

**Report of Meeting**  
**L-37-1 Surveillance Panel Conference Call**  
**November 13<sup>th</sup>, 2019**

**Attendees:**

SwRI -	<b>Warden, Louis</b>
Lubrizol -	Venhoff, <b>Slocum</b> , Drjla
Afton -	<b>Sangpeal</b> , Horvath, Bell, Kearney
Intertek -	<b>Smith</b> , Lange
TMC -	<b>Beck</b> , Clark
ExxonMobil -	<b>Banas</b> , Kanga
BASF -	<b>Goyal</b> , Mosher
Dana -	<b>Zyski</b>
Meritor -	<b>Rabinowitz</b> , LaBond
Army -	<b>Comfort</b> , Sattler
AAM -	<b>Muransky</b>
Linamar -	<b>Cabaj</b>

Voting Members in **BOLD**

The meeting was called to order at 15:05 pm EST.

**1.0 Meeting minutes Approval**

- August 7th, 2019 (Meeting #194)
- August 21st, 2019 (Conf Call)

**Motion #1 → W. Venhoff 1<sup>st</sup> /2<sup>nd</sup> M. Sangpeal to approve the meeting minutes from the August 7th, 2019 (Meeting #194) and the August 21st, 2019 (Conf Call). Motion passed unanimously, 12-0-0 (Yes-No-Abstain).**

**2.0 TMC Discussion on Info Letter 18-01**

Info Letter 18-01 changed section (12.5) of the test procedure to state that only “**non-reference oil tests**” exhibiting broken teeth should be reported as non-interpretable.

My question is how are reference oil tests exhibiting broken teeth supposed to be handled?

- I will work with TMC on the rewording and to include verbiage around the 134-reference oil.
- Will submit email ballot with purposed change

**3.0 Undefined Stress (Modified Conditioning Phase)**

- Labs have provided data on running modified conditioning and have not seen evidence of the undefined distress
  - Canadian Conditions
  - Oil - 152-2
  - 60 minutes regular load of 535 Nm
  - 40 minutes double load at 1070 Nm

Ring				
Wear	Rippling	Ridging	Pit/Spal	Scoring
7	9	8	9.9	10
9	10	7	9.9	10
8	9	9	9.9	10

Pinion				
Wear	Rippling	Ridging	Pit/Spal	Scoring
7	9	8	9.9	10
8	9	9	9.9	10
8	9	9	9.7	10

#### **Other Action Items**

- Lab B to run modified conditions when able
- Find out quantity of on hand unprocessed gear sets at Gleason
- Will set up teleconference 1<sup>st</sup> week of December to discuss current data on experimental Gleason gears and desired process on next batch

#### **4.0 Adjournment**

Meeting Adjourned at 16:00 pm EST

**Motion #2 → W. Venhoff 1<sup>st</sup> /2<sup>nd</sup> D. Smith to adjourn. Motion passed unanimously, 12-0-0 (Yes-No-Abstain).**

Respectfully submitted,

Robert Slocum  
L-37-1 Surveillance Panel Chairman



D02.B0.03

# L-37-1 Surveillance Panel Meeting

11/13/2019

3:00 pm – 5:00 pm

Ann Arbor, MI

Robert Slocum

# Agenda

- Call to Order/Agenda review
- Membership review
- Meeting Minute Approvals
  - August 7<sup>th</sup> , 2019 ( Meeting #194)
  - August 21st, 2019 (Conf Call)
- TMC Discussion Info Letter 18-01
- Undefined Distress
  - Modified Conditions
- 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
Daniel Rabinowitz	Meritor
Dale Smith	Intertek
Robert Slocum	Lubrizol
Rebecca Warden	SwRI
Kaled Zreik	GM
Mike Cabaj	Linamar

**Total Voting Members = 13**

# Meeting Minutes Approval

- August 7<sup>th</sup> , 2019 ( Meeting #194)
- August 21st, 2019 (Conf Call)

## TMC Discussion Info Letter 18-01

- Info Letter 18-01 changed section 12.5 of the test procedure to state that only “**non-reference oil tests**” exhibiting broken teeth should be reported as non-interpretable. I couldn’t find any history of why this change was made, it seems like it was a result of a discussion during the August 9<sup>th</sup> 2017 meeting.
- My question is how are reference oil tests exhibiting broken teeth supposed to be handled? This change was never made to the L-37 procedure so reference oil tests with broken teeth are still to be reported as non-interpretable for that test. If the wording is to be kept the same for L-371 then the panel should discuss how reference oil test are to be rated and reported.”

## Undefined Stress

- It was decided the next step will be to use the regular grit and deeper case depth from the experimental hardware and run a modified L-37-1 Conditioning Phase.
  - Canadian Conditions
  - Oil - 152-2
  - 60 minutes regular load of 535 Nm
  - 40 minutes double load at 1070 Nm



# Undefined Stress

- SWRI
- Note: We used the Strange housing with the Forged spool...my lab and builders are in love!
- No Undefined Stress

	Ring Gear Results				
	Wear	Rippling	Ridging	Pitting/Spalling	Scoring
Original Merit <sup>C</sup>	7	9	8	9.9	10
Transformed Results	7.0000	-0.4055	-0.9163	0.5108	10.0000
Correction Factor	0.0000	0.0000	0.0000	0.0000	0.0000
Corrected Transformed	7.0000	-0.4055	-0.9163	0.5108	10.0000
Severity Adjustment <sup>A</sup>	0.0000	0.0000	0.0000	0.0000	0.0000
Final Transformed Results	7.0000	-0.4055	-0.9163	0.5108	10.0000
Final Merit Results	7.0	9.0	8.0	9.9	10.0

	Pinion Gear Results				
	Wear	Rippling	Ridging	Pitting/Spalling	Scoring
Original Merit <sup>B,C</sup>	7	9	8	9.9	10
Transformed Results	7.0000	-0.4055	-0.9163	0.5108	10.0000
Correction Factor	0.0000	0.0000	0.0000	0.0000	0.0000
Corrected Transformed	7.0000	-0.4055	-0.9163	0.5108	10.0000
Severity Adjustment <sup>A</sup>	0.0000	0.0000	0.0000	0.0000	0.0000
Final Transformed Results	7.0000	-0.4055	-0.9163	0.5108	10.0000
Final Merit Results	7.0	9.0	8.0	9.9	10.0

# Undefined Stress

- Afton
- Used an open differential and the Strange housing:
- No Undefined Stress

	Ring Gear Results				
	Wear	Rippling	Ridging	Pitting/Spalling	Scoring
Original Merit Results <sup>C</sup>	9	10	7	9.9	10
Transformed Results	9.0000	0.6931	-1.2528	0.5108	10.0000
Correction Factor	0.0000	0.0000	0.0000	0.0000	0.0000
Corrected Transformed Results	9.0000	0.6931	-1.2528	0.5108	10.0000
Severity Adjustment <sup>A</sup>	0.0000	0.0000	0.0000	0.0000	0.0000
Final Transformed Results	9.0000	0.6931	-1.2528	0.5108	10.0000
Final Merit Results	9.0	10.0	7.0	9.9	10.0

	Pinion Gear Results				
	Wear	Rippling	Ridging	Pitting/Spalling	Scoring
Original Merit Results <sup>BC</sup>	8	9	9	9.9	10
Transformed Results	8.0000	-0.4055	-0.4055	0.5108	10.0000
Correction Factor	0.0000	0.0000	0.0000	0.0000	0.0000
Corrected Transformed Results	8.0000	-0.4055	-0.4055	0.5108	10.0000
Severity Adjustment <sup>A</sup>	0.0000	0.0000	0.0000	0.0000	0.0000
Final Transformed Results	8.0000	-0.4055	-0.4055	0.5108	10.0000
Final Merit Results	8.0	9.0	9.0	9.9	10.0



# Undefined Stress

- Intertek
- First test was run with the dana housing as the question on the TMC 152, no apparent unknown distress

Test Method D6121

L37

Form 2 - Gear Tooth Surface Conditions

Lab: EG	Motoring Stand: TB3	Storage Box:	Storage Box Run:
Start Date: 20190820	EOT Date:	EOT Time:	Test Length: 24
Oil Code: EG-0077/CMIR-146124			
TMC Oil Code:	Lab Oil code: JN91111A	Viscosity Grade: N/A	

Test No: L371-009-00-0179

Rater's Initials:							
<b>Gear Condition</b>	<b>Original Ring Rating</b>			<b>Original Pinion Rating</b>			
Burnish	Med-Bright			Dull			
Discoloration	9.00000			8.00000			
Corrosion	10.00000			10.00000			
Deposits	9.00000			9.00000			
	<b>Original Ring Rating</b>			<b>Original Pinion Rating</b>		<b>Pinion Rating With Exclusion</b>	
Wear	8.00000			8.00000		8.00000	
Rippling	9.00000			9.00000		9.00000	
Ridging	9.00000			9.00000		9.00000	
Pitting/Spalling	9.90000			9.70000		9.70000	
Scoring	10.00000			10.00000		10.00000	
<b>Original Individual Tooth Ratings</b>							
	1	2	3	4	5	6	7
Pitting/Spalling	9.90000	9.70000	9.90000	9.90000	9.90000	9.90000	9.90000
Remarks							

10-2018-246

Pinion - HT# L9224

2736808 P/N 1826587

Ring - HT# 227T378

2736811 1826588

Pinion gear - One broken tooth and polishing on coast side of gear.



# Undefined Stress

- Intertek
- The second was declared invalid due to running the wrong conditioning temp and torque on the fail oil with the Strange housing

|Test Method D6121  
L37  
Form 2 - Gear Tooth Surface Conditions

Lab: EG	Motoring Stand: TB3	Storage Box:	Storage Box Run:
Start Date: 20191101	EOT Date: 20191102	EOT Time: 14:29	Test Length: 24
Oil Code: EG-0082/CMIR-146129			
TMC Oil Code:	Lab Oil code: JN91116A	Viscosity Grade:	

Test No: L371-010-07-0187

Rater's Initials:							
<b>Gear Condition</b>	<b>Original Ring Rating</b>			<b>Original Pinion Rating</b>			
Burnish	Bright			Bright			
Discoloration	9.00000			6.00000			
Corrosion	10.00000			10.00000			
Deposits	6.00000			7.00000			
	<b>Original Ring Rating</b>		<b>Original Pinion Rating</b>		<b>Pinion Rating With Exclusion</b>		
Wear	7.00000		7.00000		7.00000		
Rippling	9.00000		7.00000		7.00000		
Ridging	6.00000		7.00000		7.00000		
Pitting/Spalling	9.90000		9.90000		9.90000		
Scoring	10.00000		10.00000		10.00000		
<b>Original Individual Tooth Ratings</b>							
	1	2	3	4	5	6	7
Pitting/Spalling	9.90000	9.90000	9.90000	9.90000	9.90000	9.90000	9.90000
Remarks							

10-2018-245

# Undefined Stress

- Summary 152-2
- Fail Oil 123?



Ring				
Wear	Rippling	Ridging	Pit/Spal	Scoring
7	9	8	9.9	10
9	10	7	9.9	10
8	9	9	9.9	10
7	9	6	9.9	10

	Wear	
	Mean	Std Dev
152-2	7.8	0.9
	Rippling	
	Mean	Std Dev
152-2	8.9	1.6
	Ridging	
	Mean	Std Dev
152-2	9.3	0.7
	Pit/Spall	
	Mean	Std Dev
152-2	9.9	0

Pinion				
Wear	Rippling	Ridging	Pit/Spal	Scoring
7	9	8	9.9	10
8	9	9	9.9	10
8	9	9	9.7	10
7	7	7	9.9	10



# New Business

- ?



D02.B0.03

L-37-1 Surveillance Panel Meeting

Adjourn

ASTM L-37/L-37-1 Surveillance Panel Membership / Sign In List  
 Meeting Date: 11/13/2019 # 195

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
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<i>DB</i>	Beck, Dylan	Voting	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, Pennsylvania 15206	Phone: 412-365-1037 Fax: E-Mail: djb@astmtmc.cmu.edu
	Belay, Mesfin	Non Voting	Detroit Diesel 13400 Outer Drive W. Detroit, MI 48239	Phone: 313-592-5970 Fax: 313-592-5952 E-Mail: mesfin.belay@daimler.com
<i>DB</i>	Bell, Don	Non Voting	Afton Chemical 500 Spring Street Richmond, VA 23219	Phone: 804-788-6332 Fax: 804-788-6243 E-Mail: don.bell@aftonchemical.com
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\* Initial to indicate attendance at subject meeting



## ASTM L-37/L-37-1 Surveillance Panel Membership / Sign In List

Meeting Date:

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**ASTM L-37/L-37-1 Surveillance Panel Membership / Sign In List**  
**Meeting Date:**

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<i>DR</i>	Rabinowitz, Daniel	Voting	Mentor Automotive 2135 West Maple Troy, Michigan 48084	Phone: 248-435-1544 Fax: E-Mail: daniel.rabinowitz@Mentor.com
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\* Initial to indicate attendance at subject meeting

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Meeting Date:

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\* Initial to Indicate attendance at subject meeting

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Meeting Date:

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JL	Jessica LaBord	NW	Murphy, Inc. 2135 W. Maple Rd, Troy, MI 48064	Phone: Fax: E-Mail: jessica.laBord@murphy.com

\* Initial to indicate attendance at subject meeting