

Sequence IVB Surveillance Panel Teleconference Minutes

Tuesday February 5, 2019

9:30 a.m. EST

1.0) Attendance

See attachment 1 for a list of attendees.

See attachment 2 for agenda

2.0) PAP TG Presentation to IVB Panel

The panel reviewed the presentation from PAP TG regarding status of IVB procedure which will be reviewed during the ACC meeting on 2/14/19 (attachment 3). There were discussions regarding the proposal to not run ACC registered tests after oils with vis grades < 0W-16, as it may impact retro-active registration. No further action was taken.

3.0) Review of Appendix K

The panel reviewed an updated appendix k. It was noted that E_p was < 1.0. No action needs to be taken by the panel. It is anticipated that the test procedure will have completed balloting by June ASTM and the panel is awaiting a category reference oil. Research report is planned but not started at this time.

4.0) BOI-VGRA Matrix

Intertek is running row 2 on both stands. SwRI stand 1 is running the second test and stand 2 has completed a re-run of failed reference on stand 2. The panel briefly discussed actions to be taken for row 5 of the matrix, but no decision was arrived at during the meeting.

5.0) Next Meeting







To be held at the call of the chair.

6.0) Meeting Adjourned

The meeting adjourned at 10:20 a.m.





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SEQUENCE IV SURVEILLANCE PANEL**

February 5, 2019

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Sequence IV Surveillance Panel

Conference Call

February 5, 2019

8:30 a.m. - 10:30 a.m.

A G E N D A

1. Chairman comments.
2. ACC PAPTG presentation to surveillance panel.
3. Review and update the Sequence IVB's Appendix K - Template for Acceptance of New Tests.
4. BOI/VGRA matrix update from testing labs.
5. Motion and action item review.
6. Next meeting.
7. Adjourn.

January 28, 2019

ACC PAPTG

Sequence IVB Readiness

ACC Actions for IVB Code of Practice Acceptance Consideration



American[®]
Chemistry
Council

Petroleum
Additives Panel

Objective for Today's Call



- Review with Toyota the status for Seq. IVB acceptance into the Code of Practice (COP).
 - This does not impact the conclusion of the tech demo.
 - Today's discussion will not be about the ILSAC GF-6 proposed limits.

ACC will Strongly Consider Acceptance of Seq. IVB Test into the COP with the Following

- Review the final analysis by statisticians of the new break in procedure.
 - Follow data to the right calibration system.
- An improvement of the cam lobe failure rate to under 10%.
 - Currently available data cannot separate technology, vis grade and engine operations.
 - Current reference oils are not GF-6 capable.
- A stipulation that, at this time, no registered tests can be run in an engine after oils with viscosity less than 0W-16.
- Completion of the statistical analysis of the BOI/VGRA matrix.

Next Steps



- ACC PAPTG will request time to present this information at the next Seq. IVB SP meeting/call and discuss next steps.
- ACC PAPTG will request time to present this information at the February 14, 2019 AOAP meeting.

ADDENDUM K1

TEMPLATE CHECKLIST

Purpose

The Checklist for Comparing Tests to the Template is used to assess progress in new engine test development against the Code Acceptance Criteria and Action Plans. The checklist is updated periodically during the course of test development and is provided to, and discussed with, the appropriate ASTM test development task force.

The rating scale for comparing test development to the Template is as follows:

A - Completed

B - In Progress

C - Planned

D - No Action

Summary:

- A. Precision and Discrimination – $E_p < 1.0$**
- B. Severity and Precision Control Charting – LTMS for AVLI and FEWMEOT is in place.**
- C. Interpretation of Multiple Tests – Planned to use MTAC.**
- D. Action Plan**
 - (D.1) Reference Oils - Currently all reference oils represent GF-5/SN technology. The Seq. IV surveillance panel's intent is to acquire at least one reference oil that represents SN+ and/or GF-6 technology. Such an oil might be able to be acquired from the BOI/VGRA matrix slate of oils.**
 - (D.3) Test Fuel - Haltermann is the supplier of KA24E Green fuel. TGC fuel task force is addressing contracts for all test fuel supply. Seq. IV surveillance panel has defined a procedure with instructions for adding a new batch of fuel over an existing batch of fuel.**
 - (D.4) Test Procedure – Test procedure, engine assembly manual and golden stand manual drafts are posted in the TMC website. AVLI and FEWMEOT are proposed pass/fail parameters.**
 - (D.6) Calibration, Monitoring and Surveillance – LTMS for AVLI and FEWMEOT is in place.**

Test Name Sequence IVB Assessment Date Feb. 5, 2019

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action

Appendix K - Template for Acceptance of New Tests

Checklist for Comparing Tests to the Template

A. Precision and Discrimination

A.1 Discrimination

Requirements

A.1.1 Proof of concept- does the test discriminate between oils of differing expected performance (for example- between good and bad oils)? A

Recommended Approaches

A.1.2 Is there evidence of additional discrimination based on all available data? A

Comments:

A.1.1 Prove-Out Data (n=9)

Oil 300 has statistically higher AVLI (Average Volume Loss, Intake) than oil 1012 at 0.07 level of significance.

A.1.2 Precision Matrix Data (n=28)

Oil 300 has statistically higher AVLI (Average Volume Loss, Intake) than oil 1012 at 0.02 level of significance. Two high Oil 300 results have large influence on oil discrimination. Without these two results, difference between oils 300 and 1012 is not statistically significant.

Oil 300 has statistically higher FEWMEOT (unadjusted) than oil 1012 at 0.01 level of significance.

A.2 Precision

Requirements

A.2.1 Is the E_p 1.0 or greater for all pass/fail criteria? No A

Parameter	dp	Spp	Ep
AVLI	0.1266	0.1680	0.8
FEWMEOT	0.2513	0.2869	0.9

Comments:

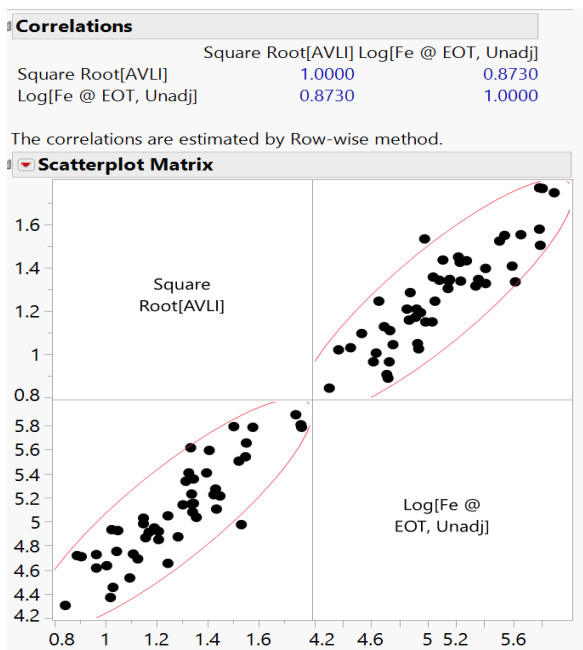
RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action

A.3 Parameter Redundancy

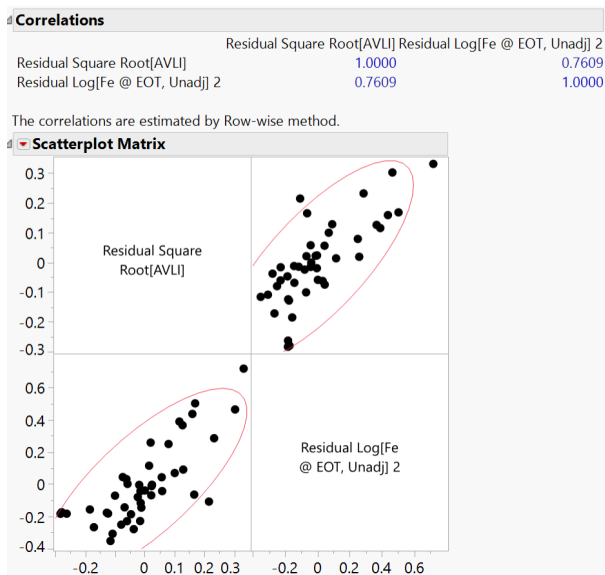
Requirements

A.3.1 For each pair of pass/fail parameters, is the correlation across oil means insignificant? If the correlation across oils is significant are these parameters closely related in repeat tests within oils?

A



Correlation between sqrt(AVLI) and Ln(FEWMEOT) is statistically significant. These two parameters are closely related in repeat tests within oils.



RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action

B. Severity and Precision Control Charting

Requirements

- B.1 Is an LTMS for reference oil tests in place which is consistent with the ACC Code Appendix A? A
- B.2 Are appropriate data transforms applied to test results? A
- B.3 Is a suitable severity adjustment system in place? A

Comments:

C. Interpretation of Multiple Tests

Requirements

- C.1 Is a suitable system in place to handle repeat tests on a candidate oil (MTEP)? C
Type: **MTAC** TLM MRS
- C.2 Has a method for the determination and handling of outlier results been defined? D

Comments: **Planned to use MTAC.**

D. Action Plan

D.1 Reference Oils

Recommended Approaches

- D.1.1 Does at least one of the reference oils represent current technology? B
- D.1.2 Is there a reference oil that is at the intended performance level of the new category? C
- D.1.3 Is reference oil supply and distribution handled through an independent organization? A
- D.1.4 Is the storage of oils defined and in place? A
- D.1.5 Is a turnover plan defined/in place to ensure uninterrupted supply of reference oil and an orderly transition to reblends? A

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action

D.1.6 Is a process for introducing replacement reference oils defined and in place? A

D.1.7 Are oils blended in a homogeneous quantity to last 5 years? A

Comments: Currently all reference oils represent GF-5/SN technology. The Seq. IV surveillance panel's intent is to acquire at least one reference oil that represents SN+ and/or GF-6 technology. Such an oil might be able to be acquired from the BOI/VGRA matrix slate of oils.

D.2 Test Parts

Requirements

D.2.1 Are all critical parts identified? A

D.2.2 Is a system defined/in place to maintain uniform hardware? A

D.2.3 Is there a system for engineering support and test parts supply? A

Recommended Approaches (if indicating yes on D.2.1, D.2.2-7 are requirements)

D.2.4 Are critical parts distributed through a Central Parts Distributor (CPD)? A

D.2.5 Are critical parts serialized, and their use documented in test report? A

D.2.6 Are all parts used on a first in/first out basis? A

D.2.7 Are all rejected critical parts accounted for and returned to the CPD? A

D.2.8 Does the CPD make status reports to the test surveillance body at least semi-annually? A

D.2.9 Is there a quality control and turnover plan in place for critical test parts, including identification and measurement of key part attributes, a system for parts quality accountability, a turnover plan in place for simultaneous industry-wide use of new parts or supply sources? A

D.2.10 Is the CPD active in industry surveillance panel/group, and in industry sponsored test matrices? A

Comments: OHT and TEI are the CPDs for IVB test.

D.3 Test Fuel

Requirements

D.3.1 Is the fuel specified and the supplier(s) identified? A

Recommended Approaches

D.3.2 Is a process in place to monitor fuel stability over time? A

D.3.3 Are approval guidelines in place for fuel certification? A

D.3.4 If the test fuel is treated as a critical part of the test procedure:
Is an approval plan and severity monitoring plan for each fuel batch in place? A

D.3.5 Is a quality control plan defined and in place to assure long term quality of the fuel? A

D.3.6 Is a turnover plan defined, in place and demonstrated to ensure uninterrupted supply of fuel? A

Comments: Haltermann is the supplier of KA24E Green fuel. TGC fuel task force is addressing contracts for all test fuel supply. Seq. IV surveillance panel approved a procedure with instructions for adding a new batch of fuel over an existing batch of fuel.

D.4 Test Procedure

Requirements

D.4.1 Are test preparation and operation clearly documented in a standard format, e.g., ASTM, CEC? B

D.4.2 Are test stand configuration requirements documented and standardized? A

D.4.3 Is operational validity defined for all controlled parameters? A

Recommended Approaches

D.4.4 Is a research report published documenting test precision for reference oils? C

D.4.5 Are there published documents detailing:
Field correlation? **N/A**
Test development history? A

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action

- D.4.6 Are routine engine builder workshops planned/conducted? A
- D.4.7 Do all rate and report parameters judge test interpretation, or judge engine oil performance? A

Comments: The ASTM draft procedure is nearing completion. Completion for surveillance panel review is expected by mid-March 2019, with ASTM balloting expected to be completed by the June 2019 ASTM meetings. An ASTM research report is planned, which will include documentation on the test development history of the Sequence IVB test. Numerous PCEOCP and AOAP presentation files also include details on the test development history. Field correlation data is not currently available.

D.5 Rating and Reporting of Results

Requirements

- D.5.1 Are the reported ratings for any single parameter in a test from single raters (i.e. not averages from various raters)? D

Recommended Approaches

- D.5.2 Are routine rater workshops conducted/planned? D

Comments: IVB test does not include ratings, but does utilize a similar approach as rating for metrology.

D.6 Calibration, Monitoring and Surveillance

Requirements

- D.6.1 Is a process in place for independent monitoring of severity and precision with an action plan for maintaining calibration of all laboratories? A
- D.6.2 Are stand, lab, and industry reference oil control charts of all pass/fail criteria parameters used to judge calibration status? A
- D.6.3 Does the specified calibration test interval allow no more than 15 non-reference oil tests between successful calibration tests? A
- D.6.4 Is an industry surveillance panel in place? A

Comments: