

T13 Task Force Meeting

Lubrizol, Wickliffe, OH

1/15/14

Stand Visit

A stand visit was conducted for Lubrizol's T13 installation. It was noted that the speed pickup off of the Oil Mist Separator unit was sourced from the DD13 engine. This part number was found, along with that of the sensor. It was noted that the fixed oil pickup location was still based off of an engine with a back-tilt. Prior to starting a T12 reference oil test, it was planned to replace the plastic coolant outlet pipe with the metal version along with proper T/C location.

Operational Data Review

Results were presented on TMC 821-3 from IAR#2 and SwRI #5. IAR#5 had a boost leak which caused increased cylinder and exhaust temperatures. SwRI #5 saw an oxidation increase in the desired time-frame, but the climb in Pb did not show the exponential growth that some other tests did.

The variation in oil consumption was brought up for discussion. Riccardo Conti brought up the possibility of changing the oil addition or sampling procedure. It was noted that a change in this would move away from testing already conducted, but also may impact the required oil quantities for Matrix testing. Mike Alessi volunteered that Exxon may be willing to run another 821-3 oil with a modified oil addition procedure to gage impact on test severity. The Task Force decided to not pursue this investigation.

Jim Rutherford presented operational data submitted by the labs for initial TMC 821-3 runs covering both controlled and uncontrolled parameters (data was previously sent out by Sean Moyer in Excel format). The largest discrepancies appeared in intake boost and temperature for tests prior to establishing 232 kPa as the target pressure. This difference between labs impacted the air temperatures at the turbocharger outlet as well as exhaust tailpipe. The intake manifold and EGR outlet temperatures were found to be surprisingly well controlled across labs.

Analytical Testing

Mike Birke had sent around used oil samples for each lab to perform analysis on, as well as three sample FTIR spectra file taken at SwRI for measurements to be calculated from. Each lab result was similar, indicating that, in general, all were performing the analysis the same from the spectra. When conducting the entire oxidation/nitration procedure, one lab was found to have measured the sample correctly, but interpreted the data differently.

Additional EOT samples will be sent out by Mike for further round robin analysis. It was requested that labs make an effort to turn these samples around quickly so that data is not delayed getting back to the task force.

The T13 task force determined that PDSC would no longer be a required item to report. Running the test is left to the discretion of the labs/clients and it will not require additional sampling since the sample volume required will be taken from the allocated quantity for FTIR measurements.

Parts Discussion

Allison Athey and Chris Cauley called in to discuss the status of various hardware items. The item of most immediate concern was the status of the large batch of rod bearings which TEI is expecting from Volvo. Chris was set to contact the buyer to determine the status of this order. Other production items have been delaying it. It was noted that the bearings would be arriving in the plastic molded trays, not the individual shrink-wrapped packages. This raised some concern about items arriving damaged. Chris seemed to think that the trays would be stacked in the boxes tight enough that there should not be large amounts of part shifting.

Engines which will be available to the labs are on order through a remanufacturing facility at Hagerstown. There were a few emissions labeling hurdles which had to be overcome since they will be T13 test configuration engines. The SN/VIN associated with these builds will not have a fully accurate BOM in IMPACT. Jim Moritz provided a full engine BOM which TMC plans to have posted as a component guideline.

Two different water pump pulley sizes were found to be in use amongst the labs, one ending in a -54 part number and the other in a -56. The -56 pulley is the correct one to use. Allison was to determine if a new belt part number exists to replace the old Mack belt part number currently being used.

Test Procedure Items

The following procedural items were discussed and decided upon:

- Crankcase pressure measured on the valve cover between cylinders 3 and 4
- Oil Adder vent line will run between cylinders 1 and 2 on the valve cover
- The Mack Valve Cover (PN 20728586) is to be used over the Volvo cover
- Intake Manifold Boost target of 232 kPa
- Coolant outlet T/C located in the middle of the stream by tapping the outlet housing.

The following procedural items were discussed and require further action or discussion:

- Crankcase pressure; hard connection to engine or collect fumes to prevent overall suction on the engine?

- Fuel temperature control: is the current location optimal for temperature control with the low-return system? Moving closer to the cylinder head may be a more stable location, but encounters issues with picking up heat off of the cylinder head.
- Based upon the part numbers provided for the OMS speed pickup/bracket, labs should begin tracking this parameter

Sean Moyer covered the initial draft of the report forms for the T13 test type. The liner wear and top ring weight loss parameters are to continue being measured.

Next Meeting

The next Task Force meeting will occur at Hagerstown sometime mid- to late-February. Mike and Greg will be coordinating