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COMMITTEE D02 on PETROLEUM PRODUCTS, LIQUID FUELS, AND LUBRICANTS

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Issued: December 09, 2020

Reply to: Dan Worcester

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These are the unapproved minutes of the 12.07.2020 Sequence VI Conference Call.

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The meeting was called to order at 1:04 PM Central Time by Chair Andrew Stevens.

- 1.0 The Agenda is Attachment 1.
- 2.0 Roll Call. Attendance is Attachment 2. Mike Deegan is the Ford voting member.

3.0 Old Business

MOTION: Approve minutes from the 11.12.2020 conference call.
Andrew, Adrian, second. Approval was unanimous.

4.0 New Business

4.1 The additive for deposit control for VIE fuel will be maintained by TMC. There are questions on how much additive to procure and whether there would be multiple suppliers. Adrian commented the Surveillance Panel would be involved if there is more than one supplier. Jeff clarified the chemistries are not interchangeable. The current version is only produced for the VIE additive. That supplier will produce one large batch and define storage requirements. Some components for that product are no longer available.

ACTIONS: Rich will calculate life of the VIE fuel based on engines and consumption in the industry. Andrew will supply data for storage. The mixture rate will be defined by the existing level in the current batch of VIE fuel.

4.2 The BL-5/FO-5 oil order was intended to supply the life of the test. However, the GM vehicle fuel economy test chose to use VIE FO for their vehicles. Dan Worcester realized this would be an issue and requested a new BL-6/FO-6 order that would include vehicle consumption. When Dexos 3 was released, consumption increased dramatically and SwRI will run out of FO in Q1 of 2021. Other labs should not be affected.

4.2.1 Several options were discussed: redistribution, conversion of BL to FO, or creation of a special FO blend for vehicle testing.

4.2.2 Similar to the fuel additive, components for BL are not readily available, and using current products would change some of the chemical properties. FO is based on BL with a detergent additive.

ACTION: Aleise will contact folks at GM that monitor the vehicle testing for the options of creating a special batch or looking at other flush products or alternatives. Another meeting will be held before or on 12.17.2020 to review options.

4.3 The alternate fuel supplier procedure proposal was released and sent for ballot. It and the Information Letter were withdrawn due to two negatives. See Attachment 3 for the letter and testing requirements for an alternate fuel supplier approval.

4.3.1 The GM negative will change to a waive. The other negative by Haltermann was withdrawn.

4.3.2 There were questions on the procedure for test labs. The existing industry correction factors will still apply as they are not based on the fuel used.

MOTION: The VIE and VIF alternate fuel supply procedure will be released as a letter ballot and an Information Letter will be generated with successful passage of that ballot. 10 yes, 4 waive, 1 negative. The motion will proceed. The negative will be resolved at the next panel level.

ACTION: Haltermann voted negative and will provide the reasons for that negative before the ballot is reviewed for release.

The meeting adjourned at 2:33 PM.

**Sequence VI Surveillance Panel Call Meeting Agenda
December 7, 2020 @ 2:00-3:30 EST**

1. Roll Call (start 2:05 EST)

1.1. SP Membership changes and additions

2. Old Business

2.1	Approve Minutes from 11/12 call	Andrew Stevens
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3. New Business

3.1	Deposit Control Additive Availability	TMC
3.2	BL-6/FO-6 Update	Dan Worcester
3.3	Alternative Fuel Supplier Proposal Re-Introduction	Panel

4. Next Meeting

4.1. SP Meeting: TBD

5. Meeting Adjourned

APPENDIX

ASTM SEQUENCE VI

Name	Email	Company	Attend
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VOTING MEMBERS

Ben Maddock	Ben.Maddock@AftonChemical.com	Afton	ATTEND
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BT Johnson			ATTEND
Quinten			ATTEND

ASTM SEQUENCE VI

Name	Email	Company	Attend
MOTION:	Alternate Fuel Ballot		
Ben Maddock	APPROVE		
Brienne Hockkeppel			
Robert	APPROVE		
Haiying Tang			
Tracey King	APPROVE		
Mike Deegan	APPROVE		
Paul Rubas			
Jim Carter	APPROVE		
Aleise Gauer	WAIVE		
Prasad Tumati	NEGATIVE		
Andy Ritchie	APPROVE		
Adrian Alfonso	APPROVE		
Andrew Stevens	APPROVE		
Jason Bowden			
Jeff Hsu	APPROVE		
Dan Worcester	APPROVE		
Dan Lanctot	WAIVE		
Rich Grundza	WAIVE		
Teri Kowalski			
Amol Savant	WAIVE		
	10 Y, 4 W, 1 N		

ASTM SEQUENCE VI

Name	Email	Company	Attend
MOTION:			
Ben Maddock			
Brienne Hockkeppel			
Kevin Brodwater			
Haiying Tang			
Tracey King			
Ron Romano			
Paul Rubas			
Jim Carter			
Aleise Gauer			
Prasad Tumati			
Andy Ritchie			
Adrian Alfonso			
Andrew Stevens			
Jason Bowden			
Jeff Hsu			
Dan Worcester			
Dan Lanctot			
Rich Grundza			
Teri Kowalski			
Amol Savant			



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Sequence VIE Information Letter 20-2
Sequence Number 7
April, 2020

TO: Sequence VI Surveillance Panel
SUBJECT: Alternate Fuel Approval Process

During the October 25, 2019 Sequence VI Surveillance Panel Conference call, the panel agreed to allow for alternate fuel approval for the fuel used for Sequence VIE tests. As a result, footnote 19 has been updated to refer to new Annex A18, which delineates the testing requirements for a fuel to be considered as a candidate for an alternate. Reference Documents have also been updated to include API 1525 as a reference.

These revised text and or section(s) have been highlighted in red and are effective with the issuance of this letter.

Aleise Gauer
Materials Engineer – Fluids & Lubricants
GM Global Propulsion Systems

Frank M. Farber
Director
ASTM Test Monitoring Center

Attachment

c: http://www.astmtmc.cmu.edu/ftp/docs/gas/sequencevi/procedure_and_ils/VIE/il20-2_vie.pdf

Distribution: Email

Revises D8114-19a

2.3 API Standard:

API 1525 Bulk Oil Testing, Handling, and Storage Guidelines Documentation

¹⁹The sole source of supply of the fuel known to the committee at this time is Haltermann. If you are aware of alternative suppliers, please provide the information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible committee,¹ which you may attend. Annex A18 provides testing and other requirements for being considered as an alternate by the Sequence VI Surveillance Panel.

A18 Alternate Fuel Approval Requirements

A18.1 For an alternate fuel to be approved for Sequence VI tests, the fuel supplier shall demonstrate, through chemical analyses and engine testing, that the fuel provides the same performance to the currently approved fuel. The supplier shall provide a Certificate of Analysis documenting that the fuel meets the current Sequence VI fuel specification, as well as conducting a prove-out program.

A18.2 *Prove-out Program*—Complete the prove-out program using the Sequence VIE test, which is to be performed on one test stand, using a minimum of two engines and a single reference oil, 1010-1 (or subsequent approved reblends). Testing shall utilize the first four runs of the engines' life and shall be alternated between the currently approved fuel and the alternate fuel candidate, as shown in Table A18.1.

Table A18.1 Testing Order

Engine	Break-in Fuel	Run #1	Run #2	Run #3	Run #4
Engines 1, 3,...	Current Fuel	Current Fuel	Alternate Fuel	Current Fuel	Alternate Fuel
Engines 2, 4,...	Alternate Fuel	Alternate Fuel	Current Fuel	Alternate	Current Fuel

A18.3 At the completion of each engine after Engine #2, construct two Analysis of Variance (ANOVA) models using the engine hour corrected results. The response variables shall be $FEI1Y_i$ and $FEI2Y_i$, which are the standardized results. Here Y_i is defined as:

$$Y_i = (R - M)/S \quad (A18.1)$$

where:

Y_i = standardized test result at test order i

R = actual reference oil test result expressed as % FEI ,

M = reference oil target mean expressed as % FEI , and

S = reference oil target standard deviation, expressed as % FEI .

Include in the ANOVA model factors “Engine”, with levels Engine1, Engine2, ..., EngineN, and “Fuel”, with two levels (current and alternate) . For the proposed fuel to be qualified, the following shall be true of the ANOVA model results for both the $FEI1Y_i$ model and the $FEI2 Y_i$ model:

A18.3.1 The absolute difference in the least squares mean for the current fuel and the least squares mean for the alternate fuel is less than 0.75.

A18.3.2 When forming a 95 % confidence interval on the least squares mean difference between fuels, the upper and lower limits of both confidence intervals are both less than 2.5 in absolute value.

A18.4 If the criteria in both A18.3.1 and A18.3.2 are not satisfied for both $FEI1$ and $FEI2$, then conduct an additional four tests on another engine, followed by another ANOVA model. Continue this process until both criteria have been satisfied for both parameters.

A18.4.1 The Surveillance Panel will approve the fuel for use following confirmation of these results. If the supplier believes, the fuel is providing equivalent performance to the current approved fuel without meeting the criteria in A18.3.1 or 18.3.2 or both, they may petition the surveillance panel for acceptance.

A18.5 *Implementation of an Alternate Fuel*-- Each laboratory can choose which approved fuel to use for individual stands, provided candidate testing is conducted on the same fuel used to calibrate the stand. When switching from one fuel supplier to another, conduct a full Certificate of Analysis on a sample of fuel consisting of no more than 10% of the current batch fuel from the current supplier from the purchasing laboratories take and at least 90% of the new batch from the alternate supplier. Ensure that the Certificate of Analysis obtained from the blended sample meets the current Sequence VI Fuel Specifications.

A18 Alternate Fuel Supplier Approval Requirements

A18.1 For an alternate fuel supplier to be approved for Sequence VI tests, the fuel supplier shall demonstrate, through chemical analyses and engine testing, that the fuel provides the same performance to the currently approved fuel. The supplier shall provide a Certificate of Analysis documenting that the fuel meets the current Sequence VI fuel specification, as well as conducting a prove-out program.

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$$Y_i = (R - M)/S \tag{A18.1}$$

where:

Y_i = standardized test result at test order i

R = actual reference oil test result expressed as % FEI ,

M = reference oil target mean expressed as % FEI , and

S = reference oil target standard deviation, expressed as % FEI .

Include in the ANOVA model factors “Engine”, with levels Engine1, Engine2, ..., EngineN, and “Fuel”, with two levels (current and alternate) . For the proposed fuel to be qualified, the following shall be true of the ANOVA model results for both the $FEI1Y_i$ model and the $FEI2 Y_i$ model:

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A18.4.1 The Surveillance Panel will approve the fuel for use following confirmation of these results. If the supplier believes the fuel is providing equivalent performance to the current approved fuel without meeting the criteria in A18.3.1 or 18.3.2 or both, they may petition the surveillance panel for acceptance.

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laboratories take and at least 90% of the new batch from the alternate supplier. Ensure that the Certificate of Analysis obtained from the blended sample meets the current Sequence VI Fuel Specifications.