

# SEQUENCE IX TASK FORCE

Date: 16 Jan 20

## ATTENDANCE

|          |  |
|----------|--|
| SWRI     | Khaled Rais, Christine Eickstead, Pat Lang |
| INTERTEK | Jason Soto                                 |
| LUBRIZOL | George Szappanos                           |
| AFTON    | Christian Porter, Scott Smith              |
| TMC      | Rich Grundza                               |
| APL      | Tim Hadaway                                |
| INFINEUM | Charlie Leverett                           |
| FORD     | Ron Romano, Dean Wingert, Michael Deegan   |

## 2019 BB Pistons: Gasket Thickness vs. Compression Ratio/Severity

- ➔ Data show that a thicker gasket can affect the compression ratio of the pistons.
  - Note: Calculations performed using compressed gasket thickness provided by Ron.

|                               | 2016 BB              |          | 2019 BB              |          |
|-------------------------------|----------------------|----------|----------------------|----------|
|                               | Piston 1             | Piston 2 | Piston 1             | Piston 2 |
| CR, Gasket Thickness = 3.5818 | 9.303                | 9.257    | 9.3949               | 9.3868   |
| <b>Average</b>                | <b>9.28</b>          |          | <b>9.39</b>          |          |
| CR, Gasket Thickness = 7.9975 | 8.9568               | 8.9153   | 9.0415               | 9.0341   |
| <b>Average</b>                | <b>8.94</b>          |          | <b>9.04</b>          |          |
| <b>Delta</b>                  | <b>0.34 decrease</b> |          | <b>0.35 decrease</b> |          |

- ➔ George – Do we know that a change in the compression ratio of this magnitude will affect the severity of the test?
  - No, but something easy to try. Would be an elegant solution to the severity difference if it does (no one wants a large correction factor as part of this test).
- ➔ Pat – Is this at all feasible? If the gasket changes the compression ratio/severity of the test, would the SP be comfortable with such a change?
  - Charlie – Really our only option at this point....
- ➔ Ron – Gasket is readily available through service parts.
  - George – could look at custom-thickness gasket if necessary later on to dial in severity impact
- ➔ Pat – SwRI willing to run a test to determine if the gasket moves the severity at all. IAR also willing,
  - **Action:** SwRI and IAR:
    - Run test with RO 221 and thicker gasket from dealer. Use same engine as previously used to assess 2019 BB pistons. Report results to group.

## AVL Equipment Calibration

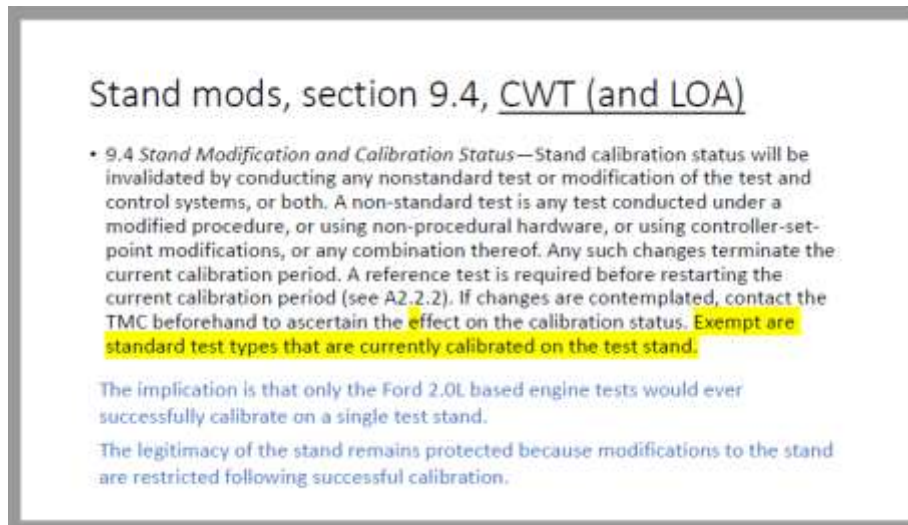
- ➔ Per the procedure, sensors and encoder should be calibrated every 300 hours. The Amp should be calibrated per the manufacturer's recommendation.
- ➔ SwRI and IAR both do not have a calibration plan in place currently.

- ➔ Sensors: How often do we really go over 300 hours on a sensor anyway?
  - **Action:** SwRI, IAR, Lubrizol
    - Mine data to determine average and max. sensor life.
  - Pat – Maybe we just limit sensor life to 300 hours regardless? Determine after data analysis.
- ➔ Amp:
  - **Action:** Khaled will look through notes for previous actions.
  - **Action:** Jason will send presentation developed previously on calibration ideas.
- ➔ Encoder:
  - **Action:** Khaled will contact AVL for their calibration recommendations.

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## Multi-Test Type Calibration for Single Stand

- ➔ George presented presentation from previous meeting with slight tweaks.
- ➔ Slide 7 (pasted below): Rich uncomfortable with “exempt”.
  - Action: Rich will wordsmith this slide, possibly using language from IIIF to IIIG conversion approach.



- ➔ Slide 11 (pasted below):
  - George: Is everyone on the call comfortable with this? Group: “Yes”

## Seq IX LTMS, Removal of Test Stand/Engines from the System

The laboratory must notify the TMC and the ACC Monitoring Agency when removing a stand/engine from the system. No reference oil data shall be removed from the control charts from test stand/engine that have been used for registered candidate oil testing. Reintroduction of a stand/engine into the system requires completion of new stand/engine acceptance requirements. In all instances of stand/engine removal, stand/engine renumbering can occur only if the stand/engine undergoes a significant rebuild, as agreed upon by the laboratory and the TMC.

The removal and reinstallation of the most recently calibrated engine back into the same test stand requires a single successful calibration test, provided its calibration period has not expired.

### ➔ George: How to move forward?

- Rich and George will agree on wording and present to Technical Group. If Technical Group agrees, present to SP for vote. Possibly have joint conference call with LSPI and Chain Wear SPs.
- **Action:** Rich and George to work out language for proposal, report to Khaled (one week from today).
- **Action:** Khaled to schedule SP call with LSPI and CW groups for vote on measure one week after it is presented to the Technical Group.

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## Stand Configuration

- ### ➔ Afton is setting up LSPI stand. Asks how crankcase pressure is vented to atmosphere (per procedure) at other labs?
- Not much detail in procedure; labs manage systems to accomplish this internally. The key is that the gases are vented, not returned to the system.