

**Sequence IIIH Task Force
Conference Call
October 30, 2014
9:30 am CDT**

Attendees:

Chrysler: Haiying Tang, Jeff Betz
SwRI: Sid Clark, Karin Haumann, Pat Lang
Intertek: Addison Schweitzer, Charlie Leverett
Lubrizol: George Szappanos
Afton: Dave Glaenzer, Ed Altman
Oronite: Kaustav Sinha
OHT: Jason Bowden
TMC: Rich Grundza
Shell: Scott Lindholm
Halterman: Tracy King

Karin Haumann started the call with a review of action item from previous calls.

Review of Action Items

Karin has attempted to contact Mike Kasimirsky at the TMC to discuss setting up a test specific rating workshop for the IIIH test. Rich Grundza said he would follow up on communications with Mike.

Charlie Leverett and Rich Grundza discussed the type of workshop that might be conducted, i.e., an ASTM Rater Workshop or more like a Task Force type activity with a very limited group of raters. The group discussed what type activity might be needed suggesting a rater conference call to review photos of post-test pistons and discuss rating procedures;

- Part preparation
- Areas to be rated
- Rating process

This activity would be followed up by a round robin rating exercise between all labs.

Action Item #1: TMC / Karin and the labs are to coordinate a rater training type exercise starting with a video type conference call between the raters from each lab to review rating requirements for the IIIH test covering part preparations, areas to be rated, rating process, data collection and reporting. The labs will then conduct a Round Robin rating exercise using one set of pistons. Rich will work with Mike Kasimirsky to summarize the rating results. IAR and SwRI will send referee rated parts with rating data to TMC for the materials to be used for the Round Robin exercise.

Industry Test Stand Installation Updates

IAR:

Addison Schweitzer provided an update on test stand installations at Intertek. Their second stand is running a slave engine looking at exhaust back pressure. Will install test engine starting a test on REO-2 on Friday. Their first stand has been taken out of service by their safety department due to excessive exhaust noise outside the building. New exhaust system components are on order. Charlie and Addison indicated Intertek would have problems holding lower exhaust backpressure control on the

new system and would therefore be running at 3.5kPa for future prove-out tests. The group discussed exhaust backpressure control capabilities with suggestions from Afton, Lubrizol, and input from SwRI decided to run the prove-out tests as close to 3.0kPa as possible for comparison with SwRI data. Ed Altman suggested running at several different backpressure conditions to see what effect these changes might have on other control conditions. Karin indicated she had performed that exercise and only saw a slight change in throttle percentage over the full length of the span from 3.0 to 6.0kPa.

Action Item #2: Karin will forward exhaust backpressure data plots from SwRI pressure sweep study to the labs.

The group agreed to control the prove-out tests as close to 3.5kPa as possible with the understanding the exhaust backpressure setting could be changed for the Prove-out Matrix.

Action Item #3: Labs will target 3.5kPa exhaust backpressure set point for prove-out testing. Labs will run wide open control for prove-out if they cannot control at the desired 3.5kPa set point.

Afton:

Ed Altman informed everyone they are still tuning the stand and have ordered all the required materials from OHT to assemble the engine. Ed indicated he felt Afton could possibly start a prove-out run after the lab visits scheduled for next week.

Action Item #4: Sid will work with Jeff Betz to get updated Engine Build Manual to the labs.

Lubrizol:

George reported Lubrizol is building their engine for the prove-out test with exception of the same situation as Intertek on the exhaust muffler but outside that should be ready to start their engine next week after the lab visit.

Ed Altman asked about OHT Oil Pan availability and Karin indicated SwRI could send them an oil pan overnight delivery so they could run the pan on their slave engine prior to running the prove-out test. Jason Bowden indicated availability of the pans should be around November 12.

SwRI:

Karin indicated SwRI has run three prove-out tests, two on REO2 and one on Reference Oil 434-1. The group discussed the run SwRI made on 434-2 and Karin explained that test generated a mild result on PVIS and therefore she ran another test on 434-1 that produced the same result as earlier testing on 434-1 with both production and final hardware. All tests were run to 90 hours. The group decided the prove-out tests would have to be run using Reference Oil 434-1 for all prove-out testing.

Action Item #5: Rich will request Dave Glaenzer send an email to the Sequence III Surveillance Panel requesting 12 gallons of Sequence III Reference Oil 434-1 to be used for IIIH Prove-out testing.

Action Item #6: Karin will send her Surveillance Panel IIIH Task Force Presentation for the 10-21-2014 meeting to the IIIH Task Force for review.

Action Item #7: Karin will send an email instructing the labs to use Reference Oil 434-1 for IIIH prove-out testing.

The group discussed whether there was a need to conduct an actual honing workshop as the procedure is similar to the process used for another test being honed in the SV-10. Ed Altman indicated there he would like to possibly have one before running the precision matrix as there seemed to be a little more hands on during the honing process than initially expected. Charlie and Karin discussed possibly honing an engine block and circulating it around the industry for a Round Robin Surface Finish measurement exercise. Charlie suggested also doing a measurement type exercise with the torque plates installed. Afton suggested possibly having each lab honing a cylinder as part of the exercise. The group discussed possible methods of conducting a Round Robin exercise on honed blocks. Many people expressed concerns about how to conduct the exercise understanding there is minimal material removal during the honing process asking whether the group might possibly consider going to a larger oversize piston to provide more material for correcting out of round cylinders resulting from torque plate attachment. The group discussed data that had been forwarded from IAR on bore measurements and Karin indicated that data had been converted from standard units to metric units and therefore may not be accurate. Addison agreed indicating IAR was waiting on a Metric Standard for use with their Metric Bore Gage on the IIIH in the future. The group continued discussion about the Sunnen Honer capabilities to correct for roundness as the hone head is designed to create a round hole, but needs ample material to remove in order to accomplish that operation. The group finally decided to table this discussion and leave it as an open item for future discussion.

Action Item #8: Labs will review the IIIH honing procedures prior to the next call and be prepared for discussions on what might be needed for a IIIH Honing Workshop.

Karin expressed concern about using a used block for the Surface Finish Round Robin and indicated SwRI could provide a new engine block for this exercise.

Karin reviewed plans for prove-out testing at each lab explaining the need to conduct the prove-out tests on the same batch of REO2 necessitating the need to conserve the remaining inventory.

George reviewed aspects of the test he wanted to review during the Lubrizol Lab Visit based on an email he sent on the 22nd. George reviewed plans for the meeting at Lubrizol and timing to go over these issues with comment from Rich about timing and travel arrangements from Cleveland to Richmond.

George emailed his presentations to the group and started discussions on differences between the IIIG and the IIIH test conditions indicating his concerns about standardizing the step changes and control states during ramping, warm up and temperature setting during shutdown procedures for oil sump temperature control. Karin and George discussed the importance of everyone doing the shutdown the same to standardize the oil sump temperatures during oil leveling. Karin agreed indicating there is a need to cool the oil and coolant down during the shutdown to lower the temperature of the sample being extracted for safety reasons, however since the IIIH is not calculating back to a full mark like the IIIG she is not as concerned over temperature differences of the oil during level estimations.

George asked how his conditions compared to what Intertek was using. Addison agreed to have his conditions available for the Lubrizol Lab Visit.

Action Item #9: Karin and Sid will review the control strategies for engine ramping at startup, shut down, and control points throughout the test and revise the Excel control strategy chart.

Parts Update from OHT

Jason provided an update indicating delivery of modified water pump housings were expected at OHT and would be forwarded to labs.

Other Discussions

Addison Schweitzer asked if labs could purchase valvetrain hardware from their dealers to build cylinder heads for second runs. Karin indicated current intent is to run the cylinder heads for only one run each.

Charlie asked about getting the next update for the engine build manual and Sid indicated he would try to have it available next week. Sid also commented he wanted the manual to be distributed through Chrysler.

Action Item #10: Sid will try to have an updated copy of the engine build manual for the lab visits.

Action Items: for the October 30 Conference Call

- 1) TMC / Karin and the labs are to coordinate a rater training type exercise starting with a video type conference call between the raters from each lab to review rating requirements for the IIIH test covering part preparations, areas to be rated, rating process, data collection and reporting. The labs will then conduct a Round Robin rating exercise using one set of pistons. Rich will work with Mike Kasimirsky to summarize the rating results. IAR and SwRI will send referee rated parts with rating data to TMC for the materials to be used for the Round Robin exercise.
- 2) Karin will forward exhaust backpressure data plots from SwRI pressure sweep study to the labs.
- 3) Labs will target 3.5kPa exhaust backpressure set point for prove-out testing. Labs will run wide open control for prove-out if they cannot control at the desired 3.5kPa set point.
- 4) Sid will work with Jeff Betz to get updated Engine Build Manual to the labs.
- 5) Rich will request Dave Glaenzer send an email to the Sequence III Surveillance Panel requesting 12 gallons of Sequence III Reference Oil 434-1 to be used for IIIH Prove-out testing.
- 6) Karin will send her Surveillance Panel IIIH Task Force Presentation for the 10-21-2014 meeting to the IIIH Task Force for review.
- 7) Karin will send an email instructing the labs to use Reference Oil 434-1 for IIIH prove-out testing.
- 8) Labs will review the IIIH honing procedures prior to the next call and be prepared for discussions on what might be needed for a IIIH Honing Workshop.
- 9) Karin and Sid will review the control strategies for engine ramping at startup, shut down, and control points throughout the test and revise the Excel control strategy chart.
- 10) Sid will try to have an updated copy of the engine build manual for the lab visits.

Next Meeting

November 5 at Lubrizol

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