

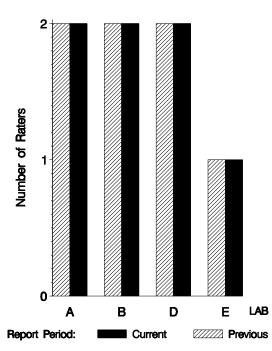
# Test Monitoring Center Carnegie Mellon University http:// 6555 Penn Avenue, Pittsburgh, PA 15206, USA http://

http://astmtmc.cmu.edu 412-365-1000

MEMORANDUM:	10-036
DATE:	August 27, 2010
TO:	Galen Greene, Chairman, L-37 Surveillance Panel
FROM:	Scott Parke Stall
SUBJECT:	L-37 Rater Calibration from October 1, 2009 through March 31, 2010

The following is a summary of L-37 rater calibration activity from October 1, 2009 through March 31, 2010.

	Reporting Data	Calibrated on 3-31-2010
Number of Raters	7	7



BY-LAB RATER DISTRIBUTION

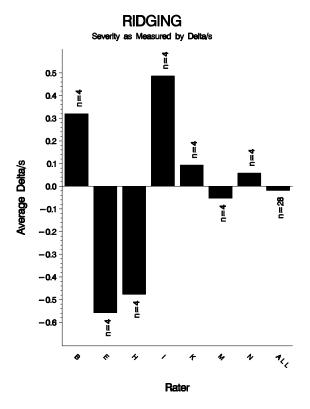
10:57:01 25AUG2010

## Test Distribution by Oil and Validity

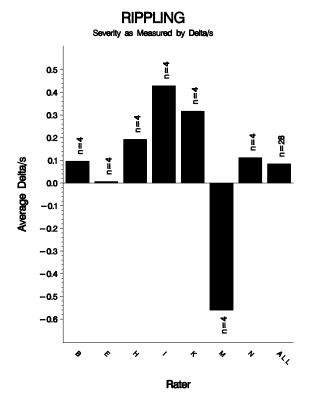
button by On and Vanuity		Totals		
		Last Period	This Period	
Accepted for calibration	AC	7	7	
Rejected (mild)	OC	0	0	
Rejected (severe)	OC	1	0	
Workshop data	AG	24	18	
Total		32	25	

		Ridging		Ripp	Rippling		Spitting		Wear	
Rater	Ν	Avg Yi	STD*	Avg Yi	STD*	Avg Yi	STD*	Avg Yi	STD*	
В	4	0.320	0.424	0.096	0.476	-0.035	0.194	0.152	0.262	
Е	4	-0.558	0.389	0.007	0.446	0.185	0.214	-0.271	1.249	
Н	4	-0.477	0.347	0.192	0.375	-0.116	0.087	0.327	0.076	
Ι	4	0.486	0.531	0.429	0.559	0.019	0.256	-0.871	0.825	
K	4	0.093	0.813	0.317	0.519	0.318	0.299	-0.108	1.317	
М	4	-0.053	0.837	-0.560	0.698	-0.094	0.073	-0.391	0.589	
Ν	4	0.058	0.740	0.112	0.534	-0.106	0.275	0.112	0.340	
ALL	28	-0.019	0.652	0.085	0.551	0.024	0.247	-0.150	0.804	

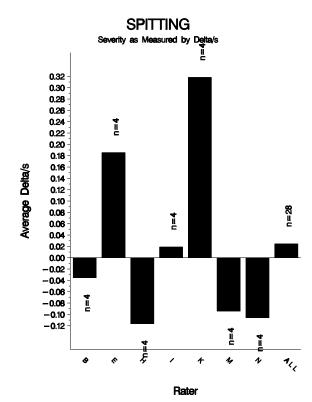
\* Due to the small number of ratings per pinion, the standard deviation of the Yi values is given in place of a pooled standard deviation.



10:38:26 26AUG2010

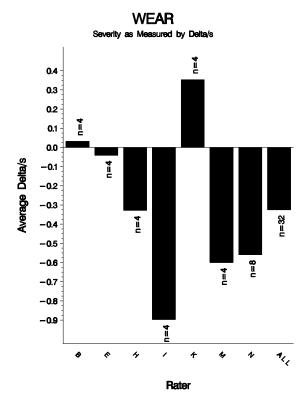


10:39:26 26AUG2010

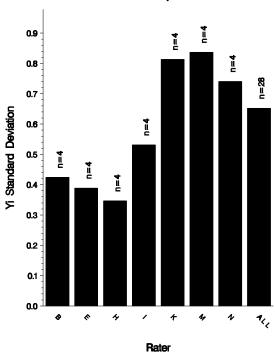


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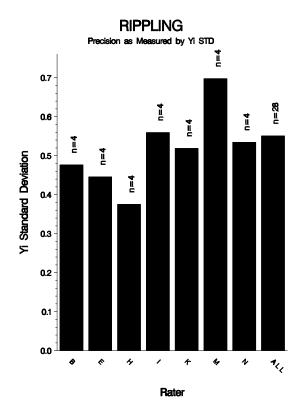
14:40:18 19AUG2010



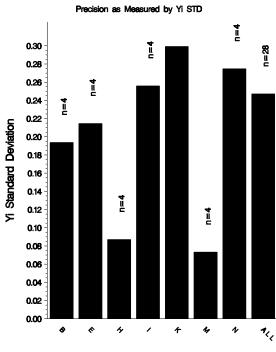
RIDGING Precision as Measured by Yi STD

10:38:26 26AUG2010

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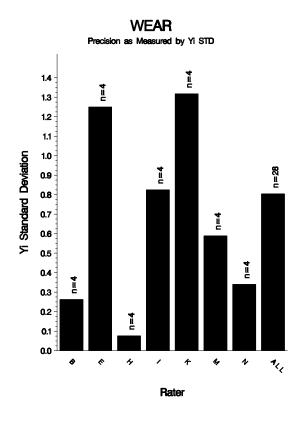
10:39:26 26AUG2010



Rater

SPITTING Precision as Measured by Yi STD

10:39:26 26AUG2010



10:39:26 26AUG2010

## **INDUSTRY CONTROL CHARTS:**

The industry control charts are shown beginning on the following page.

During this report period, RIDG, RIPP, SPIT, and WEAR all remained within both severity and precision control limits.

#### LTMS Severity Analysis EWMA 0 01JAN10 4 4 -09MAY03 0110103 017020 01JAN09 0170100 01JAN04 01JUL04 01JANOE 01JUL05 01JAN06 01JAN07 0170107 01JAN08 01JUL08 01JUL 3. Standard Deviation Units 2 1 EWMA Action Limit 0 EWMA Action Limit -1 • • £ -2 --3 -4 . 10 . 30 . 40 . 50 60 . 70 . 80 . 90 . 100 110 120 130 140 . 150 . 160 170 190 200 20 180 0 COUNT IN COMPLETION DATE ORDER Severe LTMS Precision Analysis 01JUL09 01JAN10 01JUL10 5 -09MAY03 01JUL03 01JUL05 01JAN06 01JAN08 01JAN04 01JUL04 01JAN05 017000 01JAN07 0170107 011008 01JAN09 4 Standard Deviation Units 2 1 EWMA Action Limit 0 --1 --2 --3 --4 -5 10 . 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 0 COUNT IN COMPLETION DATE ORDER CUSUM Severity Analysis 28.6 - 0, 23.2 - 0, 17.8 - 0 017006 01JUL10 01JUL09 01JAN10 0110103 01JAN05 0170105 01JAN06 011007 01JAN08 017008 01JAN04 0110104 01JAN07 01JAN09 17.8 -12.4 7.0 tandard Deviation Units 1.6 --3.8 --9.2 --14.6 --20.0 --25.4 --30.8 -36.2 --41.6 --47.0 10 30 40 50 60 70 100 110 120 130 140 150 160 170 180 190 200 210 220 230 0 20 80 90

COUNT IN COMPLETION DATE ORDER

10AUG10:11:29

### L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

**RIDGING** 

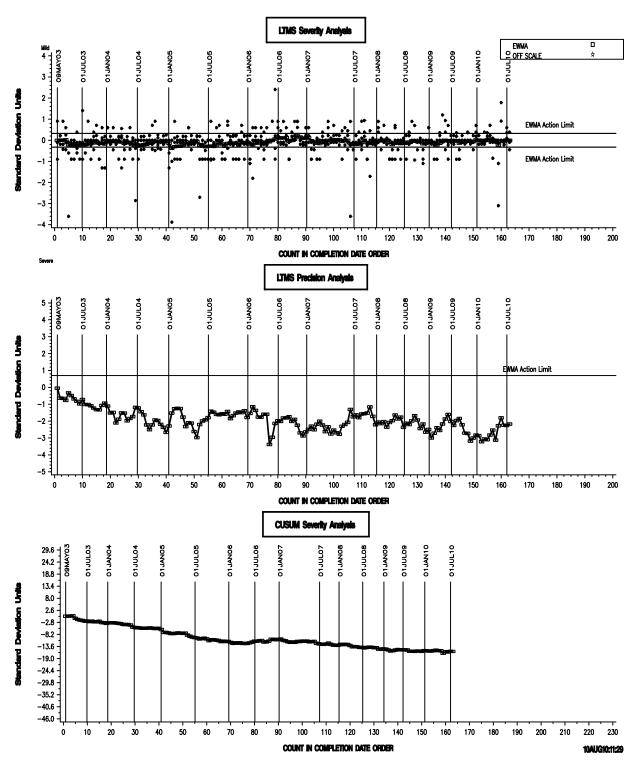
#### LTMS Severity Analysis EWMA 0 017000 01JAN10 4 01JAN05 4 -**O9MAYO3** 0110103 01JAN09 01JAN04 01JUL04 01JUL05 01JAN06 01JAN07 0170107 01JAN08 01JUL08 017020 01JUL 3 -Standard Deviation Units 2 -1. • EWMA Action Limit 0 EWMA Action Limit -1 ... -2 · -3 -4 . 10 . 30 . 40 . 50 60 . 70 . 80 . 90 . 100 110 120 130 140 . 150 . 160 . 170 190 200 20 180 0 COUNT IN COMPLETION DATE ORDER Severe LTMS Precision Analysis 01JAN10 01JUL10 5 -09MAY03 01JUL03 01JUL05 01JAN06 01JAN08 01JAN09 01100 01JAN04 01JUL04 01JAN05 017000 01JAN07 0170107 011008 4 Standard Deviation Unita 2 1 EWMA Action Limit 0 --1 --2 --3 --4 -5 10 . 20 . 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 0 COUNT IN COMPLETION DATE ORDER **CUSUM Severity Analysis** 33.6 - 0.4 28.2 - 0.4 22.8 - 00 01JUL10 01JUL03 01JAN05 0170105 01JAN06 0110106 011007 01JAN08 0170108 01JAN10 01JAN04 01JUL04 01JAN07 01JAN09 017020 22.8 -17.4 tandard Deviation Units 12.0 -6.6 -1.2 --4.2 --9.6 --15.0 --20.4 --25.8 -31.2 --36.6 --42.0 10 20 30 40 50 60 70 80 100 110 120 130 140 150 160 170 180 190 200 210 220 230 0 90 COUNT IN COMPLETION DATE ORDER 10AUG10:11:29

### L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

RIPPLING

### L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

SPITTING



#### L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

LTMS Severity Analysis EWMA 0 01JAN10 4 01700 4 -09MAY03 01JUL03 017000 01JAN09 01JAN04 01JUL04 01JANO5 01JUL05 01JAN06 01JAN07 0170107 01JAN08 011008 01JUL 3 -٠ Standard Deviation Units 2 -1. • • EWMA Action Limit 0 EWMA Action Limit -1 ٠ -2 -3 -4 . 10 . 30 . 40 . 50 60 . 70 . 80 . 90 100 110 120 130 140 . 150 . 160 170 190 200 20 180 0 COUNT IN COMPLETION DATE ORDER Severe LTMS Precision Analysis 01JAN10 01JUL10 5 -09MAY03 01JUL03 01JUL05 01JAN06 01100 01JAN04 01JUL04 01JAN05 017000 01JAN07 0170107 01JAN08 011000 01JAN09 4 Standard Deviation Unita 2 1 EWMA Action Limit 丙 0 -ΥX -1 --2 --3 -4 -5 10 . 20 . 30 40 50 60 70 80 90 100 110 120 130 140 . 150 160 170 180 190 200 0 COUNT IN COMPLETION DATE ORDER **CUSUM Severity Analysis** 26.6 - 0 21.2 - W60 15.8 - 0 017006 01JUL09 01JUL10 0110103 01JAN05 0170105 01JAN06 01JUL07 01JAN08 017008 01JAN10 01JAN04 01JUL04 01JAN07 01JAN09 15.8 -10.4 tandard Deviation Units 5.0 --0.4 --5.8 --11.2 --16.6 --22.0 --27.4 --32.8 -38.2 --43.6 --49.0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 0 COUNT IN COMPLETION DATE ORDER 10AUG10:11:29

WEAR

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SDP/sdp/astm0410.doc/mem10-036.sdp.doc c: Frank Farber Jeff Clark Don Lind L37 Surveillance Panel <u>ftp://ftp.astmtmc.cmu.edu/docs/gears/137rc/semiannualreports/137rc-04-2010.pdf</u>

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