Sequence IIIH Task Force
Conference Call
November 13, 2014
09:30 Central 10:30 Eastern

Attendees:
Chrysler: Haiying Tang, Jeff Betz
SwRI: Sid Clark, Karin Haumann
Intertek: Addison Schweitzer, Charlie Leverett
Lubrizol: George Szappanos, Kevin O'Malley , Michael Conrad
Afton: Ed Altman
Ashland: Amol Savant
OHT: Jason Bowden
TMC: Rich Grundza

Karin Haumann started the call with an update on activities since the last call and a review of action item from previous calls.

Karin is sending Prove-out data received to date. IAR finished 434-1 run on Tuesday and will be included in the summary forwarded.

Review of Action Items

- Reference oil 434-1 has been secured for prove-out testing
- Karin has contacted Mike Kasimirsky and they have decided to arrange a conference call between the raters hopefully sometime next week. Karin will target Tuesday or Wednesday of next week for the call.

  Haiying Tang asked for an update on scheduled running for REO2 Prove-out Tests indicating Chrysler would like to have all the data available by the December ASTM Update to the AOAP.

  Karin suggested reviewing the lab updates to see when the tests might be scheduled for completion.

Lab Testing Updates

- Lubrizol reported they have started their test and are coming up on the 40 hour point and should have data available Monday. Haiying asked about availability of 434-1 for their second run. George indicated he thought he should have 434-1 and would run it next followed by their second REO2 test.
- Ed Altman indicated they should have the REO2 sent by SwRI and 434-1 in stock. Ed asked about run order and Karin indicated they should run the REO2 first followed by a 434-1 and the second REO2 test. Haiying asked if Afton still planned on re-assembling the engine after the EOT inspections to run an additional 10 hours and whether that would affect the overall timing for completing of other tests. Ed indicated Afton would not have any problems meeting the timeline to get the data as their turnaround time would not affect the engine builds and schedule.
- OHT indicated they would send Afton a third set of hardware to complete testing.
- Ashland, Amol indicated they have ordered six engines from their local dealer. Amol also asked about part number clarifications and ordering information for other parts based off the Chrysler supplied parts list. Amol will send his parts list to Karin and she will review the critical parts list and get back to Amol. Amol also asked about cylinder head availability and Karin indicated labs were to order heads from IMTS.

- Charlie asked about sending core material heads to IMTS for re-work. Karin indicated there would be no work on core materials until IMTS distributed their Seed Materials. Addison indicated there may be some misunderstandings about sending core materials back to IMTS. Karin said she would talk to IMTS about sending materials back and Sid agreed to take an action item to work with IMTS to clarify the procedures for purchasing and returning heads through IMTS. Ed Altman also indicated there was confusion as to which end of the engine was being used to identify Left and Right on the IMTS Packaging and possible serial number identifications. Charlie asked Karin to have Dave Passmore start attending the Task Force Meeting.

Action Item #1: Sid will work with IMTS to outline ordering information, cylinder head core return procedures, serial number identifications and packaging concerns over Left / Right identification and Karin will request IMTS start participation on all Task Force calls.

- Karin emailed a summary table of prove-out data and George asked Rich if there were plans to include more operational data and rated part breakdowns in the TMC data base. Rich indicated here might be a little more trouble compiling the data as some of the oils did not contain CMIRS but he would see if he could set a special case and get the data into the IIIH data base.

Action Item #2: Rich will work on including a special case for IIIH prove-out testing data summary on the TMC Web Site.

- Amol questioned the data on REO2 prove-out data between the labs reported to date. Karin suggested there might be stand issues on the second Intertek result. Ed Altman suggested the difference may be attributable to piston ring differences between OHT supplied pre-gapped rings and SwRI cut rings. The group discussed differences between the tests regarding in-house gapped rings, exhaust back pressures, and any other variables. The group again discussed back pressure control with the understanding the specification would be changed for the Prove-out Matrix. Amol asked if anyone was measuring Nitration on used oil samples suggesting labs need to report this data. The group also discussed changes in the reports for coolant flow location, fuel temperature and pressure controls and whether those parameters needed to have QI calculations.

Action Item #3: Rich will work on the final report package including all parameter updates and changes required as result of recent discussions during the Task Force Meetings.

- The group continued discussion about test parameters which identified labs may be running different control points for fuel temperature. IAR is running 30°C, LZ is running 35°C and SwRI indicated they were running at 35°C. Karin indicated she also had problems controlling the temperature to 30°C and may have forgot to change the temperature to 35°C in the most recent instructions. The group discussed fuel pressures and whether they needed QI limits with Rich commenting that would come out of the precision Matrix.
- The group discussed additional parameters indicating the need to possibly record QI parameters using wider bands during prove-out testing.
- The group agreed everything discussed about changes to controls were recorded in the Task Force Minutes and those discussions would supersede the most recent Draft Procedure where the changes had not been incorporated into that document.
- George asked if there would be a set of minutes from discussions and meetings at both the Lubrizol and Afton lab visits. Karin replied there would not be any minutes distributed from those meetings

however, discussions would be included about those meetings in Task Force Calls. Rich indicated he would try to summarize the information and changes discussed during the lab visits.

Action Item #3: Rich will try to summarize his notes on information and changes discussed during the Lubrizol and Afton lab visits.

The group agreed everyone was working on updates from October and would try to expedite getting everything posted to the TMC Web site. Karin indicated she would have the minutes from the October 21, 2014 as soon as Sid incorporated her changes and re-compiled everything into PDF format. Sid agreed to work on expediting the minutes from the October 30 conference call and the minutes from this call.

- The group again discussed fuel temperature control understanding IAR, Afton, and SwRI (at least for the 434-1 run) were running at 30°C with George indicating he had successfully changed his set point to 30°C during the conversation. Sid asked for clarification for the minutes and Charlie commented the procedure indicates 30°C.

Action Item #4: Labs will run all prove-out testing at 30°C fuel temperature control.

- Addison and the group continued reviewing set points indicating where changes and clarifications needed to be made to the procedure and report forms.

Action Item #5: (Resulting from multiple discussions about set points and forms changes.)

1) Fuel temperature control should be at 30°C.
2) Intake air temperature needs to be changed from 38°C to 35°C in the report package.
3) Coolant out pressure needs to be controlled at 200kPa measured at the OHT outlet.
4) Piston rating photos need to be changed from Thrust / Anti-Thrust to Front & Rear.
5) Karin commented the form also needs to reflect ratings on the pin boss areas rather than piston skirt areas.
6) Move coolant flow from non-controlled to controlled parameters.
7) Add Air-to-fuel data to report forms understanding everyone is using some sort of wide-band sensor to read the AFR. Setting to be 14.4 ± 0.4 Air-to-fuel ratios.

- The group also discussed recording humidity control with the labs agreeing to report in Dew-Point
- The load cell will be controlled like the Sequence VI requirements
- George asked about Air-to-fuel ratio control and whether there should be a QI control even though the AFR is being controlled by the ECU. Karin expressed concern about the ECM Sensor measuring and reporting a wet sample. (Decision reflected in item #7 above).
- Additional discussions concerned recording cylinder measurements and surface finish parameters with the group agreeing everyone

Action Item #6: Karin agreed to put together a table of required changes to set points and forms changes for the next call.

- The group discussed the use of Havoline DexCool for the prove-out testing and switching to Shell Zone for Matrix testing.
- Rich Grundza discussed the supply of REO2 from the Test Monitoring Center and decoding of Reference Oil 434-1 test oils.

- The group asked Amol when he might be ready for start of his prove-out runs. Amol indicated they planned to start hopefully in mid-December but the holdup would be the receipt of the Sunnen SV-10.
- Charlie asked about everyone running the updated software for the SV-10 and it seemed everyone was updated.
- The group discussed availability of the OHT Oil Pans. Jason indicated the pans were available and would ship without the gaskets and all other materials were available for order.
- Ed Altman reminded Karin she needed to make changes to the initial oil fill based on changes made to the oil dip sheet.

Action Item #7: Karin will update initial oil fill worksheets to reflect the most recent changes to add the 8oz sample calculations to the worksheet.

- Michael Conrad from Lubrizol recommended the Task Force schedule a meeting well in advance of the December AOAP meeting so the data can be reviewed and all test start scheduling remaining can be indicated to the AOAP. Karin again commented on Afton plans to re-assemble engines to run to 100 hours for additional data. Ed indicated their problem would be availability of Fixed Phasers and indicated he would order an extra set from OHT.
- Haiying indicated Chrysler concerns about the data available for the December AOAP and her intent to fill in her table for the prove-out data. Michael commented that the intent is for each lab participating in the prove-out is able to fill in the run sheet and indicate when they plan to schedule the runs so the group can discuss any issues in advance of the AOAP meeting, which may necessitate having a couple meetings or calls to resolve any issues so the Task Force can be prepared to make their recommendations to the panel.
- This would mean everyone would need to supply their prove-out data around the second of December to have these discussions. Ed Altman indicated Afton would have problems getting the runs in by December 2, 2014 for these discussions. Ed indicated they would try to have the data by December 10 and would be prepared to discuss delays at the AOAP meeting.
- Karin and Charlie discussed repeat data on REO2 needing to be run on the same test stand. Haiying indicated she needed to see one more run on test stand #1 on REO2. Charlie and Addison indicated they felt they already had repeat data with runs being made on both lab gapped and Supplier gapped piston rings on REO2. Haiying asked Addison to discuss this with John Glazer and Addison and Charlie agreed to discuss this internally and get approval for an additional run.
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Action Item #8: The group needs to resolve what reporting requirements would be needed for Matrix testing.

- Ed Altman asked for discussion about the necessity to include the Filter Air Box in the test cell as it caused problems holding inlet air pressures. Ed did some investigations indicating there is a significant difference in air pressure requirements with and without the production Air Box, around 20 to 30% difference at the control valve. Ed went on to suggest the group entertain a motion to eliminate the Filter Air Box for the IIIH Test.
- George commented that even with a booster in-line he will have major troubles with air supply at Lubrizol with the Air Box. George indicated he has run the engine without the Air Box and there seems to be no difference in control. George indicated he had previous experience in inlet air component design and he felt there was no reason to run the production inlet air box. Conversation continued with all parties indicating problems in supply with the production Filter Air Box.

- Jeff Betz indicated he had discussed this prior to the call with Ed Altman and agreed that if the group wanted to make this recommendation he would support running filtered inlet air without the production Filter Air Box.
- The Conference Call line dropped everyone before the motion could be worded and called to question, however, communications with Karin Haumann after the call indicated the group was in agreement and the motion would most likely have been approved.

Action Item #8: The group needs to revisit the motion to remove the production filter Air Box and change to lab filtered inlet air.

Action Items

1) Sid will work with IMTS to outline ordering information, cylinder head core return procedures, serial number identifications and packaging concerns over Left / Right identification and Karin will request IMTS start participation on all Task Force calls
2) Rich will work on including a special case for IIIH prove-out testing data summary on the TMC Web Site.
3) Rich will work on the final report package including all parameter updates and changes required as result of recent discussions during the Task Force Meetings.
4) Rich will try to summarize his notes on information and changes discussed during the Lubrizol and Afton lab visits.
5) Forms changes for Rich:
   Fuel temperature control should be at 30°C.
   Intake air temperature needs to be changed from 38°C to 35°C in the report package.
   Coolant out pressure needs to be controlled at 200kPa measured at the OHT outlet.
   Piston rating photos need to be changed from Thrust / Anti-Thrust to Front & Rear.
   Karin commented the form also needs to reflect ratings on the pin boss areas rather than piston skirt areas.
   Move coolant flow from non-controlled to controlled parameters.
   Add Air-to-fuel data to report forms understanding everyone is using some sort of wide-band sensor to read the AFR. setting to be 14.4 ± 0.4 Air-to-fuel ratios.
6) Karin agreed to compile a list of set points for control parameters and forms package recording for discussion during the next call.
7) Karin will update initial oil fill worksheets to reflect the most recent changes.
8) After discussion about a motion to remove the production air filter box and run lab filtered inlet air to reduce the pressure restriction at the test cell, the call was dropped and the question was never officially called. The group should revisit the question, properly wording the motion and calling the question to officially make the change.

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

Thanks, Sid