



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](mailto:service@astm.org) ■ Website: [www.astm.org](http://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](mailto: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](mailto: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](mailto: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](mailto:janet_l_lane@email.mobil.com)  
*Staff Manager:* DAVID R. BRADLEY, (610) 832-9681, EMail: [dbradley@astm.org](mailto:dbradley@astm.org)

Originally Issued: July 18, 2008

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](mailto:reg@astmtmc.cmu.edu)

Unapproved Minutes of the May 7, 20087  
Sequence III Surveillance Panel Meeting  
held in San Antonio, TX

*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 was called to order at 9:00 am by Chairman Dave Glaenzer.

Agenda Review

Pat Lang is Action & Motion recorder.

The Agenda was accepted as shown on attachment 1.

Membership Changes

Bryan S. Cobb of Chevron Phillips Chemical Company has been added as a member. A sign in sheet listing all attendees is included as attachment 2.

Meeting Minute Status

The November 13, 2007 meeting minutes were approved by the surveillance panel.

Review of Action Items from Last Meeting

Motions and Action Items

As Recorded at the Meeting by Bill Buscher

1. Action Item – Sid Clark to check test procedure and assembly manual for requirements on torque wrenches and report back to the surveillance panel. Modify test procedure and assembly manual if necessary to accommodate current torque wrenches. **Open. GM working on updating assembly manual.**
2. Action Item – Chairman to include ACC letter (response to action item #4 from the 11/07/06 surveillance panel meeting) in current surveillance panel meeting minutes. **Done.**
3. Motion – Modify test procedure and/or assembly manual to allow for the use of replacement rocker cover bushing (OHT3F-028-2), in addition to the existing rocker cover bushing. **Done. Information Letter 07-3 issued in December 2007.**

Dwight Bowden / Charlie Leverett / Passed Unanimously

4. Action Item – Rich Grundza to analyze reference oil data to determine if anything correlates to the recent change in industry viscosity increase performance. A follow-up surveillance panel conference call will be scheduled once the data analysis has been completed. **Done. Memorandum 08-003 issued in February 2008.**
5. Action Item – Chairman to compose and send a letter to Ben Weber concerning the lack of any defined process for replacing rating aids (photos and manuals). **Done.**
6. Action Item – TMC to reword section 12.4.3.4 of the IIIG test procedure to change the name of the rating workshop. **Done. Information Letter 07-3 issued in December 2007.**
7. Action Item – Add wording to the IIIF and IIIG test procedures for dual calibration of IIIF and IIIG test stands, based off of the wording from the April

Sequence III Meeting Minutes

May 6, 2008

San Antonio, TX

16, 2003 surveillance panel meeting minutes. **Done. Information Letter 07-3 issued in December 2007.**

As a result of the review of action items from the previous meeting, additional action items were addressed. Dan Domonkus expressed concerns about using a roll pin to retain the bushing in the rocker cover. Dan felt there may be a better method. The panel assigned an action item to OHT to investigate the use of the roll pin in the rocker cover bushing. Frank Farber updated the panel on the changes that have taken place regarding the TMC and its activities. Rating workshops and rating manuals were to be conducted under the auspices of SAE, but now those functions are handles either by ASTM or the ASTM Test Monitoring Center. Frank identified Robert Dreyfus as the ASTM contact for obtaining rating aids and manuals. The panel agreed on two additional action items as a result of these changes. The first action item was to modify all test methods with the correct source for the rating aids and manuals. The second action item was to recommend to Subcommittee B that the ASTM Test Monitoring Center be placed in charge of the control, maintenance, updating and distribution of the original CRC rating manuals.

#### CPD Report

Reports from both OHT and GM Race shop were reviewed by the panel and are included as attachments 3 and 4 respectively. Also, activities regarding the Test Component Task Force were also discussed during this meeting. Sid did note that one lab identify a cylinder head with a crack in one of the intake ports. A copy of the report is included as attachment 5. Sid asked labs to watch SPO inventory and to be vigilant of P/N changes supplied by dealers. Sid stressed the importance of ancillary SPO parts supply and a need to revisit this issue in the future. Currently, intake manifolds may be in short supply. An action item was assigned for labs to consider purchasing SPO ancillary components now, rather than risking issues that could develop when these ancillary components transition to a third party supply.

#### Test Monitoring Center Report

A copy of the Test Monitoring Center Report is available at the TMC website. IIIG and IIIGA charts are all in control, with the exception of MRV precision, which is in warning alarm. IIIF APV is in mild action alarm and Vis Increase @ 60 hours is in severity alarm (severe). Rich also provided an update on his analysis regarding possible causes to the shift to on target results. The original analysis is contained in TMC Memorandum 08-003, which can be obtained from the TMC website. The updated presentation is included as attachment 6. Rich concluded that no one component or process can be shown to have caused the return to on or near target results in the summation delta/s plots for vis increase.

#### ACC Monitoring Agency Report

Frank Farber gave the ACC Monitoring Agency. A copy of the report is available at the ACC Monitoring Agency website.

#### Fuel Supplier Report

Jim Carter updated the panel on the changes in ownership and blending. The fuel is now blended at their facility in Michigan. Halterman is no longer owned by Dow, but was purchased by the Heritage Group, who owns a number of petrochemical companies. Jim stated that there has been a high volume of fuel usage the past six months. A copy of his report is included as attachment 7

## New Business

### AFR Control and Monitoring

Dave Glaenzer (panel chair) began discussions about Air Fuel Ratio (AFR) monitoring and control. Dave gave some history on the evolution of AFR monitoring in the Sequence III test and expressed concerns that all labs may not be monitoring and controlling AFR in the same manner. Dan Domonkos discussed his experience in trying to improve calibration techniques. Dave felt that wide range oxygen sensors provided the best accuracy, if they are calibrated properly. Dan stated that calibrations should encompass at least verifications at two points and compensate for pressure and humidity. Sid Clark recommended that a task force be formed to define the monitoring methods for AFR and NOx. Dan Domonkos agreed to chair this task force and hoped to report back with recommendations by the November 2008 meeting.

### IIIG Phosphorus Retention

Dave updated the group on the request to monitor phosphorus from the ESCIT group. A large difference between laboratories was noted when the initial data was analyzed. There were also concerns about a potential severity shift. Discussions centered around how to improve the measurement techniques, what information to include on the forms and how to monitor the test going forward. Dave Glaenzer was awaiting a letter from the ESCIT group detailing what actions the panel was to take regarding monitoring of Phosphorus retention. Dave will hold a teleconference once the letter is received. An action item was assigned to the TMC to have labs provide up to date Calcium and Phosphorus data to the TMC to be posted on their website.

### GF-5 Reference oils

Dave requested that members of the panel inform their companies that the panel is actively pursuing potential reference oils for the new category, GF-5

### PVIS Lambda Change

Trevor Miller of Oronite gave a presentation regarding viscosity increase severity issues. He discussed changes in oil consumption and blowby which may have an impact on severity. The panel discussed these issues in detail. Trevor made a motion to increase the lambda from 0.2 to 0.3 for all parameters. There was no second for the motion.

### Procedural Changes

Rich Grundza was made aware by monitoring agency personnel that labs are not completing previous reference test information on form 4 consistently. Some labs report the last stand reference information, while others report the last laboratory reference. After some discussion, the panel agreed to remove this information from the Sequence III tests report package. The panel then discussed how long a test can be down for oil level, before it is considered downtime. The panel agreed to revise section 12.13.2, to identify as downtime any time in excess of 55 min from the time when the engine ramps down until the test is back on test operating conditions. The panel also agreed to delete section 13.4 of the test method because of this change.

### Introduction of Reblend of Oil 434

The panel discussed how to introduce the reblend of reference oil 434, 434-1. The panel agreed to conduct calibration tests on this oil, using the targets for oil 434 for test acceptance.

### Scope and Objectives

The panel reviewed the current scope and objectives and revised accordingly. Revised scope and objectives are below.

## **SCOPE & OBJECTIVES**

### SCOPE

The Sequence III Surveillance Panel is responsible for the surveillance and continual improvement of the Sequence IIIF and IIIFHD tests documented in ASTM Standard D6984-05 as update by the Information Letter System. The Sequence III Surveillance Panel is also responsible for the surveillance and continual improvement of the Sequence IIIG and IIIGA tests documented in ASTM Standard D7320 as updated by the Information Letter System. Data on test precision will be solicited and evaluated at least every six (6) months for Sequence III test procedures. The Surveillance Panel is to provide continual improvement of rating techniques, test operation, test monitoring and test validation through communication with the Test Sponsor, ASTM Test Monitoring Center, the Central Parts Distributor, Fuel Supplier, ASTM B0.01 Passenger Car Engine Oil Classification Panel, ASTM Committee B0.01, ACC Monitoring Agency and SAE Deposit/Distress Workshop. Actions to improve the process will be recommended when appropriate based on input to the Surveillance Panel from one or more of the previously stated groups. This process will provide the best possible Sequence III Type Test Procedure for evaluating engine oil performance with respect to it's ability to prevent oil thickening, varnish formation, oil consumption and engine wear.

### **OBJECTIVES**

### **TARGET DATE**

- |   |           |
|---|-----------|
| 1. Test Component Task Force continue to monitor test component availability<br>Ongoing |           |
| 2. Solicit reference oils for GF-4/GF-5 testing<br>2008                                 | December  |
| 3. Plan and conduct unified engine build  | June 2009 |
| 4. Task Force to recommend control and verification of AFR and NOx<br>November 2008     |           |

**David L. Glaenzer, Chairman  
Sequence III Surveillance Panel**

**Updated 05/06/2008  
San Antonio, Texas**

A listing of the action items from this meeting are included as attachment 8.

Sequence III Meeting Minutes  
May 6, 2008  
San Antonio, TX

There being no new business or old business, the meeting was adjourned at 3:00 pm.

# **AGENDA**

## **SEQUENCE III SURVEILLANCE PANEL MEETING**

Southwest Research Institute, San Antonio, Texas

May 6, 2008

9:00 AM to 3:00 PM

1. **APPOINTMENT OF RECORDER OF ACTIONS/MOTIONS**
2. **AGENDA REVIEW**
3. **MEMBERSHIP CHANGES, Bryan S. Cobb (Chevron Phillips Chemical Co.)**
4. **APPROVAL OF THE MINUTES FROM THE NOVEMBER 2007 MEETING**
5. **REVIEW OF ACTION ITEMS FROM THE LAST MEETING**
  
6. **SEQUENCE III TEST HARDWARE REPORTS**
  - CPD, OH TECHNOLOGIES
  - GM MOTORSPORTS
  - TCTF
  
7. **ASTM-TMC REPORTS**
  - D 6984 - SEQUENCE IIIF
  - D 7320 - SEQUENCE IIIG/IIIGA
  
8. **CANDIDATE ACTIVITY REPORTS**
  - ACC-MA REPORT-D 6984 - SEQUENCE IIIF
  - ACC-MA REPORT-D 7320 - SEQUENCE IIIG/IIIGA
  
9. **SEQUENCE III FUEL SUPPLIER REPORT – James Carter**
  - Dow divestiture of the Dow Halterman Custom Processing business
  
10. **OLD BUSINESS**
  - CRC Rating Manuals
  
11. **NEW BUSINESS**
  - a. **Air-to-fuel ratio control and verification**
  - b. **Use of IIIG for Phosphorus Retention specification**
  - c. **Calibration Oils for GF-5**
  - d. **Editorial**
    - i. **IIIG test report form 4, “Most recent...” inconsistencies**
    - ii. **IIIG Procedure section 13.4; listing outliers, downtime at oil level**
  
12. **REVIEW OF SCOPE & OBJECTIVES**
  
13. **ADJOURNMENT**

5/6/2008

## SEQUENCE III

## ATTENDANCE

NAME	COMPANY	EMAIL
FRANK FARRER	TMC	fmf@astmtmc.cmo.edu
SCOTT COBB	CPHEM	cobbbs@cpchem.com
Rich Goundza	ASTMTMC	reg@astmtmc.cmo.edu
DWIGHT BOWDEN	OH TECHNOLOGIES	DWBOWDEN@OHTECH.COM
Jason Bowden	OH TECHNOLOGIES	jhbowden@ohtech.com
Sid Clark	GM Powertrain	Sidney.L.Clark@gm.com
Scott Stap	GM Racing	Scott.Stap@tgidirect.com
JEFF KETTMAN	GM RACING	jeff.kettman@gm.com
Bruce Matthews	GM PT	Bruce.Matthews@gm.com
B. D. DOMONKOS	LUBRIZOL	BRIGDON.DOMONKOS@LUBRIZOL.COM
Greg Semun	Lubrizol	glsem@lubrizol.com
LARRY HAMILTON	LUBRIZOL	larry.hamilton@lubrizol.com
Charlie Leverett	Intertek-AR	charlie.leverett@intertek.com
MARK SUTHERLAND	ORONITE	msut@chevron.com
J Martinez	ORONITE	jogm@chevron.com
Trevor Miller	oronite	tmbd@chevron.com
Doyle Boese	Infineum	Doyle.Boese@Infineum.com
TIM CAUVILL	Ashland	TLCAUVILL@Ashland.com
Ed Altman	Afton	Ed.Altman@Aftonchemical.com
JIM CARTER	HALTERMANN PRODUCTS	JECARTER@JHALTERMANN.COM
JONATHAN AYUTSEDE	INFINEUM	jonathan.ayutsede@Infineum.com
Mark Mosher	ExxonMobil	mark.r.mosher@exxonmobil.com
PAT LANG	SwRI	patrick.lang@swri.org
BILL BUSCHER	SwRI	william.buscher@swri.org
Ben Weber	"	Ben.Weber@swri.org
Andy Ritche	Infineum	Andrew.Ritche@Infineum.com
DAVID L GLAENZER	Afton	dave.glaenzler@Aftonchemical.com
TIMOTHY MIRANDA	BP Castrol	TIMOTHY.MIRANDA@BP.COM



# CENTRAL PARTS DISTRIBUTOR REPORT

## OH Technologies, Inc.

### Sequence III Surveillance Panel Meeting SwRI, San Antonio, TX May 6, 2008

#### 1) Rejections from 11/13/07 to 5/02/08:

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>REASON REJECTED</u>	<u>QTY</u>	<u>REPLACED (Y/N)</u>	<u>DATE REPLACED</u>
OHT3F-008-6	CAMSHAFT, SPECIAL TEST, IIIF	DEPOSITS ON LOBES	1	YES	12/19/2007
OHT3F-008-6	CAMSHAFT, SPECIAL TEST, IIIF	DAMAGE ON LOBE	1	YES	12/19/2007
OHT3F-008-6	CAMSHAFT, SPECIAL TEST, IIIF	RUST	9	YES	1/24/2008
OHT3F-008-6	CAMSHAFT, SPECIAL TEST, IIIF	RUST	13	YES	3/12/2008
OHT3F-008-8	CAMSHAFT, SPECIAL TEST, IIIG	DAMAGED CAM BOLT THREAD	1	YES	11/21/2008
OHT3F-008-8	CAMSHAFT, SPECIAL TEST, IIIG	RUST VETO BUILDUP / STAINS	1	YES	12/19/2008
OHT3F-008-8	CAMSHAFT, SPECIAL TEST, IIIG	SCRATCH ON LOBE	1	YES	12/19/2008
OHT3F-008-8	CAMSHAFT, SPECIAL TEST, IIIG	CHIP ON LOBE	1	YES	2/15/2008
OHT3F-008-8	CAMSHAFT, SPECIAL TEST, IIIG	RUST VETO BUILDUP / STAINS	10	YES	2/15/2008
OHT3F-011-2	THRUST PLATE	CRACKED	3	YES	2/26/2008
OHT3F-011-2	THRUST PLATE	CRACKED	3	YES	4/25/2008
3F028-09	BUSHING, CAM, POSITIONS 1 & 4	MULTIPLE OR MISSING OIL GROOVES	2	YES	12/17/2008
3F028-09	BUSHING, CAM, POSITIONS 1 & 4	DEFECTIVE OIL HOLE (BURR)	1	YES	4/25/2008
OHT3F-029-3	LIFTER, TEST, ACI W/ FLAT	VISUAL DEFECTS	16	YES	12/19/2008
OHT3F-029-3	LIFTER, TEST, ACI W/ FLAT	DUPLICATE SERIAL NUMBER	1	YES	12/10/2007
OHT3F-030-2	COOLER, OIL	PLATING FLAKING ON EXTERIOR	1	YES	4/25/2008
3F05X-01	RAIL, OIL	INCONSISTENT GAPS	12	YES	1/17/2008
3F05X-01	RAIL, OIL	INCONSISTENT GAPS	12	YES	4/25/2008
OHT3G-050-TOP1	TOP RING COMPRESSION	GAP	1	YES	3/6/2008

#### 2) Technical Memos Issued

2/21/08

Seq. III CPD Technical Memo 12

3F05X-01, RAIL, OIL – BATCH CODE 13 – GAP INSPECTION

#### 3) Batch Code Changes

<u>IIIF</u>	<u>Batch Code</u>	<u>Date Introduced</u>	<u>IIIG</u>	<u>Batch Code</u>	<u>Date Introduced</u>
Rocker Arms	BC 12	4/27/2007	Rocker Arms	BC 12	3/12/08
			Valve Spring	BC 7	11/07/07
Conn. Rod Bearing	BC 16	5/25/2007	Conn. Rod Bearing	BC 16	4/02/08
Piston Grade 12	BC 21	12/18/07	Piston Grade 12	BC 21	12/12/07
Piston Grade 34	BC 21	2/12/08	Piston Grade 34	BC 21	1/17/08
Piston Grade 56	BC 21	4/23/08	Piston Grade 56	BC 21	4/23/08
Oil Cooler Plating	071210	12/14/07	Oil Cooler Plating	071210	12/12/07
	080116	1/23/08		080116	1/30/08
	080327	4/16/08		080327	4/02/08
Camshaft	PC 14	11/21/07	Camshaft, Phosphate	PC 14	11/15/07

# GM Racing Lubricant Test Component Supplier Report



Presented to the Sequence III Surveillance  
Panel May 6, 2008



GM Racing

# Test Component Build-out

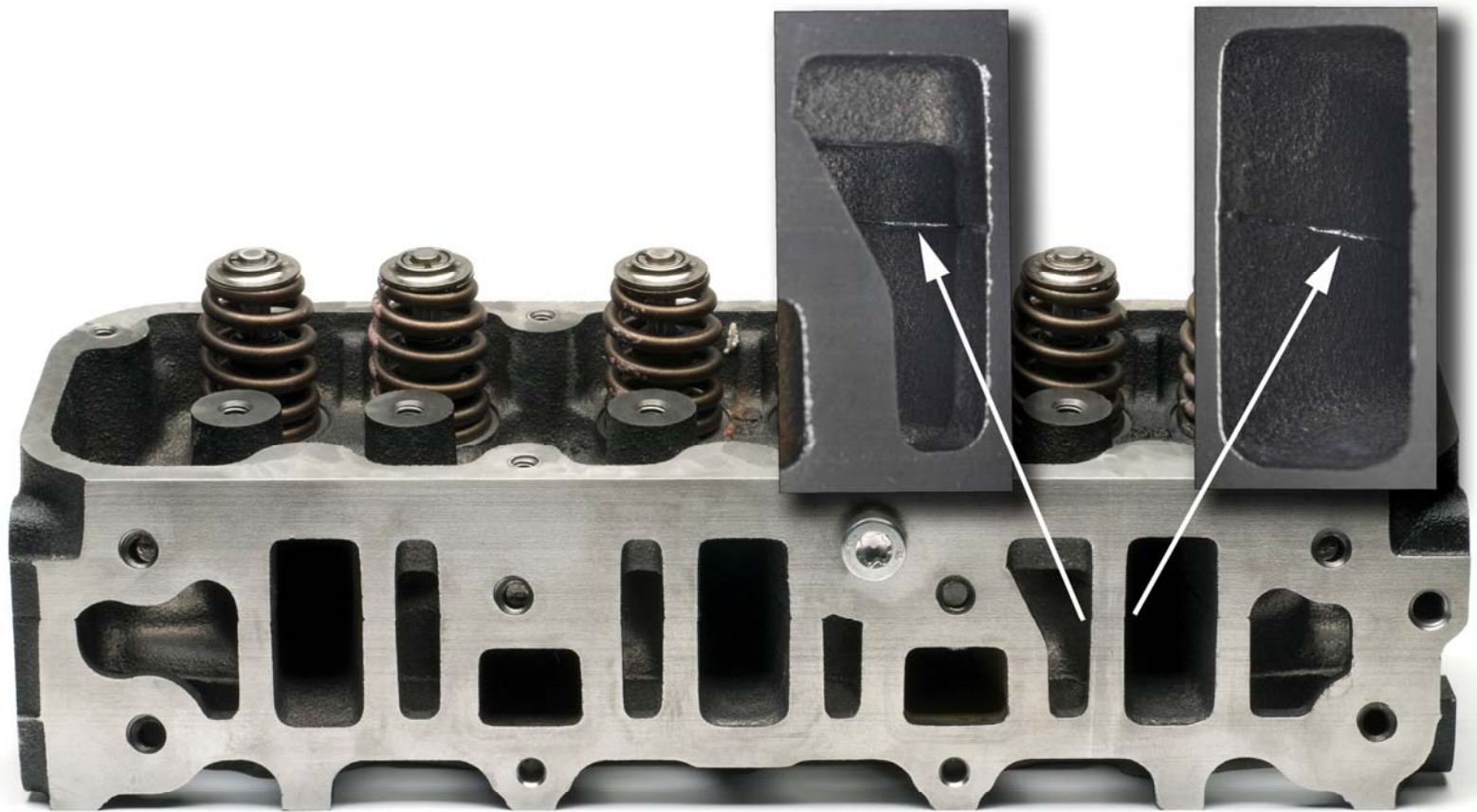
- GM Racing and GM Powertrain Plant 36 are currently in build-out
- Production run was scheduled through December 2008
- Plant shut-downs made us their #1 customer
- Engine Blocks
  - Final build-out will be complete this month
- Connecting Rods, Crankshafts, Heads
  - Orders placed build-out to be completed this summer



# Rejected Parts

- 1 Cylinder Head
  - Casting defect
  - Lab decided not to return





GM Racing

# Test Component Task Force

Presented to  
Sequence III Surveillance Panel

May 6, 2008

Sid Clark

# TCTF Membership

- GM
  - Sid Clark, Jeff Kettman, Scott Stap
- OHT
  - Dwight, Adam, Jason Bowden
- Afton
  - Ed Altman
- ExxonMobil
  - Mark Mosher
- Ashland / Valvoline
  - Tim Caudill
- Intertek
  - Charlie Leverett
- Lubrizol
  - Dan Domonkos
- SwRI
  - Pat Lang

# Scope and Objectives

- Scope
- The ASTM Sequence IIIF / IIIG Test Methods are expected to remain current through 2015. General Motors plans to cease production of the Series II 3800 engine some time during 2008 model year production. To help facilitate an orderly exit from Powertrain Engine Plant 36, based on testing laboratory requirements, the ASTM Sequence III Test Component Task Force (TCTF) with representatives from the Test Sponsor, Central Parts Distributor, Special Parts Supplier, and the Testing Laboratories was formed.
- The TCTF has been charged with the responsibility of outlining a plan for component procurement, inventory maintenance, and storage guidelines to insure the availability of qualified test components for calibrated testing throughout the anticipated life of the Sequence IIIF / IIIG Tests.
- The TCTF will acquire and document accurate information on all current test component inventories, summarize projected inventory requirements based on supplier production availability timelines, and outline an inventory allocation plan based on industry survey results. If the production of any test component is terminated, the TCTF will modify the plan to accommodate a build out, rework of existing components or development of an approved alternate source of the component.
- In executing this plan, the TCTF will minimize the financial risks shared by both the suppliers and users of the Test Methods.



# Scope and Objectives

## Objectives

## Target Date

OH Technologies Test Component Review

September 14 2007

GM Race Shop Test Component Review

September 14 2007

Service Parts Operations Test Component Review

September 14 2007

Industry Test Requirement Survey II

September 28 2007

Storage Guideline Statement of Requirements

September 28 2007

Test Component Requirements

October 5 2007

Plant 36 Build-out Schedule

October 31 2007

Surveillance Panel Presentation of TCTF Plan

November SP Meeting 2007

TCTF Plan Maintenance

Semi-Annual Review - 2015

# Test Component Review

- OH Technologies
  - Complete
- GM Racing
  - Complete
- Service Parts
  - On-going review for life of IIIG

# Industry Survey

## Monthly Average

Year	Low	High	Low	High
2008	546	677	46	56
2009	767	969	64	81
2010	710	885	59	74
2011	565	730	47	61
2012	517	662	43	55
2013	482	609	40	51
2014	436	562	36	47
2015	426	562	36	47

Totals

4449

5656

# Test Component Requirements

## Plant 36 Test Component Build-out Requirements

Number of Tests

Cylinder Blocks	<input type="text" value="833"/>	6 tests/block
Crankshafts	<input type="text" value="833"/>	6 tests/crankshaft
Front Covers	<input type="text" value="833"/>	6 tests/front cover
Cylinder Heads	<input type="text" value="10000"/>	2 cylinder heads/test (no reuse)

# Plant 36 Build-out Schedule

- Initial Plans
  - Two tiered production run
    - November 2007 – January 2008
    - January – September or sooner
  - Sooner is now
    - Plant 36 is running remainder of order this week
- Bay City (Connecting Rods)
  - Final run still planned later this year

# Service Parts

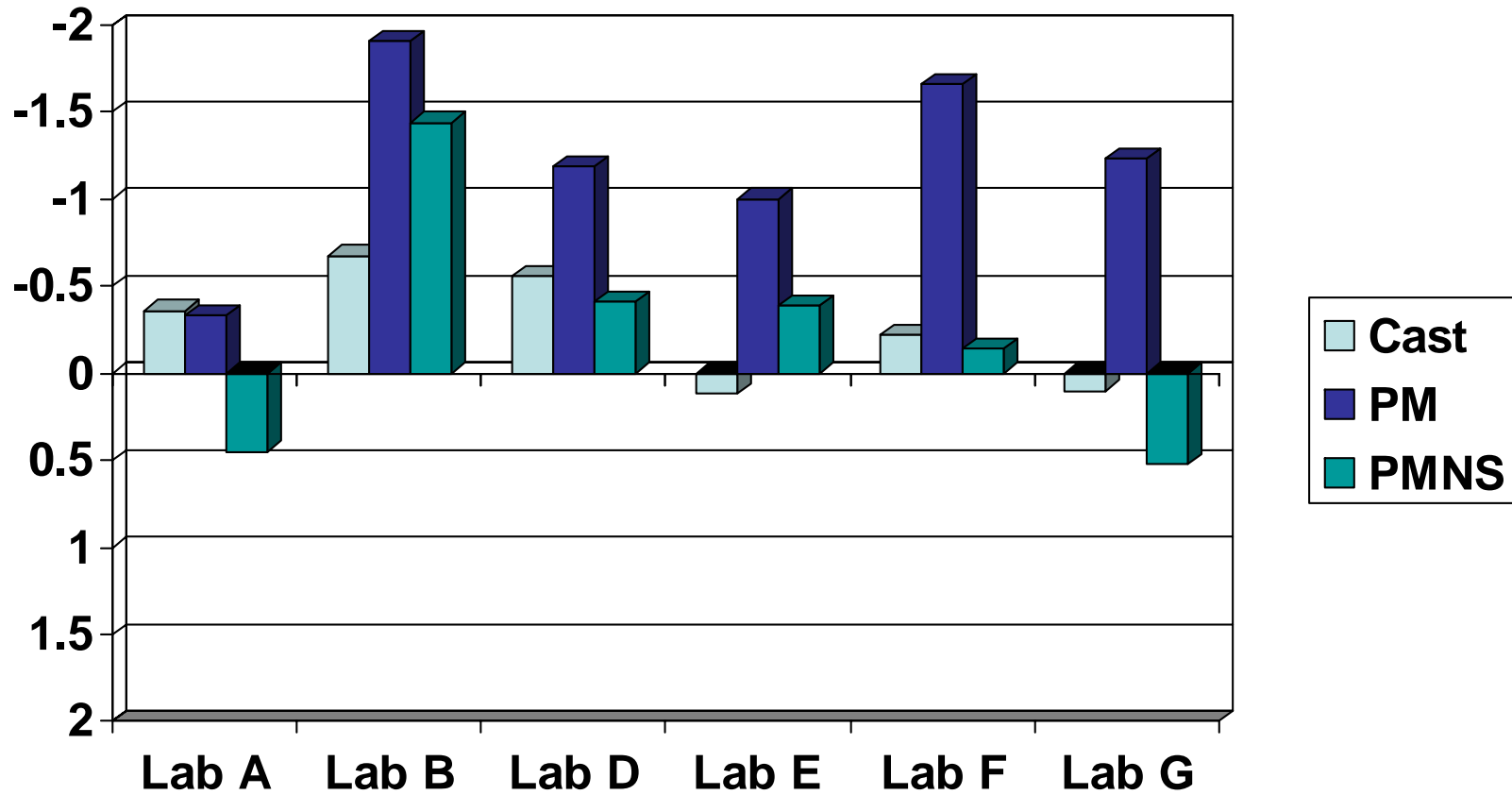
- Labs need to maintain constant review of SPO part availability
- Ancillary components will transition to third party supply
- Immediate concerns (SPO build-out)
  - Intake Manifolds 24508923
  - Balance Shaft Drive Gears
    - Drive 24504792
    - Driven 24503523

# Severity Trends by Lab/hardware

Sequence IIIG

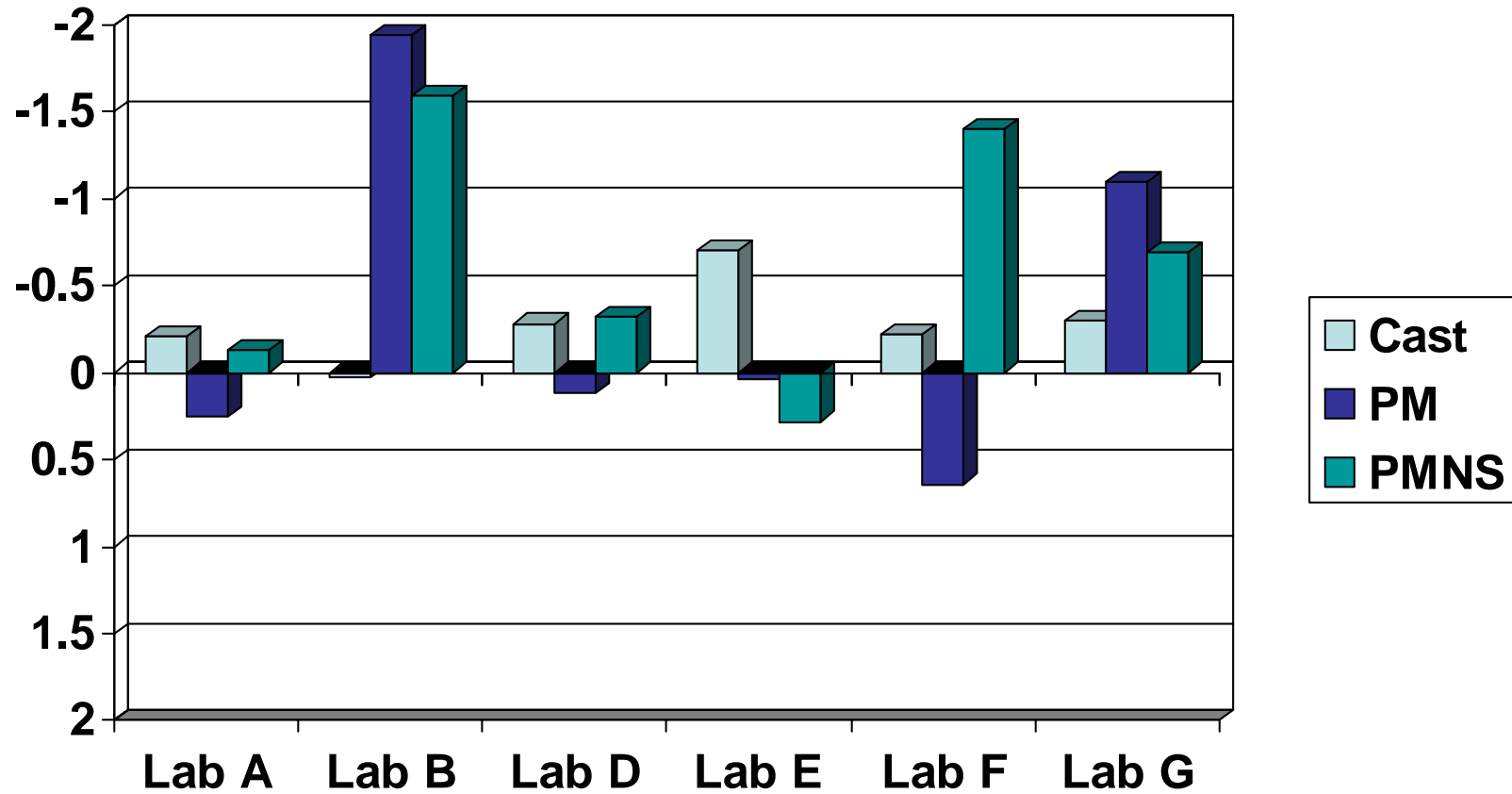
May 6, 2008

# PVIS Severity by Lab/Con Rod type





# ACLW Severity by Lab/Con Rod type



**PRODUCT:** EEE Unleaded Gasoline  
**HALTERMANN**  
**PRODUCT CODE:** HF003  
**Seq. III & VI**

**Batch No.:** WC3121LT10 WB2921LT10  
**TMO No.:** MTS MTS  
**Tank No.:** 110 110  
**Analysis Date:** 4/16/2008 3/18/2008  
**Shipment Date:**

TEST	METHOD	UNITS	HALTERMANN Specs			RESULTS	RESULTS
			MIN	TARGET	MAX		
Distillation - IBP	ASTM D86	°C	23.9		35.0	30.8	28.8
5%		°C				41.7	42.5
10%		°C	48.9		57.2	49.9	51.9
20%		°C				61.8	63.7
30%		°C				74.4	76.4
40%		°C				90.1	91.7
50%		°C	93.3		110.0	103.5	103.7
60%		°C				110.6	110.4
70%		°C				117.4	117.1
80%		°C				129.3	128.0
90%		°C	151.7		162.8	159.2	157.0
95%		°C				166.9	167.3
Distillation - EP		°C			212.8	195.2	199.9
Recovery		vol %		Report	97.4	97.5	
Residue		vol %		Report	0.8	0.8	
Loss		vol %		Report	1.8	1.7	
Gravity @ 60°F/60°F	ASTM D4052	°API	58.7		61.2	59.1	59.2
Density @ 15° C	ASTM D4052	kg/l	0.734		0.744	0.742	0.741
Reid Vapor Pressure	ASTM D5191	kPa	60.6		63.4	62.9	63.0
Carbon	ASTM D3343	wt fraction		Report	0.8650	0.8647	
Carbon	ASTM E191	wt fraction		Report	0.8655	0.8600	
Hydrogen	ASTM E191	wt fraction		Report	0.1328	0.1342	
Hydrogen/Carbon ratio	ASTM E191	mole/mole		Report	1.828	1.859	
Oxygen	ASTM D4815	wt %			0.05	<0.05	<0.05
Sulfur	ASTM D5453	mg/kg	3		15	5	6
Lead	ASTM D3237	mg/l			2.6	<2.6	<2.6
Phosphorous	ASTM D3231	mg/l			1.3	<0.2	<0.2
Composition, aromatics	ASTM D1319	vol %	26.0		32.5	28.2	27.9
Composition, olefins	ASTM D1319	vol %			10.0	0.4	1.0
Composition, saturates	ASTM D1319	vol %		Report		71.5	71.1
Particulate matter	ASTM D5452	mg/l			1	0.3	0.5
Oxidation Stability	ASTM D525	minutes	1000			>1000	>1000
Copper Corrosion	ASTM D130				1	1	1
Gum content, washed	ASTM D381	mg/100mls			5.0	<0.5	1
Fuel Economy Numerator/C Density	ASTM E191		2401		2441	2432	2425
C Factor	ASTM E191			Report		1.0051	0.9973
Research Octane Number	ASTM D2699		96.0			97.0	97.0
Motor Octane Number	ASTM D2700			Report		88.7	88.5
Sensitivity			7.5			8.3	8.5
Net Heating Value, btu/lb	ASTM D3338	btu/lb		Report		18465	18505
Net Heating Value, btu/lb	ASTM D240	btu/lb		Report		18389	18425
Color	VISUAL	1.75 ptb		Red		RED	RED

Revised 11/30/2005

APPROVED BY: \_\_\_\_\_

ANALYST \_\_\_\_\_

PLI \_\_\_\_\_

PLI \_\_\_\_\_

**PRODUCT:** EEE Unleaded Gasoline  
**HALTERMANN**  
**PRODUCT CODE:** HF003  
**Seq. III & VI**

**Batch No.:** WA2221LT10 WA0721LT10  
**TMO No.:** MTS MTS  
**Tank No.:** 110 110  
**Analysis Date:** 2/20/2008 1/16/2008  
**Shipment Date:**

TEST	METHOD	UNITS	HALTERMANN Specs			RESULTS	RESULTS
			MIN	TARGET	MAX		
Distillation - IBP	ASTM D86	°C	23.9		35.0	29.9	30.1
5%		°C				42.7	43.9
10%		°C	48.9		57.2	49.7	52.1
20%		°C				61.0	64.4
30%		°C				74.0	77.8
40%		°C				91.8	94.5
50%		°C	93.3		110.0	105.1	107.3
60%		°C				111.8	113.8
70%		°C				118.6	120.6
80%		°C				131.0	132.5
90%		°C	151.7		162.8	161.5	162.6
95%		°C				168.9	170.4
Distillation - EP		°C			212.8	205.2	203.6
Recovery		vol %		Report		97.9	98.0
Residue		vol %		Report		1.0	1.0
Loss		vol %		Report		1.1	1.0
Gravity @ 60°F/60°F	ASTM D4052	°API	58.7		61.2	59.4	58.8
Density @ 15° C	ASTM D4052	kg/l	0.734		0.744	0.741	0.743
Reid Vapor Pressure	ASTM D5191	kPa	60.6		63.4	63.4	61.8
Carbon	ASTM D3343	wt fraction		Report		0.8640	0.8644
Carbon	ASTM E191	wt fraction		Report		0.8628	0.8615
Hydrogen	ASTM E191	wt fraction		Report		0.1357	0.1360
Hydrogen/Carbon ratio	ASTM E191	mole/mole		Report		1.873	1.880
Oxygen	ASTM D4815	wt %			0.05	<0.05	<0.05
Sulfur	ASTM D5453	mg/kg	3		15	5	5
Lead	ASTM D3237	mg/l			2.6	<2.6	<2.6
Phosphorous	ASTM D3231	mg/l			1.3	<0.2	<0.2
Composition, aromatics	ASTM D1319	vol %	26.0		32.5	27.6	27.1
Composition, olefins	ASTM D1319	vol %			10.0	0.7	0.8
Composition, saturates	ASTM D1319	vol %		Report		71.7	72.1
Particulate matter	ASTM D5452	mg/l			1	0.6	0.9
Oxidation Stability	ASTM D525	minutes	1000			>1000	>1000
Copper Corrosion	ASTM D130				1	1	1
Gum content, washed	ASTM D381	mg/100mls			5.0	<0.5	<0.5
Fuel Economy Numerator/C Density	ASTM E191		2401		2441	2420	2426
C Factor	ASTM E191			Report		0.9998	1.0014
Research Octane Number	ASTM D2699		96.0			97.3	97.4
Motor Octane Number	ASTM D2700			Report		88.5	89.0
Sensitivity			7.5			8.8	8.4
Net Heating Value, btu/lb	ASTM D3338	btu/lb		Report		18496	18500
Net Heating Value, btu/lb	ASTM D240	btu/lb		Report		18435	18381
Color	VISUAL	1.75 ptb		Red		RED	RED

Revised 11/30/2005

APPROVED BY: \_\_\_\_\_

ANALYST

PLI

PLI

Sequence IIIG Surveillance Panel  
May 6, 2008  
9:00AM – 3:00PM  
SwRI, Building 209, Conference Room 103  
San Antonio, TX

Motions and Action Items

As Recorded at the Meeting by Bill Buscher

1. Action Item – OHT to investigate the use of the roll pin in the rocker cover bushing.
2. Action Item – Update all test methods with the correct source for the rating aids and manuals.
3. Motion – Recommend to Subcommittee B that the ASTM Test Monitoring Center be placed in charge of the control, maintenance, updating and distribution of the original CRC rating manuals.

Dan Domonkos / Dwight Bowden / Passed Unanimously

4. Action Item – Labs to consider purchasing SPO ancillary components now, rather than risking issues that could develop when these ancillary components transition to a third party supply.
5. Motion – Establish a task force to investigate AFR and NOx control and verification methods with Dan Domonkos as chair. Goal is to have investigation and recommendations completed by next surveillance panel meeting.

Sid Clark / Ed Altman / Passed Unanimously

6. Action Item – TMC will request the labs to update their phosphorus and calcium data from all reference oil tests conducted.
7. Motion – Table any further surveillance panel action on phosphorus retention until the surveillance panel has received ESCIT's letter of recommendation. A surveillance panel conference call will promptly be scheduled once ESCIT's letter has been received.

Dan Domonkos / Charlie Leverett / Passed Unanimously

8. Action Item – Surveillance panel members to solicit their companies for potential GF-5 calibration oils.

9. Motion – Increase LTMS lambda for all parameters from 0.2 to 0.3.

Trevor Miller / No Second / Motion Failed

10. Motion – Remove “Most Recent Stand Reference Oil Test History” table from Form 4 of the Sequence III (all test types) test reports and associated data from the Sequence III data dictionaries. Note that this data is still available from other data sources.

Dan Domonkos / Pat Lang / Passed Unanimously

11. Motion – Eliminate section 13.4 of the Sequence IIIG test procedure.

Charlie Leverett / Pat Lang / Passed Unanimously

12. Motion – Revise section 12 of the Sequence IIIG test procedure to clarify oil level downtime.

Charlie Leverett / Ed Altman / Passed with 1 Waive

13. Action Item – Chairman to plan and conduct a unified engine build prior to June 2009.