

Participants –

Mack Cooper – Chairman; Allison Athey; Zack Bishop; Bob Campbell; Chris Cauley; Jeff Clark; Riccardo Conti; Pat Fetterman – Secretary; Mark Sutherland; Ken Goshorn; Jim Matasic; Jim Moritz; Sean Moyer; Scott Richards; Jim Rutherford; Elisa Santos; Bob Salgueiro; Greg Shank; Blair Jennings; Chuck Anderson; Rick Schafer

Call to Order / topic of call –

Mark Cooper called the meeting to order at 10:38 am EST by reminding the group that our task for the meeting is to map out a way forward to keep the T-12 test available. The primary question to be answered is whether we can find a way to screen the parts on hand to try another round of reference testing which will give acceptable results.

T-12 rings –

Nothing new from last call - analysis of gaps / tension / profile are all very consistent and centered in spec. No numeric porosity data, but all batches are consistent and look like reference photos.

T-12 Liners –

Federal Mogul analysis of liners revealed significant variation in cross hatch angle with batch R around 44 degrees, batch S around 52 degrees and batch S around 58 degrees – all measurements are within the spec of 40 to 60 degrees, but they span the range from bottom to top. All measurements are the included angle between the cross hatch patterns, and the range corresponds to a Mack specification of 20 to 30 degrees from horizontal. FM indicated that they have no data to prove or disprove the correlation, but it is thought that a “steeper” (60 degree) cross hatch angle may lead to greater oil consumption. Surface traces of all liners are within specification and are similar batch to batch. Cross hatch angle is determined by RPM of the cutting stones and stroke speed, and it is adjusted by the operator to meet spec. Once set-up, there should be no variation in cross hatch angle, and all 3000 pieces were run in one set-up. FM will go back and check their records to see if they can identify previous batch X-hatch angles.

When these liners were “in production” they were processed using a different honing machine, but that would have been five to six years ago, and virtually all “test” parts would have been processed with the current machine.

Following significant discussion, the group consensus seems to be that “flatter” X-hatch angles and “smoother” surface finishes are probably more desirable for both oil consumption and wear control. FM agreed to screen (14) liners to see if there may be sufficient variation on these parameters to allow hardware screening. These liners will consist of (2) used liners from the Lubrizol “good” test run and (12) liners from new batch T liners at TEI. The Lubrizol liners will be selected by visual screening, and the TEI liners will be selected by high and low Ra, Rvk and Rpk measurements.

It was noted that Vo shows some variability, but FM is not sure what that means. It was also noted following discussion that the Lubrizol metallurgical analysis “appears typical of normal production”.

All liners are to be shipped to Federal Mogul today, arrive tomorrow and be analyzed by week end. Our next call to discuss findings is set for 9 am EST on Tuesday, February 5, 2013.

Many thanks to Federal Mogul for their continuing support in trying to sort out the problems causing variability in T-12 testing.

T-11 reference oil –

The TMC reported that the “tweaked” oil reblend was shipped today and should arrive at the labs by the end of the week. Each lab should receive two tests worth of oil.

Greg Shank strongly encouraged all labs to run calibration tests with this oil as soon as it arrives.