

**Report of Meeting  
L-37-1 Surveillance Panel Meeting**

May 8th, 2019

**Attendees:**

SwRI -	<b>Stevens</b>
Lubrizol -	Venhoff, Drlja, <b>Slocum</b> , Kuchta
Afton -	<b>Donovan</b> , Bell, Kearney, Sangpeal
Intertek -	<b>Smith</b> , Lange
TMC -	Farber, <b>Beck</b>
ExxonMobil -	<b>Banas</b> , Kanga
AAM -	<b>Muransky</b>
BASF -	<b>Goyal</b>
Dana -	<b>Zyski</b>
Army-	<b>Comfort</b>
Ipac Inc.-	Makaye Tabibi
Linamar-	Mike Cabaj

Voting Members in **BOLD**

The meeting was called to order at 3:00 PM EST.

**1.0 Membership Review**

**Motion #1** → R. Slocum 1<sup>st</sup>/2<sup>nd</sup> W. Venhoff. Appoint Mike Cabaj from Linamar as a voting member for L-37/L-37-1 surveillance panel. Motion passed unanimously, 10-0-0 (for-against-abstain).

**2.0 Meeting Minutes Approval**

**Motion #2** → M. Stevens 1<sup>st</sup>/2<sup>nd</sup> D. Smith to approve February 13, 2019 and March 23, 2019 meeting minutes as currently written. Motion passed unanimously, 10-0-0 (for-against-abstain).

**3.0 D8165 Procedure Discussion (Lab Approved Builders?)**

**Motion #3** → W. Venhoff 1<sup>st</sup>/2<sup>nd</sup> E. Donovan. Incorporate verbiage into D8165 for lab-built axles using **“approved hardware”** versus the specific like **“V1L528/P4T883A”** in the D6121., 10-0-0 (for-against-abstain).

8.2 Lab-built Axles:

8.2.1 To be approved to build axles acceptable for testing, obtain a separate approval for each of the two hardware types (lubrited and non-lubrited). Approval may be obtained for both hardware types by conducting three tests on each hardware type, or approval can be obtained with either hardware type independently by conducting just three tests on that type. To be approved to build axles acceptable for testing, assemble three axles in accordance with subsection 8.4 using **approved hardware** ~~a new V1L528/P4T883A pinion and ring set~~. Run these axles in tests using a blind mix of the following TMC-assigned oils: one TMC 152-2 and two TMC 134's (or approved re-blends of 134).

8.2.1.1 If all three of these tests are operationally valid and the 152-2 run meets the LTMS acceptance criteria for **approved V1L528** hardware and both 134 run pinion results fail SAE J2360 acceptance criteria, the builder is approved to build axles for testing and the test stand is calibrated for the period described in 9.1.

8.2.1.2 If only the TMC 152-2 does not meet the LTMS acceptance criteria, rerun one TMC 152-2 fluid. If the repeat run meets LTMS acceptance criteria, the builder is approved to build axles for testing and the test stand is calibrated for the period described in 9.1.

8.2.1.3 If only one of the two TMC 134 pinion results does not fail SAE J2360 acceptance criteria, rerun two consecutive TMC 134's. If the pinion results for both repeats fail SAE J2360 acceptance criteria, the builder is approved to build axles for testing and the test stand is calibrated for the period described in 9.1.

8.2.1.4 If two of the three tests do not meet their designated acceptance criteria, or the required repeats described in 8.2.1.2 or 8.2.1.3 do not meet the designated acceptance criteria, repeat 8.2.1.

#### **4.0 Gleason New Hardware**

Gleason 06-2018 NonLubrited Hardware Matrix

- R. Slocum to set up a teleconference in June to discuss data and possible hardware approval
- Lab D's first priority of running TMC134-1,152-2, and 155-1 after new stand bugs are worked out. Labs A, B, and G have finished there runs.
- Labs will also need to conduct testing with the 9 experimental process change gear sets using TMC-152-2.

#### **5.0 Gleason Lubrited Standard Approval Matrix (04-2014)**

The group reviewed and further discussed the current test results as part of the Gleason lubrited approval matrix. Additional approval matrix tests agreed on are as follows:

- Lab D to run one TMC134, one TMC134-1, two TMC152-2 & two TMC155-1 runs
- Lab B ran one additional run for each reference oil TMC134-1, 152-2, and TMC155-1
- Lab G to run different heat treat batch using TMC134-1 with hopes of not being mild
- All Labs to run one Canadian test conditions using TMC152-2

#### **6.0 L-37-1 Proposed Reference Oil Targets**

TMC provided a proposed target presentation. Will need to double check comparison charts and present for approval at a later date.

#### **7.0 Adhesive Wear**

Adhesive wear is still a concern with the labs. There still seems to be a disparity between the raters on calling it or finding adhesive wear. Some believe that it also has an effect on rating the other historical distresses. More training and consensus through rating workshop needs to happen. Labs should make an attempt to provide varying degrees of adhesive wear examples for the upcoming July workshop.

**8.0 Long Term Rebuild Solution**

Intertek ran the Strange Axle on TMC155-1 and TMC134-1 with Gleason 2014 non-lubrited hardware and results looked promising.

The Data is about in line to industry data. TMC 155 has a 7 on ripple. We did use gears deemed unacceptable for customer tests. Chips and rust were found on these,

IND	Comment	TESTHARCOM2	WEAR	RIDG	RIPP	SPIT
134/134-1	Average All	NONLUE Gleason	5.94	4.85	7.50	8.77
134-1	1 Run	NONLUE STRANGE	5	4	9	8
134	Targets	NONLUE Gleason	4.8	3.8	7.8	7.7

IND	VAL	TESTHARCOM2	WEAR	RIDG	RIPP	SPIT
155 All	Average All	NONLUE Gleason	7.58	9.34	8.78	9.82
155-1	MI	NONLUE STRANGE	7	9	7	9.9
155-1	Targets	NONLUE Gleason	7.9	9.6	9.6	9.9

Some Advantages:

- Spanner type carrier adjustment allowing to alleviate shim issues
- Was stated that build time was reduced by about an hour
- Forged steel spool. No differential. Dynos will always track together.

Action:

- Dale will either supply labs with all the part numbers or possibly get a batch quote for a couple per lab to try out as well to generate more data.

We ran out of time in this meeting to go over the current draft of the axle build procedure will need address in the near future to finalize that document.

**8.0 New Business**

Lab B conducted runs on TMC152-2 & TMC134-1 on Dana lubrited hardware using the electric motor rig and results look promising.

LTMSL	IND	PINBA	RINGB	LTMSDA	WEAR	RIDG	RIPP	SPIT	WEAR	RIDG	RIPP	SPIT
B	134-1	V1L528	P4T883A	20190501	7	6	8	9.7	8	7	10	9.9
B	152-2	V1L528	P4T883A	20190502	7	7	8	9.4	7	8	10	9.9

Lab D second priority will provide their data and at that time bring up the approval to run Dana hardware for industry testing on the electric motor rig.

**9.0 Adjournment**

Meeting Adjourned at 4:30 pm EST

**Motion #4** → R. Slocum 1<sup>st</sup> /2<sup>nd</sup> D. Smith to adjourn. Motion passed unanimously, 10-0-0 (Yes-No-Abstain).

Respectfully submitted,

Robert Slocum  
L-37-1 Surveillance Panel Chairman



D02.B0.03

# L-37-1 Surveillance Panel Meeting

05/08/2019

3:00 pm – 4:30 pm

Troy, MI

Robert Slocum

# Agenda

- Call to Order/Agenda Review
- Membership Review
- Meeting Minutes Approval
- D8165 Procedure Discussion (Lab Approve Builders? TMC recommendations?)
- Gleason New Hardware
  - 06-2018 NL Matrix (3 runs)
  - 09-2018 Experimental Assessment
- Gleason Lubrited Standard Approval Matrix (04-2014)
- Adhesive Wear
- L-37-1 Reference Oils Proposed Targets (TMC)
- Long Term Rebuild Solutions (Intertek)
  - 2 data points LTMS
  - Axle Build Procedure Review
- Dana Lubrited in Electric Stand (Tentative dependent on having data)
- New Business
- Adjourn

# Membership Review

Rob Banas	ExxonMobil
Allen Comfort	US Army
Troy Muransky	AAM
Eric Donovan	Afton
Arjun Goyal	BASF
Amy Zyski	Dana
Dylan Beck	TMC
Jule Rucker	Meritor
Dale Smith	Intertek
Wes Venhoff	Lubrizol
Mary Stevens	SwRI
Kaled Zreik	GM

**Total Voting Members = 12**

# Meeting Minutes Approval

- February 13, 2019
- March 23, 2019

## D8165/D6121 Discussion

- D6121 Axle “builder” approval – addressed in IL19-1
- How we incorporate the lab-built axle approval process into D8165?

### 8.2 Lab-built Axles:

8.2.1 To be approved to build axles acceptable for testing, obtain a separate approval for each of the two hardware types (lubricated and non-lubricated). Approval may be obtained for both hardware types by conducting three tests on each hardware type, or approval can be obtained with either hardware type independently by conducting just three tests on that type. To be approved to build axles acceptable for testing, assemble three axles in accordance with subsection [8.4](#) using a new V1L528/P4T883A pinion and ring set. Run these axles in tests using a blind mix of the following TMC-assigned oils: one TMC 152-2 and two TMC 134's (or approved re-blends of 134).

8.2.1.1 If all three of these tests are operationally valid and the 152-2 run meets the LTMS acceptance criteria for V1L528 hardware and both 134 run pinion results fail SAE J2360 acceptance criteria, the builder is approved to build axles for testing and the test stand is calibrated for the period described in [9.1](#).

8.2.1.2 If only the TMC 152-2 does not meet the LTMS acceptance criteria, rerun one TMC 152-2 fluid. If the repeat run meets LTMS acceptance criteria, the builder is approved to build axles for testing and the test stand is calibrated for the period described in [9.1](#).

8.2.1.3 If only one of the two TMC 134 pinion results does not fail SAE J2360 acceptance criteria, rerun two consecutive TMC 134's. If the pinion results for both repeats fail SAE J2360 acceptance criteria, the builder is approved to build axles for testing and the test stand is calibrated for the period described in [9.1](#).

8.2.1.4 If two of the three tests do not meet their designated acceptance criteria, or the required repeats described in [8.2.1.2](#) or [8.2.1.3](#) do not meet the designated acceptance criteria, repeat [8.2.1](#).



# Gleason New Hardware

– 06-2018 NL Matrix (3 runs)

LTMSLA	IND	PINBAT	RINGBA	WEAR	RIDG	RIPP	SPIT	WEARR	RIDGR	RIPPR	SPITR
G	134-1	2122701	2722705	5	4	8	9.7	5	4	9	9.8
B	134-1	2722703	2722704	6	4	4	9.8	6	4	10	9.9
G	152-2	2722701	2722705	8	9	9	9.9	9	10	10	9.9
<b>B</b>	<b>152-2</b>	<b>2722679</b>	<b>2722707</b>	<b>8</b>	<b>10</b>	<b>9</b>	<b>9.9</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>9.9</b>
G	155-1	2722703	2722704	8	10	9	9.9	9	10	9	9.9
B	155-1	2722701	2722705	9	10	10	9.9	9	10	10	9.9
A	155-1	2722700	2722706	7	9	9	9.9	8	10	9	9.9

\*Adhesive wear

- 09-2018 NL Experimental Assessment
  - LZ has run 3 of 9 (Not yet rated)



# Gleason Lubrited Standard Matrix

LTMSLA	INI	TESTHARD	PINBA	RINGBA	WEAR	RIDC	RIP	SPI	WEARF	RIDC	RIPP	SPIT
A	134	LUBRITED	2135610	2135607	6	4	9	9.6	6	5	9	9.6
B	134	LUBRITED	2115428	2115429	6	4	7	9.9	8	7	10	9.9
G	134	LUBRITED	2144989	2144988	7	4	6	9.9	7	7	9	9.9
A	134	LUBRITED	2135609	2135606	7	9	7	9.9	8	10	10	9.9
B	134	LUBRITED	2115428	2115429	7	5	7	9.9	9	10	10	9.9
G	134-1	LUBRITED	2144989	2144988	8	10	9	9.9	8	10	9	9.9
G	134-1	LUBRITED	2144989	2144988	8	9	9	9.9	8	9	10	9.9
G	134-1	LUBRITED	2144989	2144988	8	9	9	9.9	9	9	9	9.9
B	134-1	LUBRITED	2144993	2144992	7	5	5	9.9	8	6	10	9.9
A	152-2	LUBRITED	2315610	2135607	8	10	9	9.9	8	10	10	9.9
B	152-2	LUBRITED	2115428	2115429	9	10	10	8	9	10	10	9.9
B	152-2	LUBRITED	2115438	2115429	9	10	10	9.9	9	10	10	9.9
G	152-2	LUBRITED	2144989	2144988	8	10	9	9.9	9	10	9	9.9
A	152-2	LUBRITED	2135609	2135606	8	10	9	9.9	8	10	9	9.9
G	152-2	LUBRITED	2144989	214988	8	9	9	9.9	8	9	9	9.9
B	152-2	LUBRITED	2144993	2144992	9	10	10	9.9	9	10	10	9.9
A	155-1	LUBRITED	2135609	2135606	8	10	9	9.9	8	10	9	9.9
A	155-1	LUBRITED	213609	2135606	8	10	9	9.9	8	10	9	9.9
B	155-1	LUBRITED	2115428	2115429	9	9	9	9.9	9	10	10	9.9
B	155-1	LUBRITED	2116441	2116444	8	10	7	9.9	9	10	10	9.9
G	155-1	LUBRITED	2144989	2144989	8	7	9	9.9	8	8	9	9.9
G	155-1	LUBRITED	2144989	2116446	8	9	9	7	8	9	9	9.9
G	155-1	LUBRITED	2144989	2144988	7	10	9	9.9	8	10	10	9.9
B	155-1	LUBRITED	2144993	2144992	9	10	8	9.9	9	10	10	9.9



D02.B0.03

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# Adhesive Wear

# L-37-1 Reference Oils Proposed Targets (TMC)

# Long term Rebuild Solutions

- Intertek to possibly investigate running reference fluids using aftermarket housing/spool
  - Any Update?

LTMSLA	IND	PINBAT	RINGBA	WEAR	RIDG	RIPP	SPIT	WEARR	RIDGR	RIPPR	SPITR
G	134-1	2124463	2124397	5	4	9	8	7	5	10	9.9
G	155-1	2194463	2124397	7	9	7	9.9	8	9	9	9.9

- Build procedure review

# New Business

- Dana lubrified hardware approval on electric rig?
  - LZ ran at the reduced load of 1213 ft-lbs
  - Results fell within reference oil acceptance bands

LTMSLA	IND	PINBA	RINGBA	LTMSDA	WEAR	RIDG	RIPP	SPIT	WEAR	RIDG	RIPP	SPIT
B	134-1	V1L528	P4T883A	20190501	7	6	8	9.7	8	7	10	9.9
B	152-2	V1L528	P4T883A	20190502	7	7	8	9.4	7	8	10	9.9



D02.B0.03

L-37-1 Surveillance Panel Meeting

Adjourn

## INTERTEK OVERVIEW

**CAN WE USE THIS AXLE COMBINATION!!!**

**Strange Axle Run on TMC 134-1 and 155-1**

Housing and Spool Unit were received per same specs as Dana axle.





# 01

## AXLE HOUSING

Similar in all aspects of our needs

Did all that was expected...





# 02

## OIL PASSAGES SAME

The oil passages and returns are in similar positions and machining is well done. Note the spanner nuts on the housing for adjusting lash and preload. Air Vent may be inside cooling box. A possible move or hose connection.

Spanner adjust for carrier makes setup much easier. Adjust the carrier for lash and preload with no shimming. Mechanics love it!





# 03

## FRONT HOUSING PIC

Note a difference in the mounting of a snubber we don't use. Vent?

Can be moved to axle or a hose to the outside of the box is appropriate





# 04

## SPOOL INSTEAD OF CARRIER

This Spool is of forged steel and has no moving internal parts. Note the highly machined surfaces for the bearings and gear. A difference the spool has limited oil contact without the carrier. Ring gear should still be the major oil flow control.

Still shows bearing installation wear on the bearing mounting surfaces.





# 05

## SPOOL INSTEAD OF CARRIER

.Note the spline as a solid part of the spool.  
No worries about axle speed differential both  
dynos are locked together through the spool.

Much easier to clean and prep for test.





# 06

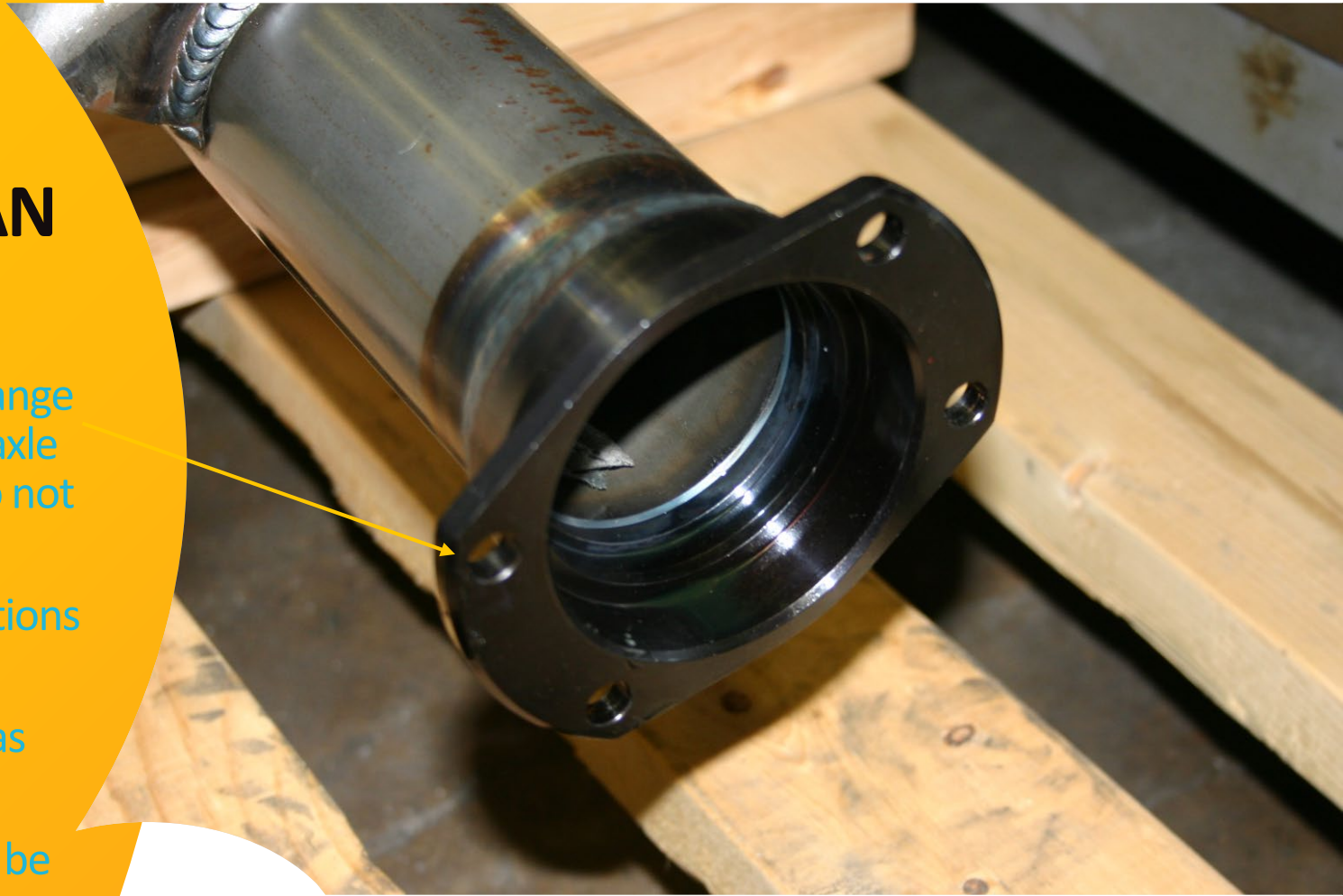
## AXLE FLANGE ENDS WILL BE DIFFERENT AXLE MOUNTS CAN BE IN THE SAME LOCATIONS

Our bearings flanges and shafts do fit with this flange but new spacers will need to be installed on the axle shafts. These are Big Ford 4 bolt flanges. They do not have a six bolt flange available.

Axle mounts can be ordered to be the same locations as our current axle.

Sealed bearings with outer O-ring must be used as there is no inner axle seal to fit this model flange.

This is a shallow flange so the spacer will need to be added to properly hold the axle in place



# 07

IND	Comment	TESTHAR	COM2	WEAR	RIDG	RIPP	SPIT
134/134-1	Average All	NONLUE	Gleason	5.94	4.85	7.50	8.77
134-1	1 Run	NONLUE	STRANGE	5	4	9	8
134	Targets	NONLUE	Gleason	4.8	3.8	7.8	7.7

## THE DATA IS THE MOST IMPORTANT NEWS

The Data is about in line to industry data. TMC 155 has a 7 on ripple. We did use gears deemed unacceptable for customer tests. Chips and rust were found on these.

IND	VAL	TESTHAR	COM2	WEAR	RIDG	RIPP	SPIT
155 All	Average All	NONLUE	Gleason	7.58	9.34	8.78	9.82
155-1	MI	NONLUE	STRANGE	7	9	7	9.9
155-1	Targets	NONLUE	Gleason	7.9	9.6	9.6	9.9

# 07

## OPINION

The Data is about in line to industry data for one run each.

Our Mechanics are looking forward to running with the new build system with fewer shims and easier adjustment.

The spool brings less parts to clean and easier control.

Only minor axle spacer modification to use the big ford flange.

Vent modification easily done.

All labs should get familiar with the Strange parts and run comparison data to assure there are no show stoppers.





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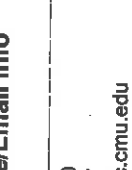



**Total Quality. Assured.**

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

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
<i>RB</i>	Banas, Rob	Voting	ExxonMobil Fuels, Lubricants & Specialties 114 Arcadia Park Dr. Canton, GA 30114	Phone: 678-493-3930 Fax: E-Mail: rob.a.banas@exxonmobil.com
<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
	Bolaney, Jonathan	Non Voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347- 7742 Fax: E-Mail: joby@lubrizol.com
	Clark, Jeff	Non Voting	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, Pennsylvania 15206	Phone: 412-365-1032 Fax: 412-365-1047 E-Mail: jac@astmtmc.cmu.edu
<i>AC</i>	Comfort, Allen	Voting	US Army Ground Vehicle Systems Center 6501 East 11 Mile road Warren, MI 48397-5000	Phone: 586-282-4225 Fax: 586-282-4244 E-Mail: allen.s.comfort.civ@mail.mil
	Dennis, Mike	Non-Voting	The Gleason Works 1000 University Ave Rochester, NY 14692	Phone: 585-241-4081 Fax: E-Mail: mdennis@gleason.com
<i>ED</i>	Donovan, Eric	Voting	Afton Chemical 500 Spring Street Richmond, VA 23219	Phone: 804-788-5097 Fax: E-Mail: Eric.Donovan@aftonchemical.com
<i>KD</i>	Drjja, Kristijan	Non-Voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347- 2326 Fax: E-Mail: kristijan.drjja@lubrizol.com

\* Initial to indicate attendance at subject meeting

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

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
	Farber, Frank	Non Voting	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, Pennsylvania 15206	Phone: 412-365-1030 Fax: 412-365-1047 E-Mail: <a href="mailto:fmf@astmtrmc.cmu.edu">fmf@astmtrmc.cmu.edu</a>
	Foeking, Brian	Non Voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-2130 Fax: 440-347-9011 E-Mail: <a href="mailto:brian.foeking@lubrizol.com">brian.foeking@lubrizol.com</a>
	Gao, Hong	Non-Voting	Conoco Phillips 100 s Pine St. Ponca City, OK 74602	Phone: 580-767-2126 Fax: 580-767-4634 E-Mail: <a href="mailto:hong.gao@conocophillips.com">hong.gao@conocophillips.com</a>
	Goyal, Arjun	Voting	BASF 500 White Plaines Rd Tarrytown NY	Phone: 914-785-2083 Fax: E-Mail: <a href="mailto:Arjun.Goyal@BASF.com">Arjun.Goyal@BASF.com</a>
	Jackson, Matt	Non Voting	Southwest Research Institute PO Drawer 28510 San Antonio, Texas 78228-0510	Phone: 210-522-6981 Fax: 210-522-6858 E-Mail: <a href="mailto:matt.jackson@swri.org">matt.jackson@swri.org</a>
	Joy, Tisha	Non Voting	BASF 500 White Plaines Rd Tarrytown NY	Phone: 914-785-2206 Fax: E-Mail: <a href="mailto:tisha.joy@BASF.com">tisha.joy@BASF.com</a>
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	Kearney, Bill	Non Voting	Afton Chemical Southfield, MI	Phone: Fax: E-Mail:
	Lange, Anthony	Non Voting	Intertek Automotive Research 5404 Bandera Rd San Antonio, TX 78238	Phone: <b>210-634-1103</b> Fax: E-Mail: <a href="mailto:anthony.lange@intertek.com">anthony.lange@intertek.com</a>
	Milner, Jeff	Non Voting	Tianhe Chemical	Phone: 804-252-6928 Fax: E-Mail: <a href="mailto:jmilner@tianhe-us.com">jmilner@tianhe-us.com</a>

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

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
	Mosher, Donna	Non Voting	BASF 100 Park Ave. Florham Park, NJ	Phone: 269-217-1715 Fax: E-Mail: donna.mosher@basf.com
	Muransky, Troy	<b>Voting</b>	AAM	Phone: 734-564-8406 Fax: E-Mail: troy.muransky@aam.com
	Pappademos, Lou	Non Voting	Dana Corporation Fort Wayne, IN	Phone: Fax: E-Mail: lou.pappademos@dana.com
	Reardon, Art	Non Voting	The Gleason Works 1000 University Ave Rochester, NY 14692	Phone: 585-256-6675 Fax: E-Mail: areardon@gleason.com
	Retzman, Kevin	Non Voting	Intertek Automotive Research 5404 Bandera Rd San Antonio, Texas	Phone: Fax: E-Mail: Kevin.Retzman@intertek.com
	Rucker, Julie	<b>Voting</b>	Meritor Automotive 2135 West Maple Troy, Michigan 48084	Phone: 248-435-1430 Fax: E-Mail: jule.rucker@Meritor.com
	Sanchez, Art	Non Voting	Southwest Research Institute PO Drawer 28510 San Antonio, Texas 78228-0510	Phone: 210-522-3445 Fax: 210-680-1777 E-Mail: asanchez@swri.org
	Sattler, Eric	Non Voting	US Army Ground Vehicle Systems Center 6501 East 11 Mile road Warren, MI 48397-5000	Phone: 586-282-2272 Fax: E-Mail: eric.r.sattler.civ@mail.mil
	Stocum, Robert	<b>Voting/ Chair</b>	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-5102 Fax: E-Mail: robert.stocum@lubrizol.com
	Smith, Dale	<b>Voting</b>	Intertek Automotive Research 5404 Bandera Rd San Antonio, Texas	Phone: 412-855-6854 Fax: 210-684-6074 E-Mail: Dale.Smith@intertek.com

\* Initial to indicate attendance at subject meeting

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Meeting Date:

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
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