ASTM D6795 Engine Oil Filterability Test (EOFT) and ASTM D6794 Engine Oil Water Tolerance Test (EOWTT)

Surveillance Panel Meeting

April 3, 2023

Yong-Li McFarland, Chair

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Agenda

- Attendance
- Topic 1: Monitoring System
- Topic 2: Ford request for modified EOFT Gelation Test: request to modify or add a new test similar to EOFT that was better able to screen some field issues

Surveillance Panel Membership and Scope

14 members

Beth Schwab, Afton Chemical
Man Hon Tsang, Chevron Oronite
Dennis Gaal, Exxonmobil
Ron Shah, Infineum
Joe Franklin, Intertek
Udo Boecker, ISP
Michael Johnscher, ISP
Litchi Xie, Lubrizol Additive (Zhuhai) Co., Ltd.
Victoria Fein, Lubrizol
Jason Bowden, OH Technologies Inc
Greg Miiller, Savant Group
Becky Grinfield, SwRI
Yong-Li McFarland*, SwRI
John Loop, TMC

*Chair

Scope and Objective

- It is the responsibility of this panel to provide surveillance over Test Methods D6794 and D6795 bench tests used in the ILSAC and API passenger car oil categories. The surveillance panel will review data semi-annually supporting the precision for each bench test and when necessary, conduct workshops to bring the bench tests within accepted limits. The surveillance panel will function with the support of the ASTM Test Monitoring Center (TMC) in an effort to monitor the bench tests and maintain appropriate and adequate supplies of reference oils for the monitoring process. The panel will maintain a liaison with the "expert groups" in ASTM, which may help in the maintenance and improvement of the bench test methods used in support of the current ILSAC and API categories. The surveillance panel will make recommendations for appropriate action through Subcommittee D02.B, Section 7.

Topic 1: Monitoring System

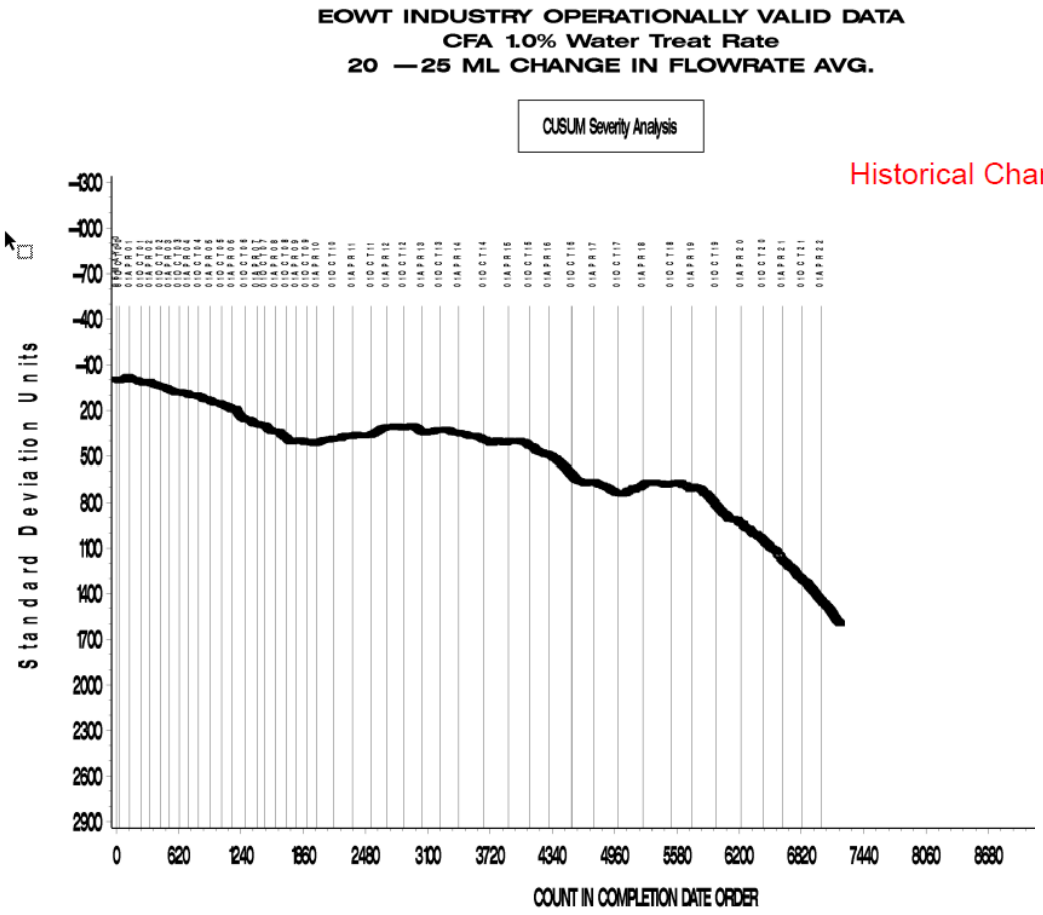
- Consider whether the current Shewhart limits is acceptable for your test or if EWMA monitoring (the same system as used for engine tests and Noack) should be considered/developed for your test
  - Is there interest in creating limits on the long term severity of the test as reported by an EWMA chart to see if the reference oil is in control or not control?
  - EOWT (all 4 water levels) test has been around 1 standard deviation severe since ~2019.
  - Currently, group is not alerted when reference limits are not consistently off target, so it's possible that candidates can also consistently be off target.
- See if interest in creating EWMA charts and if so will need to select lambas, limits, etc to use

- Discussion noted EWMA system would not be appropriate for the EOWT and EOFT tests based on testing protocol (reference run with each candidate test).
  - In future, review each lab data to see what may be contributing more or less to severity trends. To continue to discuss

EOWT D6794 CUSUM Plot: 1.0% Water

Mild

Severe



Historical Chart

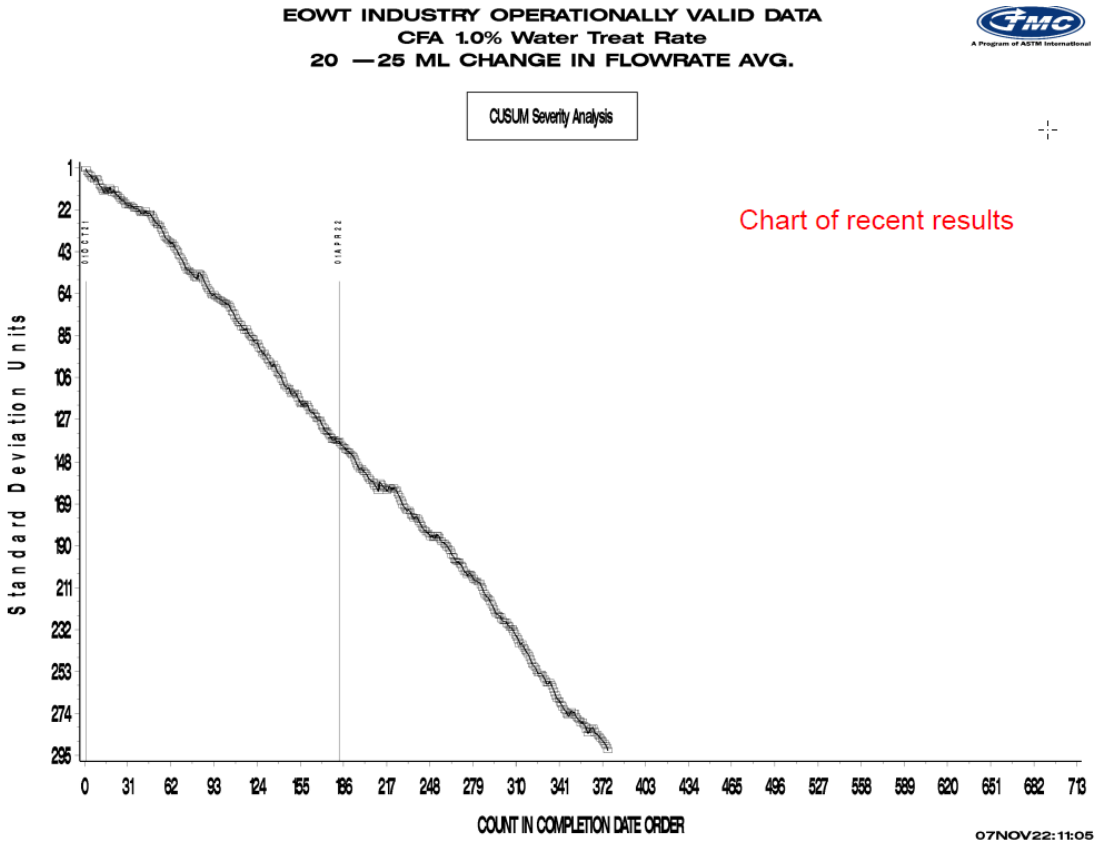
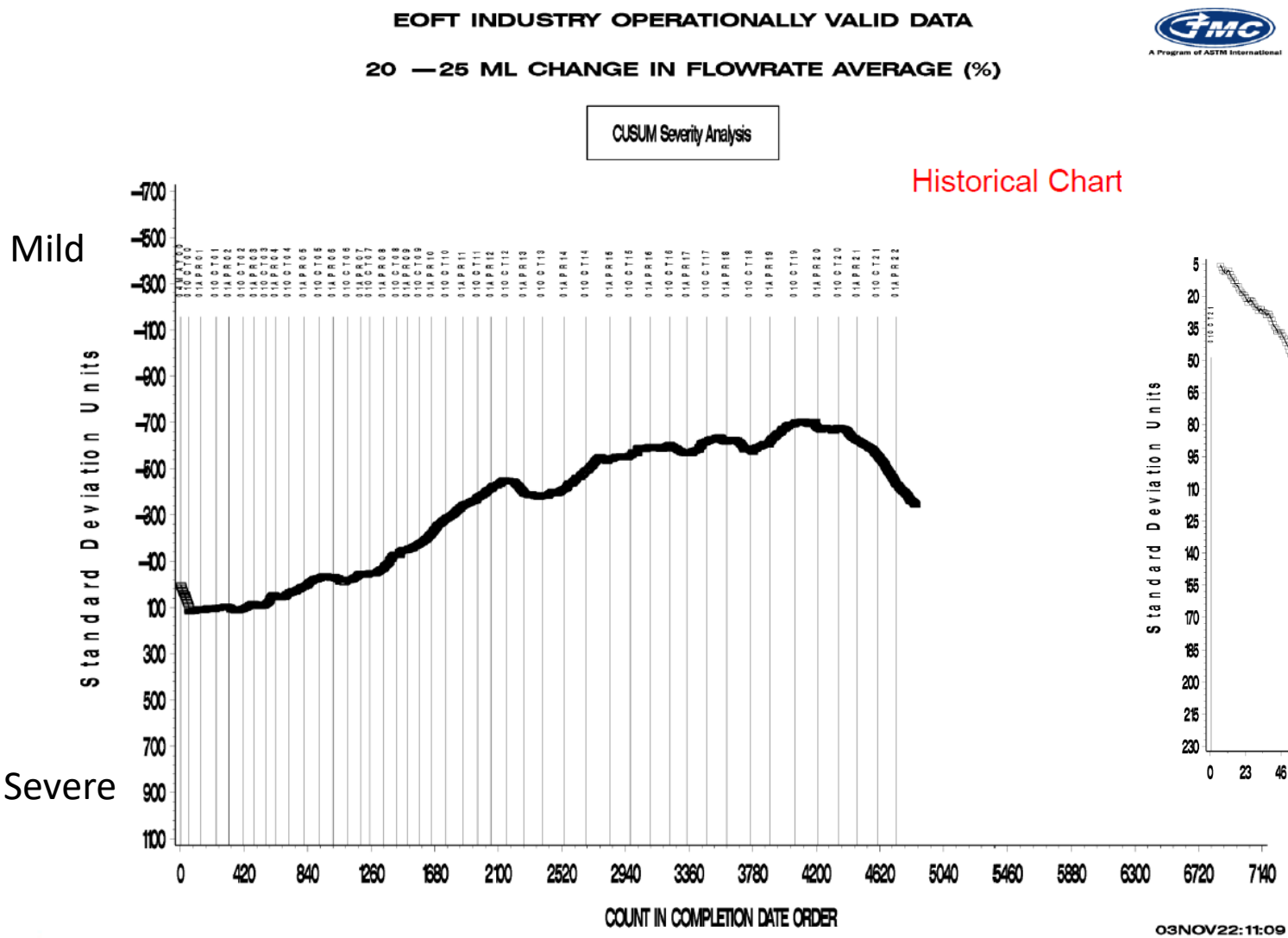


Chart of recent results

EOFT D6795 CUSUM Plot



Historical Chart

Mild

Severe

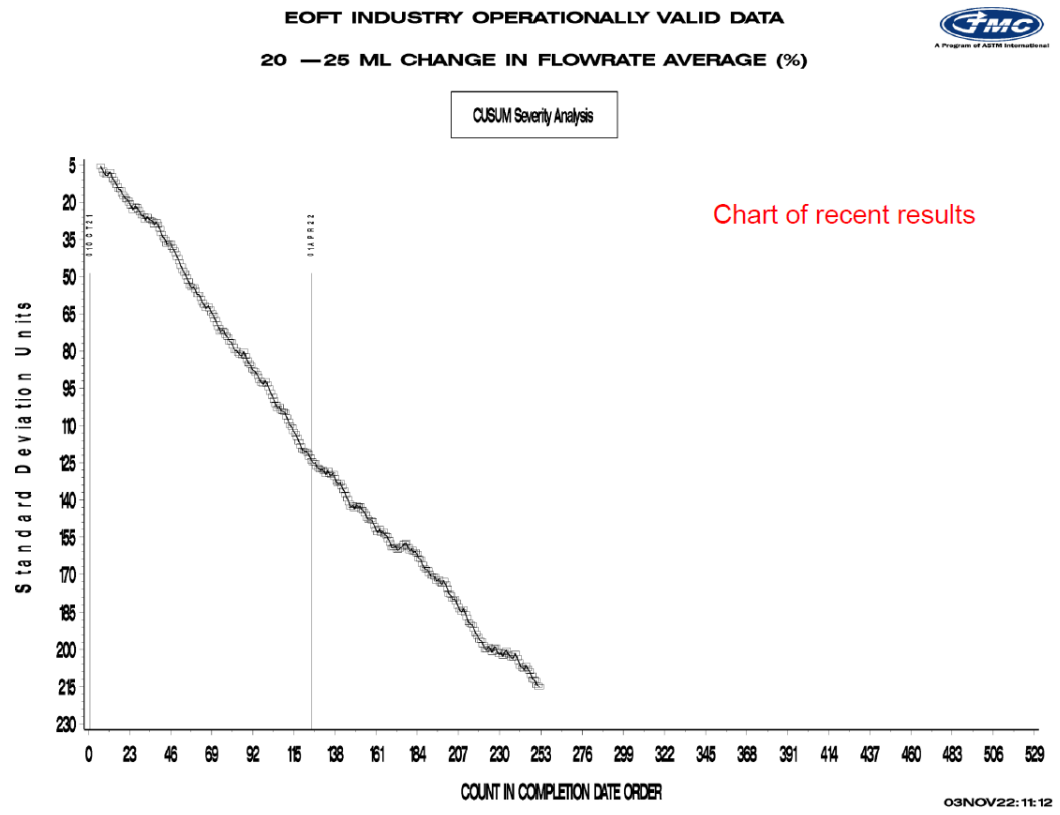


Chart of recent results

ILSAC GF6A Limits

3.f Filterability

EOWTT, ASTM D6794	
with 0.6% H_2O	50% maximum flow reduction
with 1.0% H_2O	50% maximum flow reduction
with 2.0% H_2O	50% maximum flow reduction
with 3.0% H_2O	50% maximum flow reduction

Test formulation with highest additive (DI/VI) concentration. Read across results to all other base oil/viscosity grade formulations using the same or lower concentration of the identical additive (DI/VI) combination. Each different DI/VI combination must be tested.

EOFT, ASTM D6795	50% maximum flow reduction

Topic 2: Modified EOFT Gelation

- Ford request for modified EOFT Gelation Test: request to modify or add a new test similar to EOFT that was better able to screen some field issues

- Dean presented slides titled Engine Oil Gelation in the Field
  - Mike Deegan hope to include this modified EOFT test for GF7 for first licensing by 2025
- Philiipp presented additional slides titled DOE SAE 2023
- Discussion on test: if sediment is gel-like or not, method for sample prep for elemental analysis, what fluids are available to help with test development, need Surveillance Panel support to continue to develop, noted ILSAC interest from other OEM to continue to develop method

Action Items

- All: email Yongli if you would like to be added to membership list or email distribution list for EOWT and EOFT
- All: email Yongli if interested in helping develop modified or new EOFT Gelation test, willing to supply fluids or conduct testing for new method precision

Other New Business?

- Next meeting: Mon May 8 at 9:30AM CDT