Report of Meeting ASTM SECTION B0.03 Automotive Gear Lubricants and Fluids PRI Headquarters Warrendale, PA November 2, 2005

CALL TO ORDER

Mr. Sullivan, Chairman, called the meeting to order at 3:05 pm.

AGENDA

The agenda is shown as Attachment 1. No additional items were added. The attendance list is shown as Attachment 2.

OPENING COMMENTS

Bill was happy to see movement in the L-42 test development process.

B03 is getting pressure form SAE for a reballot of SAE J2306.

MEMBERSHIP

Remove Scott Harold of Infineum USA from the membership list. The complete membership list is included as part of Attachment 2.

APPROVAL OF MINUTES

Minutes of the June 2005 meeting was approved with no changes.

REVIEW SCOPE AND OBJECTIVES

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

SURVEILLANCE PANEL REPORTS

L-33-1

Mr. Sullivian presented the panel report in place of Mr. Smith. All labs have adequate supplies of test axles. In the future, the panel will be focused on developing acceptable replacement hardware (2006 time frame). The current hardware used by the labs will no longer be available in the 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. Layton presented the panel report. 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.

Cyclic Durability

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

Oil Seal Compatibility

Mr. Bell presented the panel report. The panel is actively looking for a replacement oil of the current reference oil. Lab to lab variation is acceptable. The test method will be reballoted by the end of the year. 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 8. The report was accepted without changes.

An extended discussion took place on the rater calibration process. The group felt that the process should continue but the rater ID should not be assigned to the data for the first exercise to be placed on the web site.

Also improvements should be made to the RTMS pinions. The raters would like the tooth used to rate wear not have a spall on it. The spall can mask the wear. The group agreed that this should be done.

PM-2

Mr. Akucewich presented the task force report. No real progress has taken place in this group. The PM-2 pitting issue has been presented to the SAE TC-3. 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 has asked the SAE if the pitting requirement can be dropped. While we wait for guidance the group will continue with developing the specification if time is available. The report was accepted without changes.

<u>GL-5</u>

Mr. Buitrago presented the task force report. The GL-5 draft was approved for ballot. Yeeeee ha! 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 waiting for SAE/TC-3 feed back to is if a pitting test is required.
- GL-5 draft approved for ballot,
- The panel discussed the prospect of placing candidate data into a data base. After some discussion the proposal was tabled and will be discussed at a future date.
- No major surveillance panel issues to report.

The report was accepted without changes.

OLD BUSINESS

PG-2 SAE Letter

Mr. Sullivan presented the PG-2 issue to the SAE Fuel and Lubricant Technical Committee 3 (TC-3) committee in Oct 2005. The presentation is shown in Attachment 9. Mr. Sullivian asked for feed back. None as been received to date.

PM-2 SAE Letter

Mr. Sullivan presented the PM-2 issue to the SAE TC-3 in Oct 2005. The presentation is shown in Attachment 9. Mr. Sullivian asked for feed back. None as been received to date.

SAE TC-3 Report

Mr. Sullivan reviewed his presentation to SAE TC-3 in Oct 2005. The presentation is shown as Attachment 10.

NEW BUSINESS

PM-1 Status

Mr Sullivan will revisit the PM-1 activity status with DiamerChrysler (DC) before the next meeting. If DC has no desire to reactivate the PM-1 group, the B03 section will communicate with ASTM and SAE that the PM-1 active has stopped and will be discontinued this activity.

Non-Monitored ASTM Tests

The section discussed the issue of TMC monitored tests using non-monitored ASTM tests in their procedures. The lack of oversight on these tests can cause problems with the monitored test. Members had concerns about this and asked what can be done to insure that these non-monitored tests stay in control. Mr. Sullivan will talk to the Test Monitoring Board (TMB) and ASTM Section B at the Dec 2005 meetings concerning this issue.

Increased Time for ASTM meeting

The section discussed the problem of ASTM panels not getting enough time during the LRI meeting weeks. Some members of the section would like more time allocated to the panel meetings. Mr. Sullivan will work to identify bottlenecks and possibly expend the amount of time allocated to individual panel meetings. The section may have meetings on Tuesday in addition to the normal Wednesday meeting date.

NEXT MEETING DATE/LOCATION

The next B0.03 section will take place at the June 2006 LRI meetings in Warrendale, PA.

REPORT TO B03/SAE

Mr. Sullivan's report to the B meeting at ASTM week in December 2005 is included as Attachment 11.

ADJOURNMENT

The meeting was adjourned at 4:45 p.m.

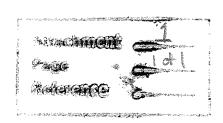
Sincerely,
Edward & Alicena

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 2, 2005

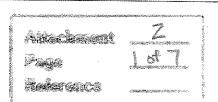
- 1 Opening Comments
- 2 Membership
- 3 Approve Minutes
- 4 Review Scope and Objectives
- 5 Surveillance Panel Reports
 - 5.1 L-33-1
 - 5.2 L-37
 - 5.3 L-42
 - 5.4 L-60-1
 - 5.5 Cyclic Durability
 - 5.6 Oil Seal Compatibility
- 6 Task Force Reports
 - 6.1 Test Rater
 - 6.2 PM-2
 - 6.3 GL-5
- 7 Gear Oil Classification Panel Report
- 8 Old Business
- 9 New Business
- 10 Next Meeting Date/Location
- 11 Report to BO3/SAE



BO.03 SECTION MEETING Sign-in Sheet

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ASTM SECTION BO.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.





Fluid technologies for a better world

L-37 Report to D02.B0.03

PRI/ Headquarters, Apollo Room - Warrendale, PA
November 2, 2005

LUBRIZOL

Panel Meetings

- Since the June2005 B0.03 meeting:
 - One Surveillance Panel meetings
 - No Teleconference Panel meetings



LUBRIZOL

Information Letters Issued

• None

LUBRIZOL

2003 L247/T758A Lubrited Hardware

- 2003 L247/T758A Lubrited Hardware:
 - ✓ Hardware currently approved for Standard testing ONLY with no Correction Factors
 - ✓ Approved for use with Standard Reference & Candidate tests completing on or after April 21, 2005



* LUBRIZOL

2003 L247/T758A Lubrited Hardware, (Cont)

- ✓ Phase 6, Low Temperature Matrix Still in Progress
- ✓ Goal is 18 tests to Evaluate Need for Possible Correction Factors
- ✓ Two Labs Still Have Testing to Complete

LUBRIZOL

2005 Non-Lubrited Hardware Order

- ✓ Binding PO's were issued May 5th, 2005.
- √ Will be made with 8620 primary steel. The panel will be advised if the primary steel cannot be obtained.
- √ Total Gears Ordered: 1370
- □ Laboratory Hardware TF visits planed for Ft. Wayne and Lugoff, facilities. When ??



2005 Non-Lubrited Hardware Order (cont) □ Dana experiencing problems procuring large enough same-batch heat of steel □ Looking at other steel suppliers □ May have to go to 8822 Molly steel □ 44-test Standard and Low Temperature hardware approval Matrix approved □ May be delayed 4-6 weeks. Hardware receipt and Matrix testing January, 2006?

" LUBRIZOL

PRI Request for Significant Digit Precision Reporting

Actions before we meet to review all information:

- ☐ The TMC is to pull 6 pinions from the Rater LTMS system and assign a number to each of the 7 gear teeth so that the raters can place a discrete number for each pinion tooth for all distress parameters. To be completed by November 24th. Two labs have completed task.
- ☐ The TMC was tasked to go back and statistically identify the best rater in the Rater LTMS system.



LUBRIZOL

Thank You

- ✓ Laboratory Task Force for donated testing and extra work.
- ✓ TMC statistical and technical support.
- ✓ Companies for \$\$\$ commitment.
- ✓ Panel for patience, direction, and support.



L42 B03 meeting November 2005

- L42-1
 - Lab visits completed in Aug/Sept
 - Lab performed L42-1 test during each visit
 - 4 Labs will run first TMC 116 oil by Mid-November
 - Labs feel confident in repeatability of test
 - Labs using torque targets to determine feasibility
 - Data Dictionary updated 9-23-05

TMC 116 (115 replacement) & Hardware update

- 3 labs ran Matrix on TMC 116 oil
 - SP accepted test results and TMC 116 is currently being used as reference fluid
- Hardware order placed in July 2005.
 - Gears expected sometime in 1Q 2006
- New Dana Representative introduced Aug 2005
 - Don Kreinbring



Scoring/Bright Burnish rating issue

- 5 gear sets (various scoring/bright burnish) sent to Harold Chambers and John Dharte.
 - Comments available through chairman

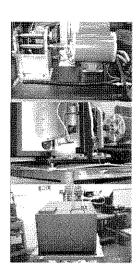
Information Letters

- Information letter June 2005
 - New Annex added to L42 procedure indicating different test versions (std temp and low temp)



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

11/2/05



Surveillance Panel Activity

2 Surveillance Panel Meetings

Data Dictionary

• Precision for Original Results Changed

Information Letter 05-3

 Allow the Use of Nitrile or Latex Gloves for Handling Catalyst

Attachment 6
Page Lamburg

Surveillance Panel Activity

Improvements to Rating Procedure

- Information Letter 05-1 made changes to the carbon varnish rating method
- Improved Consistency Observed in July 2005 Rater Workshop Data
- Continue to Review Future Workshops

Surveillance Panel Activity

- Hardware
 - Labs Working Off of the Same November 2000 Hardware Batch
- Reference Fluids
 - TMC 148-1 and TMC 151-2 Being Assigned at 50/50 Ratio
 - Reviewing LTMS for Both Fluids



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

- By: Brian Koehler; S.P. Chairman
- June 15, 2005
- PRI, Warrendale, PA

TEST STATUS

- 2 labs with a total of 2 stands
- Two references were run this last period, both passed
- Three info letters issued, 4-1, 5-1, 5-2
- One S.P. meeting held
- New style hardware is available
- All stands on conf. 2 hardware



ASTM Rating Task Force Report October 28, 2005

By: Arthur Sanchez ASTM Rating Task Force Leader

The ASTM Calibration Workshop was held in San Antonio, TX July 12,13, & 14, 2005 hosted by Southwest Research Institute. The next Calibration Workshop is scheduled for January 10,11, &12 in Richmond, VA. hosted by Afton Chemical Company.

L-42 Scoring/Bright burnish: The L-42 round robin was conducted rating five pinions and five ring gears for scoring and bright burnish by the four labs. The rating data was analyzed by the Surveillance Panel and then it was decided to send the pinions to Harold Cambers and John Dharte to get their opinion.

Harold Cambers called all bright burnished L-42 gears as non-interpretable due to unacceptable Sequence II scoring. John Dharte had not yet given his opinion on this issue. The issue was tabled until a decision by the Surveillance Panel can be made.

L-60-1 Varnish Rating Procedure: Item A10.1 in the rating procedure concerning the possible need for the use of skin tone colored gloves to hold the gears: The raters found one skin tone colored glove that could be used by raters to minimize any variation in ratings. Pete Redonich of Lubrizol provided one skin tone colored glove example for evaluation by raters.

All L-60-1 raters present agreed to except the skin tone colored glove example. It should be noted that gloves are not to be a specified requirement when rating the L-60-1 test. This is only if the rater decides he needs to use gloves to hold the gears when rating the L-60-1 test. This particular skin tone colored glove should be used to minimize any variation in ratings.

Manufacture: Microflex Tel: 1.800.876.6866.

Type: Neoprene Color: Skin Tone

Part number: NP-144-L



CRC L-37 Photo Rating Aid: A discussion regarding the possible need for replacement of several distress photos took place at the last workshop in Richmond, VA. The Rating Task Force group was not aware of the danger of changing established historic data, severity limits and bands. The Rating Task Force group will have to give this issue much thought.

If the decision is to proceed with the replacement of several distress photos, an official request will be presented to the Surveillance Panel and a Rating Task Force representative will be appointed by Chairman Art Sanchez to meet with the Surveillance Panel for discussion concerning this issue.

Hardware examples for possible replacement of current distress photos have not been collected. This issue was tabled for review at the January Workshop in Richmond, VA.

Workshop Calibration Data

A discussion of not entering the Calibration data into the TMC data system was discussed at the last workshop. This data is generated and reviewed before the initial workshop data is produced. Calibration data is used to let the rater know how their ratings compare to the other gear raters. The rater can then adjust the way he has been rating if his ratings are severe or mild compared to the group ratings.

This change would allow the calibration session to be less stressful and allow the raters to more openly discuss the calibration ratings and exchange ideas on how to improve. Several raters feel the current process of reporting calibration data forces them to take a defensive posture if their rating results are different from the group.

Rating Wear on RTMS L-37 Pinions

One other rating issue discussed by Rating Task Force group was to change the current method of rating wear on a single marked tooth of an RTMS L-37 pinion, when spalling is present near the wear step. Raters are instructed to rate one marked pinion tooth for all distress. The spalling makes it difficult to see and feel the true wear step. The Rating Task Force group would like to rate an additional tooth for wear only, when spalling is present in the heel or toe area of an RTMS L-37 pinion.

Don Lind would choose and mark a different tooth for wear only if the case of spalling in the heel or toe area near the wear step is present.



Don Lind will take a count of the number of RTMS pinions with spalling in the heel or toe area.



ASTM SECTION D02.B0.03

Special Communications to SAE F&L TC-3

Fall 2005

PG-2

- Section B03 activity on this proposed category ended in 2002.
 - Several tests that were part of category definition could not be completed with any reasonable timeline given the resources available: Spalling, Seal with nitrile
- Section points to MT-1 and SAE 2360 as fulfilling most of the original goals of PG-1 and PG-2.
- Section understanding is that industry requirements since the original request may have shifted to other areas such as energy efficiency and durability protection.
- Suggestion would be to define gaps in current categories vis-a-vis industry needs and if appropriate develop a new request for test and category development.

October 25, 2005

SAE TC-3

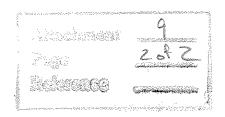
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PM-2

- The Task Force on PM-2 has not been able to identify an industry ready pitting test either in the US or Europe.
- Available resources to develop a test are low and previous industry efforts have not been successful.
- The Task Force requests TC-3 to consider dropping pitting from the requirements for this category.

October 25, 2005 SAE TC-3 3



ASTM SECTION D02.B0.03

Status Report to SAE F&L TC-3

Fall 2005

OVERVIEW

Existing Procedures and Standards

- All tests under Section B03 are available with good supply of hardware.
- All outstanding hardware are approved and where the need defined, relevant correction factors have been applied.

October 25, 2005

SAE TC-3



OVERVIEW

New Category Development

PM-2: Performance test table developed. Task Force now actively meeting. Task Force needs to address the pitting test issue with SAE

October 25, 2005

SAE TC-3

.3

SECTION TASK FORCES

- · Gear Oil Classification Panel
 - No new activity.
- Test Rating Task Force
 - Task Force actively working with with the L-42 SP and the LRI to handle burnishing issue
- GL-5 Task Force
 - Draft category standard now in draft #6. Will be ready by the end of fall
 - Will also raise possible value for more robust GL-5 type category.

October 25, 2005

SAE TC-3



CURRENT STANDARD MAINTENANCE

SAE J2360, API GL-5, D 5760 Surveillance Panel Activity

- L-33-1: All outstanding gear batches are available for use, with appropriate correction factors, where appropriate. Current supply of hardware is 2+ years. Panel will begin looking at alternate hardware options, focusing on the Dana Model 44 (L-42) in 2006.
- L-37: The SP is now developing matrix data to approve the most recent lubrited axle batch for the LT L-37.
 - When the current activity is completed 1 plain and 2 lubrited batches will have been tested for LT L-37 approval. Previous batches were and will stay grandfathered
 - All future batches will be matrix tested in both Reg Temp and Low Temp conditions and correction factors defined where necessary.

October 25, 2005

SAE TC-3

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CURRENT STANDARD MAINTAINENCE

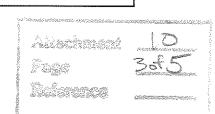
SAE J2360, API GL-5, D 5760
Surveillance Panel Activity

- L-42: The Panel is almost finished working on the hardware standardization process for the draft.
 All current labs now have the new stand configuration.
 Referencing is ready to begin. At this point, test will be named to L-42-1.
- L-60-1: Recent updates to C/V rating procedure have improved precision.

October 25, 2005

SAE TC-3

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CURRENT STANDARD MAINTAINENCE

SAE J2360, API GL-5, D5760 Surveillance Panel Activity

- Cyclic Durability: All industry stands are now calibrated using Configuration # 2 hardware.
- Seal Immersion: Panel will now test a new reference oil (aggressive) for Nitrile seals.

October 25, 2005

SAE TC-3

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NEW STANDARD DEVELOPMENT

 \bullet PM-2 (Commercial Synchronized Manual Transmission Oil Applications)

Task Force Activity

- Defined test list with partial list of limits, Task Force now active.
- Task Force has determined that there is no available pitting test in the industry.

October 25, 2005

SAE TC-3



Activities Directed at Ballots

- L-42 Stands are upgrading to the new configuration. Draft Standard ready by late 2005.
- PM-2 TF will survey European OEM's for proposed limits on CEC methods.
- GL-5 TF has written and reviewed a draft category Standard rather than rewrite STP 512A. Ready by end of fall 2005
- D-5662 SP work slowed on revisions prior to ballot.

October 25, 2005

SAE TC-3

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Next Section Meeting

Nov 2, 2005 in Pittsburgh.

October 25, 2005

SAE TC-3



ASTM SECTION D02.B0.03

Status Report to Subcommittee

December, 2005

OVERVIEW

Existing Procedures and Standards

- All tests under Section B03 are available.
- All outstanding hardware are approved and where the need defined, relevant correction factors have been applied.

December 7, 2005

Subcommittee D0B



OVERVIEW

New Category Development

PM-2: Performance test table developed. Task Force now actively meeting. Task Force addressed the pitting test issue with SAE at the Fall F&L

December 7, 2005

Subcommittee D0B

SECTION TASK FORCES

- · Gear Oil Classification Panel
 - · No new activity.
- Test Rating Task Force
 - Task Force actively working with with the L-42 SP and the LRI to handle burnishing issue
- GL-5 Task Force
 - Draft category standard now in draft #6. Will be available for next subcommittee ballot.
 - Will also raise possible value for more robust GL-5 type category.

December 7, 2005

Subcommittee D0B



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December 7, 2005

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Subcommittee D0B



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- D-5662 Standard ready for ballot.

December 7, 2005

Subcommittee D0B

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Next Section Meeting

June, 2006 in Pittsburgh.

December 7, 2005

Subcommittee D0B

