



COMMITTEE D02 on PETROLEUM PRODUCTS, LIQUID FUELS, AND LUBRICANTS

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**Sequence VIII Surveillance Panel Meeting Minutes
Wednesday, June 5, 2024
Teams Meeting (Virtual)
10:00 - 11:00 AM CDT**

Minutes recorded by Joseph Riou

Direct any comments or corrections to: 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 September 28, 2023 minutes. A motion was made for acceptance by Pat Lang and seconded by Robert Stockwell. The minutes were approved as written.

Pat Lang gave a quick introduction about the agenda, then gave a brief update on the fuel status since William was not on the call. The fuel supply was deemed okay. Then into a quick part supplier update from Dan Lanctot, where the parts status is good and no issues for parts were brought up. 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 also advised that the total bearing weight loss was slightly severe of target, and the stripped viscosity was slightly mild of target. Rich had advised that the reference oil availability looks reasonable, at 800 gallons of supply of the 1009-1 reference oil.

Andy Ritchie asked if the issues we had in the past were due to the reference oil, or other factors. At this point Travis answered that since we still have a correction factor, and we are not completely certain why the test is severe, that it could have been the reference oils, or it could not have been the reference oil. At this point Travis gave a statistical update about the test.

Travis reviewed the stats group presentation with the updated testing data (see attachment #3). He advised that since the last meeting, we will need to discuss if we should revisit the reference oil re-blend target, and whether the panel should change anything. He stated that at the time, since we had a small test population, it is important that we review as more data comes in. He showed that last time the panel met, the average bearing weight loss had a 1.1 mg difference from the re-blend to the original oil.

He then went on to show that new data could suggest that there is a difference in the bearing batch, rather than just the oil re-blend. It was also advised that all the statisticians think that there is a difference between the 03-22 bearing batch, and the 06-16 bearing batch.

Travis suggested options for updating the target values for the bearing weight loss due to the re-blend. He suggested that the panel should either update to a 14.1, or a 14.9 target. He thinks candidates might not be being adjusted as much as they should. Then Travis gave three options for moving forward.

The first of the three options is to keep the target the same at 16.2 mg, and update the Industry Correction Factor (ICF) to -5.4 mg. He states this option would only help with stand calibration. Option two states that the target should be shifted to 14.9 mg, and the ICF should be changed to -6.7 mg. This option shows that the re-blend difference was not as different as initially thought. Option 3 suggests changing the target to 14.1 mg, and the ICF to -7.5 mg. This option has similar reasoning to option 2. Travis advised that his personal choice is option 2. He also stated that at last meeting the panel wanted to wait to make a change until there were 8 data points, which there are now.

At this point Mike Deegan said he would need to review the data more before making any decisions and suggested that he is still on the conservative side.

Andy asked what the control charts would look like if the panel changed to option 2. But Travis and Rich advised that since this update would only affect future tests, that the charts would look the same.

At this point, Pat suggested to give more time, and review the PowerPoint slides Travis has provided. It was also recommended that the panel review the recommendations carefully so they can make an informed decision, since this change will be used for a long time. Adrian agrees that the panel should make an educated decision about this change. Rich agrees and suggests that if the panel should make an adjustment, the sooner the better.

Travis then discussed the changes in the stripped viscosity since the panel last met. He showed that since the last panel meeting, there should be small adjustments to the correction factor and the standard deviation of the stripped viscosity based on the addition data that is available.

At this point, it was advised that the presentation Travis had been sharing will be sent out to the panel for further review. Todd asked if there will be references run soon and suggested to wait to send out the presentation until these references had been run, and the data had been updated. At this point, Pat had said that the updated presentation will be sent out to the group once the reference is completed.

Adjournment:

The meeting was adjourned at approximately 11:00 AM CDT.

Next Meeting:

The next meeting will be scheduled as needed.

Attachment #1




Attendance List

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

6-5-24
Teams




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	
Kowalski, Teri	Toyota Motor North America, Inc. 1555 Woodridge Ann Arbor, Mi 48105 Phone: 734-995-4032 Cell: 734-355-8082 teri.kowalski@tema.toyota.com	
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	

6-5-24

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	
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	Andy Manindra 
Szappanos, George	Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092 Phone: 440-347-2631 George.szappanos@lubrizol.com	

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

Name	Address	Phone/Fax/Email	Attendance
Travis Kostm	Sw RI		✓
Ricarado Alfinito	Oronite		✓
Bill O'ryan	API		✓
Amanda S.	Afton		✓
Todd D.	Infineum		✓
Jo Martinez	Oronite		✓

Attachment #2

Agenda

Sequence VIII Surveillance Panel Meeting Agenda

June 5, 2024

10:00 – 11:00 AM CDT

Teams Meeting

- 1) Welcome
- 2) Attendance
- 3) Approval of the minutes from the September 28, 2023, 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) Review of ASTM Report (Pat Lang)
- 10) Next Meeting will be at call of the chair
- 11) Adjournment

Attachment #3

Stats Group Presentation

Sequence VIII

Data Update

STATS GROUP

JUNE 2024

Stats Group

- Amanda Stone, Afton
- Amy Ross, Valvoline
- Ricardo Affinito, Chevron Oronite
- Jo Martinez, Chevron Oronite
- Todd Dvorak, Infineum
- Martin Chadwick, Intertek
- Travis Kostan, SwRI
- Richard Grundza, TMC

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 determined 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 ¹	To ²	\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	✓

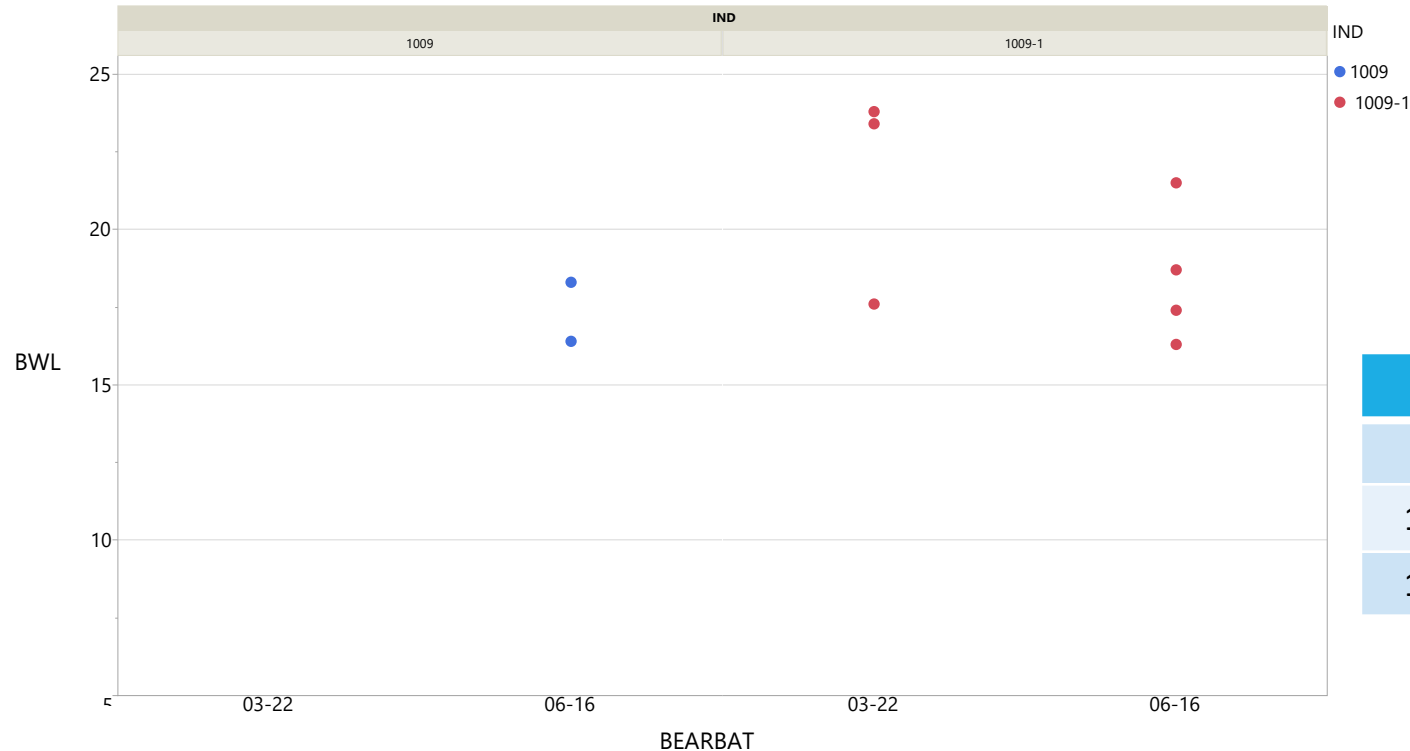
- Yellow highlighted = 06-16 (current) bearing batch
- Green highlighted = 03-22 (new) bearing batch

Other recent data

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

All Data Used From Last Time

All Data option was chosen.

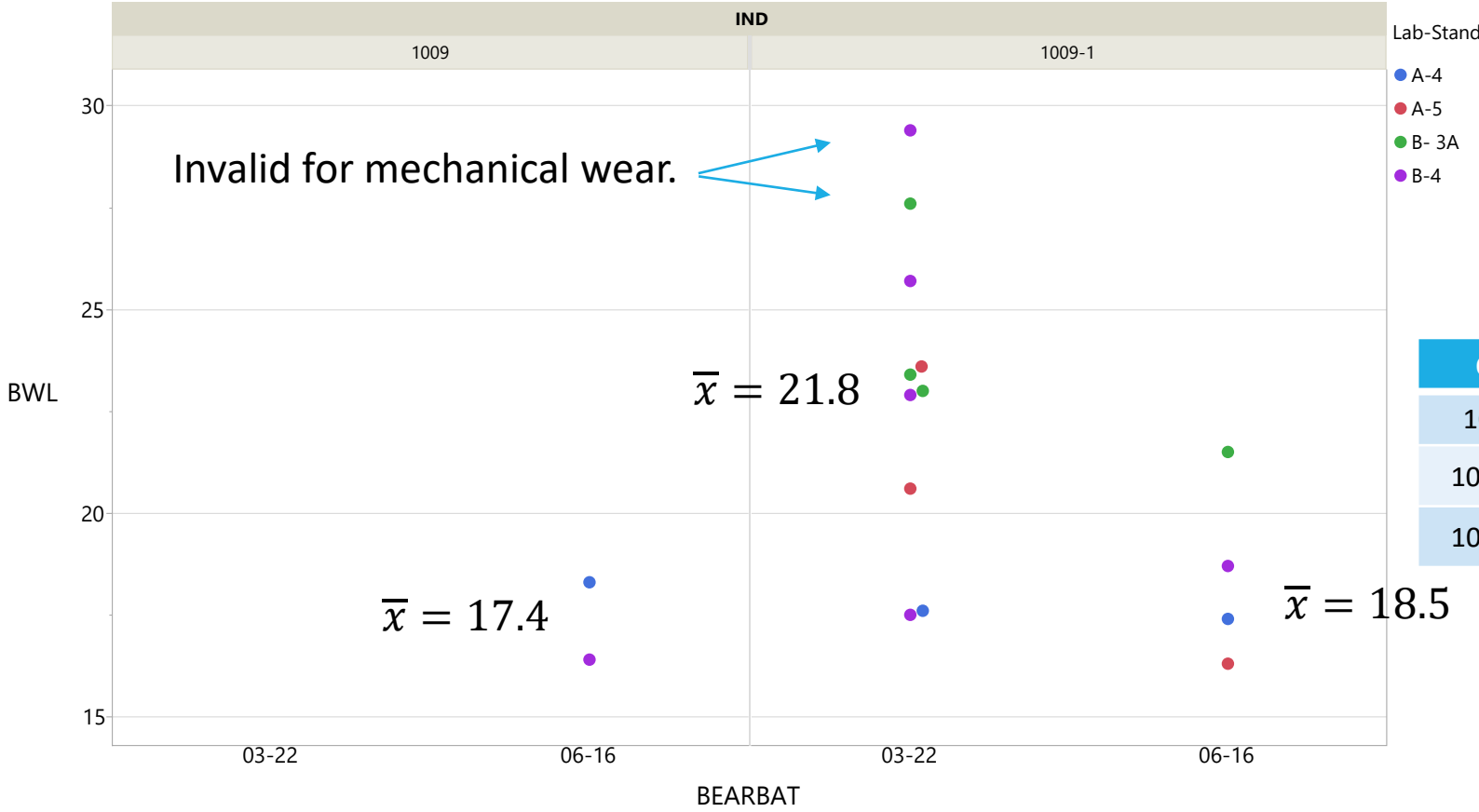


- 1009 Average: 17.4
- 1009-1 All Data: 19.8 (+2.4 mg)
- 1009-1 06-16 Only: 18.5 (+1.1 mg)

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)

Updates Using Same Methodology as Before

Invalid results not used in estimates. We still don't know 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 17.1mg 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.

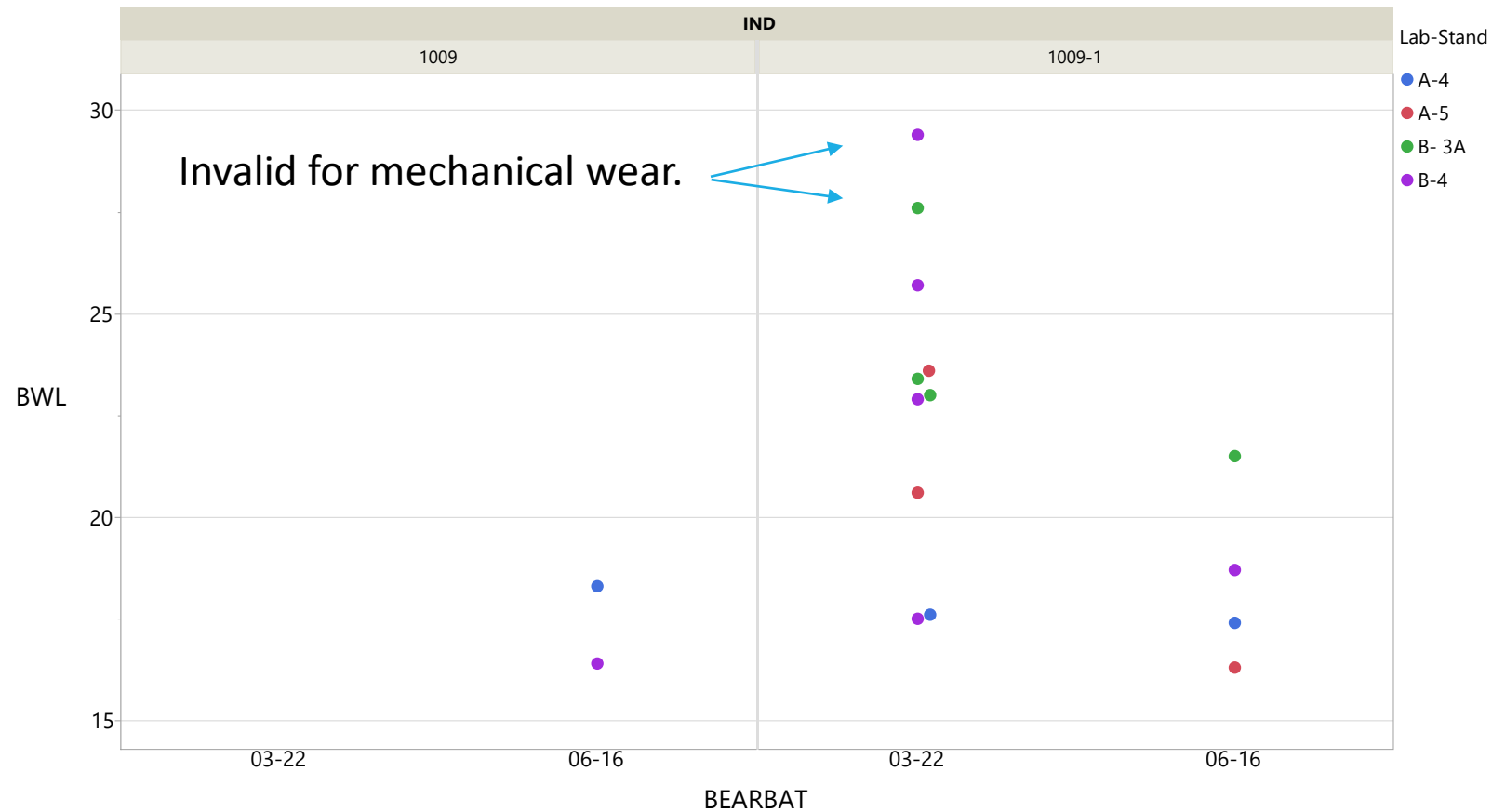


- 1009 Average: 17.4
- 1009-1 All Data: 20.7 (+3.3 mg)
- 1009-1 06-16 Only: 18.5 (+1.1 mg)

Oil	Data Used	LTMS Mean	Std. Dev.
1009	LTMS Target	13.8	2.14
1009-1	All Data (n=12)	13.8+3.3 = 17.1	3.10
1009-1	06-16 Only (n=4)	13.8+1.1 = 14.9	2.77 (pooled)

Updates with Lab-Stand Model for Reblend Difference

Invalid results not used in estimates. Using a model with lab-stand, bearing batch, and oil results in an update to the correction factor from -3.6 to -7.5* and reducing the target of 1009-1 from 16.2 to 14.1.



Re-blend Difference

Level	- Level	Difference	p-Value
1009-1	1009	0.2744	0.9142

Bearing Difference

Level	- Level	Difference	p-Value
03-22	06-16	3.1116	0.0996

* -7.5 ICF based on average prediction of 21.6 mg for each of the four stands for 1009-1 on the 03-22 bearings.

Option to not Change 1009-1 Target

Another option is to leave the current 1009-1 target at 16.2 mg. Leaving this target would continue to treat candidates the same as they have been for since the test came back online. The ICF in that case could be updated from -3.6 to -5.4 to meet target performance on calibration tests (this does not change net candidate evaluation).

Summary of Options for BWL

Below are a summary of the reasonable options.

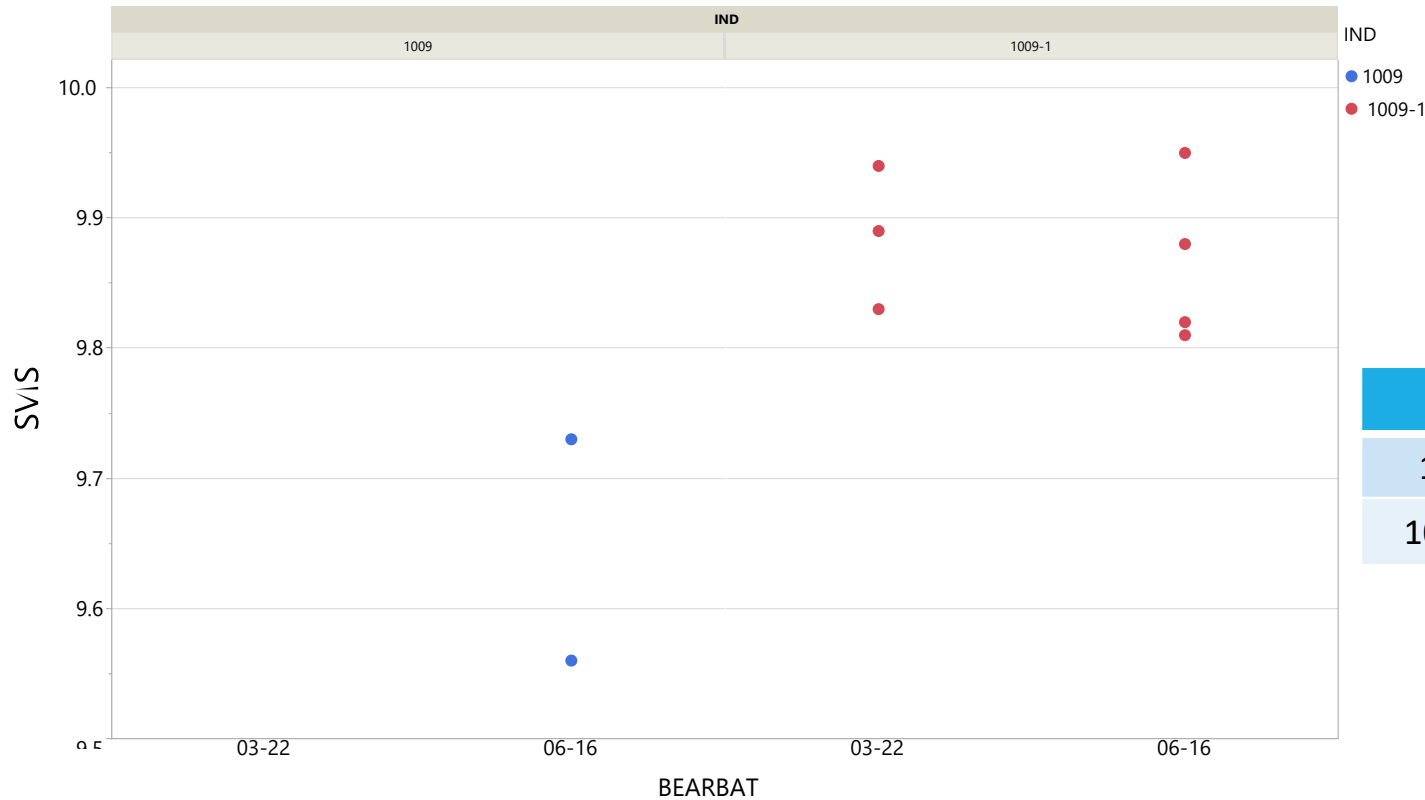
Option	1009-1 Target	ICF
Current	16.2	-3.6
Option #1	16.2	-5.4
Option #2	14.9	-6.7
Option #3	14.1	-7.5

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.

10 Hour Stripped Viscosity

1009-1 vs. 1009

Consider the difference of the re-blend first. The re-blend data on both bearing batches is similar and shows an average difference from the original blend of 0.22 cSt, resulting in a target of 9.73 cSt.



- 1009 Average: 9.65
- 1009-1 All Data: 9.87 (+0.22 cSt)
- 1009-1 06-16 Only: 9.87 (+ 0.22 cSt)

Oil	Data Used	LTMS Mean	Std. Dev.
1009	LTMS Target	9.51	0.10
1009-1	All Data	9.51 + 0.22 = 9.73	0.07

Updated Results

If you believe the bearings may be influencing this parameter, the current 1009-1 model predicted industry performance on the 03-22 batch is 9.82. This is the same as the arithmetic mean of all 12 data points. Therefore, the correction factor can be lowered from -0.14 to -0.09. The standard deviation can be updated to 0.09, close to the original blend standard deviation of 0.10.

