

## Sequence V Surveillance Panel Meeting July 26<sup>th</sup>, 2022 2 PM EST, via Webex

### Roll Call:

Afton: B. Maddock  
ExxonMobil: A. Montufar, P. Rubas  
Ford: M. Deegan, R. Zdrodowski  
General Motors: B. Cosgrove, M. Hopp, N. Siebert  
Haltermann: P. Tumati  
HCS Group: I. Gabrel  
Infineum: D. Boese, C. Laufer, A. Ritchie (Chair)  
Intertek: J. Franklin, A. Lopez  
Lubrizol: J. Gingerich, A. Stevens  
OHT: J. Bowden  
Oronite: J. Martinez, R. Stockwell  
PSL Services: C. Taylor  
SwRI: D. Engstrom, T. Kostan, P. Lang, M. Lochte  
TEI: D. Lancot  
TMC: R. Grundza  
TOTAL: A. Willis  
Valvoline: A. Savant

### Meeting Summary:

- Two 940 tests are in progress with the new fuel batch. The results will be reviewed at the next SP meeting.
- The SP agreed that we could approach PAPTAG and request for registered, blindcoded, candidate data to be reviewed in order to address OEM concerns about updating the RAC target.
- The latest 1011-1 results were reviewed and concerns, similar to those from the RAC target update, were raised. The discussion will continue at the next SP meeting.

### Open Actions:

1. From [March 26<sup>th</sup>, 2021 meeting](#): **Lab engineers** to meet to investigate severity shifts (share operational data, build data, ratings, etc.). The TF has been productive and meeting frequently.
2. From [Sept 9<sup>th</sup>, 2021 meeting](#): **Statisticians Group** led by Doyle Boese (Infineum) to provide update around potential ways to improve current lab-based system. Interim recommendation is to not adopt a stand-based system.
3. From [Sept 9<sup>th</sup>, 2021 meeting](#): **Haltermann** to report monthly inventory via email to V SP. Monthly updates are being provided.
4. From [Nov 29<sup>th</sup>, 2021 meeting](#): **Haltermann** to include extra column in fuels data to indicate which fuel goes with which test.
5. From [February 10<sup>th</sup>, 2022 meeting](#): **The VH Task Force** to assess number of parts remaining as it relates to the life of the test.
6. From [February 10<sup>th</sup>, 2022 meeting](#): **Haltermann** to report average time it takes for them to respond back to the labs with RVP data.

7. From [February 10<sup>th</sup>, 2022 meeting](#): The **VH Task Force** to discuss the lab responsibility to measure the fuel parameters as received (section 8.2) vs the use of the CoA.
8. From [May 16<sup>th</sup>, 2022 meeting](#) and [June 2<sup>nd</sup>, 2022 meeting](#): **Bob Campbell** and **Andrew Stevens** to consider if their labs, Afton and Lubrizol respectively, would be willing to participate in helping Angela come up with a more realistic forecast number for the VH.
9. From [May 23<sup>rd</sup>, 2022 meeting](#): **Haltermann** to coordinate with the labs to collect RVP data of the new fuel.
10. From [June 2<sup>nd</sup>, 2022 meeting](#): **Fuel contract team** to discuss the fuel matrix changes and send back to the panel for review by June 13<sup>th</sup>, the expected date the CoA for the new fuel batch would be ready.
11. From [June 22<sup>nd</sup>, 2022 meeting](#): **Afton lab** to share stand selection when available / ready for their fuel matrix test.
12. From July 18<sup>th</sup>, 2022 meeting: **SwRI** and **IAR** to send interim chem analysis of the first 940 tests. ← Updates are being provided to the SP.
13. From July 26<sup>th</sup>, 2022 meeting: **Ben Maddock (Afton)** and **Prasad Tumati (Haltermann)** to coordinate timely shipment of the new batch of fuel to the Afton lab.
14. From July 26<sup>th</sup>, 2022 meeting: **Prasad Tumati (Haltermann)** to schedule a meeting with the labs to discuss options for shipping the remaining fuel of the current batch.
15. From July 26<sup>th</sup>, 2022 meeting: **The V Chair, with adco support**, to raise RAC issue (see page 6) to PAPTAG.

Next call: Thursday, August 4<sup>th</sup> at 2 PM EST via Webex

### **Meeting Details:**

The Chair asked for a status update on the fuel matrix testing:

- Al Lopez (Intertek) reported that run 1 of 940 is in progress at 120 hours and an update was emailed to the panel. Fuel dilution is at 11.5% which is in line with the previous batch. Oil addition started at hour 96 which could be indication that we're making sludge but it's too soon to tell.
- Dan Engstrom (SwRI) reported they are at 67 hours, with fuel dilution at 11.9%. Chem analysis is in line with previous runs and is looking good so far.
- Ben Maddock (Afton) reported that if the two San Antonio labs' results look good, Afton lab is ready to start first 940 test during the week of August 8<sup>th</sup>. The Chair asked Haltermann if the fuel can be delivered to the Afton lab in time. Prasad Tumati (Haltermann) will contact Ben offline after contacting his logistics team.

The Chair reminded the panel that the SP will need to revisit what we do with rows 2 and 3 next time we meet when the row 1 results are in. The Chair also thanked the labs for sending out interim update reports to the panel as they help keep everyone updated of the progress.

Re: the current batch of fuel, Prasad Tumati (Haltermann) indicated that due to some DOT regulations they need to comply with and the amount of fuel being so low, they are exploring various options on shipping 2400 gal to the labs. Once he has more information on securing a truck that is properly metered and estimated handling costs, he will schedule a call with all the labs to present the options. Andrew Stevens (Lubrizol) asked if it's possible that the amount some labs receive could change due to these challenges. Prasad replied that it's a possibility but will confirm with the logistics team.

The Chair asked for an update on the inventory of the current fuel at each lab:

- Al Lopez (Intertek) and Dan Engstrom (SwRI) reported they each have about 3 months' worth remaining.
- Amol Savant (Valvoline) reported his lab has 1 test's worth of fuel remaining.
- Andrew Stevens (Lubrizol) reported he has 2-3 months left, assuming the extra fuel is received.
- Ben Maddock (Afton) reported he has 2-3 months remaining, assuming the extra fuel is received.


Before Rich Grundza (TMC) went through the presentation for the group, the Chair stated that he and Rich were invited by Ford and GM to go through the presentation on July 21<sup>st</sup>. The Chair's hope is that the SP moves toward a consensus position. He reminded the group that this would not be an Information Letter but would still like full agreement. There are some issues that the OEMs have that are legitimate and he'd like to make sure they're properly addressed.

Rich's presentation has not changed except for 2 additional data points for 1011-1 which are now reflected in the slidedeck.


Summary of RAC target calculation:

## RAC Target Calculation

- ▶ Used all results on 940 from DJ0121NX10 fuel batch for a total of 21 tests.
- ▶ Targets would be  $\bar{X}$  of 0.8041 and  $s = 0.234$ , in merit units the mean would be 7.76 compared to the current mean of 7.50
- ▶ For comparison purposes, the following charts show the current means and  $s$  in transformed units, separate industry charts with existing targets and new targets and an overlay the same EWMA charts

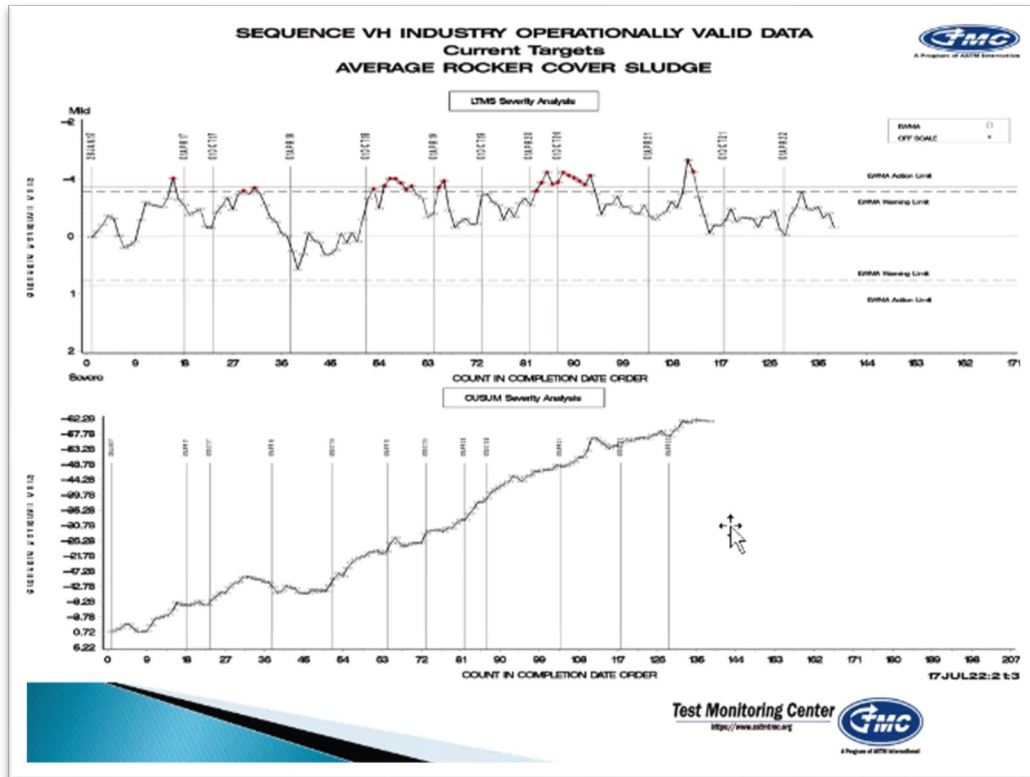


Test Monitoring Center  
<http://www.safetec.org>

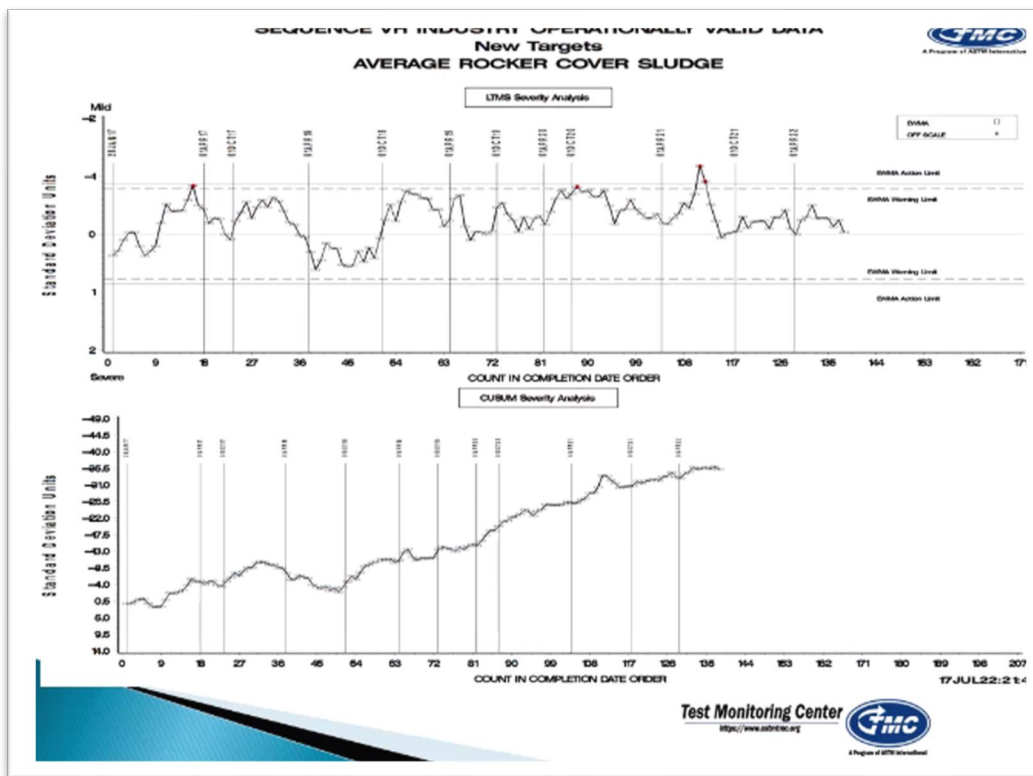


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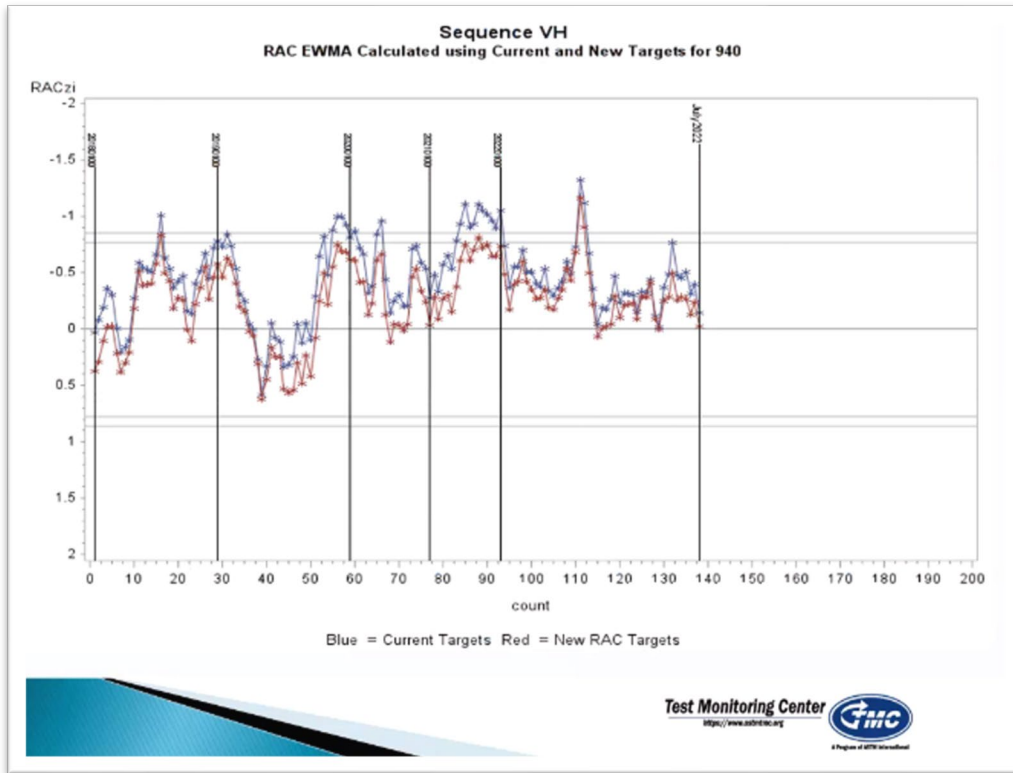
The current industry charts, with 26 alarms:



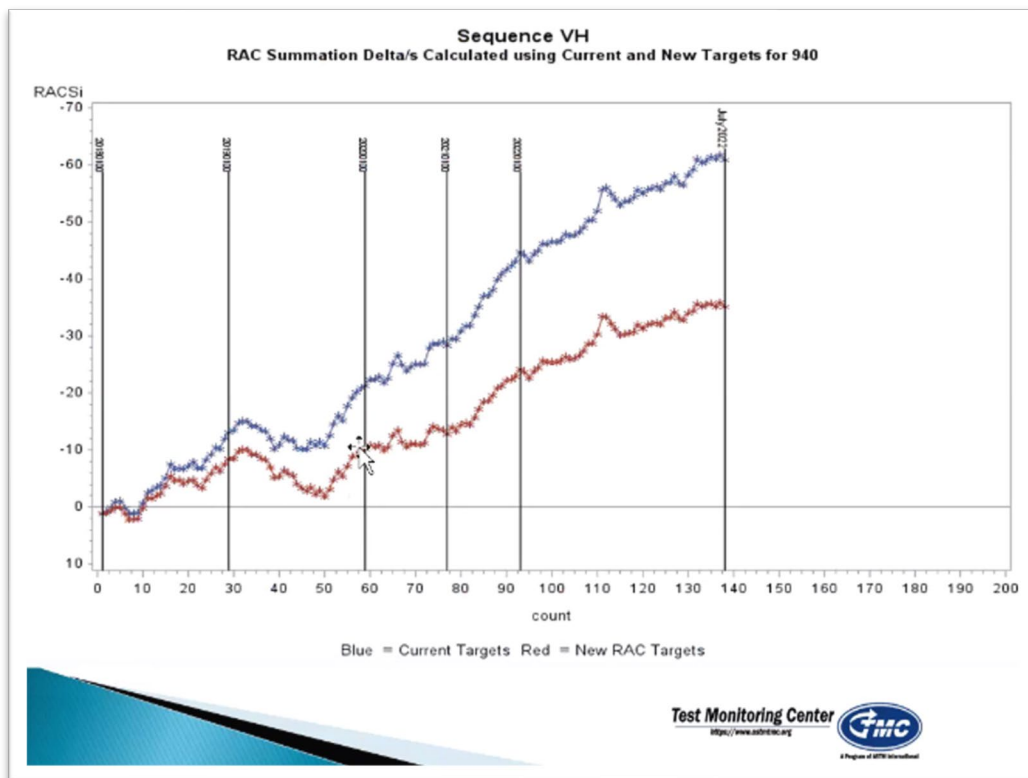
What the industry charts would look like if we were to adopt the updated targets (note: 26 alarms reduce down to 4):



A comparison of the EWMA's, with (in red) and without (in blue) the updated target:




A comparison of the CUSUMs, with (in red) and without (in blue) the updated target:



Comparison of each labs' current SA vs updated SA:

**Summary of Changes in Original Units at API and Dexos Limits**

Lab	Current	Updated	At 8.7	At 8.7 (new)	change in SA	At 8.0	at 8.0 (New)	change in SA
A	0.0743	0.0722	8.60	8.60	0.00	7.85	7.85	0.00
B	-0.0484	-0.0715	8.76	8.79	0.03	8.09	8.13	0.04
D	0.0919	0.0296	8.57	8.66	0.09	7.81	7.94	0.13
E	-0.0179	-0.078	8.72	8.80	0.07	8.04	8.15	0.11
G	0.1585	0.1161	8.48	8.54	0.06	7.66	7.75	0.09



Mike Deegan (Ford) connected the above table to the issue the OEMs have: If we update the RAC target and leave the API 1509 limit the same, some oils that have failed in the past could now potentially pass. The Chair agreed this is a serious issue and needs appropriate time to resolve. Angela Willis (TOTAL) asked if a request to PAPTAG could be made to look at registered, blindcoded, candidate data. The Chair said he can bring this issue to PAPTAG as it seems appropriate for that group and requested for adco support. Mike agreed and thanked the Chair and group for this approach. Robert Stockwell (Oronite) agreed but also suggested that the adcos could check their data and bring it to the OEMs. Angela recommended that a conversation could start with Joan Evans or John Loop to get some initial feedback before getting on the PAPTAG agenda. Mike also suggested that this could be brought into AOAP if the PAPTAG approach doesn't work. In addition to registered data or adco data, Angela suggested that GM could look at their internal database and see what percentage of oils would fall out / lie on the edge. Meryn Hopp (GM) agreed that is something GM could investigate.

The next slide is a summary of the 11 results obtained so far on 1011-1:

## Reference oil 1011-1 Target Update

APPARATS	AP50	AP50SA	AP50 adj	AE50	AE50 sa	AE50 adj	AES	SA	AES adj	RAC	RACti	SA	RAC adj
G3	8.58	0.11	8.69	9.26	-0.03	9.23	8.35	-0.02	8.33	9.52	-0.7340	0.2116	-0.5224
G2	8.91	0.11	9.02	9.5	-0.03	9.47	8.69	-0.02	8.67	9.54	-0.7765	0.2116	-0.5649
G5	8.71	0.11	8.82	9.44	-0.03	9.41	8.13	-0.02	8.11	9.33	-0.4005	0.2116	-0.1889
A2	9.05	-0.01	9.04	9.55	0	9.55	9.12	0.64	9.76	9.48	-0.6539	0.0032	-0.6507
A5	8.73	-0.01	8.72	9.2	0	9.2	8.33	0.64	8.97	9.44	-0.5798	0.0032	-0.5766
D1	8.6	0.22	8.82	9.4	0.2	9.6	7.96	0.23	8.19	9.44	-0.5798	0.0484	-0.5314
G1	9.08	0.11	9.19	9.55	-0.03	9.52	8.15	-0.02	8.13	9.36	-0.4463	0.2116	-0.2347
A3	9.38	-0.01	9.37	9.46	0	9.46	9.05	0.64	9.69	9.44	0.57982	0.0032	-0.5766
A1	9.11	0.05	9.16	9.61	0.05	9.66	9.11	0.21	9.32	9.51	0.71335	0.0486	-0.6648
B2	7.82	0.43	8.25	9.11	0.14	9.25	7.75	-0.28	7.47	9.26	0.30111	0.1234	-0.1777
D2	8.2	0.15	8.35	9.18	0.27	9.45	7.85	0.28	8.13	9.33	0.40048	0.0511	-0.3494
Means	8.74		8.86	9.39		9.44	8.41		8.62		-0.5605		-0.458
Std dev	0.44		0.35	0.17		0.15	0.51		0.73		0.1554		0.1848
Target Mean			8.96			9.43			8.43				-0.5234
Target s			0.48			0.21			0.57				0.1924

Rich reminded the group that the first 8 results are what went into the original 1011-1 targets, and since then, he has severity adjusted the results received. He clarified that the row labeled “target means” represents the current targets and the row labeled “means” represents the projected targets. For average piston varnish, the target is about a tenth severe but with decreasing variability. No real change for average engine varnish. Average engine sludge is slightly milder and a slightly more variable. RAC is in the same ballpark. Nathan Siebert (GM) clarified that it appears that AES would be easier to pass by 2 tenths. The Chair asked if the severity adjustments would account for this. Amol Savant (Valvoline) commented that the oil has shifted because it’s a new blend and believed it’s up to the group to make the change. The Chair noted that the reblend should be identical but due to changes in components and base stocks, there is almost always a difference.

The Chair noted the group will reconvene next week to discuss 940 results with the new fuel batch.

Meeting adjourned at 2:57 PM EST.