

February 28th 2018 Sequence V Surveillance Panel Call to Discuss New Fuel Batch

Afton: E. Altman

Ford: R. Romano

GM: E. Johnson, N. Somers

Haltermann: P. Tumati (joined late)

Infineum: C. Leverett, A. Ritchie

Intertek: A. Lopez

Lubrizol: J. Brys, J. Matasic

OHT: J. Bowden, M. Bowden

Oronite: R. Stockwell, J. Martinez

SwRI: C. Hudson, T. Kostan

TEI: D. Lanctot

TMC: F. Farber, R. Grundza

Toyota: T. Kowalski

Total: J. Linden

V.P Racing: C. Taylor

Meeting Details:

Minutes from Jan 3rd call were approved:

<http://www.astmtmc.cmu.edu/ftp/docs/gas/sequencev/minutes/VMinutes20180103ConferenceCall.pdf>

This call was arranged at the request of the TMC Director Frank Farber to cover 3 procedural items around the upcoming new fuel batch:

- 1) Fuel specification. The attached specification is different from what is currently in the test procedure. It represents the fuel supplier's internal specification of measurements and has been updated with laboratory input on the latest test methods. The panel agreed without any voiced objection to a motion made by R. Grundza/J. Bowden (second) to adopt the attached specification into the Sequence V test procedures. This revised fuel spec will be covered by an Information Letter and be forwarded to the VH TF to include in the Draft VH procedure.
- 2) Fuel batch matrix design. TMC pulled together past designs to make the following matrix. Since the design is not written down anywhere the panel is being asked to endorse it for the approval of the next fuel batch.

Lab	A		B		C
Stand	1	2	1	2	1
Run 1	1009	940	940	1009	940
Run 2	940	940	1009	1009	1009
Run 3	1011	1009	1011	940	1011

Al Lopez commented that 1011 should be first row oil along with 940 - these 2 oils have the widest key parameter target separations. The stats group will review the named matrix oils and report back ahead of the start of the new fuel matrix. The panel adopted without voice objection a motion by R.Romano/R.Stockwell endorsing the fuel approval matrix with the above format covering 3 labs (SwRI, IAR and Afton) and 5 stands.

- 3) The following motion was made by R.Romano/R.Stockwell to adopt the following guidelines for when it is appropriate to investigate a fuel impact on severity.

If, at any time, the Sequence V Surveillance Panel determines that the fuel batch has impacted test severity following an Industry level 2 Zi alarm, the fuel supplier is to work with the Sequence V Surveillance Panel and make every reasonable effort to correct the problem.

The motion carried without any voice objections. This paragraph will be covered by an Information Letter and be forwarded to the VH TF to include in the Draft VH procedure.

New Business:

- 1) Motion: Al Lopez/ Rich Grundza:

Allow test stands to calibrate for both VH and VG testing providing all requirements of the respective test are met.

Motion was approved without voice objection. The memorandum covering this will state the VG/VH run count stand interchange rules.

The panel reviewed the background to this motion. Several Heavy Duty tests allow calibration of more than one test type on a given stand and in this case, the stands are almost identical. Each test will be charted separately in accordance with its LTMS requirements and maintain separate run numbers for each test type.

- 2) Current batch of 1009 is in very short supply and will be held for use in the fuel matrix.
- 3) The start of the new Fuel Matrix, will now likely be held pending completion of the BOI/VGRA matrix. This is likely not an issue given the time it will take for the fuel supplier to build the new fuel batch.

Sequence V Fuel Specification

Measurement	Units	Method	Limits	Quarterly Measurements
Distillation Initial Boiling Point	°C	ASTM D86	22.2 - 35.0	✓
Distillation 5% Volume			Report	
Distillation 10% Volume			48.9 - 57.2	✓
Distillation 20% Volume				
Distillation 30% Volume				
Distillation 40% Volume				
Distillation 50% Volume			98.9 - 115.2	✓
Distillation 60% Volume				
Distillation 70% Volume				
Distillation 80% Volume				
Distillation 90% Volume			162.8 - 176.7	✓
Distillation 95% Volume				
Distillation End Point			196.1 - 212.8	✓
Distillation Recovery			volume %	
Distillation Residue	volume %		2.0 Max	
Distillation Loss	volume %		Report	
API Gravity	°API	ASTM D4052	58.7 - 61.2 → 56.5 - 61.2	✓
Specific Gravity	unitless	ASTM D4052	Report	
Reid Vapor Pressure	kPa	ASTM D5191	60.7 - 63.4	✓
Carbon	wt. fraction	ASTM D5291	0.8580 - 0.8690	
Hydrogen	wt. fraction	ASTM D5291	Report	
Carbon	wt. fraction	ASTM D3343	Report	
Oxygen	wt. %	ASTM D4815	0.05 maximum	
Sulfur	mg/kg	ASTM D5453	100 maximum	
Lead	mg/L	ASTM D3237	2.6 maximum	✓
Phosphorous	mg/L	ASTM D3231	1.3 maximum	
Composition, aromatics	volume %	ASTM D1319	35.0 maximum	
Composition, aromatics	volume %	ASTM D5769	report	
Composition, olefins	volume %	ASTM D1319	10 maximum	
Composition, olefins	Volume %	ASTM D6550	report	
Composition, saturates	volume %	ASTM D1319	Report	
Oxidation Stability	minutes	ASTM D525	1440 minimum	✓
Copper Corrosion	unitless	ASTM D130	1 maximum	
Solvent Washed Gum Content	mg/100 mL	ASTM D381	3 maximum	✓
Research Octane Number	unitless	ASTM D2699	96.0 - 98.0	
Motor Octane Number	unitless	ASTM 2700	Report	
Anti-Knock Index (R+M)/2	unitless	ASTM 2700	Report	
Sensitivity	unitless	ASTM D2700	7.5 minimum	
Appearance	unit less	N/A	clear and bright	✓
Net Heat of Combustion	btu/lb	ASTM D240	Report	
Additive, Ethyl antioxidant	ptb	calculated	Report	
C of A sets limits, test method does not				
Not on C of A				
API Gravity out of spec on last C of A				

Deleted: 7