# MACK-Volvo Surveillance Panel Meeting Notes
# 01/13/2021 @ 1:30 P.M. EST

## Attendees

SwRI: Robert Warden, Travis Kostan, Isaac Leer, Michael Lochte
Oronite: Josephine Martinez, David Lee
Afton: Christian Porter, Bob Campbell, Cory Koglin, Brent Calcut, Todd Dvorak
Infineum: David Brass (Chair), Elisa Santos, Jim Gutzwiller
Intertek: Garrett White (Secretary), Juan Vega, Martin Chadwick, Joe Franklin, Pablo Ramirez
Lubrizol: Jim Matasic
CP Chem: Jon VanScoyoc
Haltermann: Prasad Tumati
Exxon Mobil: Paul Rubas, Steve Jetter
TMC: Sean Moyer
TEI: Derek Grosch
Ford: Michael Deegan

## Agenda

1. Mack T-12/T-11 Parts

2. Mack T-8 Alternative Fuel Supplier

3. Volvo T-13 Cylinder Heads

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*Action Items and Key Points*

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- T-11/ T-12 oil ring batch X showed asymmetric rail widths.
- Derek Grosch to confirm if any asymmetric rings were placed in kits recently sent to the labs.
- Piston crown measurements from SwRI showed no major differences between batches E and F.
- SwRI projected to begin their T11/T12 batch parts testing the week of January 18th, 2021.
- Motion passed allowing TEI and Intertek to hand select batch W liners that overlap in surface finish measurements from batch V for use in a T-11 reference at Intertek. Calibration status is pending SP discussions following completion of the reference run.
- Jim Matasic to contact Volvo again regarding recent changes with the T-13 cylinder heads.
- SwRI to edit T-8 alternative fuel supplier criteria with the changes discussed before the next meeting.
- Christian Porter to contact Volvo about a change found in a new MP8 block they received where the main bearing locking tabs did not align with the notches in the block.

# Summary of Discussion

**Mack T-12/T-11 Parts**

- Batch W vs. X Oil Ring Measurements
    - David Brass shared slides on the following oil ring measurements:
        - Total rail width
        - Top and bottom rail width
        - Gap between rails
    - Batch X ring rail widths were not symmetric.
        - Measurements at 180° from ring gap show a shift in the middle of batch X.
    - Batch X also showed a similar shift in rail gap at the 180° position.
- David - Have any kits been sent out with asymmetric rings?
- **Derek to confirm if any asymmetric rings were placed in kits sent to the labs.**
- Batch E vs. F Piston Measurements Comparison
    - SwRI presented measurements from 6 total piston crowns, 3 from each batch.
    - Coordinate Measuring Machine (CMM) was used.
    - Two measuring methods used: scanning head (scans outer surfaces of lands and grooves) and a touch head to trace points and produce a profile.
    - Average top, second, third upper, third lower and bottom land diameters measured.
        - Averages between batches were within .001" at all lands.
    - Top ring groove diameters slightly larger in batch F.
        - Delta between batch averages for top ring groove diameter was -0.0018".
        - 2nd and 3rd ring groove were within .001".
    - Taper angles of the top and second lands different between batches.
        - Both top and second land angles were about 0.25° higher in batch E.
    - Top ring groove taper angle - top in batch F higher than batch E
        - Batch averages for taper angles of top grooves at the top and bottom within 0.5° of one another.
    - No major differences found between both piston crown batches according to SwRI measurements.
- David - Has any progress been made on the runs with different combination batch parts?
- Isaac Leer – We are hoping to begin the first test next week. Testing should be completed by end of February 2021.
- Outline of parts combinations and test runs:
    - Liner: W , Top Ring: X, 2nd Ring: W, Oil Ring: W, Piston: E
    - Liner: W, Top Ring: X, 2nd Ring: X, Oil Ring: W, Piston: E
    - Liner: W, Top Ring: X, 2nd Ring: X, Oil Ring X, Piston: E
    - Liner: W, Top Ring: X, 2nd Ring: X, Oil Ring X, Piston: F
- First run will be 50 hours, following combination runs will be 25 hours.
- Martin – Could you run with using more symmetric rings?
    - Need to determine which ones are going in for the runs.
- David - Could we run Y top rings and see what the OC is?

- **SwRI volunteered to add a 25-hour run using batch Y top rings in their matrix.**
- What was the reason for not using the remaining W oil rings?
- Juan Vega – It may have been done to align the batches.
- David – To date the following batch parts combinations have been tested:
    - Liner: W, Top Ring: X, 2nd Ring: X, Oil Ring: X, Piston: F = High Oil Consumption in T-12
    - Liner: W, Top Ring: W, 2nd Ring: W, Oil Ring: W, Piston: F = High Oil Consumption in T-11
    - Liner: V, Top Ring: X, 2nd Ring: X, Oil Ring: X, Piston: F = Normal Oil Consumption in T-11
- Approximately 3100 batch W liners are available.
- Currently approved new hardware kit availability by lab:
    - SwRI projected to run out by end of February.
    - Lubrizol has 1 engine built with their last remaining kit.
    - Afton and Intertek have no kits remaining.
- Pablo – Could Intertek select liners from batch W that overlap in surface finish measurements with batch V to run in a T-11 reference? The goal would be to see if OC aligns with normal, historical rates.
- Sean – First In First Out (FIFO) protocol does not allow this but could be performed if the SP approves a motion
- **MOTION: Robert Warden (SwRI) – Motions to allow TEI and Intertek to hand pick liners from liner batch W to match the parameter range of liner batch V to run a reference test in the Mack T-11 to determine if oil consumption is acceptable for calibration. The SP will discuss results after the calibration run. Calibration status of the stand will be pending until the SP meets following the completion of the reference.**
- **Pablo Ramirez (Intertek): Seconds the motion**
    - **Approved: All**
    - **Opposed: None**
    - **Waived: None**
- ***Motion carried.***
- Sean - If this proves out TEI should conduct liner screening.

**<u>Volvo T-13 Heads</u>**

- David – Any feedback from Volvo regarding the changes in the cylinder heads?
- A new part number along with a change in exhaust valves and exhaust valve seats was noted in a previous meeting.
- Jim M. – No response yet
- **Jim M. will contact Patrick Holmes at Volvo regarding changes with the cylinder head.**

**T-8 Alternate Fuel Supplier Criteria**

- David - Relative Viscosity at 4.8% Soot (50% DIN Shear Loss) to be removed from oil analytical requirements.
- David - Only Viscosity Increase at 3.8% Soot and Relative Viscosity at 4.8% Soot (100% DIN Shear Loss) will be the oil analytical requirements.
- Robert Warden - Both prove out runs on alternative fuel supplier fuel to be treated as candidates. Timing cannot be changed after the 1st run on approved fuel.
- Robert Warden - Soot at 250 and 300 hours must be at or no greater than 1% of that in the initial run.
- Martin - Each stand should be treated as its own entity and must be calibrated individually on the new fuel. This would be going to a stand-based system for the prove out.
- Document should also state that the prove out runs be noted as non-standard and will not affect calibration status should requirements not be met.
- **SwRI to edit and produce new wording before the next meeting.**

**T-13 Block Concern**

- Christian – Recently ordered an MP8 block and the lock tabs for the main bearings did not align with the notches in the block.
- No one responded stating they have experienced this before.
- **Christian to send an email to Volvo asking about this change. If there is no response, then an email will be sent to the panel detailing the concern.**

Meeting adjourned – 1/13/2021 @ 2:53 PM EST

**Next Meeting Date/Time**

Next Meeting – 1/27/2021 1:00 PM to 3:00 P.M. EST