Test Monitoring Center
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(412) 365-1000

MEMORANDUM: 06-039

DATE: May 24, 2006

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

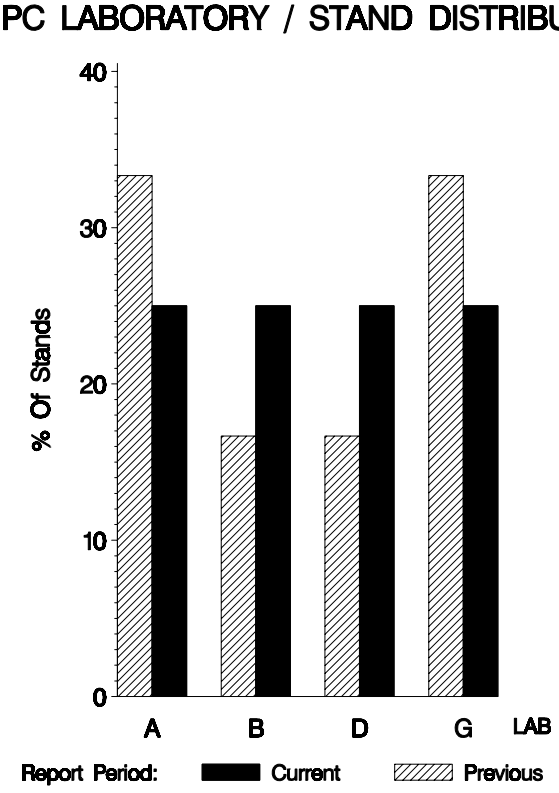
FROM: Scott Parke

SUBJECT: 1M-PC Testing from October 1, 2005 through March 31, 2006

Nine calibration tests were reported to the Test Monitoring Center during the period from October 1, 2005 through March 31, 2006. The data from the operationally valid tests is shown on page 7. Following is a summary of testing activity this period.

	Reporting Data	Calibrated on 3-31-06
Number of Labs	4	4
Number of Stands	4	4

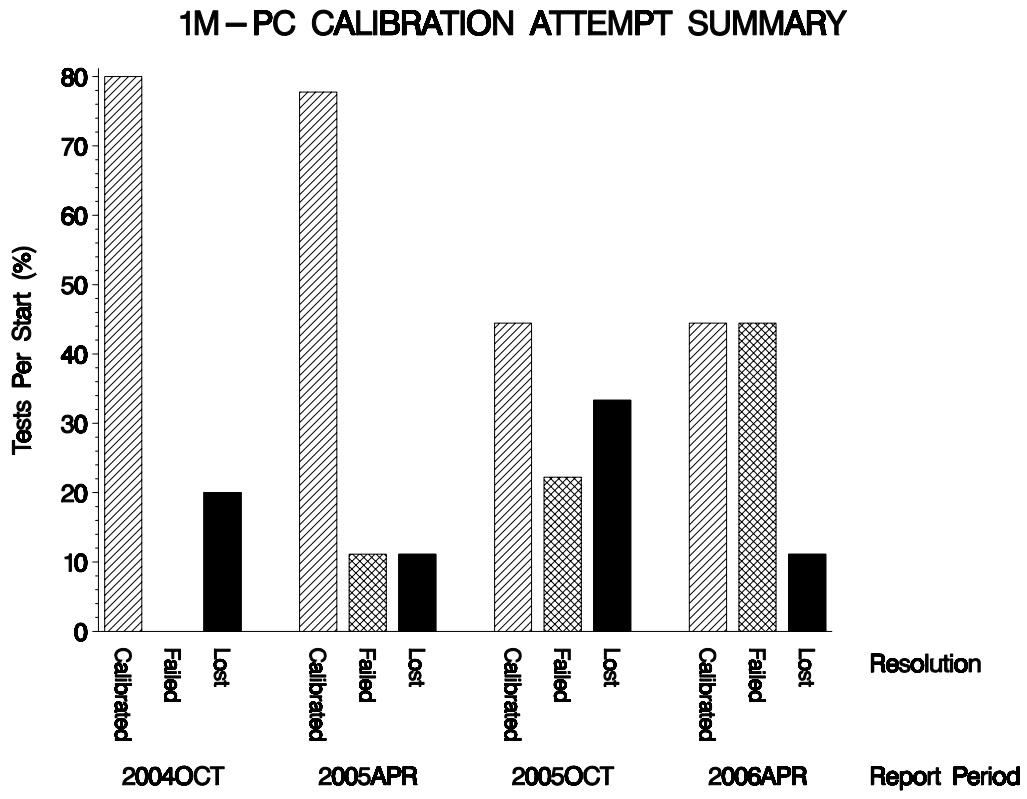
Stands reporting data this period were distributed as shown below:



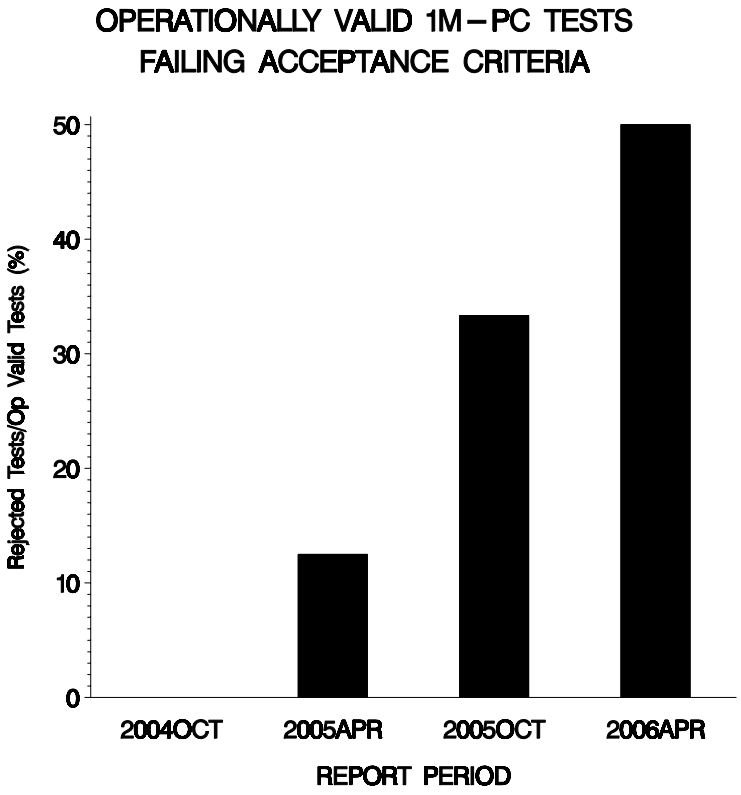
Test Distribution by Oil and Validity

				Totals	
		873-1	**873-2**	Last Period	This Period
Accepted for Calibration	AC	0	4	4	4
Rejected Mild	OC	0	0	0	0
Rejected Severe	OC	0	2	2	2
*Rejected for EWMA Precision	OC	0	1	0	1
*Rejected for Shewhart Precision	OC	0	1	0	1
Operationally Invalid (lab)	LC	0	0	2	0
Operationally Invalid (lab/TMC)	RC	0	0	1	0
Aborted Calibration	XC	0	1	0	1
Total		0	9	9	9

*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.



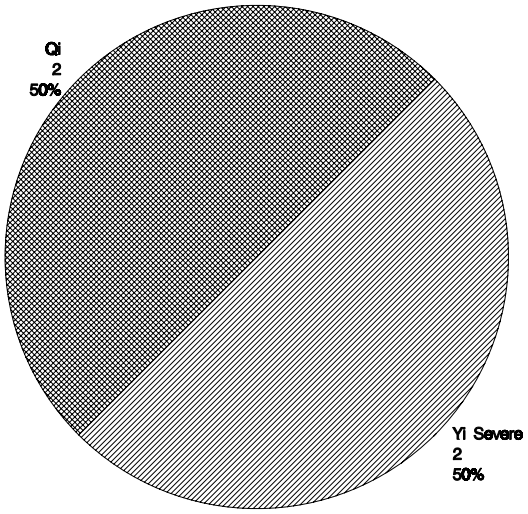
The test-per-start ratio for calibrated, failed, and lost tests is shown above.



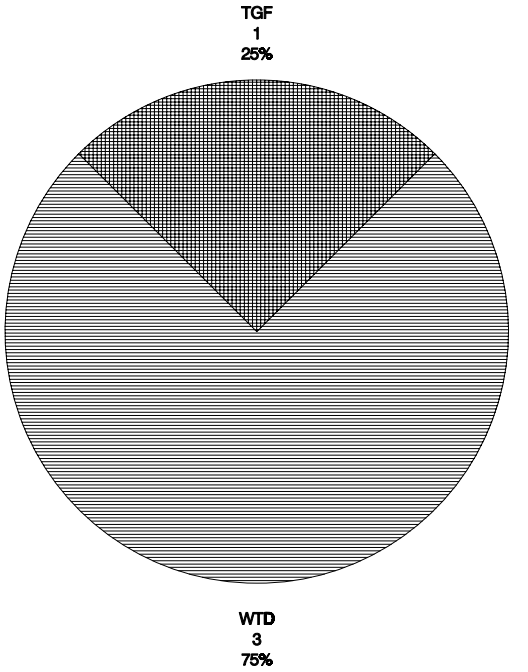
No LTMS deviations were written this period. A total of two deviations have been written over the life of this test. Four tests failed this period, all from the same lab and stand.

Shown below is the distribution by type and parameter of the alarms causing the failures for this period.

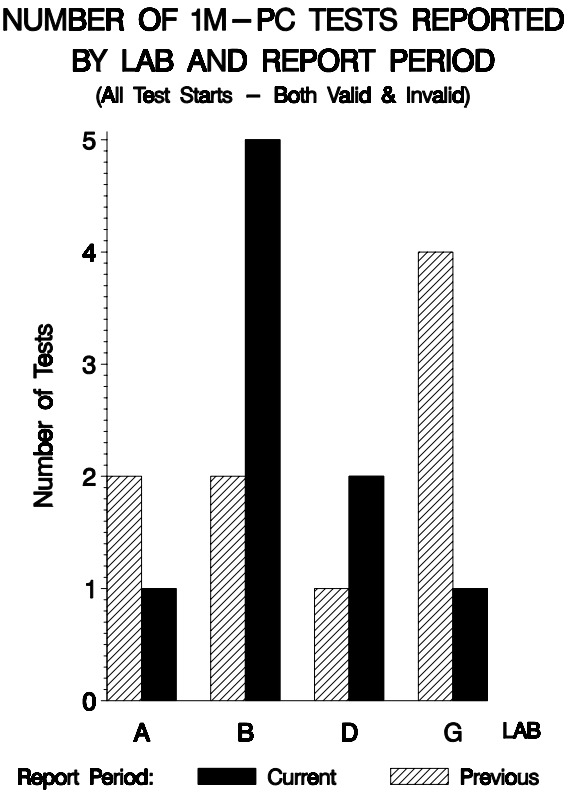
DISTRIBUTION OF 1M – PC
LTMS STAND ALARMS
(By Alarm Type)



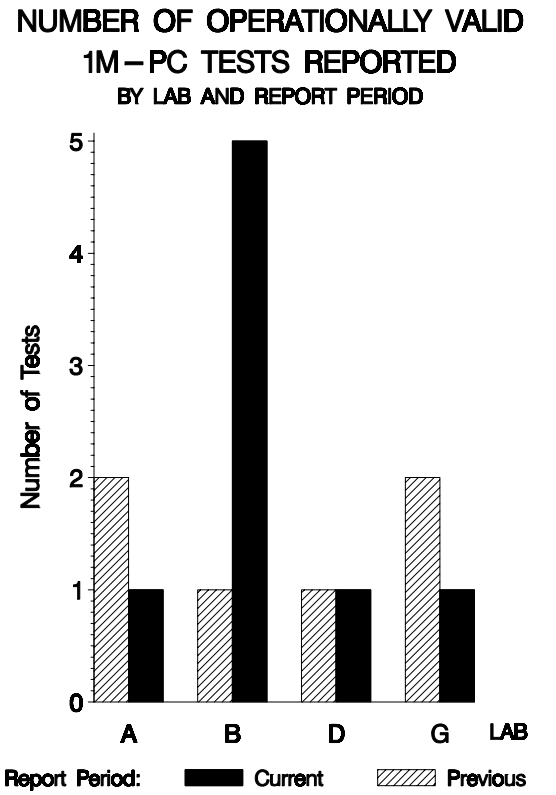
DISTRIBUTION OF 1M – PC
LTMS STAND ALARMS
(By Test Parameter)



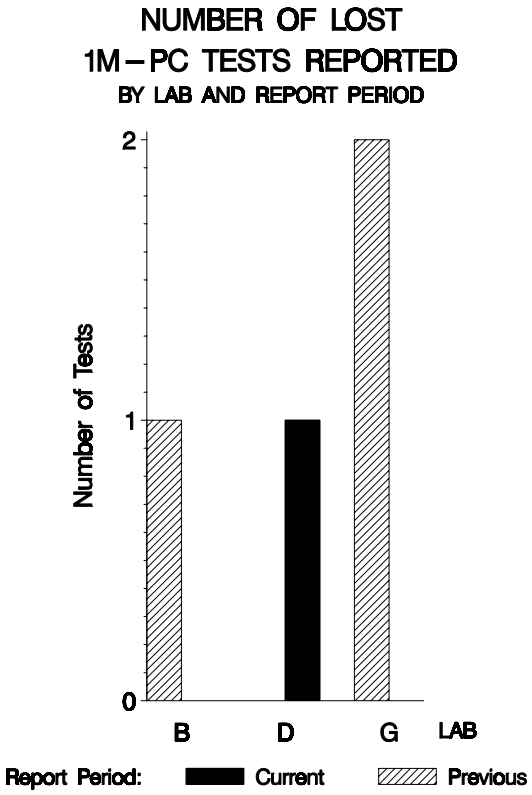
By lab, the tests run this report period were distributed as shown below:



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



And the by-lab distribution of lost tests:



Lost Tests per Start by Oil and Lab:

	873-1			873-2			Total		
Lab	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%
A				0	1	0	0	1	0
B				0	5	0	0	5	0
D				1	2	50	1	2	50
G				0	1	0	0	1	0
Total				1	9	11	1	9	11

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

Causes for Lost Tests:

		Oil		Validity			Loss Rate		
Lab	Cause	873-1	873-2	LC	RC	XC	Lost	Starts	%
D	Unexplained scuff during break-in.		●			●	1	2	50%
	Lost	0	1	0	0	1			
	Starts	0	9	9	9	9			
	%	0%	11%	0%	0%	11%			

Average Δ/s by Lab			
Lab	n	TGF	WTD
A	1	0.994	-0.830
B	5	1.590	1.907
D	1	-0.621	0.628
G	1	0.994	1.810
Industry	8	1.165	1.393

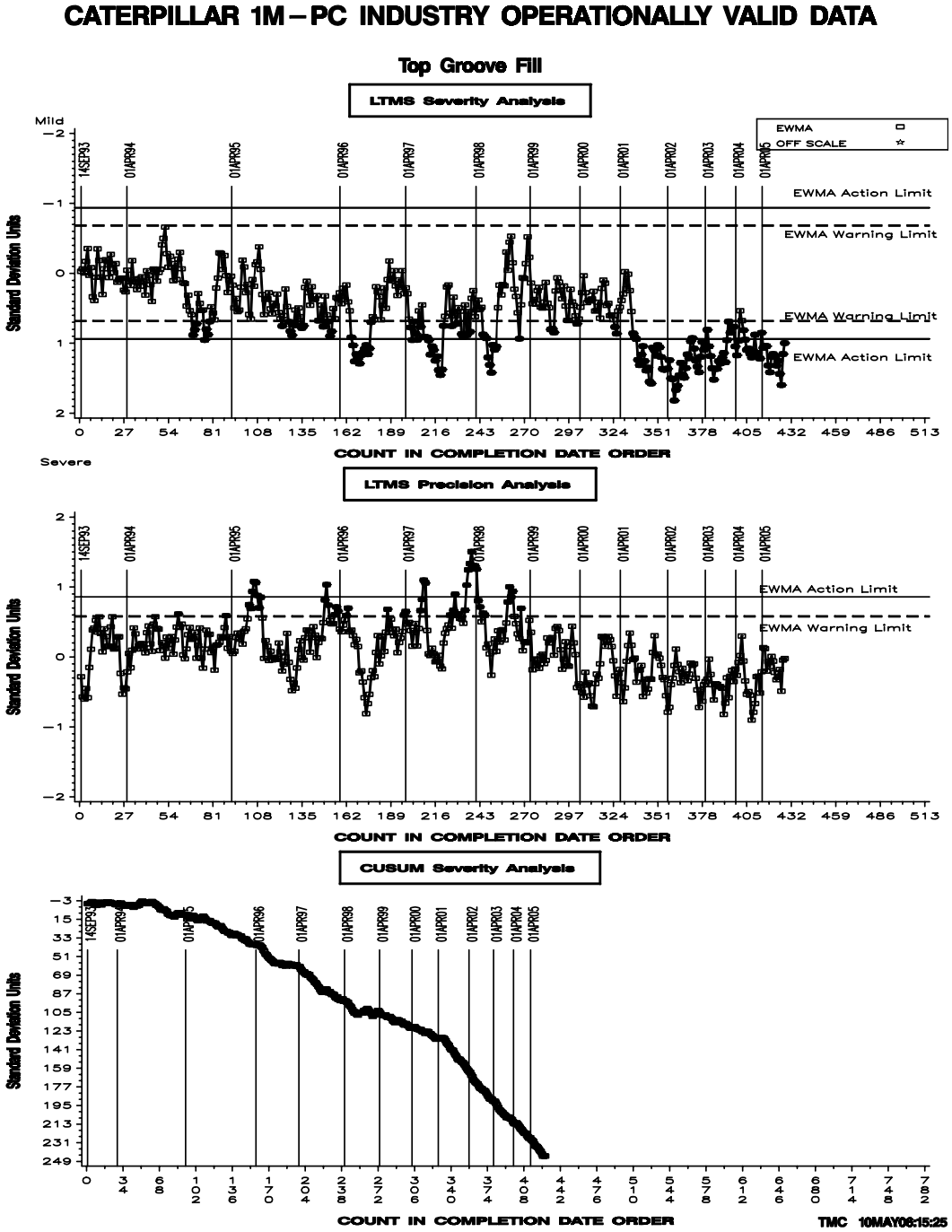
DATA FROM ALL OPERATIONALLY VALID TESTS REPORTED THIS PERIOD:

LTMS DATE	LAB	STAND	OIL	TG	WD	TGYI	WDYI
20051003	G	10A	873-2	57	323.9	0.994	1.810
20051005	B	8A	873-2	63	584.0	1.366	6.960
20051102	B	8A	873-2	70	180.1	1.801	-1.038
20051112	A	9	873-2	57	190.6	0.994	-0.830
20051115	B	8A	873-2	76	318.1	2.174	1.695
20051129	B	8A	873-2	77	295.2	2.236	1.242
20051213	D	2	873-2	31	264.2	-0.621	0.628
20051215	B	8A	873-2	47	266.6	0.373	0.675

DISCUSSION OF INDUSTRY PERFORMANCE OVER THIS PERIOD

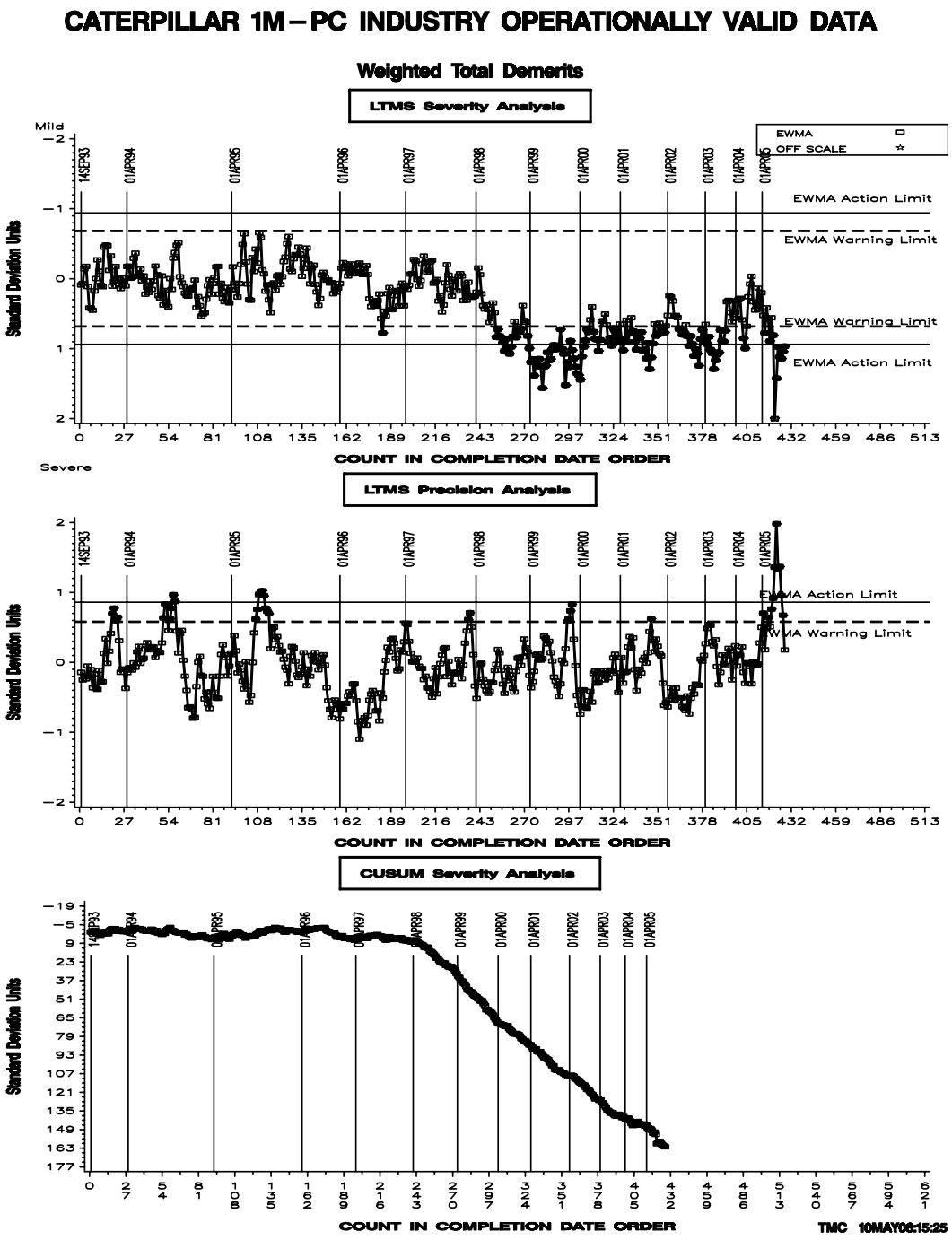
TGF:

TGF continues to exceed the EWMA action limit. Industry average TGF Yi was 1.165 (see table on previous page). Using 873-1's test target standard deviation of 16.1 to compute an average Δ yields 19% TGF. The Single Cylinder Diesel Surveillance Panel has now determined that the 1Y3995 cylinder liners introduced in May of 2001 appear to have caused a severity shift but has not taken any action in response. The stock of these liners has been depleted and a new, production-line liner (5H5657) has been introduced.

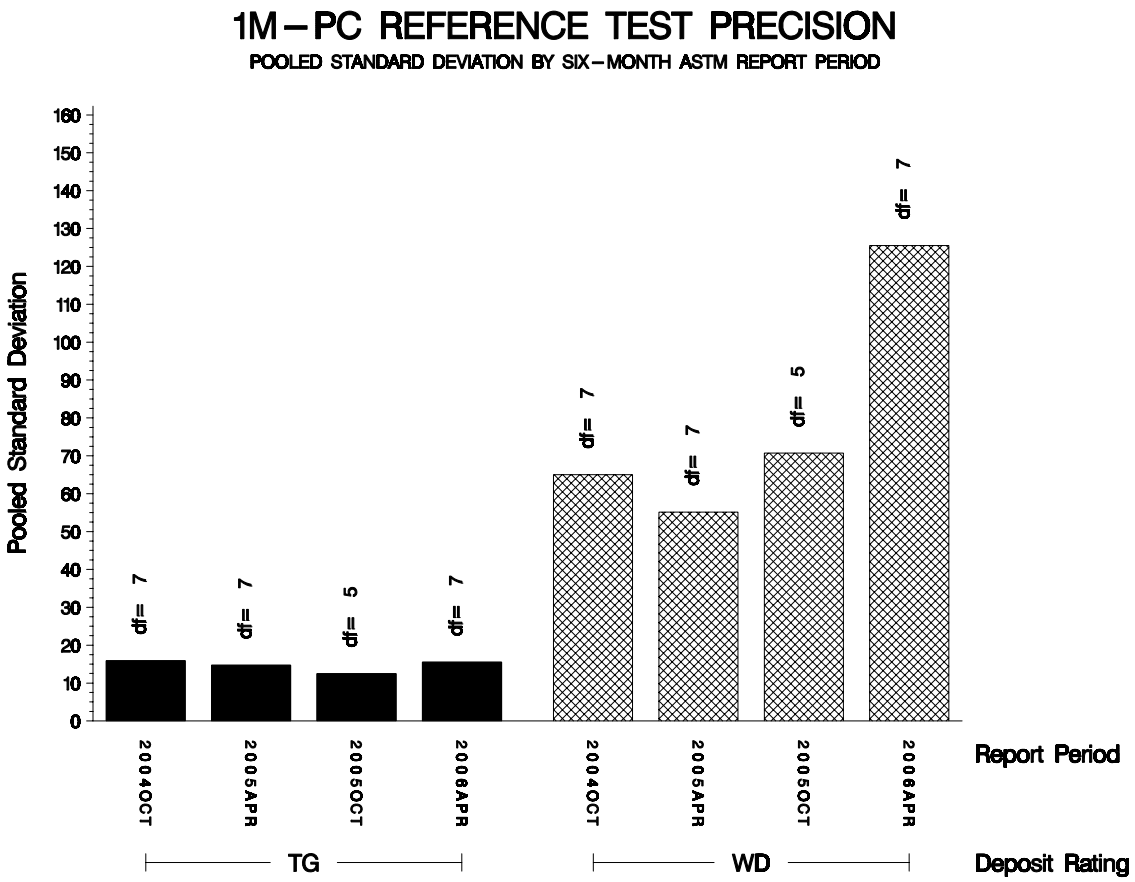


WTD:

WTD is now in the eighth year of its severe trend. Industry average WTD Yi was 1.393 (equivalent to 70.3 demerits severe when multiplied by 873-1's standard deviation of 50.5). No cause for this severity has yet been attributed. Both severity and precision for this parameter are currently exceeding the EWMA action limit.



POOLED S:
Shown below is a bar chart comparing the pooled s values for the 1M-PC test parameters over the last four report periods. Precision for both parameters, as measured by pooled s, is comparable to previous periods.



STATUS OF REFERENCE OIL SUPPLY:
At the end of this report period, the testing oil supply stood as outlined in the table below:

		@ TMC	
Oil	Cans @ Labs	Cans	Gallons
873-1	3	2	25
873-2	11	69	698
Total	14	71	723

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

TIMELINE OF SIGNIFICANT EVENTS IN THE LIFE OF THE 1M-PC TEST:

Effective Date	Info Letter	
19940419		FIRST USE OF 873-1
19940927		FIRST EXHAUST BARREL TEST
19941031		LAST USE OF 873
19941225		LAST NON-EXHAUST BARREL TEST
19950401		LTMS INTRODUCTION
19950728	95-1	REWRITTEN PROCEDURE ISSUED ALONG WITH INFORMATION LETTER 95-1
19950728	95-1	LINER WEAR STEP MEASUREMENT TECHNIQUE CHANGED TO CONFORM TO 1K/1N
19950728	95-1	REMOVAL OF MAXIMUM ALLOWABLE LSC SPECIFICATION
19950728	95-1	ADOPTION OF THE STANDARDIZED TEST REPORT COVER SHEET
19950728	95-1	EXHAUST BACKPRESSURE SPECIFICATION CHANGED TO ABSOLUTE PRESSURE
19950728	95-1	EXHAUST TEMPERATURE SPECIFICATION LOWERED
19950926	95-1	IMPLEMENTATION OF DATA DICTIONARY AND REPORT FORMS (VERSION=19950607)
19960315	96-1	FUEL FLOW MEASUREMENT DEVICE SPECIFICATION CLARIFIED
19960315	96-1	HUMIDITY CALIBRATION SCHEDULING REQUIREMENT CHANGED
19960315	96-1	EDITORIAL CHANGES
19960414	96-1	FORMS CHANGES
19980209	98-1	REVISED WARRANTY PROCEDURE & FORMS
19980209	98-1	FUEL SUPPLIER NAME CHANGE
19980209	98-1	COOLANT ADDITIVE NAME CHANGE(PENCOOL 2000)
19980209	98-1	TMC FAX NUMBER CHANGE
19980430	98-2	ADD FUEL, LTMS, AND OTHER 1K/1N-TYPE FORMS & EXAMPLES TO TEST REPORT
19980824	98-3	ADD RATING WORKSHEET (FORM 4A) TO TEST REPORT
19981109	98-4	ADD AREAS FOR CLEAN TO RATING SHEETS 5 & 5A
19981109	98-5	CORRECTION TYPO IN 98-2 TO FUEL AND COOLANT SUPPLIER NAMES
19990419	99-1	UPDATED INTAKE AIR FILTER REQUIREMENTS
19990419	99-1	RE-CALIBRATION REQUIREMENTS WHEN CRANK IS REMOVED
19990419	99-1	VISUAL INSPECTION OF INTAKE AIR BARRELS
19990419	99-1	COOLANT SYSTEM FLUSHING REQUIREMENTS
19990419	99-1	TEST STAND INSTRUMENTATION CALIBRATION REQUIREMENTS
19990419	99-1	USE OF MOBIL EF-411 AS BUILD-UP/FLUSHING OIL
19990419	99-1	TIME ZONE FOR USE IN EOT REPORTING
19990419	99-1	FUEL INJECTION PUMP REPLACEMENT
19990419	99-1	EDITORIAL
20010508		FIRST 1Y3995 LINER TEST
20020428		FIRST 873-2 TEST
20031121	03-1	1M-PC DATA DICTIONARY AND REPORT FORMS (VERSION=20031022) SEPARATED FROM THE STANDARD
20050321		FIRST 5H5657 PRODUCTION LINER TEST
20050321	05-1	EDITORIAL (SOLVENT SPEC, PRECISION STMNT, CAL FREQ ADJUSTMENT)

RATING:

Two referee re-rates were requested this report period. After review of all ratings, the lab used the second referee rating for the final test report on both tests.

Rating Re-rate Summary

Number of tests where lab rating was changed	0
Number of tests where referee rating was changed	2
Number of tests where no changes were made	0
Total number of re-rates requested	2

LAB VISITS:

No 1M-PC lab visits were completed during this period.

INFORMATION LETTERS:
No information letters were issued during this report period.

FUEL BATCH APPROVAL:
During this period, no new fuel batches were approved for testing. Dow/Haltermann is in the process of reformulating the fuel used for this test. The replacement fuel (SDTF2-Standard Diesel Test Fuel 2) is expected to be available mid-May.

SUMMARY

- Over the course of this report period, TGF and WTD both continued to be severe. The surveillance panel has concluded that the shift in TGF severity can be attributed to the use of 1Y3995 liners. The cause for WTD severity is unknown. No corrective action has been taken. The supply of 1Y3995 liners has been depleted. 5H5657 liners are being introduced. Both TGF and WTD severity are currently exceeding the EWMA action limit.

- Precision for both TGF and WTD are currently within the EWMA action limit.

SDP/sdp/astm0406.doc/mem06-039.sdp.doc
c: J. L. Zalar
F. M. Farber
Britt Pulley, Caterpillar
Single Cylinder Diesel Surveillance Panel
ftp://ftp.astmtmc.cmu.edu/docs/diesel/scote/semiannualreports/1mpc-04-2006.pdf

Distribution: email