

Unapproved Minutes of the July 14, 2015
Sequence VG Surveillance Panel
Conference Call

The meeting was called to order by Chairman Andy Ritchie at 2:00 PM EDT.

Mike McMillan agreed to take the minutes of the meeting.

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

Chairman Ritchie listed the agenda items he would like to cover in this call:

- 1) Approval of the minutes from the June 3, 2015 Sequence VG Panel Meeting
- 2) Report from Haltermann on status of contamination of new fuel batch
- 3) Discussion of next steps
- 4) Additional Old Business
- 5) New Business
- 6) Next meeting/call

Chairman Ritchie asked if there were any additions or corrections to the minutes from the June 3, 2015 VG Panel Meeting in San Antonio. There being none, Jason Bowden moved and Ed Altman seconded a motion to approve the minutes. The motion was approved unanimously.

Chairman Ritchie summarized the situation with the contamination of the new fuel batch which occurred a couple of weeks ago. The following was excerpted from a presentation given by Rom Romano during the combined API Auto-Oil Advisory Panel/ASTM Passenger Car Engine Oil Classification Panel meeting on July 9, 2015. Chairman Ritchie's annotations appear in red in what follows:

350,000 gallon batch of DA fuel accidentally had a glycol ether compound added.

- Initial limited chemical analysis showed it still meet the VG fuel spec.

- Ran two VH tests on DA/glycol ether fuel
 - SWRI test was ended at 196 hours due to a leaking fuel injector
 - IAR test completed the test
- Hard flakey deposit was formed as opposed to sludge
- Severe AEV and mild APV
- Deposit rating had a slightly mild rating
 - Performing oil and deposit analysis

UPDATE: SwRI measured 1323 ppm DiEGME in the EOT oil sample from Intertek.

- Need to determine if a VG test is needed in addition to the VH test to evaluate fuel
- Investigating making another batch of VG fuel
- Investigating cleaning (removing glycol ether) the DA batch of fuel

UPDATE: SwRI measured 0 ppm DiEGME in the cleaned DA fuel

Mark Overaker added that the cleaning process they were using basically consisted of an extraction process with water. Ron Romano questioned whether all of the salt and clay are removed after the extraction process. Mark answered that it was a multi-stage procedure, and he couldn't answer at this point whether all had been removed and that further analyses were being conducted. Chairman Ritchie asked if an analysis for the concentrations of the two secret compounds used in the formulation of the fuel would be conducted. Mark answered yes, but that Haltermann would not be releasing those results since that was proprietary information. Ron asked whether the distillation curve could have been changed by the extraction, and Mark answered that was not likely, but it would be checked when the process was completed, and a new C of A would be issued for the fuel batch. Ed Altman asked about the nature of the deposits and how they

differed from conventional VG sludge. Al Lopez answered they were dry and flakey and different from normal VG sludge. Ed also asked about the SwRI aborted test and whether they had looked at the parts afterwards. Cole Hudson answered they had looked at the parts, and, like Intertek, they had noticed the sludge and deposits were different than those generated in a normal VG test. Amol Savant suggested that, because glycol absorbs water, it is reasonable to speculate that the sludge also contained less water and would be drier and more flakey.

At this point in the discussion, Ron asked whether it might be better to just make a new batch rather than trying to clean up the contaminated batch. Mark answered that it would probably take more time to scrap this batch and make a new batch, in addition to being very costly. Gordon Farnsworth countered that it is probably even more costly to begin a new performance category with an uncertain fuel which might not be able to be duplicated later. Chairman Ritchie also added that we weren't in very good shape with this fuel batch before the contamination, given the mild results on AES obtained on the VH tests run on the fuel batch before contamination occurred.

Mark acknowledged that there were a lot of unanswered questions and suggested the Panel give him time to complete his cleaning process and report back to the group with various options. Chairman Ritchie agreed this was an appropriate course, and also noted that we don't have an analytical chemist on the Panel, and it might be good to have that kind of input. Al said he has been keeping Joe Franklin apprised of what has been going on and had invited him to participate in today's meeting, but he is on vacation and unavailable. SwRI also indicated they could have someone with that kind of background participate.

Chairman Ritchie proposed that we reconvene in two weeks to let Mark complete his work, and have the analytical group also report back at that time. Ed asked if we could make whatever analytical information we have at this time available to the Panel members later this week. Mark indicated whatever information he has at this time is available at SwRI, and Cole said he would make that information available. Chairman Ritchie also pointed out that we were not planning to begin fuel approval matrix testing until approximately October 1, so although the contamination is a setback, we're probably not as bad off as it might seem.

Amol suggested that a timeline would be helpful leading up to the VH precision matrix. Chairman Ritchie indicated he felt there are too many unknowns at this point for this to be very useful, but perhaps when some of the questions raised today are answered a timeline could help. Al asked what we were going to require from Haltermann to accept this fuel batch, suggesting that certainly some prove out tests (maybe 2 or 4) would be necessary. Ron agreed but suggested we need to look at the analytical work before this to determine that all of the glycol has been removed, no other components have been introduced, the distillation curve is still the same, etc. It was also suggested we need to make sure we have one homogeneous batch when all cleanup has been completed.

Old Business: There was no Old Business brought before the Panel.

New Business: Chris Taylor introduced himself and indicated that VP Racing Fuels would like to be considered as a supplier the next time a new fuel batch is required. He indicated they have three 60K gallon storage tanks available, and are developing a fuel blend that they think would meet our requirements. Ron commented he would want to make sure the fuel was typical of conventional gasoline in that it is made with conventional streams and not formulated with some unusual additives which promote sludge formation. Chris assured the Panel that the latter was not the case with the blend VP is preparing. Ed remarked that the Panel would actually prefer a much larger batch, perhaps 1 million gallons, so as not to have to approve fuel batches as often. Chris said he would look into the possibility of securing such storage capacity. Several of the Panel members expressed interest in having VP Racing Fuels compete for the next new fuel batch. It was suggested that Chris work with the two San Antonio labs in preparing for this possibility. Cole Hudson of SwRI and Al Lopez of Intertek volunteered to be the contact points at the two labs.

Next Meeting: The next VG Panel conference call is scheduled for Tuesday, July 28, 2015 at 2:00 PM EDT.

The conference call was adjourned at 3:10 PM EDT.

Attachment 1

Attendance for 7/14/15 Sequence VG Call

Infineum: Andrew Ritchie, Mike McMillan, Gordon Farnsworth

Ashland: Amol Savant, Tim Caudell

VP Racing Fuels: Chris Taylor

GM: Bruce Matthews

Ford: Ron Romano

Haltermann : Tracey King, Mark Overaker

SwRI : Dan Worcester, Cole Hudson

Intertek: Al Lopez

Afton: Ed Altman

Lubrizol: Jerry Brys, Kevin O'Malley

Oronite: Jo Martinez, Ricardo Affinito

OHT: Jason Bowden, Matt Bowden

TEI: Zack Bishop, Dan Lanctot

Shell: Jeff Hsu

Valvoline: Thom Smith

Neste: Chris Castanien