



# Test Monitoring Center

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MEMORANDUM: 04-025  
DATE: April 16, 2004  
TO: Kevin Layton, Chairman, L-42 Surveillance Panel  
FROM: Donald Lind  
SUBJECT: L-42 Reference Test Status from October 1, 2003 through March 31, 2004

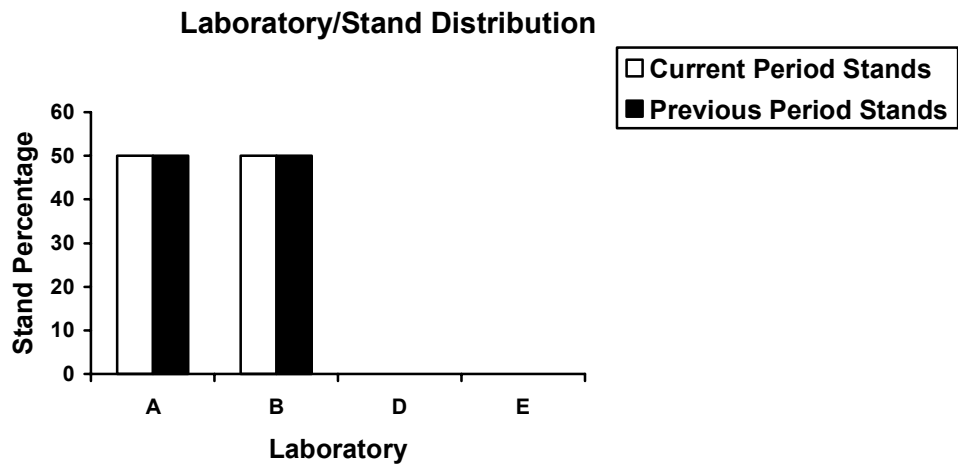
## Summary

The following is a summary of the L-42 reference oil tests that were reported to the Test Monitoring Center during the period October 1, 2003 through March 31, 2004.

## Lab/Stand Distribution

	Reporting Data	Calibrated as of 3/31/04
Number of Laboratories	2	2
Number of Stands	2	2

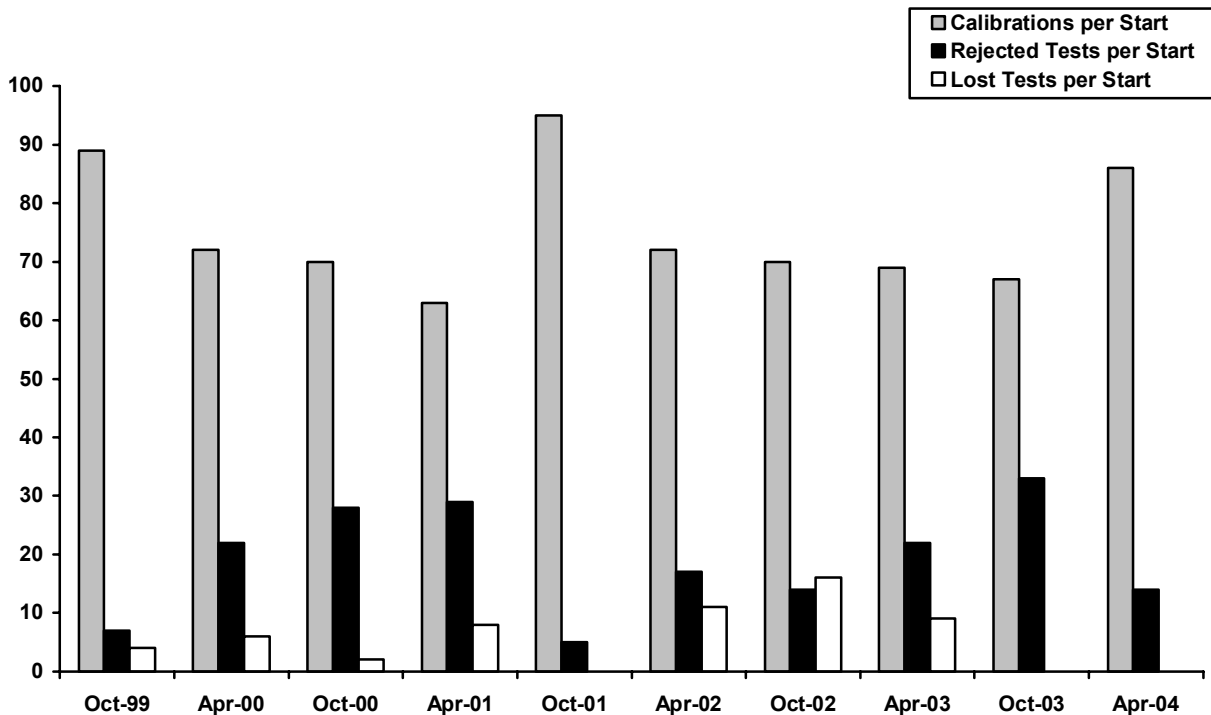
The following chart shows the laboratory/stand distribution:



A total of 14 operationally valid reference oil tests were reported this report period. All of the 14 operationally valid reference oil tests were run on gear batch V1L637/P8L604. Of the 12 operationally and statistically valid tests, 9 were used for stand calibration. The following summarizes the status of the reference oil tests reported to the TMC:

	TMC Validity Codes	Number of Tests
Operationally and Statistically Acceptable (LTMS)	AC	12
Operationally Valid, Statistically Unacceptable	OC	2
Operationally Invalid Calibration Test-Lab Judgment	LC	0
Aborted Calibration Test	XC	0
Acceptable Discrimination Oil Test	AS	0
Unacceptable Discrimination Oil Test	OS	0
Aborted Discrimination Oil Test	LS	0
Donated Tests	AG	0
Non-blind Tests (Stand Evaluation)	NN	10
<b>Total</b>		<b>24</b>

Attempted calibration tests are depicted graphically below by report period.



The calibrations per start has increased this report period when compared to the previous period. The rejected test per start rate has decreased compared to the previous period. The lost test per start rate has remained the same this report period when compared to the previous period. All rates compare well with the historical values.

Severity and Precision

The average  $\Delta/s$  for this period is -0.09 (-0.54 % Scoring) mild as illustrated in the Cusum severity plot in Figure 1. The average  $\Delta/s$  for the 9 tests used for stand calibration is -0.80 (-4.76 % Scoring) mild. There were 2 EWMA precision warning alarms this report period. The alarms do not appear to be attributed to any one gear batch, oil or lab. The means and standard deviations, by reference oil and gear batch for all operationally valid tests completed during this period, are tabulated below:

Oil	N	Gear Batch	Coast Side Pinion Scoring		
			Mean	Std. Dev.	$\Delta/s$
115	14	V1L637/P8L604	24.93	5.95	-0.09

The  $\Delta/s$  and pooled standard deviations, by lab, are listed in the following table:

Lab	Coast Side Pinion Scoring $\Delta/s$	Pooled Standard Deviation			
		df	Coast Side Pinion Scoring	Coast Side Ring Scoring	Seq. 2 Coast Side Ring Scoring
A	-0.36	8	5.55	5.56	8.33
E	0.41	4	6.61	6.53	0.00

Information Letters

There was one information letter issued during this report period. Information Letter 03-4, Sequence Number 18 was issued on November 14, 2003. Items changed with this information letter are documented in the L-42 timeline (Table 1).

TMC Lab Visits

There were two lab visits performed this report period. During the lab visits one discrepancy was noted. The axle preparation was not as per Sections 5.1.2 through 5.1.4 of the L-42 procedure.

Reference Oil Status

The following table quantifies the reference oil supply and the expected number of tests remaining at the Test Monitoring Center and at the testing laboratories. L-42 reference oils are shipped in quantities of 1/2 gallon per test.

Oil	Lab A	Lab B	Lab D	Lab E	TMC	Total
112-2	3	6	4	2	74	89
114-1	0	12	4	1	18	35
115	10	11	13	7	117	158
113	2	4	4	4	192	206

DML/dml

Attachments

c: L-42 Surveillance Panel

<ftp://ftp.astmtmc.cmu.edu/docs/gears/l42/semiannualreports/l42-04-2004.pdf>

Distribution: Email

Table 1

Effective Date	L-42 Timeline	
	Topic	IL#
19940110	Test report form and data dictionary changes version number 19940106	1
19940401	In-Line Torque Meter Addition	2
19940401	Instrument Calibration Requirement	2
19940701	Report Forms and Data Dictionary Version 19940526	3
19940903	Report Forms and Data Dictionary Version 19940707	4
19940903	Recording of Torque Measurement using Inline Torque Meter	5
19950824	Report Forms and Data Dictionary Version 19950721	5
19960713	Test Break-in Procedure	96-1
19960713	Report Forms and Data Dictionary Version 19960607	96-1
19960923	Non-reference oil test Sequence 2 (15%) and Sequence 4 (10%) coast side torque limits.	96-2
19960923	Sequence 2 and Sequence 4 dynamometer synchronization torque specification	96-2
19970317	Revised Calibration Schedule, Discrimination Requirements, Coast Side Torque Limits, Report Forms and Data Dictionary Version 19970305	97-1
19980302	Report Forms and Data Dictionary Version 19971211	98-1
19980122	Backlash Settings Clarification	98-2
	Section 5.2.4 Editorial Correction	98-3
19990101	Addition of CRC Gear Rating Workshop Training	98-4
19990901	Reference test requirement: EOT pinion c.s. scoring => EOT ring c.s. scoring	99-1
20020211	Replacement of CRC Manual 17 with CRC Manual 21	02-1
20020401	Remove Report Forms and Data Dictionary from ASTM Procedure	02-1
20030101	Require the Use of a Himmelstein Torque Meter	03-1
20030101	Require the Use of a Himmelstein Model 701 or 711 Strain Gage Conditioner	03-1
20030415	Non-interpretable Tests	03-02
20030415	Complete Test Procedure Update	03-02
20040101	Revised Solvent Specification	03-03
20031114	Non-interpretable Tests for Drive Side Scoring	03-04

Figure 1

# L-42 INDUSTRY OPERATIONALLY VALID DATA

## FINAL END OF TEST PINION % SCORING COAST (%)

