CAT Aeration Test Task Force meeting
July 10, 2014

Attendees:

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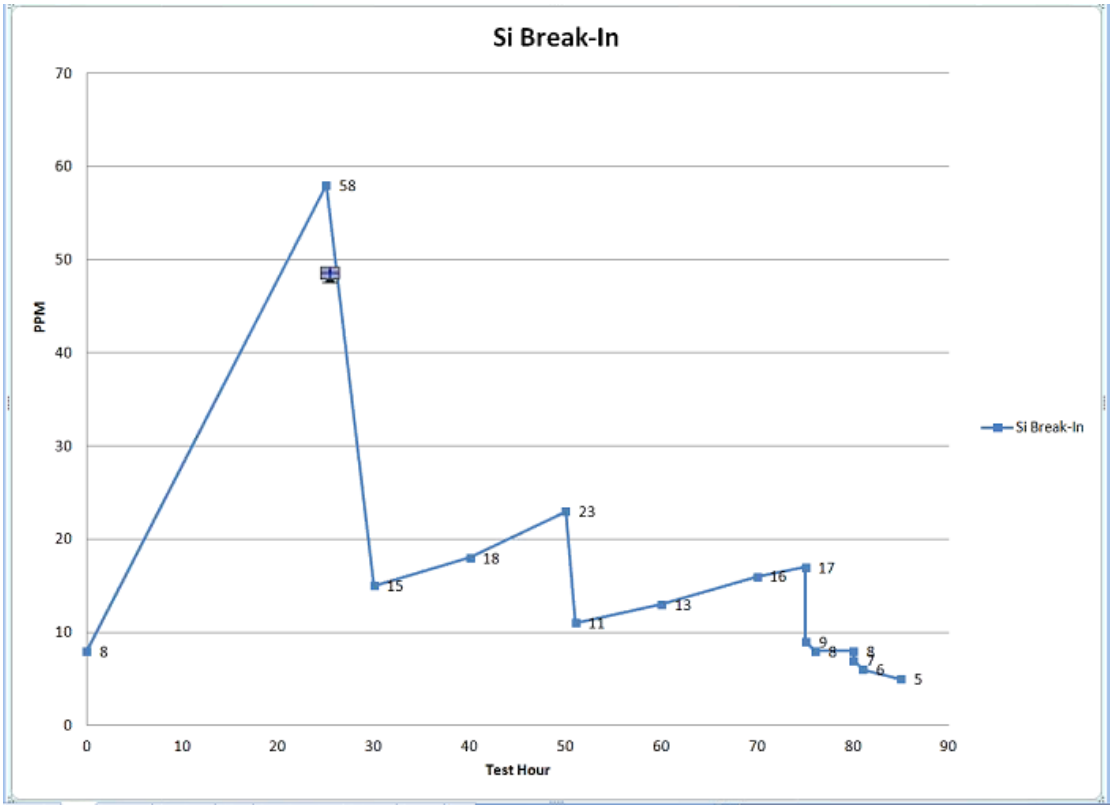
SWRI Engine Break-In:
SWRI has completed 75 hours of break-in on engine#2 which was composed of three 25hr full power runs. Then there were two additional 5hr runs for a total of 85hrs. The Si levels came down after the 2 x 5hr additional runs.

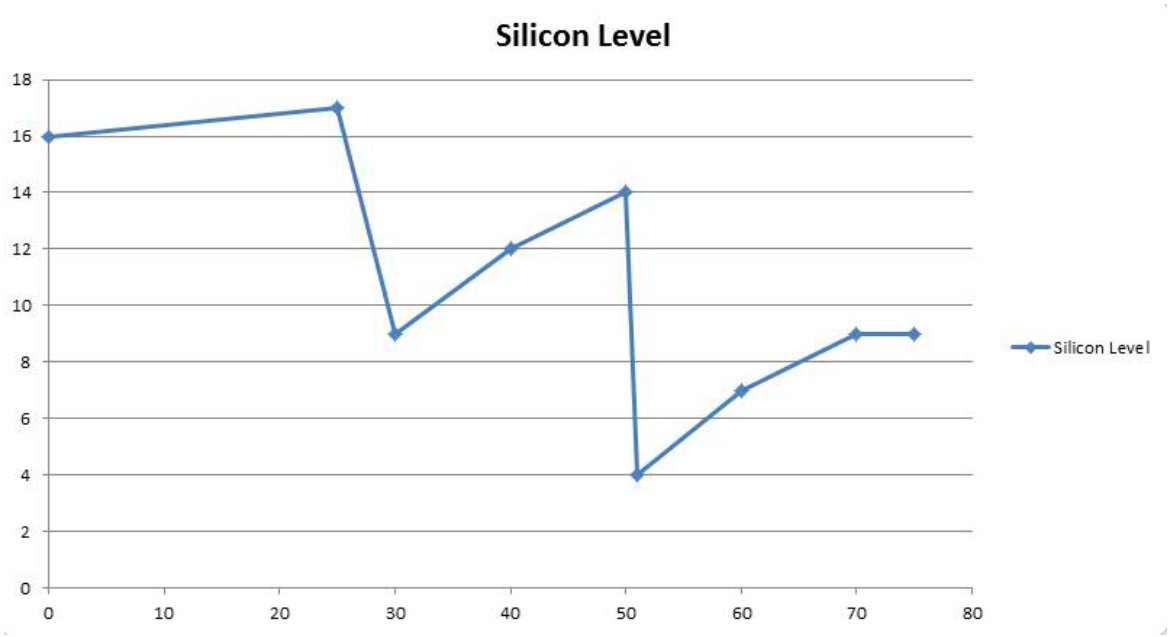


Action: Agreement that the SWRI engine is broken in and then will proceed to the shakedown testing using the LZ oil.

Lab Status:
1- SWRI engine#2 has completed the break-in and is ready to start the shake-down testing. The TF decided to remove the engine. The Si level is dropping. It may take the other labs a couple more 5hr runs to drop the Si level.

2- Intertek: Delay in getting the engine on the stand last week. Unfortunately, Intertek is fighting an oil leak. It appears to be the rear main crank seal is leaking. It is at 1hr into the first 25hr period. The valve lash has been set. They are trying to fix the leak with a wear sleeve. They had tried replacing the seal but that did not work. Need some help from CAT with a reuse guideline on the allowable crank groove depth?

3- Lubrizol engine @ CAT (Engine s/n: KCB48186): 85hrs total on the engine as of this morning. The Si data through 75hs is shown below. The engine has completed the two 5hr extra drains but we don't have the Si levels back from the lab yet. CAT confirmed that the ICP method used is D5185. **Action:** CAT will send the engine break-in operational data out to everyone including the oil sample data. CAT will work then work with LZ to get the shipping information.



Action: Lubrizol will share the density curve for their oil run at 30, 40, 50, 60, 70, 80, 90C

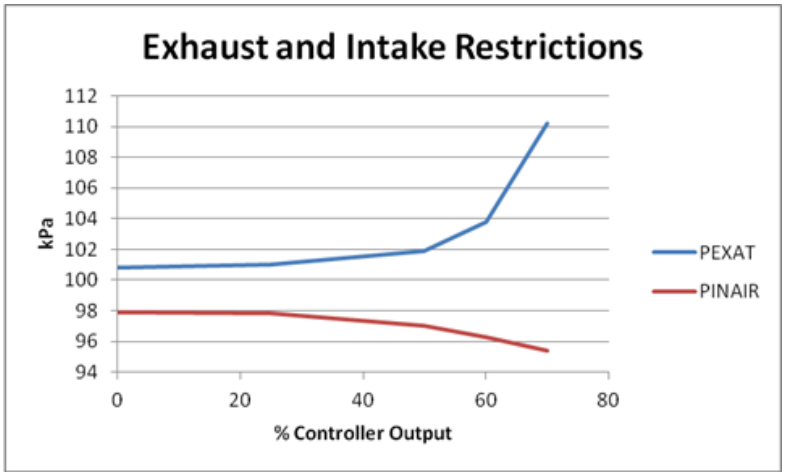
The SWRI engine#2 is ready for the shake-down test. Martin is planning to run the micro-motion after the 2nd flush and engine is shutdown. During the 4hr cool-down log the micro-motion as the engine cools. The measured oil density should fall on the **D4052** bench density measurement vs temperature liner. The TF agreed to allow SWRI to proceed with the shake-down testing if the two measurements agree to +/-0.005 g/cc (~0.5% aeration) between the bench test and the micro-motion (after the 2nd flush). If the calibrations do not match we will reconvene the TF and decide next steps.

Note update (July 10th afternoon): Confirmed the LZ oil arrived at SWRI and Intertek

Test conditions:
Martin @ SWRI ran a sweep/study on the intake and exhaust restrictions. He observed about a 0.7kpa drop across the new air filter. The TF agreed on decided **96kpa** absolute to the intake, **104kpa** for the exhaust back pressure.

			%	0	25	50	60	70
PAMB	98.6		PINAIR	97.9	97.8	97	96.25	95.4
		PINMAN		28	27.9	26.5	25.4	23.9

%	PEXAT	PINMAN
0	100.8	28
25	101	28
50	101.9	27.5
60	103.8	27
70	110.2	25



Operational differences discussion: oil gallery fittings & thermocouple depth. The current SWRI thermocouple is too big. The team agreed to replace the current thermocouple with an 1/8” thermocouple. This will prevent it from restricting the flow. Also, the thermocouple will be pushed in all the way into the oil gallery in order to obtain a more accurate reading.