

# Sequence X

ASTM D8729

## Ford Chain Wear Test Surveillance Panel Meeting Minutes

November 28, 2023

Prepared By: Alfonso Lopez, S.P. Chairman

# Sequence X Surveillance Panel Meeting Agenda

## 11/28/23

- Roll call
- Action Items
- TMC Report
- OH Report
- Alternative Fuel Matrix
- Report to Sub B in New Orleans (December)
- Next Meeting

# Meeting Minutes

- Roll Call
  - Any Ritchie informed the panel that he will be transferring the Infineum representation to Christopher Tonstad.
  - Attendance roster attached
- Action Items
  - No new action items were recorded
  - Completed action items summarized on page 5
- TMC Report
  - Control charts show test in industry alarm – mild
  - Discussion of lab visits and root cause
    - Labs have met and had workshops
    - No root cause of mild shift has been found
  - Test viable and fit for oil certification using new calibration method – page 6-7

# Meeting Minutes

- Alternative Fuel Report - Page 8
  - Statistics group reviewing matrix designs
  - Presentation to panel planned in Q1
- OH Report – Pages 9-10
  - Jason to schedule an OH meeting in Q1 2024
  - No pressing issue with hardware
- Oil 1011-1 remains on hold
  - Two reference oil system working (270 calibration and 271 discrimination)
  - No oil availability problem
- Test activity level increased last 2 months – Page 13
- Report to Sub B next week in New Orleans - draft will sent to panel

# Task Force Action

- Lab visits in San Antonio (Complete)
  - Test stand inspections
  - Information Letter 23-2
    - Standardize stand Blowby Stack configuration
    - Clarify wording on engine ramps and taking Blowby window
- Build workshop (Complete)
  - August 15<sup>th</sup>
  - Lubrizol
- Operations and Hardware Chair Appointed (Jason Soto)

# Sequence X SP

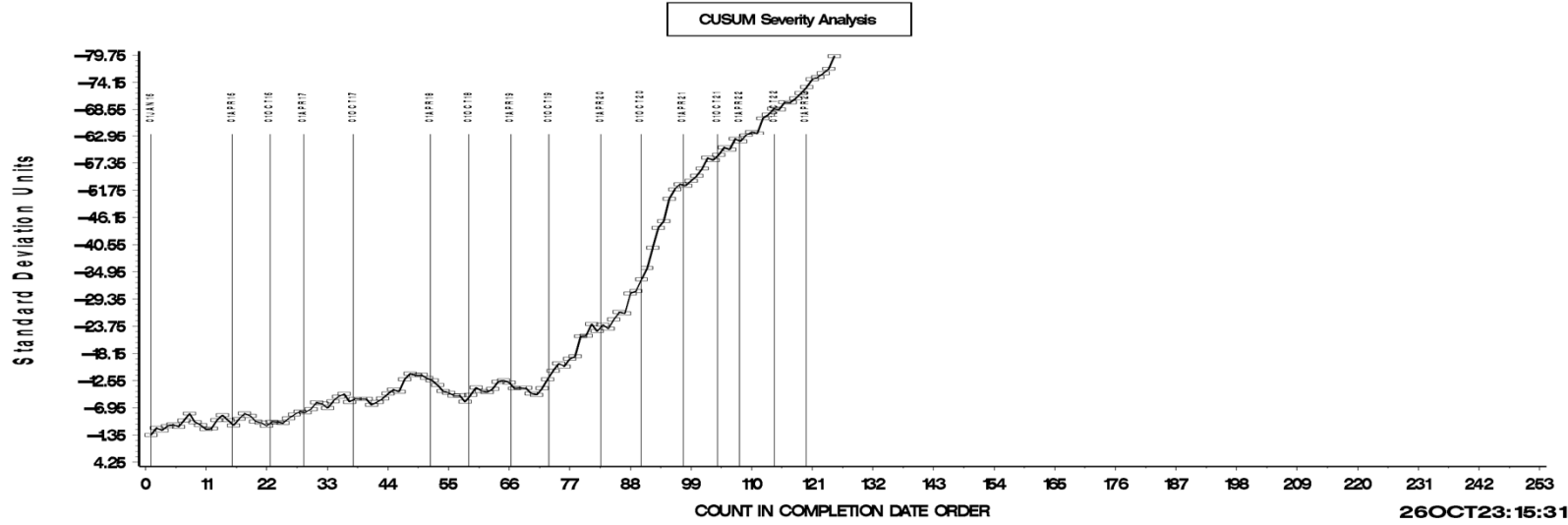
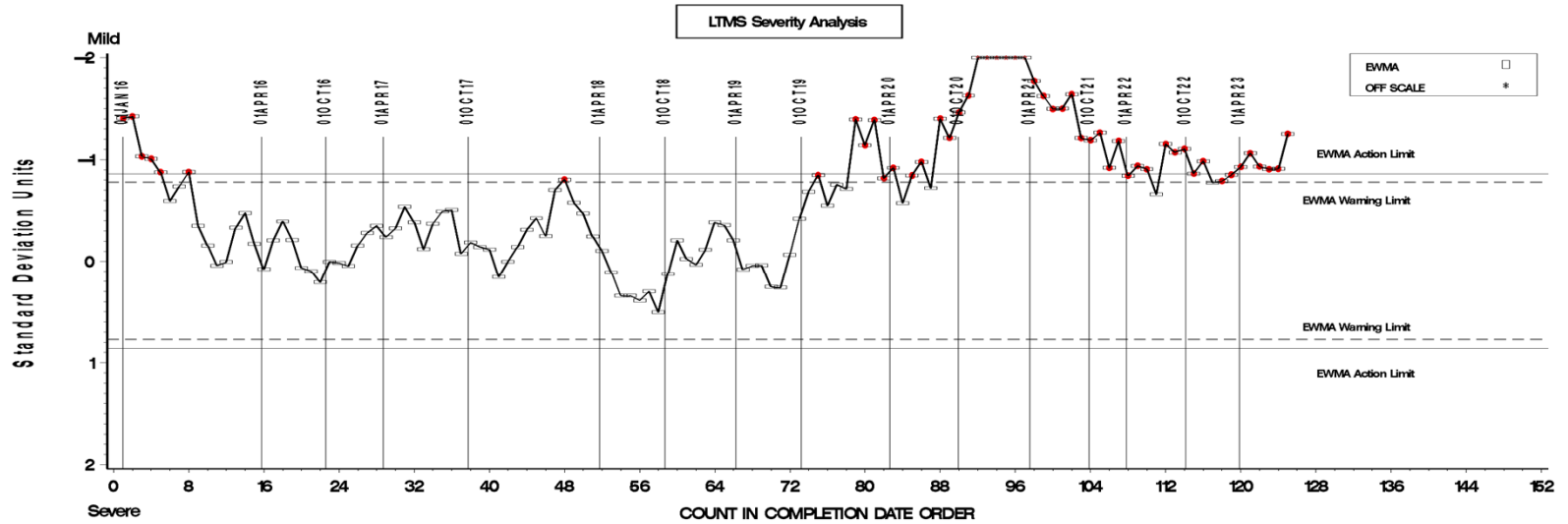
## Test Status

- Information Letter 23-1 (New stand calibration criteria effective February 28, 2023)
  - Run oil 270 within Ei bands
  - Run oil 271 as a discrimination oil - prove discrimination per 23-1 statistical limits
  - Reference periods extended to 365 days (15 tests)
- 4 labs, 6 Test Stands. All test stands have calibrated per new criteria
  - No stands have failed to discriminate
- Test in mild alarm status. 270 oil tests still mild and charted. Discrimination oil 271 results are not charted.

# SEQUENCE X INDUSTRY OPERATIONALLY VALID DATA



## END OF TEST CHAIN WEAR FINAL RESULT



# Sequence X Alternate Fuel Supplier Update

- The last task force teleconference was in September 2023.
- The statics group presented different options for the fuel matrix design.
- The task force agreed, with no objections on a 6 test matrix (Option 2a) with either 2 or 3 stands on oil 270. Two additional tests on oil 271 for a total of 8 tests.
- Statistics group is working on finalizing the criteria for a final review before going to the Surveillance Panel.

## Design Options

- 2 stands from 2 different labs will run 271
- run 270 according to a design on the right

1a (6 tests): 2 labs				2a (6 tests): 2 or 3 labs			
Stand 1	Stand 2			Stand 1	Stand 2	Stand 3	
270	270			270	270	270	
270	270			270	270	270	
270	270						
1b (9 tests): 2 or 3 labs				2b (8 tests): 2-4 labs			
Stand 1	Stand 2	Stand 3		Stand 1	Stand 2	Stand 3	Stand 4
270	270	270		270	270	270	270
270	270	270		270	270	270	270
270	270	270					
1c (12 tests): 2-4 labs							
Stand 1	Stand 2	Stand 3	Stand 4				
270	270	270	270				
270	270	270	270				
270	270	270	270				



# Sequence X O&H Update

- Hardware

- Final critical hardware purchase was made( timing chains, gears, tensioners and guides).
- Changes to the crankshaft timing gear and timing chain tensioners have been observed. (Historical hardware on the right/ New hardware on the left)
- The new timing with splines is allowed to be used but they must be brought in on a reference.
- The aluminum timing chain tensioners will be used in the future. IAR has offered to redistribute some tensioners so that all labs can transition around the same time.
- Other noncritical changes were noted in the 2018 batch of engines and were documented in a presentation. A meeting needs to be scheduled to review these changes again.



# Sequence X O&H Update

- Build workshop took place August 15<sup>th</sup> at Lubrizol.
  - Rebuild kits are coming in with different design head bolts. New design head bolts are ok to use. Use first in first out principle.
  - The new rear main seals also have some color differences. All dimensions are still the same, ok to use.
- Reference Oils
  - TMC 271- discrimination oil, no inventory problems.
  - TMC 270- primary reference oils, no inventory problems.
  - TMC 1011- original batch has been depleted. New batch 1011-1 on hold.

# Reference Oil Update

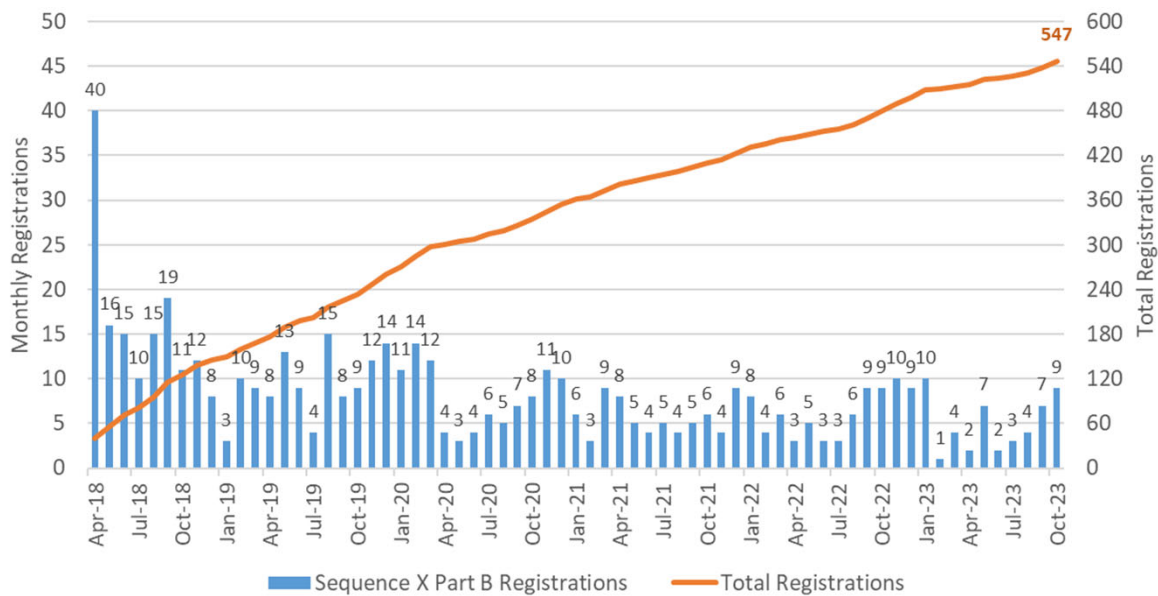
- Oil 271
  - Oil to be used as a discrimination oil only per Info. Letter 23-1
  - No inventory problems
- Oil 1011 Depleted
  - 1011-1 Assignment on hold
- Oil 270 – Primary reference oil
  - No inventory problems

# Fuel / Hardware Update

- Fuel
  - No fuel supply issue
  - Alternative fuel supplier matrix design - Jason
- Hardware
  - Critical component purchase complete
    - Only the independent labs purchased hardware
  - Hardware inventory forecast good for 5 years plus
    - Lab Survey performed (Independent Labs responded)
  - GF7 registration live July 1, 2023
  - and GF8 - AOAP timelines are being established
  - Seq X needs to be available through 2028 minimum (GF7)
  - New engine platform for GF8? (possible extension of current engine platform)

### Sequence X Part B Registrations through 20231031

Registration began on April 2, 2018 with retroactive registration March 19, 2016 - April 2, 2018



Sequence X Surveillance Panel Meeting		
November 28, 2023		
	Attendance	
Porter, Christian <Christian.Porter@AftonChemical.com>		Afton
Martin Chadwick Intertek <martin.chadwick@intertek.com>		IAR
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Dave Passmore		IMTS
Mathew Bowden		OHT
Jason Bowden <jhbowden@OHTech.com>	x	OHT
'Rich Grundza' (reg@astmtmc.cmu.edu)	x	TMC
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Indresh Mathur	x	Haltermann
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Amanda Stone		Afton
Jason Lekavich	x	Afton
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Todd Dvorak	x	Infineum
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Tony Catanese	x	LZ
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Michael Luhard		Afton
Ben Maddock		Afton
Angela Willis		
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Mike Kunselman	x	
<a href="mailto:Tonstad,Christopher">Tonstad, Christopher &lt;Christopher.Tonstad@Infineum.com&gt;</a>	x	Infineum

# Sequence X History

## Sequence X Milestones

1/1/2012	Start of Chain Wear Test Development
12/7/2017	AOAP Approval for GF6
4/2/2018	Live Registration (03/19/16 Retro - Registration)
2/20/2019	Surveillance Panel Procedure Acceptance Vote
4/4/2019	Subcommittee B Ballot
6/16/2019	Main Committee D02 Ballot - ASTM Procedure D8279
11/7/2019	Memorandum 19-043 Use of Calibrated Sequence X Stands to Generate Used Oil Samples for Seq IX (LSPI)
11/20/2020	Information Letter 20-1 Procedure Edits / Drive Shaft Spec
1/27/2020	Information Letter 20-2 Criteria for Multiple Test Type Calibration
6/1/2020	Mild Severity Shift Task Force Formed
9/11/2020	Information Letter 20-3 Correction to Table 12
10/14/2020	Information Letter 20-4 (1) Correcting PCV Flow Meters (2) Correction to Section 12.1.1
4/8/2021	Oil 271 Suspended from use due to mild results
9/17/2021	Information Letter 22-1 Engine run limits, honing procedure, connecting rod orientation, blowby gas thermocouple orientation
5/3/2023	Information letter 23-1. Use oil 271 as a discrimination oil
6/9/2023	Information letter 23-2. Procedure revision Fig 2