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COMMITTEE D02 ON PETROLEUM PRODUCTS, LIQUID FUELS, AND LUBRICANTS

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Issued: October 20, 2015
Reply to: Dan Worcester
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These are the unapproved minutes of the 10.20.2015 Sequence VI Surveillance Panel call.

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The meeting was called to order at 8:00 AM Central Time by Chairman Nathan Moles.

Agenda

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

1.0 Roll Call

The Attendance list is **Attachment 2**.

2.0 Approval of minutes

- 2.1 Approval of the minutes of the 10.13.2015 meeting.

MOTION: Approve the minutes from the 10.13.2015 conference call.

[Nathan Moles, Jason Bowden, second] Approved unanimous.

3.0 Action Item Review

- 3.1 OHT to provide update on current VIE inventory and service engine order. –OHT
There are 49 of the original order [-001] of engines remaining, and 144 service engines [-002].
OHT is still waiting for fixed cam gears.
- 3.2 Labs reported VID engine inventory and expected depletion date of VID engines.
-Expected life of engines range from 2016 Q1 to 2018
Lab1: 1 engines
Lab2: 3 engines
Lab3: 4 engines
Lab4: 1 engines SwRI has one engine left.

4.0 Old Business

- 4.1 List of items to be reviewed after the Precision Matrix
Do we really need to run three RO tests to establish the new engine for LTMS?
Discussion of reducing the new reference requirement to two oils, then a third oil run after a defined number of candidates.
Discussion of using FEI 2 and FEI Sum for references to match candidate pass/fail criteria.
Discussion of evaluating 80/20 ratio of BL before to after for FEI 1 and 10/90 for FEI 2.
Should the acceptance bands value of 1.96 be rounded up? Due to the rounding on FEI 1 and 2 the actual pass limit is 1.91 and 1.92.
-SP chair and test sponsor to investigate what is needed to establish VID equivalent limits for VIE.
This will be an on-going effort.
- 4.2 Discussion on start of precision matrix [PM].
-Start week of November 9th.
-Awaiting 5W-30 Tech 1 (RO 544).
TMC is blending 5W-30 Tech 1 [now RO 544] and is working on analysis then will ship to labs. All labs will be able to support start of the precision matrix the week of 11.09.2015. BOI/VGRA will not be included unless that group and AOAP approve the oils for the matrix to be inserted after run # 3 on matrix engines. Here is the matrix design approved by the industry [VIE Approach 2.5ai]:

| Step | Run Order | SW1 | SW2 | IAR1 | IAR2 | LZ | Afton | Ashland | XOM | |
|------|------------------|--------|--------|--------|--------|--------|--------|---------|--------|------------|
| | SOT Engine Hours | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | Engine Hrs |
| 1 | 1 | 542-2 | 1010-1 | 5w30T1 | 542-2 | 5w30T1 | 1010-1 | 5w30T1 | 1010-1 | 350 |
| | 2 | 5w30T1 | 542-2 | 1010-1 | 1010-1 | 1010-1 | 542-2 | 542-2 | 5w30T1 | 550 |
| | 3 | 1010-1 | 5w30T1 | 542-2 | 5w30T1 | 542-2 | 5w30T1 | 1010-1 | 542-2 | 750 |
| | 4 | 1010-1 | 5w30T1 | 542-2 | 5w30T1 | 542-2 | 5w30T1 | 1010-1 | 542-2 | 950 |
| 2 | 5 | | 1010-1 | | 542-2 | 1010-1 | | | | 1150 |
| | 6 | | 542-2 | | 1010-1 | 5w30T1 | | | | 1350 |
| | 7 | | 5w30T1 | | 1010-1 | 1010-1 | | | | 1550 |
| | 8 | | 542-2 | | 5w30T1 | 542-2 | | | | 1750 |
| | 9 | | 542-2 | | 5w30T1 | 1010-1 | | | | 1950 |
| | 10 | | 5w30T1 | | 542-2 | 5w30T1 | | | | 2150 |
| | 11 | | 542-2 | | 1010-1 | | | | | 2350 |
| | EOT Engine Hours | 950 | 2350 | 950 | 2350 | 2150 | 950 | 950 | 950 | Total Runs |
| | Runs/Engine | 4 | 11 | 4 | 11 | 10 | 4 | 4 | 4 | 52 |

4.3 Update from task force, to investigate alternative test procedure Sequence “VIF” that would improve 0W-16. – Dan Worcester/Satoshi Hirano Intertek and SwRI will start the Sense Check portion of the matrix parallel to the precision matrix. Oil 400 [now RO 543] will be at labs in time to support the starts. Here is the matrix design approved for the VIF:

| Run | EOT Hour | Engine 11 | Engine 21 | Engine 12 | Engine 22 |
|-----|----------|-----------|-----------|-----------|-----------|
| 1 | 350 | Oil 400 | TMC1011 | TMC542-2 | TMC1011 |
| 2 | 550 | TMC542-2 | TMC542-2 | Oil 400 | Oil 400 |
| 3 | 750 | TMC542-2 | TMC1011 | Oil 400 | TMC1011 |
| 4 | 950 | Oil 400 | Oil 400 | TMC542-2 | TMC542-2 |
| 5 | 1150 | TMC1011 | Oil 400 | TMC1011 | TMC542-2 |
| 6 | 1350 | Oil 400 | TMC1011 | Oil 400 | TMC1011 |
| 7 | 1550 | TMC542-2 | TMC542-2 | TMC1011 | Oil 400 |
| 8 | 1750 | TMC1011 | | TMC542-2 | |

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

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

4.4 Update from task force to investigate option to prolong usable life of the available VIE engines. –Adrian Alfonso/Bill Buscher IAR has the short block and heads. There will be a Build and Parts Review at IAR with SwRI 10.21.2015.

5.0 New Business

5.1 Face to face meeting for Seq. VI SP scheduled in the afternoon on 10/27 at USCAR facility in Southfield MI. OHT is sponsoring.

Call In Info Below:
Phone Number: (712) 432-0927
Code: 976140

6.0 Next Meeting.

The next meeting will be as noted above.

The meeting adjourned at 8:17 AM.

Sequence VI Surveillance Panel Conference Call Agenda October 20 @ 9:00-10:00AM EST

Call-in information is included below:

Call-in Number: 866-528-2256
Conference Code: 3744024

1.0) Roll Call

Do we have any membership changes or additions?

2.0) Approval of minutes

2.1 Approve the minutes from the October 13, 2015 Sequence VI Surveillance Panel.

<ftp://ftp.astmtmc.cmu.edu/docs/gas/sequencevi/minutes/VIMinutes20151013Conference%20call.pdf>

3.0) Action Item Review

3.1 OHT to provide update on current VIE inventory and service engine order. –OHT

3.2 Update of VID engine inventory and expected depletion date of VID engines.

-Expected life of engines range from 2016 Q1

Lab1: 2 engines

Lab2: 2 engines

Lab3: 4 engines

Lab4: 1 engines

4.) Old Business

4.1 List of items to be reviewed after the Precision Matrix

-Do we really need to run three RO tests to establish the new engine for LTMS?

-Discussion of reducing the new reference requirement to two oils, then a third oil run after a defined number of candidates.

-Discussion of using FEI 2 and FEI Sum for references to match candidate pass/fail criteria.

- Discussion of evaluating 80/20 ratio of BL before to after for FEI 1 and 10/90 for FEI 2.
- Should the acceptance bands value of 1.96 be rounded up? Due to the rounding on FEI 1 and 2 the actual pass limit is 1.91 and 1.92.
- SP chair and test sponsor to investigate what is needed to establish VID equivalent limits for VIE

4.2 Discussion on start of precision matrix.

- Start week of November 9th.
- Awaiting 5W-30 Tech 1 (RO 544).

4.3 Update from task force, to investigate alternative test procedure Sequence "VIF" that would improve 0W-16. – Dan Worcester/Satoshi Hirano

4.4 Update from task force to investigate option to use short blocks to supplement engine inventory. –Adrian Alfonso/Bill Buscher

4.5 Face to face meeting for Seq. VI SP scheduled in the afternoon on 10/27 at USCAR facility in Southfield MI. OHT is sponsoring.

Call In Info Below:

Phone Number: (712) 432-0927

Code: 976140

5.) New Business

5.1 None

6.) Next Meeting

Next Tuesday (reoccurring weekly meeting)

7.) Meeting Adjourned

ASTM SEQUENCE VI

| Name | Address | Phone/Fax/Email | Attendance |
|----------------------------------|------------------------------|---|---------------|
| Adrian Alfonso Voting Member | Intertek Automotive Research | Phone: (210) 838-0431 adrian.alfonso@intertek.com | ATTEND |
| Jason Bowden Voting Member | OH Technologies | Phone: (440) 354-7007 jhbowden@ohtech.com | ATTEND |
| Timothy Caudill Voting Member | Ashland | Phone: (606) 329-5708 Tlcaudill@ashland.com | |
| Tim Cushing Voting Member | General Motors | Phone: (248) 881-3518 timothy.cushing@gm.com | |
| David Glaenzer Voting Member | Afton | Phone: (804) 788-5214 Dave.Glaenzer@aftonchemical.com | ATTEND |
| Rich Grundza Voting Member | ASTM TMC | Phone: (412) 365-1034 reg@astmtmc.cmu.edu | ATTEND |
| Jeff Hsu Voting Member | Shell | Phone: (832) 419-3482 j.hsu@shell.com | ATTEND |
| Tracey King Voting Member | Haltermann | Phone: tking@jhaltermann.com | |
| Teri Kowalski Voting Member | Toyota | Phone: (734) 995-4032 teri.kowalski@tema.toyota.com | |
| Dan Lanctot Voting Member | TEI | Phone: (210) 690-1958 dlanctot@tei-net.com | |
| Brian Marks Voting Member | BP Castrol | Phone: (973) 686-3325 Brian.Marks@bp.com | ATTEND |
| Nathaniel Moles Voting Member | Lubrizol | Phone: (440) 347-4472 Nathaniel.Moles@Lubrizol.com | ATTEND |
| Mark Mosher Voting Member | ExxonMobil | Phone: (856) 224-2132 mark_r_mosher@exxonmobil.com | ATTEND |
| Andy Ritchie Voting Member | Infineum | Phone: (908) 474-2097 Andrew.Ritchie@infineum.com | |
| Ron Romano Voting Member | Ford Motor | Phone: (313) 845-4068 rromano@ford.com | |
| Kaustav Sinha Voting Member | Chevron Oronite | Phone: (713) 432-6642 LFNQ@chevron.com | ATTEND |
| Haiying Tang Voting Member | Chrysler | Phone: (248) 512-0593 HT146@Chrysler.com | |
| Dan Worcester Voting Member | Southwest Research Institute | Phone: (210) 522-2405 dan.worcester@swri.org | ATTEND |

ASTM SEQUENCE VI

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| | | | |

ASTM SEQUENCE VI

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|------|---------|-----------------|------------|
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