

# MACK-Volvo Surveillance Panel Meeting Notes

## 08/23/2021 @ 10:00 A.M. EST

### Attendees

SwRI: Isaac Leer, Robert (Bob) Warden, Travis Kostan, Jose Starling  
Oronite: David Lee, Josephine Martinez  
Afton: Christian Porter, Bob Campbell, Todd Dvorak  
Infineum: David Brass (Chairman), Elisa Santos  
Intertek: Garrett White (Secretary), Martin Chadwick  
Lubrizol: Nick Ariemma, Jim Matasic  
CP Chem: Jon VanScoyoc  
Haltermann: Prasad Tumati  
Exxon Mobil: Paul Rubas, Steve Jetter, Riccardo Conti  
TMC: Sean Moyer  
TEI: Derek Grosch  
Volvo: Patrick Holmes

### Agenda

1. T-12 Reference Testing
  - a. Operational Data Review
  - b. Industry Correct Factor Discussion

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#### *Action Items and Key Points*

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- Lab B's reference re-run completed. The re-run had higher oil consumption compared to the first run. All other results repeated in comparison to the first run.
- If available, labs are to provide end of test (EOT) drain weights from the coordinated references on new hardware and from one reference test on the last batch of approved hardware.
- A decision to approve hardware was not made. The panel decided to conduct a review of the following in the next meeting: analytical (chemistry) data of oil samples, EOT oil drain weights and injection timing values used in phase 1.
- Todd Dvorak to organize analytical data from coordinated reference runs for review in the next meeting.
- Sean Moyer to organize EOT drain weights and timing values for review in the next meeting.
- Labs are to inspect the T13 main bearings they currently have on site. TEI notified the panel that the top coating of the main bearings is affected by the type of paper used for wrapping them. If labs do find the bearings to have the top coating coming off, they can be exchanged with TEI for ones that are not. TEI is working on finding a replacement for the current paper.

## Summary of Discussion

### T-12 Operational Data Review

- Lab B's reference re-run completed.
- Nick – Operationally the test ran well and the 100-hour soot requirements were met.
- There was a large difference between the first test's oil consumption and the re-run, in both stages.
  - Oil consumption:
    - Stage 1 average oil consumptions: First test = 21.1 g/hr. Second test = 32.7 g/hr.
    - Stage 2 average oil consumption: First test = 89.2 g/hr. Second test = 97.7 g/hr.
- Bob W – Peak height oxidation results appear to be abnormally high compared to runs at other labs.
- Nick – Our first run and re-run look similar regarding peak height oxidation.
- Bob C – The iron at 25 hours is almost 2.5 times of that in the other labs.
- The iron level at 25 hours was 50.6 ppm for lab B's re-run.

T12 Operational data plots were shared by Todd Dvorak

- Lab B re-run had slightly higher blowby compared to other labs runs (~ 10-20 LPM)
- Lab B re-run had lower oil delta pressure compared to labs A, G, and D (ranged from 35-40 kPa). Lab B delta pressure ranged from 25-30 kPa.
- Martin – Were these 2 runs on the same block?
- Nick – No, different blocks but the same stand.
- Oil gallery pressures: Pressures ranging from 420 to 455 kPa for stage 1 and 180 to 220 kPa for stage 2.
- Christian – How was the soot rate in phase 1? Did you have to make a timing change every day and were the changes large?
- Nick – Each day we backed down by a degree each time.
- Jim M – The adjustments were not very large, more like fine tuning type changes.
- David – Last meeting someone mentioned a 2 °C difference was significant for oil sump temperature. Has anyone investigated this?
- Bob W – 2-3 °C variance seems to be normal for the last few years in each lab looking at the data in the LTMS.
- Both runs for Lab B consistently lower on oil sump temperature compared to other labs.
- Bob C – Do any labs have the EOT drain weight of all oil from filters, sump, and bucket?
- Lab B claimed to have theirs, no other labs answered.
- **Labs to send EOT drain weights from the recent coordinated references and 1-2 valid references on previously approved hardware to Sean Moyer, if available.**
- Christian P – How many references are we going back on?
- Bob C – The recent runs and the last “normal” runs would be good to obtain numbers from.
- Lab A power and torque appreciably higher compared to other labs (~ 10-15 kW and 75-100 N-m in phase 1).

- Christian – The torque did not change much after the timing changes for lab B in the first run. That may have been part of the reason the soot window was missed.
- Nick - Timing changes in the first run for Lab B did not react like normal.
- Jim M – May also be good to see what other labs are running at regarding timing to hit the soot windows. Could also have an impact on the differences between the labs.
- Jim M – The analytical data would also be good to look at too.

Bob W shared rough plots of the analytical data for the recent coordinated references.

- Lab B higher in iron compared to other labs.
- Lab B peak height oxidation result also higher, even in the early parts of the test.
- Average bearing weight loss high as well for lab B, source of the high delta lead.

### Industry Correction Factors

- September 17<sup>th</sup> is when provisional licensing expires.
- David – How soon can lab B get data into LTMS?
- Nick – Should be able to get the report out in the next couple days.
- Jim M – We can at least get preliminary data out so statisticians can begin their analysis.
- David – Should we go ahead look at the 3 results so far or wait until lab B submits their data before discussing the correction factors?
- Elisa – We could always make a change in the CF later if needed.
- Jim – I don't disagree that lab B is different, but I am worried about how candidates will be impacted.
- Bob C – I would like to look at EOT drain data before we move on.
- Jim M – Phase 1 timing values, EOT drain masses and analytical data would be good to have all together for the next meeting.
- **Todd to put together analytical (chemistry) data for the next meeting.**
- **Sean to table the timing values and the EOT drain weights for the next meeting.**
- Panel decided to await hardware approval decision once the additional data has been reviewed in the next meeting.

### T12 Parts – Future Orders

- David – Derek, have we started looking at purchasing the next batch of Y rings?
- Derek – Dealer is trying to obtain similar date codes for the 2<sup>nd</sup> and oil rings to create “batches”. Bearings won't be able to be made in batches, they will be PNB (parts not batched).
- David – Is there any way to obtain similar date codes in bearings?
- Derek – It might be possible to obtain similar date codes. Will check on this.

### T13 Backordered Parts

- Christian – Have you heard from Patrick on T13 parts?
- David – No word from Volvo yet.
- **Christian to send a follow up email to Patrick about T13 parts backorders.**

### T13 Main Bearings

- Christian – Derek is there any update on the bearings for T13?
- Derek – The very top layer of the main bearings is coming off. I think it's the VCI paper that we are using that is causing the top layer to come off and stick to the paper. If any labs find this in their currently stocked kits we can exchange them.
- Christian – If you take heptane and a rag you can wipe off the entire top coating of the bearing.
- Derek – Right now the plan is to change the paper and oil them better for packaging.
- David – How many more bearings have been ordered?
- Derek – We ordered 30 kits of bearings. Usually there is an immediate response if there are backorder issues. No immediate response so most likely the bearings are not on backorder.
- Bob C – Is anything else stored in the VCI paper?
- Derek - We use it for the rod bearings too. Coating on the mains may be different from the rods and doesn't react the same way. Would be good to go ahead and change it for the rods too just in case.
- **Labs to inspect the T13 kits they have on site and exchange them for ones without the top layer flaking off.**

Meeting adjourned at 11:34 EST.

### Next Meeting Date/Time

September 1<sup>st</sup>, 1:30 – 3:00 PM EST