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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

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October 15th, 2013

Reply to:
Chris Prengaman
The Lubrizol Corporation
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crpr@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:

- **August 14th, 2013 S.P. Meeting**

Please direct any corrections or comments to my attention.

Sincerely,

Chris Prengaman, Chairman
L-37 Surveillance Panel

Report of Meeting
L-37 Surveillance Panel Meeting
Warrendale, PA
August 14th, 2013

Attendees:

Voting Members in **BOLD**

Gottwald, Thomas – Afton Chemical

Boschert, Tom – Afton Chemical

Keisler, Marc – Afton Chemical

Kearney, Bill – Afton Chemical

Parke, Scott – ASTM TMC

Dewitt, Mike – Dana

Banas, Rob – ExxonMobil

Kanga, Percy – ExxonMobil

Smith, Dale – Intertek Automotive Research

Trader, Angela – Intertek Automotive Research

Aguirre, Nancy – Intertek Automotive Research

Prengaman, Chris – Lubrizol

Hamilton, Larry – Lubrizol

Umerley, Matt – Lubrizol

Gropp, Jerry – Lubrizol

Koehler, Brian – Southwest Research Institute

Comfort, Allen – US Army RDECOM/TARDEC

The meeting was called to order at 14:00 EST.

1.0 & 2.0 Membership and Agenda Review

No change in voting membership.

3.0 Approval of Meeting Minutes

Motion: Motion to approve prior minutes that have been posted for review on the TMC website.

1. 5/15/13 – Surveillance Panel Meeting

Approved by voice vote unanimously.

4.0 Summary of Parts Build Process

M. Dewitt shared that Dana was continuing to work through the builds and shared that as their housing inventory diminishes, builds may become slower.

B. Koehler requested that Dana increase production of non-lubricated axles. Dana agreed to shift to non-lubricated production to even out lab inventory.

C. Prengaman shared that all remaining housings from Lubrizol and Afton's inventory are being sent to Dana.

M. Dewitt shared that some of the housings on hand are rusty, and they have been setting these aside, and the group will need to address this eventually.

5.0 Lab Built Hardware Discussion

Discussion was had over labs being able to build their own axles using the extra gearsets built from this batch with rebuild parts and used housings. Some or all of the labs to date have been saving housings from completed tests.

C. Prengaman shared that both Lubrizol and Southwest Research has built an axle. Build sheets were shared with the group.

Lubrizol ran this rebuilt axle on TMC 155 and the results fell within targets for the hardware batch. Southwest Research volunteered to run a TMC 134 run on their built axle.

Potential wording was shared with the group. S. Parke volunteered to wordsmith the proposed language in case it eventually becomes voted into procedure.

One topic of concern shared by several members was how labs would determine the appropriate contact pattern rating. Currently no pictures are in the procedure detailing this. Dana has previously shared pattern rating sheets with all labs, but does not wish this sheet to become into the public domain.

6.0 Discussion of LRI board letter to L-37 Surveillance Panel (5/20/13 minutes)

C. Prengaman reviewed the 5/20/13 letter from the LRI panel to the S.P and opened the floor for discussion.

The group discussed this letter to some degree.

Action Item: C. Prengaman to draft a response and distribute to a few panel members for review before sending back to the LRI board members.

7.0 New Business

9.0 Adjournment

Motion to adjourn .

Respectfully Submitted

Chris Prengaman

D6121 (L-37) ASTM Surveillance Panel Meeting

August 14th, 2013
2:00 pm –3:00 pm EST
PRI - Warrendale, PA

Agenda

- 1) Call to order/Agenda review
- 2) Membership Review
- 3) Approval of Meeting Minutes
 1. 5/15/13 – Surveillance Panel Meeting
- 4) Rebuilt Hardware Update – Dana
- 5) Lab Rebuilt Hardware
- 6) Discussion of LRI board letter to L-37 Surveillance Panel
(5/20/13 minutes)
- 7) New business
- 8) Adjournment

Call in number → **216-706-7052 code 324160**

ASTM L-37 Surveillance Panel Membership/Mailing List

Meeting Date: ~~February 2013~~
 August 14th 2013

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
AAA	Athey, Allison	Voting	Volvo GGT 13302 Pennsylvania Avenue Hagerstown, Maryland 21740	Phone: 301-573-5684 Fax: E-Mail: allison.athey@volvo.com
AB	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
DCB	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
TB	Boschert, Tom	Non Voting	Afton Chemical 500 Spring Street Richmond, VA 23219	Phone: 804-788-5202 Fax: E-Mail: tom.boschert@aftonchemical.com
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	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
A.C.	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
	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
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* Initial to indicate attendance at subject meeting

ASTM L-37 Surveillance Panel Membership/Mailing List

Meeting Date: February 6th, 2013

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JG	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
LH	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
MEK	Keisler, Mark MARC	Non Voting	Afton Chemical 500 Spring Street Richmond, VA 23218	Phone: 804-788-5617 Fax: 804-788-6358 E-Mail: @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

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ASTM L-37 Surveillance Panel Membership/Mailing List

Meeting Date: February 6th, 2013

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<i>INAK</i>	Kearney, Bill	Non Voting	Afton Chemical Southfield, MI	Phone: Fax: E-Mail:
<i>[Signature]</i>	Koehler, Brian	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
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	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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ASTM L-37 Surveillance Panel Membership/Mailing List

Meeting Date: February 6th, 2013

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	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
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Meeting Date: February 6th, 2013

Initials*	Name	Voting Status	Company Name & Address	Phone/Email Info
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	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
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				Phone: Fax: E-Mail:
				Phone: Fax: E-Mail:
				Phone: Fax: E-Mail:

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Current Procedure & Proposed Changes

8.2 Preparation of Axle:

8.2.X If required, assemble a gear unit using new V1L528/P4T883A gear sets, Dana rebuilt parts list (see appendix X) and using Dana Model 60 Maintenance Manual. Apply gear contact pattern grease on the drive and coast side of the ring. Place a 30 ± 5 lbf-ft ($40.7 \text{ N}\cdot\text{m} \pm 6.8 \text{ N}\cdot\text{m}$) turning torque on the ring and pinion. Rotate ring and pinion through the gear contact pattern grease on the drive and coast side.

8.2.1 Record the "as received" drive side contact pattern length and flank values as noted on the axle housing from Dana Corp.¹⁰ Length values of L^2 and L^3 and flank values of F^{-1} , F^0 , and F^{+1} are considered acceptable. Note any adjustments that are made to the axle prior to testing in the comments section of the test report. Test labs pattern and report, in the test report, axle housings from prior gear batches that do not have contact pattern markings. *For lab built V1L528/P4T883A units, determine and record values for the pattern length and flank, Only Length values of $L2$ and $L3$ and flank values of $F-1$, $F0$ and $F+1$ are considered acceptable.*

8.2.2 *Break and Turn Torque Measurements*—Determine and record the torques required to break and to turn the pinion shaft of the completely assembled test unit.

8.2.3 *Backlash Measurements*—Record the backlash on the test axle reported from the manufacturer. To be acceptable, the backlash reported by the manufacturer shall be between 0.004 to 0.012 in. (0.102 mm to 0.305 mm).

8.2.3.1 If the test axle does not have a reported backlash from the manufacturer, the average backlash, as measured in 8.2.3.2, shall be between 0.004 and 0.009 in. (0.102 mm to 0.229 mm).

8.2.3.2 Remove the cover plate. Measure and record backlash at four equally spaced locations. Report the average and the four readings.

8.2.X If the axle is built at the test lab, Follow Dana Model 60 Maintenance Manual if contact pattern or backlash needs to be adjusted.

Possible rebuild parts for 060AA100		
Part Number	Description	Qty
30271	Pinion Nut	1
42449	Pinion Seal	1
34801 as required	Pre- Load Shim	1
30291-1,-2,-3	Pinion Position Shim	1
30276-1,-2,-3,-4	Diff. Shims	2
40638	Ring Gear Screws (120-140 Lbs/Ft.)	12
34686	Cover Gasket (Replaced by 34687)	1
781904	Tube Cap	1
	Cover Screws (30-40 Lbs/Ft.)	
	Bearing cap (70-90 Lbs/Ft.)	
550360-1	Inner Pinion Cone (HM803146 Timken)	1
550361-1	Inner Pinion Cup (HM803110 Timken)	1
550358-1	Outer Pinion Cone (HM88542 Timken)	1
550359-1	Outer Pinion Cup (HM88510 Timken)	1
550363-1	Diff. Bearing Cup (382S Timken)	2
550362-1	Diff. Bearing Cone (387A Timken)	2

*occasionally needed

Axle Unit Data Logsheet

Note: This logsheet can be used for the following Axle tests: L-37, L-20 and Gear Spalling.

		Break	Turn
	Initial	40.0	30.0
E	Hot		
	Cold		
O	Without Axles		
T	Pinion Only		

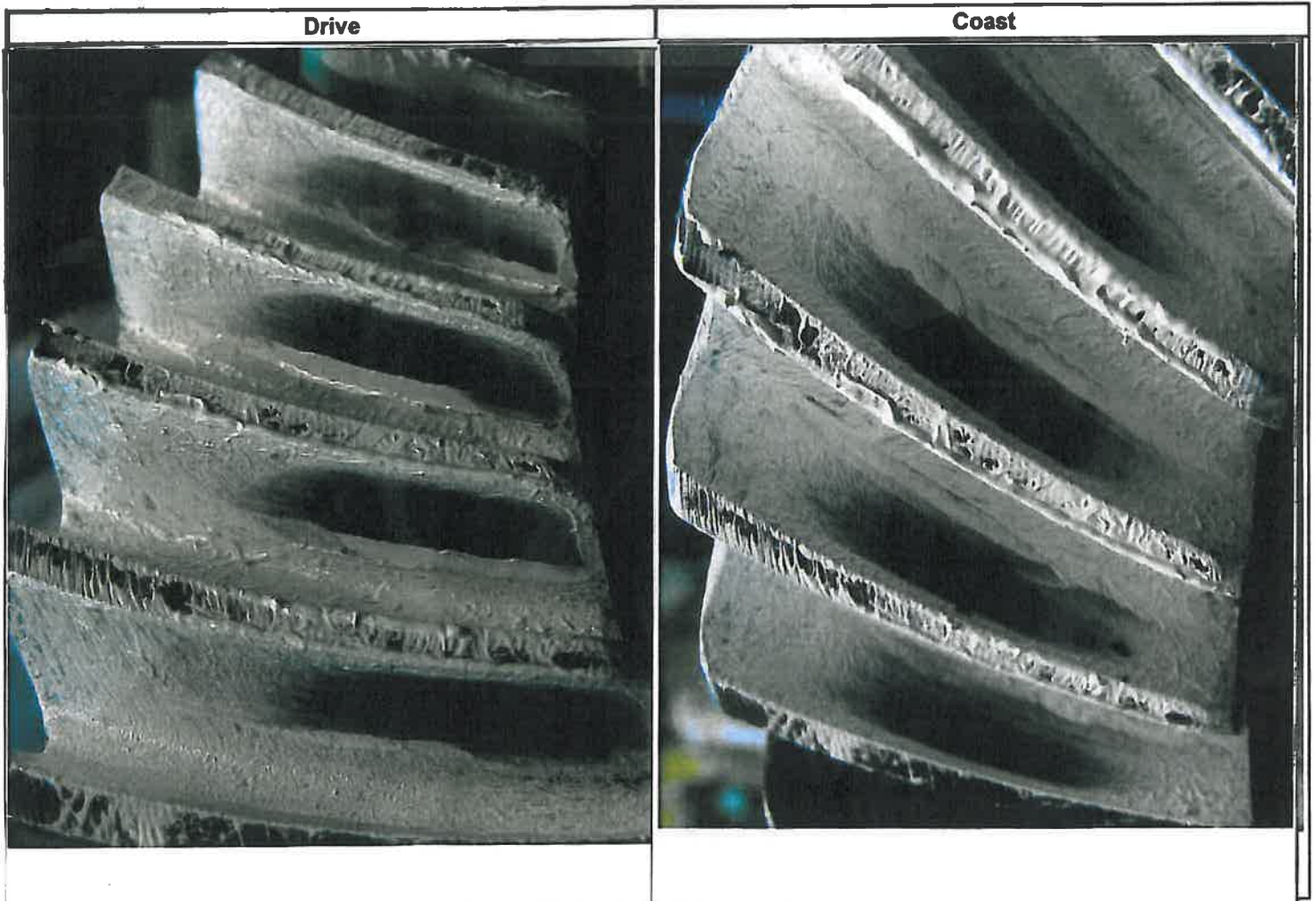
	Backlash	
	Initial	EOT
1	0.0070	
2	0.0050	
3	0.0060	
4	0.0060	
Avg.	0.0060	

TRN Number	
Hardware ID	0L
Ring Batch ID	P4T883A
Pinion Batch ID	
Gear Test Type	Non Lubrited
Axle Ass'y Date	221 13A
Axle ID Number	060AA1002
Axle Serial No.	ASTM0326
Pattern Contact	L2 F0
Agree Y/N?	Yes
Operator	BRPI/ALKN
Prep Date	08/09/13

	Tool ID #'s	
Initial	584-67	563-69A
EOT		
	Mfg's Build Info	
	Backlash	
	R/T	

	Axle Cleaned
Oper.	
Date	

Comments _____



Axle Unit Data Logsheet

Note: This logsheet can be used for the following Axle tests: L-37, L-20 and Gear Spalling.

		Break	Turn
Initial		55.0	55.0
E	Hot		
	Cold		
O	Without Axles		
	Pinion Only		

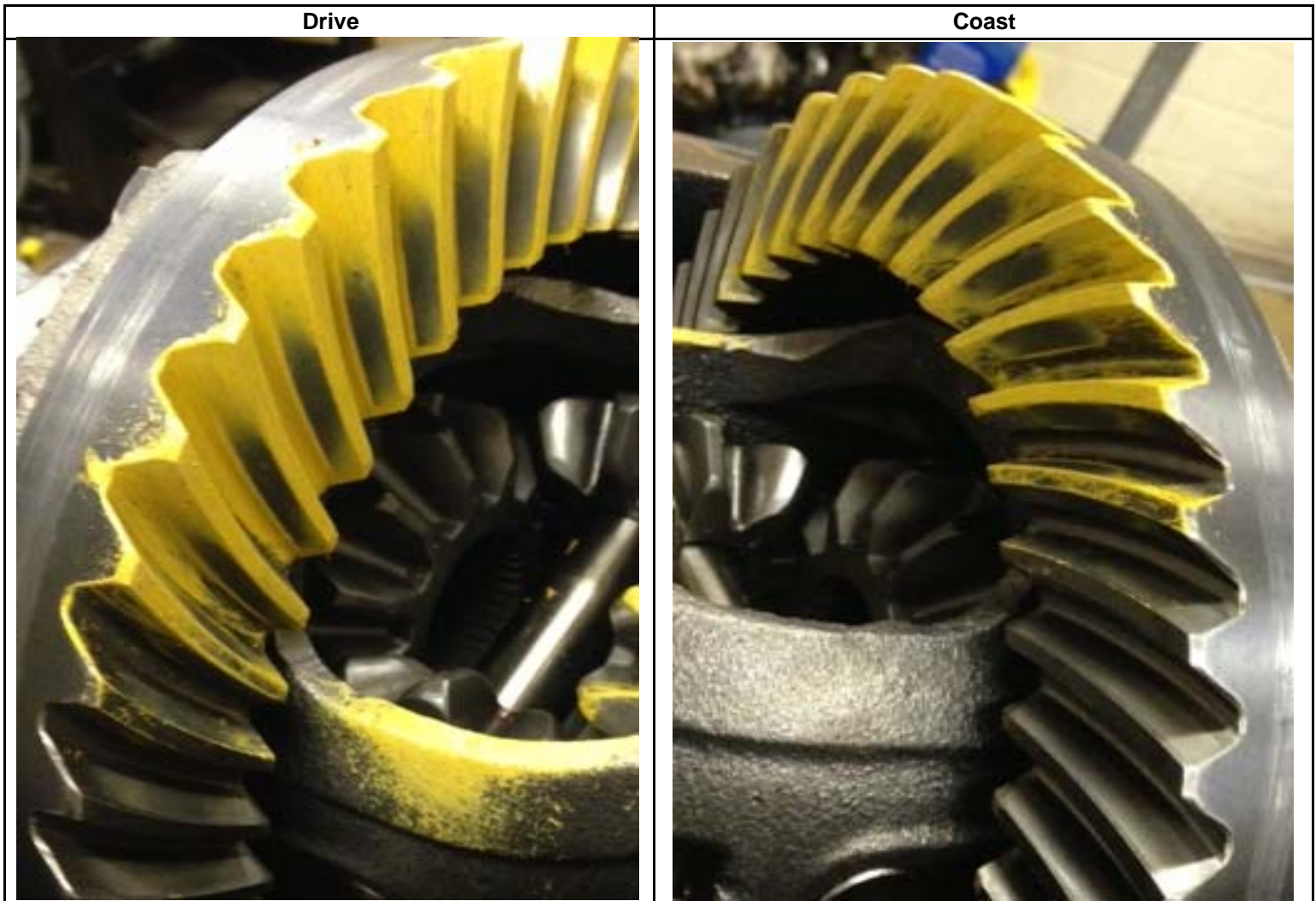
		Backlash	
		Initial	EOT
1	0.0080		
2	0.0080		
3	0.0090		
4	0.0085		
Avg.	0.0084		

TRN Number	
Hardware ID	
Ring Batch ID	P4T883A
Pinion Batch ID	
Gear Test Type	
Axle Ass'y Date	
Axle ID Number	SWRI 1
Axle Serial No.	
Pattern Contact	L2 F0
Agree Y/N?	
Operator	
Prep Date	

		Tool ID #'s	
Initial			
EOT			
Mfg's Build Info			
Backlash			
R/T			

		Axle Cleaned
Oper.		
Date		

Comments _____



IND	RINGBAT	LTMSLAB	TESTKEY	LTMSDATE	WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR	COM1	COM2	COM3	COM4
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Non-lubrited (24 Hour Test)

Hardware Approval Matrix Results (155)

155	P4T883A	G	89042-L37	20120904	6	9	8	7	10	7	10	8	9	10					NONLUBR STANDARD
155	P4T883A	A	89035-L37	20120915	6	8	8	9.9	10	8	9	9	9.9	10					NONLUBR STANDARD
155	P4T883A	D	73555-L37	20120921	7	7	7	9.9	10	7	9	10	10	10					NONLUBR STANDARD
155	P4T883A	B	89954-L37	20121014	7	9	10	9.9	10	9	10	10	9.9	10					NONLUBR STANDARD
155	P4T883A	G	89045-L37	20121014	7	9	8	9.9	10	8	10	8	9.9	10					NONLUBR STANDARD
155	P4T883A	A	89036-L37	20121014	7	8	8	9	10	7	10	9	9.7	10					NONLUBR STANDARD
155	P4T883A	G	89046-L37	20121015	7	9	8	6	10	7	10	9	9.9	10					NONLUBR STANDARD
155	P4T883A	B	89029-L37	20121016	7	10	10	9.7	10	9	10	10	9.9	10					NONLUBR STANDARD
155	P4T883A	D	89574-L37	20121102	7	8	9	7	10	8	10	10	9.9	10					NONLUBR STANDARD

Lubrizol Built Axle Results

155	P4T883A	B	89955	20130813	7	9	10	9.9	10	9	10	10	9.9	10					NONLUBR STANDARD
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