

IIH Data Review Task Force Conference Call  
November 5, 2015 09:00 Central 10:00 Eastern

Attendees:

The secretary was not on the call at the start so an accurate attendee list was not recorded. However, an attempt at recording those on the call was recorded and listed below.

Chrysler: Haiying Tang, Jeff Betz  
Shell: Karin Haumann  
Oronite: Jo Martinez, Kaustav Sinha  
Afton: Ed Altman  
Ashland: Amol Savant  
Infineum: Andy Ritchie, Doyle Boese  
Lubrizol: George Szappanos, Kevin OMalley  
Intertek: Adison Schweitzer  
SwRI: Ankit Chaudhry, Sid Clark  
TMC: Rich Grundza  
OHT: Jason Bowden  
IMTS: Dave Passmore  
Ford: Ron Romano

The group logged into a web-ex set up by Lubrizol and participants suggested parameters to view plots of the Matrix Data as Kevin OMalley arranged the data for viewing.

Summary of discussion topics discussed during the call:

Piston Ring Batch;

The piston rings used for the Prove-out testing were a different batch from the Matrix piston rings.

Blowby:

High rate of blowby during first few hours of test, relates to MAP as engine breaks-in.

The group discussed the blowby ventilation setup relating to the plumbing of the system from the cam covers through the external system.

Karin indicated she used a mean blowby between 60 and 78 hours as a true indicator of the engine mean during development.

The group expressed concern over the high starting blowby rates and three distinct starting points where the tests seemed to be grouped. Kevin arranged the data by oils using different colors and all three oils were disbursed throughout the three groups.

Kevin will normalize the data between 16 and 76 hours for future review.

Karin commented on crankcase pressure comparison, indicating the group discussed this earlier cautioning that labs may have differing transducers and the pressures are so low they are hard to compare.

Oxidation and Nitration Data:

Group casually discussed the limited data and Karin commented we can compare Peak Height and Peak Area later as the data comes in, however she indicated there are differences between the spectra between Gasoline and Diesel due to the Soot Levels.

Piston Cooling Jets:

George Szappanos asked about cooling jet changes earlier in testing.

Jeff Betz explained the change in cooling jets was related to tube orientations so they could be used in two engine models. The change was back in 2013 and none of the engines used for Prove-Out and Matrix were built with older cooling jets. Jeff went on to explain the engine block serial number identifications between a North Plant and South Plant.

Additional conversation after the call confirmed both North and South Lines are in the same complex. During that conversation, Jeff assured me that Metrology constantly performs comparison checks to assure both lines are generating the same materials and crankshafts / block combinations from one line generates the same bearing sizing on either line.

Action Item: Jeff Betz will confirm the orifice size of the fresh air tube connection on the left side cam cover. The area of concern is the actual hole going through the shell of the cover into the baffle inside the cam cover.

Jeff confirmed the engines are not stocked at the dealer and all engines received for Prove-Out and Matrix Testing were current production.

At this time, the group was reminded there was only 30 minutes left in the call.

Haiying Tang reminded everyone that Chrysler needed to move forward with the test and they will continue to work with Afton and the group to try to identify the reason lab "D" seems to be unable to separate the oils. Haiying attempted to make a motion to remove lab "D" data from the statistical analysis.

Ed Altman asked if anyone saw any reason to remove lab "D" data. Statistician comments did not support removal of the data without identification of a reason. Doyle Boese commented on potential occurrences at other labs and the importance of identifying the driver for the results. Ron Romano commented about setting targets and throwing out data, indicating the current TMC Referencing would not accept a test outside the reference bands. Unfortunately, we do not have acceptance bands for the IIIH and this data will broaden the bands.

The group continued discussion on this subject with comments from Karin, Rich Grundza, Kevin OMalley, Andy Ritchie, and others. Discussion questioned the distinction between a laboratory problem and an industry problem and how to handle the mild data. The group discussed the initial validation of the tests and subsequent efforts to find any difference between test operations and engine build procedures agreeing the group could not technically find any reason to exclude the data.

Rich Grundza indicated that if the data are indicative of the test variability, this is something the labs will have to live with going forward. Karin commented about past Matrix Programs where only the two independent labs were used to establish targets and dependent labs came on-board having to meet those targets.

Conversation continued and Kevin OMalley reminded everyone there was only ~ five minutes remaining on the Web-ex line.

Sid suggested since there was no second on Haying Tangs attempt for a motion, it be tabled for further discussion.

Doyle Boese commented that the RMSE for all data is 0.55 and with Lab "D" data removed it only changes to 0.48. Jo Martinez commented that calculated targets for the specific oil being discussed will have a dramatic change in its STDV.

Karin commented we are in a situation where we cannot find a reason for this result and the data we have now is not distributed evenly between the labs.

Ed Altman asked if anyone could agree on a reason to remove this data.

Sid asked if Afton used the same cleaning procedures for Post Honing and Engine Block Preparations for the test build. Ed replied everything was the same. Ed continued suggesting we look closer at the Engine Supply to see if there was any difference in supply and manufacture.

Conversation continued with Ed commenting about oil pressure dropping right at the end of the test being indicative of the oil breaking right at the 90 hour point.

George Szappanos indicated we had to drop off the Web-ex and the group discussed setting the next meeting date and time.

Ed Altman asked about engine build data and Karin commented that the Afton Engines in question were built on the 49<sup>th</sup> and 84<sup>th</sup> days of 2015. Karin also commented the Matrix Engines were produced a number of differing days. The group discussed potential differences understanding pistons, rings, and cylinder heads all come from CPD's.

George indicated Kevin OMalley was putting build hardware data together for further discussion.

Doyle Boese commented that REO 438 had a higher STDV than the other oils. Karin and Haiying commented that 438 was only to be considered for WPD but the group continued to insist it be used for Pvis in the Matrix Data.

The group agreed to meet Tomorrow 11/06/2015 at 1:00 to 3:00pm with Web-ex.

This is a compilation from notes recorded during the call, with comments from member participants during the Draft Review. Certain subjects may not necessarily be in exact order; however, they are believed to represent an accurate account of the call. If anyone feels changes or additional content may be necessary, please contact Sid Clark @ 586-873-1255 or [Sidney.Clark@swri.org](mailto:Sidney.Clark@swri.org)

Thanks, Sid