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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

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Issued: April 05, 2012
Reply to: Dan Worcester
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San Antonio, TX 78238
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These are the unapproved minutes of the 03.27.2012 Sequence VI Surveillance Panel meeting.

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The meeting was called to order at 9:00 AM by Chairman Charlie Leverett.

Agenda

The Agenda is the included as **Attachment 1**.

1.0 Roll Call

The Attendance list **Attachment 2**. The group would like to recognize and give special thanks to Haltermann, OHT and TEI for covering the costs of the meeting room and meals.

Motions and Actions will be **Attachment 3**.

2.0) Approval of minutes

- 2.1) Approval of the minutes of the 02.06.2012 Conference Call.

**Motion – Accept the minutes of the 03.17.2012 VID SP CC. Unanimous.
Charlie Leverett, Jason Bowden, second.**

3.0) Action Item Review

- 3.1 OHT to report VID engine usage and expected depletion date at all Surveillance Panel meetings. **Will be on-going. There are 44.**
- 3.2 GM to report to the SP what the last date of purchase for 2012 LY7 engines at the next SP meeting. **The latest date is mid-April. The first response from the survey was for 166 engines. A second survey was sent out. This will be in new business.**
- 3.3 GM will check to see if the fixed cam gears can be installed during assembly on 2012 engines. **This will not be done.**
- 3.4 A Task Force will be setup to review the current VID Standard with the Scope/Goal being to better standardize. **A first conference call was held. A face to face meeting will be held after the VID meeting on 03.27.2012. A matrix and additional testing will be developed.**

4.) Old Business

- 4.1 None

5.) New Business

- 5.1 Review of remaining BL & FO oils – Rich did a survey and we need to discuss the outcome. **TMC has 44 drums of BL-3. One lab will run out of oil in 9 months. Infineum is the supplier, and it will take about one year for new batches. There will be further discussion in November.**

Action Item – Surveillance panel chairman and TMC to develop a plan for future BL and FO needs and procurement.

- 5.2 Review of any comments from the ILSAC/Oil Committee meeting held April 12th. **There was no discussion on this item.**
- 5.3 The disposition of the Malibu engines be discussed. A motion should be made that GM allow labs that have engines the option of buying their engine (if need be), and thus be able to perform internal testing. **GM says these engines should only be used to gather data for the industry and/or Test Improvement Task Force.**

Motion – Allow laboratories to use the MY2012 LY7 engines that were donated by GM for private purposes.

George Szappanos / Dan Worcester / Failed 1-7-4

5.4 Can we dispose of the current used VID engines in our inventory?

It is lab discretion on how they dispose of these engines. They will not have core value for the 2012 engines. However there are concerns that some related parts may need to be procured for future testing. For example, fuel rails. It is recommended labs hold these engines until the 2012 version are procured.

Action Item – Identify a list ancillary components needed to last the life of the Sequence VID test with both the MY2009 and MY2012 engines and provide to GM.

5.4 TMC Report

- a. All test types are now in one presentation. See Attachment 4.
- b. 1010 targets have been updated.
- c. 541-1 is being introduced at new references.
- d. FEI1 and FEI2 are in control.
3. There is a lot of each reference oil available.

6.) Next Meeting

At the call of the chairman.

7.) Meeting Adjourned

The meeting adjourned at 9:43 AM.

Charlie Leverett, Dan Worcester, second. Unanimous.

Sequence VI Surveillance Panel conference Call

March 27, 2012 9:00-12:00

Call in #: 800-391-9177

Pass Code: 4875645502

Agenda

1.0) Roll Call

2.0) Approval of minutes

2.1) Approve the minutes from the 02/21/2012 Sequence VI Surveillance Panel conference call.

3.0) Action Item Review

3.1 OHT to report VID engine usage and expected depletion date at all Surveillance Panel meetings. **44 as-of 02/06/12**

3.2 GM to report to the SP what the last date of purchase for 2012 LY7 engines at the next SP meeting. **01/23/12 moved to mid April**

3.3 GM will check to see if the fixed cam gears can be installed during assembly on 2012 engines. **02/06/12 GM is checking on this**

3.4 A Task Force will be setup to review the current VID Standard with the Scope/Goal being to better standardize, Dave has agreed to chair the task force. **2/06/12 Dave will work on the scope with GM and a meeting will be held March 27 at 14:00 in conjunction with the Seq. VI Semi Annual SP meeting.**

4.) Old Business

None

5.) New Business

5.1 Review of remaining BL & FO oils – Rich did a survey and we need to discuss the outcome.

5.2 Review of any comments from the ILSAC/Oil Committee meeting held April 12th.

5.3 The disposition of the Malibu engines be discussed. A motion should be made that GM allow labs that have engines the option of buying their engine (if need be), and thus be able to perform internal testing.










5.4 Can we dispose of the current used VID engines in our inventory?

6.) Next Meeting

Call of the chairman

7.) Meeting Adjourned

ASTM SEQUENCE VI SURVEILLANCE PANEL

| Name | Address | Phone/Fax/Email | Attendance |
|------------------------------------|--|---|---|
| Bowden, Jason Voting Member | OH Technologies, Inc. P.O. Box 5039 Mentor, OH 44061-5039 | Phone: 440-354-7007 Fax: 440-354-7080 dhbowden@ohtech.com |  |
| Bruce Matthews Voting Member | GM Powertrain Engine Oil Group Mail Code: 483-730-472 823 Joslyn Rd | Pontiac, MI 48340: 248-830-9197 bruce.matthews@gm.com |  |
| Andy Ritchie Voting Member | Infineum 1900 East Linden Ave. Linden, NJ 07036-0735 | Phone: 908-474- Fax: 908-474-3637 | By Phone |
| Ron Romano Voting Member | Ford Motor Company 21500 Oakwood Blvd POEE Bldg Rm DR 167 MD 44 Dearborn, MI 48121-2053 | Phone: 313-845-4068 rromano@ford.com | |
| Leverett, Charlie Voting Member | Intertek Automotive Research 5404 Bandera Road San Antonio, TX 78238 | Phone: 210-647-9422 Fax: 210-523-4607 charlie.leverett@intertek.com | |
| Grundza, Rich Voting Member | ASTM TMC 6555 Penn Ave. Pittsburgh, PA 15206-4489 | Phone: 412-365-1034 Fax: 412-365-1047 Dml@tmc.astm.cmri.cmu.edu | |
| Miranda, Timothy Voting Member | BP Castrol Lubricants USA 1500 Valley Road Wayne, NJ 07470 | Phone: 973-305-3334 Timothy.Miranda@bp.com | |
| Mosher, Mark Voting Member | ExxonMobil 600 Billingsport Road Paulsboro, NJ 08066 | Phone: 856-224-2132 Fax: 856-224-3628 mark_r_mosher@exxonmobil.com |  |
| Caudill, Timothy Voting Member | Ashland, Inc. 21st and Front Streets Ashland, KY 41101 | Phone: 606-329-5708 Fax: 606-329-3009 Tcaudill@ashland.com | |
| Dan Worcester Voting Member | Southwest Research Institute (SwRI) 6220 Culebra Road San Antonio, TX 78228 | Phone: Fax: dan.worcester@swri.org |  |
| Szappanos, George Voting Member | Lubrizol 29400 Lakeland Blvd. Wickliffe, OH 44092 | Phone: 440-347- Fax: 440-347-4096 George.Szappanos@lubrizol.com |  |
| Glaenger, David Voting Member | Afton Research Center 500 Spring Street Richmond, VA 23218 | Phone: 804-788-5214 Fax: 804-788-6358 |  |
| Sutherland, Mark Voting Member | Chevron Oronite Company LLC 4502 Centerview Ste. 210 San Antonio, TX 78228 | Phone: 731-5605 Fax: 731-5621 msut@chevrontexaco.com |  |
| Robert Stockwell Voting Member | ConocoPhillips Lubricants R&D Passenger Car Engine Oil GM POWERTRAIN | office 580-767-6894 Robert.T.Stockwell@conocophilli ps.com 210-563-0785 ROBERT.STOCKWELL@GM.COM |  |
| Jim Linden VOTING MEMBER | Toyota | lindenjim@hotmail.com |  |
| Haiying Tang | CIMS 482-00-13 800 Chrysler Dr. Auburn Hills, MI USA | HT146@Chrysler.com | |

ASTM SEQUENCE VI SURVEILLANCE PANEL

| Name | Address | Phone/Fax/Email | Attendance |
|------|---------|-----------------|------------|
|------|---------|-----------------|------------|

Guest Present at meeting

| | | | |
|-----------------------|------------------|------------------------------------|------------|
| WILLIAM A BUSCHER III | SWRI | wbuscher@swri.edu | WIFE |
| CHRISTIAN PORTER | AFTON | CHRISTIAN.PORTER@AFTONCHEMICAL.COM | PH/RA |
| Ed Altman | AFTON | Ed.Altman@aftonchemical.com | S/A |
| Todd Dvorak | AFTON | todd.dvorak@aftonchemical.com | ASTM |
| Doyle Borse | Infinium | doyle.borse@infinium.com | Bill Borse |
| KURT KAPP | CHEVRON PHILLIPS | KNAPPK@CPNEW.COM | |
| Jeff Clark | TMC | jac@astmtmc.cmu.edu | |
| SEAN MOYER | TMC | sam@astmtmc.cmu.edu | |
| Rich Grundza | TMC | reg@astmtmc.cmu.edu | |
| RON ROMANO | FORD | RROMANO@FORD.COM | |
| CLAYTON KNIGHT | TEI | CKnight@TEI-NET.COM | |
| FERRY BRYE | LUBRIZOL | TEROME.BRYE@LUBRIZOL.COM | |
| JIM CARTER | HALTERMANN | JECARTER@JHALTERMANN.COM | |
| MATT BOWDEN | OH TECHNOLOGIES | mjbowden@ohtech.com | |
| DWIGHT BOWDEN | " | DWBOWDEN@OHTECH.COM | |
| JO MARTINEZ | ORONITE | jogm@chevron.com | |
| Scott Stap | Chev Performance | Scott.Stap@Tgidirect.com | |
| Jeff Kettman | Chev Performance | Jeff.Kettman@gm.com | |

Sequence VID Surveillance Panel
March 27, 2012
9:00AM – 2:00PM
Omni Corpus Christi Hotel, Bayfront Tower
Corpus Christi, TX

Motions and Action Items

As Recorded at the Meeting by Bill Buscher

1. Motion – Accept the minutes of the 03.17.2012 VID SP CC.
Unanimous.
Charlie Leverett, Jason Bowden, second.

2. Action Item – Surveillance panel chairman and TMC to develop a plan for future BL and FO needs and procurement.

3. Motion – Allow laboratories to use the MY2012 LY7 engines that were donated by GM for private purposes.

George Szappanos / Dan Worcester / Failed 1-7-4

4. Action Item – Identify a list of ancillary components needed to last the life of the Sequence VID test with both the MY2009 and MY2012 engines and provide to GM.



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Attachment 4

ASTM D02.B1 Semi-Annual Report Passenger Car Reference Oil Testing

April 2012

Passenger Car Engine Oil Testing Executive Summary

- ▶ **IIIF**
 - No significant monitoring issues.
- ▶ **IIIG/A/B**
 - Ten tests obtained on reference oil 435-2. Potential target update to be discussed at March meeting.
- ▶ **IVA**
 - Reference oil 1006-2 reintroduced February 2, 2012. Calibration periods with 1006-2 reduced to generate additional data for targets.
- ▶ **VG**
 - Replacement oil for 925-3 approved, oil being obtained by TMC.

Passenger Car Engine Oil Testing Executive Summary

- ▶ VIB
 - No test activity this period.
- ▶ VID
 - Targets Updated in December for reference oil 1010.
 - Results reported on new blend of 541
- ▶ VIII
 - No significant monitoring issues.

Calibrated Labs and Stands*

| Test | Labs | Stands |
|----------|------|--------|
| IIIF | 3 | 3 |
| IIIG/A/B | 6 | 15 |
| IVA | 3 | 5 |
| VG | 4 | 8 |
| VIB | 0 | 0 |
| VID | 5 | 10 |
| VIII | 3 | 4 |

*As of 3/31/2012

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Test Activity Levels

»» October 1, 2011 –
March 31, 2012

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Sequence Tests

| Test Status | Validity Code | IIIF | IIIG | IVA |
|-----------------------------|---------------|-----------|-----------|-----------|
| Acceptable Calibration Test | AC | 7 | 12 | 9 |
| Failed Calibration Test | OC | 1 | 3 | 2 |
| Operationally Invalid | LC | 0 | 0 | 1 |
| Aborted | XC | 1 | 1 | 0 |
| Abandon Stand/Eng | MC | 0 | 0 | 3 |
| Decoded/Donated | NN/AG | 0 | 0 | 7 |
| Assigned, not reported | | 1 | 0 | 0 |
| Total | | 10 | 16 | 22 |

Sequence Tests (cont.)

| Test Status | Validity Code | VG | VID | VIII |
|-----------------------------|---------------|----------|-----------|----------|
| Acceptable Calibration Test | AC | 8 | 26 | 5 |
| Failed Calibration Test | OC | 0 | 1 | 4 |
| Operationally Invalid | LC | 0 | 1 | 0 |
| Aborted | XC | 0 | 0 | 0 |
| Abandon Stand/Eng | MC | 0 | 2 | 0 |
| Decoded/Donated | NN/AG | 1 | 10 | 0 |
| Assigned, not completed | | 0 | 0 | 0 |
| Total | | 9 | 40 | 9 |

Failed Tests

| Test Status | Test | Number of Tests |
|--|------|-----------------|
| Screened ACLW >20µm | IIIF | 1 |
| Severe Viscosity Increase | IIIG | 1 |
| Severe Viscosity Increase and WPD | IIIG | 1 |
| Mild Average Cam Wear | IVA | 4 |
| Stand EWMA Precision Alarm, FEI2 | VID | 1 |
| Severe Stripped Viscosity Result | VIII | 2 |
| Severe Stripped Viscosity, BWL Precision Alarm | VIII | 2 |
| Total | | 10 |

Lost Tests*

*Invalid and aborted tests

| Test Status | Cause | IIIF | IIIG | IVA | VG | VID | VIII |
|--------------|--------------------------------|----------|----------|----------|----------|----------|----------|
| Aborted | Oil Temperature Control | 1 | 0 | 0 | 0 | 0 | 0 |
| Aborted | Blown Head Gasket | 0 | 1 | 0 | 0 | 0 | 0 |
| Invalid | Engine Oil Thermocouple Failed | 0 | 0 | 1 | 0 | 0 | 0 |
| Invalid | Knock Sensor Wiring Issue | 0 | 0 | 0 | 0 | 1 | 0 |
| Total | | 1 | 1 | 1 | 0 | 1 | 0 |

Test Severity

»» October 1, 2011 –
March 31, 2012

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Test Severity (cont.)

▶ VID

- FEI1 and FEI2 are in control.

- Charts shown in [Appendix 1.e.](#)

▶ VIII

- BWL parameters is in control.
- Stripped Viscosity in severe action alarm

- Charts shown in [Appendix 1.f.](#)

Test Precision

»» October 1, 2011 –
March 31, 2012

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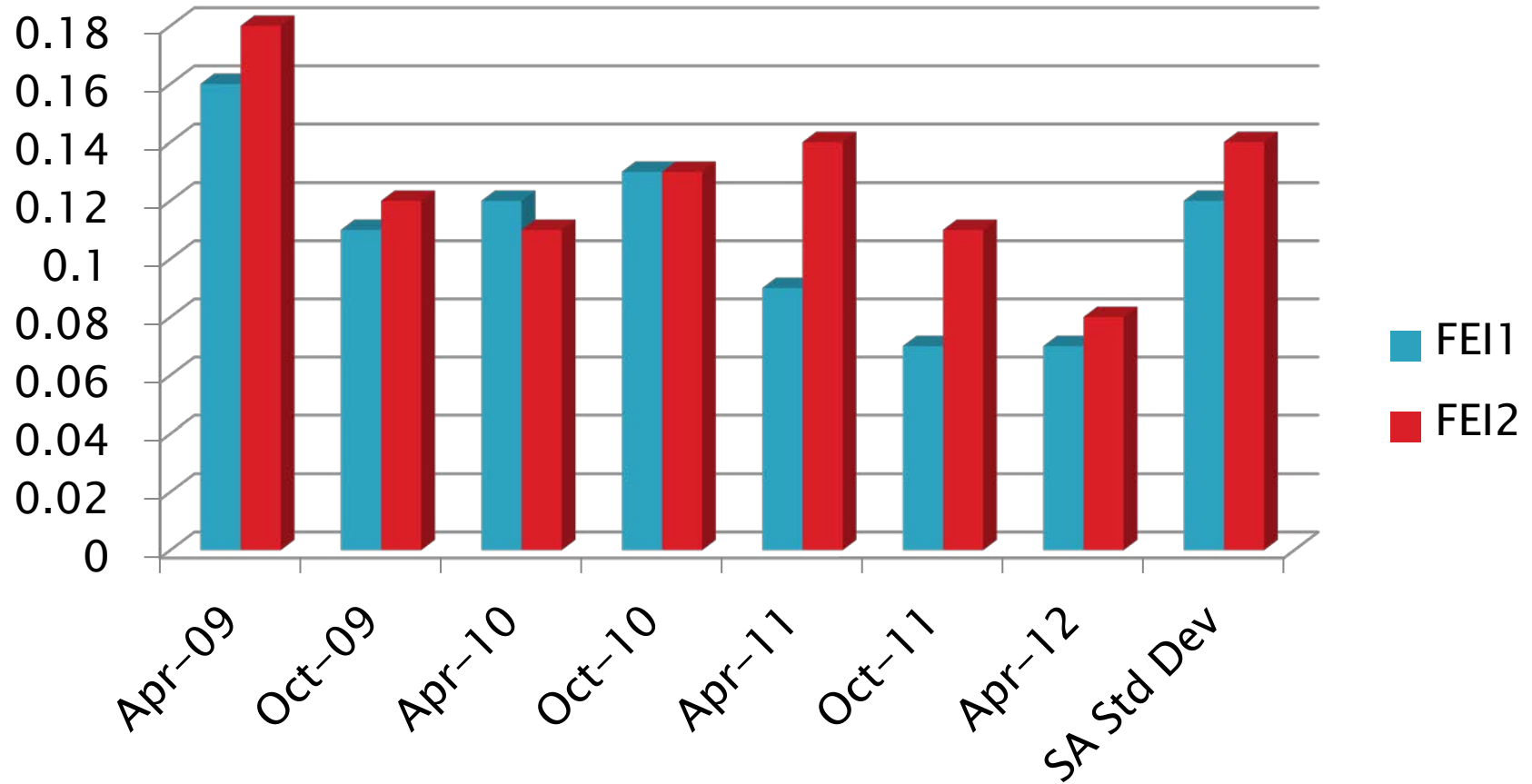


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Test Precision Estimates

- ▶ Presented on an six month basis.
- ▶ Data presented for past four years.

Sequence VID Precision Estimates



Information Letters

»» October 1, 2011 –
March 31, 2012

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Information Letters*

| Test | Date | IL | Topic |
|------|--------------------|---------------|---|
| IIIG | November 29 , 2011 | 11-4, Seq. 34 | Added provisions for strainers in coolant system Updated tolerances for cam and lifter measurement devices |
| IIIG | December 12, 2011 | 11-5, Seq. 35 | Added First-in, First-out criteria for specific hardware and corrected harmonic balancer p/n |
| VID | January 11, 2012 | 12-1, Seq. 9 | Clarified procedure for oil additions during new engine break-in |

*Available from TMC Website

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Reference Oil Inventory

»» Actions, Re-blends, Inventories
and Estimated Life

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Reference Oil Re-blends

- Oils with ~ 2 years or less supply
 - Re-blends no longer available
 - Oils Affected
 - 925-3 and 1007
 - A replacement oil for 925-3 has been approved, TMC contacting supplier to obtain
 - 1007 replaced with 1006-2 in IVA

Reference Oil Re-blends

- Oils with ~ 2 years or less supply
 - Re-blends available
 - Oils Affected
 - 541-1 and 435-2
 - Both Test areas actively working on introducing these reblends.
 - 435-2 targets reviewed at 3/28/12 meeting

Reference Oil Inventory Estimated Life

| Oil | Tests | Original Blend Amount | Quantity Shipped in last 6 months | TMC Inventory | Lab Inventory | Estimated Life |
|-------|-------|-----------------------|-----------------------------------|---------------|---------------|----------------|
| 433-1 | IIIF | 1045 | 40 | 198 | 48 | 2.5 years |
| 434 | IIIG | 550 | 0 | 5 | 12 | <1 year |
| 434-1 | IIIG | 660 | 0 | 254 | 24 | 5+ years |
| 435 | IIIG | 550 | 0 | 2 | 4 | <1 year |
| 435-2 | IIIG | 550 | 37 | 437 | 28 | 5+ years |
| 438 | IIIG | 990 | 24 | 712 | 32 | 5+ years |
| 540 | VID | 1100 | 25 | 463 | 40 | 5+ years |
| 541 | VID | 550 | 35 | 5 | 45 | <1 year |

Reference Oil Inventory Estimated Life

| Oil | Tests | Original Blend Amount | Quantity Shipped in last 6 months | TMC Inventory | Lab Inventory | Estimated Life |
|--------|---------------|-----------------------|-----------------------------------|---------------|---------------|----------------|
| 541-1 | VID | 550 | 25 | 515 | 20 | 5+ years |
| 542 | VID | 1100 | 85 | 358 | 65 | 5+ years |
| 704-1 | VIII | 897 | 12 | 206 | 10 | 5+ years |
| 925-3 | VG | 975 | 0 | 10 | 6 | <1 year |
| 1006-2 | IVA, VG, VIII | 5500 | 91 | 3772 | 63 | 5+ years |
| 1007 | IVA, VG | 1968 | 40 | 21 | 41 | <1 year |
| 1009 | IVA, VG | 1100 | 34 | 379 | 33 | 5+ years |
| 1010 | IIIG, VID | 1100 | 55 | 712 | 60 | 5+ years |

LTMS Deviations

»» October 1, 2011 –
March 31, 2012

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LTMS Deviations

- Two IVA LTMS Deviation in Current Period
 - Test sounded a stand precision EWMA Alarm, cleared after one test, Alarm due to change in hardware and oil selection and stand calibrated with out additional tests
 - 2nd deviation removed results from abandoned cam batch from lab control charts

Historical Count of PCEO LTMS Deviations

| Test | LTMS Deviations |
|------|-----------------|
| IIIF | 5 |
| IIIG | 5 |
| IVA | 7 |
| VG | 8 |
| VID | 1 |
| VIII | 3 |

Quality Index Deviations

»» October 1, 2011 –
March 31, 2012

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Quality Index Deviations

- Two PCEO Quality Index Deviations this period
III G Deviation issued for EBP and Load Control problem.
IVA Deviation issued for EBP.

Historical Count of PCEO Quality Index Deviations

| Test | Quality Index Deviations |
|------|--------------------------|
| IIIF | 25 |
| IIIG | 11 |
| IVA | 28 |
| VG | 38 |

TMC Laboratory Visits

»» October 1, 2011 –
March 31, 2012

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TMC Lab Visits

- Two III lab visits this period.

No issues at one lab, identified discrepancies in fuel injector flow measurements

- Two VID lab visits this period.

No issues identified during visits.

Test Area Timelines

»» October 1, 2011 –
March 31, 2012

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Test Area Timeline Additions

| Test | Date | Topic | IL |
|------|----------|---|------|
| IIIG | 20111129 | Added provisions for strainers in coolant system Updated tolerances for cam and lifter measurement devices | 11-3 |
| IIIG | 20111212 | Added First-in, First-out criteria for specific hardware and corrected harmonic balancer p/n | 11-4 |
| VID | 20120111 | Clarified procedure for oil additions during new engine break-in | 12-1 |
| IVA | 20120204 | Reintroduced reference oil 1006-2, targets with N = 4 | |
| IVA | 20120209 | Updated standard deviation for severity adjustments | |

*As of 3/31/2012

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Additional Information

»» October 1, 2011 –
March 31, 2012

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Additional Information

- ▶ Available on TMC Website:
 - Live Reference Test Data Bases
 - Surveillance Panel Meeting Minutes
 - Test Area Alarm Logs
 - Complete Test Area Timelines
 - LTMS Manual

- ▶ www.astmtmc.cmu.edu



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Appendix 1 PCMO Reference Oil Testing Control Charts April 2012

Appendix 1.e

Sequence VID Control Charts

» Severity, Precision, and CuSum

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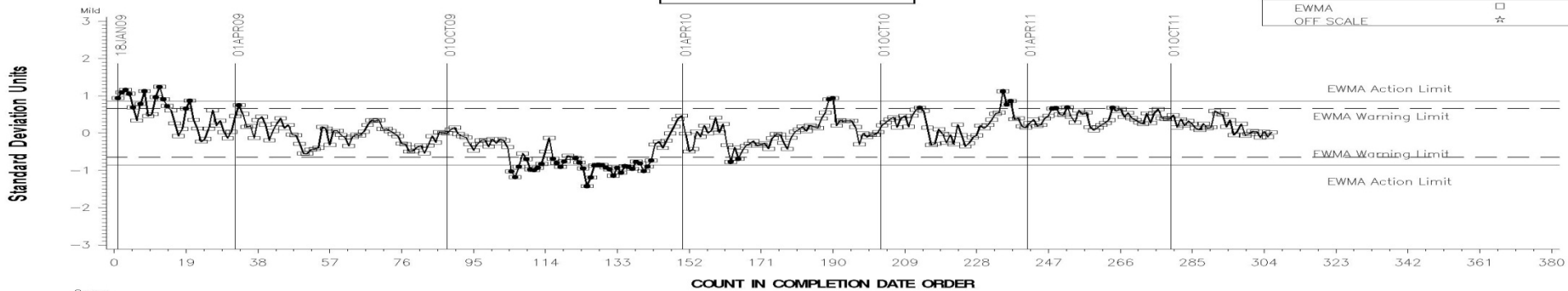


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SEQUENCE VID INDUSTRY OPERATIONAL VALID DATA

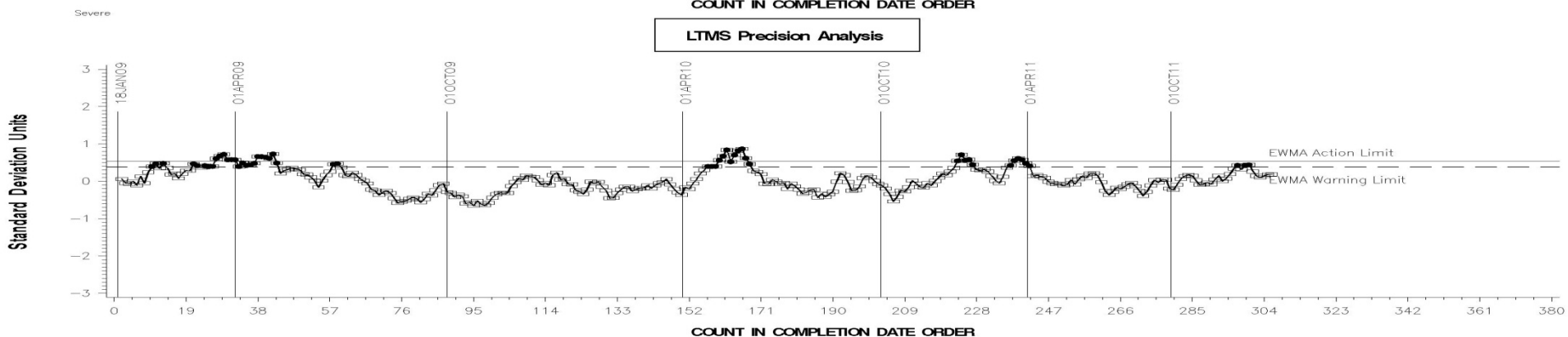
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LTMS Severity Analysis



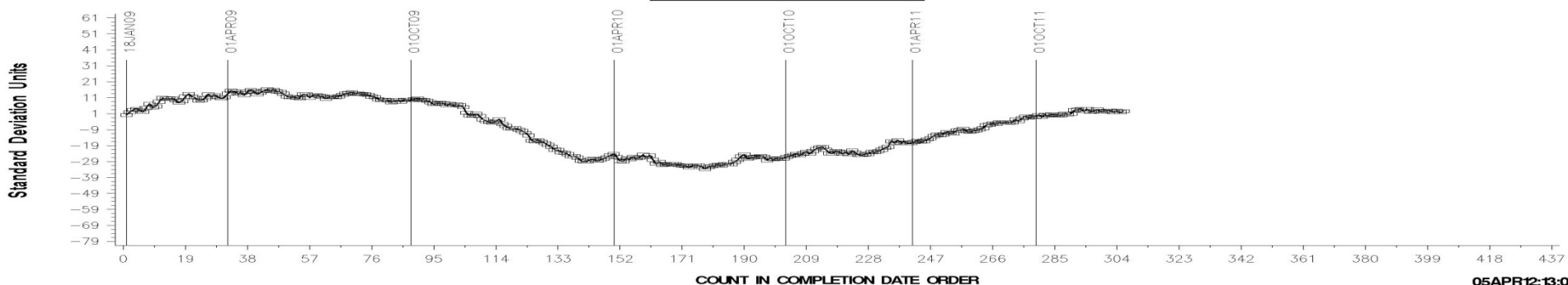
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LTMS Precision Analysis



COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis



COUNT IN COMPLETION DATE ORDER

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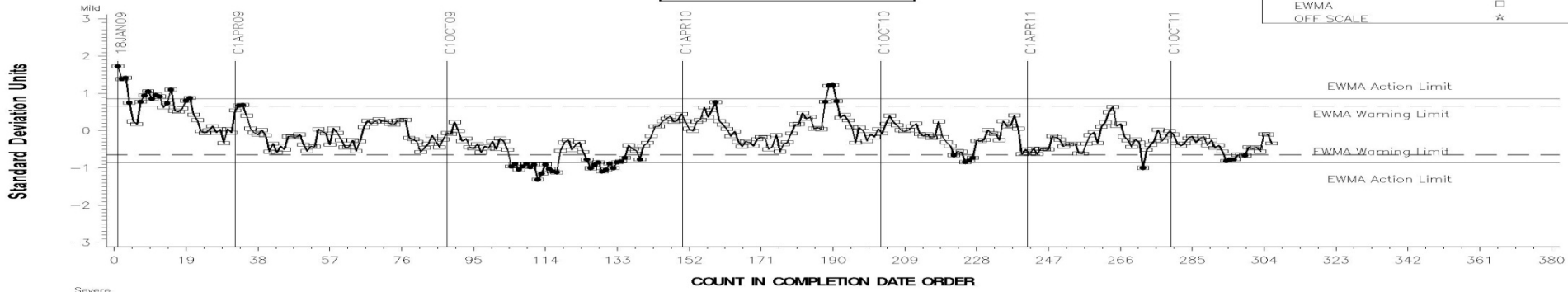
Test Monitoring Center

<http://astmtmc.cmu.edu>

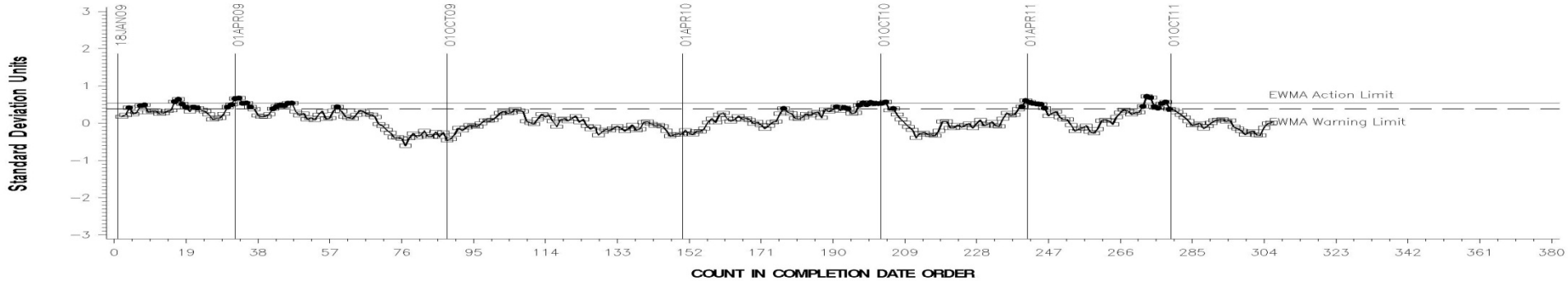


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LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

