Test Monitoring Center
6555 Penn Avenue
Pittsburgh, PA 15206-4489
(412) 365-1000

MEMORANDUM: 05-093

DATE: November 14, 2005

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

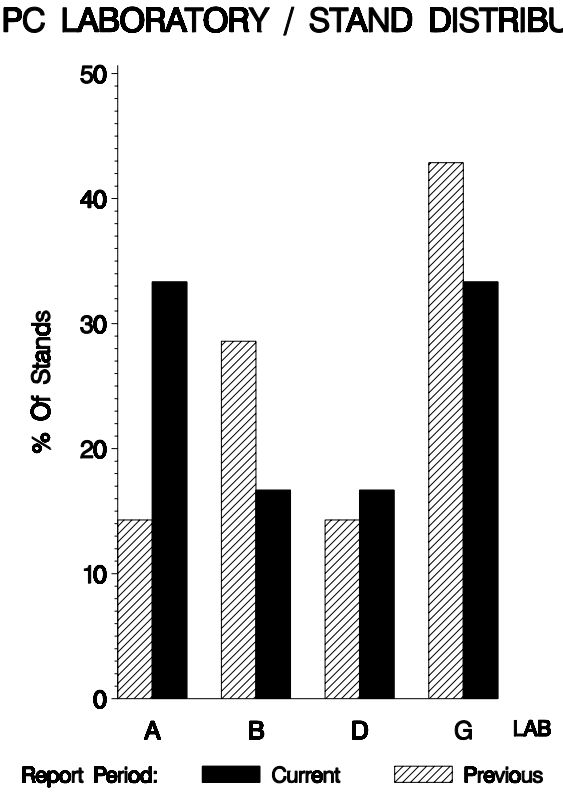
FROM: Scott Parke

SUBJECT: 1M-PC Testing from April 1, 2005 through September 30, 2005

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

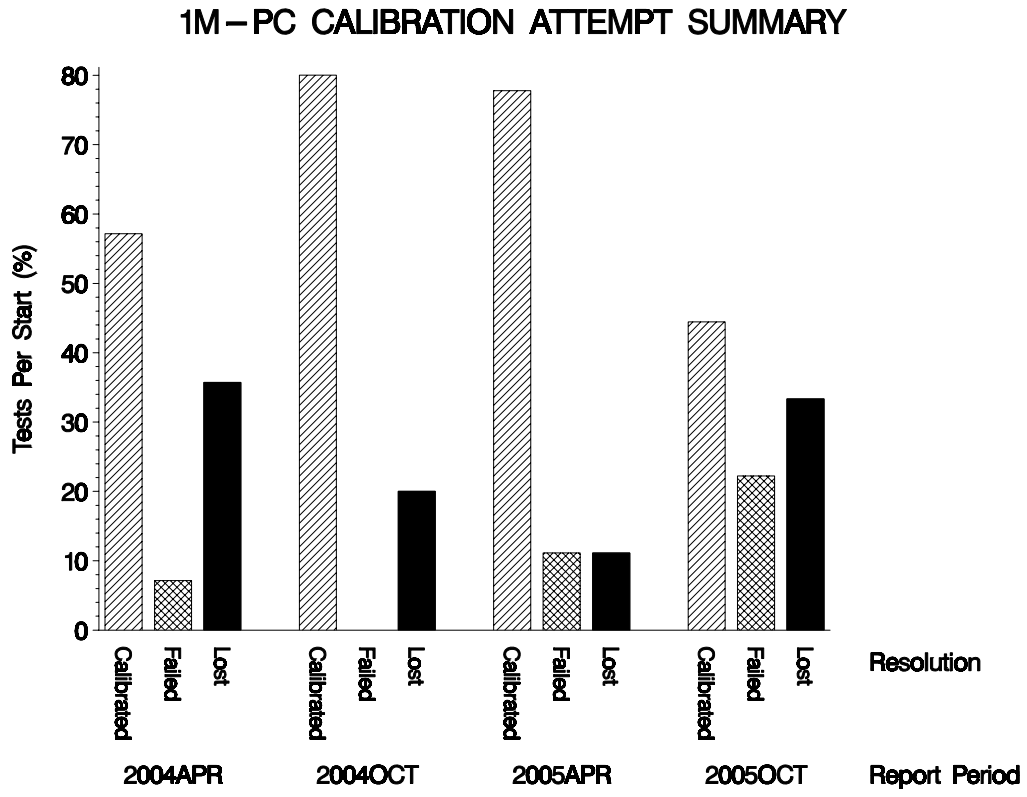
	Reporting Data	Calibrated on 9-30-05
Number of Labs	4	3
Number of Stands	6	4

Stands reporting data this period were distributed as shown below:

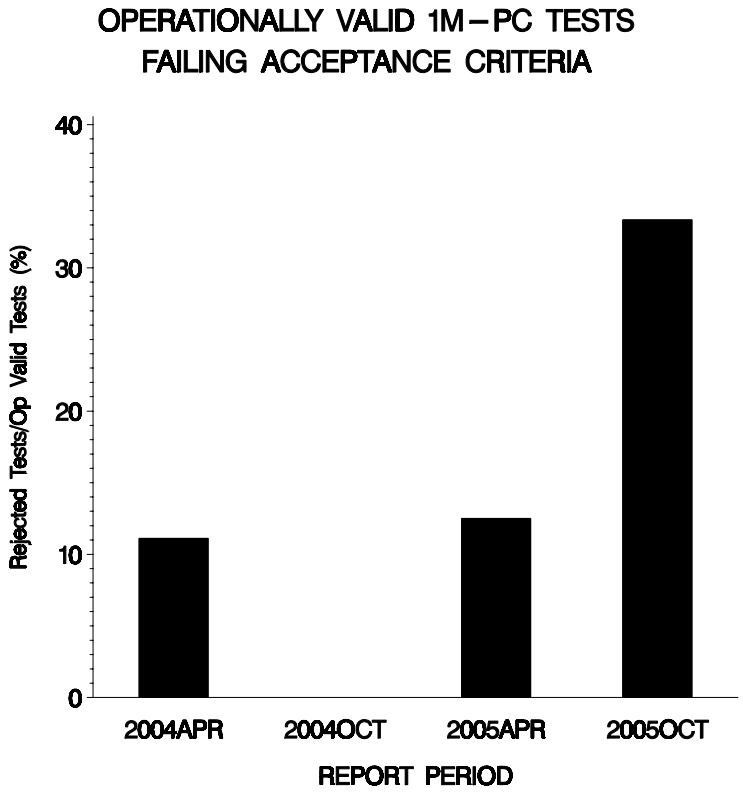


Test Distribution by Oil and Validity

				Totals	
		873-1	**873-2**	Last Period	This Period
Accepted for Calibration	AC	0	4	7	4
Rejected Mild	OC	0	0	0	0
Rejected Severe	OC	0	2	1	2
Rejected for EWMA Precision	OC	0	0	0	0
Rejected for Shewhart Precision	OC	0	0	0	0
Operationally Invalid (lab)	LC	0	2	0	2
Operationally Invalid (lab/TMC)	RC	0	1	0	1
Aborted Calibration	XC	0	0	1	0
Total		0	9	9	9



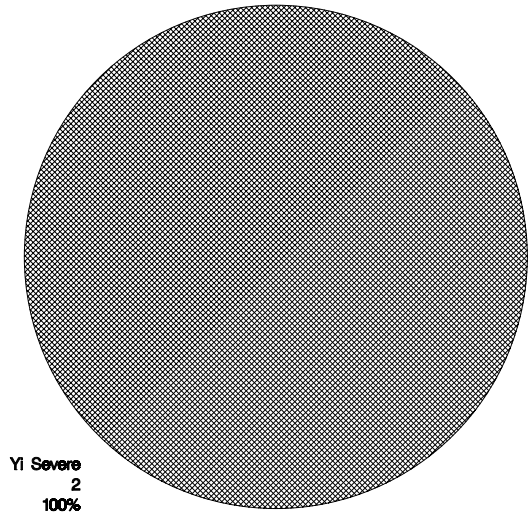
The test-per-start ratio for calibrated, failed, and lost tests is shown above.



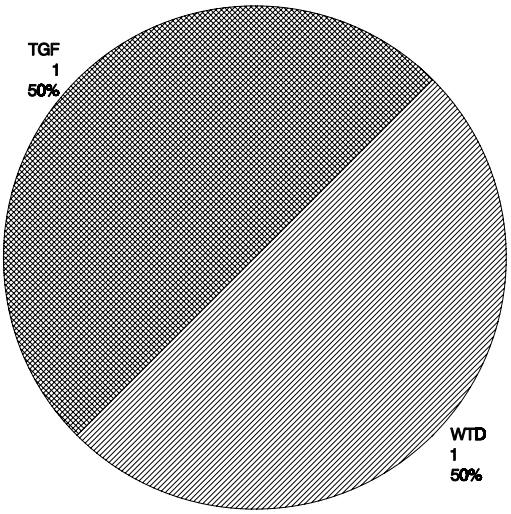
No LTMS deviations were written this period. A total of two deviations have been written over the life of this test. Two tests failed this period; one severe on TGF the other severe on WTD. Two of the three operationally invalid tests were also severe. 1Y3995 cylinder liners have tended to produce severe results.

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)

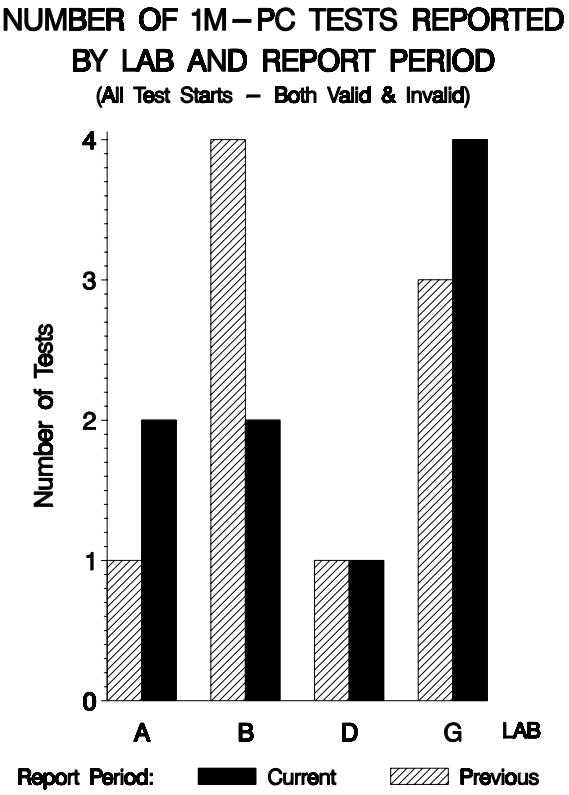


DISTRIBUTION OF 1M – PC
LTMS STAND ALARMS
(By Test Parameter)

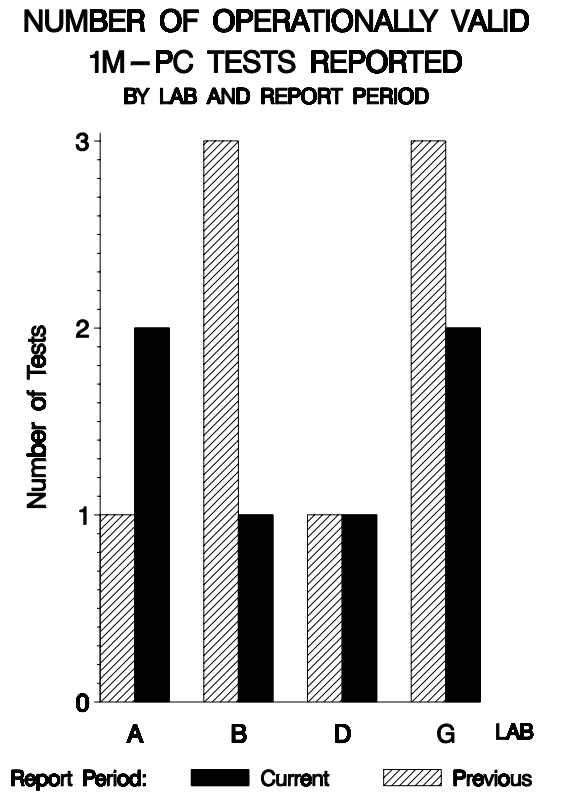


Two tests failed this period; one for severe TGF the other for severe WTD.

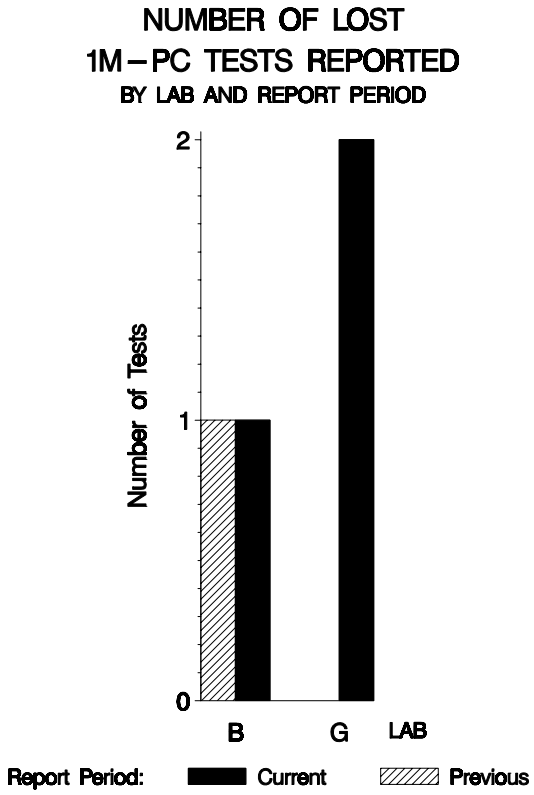
By lab, the tests run this report period were distributed as shown below:



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	2	0	0	2	0
B				1	2	50	1	2	50
D				0	1	0	0	1	0
G				2	4	50	2	4	50
Total				3	9	33	3	9	33

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	%
B	Post-test inspection of severe 5H liner result discovered that oil jet pressure had run high throughout the test.		●	●			1	2	50%
G	Post-test inspection of extremely mild (2%) TGF result revealed intake debris and a worn intake valve guide.		●	●			2	4	50%
	Exhaust cam lobe failure @64h.		●		●				
	Lost	0	1	2	1	0			
	Starts	0	9	9	9	9			
	%	0%	11%	22%	11%	0%			

Average Δ/s by Lab			
Lab	n	TGF	WTD
A	2	1.429	1.800
B	1	1.801	2.141
D	1	1.056	-1.024
G	2	1.366	0.227
Industry	6	1.408	0.862

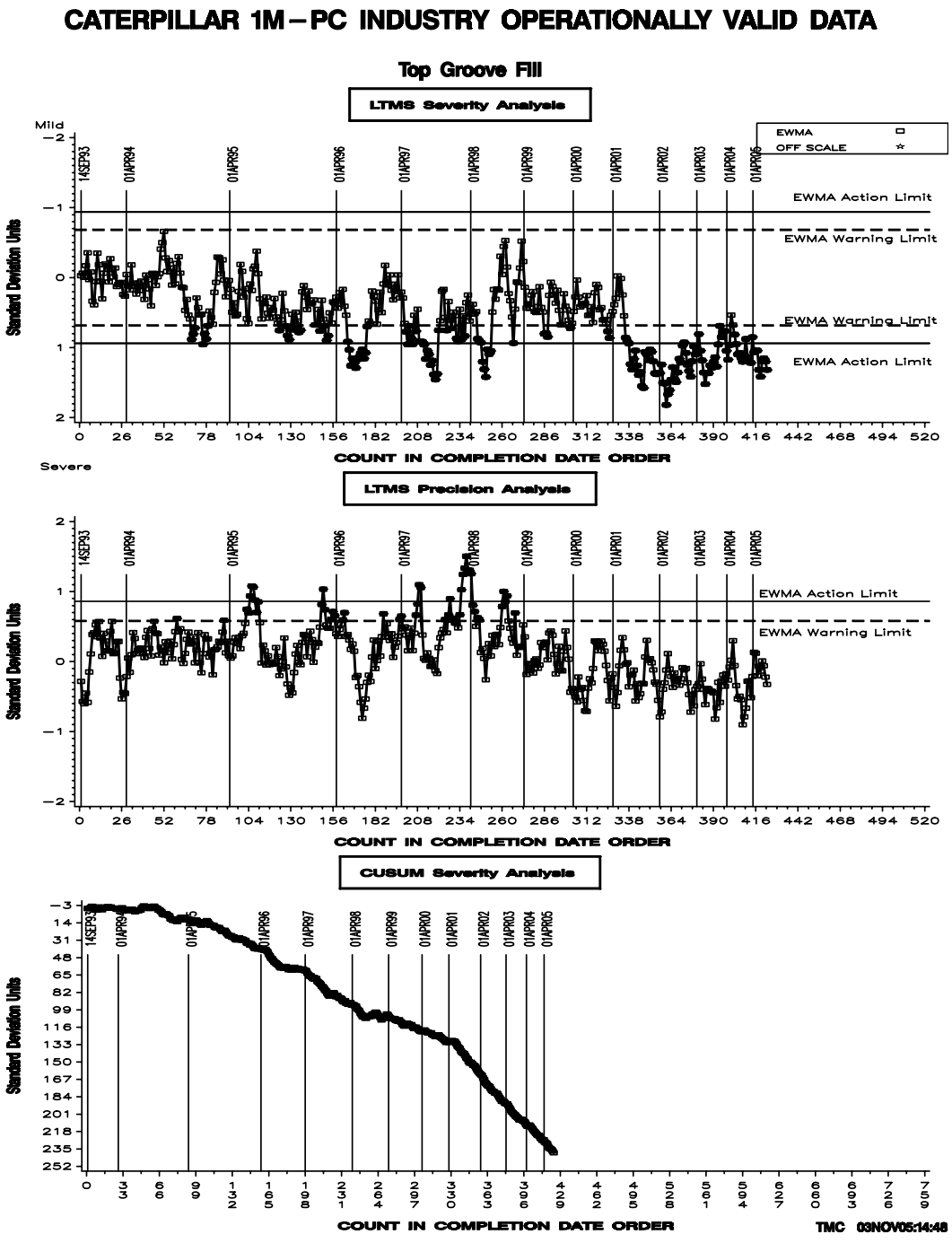
DATA FROM ALL OPERATIONALLY VALID TESTS REPORTED THIS PERIOD:

LTMS DATE	LAB	STAND	OIL	TG	WD	TGYI	WDYI
20050503	A	6A	873-2	72	324.2	1.925	1.816
20050516	A	9	873-2	56	322.6	0.932	1.784
20050531	D	2	873-2	58	180.8	1.056	-1.024
20050907	G	13A	873-2	80	295.0	2.422	1.238
20050919	B	7	873-2	70	340.6	1.801	2.141
20050919	G	13A	873-2	46	192.9	0.311	-0.784

DISCUSSION OF INDUSTRY PERFORMANCE OVER THIS PERIOD

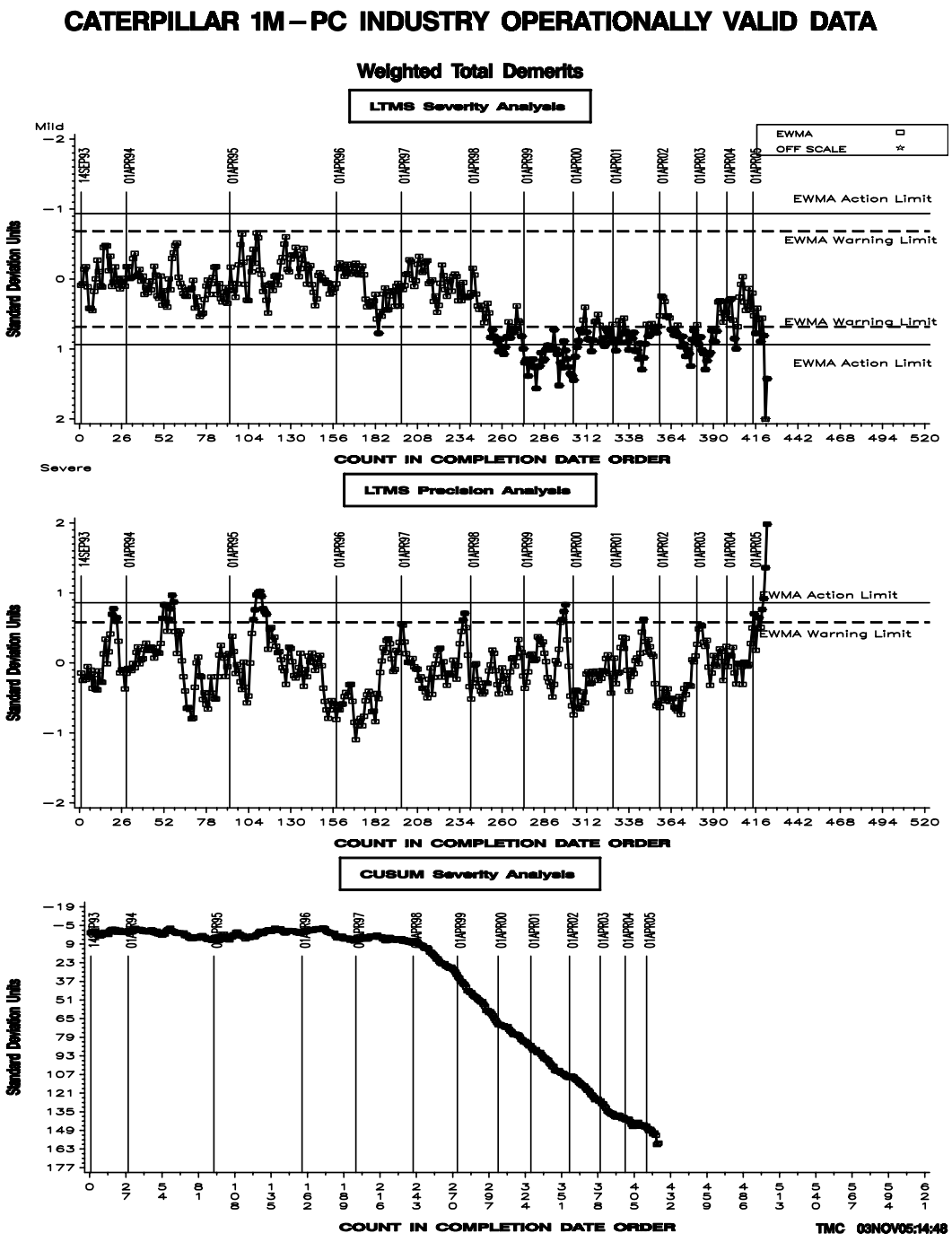
TGE:

TGF over this period was again severe and continues to exceed the EWMA action limit. Industry average TGF Yi was 1.408 (see table on previous page). Using 873-1's test target standard deviation of 16.1 to compute an average Δ yields 23% 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 yet decided on any action to take in response. The stock of these liners is nearly depleted. A new liner is in the process of being introduced but no systematic introduction plan has been devised.



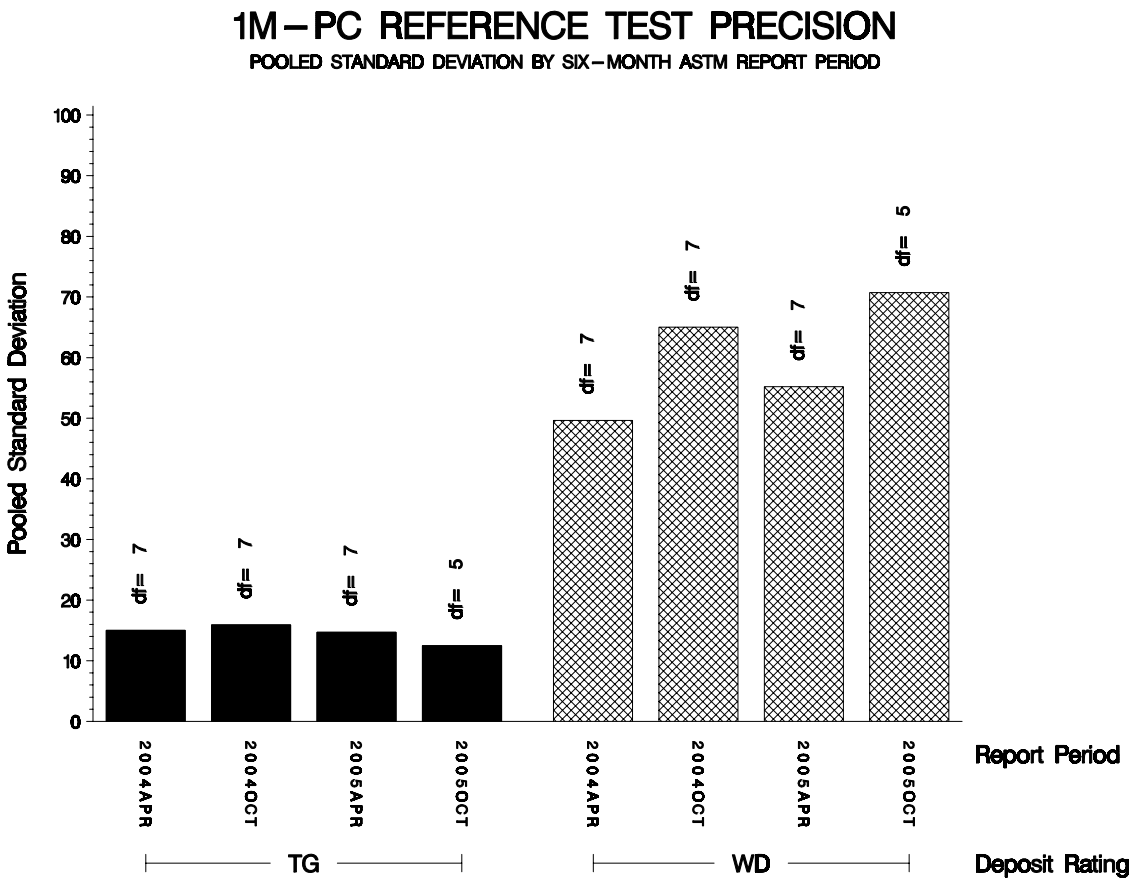
WTD:

As it has since April ’98, WTD also continues to be severe. Industry average WTD Yi was 0.862 (equivalent to 43.5 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	10	75	754
Total	13	77	779

* 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:

One referee re-rate was requested this report period. After review of all ratings, the lab used the second referee rating for the final test report.

Rating Re-rate Summary

Number of tests where lab rating was changed	0
Number of tests where referee rating was changed	1
Number of tests where no changes were made	0
Total number of re-rates requested	1

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.

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. WTD severity is currently exceeding the EWMA action limit.

- Precision for TGF remained within limits throughout the period but WTD is currently exceeding the EWMA action limit.

SDP/sdp/astm1005.doc/mem05-093.sdp.doc
c: J. L. Zalar
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Single Cylinder Diesel Surveillance Panel
ftp://ftp.astmtmc.cmu.edu/docs/diesel/scote/semiannualreports/1mpc-10-2005.pdf

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