

## CAT Aeration Test Task Force meeting July 23, 2014

### Attendees:

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### Agenda:

- 1) Lab Status:
  - a) SWRI
  - b) Intertek
  - c) Lubrizol
- 2) Review SWRI shakedown test results
- 3) Operational Parameter Discussion (Test Conditions) – follow-up?
- 4) Timeline
- 5) General Discussion

## **Lab Status:**

### **1- SWRI**

Engine#2 is on the aeration test stand and it completed the shakedown testing with the Lubrizol test oil. They have not started the flushes pending the decision from today's meeting.

The data was sent out to everyone on the TF. The data reported in the Excel sheet every 6 minutes according to the C13 deposit test standard. The desire is to have it every 30 seconds. Martin has the data and will update the file.

SF asked Martin to document the procedure to prove out the micro-motion.

### **2- Intertek**

The engine is finishing up the install on the aeration test stand. Plan to run the shakedown testing over the weekend with the LZ test oil. Perform a micro-motion checkout and compare to the D4052 density bench test.

### **3 – Lubrizol**

The engine was received by LZ last week (July 17<sup>th</sup>). The engine has been installed (Engine s/n: KCB48186) on the aeration test stand. Greg is completing some of the modifications to the blowby system. He is also working on some fixes to the coolant flow instrumentation. Greg is planning to run the shakedown test with the LZ oil over the weekend. The test data should be available next Monday. There was discussion on regarding the breather. It should be the standard C13 deposit breather. Greg will check the breather spacer is installed according to the C13 test procedure (Figure A4.10 from the C13 deposit test procedure 6.2.9, part# 221-3934, 18mm thick). Greg will check out the micromotion according the same procedure used by SWRI.

Not running filter on their micro-motion system.

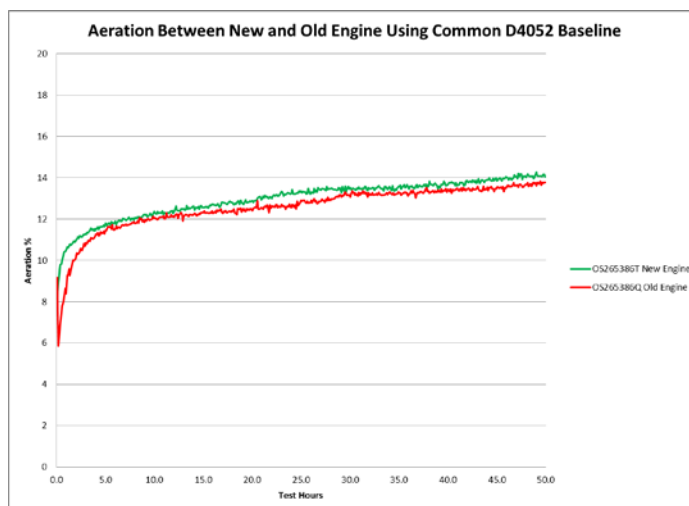
## **Operational Parameter Discussion (Test Conditions):**

- The TF discussed how to handle the down-time if the engine shuts down before the end of the test. Should we have two timers??
- We need to note when the shutdown happens and for how long.
- Agreed to report all the on-test data after the engine has gone through a warm-up after a shutdown.
- Log all data including the warm-up first 40 minutes 1Hz data collection. Decide to hold on to all the data for now.
- Agreed on data sampling: every 30 seconds for the data template.
- Normally the aeration test will come back in line within 4hrs
- **Martin will forward the draft test procedure document to TMC and they will post on the website. He will also forward to the rest of the TaskForce. There has to be a common test procedure document used for running the matrix.**

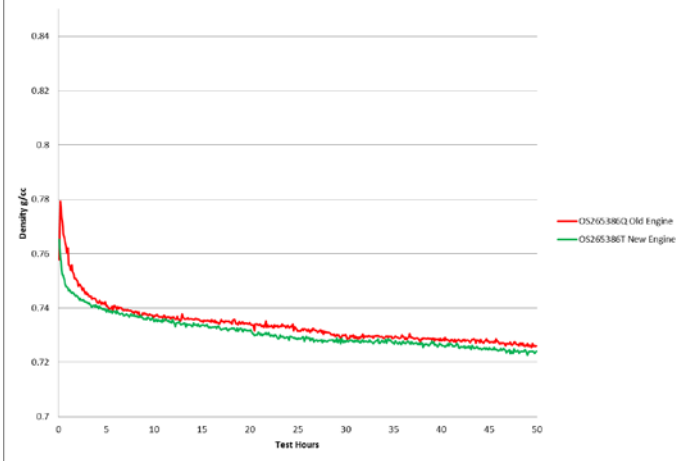
- Add extra columns for the baseline density (zero aeration) reference (D4052 + micromotion) used for the aeration calculation on the same tab. This will be a modification to the TMC template.
- Discussed the response time of the test cell setup. Martin reviewed the SWRI response time values which are based on the C13 test procedure. He had emailed this data out to the TF on July 18<sup>th</sup>.
- There was discussion on the micro-motion setting. We need to standardize on a common value. Martin will send out the information after the meeting. The current setting on the SWRI micro-motion is at 2 seconds.
- Include the cumulative engine hours on the engine build at the beginning of the aeration test. Add this information to the spreadsheet.

### SWRI Shake-down test data review:

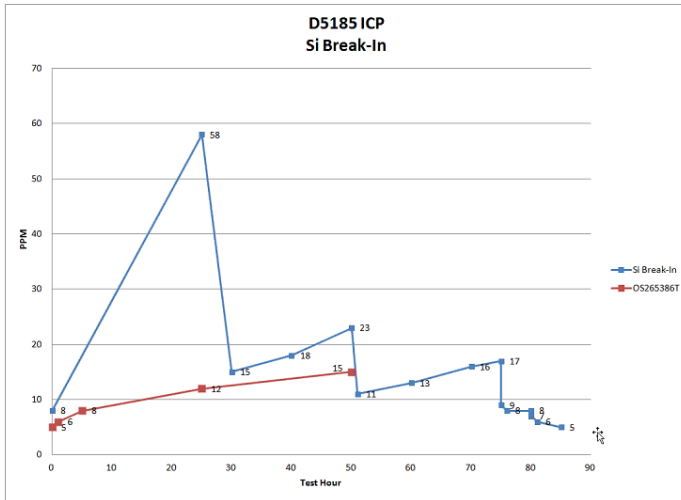
- The engine has completed the shake down testing with the LZ oil. The density and aeration seems to repeat reasonably well with the previous LZ oil test (~0.4%).
- Unfortunately the Si increased during the shake down testing. There is uncertainty on the effect of Si. However, it is encouraging that the recent LZ oil test is comparable with an older engine which was more “passivated” and had more hours on it.
- **The TF agreed to run the HA oil next at SWRI.** We will be able to get the effect of engine hours and Si with the repeat of the HA oil.
- SWRI only has enough LZ oil for one more run.
- Decide to table the test#4 until we see the results of the first 3 runs.
- Martin will update the spreadsheet
  - Increase the data freq to 30 seconds
  - Add three additional columns in the data tab for reference densities used in the aeration calculations.



Raw Density Comparison



D5185 ICP  
Si Break-In



**Timeline:**

- Decided to assign Lab 1 to be SWRI for the prove out testing.
- Assign Lab 2 to Intertek, Lab 3 will be Lubrizol

	Test 1	Test 2	Test 3	Test 4	Test 5
Lab 1	HA	1005	HA	1005	HA
Lab 2	HA	1005	HA	1005	HA
Lab 3	1005	HA	1005	HA	1005

STOP:  
Review results  
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- SWRI should be done with the test#1 by next Monday. The data will be sent out to everyone on the TF.
- When will the matrix oils be ready? It looks they will be not be ready until the end of August/beginning of September. The labs will have a couple weeks advance notice of when the oil will be ready.
- NCDT – meeting 2<sup>nd</sup> week, August 14<sup>th</sup>. Target to have the data ready. This is still the target date to have the aeration test data available for review and approval.
- Schedule a CAT surveillance panel within the next two weeks?
  - MPC - support
  - C13 – deposit test updates

**General Discussion:**

- Mark will setup a meeting for next Tuesday 2-4pm (July 29<sup>th</sup>) which should allow the TF team to review the shakedown test results from LZ and Intertek. SWRI should have the first test completed on the HA by then as well.
- Schedule a CAT surveillance panel within the next two weeks?
  - MPC - support
  - C13 – deposit test updates