ASTM Engine Oil Gelation Test (EOGT) WK86363 Update

EOFT and EOWTT Surveillance Panel Meeting

March 27, 2025

Yong-Li McFarland, Chair

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EOFT and EOWTT Surveillance Panel Membership

21 members

Beth Schwab, Afton Chemical
Michael Kunselman, KJA Group
Robert Stockwell, Chevron Oronite
Quanchang Li, ExxonMobil
Michael Deegan, Ford
Melissa Chu, Infineum
Angela Willis, Infineum
Joe Franklin, Intertek
Karina Gil, Intertek
Yuliza Rocha, Intertek
Michael Johnscher, ISP
Litchi Xie, Lubrizol Additive (Zhuhai) Co., Ltd.
Victoria Fein, Lubrizol
Jason Bowden, OH Technologies Inc
Greg Miiller, Savant Group
Sean Alston, SGS North America
Jared Cavaliere, SwRI
Becky Grinfield, SwRI
Yong-Li McFarland*, SwRI
John Loop, TMC
Amy Ross, Valvoline

*Chair

New EOGT WK86363, ILS# 1854

- Ford request for a new Engine Oil Gelation Test (EOGT): request to add a new test filterability test to better screen oils for field issues
- Status:
  - Method: 1 draft (Afton method V9.6) uploaded on ASTM Collaboration Area
  - Oils: 11 potential reference oils offered; 17 oils received at TMC
  - Screening Tests and ILS: ILS tests ongoing
  - Timing: ILS tests to be run by April, and test available in August 2025

Agenda 3-27-25:

- 1. ILS status, feedback on EOGT method V9.7 or report form
- 2. Oils Data
- 3. Concerns from industry on if EOGT is representative of field issue

Pilot II/ILS Updates 3-27-25

- Afton: completed Pilot II and Pilot III, started ILS and estimate to complete April 4
- SwRI: completed Pilot II and Pilot III, estimate to complete ILS by March 28
- Savant: plan to rerun Pilot II by March 28, will run FTIR on EOT samples
- Intertek: completed Pilot II, start ILS and estimate to complete by April 11
- Valvoline: completed Pilot II, start ILS and estimate to complete by April 25, will run FTIR on previous samples
- Infineum: completed Pilot II, start ILS and estimate to complete by April 11
- Lubrizol: completed Pilot II, start ILS and estimate to complete by April 11
- Richful: starting Pilot II and complete by April 11

- No questions or comments on the Method or Report Form

ILS Details

Labs(8)

- **Afton**
- **Infineum**
- **Intertek**
- **Lubrizol**
- Richful
- Savant
- **SwRI**
- **Valvoline**

Samples (7)

- Oil U* (**low** flow): 2 containers
- Oil F (**low** flow): 2 containers
- Oil E (**mid** flow): **not** eligible to be reference oil, 3 containers
- Oil R (**mid** flow): 3 containers
- Oil K (**high** flow): 2 containers
- Oil M (**high** flow): 2 containers
- Oil P (**high** flow): 2 containers

Details

- Each Test is 2 runs, results will be reported as average of 2 runs. A duplicate test is 4 runs. A triplicate test is 6 runs.
- Each lab will run 32 runs for ILS
- Duplicate test will need two 120 mL containers and triplicate test needs three 120 mL containers
- Use procedure EOGT 9.7
- Use industry matrix for run order
- Labs to send completed EOGT ILS Report Form to TMC by **May 1.**
- ASTM to start Research Report

3-6-25 Notes: ILS will start and samples to be shipped out by TMC. Report form and latest procedure will be sent out to all labs in ILS.

ILS Oils Data

IS THIS SAMPLE FROM SINGLE (S) or MULTIPLE (M) BLEND BATCH??
Available as REFERENCE OIL (Y/N)
OK to Analyze for Molybdenum and Boron
SAE Viscosity Grade
Base Oil Group
Single Base Oil Slate
Additive Available for Reblending
Finished Oil Properties
Kinematic Viscosity @100°C, cSt (ASTM D445)
Kinematic Viscosity @ 40°C, cSt (ASTM D445)
Viscosity Index (ASTM D2270)
CCS at -35°C, cP (ASTM D5293)
CCS at -30°C, cP (ASTM D5293)
CCS at -25°C, cP at grade temp. (ASTM D5293)
CCS at -20°C, cP at grade temp. (ASTM D5293)
HTHS @ 150°C, cP (ASTM D4683)
NOACK, % loss (D5800)
MRV (Pumping) at -40°C, cP at grade temp. (ASTM D4684)
MRV (Pumping) at -35°C, cP at grade temp. (ASTM D4684)
MRV (Pumping) at -30°C, cP at grade temp. (ASTM D4684)
MRV (Pumping) at -25°C, cP at grade temp. (ASTM D4684)
Calcium, % mass (ICP)
Magnesium, % mass (ICP)
Sulfur, % mass (REPORT METHOD HERE)
Relative VM Content*
Base Oil Properties
Base Oil Blend KV @ 100°C
Base Oil Blend KV @ 40°C
Base Oil Blend Viscosity Index (VI)
Base Oil Blend Saturates (ASTM D2007)
Base Oil Blend Saturates (ASTM D7419)
Base Oil Blend Sulfur content (REPORT METHOD HERE)
Expected Performance (Good/Unknown/Poor)

Oil Participants

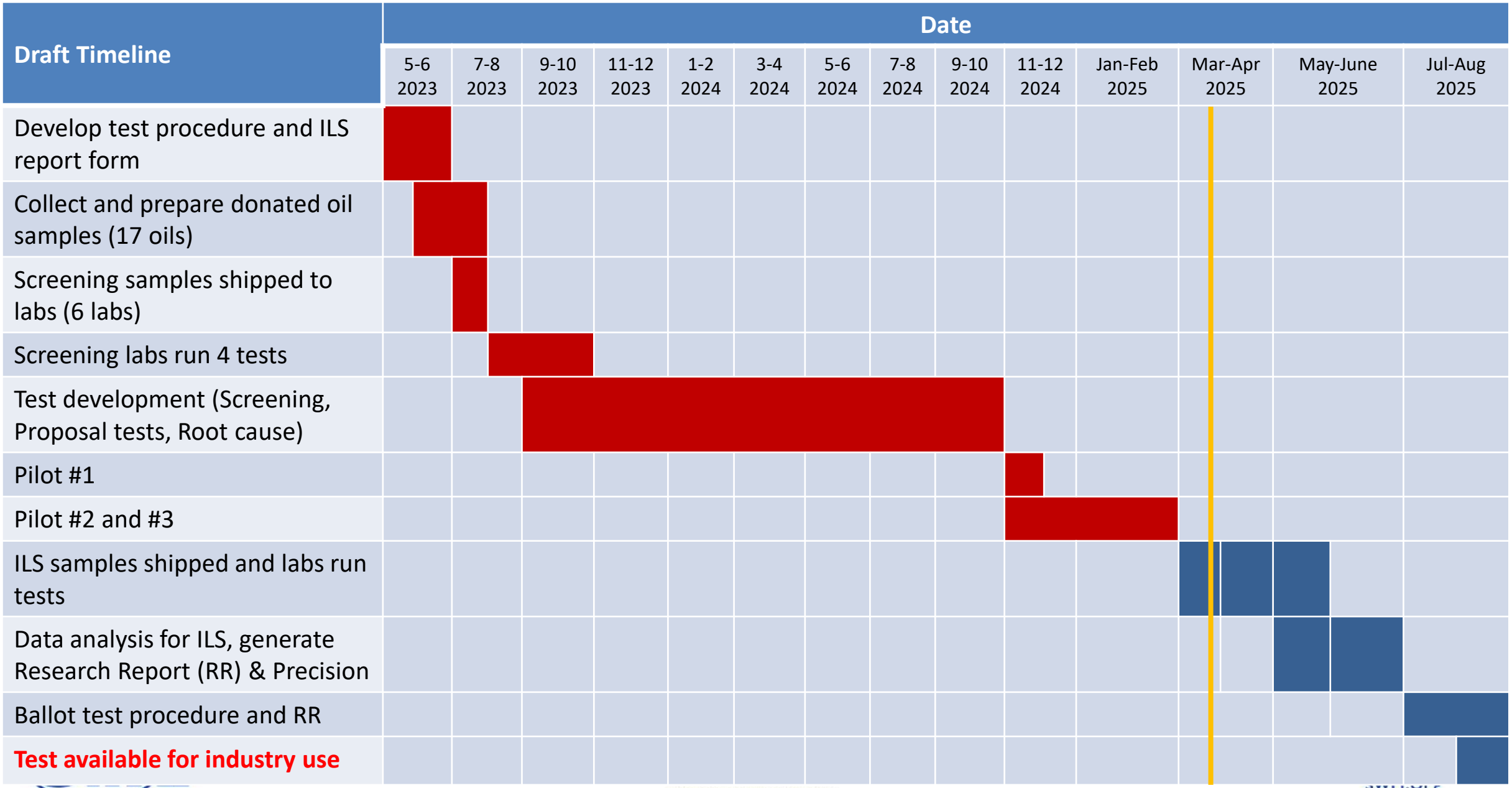
Afton
Ford
Infineum
Lubrizol
Oronite
Subaru
Toyota

EOGT representative of field issue?

- During Feb 2025 API meetings, multiple questions regarding if the test is representative of the field issue, if gel samples were tested and similar to field samples
- Concern if EOGT test is correlated to original issue
- Gel analysis?
- What is group's response, next steps?
- Ford (Rob, Mike) to provide a response that can be shared with others.

- 3-27-25 Notes: Ford reviewed previous FTIR analysis completed and saw peaks associated with crystalline calcium carbonate which promotes the gelling. EOGT is representative of the field issue. Ford to show FTIR comparison of the field sample and current gelling EOGT sample and current "good" EOGT sample
- Response for AOAP or Lubricants group.
- Ford engine test that ran Oil F and K, but no analytical data collected on samples
- Will FTIR show the calcite?

Draft Timeline – updated Mar 27, 2025



Action Items and Next Meeting

- Richful and Savant to run Pilot II and send data to Yongli, Jared, and John L
- Once samples are received, labs start ILS tests
- Ford (Mike and/or Rob) to provide a response/slides to questions on if the EOGT is representative of the field issue

- Next Meeting: Wednesday April 23 at 9AM CDT for 1 hr

Thank you for your support!

Participants		
Method Development (11)	Oil Donations (9)	Testing Labs (10)
Afton ExxonMobil Ford Infineum Intertek ISP Lubrizol Oronite Savant SwRI TMC	Afton Ford Infineum Lubrizol OH Technologies (donate filters only) Oronite Subaru TMC (collection, shipping only) Toyota	Afton Infineum Intertek ISP Lubrizol Richful Savant SwRI TMC (monitoring system only) Valvoline