

Report of Meeting
L-37 Next Generation Task Force Meeting
Automation Alley
Troy, MI

May 9th, 2012

Attendees:

| | |
|--------------|---|
| SwRI - | Koehler |
| Lubrizol - | Venhoff , Hamilton, Gropp |
| Afton - | Gottwald , Bell, Higuchi, Kearney, Boschert, Hobson, Recinos |
| Intertek - | Smith , Trader |
| TMC - | Parke |
| Meritor - | McGlone , Muransky |
| Dana - | Guzikowski (TC) |
| ExxonMobil - | Eliot, Kanga |
| Chevron - | Zakarian |
| GM - | Zreik , O'Brien |
| US Army - | Comfort , Dwornick |

Voting Members in **BOLD**

The meeting was called to order at 3:50 pm EDT.

1.0 Approval of Meeting Minutes

- **February 8, 2012 (PRI Headquarters – Warrendale, PA)**
- **April 19, 2012 (Teleconference)**

Motion # 1 → J. Zakarian / 2nd T. Gottwald to approve the minutes as presented. Motion for approval was passed with a unanimous vote.

2.0 Summary of Meeting Discussions

2.1 Review of initial pilot batch results

Only three validation test results were available for review, no conclusions to be drawn at this time. It was agreed that all labs will do their best to have their two initial runs complete (TMC155 → lubrited axle, TMC134 → non-lubrited axle) by the end of May. The Chairman will call a teleconference to discuss results when the eight tests are complete and have been reported.

One lab ran some of the new axle batch from AAM and saw some pinion head bearing spalling. The labs agreed to cut the cages on the pinion head bearing from all initial tests to perform a thorough inspection of the inner race. Another lab noticed a difference in vibration level from dealer axles compared to the pilot batch test axles. The build of the test axles omitted two steps from the regular production process, the in-line NVH check and the balancing of the axles. These steps were omitted because the labs decided to not have the test axles charged with any oil prior to shipping. These two steps can be revisited at a later time if further investigation is needed.

2.2 Field oil submission review/selection

Three submitted oils were reviewed by the NGTF. For submitted field test data, it was agreed that photos and ratings were necessary as part of the submission, but that in-depth review of field test data would only be necessary if questions/concerns arose from review of the submitted lab test data. See Addendum 1 attached to these minutes.

3.0 Adjournment

Motion to Adjourn by J. Zakarian / 2nd D. Smith. Meeting adjourned at 4:25 pm EST.

Respectfully submitted,

Wes Venhoff
L-37 Next Generation Task Force Chairman

Addendum 1

Company Name Supplier 1

Contact Name and Phone/Email _____

Oil Code Oil A

Viscosity Grade 80w-90

API GL-5

For API GL-5 Oils, please provide information on the performance of this lubricant in the field as stated in cover letter

Level of Performance (check Appropriate box) SAE J2360

PRI QPL Number: 11 current QPLs

Summary of ASTM D6121 (L-37) Test Results:

| Hardware | non-Lubrited | | | | Lubrited | | | |
|---------------------------|----------------|------|----------|------|----------------|------|----------|------|
| | Standard | | Canadian | | Standard | | Canadian | |
| | Pinion | Ring | Pinion | Ring | Pinion | Ring | Pinion | Ring |
| Wear | 8 | 9 | | | 7 | 9 | | |
| Rippling | 10 | 10 | | | 9 | 10 | | |
| Ridging | 9 | 10 | | | 8 | 10 | | |
| Pitting | 9.9 | 10 | | | 9.9 | 10 | | |
| Spalling | 9.9 | 10 | | | 9.9 | 10 | | |
| Pitting/Spalling | 9.9 | 10 | | | 9.9 | 10 | | |
| Scoring | 10 | 10 | | | 10 | 10 | | |
| Hardware batch | V1L303/P4L514A | | | | V1L303/P4L514A | | | |
| Test Lab | | | | | | | | |
| Stand Number / Run Number | | | | | | | | |
| End of Test Date | May 2000 | | | | May 2000 | | | |

Addendum 1

Company Name Supplier 1

Contact Name and Phone/Email _____

Oil Code Oil B

Viscosity Grade 80w-90

API GL-5

For API GL-5 Oils, please provide information on the performance of this lubricant in the field as stated in cover letter

Level of Performance (check Appropriate box) SAE J2360

PRI QPL Number 20 current QPLs

Summary of ASTM D6121 (L-37) Test Results:

| Hardware | non-Lubrited | | | | Lubrited | | | |
|---------------------------|----------------|------|----------|------|----------------|------|----------|------|
| | Standard | | Canadian | | Standard | | Canadian | |
| | Pinion | Ring | Pinion | Ring | Pinion | Ring | Pinion | Ring |
| Wear | 6 | 8 | | | 7 | 9 | | |
| Rippling | 10 | 10 | | | 10 | 10 | | |
| Ridging | 10 | 10 | | | 9.6 | 10 | | |
| Pitting | 10 | 10 | | | 9.9 | 10 | | |
| Spalling | 10 | 10 | | | 9.9 | 10 | | |
| Pitting/Spalling | 10 | 10 | | | 9.9 | 10 | | |
| Scoring | 10 | 10 | | | 10 | 10 | | |
| Hardware batch | V1L303/P4L514A | | | | V1L688/P4L626A | | | |
| Test Lab | | | | | | | | |
| Stand Number / Run Number | | | | | | | | |
| End of Test Date | Dec 2004 | | | | Dec 2004 | | | |

Addendum 1

Company Name Supplier 1

Contact Name and Phone/Email _____

Oil Code Oil C

Viscosity Grade 80w-90

API GL-5 x

For API GL-5 Oils, please provide information on the performance of this lubricant in the field as stated in cover letter

Level of Performance (check Appropriate box) SAE J2360

PRI QPL Number: _____

Summary of ASTM D6121 (L-37) Test Results:

| Hardware | non-Lubrited | | | | | | | |
|---------------------------|---------------|------|----------|------|----------|------|----------|------|
| Version | Standard | | Standard | | Standard | | Canadian | |
| | Pinion | Ring | Pinion | Ring | Pinion | Ring | Pinion | Ring |
| Wear | 8 | 8 | | | | | | |
| Rippling | 10 | 10 | | | | | | |
| Ridging | 9 | 10 | | | | | | |
| Pitting | 9.9 | 10 | | | | | | |
| Spalling | 9.9 | 10 | | | | | | |
| Pitting/Spalling | 9.9 | 10 | | | | | | |
| Scoring | 10 | 10 | | | | | | |
| Hardware batch | V1L500/P4T813 | | | | | | | |
| Test Lab | | | | | | | | |
| Stand Number / Run Number | | | | | | | | |
| End of Test Date | Mar 2011 | | | | | | | |

Oil C GL-5 Field Trial

Company Name _____

Contact Name and Phone/Email _____

Oil Code Oil C

Viscosity Grade 80w-90

API GL-5 x

For API GL-5 Oils, please provide information on the performance of this lubricant in the field as stated in cover letter

Level of Performance (check Appropriate box) SAE J2360

PRI QPL Number: _____

Summary of GL-5 (ASTM D-7450) Test Results:

| L42 | | | | |
|--------------------------|-----------|-----------|---------------------------------------|--|
| Test Item | Candidate | Reference | Acceptance Criteria | |
| % Scoring, Pinion | | | | |
| Drive Side | 0 | 0 | Better than the passing reference oil | |
| Coast Side | 22 | 28 | | |
| % Scoring, Ring | | | | |
| Drive Side | 0 | 0 | | |
| Coast Side | 13 | 18 | | |

| L37 (D-6121)- Standard, non-coated | | | |
|------------------------------------|-----------------|------|---------------------|
| Test Item | Surface Fatigue | | Acceptance Criteria |
| | Pinion | Ring | Minimum |
| Wear | 8 | 8 | 5 |
| Ridging | 9 | 10 | 8 |
| Rippling | 10 | 10 | 8 |
| Pitting/Spalling | 9.9 | 10 | 9.3 |
| Scoring | 10 | 10 | 10 |

| L-60-1 (D 5704) | | |
|---------------------------|--------|---------------------|
| Test Item | Result | Acceptance Criteria |
| Viscosity Increase, % | 31 | 100 max. |
| Pentane Insolubles, wt. % | 0.8 | 3.0 max. |
| Toluene Insolubles, wt. % | 1.1 | 2.0 max. |

| Foam Tendency and Stability (D 892) | | |
|-------------------------------------|--------------------|---------------------|
| Test Item | Tendency/Stability | Acceptance Criteria |
| Sequence I, mL | 0/0 | max. 20/0 |
| Sequence II, mL | 0/0 | max. 50/0 |
| Sequence II, mL | 0/0 | max. 20/0 |

| L-33-1 (D 7038) | | |
|--------------------------------|--------|---------------------|
| Test Item | Result | Acceptance Criteria |
| Final Rust Merit Rating | 9.2 | minimum 9.0 |

| Copper Corrosion (D 130) - 3hr / 121°C | | |
|--|--------|---------------------|
| Test Item | Result | Acceptance Criteria |
| Rating | 1b | max. 3 |

ASTM L-37 Surveillance Panel Membership/Mailing List




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| Initials* | Name | Voting Status | Company Name & Address | Phone/Email Info |
|-----------|-------------------|---------------|--|--|
| | Athey, Allison | Voting | Volvo Powertrain 13302 Pennsylvania Avenue Hagerstown, Maryland 21740 | Phone: 301-573-5684 Fax: E-Mail: allison.athey@volvo.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 |
| ZCS | Boschert, Tom | Non Voting | Afton Chemical 500 Spring Street Richmond, VA 23219 | Phone: 804-788-5202 Fax: E-Mail: tom.boschert@aftonchemical.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 |
| | 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@us.army.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 |
| | 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 |
| | Eliot, Stephen | Non Voting | ExxonMobil Lubricants & Specialties 18486 Lanier Island Sq. Leesburg, Virginia 20176 | Phone: 703-669-9916 Fax: 703-669-9917 E-Mail: stephen.w.eliot@exxonmobil.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 |

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|--|------------------|---------------|--|--|
| | 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 | Voting | Afton Chemical 500 Spring Street Richmond, VA 23219 | Phone: 804-788-5230 Fax: E-Mail: thomas.gottwald@aftonchemical.com |
|  | Gropp, Jerry | Non Voting | The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092 | Phone: 440-347-1223 Fax: 440-347-1555 E-Mail: jerrold.gropp@lubrizol.com |
|  | Guzikowski, Joe | Voting | Dana Corporation Maumee, IN | Phone: 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 |
| | Higuchi, Sam | Non Voting | Afton Chemical 500 Spring Street Richmond, VA 23218 | Phone: 804-788-5375 Fax: 804-788-6358 E-Mail: samuel.higuchi@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: huron@chevronltxaco.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 |

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|--|-----------------|---------------|---|--|
| | 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 |
| | Kearney, Bill | Non Voting | Afton Chemical Southfield, MI | Phone: Fax: E-Mail: |
| | 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 |
| | 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 48034 | Phone: 248-226-6985 Fax: 248-226-2739 E-Mail: thelmaemarougy@eaton.com |
| | Martin, Dan | Non Voting | The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092 | Phone: 440-347-4723 Fax: 440-347-2878 E-Mail: dan.martin@lubrizol.com |
|  | McGlone, Bruce | Voting | Meritor Automotive 2135 West Maple Troy, Michigan 48084 | Phone: 248-435-9929 Fax: 248-435-1411 E-Mail: Bruce.McGlone@Meritor.com |
|  | 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 |

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|--|-----------------|---------------|--|---|
| | 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: sdpc@astmtmc.cmu.edu |
| | 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 |
| | 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 San Antonio, Texas | Phone: 412-855-6854 Fax: 210-684-6074 E-Mail: Dale.Smith@intertek.com |
| | 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 |
| WVE | Venhoff, Wes | Voting/Chair | The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092 | Phone: 440-347-4879 Fax: 440-347-2878 E-Mail: wve@lubrizol.com |

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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 |
| | Zakarian, Jack | Voting | Chevron Products 100 Chevron Way Richmond, CA 94802 | Phone: 510-242-3595 Fax: 510-242-3758 E-Mail: jaza@chevron.com |
| K. Z | 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 |
| WK | Will Reinos | NV | Afton Chemical | Phone: 804-788-5323 E-Mail: William.Reinos@aftonchemical.com |
| ATT | Trader, Angela | NV | Inteltek Automotive Research | Phone: 210 706 1533 E-Mail: angela.trader@inteltek.com |
| | | | | Phone: Fax: E-Mail: |
| | | | | Phone: Fax: E-Mail: |
| | | | | Phone: Fax: E-Mail: |
| | | | | Phone: Fax: E-Mail: |

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