

**Report of Meeting
ASTM SECTION B0.03
Automotive Gear Lubricants and Fluids
PRI Headquarters
Warrendale, PA
November 3, 2004**

CALL TO ORDER

Mr. Sullivan, Chairman, called the meeting to order at 3:20 pm.

AGENDA

The agenda is shown as Attachment 1. An additional item was added to the agenda, "Solvent Issue". The attendance list is shown as Attachment 2.

OPENING COMMENTS

Mr. Sullivan would like the section to focus on the L-37 and L-42 test areas. Then look to working on PM-2 specification development and then focus on GL-5.

MEMBERSHIP

No changes made. The complete membership list is included as part of Attachment 2.

APPROVAL OF MINUTES

Minutes of the November 2003 and June 2004 meetings were approved. Some members did not get copies of the minutes. Future minutes will be sent to the TMC to placed on their web site for viewing as a "pdf" file.

REVIEW SCOPE AND OBJECTIVES

The sections scope and objectives were review. No changes were made. Attachment 3 shows the current scope and objectives.

SURVEILLANCE PANEL REPORTS

L-33-1

Mr. Smith presented the panel report. Little activity has occurred in this group over the last 6 months. The group has been waiting for the ballot to be completed. The hardware situation is good. All labs have adequate supplies of test axles. Usage has been lower than expected. In the future the panel will be focused on developing acceptable replacement hardware. The current hardware used by the lab will not longer be available in the near future. The report was accepted without changes.

L-37

Mr. Bartlett presented the panel report. The report is shown as Attachment 4. The report was accepted without changes.

L-42

Mr. Koglin presented the panel report in place of Mr. Layton. The report is shown as Attachment 5. The report was accepted without changes.

L-60-1

Mr. Schenkenberger presented the panel report. The report is shown as Attachment 6. The report was accepted without changes.

Other issues were discussed during this report not included in Attachment 6.

Issue 1: Mr. Schenkenberger indicated that his panel was having problems with the D445@100C test. The way it is being run is not per procedure. Mr. Sullivan will bring this issue to the committee overseeing the D445 test.

Issue 2: Rating problems. Additional discussion on the carbon/varnish rating took place. Two labs are going mild. Mr. Schenkenberger will investigate this.

Issue 3: Hardware issues. The panel is approaching the end of the 5 year batch purchase of test gears. No labs indicate that they need to buy any additional gears. The manufacturer indicates they can make another batch if needed. Mr. Schenkenberger requested that each lab review their stock of test gears and determine if additional gears are needed.

Cyclic Durability

Mr. Koehler presented the panel report. The report is shown as Attachment 7. The report was accepted without changes.

Oil Seal Compatibility

Ms. Whinton presented the panel report. The report is shown as Attachment 8. The report was accepted without changes.

TASK FORCE REPORTS

Test Rating

Mr. Koehler presented the task force report for Mr. Sanchez. The report is shown as Attachment 9.

PM-2

Mr. Akucewich presented the task force report. The task force met one time since the last section meeting. The group is progressing on defining the tests and limits. One problem exists with the development of the specification. There is no pitting test readily available for use in the specification. If the section wants the specification to be completed in a reasonable time frame, the pitting requirement needs to be dropped. The task force agreed to ask the SAE if the pitting requirement can be dropped. The report was accepted without changes.

GL-5

Mr. Buitrago presented the task force report. He reports that the draft is complete. He will distribute th the task force members soon for review. After the review, the specification will be ready to move forward to ballot. The report was accepted without changes.

GEAR OIL CLASSIFICATION PANEL

Mr. McGlone presented the panel report. The panel met once in the last 6 months. The group reports the following:

- PG-2 – waiting for SAE/TC-3 feed back to determine direction,
- PM-1 – waiting for SAE/TC-3 feedback to decide if needed,
- PM-2 – activity ongoing but slow,
- GL-5 – draft of specification is complete, task force moving forward,
- Viscosity grad additions to SAE Gear Oil Grades scheduled for an early 2005 ballot.
- No major surveillance panel issues to report.

The report was accepted without changes.

Following the report the section discussed two additional issues:

Issue 1: The section discussed the topic of test registration. This caused a lively debate. Mr. Sullivan agreed to put a test registration proposal together for the section to evaluate and debate.

Issue 2: CRC Rating Seminar. The section agreed that a CRC rating seminar should take place in 2005. Mr. Sullivan agreed to contact the CRC to determine if one will take place and indicate that the section would like to have a seminar.

OLD BUSINESS

PG-2 SAE Letter

Mr. Sullivan will send the letter to SAE for discussion at the next TC-3 meeting.

NEW BUSINESS

Solvent Issue

The section discussed the D235 Type 2 Class C specification found in most of sections procedures/standards which describes the type of solvent acceptable for use in the lab. The solvents used by the labs don't comply with this specification. The section discussed which parts of the specification are important to B03. These include flash point (D56), aromatic content (D1319) and color (D156). Frank Farber will discuss this issue with the ASTM engine oil panels.

Mr. Sullivan made the following motion (Mr. Buitrago seconded):

- a) The TMC will temporarily suspend the solvent requirement as specified in D235 until February 2005.
- b) Each lab will determine the minimum requirements needed for the solvent to meet its needs. Sent the info to Mr. Sullivan and Frank Farber by November 17, 2004.
- c) B3 will modify all procedures to reflect the solvent requirements.

The motion passed unanimously.

TMC Requests Guidance

The TMC requested guidance from the section on inspections of oils under it's care. The labs indicated that they want a certificate of analysis for batch.

LRI Review of Significant Digits

Mr. Bartlett indicated that the LRI is reviewing data on significant digits used by the tests. He requests that each panel to review the significant digits used by its test and recommend a significant digit level to be used by the April LRI. They want to rationalize the use of significant digits.

NEXT MEETING DATE/LOCATION

The next B0.03 section will take place in the second week of June 2006 in Warrendale, PA.

REPORT TO B03/SAE

Mr. Sullivan reviewed the report he created for the B meeting at ASTM week in December 2003. The report is included as Attachment #10.

ADJOURNMENT

The meeting was adjourned at 5:10 p.m.

A handwritten signature in cursive script, appearing to read "Ed Akucewich".

Edward S. Akucewich, Secretary
ASTM Section B0.03 Gear Lubricants and Fluids

**ASTM SECTION B0.03
AUTOMOTIVE GEAR LUBRICANTS AND FLUIDS
PRI, Warrendale, PA
November 3, 2004**

- 1 Opening Comments
- 2 Membership
- 3 Approve Minutes
- 4 Review Scope and Objectives
- 5 Surveillance Panel Reports
 - 5.1 L-33-1
 - 5.2 L-37
 - 5.3 L-42
 - 5.4 L-60-1
 - 5.5 Cyclic Durability
 - 5.6 Oil Seal Compatibility
- 6 Task Force Reports
 - 6.1 Test Rater
 - 6.2 PM-2
 - 6.3 GL-5
- 7 Gear Oil Classification Panel Report
- 8 Old Business
- 9 New Business → "Solvent Issue"
- 10 Next Meeting Date/Location
- 11 Report to B03/SAE

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BO.03 SECTION MEETING Sign-in Sheet

August 29, 2001

Name	Voting	Organization	Address	Electronic Communication
Edward Akucewich 	Non-Voting	The Lubrizol Corp.	29400 Lakeland Blvd. Wickliffe OH 44092-2298	Tele: (440) 347-2415 Email:esak@lubrizol.com Fax: (440) 347-2878
Michael Anderson		Falex Corporation	2055 Comprehensive Drive Aurora IL 60505-	Tele: (708) 851-7660 Email:m.anderson@falex.com Fax: (708) 898-7851
Don Bartlett 		The Lubrizol Corporation	29400 Lakeland Blvd. Wickliffe OH 44095-	Tele: (440) 347-2388 Email:dtb@lubrizol.com Fax:
Peter Bielik		D.A. Stuart	9100 Freeland Ave. Detroit MI 48228-	Tele: (313) 273-7374 Email:pbielik@dastuart.net Fax: (313) 838-1930
Breanna Bomback		The Lubrizol Corp.	29400 Lakeland Blvd. Wickliffe OH 44092-2298	Tele: (440) 347-5097 Email:bmbc@lubrizol.com Fax:
Frank Bondarowicz		International Truck and Engine	10400 W. North Avenue Melrose Park IL 60160-	Tele: (708) 865-4030 Email:frank.bondarowicz@nav-internati Fax: (708) 865-4229
Tom Bryson	Voting	Mack Trucks, Inc.	13302 Pennsylvania Avenue Hagerstown MD 21742-2693	Tele: (301) 790-6744 Email:thomas.bryson@volvo.com Fax: (301) 790-5605

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Name	Voting	Organization	Address	Electronic Communication
R Buck			Test Engineering, Inc. San Antonio TX	Tele: (210) 690-1958 Email:r.buck@tei-net.com Fax:
Juan Buitrago	<i>Voting</i>	<i>Chevron Oronite Co</i> Oronite	<i>100 Chevron way</i> Oronite Additives Richmond, CA 94802-	Tele: (510) 242-1161 Email:jabu@chevrontexaco.com Fax: (510) 242-3392
Harold Chambers	Non-Voting	Visteon Automotive Systems	6100 Mercury Drive Dearborn MI 48126-	Tele: (313) 755-0124 Email:hchamber@visteon.com Fax: (313) 755-0124
R Cleveland		Dana Corporation	Spicer Axle Division Ft. Wayne IN 46801-	Tele: (804) 788-5255 Email: Fax:
Allen Comfort	<i>Non-Voting</i>	<i>A.C.</i> US Army TACOM	AMSTA-TR-D/210 Warren MI 48397-5000	Tele: (810) 574-4225 Email:comforta@tacom.army.mil Fax: (810) 574-4224
W Crouse		Sun Refining & Marketing	PO Box 1135 Marcus Hook PA 19061-	Tele: (713) 544-7499 Email: Fax:
Hector De La Fuente		Southwest Research Institute	6220 Culebra Road San Antonio TX 78238-	Tele: (210) 522-5996 Email:hdelafuente@swri.edu Fax: (210) 680-1777
S Devon		Shell International Petro. Co.	Shell Centre London SE1 7NA	Tele: Email: Fax:

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Name	Voting	Organization	Address	Electronic Communication
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Ron Duckstein

Pittsburgh Applied Research Corp.	100 William Pitt Way Pittsburgh PA 15238-	Tele: (309) 578-7032 Email: rduckstein@parctech.com Fax:
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Chris Engel

Voting

Daimler Chrysler Corporation	CIMS 482-00-13 Auburn Hills MI 48326-2757	Tele: (248) 576-7487 Email: cae8@daimlerchrysler.com Fax: (248) 576-7490
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John Fantin

Timken	Corporate Offices Canton OH 44706-0930	Tele: (713) 363-8190 Email: fantinj@timken.com Fax:
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Frank Farber

VOTING

ASTM TMC	6555 Penn Avenue Pittsburgh PA 15206-	Tele: (412) 365-1030 Email: fmf@tmc.astm.com fmf@tmc.cmu.edu Fax: (412) 365-1047
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Greg Fett

Non-Voting

Dana Corporation	Spicer Axle Division Ft. Wayne IN 46801-	Tele: Email: gregfett@dana.com Fax:
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Roy Fewkes

Powertrain Research Fuels & Lubes	Esorse & Ward Rd Ypsilanti, MI 30500 Mound Road Warren MI 48090-	Tele: 734-481-6483 Email: Fax:
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Dennis Florkowski

Daimler-Chrysler Corporation	800 Chrysler Drive Auburn Hills MI 48326-2757	Tele: (248) 576-7487 Email: cae8@daimlerchrysler.com Fax: (248) 576-7490
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Miguel Garcia

Repsol YPF	2609 Native Oak Drive Flower Mound TX 75022-	Tele: Email: mgarcia@repsol-ypf.com Fax:
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Name	Voting	Organization	Address	Electronic Communication
J Gottlieb		Komatsu Dresser Company	East Sunnyvale Avenue Libertyville IL 60048-	Tele: (440) 347-1223 Email: Fax:
Jerry Gropp	<i>Voting</i>	<i>JLG</i> The Lubrizol Corp.	29400 Lakeland Blvd. Wickliffe OH 44092-2298	Tele: (440) 347-1223 Email: jlg@lubrizol.com Fax: (440) 347-1555
Tom Hansel		Chevron Products	100 Chevron Way Richmond CA 94802-	Tele: Email: thansel@chevrontexaco.com Fax: (510) 242-3362
Scott Harold	Voting	Infineum USA L.P.	1900 E. Linden Ave. Linden NJ 07036-	Tele: (474) 231-2318 Email: Scott.Harold@Infineum.com Fax:
Raymond Harris		Petroleum Products Corp.	P.O. Box 2621 Harrisburg PA 2621 -	Tele: Email: Fax:
Marv Hart		Century Lubricating Oils	Division of Fuchs Kansas City KS 66111-	Tele: (913) 441-7160 Email: mhart@fuchs.com Fax:
A Hebert		State of California	Div. Meas. Stds. Sacramento CA 95826-	Tele: Email: Fax:
Steven Herzog		Rohmax	723 Electronic Drive Horsham PA 19044-	Tele: (215) 706-5817 Email: steven.herzog@degussa.com Fax:

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Name	Voting	Organization	Address	Electronic Communication
Didier Humbert		Total Raffinage Distribution Inter.	84, Rue de Villiers 92538 Levallois-Perret Cedex	Tele: Email: Fax:
M Hurcombe		British Petroleum Co., Ltd.	Research Centre Middlesex TW16 7LN	Tele: (908) 474-3031 Email: Fax:
N Kelly		Yellow Freight System Inc.	10990 Roe Avenue Overland Park KS 66207-	Tele: Email: Fax:
Tracey King		Chrysler Corporation	Chrysler Technology Center Auburn Hills MI 48326-2757	Tele: (248) 576-7500 Email: tek1@Chrysler.com Fax: (248) 576-7490
John Knight		Test Engineering, Inc.	12758 Cimarron Path San Antonio TX 78249-3417	Tele: (616) 567-1140 Email: jknight@tei-net.com Fax:
Cory Koglin	(Voting)	Ethyl Petroleum Additives <i>Affton Chemical</i>	500 Spring Street Richmond VA 23218-2158	Tele: Email: cory.koglin@ethyl.com Fax: <i>Cory.koglin@afftonchemical.com</i>
Don Kreinbring		Dana Corporation	Spicer Hvy Axle and Brake Div Kalamazoo MI 49003-4097	Tele: (248) 350-0647 Email: don.kreinbring@dana.com Fax:
Richard Kuhlman		<i>Affton Chemical</i> Ethyl Corporation	2000 Town Center, Suite 1750 Southfield MI 48075-1150	Tele: (804) 788-5303 Email: dick_kuhlman@ethyl.com Fax:

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Name	Voting	Organization	Address	Electronic Communication
Steve Lakes		Emery Chemicals	4900 Este Avenue Cincinnati OH 45232-	Tele: (216) 749-2610 Email: Fax:
Kevin Layton	Voting	Ethyl Corporation	500 Spring Street Richmond VA 23218-	Tele: (804) 788-5363 Email: kevin_layton@ethyl.com Fax: (804) 788-6358
Donald Lee		Elco Corporation	1000 Belt Line Street Cleveland OH 44109-2800	Tele: (810) 986-1888 Email: dlee@elcocorp.com Fax:
Don Lind		Test Monitoring Center	6555 Penn Avenue Pittsburgh PA 15206-	<i>dml@astmtmc.cmu.edu</i> Tele: (412) 365-1034 Email: dml@tmc.astm.cmri.cmu.edu Fax: (412) 365-1047
James Linden		GM Research, Chemical & Evnironmental	Mail Code 480-106-160 Warren MI 48090-	Tele: (586) 986-1888 Email: james.l.linden@gm.com Fax: (586) 986-2094
Lawrence Ludwig		Schaeffer Mfg.	102 Barton Street St. Louis MO 63104-	Tele: (704) 878-5795 Email: lludwig@schaeffer.com Fax:
Joseph Manning		Dana Corp.	Spicer Clark-Hurth Statesville NC 28677-	Tele: (248) 354-6985 Email: joe.manning@clarck-hurth.com Fax:
Thelma Marougy		Eaton Corporation	Corporate R&D Southfield MI 48037-	Tele: (248) 354-6985 Email: thelmaemarougy@eaton.com Fax:

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Name	Voting	Organization	Address	Electronic Communication
Steve Marty		Southwest Research Institute	P.O. Drawer 28510 San Antonio TX 78228-0510	Tele: (210) 522-5929 Email:smarty@swri.org Fax: (210) 684-7523
Christopher May		Imperial Oil Ltd.	Sarnia Research Center Sarnia, Ontario	Tele: Email:chris.may@esso.ca Fax:
Bruce McGlone		V Arvin-Meritor	2135 West Maple Road Troy MI 48084-7186	Tele: (248) 435-9929 Email:bruce.mcglone@arvinmeritor.co Fax: (248) 435-1411
Ken McLeod		<i>Chevron</i> Research & Technology	4502 Centerview Drive San Antonio TX 78228-	Tele: Email:kmcleod@chevrontexaco.c om Fax: (510) 242-3000
Chris Morgan		General Motors <i>Powertec</i>	<i>Pontiac MI</i> 30500 Mound Rd. Warren OH 48090-	Tele: (586) 986-1897 Email:christopher.morgan@gm.com Fax: (586) 986-2094
Mark Mulvihill		Gulf Oil International	Harmerville Research Center Pittsburgh PA 15238-	Tele: Email: Fax:
Nobukazu Okamoto		Toa Nenryo Kogyo Co. Ltd.	175 Tsurugaoko, Oi-machi	Tele: (810) 947-0069 Email: Fax:
Subardjo Pangarso		Lemigas R&D Ctr. for Oil & Gas	JL. Ciledug Raya-Cipulir Jakarta Selatan 12230	Tele: (281) 986-5745 Email: Fax:

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Name	Voting	Organization	Address	Electronic Communication
Kim Peyton		Nalco Chemical Co.	PO Box 87 Sugarland TX 77847-	Tele: (703) 759-0460 Email: Fax:
Chris Schenkenberger	Non-Voting	The Lubrizol Corporation	Drop #121C	Tele: (440) 347-2927 Email:csc@lubrizol.com Fax: 440 347-2878
Alex Schuettenburg		Phillips Petroleum Co.	148AL Phillips Research Bartlesville OH 74004-	Tele: Email: Fax:
John Skiba		Citgo Petroleum	PO Box 3758 Tulsa OK 74102-	Tele: (281) 544-9226 Email: Fax:
Anthony Skrobul		Equilon Enterprises LLC	Westhollow Technology Center Houston TX 77082-3101	Tele: (412) 826-5051 Email:apskrobul@equilon.com Fax:
Dale Smith	Voting	Pittsburgh Applied Research Corp.	100 William Pitt Way Pittsburgh PA 15238-	Tele: (412) 826-5051 Email:dsmith@parctech.com Fax: (412) 826-5443
William Sullivan		ExxonMobil Chemical Co.	Synthetics Division Edison NJ 08818-	Tele: (732) 321-3364 Email:william.t.sullivan@exxonmobil.c Fax: 732 321-8064
Ian Taylor		Esso Research Centre	F7 Bld15 Research Centre	Tele: Email: Fax:

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Name	Voting	Organization	Address	Electronic Communication
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Paula Vettel

D.A. Stuart
Company

4580 Weaver Pkwy
Warrenville
IL 60555-

Tele: (630) 393-8854
Email:pvettel@dastuart.net
Fax: (630) 393-8577

Luis Villahermosa

US Army
TACOM

6501 E. Eleven Mile Road
Warren
MI 48036-

Tele: (810) 574-4207
Email:villahel@tacom.army.mil
Fax:

Claire Whitton

Non-
Voting *AFTON
CHEMICAL
CORP.*
Ethyl Petroleum
Additives

500 SPRING ST.
330 South 4th Street
Richmond
VA 23218-2158

claire.whittoneaftonchemical.com
Tele: (804) 788-5052
Email:~~claire_whitton@ethyl.com~~
Fax: (804) 788-6243

CMW

Leslie Wolf

Amoco
Petroleum
Products

Products Research
Naperville
IL 60563-8460

Tele:
Email:
Fax:

Brian Koehler

~~██████████~~
Voting
SWRI

SWRI
P.O. Box 28510
San Antonio
TX 78228-0510

210-522-3588
BKoehler@swri.org
210-684-7523

Don Bell non-voting

Afton chemical
500 Spring St.
Richmond, VA
23218

804 788 6332
804 788 6243 fax
don.bell@aftonchemical.com

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ASTM SECTION B0.03 GEAR LUBRICANTS AND FLUIDS

SCOPE

This section is responsible for the promotion of knowledge of, and specifications, test methods and terminology for automotive gear lubricants and fluids. This includes gear lubricants used in rear drive axles, power dividers, and fluids used in manual and automatic transmissions of wheeled or track laying vehicles such as passenger cars, recreation vehicles, taxicabs, trailers, trucks, buses, tractors, construction and farm vehicles.

FUNCTIONS:

- Keep existing performance tests operational, at historic severity and precision levels.
- Ensure that performance test parts and reference oils are available in adequate supply and of a consistent quality.
- Develop and maintain performance tests for gear lubricant and transmission fluid categories.
- Maintain surveillance of test procedures under Section jurisdiction
- Work to improve test precision and correlation with field service.
- Maintain active liaison with related organizations, CEC, SAE.

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L-37 Surveillance Panel Report to DO2.B0.03

**PRI Headquarters, Apollo Room,
Warrendale, PA**

November 3rd, 2004

Activity Since June 2004

- ✓ Two Panel Meetings
- ✓ Five Panel Teleconference Meetings
- ✓ One Laboratory/TMC Task Force Visit to Dana Ft. Wayne Facility
- ✓ Three Laboratory/TMC Task Force Teleconference Meetings
- ✓ Approved Two Information Letters

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L-37 IL 04-1

- ✓ Standardization Revisions for Both Standard and Canadian Tests
- ✓ Implemented Low Temperature (LT) Ring and Pinion Transformed Ridging Correction Factor For V1L686/P4L626A Lubricated Hardware on Non-Reference Tests
- ✓ Intermediate Precision & Reproducibility Revisions

L-37 IL 04-1, (cont) Standardization of Standard and Canadian Procedures

- ✓ Retroactive to June 30, 2004
- ✓ Lubricant PID Water Control System (2 Valves, Trim, 5 Nozzles With Brand Type, Sizes) Specified
- ✓ Modified Axle Lubricant Cooling System Drawing
- ✓ Standardized Torque and Speed Transitioning Ramping Strategies To and From Gear Test Phases and Unscheduled Downtimes
- ✓ Other Miscellaneous Procedure Clarifications

Attachment	4
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L-37 IL 04-1 (Cont)
Lubrited Hardware V1L686/P4L626A LT
Correction Factors

- ✓ Completed The Four Lab, 16-Test LT Matrix In Early August
- ✓ Analyzed The Data At The August 24th/25th SP Meeting
- ✓ SP Adopted New LT Transformed Ring and Pinion Ridging Correction Factor of +0.6065
- ✓ Effective LT Non-Reference Tests Completing On/After August 25th, 2004.

L-37 IL 04-2

- ✓ Revised The Drive Shaft Outside Diameter Specification
- ✓ Require Existing Stands to Alternate Between Lubrited and Non-Lubrited Hardware With Each Reference Oil Calibration
- ✓ Effective With Next Reference On/After September 22nd, 2004

Outcomes From the August 24th/25th SP Meeting

- ✓ Adopted a New Boiler-Plate Template That:
 - Changed Panel Philosophical Thinking From Talking 'Anchor Batch' Hardware to 'Anchor Oils'
 - Will Use Anchor Points for Setting Reference Acceptance Bands
 - Provides a Better Approach For Application of New Hardware Correction Factors
 - 'Up Front' Testing Approach To Batch Approval Matrix Testing Will Save \$\$\$ and Add Value

Outcomes From the August 24th/25th SP Meeting (Cont)

- ✓ Adopted An 'Expectation Statement' For Commercial Reference Oils LT1-1 and LT2-1 Oils
 - The Performance Level For LT L-37 Should Be That The Overall Pass Rate Range for All Collective Parameters is Between 75 – 90 %
 - Action Item: For Both Standard and Canadian L-37, SP Is To Determine Expected Performance Levels For All Parameters For RO 151-3, LT1-1 and LT2-1

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2004 Non-Lubrited Hardware V1L351/P4T771 Approval Matrix

- ✓ Four Lab, Equal Participation, 44 - Test Matrix Was Proposed and Accepted
- ✓ Target Completion by December 15th, 2004
- ✓ Oils to Be Included:
 - One test on TMC 127 Standard test to Confirm Discrimination
 - Reference Oil TMC 151-3, LT1-1 and LT2-1 on Both Standard and Canadian Procedures

2003 Lubrited Hardware T758A/L247 Approval Matrix

- ✓ 32 - Test Matrix Completed to Date
- ✓ Did Not Included Low Temperature Testing
- ✓ Placed Hardware Batch Approval on Hold Pending Completion and Analysis of 2004 Non-Lubrited Hardware Matrix Currently Underway

THANK YOU !!!

- ✓ Testing Laboratory Companies - For Financial and Engineering Support
- ✓ Laboratory Task Force - For Your Time For Travel/Meetings & Hard Work for Consensus Decision Making
- ✓ TMC - For Your Time For Travel & Meetings, Statistical Support, and Technical Guidance
- ✓ Panel and OEM's - For Your Technical Guidance, Patience, and Consensus Support At Our Meetings

Any Questions?

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L42 B03 meeting

- Motions made/update to procedure
 - October 5th SP conference call
 - TMC 115 reblend
 - November 2nd SP meeting
 - Motion approved to update balancing specification in L42 procedure

L42-1 update

- Task force met Tuesday, November 2nd 2004
 - Section 12 (data interpretation)
 - SWRI was not happy with data generated to date because it was felt to be non representative
 - SWRI will generate new data on stand in 3 weeks (by November 29th)
 - TF to hold conference call to discuss data and revise section 12 so labs may start to develop stand

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L42-1

- Task force in agreement to use adopted L37 cooling assembly with exception of the 2 extra cooling nozzles used for Low temp
- 2 Drawing updates-including a revised drawing for axle/nozzle locations to be similar to L37
- Balancing specification update

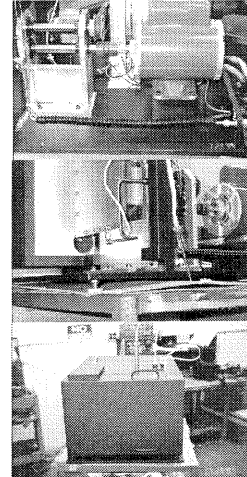
Scoring/Polishing issue

- Action Item to take to Rater workshop
 - 3 options
 - Test w/any distress caused by the test other than scoring should be deemed as non-interpretable.
 - Test w/any distress not defined in the CRC Manual xxx should be deemed as non-interpretable.
 - If raters define polishing, SP will determine how to handle (non-interpretable).

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**ASTM L-60-1 S.P.
Report to D02.B0.03**

11/03/04



Meeting Activity

- 2 Surveillance Panel Meetings
- 1 Task Force Meeting
- 2 Task Force Teleconferences

Primary Focus Has Been L-60-1 Drawings

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Information Letters

Information Letter 04-2

- Clarified Acceptable Air Flow Meters used to Calibrate Sierra Side Trak
- Revised Precision Statement

Activities Completed

1. Drawings Reviewed and Approved
 - Lab Implementation Taking Place
 - Compliance Date Set for January 1, 2005
2. Testing has taken place to investigate lab to lab differences in end of test viscosity (D445 @ 100°C)
3. SP reviewed Historical Reference Data for D893 Pentane/Toluene Results

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Future Work

1. Review LTMS Data within Surveillance Panel
2. Make Decision on the use of Test Rig Enclosures and Insulation
3. Review Upcoming Rating Workshop Data
 - Raters Calibrating with Gears from TMC-151 Laboratory Stand Reference Tests

Mack HTCT S.P. Presentation to Section B0.03

- By: Brian Koehler; S.P. Chairman
- November 3, 2004
- PRI, Warrendale, PA

TEST STATUS

- 2 labs with a total of 2 stands
- Both stands are referenced
- No information letters issued
- One S.P. meeting held, Nov. 3rd
- New style hardware is available
- All stands on conf. 2 hardware
- Slight severe trend: -0.75 delta/S

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OSCT Panel

- Meetings since last section meeting
 - Two panel meetings
 - August
 - Minor procedure changes to ballot method
 - Voted on reference oil limits
 - November
 - PA %volume calibration challenges for one lab
 - Two task force conference calls
 - Evaluate extension of elastomer shelf life
 - Evaluation of new batches of elastomer
 - Sampling new elastomer batches

November 3, 2004

B.03 Meeting

OSCT

- Two Information Letters issued
 - 04-063
 - Reference Oil Targets Established
 - 04-084
 - Correct nitrile Shore Hardness mean
 - Supercedes 04-063

November 3, 2004

B.03 Meeting

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Reference	—

OSCT Reference Oil Performance Summary

Severity

- New targets applied
- % Elongation
 - FL mild
 - PA slightly severe
- Hardness
 - NI & PA slightly mild
- % Volume
 - FL severe
 - PA mild
 - NI slightly mild

Precision

- All measures compare well to historical levels
- % Elongation
 - PA & NI improved over previous
 - FL slightly degraded over previous
- Hardness
 - FL improved over previous
 - PA & NI degraded to previous
- % Volume
 - All 3 improved over previous

November 3, 2004

B.03 Meeting

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ASTM Gear Rating Task Force Report

November 3, 2004

The ASTM Calibration Workshop & Task Force Meeting was held in Monroeville, PA July 20, 21, & 22 hosted by PARC. The next Calibration Workshop and Task Force Meeting is scheduled for January 11, 12 & 13, 2005 in Richmond Va. Hosted by Afton Chemical.

L-60-1

The new ASTM L-60-1 carbon rating aids are complete and are now available through the CRC web site @ www.crao.com. The price is \$30.00 each.

A discussion regarding a shift in the ratings of reference oil 151 took place at the July 2004 Calibration Workshop. Some labs have shifted mild and one lab has stayed the same. This information was provided by Don Lind of TMC.

Possible ways to resolve this problem were presented and evaluated. The angle of the gear in relation to the light can effect the final rating mild or severe. The possibility that the problem may not be the raters was also discussed. Each lab was instructed to bring the hardware from 151 oils to the next workshop and have the group rate the parts in an exercise to try to resolve any rating discrepancies.

The number of L-60-1 gears used for the workshop will also be increased from 4 to 6 gears for the calibration and from 6 to 10 gears for testing.

L-37

A suggestion to use the TMC L-37 calibration pinions for the Gear Rating Workshops was presented to Don Lind by the Rating Task Force. TMC will provide 10 calibration pinion for the next January 2005 Gear Rating Workshop.

A question of the need to continue to rate ring gears at the Gear Rating Workshops was presented at the July 2004 Gear Rating Workshop. Don Bartlett requested that we continue to rate ring gears at future workshops. 13 cut ring gears will be used for the January 2005 Gear Rating Workshop, 3 for calibration and 10 for testing.

L-42

Raters were asked to bring gears with polish/scoring to the January 2005 Gear Rating Workshop to try to resolve this issue. Recommendations discussed at the ASTM Surveillance panel meeting before the 2004 November LRI meeting will also be evaluated at the Gear Workshop.

- 1.) For L-42 test, any test having distress other than scoring will be considered non-interpretable.
- 2.) For L-42 test, any test having distress other than defined in CRC rating manual will be considered non-interpretable.
- 3.) For L-42 test, raters to define "Polishing", procedure to then state that any test having polishing will be non-interpretable.

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Reference	---

L-33

A motion was made at the July 2004 Gear Workshop to use 4 tapered pins to secure the cover plate template. Motion passed.

PARC will provide the part number from McMaster Carr.

Submitted by: Arthur Sanchez
ASTM Gear Rating Task Force Chairman

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Reference	_____