



# Test Monitoring Center

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(412) 365-1000

MEMORANDUM: 06-089

DATE: November 3, 2006

TO: James McCord,  
Chairman, Single Cylinder Diesel Surveillance Panel

FROM: Scott Parke

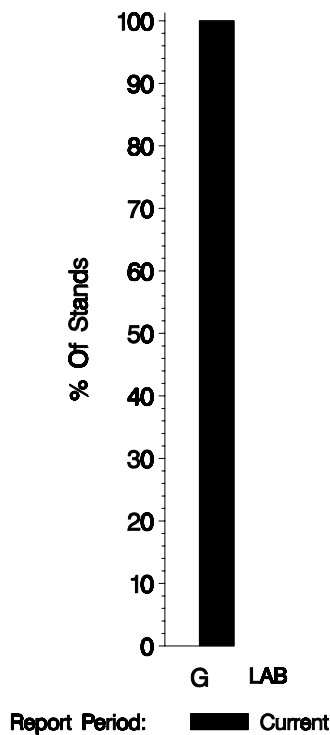
SUBJECT: 1R Testing from April 1, 2006 through September 30, 2006

One calibration test was reported to the Test Monitoring Center during the period from April 1, 2005 through September 30, 2005. The data from this test is shown on page 7. Following is a summary of testing activity this period.

	Reporting Data	Calibrated on 9-30-06
Number of Labs	1	1
Number of Stands	1	1

Stands reporting data this period were distributed as shown below:

## 1R LABORATORY / STAND DISTRIBUTION

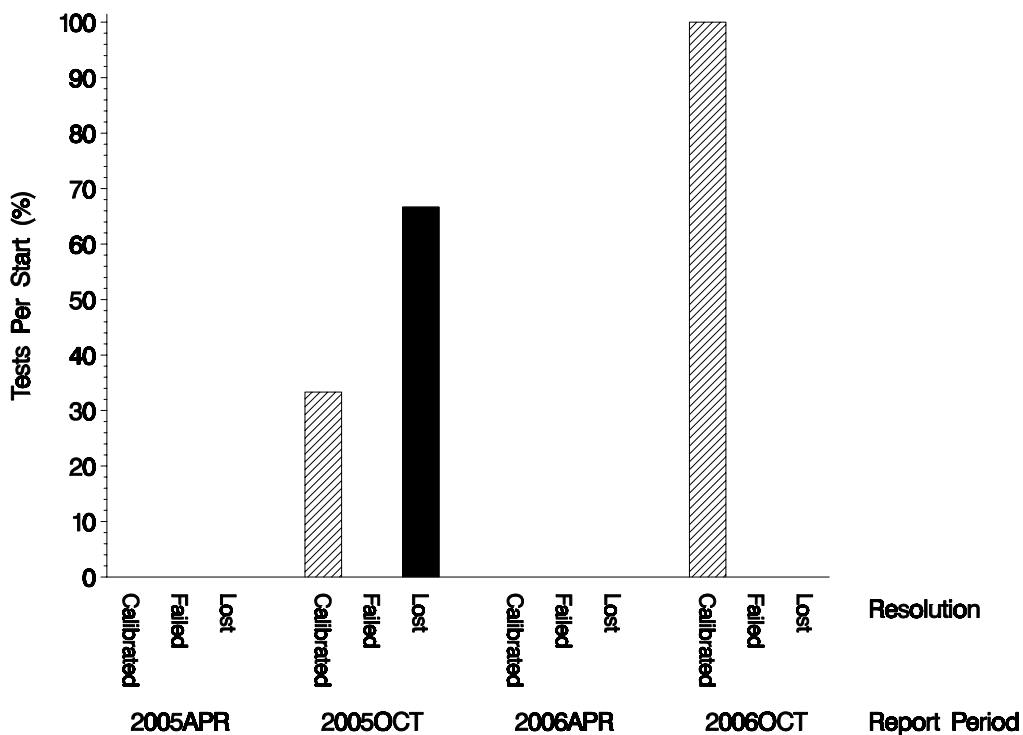


**Test Distribution by Oil and Validity**

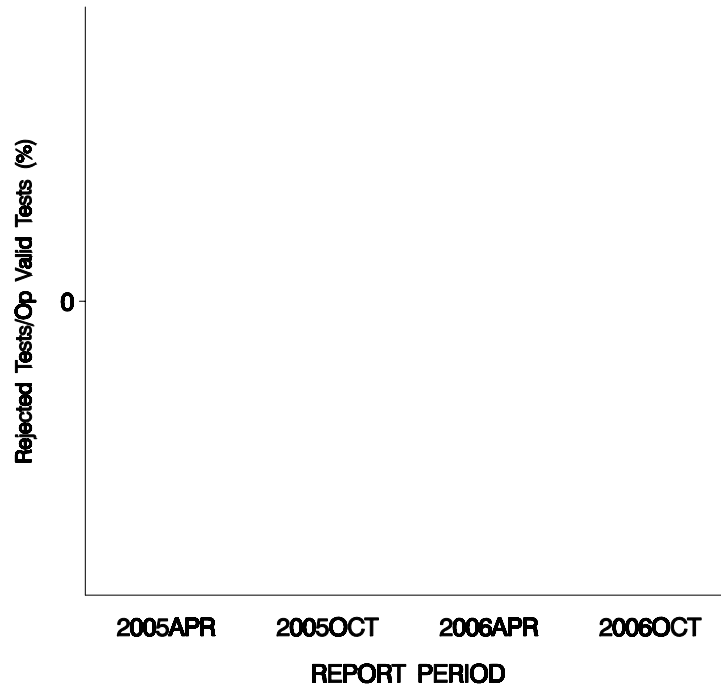
			Totals			
		820-2	1005-1	1005-2	Last Period	This Period
Accepted for Calibration	AC	1	0	0	0	1
Rejected Mild	OC	0	0	0	0	0
Rejected Severe	OC	0	0	0	0	0
*Rejected for EWMA Precision	OC	0	0	0	0	0
*Rejected for Shewhart Precision	OC	0	0	0	0	0
Operationally Invalid (lab)	LC	0	0	0	0	0
Operationally Invalid (lab/TMC)	RC	0	0	0	0	0
Aborted Calibration	XC	0	0	0	0	0
<b>Total</b>		<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>

\*During a January 23, 2006 teleconference, the Surveillance Panel elected to remove precision as a rejection criteria. Instead, the test report will now include a checkbox for use in instances where a candidate test was run in a stand that produced a precision alarm on its reference run.

**1R CALIBRATION ATTEMPT SUMMARY**



**OPERATIONALLY VALID 1R TESTS  
FAILING ACCEPTANCE CRITERIA**



The above chart shows the percentage of failed but operationally valid tests. No tests failed in any of the last four report periods.

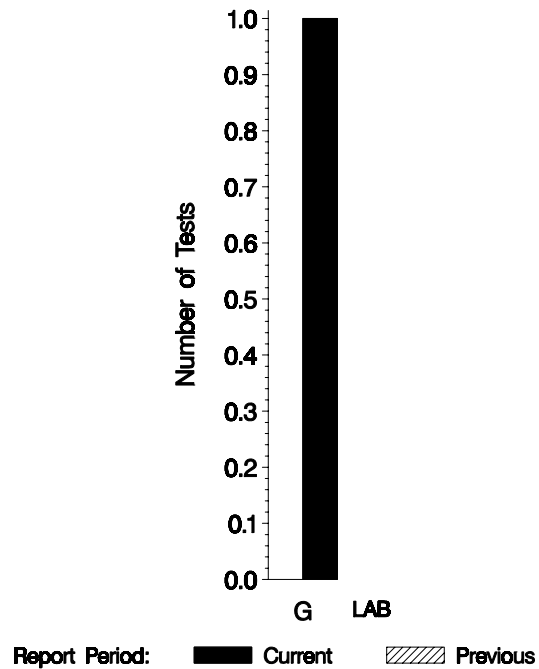
No LTMS deviations were written this period (none have ever been written for this test).

No stands calibrated using reduced-K criteria this period.

By lab, the tests run this report period were distributed as shown below:

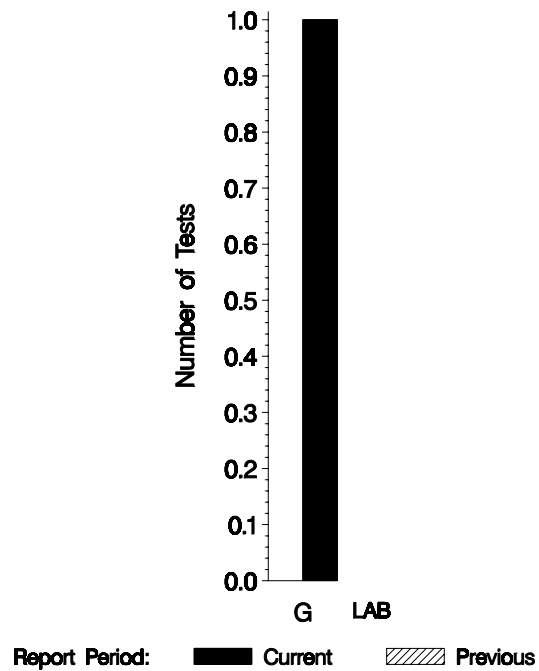
### NUMBER OF 1R TESTS REPORTED BY LAB AND REPORT PERIOD

(All Test Starts – Both Valid & Invalid)

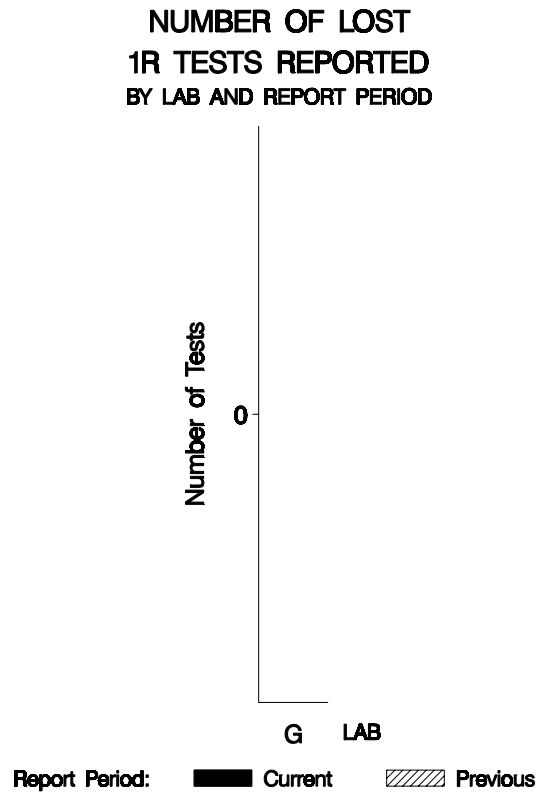


With all operationally invalid tests removed, the distribution looks like this:

### NUMBER OF OPERATIONALLY VALID 1R TESTS REPORTED BY LAB AND REPORT PERIOD



And the by-lab distribution of lost tests:



Lost Tests per Start by Oil and Lab

Lab	820-2			1005-1			1005-2			Total		
	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%
G	0	1	0							0	1	0
Total	0	1	0							0	1	0

Lost tests are those that were either aborted, rejected by lab, or operationally invalid.

Causes for Lost Tests

Lab	Cause	Oil			Validity			Loss Rate		
		820-2	1005-1	1005-2	LC	RC	XC	Lost	Starts	%
	No tests were lost this period.							0	1	0%
	Lost	0	0	0	0	0	0			
	Starts	1	0	0	0	0	0			
	%	0%	0%	0%	0%	0%	0%			

Average Δ/s by Lab						
Lab	n	TGC	WD	TLC	BTOC*	ETOC*
G	1	-0.935	-0.696	-1.411	-0.235	-0.154
Industry	1	-0.935	-0.696	-1.411	-0.235	-0.154

\* Transformed

DATA FROM ALL OPERATIONALLY VALID TESTS REPORTED THIS PERIOD:

**LTMS**

DATE	LAB	STAND	OIL	TG	WD	TL	BTOC	ETOC	TGYI	WDYI	TLYI	BTOCYI	ETOCYI
20060924	G	1	820-2	24.50	316.0	8.00	7.9	7.5	-0.935	-0.696	-1.411	-0.235	-0.154

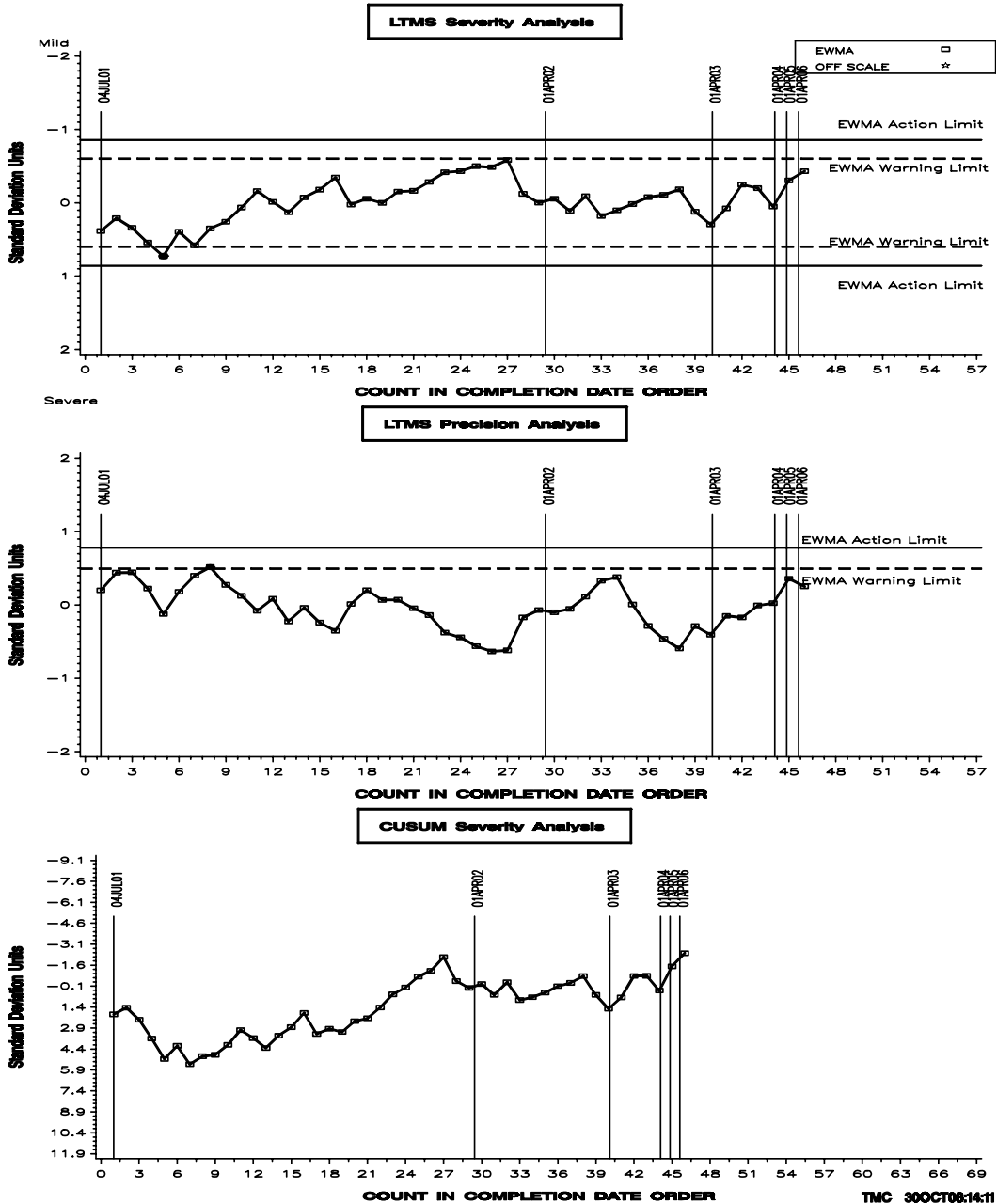
DISCUSSION OF INDUSTRY PERFORMANCE OVER THIS PERIOD

TGC:

The average  $Y_i$  reported this period was -0.935 (see table on previous page). Using the value 9.70 (which is the root mean square error of the matrix data and the value used to generate lab severity adjustments) to compute an average delta yields 9.07 demerits mild. Severity and precision remained within acceptable limits throughout this period.

**CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA**

**FINAL TOP GROOVE CARBON (DEMERITS)**



Shown above is the LTMS/Cusum plot for TGC.

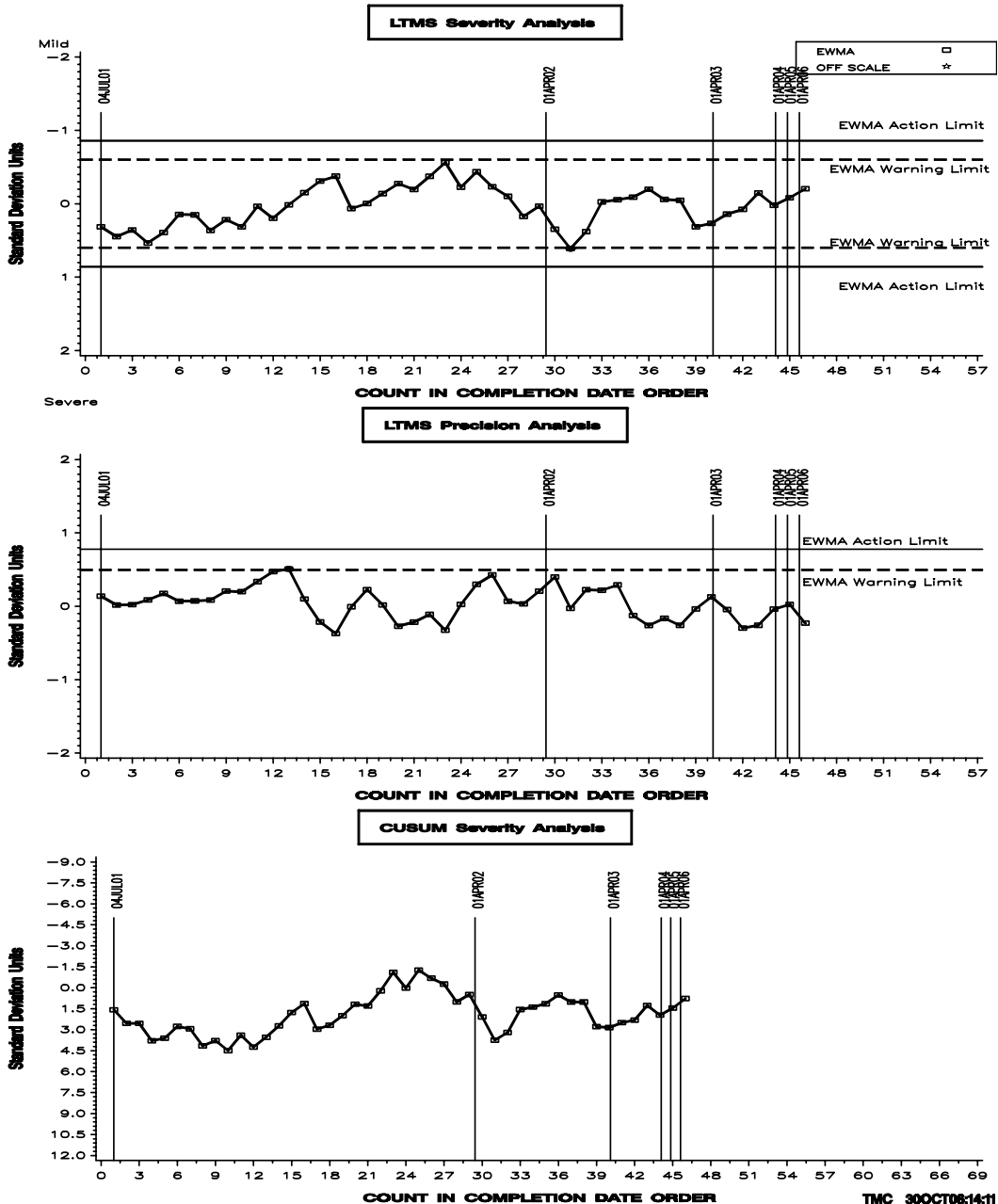


WD:

The average  $Y_i$  reported for WDP this period was -0.696 mild (see table on page 7). Using the value 29.0 (which is the root mean square error of the matrix data and the value used to generate lab severity adjustments) to compute an average delta yields 20.18 demerits mild. Severity and precision remained within acceptable limits. The LTMS/Cusum plot is shown below.

**CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA**

**FINAL WEIGHTED TOTAL DEMERITS (DEMERITS)**

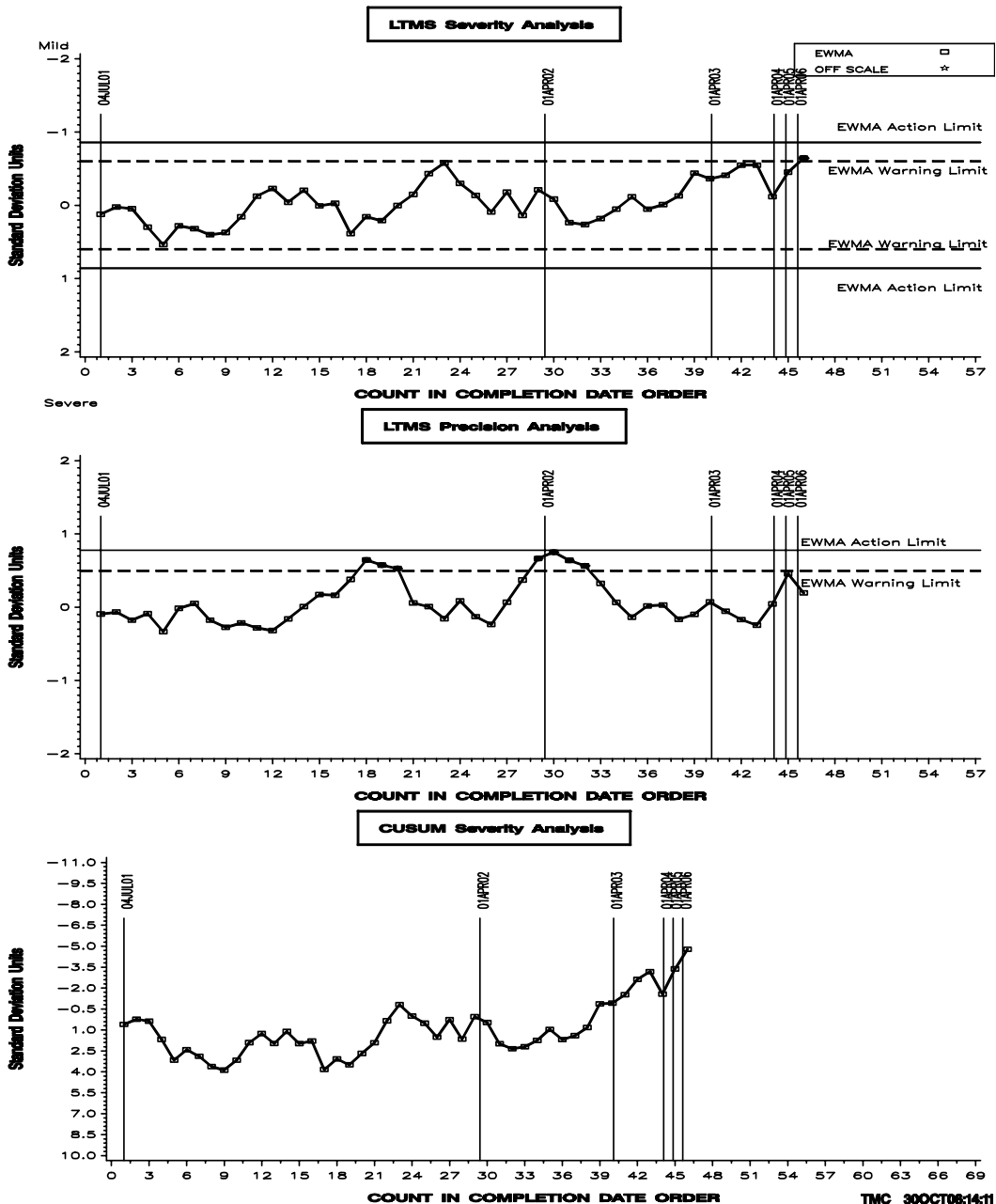


TLC:

The average TLC  $Y_i$  reported this period was -1.411 (see table on page 7). Using the value 7.84 (which is the root mean square error of the matrix data and the value used to generate lab severity adjustments) to compute an average delta yields 11.06 demerits mild. TLC remained within both severity and precision limits but is beginning to show a slight mild trend. The LTMS/Cusum chart is shown below.

**CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA**

**FINAL TOP LAND CARBON (DEMERITS)**

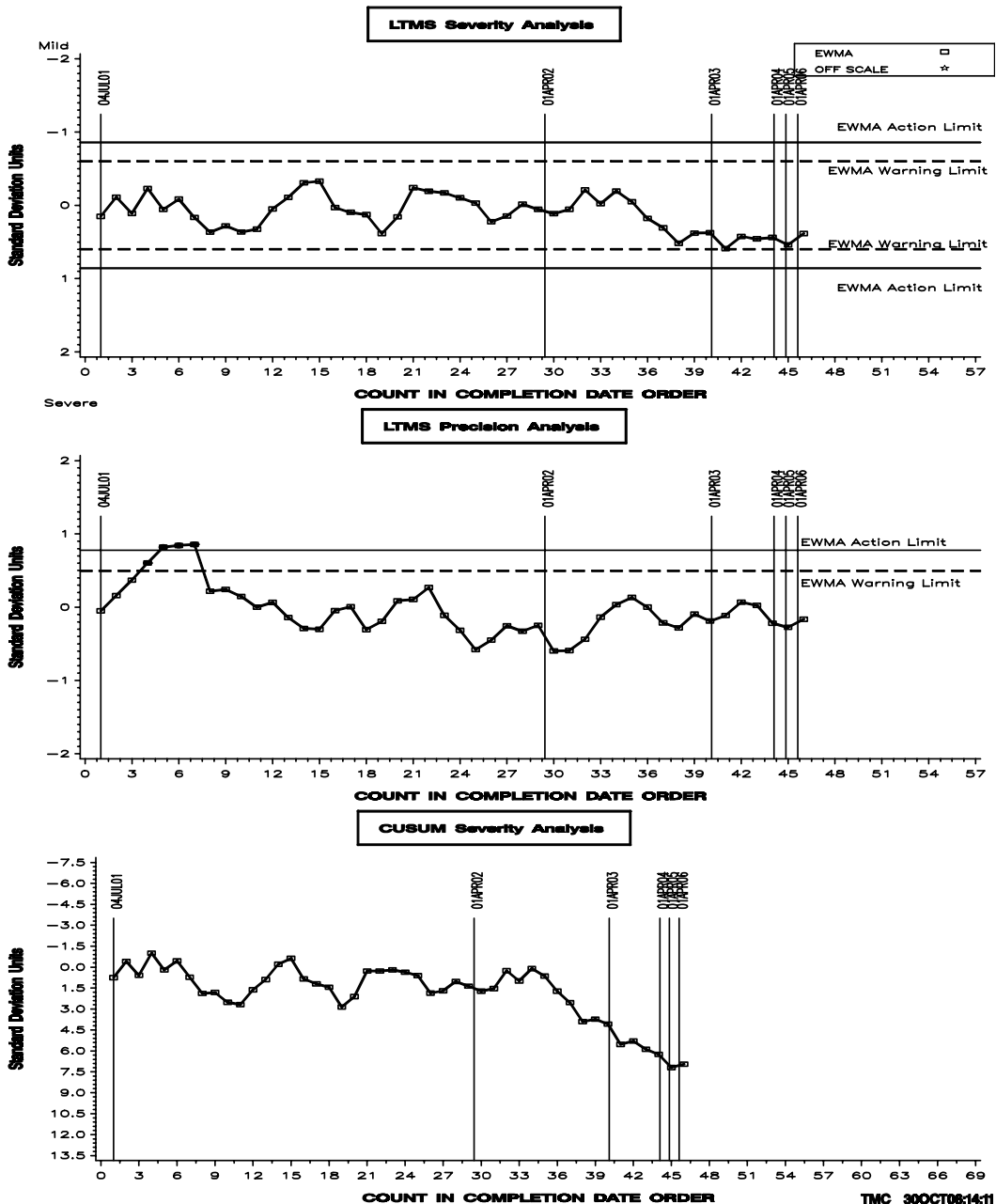


Beginning of Test Oil Consumption (BTOC):

The average transformed BTOC  $Y_i$  this period was -0.235 (see table on page 7). Using the value 1.32 (which is the root mean square error of the matrix data and the value used to generate lab severity adjustments) to compute an average delta yields -0.31g/h mild. Severity and precision remained within acceptable limits. The LTMS/Cusum plot for BTOC is shown below.

**CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA**

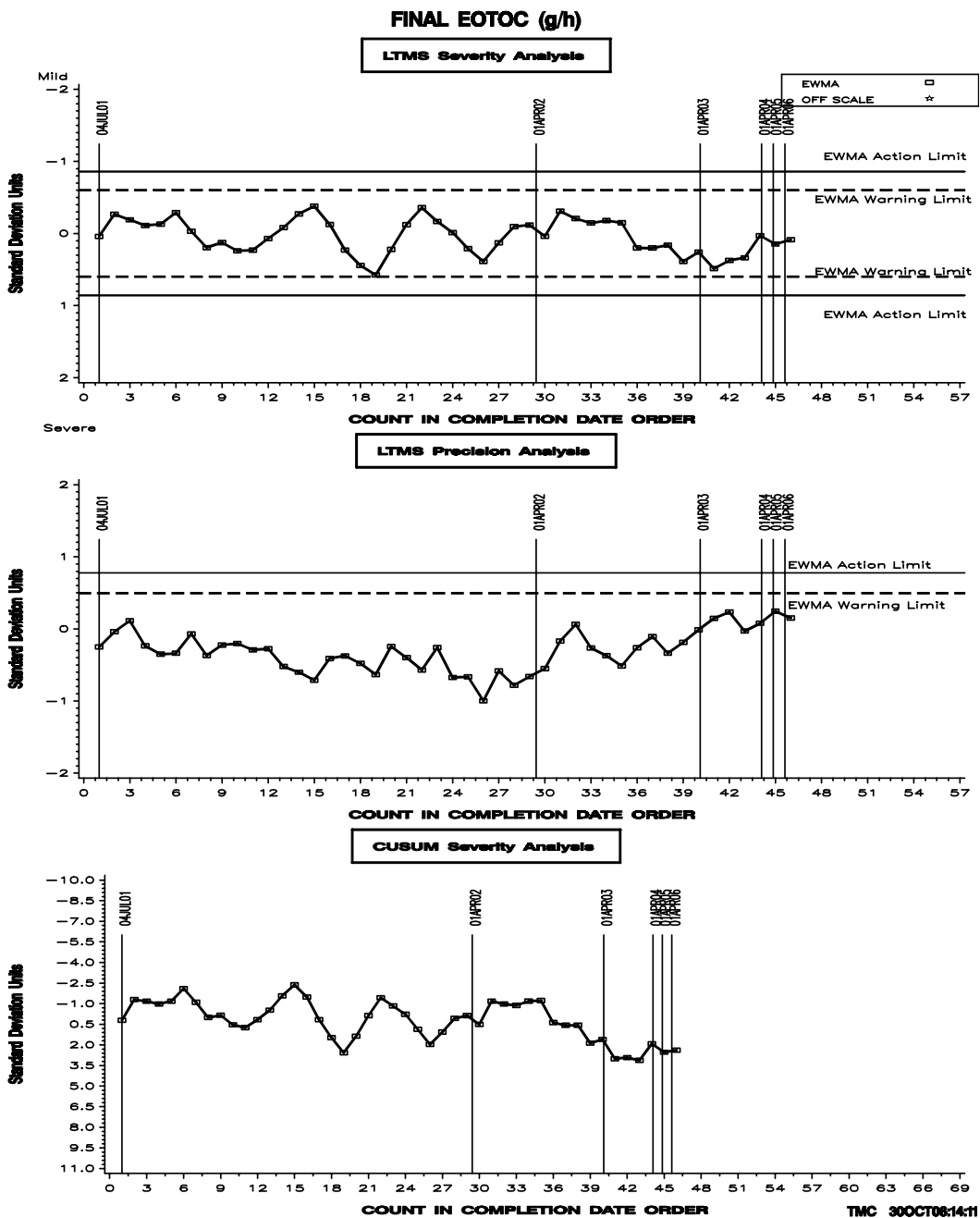
**FINAL BOTOC**



End of Test Oil Consumption (ETOC):

The average transformed ETOC  $Y_i$  this period was -0.154 (see table on page 7) Using the value 1.35 (which is the root mean square error of the matrix data and the value used to generate lab severity adjustments) to compute an average delta yields -0.21g/h mild. Severity and precision remained within acceptable limits throughout this period. The LTMS/Cusum plot for ETOC is shown below.

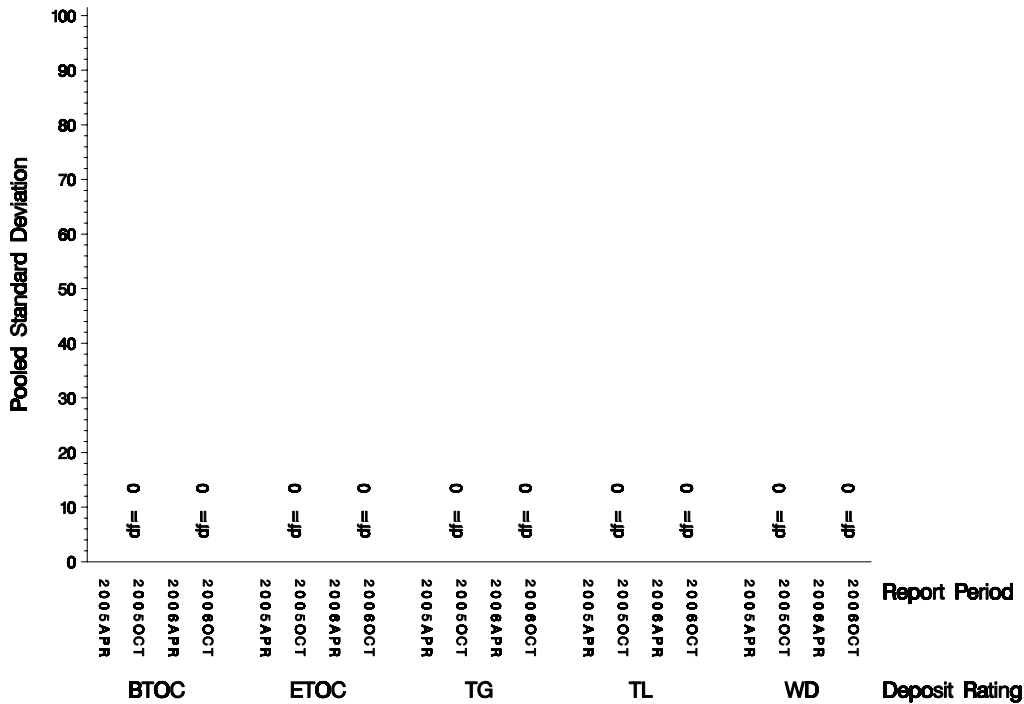
**CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA**



POOLED S:

Shown below is a bar chart comparing the pooled s values for the 1R test parameters over the last four report periods. Where degrees of freedom equal zero, no bars are shown. This will occur where only one test was reported (such as this period) or where multiple tests are reported but all are on different oils (as was the case for the October 2005 period). Periods showing no information had no tests reported.

**1R REFERENCE TEST PRECISION**  
 POOLED STANDARD DEVIATION BY SIX-MONTH ASTM REPORT PERIOD



STATUS OF REFERENCE OIL SUPPLY:

At the end of this report period, the testing oil supply stood as outlined in the following table:

Oil	Cans @ Labs	@ TMC	
		Cans	Gallons
1005-1	11	0	5
1005-2	0	83	1250
820-2	6	0	10
<b>Total</b>	<b>17</b>	<b>83</b>	<b>1265</b>

\* Future reblends of oils marked with an asterisk are not obtainable by TMC.

Be aware that this table presumes that all of each of these oils is dedicated to the 1R test area. This is not the case; all of these oils are also used in other diesel test areas. The supply of 820-2 is nearly depleted. A reblend (820-3) has been procured and is in the process of being introduced in the multi-cylinder diesel test areas.

TIMELINE OF SIGNIFICANT EVENTS IN THE LIFE OF THE 1R TEST:

Effective Date	Info Letter	
20010612		START OF FIRST 1R MATRIX TEST
20010902		END OF LAST 1R MATRIX TEST
20011001		BEGIN REGISTERED TESTING
20030101	03-1	FIRST ISSUE OF PROCEDURE DRAFT
20030101	03-1	QUALITY INDEX CALCULATION CONSTANTS FINALIZED
20040212		DD VERSION 20040116 ACC STATEMENT ADDED TO REPORT FORMS
20050321	05-1	SOLVENT SPEC, CAL PERIOD ADJUSTMENT GUIDELINES, PRECISION STMT WORDING

RATING:

No 1R re-rates were required during this report period. The table below summarizes the re-rates for this report period:

<b>Rating Re-rate Summary</b>	
Number of tests where lab rating was changed	0
Number of tests where referee rating was changed	0
Number of tests where no changes were made	0
Total number of re-rates requested	<u>0</u>

LAB VISITS:

No 1R lab visits were completed during this report period.

INFORMATION LETTERS:

No information letters were issued during this report period

FUEL BATCH APPROVAL:

During its June 1, 2006 teleconference, the surveillance panel voted to transfer responsibility for fuel batch approval from the TMC to each of the testing labs. Consequently, fuel batch approval will no longer be a part of this report.

SUMMARY

- Over the course of this report period, TGC, WD, TLC, BTOC and ETOC all remained within acceptable severity limits.
- Precision for all parameters remained within acceptable limits throughout this report period.

SDP/sdp/astm1006.doc/mem06-089.sdp.doc

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<ftp://ftp.astmtmc.cmu.edu/docs/diesel/scote/semiannualreports/1r-10-2006.pdf>

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