Minutes of the Sequence VIF Task Force Teleconference Call December 09, 2015 08:00 CST

The thirteenth meeting of the Sequence VIF Task Force was called to order by Chairman Dan Worcester at 08:00 CST. The meeting Agenda is included as Attachment 1. The meeting attendance roster is included as Attachment 2.

Chairman Worcester opened the meeting at 08:00 CST and had no opening comments.

The minutes from the December 02, 2015 meeting were approved as written and are available on the ASTM-TMC web site. Motion for approval by Dan Worcester, second by David Glaenzer.

ftp://ftp.astmtmc.cmu.edu/docs/gas/sequencevi/minutes/VIFTaskForceMinutes20151202.pdf

"Sense Check" testing continues on one stand at Southwest Research. Two runs are complete (RO 543 & RO 542-2) and have been reported to the ASTM-TMC and are available in the database.

ftp://ftp.astmtmc.cmu.edu/refdata/gas/vif/data/

SRI is running their third test with RO 542-2 and will complete it late Friday, December 11. The fourth test at SRI (RO 543) will start Monday, December 14. The stand will then sit idle until Intertek Automotive Research has completed their four tests. IAR is finishing the shake-down of their first stand to be used for "Sense Check" testing. They have an engine that has already completed 150 hour break-in and anticipate starting their first test late this week or early next.

The next call will be held on Wednesday, December 16 at 08:00 CST.

Having no further business, the meeting was adjourned at 08:09 CST.

Respectfully submitted,

David L. Glaenzer, Afton Chemical Corporation

Attachment 1
page 1 of 2

GF-6B Sequence VIF Task Force 12.09.2015

Toll-free dial-in number (U.S. and Canada): (866) 588-1857 International dial-in number: (678) 373-4882 Conference code: 1908975

Scope

The ASTM Sequence VI Surveillance Panel requested a Task Force be formed to determine if the Sequence VIE could be used for 0W 16 oils. The TF will look at development of the VIF test using 100 °C oil temperature and 94 °C coolant temperature for stages 1, 3, 4, and 6.

Objective

Review the Toyota proposal attached and work on selection of reference oils, stands to support testing, and running the Sense Check and test matrices.

The agenda for this meeting is shown below, if you have any additions please send them to me and Cc this distribution.

- 1.0 Chairman's Comments
- 2.0 Roll Call
- 3.0 The VIF Task Force was discussed as part of the Surveillance Panel 12.02.2015. Here are the SP Minutes for review:

ftp://ftp.astmtmc.cmu.edu/docs/gas/sequencevi/minutes/VIFTaskForceMinutes20151202.pdf

- 4.0 Oil 543 is at the labs.
- 5.0 The matrix for VIF testing has been chosen. SwRI has completed the first two tests, 543 and 542-2.

| Run | EOT Hour | SWRI#1 | SwRI#2 | IAR#1 | IAR#2 |
|-----|----------|--------|--------|-------|-------|
| 1 | 350 | 543 | 1011 | 542-2 | 1011 |
| -2 | 550 | 542-2 | 542-2 | 543 | 543 |
| 3 | 750 | 542-2 | 1011 | 543 | 1011 |
| 4. | 950 | 543 | 543 | 542-2 | 542-2 |
| 5 | 1150 | 1011 | 543 | 1011 | 542-2 |
| 6 | 1350 | 543 | 1011 | 543 | 1011 |
| 7 | 1550 | 542-2 | 542-2 | 1011 | 543 |
| 8 | 1750 | 1011 | | 542-2 | |

Stage 1 Sense Check Runs will be tested in 2 engines/2 labs

Stage 2 Sense Check Runs will be tested in the other 2 engines/2labs

TMC543 - Oil 400

5.1 Additional Chem for FEI 2 for the matrix

ICP D-5185

TAN D-664

TBN D-4739

FTIR IIIG METHOD E-168

VIS D-445

5.2 All chemical analysis be done at IAR and be reviewed at the completion of Sense Check tests.

5.3 FEI 1, 2 and Sum for first test on RO 543:

| FEI1 vs. (0.8 BLB2 + 0.2 BLA) FEI2 vs. (0.1 BLB2 + 0.9 | 1.75% | 1.75% |
|--|-------|-------|
| BLA) | 2.33% | 2.33% |
| FEI Sum | | 4.08% |

5.4 FEI 1, 2 and Sum for first test on RO 542-2:

| FEI1 vs. (0.8 BLB2 + 0.2 BLA) | 2.42% | 2,42% |
|----------------------------------|-------|-------|
| FEI2 vs. (0.1 BLB2 + 0.9 BLA) | 1.59% | 1.59% |
| FEI Sum | | 4.01% |

5.5 And FEI 1 estimate for 542-2 repeat:

| FEI1 vs BLB2 | 2.25% |
|--------------|-------|

6.0 Next meeting will be Conference Call on 12.16.2015.

| Name | Affiliation |
|-------------------|---------------------------|
| , vaine | 7,1,114,1011 |
| Adrian Alfonso | Intertek |
| Amol C Savant | Ashland |
| Andrew Ritchie | Infineum |
| Charlie Leverett | Intertek |
| Chris Castanien | Nesteoil |
| Cliff Salvensen | ExxonMobil |
| Cole Hudson | SwRI |
| Dan Worcester Jr. | Chairman, SwRI |
| David Glaenzer | Secretary, Afton Chemical |
| Denny Gaal | ExxonMobil |
| Doyle Boese | Infineum |
| Eric Liu | SWRI |
| Gordon Farnsworth | Infineum |
| Guy Stubs | SwRI |
| Jason Bowden | OH Technologies |
| Jim Linden | Toyota |
| Jo Martinez | Chevron |
| Kaustav Sinha | Chevron |
| Kevin OMalley | Lubrizol |
| Mark Adams | Tribology Testing |
| Mark Mosher | ExxonMobil |
| Martin Chadwick | Intertek |
| Matthew Bowden | OH Technologies |
| Michael Conrad | Lubrizol |
| Mike McMillan | Infineum |
| Nathaniel Moles | Lubrizol |
| Patrick Lang | SwRI |
| Ray Burn | ExxonMobil |
| Rich Grundza | ASTM Test Monitoring |
| Robert Stockwell | Oronite |
| Ron Romano | Ford Motor Company |
| Satoshi Hirano | Toyota |
| Teri Kowalski | Toyota |
| Timothy Cushing | General Motors |
| Todd Dvorak | Afton Chemical |
| Tracy King | Haltermann |
| Valerie Lieu | Chevron |
| William Buscher | Intertek |
| Bob Campbell | Afton |
| Mike Ragomo | ExxonMobil |
| Travis Kotan | SwRI |
| Thomas Hickl | GM Europe |
| Jonas Leber | GM Europe |

| 10/21/ | 11/11/1 | 5 | 12/02/ | 15 | 12/09/ | 15 |
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