

**Report of Meeting**  
**L-60-1 Surveillance Panel**  
**Feb. 13th, 2025**

**Attendees:**

|                         |  |
|-------------------------|--|
| SwRI -                  | <b>Mueller, Wright</b>                 |
| Lubrizol -              | <b>Schaup, Ariemma, Gingerich</b>      |
| Afton -                 | <b>Sangpeal, Bell, Campbell, Zyski</b> |
| Intertek -              | <b>Lange, Portell</b>                  |
| TMC -                   | <b>Beck, Venhoff</b>                   |
| BASF -                  | <b>Goyal, Margret, Mosher</b>          |
| Dana -                  | <b>Gibson</b>                          |
| Cummins-Meritor -       | <b>Carowick, Catania</b>               |
| Army -                  | Sattler, <b>Comfort</b>                |
| AAM -                   | <b>Muransky</b>                        |
| International Motors -  | Morris                                 |
| Fuchs -                 | Bender                                 |
| Oronite-                | <b>Warden, Jackson, DeLaFuente</b>     |
| Shell-                  | Jordan, Schweitzer, Uy                 |
| Exxon-                  | Banas, <b>Jetter</b>                   |
| Daimler Truck NA-       | Fry, Vanderwal                         |
| Richful Lube Additives- | <b>McCullum</b>                        |

Voting Members in **BOLD**

**1.0 Membership Review**

Added Clarence McCullum from Richful Lube Additive as a voting member.

Changed Voting member from Amy Zyski to Trevor Gibson.

Changed Voting member from Rob Banas to Steve Jetter.

**2.0 Meeting minutes Approval**

– November 13th, 2024, ASTM Meeting #215

**Motion #1 → Carowick 1<sup>st</sup> /2<sup>nd</sup> Muransky approve the meeting minutes from the November 13th, 2024 , ASTM Meeting. Motion passed unanimously, 11-0-0 (Yes-No-Abstain).**

**3.0 Action Item Review**

Previous Action Items:

- Labs to complete tests on 145 candidate reference oil before February meeting.
- Lab engineers to review data for 145 candidate reference oil.
  - At TMC’s request this was sent to stats group for recommendation.
- Nick Schaup to “get the ball rolling with OGT”
  - OGT was bought out twice, a person that had been employed by OGT at the time told Nick that they would no longer be able to facilitate the previous arrangement.
  - Boston Gear is no longer willing to work with 11L17 steel and will only work with their standard 1117CD steel that does not contain any lead.

**4.0 L-60-1 Candidate Oil Target Recommendation by the stats group**

- Stats group recommended the following targets for the Candidate reference oil 145

| Oil   | Targets            | VISI   | PEN   | TOL   | ACV   | ASL   |
|-------|--------------------|--------|-------|-------|-------|-------|
| RO145 | mean               | 70.225 | 1.198 | 1.217 | 6.329 | 8.575 |
|       | standard deviation | 5.099  | 0.249 | 0.409 | 0.747 | 0.648 |

- MOTION #1: Reference oil was approved and target recommendation was accepted Unanimously 12-0-0. Effective Immediately (2/12/25).

#### **5.0 Bar Stock procurement**

- Boston Gear is unwilling to work with anything other than the standard 1117CD steel.
- As a short term stop gap T.Muransky is looking into getting 11L17 steel and cutting “clones” of the current test gears.
- As an experiment Lubrizol is to procure 16 “off the shelf” gears from Boston Gear and distribute them to all the labs so that each lab can run 2 tests on each approved reference Oil. This is to be completed before May. If results are available before May lab engineers are to meet and review data.

#### **6.0 Sierra Side Trak Replacement**

- It was reported that some components of the currently required Sierra model are obsolete and no longer readily available.
- It was decided that Wes Venhoff will investigate similar controller requirements in different test methods and come up with some verbiage to suggest at the next meeting.
- It was also noted that if this change was made that the calibration requirements will also need to be looked at.

#### **7.0 Old Business**

#### **8.0 New Business**

#### **9.0 Adjourn**

**Motion #3 → Lange 1<sup>st</sup> /2<sup>nd</sup> Mueller to adjourn. Motion passed unanimously, 11-0-0 (Yes-No-Abstain).**

Respectfully submitted,

Nicholas Schaup  
L-60-1 Surveillance Panel Chairman



D02.B0.03

# L-60-1 Surveillance Panel Meeting

02/12/2025

Nick Schaup

# Agenda

- Call to Order/Agenda review
- Membership review
- Meeting Minute Approvals
  - Nov 13<sup>th</sup> 2024, Surveillance panel meeting
- Action Item Review
- Stats Recommendation(s)
- Hardware order update
- Sierra Side Trak or equivalent discussion
- Old Business?
- New business
- Adjournment



# Membership Review

|                                    |                  |
|------------------------------------|------------------|
| <b>Allen Comfort</b>               | <b>US Army</b>   |
| <del>Amy Zyski</del> Trevor Gibson | <b>Dana</b>      |
| <b>Arjun Goyal</b>                 | <b>BASF</b>      |
| <b>Anthony Lange</b>               | <b>Intertek</b>  |
| <b>Jessica Carowick</b>            | <b>Cummins</b>   |
| <b>Wes Venhoff</b>                 | <b>TMC</b>       |
| <b>Nick Schaup</b>                 | <b>Lubrizol</b>  |
| <b>Matt Sangpeal</b>               | <b>Afton</b>     |
| <b>Caroline Mueller</b>            | <b>SwRI</b>      |
| <del>Rob Banas</del> Steve Jetter  | <b>ExxonMobi</b> |
| <b>Troy Muransky</b>               | <b>AAM</b>       |
| <b>Rebecca Warden</b>              | <b>Oronite</b>   |



# Meeting Minutes Approval

– Nov 13<sup>th</sup>, 2024, Surveillance Panel Mtg

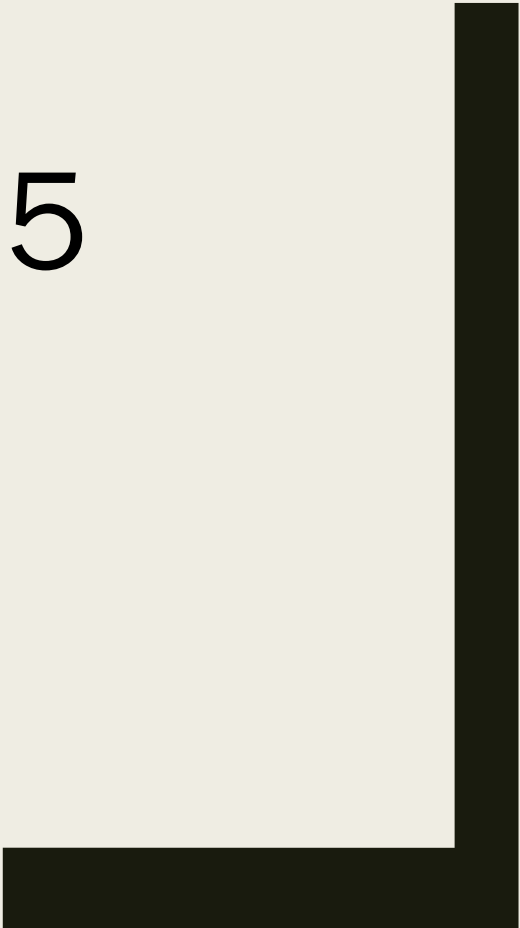
# Action Item Review

- Labs to complete tests on new discrimination oil before February Meeting
  - Done
- Panel Will review 148-1 candidate for reference oil
  - At TMCs request, this was sent to the stats group for review
  - Results from that request will be discussed later
- Nick Schaup to get ball rolling with OGT
  - OGT has been bought and exchanged hands several times
  - Is no longer capable of fulfilling this request
  - Boston Gear is not willing to work with anything other than 1117CD steel



# L60-1 R0145 TARGETS

Statistics Group  
Jan. 20, 2025





# Statistics Group

- Amanda Stone, Afton/New Market
- Dylan Beck, TMC
- Jo Martinez, Chevron Oronite
- Martin Chadwick, Intertek
- Travis Kostan, SwRI

# Reference Oil 145 Targets

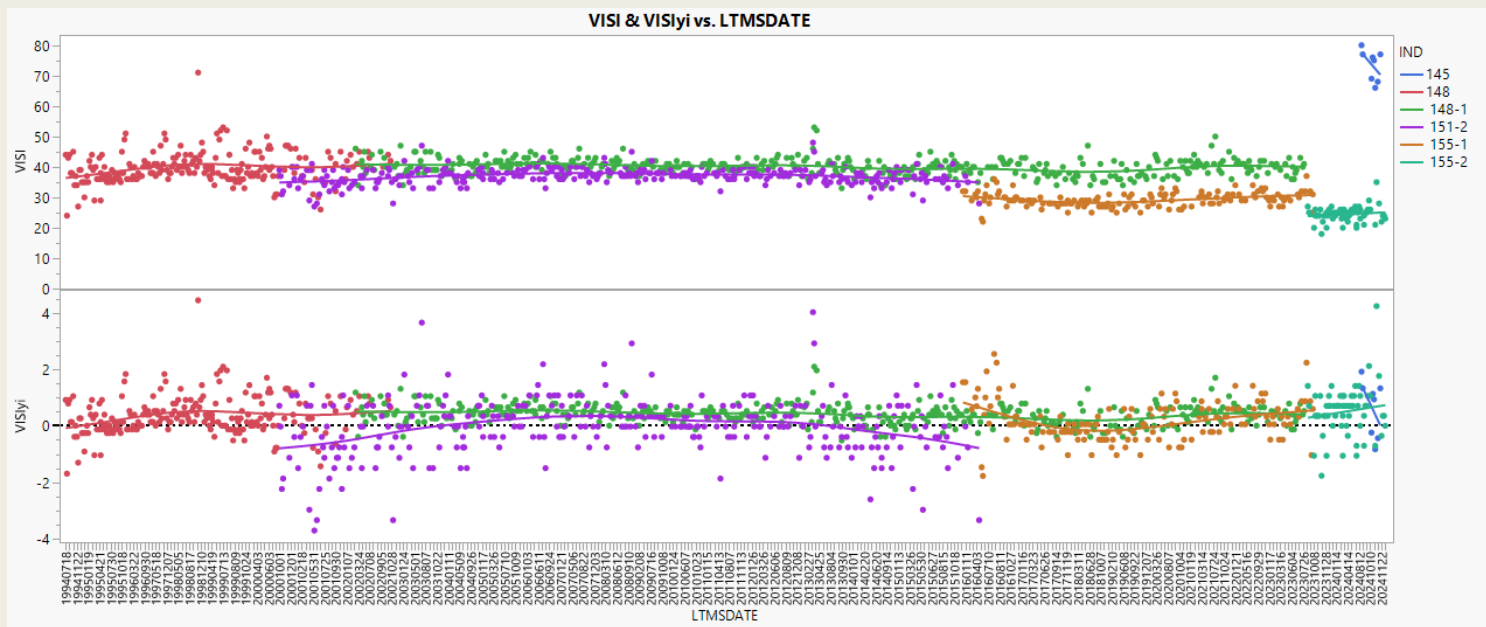
- Total of 8 tests
  - 2 tests per lab
  - 4 labs
  - 6 stands
- Recommend RO 145 targets below

| Oil       | Targets            | VISI   | PEN   | TOL   | ACV   | ASL   |
|-----------|--------------------|--------|-------|-------|-------|-------|
| RO145     | mean               | 70.225 | 1.198 | 1.217 | 6.329 | 8.575 |
|           | standard deviation | 5.099  | 0.249 | 0.409 | 0.747 | 0.648 |
| TMC 148-1 | mean               | 36.966 | 0.387 | 0.257 | 8.306 | 9.532 |
|           | standard deviation | 7.659  | 0.413 | 0.249 | 0.511 | 0.106 |

- *mean is model prediction adjusted by deviation of RO 155-2 prediction versus target*
- *standard deviation is the raw standard deviation*

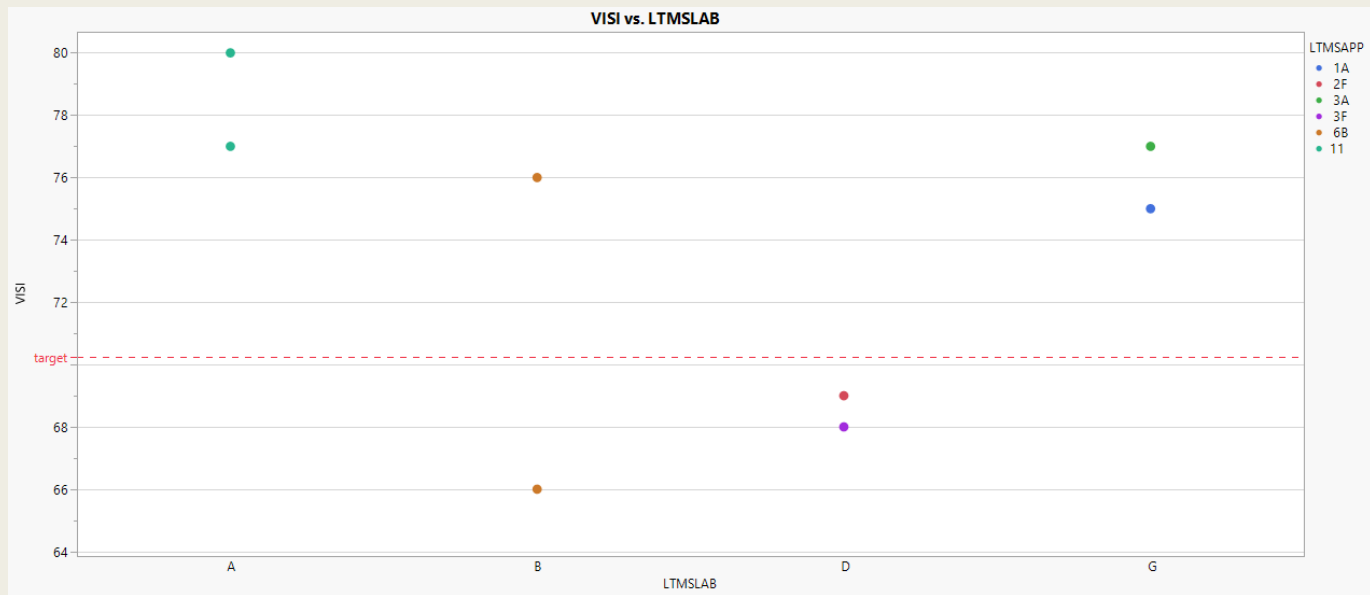
# VISI

- 155-2 is off target by +0.3s
- to adjust for this severity the target mean for RO 145 should be 70.225



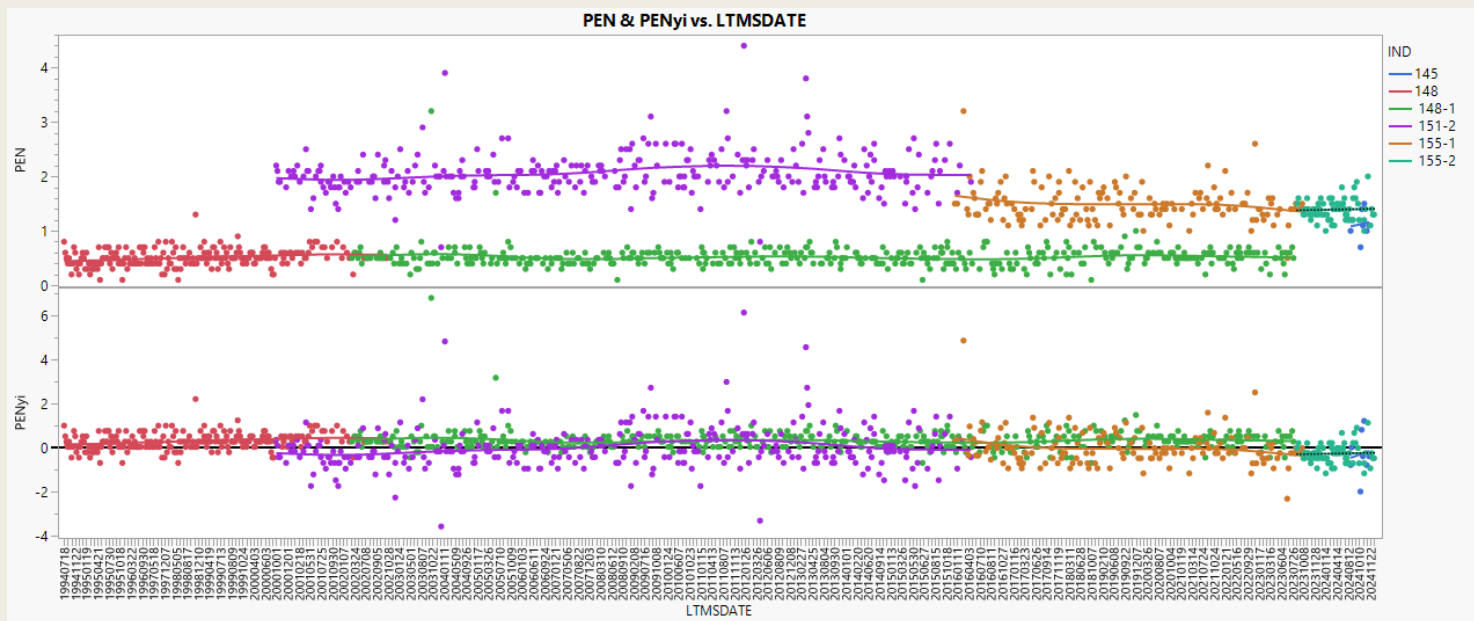
# VISI

mean=70.225    s=5.099



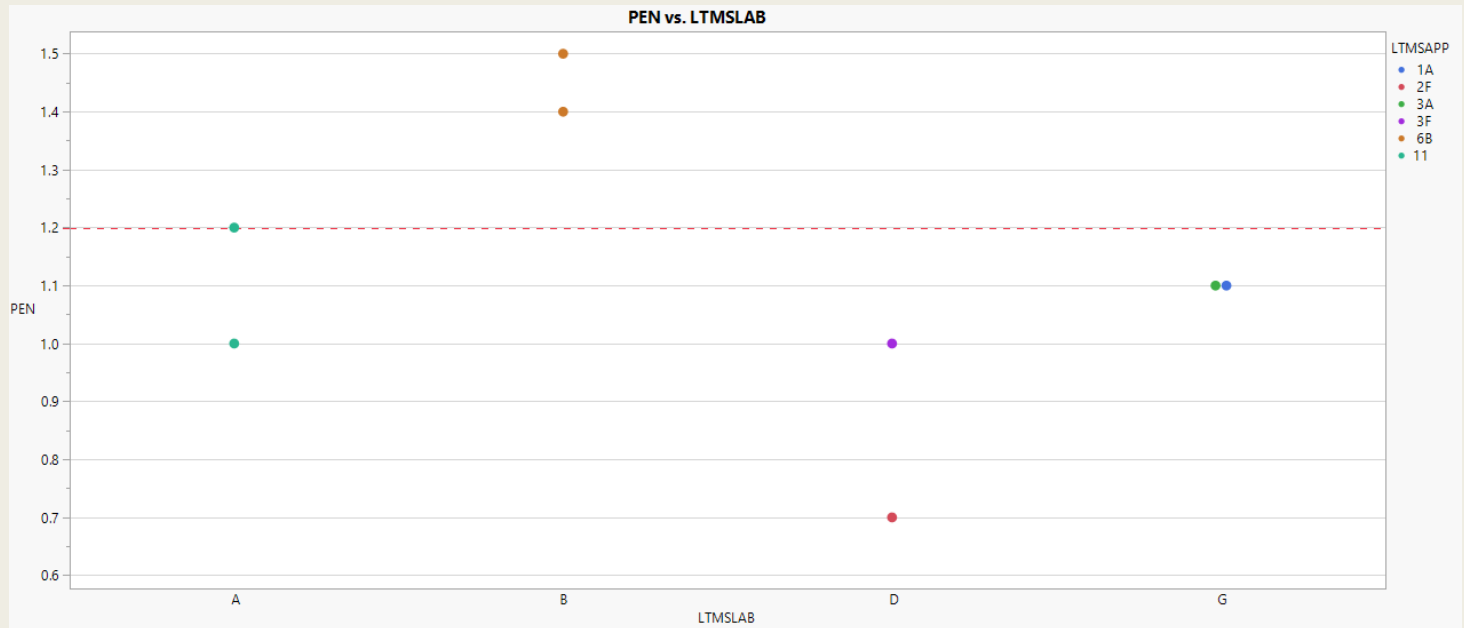
# PEN

- 155-2 is off target by -0.4s
- to adjust for this severity the target mean for RO 145 should be 1.198



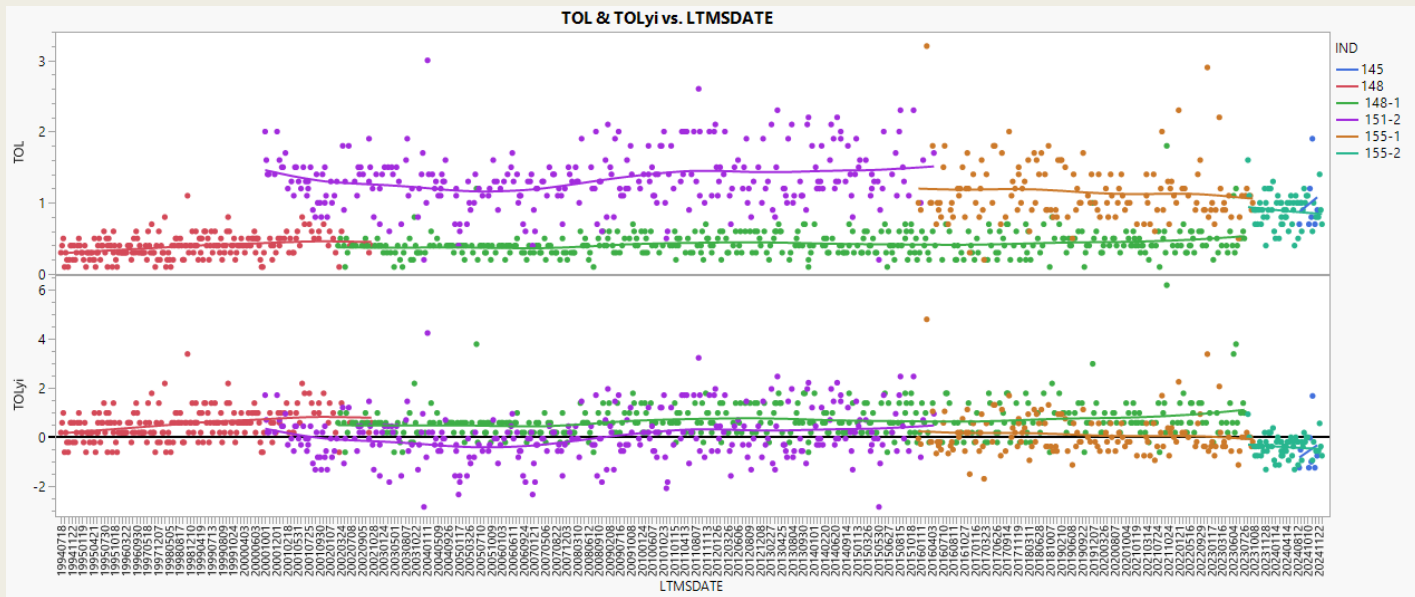
# PEN

mean=1.198 s=0.249



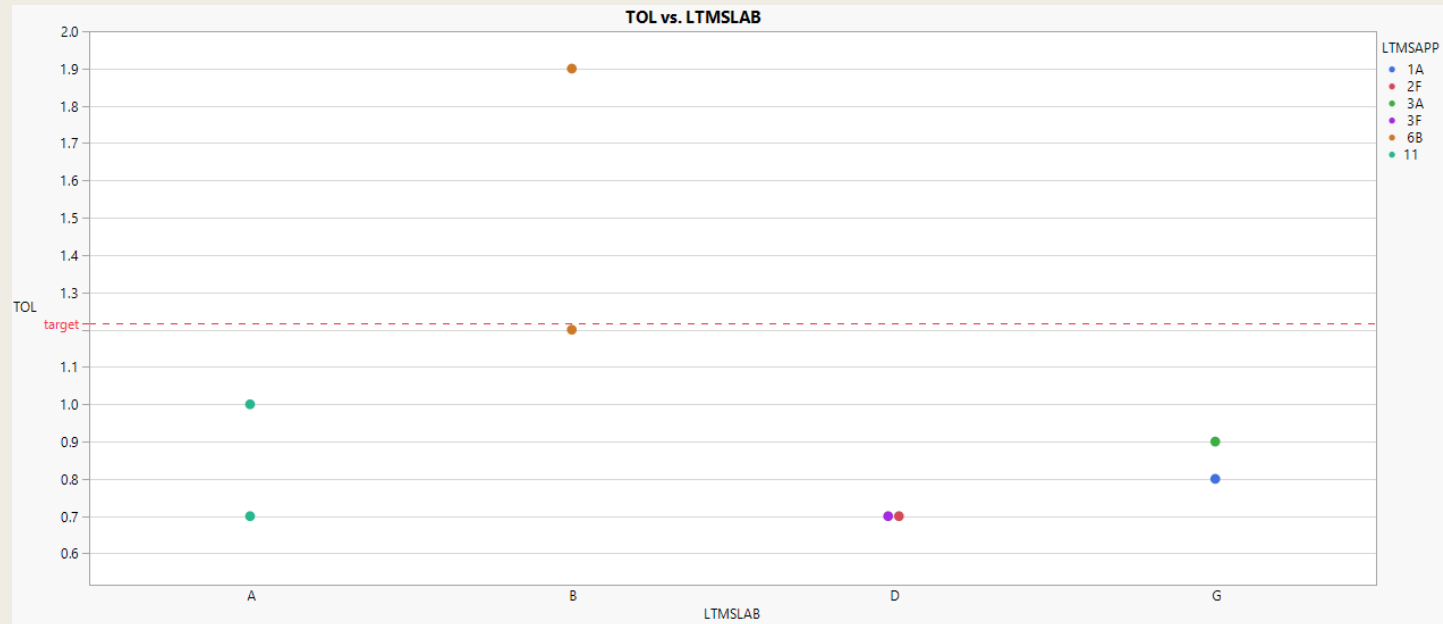
# TOL

- 155-2 is off target by -0.5s
- to adjust for this severity the target mean for RO 145 should be 1.217



# TOL

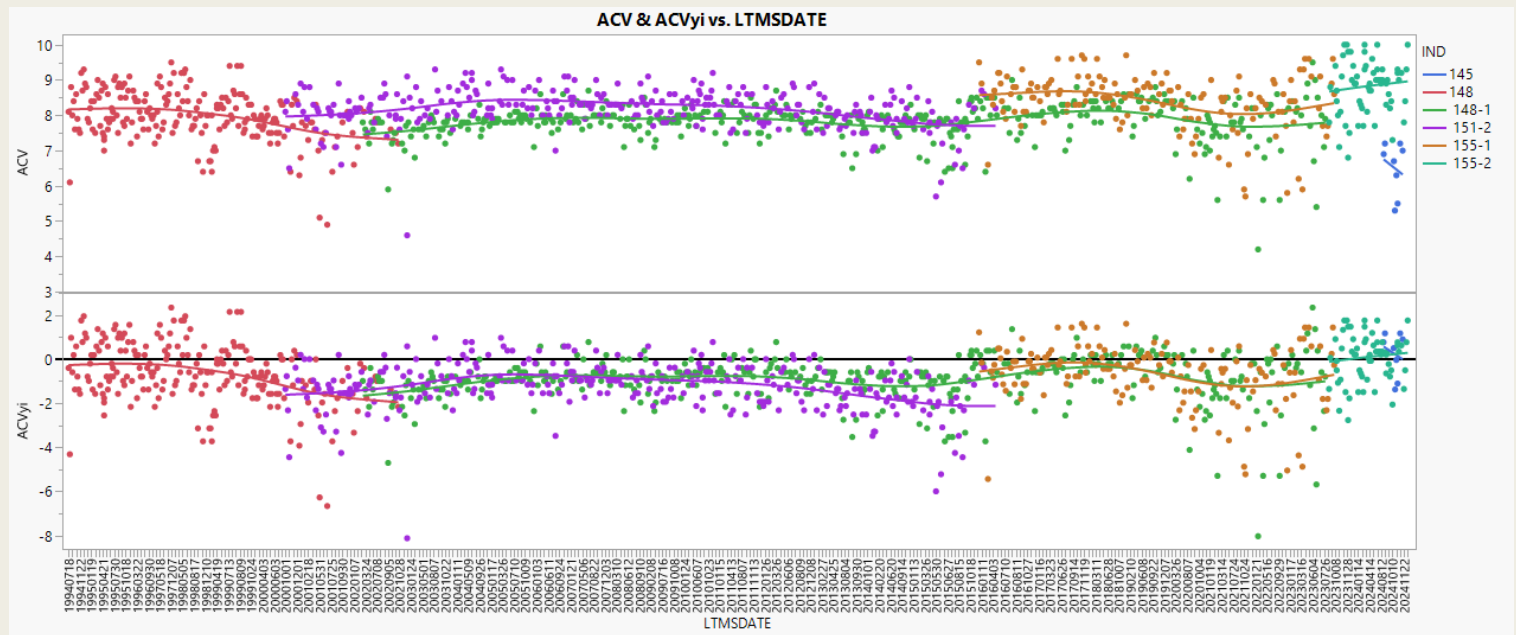
mean=1.217 s=0.409





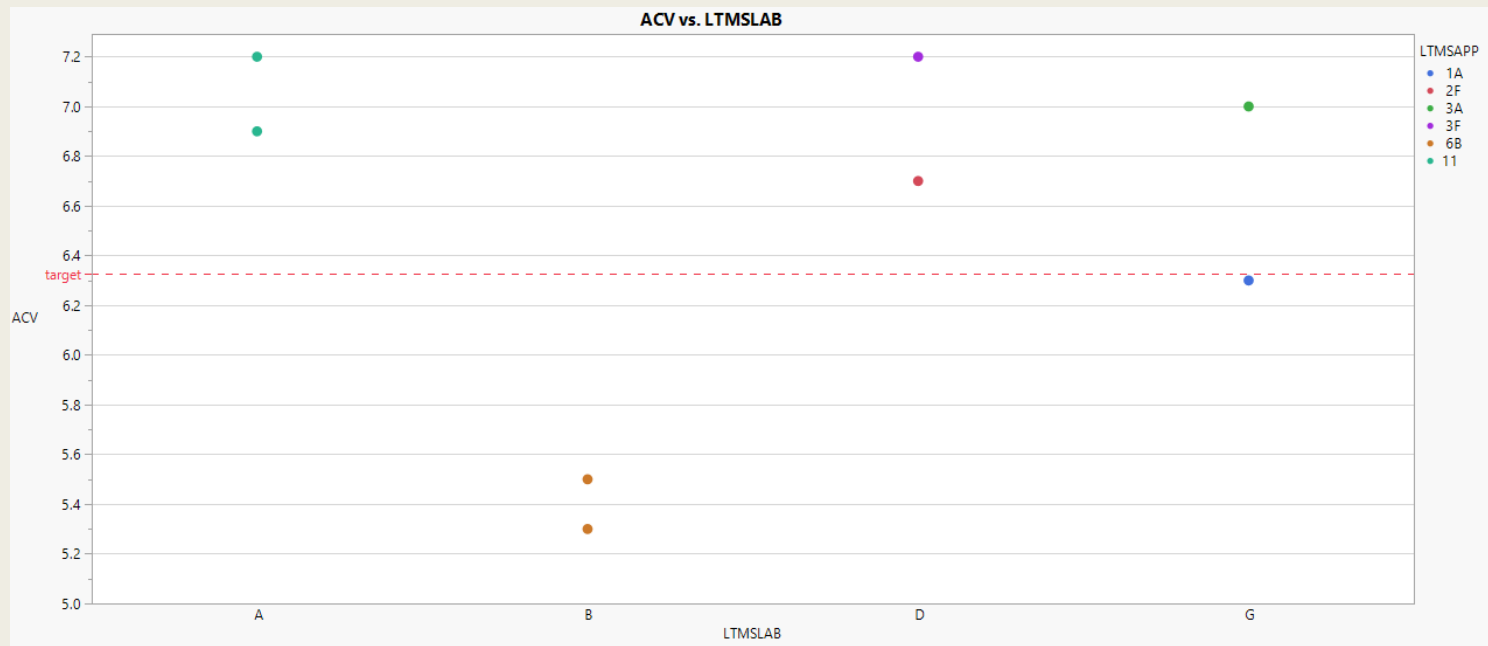
# ACV

- 155-2 is off target by +0.04s
- to adjust for this severity the target mean for RO 145 should be 6.329



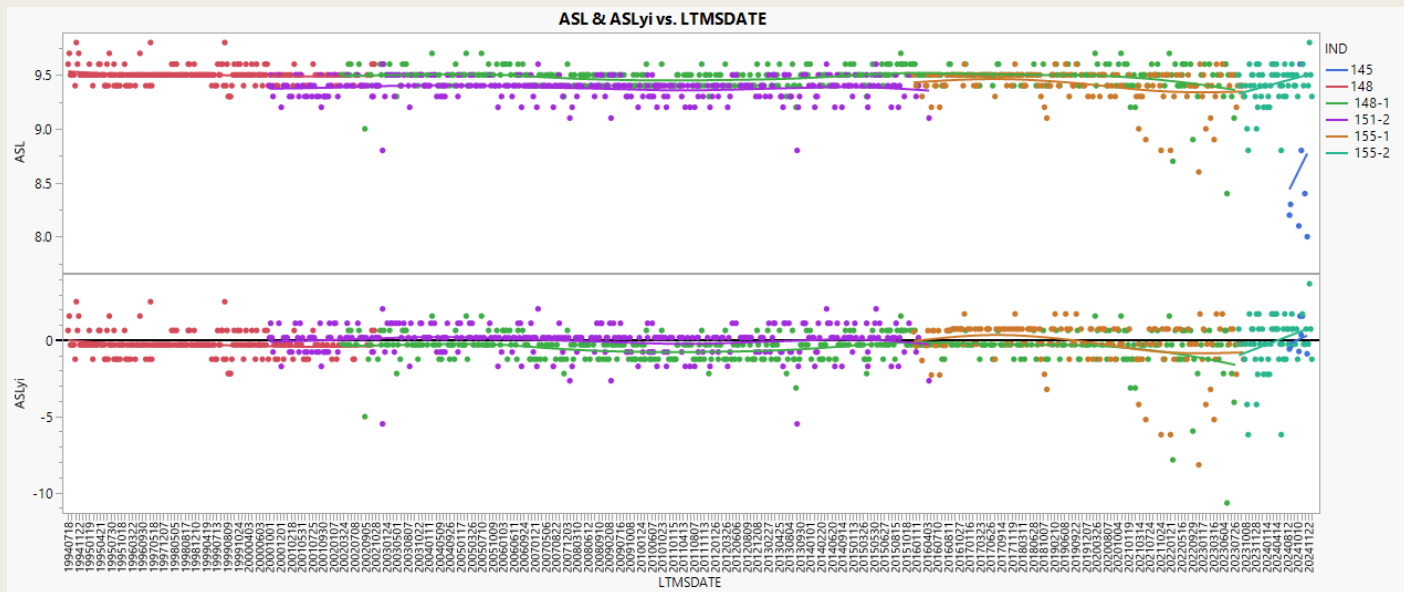
# ACV

mean=6.329 s=0.747



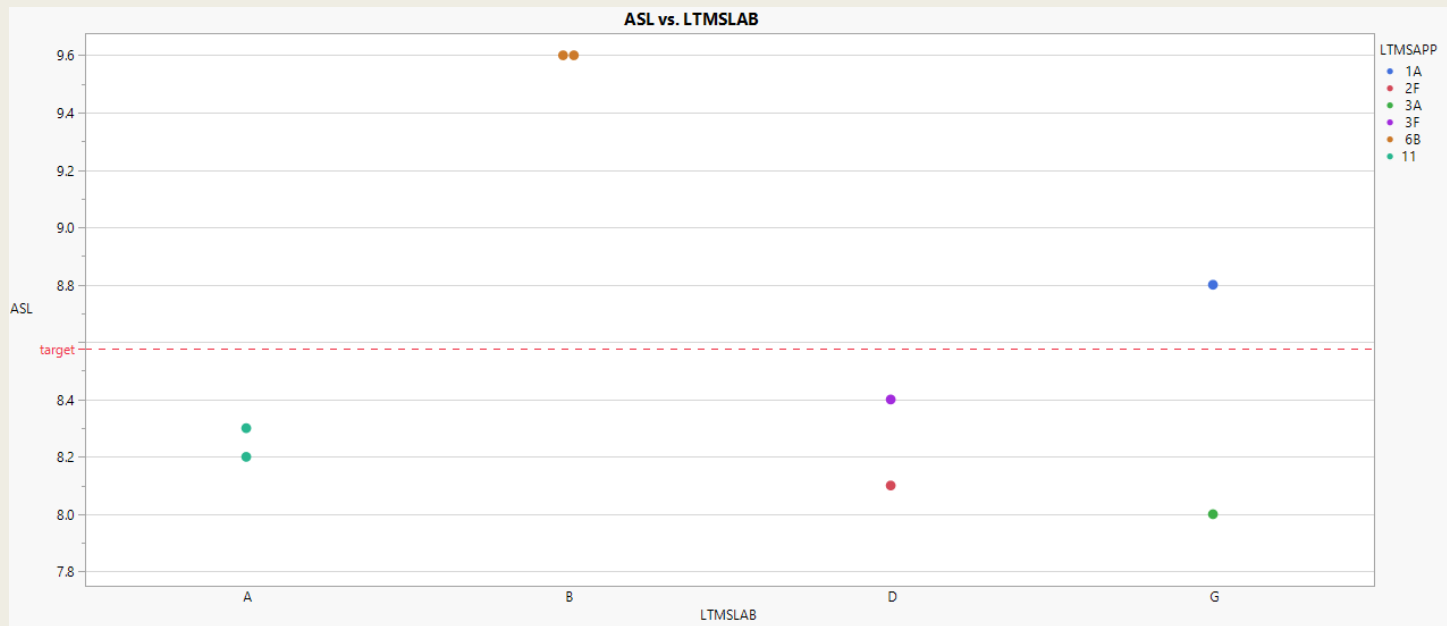
# ASL

- 155-2 is off target by +0.2s
- to adjust for this severity the target mean for RO 145 should be 8.575



# ASL

mean=8.575 s=0.648



# Prediction models

| VISI       |          |         |             |        | PEN    |            |            |          |         | TOL         |        |        |            |            |          |         |             |        |       |            |        |
|------------|----------|---------|-------------|--------|--------|------------|------------|----------|---------|-------------|--------|--------|------------|------------|----------|---------|-------------|--------|-------|------------|--------|
| Term       | Estimate | Prob> t | 155-2       | 151-2  | 148-1  | 145        | Term       | Estimate | Prob> t | 155-2       | 151-2  | 148-1  | 145        | Term       | Estimate | Prob> t | 155-2       | 151-2  | 148-1 | 145        |        |
| Intercept  | 40.41289 | <.0001  |             | 1      | 1      | 1          | Intercept  | 1.176779 | <.0001  |             | 1      | 1      | 1          | Intercept  | 0.836712 | <.0001  |             | 1      | 1     | 1          | 1      |
| IND[145]   | 32.61943 | <.0001  |             |        |        | 1          | IND[145]   | -0.10607 | 0.1599  |             |        |        |            | IND[145]   | 0.070895 | 0.3957  |             |        |       |            | 1      |
| IND[148]   | 0.454639 | 0.2169  |             |        |        |            | IND[148]   | -0.57558 | <.0001  |             |        |        |            | IND[148]   | -0.3409  | <.0001  |             |        |       |            |        |
| IND[148-1] | -1.06    | <.0001  |             |        |        |            | IND[148-1] | -0.67695 | <.0001  |             |        |        | 1          | IND[148-1] | -0.45989 | <.0001  |             |        |       |            | 1      |
| IND[151-2] | -4.18334 | <.0001  |             |        | 1      |            | IND[151-2] | 0.88567  | <.0001  |             |        | 1      |            | IND[151-2] | 0.496307 | <.0001  |             |        |       | 1          |        |
| IND[155-1] | -11.3375 | <.0001  |             |        |        |            | IND[155-1] | 0.300603 | <.0001  |             |        |        |            | IND[155-1] | 0.243162 | <.0001  |             |        |       |            |        |
| 155-2      | -16.4933 |         | 1           |        |        |            | 155-2      | 0.172322 |         | 1           |        |        |            | 155-2      | -0.00958 |         |             |        | 1     |            |        |
| LTMSLAB[A] | -0.49345 | 0.0172  | 0.25        | 0.25   | 0.25   | 0.25       | LTMSLAB[A] | -0.10964 | <.0001  | 0.25        | 0.25   | 0.25   | 0.25       | LTMSLAB[A] | -0.09836 | <.0001  | 0.25        | 0.25   | 0.25  | 0.25       | 0.25   |
| LTMSLAB[B] | -1.32774 | <.0001  | 0.25        | 0.25   | 0.25   | 0.25       | LTMSLAB[B] | -0.04547 | 0.0725  | 0.25        | 0.25   | 0.25   | 0.25       | LTMSLAB[B] | -0.04271 | 0.1273  | 0.25        | 0.25   | 0.25  | 0.25       | 0.25   |
| LTMSLAB[D] | 0.819914 | <.0001  | 0.25        | 0.25   | 0.25   | 0.25       | LTMSLAB[D] | 0.106236 | <.0001  | 0.25        | 0.25   | 0.25   | 0.25       | LTMSLAB[D] | 0.074658 | 0.0001  | 0.25        | 0.25   | 0.25  | 0.25       | 0.25   |
| G          | 1.00127  |         | 0.25        | 0.25   | 0.25   | 0.25       | G          | 0.048873 |         | 0.25        | 0.25   | 0.25   | 0.25       | G          | 0.056416 |         | 0.25        | 0.25   | 0.25  | 0.25       | 0.25   |
|            |          |         | prediction  | 23.920 | 36.230 | 39.353     | 73.032     |          |         | prediction  | 1.349  | 2.062  | 0.500      | 1.071      |          |         | prediction  | 0.827  | 1.333 | 0.377      | 0.908  |
|            |          |         | target      | 23     | 37.07  | 36.966     | 73.5       |          |         | target      | 1.509  | 2.064  | 0.387      | 1.125      |          |         | target      | 1.109  | 1.329 | 0.257      | 0.988  |
|            |          |         | delta/s     | 0.920  | -0.840 | 2.387      | -0.468     |          |         | delta/s     | -0.160 | -0.002 | 0.113      | -0.054     |          |         | delta/s     | -0.282 | 0.004 | 0.120      | -0.080 |
|            |          |         | s           | 2.832  | 2.717  | 7.659      | 7.315      |          |         | s           | 0.434  | 0.380  | 0.413      | 0.262      |          |         | s           | 0.53   | 0.394 | 0.249      | 0.514  |
|            |          |         | delta/s     | 0.32   | -0.31  | 0.31       | -0.06      |          |         | delta/s     | -0.37  | 0.00   | 0.27       | -0.21      |          |         | delta/s     | -0.53  | 0.01  | 0.48       | -0.16  |
|            |          |         |             |        |        | Target     |            |          |         |             |        |        | Target     |            |          |         |             |        |       | Target     |        |
|            |          |         | target/pred | 0.962  |        | ratio*pred | 70.225     |          |         | target/pred | 1.119  |        | ratio*pred | 1.198      |          |         | target/pred | 1.341  |       | ratio*pred | 1.217  |

| ACV        |          |         |             |       | ASL    |            |            |          |         |             |       |        |            |        |
|------------|----------|---------|-------------|-------|--------|------------|------------|----------|---------|-------------|-------|--------|------------|--------|
| Term       | Estimate | Prob> t | 155-2       | 151-2 | 148-1  | 145        | Term       | Estimate | Prob> t | 155-2       | 151-2 | 148-1  | 145        |        |
| Intercept  | 7.89403  | <.0001  |             | 1     | 1      | 1          | Intercept  | 9.278193 | <.0001  |             | 1     | 1      | 1          |        |
| IND[145]   | -1.54232 | <.0001  |             |       |        | 1          | IND[145]   | -0.68483 | <.0001  |             |       |        | 1          |        |
| IND[148]   | 0.004539 | 0.9511  |             |       |        |            | IND[148]   | 0.177841 | <.0001  |             |       |        |            |        |
| IND[148-1] | -0.09076 | 0.0686  |             |       |        |            | IND[148-1] | 0.167209 | <.0001  |             |       |        | 1          |        |
| IND[151-2] | 0.273908 | <.0001  |             |       |        | 1          | IND[151-2] | 0.069919 | <.0001  |             |       | 1      |            |        |
| IND[155-1] | 0.457331 | <.0001  |             |       |        |            | IND[155-1] | 0.101939 | <.0001  |             |       |        |            |        |
| 155-2      | 0.897296 |         | 1           |       |        |            | 155-2      | 0.167919 |         | 1           |       |        |            |        |
| LTMSLAB[A] | 0.157502 | 0.0002  | 0.25        | 0.25  | 0.25   | 0.25       | LTMSLAB[A] | 0.034238 | <.0001  | 0.25        | 0.25  | 0.25   | 0.25       |        |
| LTMSLAB[B] | -0.27004 | <.0001  | 0.25        | 0.25  | 0.25   | 0.25       | LTMSLAB[B] | 0.073927 | <.0001  | 0.25        | 0.25  | 0.25   | 0.25       |        |
| LTMSLAB[D] | 0.212018 | <.0001  | 0.25        | 0.25  | 0.25   | 0.25       | LTMSLAB[D] | 0.045288 | <.0001  | 0.25        | 0.25  | 0.25   | 0.25       |        |
| G          | -0.09948 |         | 0.25        | 0.25  | 0.25   | 0.25       | G          | -0.15345 |         | 0.25        | 0.25  | 0.25   | 0.25       |        |
|            |          |         | prediction  | 8.791 | 8.168  | 7.803      | 6.352      |          |         | prediction  | 9.446 | 9.348  | 9.445      | 8.593  |
|            |          |         | target      | 8.76  | 8.801  | 8.306      | 6.513      |          |         | target      | 9.426 | 9.382  | 9.532      | 8.625  |
|            |          |         | delta/s     | 0.031 | -0.633 | -0.503     | -0.161     |          |         | delta/s     | 0.020 | -0.034 | -0.087     | -0.032 |
|            |          |         | s           | 0.708 | 0.517  | 0.511      | 0.979      |          |         | s           | 0.101 | 0.106  | 0.106      | 0.634  |
|            |          |         | delta/s     | 0.04  | -1.22  | -0.98      | -0.16      |          |         | delta/s     | 0.20  | -0.32  | -0.82      | -0.05  |
|            |          |         |             |       |        | Target     |            |          |         |             |       |        | Target     |        |
|            |          |         | target/prei | 0.996 |        | ratio*pred | 6.329      |          |         | target/prei | 0.998 |        | ratio*pred | 8.575  |

# estimates of standard deviation

| raw      | lab stand model RMSE | random effects model |          |           |           |           |          |          |           |              |
|----------|----------------------|----------------------|----------|-----------|-----------|-----------|----------|----------|-----------|--------------|
|          |                      | VISI                 | Random E | Var Ratio | Var Compr | Std Error | 95% Lowe | 95% Uppe | Wald p-Va | Pct of Total |
|          |                      | 5.371563             | LTMSLAB  | 1.170575  | 28.85369  | 19.61982  | -9.60045 | 67.30783 | 0.1414    | 53.929       |
|          |                      |                      | LTMSAPP[ | -0.94901  | -23.3924  | 21.90435  | -66.3241 | 19.53935 | 0.2856    | 0            |
|          |                      | 4.964792             | Residual |           | 24.64916  | 21.87128  | 7.391623 | 499.2818 |           | 46.071       |
| 5.09902  | 5.220153             | 7.314564             | Total    |           | 53.50285  | 36.04392  | 19.91205 | 381.9608 |           | 100          |
|          |                      | PEN                  | Random E | Var Ratio | Var Compr | Std Error | 95% Lowe | 95% Uppe | Wald p-Va | Pct of Total |
|          |                      | 0.214209             | LTMSLAB  | 3.713746  | 0.045886  | 0.053003  | -0.058   | 0.14977  | 0.3866    | 66.611       |
|          |                      |                      | LTMSAPP[ | 0.861524  | 0.010645  | 0.026438  | -0.04117 | 0.062463 | 0.6872    | 15.453       |
|          |                      | 0.111156             | Residual |           | 0.012356  | 0.012208  | 0.003384 | 0.452708 |           | 17.936       |
| 0.249285 | 0.111803             | 0.262461             | Total    |           | 0.068886  | 0.04962   | 0.024383 | 0.603507 |           | 100          |
|          |                      | TOL                  | Random E | Var Ratio | Var Compr | Std Error | 95% Lowe | 95% Uppe | Wald p-Va | Pct of Total |
|          |                      | #NUM!                | LTMSLAB  | -0.58987  | -0.07884  | 0.254094  | -0.57685 | 0.419175 | 0.7564    | 0            |
|          |                      |                      | LTMSAPP[ | 0.973128  | 0.130064  | 0.18052   | -0.22375 | 0.483876 | 0.4712    | 49.319       |
|          |                      | 0.365589             | Residual |           | 0.133655  | 0.185504  | 0.027062 | 106.5438 |           | 50.681       |
| 0.408613 | 0.380789             | 0.513535             | Total    |           | 0.263719  | 0.366024  | 0.053397 | 210.2246 |           | 100          |
|          |                      | ACV                  | Random E | Var Ratio | Var Compr | Std Error | 95% Lowe | 95% Uppe | Wald p-Va | Pct of Total |
|          |                      | #NUM!                | LTMSLAB  | -13.3446  | -0.42244  | 0.469798  | -1.34323 | 0.498349 | 0.3686    | 0            |
|          |                      |                      | LTMSAPP[ | 29.26621  | 0.926452  | 0.828241  | -0.69687 | 2.549774 | 0.2633    | 96.696       |
|          |                      | 0.177921             | Residual |           | 0.031656  | 0.030859  | 0.008771 | 1.068846 |           | 3.304        |
| 0.747257 | 0.180278             | 0.97883              | Total    |           | 0.958108  | 0.829342  | 0.293234 | 17.23347 |           | 100          |
|          |                      | ASL                  | Random E | Var Ratio | Var Compr | Std Error | 95% Lowe | 95% Uppe | Wald p-Va | Pct of Total |
|          |                      | 0.422664             | LTMSLAB  | 71.60284  | 0.178645  | 0.463587  | -0.72997 | 1.087258 | 0.7       | 44.492       |
|          |                      |                      | LTMSAPP[ | 88.33196  | 0.220383  | 0.294908  | -0.35763 | 0.798391 | 0.4549    | 54.887       |
|          |                      | 0.049949             | Residual |           | 0.002495  | 0.00249   | 0.000678 | 0.097299 |           | 0.621        |
| 0.647523 | 0.05                 | 0.633658             | Total    |           | 0.401523  | 0.317093  | 0.132323 | 4.88156  |           | 100          |

# Hardware order update

- Ohio Gear and Transmission is no longer, they were bought out several times and cannot source 11L17 steel.
- Boston Gear is not willing to work with 11L17 steel (even if we procure it ourselves) and is only willing to produce GA-34 and GA-50 in 1117CD steel.

# Sierra Sidetrack 840 or Equivalent

- Some Sierra components are not available anymore
- Requirement comes from 8.10.1
- This would alter calibration requirements as well





D02.B0.03

Old Business

New Business

Adjournment