



Address 100 Barr Harbor Drive
PO Box C700
W. Conshohocken, PA
19428-2959 | USA

Phone 610.832.9500
Fax 610.832.9666
Web www.astm.org

Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

Chairman: KENNETH O. HENDERSON, Cannon Instrument Co., 2139 High Tech Road, State College, PA 16803, (814) 353-8000, Fax: (814) 353-8007, e-mail: kenohenderson@worldnet.att.net
First Vice-Chairman: BEN R. BONAZZA, 3457 WOODVALLEY DRIVE, LAPEER, MI 48446 (810) 664-6769
e-mail: bbonazza@charter.net
Second Vice-Chairman: JANET L. LANE, ExxonMobil Research & Engrg., 600 Billingsport Rd, Paulsboro, NJ 08066-0480
(856) 224-3302, Fax: (856) 224-3616, e-mail: janet.l.lane@exxonmobil.com
First Secretary: RALPH A. CHERRILLO, Shell Global Solutions (US) Inc., Westhollow Tech Ctr., 3333 Highway 6 South, Houston, TX 77082 (281) 544-8789, Fax: (281) 544-8150, e-mail: ralph.cherrillo@shell.com
Second Secretary: MICHAEL A. COLLIER, Petroleum Analyzer Co. LP, PO Box 206, Wilmington, IL 60481, (815) 458-0216, Fax: (815) 458-0217, e-mail: Michael.collier@pacpl.com
Staff Manager: DAVID R. BRADLEY, (610) 832-9681, Fax: (610) 832-9668, e-mail: dbradley@astm.org

April, 28th, 2016

Reply to:
Matt Umerley
The Lubrizol Corporation
29400 Lakeland Blvd.
Wickliffe, OH 44092
(440) 347-4589
(440) 347-2377 (FAX)
mtue@lubrizol.com

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

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

- **February 10th, 2016 S.P. Meeting, PRI – Warrendale, PA**

Please direct any corrections or comments to my attention.

Sincerely,

Matt Umerley, Chairman
L-37 Surveillance Panel

Report of Meeting
L-37 Surveillance Panel Meeting
Surveillance Panel Meeting, PRI, Cranberry, PA
February 10th, 2016 Meeting

Attendees:

Voting Members in **BOLD**

Banas, Rob – ExxonMobil

Bell, Don - Afton

Bubonic, Brad - Lubrizol

Donovan, Eric – Afton

Dehart, John – AAM

Foeking, Brian – Lubrizol

Kanga, Percy – ExxonMobil

Kearney, Bill – Afton

*Keisler, Marc - Afton

Parke, Scott– ASTM TMC

Rettmann, Kevin - Intertek

Smith, Dale - Intertek

*Trader, Angela – Intertek

Umerley, Matt – Lubrizol

Venhoff, Wes – Lubrizol

Warden, Rebecca – SwRI

The meeting was called to order at 1330 EST.

1.0 Agenda Review

The agenda was reviewed

2.0 Membership Review

No membership changes

3.0 Reference Oil Targets

Discussion about reference oil targets

4.0 Lab Build Approval Process

Motion to change procedure wording (lab build approval process) so TMC 134 must fail by J2360 Pass/Fail criteria (fail on at least one parameter). Current Procedure wording requires TMC 134 results to hit LTMS targets.

Effective 20160210

R. Warden Motion

E. Donovan 2nd

7-0-1

For-Against-Waive

5.0 Build Process

See Eric Donovan's presentation attached

6.0 New Business

No new business

7.0 Adjournment

Motion by A. Trader, second by E. Donovan. All in favor.

Respectfully submitted,
Matt Umerley

L37 & L37-1 Build Procedure Highlights

- Install tail bearing race, tail bearing, washer, and pinion seal
- Use setup pinion head bearing and pinion depth tool (Miller Special Tools 6775) to determine the pinion depth
 - **Note for Gleason builds:** Remove 0.005" from the measure pinion depth. For example if measured pinion depth is 0.040", subtract 0.005" and install 0.035" total head bearing shim.
- Install dummy carrier bearings (Miller Special Tools 6770-D343) on assembled carrier and insert into the housing. Using a dial indicator, slide the carrier side-to-side to measure the total carrier shim amount. Measure at 4 spots around the carrier. Record the average total shim amount (typically in the 0.080-0.100" range). Remove the carrier assembly after measurement.
- Install the head bearing on the pinion.
 - **Note:** Use 5 tons of pressure when pressing the bearing onto the pinion.
- Install the pinion with tail shims*
 - *Tail shims are recorded and saved from the initial Dana build and reused in subsequent builds for that particular housing.
 - **Note:** Afton uses a RAM-PAC/Smart Collet hydraulic tool to pull the pinion into place prior to installing the flange and nut.
- Install flange and nut. Torque nut to 250 ft-lb.
- Check turning torque and ensure it is between 25-50 in-lb. Adjust tail shims accordingly if necessary.
- Install the carrier assembly with dummy carrier bearings into the housing. Using a dial indicator as before, zero the dial indicator with the ring pulled fully out of mesh. Then push the ring into mesh and record the measurement. This will be called the "in" measurement. The "out" measurement is the total shim measurement minus the "in" measurement.
 - **Note:** The "in" measurement corresponds to the ring side of the carrier. The "out" measurement corresponds to the non-ring side of the carrier.
- For final shim setup
 - Take 0.005" from the "in" measurement and add it to the "out" measurement for backlash.
 - Then add an additional 0.005" to the "out" measurement for carrier preload.
 - Example:

Total:	0.090"	<u>Final shims</u>	
In:	0.060"	In (ring side):	0.055"
Out:	0.030"	Out (non-ring side):	0.040"
- Install the carrier shims and bearings onto the carrier
 - **Note:** Use 5 tons of pressure when pressing the bearings onto the carrier.
- Install the carrier assembly into the housing. Once seated in the housing, install the carrier bearing caps and torque to 85 ft-lb (spec torque is 80-90 ft-lb).
- Check backlash and turning torque. Adjust shims accordingly if necessary.
- Check contact pattern
 - For Dana hardware, ensure the turning torque is 30 ft-lb.
 - **Note for Gleason builds:** Set the turning torque to 15 ft-lb.
 - **Note:** Axle shaft with brake or "Frankenstein" cover with bolts can be used to apply the load for checking the contact patter. Afton utilized the axle shaft with brake.

Tools List

- Pinion Depth Tool
 - Miller Special Tools 6775
 - <http://www.toolsource.com/master-pinion-depth-setting-p-113927.html>
- Dummy Carrier Bearing Tool
 - Miller Special Tools 6770
 - http://www.autotoolworld.com/Miller-Special-Tools-6770-Dummy-Bearing-Kit_p_156305.html
 - Miller Special Tool D-343 (Dana 60 dummy bearings only, included in 6770 kit)
 - <http://www.toolsource.com/bearing-p-132898.html>

ASTM L-37 Surveillance Panel Membership/Mailing List

Meeting Date: 02/10/2016

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
	Athey, Allison	Voting	Volvo GGT 13302 Pennsylvania Avenue Hagerstown, Maryland 21740	Phone: 301-573-5684 Fax: E-Mail: allison.athey@volvo.com
ROB	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
DB	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
	Barrera, Tony	Non Voting	Intertek Automotive Research 5404 Bandera Rd San Antonio, Texas	Phone: Fax: E-Mail: Tony.Barrera@intertek.com
	Boschert, Tom	Non Voting	Afton Chemical 500 Spring Street Richmond, VA 23219	Phone: 804-788-5202 Fax: E-Mail: tom.boschert@aftonchemical.com
BS	Bubonic, Brad	Non Voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-5325 Fax: E-Mail: brad.bubonic@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
	Chambers, Harold	Non-Voting	Linamar Driveline Systems 26555 Evergreen Rd Southfield 48076	Phone: 248-358-6038 Fax: E-Mail: hchambers@linamar.com
	Comfort, Allen	Voting	US Army RDECOM/TARDEC 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
ED	Donovan, Eric	Voting	Afton Chemical 500 Spring Street Richmond, VA 23219	Phone: 804-788- Fax: E-Mail: Eric.Donovan@aftonchemical.com
JAS	Dharte, John	Voting	American Axle & Manufacturing 1 Dauch Drive Detroit, MI 48211	Phone: 313-758-4687 Fax: 313-758-4237 E-Mail: Dhartej@aam.com

* Initial to indicate attendance at subject meeting

ASTM L-37 Surveillance Panel Membership/Mailing List

Meeting Date:

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
	Dwornick, Bridget	Non-Voting	US Army RDECOM/TARDEC 6501 East 11 Mile road Warren, MI 48397-5000	Phone: 586-282-4221 Fax: 586-282-4244 E-Mail: bridget.dwornick@us.army.mil
	Dykne, Olga	Non-Voting	BASF 500 White Plains Rd Tarrytown NY	Phone: Fax: E-Mail: olga.dykne@BASF.com
	Farber, Frank	Non Voting	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, Pennsylvania 15206	Phone: 412-365-1030 Fax: 412-365-1047 E-Mail: fmf@astmtmc.cmu.edu
<i>BTF</i>	Foeking, Brian	Non Voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-2130 Fax: 440-347-9011 E-Mail: brian.foeking@lubrizol.com
	Gao, Hong	Non-Voting	Conoco Phillips 100 s Pine St. Ponca City, OK 74602	Phone: 580-767-2126 Fax: 580-767-4534 E-Mail: hong.gao@conocophillips.com
	Gottwald, Thomas	Non-Voting	Afton Chemical 500 Spring Street Richmond, VA 23219	Phone: 804-788-5230 Fax: E-Mail: thomas.gottwald@aftonchemical.com
	Goyal, Arjun	Voting	BASF 500 White Plains Rd Tarrytown NY	Phone: 914-785-2083 Fax: E-Mail: Arjun.Goyal@BASF.com
	Gropp, Jerry	Non Voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-1223 Fax: E-Mail: JLG@lubrizol.com
	Guzikowski, Joe	Voting	Dana Corporation 3939 Technology Drive Maumee, OH 43537	Phone: 419-887-3425 Fax: E-Mail: joe.guzikowski@dana.com
	Hamilton, Larry	Non Voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-2326 Fax: 440-347-2878 E-Mail: ldha@lubrizol.com
	Hobson, Kevin	Non Voting	Afton Chemical 500 Spring Street Richmond, VA 23218	Phone: 804-788-5307 Fax: E-Mail: kevin.hobson@aftonchemical.com

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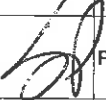

Meeting Date:

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
	Keisler, Marc	Non Voting	Afton Chemical 500 Spring Street Richmond, VA 23218	Phone: 804-788-5617 Fax: 804-788-6358 E-Mail:
	Koglin, Cory	Non Voting	Afton Chemical 500 Spring Street Richmond, VA 23218	Phone: Fax: E-Mail: Cory.Koglin@aftonchemical.com
	Huron, John	Non Voting	Chevron Oronite Company LLC Suite 210 San Antonio, Texas 78228-1374	Phone: 210-731-5609 Fax: 210 731 5699 E-Mail: huro@chevrontexaco.com
	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: matt.jackson@swri.org
P.R. K	Kanga, Percy	Non Voting	ExxonMobil Research & Engineering 600 Billingsport Road Paulsboro, New Jersey 08066	Phone: 856-224-2094 Fax: 856-224-3613 E-Mail: percy.r.kanga@exxonmobil.com
WAK	Kearney, Bill	Non Voting	Afton Chemical Southfield, MI	Phone: Fax: E-Mail:
	Koehler, Brian	Non Voting	Southwest Research Institute PO Drawer 28510 San Antonio, Texas 78228-0510	Phone: 210-522-3588 Fax: 210-684-7523 E-Mail: bkoehler@swri.org
	Lind, Don	Non Voting	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, Pennsylvania 15206	Phone: 412-365-1034 Fax: 412-365-1047 E-Mail: dml@astmtmc.cmu.edu
	Lochte, Michael	Non Voting	Southwest Research Institute PO Drawer 28510 San Antonio, Texas 78228-0510	Phone: 210-522-5430 Fax: 210-684-7523 E-Mail: Mlochte@swri.org
	Marougy, Thelma	Voting	Eaton Corporation 26201 Northwestern Highway Southfield, MI 48076	Phone: 248-226-6985 Fax: 248-226-2739 E-Mail: thelmaemarougy@eaton.com
	McGlone, Bruce	Voting	Meritor Automotive 2135 West Maple Troy, Michigan 48084	Phone: 248-435-9929 Fax: 248-435-9902 E-Mail: Bruce.McGlone@Meritor.com

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Meeting Date:

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
	Muransky, Troy	Non Voting	Meritor Automotive 2135 West Maple Troy, Michigan 48084	Phone: 248-435-1401 Fax: 248-435-6602 E-Mail: troy.muransky@Meritor.com
	Mosher, Donna	Non Voting	Eaton Corporation 26201 Northwestern Highway Southfield, MI 48034	Phone: 269-342-3039 Fax: E-Mail: donnammosher@eaton.com
	O'Brien, Cheryl	Non Voting	General Motors 823 Joslyn Ave. Pontiac, MI 48340-2925	Phone: 248-343-7347 Fax: 248-676-7146 E-Mail: cheryl.obrien@gm.com
	Pappademos, Lou	Non Voting	Dana Corporation Fort Wayne, IN	Phone: Fax: E-Mail: lou.pappademos@dana.com
	Parke, Scott	Voting	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, Pennsylvania 15206	Phone: 412-365-1036 Fax: E-Mail: sdp@astmtmc.cmu.edu
	Prengaman, Chris	Voting/Chair	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-4225 Fax: E-Mail: christopher.prengaman@lubrizol.com
	Radonich, Peter	Non Voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-2184 Fax: 440-347-9011 E-Mail: peter.radonich@lubrizol.com
	Recinos, Will	Non Voting	Afton Chemical 500 Spring Street Richmond, VA 23218	Phone: 804-788-5323 Fax: E-Mail: william.recinos@aftonchemical.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
	Smith, Dale	Voting	Intertek Automotive Research 5404 Bandera Rd San Antonio, Texas	Phone: 412-855-6854 Fax: 210-684-6074 E-Mail: Dale.Smith@intertek.com

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Meeting Date:

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
	Song, HaiQing	Non Voting	Research Institute of Petroleum Processing No. 18, XueYan Road, PO Box 914-19 Beijing 10083 P.R. China	Phone: 011-86-10-8236-8182 Fax: 011-86-10-6231-1290 E-Mail: songhq@ripp-sinopec.com
	Sullivan, Bill	Non Voting	William T. Sullivan, Inc. 5 Scheiber Drive Brick, NJ 08723	Phone: 908-930-3512 Fax: 267-220-7750 E-Mail: wtsullivan@comcast.net
	Suresh, Arunya	Non Voting	BASF	Phone: 914-262-8715 Fax: E-Mail: arunya.suresh@basf.com
Call-in	Trader, Angela	Non Voting	Intertek Automotive Research 5404 Bandera Rd San Antonio, Texas	Phone: 210-706-1533 Fax: E-Mail: angela.trader@intertek.com
	Umerley, Matt	Non Voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-4589 Fax: 440-347-2878 E-Mail: mtue@lubrizol.com
RW	Warden, Rebecca	Voting	Southwest Research Institute PO Drawer 28510 San Antonio, Texas 78228-0510	Phone: 210-522-6266 Fax: E-Mail: rebecca.warden@swri.org
	Xie, JingChun	Non Voting	Lanzhou Lube Oil R&D Institute No. 369 Yumen Street, XiGu District Lanshou 730060, GanSu Province P.R. China	Phone: 011-86-931-793-3713 Fax: 011-86-139-9319-2560 E-Mail: xiejingchun_rhy@petrochina.com.cn
	Zakarian, Jack	Voting	Chevron Products 100 Chevron Way Richmond, CA 94802	Phone: 510-242-3595 Fax: 510-242-3758 E-Mail: jaza@chevron.com
	Zreik, Khaled	Voting	General Motors 823 Joslyn Ave Pontiac, MI 48340-2925	Phone: 248-977-9214 Fax: 248-857-2550 E-Mail: khaled.zreik@gm.com
WV	WES VENKOFF	NV	LUBRIZOL	Phone: 347-4879 Fax: E-Mail: WVE@LUBRIZOL.COM

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