Notes from 11/16/2010 Sequence VG Surveillance Panel Call

Attendees:
Andrew Ritchie, Gordon Farnsworth, Mike McMillan – Infineum
Jo Martinez, Mark Sutherland – Chevron
Ron Romano – Ford
Raham Kirkwood, Bill Buscher – SwRI
Al Lopez – Intertek
Dave Glaenzer, Ed Altman, Todd Dvorak – Afton
Rich Grundza – TMC
Jerry Brys, Alison Rajakumar, George Szappanos – Lubrizol
Jim Carter, Mark Overaker – Halterman
Bruce Matthews – GM
Timothy Caudill – Ashland
Timothy Miranda – Castrol
Jason Bowden, Adam Bowden, Mathew Bowden, Dwight Bowden – OHT
Zack Bishop, Clayton Knight - TEI

1) Motion to approve the notes from November 11, 2010 meeting was made by Ron Romano and seconded by Mark Sutherland. Passed by acclamation.
2) Action items from last meeting were reviewed:
   i) Halterman to determine when fuel will be at SwRI and Intertek since these two labs will be in the matrix as a minimum. Fuel can be made available as soon as decision on which labs will be included is made.
   ii) SwRI and Intertek to determine when fuel references can be completed if three runs or four runs per stand is decided upon. Tests at both labs can start by the end of this week, and tests will be run back-to-back.
   iii) Lubrizol and Afton to determine when they could complete fuel references if requested to run 3 or 4 runs in a stand. Both labs indicated they could start matrix testing by the middle of next week, and matrix tests will be run back-to-back.

3) Jo Martinez went through the several possible options for conducting the fuel approval matrix which were identified in the November 11 call. The three statisticians favored a compromise option (#2a in the attached presentation). This option includes 3 tests on 3 oils at each of the 4 labs, plus one additional repeat test at each of the two independent labs. Following some questions about the other possible options, a motion was made by Ed Altman and was seconded by George Szappanos to accept Option 2a for conducting the fuel approval matrix. Extensive discussion followed primarily around whether the data generated in the previous fuel approval matrix was “correct” or not, and whether Option 2a was the best option to select based on where most industry testing is conducted. Gordon Farnsworth made the point that whichever option is selected, data should be available on the history (going back ~2 years) of any stand being considered

for matrix testing. Rich Grundza agreed to compile a summary from each lab for each of their stands being proposed for the matrix. Over the next few minutes Rich did this, and the results in chronological order were as follows: (Note: in the following

AC = Acceptable, XC = Aborted, LC = invalid, OC = fail, AF = fuel)

Lab 1: Stand 1 – 4 AC
Lab 2: Stand 1 – 4 AC
Stand 2 – 1 LC, 4 AC
Lab 3: Stand 1 – 1 LC, 1 XC, 3 AC
Stand 2 – 1 AF, 4 AC
Lab 4: Stand 1 – 1 LC, 1 OC, 3 AC, 1 LC, 1 AC
Stand 2 – 2 OC, 3 AC, 1 LC, 1 OC, 1 AC

There was also some discussion of how each of the stands was running (i.e., mild, severe, by how much, what parameters, etc.), but no action was taken based on this discussion.

Chairman Ritchie finally called the question on the motion to accept Option 2a, and a roll call vote was taken. The motion passed with 6 Affirmative, 2 Negatives, and 6 Waives.

Action items from this meeting:

1) Meeting minutes will be circulated within 48 hrs.
2) Halterman will send fuel to all 4 labs within 7 days. Sampling will include 1 in storage tank, 1 in truck tank/compartment and 1 at the stand/lab before each test start. Everyone should ensure that the CofA batch number is on each sample. All samples are to be sent back to Halterman for analysis.
3) Rich Grundza will work with all 4 labs to identify the best stand to be used in the matrix.
4) Each lab should send the name of a point-of-contact person for the matrix to Mark Overaker.

The next call will be scheduled in 1-2 weeks to discuss how the matrix or preparations are proceeding.

Attachment 1

	SVGM2, YJ0621NX10, Tk 62 40492		SVGM2, XC2721NX10, Tk 62 39902	
Summary by Group				
Totals by Group	%Wt	% Vol	%Wt	% Vol
Paraffin	2.29	2.59	2.225	2.5
Isoparaf.	45.83	51.57	44.22	49.96
Olefin	5.58	5.94	5.46	5.91
Naphthene	1.72	1.67	2.015	1.96
Aromatic	43.26	36.99	42.91	36.63
Oxygenates	0	0	0	0
Unidentified	1.3	1.24	3.17	3.04
	100	100	100	100
Summary by Carbon				
Group	%Wt	% Vol	%Wt	% Vol
C4	2.15	2.84	2.01	2.65
C5	18.11	21.71	18.75	22.51
C6	5.73	6.31	5.76	6.33
C7	26.34	23.46	26.41	23.59
C8	21.12	22.29	20.14	21.16
C9	16.62	14.54	15.93	13.98
C10	5.94	5.12	6.67	5.62
C11	1.56	1.39	0.53	0.49
C12	1.1	1.1	0.63	0.63
Paraffins	%Wt	% Vol	%Wt	% Vol
C4	0.52	0.67	0.52	0.67
C5	0.29	0.34	0.31	0.37
C6	0.28	0.32	0.26	0.29
C7	0.29	0.32	0.28	0.3
C8	0.27	0.29	0.275	0.29

C9	0.14	0.15	0.1	0.1
C10	0.05	0.05	0.02	0.02
C11	0.1	0.1	0.12	0.12
C12	0.35	0.35	0.34	0.34
Isoparaf.	%Wt	% Vol	%Wt	% Vol
C4	1.63	2.17	1.49	1.98
C5	17.82	21.37	18.44	22.14
C6	1.82	2.04	1.81	2.04
C7	1.9	2.07	1.88	2.04
C8	19.71	20.9	18.33	19.42
C9	1.61	1.68	1.69	1.76
C10	0.17	0.17	0.09	0.09
C11	0.42	0.42	0.2	0.2
C12	0.75	0.75	0.29	0.29
Olefin	%Wt	% Vol	%Wt	% Vol
C4				
C5				
C6	3.23	3.57	3.2	3.54
C7	1.85	1.85	1.78	1.87
C8	0.5	0.52	0.48	0.5
C9				
C10				
C11				
Naphthene	%Wt	% Vol	%Wt	% Vol
C4				
C5				
C6	0.32	0.31	0.39	0.38
C7	0.51	0.5	0.65	0.63
C8	0.19	0.19	0.445	0.44
C9	0.25	0.24	0.37	0.35
C10	0.37	0.36	0.16	0.16
C11	0.08	0.07	0	0
Aromatic	%Wt	% Vol	%Wt	% Vol
C6	0.08	0.07	0.1	0.08
C7	21.79	.18.22	21.82	18.75
C8	0.45	0.39	0.61	0.51
C9	14.62	12.47	13.77	11.77
C10	5.35	4.54	6.4	5.35
C11	0.96	0.8	0.21	0.17

New Fuel Batch Matrix (May 2009)

- 12 tests
- 2 labs (2 stands per lab)
- No significant difference between Lab A and Lab G on all parameters
- *Recommendation for next matrix:*
  - Proceed with 2-lab matrix (12 tests)
  - Determine correction factor and review/update with more data

Analysis of Matrix Data

Parameter	Lab A	Lab G	Actual Delta	p-value	RMSE	Yi (in *s* units)	α = 0.05	α = 0.10	α = 0.20	α = 0.25	α = 0.30
							1.41	1.12	0.83	0.74	0.65
							Delta in original units given RMSE				
AES LSMEAN	8.20	7.81	0.39	0.40	0.73	0.54	1.026	0.815	0.604	0.534	0.476
RAC LSMEAN	8.88	8.72	0.17	0.37	0.29	0.58	0.405	0.321	0.238	0.211	0.188
AEVB LSMEAN	9.08	9.14	0.07	0.58	0.19	0.35	0.273	0.217	0.161	0.142	0.126
APV LSMEAN	8.33	8.30	0.03	0.79	0.21	0.16	0.294	0.233	0.173	0.153	0.136
LnOSC_1 LSMEAN	1.9	2.1	0.26	0.60	0.78	0.33	1.109	0.880	0.652	0.577	0.514

Parameter	Data Used to Determine Fuel Effect (n=152)					Data Used to Update CF (n=25)					All Data with New Fuel (n=48)				
	Yi	Max Delta	RMSE	AG Delta	Yi	Yi	Max Delta	RMSE	AG Delta	Yi	Yi	Max Delta	RMSE	AG Delta	Yi
AES LSMEAN	1.08	0.553	0.511	0.010	0.02	0.75	0.456	0.61	0.456	0.75	1.07	**0.504**	0.47	0.504	1.07
RAC LSMEAN	1.09	0.307	0.281	0.112	0.40	0.98	0.236	0.24	0.236	0.98	1.48	**0.386**	0.26	0.245	0.94
AEVB LSMEAN	1.00	**0.146**	0.147	0.038	0.26	0.38	0.058	0.15	0.058	0.38	1.33	0.192	0.14	0.046	0.32
APV LSMEAN	1.09	**0.256**	0.236	0.030	0.13	0.76	**0.160**	0.21	0.160	0.76	2.22	**0.467**	0.21	0.100	0.47
LnOSC_1 LSMEAN	1.96	**1.461**	0.747	0.073	0.10	0.24	0.150	0.64	0.150	0.24	1.17	0.670	0.57	0.165	0.29

Significant lab differnce at α=0.05

AEV - EG, APV - AD, LnOSC - D1G APV - BG AES-AG, RAC-AG, APV-AB, BG

Maximum Delta

Parameter	AES	RAC	AEVB	APV	LnOSC_1
Delta					
Matrix Data (n=12)	0.39	0.17	0.07	0.03	0.26
Update Data (n=25)	0.46	0.24	0.06	0.16	0.15
All Data (n=48)	0.50	0.24	0.05	0.10	0.17
RMSE					
Matrix Data (n=12)	0.73	0.29	0.19	0.21	0.78
Update Data (n=25)	0.61	0.24	0.15	0.21	0.64
All Data (n=48)	0.47	0.26	0.14	0.21	0.57
Yi					
Matrix Data (n=12)	0.54	0.58	0.35	0.16	0.33
Update Data (n=25)	0.75	0.98	0.38	0.76	0.24
All Data (n=48)	1.07	0.94	0.32	0.47	0.29

Significant lab difference (0.05)