100 Barr Harbor Drive ■ PO Box C700 ■ West Conshohocken, PA 19428-2959
Telephone: 610-832-9500 ■ Fax: 610-832-9555 ■ e-mail: service@astm.org ■ Website: www.astm.org

Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

Chairman: W. JAMES BOVER, ExxonMobil Biomedical Sciences Inc, 1545 Route 22 East, PO Box 971, Annandale, NJ 08801-0971, (908) 730-1048, FAX: 908-730-1197, EMail: wjbover@erenj.com
First Vice Chairman: KENNETH O. HENDERSON, Cannon Instrument Co, PO Box 16, State College, PA 16804, (814) 353-8000, Ext: 0265, FAX: 814-353-8007, EMail: kenohenderson@worldnet.att.net
Second Vice Chairman: SALVATORE J. RAND, 221 Flamingo Drive, Fort Myers, FL 33908, (941) 481-4729, FAX: 941-481-4729
Secretary: MICHAEL A. COLLIER, Petroleum Analyzer Co LP, PO Box 206, Wilmington, IL 60481, (815) 458-0216, FAX: 815-458-0217, EMail: macvarlen@aol.com
Assistant Secretary: JANET L. LANE, ExxonMobil Research and Engineering, 600 Billingsport Rd, PO Box 480, Paulsboro, NJ 08066-0480, (856) 224-3302, FAX: 856-224-3616, EMail: janet_l_lane@email.mobil.com
Staff Manager: DAVID R. BRADLEY, (610) 832-9681, EMail: dbradley@astm.org

Originally Issued: January 7, 2009

Reply to: Richard Grundza
ASTM Test Monitoring Center
6555 Penn Avenue
Pittsburgh, PA 15206
Phone: 412-365-1031
Fax: 412-365-1047
Email: reg@astmtmc.cmu.edu

Unapproved Minutes of the January 6, 2009 Sequence IVA Build Workshop

This document is not an ASTM standard; it is under consideration within an ASTM technical committee but has not received all approvals required to become an ASTM standard. It shall not be reproduced or circulated or quoted, in whole or in part, outside of ASTM committee activities except with the approval of the chairman of the committee having jurisdiction and the president of the society. Copyright ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

The meeting called to order at 9:00 AM

A copy of the agenda is included as attachment 1.

A review of the industry status was conducted. Intertek is still unable to calibrate. Ashland changed cylinder heads on there engine and has seen mild results with reference oil 1006-2, using laboratory retains. Lubrizol intimated that they will be starting a calibration test shortly. Southwest Research has been attempting to bring in a new stand, 27. The first test on this stand was severe and was found to have incorrect ramps, exhaust backpressure problems, temperature control issues and ran EEE fuel. A second test on 1006-2 yielded 50 um. The 3 way valve was found to be installed backwards. This situation was corrected and a third attempt using reference oil 1007 provided 40 um. The research valve for coolant control to the heat exchanger was installed on the inlet side. This situation has been corrected, but the

laboratory feels that they have encountered a mild stand, and potentially a mild cam batch. A test on retains was attempted on stand 54 and appears to be o n target to slightly severe, based on Iron levels.

Al Lopez suggested that the panel may wish to suspend the use of reference oil 1009. Eric Liu of Southwest indicated that he felt cell ambient may have an influence on 27's performance and potential rocker cover heat loss may also play a part in severity differences. Al Lopez suggested that the flow to the front cover may need to be specified. Southwest has metered the front cover flow on stand 27. Al suggested that this flow is not specified and there is a large potential for significant differences between labs. Intertek also pressurizes the cooling system to 100 kPa. Al said the cap will not maintain 100 kPa. Bill Buscher stated that the procedure says to use a 100 kPa cap and that pressurizing the coolant system is not mandatory.

The group reviewed test stands at SR. Stands 27, 54, 78, 79 and 80 were all inspected by the group. Additional differences were noted. Stand 27 instrumentation is in a different location than the other stands at SR. SR also commented that they used both ECM's and haven't noted a difference. Stands 79 and 27 have Vulcan couplings in the driveline, while other stands have solid drivelines. Both Intertek and Ashland uses a solid driveshaft, while Lubrizol is using a damped shaft. SR maintains all their load cells at 46˚ C. It was noted by IAR technicians that the three way valve was installed with the arrow pointed opposite the direction of flow. Bill Buscher explained that SR believes that this is the proper orientation, as these valves are used for mixing and in this application, the valves are being used to divert air flow. Other labs were going to review the orientation of their 3 way valves to ensure similar orientation.

SR reviewed their build up practices on a slave engine. Al Lopez commented that he had encountered an engine with Mexico cast on the side, rather than Japan. Other labs would monitor their inventories and report to the panel any occurrences of Mexico blocks. SR does not remove the front cover and drills the fresh air hole while on the engine, while other labs reuse front covers numerous times. Like all labs, they replace the stock oil pan with a modified oil pan. Several build technicians commented that there are two different distributors and the drive gear will need to be replaced from an earlier engine to use the proper distributor. SR recommends purchasing replacement caps and rotors, as these parts are still available and the distributor is not. SR monitors injector pulse width and agreed to provide schematic and required components to build the pulse width monitoring device. Some blocks have been received with the distributor off, in that there is not sufficient movement to allow proper timing of the engine. The drive gear must be relocated to correct this situation. Al asked if any labs have encountered leaking oil coolers. Most labs have not encountered this phenomenon. IAR technicians noted that the must replace the rocker arm retaining springs every 5 tests or so, while SR is able to use one set through out the life of the engine. Cylinder head assembly was reviewed and it was noted that SR is not measuring the squareness and free length of the valve springs. Both SR and IAR vacuum check the assembled head.

Additional items were noted during the test stand review, specifically that the PCV and blowby system at SR is different from many of the other labs. SR has a 1/8 " valve between the PCV valve and the 3 way valve which is used for blowby measurement. This is done to isolate fresh air flow during blowby measurement. This is required because SR uses the IIIG blowby cart, while other labs use the VG cart. SR and IAR finally discussed what would be included in the engine swap. All components except the wiring harness, the exhaust manifold and pipe and the fuel rail. AL will install an OHT harness on the stand prior to the engine swap.

The following recommendations were made as a result of the workshop.

1. Bill Buscher will conduct an electronic ballot to remove the requirement to conduct valve spring free length and squareness of valve springs and to require vacuum checks of the cylinder head after assembly.
2. Begin to monitor fresh air flow to the front cover.
3. Begin monitoring RAC in and outlet temperatures
4. Advise industry to monitor long blocks for Mexico castings.
5. SR to provide schematic and equipment list to calculate the injector pulse width.
6. Pressurize the cooling system to 100 kPa, in a manner similar to VG and VIB.
7. Configure the PCV system similar to SR with the isolation valve and measure blowby using the IIIG cart.

There being no old or new business, meeting adjourned 3:40 PM

Sequence IVA Build Workshop

San Antonio, TX
SwRI, Building 209, Conference Room 103
SwRI, Building 75, Build-up Room
January 6, 2009
9:00 a.m. - 5:00 p.m.

A G E N D A

1. Introductions.
2. Attendance sign-in sheet distribution.
3. Action recorder.
4. Review, demonstrate and discuss Sequence IVA test engine and cylinder head preparation procedures and techniques.
5. Discuss practices for periodic replacement parts (including distributors, oil coolers, PCV valves, fuel injectors, etc.) among labs.
6. Review, demonstrate and discuss Sequence IVA valve-train installation procedures and techniques.
7. Recommend procedural changes to the Surveillance Panel.
8. Plan future activity.
9. Wrap-up discussion.
10. Adjourn.