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Sent: Thursday, February 1, 2024 4:56 PM
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Subject: B6.7 EPA24/GHG24 - Oil Pressure Sensor In Range High (FC 435 followed by 143 and 415) Meeting notes

Good Afternoon,

Thank you all for your participation on today's call. As promised attached is an updated one-pager presentation with the details we reviewed in regards to the EPA 24 B6.7 oil pressure fault codes. I've also attached a excel list of the current ESN range as of 2/1/2024.



Navistar Specific One Pager Oi... Navistar B6.7 EPA24-GHG24 Li...

Thanks,

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Updated: 2/1/24

Oil Pressure Sensor In Range High (FC 435 followed by 143 and 415)

ESCALATION:

BACKGROUND

- EPA24 change from an oil pressure switch to a sensor combined with a wiring harness and diagnostic change have been made. (All changes noted on Walk-Around slide)
 - Sensor and diagnostic/tuning changes were field tested
- ALL B6.7 EPA24/GHG24 Engines are impacted
- FC's observed: 435 (Amber), 415 (Red) and 143 (Amber)
- 1 confirmed fault code related issue reported from Navistar**
 - ESN: 99215832 in transit (Salt Lake City,UT)**

FAULT CODE/FAIL MODE

- Fault Code 435, 143 and 415 being generated. Fault progression on subsequent slide.
 - 435 - Oil Rifle Pressure - Data Erratic, Intermittent, or Incorrect
 - 143 - Oil Rifle Press - Data Valid But Below Normal Operating Range - Moderately Severe Level
 - 415 - Oil Rifle Pressure - Data Valid but Below Normal Operational Range - Most Severe Level
- While fault codes above suggest low oil pressure, engines have adequate oil pressure and no damage has occurred. When FC 435 is active, diagnostic triggers an incorrect default value leading to these additional fault codes.**

CURRENT STATE

- Engineering release work has been kicked off to implement diagnostic changes on 1/29/24
- Current suspect population of 3135 engines shipped to Navistar. This volume will grow leading up to implementation.**

ROOT CAUSE AND GOAL STATEMENT

- Eliminate nuisance fault codes (435, 143, 415)

Completed

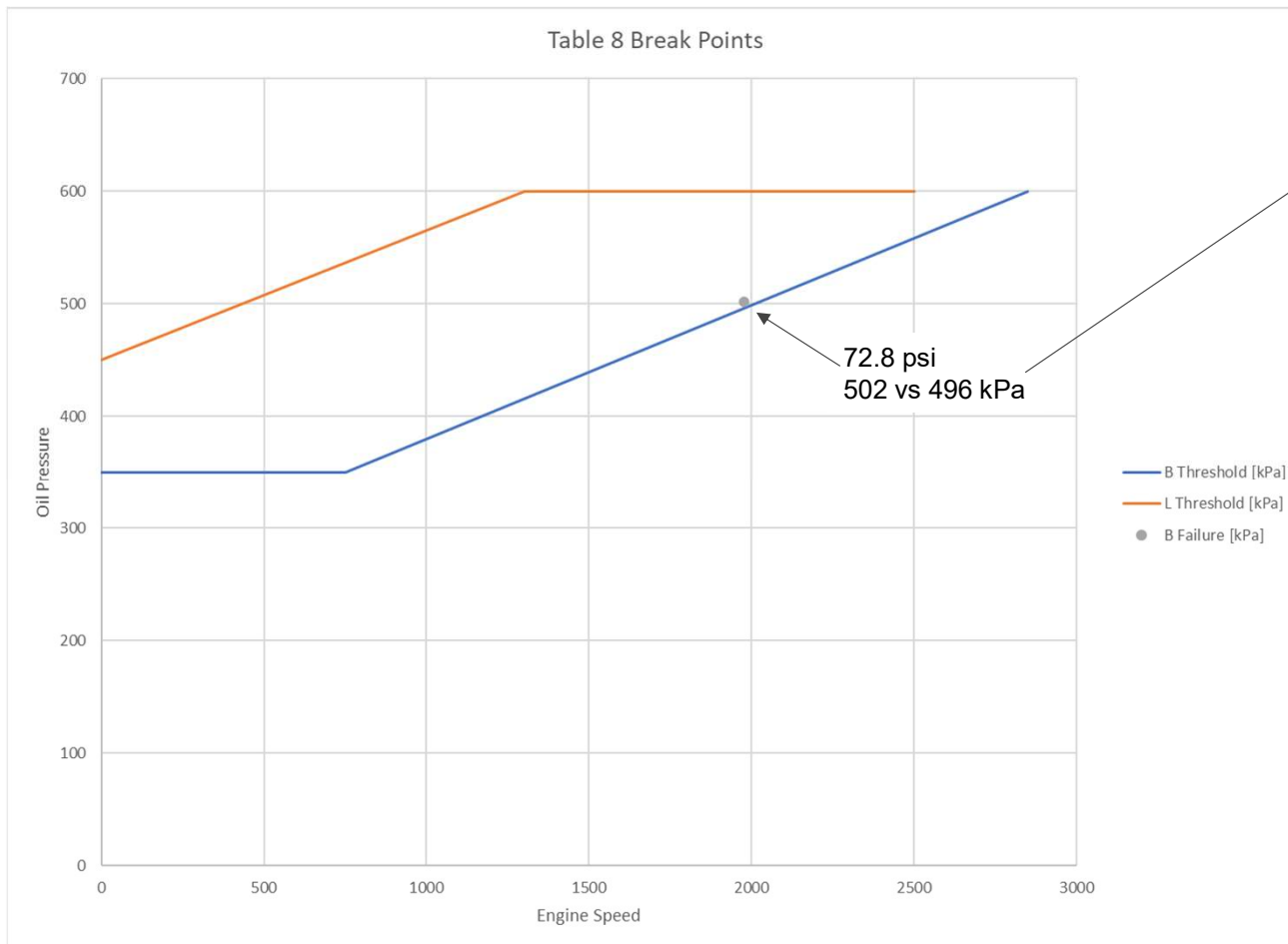
- Eliminated wiring harness, ECM, and Oil Pressure Sensor malfunction as a likely cause .
 - Supplier part analysis completed on 2 returned sensors – NTF
 - Part swaps and measurements completed with wiring harnesses and ECMs - NTF
- Evaluated L9 telematics and warranty claims. No similar issues noted, suggesting issue does not follow the sensor – same PN used on L9
- Failure mechanism reviewed by CMI Engineering – In Range High diagnostic limit exceeded - Cause Identified. Default value also set too low. (See Fault Progression slide)
- Internal review with new oil pressure values created on 1/30/2024

NEXT STEPS

- Draft and submit Change Request to kickoff the release work
- Continue documenting OEM and Field failure reports
 - This data will be utilized to calculate estimated failure rate.
- Service Engineering working on field communication/TSB

Row Labels	Count of customername
NAVISTAR MEXICO S DE RL DE CV	2200
8588	2200
NAVISTAR, INC.	682
795	682
IC BUS OF OKLAHOMA LLC	251
8586	251
NAVISTAR INC	2
9147	2
Grand Total	3135

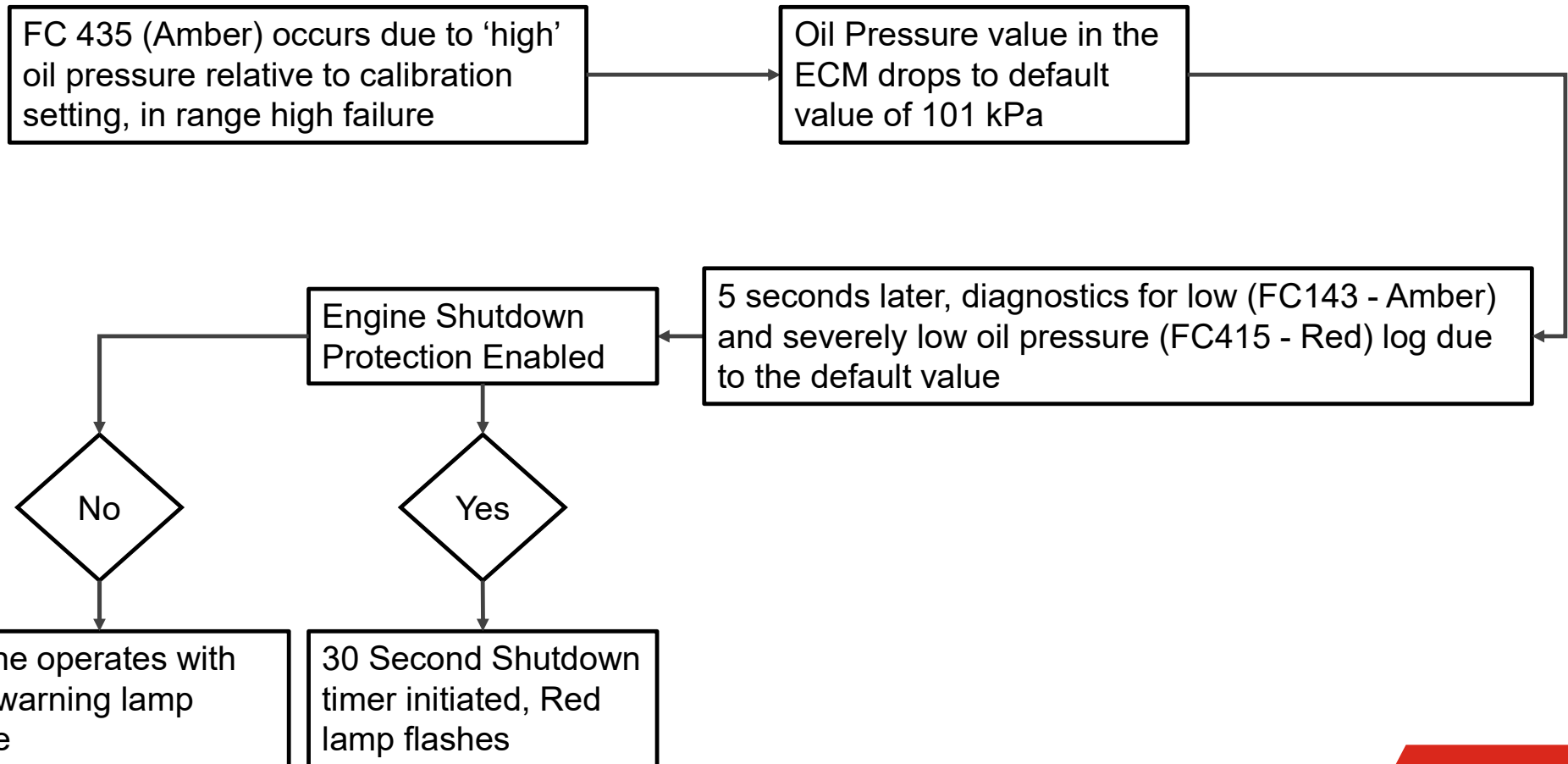
Cal Settings vs Dyno Fault Condition



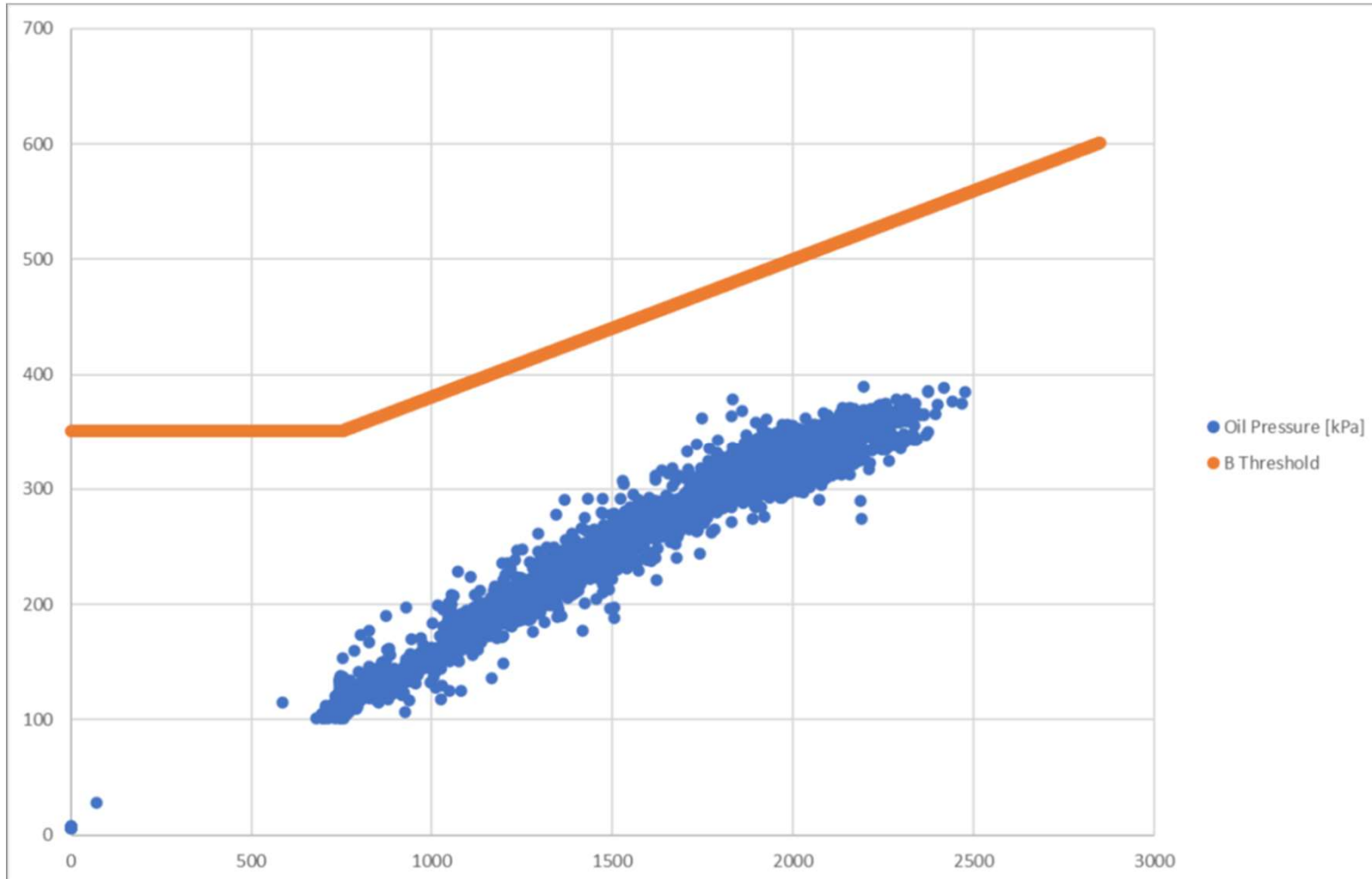
FC 435

- ECM Time (Key On Time) 000004:21:53
- Engine Oil Pressure 72.8 psi
- Engine Speed 1977 rpm
- Engine Coolant Temperature 197.6 F

Fault Progression



Field Test Data



B6.7™ EPA 24 Engine Walk-Around



Electronic Hardware

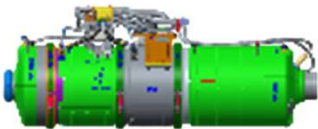
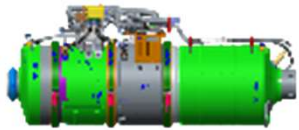
- Cyber Security Enhancements

Software & OBD

- ECM upgrade - bootloader Phase 35 software
- OBD Regulatory required improvements

Aftertreatment

- New Mixer



Customer TCO Improvement

- Dynamic Maintenance Monitor

Base Engine

- New Edge Molded Oil Pan Gasket reduces risk of leaks

Lube and Cooling

- Oil Pressure Sensor replaces pressure switch to improve health monitoring of lube system
 - Engine harness change

Air Handling

- Enhanced Turbo actuator for improved vibration capability and cooling controls capability via revised chipset
- Upgraded Turbo Bearing Housing

Ratings and Emissions

- Low Ratings Changes:
 - 200 hp/520 ft-lb/2600 rpm (eliminate) = 200hp/600ft-lb/2600rpm (new rating)
 - 220 hp/520 ft-lb/2600 rpm (eliminate) = 220 hp/600 ft-lb/2600 rpm (existing)
 - 240 hp/560 ft-lb/2600 rpm (eliminate) = 240hp/600ft-lb/2600rpm (new rating)