Sequence VI Surveillance Panel Meeting Minutes
November 19, 2024

- Previous minutes approved
- Stats presentation on "Seq VIF data review", by Travis Kostan
    - 422 tests
    - Intention: Lab and oil severity over time, run number (engine age)
    - FEI 1 and 2 suggests Yi is ok, but individual oils reveal that some oils more/less severe than others
    - Large difference between runs 1 and 2
    - Recommend that
        1. the targets be adjusted
        2. drop RO542
        3. standardize RO assignment order
    - motion made by Dan Engstrom, seconded by Tony Catanese and passed with 9 approves, 0 negatives, and 4 waives.

  "The Sequence VI Surveillance Panel chooses to adopt the changes to targets and standard deviations shown on slide 42. The SP further instructs the TMC to modify the LTMS document to specify that reference oil 543 will always be assigned to first run engines, followed by 1011 on second run engines. Reference oil 542 will be suspended from use. Effective December 6th, 2024."

    - LTMS change, so goes in effect on Dec 6 (2 wks)
    - Action item to revisit in 6 months
- Motion by Jason Lekavich from Afton, second by Adrian to remove length restriction on TC exposure
    - Approved 9/0/4

  Replace verbiage in paragraph 6.9.2 in both VIE and VIF procedures to read:
  "6.9.2 All thermocouples (excluding the oil heater thermocouple)
  shall be premium grade, sheathed types with premium
  wire. Use thermocouples with a diameter of 3.2 mm. Thermocouple
  lengths are not specified, but in all cases, shall be long
  enough to allow thermocouple tip insertion to be in mid-stream
  of the medium being measured."

- Chairman's request for O&H panel chair
    - Dan Engstrom volunteered, others encouraged to join, OHT also in
- Rich Grundza provided update on LTMS cusum charts, focusing on FEI1
- Todd volunteered to perform similar analysis to Travis' VIF presentation of VIE data
- Fuel update from Haltermann
    - HF20003 supply, 26-27,000 gal in inventory

Stats Group Recommendation

- Use the average of Run 1 and Run 2 Oil performance as the new target for each oil.

Current

FEI 1

Oil	Mean	Std. Dev.
542-X	2.23	0.18
543-X	1.88	0.27
1011-X	1.45	0.14

FEI 2

Oil	Mean	Std. Dev.
542-X	1.52	0.13
543-X	2.25	0.34
1011-X	1.41	0.39

Severity Adjustment Std. Dev

FEI1: 0.22

FEI2: 0.30

Proposed

Oil	Mean	Std. Dev.
542-X	2.12	0.22
543-X	1.78	0.34
1011-X	1.57	0.20

Oil	Mean	Std. Dev.
542-X	1.48	0.21
543-X	1.99	0.27
1011-X	1.46	0.28

Severity Adjustment Std. Dev

FEI1: 0.27

FEI2: 0.27

Summary Table

The tables to the right summarize the changes in severity adjustments and Vi values for various update options.

FEI 1

Option	Avg. SA Lab A	Avg. SA Lab G	Expected SA Max Range Within Lab (based on combo medians)	Vi Avg. Lab A	Vi Avg. Lab G	Expected Vi Max Range Within Lab (based on combo medians)
Do Nothing	0.06	-0.06	0.32	1.46	0.61	3.71
Update + Keep all combos	0.04	-0.06	0.15	1.11	0.48	0.79
Update + Drop 542	0.06	-0.08	0.13	1.24	0.60	0.32
Update + Always run 543, then 1011	0.06	-0.01	0.00	1.08	0.69	0.00

FEI 2

Option	Avg. SA Lab A	Avg. SA Lab G	Expected SA Max Range Within Lab (based on combo medians)	Vi Avg. Lab A	Vi Avg. Lab G	Expected Vi Max Range Within Lab (based on combo medians)
Do Nothing	0.06	0.08	0.27	0.71	0.87	2.63
Update + Keep all combos	-0.03	-0.01	0.09	0.70	0.85	1.16
Update + Drop 542	-0.04	0.01	0.07	0.75	0.89	1.16
Update + Always run 543, then 1011	-0.03	0.04	0.00	0.17	1.38	0.00

Recommendations

The below are a list of options for updates to apply to the Sequence VIF. It is highly recommended to, at a minimum, adopt update #1 below.

1. Update the targets and standard deviations with the proposed values given on slide #42.
   - This will provide the biggest reduction in reference oil assignment order dependency for engine severity adjustments.
2. Drop 542 as a reference oil.
   - This oil is a 0W-20 and therefore is not similar to the candidates that are running this test. In addition, some lab differences were largest on this oil when comparing run #1 to run #2.
   - This will also provide a slightly greater reduction to the reference oil assignment order dependency on engine severity adjustments.
3. Utilize only a single combination of first and second run reference oil assignments (i.e. 543 always the oil for first run, 1011 always the oil for second run).
   - This takes all reference oil assignment order dependency out of the equation and provides a level playing field for all engines.

Motion

Current Verbiage

- 6.9.2 – All thermocouples (excluding the oil heater thermocouple) shall be premium grade, sheathed types with premium wire. Use thermocouples with a diameter of 3.2mm. Thermocouple lengths are not specified, but in all cases shall be long enough to allow thermocouple tip insertion to be in mid-stream of the medium being measured. The thermocouples shall not have thermocouple sheath greater than 50mm when exposed to laboratory ambient temperature.

Proposed Verbiage

- 6.9.2 – All thermocouples (excluding the oil heater thermocouple) shall be premium grade, sheathed types with premium wire. Use thermocouples with a diameter of 3.2mm. Thermocouple lengths are not specified, but in all cases shall be long enough to allow thermocouple tip insertion to be in mid-stream of the medium being measured.