

# Sequence VH Task Force | MINUTES

Revision Date 11/15/2016 11:37:00 PM

<b>Relevant Test:</b>	Sequence VH
<b>Note Taker:</b>	Chris Mileti
<b>Meeting Date:</b>	11-09-2016
<b>Lubrizol Attendees:</b>	
<b>Comments:</b>	Conference call in preparation for 11-17-2016 Sequence V Surveillance Panel meeting.

## 1. CONFERENCE CALL:

### a) Rating "Round Robin" with Lubrizol Pistons:

i) Intertek has reviewed the Lubrizol pistons.

#### ii) Intertek comments:

- (1) There is significant variation in the way that different Raters perceive the varnish on the top-half of the skirt.
- (2) As a result, the 50% Average Piston Varnish (APV) ratings definitely show more variability than the full skirt APV ratings.

iii) The group agreed that the most prudent course of action is to perform both full-skirt and half-skirt piston varnish ratings through the Precision Matrix.

iv) The newly discovered variation in the 50% APV ratings between labs and between Raters is concerning.

- (1) The Raters need to have a meeting to resolve this issue as soon as possible.
- (2) Intertek will summarize the ratings that are currently available.

#### v) Lubrizol and Afton comments:

- (1) The Raters reported that the VG rating template does not fit correctly over the VH piston skirt.
- (2) Lubrizol and Afton are curious as to why the skirt of the VH piston is longer than that of the VG piston.
  - (a) The dimensions of these pistons should be identical.

#### vi) Ashland Comments:

- (1) Ashland has revised the rating template to accommodate the VH piston skirt.
- (2) SWRI is concerned that there may be reproducibility errors when the different labs print out the new Ashland template.
  - (a) SWRI will review the rating procedure to see if there is a specification for the distance from the piston crown to the top of the template.
- (3) The new Ashland template needs to be printed with the A4 format in order to be scaled correctly.

### b) Operational Validity:

#### i) Intertek Comments:

- (1) Intertek has completed (4) Sequence VH prove-out tests.
- (2) They originally planned to submit (2) of these tests for an operational data review.

- (a) The MOA only requires each lab to submit two valid prove-out tests for acceptance into the Precision Matrix.
- (b) However, they agreed to submit the data from all (4) tests at the request of the other labs.

**ii) TMC Comments:**

- (1) The TMC is mandated to review the operational data from submitted prove-out tests to confirm that the lab's QI calculations are correct.

**iii) Transitions Between Stages:**

- (1) The labs questioned whether the transitions should be reviewed for operational validity as well.
- (2) Intertek noted that (without the new process water heating circuit) they had difficulty achieving the oil temperature set-point window ( $7\pm 2$  minutes) during the Stage 1→2 transition.

**iv) Lubrizol Comments:**

- (1) The dependent labs basically had to shakedown their Sequence VH stands and run their prove-out tests at the same time.
- (2) As a result, it is probably best to use [a somewhat lenient] engineering judgement when reviewing the operational data from the prove-out tests.
- (3) The group can then use more strict criteria when reviewing the operational data from Precision Matrix tests.
- (4) *TMC Comment:*
  - (a) This means that some of the prove-out tests may be considered valid even though they have negative QI values.
  - (b) The Sequence IIIH has set a precedent for using prove-out tests that have negative QI values.
- (5) Ford is in agreement with the Lubrizol proposal.

**v) QI Limits:**

- (1) The Sequence VG has some of the tightest QI limits of any ASTM test.
  - (a) The Sequence VG test was developed utilizing relatively primitive data acquisition equipment.
  - (b) The coarse measurements of this old equipment probably made it possible to maintain these tight limits.
  - (c) It is much more difficult to maintain these tight limits with modern, high-speed data acquisition systems.

**(2) Stage 3 Speed QI:**

- (a) The Stage 3 Speed QI is a good example of unreasonably tight limits with the Sequence VG/VH test.
- (b) It is impossible to control the engine's idle speed within the current limits.
- (3) The group agreed that some of the QI limits should be expanded after the VH Precision Matrix is complete.

**c) REO1009 Inventory:**

- i) The TMC only has 9-gallons of REO1009 in their inventory.
- ii) The supplier of this chemistry has not yet completed the requested re-blend.
  - (1) The re-blend was originally expected 6-months ago.
- iii) Fortunately, each lab should have enough REO1009 in their existing inventory to complete their matrix commitments.
  - (1) They should also have enough left over for repeat tests.

**iv) Ford Comments:**

- (1) REO1009 is required to provide backwards compatibility between the VG and VH tests.
- (2) This is especially important now that REO1006-2 is no longer available.

**d) Goals for Surveillance Panel Meeting:**

- i) There is a reasonable chance that the Surveillance Panel will vote on the Precision Matrix.
- ii) Lubrizol's participation in the Precision Matrix will be contingent on the submission of their 2<sup>nd</sup> valid prove-out test.
- iii) *When should the Precision Matrix start (assuming that both the Surveillance Panel and AOAP vote favorably)?*

**iv) A. Ritchie posed three potential start dates:**

- (1) December 1<sup>st</sup>
- (2) December 9<sup>th</sup> – 15<sup>th</sup>
  - (a) The AOAP voting results should be available during this time.
- (3) January 2, 2017
  - (a) The labs could start immediately after the holiday season.
- (4) It may be helpful to synchronize the starting dates of the VH and IVB Precision Matrices.
- v) The group agreed that it will probably be best to start the Precision Matrix in early December.
  - (1) Ritchie cautioned the group not to rush into the Precision Matrix.
  - (2) Several of the other development groups feel that their test could have benefited by waiting longer to start matrix testing.

**e) Remaining Open Items:**

**i) Ashland had one extremely mild prove-out test result.**

- (1) Ashland reviewed the operational data from this test and it appears to have been run according to the procedure.
- (2) TMC cautioned that the group should not start the Precision Matrix if it is aware of significant lab differences.
- (3) Ashland said that it is prepared to start a repeat test on Friday.

**ii) Afton had a test in which the Stage 1 oil pressure dropped precariously.**

- (1) The oil pressure remained low until some of the fuel dilution volatilized in Stage 2.
- (2) The Ford technicians at their local dealership said that low oil pressure is not uncommon with these cylinder heads.
- (3) *REO1011 Test at Intertek:*
  - (a) Intertek will submit their REO1011 operational data for review.
  - (b) REO1011 is a 0W16 low-viscosity oil.
  - (c) There was a 100kPa difference in oil pressure between the right-side and left-side cylinder heads.
- (4) The group needs to discuss this oil pressure problem at the Surveillance Panel meeting.
  - (a) There may be operational problems with low-viscosity oils.

Action Items	Person responsible	Completion Date
Summarize 50% APV ratings from "round robin" with Lubrizol pistons.	Intertek	
The Raters need to find a solution to the excessive variation with the 50% APV ratings.	Raters	
Determine if the distance from the top of the crown to the rating template is specified in the procedure.	SWRI	

Follow-up Notes/Updates:	Initials	Date Added

Follow-up Notes/Updates:	Initials	Date Added