

Sequence V Surveillance Panel Meeting November 7th, 2022 2 PM EST, via Webex

Roll Call:

Afton: B. Maddock, A. Stone
BP: J. Agudelo
ExxonMobil: P. Rubas
Ford: M. Deegan, R. Zdrodowski
General Motors: B. Cosgrove, K. Zreik
Haltermann: W. Hairston, E. Hennessy, I. Mathur
Infineum: D. Boese, C. Laufer, A. Ritchie (Chair)
Intertek: J. Franklin, A. Lopez
Lubrizol: J. Catanese, G. Szappanos
OHT: J. Bowden
Oronite: J. Martinez, R. Stockwell
Shell: J. Hsu
SwRI: T. Kostan, P. Lang, M. Lochte
TEI: D. Lanctot
TMC: R. Grundza
Valvoline: A. Savant

Meeting Summary:

- The CoAs of the latest fuel batch N-000010-1 and previous batches were reviewed. Haltermann explained they made several adjustments to increase the severity of the fuel.
- Haltermann will schedule delivery of N-000010-1 to the 3 test labs end of this week.
- The group will reconvene on Thursday 11/10 to discuss matrix composition, RO 940, and impact on RAC target setting.

Next meetings:

- Webex: Thursday, November 10th, 2022 at 2 PM EST to discuss matrix composition and impact on RAC target setting
- F-2-F: Wednesday, November 16th, 2022 at 8 AM CST in San Antonio
- Task Force session to agree next steps (not fixed), lab visits (target 1Q23)

Meeting Details:

Indresh Mathur (Haltermann) guided the group through the CoA of the new batch of fuel, N-000010-1, and compared it to the previous batch, N-000010 (see excel file in Appendix). The CoAs of the prior GI and DJ batches were also reviewed (see PDFs in Appendix). The data has been compiled in this table:

								edited to add GI and DJ batches (copied from PDF files in Appendix):	
PRODUCT:	SVG M2			Batch No.:	N-000010-1	N-000010	GI0321NX10	DJ0121NX10	
PRODUCT CODE:	HF0295			Tank No.:	Tk79	Tk79	79	T62	
				Date:	10/6/2022	7/9/2022	8/11/2018	1/6/2016	
TEST	METHOD	UNITS	SPECIFICATIONS			RESULTS	RESULTS	RESULTS	RESULTS
			MIN	TARGET	MAX				
Distillation - IBP	ASTM D86 ²	°C	22.2		35.0	30.4	29.9	32.3	27.9
5%		°C				45.5	43.2	46.9	41.6
10%		°C	48.9		57.2	54.3	51.7	55.0	49.7
20%		°C				69.4	66.1	67.7	62.4
30%		°C				86.1	82.2	82.6	77.6
40%		°C				100.9	98.3	99.0	95.9
50%		°C	98.9		115.2	110.1	108.5	109.4	107.4
60%		°C				117.2	115.2	116.7	114.1
70%		°C				127.0	123.6	124.9	122.7
80%		°C				148.8	143.3	143.2	142.4
90%		°C	162.8		176.7	173.1	171.4	171.9	172.9
95%		°C				182.1	180.9	181.5	182.7
Distillation - EP		°C	196.1		212.8	200.9	199.2	203.0	203.9
Recovery		vol %		Report		97.5	97.1	97.3	97.4
Residue		vol %			2.0	1.1	1.1	1.1	1.1
Loss		vol %		Report		1.4	1.8	1.6	1.5
Gravity	ASTM D4052 ¹	°API	56.5		61.2	56.93	57.96	57.7	58.5
Specific Gravity	ASTM D4052 ¹	---		Report		0.7509	0.7469	0.7478	0.7449
Reid Vapor Pressure	ASTM D5191 ¹	kPa	60.7		63.4	60.8	62.1	61.4	61.6
Carbon	ASTM D5291 ²	wt fraction	0.8580		0.8690	0.8630	0.8610	0.8680	0.8667
Hydrogen	ASTM D5291 ²	wt fraction				0.1370	0.1390	0.1320	0.1296
Carbon	ASTM D3343 ¹	wt fraction		Report		0.8670	0.8659	0.8677	0.8669
Oxygen	ASTM D4815 ²	wt %			0.05	None Detected	None Detected	Not Detected	None Detected
Sulfur	ASTM D5453 ¹	mg/kg			100	52	55	51	52
Lead	ASTM D3237 ²	mg/l			2.6	None Detected	None Detected	None Detected	None Detected
Phosphorous	ASTM D3231 ²	mg/l			1.3	None Detected	None Detected	None Detected	None Detected
Composition, aromatics	ASTM D1319 ²	vol %			35.0	30.8	29.6	32.9	31.9
Composition, aromatics	ASTM D5769 ²	vol %		Report		33.14	33.98	34.3	
Composition, olefins	ASTM D1319 ²	vol %			10.0	6.6	5.1	6.2	6.5
Composition, olefins	ASTM D6550 ²	vol %		Report		6.0	5.7	5.7	
Composition, saturates	ASTM D1319 ²	vol %		Report		62.6	65.3	60.9	61.6
Oxidation Stability	ASTM D525 ²	minutes	1440			1440+	1440+	1440+	1440+
Copper Corrosion	ASTM D130 ²	Class			1	1a	1a	1a	1a
Existent gum, unwashed	ASTM D381 ²	mg/100mL			5	2.5	1.5	1.5	
Existent gum, washed	ASTM D381 ²	mg/100mL			3	0.5	<0.5		<0.5
Research Octane Number	ASTM D2699 ²		96.0		98.0	97.8	98.0	98.0	97.4
Motor Octane Number	ASTM D2700 ²			Report		88.4	88.0	88.9	86.5
(R+M)/2	D2699/2700 ²			Report		93.1	93.0	93.4	92.0
Sensitivity	D2699/2700 ²		7.5			9.4	10.0	9.1	10.9
Appearance	Visual			Report		C&B	C&B	C&B	
Net Heat of Combustion	ASTM D240 ²	Btu/lb		Report		18501	18236	18612	18592
Additive, Ethyl antioxidant	calculated	ptb		Report		3.5	3.5	3.5	3.5

Indresh explained that the new batch of fuel should be more severe; the following were adjusted within the bounds of the specification:

- T50 - desire is to have a higher boiling point fuel
- T90 is also indicating it is moving in the right direction
- Specific gravity shows that the new batch is heavier with the addition of the heavy aromatics most responsible for this SG increase.
- Carbon number shows higher carbon fraction from higher aromatics
- Sulfur was kept around the same level
- Olefins are higher, saturates are lower
- Higher unwashed gum is also a good indication of the expected fuel severity

Compared to the GI and DJ batches, N-000010-1 appears to have less aromatics and more olefins. Indresh pointed out that D1319 is a very broad measurement test but that the density measurement on the other hand is very accurate and shows higher density for the newly made batch, an indication that there are more aromatics. N-000010-1 was noted to have a low RVP value, very close to the lower limit. William Hairston (Haltermann) stated that RVP would be adjusted more to mid-range via the addition of butane before the fuel will be ready to be shipped out at the end of this week. Ben Maddock (Afton) will follow-up with Haltermann on how much fuel can be received at the Afton lab. SwRI and IAR confirmed they are ready to receive a truck load. William will confirm with the labs when the trucks are scheduled.

The SP group will reconvene on 11/10 to focus the discussion on RO 940 and the matrix design. Travis Kostan (SwRI) will gather the input from the statisticians' group and have a document ready to lay out the pros and cons of options. Time will also be allocated the following week on the 16th to have a f2f meeting to follow up on the 940 discussion, review the 6 month reporting period, housekeeping on action items, and catch-up on the remaining items for the Severity Task Force to address. The Chair asked the labs to be ready to discuss a lab visit in 1Q23.

Meeting adjourned at 2:36 PM EST.

Appendix:

Excel file: CoAs of N-000010 and N-000010-1 fuel batches

PDFs: CoAs of the DJ and GI fuel batches



Book1.xlsx



HF0295



New VH Fuel

DJ0121NX10 TK62_nSpecification GJ EEE