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### **Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS**

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February 4<sup>th</sup>, 2013

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ASTM D02.B0.03 L-37 Surveillance Panel  
Members and Guests:

Attached for your review and comment are the unconfirmed minutes of the:

- **December 18-19<sup>th</sup>, 2012 S.P. Meeting (Southwest Research Institute – San Antonio, TX)**

Please direct any corrections or comments to my attention.

Sincerely,

Wes Venhoff, Chairman  
L-37 Surveillance Panel

**Report of Meeting  
L-37 Surveillance Panel Meeting  
Southwest Research Institute  
San Antonio, TX**

*December 18-19th, 2012*

**Attendees:**

SwRI -	<b>Koehler</b>
Lubrizol -	<b>Venhoff</b> , Gropp, Prensaman, Umerley
Afton -	<b>Gottwald</b> , Hobson
Intertek -	<b>Smith</b> , Trader
TMC -	<b>Parke</b>
Dana -	<b>Guzikowski</b>

Voting Members in **BOLD**

The meeting was called to order at 3:00pm CST on Dec. 18, 2012

The meeting was called to order at 2:15pm CST on Dec. 19, 2012

**1.0 Summary of Meeting Discussions**

**1.1 Non-lubrited Hardware Discussion (12/18/2012)**

After reviewing all of the hardware and reference oil data, a lengthy discussion was had by all. In some cases, commercial oil results ran on the V1L528 hardware were also considered when looking at correction factors and exclusions. There was quite a bit of discussion over the amount of correction for rippling for Canadian test conditions. Dana's position is that a multi-number correction is unacceptable. Their rule of thumb would be no greater than a +1 correction. Given the average of 6.8 on rippling for Canadian test conditions on TMC 152-x, they would propose a +1 correction, the rounded 7 would go up to an 8 and we'd have to live with a 50% chance pass ratio. In all cases, the motions were made for the Surveillance Panel to approve the use of the V1L528 non-lubrited hardware with the applied corrections/exclusions. In the end, the following motions were made:

**Motion # 1** → B. Koehler/2<sup>nd</sup> T. Gottwald

1. Rate and report every pinion tooth for pitting/spalling. Report 4<sup>th</sup> lowest pitting/spalling value as final rating. This applies to tests run under both Standard and Canadian test conditions.
2. Apply correction of +1 to pinion rippling for Standard conditions.
3. Apply correction of +1 to pinion ridging for Standard conditions.
4. Apply correction of +3 to pinion rippling for Canadian conditions.
5. Corrections apply to non-reference fluids only.
6. Exclusions apply to non-reference fluids only.
7. TMC to combine TMC 152-1 & TMC 152-2 qualification matrix data when determining acceptance bands for references.
8. Pooled st dev will be used where the standard deviation of the non-lubrited data would otherwise be undefined.
9. TMC 155, TMC 152-2 & TMC 134 to be used as reference oils for this axle batch in a split of 40%/40%/20%.
10. Pending lubrited hardware approval, alternating stand reference tests between lubrited & non-lubrited hardware.

**Vote passes: 4-1-1**

**Motion # 2** → B. Koehler/2<sup>nd</sup> W. Venhoff (further clarification of above motion)

1. Regarding ridg/ripp correction for non-ref. oils, we ask the TMC to calculate correction factors with the appropriate magnitude (i.e., ridg 7 goes to 8 for Standard conditions) based on historic transformations.
2. Apply correction factor "A" for pinion rippling using  $-\ln(10.5-x)$  transform equation for Standard conditions.
3. Apply correction factor "B" for pinion ridging using  $-\ln(10.5-x)$  transform equation for Standard conditions.
4. Apply correction factor "C" for pinion rippling using  $-\ln(10.5-x)$  transform equation for Canadian conditions.
5. Reinstate transformation calculations to report form for ridging, rippling and pitting/spalling.

**Vote passes: 3-0-2**

### 1.2 Lubrited Hardware Discussion (12/19/2012)

After reviewing all of the hardware and reference oil data, a lengthy discussion was had by all. In some cases, commercial oil results ran on the V1L528 hardware were also considered when looking at correction factors and exclusions. Typically, lubrited hardware data always seemed to be worse historically, but with a better distribution. That does not seem to be the case with this current hardware batch (V1L528). In all cases, the motions were made for the Surveillance Panel to approve the use of the lubrited V1L528 hardware with the applied corrections/exclusions. In the end, the following motions were made:

**Motion # 1** → J. Gropp/2<sup>nd</sup> B. Koehler

1. Rate and report every pinion tooth for pitting/spalling. Report 2<sup>nd</sup> lowest pitting/spalling value as final rating. This applies to tests run under both Standard and Canadian test conditions.
2. Apply correction of +1 to pinion ridging for Standard conditions.
3. Apply correction of +2 to pinion rippling for Canadian conditions.
4. Apply correction of +2 to pinion ridging for Canadian conditions.
5. Apply correction of +1 to ring ridging for Canadian conditions.
6. Corrections apply to non-reference fluids only.
7. Exclusions apply to non-reference fluids only.
8. Pooled st dev will be used where the standard deviation of the lubrited data would otherwise be undefined.
9. TMC 155, TMC 152-2 & TMC 134 to be used as reference oils for this axle batch in a split of 40%/40%/20%.
10. Alternating stand reference tests between lubrited & non-lubrited hardware.

Clarification of Motion #1

1. Regarding ridg/ripp correction for non-ref. oils, we ask the TMC to calculate correction factors with the appropriate magnitude (i.e., ridg 7 goes to 8 for Standard conditions) based on historic transformations.
2. Apply correction factor "A" for pinion ridging using  $-\ln(10.5-x)$  transform equation for Standard conditions.
3. Apply correction factor "B" for pinion rippling using  $-\ln(10.5-x)$  transform equation for Canadian conditions.

4. Apply correction factor “C” for pinion ridging using  $-\ln(10.5-x)$  transform equation for Canadian conditions.
5. Apply correction factor “D” for ring ridging using  $-\ln(10.5-x)$  transform equation for Canadian conditions.
6. Reinstate transformation calculations to report form for ridging, rippling and pitting/spalling.

**Vote passes: 3-1-2**

**For the record:**

Afton agrees with all but #1 from motion – would like to see more supporting data, abstain.

**Motion # 2** → B. Koehler/2<sup>nd</sup> T. Gottwald

1. At the labs discretion, stand calibration may be effective as of the last matrix test on TMC 155, TMC 152-1/TMC 152-2 or TMC 134 under standard test conditions for either lubrited on non-lubrited, whichever is most recent

**Vote passes: 6-0-0**

**Motion # 3** → D. Smith/2<sup>nd</sup> B. Koehler

1. TMC 152-1 & TMC 152-2 matrix data will be combined for determining acceptance bands for stand references. CMIR 89025 & CMIR 90763 should be discarded during these calculations (these two tests considered to be outliers).

**Vote passes: 5-0-1**

**2.0 Adjournment**

Motion to adjourn by T. Gottwald / 2<sup>nd</sup> D. Smith. Motion was approved unanimously.

Respectfully submitted,

Wes Venhoff

L-37 Surveillance Panel Chairman