

Unapproved Minutes of the November 13, 2012
Sequence VG Surveillance Panel
Conference Call

The meeting was called to order by Chairman Andy Ritchie at 1:00 PM EST.

A list of the attendees on the call is included as Attachment 1.

Chairman Ritchie asked if there were any corrections to the minutes from the October 2, 2012 VG Panel conference call. There being none, it was moved by Rich Grundza and seconded by Ed Altman that the minutes be approved. The motion passed unanimously.

Chairman Ritchie listed the three items he had included in the notice for the call:

- 1) Status of new VG fuel blend
- 2) Review of Oil 940 dataset
- 3) Plan for extending use of VG test to July 2016

Chairman Ritchie asked Mark Overaker to begin by providing an update on the status of the current VG fuel batch and plans for developing a new fuel batch. Mark went through a presentation on this which is included as Attachment 2 to these minutes. There are currently about 78K gallons of the current fuel batch remaining. No further shipments will be made until November 27, at which time 6K gallons will be shipped to Afton, 7K gallons to Lubrizol, 7K gallons to SwRI, and 14K gallons to Intertek. Four ISO totes (a total of 24K gallons) will also be filled and stored for emergency purposes. Following these shipments, Haltermann will begin refilling Tank 62 with raw materials with a planned reblend completion date of December 14. Mixing, initial testing, and adjustments as necessary will follow, with the generation of CofA data planned by December 28. Shipments to the four labs would follow, with matrix testing targeted to begin in early January and complete in early February 2013.

Rich Grundza was then asked by Chairman Ritchie to go through his presentation on Oil 940, which is included as Attachment 3 to these minutes. Five VG tests have been run on Oil 940, one from each of three labs, and two from the oil supplier. TMC and laboratory engineers have expressed

concerns regarding the small standard deviation (0.13) found for the Oil 940 AES dataset from the five tests being unrealistic. It is the smallest value for sludge of any of the VG reference oils, and, given the limited amount of data (5 values), might be an anomaly, especially for a failing oil with a large amount of sludge where we know the ratings can vary drastically. A number of proposals were put forth to address the issue, and the statisticians group are recommending that we use a standard deviation for AES pooled from the 5 results generated on Oil 940 plus the 26 target results from the Reference Oil 925-3 which Oil 940 is replacing. The proposed standard deviations for the other 4 parameters are proposed to be based on just the five Oil 940 test results.

Because we will not get any further VG calibration data on Oil 940 until we adopt it as a reference oil with a set of provisional acceptance targets, the following motion was made by Rich Grundza and seconded by Al Lopez:

Motion:

Accept Reference Oil 940 into the VG calibration system with the following targets for tests completing on or after November 13, 2012:

<u>Parameter</u>	<u>Mean</u>	<u>Standard Deviation</u>
AES	6.43	0.51*
RAC	8.15	0.44
AEV	8.79	0.25
APV	7.38	0.63
OSCR	3.951	0.84

* based on 31 results (5 on Oil 940, 26 on Oil 925-3)

The motion passed unanimously.

Chairman Ritchie reported that at the last meeting of the AOAP (Auto-Oil Advisory Panel) it was announced that introduction of the GF-6 category will be delayed until the second half of 2016. This means that the VG Panel needs to try to extend the life of the VG test until at least July 2016. He asked the lab engineers to collect data on what hardware currently exists and whether it is enough to support VG testing through July 2016. Ed Altman agreed to lead this effort, and he will get together with the various lab

engineers to make this assessment and report back to the Panel by the December VG conference call.

New business: Ron Romano gave an update on Sequence VH development. Two tests have been run so far, one on Oil 940 and one on Oil 1006. Both tests ran 264 hours, which is longer than the current VG test length. The AES results were 7.05 merits for Oil 940 and 9.25 merits for Oil 1006. Both of these results are mild relative to VG oil targets, so it is planned to increase the test length by an additional 24 hours to increase sludge severity. Test conditions are fairly close to those for the VG, and stage times are also basically the same. Soot generation is causing some filter plugging problems, so attempts are being made to optimize the conditions so that enough soot is formed to allow the test to be used to measure chain wear, but not so much soot is formed that it plugs filters excessively. Rich Grundza asked whether the sludge distribution on the engine parts which are rated is similar to the VG test, and Ron indicated that it is. Ron mentioned that some of the special parts which will be used for the VH test are available from OHT, if any of the labs want to start putting together a test stand, but suggested holding off on obtaining cam covers, since the design for these components are still being finalized. Ron also mentioned that this same engine, a 2.0 L GDI engine, is being used to develop a LSPI (Low-Speed Pre-Ignition) test for GF-6.

Next Meeting: Chairman Ritchie stated that he was going to reinstate monthly Sequence VG calls at 2:00 PM ET on the second Tuesday of each month. Thus, the next regularly scheduled call will be Tuesday, December 11, at 2:00 PM ET. However, this month Chairman Ritchie would like to have an additional conference call on Tuesday, November 27, at 2:00 PM ET to follow up on plans for the next fuel batch.

Attachment 1

Attendees during 11/13/2012 Sequence VG Surveillance Panel Call

Afton – Ed Altman

BP – Timothy Miranda

Ford - Ron Romano

GM –Bruce Mathews

Haltermann – Mark Overaker

Infineum – Andy Ritchie, Doyle Boese , Mike McMillan, Gordon Farnsworth

Intertek – Al Lopez

Lubrizol – Jerome Brys, Chris Mileti, Jessica Buchanan

OHT – Dwight Bowden, Jason Bowden, Matthew Bowden

Oronite– Mark Sutherland, Jo Martinez

SwRI – Bill Buscher, Raham Kirkwood

TEI – Clayton Knight

TMC – Rich Grundza



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Sequence VG 940 Results

Sequence V Surveillance Panel

November 9, 2012

Summary of Results

- 5 tests reported from 3 labs
- 2 supplier results, 3 donated
- Summary in next few slides

Target Values

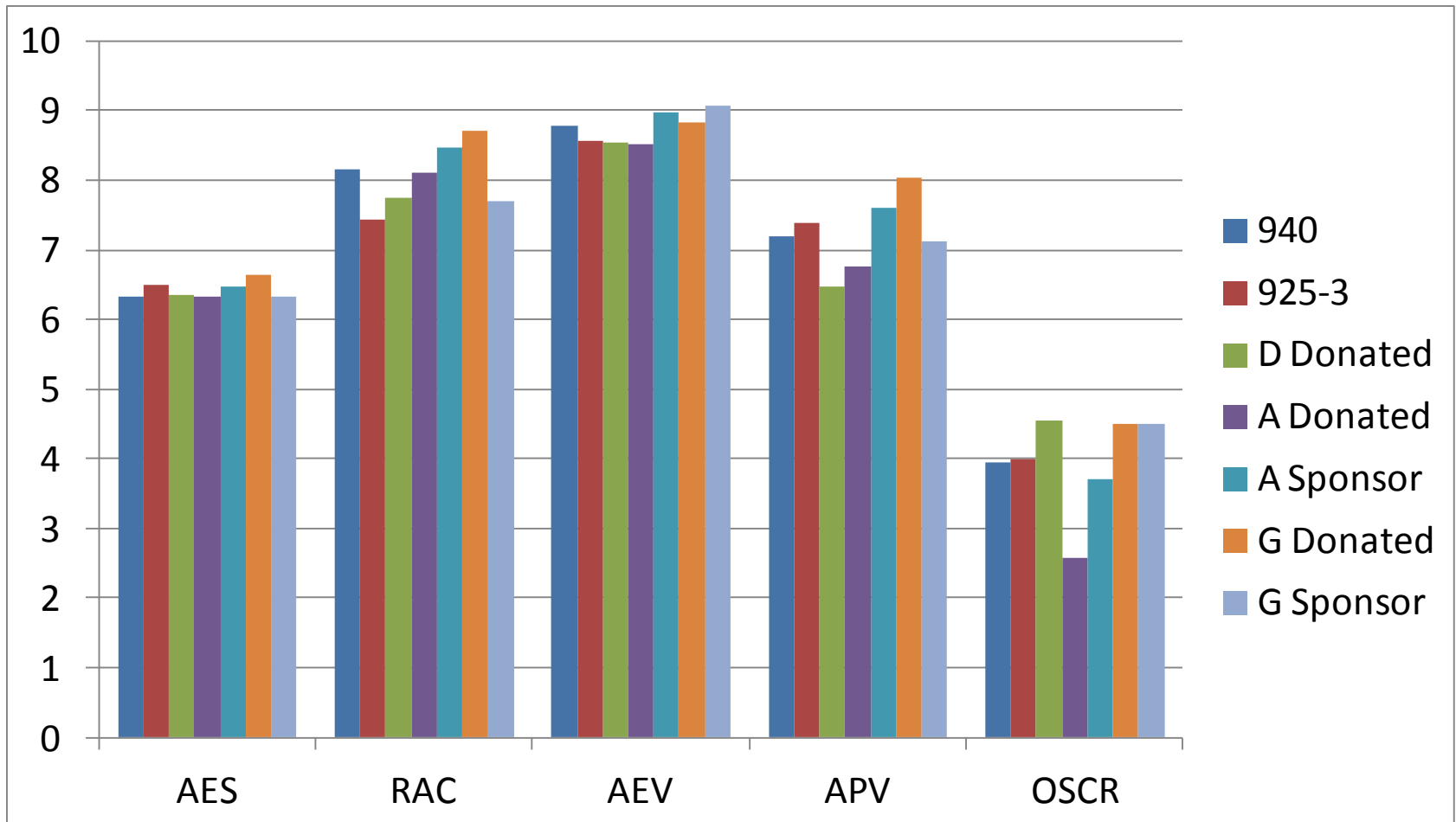
Lab	AES	RAC	AEV	APV	OSCR	OSCR _{Ti}
A	6.47	8.48	8.97	7.6	40	3.7136
G	6.34	7.7	8.82	7.12	90	4.5109
G	6.64	8.70	9.07	8.04	90	4.5109
A	6.34	8.11	8.52	6.75	12	2.5649
D	6.36	7.75*	8.55*	6.47	85	4.4543
Mean	6.43	8.15	8.79	7.2	63.4	3.951
925-3	6.49	7.43	8.56	7.38	51 ‘	3.997
S	0.51#	0.44	0.25	0.63		0.84

*Laboratory SA's applied

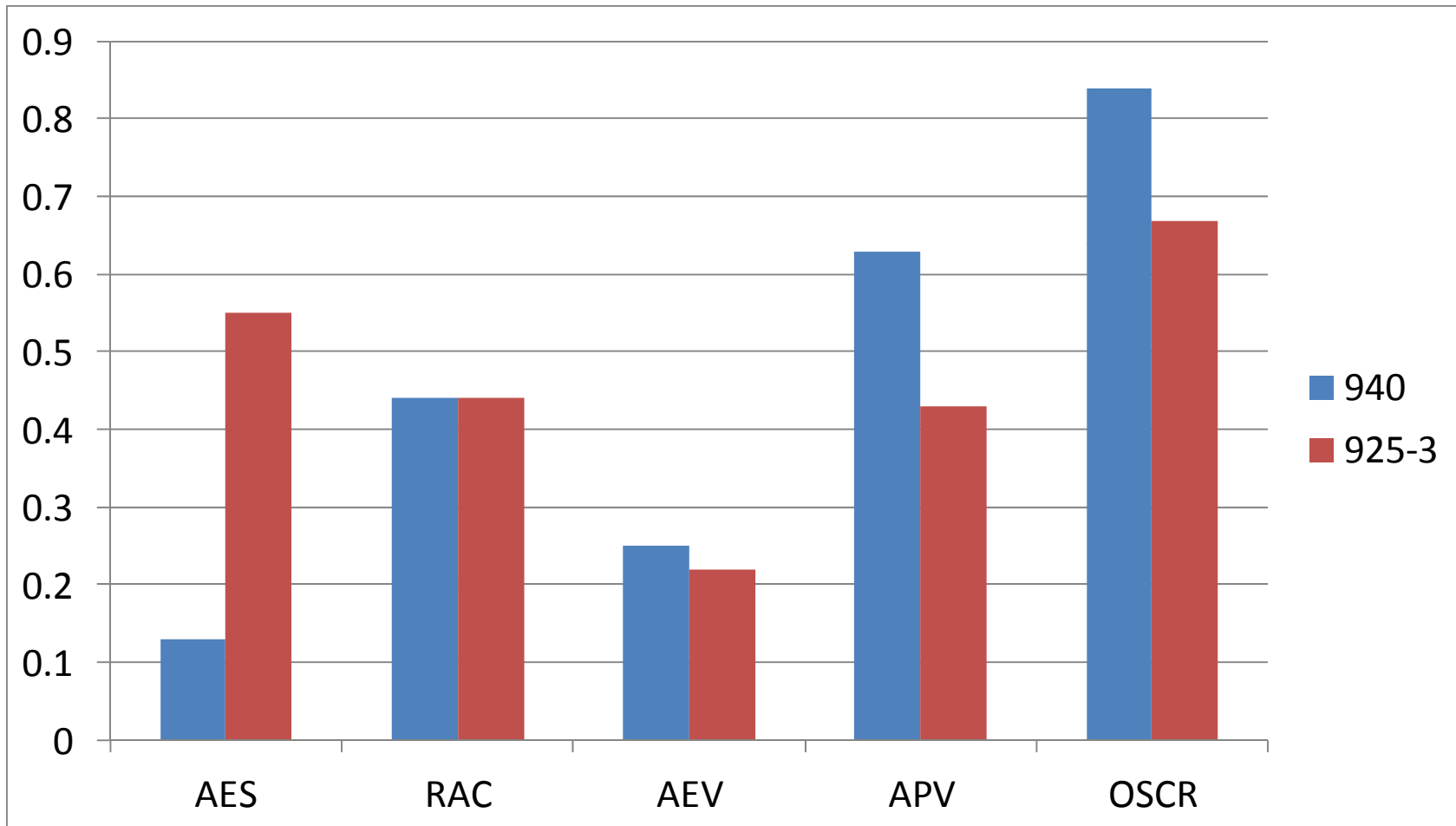
‘ Mean of transformed results converted back to original units.

standard deviation pooled s from 925-3 (n=26) and 940 (n=5)

Comparison of Mean Performance of 940 (n= 5) with 925-3 targets



Comparison of Standard Deviations of 940 (n= 5) with 925-3 targets





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