



# Test Monitoring Center

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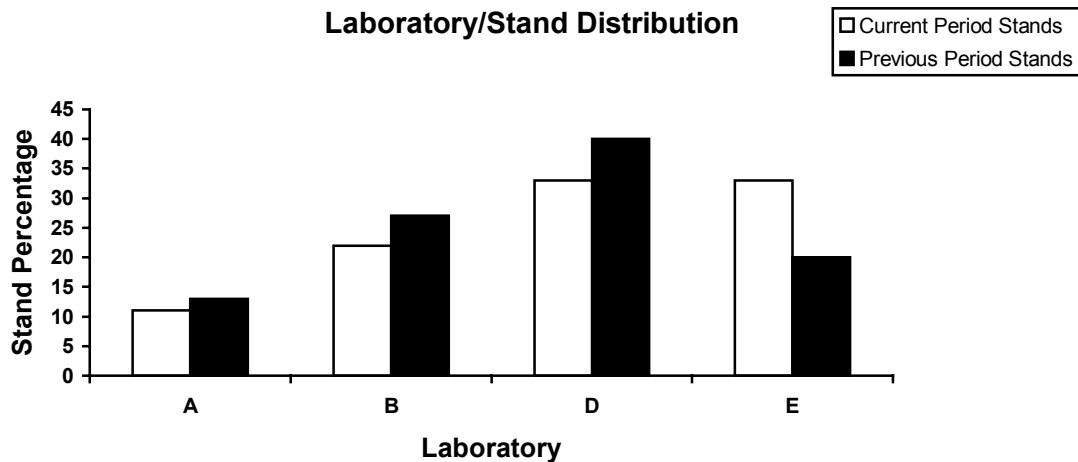
MEMORANDUM: 00-143  
DATE: October 18, 2000  
TO: Dale Smith, Chairman, L-33 Surveillance Panel  
FROM: Donald Lind  
SUBJECT: L-33 Reference Test Status from April 1, 2000 through September 30, 2000

The following is a summary of the L-33 reference oil tests that were reported to the Test Monitoring Center during the period April 1, 2000 through September 30, 2000.

### Lab and Stand Summary

	Reporting Data	Calibrated as of 3/31/00
Number of Laboratories	4	4
Number of Storage Boxes	18	13

The following chart shows the laboratory/stand distribution:

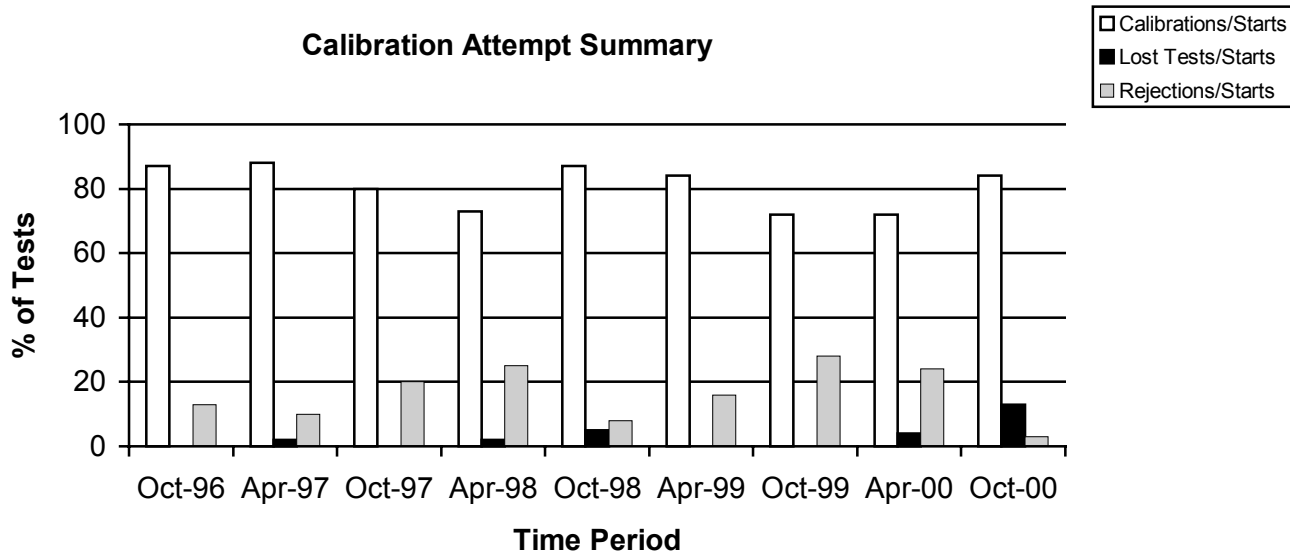


The following summarizes the status of the reference oil tests reported to the TMC:

	TMC Validity Codes	No. of Tests
Operationally and Statistically Acceptable	AC	26
Failed Acceptance Criteria	OC	1
Operationally Invalid (Lab Judgement)	LC	4
Operationally Invalid (Lab / TMC Judgement)	RC	0
Aborted	XC	0
<b>Total</b>		<b>31</b>

There were 16 additional tests conducted for V99.1 hardware approval and evaluation.

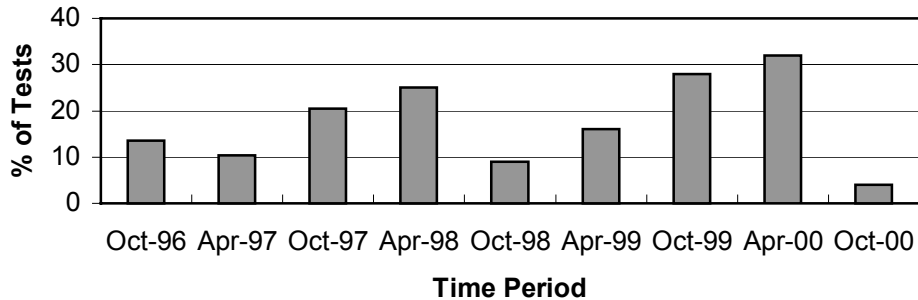
Calibrations per start, lost tests per start and rejection per start rates are summarized below:



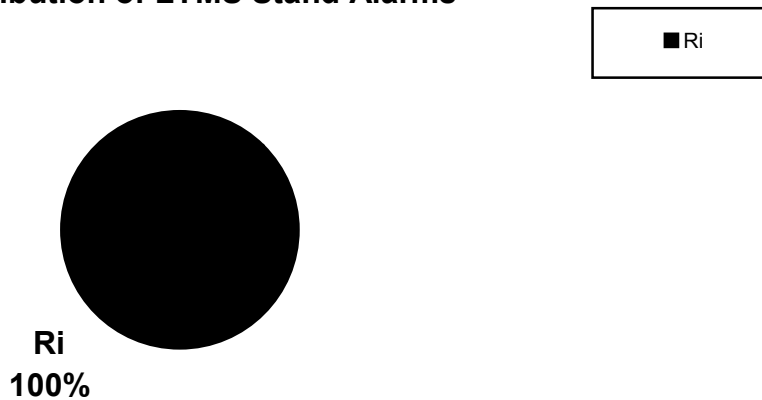
The calibrations per start and lost test per start rates have increased with respect to the previous period. The rejected test per start rate has decreased with respect to the previous period. All rates compare well with the historical values.

The percentage of tests failing the acceptance criteria for operationally valid tests has decreased this report period compared to the previous report period and history. The percentages of tests failing the acceptance criteria for operationally valid tests are depicted graphically below.

### Rejected Operationally Valid Tests



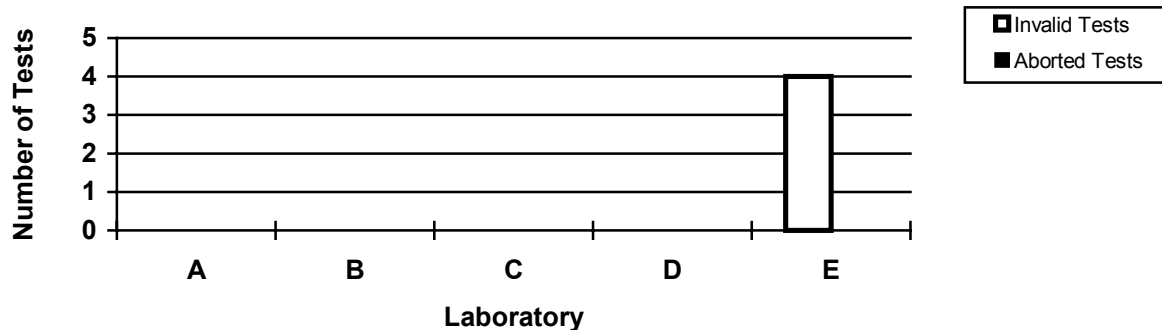
### Distribution of LTMS Stand Alarms



There was only one test that failed the acceptance criteria this report period and it failed Shewhart precision alarm (Ri).

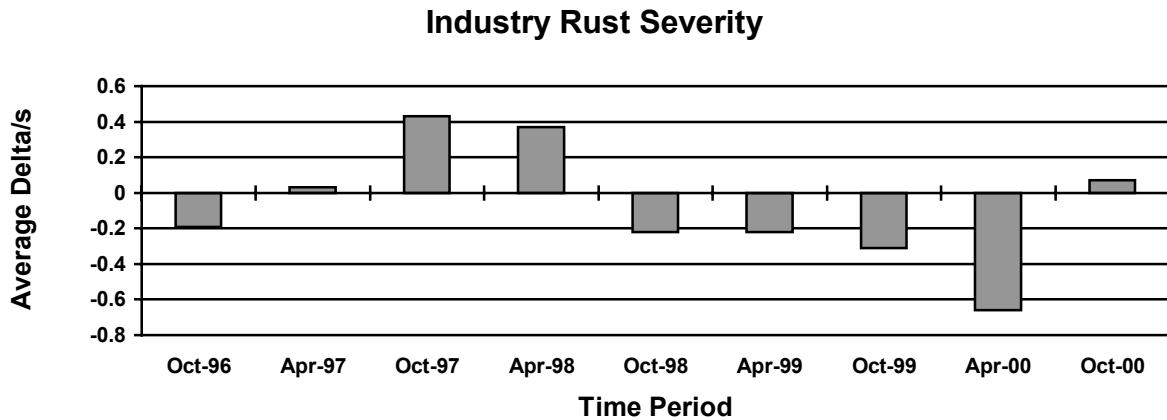
The laboratory distribution of lost tests is shown below. There were four lost tests this report period. A detailed list of reasons for tests declared operationally invalid or aborted are shown in Table 2.

### Lost Test Distribution

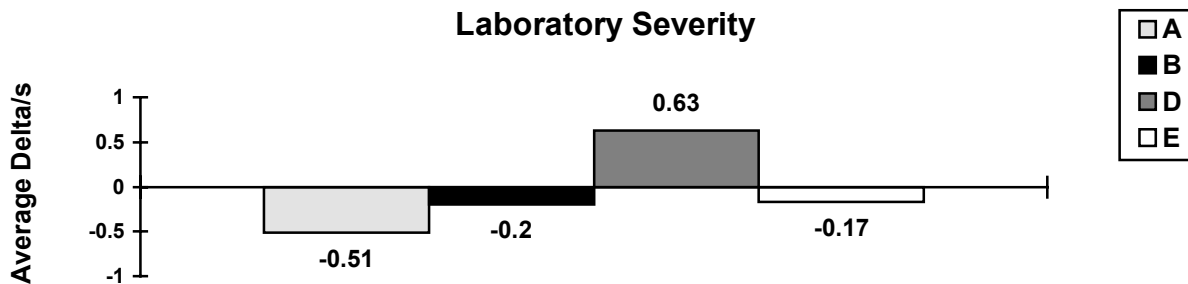


Severity and Precision

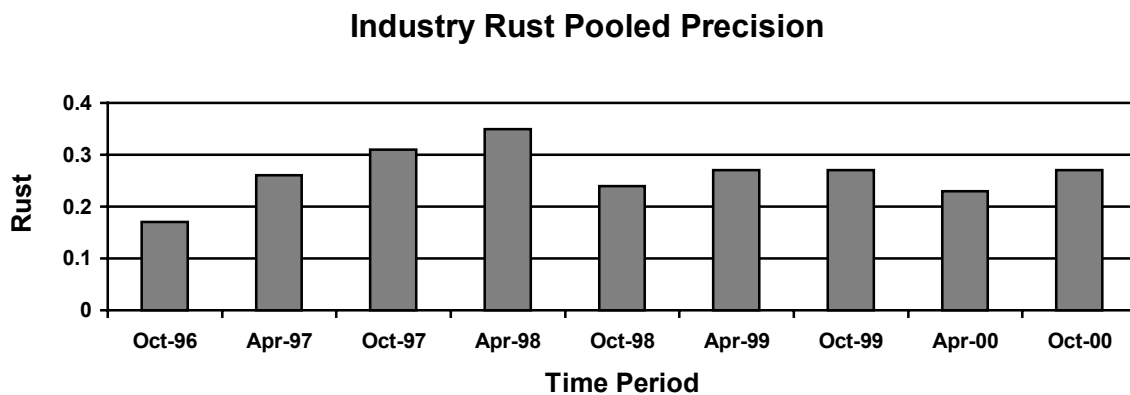
A total of 27 operationally valid test results were reported this period, 17 were conducted on gear batch V99.1 and 10 on gear batch V95.1. The mean  $\Delta/s$  for this period is 0.07 mild, which equates to 0.02 merits. Severity is on target as indicated in the chart below and Figure 1. Comparison with previous periods are shown below.



Shown below is a summary of the average rust  $\Delta/s$  for all laboratories reporting data this report period.



The industry precision estimate for this report period is 0.27 merits (pooled s). The precision estimate has degraded slightly compared to the previous report period, and compares well historically.



Industry Control Charts

Figure 1 is the Industry EWMA severity and precision chart of tests completed through September 30, 2000. There were three precision EWMA warning alarms and three severity EWMA alarms (two warning and one action) triggered this report period. There are no identifiable lab, stand, or reference oil problems related to the alarms.

TMC Lab Visits

The TMC visited four labs this report period. There were no lab discrepancies to report.

Information Letters

There were two information letters issued this report period. Information Letter 00-1 was issued on May 1, 2000 and Information Letter 00-2 was issued June 30, 2000. Items changed with these information letters are documented in the L-33 timeline (Table 1).

Reference Oils

The following is a listing of reference oils with the expected number of tests remaining at the Test Monitoring Center and at the testing laboratories. L-33 reference oils are shipped in quantities of 1 gallon per test.

Reference Oil	Lab A	Lab B	Lab D	Lab E	TMC
121-1	9	6	2	6	0
121-2	4	6	7	3	133
123	16	5	9	11	78
123-1	2	3	5	6	11
151-3	6	6	2	2	*

\* 674 Gallons (Multiple test area usage)

Attachments

c: L-33 Surveillance Panel

<ftp://www.tmc.astm.cmri.cmu.edu/docs/gear/l33/semiannualreports/l33-10-2000.pdf>

**Listing of Tables and Figure Included as Part of This Report to the L-33 Surveillance Panel**

Table 1 is the L-33 Industry Timeline

Table 2 is summary of lost tests

Figure 1 is the Industry Control Chart for L-33 Rust

Table 2  
Summary of Reasons for Aborted and Operationally Invalid Tests

Reason	Number of Tests
Manilla Gasket was placed on the Housing Side	3
Water Column Not Approved	1

**Table 1**  
**L-33 Industry Timeline**

Effective Date	Topic	Information Letter Number
19930901	Ultrasonic Parts Cleaning Requirement	1
19930901	Abrasive Blasting w/ AL Oxide Required	1
19930901	Differential Housing Cover Plate Preparation Requirement	1
19930901	Functional Surface Preparation Requirement	1
19930901	Pre-test Inspection for Rust Requirement	1
19930901	Acetone Usage Report Note Requirement	1
19931221	Report Forms and Dictionary Version 19931129	2
19941020	Test Stand Calibration Schedule Change	3
19941020	Report Forms and Dictionary Version 19940909	3
19950820	Revised Definition of Corrosion Rust and Light Rust	4
19950820	Report Forms and Dictionary Version 19950509	4
19960312	Revised Time Limit for Parts Rating	96-1
19960506	Report Forms and Dictionary Version 19960329	96-2
19970602	Rating Scale Revisions	97-1
19970602	Discrimination Oil Test Requirement	97-1
19970602	Area Weighting Factors for Reference Oil Tests	97-1
19970602	Report Forms and Dictionary Version 19970411	97-1
19970602	New TMC Address and Test Reporting Clarifications	97-1
19970602	Discrimination Oil Test Correction	97-2
19970602	Rust Rating Correction	97-2
19970602	Report Forms and Dictionary Version 19970609	97-3
19980303	Report Forms and Dictionary Version 19971218	98-1
19980701	Pinion torque requirements for assembled unit	98-2
19990104	Removal of Discrimination Oil Test Requirement	99-1
19990430	Reference Oil 121-1 Targets 45 Test Update	
20000419	New Hardware Configuration	00-1
20000730	Changes to Abrasive Blasting Equipment and Material	00-2



# L-33 INDUSTRY OPERATIONALLY VALID DATA

## REFERENCE FINAL RUST CORROSION MERIT RATING

Figure 1

