

## MEETING MINUTES: ROBO SURVEILLANCE PANEL

**Meeting:** ROBO SP Meeting

**Date:** January 19, 2023

**Location:** MS Teams (virtual)

**Minutes by:** Justin Mills – SP Chair

### Meeting Outcome and Actions:

1. Justin Mills to turn over surveillance panel to Maddie Dellinger.
2. John Loop to differentiate between dilute and liquid NO2 in TMC semi-annual report.
3. Next meeting tentatively scheduled for April 27.

### Membership and Attendance:

ASTM TMC	*John Loop, Sean Moyer
Afton	*Shelia Thompson, Jeff Yang,
BG Products	*Madeleine Dellinger
Chevron Oronite	*Robert Stockwell
Evonik Oil Additives	*Justin Mills, *Gabe Walkup, Justin Kontra
ExxonMobil	*Dennis Gaal
Infineum	Andy Richie, Sapna Eticala
Intertek	*Joe Franklin, Matt Schlaff, *Rachel Stone
Lubrizol	*Aimee Shinhearl, Jerimiah Westbrook
SwRI	*Becky Grinfield, Joe De La Cruz, Mike Birke, *Yong-Li McFarland
Valvoline	Amol Savant, *Amy Ross, *Bruce Tonkel
Vanderbilt Chemicals	Al Filho, Christine Katrenya
Ace Glass	Dave Lawrence, *Tom Petrocella
Koehler Instruments	Raj Shah, Vincent Colantuini
Tannas/Savant	*Greg Miller
General Interest	*Alan Flamberg

\* Denotes attendance

## MEETING MINUTES: ROBO SURVEILLANCE PANEL

### Summary:

- Meeting convened at 11:02EST on January 19, 2023.
- No modifications to agenda
- ASTM Antitrust and Recording Policy reviewed
- Membership review and update
  - TMC – Dylan Beck and Jeff Clark removed.
  - Afton – Todd Dvorak removed.
  - PetroChina – Removed due to inactivity
- Meeting minutes from December 1<sup>st</sup> SP meeting were accepted (Motion made by Joe Franklin, Seconded by Alan Flamberg)
- Actions and outcome from the December 1<sup>st</sup> meeting were reviewed. Actions included:
  - Justin Mills to prepare comparison of precision and bias between concentrated (liquid) nitrogen dioxide and dilute nitrogen dioxide. Comparison to be shared at next meeting.
  - Seeking nominations at the January meeting for new SP chair.
- ROBO Status
  - Current semester (October 1 – March 31) is running slightly severe and precision close to target.
- Dilute NO<sub>2</sub>
  - Comparison between dilute and liquid NO<sub>2</sub> on TMC reference oils was shared.
    - 2 out of 6 labs are using dilute NO<sub>2</sub>.
    - Slightly higher calibration pass rate with dilute NO<sub>2</sub> in last 6 months.
    - Did not perceive a significant bias between liquid and dilute NO<sub>2</sub>, noting only 2 labs are reporting dilute NO<sub>2</sub> results, one with no bias (0.04) and other severe (0.75)
    - No perceived differences in reference oil bias
  - Denny requested that the semi-annual TMC report differentiate between liquid and dilute NO<sub>2</sub>. John Loop agreed.
- Surveillance Panel Chair
  - Justin Mills to step down as SP chair due to role change. Justin Mills nominated Maddie Dellinger. No other nominations received. A voice vote was taken and there were none opposed. Congratulations to Maddie, our new ROBO SP chair.
- Next meeting tentatively scheduled on for April 27, 2023. Date may be postponed if necessary.
- Meeting adjourned at 11:36EST.

-End report-

# ASTM D7528: Bench Oxidation of Engine Oils by ROBO Apparatus

ROBO Surveillance Panel Meeting

January 19, 2023

Justin Mills

# Agenda

---

- Welcome, ASTM statement
- Review of surveillance panel membership
- Minutes and actions from prior meeting (December 1, 2022)
- Current status of ROBO including statistics
- Dilute vs Liquid NO<sub>2</sub> severity
- New surveillance panel chair
- Set next meeting

# ASTM Antitrust and Recording Policy

---

ASTM International is a not-for-profit organization and developer of voluntary consensus standards. ASTM's leadership in international standards development is driven by the contributions of its members: more than 30,000 technical experts and business professionals representing 135 countries.

The purpose of antitrust laws is to preserve economic competition in the marketplace by prohibiting, among other things, unreasonable restraints of trade. In ASTM activities, it is important to recognize that participants often represent competitive interests. Antitrust laws require that all competition be open and unrestricted.

It is ASTM's policy, and the policy of each of its committees and subcommittees, to conduct all business and activity in full compliance with international, federal and state antitrust and competition laws. The ASTM Board of Directors has adopted an antitrust policy which is found in Section 19 of ASTM Regulations Governing Technical Committees. All members need to be aware of and compliant with this policy. The Regulations are accessible on the ASTM website (<http://www.astm.org/COMMIT/Regs.pdf>).

Electronic recording of ASTM meetings is prohibited.

# Membership

---

ASTM TMC	<b>John Loop</b> , Sean Moyer
Afton	<b>Shelia Thompson</b> , Jeff Yang
BG Products	<b>Maddie Dellinger</b>
Chevron Oronite	<b>Robert Stockwell</b>
Evonik Oil Additives	Justin Mills, <b>Gabe Walkup</b> , Justin Kontra
ExxonMobil	<b>Dennis Gaal</b>
Infineum	Andy Richie, Sapna Eticala
Intertek	<b>Joe Franklin</b> , Matt Schlaff, <b>Rachel Stone</b>
Lubrizol	<b>Aimee Shinhearl</b> , Jerimiah Westbrook
SwRI	Becky Grinfield, Joe De La Cruz, Mike Birke, <b>Yong-Li McFarland</b>
Valvoline	Amol Savant, <b>Amy Ross</b> , <b>Bruce Tonkel</b>
Vanderbilt Chemicals	Al Filho, Christine Katrenya
Ace Glass	Dave Lawrence, <b>Tom Petrocella</b> ,
Koehler Instruments	Raj Shah, Vincent Colantuini
Tannas/Savant	<b>Greg Miller</b>
General Interest	<b>Alan Flamberg</b>
Guests	

## Summary of changes:

1. TMC – Dylan Beck and Jeff Clark removed.
2. Afton – Todd Dvorak removed.
3. PetroChina – Removed due to inactivity



# Motion to accept December 1, 2022 meeting minutes

## MEETING MINUTES: ROBO SURVEILLANCE PANEL

Meeting: ROBO SP Meeting  
Date: December 1, 2022  
Location: MS Teams (virtual)  
Minutes by: Justin Mills – SP Chair

### Meeting Outcome and Actions:

- Justin Mills to prepare comparison of precision and bias between concentrated (liquid) nitrogen dioxide and dilute nitrogen dioxide. Comparison to be shared at next meeting.
- Surveillance Panel will be seeking a new chair as Justin Mills to step down – Will seek/discuss nominations at the January meeting.
- Next meeting tentatively scheduled for January 19<sup>th</sup>.

### Membership and Attendance:

ASTM TMC	Jeff Clark, John Loop*, Sean Moyer
Afton	Shelia Thompson, Jeff Yang, Todd Dvorak
BG Products	Madeleine Dellinger*
Chevron Oronite	Robert Stockwell
Evonik Oil Additives	Justin Mills*, Gabe Walkup*, Justin Kontra*
ExxonMobil	Dennis Gaal**
Infineum	Andy Richie, Sapna Eticala
Intertek	Joe Franklin*, Matt Schlaff*, Rachel Stone
Lubrizol	Aimee Shinheartl, Jerimiah Westbrook
PetroChina	Li Shaohui , Sun Ruihua, Peng Wang, Xiaogang Li, Xu Li
SwRI	Becky Grinfield*, Joe De La Cruz, Mike Birke, Yong-Li McFarland
Valvoline	Amol Savant, Amy Ross*, Bruce Tonkel*
Vanderbilt Chemicals	Al Filho, Christine Katrenya
Ace Glass	Dave Lawrence, Tom Petrocella*
Koehler Instruments	Raj Shah, Vincent Colantuini
Tannas/Savant	Greg Miller
General Interest	Alan Flamberg*
Guests	

\* Denotes attendance

## MEETING MINUTES: ROBO SURVEILLANCE PANEL

### Summary:

- Meeting convened at 10:02EST on December 1, 2022.
- No modifications to agenda
- ASTM Antitrust and Recording Policy reviewed
- Membership review and update
  - TMC – John Loop added as primary contact for TMC. Sean Moyer will be his primary backup.
- Meeting minutes from May 12<sup>th</sup> SP meeting were accepted (Motion made by Joe Franklin, Seconded by Alan Flamberg)
- Actions and outcome from the May 12<sup>th</sup> meeting were reviewed. Actions included:
  - Justin to tentatively add two topics to next meeting: Flow meter calibration and update on proposed SAE J300 MRV limit changes.
- ROBO Status
  - Previous semester (April 1, 2022 – September 30, 2022) ended with no bias and an improvement to precision vs prior semesters.
- Dilute NO2
  - Reminder that dilute NO2 was effective December 1, 2021 via information letter and updated method was published April 2022.
  - A request was made to compare the precision and bias between the liquid NO2 and the dilute NO2 using the calibration data tracked via the LTMS. An action was taken to prepare and present this at our next meeting.
    - Matt Schlaff did a quick analysis during the meeting. Over the relevant time periods, tests using dilute NO2 ran slightly more severe than those using concentrated (liquid) NO2; however it is possible that there are also other factors that effect bias, such as lab-to-lab variation.
- ASTM meeting in Orlando
  - Justin Mills shared slides prepared for upcoming D02.B0.07 meeting in Orlando. Overall, the ROBO test is in very good standing from all aspects (method, parts, reference oils, availability, and precision).
  - Justin Mills will not be attending ASTM, but Alan Flamberg agreed to present on his behalf – Thanks Alan!
- Additional topics
  - Briefly discussed the recent proposal at SAE EOVC to change the SAE J300 limits from 60,000cP to 40,000cP. Denny provided an update on the SAE EOVC Task Force Sub-Group.
  - Over the past couple of SP meetings there has been some discussion regarding calibration of flow meters. Maddie Dellinger of BG Products said her company recently achieved ISO 17025 accreditation and would be happy to share their best practices for calibrating flow meters.
- Surveillance Panel Chair - Surveillance Panel will be seeking a new chair as Justin Mills to step down – Will seek/discuss nominations at the January meeting.
- Next meeting tentatively scheduled on for January 19, 2023. Date may be postponed if necessary.
- Meeting adjourned.

-End report-

## Actions from December 1, 2022 meeting

---

- Justin Mills to prepare comparison of precision and bias between concentrated (liquid) nitrogen dioxide and dilute nitrogen dioxide. Comparison to be shared at next meeting.
- Surveillance Panel will be seeking a new chair as Justin Mills to step down – Will seek/discuss nominations at the January meeting.



# Current status of ROBO

# ROBO Industry Statistics

Period	N-size	Degrees of Freedom	Pooled s	Mean $\Delta/s$
Current Targets	80	77	0.1551	-----
4/1/19 through 9/30/19	95	91	0.2492	-0.32
10/1/19 through 3/31/20	158	153	0.2723	-0.10
4/1/20 through 9/30/20	119	113	0.2264	-0.76
10/1/20 through 3/31/21	113	108	0.3188	-0.11
4/1/21 through 9/30/21	116	110	0.1992	-0.37
10/1/21 through 3/31/22	106	102	0.2103	-0.35
4/1/22 through 9/30/22	105	101	0.1868	-0.06
10/1/22 through 3/31/23	55	52	0.2164	0.18

- On average test is running slightly severe in current semester (~10 weeks remaining)

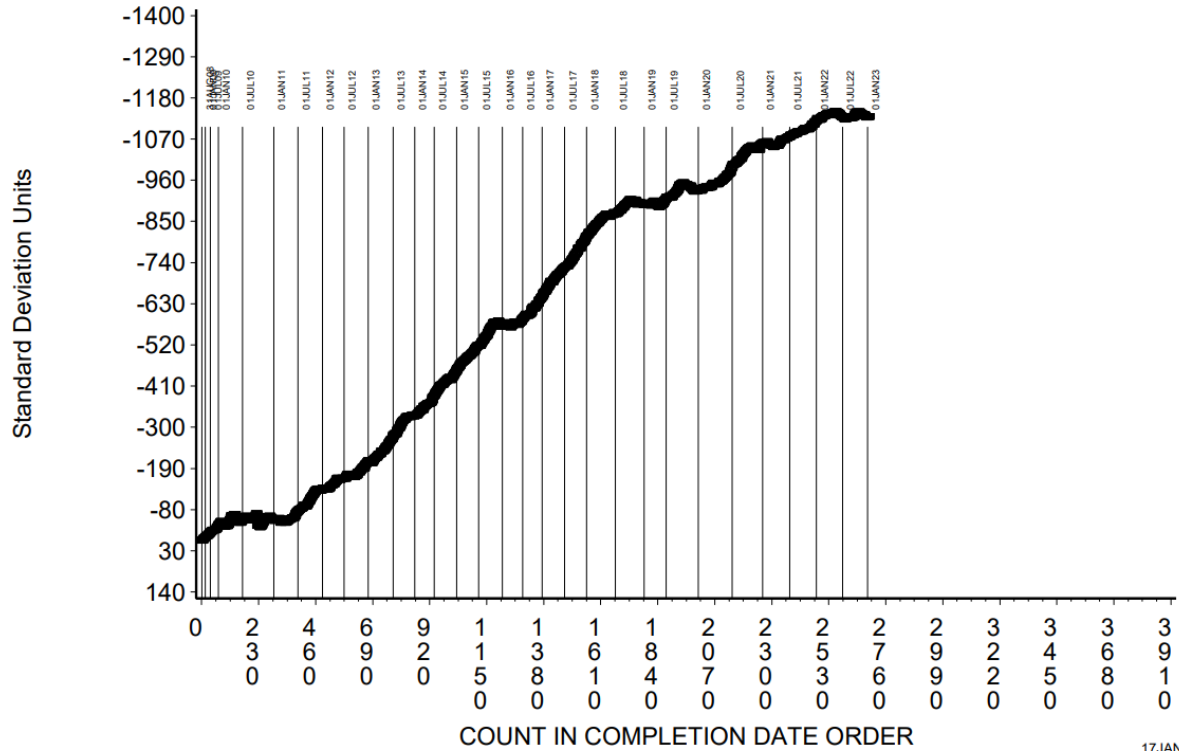
Source <https://www.astmtmc.org/ftp/refdata/bench/robo/data/statistics.txt> (January 18, 2023)

# CUSUM severity analysis

ROBO TEST INDUSTRY OPERATIONALLY VALID DATA  
 AGED OIL MRV APPARENT VISCOSITY



CUSUM Severity Analysis



17JAN23:13:16

Source: <https://www.astmtmc.org/ftp/refdata/bench/robo/plots/mrv%20INDUSTRY.pdf> (January 18, 2023)

## LTMS updates

---

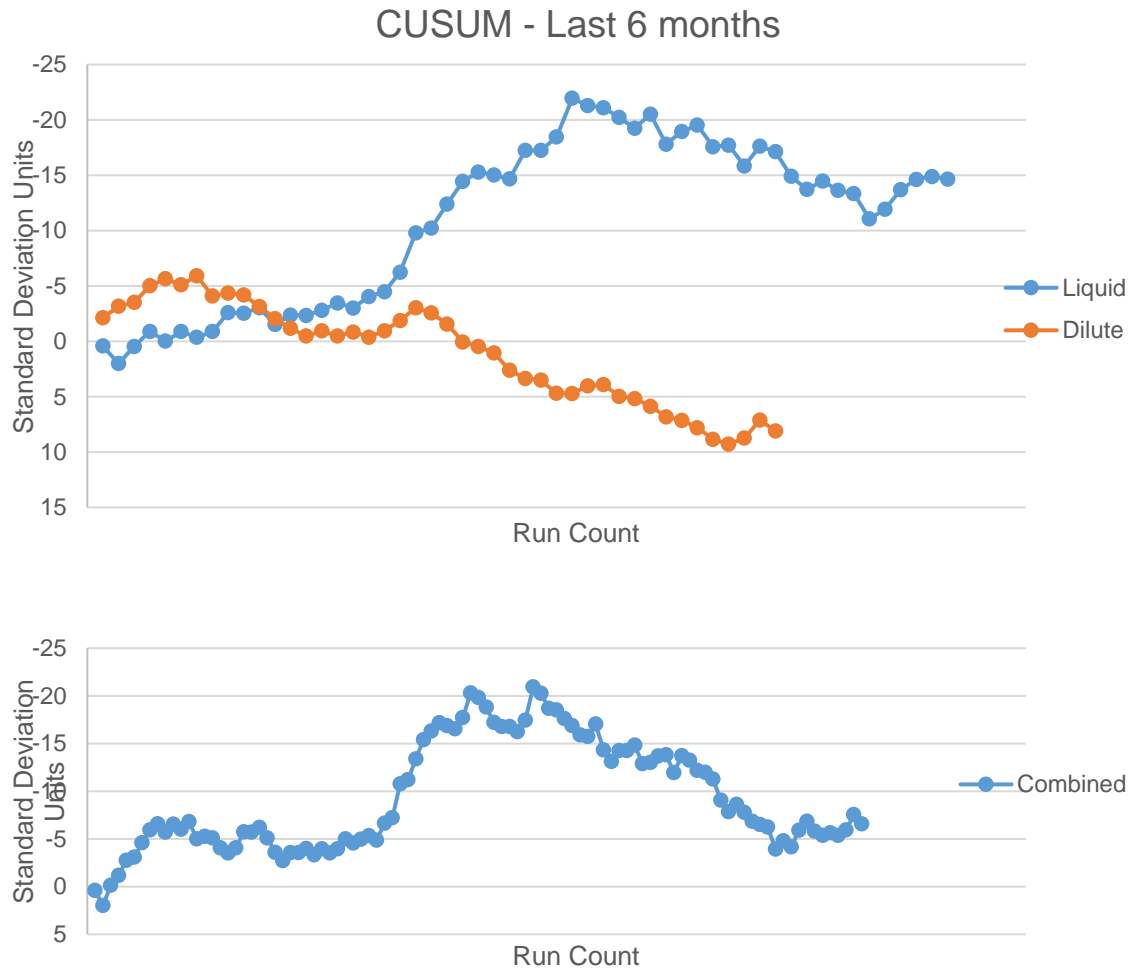
- No updates to report since our last meeting.

<https://www.astmtmc.org/ftp/docs/ltms/ltms.pdf>

Dilute NO<sub>2</sub>

# Dilute vs liquid

## CUSUM over last 6 months (AC only)



### Data description

	# charted tests	# AC tests	Pass rate	# labs	# rigs	Lab IDs
Dilute	44	43	97%	2	17	AM, G
Liquid	55	46	84%	5	16	A, AQ, B, BC, G
All	99	89	90%	6	33	

### Bias by oil – charted runs

	Dilute	Liquid
434-3	0.03	-0.21
435-1	0.15	-0.50
436	0.46	0.19
Wt. Average	0.18	-0.27

### Bias by lab – charted runs

	A	AM	AQ	B	BC	G	G
	Liquid	Dilute	Liquid	Liquid	Liquid	Liquid	Dilute
n	32	9	8	3	2	10	35
Average	0.07	0.75	-0.30	-2.08	0.91	-1.02	0.04

- Don't perceive a significant bias between methods.
  - Only 2 labs are reporting dilute NO2 results, one with no bias (0.04) and other severe (0.75)
- No perceived differences in reference oil bias

# Surveillance Panel Chair

## SP chair

---

- Justin Mills to step down as SP chair due to role change..



# Next Meeting

## Next meeting???

---

- Suggest ROBO SP meeting in April/May prior to ASTM.