

ASTM Chain Wear Task Force Conference Call

Thursday 25th August, 2016

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Completed Action Items:

- Lab meeting to discuss CAN data acquisition and other operational items. Attached are the minutes from the meeting.
- Piston orders submitted by all Labs (2014 Design Pistons for retrofit to 2016 long blocks)



CW Lab Engineers
Meeting August 18th.

New Action Items:

- Labs to compare the following
 - Ring gaps
 - Blowby equation – run given delta pressure through everyone’s calculation for conversion to liters per minute.
 - Gas flow through PCV system
 - Blowby stack – line lengths and configuration
- Used oil samples will be exchanged for analysis
- Plot TAN and TBN crossover
- Plot blowby versus crankcase pressure
- Labs to “clean-up” data files for further operational review. Any zeros and erroneous data has contaminated the plots and made the operational review difficult to correlate to severity.
- Test validity of Lab D test 114666 will be revisited by the task force.
- Ron to forward new engine and hardware solicitation

Lab Meeting Review of Minutes:

- The attached list of notes was discussed in detail. The focus of the group switched from the cam variability to crankcase environment. Evidence is mounting that lab severity differences are being caused by oil degradation inputs such as fuel dilution, water content and acid formation. These operational conditions are influenced by crankcase venting of the blowby gases. The predominant theory is that more severe tests make more blowby or keep the blowby in the crankcase longer. Crankcase pressure was observed to be lower at Lab A. This indicates either less blowby or more rapid venting of the gases. We know from early sequence V development that resident time of the blowby in the engine will cause more severity in both wear and oxidation. The longer the blowby remains in the

engine, the more time it has to condense out water and fuel. Acid formation will increase.

- A review of the O'Malley chemistry plots showed a clear difference in fuel dilution, acid number and crankcase pressure between Labs A and G. All of these parameters were in the direction of the theory of residing blowby gas.

Path Forward

- Reevaluate the operational data after bad quality data is removed
- Execute action items above and then meet for discussion
- AOAP update on current activities – Ron to report
- Make the labs identical in all things crankcase related

Hardware Update

- Piston order MOQ was reduced to 2000. Labs have ordered pistons.
- Engine order will be stand alone.
- Ron to forward parts solicitation of all other engine components
- Another engine buy next year has been requested. The industry needs to understand the consumption rates of both tests (LSPI and CW) before making a final purchase. Of concern is the FLSPi engine failure rate.

Next Conference Call:

- Thursday the 1st of September time to be determined.