

DD13 Scuffing Task Force Meeting Minutes

Teleconference

5/21/2014

Attendance:

Bob Campbell
Jim Matasic
Kevin O'Malley
John Loop
Elisa Santos
Jim Gutzwiller
Bob Salgueiro
Greg Bruzinas
John Cruz
Jeremy Dean
Mesfin Belay
Jim McCord
Martin Thompson
Jim Rutherford
Mark Sutherland
Mark Cooper
Greg Shank
Brad Carter
Jeff Clark
Sean Moyer
Chris Castanien

Discussion:

Jim Matasic reviewed the attached presentation with an update of test development status. IAR has tuned their cycle to try to duplicate the LZ cycle (adjusting ramp rates and throttle settings)

test results on slides 2 & 3:

-Mark Cooper asked whether transient response at SwRI is the same as LZ and the new tuned IAR cycle. Jim Matasic stated that based on high speed data acquisition, all labs are fairly close but that there are some small differences in terms of damping. Martin Thompson said that SwRI hasn't touched their tuning since first Oil C run.

-Bob Campbell asked whether IAR and SwRI are each running only one stand. Both labs indicated that all of their tests to this point have been run on a single stand.

Slide 4 of the presentation shows soot rate versus test hours (EOT). The soot rate slide data is all data on Oil C. It seems that soot rate may align with test severity. The soot rate calculation is measured soot at EOT divided by the total test length. There is an obvious difference between soot rates at the labs. It could be due to older injectors causing cylinder wetting.

Steps moving forward:

- LZ to run oil C again with tuned (damped) cycle and new injectors.

It was asked if injector age could be attached to all historical data.

Daimler may travel to LZ to use internal software to gather more engine data to determine what differences there may be.

The question was asked whether Daimler sees field differences in soot rate over the life of an engine? They do not see any change in soot generation.

It was asked about fuel dilution in the tests that have been run. There hasn't been any appreciable fuel dilution in these tests

Are full or partial rebuilds being done? LZ has been doing partial rebuilds.

The IAR Oil C # that stopped early did not actually scuff but was stopped when it was determined it was about to scuff.

It was brought to the taskforce's attention that shutdowns are not being handled consistently across labs. Shutdowns are targeted at 4 hours but are not always 4 hours. They are a minimum of 4 hours but without autostarts there is no guarantee. To this point there has been no maximum shutdown time in the procedure. It was stated that labs should start using autostarts in order to standardize. The question was asked whether the task force should consider an engine temperature limit be used instead of time limit for shutdowns. Going forward it was determined that shutdowns should be +/- 15 minutes of 4 hour mark. There could be cell safety issues with instituting autostarts. Brad Carter suggested that labs be tracking engine cranking. Most labs have no issues with startups and they typically only take 5-6 secs. Need to decide if shutdown time or temperature to restart is more important. There was discussion about where to place a thermocouple near cylinder liner in order to better measure engine temperature for shutdown/startup procedure. Is there data logging during shutdowns? Not at IAR or SW. LZ can put their shutdown data together.

There was discussion about how to avoid boiling in the coolant system. The group felt that raising pressure would be better than changing coolant temperatures. Start it at 100 kPa. LZ will run next test with this new pressure and old injectors and modified tuning.

Jim Matasic asked for any suggestions from the group on what data should be generated between now and the face to face meeting on June 5th.

The goal should be to get a good dataset on one oil with the same procedure. All labs will run oil C at 100kPa and try to standardize shutdown procedures.

Mark Sutherland indicated that there will be two different liners in kits. They will put the same liners with the same part numbers in one kit but liners may differ between kits. Can the next 3 tests all use the same part #? Labs will make sure that the next 3 tests all use the same part #.

Next meeting will be the afternoon of June 5th in Paulsboro, NJ.