

Mack/Volvo Surveillance Panel Meeting

June 30, 2020

10:30 AM – 12:00 PM EST

Attendees:

Afton: Christian Porter, Abaigael Ritzenthaler, Todd Dvorak

Chevron Phillips Chemical: Jon VanScoyoc

ExxonMobil : Riccardo Conti, Paul Rubas

Haltermann : Prasad Tumati

Infineum : David Brass (secretary), Elisa Santos, Jim Gutzwiller

Intertek: Juan Vega, Pablo Ramirez

Lubrizol: Jim Matasic

Oronite: Mark Cooper (chair),

SWRI: Travis Kostan, Isaac Leer, Bob Warden, Mike Lochte, Jose Starling

TEI: Derek Grosch, Mark Sutherland

Agenda:

1. Alternative fuel acceptance criteria
 - Action Items from last meeting were discussed by the Surveillance Panel:
 1. SWRI provided data after rebuild. Other labs to provide data.
 - Intertek provided data showing the differences for the 3 tests following the rebuild test compared to the rebuild test.
 - Run 1 in the supplied plots was the 2nd run after rebuild. The data shared was run 2, 3, and 4.
 - Based on the supplied data from SWRI and IAR combined the following operational parameters were suggested:
 - Average power within +/- 10 kW of the calibration test
 - *Parameter fit data from both labs*
 - Isaac (SWRI) suggested tightening this parameter further based on the shared data from the labs.
 - Average front and rear exhaust manifold temperatures should be within +/- 15°C of the calibration test
 - *Both labs had one rebuild with points close to the edge*
 - Surveillance Panel agreed to leave operational targets
 - Average tailpipe temperature should be within +/- 15°C of the calibration test
 - *Parameter fit data from both labs*
 - Average injection timing within +/- 1.5 deg of calibration test
 - Original suggestion was +/- 3.0 deg. Since data from labs was held within the bounds of +/- 1.5 deg and this parameter has a lot of influence on the results for the Mack T-11 test the Surveillance Panel agreed to reduce boundary value for this parameter.
 2. Sean (TMC) to provide LTMS Level 2 spreadsheet (Zi, Ei) to Travis (SWRI) to aid analysis
 - This was provided to Travis (SWRI) and was used to show actual results in next action item.

- Yi, Zi was at the stand level and not the lab level
- 3. Travis (SWRI) to show what an actual result would look like based on Zi/Ei for the candidate fuel tests.
 - Calculate new stand Zi values based on Yi from reference test and current stand Zi
 - Calculate Ei based on the new stand Zi that was measured
 - Ei will only tell you if the result is close to historic values
 - As part of the analysis Travis suggested the use of a severity limit from the target value of the performance parameters (Yi limit)
 - Surveillance Panel considering if this should be tied to the critical parameters only.
 - Examples supplied to the group are specifically written to show that the two candidates could pass the current criteria and be almost 3.5 sigma apart from each other.
 - Travis (SWRI) provided analysis on the probability of passing outright the criteria currently set forth if the current reference oil was run on the current fuel. This was based on 49 reference tests using the reference oil 822-2.
 - The parameters looked at were
 - Soot = Soot% at 12 cSt (critical parameter based on LTMS)
 - Soot4 = Soot% at 4 cSt
 - Soot5 = Soot% at 15 cSt
 - MRV
 - Based on current reference data for all 4 parameters a passing Ei for both candidate tests would only occur 24% of the time.
 - This low probability to pass was based on the MRV seeming to move with time and have a higher than target variability.
 - Without MRV parameter there was a 54% chance of passing with only soot parameters considered.
 - Comment from Todd (Afton): It might be time to look at the std dev for the T-11. There seems to be a shift in the data for MRV from the original target.
 - Travis (SWRI) reminded the Surveillance Panel that we are agreeing on the free pass criteria. This is the criteria in which the new fuel would get approved within further analysis of the data. Just because the candidate test doesn't meet these criteria doesn't mean that it is outright rejected, the fuel might still get approved but with more scrutiny by the Surveillance Panel.
 - Travis (SWRI): mentioned that Seq VIE probability of passing with current fuel was closer to high 70% and Seq IIIH was in the mid 60% range.
 - Suggestion from Surveillance Panel Member: SP might want to consider a similar level to pass as PCMO of around 2/3.
 - Probabilities of pass are based on std devs of the targets. MRV seems to be off the actual std dev in the data for the reference oil.
- **ACTION: Surveillance Panel to evaluate if the standard deviations for all the performance parameters targets in the Mack T-11 need to be adjusted. Todd (Afton) and Elisa (Infineum) offered to help with this exercise.**
 - With this comment in mind the Surveillance Panel discussed a few options without coming to a conclusion:

- Focus on 12 cSt only (which is the critical parameter based on LTMS)
- Focus only on the soot parameters and not the MRV
- Focus on all parameters
- **ACTION: Travis (SWRI) Condense operational parameter analysis and statistical analysis of performance parameters into one document.**
 - Todd (Afton) had looked at the C of A provided by CP Chem, but has more work to do before the effect of fuel parameters on operational parameters can be presented. Will have something for next meeting.
- **ACTION (Continued from previous meeting): Todd (Afton) to look at the effect of fuel parameters on test operational parameters.**

Next Meeting: July 15, 1:00 PM – 2:30 PM EST