Report of Meeting
L-37-1 Surveillance Panel Conference Call
November 9th, 2021

Attendees:

SwRI -	**Warden,** Kostan, Mueller
Lubrizol -	Venhoff, **Slocum**, Bealko
Afton -	**Sangpeal,** Bell
Intertek -	**Lange**
TMC -	**Beck**
ExxonMobil -	**Banas**
BASF -	**Goyal,** Mosher
Dana -	**Zyski**
Meritor -	LaBond, **Carter**
Army -	**Comfort**, Sattler
AAM -	**Muransky**
Chevron -	Martinez
Retiree -	Kanga
Daimler -	Neal

Voting Members in **BOLD**

1.0 Membership Review

- No change

2.0 Meeting minutes Approval

– August 11th, 2021, ASTM Meeting

Motion #1 → R. Slocum 1st /2nd T. Muransky to approve the meeting minutes from the August 11th, 2021, ASTM Meeting. **Motion passed unanimously, 11-0-0 (Yes-No-Abstain).**

3.0 L-37-1 Hardware Print Location

- Upon discussion we decided to keep the Gleason Hardware prints on TMC website but not in a location that would be accessible to the public

Action Items:

- **I will need to edit and remove Gleason Hardware prints from Meeting Minutes from LRI 201 because they are accessible to the public**

4.0 Old Business

– Gleason Hardware Order
  - Gleason is having issues with acquiring gear material
  - Gleason hopes to have first sets of 45 shipped at end of November

- **Action Items**
  - **Lubrizol needs to set up a conference call solely with Gleason**
  - **Topics to cover**
    - **Ensure material sourcing will be consistent for all hardware ordered**
    - **Labs need Lubrited sooner than later**
    - **Lubriting Process – Can we get some specifics**
      - **Coating weight, crystal size, etc..**

5.0 L-37-1 LTMS Update

- See Attached slides
- Set up mid-December conference call to discuss overall thoughts after digesting all material

6.0 Adjourn

Motion #2 → R. Warden 1st /2nd W. Venhoff to adjourn. Motion passed unanimously, 11-0-0 (Yes-No-Abstain).

Respectfully submitted,

Robert Slocum
L-37-1 Surveillance Panel Chairman

D02.B0.03

L-37-1 Surveillance Panel Meeting

11/09/2021
4:00 pm – 5:00 pm
Robert Slocum

Agenda

- Call to Order/Agenda review
- Membership Review
- Meeting Minute Approvals
- August 11th, 2021, ASTM Meeting
- L371 Hardware Print Location
- L-37-1 LTMS Update
- Old Business
- New business
- Adjournment

Membership Review

Rob Banas	ExxonMobil
Allen Comfort	US Army
Troy Muransky	AAM
Matt Sangpeal	Afton
Arjun Goyal	BASF
Amy Zyski	Dana
Dylan Beck	TMC
Jason Carter	Meritor
Anthony Lange	Intertek
Robert Slocum	Lubrizol
Rebecca Warden	SwRI
Kaled Zreik	GM
Mike Cabaj	Linamar

Total Voting Members = 13

Meeting Minutes Approval

– August 11th, 2021, ASTM Meeting

L371 Hardware Print Location ??

www.astmtmc.org - /ftp/docs/gear/l371/procedure_and_ils/

www.astmtmc.org - /ftp/docs/gear/l371/procedure_and_ils/

[To Parent Directory]

3/3/2015	4:54 PM	<dir>	archive
11/29/2018	10:01 AM	170863	IL1801_L371.pdf
2/21/2019	9:48 AM	157439	IL1901_L371.pdf
5/2/2019	8:40 AM	142010	IL1902_L371.pdf
8/28/2019	3:59 PM	142388	IL1903_L371.pdf
10/23/2019	6:13 AM	229551	IL1904_L371.pdf
1/8/2020	9:08 AM	204578	IL2001_L371.pdf
6/12/2020	7:11 AM	171523	IL2002_L371.pdf
11/12/2020	2:45 PM	136847	IL2003_L371.pdf
11/13/2020	11:02 AM	135942	IL2004_L371.pdf

Old Business

- Gleason Hardware
  - Lubrited

New Business

L-37-1 LTMS Update

Adjourn

L37-1
Target Data Set Review

SOUTHWEST RESEARCH INSTITUTE®

Statistics Group

- Jo Martinez, Chevron Oronite
- Martin Chadwick, Intertek
- Todd Dvorak, Afton
- Dylan Beck, Test Monitoring Center
- Travis Kostan, SwRI
- Rob Slocum, Lubrizol
- Wes Vehhoff, Lubrizol

Background and Objective

- On August 11, 2021, Surveillance Panel met to discuss the differences between a Zi/Ei LTMS calibration system vs. the current Yi system.
- In order to properly assess the impact on labs, more feedback was needed by the statisticians on the proper data set to include in deriving oil means and standard deviations. Time ran out before these slides could be reviewed on the call, but the SP was asked to review the slides and provide feedback to the extent possible. Lubrizol, Afton, SwRI, and TMC supplied comments, which are included in the presentation.
- The objective of this call would be to discuss the comments and come to a resolution on each of the questions.

Updates to Oil Means and Standard Deviations

The Full Data Set

Statisticians group worked with TMC and labs where necessary to reduce the data set to only operationally valid tests run to the same procedure, which resulted in a total of 128 tests dating back to 01/07/2015.

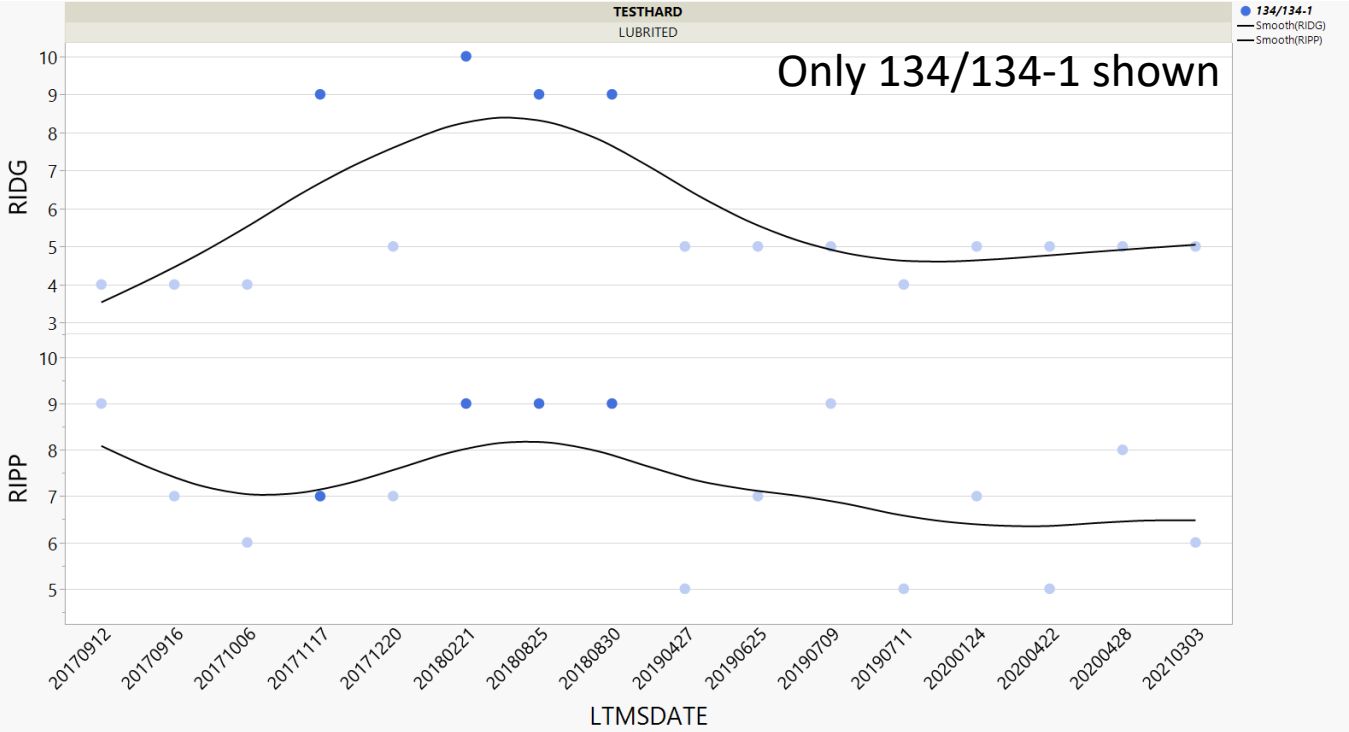
- 87 Nonlubrited
  - 39 with “04-2014” hardware
  - 24 with “06-2018” hardware
  - 24 with “12-19” or “01-20” hardware
- 41 Lubrited
  - All on “04-2014” hardware
- Reference oils included 134, 134-1, 152-2, and 155-1

High 134-1 Ridging Results

The plots below show some older 134 results which have been included in previous target setting data.

TESTKEY	LTMSLAB	Date	WEAR	RIDG	RIPP	SPIT
114308-L371	A	11/17/2017	7	9	7	9.9
129857-L371	G	2/21/2018	8	10	9	9.9
133018-L371	G	8/25/2018	8	9	9	9.9
133019-L371	G	8/30/2018	8	9	9	9.9

Should results like these be passing calibration tests? If not, can they be removed from target setting for 134-1?



Comments

Afton - Need more information on what caused the outlying result

Lubrizol - Ok with eliminating 4 tests

TMC - Ok with these test being removed. Seems to agree with the data set reduction recommendation in slide 26 (Next Slide; #26 from August presentation)

SwRI - I think we should look at what Rippling was doing for those tests. A lot of time we'll see one or the other below and not both (the rippling could be covering the ridging)

Resolution

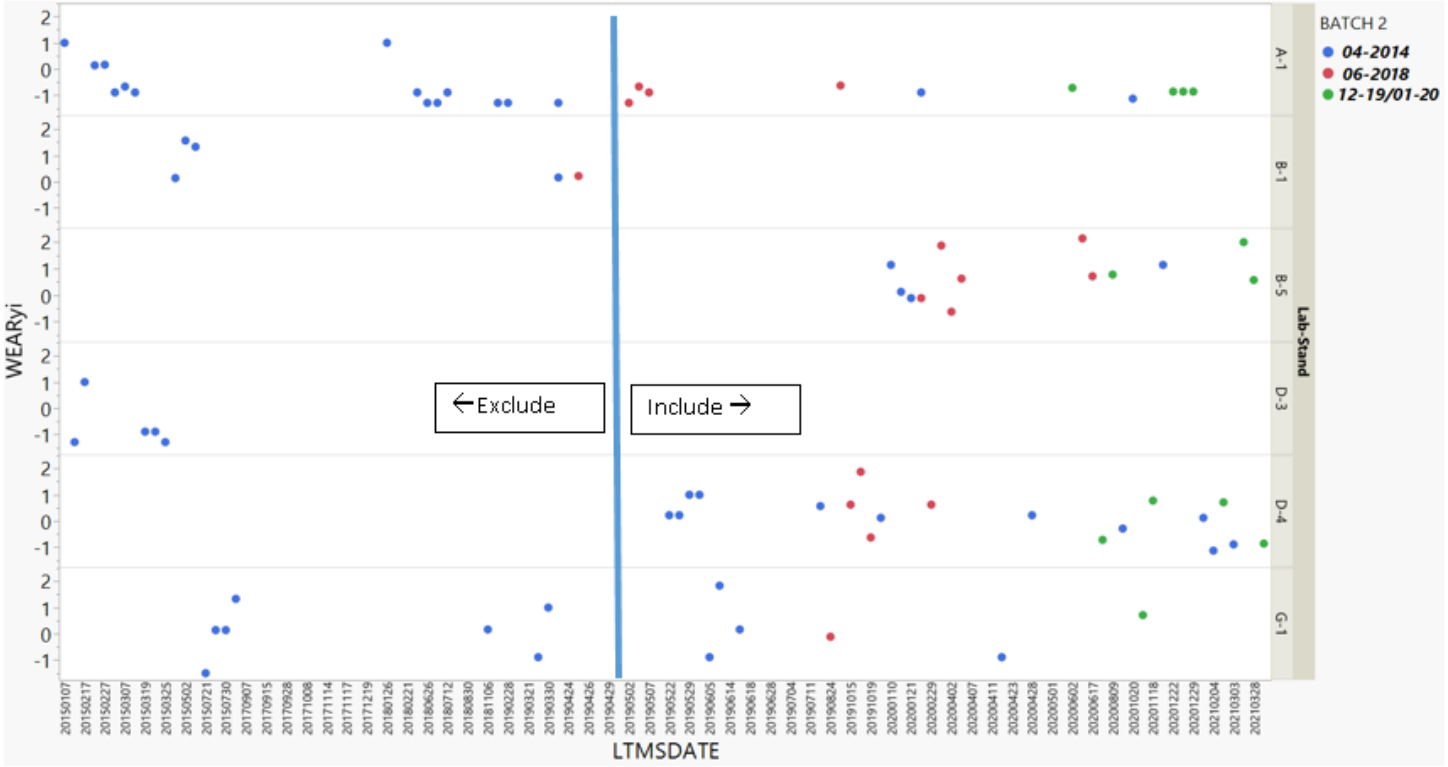
Remove all 4 points for current target setting. Revisit these points in the future to see if more cases like this appear and warrant consideration in target setting.

Reduced Data Set

After an initial meeting to discuss target calculations, the statistics group decided to split the data using the following split. Though the split choice is not tied to any test changes, it cleanly separates the data to only include active stands for Labs B and D, while limiting Lab A and Lab G to more recent data. This resulted in a data set including 70/128 data points.

Comments

Afton - How many Lubrited tests would this eliminate?
Lubrizol - Ok with reduced data set of 70 pts
TMC - OK with reducing dataset at the proposed split
SwRI - I'm OK with it for standard but have concerns for lubrited. We don't have much lubrited data so eliminating some of it make it that much harder to get good data



Is it acceptable to reduce the data set in this way?

Resolution

Split for non-lubrited. No Split for lubrited.

Limited Data for Lubrited

Using, the data split suggested results in very few lubrited data points, in particular for Oil 152-2. Should we…

1. Use a model which combines lubrited and nonlubrited hardware. This increases the number of data points for estimating lab severity, which is appropriate if lab severity shouldn't change with hardware. Oil means will still be adjustment for lubrited vs. nonlubrited using model variables.
2. Use all data for lubrited without a split and predict with a model.
3. Do not attempt to update at this time.

Resolution

Use #2 above since we are not splitting lubrited data. As an additional action item, research if there is any dependence of lab severity on hardware (lubrited vs. non-lubrited).

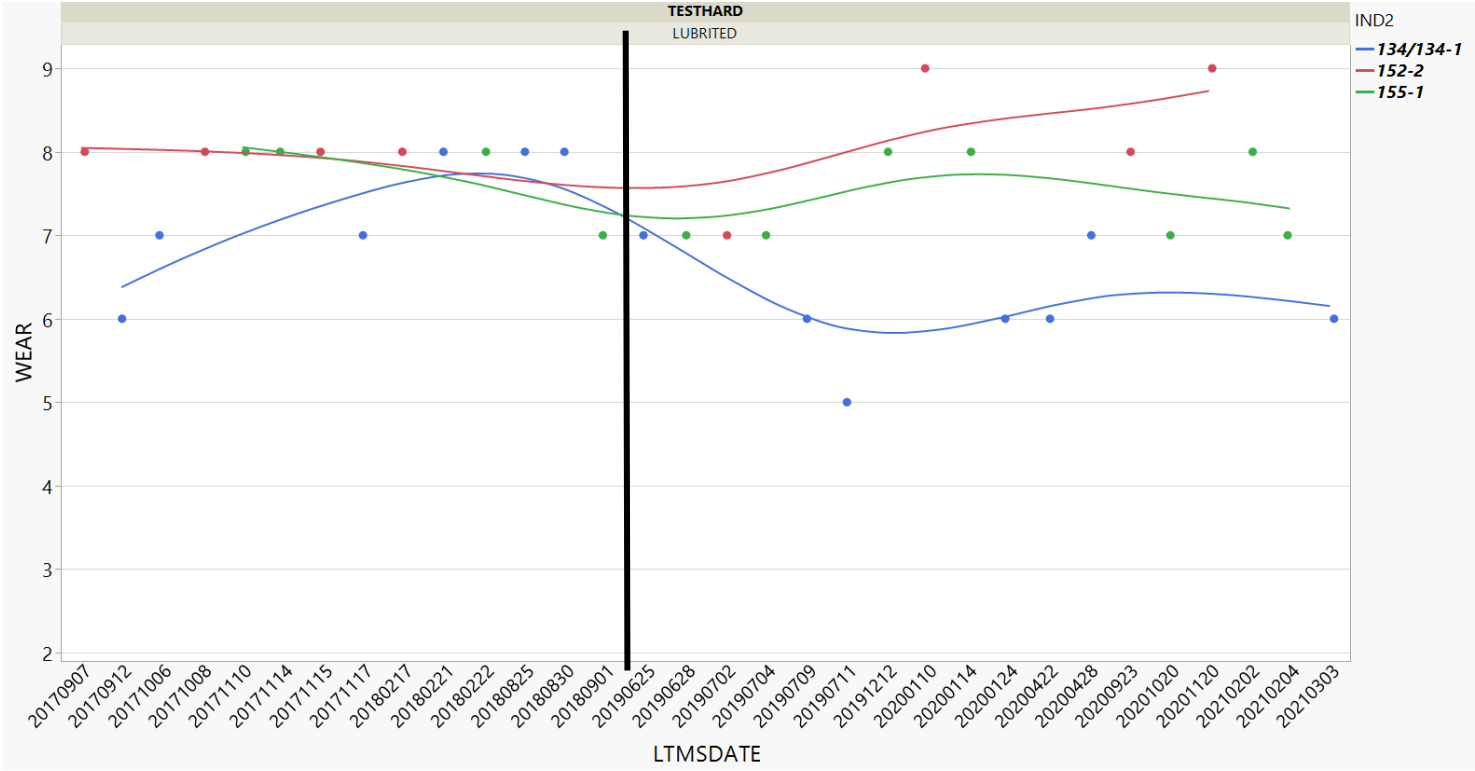
Comments

Afton - Not Ok with combined Lubrited and Non-Lubrited. I vote for Option 2

Lubrizol - Ok with suggestion # 2 152 and 155 averages are within a few tenths between all and reduced but 134 averages significant. Ok with pooled standard deviations.

TMC - OK with no split for Lubrited hardware and using the full history of data on this hardware, but not ok with combining lubrited and non-lubrited datasets. Ok with pooling stand deviations together for 152-2 and 155-1.

SwRI - Not OK with combining lubrited and non-lubrited. They're too different to look at with the same lens. I vote option 2.



Ok to Provide Option for Adjusted Standard Deviations?

Due to the integer nature of parameters like Rippling, the stats group may want to provide an option of a small adjustment to the standard deviation. Is this acceptable?

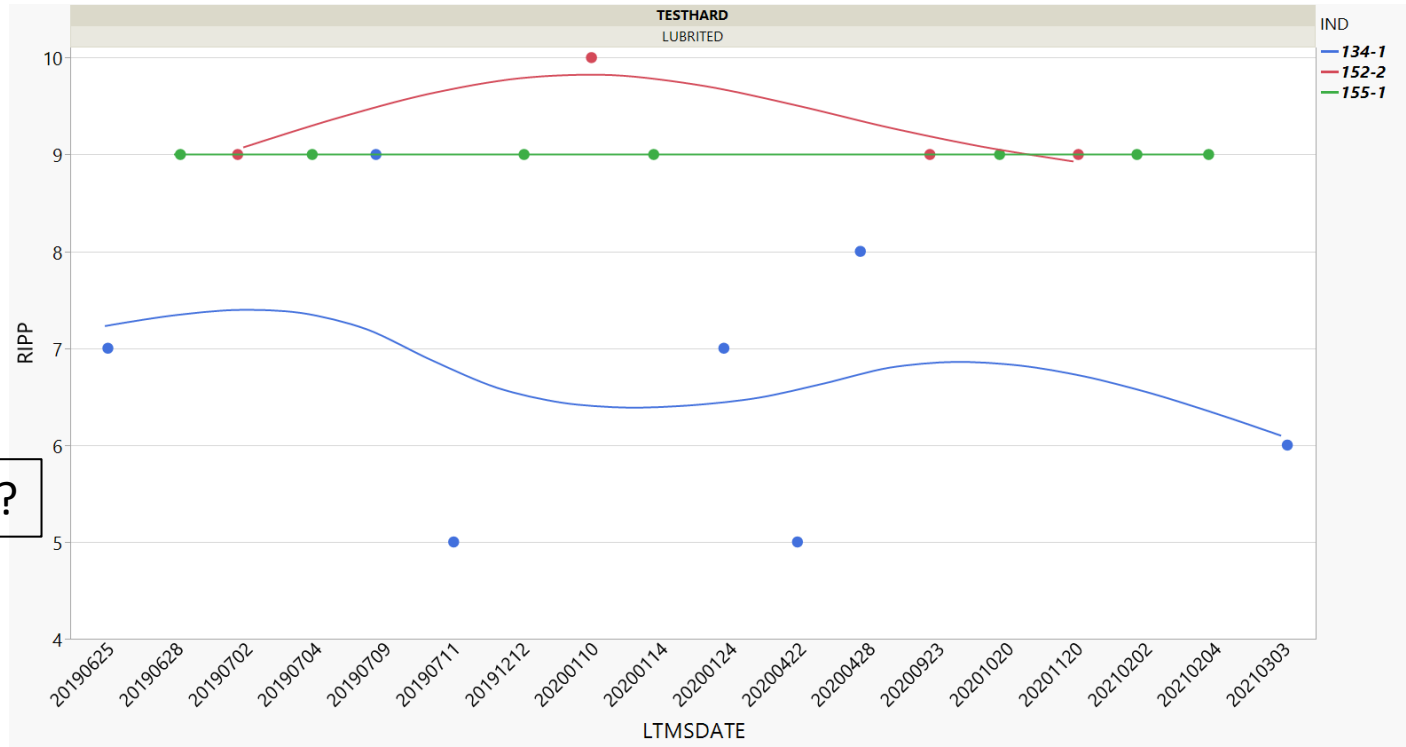
In this example, for standard deviation, by using 0.4, if you have a Zi=0.5, you would be allowed a single "10" on 152-2 or 155-1 without failing. Same goes for a Zi = -0.5 and a result of "8" on these oils. Using 0.33 makes it extremely unlikely to ever pass a value different from 9 under any circumstance.

Oil	Current Mean	Proposed Mean	Current SD	Proposed SD
134-1	7.4	6.71	1.6	1.50
152-2	9.3	9.00	0.5	0.33
155-1	8.7	9.00	0.7	0.33

0.4 better?

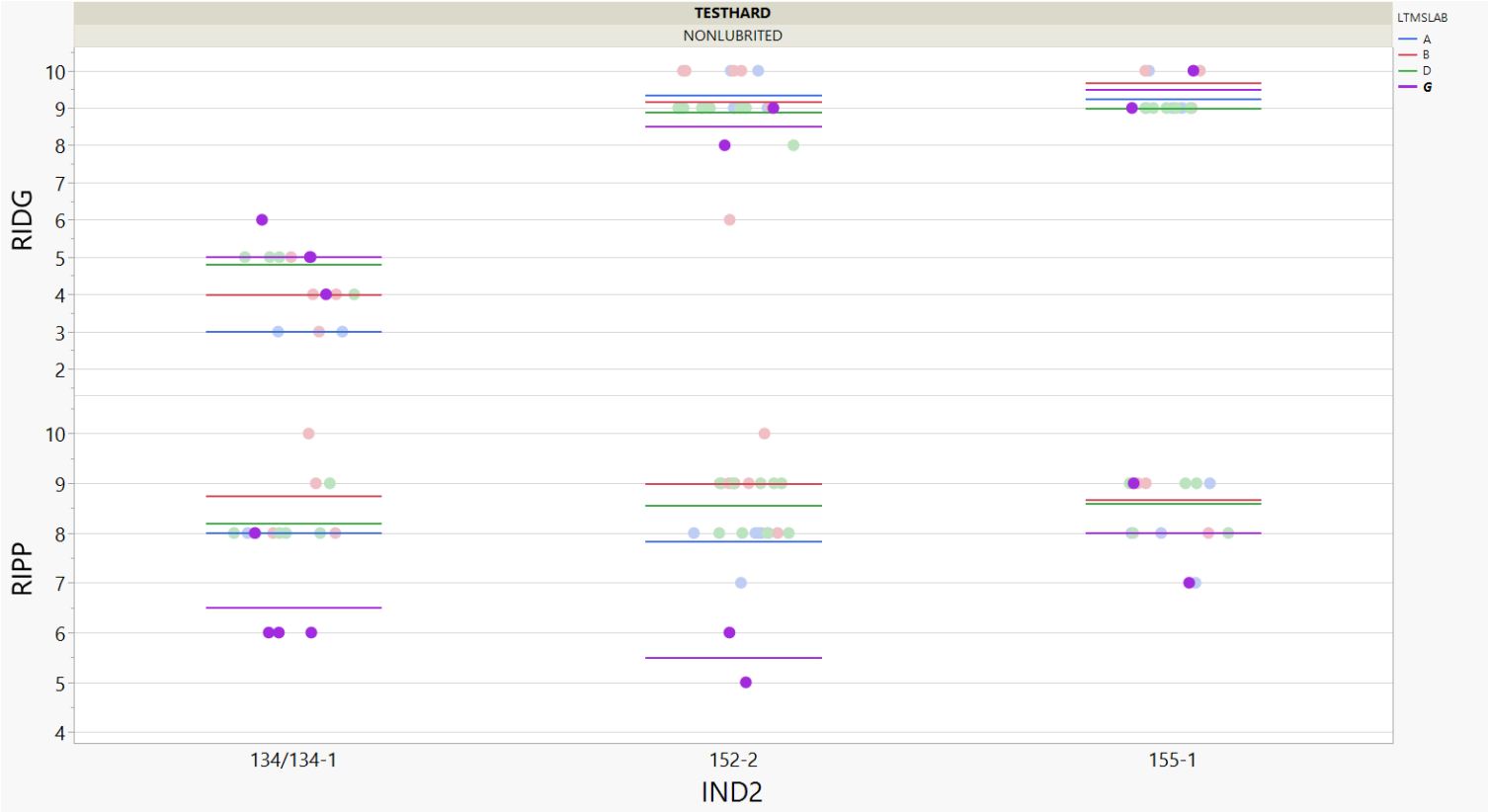
Resolution
Small adjustments, whether though Std. Dev. Adjustments or limit adjustments, would be acceptable to the panel.

Comments
Afton - Ok with adjusting std dev
Lubrizol - Ok with adjusted std dev
TMC - I have some concern with opening up the range of acceptable results too much so that everything passes for RIDG on 152-2 and 155-1. 10 out of the 11 results for 152-2 and 155-1 are a 9. Do we have to open up the range for the one results that was a 10?
SwRI - OK



How to Treat Lab G Rippling Data

The Lab G data below, half of which are non-chartable but still valid to the procedure, is very different from the other labs for data after May 1, 2019. How should this be treated in target setting?



Full ratings for 5 most severe

Oil	Date	WEAR	RIDG	RIPP	SPIT	Chart
152-2	6/5/2019	7	8	6	9.8	N
134/134-1	6/12/2019	7	6	6	9.9	Y
134/134-1	6/15/2019	5	5	6	8	Y
134/134-1	8/24/2019	5	5	6	9.9	Y
152-2	5/2/2020	7	9	5	9.9	N

Comments

Afton - Why were these tests non-chartable? Need more information

Lubrizol - Ok with including all data but open for suggestions

TMC - The tests are non-chartable. Were they approval runs on a hardware that has since been approved? If so how does lab G's run on the hardware compare to other labs post approval?

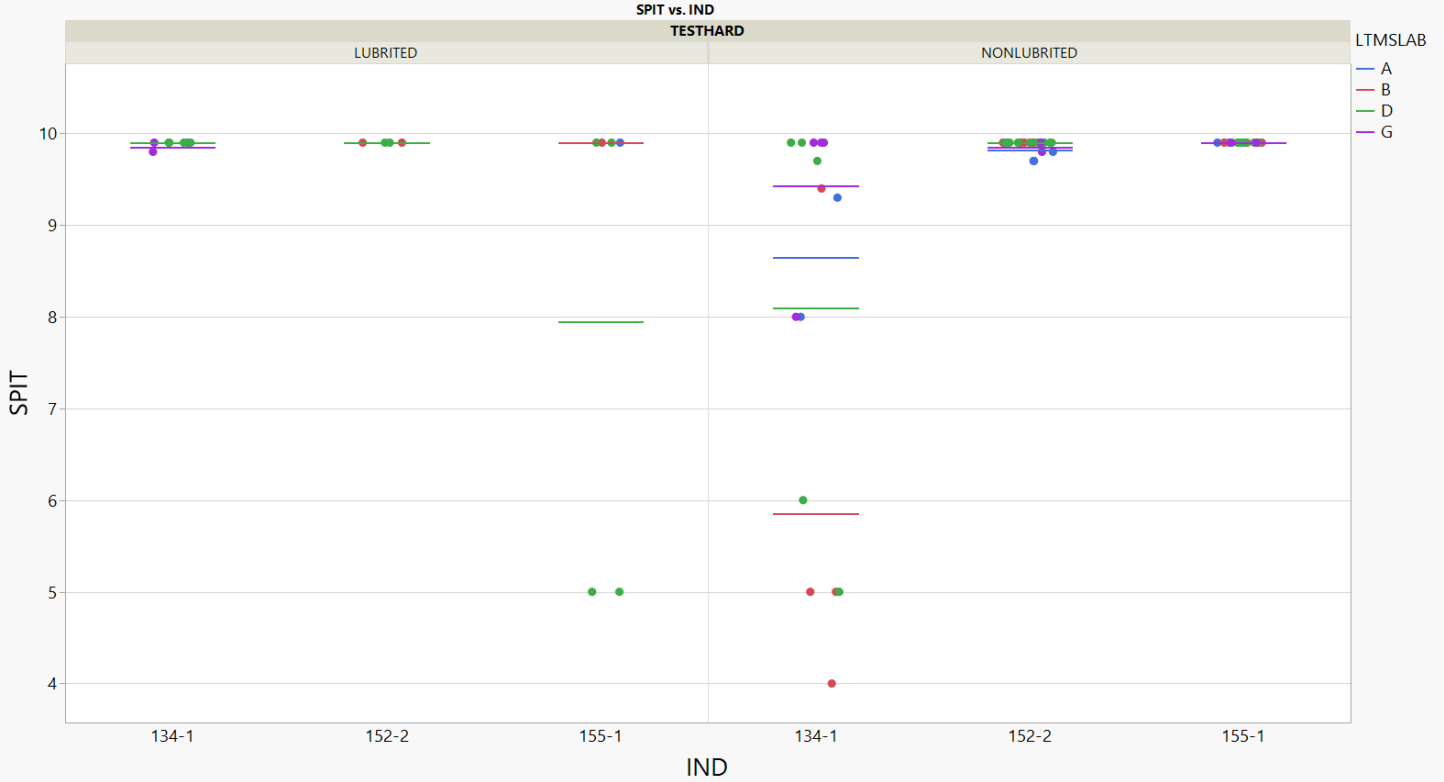
SwRI - Similar to slide 25 above (slide 6 in this presentation). I think we can pigeonhole ourselves not looking at the two together in these cases.

Resolution

Remove 152-2 data points from target setting.
Leave in 134/134-1 data.

Variability in 134-1 Non-Lubrited

Is the variability of results in oil 134-1 acceptable?



Comments

Afton - Need more information on what could have caused the variability

Lubrizol - Not sure what can be done about the variability

TMC - A large range of results with a gap in the middle. I have no good answer. Does the panel have a preference on what they would like to see used for targets in this case? Adjusted mean for upper range or lower range of results? Keep the mean and open up the std to cover a large range or results?

SwRI - I think we should discuss making spitting a non-critical parameter in terms of referencing due to variability.

Resolution

SP will choose “Go/No-Go” acceptance windows at the next meeting for this parameter. Stats group to create plots by oil and hardware to aid in this exercise.

Recommend to Not Have Std. Dev. = 0

For Pitting/Spalling, is it ok to change standard deviations of 0 to standard deviations of 0.10?

Are there other values to consider?

Comments

Afton - OK with making std dev 0.1
Lubrizol - Ok with SD not being zero and recommended
TMC - Ok with changing stdev from 0 to 0.1
SwRI - Agree no zero but see comment above (Previous Slide)

Oil	Current Mean	Proposed Mean	Current SD	Proposed SD
134-1	7.9	7.93	2	2.26
152-2	9.9	9.90	0.1	0.10
155-1	9.9	9.90	0	0.10

Resolution

Standard deviation will not be an issue if moving to “Go/No-Go” acceptance windows.