

**Unconfirmed Minutes of the September 4, 2003
Meeting of the Mack Surveillance Panel
Richmond, VA**

Call to Order-

The meeting was called to order at 1:08 pm by the Chairman, Wim Van Dam.

Membership and Attendance-

There were no recorded changes in membership. The attendance log is shown in Attachment 1.

RSI Update-

Wim gave a quick update on the most recent RSI report. There were no issues of note regarding any of the registered Mack tests, see Attachment 2.

Approval of minutes-

The minutes of the June 16, 2003 meeting were approved as issued.

TMC Report-

Jeff Clark presented the TMC report covering all Mack tests (Attachment 3). Reference test activity is quite low. The liner round robins have been progressing well. Two of the three tests on the new conrod bearings have been completed. As of the meeting time, the third test has completed 200 hours. The two completed tests are mild and the third seemed to indicate that it would also be mild. After some discussion, it was decided that a correction factor of some sort would need to be developed based upon these three tests. It was also felt that other results, such as ir, tbn, tan, bearing weight loss, etc. also be examined to see if any other options are available. It was agreed that once the third data point is available, a teleconference would be scheduled to discuss a resolution to the situation.

TMC action item: prepare summary comparison of pb, ir, tbn, tan, and conrod weight loss for the reference oil database vs. the three tests on the new bearings; may need to consider 250-300 delta for all parameters; put together template for reporting of candidate data and distribute with the minutes.

TGC Recommendations-

The Technical Guidance Committee has made two recommendations to the surveillance panels:

- Include fuel specifications in the Test Procedures as an Annex.
- Standardizing to a Uniform Solvent (ASTM D235 – Type II, class C)

Both recommendations were accepted.

Laboratory Action Item: The solvent change is to occur at the labs by the end of the year.

TMC Action Item: Information Letters will be issued to change the solvent requirements in the various procedures.

TEI Report-

Ron Buck presented the TEI report, which is included as Attachment 4. Ron requested guidance on ordering kit quantities. After some discussion, 100 builds seemed to be a reasonable number. Ron would investigate the possibility of upping the quantity should activity require it. It was expected that this would be discussed again on the upcoming conference call.

T-10 EGR cooler supply is down to 10. No more are available. Ron is willing to investigate repairing failed coolers. Labs are to send failed coolers to Ron. Ron will investigate cooler suppliers as well.

Old Business-

Wim updated the group on the June class panel discussion of the T-9 life. The class panel indicated that despite low activity, T-9 monitoring will continue. The issue of alternate T-10 limits did not generate any interest either.

New Business-

Greg Shank mentioned that the T-10 has now been accepted into the ACEA categories. For CI-4 upgrade, there are no proposed T-10 limit changes. For PC-10, there are some other possibilities. These include a T-10 on ultra low sulfur fuel, or a T-10 type test on T-11 hardware. Another option is a T-12 on Mack/Volvo hardware. This means the T-10 will be relevant at least through 2006/2007.

Next Meeting-

There will be a conference call the week of September 15th.

The meeting was adjourned at 2:12 pm.

Attachment 1 - ASTM Mack Surveillance Panel Attendance

Thursday, September 4, 2003
Ethyl Headquarters, Richmond, VA

Sign if present.
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Note: This report must be viewed in MS Word “Page Layout” or “Print Layout” in order to display the graphics

Report Objective

This report highlights RSI's interpretations and opinions related to the Proactive Monitoring Graphs posted on the RSI Web-Site and is meant to serve as an executive summary to Test Sponsors participating in the American Chemistry Council (ACC) Code of Practice. More detailed proactive monitoring information is available by accessing the new RSI Web-Site at:

http://www.registration-systems.com/Protected/welcome_welcome.htm

Username: acc

Password: rsi999.

Note Username and Password are case sensitive. Any questions or comments on this report should be directed to Rick Oliver at RSI via email (crickoliver@attbi.com) or telephone (972 724-2136).

Report Format

This report is divided into two sections:

1. The First Section is an **Executive Summary** that provides a brief interpretation of the severity of each test pass/fail parameter for the most recent month in which one or more EWMA data points were added to the Proactive Monitoring Charts.
2. The Second Section is an **12-Month Frequency and Severity Summary** that provides bar charts for:
 - a. The number of data points added to the EWMA charts for the test for each of the past twelve months (or since the test has been registered by the RSI if that is less than twelve months).
 - b. The severity of each test pass/fail parameter for each of the past twelve months in which at least one EWMA data point was added to the Proactive Monitoring Charts.
3. The [Registration Systems Inc.](http://www.registration-systems.com) website should be consulted for additional details related to the severity of each test.

Each data point represents a block of candidate data. The actual EWMA data point plotted is the median of the block of data. Block sizes are targeted to generate two blocks of data per month. Block sizes are adjusted periodically by the American Chemistry Council (ACC) Technical Advisory Group (TAG), but block sizes are never smaller than five data points.

The Test Severity bar charts in the **12-Month Frequency and Severity Summary** portion of the report presents severity adjusted data and should be interpreted as follows:

1. If a month is shown on the x axis, no EWMA data points were generated for the test during that month.
2. If a month is shown on the x axis, at least one data point was added to the EWMA chart for that month, and the data should be interpreted as follows:
 - a. No bar indicates the parameter was within the 3-Sigma Control Lines and was thus in control.
 - b. A positive 3-sigma bar indicates the parameter EWMA was between the 3 and 4-Sigma Control Lines in the mild or higher performance direction.
 - c. A negative 3-sigma bar indicates the parameter EWMA was between 3 and 4-Sigma Control Lines in the severe or lower performance direction.
 - d. A positive 4-sigma bar indicates the parameter EWMA was at least at the 4-Sigma Control Line in the mild or higher performance direction.
 - e. A negative 4-sigma bar indicates the parameter EWMA was at least at the 4-Sigma Control Line in the severe or lower performance direction.



Executive Summary

Seq. IIIF Test 5W-30

- One EWMA data points were added in July 2003.
- The EWMA data point added in July 2003 indicated:
 - Screened Avg. Cam plus Lifter Wear continued to exceed the 4-Sigma Control Lines in a severe or lower performance direction.
 - Weighted Piston Deposits and Average Piston Varnish continued to exceed the 4-Sigma Control Lines indicating mild or higher performance.
 - Percent Viscosity Increase continued in control.

Seq. IVA Test

- No EWMA data points were added for July 2003.
- The last EWMA data point added for May 2003 indicated:
 - Average Cam Plus Lifter Wear remained in control.

Seq. VG Test

- No EWMA data points were added for July 2003, but one data point was added for June 2003.
- The last EWMA data added for June 2003 indicated:
 - Average Engine Sludge and Average Piston Varnish continued to exceed the 4-Sigma Control Line indicating severe or lower performance.
 - Average Engine Varnish, Rocker Cover Sludge, and Oil Screen Clogging continued in control.

Seq. VIB SAE 5W-30

- Two EWMA data points were added for July 2003 indicating:
 - FEI 1 and FEI 2 continued to exceed the 4-Sigma Control Line indicating mild or higher performance.

Seq. VIB 10W-30

- No EWMA data points were added for July 2003, but one data point was added for June 2003.
- The EWMA data point added for June 2003 indicated:
 - FEI 1 moved from between the 3 and 4-Sigma Control Lines indicating mild or higher performance to between the 3-Sigma Control Lines indicating it is in control.
 - FEI 2 continued in control.

Seq. VIB 5W-20

- No EWMA data points were added for July 2003.
- The last EWMA data point added in June 2003 indicated:
 - FEI 1 continued in control.
 - FEI 2 moved from being in control to between the 3 and 4-Sigma Control Lines indicating mild for higher performance.

Seq. VIII

- No EWMA data points were added in July 2003, but one data point was added for June 2003.
- The EWMA data point added for June 2003 indicated:
 - Bearing Weight Loss continued in control.

Roller Follower Wear Test

- No EWMA data points were added in July 2003.
- The last EWMA data point added in February 2003 indicated:
 - Roller Follower Wear moved from between the 3 and 4-Sigma Controls Lines indicating mild or higher performance to being in control.



Executive Summary (Cont.)

1K

- No EWMA data points were added in July 2003.
- The last EWMA data point added for March 2003 indicated:
 - TGF and BSOC continued in control.
 - WTD continued to exceed the 4-Sigma Control Line indicating severe or lower performance.

1MPC

- No EWMA data points were added for July 2003.
- The last EWMA data point added in May 2003 indicated:
 - Top Groove Fill and WTD continued in control.
 - Brake Specific Oil Consumption and CF-2 WTD continued to exceed the 4-Sigma Control Lines indicating severe or lower performance.

1P

- No EWMA data points were added in July 2003.
- The last EWMA data point added in April 2003 indicated that all test pass/fail parameters remained in control.

1R

- No EWMA data points were added for July 2003.
- The last EWMA data point added in December 2002 indicated that all 1R pass/fail parameters continued in control.

T8

- No EWMA data points were added in July 2003.
- The last EWMA data point added for February 2003 indicated:
 - Viscosity Increase @ 3.8% Soot continued between the 3 and 4-Sigma Control Lines indicating continued mild or higher performance.

T8E

- No EWMA data points were added in July 2003.
- The last EWMA data point added for October 2002 indicated:
 - Relative Viscosity and Viscosity Increase @ 3.8% Soot continued in control.

T9

- No EWMA data points have been generated in the last 12 months.

T10

- No EWMA data points were added for July 2003, but one data point was added for June 2003.
- The last EWMA data point added for June 2003 indicated:
 - The Mack Merits parameter continued in control.

M11

- No EWMA data points have been generated since December 2002.
- The last EWMA data point added in December 2002 indicated:
 - Filter Plugging, Crosshead Wear, and Sludge were all in control.

M11EGR

- No EWMA data points were added for July 2003.
- The last EWMA data point added for March 2003 indicated:
 - Crosshead Total Weight Loss and Avg. Engine Sludge continued in control.
 - Oil Filter Delta Pressure moved from being in control to between the 3 and 4-Sigma Control Lines in a severe or lower performance direction.
 - Top Ring Weight Loss moved from being in control to exceeding the 4-Sigma Control Lines in a mild or higher performance direction, supporting M11EGR Surveillance Panel observations.



12-Month Frequency and Severity Summary

Seq. IIIF Test SAE 5W-30

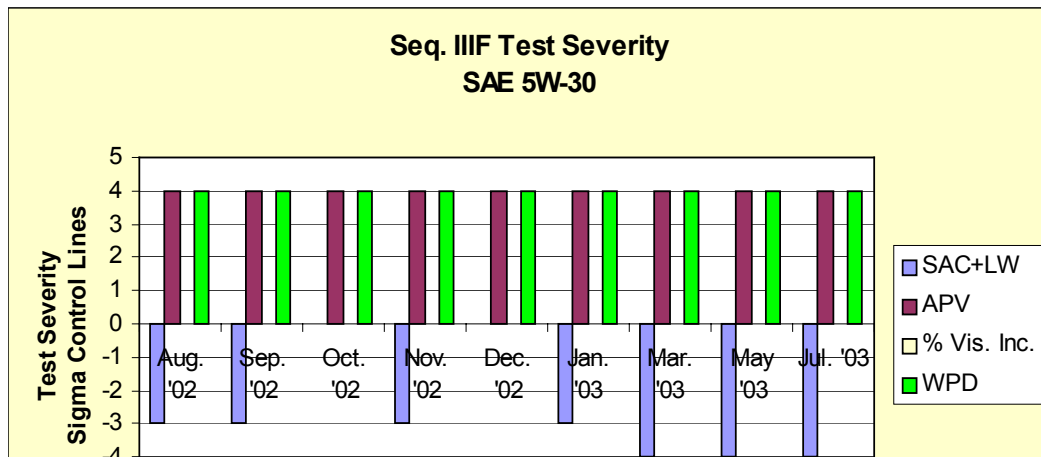
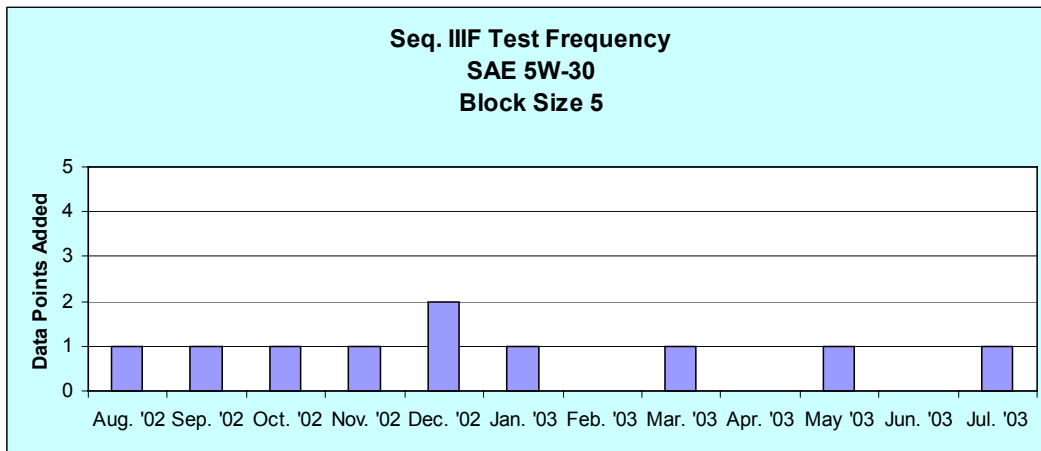
Test Frequency

- One EWMA data point was added in July 2003.

Test Severity

- The EWMA data point added in July 2003 indicated:
 - Screened Avg. Cam plus Lifter Wear continued to exceed the 4-Sigma Control Lines in a severe or lower performance direction
 - Percent Viscosity Increase continues to be in control indicating that it is on target.
 - Weighted Piston Deposits continued to exceed the 4-Sigma Control Line in a mild or higher performance direction.
 - Average Piston Varnish continued to exceed the 4-Sigma Control Line in a mild or higher performance direction.

For Detailed Information: <http://www.registration-systems.com/Protected/PCMO.htm>





Seq. IVA Test

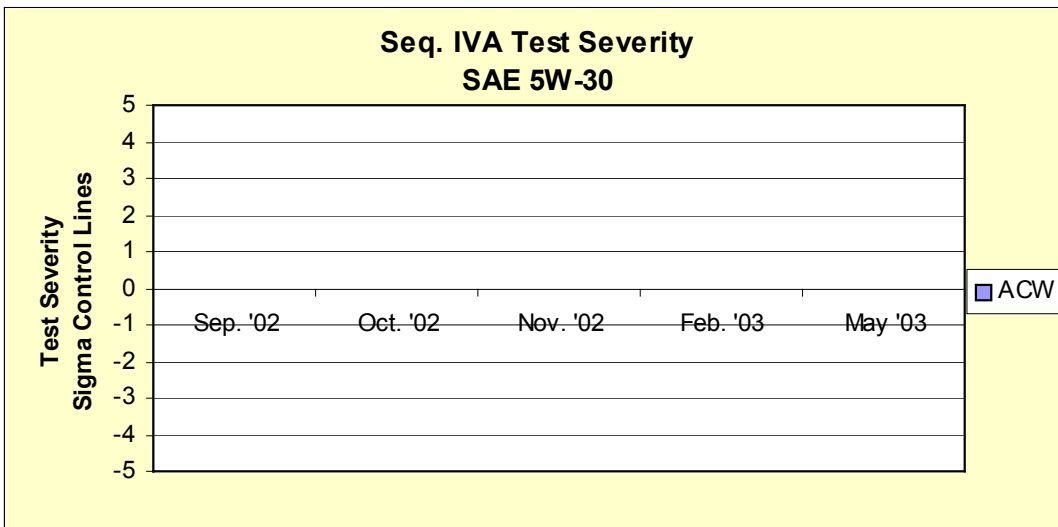
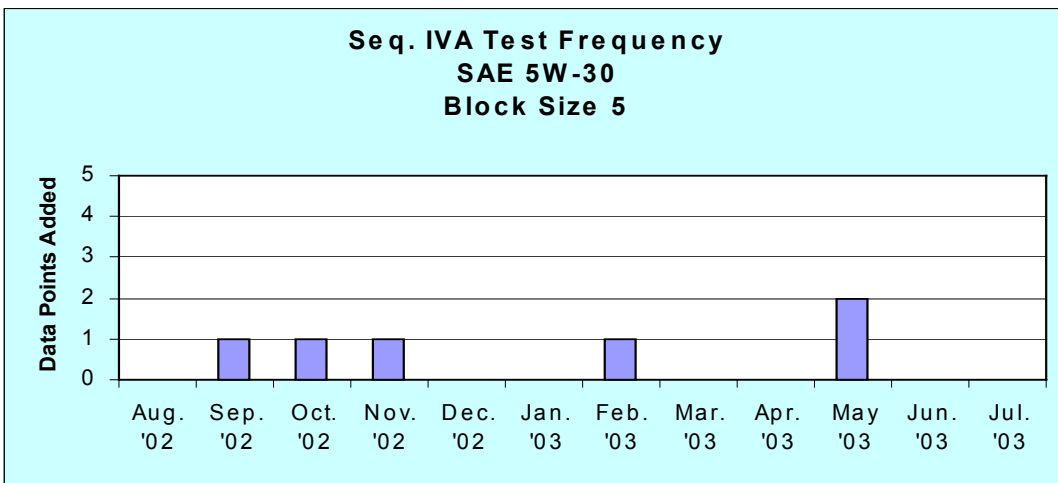
Test Frequency

- No EWMA data points were added in July 2003.

Test Severity

- The last EWMA data point added in May 2003 indicated that Average Cam Wear remains in control.

For Detailed Information: <http://www.registration-systems.com/Protected/PCMO.htm>





Seq. VG Test

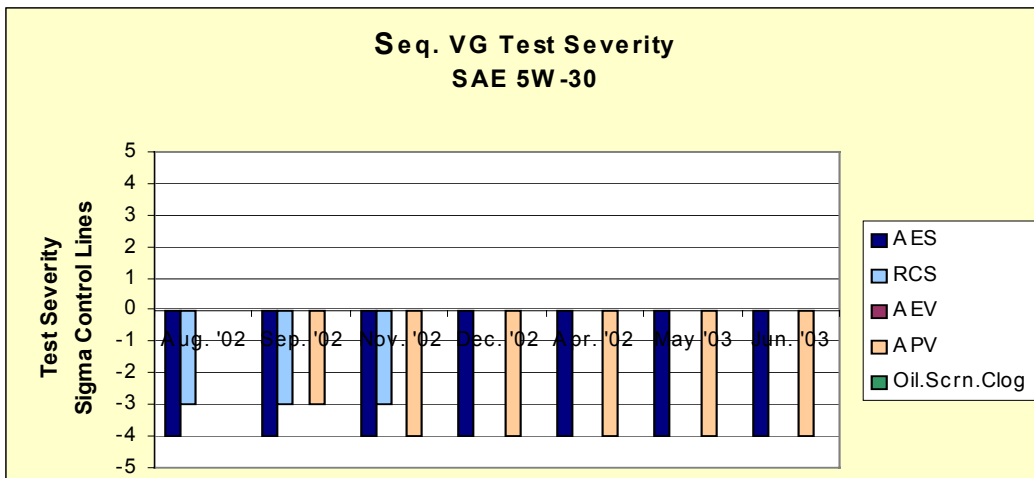
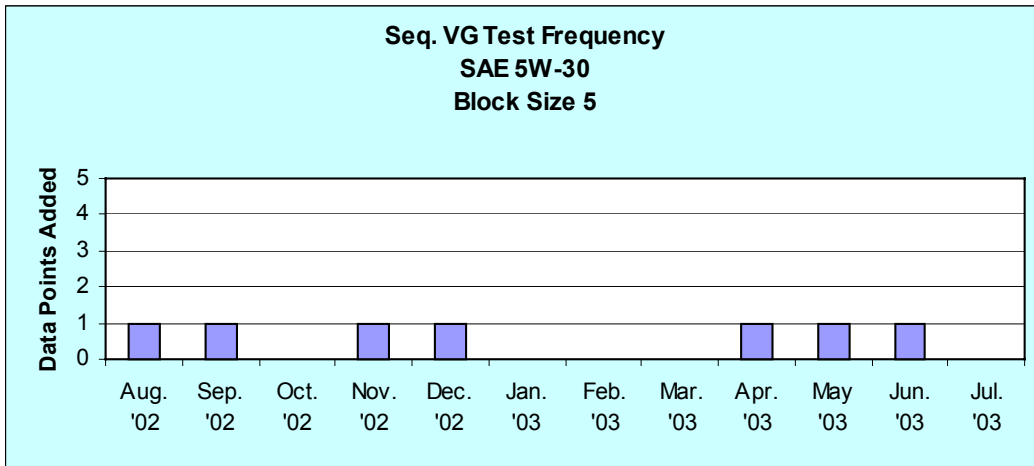
Test Frequency

- No EWMA data points were added in July 2003, but one data point was added for June 2003.

Test Severity

- The last EWMA data point added in June 2003 indicated:
 - Average Engine Varnish (AEV), Rocker Cover Sludge (RCS), and Oil Screen Clogging continued in control.
 - Average Piston Varnish (APV) continued to exceed the 4-Sigma Control Line in a severe or lower performance direction.
 - Average Engine Sludge continued to exceed the 4-Sigma Control Line in a severe or lower performance direction.

For Detailed Information: <http://www.registration-systems.com/Protected/PCMO.htm>





Seq. VIB Test SAE 5W-30

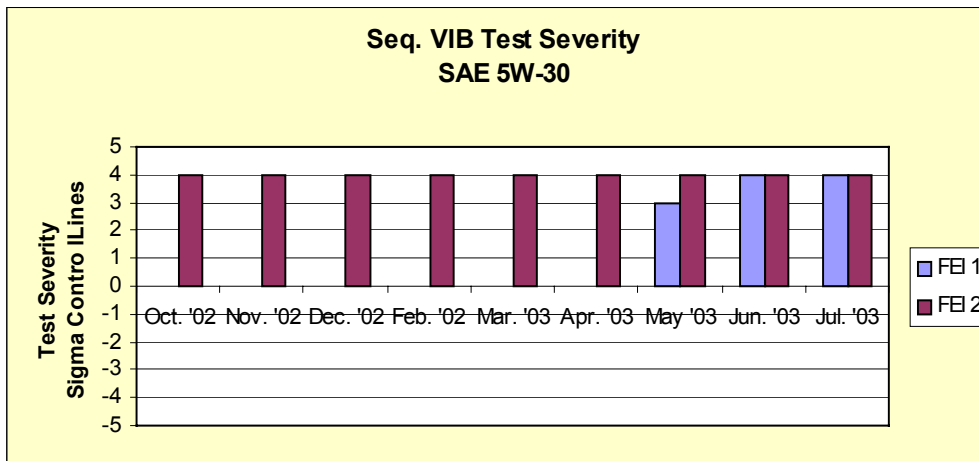
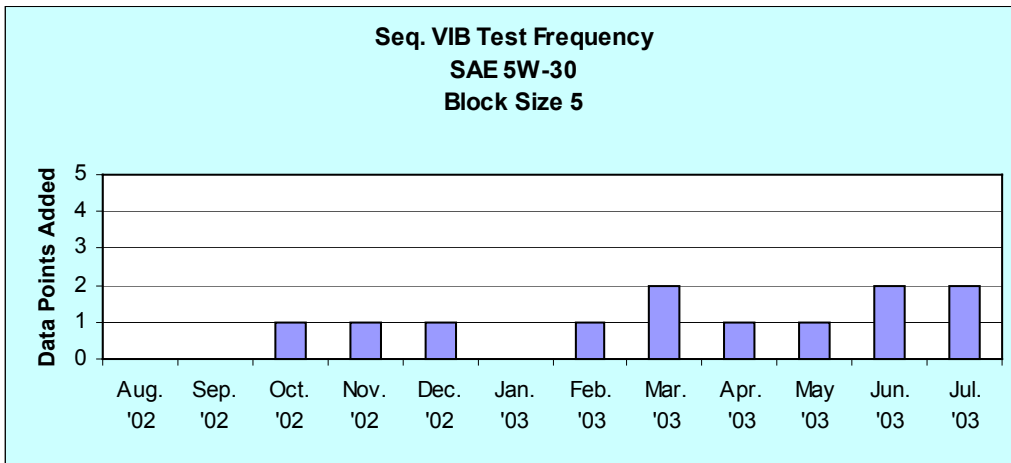
Test Frequency

- Two EWMA data points were added in July 2003.

Test Severity

- The EWMA data points added in July 2003 indicated:
 - FEI 1 continued to exceed the 4-Sigma Control Lines indicating mild or higher performance.
 - FEI 2 continued to exceed the 4-Sigma Control Lines in a mild or higher performance direction.

For Detailed Information: <http://www.registration-systems.com/Protected/PCMO.htm>





Seq. VIB Test SAE 10W-30

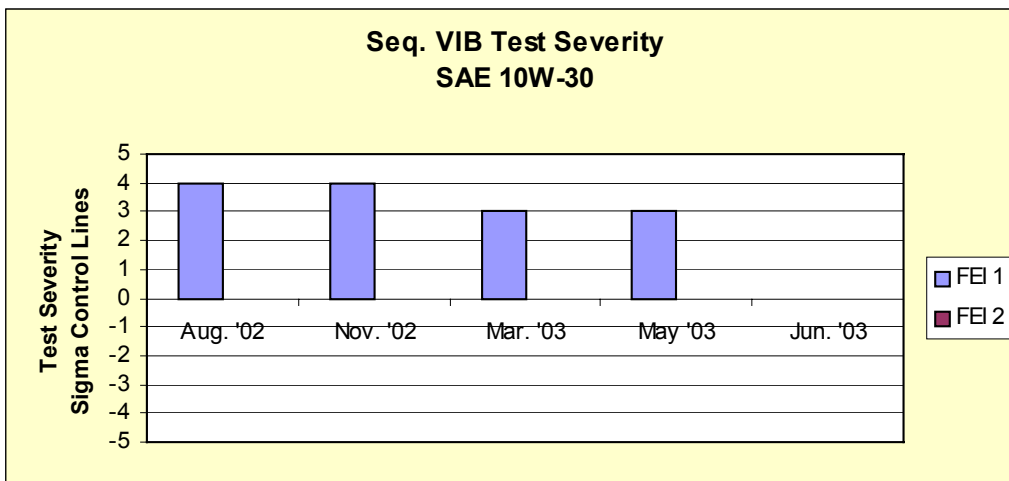
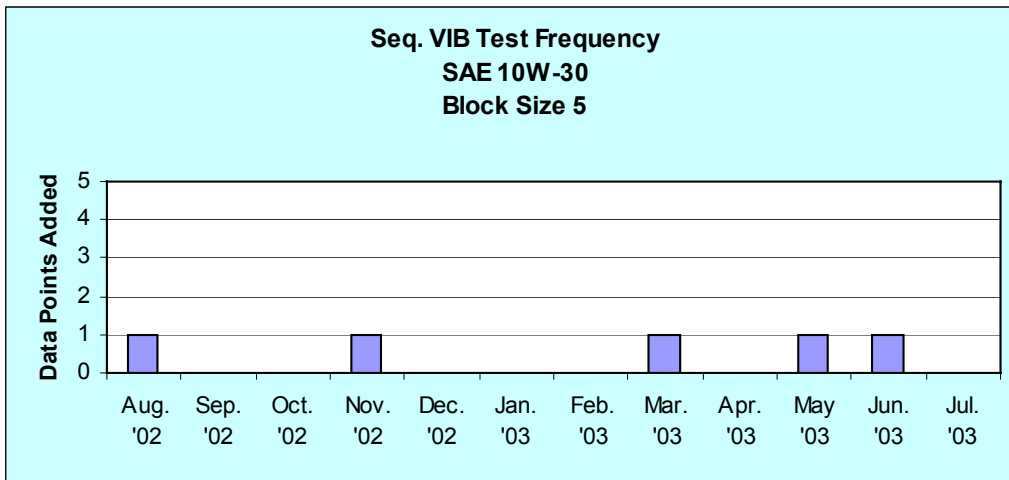
Test Frequency

- No EWMA data points were added in July 2003, but one data point was added for June 2003.

Test Severity

- The last EWMA data point added for June 2003 indicated:
 - FEI 1 moved from between the 3 and 4-Sigma Control Lines in a mild or higher performance direction to within the 3-sigma Control Lines indicating it is on target.
 - FEI 2 continued within the 3-sigma Control Lines indicating it is on target.

For Detailed Information: <http://www.registration-systems.com/Protected/PCMO.htm>





Seq. VIB Test SAE 5W-20

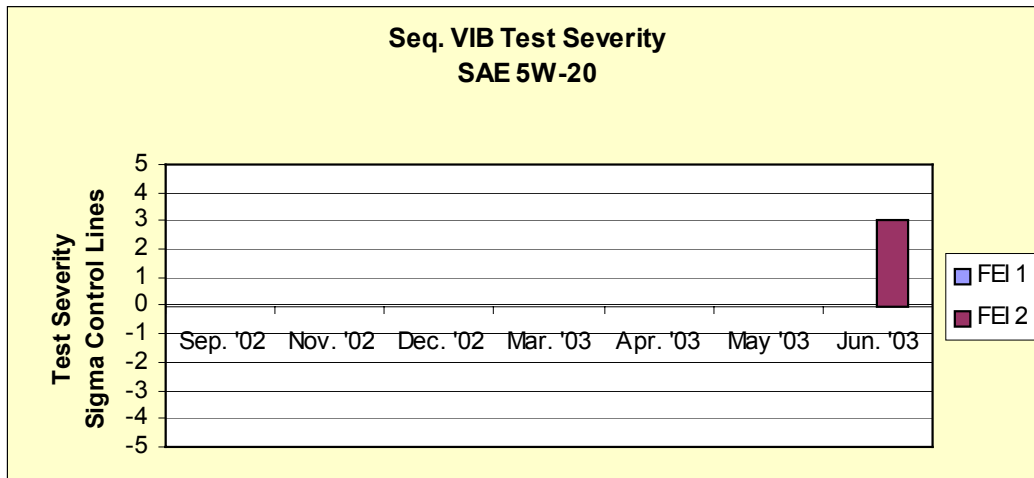
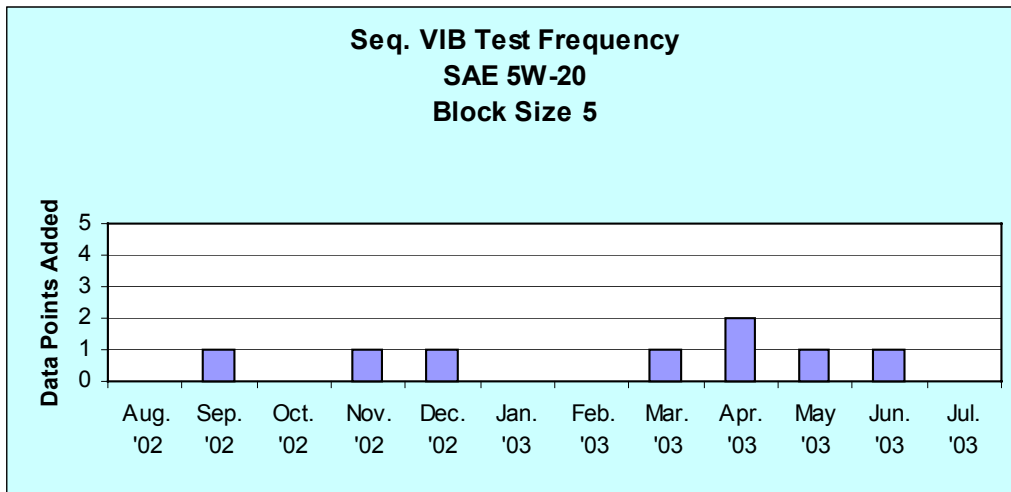
Test Frequency

- No EWMA data points were added for July 2003.

Test Severity

- The last EWMA data point added for June 2003 indicated:
 - FEI 1 continued to be within the 3-Sigma Control Lines indicating it is in control.
 - FEI 2 moved from being in control to between the 3 and 4-Sigma Control Lines in a mild or higher performance direction.

For Detailed Information: <http://www.registration-systems.com/Protected/PCMO.htm>





Seq. VIII Test

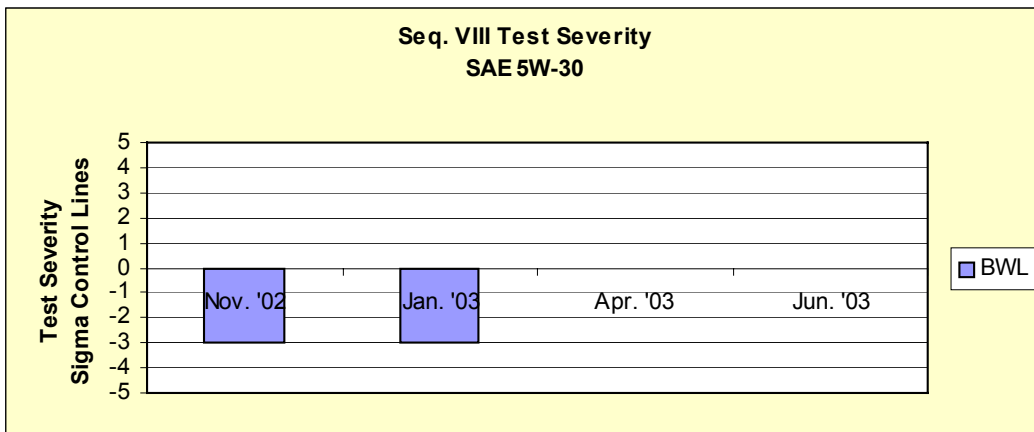
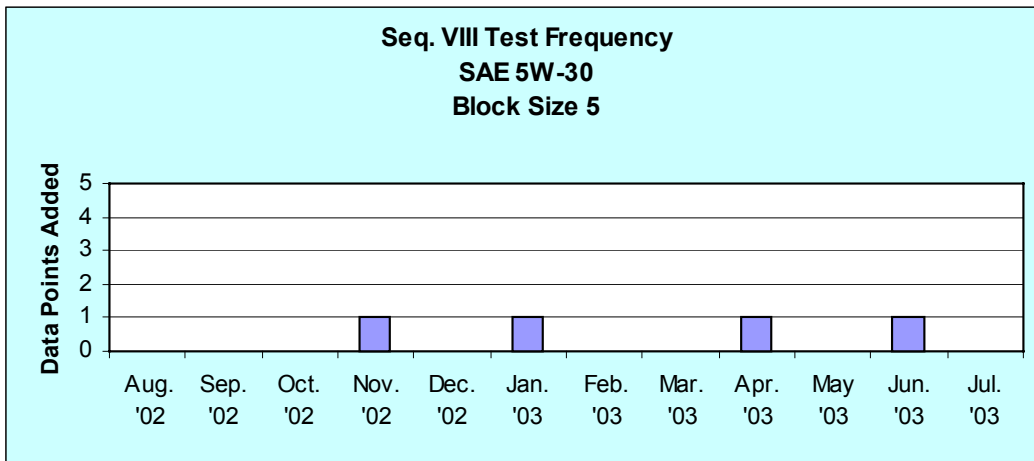
Test Frequency

- No EWMA data points were added in July 2003, but one data point was added for June 2003.

Test Severity

- The last EWMA data point added for SAE 5W-30 viscosity grade candidates for June 2003 indicated that Bearing Weight between the 3-Sigma Control Lines indicating it is in control.

For Detailed Information: <http://www.registration-systems.com/Protected/PCMO.htm>





Roller Follower Wear Test

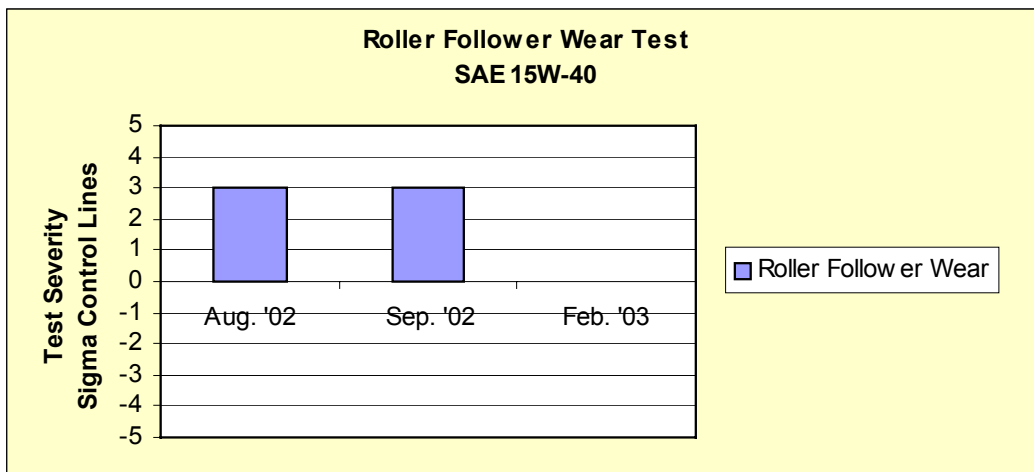
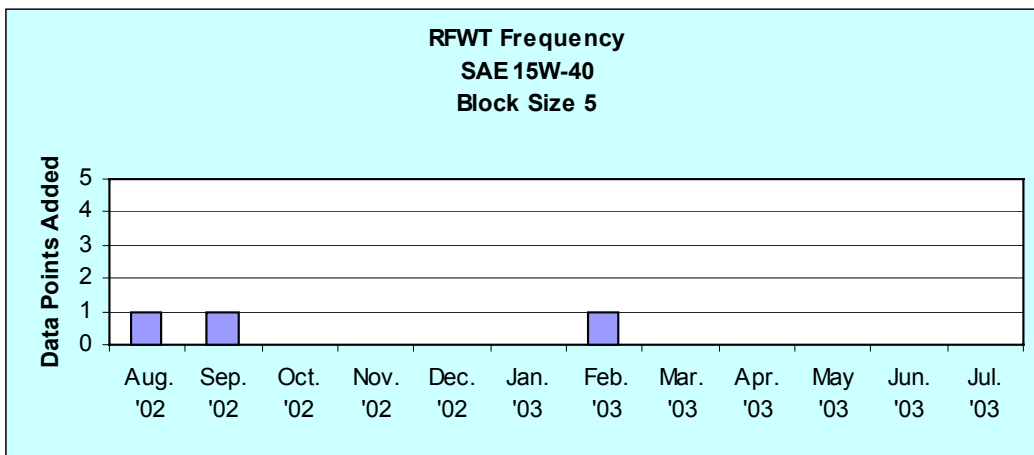
Test Frequency

- No EWMA data points were added in July 2003.

Test Severity

- The last EWMA data point added in February 2003 indicated that the Roller Follower Wear moved from between the 3 and 4-Sigma Control Lines in a mild or higher performance direction to between the 3-Sigma Control Lines indicating it was in control in February 2003.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





1K Test

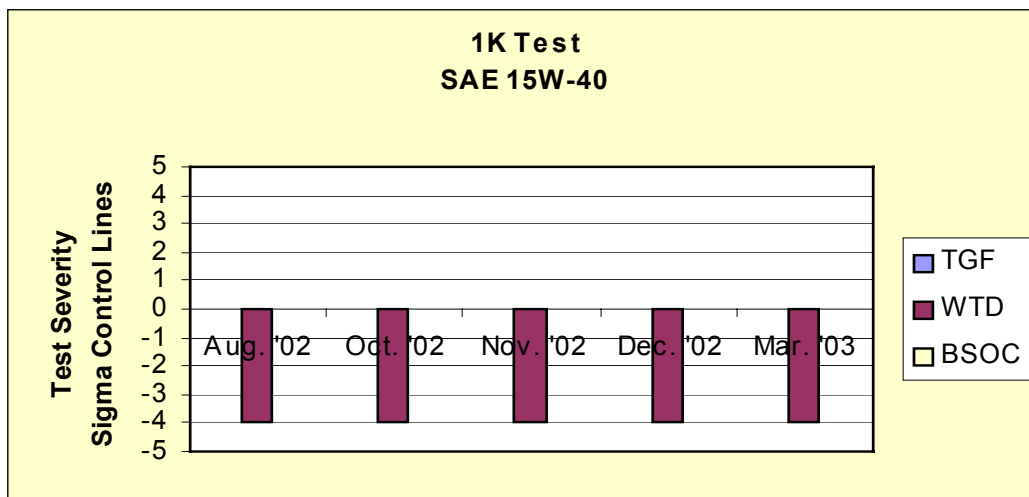
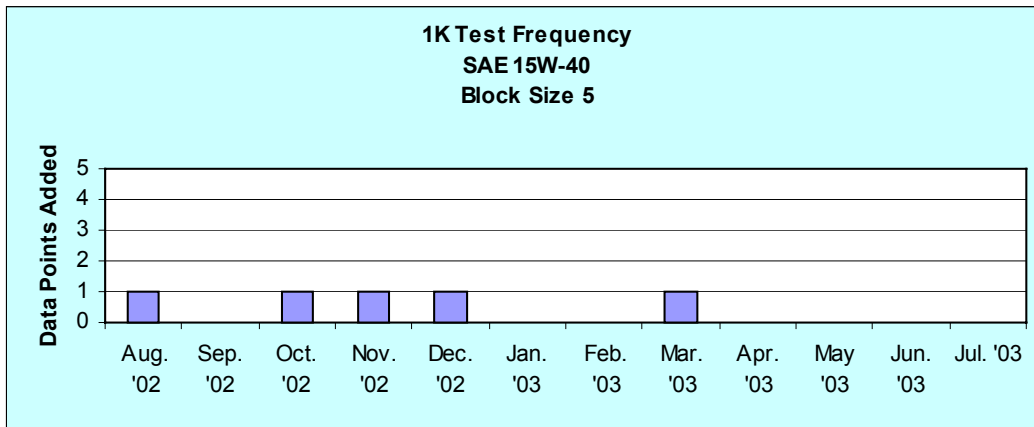
Test Frequency

- No EWMA data points were added for July 2003.

Test Severity

- The last EWMA data added in March 2003 indicated:
 - Brake Specific Oil Consumption and Top Groove Fill both remained within the 3-Sigma Control Lines indicating they are in control.
 - Weighted Total Deposits continued to exceed the 4-Sigma Control Lines in a severe or lower performance direction.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





1MPC Test

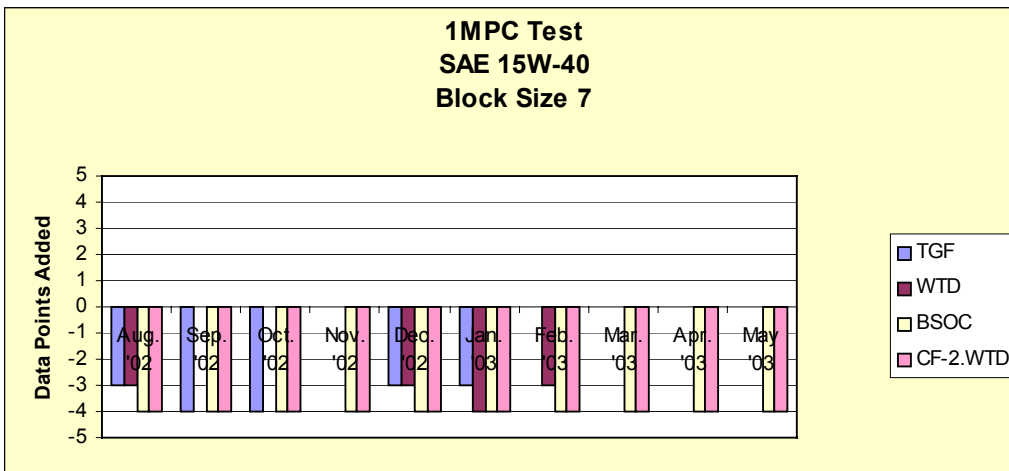
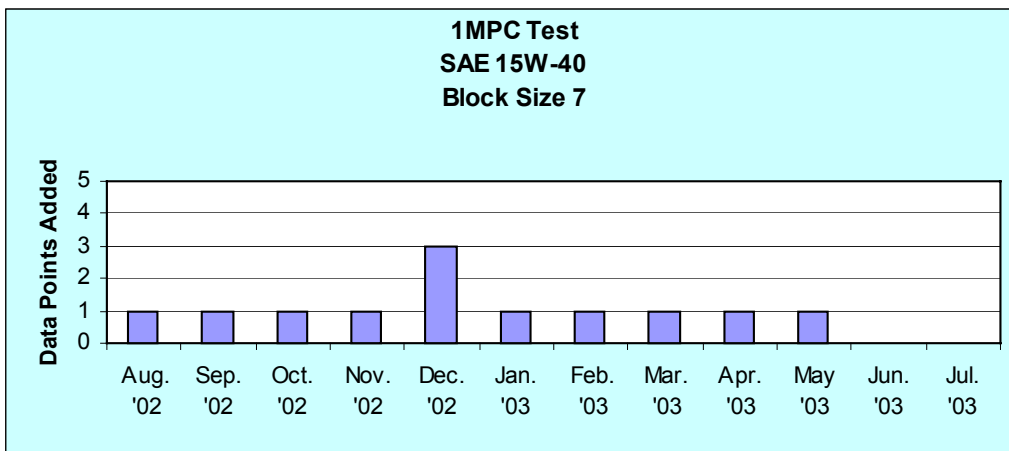
Test Frequency

- No EWMA data points were added for July 2003.

Test Severity

- The last EWMA data point added in May 2003 indicated:
 - Top Groove Fill and Weighted Total Deposits remained in control.
 - CF-2 Weighted Total Deposits continued to exceed the 4-Sigma Control Lines indicating severe or lower performance.
 - Brake Specific Oil Consumption continued to exceed the 4-Sigma Control Line indicating severe or lower performance.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





1P Test

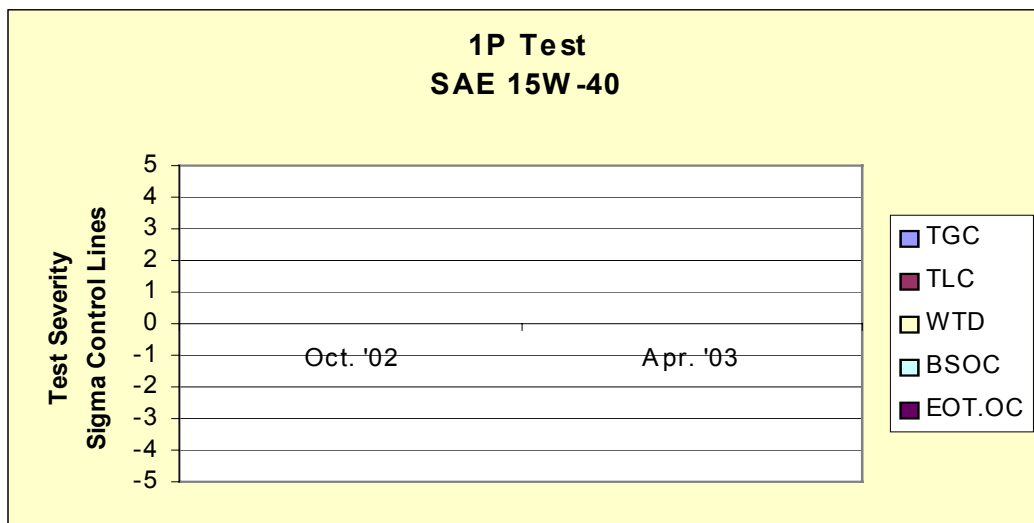
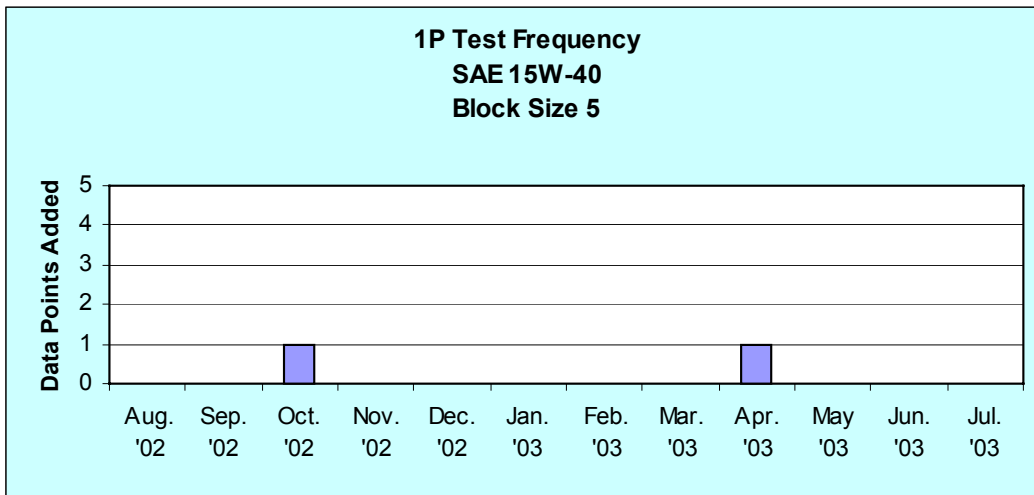
Test Frequency

- No EWMA data points were added for July 2003.

Test Severity

- The last EWMA data point added in April 2003 indicated that all tests pass/fail parameters continued in control.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





1R Test

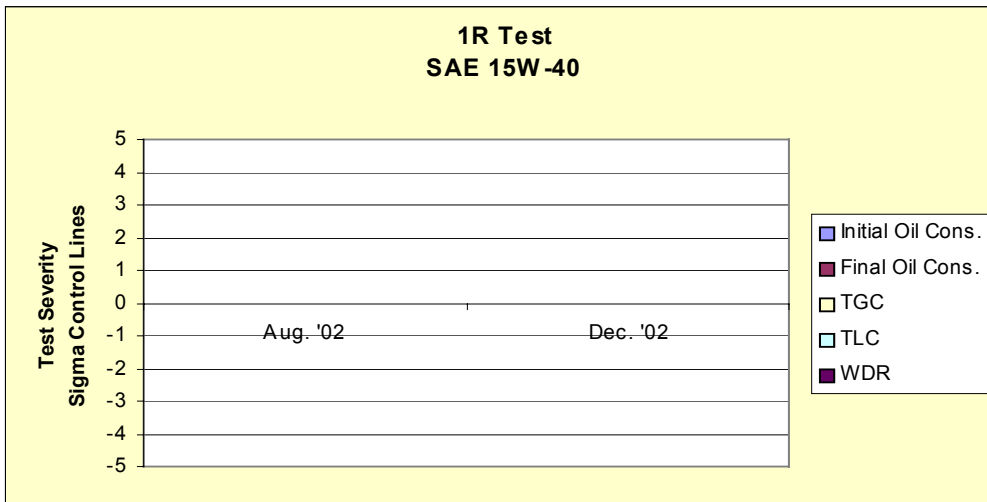
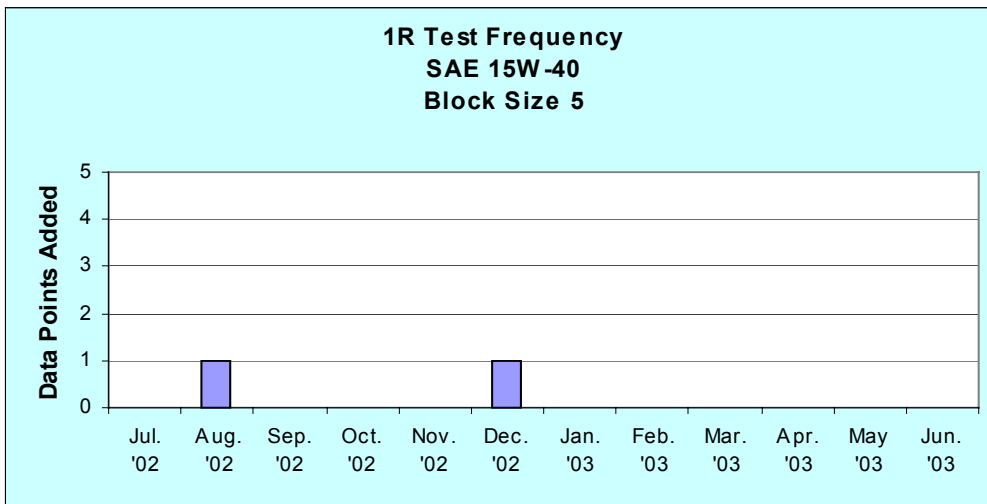
Test Frequency

- No EWMA data points were generated in July 2003

Test Severity

- The last EWMA data point generated in December 2002 indicated:
 - Initial Oil Consumption, Final Oil Consumption, TGC, TLC, and WDR were all in control.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





T8 Test

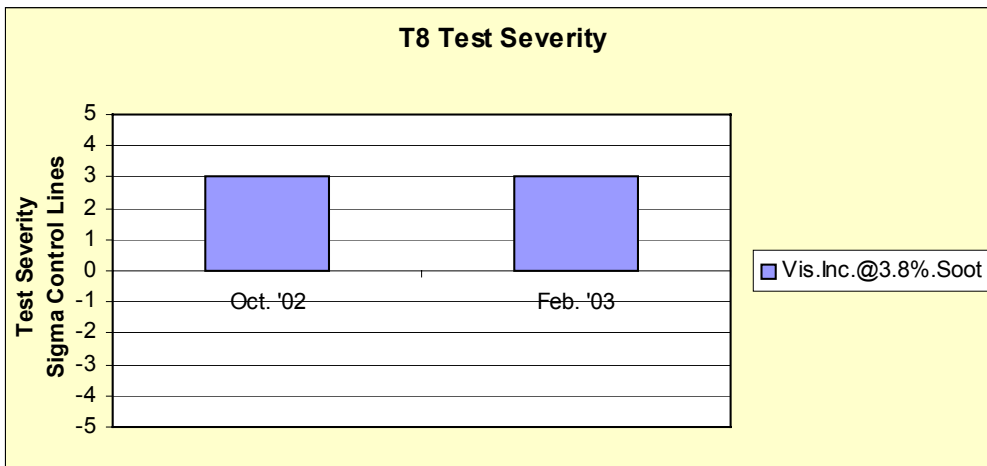
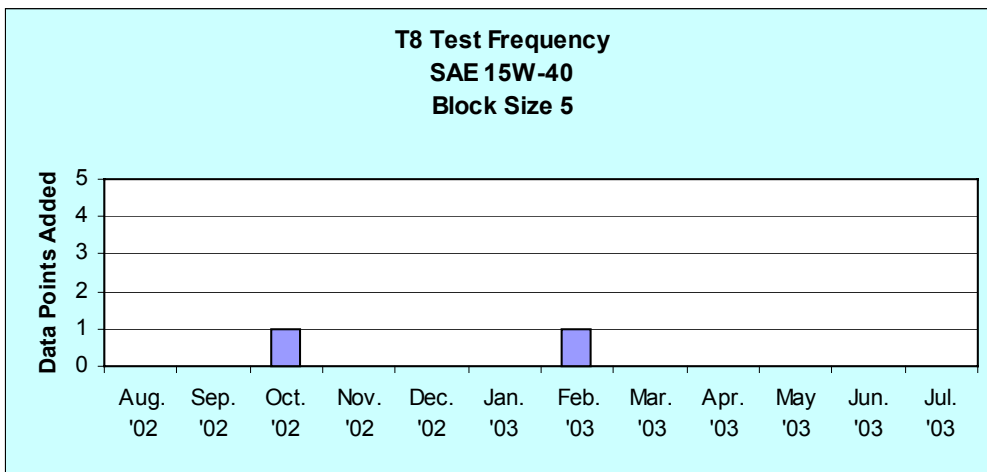
Test Frequency

- No EWMA data points were added for July 2003.

Test Severity

- The last data point added in February 2003 indicated that the Viscosity Increase @ 3.8% Soot parameter continued between the 3 and 4 Sigma Control Lines indicating mild or higher performance.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





T8E Test

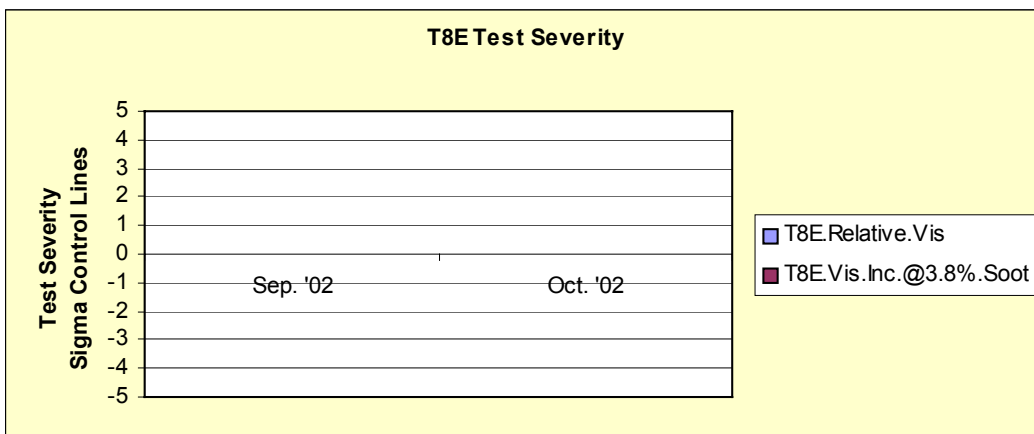
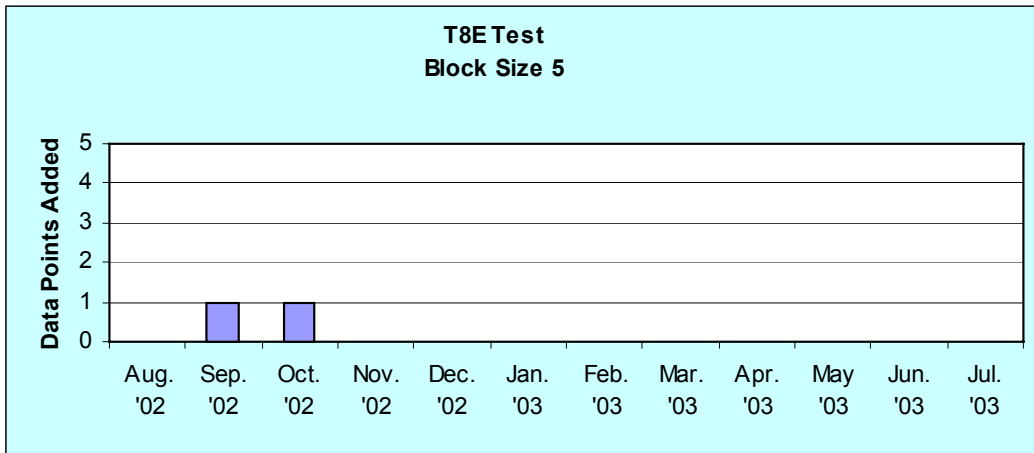
Test Frequency

- No EWMA data points were added in July 2003.

Test Severity

- The last EWMA data added in October 2002 indicated:
 - Relative Viscosity and Viscosity Increase @ 3.8% Soot continued within the 3-Sigma Control Lines and are thus considered in control.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





T9 Test

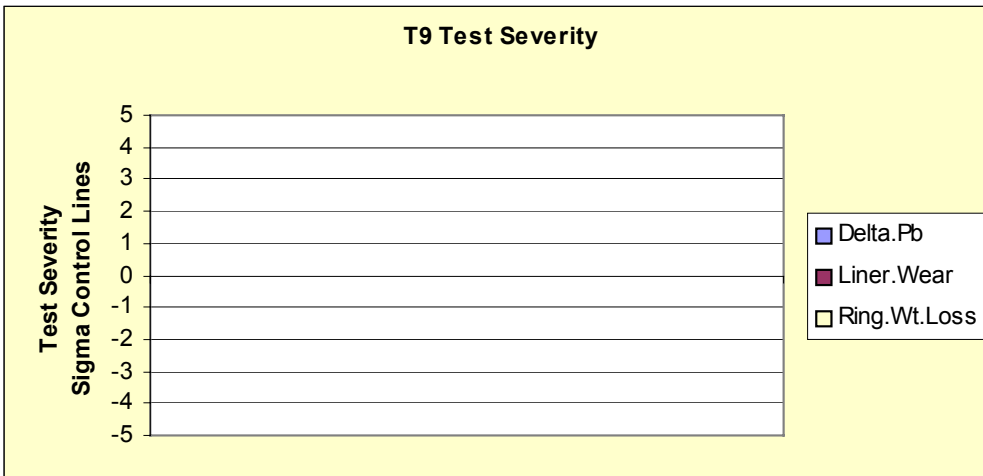
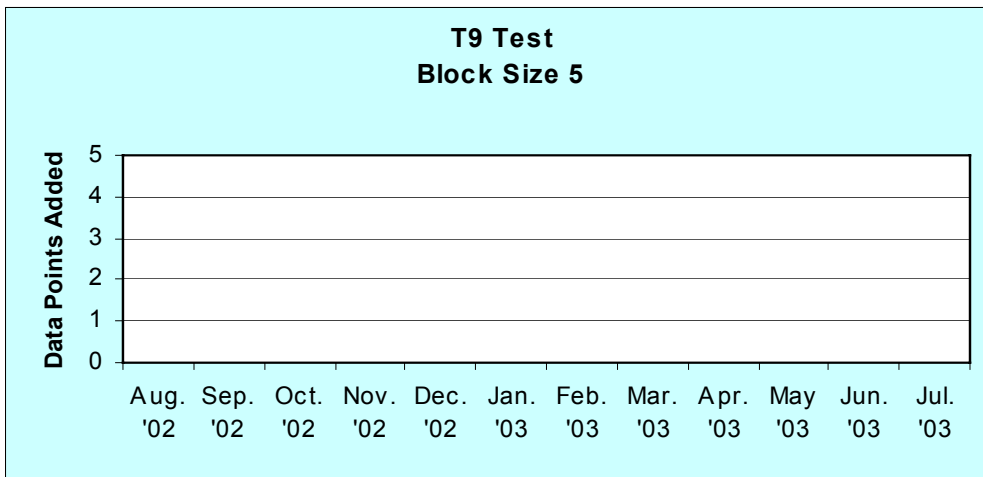
Test Frequency

- No EWMA data points have been generated in the last 12 months.

Test Severity

- No EWMA data points have been generated for this test in the past 12 months.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





T10 Test

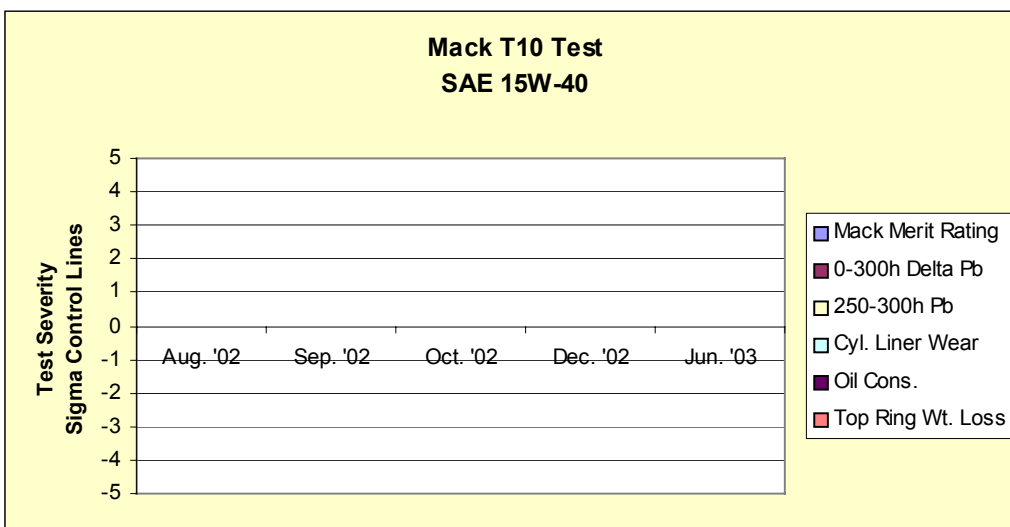
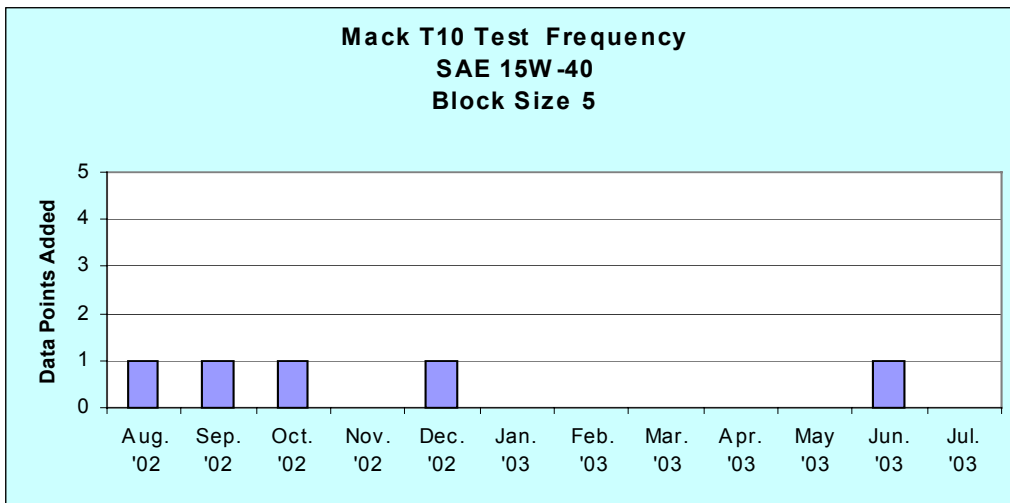
Test Frequency

- No EWMA data points were added in July 2003, but one data point was added for June 2003.

Test Severity

- The EWMA data point added for June 2003 indicated:
 - The Mack Merit Rating was within the 3-Sigma Control Lines and is thus in control.
 - The components of the Mack Merit Rating, 0-300h Delta Pb, 250-300h Pb, Cylinder Liner Wear, Oil Consumption, and Top Ring Weight Loss were all within the 3-Sigma Control Lines and thus in control.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





M11 Test

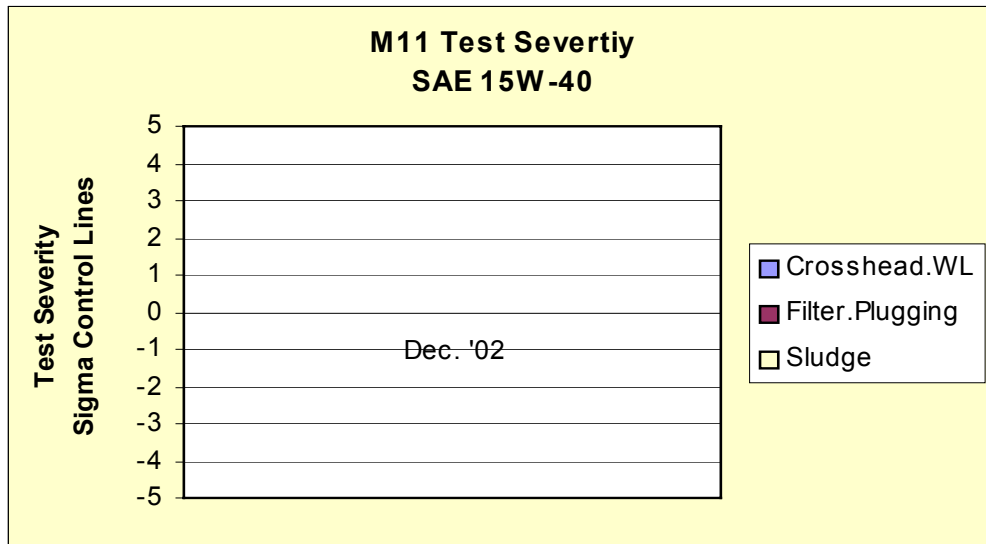
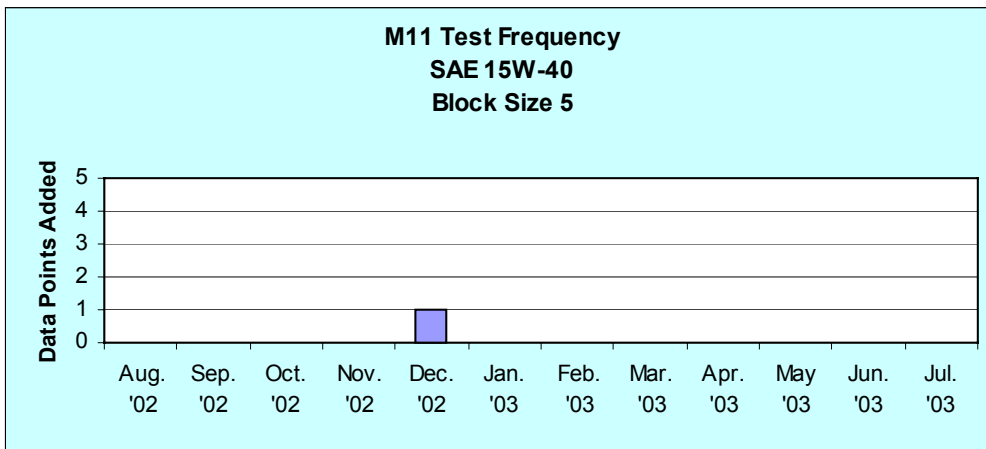
Test Frequency

- No EWMA data points were added for July 2003.

Test Severity

- The last EWMA point added in December 2002 indicated:
 - Crosshead Wear, Filter Plugging, and Sludge were all within the 3-sigma Control Lines and thus in control.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





M11 EGR Test

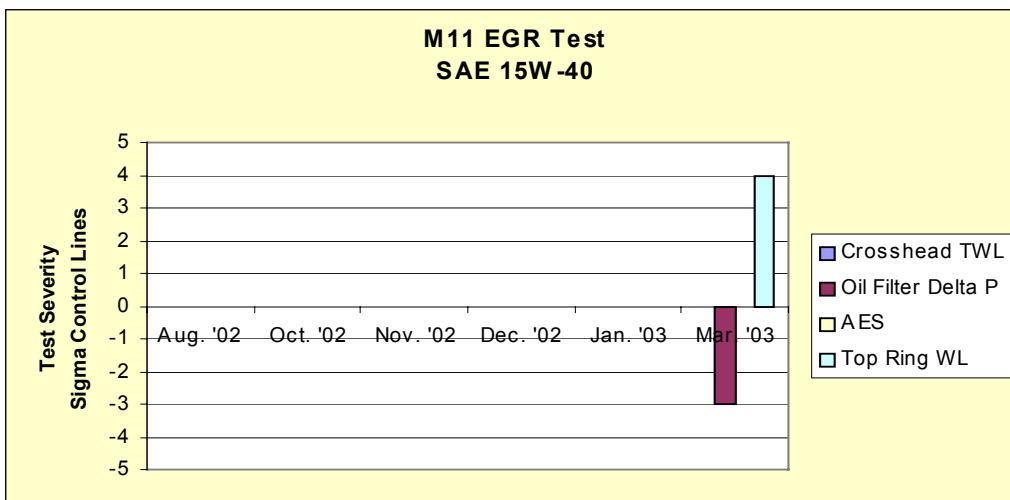
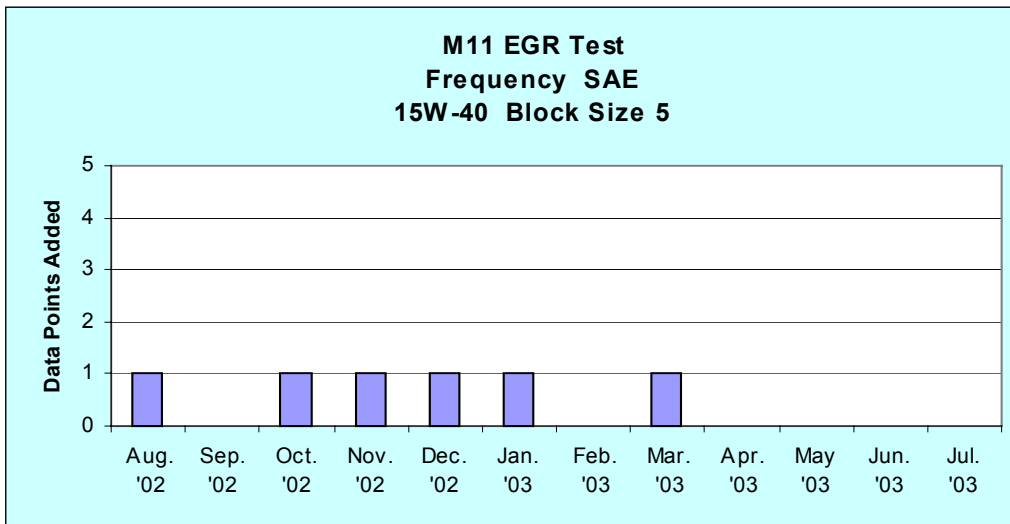
Test Frequency

- No EWMA data points were added for July 2003.

Test Severity

- The EWMA data point added for March 2003 indicated:
 - Crosshead Total Weight Loss and Average Engine Sludge continued within the 3-sigma Control Lines and were thus in control.
 - Oil Filter Delta Pressure moved from being in control to being between the 3 and 4-Sigma Control Lines in a severe or lower performance direction.
 - Top Ring Weight Loss moved from being in control to exceeding the 4-Sigma Control Lines in a mild or higher performance direction, verifying a mild trend reported by the M11 ASTM Surveillance Panel.

For Detailed Information: <http://www.registration-systems.com/Protected/HDEO.htm>





**Attachment 3
Test Monitoring Center
Report to the
Mack Test Surveillance Panel**

September 4, 2003

Richmond, VA

Reference Oil Testing Summary

- Test Activity
 - All Mack tests (T-8, T-9, T-10)
 - **Low**
- Semi-Annual summaries of recent activity will be issued in early October

Liner Measurement Round Robin

- All eight instruments (five labs) successfully calibrated during Spring '03 round robin
- Summer '03 round robin is in progress and will complete soon

Liner Measurement Round Robin Results

Liner Measurement Round Robin						
Spring 2003						
LINER: TMC 170834						
Reference Test Measured Value: 32.2 microns						
		<u>Trial</u>				
<u>Lab</u>	<u>PDI</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>Average**</u>
A	1	31.55	31.55	31.55	31.50	31.54
A	2	31.79	31.70	31.70	31.75	31.74
A	3	31.78	31.89	31.83	31.85	31.84
A	4	31.54	31.54	31.62	31.55	31.56
B	1	31.62	31.90	31.62	31.66	31.70
D	1	31.80	31.76	31.68	31.59	31.71
F	1	31.10	31.29	31.30	31.42	31.28
G	1	31.62	31.64	31.73	31.75	31.68
Target					31.63	
Standard Deviation					0.18	
Minimum					31.13	
Maximum					32.13	
**Average values are for information only. Calibration is determined by comparing individual measurements to the Minimum and Maximum values.						

T-10 Conrod Bearings

- Labs were allowed to take calibration extensions in exchange for running a reference oil test on the new bearings.
- Three Labs
 - Lab A: PB EOT = 12; PB 250-300 = 3
 - Lab G: PB EOT = 16; PB 250-300 = 4
 - Lab D: test still running
- Target Means
 - PB EOT = 24.8; PB 250-300 = 9



TEST ENGINEERING, INC.

12718 CIMARRON PATH

SAN ANTONIO, TEXAS 78249-3423 USA

VX 210-690-1958 EX 210-690-1959

www.TEI-net.com

Attachment 4 - CPD Report

Mack Surveillance Panel

September 4, 2003

Part Description	Batch	Reject Rate	Qty on Hand (builds)	Estimated Monthly Use Rate (builds)	Estimated Inventory Life (months)
T9/T 10/T 11 Cylinder Kits	F/G	9%	56	8	7
T9/T 10/T 11 Main Bearings	F/G	8%	233	8	29
T9/T 10 Con Rod Bearings (currently being allocated)	G	3%	30	4	7
T9/T 10 Con Rod Bearings (special batch)	J	3%	190	4	48
Part Description			Qty on Hand	Comments	
T10 EGR Coolers (19GBX52)			10	last of inventory	
T10 Injectors (736GB49BM3)			228	last of inventory	
T10 Oil Pumps (315GC465BM)			13	last of inventory	
T10 Cylinder Heads (732GB5341M)			6		
T10 Exhaust Mnfld Assembly			3		
T10 Turbo (small 631GC5145M3)			11		
T10 Turbo (large 3801847R)			2		
T10 Exh Valves (688GC344)			24		
T10 Fuel Inj Lines (HL69-151)			20	additional on order	
T10 Fuel Inj Lines (HL69-152)			4	additional on order	



TEST ENGINEERING, INC.

12718 CIMARRON PATH

SAN ANTONIO, TEXAS 78249-3423 USA

VX 210.690.1958 FX 210.690.1959

www.TEI-net.com

CPD Report

Mack Surveillance Panel

September 4, 2003

- **Based on current use rate the current batch of cylinder kits will be used up in 7 months. Need guidance for next order quantity as lead time is approximately 6 months for these kits**