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**COMMITTEE D02 on PETROLEUM PRODUCTS, LIQUID FUELS, AND LUBRICANTS**

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**STAFF MANAGER:** Alyson Fick, ASTM International, (610) 832-9710, e-mail: [afick@astm.org](mailto:afick@astm.org)

**Sequence VIII Surveillance Panel Meeting Minutes  
Tuesday, November 19, 2024  
SwRI Campus (and Virtual)  
3:00 - 5:00 PM CDT**

**Minutes recorded by Joseph Riou**

**Direct any comments or corrections to:** [joseph.riou@swri.org](mailto:joseph.riou@swri.org)

The attendance list can be found as Attachment #1.

There were no membership changes brought to the attention of the panel.

**Agenda:**

The agenda can be found as Attachment #2.

**Meeting Minutes:**

No corrections or changes were received for the June 5, 2024 minutes. A motion was made for acceptance by Robert Stockwell and seconded by Andy Richie. The minutes were approved as written.

Pat Lang gave a quick introduction about the agenda. Then moves to William from Haltermann to give the fuel report. William informed the panel that there are just under 29,000 gallons of fuel for this test in supply. No issues are foreseen, and the fuel supply was deemed okay. At this point, Pat passed the meeting over to Rich Grundza to give an update on the reference test status (LTMS update).

Rich advised that total bearing weight loss, and stripped viscosity are in control. He pointed out that the stripped viscosity is mild across the industry. He also advised that the 1009-1 supply is good and has no issues. Travis then suggested since this test is still using the old version of LTMS that the test should switch over to the new version to modernize, since this test does not use continuous severity adjustments. This was generally agreed upon and, in the effort to keep the meeting progressing, Pat suggested to move to Travis to present the updated

stats group assessment on the industry correction factors for bearing weight loss (BWL) and stripped viscosity (SVISC).

Travis went through the stats group presentation (see Attachment #3) explaining the previous reasons the panel went with the option it did. At the time of introducing the ICF, the test was going severe, a new bearing batch was being introduced, and a reference oil reblend was being introduced. At the time the panel was not sure if the severity was coming from the reference oil reblend, the bearing batch, or some outside factor; therefore, the panel went with the more conservative approach. Now that the panel has more data, using the same model from the previous meeting, the new ICF for BWL is suggested to be -7.4 mg. This is updated from the June meeting where it was suggested to move the ICF to -5.4. This option is the recommend option from the stats group.

Travis explained that SVIS has been mild as Rich had advised earlier during his report, and that the recommended option for updating the targets is to change the ICF from -0.14 to -0.13. This was also using the same model as the June meeting, just updated using the most current data.

**Motion:**

A motion was made to accept the new option #1 as outlined on slide 10 of Attachment #3. This updates the BWL ICF to -7.4 from -3.6, and the SVIS ICF from -0.14 to -0.13. The severity adjustment standard deviation will be updated from 4.8 to 3.38. The effective date is 12/03/2024.

Comment: Adrian explains that at the time when the ICF's were originally accepted, there was very little data, and agrees that option 1 should be adopted.

Robert Stockwell/Adrian Alfonso

Motion passed with a vote of 7/0/4 affirmative/negative/waive.

There was discussion again about moving the current Sequence VIII LTMS to the new system. Pat commented that there are rumors that GF-8 might not include the Sequence VIII test so is it worth the effort at this point to convert to a new system. Andy Ritchie stated that getting rid of the test has been suggested for years, and it has not gone anywhere. Rich also agrees we should move to a new LTMS system. Robert then suggested to investigate updating the LTMS as an action item.

**Action:**

Sequence VIII panel to request the stats group to investigate converting the current Sequence VIII LTMS System to the LTMS II System.

**Adjournment:**

The meeting was adjourned at approximately 3:50 PM CDT.

**Next Meeting:**



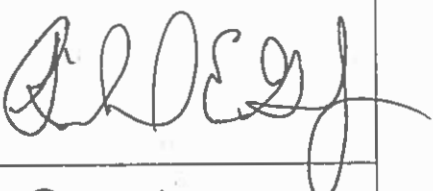



The next meeting will be scheduled as needed.

**Attachment #1**




**Attendance List**

**ASTM SEQUENCE VIII SURVEILLANCE PANEL  
VOTING MEMBERSHIP ATTENDANCE RECORD**

*Nov 19, 2024*

Name	Address	Attendance
Alfonso, Adrian	Intertek 5404 Bandera Road San Antonio, TX 78238 Phone: 210-647-9429 adrian.alfonso@intertek.com	
Bowden, Jason	OH Technologies, Inc. P.O. Box 5039 Mentor, OH 44061-5039 Phone: 440-354-7007 dhbowden@ohtech.com	
Savant, Amol	Valvoline 21st and Front Streets Ashland, KY 41101 Phone: 606-585-8982 acsavant@valvolineglobal.com	
Maddock, Ben	Afton Chemical 500 Spring Street P.O. Box 2158 Richmond, VA 23218 Ben.Maddock@aftonchemical.com	
Grundza, Rich	ASTM/TMC Phone: 412-365-1031 reg@astmtmc.org	
Hsu, Jeff	Shell Projects and Technology-USA 3333 Hwy 6 Houston, TX 77082 Phone: 281-544-8619 J.Hsu@shell.com	
Hairston, William	Haltermann Solutions 15600 W. Hardy Road Houston, TX 77060 Phone No: 832-647-9264 whhairston@haltermann.com	
Riou, Joseph	Southwest Research Institute 6220 Culebra Road P.O. Box 28510 San Antonio, TX 78228-0510 Phone: 210-522-6266 jriou@swri.org	

**ASTM SEQUENCE VIII SURVEILLANCE PANEL  
VOTING MEMBERSHIP ATTENDANCE RECORD**

Name	Address	Attendance
Lanctot, Dan	Test Engineering Inc. 12718 Cimarron Path San Antonio, TX 78249-3423 Phone: 210-690-1958 dlanctot@tei-net.com	
Deshpande, Venkat	Toyota Motor North America, Inc. 1555 Woodridge Ann Arbor, Mi 48105 Phone: 734-995-0121 Cell: 734-730-6709 venkat.deshpande@toyota.com	Venkat ✓
Cosgrove, Bradley	GM Global Propulsion Systems Phone: 313-590-2186 Bradley.Cosgrove@gm.com	
Rubas, Paul	ExxonMobil Research and Engineering Company Email: paul.j.rubas@exxonmobil.com	
Tang, Haiying	Stellantis Phone: 248-512-0593 haiying.tang@stellantis.com	
Stockwell, Robert	Chevron Oronite Company LLC 4502 Centerview Drive Suite 210 San Antonio, TX 78228 Phone: 210-232-3188 Robert.stockwell@chevron.com	
Agudelo, Jorge	BP Lubricants USA 1500 Valley Rd Wayne, NJ 07470 Jorge.Agudelo@BP.com	

**ASTM SEQUENCE VIII SURVEILLANCE PANEL  
VOTING MEMBERSHIP ATTENDANCE RECORD**

Name	Address	Attendance
Deegan, Mike	Ford Motor Company 17228 Federal Drive Allen Park, MI 48101 Phone: 313-805-8942 mdeegan@ford.com	<i>on-line</i>
Ritchie, Andy Koricherla, Manindra	Infineum P.O. Box 735 1900 East Linden Ave. Linden, NJ 07036-0735 Phone: 908-474-2097 andrew.ritchie@infineum.com	<i>Andy Ritchie ✓</i> <i>Koricherla ✓</i>
Szappanos, George	Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092 Phone: 440-347-2631 George.szappanos@lubrizol.com	<i>GS</i>

**ASTM SEQUENCE VIII SURVEILLANCE PANEL  
NON-VOTING MEMBERSHIP and GUESTS ATTENDANCE RECORD**

Name	Address	Phone/Fax/Email	Attendance
Bill Buschen	INTERTEC		WAB
Tony Catanese	Lubrizon		TC
Michael Lochke	SWRI		ML
Travis Kostan	SWRI		TK

## **Attachment #2**

### **Agenda**

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Sequence VIII Surveillance Panel Meeting Agenda  
November 19, 2024  
3:00 – 5:00 PM CST  
SwRI Building 209, Conference Room 313 w/Virtual Option

- 1) Welcome
- 2) Attendance
- 3) Approval of the minutes from the June 5, 2024, virtual meeting. Minutes are posted to TMC website.
- 4) Fuel supplier update (Haltermann)
- 5) Parts supplier update (TEI)
- 6) TMC Update (Rich Grundza)
  - a. Reference testing activity update
  - b. Review LTMS trends
  - c. Reference oil status
- 7) Review of the Industry Correction Factors (ICF's) with additional reference data that has been generated since initial ICF implementation (Travis Kostan)
- 8) New Business
- 9) Next Meeting will be at call of the chair
- 10) Adjournment

## **Attachment #3**

### **Stats Group Presentation**

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# Sequence VIII

## Data Update

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STATS GROUP

NOVEMBER 2024

# Executive Summary From Sept. '23

Based on raw standard deviation, including the latest 25.7 mg result on 1009-1 with the new bearings (result not added to ICF estimation based on statisticians' recommendation).

## General Comments:

- The new bearing batch can be accepted.
- A lot of assumptions have been made with little data. We should re-evaluate soon once additional data becomes available.

## Bearing Weight Loss:

- Option #1:
  - Apply an industry correction factor of -4.9 mg for tests moving forward.
  - 1009-1 will have an LTMS mean of 14.9 mg and a standard deviation of 3.48 mg.
  - This is the option to choose if you think the bearings might be more severe and we should only consider a re-blend difference on the same hardware.
- Option #2:
  - Apply an industry correction factor of -3.6 mg for tests moving forward.
  - 1009-1 will have an LTMS mean of 16.2 mg and a standard deviation of 3.48 mg.
  - This is the option to choose if you believe the new bearings are the same and we can use all data to estimate the difference due to the oil re-blend.
- Based on the methodology used, with both options there is some evidence that this may slightly over correct candidates < 10 mg and may under correct candidates > 20 mg (no candidate data offered > 20mg to study).
- Severity adjustment standard deviation should be updated from 4.8 to 3.0.

## Stripped Viscosity:

- It is recommended to apply an industry correction factor of -0.14 cSt for tests moving forward.
- 1009-1 is recommended to have an LTMS mean of 9.73 cSt and a standard deviation of 0.07 cSt.

# Bearing Weight Loss (BWL)

# Timeline

- December 2022 - January 2023:
  - Both labs starting producing 1006-2 results > 25.
- January 2023 - April 2023:
  - More than 20 experimental runs in total were conducted between the two labs varying parts, fuel, and oil retains on 1006-2 to try to return severity to a normal level with no success (both labs averaged slightly over 30 mg).
  - Two tests on 1009-1 resulted in 17.4 mg and 18.7 mg and one test on 704-1 of 12.5 suggested that the test was indeed severe but not as bad for oils with a lower target performance.
- May 2023:
  - With 704-1 nearly depleted, SP agreed to run two 1009 tests to determine the feasibility of introducing 1009-1 as a reference oil moving forward. (results were 18.3 and 16.4).
- June 2023:
  - SP agrees to run the rest of the stats group matrix (an additional 8 runs), which is shown on the following slide.

TOTAL BEARING WEIGHT LOSS  
Unit of Measure: mg  
CRITICAL PARAMETER

Reference Oil	Mean	Standard Deviation
704-1	8.3	2.32
1006	15.9	4.85
1006-2	17.5	4.23

Sequence VIII Reference Oil Targets					
Oil	n	Effective Dates		TBWL	
		From <sup>1</sup>	To <sup>2</sup>	$\bar{X}$	s
1009	5	1-7-03	1-23-05	12.8	2.00
	11	1-24-05	5-21-21	13.8	2.14

# Test Matrix

During the test matrix, there was a higher than normal result on the second run in stand B1 producing 16.5 mg BWL. Following this test, clear mechanical wear was seen on the third run in the stand. A couple of additional runs were made on the stand which also exhibited mechanical wear, and the lab has requested to have the analysis completed without the final data point from this stand.

Requested Matrix

A1		A2		B1		B2	
1009	✓	704-1	✓	1009	✓	1009-1	✓
704-1	✓	1009-1	✓	704-1	?	704-1	✓
1009-1	✓	1009-1	✓	1009-1	X	1009-1	✓

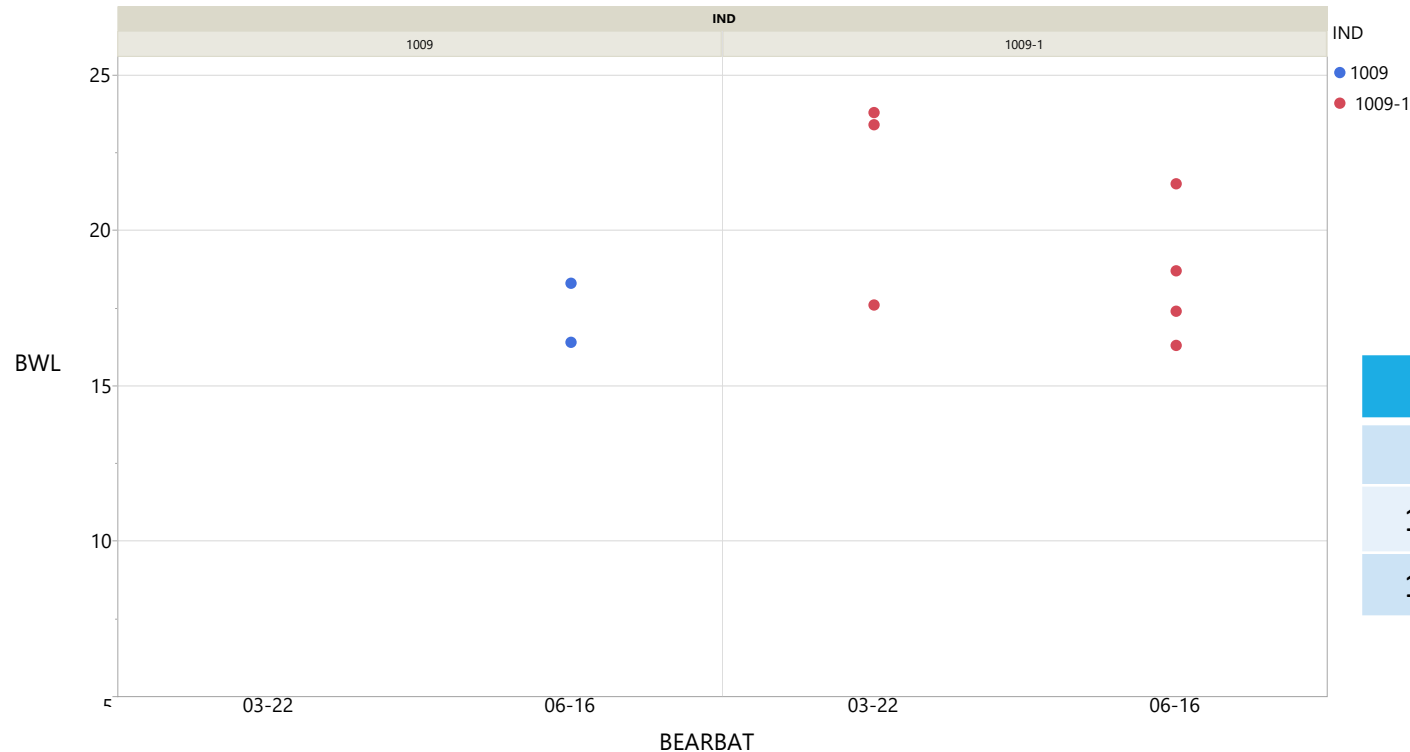
- Yellow highlighted = 06-16 (current) bearing batch
- Green highlighted = 03-22 (new) bearing batch

Other recent data

A1	A2	B1	B2
1009-1	--	1009-1	704-1

# All Data Used From Sept. '23

All Data option was chosen.



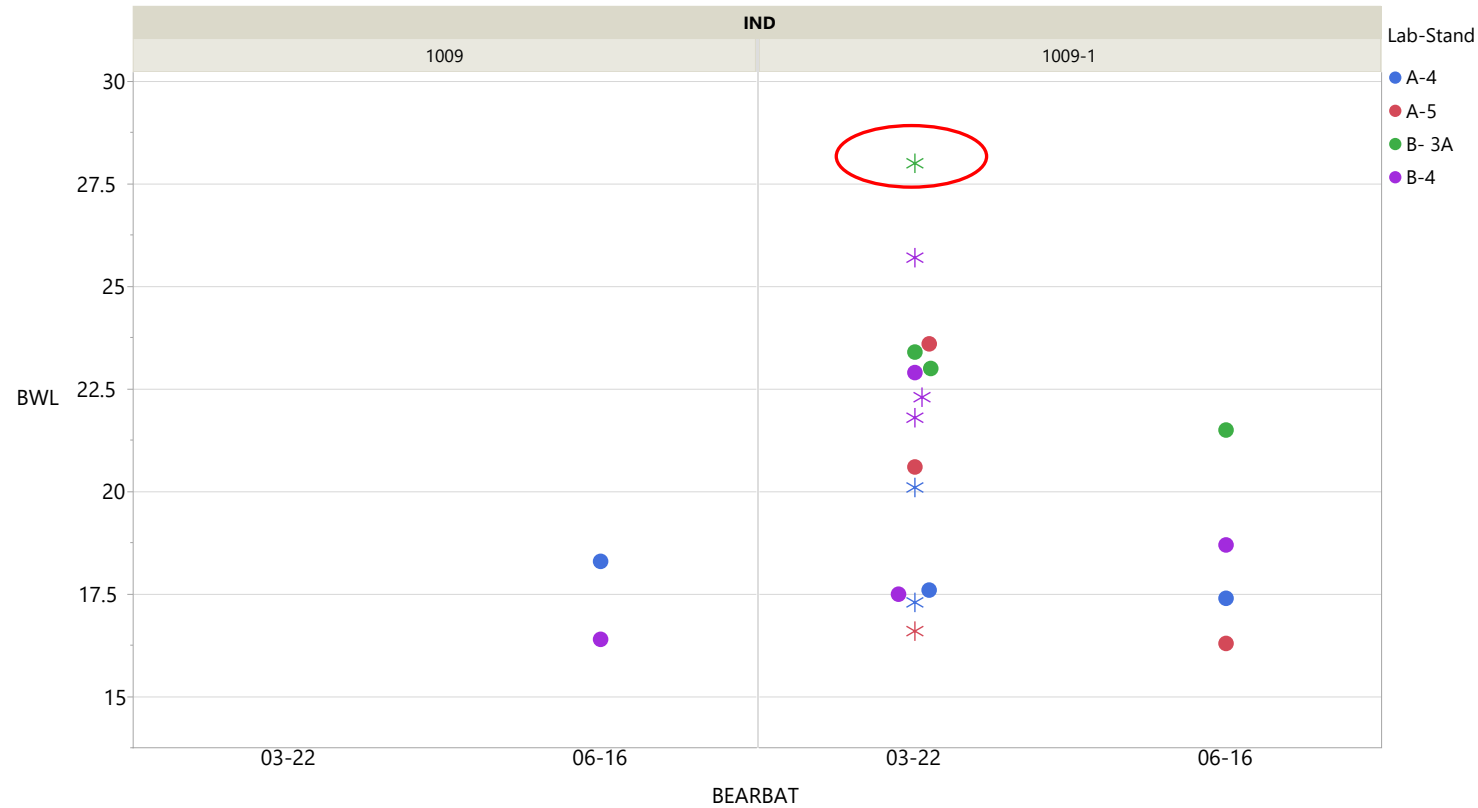
- 1009 Average: 17.4
- 1009-1 All Data: 19.8 (+2.4 mg)
- 1009-1 06-16 Only: 18.5 (+1.1 mg)

Oil	Data Used	LTMS Mean	Std. Dev.
1009	LTMS Target	13.8	2.14
1009-1	All Data (n=7)	13.8+2.4 = 16.2	3.01
1009-1	06-16 Only (n=4)	13.8+1.1 = 14.9	2.77 (pooled)



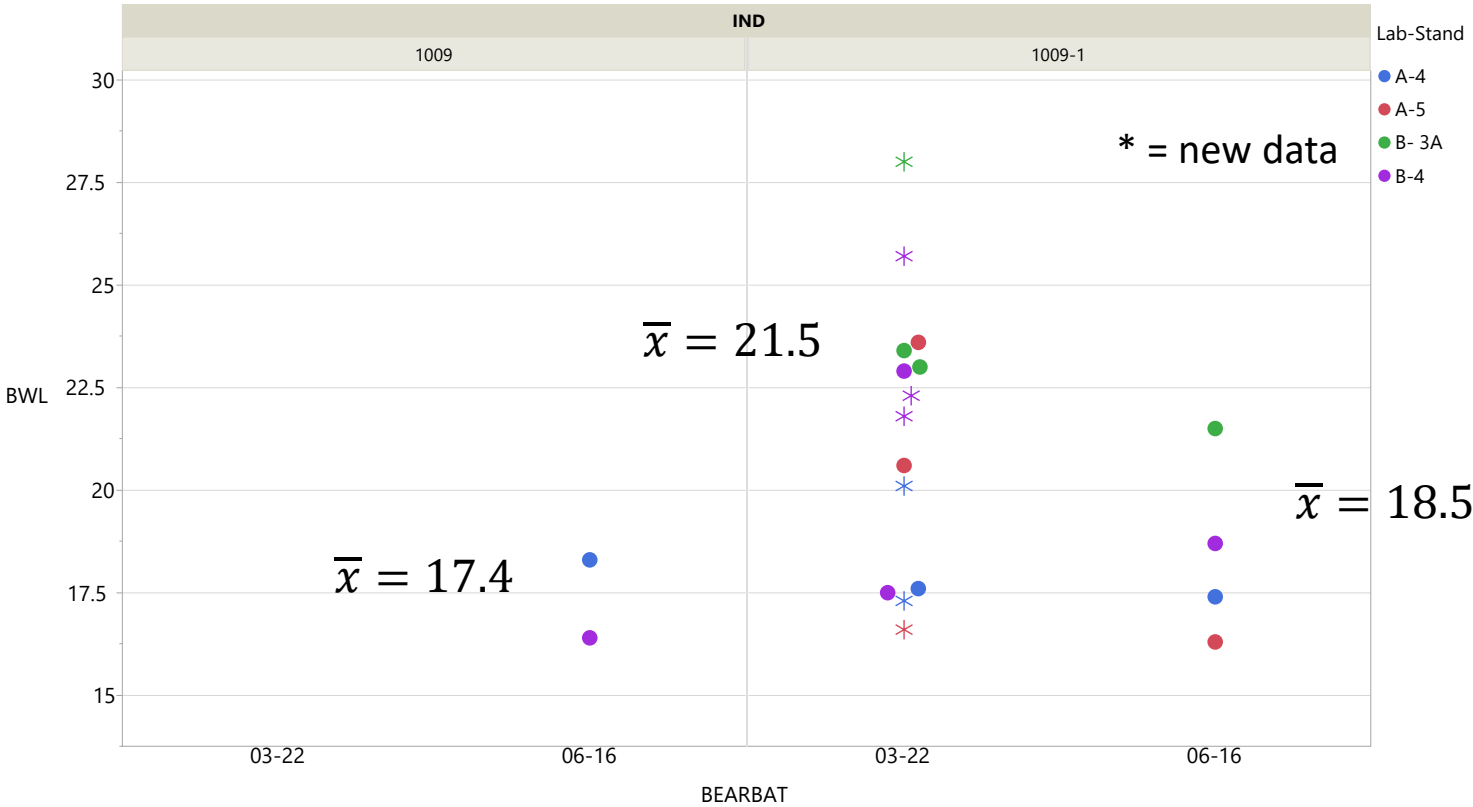
# Recent Severe BWL Result

There is a recent severe BWL failure from 11/5/24. As of 11/15/24, the stand has still not calibrated. However, because the result was valid, it is included in the analysis. If the panel decides this data point should not be included, the analysis without this data point is included in the appendix.



# Updates Using Same Methodology as Sept. '23

We still can't be certain how much of the difference is due to the bearings, and how much is due to the re-blend. Updating using same methodology as last time results in a 16.8mg target for 1009-1 and correction factor for the bearings remains at -3.6. The stats group all agrees this option does not seem appropriate.

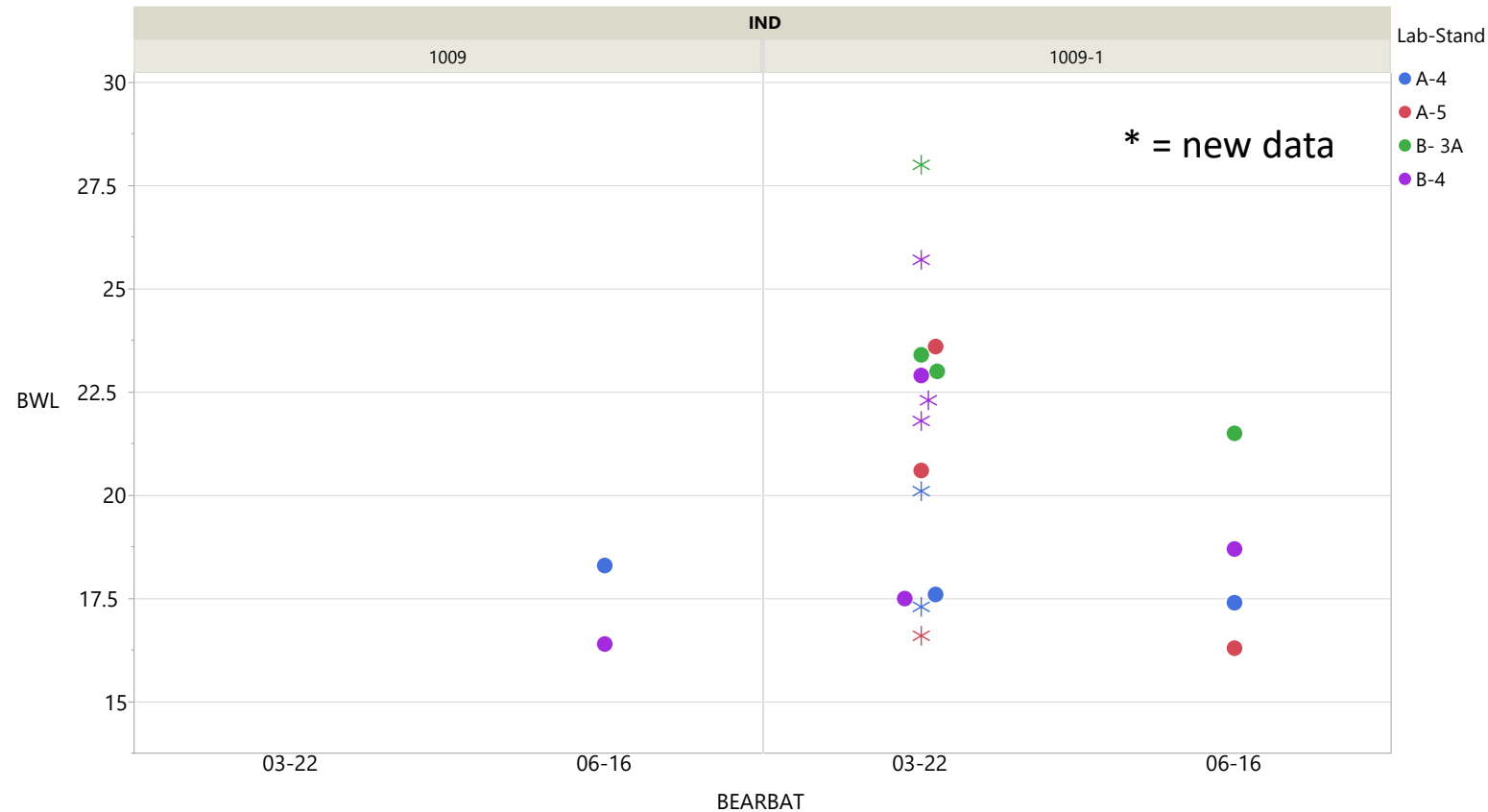


- 1009 Average: 17.4
- 1009-1 All Data: 20.8 (+3.4 mg)
- 1009-1 06-16 Only: 18.5 (+1.1 mg)

Oil	Data Used	LTMS Mean	Std. Dev.
1009	LTMS Target	13.8	2.14
1009-1	All Data (n=18)	13.8+3.4 = 17.2	3.35
1009-1	06-16 Only (n=4)	13.8+1.1 = 14.9	3.20

# Updates with Lab-Stand Model for Reblend Difference

Using a model with lab-stand, bearing batch, and oil results in an update to the correction factor from -3.6 to -7.4\* and reducing the target of 1009-1 from 16.2 to 14.0.



## Re-blend Difference

Level	- Level	Difference	p-Value
1009-1	1009	0.190	0.9361

## Bearing Difference

Level	- Level	Difference	p-Value
03-22	06-16	2.954	0.0653

\* -7.4 ICF based on average stand prediction of 21.4 mg for each of the four stands for 1009-1 on the 03-22 bearings.

# Summary of Options for BWL

Below are a summary of the reasonable options. This difference between the two targets are whether or not you believe the oil re-blend difference should be estimated from the model (Option #1) or from comparing the straight average of the n=2 data points on 1009 to the n=4 data point average on 1009-1 on the same bearing batch (Option #2). Both options calculate the ICF based on the difference of stand predictions (20.6 mg) compared to target for that option.

## From June SP Meeting

Option	1009-1 Target	ICF
Current	16.2	-3.6
Option #1	14.1	-7.5
Option #2	14.9	-6.7

## With updated data

Option	1009-1 Target	ICF	Standard Deviation
Current	16.2	-3.6	3.38
Option #1	14.0	-7.4	3.38
Option #2	14.9	-6.5	3.38

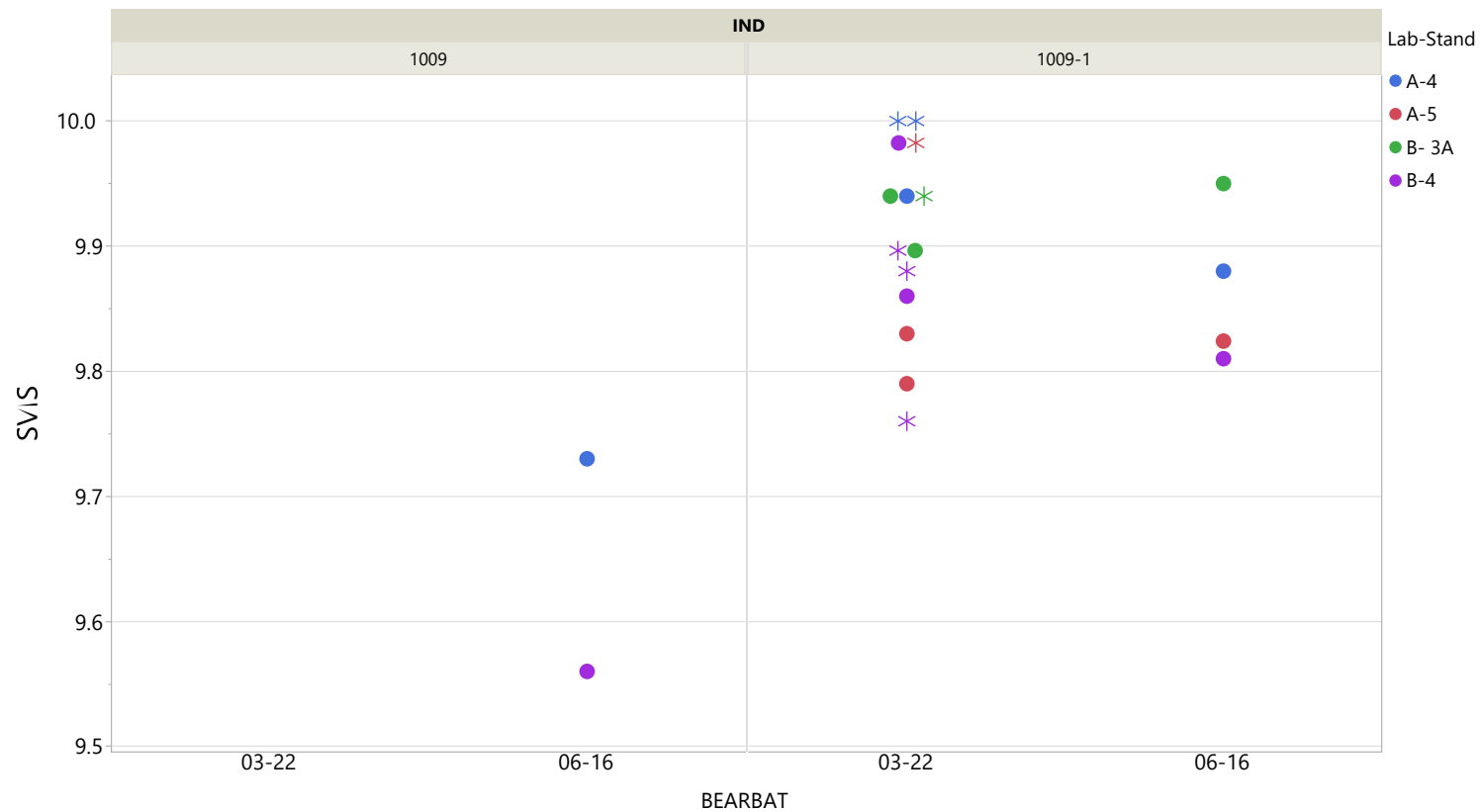
**Reminder:** There was evidence from 1006-2 that the test severity increases with higher bearing weight loss, meaning that candidates at or near the pass/fail of 26mg may be observing even more of a difference than what is represented by the current severity of 1009-1. However, without candidate data to show that this doesn't occur outside of 1006-2, the Surveillance Panel agreed to let 1009-1 represent industry severity.

Raw standard deviation of n=14 data points on 03-22 bearings is still 3.38

# 10 Hour Stripped Viscosity

# SVIS Results

Not including bearing batch as a factor here, the average modeled stand prediction of 1009 is 9.64, and the average modeled stand prediction of 1009-1 is 9.90. Therefore, with the current target of 9.51 for 1009, the 1009-1 target should be 9.77, and the correction factor can be changed from -0.14 to -0.13. The standard deviation is still 0.07.



# Potential Motion

Update the 1009-1 targets, industry correction factors, and severity adjustment standard deviations as shown in the bottom two tables below. Change the severity adjustment standard deviation from 4.80 mg. to 3.38 mg.

## BWL Current

1009-1 Target	ICF	Standard Deviation
16.2	-3.6	3.38

## Stripped Visc. Current

1009-1 Target	ICF	Standard Deviation
9.73	-0.14	0.07

## BWL Updated

1009-1 Target	ICF	Standard Deviation
14.0	-7.4	3.38

## Stripped Visc. Updated

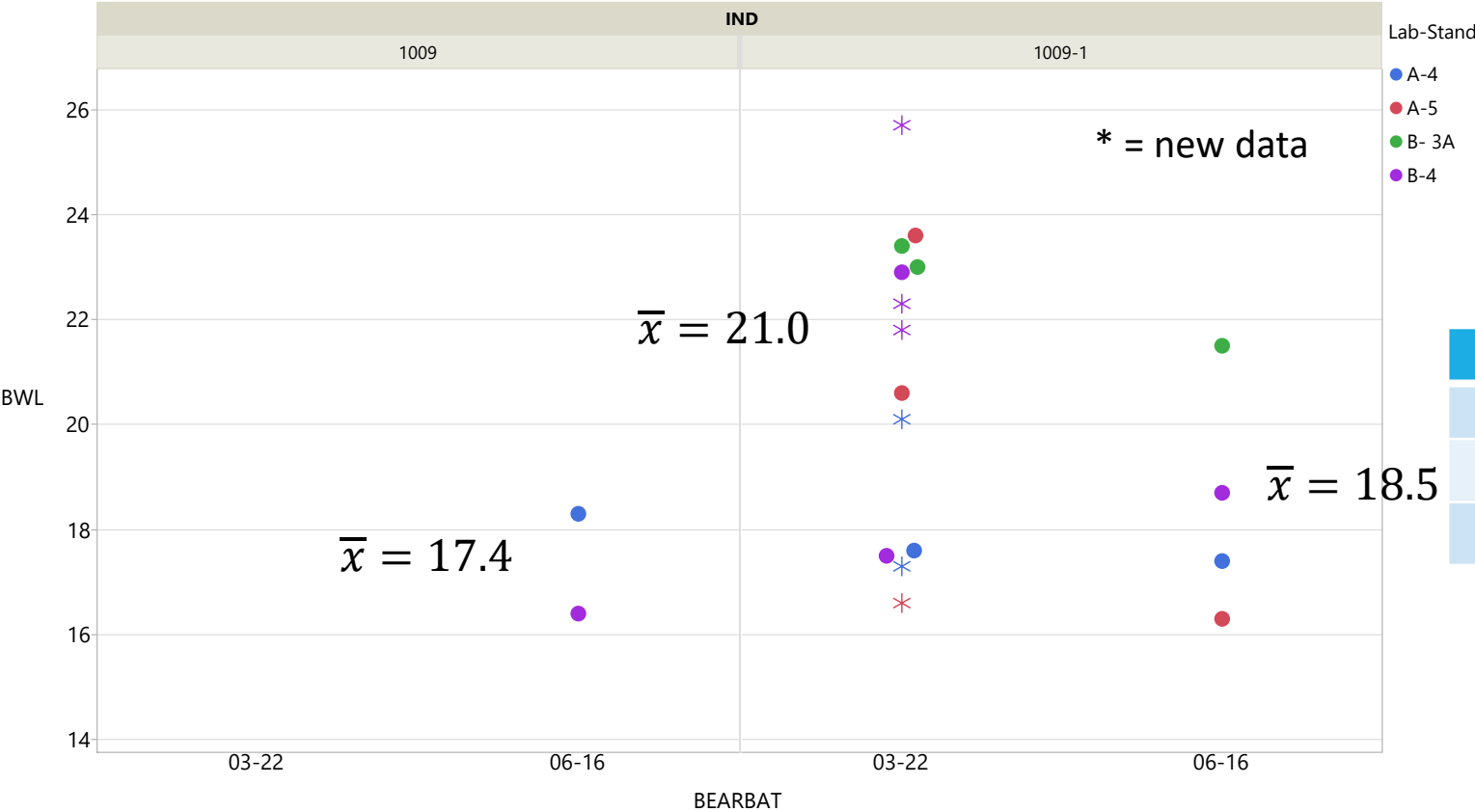
1009-1 Target	ICF	Standard Deviation
9.77	-0.13	0.07

# Appendix



# Updates Using Same Methodology as Sept. '23

We still can't be certain how much of the difference is due to the bearings, and how much is due to the re-blend. Updating using same methodology as last time results in a 16.8mg target for 1009-1 and correction factor for the bearings remains at -3.6. The stats group all agrees this option does not seem appropriate.

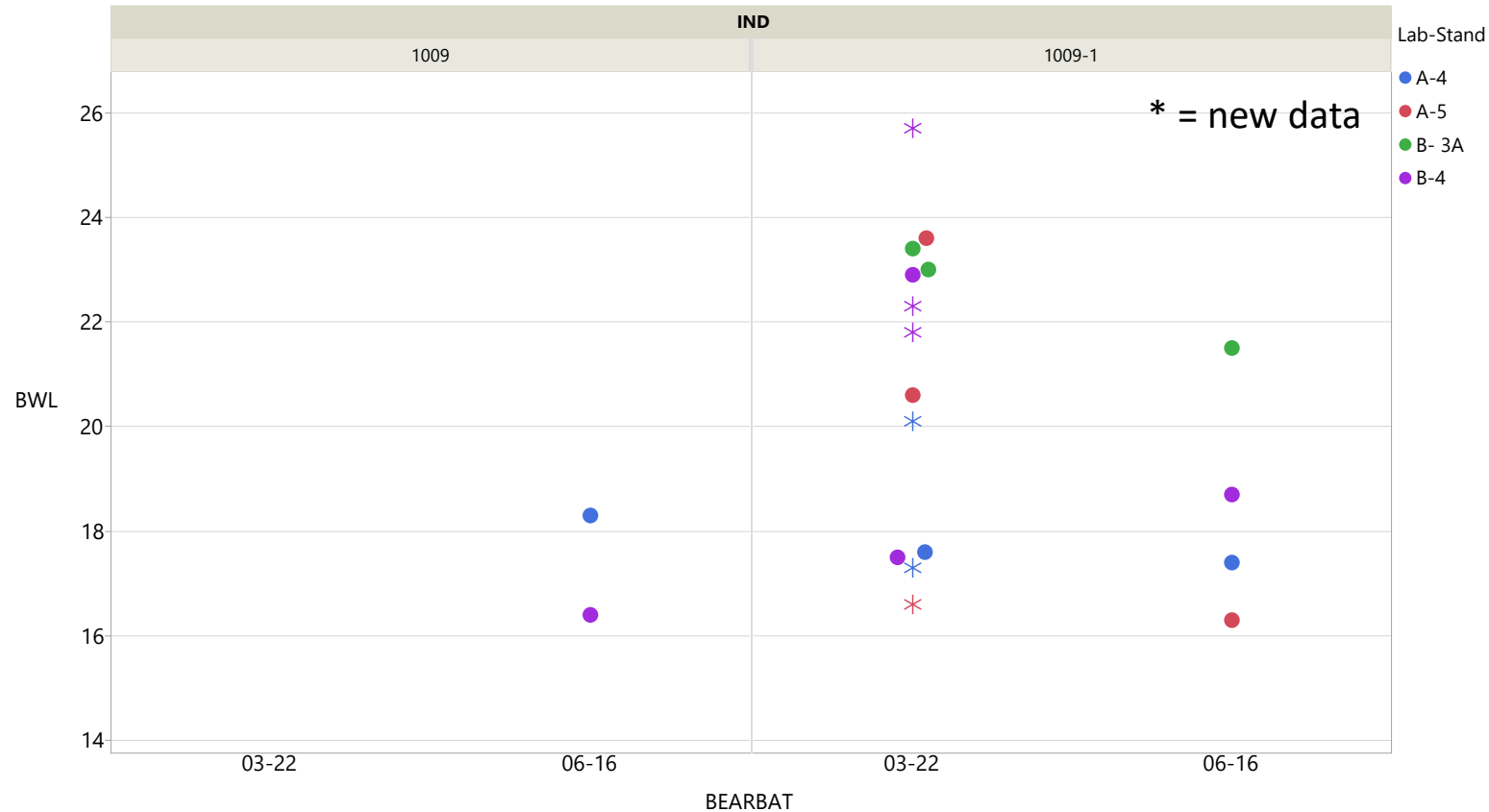


- 1009 Average: 17.4
- 1009-1 All Data: 20.4 (+3.0 mg)
- 1009-1 06-16 Only: 18.5 (+1.1 mg)

Oil	Data Used	LTMS Mean	Std. Dev.
1009	LTMS Target	13.8	2.14
1009-1	All Data (n=17)	13.8+3.0 = 16.8	2.92
1009-1	06-16 Only (n=4)	13.8+1.1 = 14.9	2.80

# Updates with Lab-Stand Model for Reblend Difference

Using a model with lab-stand, bearing batch, and oil results in an update to the correction factor from -3.6 to -6.8\* and reducing the target of 1009-1 from 16.2 to 14.3.



## Re-blend Difference

Level	- Level	Difference	p-Value
1009-1	1009	0.480	0.8330

## Bearing Difference

Level	- Level	Difference	p-Value
03-22	06-16	2.589	0.0927

\* -6.8 ICF based on average stand prediction of 21.1 mg for each of the four stands for 1009-1 on the 03-22 bearings.