

Sequence X Severity Task Force

Meeting Minutes

01/18/22

Attendance

- Michael Deegan
- Rich Grundza
- ~~Christian Porter~~
- Ben Maddock
- Christine Eickstead
- Amol Savant
- George Szappanos
- Jason Soto
- Alfonso Lopez
- ~~Travis Kostan~~
- ~~Juan Vega~~
- ~~Pat Lang~~
- ~~Mike Lochte~~
- Charlie Leverette

Agenda 01/18/22

- Video review of Intertek Chain Wear Stand
- Develop plan to video tape and share files for review in place of lab visitations
- Review PCV flow diagram from Ford
- Develop action plan to standardize BB stack flow rates

Meeting Minutes – Video Review

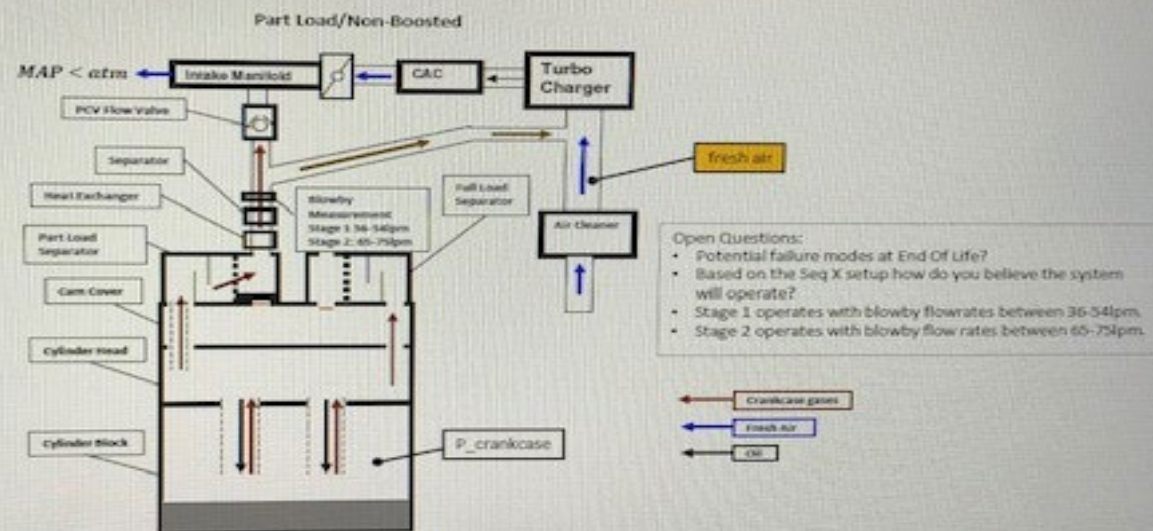
- A video was presented of Intertek CW Stand 93
 - The video will be uploaded to an accessible site. That is still a work in progress
 - The visual of the blowby stack became the primary focus and discussion point
 - Amol informed us that his plumbing between the heat exchanger and the oil separator was longer. A photograph or video was also requested. **An action item was made to have all labs measure the distance between the heat exchanger and the separator.**
 - The hose from the BB valve to the airbox tube was pointed out as not being specified in the procedure. It is thought that this should be a $\frac{3}{4}$ valve. **Labs to check and report back. Action Item**

Meeting Minutes – PCV Flow Diagram

- Mike presented a drawing of the engine and crankcase gas flow direction. See below.
 - The flow direction and magnitude was verified on the drawing as it works in our test stands.
 - Labs to verify flow rates in first and second stage to confirm what should be happening with 70 lpm of total BB in second stage
 - A drawing of the rocker cover was shown. There is a baffle in this cover that is designed to separate oil from gas as gas leaves the cover.
 - The flow rate of the PCV valve is measured and confirmed to be within the specified range for 60kpa and 27kpa. The question is if the valve is actually flowing the correct rate or if more gas is flowing through the hose to the air charge and intercooler. Action item to measure the flow in both first and second stage. For second stage the flow the air charge was confirmed at 25 – 30 lpm and Intertek and LZ.

2.01 GTDI Sequence X & Aged Oil Setup

*note: equations assume steady state conditions/time-averaged data; transient effects (A/S pulsations, PCV valve pulsations, blowby variation, crankcase pressure pulsations) are not accounted for and may contribute to variation within the calculation



Action List

Sequence X Sverity Task Force

Action List

6/6/2021

Task Force Formed	June 2020	First Meeting August 2020		Action
Operational Data Review	March 2021	Travis presentation	Fuel correlation to mild shift found	
Fuel COA analysis		Met with Haltermann, no differences found between batches	Christine met with SWRI fuel team, no other analysis was recommended	
Crankcase Experiments	Ongoing	IAR, Valvoline ran tests, fixed orifice in BB stack. Valvoline 1011 on target (.1258 Yi=). More sludge and emulsion noticed in the engine. Oil 270 on target (.1165) Oil separator filter	LZ test showed correlation, ran high CC pressure by accident	Done, all tests on target with orifice
Ln Transform Review	Ongoing	Stats group meeting regularly	Transform options to be presented	
Oil 271 Suspended	04/07 - 06/07	Panel Motion		
Cylinder honing	4/13/2021	Labs commonized honing techniques. Ra target 9-13	Revised procedure, agreed to hone new blocks as well as used. May want to look at other surface parameters	Done - ballot
Torsional Analysis		Driveline Manufacturere	Called Machine Services - no change in material or design, same stiffness	done no change
		Clutch pack	Called OHT - no change	
		Crank/Hub	Engine batches changing but labs using sme harmonic balancer from original engines	Review combination. Ask engineering on possible mismatch
Hardware batch timeline	5/25/2021	Lab Review	No correlation found with a change of hardware	
Chemistry		Travis- slides on TAN, TBN, water. No correlation seen	Amol recommendation to review oxidation, nitration, pentanes, TAN, TBN	Method of reporting, which should we use?
BB Gas T/C		Orientation may be influenced by drainback	Labs are not plumbed the same. Original configuration at IAR, Afton, SWRI. LZ, Afton installed 45 degree elbows	
CC Pressure Data		Missing data on TMC site	Rich completing review of CC correlation	Labs to input data
Action on Amol		Test on 271 w/orifice plate		Done on target
		Chem analysis on orifice plates	Travis plots	Done - review was inconclusive
Heat exchanger flow directon. Procedure mismatch		Labs to commonize	E ballot - procedure corrections	Done - ballot
PCV design change	1/18/2022	M Deegan to verify PCV valve print and any changes	No changes since 2012	Done
Build Data	1/18/2022	Lab to compare build data	IP issue - no participation	
Lab Visits		On hold due to Covid	Video reviews	
Piping between the HX and the oil separator	1/18/2022	No standard in the procedure	Labs to measure and photograph	
Hose diameter from the BB valve to the air box tube	1/18/2022	No standard in the procedure	Labs to measure and photograph	
Review map data in second stage	1/18/2022	Need to re-analyse and compare to barometric pressure. May be a boost influence on the pcv valve		
Meassure BB flow rate	1/18/2022	Determin distributioj of flow in first and second stage		
MD PCV review	1/18/2022	Mike to consult with Ford engineer on the flow characteristics of our stand set up. Near boost condition, at different pressures.		

