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**COMMITTEE D02 on PETROLEUM PRODUCTS, LIQUID FUELS, AND LUBRICANTS**

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Unapproved Meeting Minutes of the Technical Guidance Committee Meeting

December 9, 2019

Marriott, New Orleans

Mardi Gras Ballroom FGH, 4:00 – 5:30 PM

**Reply to:** Patrick Lang

Southwest Research Institute, 6220 Culebra Road San Antonio, TX 78228

Phone: 210-522-2820, patrick.lang@swri.org

The meeting was called to order at 16:00

**Agenda:**

The meeting agenda can be found as attachment 1.

### **Membership Review:**

Chairman Lang passed out the Membership/Attendance List. The list can be found as attachment 2.

### **Review and Acceptance of Minutes:**

Pat Lang asked for approval of the June 24, 2019 TGC Minutes (Denver meeting). Receiving no comments on the minutes the chairman moved for approval of the aforementioned minutes. The minutes were approved.

### **Action Item List:**

The action item list can be found as attachment 3. The action item list was not reviewed in the spirit of saving time to cover other items on the agenda.

### **Fuels Task Force Update:**

- Fuels task force update provided by Mike Lochte (see attachment 4). Mike reported the following:
  - The fuels task force met by telecom on July 9, October 2 and November 25, 2019.
  - The proposed Sequence III and Sequence VI fuel specifications were accepted by the task force and forwarded to the Sequence III, VI, IX and X Surveillance Panel chairs.
  - The KA24E Green Fuel specification is currently being worked on by the task force.

### **Alternate Fuel Supplier Update:**

Andrew Stevens of Lubrizol provided a summary of the Sequence VI Alternate Fuel Supplier Task Force recommendation that was approved by the surveillance panel. He advised that the approval was by simple majority and that there were negatives. Andrew showed slides 8 and 9 from his semi-annual report (see attachment 5). These slides summarize the engine testing that will be required of an alternate supplier.

In summary the requirement will be:

- A) Two engines
- B) Four runs per engine
- C) Single reference oil (1010-1 or subsequent approved re-blends)

Andrew further explained that with the proposed criteria and the Sigma values chosen by the group, the current Sequence VI fuel would only have a 70% chance of passing. Bob Campbell commented that if this criteria was not met after the required testing was completed, a potential supplier could run additional testing and submit it to the surveillance panel for consideration.

Nathan from GM expressed concerns about a potential shift in performance associated with a new fuel supplier. For the OEM's this could be a very significant issue due to stringent fuel economy requirements. Comments were made that the LTMS system along with the severity adjustment that are generated with the commissioning of every new engine should compensate for a shift. Tracey King commented that the current fuel supplier doesn't have to go through these stringent requirements to approve the current fuel and that these requirements are potentially in excess of the repeatability /reproducibility of the test.

Pat Lang further clarified that if this proposal passes, the way it is written is that there could be two fuel suppliers at one time. Additionally, labs could run both fuels at once but would be required to run reference and candidates tests on the same batch.

Ron Romano explained his discontent with labs being able to choose a fuel. He is concerned that labs will choose the "mild" fuel. Similar comments were made as they were earlier regarding the LTMS system and severity adjustment taking care of this concern. Ron felt that labs should be required to run one fuel or the other, not both. Mike Lochte stated that at SwRI fuel batches are not switched during a test, i.e. it always starts and finishes on the same batch.

Andrew Stevens from Lubrizol commented that there are tankage issues at labs that would make it difficult to manage the transiting to one single batch in the entire lab at one time. This brought up the issue of how the labs currently handle mixing fuel that is from the current supplier but the same batch. The general rule is to keep it 10%. A lot of people were not aware that this rule was being exercised. It is required only for the Sequence V test where it is known that fuel batches can be significantly different. Nathan from GM felt that a 10% dilution rate was too much even with different batches with the same supplier. He felt that the fuels would not be the same even at that rate. Al Lopez of Intertek commented that he would be able to drain his tank and clean it prior to switching suppliers. There was more discussion on the details of how to handle this but in the end the group felt like issue needed to be addressed within the technical group.

At this point Pat Lang reminded the group that the protocol that was defined for alternate suppliers was followed relative to the Sequence VI fuel. Specifically, the technical group (task force) met and came up with a proposal to the surveillance panel. The surveillance panel voted on it and passed the motion. Since there still seemed to be opposition to the proposal, he reminded the group that it is the TGC that recommended the guidelines that were followed and asked the group if there were any additional suggestions on how to improve the process so that we could keep things moving forward. No further suggestions were made.

At this point the group agreed to let the motion go to ballot to see where it lands. If the negative votes persist, the technical group will have to either address them or deem them non-persuasive.

Pat Lang reported that the Sequence IIIH Alternate Supplier Task Force has been active but has not yet come up with a final recommendation.

### **Rating Task Force:**

Rating task force report was given by Bob Campbell (see attachment 6). The following is a summary of his report:

- 1) In this reporting period the Heavy Duty Rating Workshop was conducted the week of 9/30/19.
- 2) The surveillance panels have agreed that the data generated supported the inclusion of LED lighting into Manual 20. Updated manuals are at ASTM for an early 2020 print.
- 3) Some changes to the rating workshop will be recommended:
  - a. Work towards real-time data monitoring during Session A to identify problems quicker
  - b. Intermediate data review during Session A
  - c. Reduction in hardware and more focus on resolution
  - d. Heavier focus on lab raters during Session A

### **Old Business:**

Pat Lang commented that surveillance panels have been meeting on a regular basis mostly by teleconference. Bill Buscher commented that he has a company that has approached him to host a block of surveillance meeting at their site in early spring of 2020.

### **New Business:**

There was no new business discussed or added to the list.

The meeting adjourned at 17:15.

# **Attachment #1**

**Agenda**

**12/09/2019**

## **AGENDA**

### **ASTM Technical Guidance Committee**

Patrick Lang – Chairman

Monday December 9, 2019 – 4:00 pm to 5:30 pm

Marriott, New Orleans

Meeting Room: Mardi Gras Ballroom FGH

1. Welcome, Introductions
2. Membership Review
3. Chairman's Comments
4. Review & Acceptance of Minutes
  - 4.1. Acceptance of the June 24, 201 minutes (Denver). No comments or changes have been submitted at this point.
5. Review Action Item List (Pat Lang)
6. Fuel Task Force Update
  - 6.1. Update on fuel specification reviews (Mike Lochte)
  - 6.2. Summary of the activities of the Sequence VI and IIIH alternate fuel supplier task forces (Pat Lang)
7. Rating Task Force Update (Bob Campbell)
  - 7.1. Summary of Fall Heavy Duty 2019 Rating Workshop
  - 7.2. Status of ASTM Deposit Rating Manuals 20/21
  - 7.3. Replacement of fluorescent lights with LED's
  - 7.4. Modifications to the workshop format
8. Old Business
  - 8.1. Surveillance panels minimum meeting frequency (minimum of every six months or sooner)

9. New Business

9.1. ????

10. Next Meeting: Will be held during June 2020 ASTM week.

11. Adjournment

**Attachment #2**



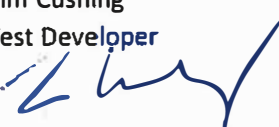

**Attendance List**

**12/09/19**



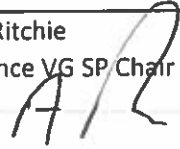
Technical Guidance Committee Membership List

12-9-19

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**Attachment #3**

**Action Items List**

**12/09/19**

## Technical Guidance Committee (TGC)

### Open Action Items List Status as of 12-9-19:

1. Action Item – The TGC to review the parts lists in each test procedure, starting with the PCMO test types, to determine if they list all necessary parts and if they properly identify the critical test parts.
  - *Ongoing. Chair currently working with GF-6 procedure task forces to incorporate/refine these lists.*
  
2. Action Item – TGC to review the current document for “out of control” tests.
  - *Open*
  
3. Action Item – TGC to review the current “DACA II” document.
  - *In process; participant list has been created and initial conference call is planned for mid-July.*
  
4. Action Item – TGC to work on generating test procedure wording that would address the handling of testing anomalies.
  - *Open*



**Attachment #4**  
**Fuels Task Force Update**  
**12/09/2019**

# TGC Fuels Task force Update

**Michael Lochte, Chairman**

**SOUTHWEST RESEARCH INSTITUTE®**



## SCOPE

- The scope of this task force is to create a document including best practices for HD and PC test fuel monitoring, handling, storage, and supply. The task force also needs to establish mechanisms for single and multiple source supply.

# OBJECTIVES

- Maintain a data depository for all test fuel data, located in the TMC website. This should include test fuel formulation details (similar to reference oils) and create a procedure to indicate when significant changes occur in a test fuel formulation.
- Develop test fuel monitoring plans, include what to analyze (what are key parameters) and how to determine what properties of the test fuel affect the parameters the lubricant test is evaluating. Define what a “batch” is.
- Establish best practices for test fuel transporting, handling, and storage at the suppliers and laboratories.
- Develop robust back up plans to account for lack of supply, natural disasters, raw material shortages, etc. From original supplier or alternative suppliers.
- Include test fuel as critical parameter and test fuel suppliers as partners at the start of test development. Start out with multiple supply scenarios in new procedures.

# OBJECTIVES, cont'd

- Look to reduce the amount of industry test fuels and reduce storage complexity for labs.
- Develop alternative supplier standards for test fuel across lubricant testing procedures. (being handled by surveillance panels, recommend we remove this from the objectives)

# Activity since last ASTM TGC meeting....

- The TGC Fuels Task force met by Telecon on July 9, October 2, and November 25, 2019.
- The proposed Sequence III and Sequence VI fuel specifications were accepted by the task force and forwarded to the Sequence III, VI, IX, and X surveillance panel chairs.
- Currently the task force is working on the KA24E fuel specification, which is utilized for the IVA, IVB, and VIII tests.

# Proposed Sequence III fuel spec

TEST	METHOD	UNITS	Seq. III Specs		
			MIN	TARGET	MAX
Distillation - IBP	ASTM D86	*C	23.9		35.0
5%		*C			
10%		*C	48.9		57.2
20%		*C			
30%		*C			
40%		*C			
50%		*C	93.3		110.0
60%		*C			
70%		*C			
80%		*C			
90%		*C	151.7		162.8
95%		*C			
Distillation - EP		*C			212.8
Recovery		vol %		Report	
Residue		vol %		Report	
Loss		vol %		Report	
Gravity @ 60°F/60°F	ASTM D4052	*API	58.7		61.2
Density @ 15° C	ASTM D4052	kg/l	0.734		0.744
Dry Vapor Pressure Equivalent	ASTM D5191	kPa	60.1		63.4
Carbon	ASTM D3343	wt %		Report	
Carbon	ASTM D5291	mass %		Report	
Hydrogen	ASTM D5291	mass %		Report	
Hydrogen/Carbon ratio	ASTM D5291	mole/mole		Report	
Oxygen <sup>1</sup>	ASTM D4815	wt %			0.2
Oxygenates Ethanol	ASTM D4815	%		Report	
MTBE		%		Report	
ETBE		%		Report	
Methanol		%		Report	
Sulfur	ASTM D5453	mg/kg	3		15
Composition, aromatics	ASTM D5769 <sup>2</sup>	vol %	31.0		34.0
C6 aromatics (benzene)	ASTM D5769	vol %			1.0
C7 aromatics (toluene)	ASTM D5769	vol %		Report	
C8 aromatics	ASTM D5769	vol %		Report	
C9 aromatics	ASTM D5769	vol %		Report	
C10+ aromatics	ASTM D5769	vol %		Report	
Composition, olefins	ASTM D6550 <sup>3</sup>	wt%			2.0
Lead <sup>4</sup>	ASTM D3237	mg/l			2.6
Manganese <sup>4</sup>	ASTM D3831	g/gal			0.01
Phosphorus <sup>4</sup>	ASTM D3231	mg/l			1.3
Silicon <sup>4</sup>	ICP method	mg/kg			4
Particulate matter	ASTM D5452	mg/l			1
Oxidation Stability	ASTM D525	minutes	1000		
Copper Corrosion	ASTM D130				1
Gum content, washed	ASTM D381	mg/100mls			5.0
Gum content, unwashed	ASTM D381	mg/100mls			10.0
Research Octane Number	ASTM D2699		96.0		
Motor Octane Number	ASTM D2700			Report	
R+M/2	D2699/2700			Report	
Sensitivity			7.5		
Net Heating Value, btu/lb	ASTM D3338	btu/lb		Report	
Gross Heating Value, btu/lb	ASTM D240	btu/lb		Report	
Net Heating Value, btu/lb	ASTM D240	btu/lb		Report	
Water and Sediment	ASTM D2709	vol%			0.01
Color <sup>5</sup>	VISUAL	1.75 ptb		Red	

<sup>1</sup>no intentional addition of these elements permitted.

<sup>2</sup>Innospec Oil Red B4 Liquid Dye

<sup>3</sup>or use D6839 for everything measured by D5769 and D6550

# Proposed Sequence VI fuel spec

TEST	METHOD	UNITS	Seq. VI Specs		
			MIN	TARGET	MAX
Distillation - IBP	ASTM D86	°C	23.9		35.0
5%		°C			
10%		°C	48.9		57.2
20%		°C			
30%		°C			
40%		°C			
50%		°C	93.3		110.0
60%		°C			
70%		°C			
80%		°C			
90%		°C	151.7		162.8
95%		°C			
Distillation - EP		°C			212.8
Recovery		vol %		Report	
Residue		vol %		Report	
Loss		vol %		Report	
Gravity @ 60°F/60°F	ASTM D4052	*API	58.7		61.2
Density @ 15° C	ASTM D4052	kg/l	0.734		0.744
Dry Vapor Pressure Equivalent	ASTM D5191	kPa	60.1		63.4
Carbon	ASTM D3343	wt %		Report	
Carbon	ASTM D5291	mass %		Report	
Hydrogen	ASTM D5291	mass %		Report	
Hydrogen/Carbon ratio	ASTM D5291	mole/mole		Report	
Oxygen <sup>1</sup>	ASTM D4815	wt %			0.2
Oxygenates Ethanol	ASTM D4815	%		Report	
MTBE		%		Report	
ETBE		%		Report	
Methanol		%		Report	
Sulfur	ASTM D5453	mg/kg	3		15
Composition, aromatics	ASTM D5769 <sup>4</sup>	vol %	31.0		34.0
C6 aromatics (benzene)	ASTM D5769	vol %			1.00
C7 aromatics (toluene)	ASTM D5769	vol %		Report	
C8 aromatics	ASTM D5769	vol %		Report	
C9 aromatics	ASTM D5769	vol %		Report	
C10+ aromatics	ASTM D5769	vol %		Report	
Composition, olefins	ASTM D6550 <sup>4</sup>	wt%			2.0
Lead <sup>1</sup>	ASTM D3237	mg/l			2.6
Manganese <sup>1</sup>	ASTM D3831	g/gal			0.01
Phosphorus <sup>1</sup>	ASTM D3231	mg/l			1.3
Silicon <sup>1</sup>	ICP method	mg/kg			4
Particulate matter	ASTM D5452	mg/l			1
Oxidation Stability	ASTM D525	minutes	1000		
Copper Corrosion	ASTM D130				1
Gum content, washed	ASTM D381	mg/100mls			5.0
Gum content, unwashed	ASTM D381	mg/100mls	7.0		20.0
Research Octane Number	ASTM D2699		96.0		
Motor Octane Number	ASTM D2700			Report	
R+M/2	D2699/2700			Report	
Sensitivity			7.5		
Net Heating Value, btu/lb	ASTM D3338	btu/lb		Report	
Gross Heating Value, btu/lb	ASTM D240	btu/lb		Report	
Net Heating Value, btu/lb	ASTM D240	btu/lb		Report	
Water and Sediment	ASTM D2709	vol%			0.01
Color <sup>2</sup>	VISUAL	1.75 pto		Red	
Top Tier Additive <sup>3</sup>		ppm m/m	267		Report

<sup>1</sup> no intentional addition of these elements

<sup>2</sup> Innospec Oil Red B4 Liquid Dye

<sup>3</sup> Lubrizol UltraZol 8219. Can be obtained from Lubrizol Sales.

<sup>4</sup> or use D6839 for everything measured by D5769 and D6550



# On the to-do list for TGC fuels task force....

- Will need to address the KA24E (IVA, IVB, and VIII) and STDF (diesel IMPC and IK) fuel specifications because of the D1319 issue, and conflicts between COA and the various test procedures.

# **Attachment #5**

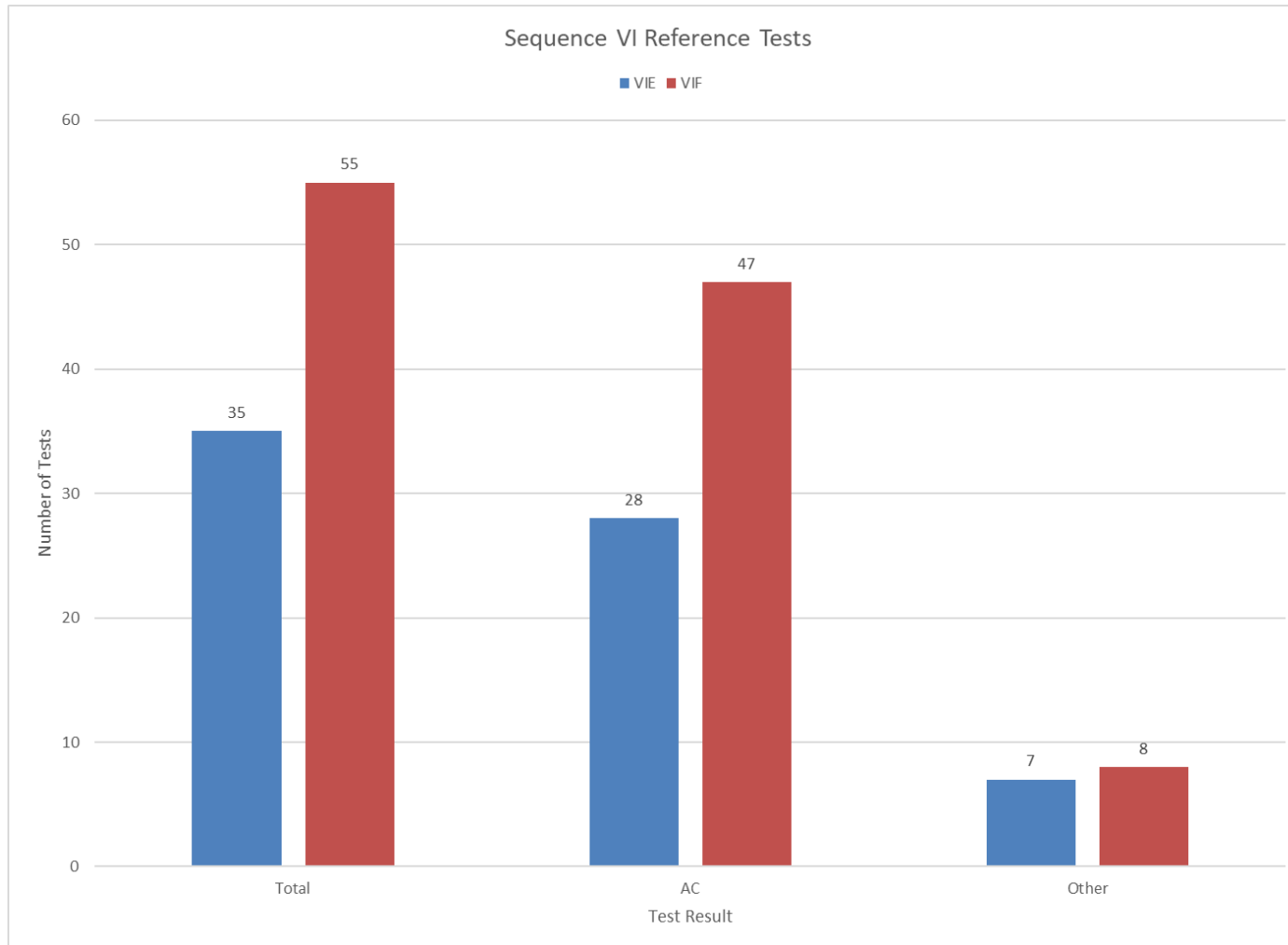
**Sequence VI Alternate Fuel Supplier Proposal**

**12/09/2019**

Sequence VI S.P.  
Semi-Annual Report, December 2019  
Presentation to Subcommittee D02.B

Prepared By: Andrew Stevens, S.P. Chair December 2019

# Sequence VI S.P. Report Reference Test Activity



# Sequence VI S.P. Report

## LTMS Laboratory/Stand Distribution

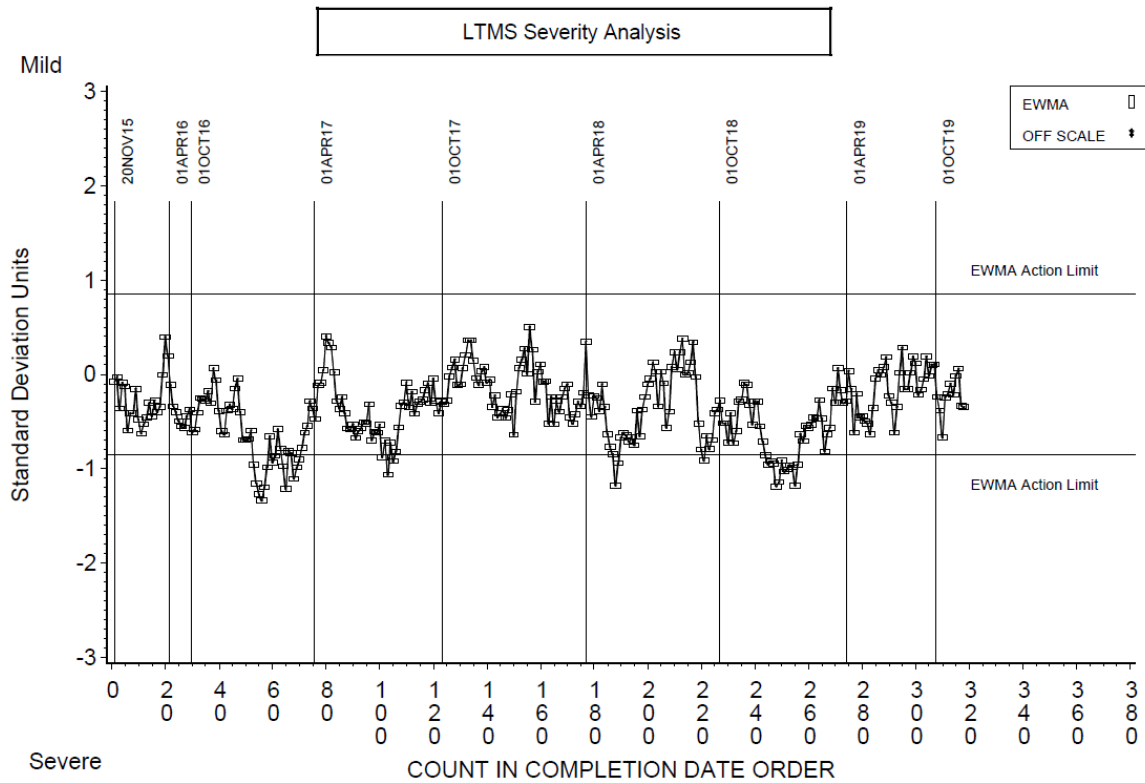
<b>Sequence VIE Reference Tests</b>	<b>Reporting Data</b>	<b>Calibrated as of 12/5/19</b>
Number of Laboratories	5	4
Number of Stands	15	9

<b>Sequence VIE Reference Tests</b>	<b>Reporting Data</b>	<b>Calibrated as of 12/5/19</b>
Number of Laboratories	4	3
Number of Stands	10	9

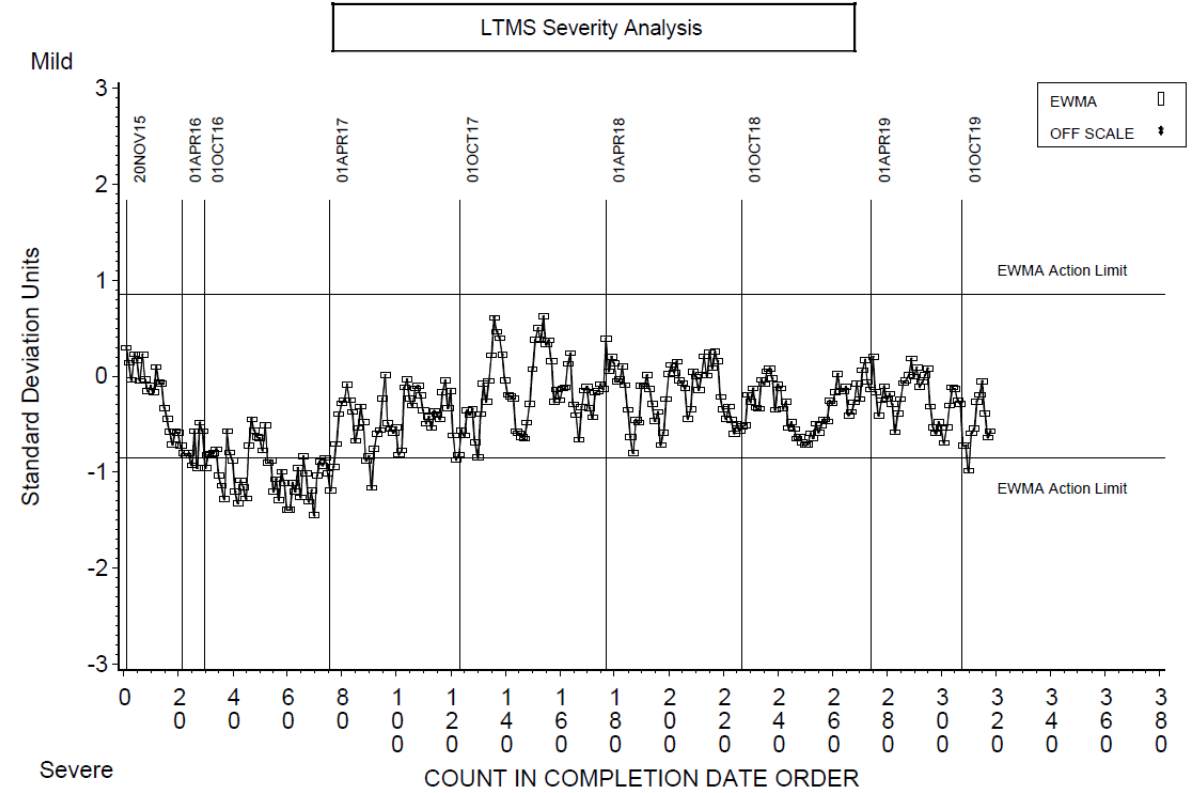
# Sequence VIE S.P. Report

## Industry Reference Severity Summary

FEI1



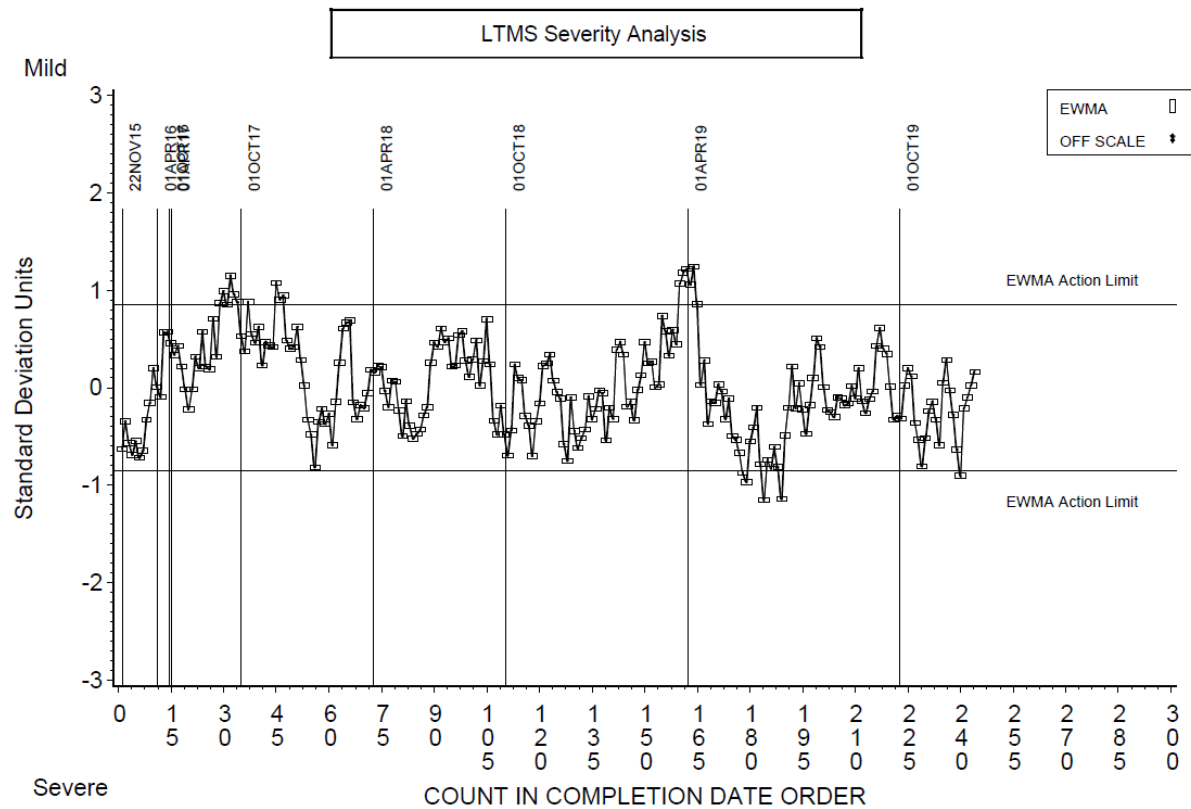
FEI2



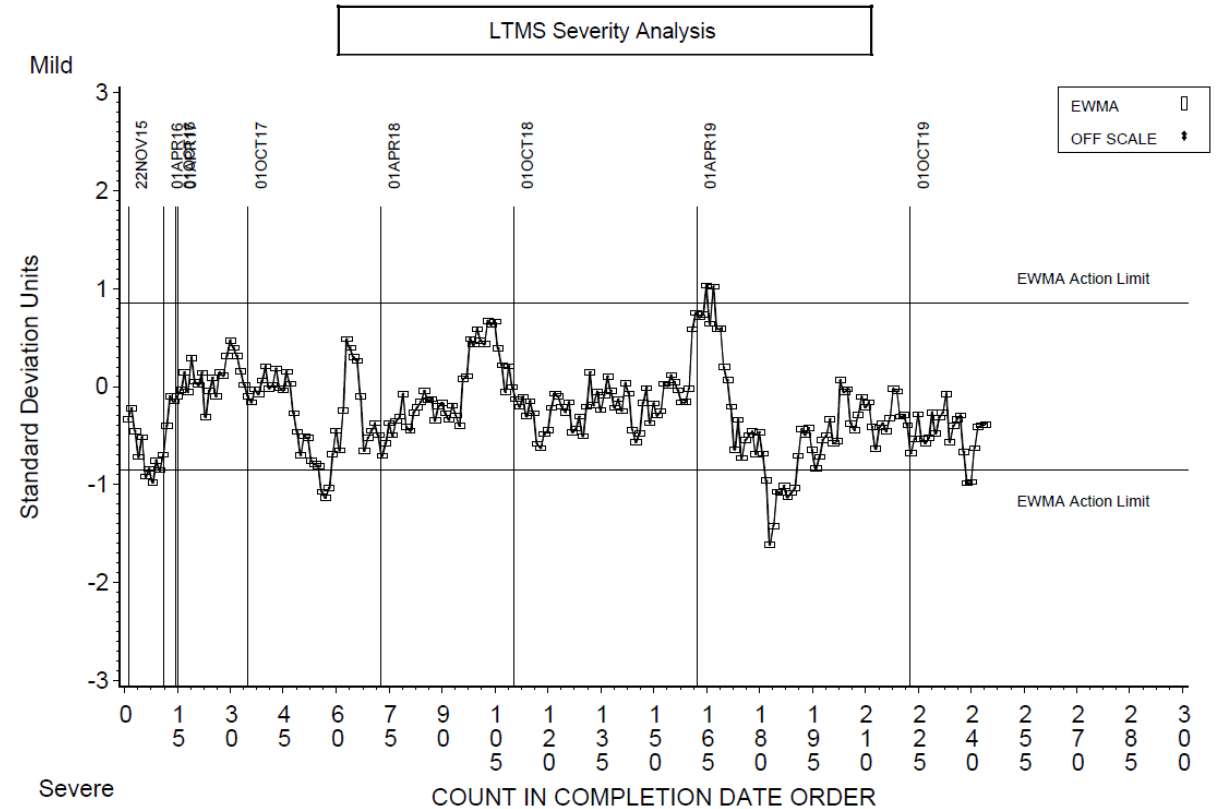
# Sequence VIF S.P. Report

## Industry Reference Severity Summary

### FEI1



### FEI2



# Sequence VI S.P. Report Reference Oils Status

- 542-3      Beginning transition to 542-4
- 543      2yrs Remaining
- 544      1.5yrs Remaining
- 1010-1    1.5yrs Remaining
- 1011      1.5yrs Remaining



# Sequence VI S.P. Report Hardware & Fuel

- Short blocks in ample supply, projected to last until 2027
- Current fuel is projected to last 6 – 12 months

# Sequence VI S.P. Report Panel Activity

- Process for allowing alternative fuel supplier is being finalized

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

*Table 1: Engine Tests Run Order*

1. The absolute difference in the least squares mean for Fuel A and the least squares mean for Fuel B is less than 0.75.
2. When forming a 95% confidence interval on the least squares mean difference between fuels, the upper and lower limits are both less than 2.5 in absolute value.

# Sequence VI S.P. Report Panel Activity

P(Average Fuel Difference) < Various Sigma, Assuming Zero Actual Fuel Difference

# of Engines	P(Estimate < 0.5 Sigma) if Fuel Difference is Zero	P(Estimate < 0.75 Sigma) if Fuel Difference is Zero	P(Estimate < 1.0 Sigma) if Fuel Difference is Zero	P(Estimate < 1.25 Sigma) if Fuel Difference is Zero
2	0.52	0.71	0.84	0.92
3	0.61	0.81	0.92	0.97
4	0.68	0.87	0.95	0.99
5	0.74	0.91	0.97	0.99

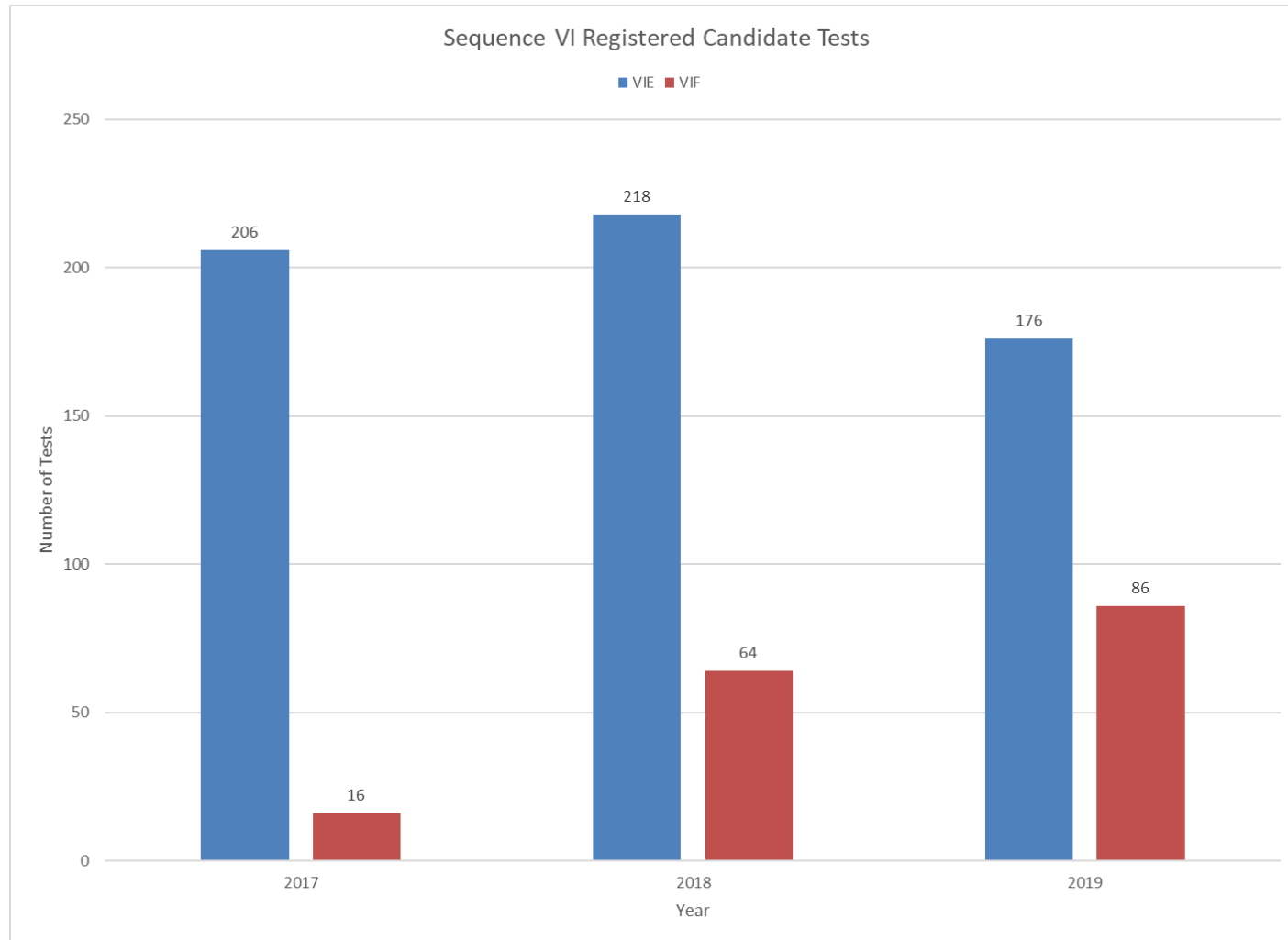
P(CI Width within Various Sigma), Assuming Zero Actual Fuel Difference

# of Engines	P(CI Width within 1.5 Sigma) if Fuel Difference is Zero	P(CI Width within 2.0 Sigma) if Fuel Difference is Zero	P(CI Width within 2.5 Sigma) if Fuel Difference is Zero	P(CI Width within 3.0 Sigma) if Fuel Difference is Zero
2	-0.35	0.20	0.67	0.91
3	0.23	0.75	0.96	1.00
4	0.58	0.93	0.99	1.00
5	0.77	0.98	1.00	1.00

# Sequence VI S.P. Report Panel Activity

- VIF: Once a candidate with viscosity <0W-16 has been run, the second candidate cannot run a 0W-16. Test sponsors must supply viscosity grade.

# Sequence VI S.P. Report Candidate Test Activity



# Sequence VI S.P. Report

## Scope and Objectives

### SCOPE

- The Sequence VI Surveillance Panel is responsible for the surveillance and continual improvement of the Sequence VID test, documented in ASTM Standard D7589 as updated by the Information Letter System, and the Sequence VIE and VIF tests, currently in the process of being established as industry available standards. Test precision data will be solicited and evaluated at least every six (6) months for all Sequence VI test procedures. The Surveillance Panel is to provide options for continual improvement of test operation, test monitoring, and test validation while maintaining effective communication with the test sponsors, independent test laboratories, ASTM Test Monitoring Center, the central parts distributor/s, fuel supplier/s, ASTM B0.01 Passenger Car Engine Oil Classification Panel, ASTM Committee B0.01, the ACC Monitoring Agency, and the ASTM Deposit/Distress Workshop. Strategies to ensure the continual improvement of associated test methods are to be recommended through previously stated groups, Surveillance Panel members, and industry governing bodies. It is the mission of the Surveillance Panel to ensure that technical credibility is maintained for all Sequence VI test methods in the evaluation of lubricant oil fuel economy performance.

### OBJECTIVES

- Monitor critical Sequence VIE/F hardware availability
- Prepare and introduce VIE/F short block hardware
- Monitor Sequence VID/E/F tests

# Sequence VI S.P. Report Appendix

For an alternate supplier to obtain approval for Sequence VI tests, the supplier must demonstrate, through chemical analysis of the fuel candidate and engine testing, that the potential fuel will provide acceptable results when used for Sequence VI registered testing. The supplier will provide a C of A documenting that the fuel meets the current Sequence VI fuel specification, as well as conducting a prove-out program.

The prove-out program will be completed using the Sequence VIE test, and is to be performed in one test stand, using a minimum of two engines and a single reference oil, 1010-1 (or subsequent approved re-blends). Testing will utilize the first four runs of the engines' life and will be alternated between the current fuel and the alternate fuel candidate, as shown in Table 1 (below).

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

*Table 1: Engine Tests Run Order*

At the completion of each engine after Engine #2, two ANOVA models will be constructed using the engine hour corrected results. The response variables will be FEI1 Yi and FEI2 Yi, which are the standardized results, and factors to include are "Engine", with levels Engine1, Engine2, ..., EngineN, and "Fuel", with two levels. For the alternate fuel to be qualified, the following must be true of the ANOVA model results for both the FEI1 Yi model and the FEI2 Yi model:

1. The absolute difference in the least squares mean for Fuel A and the least squares mean for Fuel B is less than 0.75.
2. When forming a 95% confidence interval on the least squares mean difference between fuels, the upper and lower limits are both less than 2.5 in absolute value.

# Sequence VI S.P. Report Appendix

If the above two criteria are not satisfied for both FEI1 and FEI2, then an additional four tests must be conducted on another engine, followed by another ANOVA model. This process will continue until both criteria have been satisfied for both parameters. This is the criteria for automatic acceptance. If the supplier believes the fuel is sufficient without meeting these criteria, they may petition the surveillance panel for acceptance.

If approved, the alternate fuel may be used for registered testing in both the Sequence VIE and the Sequence VIF, provided acceptable reference testing has been completed on the stand/engine combination. All test run for registration purposes must be run on the same fuel (current or alternate) that the stand engine was calibrated on. When changing fuels, add fuel from a new batch to a laboratory's fuel tank when the current fuel level is below 10 % of the final fuel (new and previous) mixture's total volume. Each lab can choose which fuel to use for individual stands, provided the above criteria have been met.



# **Attachment #6**

**Rater Task Force Update to TGC**

**12/29/2019**






# Rater Task Force Update to TGC

12/9/2019




Passion for Solutions®

# TF Communications and Next Workshops

-  Pre-HD workshop call (9/19/2019)
-  HD workshop held (week of 9/30/19)
-  Post-HD workshop calls (10/30 & 11/13)

-  Next LD Workshop (week of 5/4/20)
-  Next HD Workshop (week of 9/28/20)

# Manual 20 Update

-  **Group agreed to eliminate term “glossy” from page 16 of the paint specification and prohibit its use**
-  **Surveillance panels have agreed that data generated at Spring workshop supported inclusion of LED lighting into Manual 20.**
-  **Updated Manual at ASTM for reprint—expected early 2020!**

# HD Workshop update

## Attendance was “normal” (nice surprise)

- ▲ 13 raters in Session A, 20 raters in Session B

## Sessions ran very smoothly


## Data output very quickly (thanks to TMC)

## But.....Several gaps identified

- ▲ Need better system to identify differences
  - and provide time to rectify these differences when observed
- ▲ No sludge color coding currently

# Improvement Discussions

 **Small F2F meeting between TMC, TGC and Rating TF Chair (Farber, Clark, Lang, Campbell) 11/21/19**

 **Slight modifications to format and requirements being discussed **but not finalized yet**.....**

- ▶ Seq V panel just approved reduction in piston requirement (24 to 16) and added color coding requirement for sludge (12/3/19)
- ▶ Session A only for lab raters
- ▶ Extend Session A by ½ day, decrease Session B by same
- ▶ Require real-time data entry
  - Will allow more “real time” data monitoring to identify problems quicker
- ▶ Add intermediate (2<sup>nd</sup>) data review to Session A
- ▶ Employ more visual techniques (JMP or equivalent) during review
- ▶ Reduction in hardware, more focus on difference resolution

# Spring Workshop Expectations

## **Employ newer format, addressing observations from Fall**

- ▲ Identify and resolve differences earlier
- ▲ Heavier focus on lab raters (Session A)
  - However Trainers still available for Session B, which will be open to all
- ▲ Provide more time to achieve better interaction

## **Better Product!**