

Chrysler IIIH Task Force  
Conference Call Minutes  
September 12, 2014

Attendees

Chrysler: Haiying Tang

SwRI: Sid Clark, Karin Haumann, Pat Lang

Intertek: Charlie Leverett, Addison Schweitzer, Bill Buscher

Lubrizol: George Szappanos, Mike Conrad

Afton: Ed Altman, Raymond Smart

Oronite: Kaustav Sinha, Jerry Wang

Shell: Scott Lindholm

OHT: Jason Bowden, Matt Bowden

Halterman: Tracey King

TMC: Jeff Clark

Karin opened the meeting with a review of action items from the September 5, 2014 meeting;

- 1) As an action item, the labs will send pictures of their fuel rail connections to the group for further discussion and standardization working with OHT.

The group discussed sending photos of proposed connection components to OH T for use with a machined fuel rail OHT is proposing for use on the Chrysler Engine. Afton, Lubrizol and IAR are all sending pictures and part number identification for purchased connection blocks and inlet connectors for the fuel rail that will provide minimal overhung mass at the fuel line inlet for the injector fuel rail. Jason will review and decide if these suggested materials might be acceptable for addition in to the OHT design.

- 2) Karin discussed the action item for the Sequence III Chairman Dave Glaenger to look into the process required to bring the Chrysler IIIH Test forward for recommendation to the proper panel. Sid commented that a discussion on this subject was previewed at the AOAP Meeting on the September 11, 2014. Scott Lindholm (Chairman of the AOAP) said he would make sure the information provided at the AOAP meeting was relayed to the Task Force.

Copy of information as copied in Sid Clark notes from the AOAP Meeting;

AOAP needs to request test Sponsor form a Task Force that will recommend tests are precise, reproducible, and have ability to discriminate and are ready for Matrix. Recommendation is

forwarded to PCEOCP for ready for Matrix Vote and then AOAP for decision on inclusion in Specification.

Bill Buscher also commented that the Chairman of the PCMO Surveillance Panels are going to put together a common list of what items are needed for each test and a column for dates identifying when completed.

- 3) Lubrizol will run their coolant system full open to map the system capabilities using the Kundinger Fluid Processor setup with the Spiral Heat Exchanger.

George is still working on Action Item #3

Karin has yet to follow up on the use of Fans on the exhaust system and will work with George and the group to standardize application and wording for their use if agreed.

#### Lab Updates:

Ed Altman reported that Afton is close to a start. They are working on software programming and cooling system changes. Ed indicated he has discussed the coolant system designs with Karin and believes there are different designs between the labs. Ed will continue moving ahead and start their engine but would like to discuss their coolant system design with the Task Force.

Jason asked if everyone has standardized their designs with SwRI, using the materials OHT has designed or are they running the same configuration as SwRI. Ed commented that he felt there are at least three different configurations and we need to discuss this further. Jason said he feels step #1 is to standardize the test stands. Charlie commented we probably need to review the procedure and conduct lab visitations, preferably before any additional prove-out work.

Karin agreed and the group discussed possibly meeting the end of September in San Antonio. Ed suggested using SwRI as the template and use the procedure to put together a check list. Charlie proposed having the review the week of September 29<sup>th</sup> which would include review of the Procedure, the Assembly Manual, and have lab inspections between SwRI and IAR. After much discussion Charlie made the aforementioned motion to meet in San Antonio the week of September 29<sup>th</sup> and Ed Seconded the motion. The group continued discussion focused on test stand standardization. Haiying Tang, Jerry Wang, and Scott Lindholm commented about the importance of moving forward with installations based on the design of the SwRI test stand configurations.

As there was no real review of the wording for the motion, the secretary took the liberty to summarize the Motion by his interpretation;

Motion by Charlie Leverett second by Ed Altman

Participating members from the Task Force will meet the week of September 29<sup>th</sup> starting on Tuesday September 30 with a review of the Procedure and the Test Specific Assembly Manual followed by lab visitations at both SwRI and Intertek. SwRI and Intertek will work toward standardization and system designs prior to the meeting.

The Task Force Leader called the question by roll call vote. The motion passed by unanimous vote.

Karin continued discussions focused on prove-out testing based on conversations with Chrysler. Karin indicated we are not trying to design a precision matrix; we are just trying to prove-out test stands. The requirement will be 2 tests on REO2 and 1 test on TMC reference oil 434. Labs with more than one stand will not be required to run all three tests on both stands.

Jeff Clark commented on the remaining inventory of Reference Oil 434-1 indicating there was a minimal amount of 434-1 and ample inventory of 434-2 that he might recommend for the Chrysler Test. Karin will coordinate which blend of 434 should be used with Dave Glaenzer. Since 434-2 has yet to be run in any testing, Karin and Charlie agreed to run tests on 434-2 in the Chrysler test. Jerry Wang cautioned that all testing during development was conducted on 434-1 and his discussions with Frank Farber indicated there was enough 434-1 for prove-out testing in the Chrysler Test. Jeff Clark agreed with Jerry's comments, however, he would have to approve the use of 434-1 through the Sequence III Surveillance Panel for its use in the Chrysler Test. Jeff reminded everyone that 434-2 was put on hold in the Sequence IIIG during prove-out of the run 7 & 8 materials.

Jerry expressed concerns that 434-2 might be a mild re-blend and not provide the same results as 434-1 and therefore we should leave the option open for the use of either oil based on Karin's discussions with the Surveillance Panel Chair and the TMC. Discussion continued with comment from Jason, Charlie, Ed, and Scott Lindholm who indicated at the end of the day it is the Task forces responsibility to prove the test is ready for matrix testing.

Karin next discussed the coolant flow schematic that everyone has been referencing and reminded that last week the group made a motion to return to the original SwRI configuration as provided in the procedure draft. Ed Altman commented that he, George, and Karin have been discussing this all week since the last call. Ed reminded everyone that Afton and Lubrizol's first thoughts were the coolant system was designed off the Sequence III Fluid Process Control Rack where the two way flow control valve is positioned before the engine when the actual location on the Chrysler test is after the engine. George commented that he considered his fluid control system a hybrid design and asked if there was a need to have all systems designed the same or could they incorporate a pressure control device downstream of the engine to accomplish the required back pressure on the engine. Pat Lang commented on the reasoning for positioning the flow control valve downstream of the engine was to keep backpressure on the engine and although he agreed with George cautioned, where the control valve is placed may have an effect on pressures inside the engine.

Discussion on this subject continued with comment that SwRI also puts pressure on the reservoir. Ed commented that Afton currently has their system set up with a Variable Speed / Frequency Controlled Drive for their coolant system pump. Ed commented they would also control pressure by maintaining pressure on the reservoir.

George made a motion to specify Flow, Pressure, and temperature requirements at specific locations be specified in the procedure for the cooling system and the rest of the rack can be at the labs discretion.

Karin commented that she felt we really need to use the OHT Front Cover even though discussion reasoned the pressure on the oil cooler should be the same as long as the supply to the oil cooler is taken from the area between the coolant pump outlet and the front of the engine inlet. The group discussed modifications being made at OHT to the front Cover Inlets for engine coolant and the oil cooler connections. Jason indicated he would need the group to make a decision before any further work on the front cover continues.

Ed Altman suggested tabling George's motion until the labs discuss this further and hopefully can agree on these issues by next week's call.

Jason asked for feedback from the labs about oil pan modifications. Karin commented the location for the oil sump thermocouple may have to be moved as she felt the reading might be skewed due to running in the oil pump vortex. The group agreed that temperature was a read only parameter and the location could be moved if necessary.

Jason provided updates on OHT supplied materials including fixed phasers indicating their availability around mid-October. Karin agreed that certain SwRI parts (fixed phasers) could be sent to the labs for setup work. Karin also commented that work at SwRI indicated results using electronically fixed phasers was comparable with the OHT materials running the modified control algorithm. Charlie expressed concerns that IAR would rather run tests on actual test materials including the pre-gapped piston rings. Both SwRI and Intertek said they could provide fixed phasers to Afton and Lubrizol.

As an action item, Karin will work with OHT and Chrysler to provide parts for prove-out testing.

The group next discussed crankcase ventilation systems. Karin indicated she sent the diagram for the crankcase vent to the labs prior to the conference call. The group discussed concerns that the Lubrizol setup did not have the internal components removed from the adaptor on the right rear camshaft cover. Jeff Betz expressed concerns that the PCV valve needs a slight vacuum to actually allow flow and thereby the Lubrizol configuration may have forced more flow through the left side camshaft cover possibly forcing more liquid through the ventilation system. George discussed the Lubrizol system design using a J-Tek Vortex Shedding Meter. Ed read the description of operation for the PCV valve from the Chrysler Service Manual.

Karin commented again that the information was sent just prior to the call and said we will discuss this further on the next call.

Addison asked if everyone had received bore measurement data from IAR showing the bore measurements with and without stress plates. Addison expressed concerns that the cylinders might be close to not having enough material for sizing the cylinders for the test piston skirt size. Charlie commented that there is only 0.0008 to 0.001 inch material for honing and the SV-10 may have to be run in manual mode to hone the Chrysler Block. Karin agreed with the data and indicated SwRI realized the same but was able to hone the blocks.

Karin will provide IAR with SwRI data and discuss further.

Jeff Betz indicated he has Fixed Phaser Engine Control Modules and asked Karin if they could be run at SwRI. Karin agreed to switch controllers between subsequent 20 hour segments on future testing at SwRI to check the newly programmed controllers.

The group again went back to discussion on coolant system design and Jeff Betz asked what was needed for the coolant system design. Karin reminded everyone that we voted to return to the development system configuration at the last meeting. Jason asked for clarification on the design of the front cover and Karin explained that the group decided to make changes that are now being reversed. Ed suggested everyone take pictures of their front covers and send to the group for discussion before the next call.

Karin discussed pressures experienced at SwRI and reminded everyone the set point will be on the outlet side of the engine.

Secretary Note: There were numerous discussions on coolant system designs during this call. I have attempted to capture the majority of those comments as accurately as possible from my notes.

Action Items:

- 1) Sid to include copy of AOAP Direction for Task Force working on recommendations for GF-6 tests to be brought forward for Matrix Testing. (See Italicized text during discussions on this subject during review of Action Items #2.)
- 2) Sid committed to having the Assembly Manual complete and ready for distribution the week of September 22<sup>nd</sup>. Further development, Sid will be traveling to San Antonio September 22<sup>nd</sup> and will have the Assembly Manual completed for the review on September 30, 2014.
- 3) Karin will coordinate use of Reference Oil 434 blend 1 or 2 for prove-out testing with the Sequence III Surveillance Panel Chair and Frank Farber.
- 4) Karin to work with Chrysler, OHT, and Intertek to provide materials to Afton and Lubrizol for prove-out testing. This includes Engine Controllers and Fixed Camshaft Phasers.
- 5) TMC will provide an update on the Data Dictionary for the IIIH on the next call.
- 6) Karin will provide SwRI block measurements to IAR.

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

