

## Mack SP Conference Call Meeting Minutes December 13, 2012

### Update on metallurgical analysis from T-12 parts and related issues with TUXO hardware

Jim Matasic of Lubrizol noted that one of his X batch bearings has higher lead content, but other than that nothing really stands out. During the meeting, Jim was still waiting for analysis results for the Afton. Jim sent out an update after the meeting with Afton's bearing included and, again, nothing from the analysis stands out. Jim's report, with the Afton bearings included, is Attachment 1.

Zack Bishop of TEI reported on the analysis from the liner supplier. The hardness for three new Batch T liners ranged from 46-48 HRC. Four used liners were also analyzed for hardness (two higher wear, two lower wear). These were examined above and below the ring travel. The range for all these measurements ranged from 46-49 HRC. Jim Matasic asked if the difference in moly for the new liners is significant. A Volvo metallurgist(s) indicated that more moly would actually be expected to reduce wear. It was also indicated that the method used to measure hardness may not be appropriate. Zack will be getting more information on T1, T2, and T3 and will report the results when available. Much further discussion ensued with no clear action items resulting. Zack's report is Attachment 2.

Scott Richards noted that all these liners are producing higher than expected wear, and both he and Bob Campbell suggested the issue may lay with the piston rings and not necessarily the liners. After lengthy, wide-ranging discussion, Volvo was asked to have the ring supplier measure parameters to see if they could contribute to higher liner wear, higher oil consumption and inconsistent lead levels. Ken Goshorn will contact the supplier to see if they are willing to participate with the panel. Jim Matasic will ask a Lubrizol metrologist to participate as well.

Labs indicated they are at risk of running out of the currently approved T-12 hardware sometime in January.

The TMC was asked to provide the clock position liner wear values for the new hardware batch tests (72 clock positions per test).

### T-8 Status on New Hardware

Two tests have been run on the TU liner/ring batch hardware. After a quick discussion, Jim Moritz moved, Scott Richards second, to approve the use TU hardware in the T-8. The motion passed with no objections and two waives.

## **Status of tweak/change to Oil 822 for T-11 and other issues related to T-11**

Jeff Clark of the TMC gave an update on the status of TMC 822. The supplier is currently investigating the possibility of tweaking the existing blend. A T-11 test will be run shortly on a tweaked version of the reference oil with the intent of having data available in early January '13.

As previously requested, Jim Rutherford of ChevronOronite updated a presentation on T-11 data by including the supplier's original data for oil 822. Jim's updated presentation is Attachment 3. Elisa Santos of Infineum also provided a presentation of T-11 data shown in Attachment 4. Neither Jim's nor Elisa's work were reviewed or discussed in this meeting.

Multiple concerns were expressed about running out of T-11 hardware. Scott suggested a potential desperation measure for T-11 hardware is to use S rings (TEI has 15 sets) with used S liners. This topic will continue to be discussed at future meetings, but may need to wait for the reference oil situation to be resolved first.

## **Future Meetings**

Next Conference Call - following the T-13 conference call on Wednesday 12/19 (2 pm EST).

Next Face-to-Face Meeting - like January 9th; will be confirmed later this week.