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Unapproved Minutes of the November 20, 2013
Sequence IV Surveillance Panel Meeting.

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The meeting was called to order by Chairman Buscher at 8 AM Eastern Time.

A copy of the agenda is included as attachment 1.

A list of attendees is included as attachment 2.

A review of the meeting structure for this meeting and for future meetings was discussed and it was suggested by Andy Ritchie that the TGC be reconvened to discuss fuel issues, LTMS, etc. It was also suggested that the TGC be broken into several smaller groups and convene an automotive TGC in conjunction with Next spring's B0.01 panel meetings.

November 20, 2013 Sequence IV Surveillance Panel

No membership changes were noted.

Minutes from the October 15, 2013 Surveillance panel were approved with no comments.

Review of action items from the previous meeting: Action items were reviewed and their status is detailed in attachment 3.

PDI Software Update Availability

The PDI software needs to have trace overlays available due to crown on lifter. Current PDI may not be usable as PDI is not interested in updating software to address the overlay and current software is written for Windows. Discussions with Toyota in Japan disclosed that Mititoyo may have a device capable of performing these measurements with overlay. The Surveillance Panel Chair and Toyota will follow up with PDI via formal letter to see if PDI will address the software update issue.

Fuel Supplier Report

The fuel supplier report was not discussed and moved down to be addressed at later in the meeting.

TMC Report

The TMC report (attachment 4) was given and accepted and there were no questions regarding the ACC report.

Hardware status

SwRI is out of hardware and is trying to calibrate with 99 cams which were believed to be mild. SR had obtained an acceptable result on a shakedown and had run a reference which came out 2.05s mild. SwRI is attempting to reference again and if acceptable has sufficient 99 cams to conduct tests for two periods. IAR inventory is good through the end of 2014 to early 2015. They also included 99 cams in their estimate of available hardware. LZ has sufficient cams for a year or so. Ashland has approximately 20 cams. No other issues were noted. Andy noted that without the new hardware, will be out of hardware end of 2014. LZ and IAR indicated that they will be good till the new hardware is available.

OHT Update on Cam Grinding

Jason Bowden stated LZ and OHT inspected cams shipped from Nissan North America and 62 were rejected due to bending, scratching, chipped, etc. The results of the inspections were sent to Nissan and the Surveillance Panel Chair. Bill indicated there has been no response from Nissan on RMA for the rejected cams. Remaining hardware has been repackaged and shipped to the vendor for traces, bend measurements, etc. Jason indicated they had planned on doing 100% traces but their vendor indicated traces may not be useful. Their vendor felt it better to do bend and surface measurements. The vendor plans to conduct an audit of 32 cams for surface finish, then proceed to grinding and make sure they are flat. Jason plans to meet with the vendor on 12/2/2013. Jason is going to have the vendor proceed with 4 cams. The vendor has been having some issues with heels of the cam, specifically chips and minor edge damage and laboratory contact as well as Jason have instructed the vendor not to worry about these minor defects on the heels of the cam. Jason expects to begin regrinding a week or so after the 12/2/2013 meeting. Jason will instruct the vendor to make partial shipments once the cams have had full post inspection and Surface finish (Rsk, Ra WT) are established to use as targets for the process. Al Lopez asked if the plan was still to ship limited quantities of cams as they became available and Al and Bill agreed to let SR have first cams. However Al would like one cam for inspection and

OHT agreed to provide one to Lubrizol as well. Al and Bill noted that they believed some of the mild results on the 99 cams was the result of residual material from processing and requested OHT ensure that the regrinding process leaves no residual material. The vendor will need to remove freeze plugs to process these cams, and the vendor will source freeze plugs. Bill noted there were cams around 2004 which were missing freeze plugs and Nissan supplied them. Bill indicated he will obtain these plugs. Action Item was assigned to provide the source for the cam freeze plugs and an additional action item was assigned to check for convex lobes on prior to regrinding at OHT. Afton noted their pdi software is windows NT. Nissan asked if it would be possible to obtain one shipper for freight. Jason feels Nissan believes issue was carrier, but OHT still believes it was packaging. A copy of Nissan's email is included as attachment 5. A single carrier won't fix packaging issue, as both shippers had issues. OHT would provide packaging to Nissan for shipping. Cams come from Japan through Nissan NA, then to OHT. An action item was assigned to the chair to contact NNA indicating the 3 labs purchasing hardware directs NNA to coordinate directly with OHT for future. Action Items were also assigned for labs to contact Nissan to determine the status of replacement material for the damaged cams and the Chair is to contact Nissan regarding the status of other components purchased for the life of the test.

IVB status

Fred Gerhart gave a presentation regarding the status of IVA development (attachment 6). CPD is making cams, but presently no stand parts are available. Initial development tests did not rank oils as the current IVA test. Fred indicated that in some cases the results were 10 times higher than expected. Bill commented that iron levels are highly indicative of wear levels much like the IVA. Initial development was performed at 300 hours test length and test length may decreased to 175 hours. Fuel dilution in the Toyota test increases over time, with iron levels fairly linear to somewhat exponential. Test parts were made available for members to review. Intake cam is different than the exhaust cam. Discussions took place on further test development. The current test development is using KA24E fuel. Fred feels there is a fuel influence with the Toyota test. The test will continue to use KA24E fuel as the other test which uses this fuel is not interested in changing to a different fuel.

Fuel Supplier Report

Haltermann expects there will be no issues for future supply. This fuel is blended as needed.

Golden Stand Concept

Labs who are considering running the IVB test provided their feedback. Comments related to coast and viability of the test. Concerns were expressed about availability of stands relative to timing of the matrix. Apprehension was expressed that industry partners may be approving something without cost estimate, and members may not get fair market value. The Sequence III experience with Kunding was mentioned and that involved company not familiar with rigors of building components for testing. Several members expressed concerns that there may be less than two months to get the stand installed and operating and others suggested the primary concern should be to have stands available to labs to participate in the precision matrix. Mark Mosher detailed ExxonMobil's concerns specifically that there maybe constrains at different labs. For example, the type of thermocouples used in the stand as well as other components. Also, it will be necessary for the stand to meet lab safety requirements. Stand parts availability needs to be addressed as parts for the stand will need to be available in hours, not days, from supplier. There were also concerns that a stand designed by one lab might be mandated across industry and the stand may have been constructed out of components "on hand" at the lab, but not other labs. Teri Kowalski indicated that the stand was constructed with components based on specifications from Toyota. Discussions then took place regarding what level of testing needs to

November 20, 2013 Sequence IV Surveillance Panel

take place and how much time might be needed to prove a stand is ready for matrix testing. The VID experience was reviewed and considerable discussion took place with how to determine when stands are ready to go. Bill Buscher estimated it would take about two months, and that is aggressive, for shakedown and running two results. Several other members commented that the challenge might be integrating data acquisition from the stand with the lab system. Bill suggested a Task Force be formed for data acquisition. Jerry, calibrate, tuning, build, so you could be dealing with an additional month. Al Lopez questioned when an order for the stand can be placed. It was suggested that the end of February might be the "wish date: for stands to be available for purchase. Dave Glaenzer questioned what happens if you install a stand and get the wrong answer, what do you do. The panel agreed that the path forward would be to finalize the stand configuration, determine pricing, and determine when stands will be available for purchase.

Scope and objectives

Objectives were reviewed, discussed and modified as necessary. No changes were made to the scope. Updated objectives are included as attachment 7.

There was no old business.

As an item of new business Bill noted that there are some duplications in sections of the procedure and it was agreed to form a procedure review task force to be headed by Fred Gerhart to identify and address any inconsistencies within procedure.

The meeting was adjourned at 10:42 AM.

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

Attachment 1

Sequence IV Surveillance Panel

San Antonio, TX

Southwest Research Institute, Building 209

November 20, 2013






8:00 a.m. - 10:00 a.m.

A G E N D A

1. Chairman comments
2. Attendance sign-in sheet distribution
3. Membership changes
4. Motion and Action recorder
5. Approval of minutes for 10/15/2013 All
6. Action item review Chairman
7. Fuel supplier report – KA24E Green Fuel Haltermann
8. TMC report (*Any questions?*) TMC
9. ACC report (*Any questions?*) TMC
10. Status of test hardware at labs Labs
11. Update on camshaft regrinding OHT
12. Review labs feedback on Toyota's Sequence IVB Golden Stand concept All
13. Update on Sequence IVB test development Toyota
14. Review Scope & Objectives Chairman
15. Old business
16. New business
17. Motion and action item review
18. Next meeting
19. Adjourn

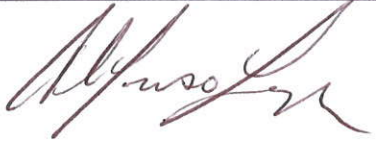
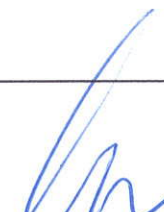

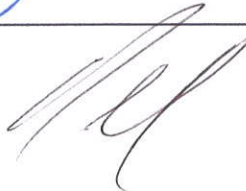

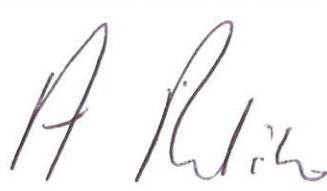
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November 20, 2013

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Sequence IV Surveillance Panel
October 15, 2013
9:00AM – 5:00PM
Southwest Research Institute
San Antonio, TX

Motions and Action Items

As Recorded at the Meeting by Bill Buscher

1. Action Item – Labs to bring back Toyota’s Sequence IVB Golden Stand concept to their respective companies to digest the information and generate questions and concerns. A follow up discussion will occur at the next surveillance panel meeting.
To be discussed at today’s meeting.
2. Action Item – The TMC to conduct a lab survey of all potential Sequence IVB test labs to audit them for any restrictions to stand installation within their respective labs.
Completed. 5 labs responded no restrictions, 1 lab noted they would like to relocate the fluid conditioning rack from rear to side.
3. Action Item – Toyota to supply a list of connections and locations of connections for the data acquisition systems and power supplies (type, signal and range) and a list of support system minimum requirements (i.e. process water, chilled water, etc.).
Incomplete, but progressing.
4. Action Item – The Sequence IVB Golden Stand supplier to issue “ballpark” pricing to the potential Sequence IVB test labs as soon as possible.
Incomplete, but progressing.
5. Action Item – Potential Sequence IVB test labs to check their PDI software version to see if they have the Windows 98 software that is capable of pre-test/post-test trace overlays.
Incomplete, but progressing. 1 lab is XP???
6. Action Item – SwRI to contact PDI to request a future software upgrade that will reintroduce trace overlay capabilities.

Completed. PDI indicates they are not interested. We need to convince PDI to do this or find alternate measurement equipment for Seq. IVB.

7. Action Item – Surveillance panel chair and JAMA members to contact Nissan Japan (NML) to discuss the condition of the 217 camshafts, from the Nissan partial shipment, that were just received at OHT and a plan to resolve the situation.

Completed. Conference call held on October 17, 2013.

8. Motion – Modify ASTM D6891 to add OHT p/n OHTKA24-007-1 (oil cooler stud) to be used along with OHT p/n OHTKA24-005-1 (oil cooler adapter) and OHTKA24-006-1 (unplated oil cooler).

Jason Bowden / Bill Buscher / Passed unanimously

Completed. TMC issued Sequence IVA Information Letter 13-4 on October 29, 2013.

9. Action Item – Table introduction of new IVA reference oil (RO 300) until new Nissan hardware has been introduced at all participating laboratories, or when the surveillance panel deems the IVA hardware situation is acceptable to do so.

Completed.

10. Motion – Modify ASTM D6891 to require labs to report any negative final ACW result as zero. Effective for tests completing on or after 10/15/13.

Jason Bowden / Robert Stockwell / Passed 10-0-5

Completed. TMC issued Sequence IVA Information Letter 13-4 on October 29, 2013.



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

October 2013

Passenger Car Engine Oil Testing Executive Summary

▶ IVA

- TMC reference oil 300, an oil performing in the 50–60 μm range, has been obtained and the panel needs to address its introduction into LTMS. On hold awaiting introduction of build out cams in industry.

Calibrated Labs and Stands*

Test	Labs	Stands
IVA	3	4

*As of 9/30/2013

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Test Activity Levels

»» April 1, 2013 –

September 30, 2013

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Sequence Tests

Test Status	Validity Code	IVA
Acceptable Calibration Test	AC	7
Failed Calibration Test	OC	1
Operationally Invalid by Lab	LC	1
Aborted	XC	1
Test Stand Removed from LTMS	MC	0
Decoded/Donated	NN/AG	1
Total		11

Sequence Tests

Test Status	Validity Code	VG	VID	VIII
Acceptable Calibration Test	AC	4	19	4
Failed Calibration Test	OC	0	6	0
Operationally Invalid	LC	0	3	1
Aborted	XC	1	1	0
Fuel Approval	AF	24	0	0
Operationally Invalid, Lab & TMC	RC	0	0	1
Decoded/Donated	NN/AG	0	23	0
Total		29	52	6

Failed Tests

Test Status	Test	Number of Tests
Severe ACW	IVA	1
Total		1

Lost Tests*

Slide 1 of 2

Test Status	Cause	IIIF	IIIG	IVA	VG	VID	VIII
Invalid	Driveline and Engine Mounting Failure	0	0	1	0	0	0
Aborted	Break-in not Performed on New Cylinder Head	0	0	1	0	0	0

*Invalid and aborted tests

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Lost Tests*

Slide 2 of 2

Test Status	Cause	IIIF	IIIG	IVA	VG	VID	VIII
Invalid	Downtime Exceeded Procedural Limit	0	0	0	0	3	0
Aborted	Engine Coolant Leak	0	0	0	0	1	0
Invalid	Excessive Camshaft Wear	0	0	0	0	0	1
Invalid	High Mechanical Wear	0	0	0	0	0	1
Totals		2	4	2	1	4	2

*Invalid and aborted tests

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Test Severity

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Test Severity

- ▶ IVA

- ACW in severe warning alarm.

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

Test Precision

»» April 1, 2013 –
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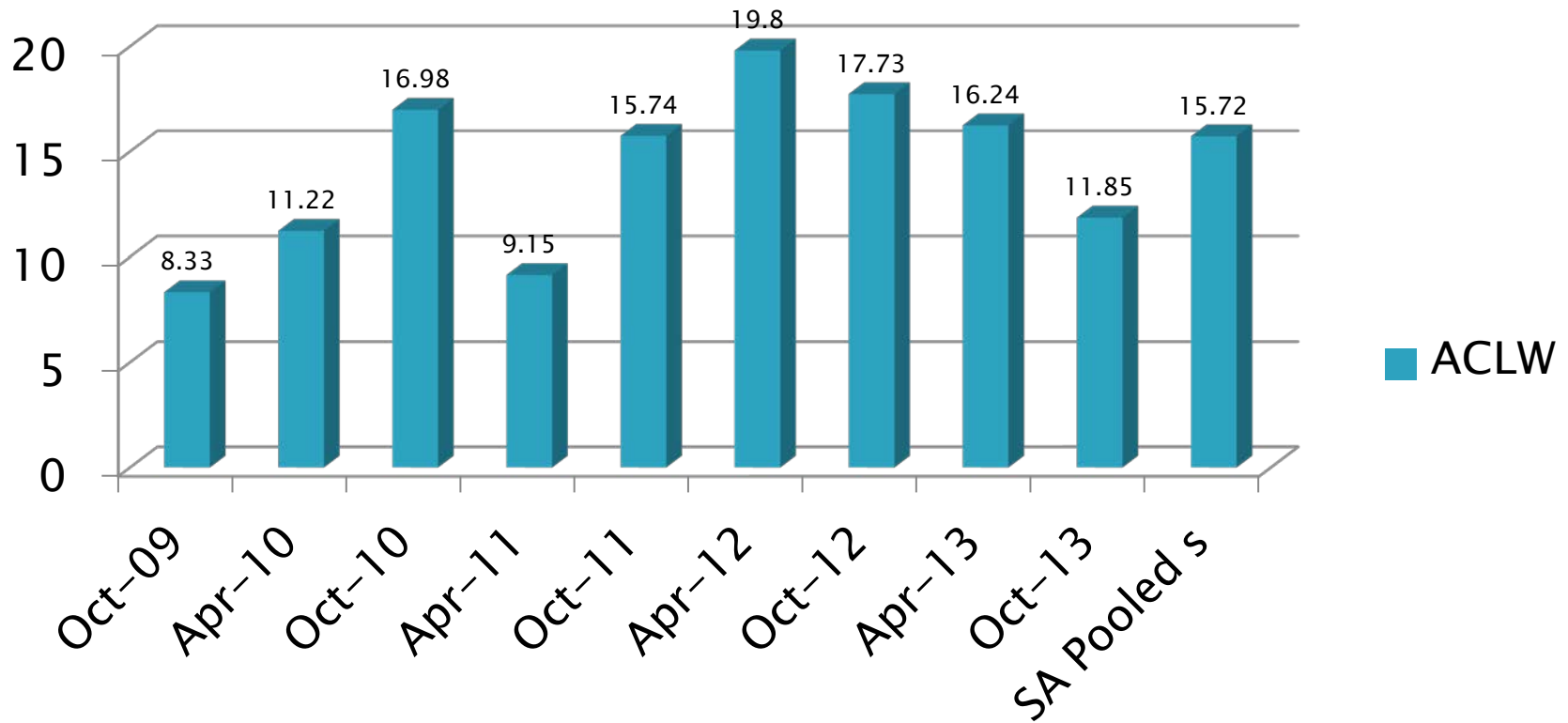
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Test Precision Estimates

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

Sequence IVA Precision Estimates

ACW



Information Letters

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Reference Oil Inventory

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

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LTMS Deviations

»» April 1, 2013 –
September 30, 2013

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LTMS Deviations

Historical Count of PCEO LTMS Deviations

Test	LTMS Deviations
IIIF	6
IIIG	6
IVA	7
VG	8
VID	2
VIII	3

Quality Index Deviations

»» April 1, 2013 –
September 30, 2013

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Quality Index Deviations

- One IIF Quality Index Deviation this period for right exhaust backpressure control

Historical Count of PCEO Quality Index Deviations

Test	Quality Index Deviations
IIF	25
IIIG	11
IVA	28
VG	38

TMC Laboratory Visits

»» April 1, 2013 –

September 30, 2013

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TMC Lab Visits

Test	Number of Labs Visited
III	4
IVA	1
VID	4
VIII	1

Test Area Timelines

»» April 1, 2013 –
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Additional Information

»» April 1, 2013 –
September 30, 2013

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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 October 2013

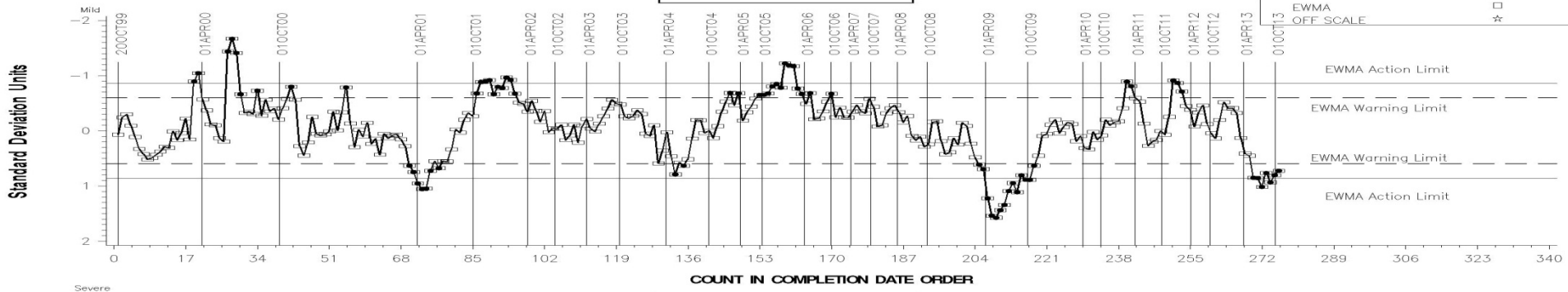
Appendix 1.c

Sequence IVA Control Charts

» Severity, Precision, and CuSum

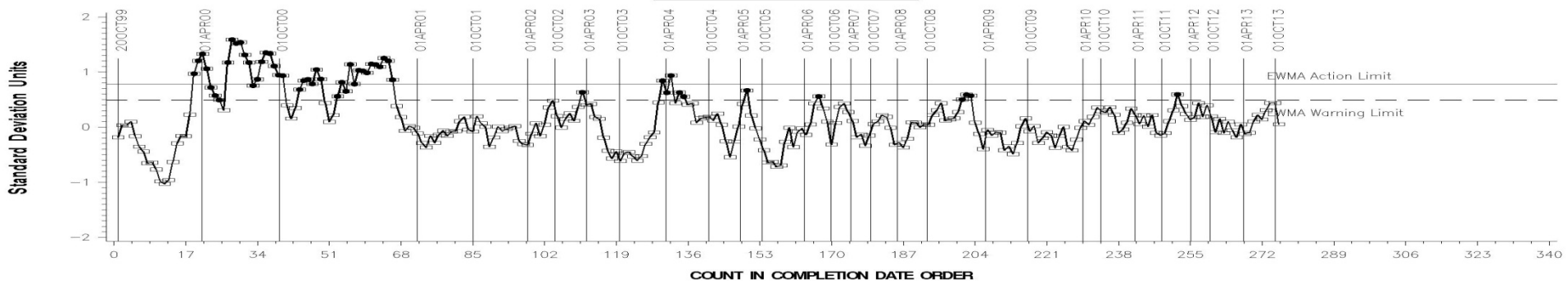
AVERAGE CAM WEAR

LTMS Severity Analysis



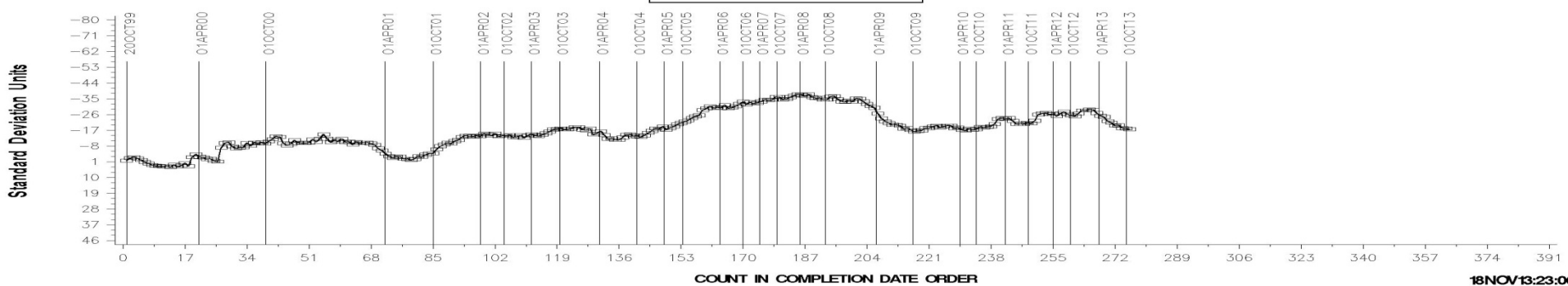
COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis



COUNT IN COMPLETION DATE ORDER

18NOV13:23:06

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Test Monitoring Center

<http://astmtmc.cmu.edu>



A Program of ASTM International

From: [Fields, Stephen](#)
To: [Buscher III, William A.](#)
Subject: RE: IVA SP Meeting - November 20, 2013 San Antonio, TX
Date: Tuesday, November 19, 2013 7:32:38 AM

Good morning, William!

Since we had such a difficult time shipping the cam shafts to OHT, we need to try something different for the balance of shipments to their facility. Each of the test labs are responsible for the freight and although the packaging may not have been robust enough, the freight is not Nissan's responsibility once it leaves our facility. Would it be possible to line up one carrier to transport all three test lab orders to OHT instead of individual shipments? We could still create orders for each lab, but we could combine those into one carrier shipment. Please let me know your thoughts.....thanks!

Stephen B. Fields
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 Supply Chain Management - PCM/CM
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From: Buscher III, William A. [mailto:william.buscher@swri.org]
Sent: Monday, November 18, 2013 10:02 PM
To: Buscher III, William A.; Gerhart, Fred W.; Weber, Ben; X-Jeff A. Clark; 'X-Rich E. Grundza'; 'X-Frank F. Farber'; gordon.farnsworth@infineum.com; James.Gutzwiller@infineum.com; Ray.Seiz@infineum.com; jomc@lubrizol.com; 'X-Phil Scinto'; dhbowden@ohtech.com; BuschWA@aol.com; Dave.Glaenger@aftonchemical.com; mark.r.mosher@exxonmobil.com; tlaudill@ashland.com; Hapjthom@aol.com; jaru@chevron.com; Cknight@tei-net.com; Andrew.Ritchie@Infineum.com; 'X-Jo Martinez '; timothy.miranda@bp.com; Ed.Altman@aftonchemical.com; r.sutherland@shell.com; al.lopez@intertek.com; rromano@ford.com; Jerome.Brys@lubrizol.com; Szappanos, George; Liu, Eric; jecarter@jhaltermann.com; Clark, Sidney L.; Doyle.Boese@infineum.com; Adam Bowden; Jason Bowden; mbowden@ohtech.com; bruce.matthews@gm.com; Mike McMillan; Fields, Stephen; SAGAWA, TAKUMARU; teri.kowalski@tema.toyota.com; Jim Linden; ht146@chrysler.com; greg.guinther@aftonchemical.com; sam@astmtmc.cmu.edu; Mark Sutherland; Zack Bishop; Scott.Lindholm@shell.com; Jeff Hsu; King, Tracey; Wang, Jerry C; robert.stockwell@gm.com; Sinha, Kaustav; Adam E Sworski; Moles, Nathaniel; Rieth, Ryan; Michael.Warholic@infineum.com; Conrad, Michael
Subject: RE: IVA SP Meeting - November 20, 2013 San Antonio, TX

[Agenda for Wednesday's meeting is attached. Let me know if you request any additions.](#)

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From: Buscher III, William A.

Sent: Thursday, October 17, 2013 9:29 AM

To: Gerhart, Fred W.; Weber, Ben; X-Jeff A. Clark; 'X-Rich E. Grundza'; 'X-Frank F. Farber'; 'X-Gordon Farnsworth'; 'X-Jim Gutzwiller'; 'X-Raymond Seiz'; 'X-Jon Carlson'; 'X-Phil Scinto'; 'dhbowden@ohtech.com'; 'BuschWA@aol.com'; 'Dave.Glaenzer@aftonchemical.com'; 'mark.r.mosher@exxonmobil.com'; 'tlcaudill@ashland.com'; 'Hapjthom@aol.com'; 'jaru@chevron.com'; 'Cknight@tei-net.com'; 'X-Andrew Ritchie'; 'X-Jo Martinez'; 'timothy.miranda@bp.com'; 'Ed.Altman@aftonchemical.com'; 'r.sutherland@shell.com'; 'al.lopez@intertek.com'; 'rromano@ford.com'; 'Jerome.Brys@lubrizol.com'; 'Szappanos, George'; Liu, Eric; 'jecarter@jhaltermann.com'; Clark, Sidney L.; 'Doyle.Boese@infineum.com'; 'Adam Bowden'; 'Jason Bowden'; 'mbowden@ohtech.com'; 'bruce.matthews@gm.com'; 'Mike McMillan'; 'Fields, Stephen'; 'SAGAWA, TAKUMARU'; 'teri.kowalski@tema.toyota.com'; 'Jim Linden'; 'ht146@chrysler.com'; X-Greg Guinther; 'sam@astmtmc.cmu.edu'; 'Mark Sutherland'; 'Zack Bishop'; 'Scott.Lindholm@shell.com'; 'Jeff Hsu'; 'King, Tracey'; 'Wang, Jerry C'; 'robert.stockwell@gm.com'; 'Sinha, Kaustav'; 'Adam E Sworski'; 'Moles, Nathaniel'; 'Rieth, Ryan'; Michael.Warholic@infineum.com

Subject: IVA SP Meeting - November 20, 2013 San Antonio, TX

The Sequence IV, V,III and VI Surveillance Panels will meet at SwRI on November 19th and 20th.

SwRI will provide lunch both days at the SwRI cafeteria. The start and end times and proposed times for these panels to convene on each of the two days is below. Panel members must be aware that there is some flexibility here and that the proposed times for each day's schedule may be adjusted, since with agreement from all the panel Chairs we intend to run a continuous schedule and to keep working through the panel agendas for each day in the order listed. Our intention is to work efficiently here and be able to accommodate the panels to allocate additional time to items which might require longer discussion times than anticipated. We have also left open the afternoon of the second day to end no later than 4PM as a contingency to allow for this and provide the opportunity to reopen panel items for further discussion.

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Tuesday November 19th

Sequence VI 9-11

Sequence III 11- Lunch – 3 PM Minimum of 1 hour break for lunch

GMOD update 3PM -4PM

End no later than 5.30 PM

Wednesday November 20th

Sequence IV 8 – 10 AM

Sequence V 10 – Lunch Minimum of 1 hour break for lunch

Ford specific items: Sequence VH, Chain wear, LSPI 1 -2 PM

Afternoon contingency to accommodate possible extensions of the some of these meetings or to reopen deferred panel items.

End no later than 4PM

Hotel information is included below:

Hotel: Marriott Courtyard San Antonio SeaWorld/Lackland

Rate: \$79.95/night (rate as of January 2013, might have changed some)

Phone: 210-647-4100

When you call please mention the **SwRI Group Rate**.

A conference line will also be provided. Call-in information is included below:

Call-in Number: 866-588-1857

Conference Code: 2105226802

A draft agenda will be sent prior to the meeting. If you have any items that you would like to have included on the agenda, please forward them to me. Please forward this announcement to anyone that I might have missed. Thank you.

William A. Buscher III

Chairman, Sequence IVA Surveillance Panel

Tel: (210) 522-6802

Fax: (210) 684-7523

Cell: (210) 240-8990

Status of IVB Test Development at Southwest Research Institute

By Fred Gerhart

November 20, 2013

Test Design Constraints

- **Must be cold temperature wear test**
- **Laboratories currently running IVA or with past IVA experience should be able to run test**



Stand Installations

- Two test stands installed – S19 and S20
- Both originally setup very similar to IVA



S19 Update

- S19 is currently dedicated to RNT (radionuclide technique) for measuring wear real time in order to speed up test development
- Looking at wear rates of camshaft and bucket lifters and have conducted 14 experiments to date.
- Some difficulty due to wear surfaces continuously changing but progress is being made.
- ASTM IVB test will not be RNT.
- RNT is only for experiments.



S20 Update

- Full length testing is conducted on this stand
- Stand is currently offline for revisions
 - Originally one off parts used to setup stands.
Specific test stand setup parts fabricated by CPD are now being installed
 - Changes required for improved temperature control
 - Water cooled rocker cover was added a few months back.
- Hope to be back online next week.



Full Length Tests Update

- Six tests have been conducted using different combinations of ASTM reference oils 1009, 1006-2, and 300.
- First test was scoping work using 1006-2
- Second test was full length 300 hours using 1006-2 with IVA cycle and stock crankcase ventilation. Test result was considered too mild.
- Third test was a more aggressive cycle combining start /stop with elevated conditions and using 1006-2 and stock crankcase ventilation but had to be terminated at 100 hours due to oil thickening.



Full Length Tests Update

- Test 4 was 300 hours long and used ASTM REO 1009 and IVA type of cycle with jacketed rocker cover and true foul air crankcase ventilation. Good wear seen.
- Test 5 used ASTM REO 1006-2. All other conditions matched test 4. Good wear seen
- Test 6 used ASTM REO 300. All other conditions matched test 4. Good wear seen.
- But....



Full Length Tests Update

- Oils did not rank in the same order as in the IVA.
- IVA Ranks oils from mild to worse as 1009, 300, 1006-2
- Tests 4, 5, and 6 ranked oils from mild to worse as 1006-2, 1009, 300
- What happened??



Full Length Tests Update

- Components from REO 1009 (Test 4) were examined using Auger electron spectroscopy
 - Weak AW film present (less than 10 nm thick)
 - Test conditions are too severe for mature AW films to form.
- Plan is to continue testing but dial back severity to see if REO oils rank similar to IVA
 - Increase rocker cover temperature from 20°C to ?
 - Add reduced fresh air flow across valve deck
 - Others?



ASTM Sequence IVA Surveillance Panel

Scope and Objectives

Scope

The Sequence IVA Surveillance Panel is responsible for the surveillance and continued improvement of the Sequence IVA test documented in Test Method D 6891 as updated by the Information Letter system. Data on test precision and laboratory versus field correlation will be solicited and evaluated at least every six months. Improvements in wear measurement technique, test operation, test monitoring and test validation will be accomplished through continual communication with the Test Sponsor and Parts Distributor, ASTM Test Monitoring Center, ASTM Committee D02.B0.01 and the ASTM Passenger Car Engine Oil Classification Panel. Actions to improve the process will be recommended when deemed appropriate based on input from the proceeding. The Panel will review development and correlation of updated test procedures with previous test procedures. This process will provide a suitable test procedure for evaluating an automotive lubricant's effect on controlling cam lobe wear for overhead valvetrain equipped engines with sliding cam followers.

Objectives

Target Date

- | | |
|--|------------------|
| 1. Secure hardware to sustain test through 2016. | <i>June 2014</i> |
| 2. Pursue engine mounting and driveline identification, optimization and maintenance procedure and interval. | <i>Nov 2014</i> |
| 3. Introduce GF-5 technology reference oil 300. | <i>June 2014</i> |

William A. Buscher III, Chairman
Sequence IVA Surveillance Panel

Updated: Nov. 2013

Sequence IV Surveillance Panel
November 20, 2013
8:00AM – 10:00AM
Southwest Research Institute
San Antonio, TX

Motions and Action Items

As Recorded at the Meeting by Bill Buscher

1. Action Item – Surveillance panel chair and Toyota to follow up with PDI requesting a future software upgrade that will reintroduce trace overlay capabilities.
2. Action Item – SwRI to provide OHT with sourcing information for Sequence IVA camshaft rear freeze plug.
3. Action Item – OHT to find out from camshaft regrind vendor if they observed any convex lobes in their pre-regrinding surface profilometer inspections of the 32 camshaft sampling.
4. Action Item – Labs to follow up with Nissan on status of camshaft replacements for the 62 camshafts rejected due to shipping damage.
5. Action Item – Surveillance panel chair to reply to NNA indicating the 3 test labs purchasing Sequence IVA hardware directs NNA to coordinate directly with OHT for future camshaft shipments from NNA to OHT. Indicate OHT is willing to provide individual camshaft packaging, as well as shipping crates/pallets, for shipping from NNA to OHT.
6. Action Item – Surveillance panel chair to request another update from Nissan on status of remaining balance from the industry order, including components other than the balance of camshafts, then report to the purchasing test labs.
7. Action Item – Form a Sequence IVA test procedure editorial review task force, with Fred Gerhart as leader, to further clean up some inconsistencies within the test procedure. Anyone interested, to contact Fred to join the task force.