

**Sequence VH O&H Meeting**  
**April 21<sup>st</sup>, 2026 at 3:00 PM EST via MS Teams**

**Attendees:** Christian Exposito, Tony Catanese, Rob Zdrodowski, Mike Lochte, Tyler Langford, Joe Anthony, Mike Deegan, Dylan Beck, Bill Du Chene, Amol Sawant, Al Lopez, Ben Maddock

**Overview:**

1. Hardware
  2. Operation
  3. Fuel
  4. Other
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**1. Hardware**

- a. Inventory Life (as of December 2025)
  - i. Lab A = ~2028
  - ii. Lab B = ~2030
  - iii. Lab D = ~2030
  - iv. Lab G = ~2028
  - v. Do we expect run rates to increase in the next four years? Yes due to dexos1 Gen 4 and GF-8
  - vi. What date should labs target?
    1. Depends on VJ development, dexos1 Gen 4, and GF-8 forecasted timeline
    2. Tentatively labs are truing up to 2030 but that could change
- b. Various hardware orders
  - i. **Bishop Order 2026**
    1. Labs agreed this is important but no immediate action required. Dexos implications could drastically change forecasts. O&H will monitor and act prior to June 2026 ASTM
  - ii. **FCS Order 2026**
    1. Ford will work with FCS contact to straighten out part numbers and minimum orders
    2. Execution of this order is closely tied to GM dexos demand
  - iii. **FCS Oil Pump order** expected ahead of larger FCS order
- c. Ford has been pursuing a new internal Ford Component Sales (FCS) contact as the previous has retired. Ford also agreed to speak with GM about expected VH demand from dexos1 Gen 4
  - i. Read across?
  - ii. Limits?
- d. Bishop salvage block
  - i. Lab G ran a successful calibration test with a Bishop salvage block to relieve industry concern
  - ii. It was acknowledged that Bishop blocks will require more attention to detail in the cleaning process
  - iii. CMIR 201946 with engine VH205S.
    1. Salvage blocks will have an "S" at the end of the build number.

e. Pencoool in RAC system

- i. As discussed: [VHOandHMinutes20250128.pdf](#)

8.4 *Coolants:*

8.4.1 *Description*—The engine coolant is equal parts of demineralized (less than 0.34 g/kg) or distilled water and a fully formulated ethylene glycol based automotive antifreeze to protect against corrosion of all system components. The RAC coolant is a solution of demineralized (less than 0.34 g/kg) or distilled water and an additive treatment of 475 mL of Pencoool 2000<sup>26,13</sup> per 15 L of water.

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<sup>26</sup> The sole source of supply of Pencoool 2000 coolant known to the committee at this time is Penray Cos., Inc., 1801 Estes Ave., Elk Grove, IL 60007.

ii.

- iii. **Motion:** Penray has discontinued their entire Pencoool lineup and do not offer an alternative. Labs have identified that Nalcoool Nalfleet 2000 is an allowable alternative. Modify Section 8.4.1 and remove footnote 26 as follows:

8.4.1 *Description*—The engine coolant is equal parts of demineralized (less than 0.34 g/kg) or distilled water and a fully formulated ethylene glycol based automotive antifreeze to protect against corrosion of all system components. The RAC coolant is a solution of demineralized (less than 0.34 g/kg) or distilled water and a coolant additive treatment<sup>13</sup> of 475 mL of per 15 L of water. **Pencoool 2000 and Nalfleet 2000 are the only approved coolant additive treatments in the RAC coolant.**

- iv. Labs are ok with the motion but want to hold until TMC can locate old information letter that may have already addressed this.

f. SV-10 honing machine

- i. Labs agreed that conceptually a lab could attempt a reference with an engine honed in an SV-10 machine instead of the procedural CV-616 could be considered acceptable
- ii. The group will need to further define the requirements but it appears this is a low-priority request as the lab pursuing it no longer needs to.

## 2. Operation

- a. TMC confirmed that industry charts are not capped, meaning large standard deviation results can greatly influence their shape and apparent severity
- b. ON HOLD until after M-000054-3 stats review - Tightened piston to bore clearance
- Current: 0.020 to 0.046 mm
  - Proposed 0.030 to 0.038mm, average of all eight cylinders

### 3. Fuel

a. M-000054-3 additional runs

Lab A:

200603: AES 1.75  $\sigma$  mild  
200607: AES 1.6  $\sigma$  mild  
**200604: AES -1 severe OC**  
**204649: AES 0.79 mild**

Lab B:

198394: AES 1.09  $\sigma$  mild, APV -4.1 severe  
198391: AES -0.7 severe, APV -1.98 severe  
203078: AES 0.52 mild, APV -2.67 severe

Lab D:

193863: AES 0.053 mild

Lab G:

201949: AES 0.7193  $\sigma$  mild  
199199: AES 1  $\sigma$  mild  
**201950: AES -1.2 severe**  
**201946: AES 0.45 mild (Salvage block)**

b. 13 tests were used to approve M-000054-3

- i. Twelve additional data points now available
- ii. **Labs agreed April is the correct time to request a Stats Analysis**

c. Fuel Properties

i. Fuel Supplier survey results

1. <https://www.astmtmc.org/ftp/docs/gas/sequencev/minutes/V%20O%20and%20H%20Subpanel/VHOandHMinutes20260217.pdf>
2. Labs need more time to review and devise an action plan

Historical Logbook

Date	Topic	Description	Comments
2/12/24	-	O&H formed.	
2/29/24	Hardware	Cam cap anaerobic sealant	IL24-1
3/5/24	Hardware	Cam bearings resolved with King Bearing supply to TEI.	Incl. SwRI bearing analysis
3/12/24	Fuel	N-000010-1+ CofA data integrity review.	Included lab samples to Saybolt
3/26/24	Fuel	Quarterly samples now from test cell	
4/9/24	Hardware	Piston oil hole size differences by piston size not statistically significant to APV	
4/16/24	Operation	Build Workshop conducted	IL24-3 and IL24-4
5/21/24	Fuel	AO content depletion in transit	
5/21/24	Operation	Honing data analysis uninterpretable due to measurement differences	This will be revisited after 2025 fuel approval matrix
6/4/24	Hardware	OHT3G-096-1 brushes explained	IIIG efforts
7/9/24	Operation	OSCR raters group imprecision reviewed	
8/27/24	Hardware	FCS order placed on pistons and rings	
8/27/24	Operation	N-10-1 approval vs PM statistical analysis	
1/7/25	Fuel	RVP adjustments vs fuel dilution	
4/29/25	Operation	Blowby Cart Questions - 5/16" orifice	Equation difference, ~0.1 L/min
8/19/25	Hardware	2024 FCS order has completed	
9/16/25	Operation	Engine Swap experiment Lab A & G	Fuel dilution moves with build
10/28/25	Fuel	M-000054-3 fuel batch approved.	
12/17/25	Operation	Updated report form to capture piston dia.	Version: 20251222
2/17/26	Operation	Severity alarms discussed ahead of Stats review	Some indication of RAC ICF. Other parameters are lab issues
2/17/26	Fuel	Fuel supplier feedback on ethanol, distillation and oxidation stability	O&H needs to summarize and create action plan