SEQUENCE IX SP MEETING

Date: 20 May 2021

ATTENDANCE

SWRI	Khaled Rais (Chair), Christine Eickstead, Pat Lang, Travis Kostan
INTERTEK	Al Lopez, Jason Soto
LUBRIZOL	George Szappanos
AFTON	Ben Maddock, Todd Dvorak
ORONITE	Robert Stockwell
INFINEUM	Charlie Leverett, Doyle Boese
APL	Timothy Hadaway, Christian Muller
TMC	Rich Grundza
FORD	Mike Deegan
EXXON	Paul J. Rubas
GM	Khaled Zreik, Brad Cosgrove
SHELL	Jeff Hsu
VALVOLINE	
HALTERMAN	Prasad Tumati, Tracey King
TEI	D. Lanctot
OHT	Jason Bowden

MEETING:

Reviewed minutes from previous meeting.

MOTION 1: Approve minutes from previous meeting		
Proposed:	Khaled Rais	
Second:	Rich Grundza	
Discussion:	None	
Questions:	None	
Votes:	*Waive:*	0
	Negative:	0
	Approve:	Unanimous
Outcome:	**Motion passes unanimously.**	

Wiring harnesses:

- IAR – Purchases from dealership. Previously had long lead time but this issue has been resolved.
- SwRI – Okay with current stock

Need to confirm part number is what is specified in procedure, add suffix as an alternative to the procedure

MOTION 2: Add the current Ford Service P/N in Table A8.6 of the Sequence IX procedure so that it reads "DU5Z12A581U or DU5Z12A581BA" and add the current Ford Engineering P/N "DU5T-12C508-BH".		
Proposed:	Khaled Rais	
Second:	Jason Soto	
Discussion:	None	
Questions:	None	
Votes:	*Waive:*	0
	Negative:	0
	Approve:	Unanimous
Outcome:	**Motion passes unanimously.**	

As a result of this motion passing, there is no need to make a large Industry purchase. Labs can purchase directly from dealerships.

TMC:

Rich presents the LTMS summary.

- The test was out of control but is back in control currently. The out of control situation may have been due to several new engines coming online at one time (new engines are typically more severe).
- Reference oils:
  - 221: three year supply
  - 224: two year supply, may need reblend

Fuel:

Prasad presents fuel status.

- Plenty of fuel (300,000 gallons) in the system now

- There was a problem before, took a couple weeks to make the adjustment, now everything's fine and currently shipping fuel.
    - Ben Maddock – This issue had a significant impact on business. Action: Need a root cause analysis of how we ran out of fuel and what Halterman is going to do to ensure this doesn't happen again.
    - Action: Pat – We will put this on the agenda for the TGC meeting. This is a big deal when the Industry is locked in to a single source supplier.

Old Business:

- Clutches:
    - The group passed a motion during the last meeting to approve the ACT clutch disc for use in the LSPI test.
        - IAR
            - Multiple engines with new clutch disc installed
            - 3 – 4 engines calibrated with it
            - Ran 1000 hours on first clutch
            - Usually replace the clutch with every engine but going to see how they last for now
        - SwRI – one engine calibrated with new clutch installed
    - The procedure specifies to buy the clutch from OHT.
        - Bowden – OHT still has an inventory of Sachs clutches (only 4 spring clutches stocked, no 6 spring clutches in stock)
    - Table 8.7 still has old PN
        - Rich – must have missed this, will clean up in next Information Letter to show both PNs

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Form Changes:

George presents:

- Fuel flow:
    - Data dictionary says L/min, labs reporting in kg/hr
    - Rich – can just change data dictionary (editorial change), will need new beta version
- Fuel pressure – listed as absolute, should be gage
    - Rich – can be addressed in Information Letter
- Inlet air pressure – listed as absolute, should be gage
    - Rich – can be addressed in Information Letter
- Blowby – listed in Table 11
    - Left over from X procedure? Not needed for LSPI validity. Remove? Or change to optional?
    - Rich – no apparatus included in procedure for BB, probably carryover from X procedure. Can just remove from Data Dictionary.
- Knock sensors and APP – listed in Table 9
    - Not in Data Dictionary. Make option or take out of DD?
    - Rich – Does knock correspond to LSPI events?
        - George – hard to correlate
        - Khaled – Frequency makes this tough also, CAN data and logging rates make it tough to compare to AVL data.
        - George – Remove from procedure. Let labs use for internal use.
        - Rich – Agreed
        - Group – Agreed

- Coolant temp and pressure – missing from Table 8
  - George will work with Rick to provide details to include in procedure
- Downtime – Never got changed? The procedure still specifies 4.5 hours as test cycle, but we only run 3.5 hours per iteration?
  - The intention was to have one additional hour of allowance following an iteration.
  - Rich – Can work-smith the procedure. Two hours after stage 6 = end of iteration? End of stage 6 is considered the end of an iteration. Start new sentence with "Any time a test comes down…"
  - George – Change to specifying that downtime starts one hour after the end of Stage 6.

MOTION 3: Specify in the procedure that downtime starts one hour after the end of Stage 6.		
Proposed:	George Szappanos	
Second:	Rich Grundza	
Discussion:	None	
Questions:	None	
Votes:	*Waive:*	0
	Negative:	0
	Approve:	Unanimous
Outcome:	**Motion passes unanimously.**	

Pistons:

- 2019 BB pistons:
  - Two initial runs at SwRI
  - Two initial runs at IAR
  - Severe of target – previously discussed correction factor

  - SwRI – scanned pistons and machined pistons to resemble old ones (see attached presentation)
    - Surface finish still different, but not much we can do about that.
    - SwRI ran a single test with the machined pistons (original head gasket)
      - AvPIE on RO 221 (target = 11) went from 16.75 to 11.25
    - What machining was done?
      - CNC milled surface – milled off extra material, tried to make resemble old pistons
      - Bowl extends further, but nothing to do about that.
    - George – no change in compression ratio? Khaled – yes, might be closer to 9.29.

    - Looks promising to the group?
    - George – Lubrizol is probably in the most dire position, but currently in good shape. If we machine the pistons and then run them, can we consider those calibration runs? As in, can runs from a precision matrix be used for calibration purposes?
    - Pat – This is an appropriate question, but it would be nice to see if another lab can reproduce the response change. Then the group would need to evaluate how the compression ratio is changing, etc. to prove that there is no lab bias. The shape of the pistons is critical; the group needs to buy into the machining concept overall.
      - Need to understand how much material is removed, how the shape changes, and how this affects severity. But this process is preferable to trying a *third* piston batch.
    - We need another lab to duplicate SwRI's results on the machined pistons. Action: SwRI will provide the machined pistons in an effort to get the whole industry down the road.
    - Al – How long does it take to machine a set? Where is it being done?

- Khaled – It's being done at SwRI. Doesn't take too long; the program and fixture are already made.
- Pat – We will need to look at a "production" rate, don't want to promise anything.
- Al – What is considered a "batch"? Want to do this all in one shot to call this one batch of pistons.

- IAR – Has had a set of pistons custom-made. Results so far not promising but willing to run more.

Aging:

(Not much time left….)

Deegan – Want this test to go through as a supplement to GF-6.

Pat – Is the goal to make sure the Aging test is in a state of being called out as a supplement to GF-6?

Deegan – Yes.

Next step is precision matrix and funding – need to review with group.

Deegan will set up next meeting for 1 – 2 weeks from now.

Meeting adjourned.