From: Salgueiro, Bob

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Cc: Kostan, Travis G. (travis.kostan@swri.org)

Subject: AMENDED: Mack Surveillance Panel Meeting Minutes - June 1, 2016

Date: Saturday, June 04, 2016 12:11:32 AM

The following minutes were amended to include the unavailability of the Mack T-10A and that the next meeting was scheduled for Thursday June 9, 2016 from 10-11:30 AM Eastern. Please note, I will not be able to attend the next call, so if one of the other panel members would be willing to act as Secretary and take the minutes for that meeting it would be greatly appreciated. Thanks.

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Everyone,

The following are the unconfirmed minutes of the Mack Surveillance Panel Meeting held on June 1, 2016. The meeting was conducted by WebEx. Please feel free to let me know if there are any changes or revisions needed. Thanks.

Call Participants:

Afton - Bob Campbell, Abaigeal Ritzenthaler

ChevronPhillips - Jon VanScoyoc

ExxonMobil – Cliff Salvesen

Gage Products – Jim Carter

Infineum - Bob Salgueiro (Secretary), Elisa Santos, Jim Gutzwiller

Intertek - Jim Moritz, Luiz Garcia

Lubrizol - Jim Matasic, Nick Secue, Jon Ahlborn

Oronite - Mark Cooper (Chairman), Jim Rutherford

SwRI – Jim McCord, Robert Warden

TEI - Mark Sutherland

TMC - Sean Moyer, Jeff Clark

Volvo/Mack - Greg Shank

VP Racing Fuels – Chris Taylor

Mack Surveillance Panel Meeting

The Mack Surveillance Panel meeting was called to order at 10:30 AM Eastern, by Mark Cooper, Chairman of the Surveillance Panel. The agenda topics are listed below, with discussions and actions following.

Agenda Topics:

Introduction of T-11 / T-12 new ring batch "W"

TEI reported there are 400 sets of main bearings, 434 piston crowns (limiting factor for next parts batch change). Current piston top ring batch will be out with next kit. TEI could take rings from T-11 kits if needed. So the question is how to introduce the new "W" batch of rings? 3 Options for the Surveillance Panel to Consider were:

- 1) Run coordinated references on the new hardware
- 2) Run the new hardware when references come up following normal schedule
 - 3) Accept new rings without running references

ACTION: All Labs to let TMC know when they expect to convert to W batch rings and when their next references are due. Targeting to be completed this week. TMC can then advise when would be best to run coordinated references.

T-13 humidity control feasibility study

TMC reviewed with the Surveillance Panel, the recorded data (attached) from the labs, regarding their ability to control humidity in the T-13 test. Could all labs control humidity to the set points agreed to at the last Surveillance Panel meeting (Dew point of 16.1C = 11.4g/kg moisture content). Lab G felt they could control to about +/- 1.5 g/kg moisture content. For historical precedence the tolerance for the Cat 1P test was 1.7. Lab G used a similar formula to calculate moisture content but not exactly the same that was shared with all labs. Going forward the labs should be using the same formula. SwRI tried measuring the humidity under a pressurized environment (intake manifold) but SwRI didn't seem to think it worked well. The output from the sensor kept saturating. The unit that measured pressure and dew point was a Model DPT146. Lubrizol had tried a similar approach for 30 minutes and thought it worked ok although they were using a different model unit.

A suggestion was made to proceed with a range for moisture content without a Qi. Some of the new gasoline tests will have Qi on moisture content. We could start with wider limits and tighten in several months after more data is collected. Labs A and G thought they would struggle to get below a dew point of 14 C. Discussion ensued around what the acceptable range should be for moisture content (+/- 0.5 or up to 1.5). Should the parameter should be ranged parameter or controlled to a Qi. If Qi parameter then how big should the window be? Because of seasonal

variation, regardless of the decision the data will need to be reviewed again by the Surveillance Panel at a future date.

Lubrizol proposed a Qi of 11.4 g/kg moisture content +/- 1. If labs have difficulty achieving, we could revisit and adjust later, but prefer this than starting wider, as Qi would encourage labs to run to target humidity control. If it was a question of timing for each of the labs to have all their stands ready for humidity control, we should poll them and find out when they expect to be ready.

SwRI – estimate 2-3 weeks to have entire lab setup for humidity control. IAR – estimate at least few weeks, hardware is setup, just need time to tune the instruments.

Lubrizol – has humidity control now on both their stands.

Afton – had humidity control previously

A question was raised on if Labs need to re-reference after implementing humidity control since it impacts severity and could impact lab severity adjustments. Afton proposed a Qi of 11.4 g/kg moisture content +/- 1 with immediate implementation. All stands should be controlling humidity. At least 1 reference should be run per lab. SwRI confirmed they could start a reference in next week. Since SAs are lab based, each lab could run 1 reference with humidity control. Lambda will need to be adjusted to increase the impact of the newest references. Any candidate tests that start after the reference must be controlled on humidity and the new Severity Adjustments will apply assuming the reference is valid and acceptable.

Bob Warden motioned to direct the TMC that for T-13 reference periods, there should be no net gain or loss of time for early running of T-13 references. Seconded by Jim Moritz.

Votes: No objections, TMC waived. The motion carries.

Bob Campbell motioned to set a Qi limit of +/-1 g/kg for moisture content, that the next T13 test in a lab has to be a reference, unless previously referenced on humidity control, and all candidates started after the reference need to be on humidity control so they have the proper Severity Adjustment applied. Seconded by Greg Shank. Votes: No objections, TMC waived. The motion carries.

After much discussion, it was decided that negative Qis would trigger an engineering review on a going forward basis.

SwRI asked that the formula being used to calculate moisture content should be added to the test procedure. Bob Warden motioned to adopt the equation for moisture content to be added to the test procedure, but a decision was made to work out the exact wording to go into the procedure over e-mail first.

Current language in Mack and Volvo test methods do not match ASTM language for sole-source supply. That language needs to be added to the test procedures to reflect the current practice of having sole source supply for fuel. That language includes a foot note which indicates if alternate suppliers that information needs to be provided to ASTM to allow consideration of alternate suppliers. A request was made to make the language across all Mack test methods be in compliance with ASTM language for sole supply situations. No Surveillance Panel member had any objections to making that editorial change. Frank Farber will direct ASTM to update the Mack and Volvo Test procedures accordingly. A future discussion will be on how to go about introducing alternative suppliers to meet the same specification.

Mack T-10A

The Mack T-10A is no longer available.

Old/New Business

None

Other Business

None

Next Meeting

Thursday June 9, 2016 from 10-11:30 AM Eastern

The Mack Surveillance Panel adjourned at 12:45 PM Eastern.

Respectfully submitted,

Bob Salgueiro

Industry Liaison Advisor

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