A

Committee Correspondence

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date: June 15, 1988

Reply to:

LRI Gear Lubricants Information Letter No. GL-88-3

TO: GEAR LUBRICANTS PRESENTERS

SUBJECT: Use of the Terms "Nil" and "Trace" When Reporting Elemental Analyses

Gentlemen:

Some presentations to the Review Committee have reported New Gear Lubricant Inspection Data for low concentrations of elements (GL Form 2) as "Nil" or "Trace". In all cases the measured values should be reported. Do not use the terms "Nil" or "Trace".

The rational for this requirement is as follows: For purposes of issuing a Lubricant Qualification, the Belvoir Research, Development and Engineering Center, and it alone, assigns the terms "Nil" and "Trace" to specific ranges of elemental concentrations, and thereby controls the use of these terms. The purpose of this control is to assure the uniform definition of "Nil" and "Trace", since these terms can have different meanings in the various organizations and laboratories dealing with the Military.

If you have questions or comments, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: Laura Feix-Baker
GLRC

Committee Correspondence

B

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date: September 30, 1988

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-88-5

TO: Gear Lubricants Presenters

SUBJECT: ASTM L-37 Tests on 75W Grade Lubricants

Gentlemen:

Because 75W grade gear lubricants are being used in other than low temperature service, the LRI Gear Lubricants Review Committee is concerned about the performance of 75W lubricants in the ASTM L-37 test if the test were run at the 297°F temperature specified for the other grades rather than only the 220°F temperature specified for the 75W grade.

Therefore, until further notice, run and report results of ASTM L-37 test on 75W grade lubricants at the low (220°F) and the high (297°F) temperatures.

If you have any questions or comments, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: Ms. Laura Feix-Baker
GLRC

C-1

Committee Correspondence

Name of Committee:
SAE/LRI Gear Lubricants Review Committee

Date:
February 13, 1992

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-92-1

TO: Gear Lubricants Presenters

SUBJECT: ASTM, CRC L-42 TESTS---MIL-L-2105 D SPECIFICATION

Section 3.4.7.1 Gear Scoring of MIL-L-2105D Specification states that satisfactory performance is based on tests conducted in accordance with ASTM, STP 512A, L-42 Test Procedures.

At Meeting No. 71, January 16, 1992, the Review Committee advised the Presenters that all laboratories are to use the same CRC L-42 Test Procedure; namely, the Procedure as described in ASTM, STP 512A Publication.

Background

The Gear Lubricants Review Committee discussed in detail at Meeting No. 71 with the Presenters the question of the CRC L-42 Tests. Coded copies of torque data tabulated by Mr. Osborne from tests presented to the Committee on Reference and Candidate oils were distributed to the Presenters in the Open Meeting session. These tabulations illustrated the variations in torque levels recorded for various gearsets and the spread between maximum and minimum torque reported for Sequence 2 and Sequence 4 of the tests by four (4) laboratories.

Based on these data, the Committee advised the Presenters:

1. That the torques and times of the test should be controlled, and should be controlled more closely than reported in some cases.
2. The Committee wants to know the capability of each laboratory to control the torque and time variables of the test.
3. The Committee wants to receive reports from each laboratory of the historic average values of torque and times, the range of these values, and the statistical capability of the laboratories to control these values.

The problem of completing L-42 tests has continued for many months, and has been discussed repeatedly at the Review Committee meetings. There was extensive discussion

At Meeting No. 66 regarding the Procedure and the use of variations from the Procedure as described in ASTM, 512A, although the L-42 Surveillance Panel had not at that time approved any variations.

At Meeting No. 67, the Surveillance Panel reported it had on March 21, 1991, approved the Mobil "reverse gear breakin" procedure for the 80/280 gearset and the Relap procedure for the 72/39 gearset. This approval would permit the Surveilance Panel to proceed with the development and the approval of Reference Oils. The Gear Lubricants Review Committee accepted this variation of the Test Procedure; i.e., the use of the Mobil "reverse gear breakin", for the purpose of approving the Reference Oils.

The Committee now believes that progress has been made on resolving the problems, and now wants all CRC L-42 tests, presented for review, to be conducted in accordance with ASTM, STP 512A, CRC L-42 Test Procedure.

If you have questions, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review
Committee

cc: GLRC
Mr. David J. DuBois

D-1

Committee Correspondence

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date:

September 2, 1993

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-93-1

TO: Gear Lubricants Presenters

SUBJECT: ASTM Test Monitoring Center L-60 Report Forms

As part of its activity in monitoring the L-60 Thermal Oxidation Stability Test, the ASTM Test Monitoring Center (TMC) has developed five (5) standardized forms to be used to report Reference and Candidate oil test data. Copies of these forms are attached.

These forms have been reviewed by the L-60 Surveillance Panel and are acceptable to the LRI Gear Lubricants Review Committee as replacements for the forms currently in the L-60 Test Procedure as stated in STP-512A.

Effective, beginning with Meeting No. 78, and until further notice, these forms are to be used to report test results to the LRI Gear Lubricants Review Committee.

If you have comments or questions, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: Mr. D. J. DuBois
GLRC

Attachments

L-60 THERMAL OXIDATION STABILITY TEST
TEST IDENTIFICATION COVER SHEET

TEST LAB AFFIDAVIT

	The Reference oil/Candidate (Code # _____) was evaluated in accordance with the L-60 Automotive Gear Lubricant test procedure and completed the 50 hour test.
	The Reference oil/Candidate (Code # _____) was evaluated in accordance with the L-60 Automotive Gear Lubricant test procedure but did not complete the 50 hour test. (Refer to comment page for clarification.)
	The Reference oil/Candidate (Code # _____) was not evaluated in accordance with the L-60 Automotive Gear Lubricant test procedure. (Refer to comment page for clarification.)

_____

TEST LAB REPRESENTATIVE

REFERENCE OIL TEST

	TEST LAB	TEST DATE STARTED	TEST DATE COMPLETED	END OF TEST TIME	TOTAL TEST HOURS	STAND NO.	STAND RUN NO.	CMIR NO.	TMC OIL NO.	VIS INCREASE PERCENT	PENTANE PERCENT	VARNISH MERITS	SLUDGE MERITS	TOLUENE PERCENT
HIGH														
LOW														

CANDIDATE OIL TEST

TEST LAB	TEST DATE STARTED	TEST DATE COMPLETED	END OF TEST TIME	TOTAL TEST HOURS	STAND NO.	STAND RUN NO.	OIL CODE NO.	VIS INCREASE PERCENT	PENTANE PERCENT	VARNISH MERITS	SLUDGE MERITS	TOLUENE PERCENT

TMC USE ONLY		VALIDITY	COMMENT 1
COMMENT 2		COMMENT 3	COMMENT 4

D-2

D-3

L-60 THERMAL OXIDATION STABILITY TEST
FORM 2

LAB	STAND NO.
OIL CODE/CMIR	STAND RUN NO.

TEST CONDITIONS			
HOURS RUN		WARM UP TIME	MINUTES
AIR TEMP °C	MIN	MAX.	AVG.
OIL TEMP °C	MIN.	MAX.	AVG.

TEST RESULTS			
Catalyst weight loss	g	percent	
HOURS RUN	VISCOSITY		
NEW (0 hours)			
50 hours			
VISC. PERCENT INCREASE			
HANG UP OIL WEIGHT		grams	
INITIAL OIL CHARGE WEIGHT		grams	
FINAL OIL DRAIN WEIGHT		grams	
OIL WEIGHT LOSS		grams	
ACID NUMBER (ASTM D664)			
PENTANE INSOLUBLES (ASTM D893, Method A)			
TOLUENE INSOLUBLES (ASTM D893, Uncoagulated)			
CARBON/VARNISH		merits	
SLUDGE		merits	

FORM 3
L-60 THERMAL OXIDATION STABILITY TEST
LOST TIME AND COMMENTS

LAB	STAND NO.
OIL CODE/CMIR	STAND RUN NO.

TEST LOST TIME:

RECORD: THE TIME SHUTDOWN, TIME OFF TEST CONDITIONS, EARLY INSPECTIONS/TERMINATION WITH REASONS.

TEST HOURS	DATE	TIME DOWN	REMARKS/REASONS
Total Down Time			

OUT-OF-LIMIT DATA AND TIME, TEST MODIFICATIONS AND COMMENTS

D-5

FORM 4

LAB	STAND NO.	OIL CODE/CMIR
RATER'S INITIALS	STAND RUN NO.	

DESCRIPTION OF PARTS AFTER TEST

(a) Catalyst - Front Face (Face adjacent to gear teeth)

Rear Face:

(b) Small Gear - Front Face (Numbered surface facing out)

Rear Face:

Gear Teeth:

(c) Large Gear - Front Face (Numbered surface facing out)

Rear Face:

Gear Teeth:

(d) Bearings - Front Face (Numbered surface facing out)

Rear Face:

Bearings and Carrier:

RATING DATE

RATER'S SIGNATURE

D-6

FORM 5
L-60 GEAR RATING

LAB	STAND NO.	OIL CODE/CMIR
RATER'S INITIALS	STAND RUN NO.	

VARNISH/CARBON:

LARGE						SMALL					
FRONT			REAR			FRONT			REAR		
%	RATE	MERIT	%	RATE	MERIT	%	RATE	MERIT	%	RATE	MERIT
	TOTAL			TOTAL			TOTAL			TOTAL	

AVERAGE OF VARNISH/CARBON: _____

SLUDGE:

LARGE

FRONT			REAR		
DEPTH	% COVER	VOL. FACT.	DEPTH	% COVER	VOL. FACT.
CL			CL		
1/4A			1/4A		
1/2A			1/2A		
3/4A			3/4A		
A			A		
AB			AB		
B			B		
BC			BC		
C			C		
TOTAL			TOTAL		
MERIT RATING			MERIT RATING		

SMALL

FRONT			REAR		
DEPTH	% COVER	VOL. FACT.	DEPTH	% COVER	VOL. FACT.
CL			CL		
1/4A			1/4A		
1/2A			1/2A		
3/4A			3/4A		
A			A		
AB			AB		
B			B		
BC			BC		
C			C		
TOTAL			TOTAL		
MERIT RATING			MERIT RATING		

AVERAGE SLUDGE: _____

LARGE GEAR FRONT - STAMPED GA 50
REAR - NO MARKINGS

SLUDGE:
RATE TOTAL FLAT AREA EXCLUDING GEAR TEETH AND WASHER/NUT AREA USING CRC MANUAL NO. 12.

SMALL GEAR FRONT - STAMPED GA 34
REAR - NO MARKINGS

VARNISH/CARBON:
INTEVEP.METHOD - E/R" WIDE STRIP ACROSS GEAR EXCLUDING GEAR TEETH AND WASHER/NUT AREA.
CRC RUST/VARNISH COLOR INTENSITY FACTORS
10.0 TO 1.0
LIGHT CARBON = 0.9
MEDIUM CARBON -0.8 TO 0.1
HEAVY CARBON = 0.0

REMARKS: _____

Committee Correspondence

E

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date:

January 10,1994

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-94-1

TO: Gear Lubricants Presenters

SUBJECT: ASTM Test Monitoring Center (TMC) Test Report Forms for L-60, L-33, L-37 and L-42 Tests

This Information Letter is to confirm the position the LRI Gear Lubricants Review Committee expressed in the Open Meeting, at Meeting No. 78, October 5, 1993, regarding the standardized Test Report Forms developed by TMC for the L-60, L-33, L-37 and L-42 tests; namely--

> The Review Committee agreed that present and future versions of the Forms that are acceptable to the ASTM Surveillance Panels will be accepted for use in presentations to the Committee.

Information Letters, to which were attached copies of the final drafts as accepted by the respective Surveillance Panels, have been issued by TMC. The effective date for use of these forms in reporting data to TMC is stated in each of the letters.

Effective starting with Meeting No. 79, January 25, 1994, these forms are to be used for presentations to the LRI Gear Lubricants Review Committee.

If you have any questions or comments, do not hesitate to contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: David J. DuBois
GLRC

F

Committee Correspondence

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date:

April 13, 1994

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-94-2

TO: Gear Lubricant Presenters

SUBJECT: Review Candidate Oil ASTM L-37 Test Gears

Due to the problems with the new axles, the LRI Gear Lubricants Review Committee will review candidate oil L-37 tests with spalling on gears from batches (coated) C1L151/P4L771 and (non-coated) C1L146/P4L274. An attempt will be made to rate those teeth with little or no spalling using the traditional standards.

Effective as of this date, Presenters are required to provide all historic passing L-37 data on the same additive package at equal or lower concentrations and at the same or lower viscosity. These data must include the following:

1. Program Number
2. Additive Identification (Formulation)
3. Additive Treat Rate
4. Lubricant Viscosity
5. Results of the L-37 Tests

If you have questions or comments, do not hesitate to contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: Mr. David J. DuBois
GLRC

Committee Correspondence

9

Name of Committee:
SAE/LRI Gear Lubricants Review Committee

Date: November 21, 1994

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-94-3

TO: Gear Lubricant Presenters

SUBJECT: Review by Pre-Review Task Force

The LRI Gear Lubricants Review Committee has established a Pre-Review Task Force to review Reference Oil Reports and the Ratings of Parts for the L-60, L-33, L-37 and L-42 tests prior to presentation to the Committee.

Effective Beginning with Meeting No. 84, January 24, 1995, and until further notice, Presenters are to deliver Reports and Parts of the above noted Reference Oil Tests to arrive at SAE Headquarters on or before the Friday preceding the meetings.

If you have comments or questions, please do not hesitate to contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: David J. Dubois
GLRC

H

Committee Correspondence

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date: January 10, 1995

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-95-1

TO: Gear Lubricants Presenters

SUBJECT: Temporary Suspension of Review by Pre-Review Task Force

Due to limits of personnel to man the Task Force, the requirement issued in INFORMATION LETTER No. GL-94-3 that presenters are to deliver Reports and Parts of L-60, L-33, L-37 and L-42 Reference Oil Tests to arrive at SAE Headquarters on or before Friday preceding the meetings is SUSPENDED UNTIL FURTHER NOTICE.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: David J. DuBois
GLRC

I-1

Committee Correspondence

Name of Committee:
SAE/LRI Gear Lubricants Review Committee

Date:
February 21, 1995

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-95-2

TO: Gear Lubricants Presenters

SUBJECT: Cycling Transmission Test

Test requirements for candidate oils submitted against the MIL-L-2105E Specification are noted below. All oils will be L-60-1 tested.

1. For finished oils having both 80W-90 and 85W-140 grades formulated from the same base stocks and additives, test the oil with the poorer L-60-1 carbon/varnish rating. The test could be waived for the other viscosity grade oil. If the L-60-1 carbon/varnish rating is the same for the two viscosity grades, test the 80W-90 grade oil. This requirement would not apply if requirement (3) is fulfilled.

2. Test results from previous test run on API MT-1 approved test stands will be accepted. Testing must have been started after the following dates for the various test stands.

SwRI	stand 1	-	November 24, 1992
SwRI	stand 2	-	December 11, 1992
SwRI	stand 3	-	October 14, 1994
ALI	stand 97	-	December 5, 1994
ALI	stand 98	-	November 9, 1992
ALI	stand 99	-	April 9, 1993

If the 85W-145 grade, of a 80W-90/85W-140 oil pair as noted in requirement (1), has the poorer L-60-1 carbon/varnish rating and has not been tested, this test must be completed. This requirement would not apply if requirement (3) is fulfilled.

3. The test will be waived where a given additive package and viscosity improver (if used) has been qualified in five (5) or more programs using different base stocks. To have this test waived the oil must have an additive package treat level equal to or higher than the treat level in the tested oils.

Consideration of the need for additional test of 80WXXX (140 or higher) will be given after review of programs as noted above.

4. Test all 75WXXX oils using petroleum base stocks.

   Test synthetic 75WXXX oils as outlined in requirement (1), above.

If you have any comments or questions, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: David J. DuBois
GLRC

Committee Correspondence

J-1

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date: February 21, 1995

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-95-3

TO: Gear Lubricants Presenters

SUBJECT: Procedures--Field Tests - Heavy Duty Service
Mack Transmission Field Test

Attached is a copy of the Procdeures for the Mack Transmission Field Test. It will be noted this Procedure follows quite closely the section 2.4.1 Field Test - Heavy Duty Service of the November 1994 issue of the Gear Lubricant Review Procedures.

If you have questions or comments, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: David J. DuBois
GLRC

2.4.1 FIELD TESTS - HEAVY DUTY SERVICE

2.4.1.1 AXLE FIELD TEST

(No Change)

2.4.1.2 TRANSMISSION FIELD TEST

A minimum of three (3) Class 8 on-highway trucks equipped with new manually shifted, overdrive transmissions are to be employed. All transmission test components shall be new and from the original equipment manufacturer (OEM). The vehicles must be operated for at least 100,000 miles (160,000 km) and are to be loaded and operated in typical commercial, for profit service.

It is acceptable, prior to test: (1) To clean the housing, and (2) to fill with candidate oil and run under no-load conditions for no more than 15 minutes or 10 miles (16 km) as a flushing operation. Following this operation, drain and refill with candidate oil and start the 100,000 mile test. There is to be no other drain during the test.

Small samples (maximum of 4 oz.) of the oil shall be withdrawn at approximate intervals of 10,000 miles (16,000 km) for chemical analysis. These withdrawn samples are not to be replaced with new oil. These samples are to be analyzed by the latest revision of referenced test methods for:

a). Viscosity at 40°C and 100°C, cSt (ASTM D445).
b). Additive and wear elements, ppm or wt % (Std. ASTM Methods).
c). TAN (ASTM D664) and TBN (ASTM D4739).
d). Insolubles in pentane and in toluene, wt % (ASTM D983, uncoagulated, with special attention paid to Paragraph 6.1 - Preparation of Sample).
e). Water, ppm or % (ASTM D1744).
f). Sulfur, wt %.

At the completion of the 100,000 miles (160,000 km) of operation, a tear-down inspection shall be made on all units. A report of the analyses of the oil drain samples and the tear-down inspection shall be presented to the Committee. The report must also include photographs of (a) shift bar housing, rails, and yokes, (b) front box gears and case wall, and (c) auxiliary or back box. Also the following components (ref. Fig. 1 and 2) from at least two (2) transmissions shall be presented to the Committee for inspection.

Components: (A) output seal in rear bearing retainer or cover, (B) output yoke, (C) auxiliary box range clutch, (D) both range synchronizers or friction and reaction disc packs, (E) both output bearings, (F) countershaft bearing - upper right of triple countershaft unit or upper of twin countershaft unit, (G) mainshaft input gear and countershaft mating gear - upper right C.S. for triple C.S. or upper C.S. for twin C.S. unit, (H) mainshaft overdrive gear and mating countershaft gear - upper right C.S. for triple C.S. or upper C.S. for twin C.S. unit, (J) direct/overdrive sliding clutch, (K) second ~~and~~ third gear spacer and washer, or (L) range shift yoke, and (M) roller bearing from mainshaft rear.

Any seal leakage, seal replacement or other transmission maintenance on any of the test vehicles during the test must be reported. Any replacement components shall be presented to the Committee.

FIGURE 1

J-4

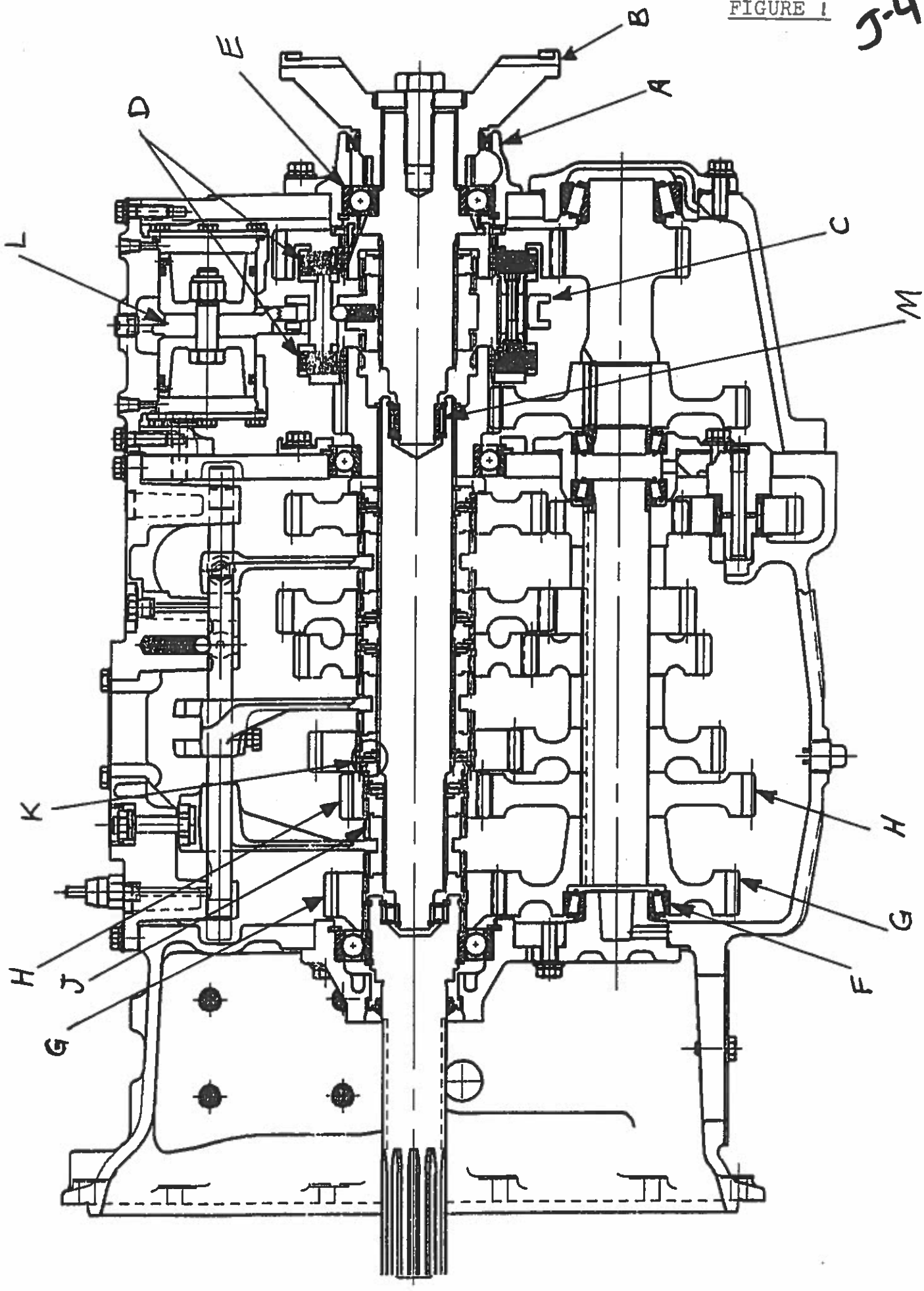
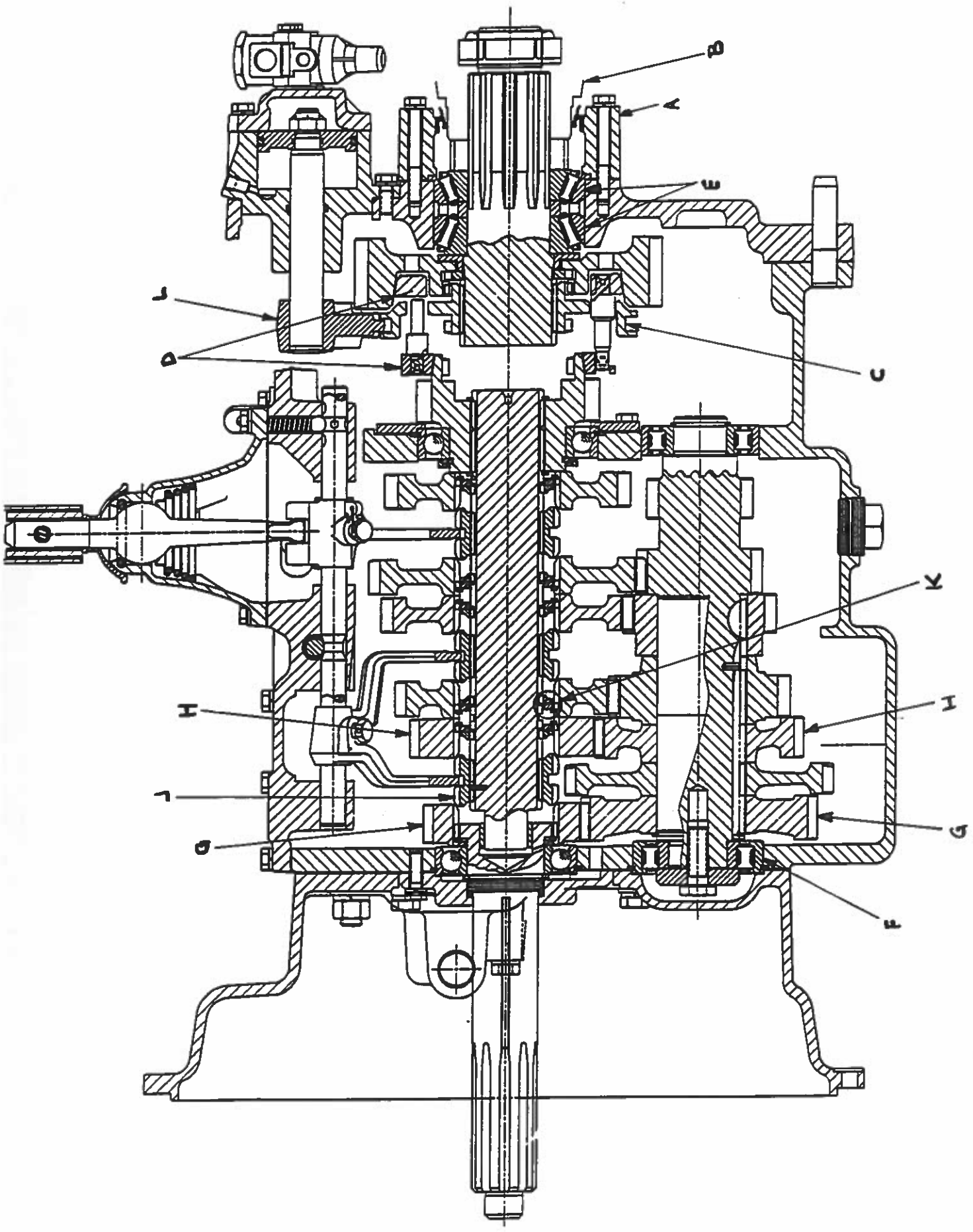


FIGURE 2

5-5



Committee Correspondence

K

Name of Committee:
SAE/LRI Gear Lubricants Review Committee

Date: July 6, 1995

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-95-4

TO: Gear Lubricants Presenters

SUBJECT: Amplification of LRI Gear Lubricants Information Letter No. GL-95-3

This letter is to clarify procedures regarding the heavy duty transmission test as outlined in the Subject LRI Information Letter. Further it is to confirm the information given in the Open Meeting of Meeting No. 86, June 13, 1995, regarding operating mileage permitted on axles and transmissions prior to the start of a field test.

2.4.1.1 AXLE FIELD TEST
No change

2.4.1.2 TRANSMISSION FIELD TEST
Because new trucks can accumulate "destination" mileage", transmission field tests can be conducted using transmissions that have accumulated up to 500 miles of operation; however, new transmissions are preferred.

Other portions of this section prevail.

If you have questions, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: David J. DuBois
GLRC

Committee Correspondence

L

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date:
April 5, 1996

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-96-1

TO: Gear Lubricant Presenters

SUBJECT: Submission of Cut Gears from L-37 Tests

During the Open Meeting of Meeting No. 90, the Committee was asked if presenters could submit cut sections of the Ring Gear and Pinion from the L-37 tests rather than the whole gear and pinion. To be able to do this would reduce the weight of the parts being handled and shipped.

The Committee recognizes the problem, but it needs to see all of the teeth of both the Ring Gear and the Pinion. However, to reduce the weight of the parts being shipped, it is suggested that the Stem Area of the Pinion could be cut off, leaving the teeth for analysis.

If you have any questions or comments, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LIR Gear Lubricants Review Committee

cc: Mr. David J. DuBois
GLRC

M-1

Committee Correspondence

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date: July 6, 1995

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-95-5

TO: Gear Lubricants Presenters

SUBJECT: Seal Immersion Testing for Military Gear Oil Specification

Mr. Chambers has received several inquires by the testing laboratories and formulators regarding the seal immersion tests to be run for presentation to the Committee. Many are assuming they can submit data obtained from API MT-1 Oil Seal Compatibility Test which uses different elastomers, temperatures and times than the Gear Lubricants Review Committee has been requesting for differential gear tests.

The tests the Committee has requested for the past several years has been a 1000-hour, 100°C immersion procedure which is believed to be more typical of the environment for a rear axle. A summary of that test is attached.

If you have comments or questions, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: David J. DuBois
GLRC

Att:

M-2

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-95-5 (Attachment)

SEAL IMMERSION TESTING FOR LRI GEAR LUBRICANTS PRESENTATION

Test per ASTM D471 at 100°C for 1000 Hours. Reference: SAE J200

Measure and Report all parameters as follows:

Test 1000 hours total. Pull seal specimens every 100 hours.
Test Temperature: 100°C.
Plot data using a line chart:
X axis = Time; Y axis = elastomer property change (volume, hardness...etc.)
Run elastomer specimens in triplicate.
Materials to be tested:
"BUNA N" Nitrile - Allison C-3, supplied by Acadia "30-42-3, (Dexron II)
Polyacrylate - Supplied by Freudenberg NOK, #H-126-1 (Dexron II)
Flouroelastomer - Viton - Federal Mogul V-41
Call Bob Mojica (313)354-7817

	Guidelines for Acceptance		
	"BUNA N" Nitrile	Polyacrylate	Fluorolastomer
Volume change, %	+/- 15	+/- 10	+/- 10
Hardness change, pts.	+/- 10 pts	-5 to +10	-15 to +5
Elongation change, %	-55 max.	-35 max.	-40 max.
Tensile Strength change, %	-25 max.	-20 max.	-40 max.
Reversion	Must Pass	Must Pass	Must Pass
Bend Test - Pass/Fail	Must Pass	Must Pass	Must Pass

Committee Correspondence

N-1

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date:
May 12, 1997

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-97-1

TO: Gear Lubricants Presenters

SUBJECT: Revised RGL Form 4

Attached is a copy of the revised "RGL Form 4" for use with the new L-42 referencing system, which will run three "pass oil" tests and one "fail oil" test in order to be referenced.

Use of this Form will be effective beginning with presentations at Meeting No. 96, June 3. 1997.

If you have questions or comments, please do not hesitate to contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review
Committee

cc: Mr. David J. DuBois
GLRC

RGL Form 4: Summary of L-42 Calibration Test Results

N-2

DATE _____ MEETING/PROGRAM _____

TEST IDENTIFICATION	TEST RESULTS - % SCORING Pinion	Ring Gear	COMMITTEE RECOMMENDATION
DATE:_____ TEST NO:_____ REF. OIL:_____ GEAR BATCH:_____	D:_____ C:_____	D:_____ C:_____	_____ A:_____ NA:_____
DATE:_____ TEST NO:_____ REF. OIL:_____ GEAR BATCH:_____	D:_____ C:_____	D:_____ C:_____	_____ A:_____ NA:_____
DATE:_____ TEST NO:_____ REF. OIL:_____ GEAR BATCH:_____	D:_____ C:_____	D:_____ C:_____	_____ A:_____ NA:_____
DISCRIMINATION TEST (1 if required)	**TEST RESULTS - % SCORING Pinion**	**Ring Gear**	**COMMITTEE RECOMMENDATION**
DATE:_____ TEST NO:_____ REF. OIL:_____ GEAR BATCH:_____	D:_____ C:_____	D:_____ C:_____	_____ A:_____ NA:_____

COMMENTS:_____

_____

Committee Correspondence

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date:
June 30, 1997

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-97-2

TO: Gear Lubricants Presenters

SUBJECT: L-42 Reference Oil Scoring Limits

The question of the scoring limits for the L-42 tests has been reviewed by the Committee and the L-42 Surveillance Panel. Concensus has been reached on the following four items , which have been drafted to reflect the operating procedures of the TMC

1. If any test of the 3-test calibration sequence exceeds a 30% score level and passes the LTMS severity guidelines, the test will be considered acceptable by the Committee

2. If the average of the 3-test calibration sequence is below 30% scoring and all tests have passed the LTMS severity guidelines, the average score value of the 3 calibration tests will be used as the pass/fail for the next 15 non-reference oil tests.

3. If any test of the 3-test calibration sequence does not meet the LTMS requirements, that test will be considered statistically unacceptable and cannot be used for test stand calibration or for the 3-test average in generating the pass/fail limit. More calibrtation tests may be performed to replace ones that did not meet the LTMS requirements. If the test stand is adjusted to achieve a nominal score level less than 30%, a complete new calibaration sequence must be performed.

4. When the average of a 3 test calibration sequence exceeds 30% scoring, that calibration sequence is not aceptable for determining the non-reference oil test pass/fail limit.

Although concensus has been reached on the scoring limit, this can be considered to be a learining process. Therfore, the LRI Gear Lubricants Reveiew Committee reserves the right to review this calibration procedure and may revise its position if it is determined that it may lead to the acceptance of candidate oils with excessively high levels of scoring which would not be in the best interest of the user. Any change would be discussed with the ASTM L-42 Surveillance Panel

If you have any questions, please do not hesitate to contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: Mr. David J. DuBois
GLRC

Committee Correspondence

Name of Committee:

Date:
September 8, 1997

Reply to:

SAE/LRI Gear Lubricants Review Committee

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-97-3

TO: Gear Lubricants Presenters

SUBJECT: L-37 Coated and Non-coated Gear Tests

At Meeting No. 97 the Presenters raised four points concerning the plans of the Review Committee to make a rule change regarding the waiver of L-37 Coated tests. These are discussed below.

Reasons for the Change

Current industry surveys of production hypoid gear sets reveal there are no instances in which both the ring and pinion gears are "bare" or non-coated. Either one or both gears of the set are coated (Lubrited). Further, the reviewers of the L-37 (ASTM D6121) tests have observed that tests on the coated gears are more sever (show greater stress) than on the non-coated gears. The change is made so the testing is representive of industry applications.

Clarification of Rule

Based on the above information and to be in line with current industry practice, the Committee, with the concurrence of the Military, has revised Section to read as follows:

Section 2.3.2 -b The L-37 test using non-coated gears and one L-42 test are waived where a given additive package has been qualified in seven or more programs using different base stocks.

Change in level of Performance

This should maintain the level of performance for all tests the same as the first seven (7) tests before the waiver is granted.

Availability of Adequate Hardware

Since there may be a problem of non-coated gear sets being available, this change in the Procedures is effective beginning with Meeting No. 100 (March 1998). However, Presenters who are in a position to do so, could implement this change before Meeting No. 100.

If you have further questions, please do not hesitate to contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Geart Lubricants Review Committee

cc: David J. DuBois
GLRC

Committee Correspondence

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date: September 8, 1997

Reply to:

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-97-4

TO: Gear Lubricants Presenters

SUBJECT: Lubricant Shear-down, Out of Grade, in Service

The Review Committee has received reports of some gear lubricants shearing down, out of grade, in as few as 3000 to 5000 miles in service. There is no doubt this is a Performance Quality that should be evaluated. The Committee needs to learn if this occurrs in any of the gear tests currently being run as part of the review process. It believes this is of interest to the Presenters as well.

As a First Step:

This Information Letter is a request to the Presenters: To submit end-of-test Kinematic Viscosity @ 100 C for any L-37 tests previously reported to the Committee and on which you might have such data. It is suggested these data be entered in Section VII Comments of the related GL Form 2

As a Second Step

As a change in the Procedures, for future L-37 tests and those in progress on this date, and until further notice, conduct and report the end-of-test Kinematic Viscosity @ 100 C on the L-37 Tests. Include these data with the L-37 presentation to the Committee, entering them in Section VII COMMENTS of GL Form 2.

Further:

If you have end-of-test Kinematic Viscosity @100 C data for the L-42 tests, the Committee would be pleased to receive them, though it is not making this a change in the Procedures at this time.

If you have any questions or comments, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: David J. DuBois
GLRC

Committee Correspondence

R-1

Name of Committee:

Date:
September 8, 1997

Reply to:

SAE/LRI Gear Lubricants Review Committee

LRI GEAR LUBRICANTS INFORMATION LETTER No. GL-97-5

TO: Gear Lubricants Presenters

SUBJECT: Revised GL Form 1

Attached is a copy of the revised GL Form 1 which is to be used beginning with Meeting No. 98 and continued until further notice. This form was discussed at the Open Meeting of Meeting No. 97.

This form has been revised to better accommodate the documentation of Gear Lubricants presentations which now, more frequently than previously, are requesting acceptance of Read Across from other other tests.

We believe the form is self explanatory. It is similar to that used for the Engine Oil presentations. If you have any questions, please do not hesitate to contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: David J. DuBois
GLRC

GL Form 1: Program Submission and Committee Recommendation

I. Oil Company _____ Date _____ Meeting/Program: _____
Specification: _____ Viscosity Grade SAE: _____ Formula No.: _____
Purpose: _____

II. I do hereby certify that the information presented for this candidate engine oil is accurate, that the tests were conducted in compliance with the prescribed test procedures, and that the tests results represent the expected performance of this formulation in the specified tests

Presenter's Name: _____ Title: _____

Presenter's Signature: _____ Company: _____

III ADDITIVE FORMULATION

Additive	Designation	Description	Source
A.			
B.			
C.			
D.			
E.			

IV. LUBRICANT IDENTIFICATION:

Test	Act*	Lubricant Code	Grade	Treatment Level Mass % (Finished Oil)					Mtg/Prog Test Originally Accepted	Committee Action: This Oil Code			Committee Action: Read Across/ Final Formulation		
				A	B	C	D	E		A	NA	P	A	NA	P
C&P															
L-60-1															
L-33															
L-37(Coated)															
L-37(Nonc)															
L-42 (Run 1)															
L-42 (Run 2)															
D5579															
D5662															

* Act = Action Required – T = Review Test: RA = Read Across: M = Matrix: N = None

** A = Acceptable; NA = Not Acceptable; P = Pending

V. Committee Recommendation:

The above recommendation applies only to the specification identified above and the gear lubricant described above. This recommendation shall not be construed to be an approval, disapproval, or certification of the above identified gear lubricant by members of the Lubricant Review Institute (LRI) Gear Lubricant Review Committee, either individually or collectively, or to be a guarantee that such engine oil as markete conforms to such specification.

Complete/Partial with Parts _____ Resubmissions/No Parts _____ Consultation _____

Signature: _____ _____

Chairman, LRI Gear Lubricant Review Committee Date

08/97

Committee Correspondence

8.5-1

Name of Committee:

Date:

January 30, 1998

Reply to:

SAE/LRI Gear Lubricants Review Committee

LRI Gear Lubricants Information Letter No. GL-98-1

TO: Gear Lubricants Presenters

SUBJECT: Revised RGL Form 3

Attached is a copy of the revised RGL Form 3, designed to accomodate the rating definitions. Use of this form is to be effective begining with Meeting No.100 and continuing until further notice.

If you have any comments or questions, please do not hesitate to contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc:Secretary LRI
GLRC

S-2

RGL Form 3: Summary of L-37 Calibration Test Results

DATE _____ MEETING/PROGRAM _____ / _____

TEST LABORATORY: _____

TEST IDENTIFICATION	TEST RESULTS	COMMITTEE RECOMMENDATION
DATE: _____ TEST NO: _____ REF. OIL: _____ GEAR BATCH: _____	ASTM RATING: _____ RATINGS: Actual Ind. Avg. Ridging: _____ _____ Rippling: _____ _____ Spalling: _____ _____ Wear: _____ _____ Pitting: _____ _____ Remarks: _____	_____ A: _____ NA: _____
DATE: _____ TEST NO: _____ REF. OIL: _____ GEAR BATCH: _____	ASTM RATING: _____ IND. AVG. _____ RATINGS: Actual Ind. Avg. Ridging: _____ _____ Rippling: _____ _____ Spalling: _____ _____ Wear: _____ _____ Pitting: _____ _____ Remarks: _____	_____ A: _____ NA: _____

COMMENTS: _____

_____

_____

Committee Correspondence T

Name of Committee: SAE/LRI Gear Lubricants Review Committee

Date: January 30, 1998

Reply to:

LRI Gear Lubricants Information Letter No. GL-98-2

TO: Gear Lubricants Presenters

SUBJECT: Cancellation of LRI Gear Lubriacants Information Letter No. GL-97-4
Subject: Lubricant Shear-down, Out of Grade, in Service

Data which has been presented to the Committee, in response to the request by GL-97-4, show that the L-37 and L-42 tests are not sufficiently severe to produce a significant change in kinematic viscosity of the lubricant during the test and thus to evaluate shear-down characteristics.

Effect this date, the Committee cancels the request made by Information Letter GL-97-4. The Committee appreciates the cooperation of the Presenters in conducting the laboratory inspections and providing the data as requested.

Note:

The Committee continues to search for a test that will evaluate the shear-down performance of gear lubricants. It encourages and welcomes Presenter's assistance in this project. As a first step, the Committee requests that Presenters submit KRL Shear Stability Test{CEC-L-45-93-1) 20 hour, Method C data, as well as any data developed by any other laboratory test they have employed to evaluate this characteristic of a lubricant.

If you have any comments or questions, please do not hesitate to contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: Secretary LRI
GLRC

Committee Correspondence

Name of Committee:

SAE/LRI Gear Lubricants Review Committee

Date:

February 12, 1998

Reply to:

LTI Gear Lubricants Review Committee Information Letter No. GL-98-3

TO: Gear Lubricant Presenters

SUBJECT: Extension of effect date of LRI Gear Lubricants Review Committee Information Letter No. GL-97-4

This Information Letter is In response to the request by the ASTM L-37 Surveillance Panel, dated February 2, 1998, to extend the effective date for the change in the Procedures from Meeting No.100, scheduled for March 17, 1998, to Meeting No. 102, scheduled for August 12, 1998.

That request is granted by this Information Letter, and is predicated on the assumption that gesr-sets will be available sufficiently in advance of Meeting No.102 so candidate lubricants will be presented at that time.

If you have questions or comments, please contact me.

Yours very truly,

Richard B. Sneed

Richard B. Sneed, Chairman
LRI Gear Lubricants Review Committee

cc: LRI Secretary
GLRC

V-1

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July 22, 1998

PRI/LRI Gear Lubricants Review Committee Information Letter No. GL-98-4

TO: Gear Lubricant Presenters

SUBJECT: Extension of effect date of LRI Gear Lubricants Review Committee Information Letter GL-98-3.

This Information Letter is in response to a request dated June 11, 1998 from the ASTM L-37 Surveillance Panel (see attached letter) requesting the effective date for running coated gears in the ASTM L-37 test, when a waiver has been granted, from meeting #102 (August 1998) to meeting #104 (January 1999). This request was made due to test hardware availability.

This request is granted by the Review Committee by this letter, and is predicated on the assumption that the gear sets will be available sufficiently in advance of meeting No. 104 that candidate lubricants can be presented at that time.

Should you have any questions please call either David DuBois or myself at PRI.

Yours truly,

Richard B. Sneed

Richard B. Sneed

Cc: LRI Secretary D. DuBois
GLRC

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Web Site: http://www.pri.sae.org

Committee D-2 ON PETROLEUM PRODUCTS AND LUBRICANTS

V-2

Chairman: N. DAVID SMITH, North Carolina Dept. of Agric., 2 West Edenton St., P.O. Box 27647, Raleigh, NC 27611 (919-733-3313) FAX: 919-715-0524
First Vice-Chairman: SUSAN E. LITKA, UOP Research Center, 50 East Algonquin Rd., P.O. Box 5016, Des Plaines, IL 60017-5016 (708-391-3390)
Second Vice-Chairman: KURT H. STRAUSS, 69 Brookside Rd., Portland, ME 04103 (207-773-4380) FAX: 207-775-6214
Secretary: KENNETH O. HENDERSON, Castrol North America, Automotive Div., 240 Centennial Ave., Piscataway, NJ 08854 (908-980-3630) FAX: 908-980-9519
Assistant Secretary: W. JAMES BOVER, Exxon Biomedical Sciences, Inc., Mettlers Rd., CN2350, East Millstone, NJ 08875-2350 (908-873-6318) FAX: 908-873-6009
Staff Manager: EARL R. SULLIVAN (215-299-5514)

June 11, 1998
The Lubrizol Corporation
29400 Lakeland Blvd.
Wickliffe, OH 44092

Performance Review Institute
161 Thornhill Road
Warrendale, PA 15086-7527

Dear Mr. Sneed:

This letter is to formally request a two LRI meeting delay in the rule change outlined in LRI Gear Lubricant Information Letter No. GL-98-3 dated February 12, 1998. This upcoming rule change requires the running of an L-37 test using coated gears when qualifying an additive which has been issued a waiver. We are asking that this requirement, scheduled to be effective at the August 11, 1998 LRI meeting #102, be delayed until the January 1999 LRI meeting #104.

This request is made because the industry does not have an adequate supply of coated gears to comply with the rule change. This is due to a delay in receiving new hardware (originally scheduled for November of 1997) for this test. Current supplies of coated axles are very low.

V-3

The Surveillance Panel has approved a plan for the axle batch that requires data from four labs conducting 5 tests each on respective ASTM TMC reference oils to set targets and acceptance bands. Two laboratories recently started receiving hardware and started the testing to qualify the axle batch. Unfortunately, one laboratory has yet to receive the hardware. That shipment is still pending Dana receiving necessary hardware to complete the assembly. Another laboratory is not able to commence testing until sometime in July because their stand is not available due to a stand upgrade/enhancements to improve operational control that will improve test control and repeatability. Thus, unless the rule change is delayed, most of the industry will be unable to present complete programs to the LRI until additional L-37 hardware is available and acceptable.

Please give this request your consideration and respond as soon as possible.

Sincerely,

Donald T. Bartlett

Donald T. Bartlett, Vice Chairman
L-37 Surveillance Panel

cc: David J. DuBois

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WM

July 22, 1998

PRI/LRI Gear Lubricants Review Committee Information Letter No. GL-98-5

TO: Gear Lubricant Presenters

SUBJECT: LRI Gear Lubricant Procedures update

This Information Letter has been issued to distribute the updated Table 2a from the LRI Gear Lubricant Procedures. This update includes the T-8, CBT, and HUEI test requirements for the appropriate MIL specs.

Should you have any questions please call either David DuBois or myself at PRI.

Yours truly,

Richard B. Sneed

Richard B. Sneed

Cc: LRI Secretary D. DuBois
GLRC

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E-mail pri@sae.org
Web Site: http://www.pri.sae.org

W-2
9

TABLE 2a

ADDITIONAL LABORATORY ENGINE TEST REQUIREMENTS

Test Technique	Parameters	MIL-PRF-2104G/MIL-PRF-21260E			MIL-L-46167
RFWT	Pin Wear, um, avg. max mils, avg. max	1 Test 11.4 0.45	2 Test 12.4 0.49	3 Test 12.7 0.50	NR
1N		1 Test	2 Test	3 Test	NR
	Top Groove Fill, %avg., max	20	23	25	
	WDN, demerits, avg., max	286	311.7	323.0	
	Top Land Heavy carbon, %, avg. max	3	4	5	
	Oil Consumption, g/k-W-h, avg., max.	0.5	0.5	0.5	
	Scuffing, piston/rings/liners/, avg., max.	None	None	None	
	Stuck Rings, avg., max.	None	None	None	
1M-PC	Top Groove Fill, % max.	70			NR
	WTD, avg. max	240			
	Ring Side Clearance Loss, mm, max.	0.013			
	Piston Ring Sticking	None			
	Piston, Ring, and Liner Scuffing	None			
T-8		1 Test	2 Test	3 Test	NR
	Viscosity increase, cSt, max. from min. corrected to 3.8% Soot by TGA	11.5	12.5	13.0	
	Oil Consumption, g/Bhp-h, max.	0.0005	0.0005	0.0005	
CBT	ASTM D 5968				NR
	Copper, max ppm increase	20			
	Lead, max ppm increase	60			
	ASTM D 130				
	Copper corrosion, max (P130 rating)	No. 3			
HEUI TEST	Foam Stability at 20 hrs % max	10			NR

X-1

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December 28, 1998

PRI/LRI Gear Lubricants Information Letter No. GL-98-6

TO: All Gear Lubricant Presenters and Review Committee Members

SUBJECT: Update of Information

The purpose of this Information Letter is to provide you with an update of information discussed at the last LRI meeting. Shown in Attachment 1 is a list of several questions that were a result of the last CRC Field Test Gear Rating Workshop. These questions were presented to the Review Committee at the last meeting and discussed. The LRI Review Committee has agreed to the following:

1. The LRI Gear Lubricants Review Committee recommends wiping (only) of the whole seal area for field tests being presented to LRI. Please indicate in the comment section of the report the presence of grease and its condition.
2. The LRI Gear Lubricants Review Committee requires all field test raters to be calibrated raters.
3. It was agreed that leakage should be added to the approved field test evaluation form. Shown in Attachment 2 is the definition of the various stages of leakage and an updated Fleet Axle Inspection Form is shown in Attachment 2a.

Shown in Attachment 3 is an update of the L-37 gear batch.

Attachment 4 is also an update on the status of the L-42 gear batch. The LRI Review Committee will handle the waiver of the 3 meeting program completion requirement on a case-by-case basis until the L-42 gear situation is resolved.

Attachment 5 is the proposed dates for the 1999 LRI meeting schedule.

Lastly, we continue to explore various options for a new Chairman of the LRI Review Committees. We will keep you up to date as progress on this task is made.

Should you have any additional questions, please call.

Sincerely,

David J. DuBois
PRI/LRI Secretary

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Attachment 1

X-2

November 10, 1998 LRI

AT THE CRC GEAR/BEARING/SEAL RATING WORKSHOP IN SAN ANTONIO THERE WAS SOME DISCUSSION ON THE FIELD TEST TABLES ABOUT RATING SEALS. WHEN RATING SEALS SOME RATERS WASH THE SEALS IN SOLVENT BEFORE RATING THE GREASE PACK AREA, SOME RATERS WIPE THE GREASE PACK AND THEN RATE, AND SOME RATERS ONLY WIPE A SMALL AREA OF THE GREASE PACK AREA TO RATE. STANDARDIZATION OF THE PROCEDURE WILL PROVIDE A MECHANISM FOR US TO ACHIEVE IMPROVED REPRODUSEABILITY. COMPLIANCE TO THE APPROVED EVALUATION METHOD AND FORMAT WILL ALSO CONTRIBUTE TO A REPRODUCIBLE AND MEANINGFUL LABORATORY TO FIELD COORELATION DATA BASE.

A RATER CALIBRATION REQUIRMENT HAS ALREADY BEEN IMPLEMENTED INTO THE L-33, L-42. L-60-1 AND L-37 TESTS AS A SIGNIFICANT CONTRIBUTOR TO TEST REPEATABILITY AND ESSENTIAL FOR QUALITY AND MEANINGFUL EVALUATIONS. THE FIELD TEST SHOULD ALSO BE DONE BY A CALIBRATED RATER SINCE THE DATA THAT IS PRESENTED GOES THROUGH THE SAME APPROVAL PROCESS BY THE SAME PEOPLE.

SHOULD LEAKAGE BE ADDED TO THE APPROVED FIELD TEST EVALUATION FORM FOR HEAVY AND LIGHT DUTY AXLES.

Attachment 2 X-3

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, USA 78228-0510 • (210) 684-5111 • TELEX 244846

November 16, 1998

Mr. David Dubois
Performance Review Institute
161 Thornhill Road
Warrendale, PA 15086-7527

Dear Mr. Dubois:

Enclosed please find the definitions that are added to the Axle field test rating forms for rating seals.

None – Dry
Weep – Wet, but NO drop
Seep – Wet with a drop visible, but not dripping
Leak – Wet with oil dripping

Also enclosed please find the revised rating forms.

If you have any questions, please call me at (210) 522-3445.

Regards,

Garland Tschirhart
ASTM Gear Rating Task Force
Chairman

GT/bls

Attachment 2a

X-4

FLEET AXLE INSPECTION

Fleet		Procedure No.	
Vehicle No.		Axle Type	
Date Comp.		Axle Number	
Oil Code		Test Miles	
Rated By:		Date:	Front Unit
Approved By:		Date:	Rear Unit

Gear	Pinion		Ring Gear		Spider	Cross	Side
Condition	Drive	Coast	Drive	Coast	Gears	Shaft	Gears
Burnish							
Wear							
Rippling							
Ridging							
Pitting							
Spalling							
Scoring							
Discoloration							
Corrosion							

Bearing	Differential		Pinion		Wheel Bearings	
Condition	Cups	Rollers	Cups	Rollers	Left	Right
Wear						
Scoring						
Pitting						
Spalling						
Discoloration						
Corrosion						
Roller End Wear						

Seals	Wear	Hardening	Reversion	Blistering	Cracking	Deposits	Weap	Seep	Leak
Input									
Output									
Left Wheel									
Right Wheel									

	Thrust Washers		Axle Shafts	
	Spider Gear	Side Gear	Right	Left
Wear				
Scoring				
Pitting				
Spalling				
Discoloration				
Corrosion				

DEPOSITS Amount & Nature

Axle Shaft	
Axle Cover	
Axle Housing	
Diff. Case	
Cross Shaft	
Pinion	
Ring Gear	
Bearings	

Remarks

Input Yoke (S/C Area)

Wear	
Pitting	
Discol.	
Deposit	

NOTE: These ratings were performed using the CRC Rating Manual No. 17 Protocol

Attachment 3

X-5

Presentation to LRI Committee
Tuesday, November 10, 1998

Current Status of Gear Batch (P4L514/V1L303)

Lubrited

- **Matrix Testing Completed**
- **Data and Hardware Reviewed**
- **Surveillance Panel Approval Granted for Testing (No Rating Exclusion Zone)**
- **Gear Batch Acceptable for LRI Program Presentation, Effective the Completion Date of Batch Approval Matrix Tests in Respective Laboratory**

Attachment 4

X-6

100 YEARS
ASTM
A PROVEN PARTNERSHIP

Committee D-2 on PETROLEUM PRODUCTS AND LUBRICANTS

Chairman: N. DAVID SMITH, North Carolina Dept. Of Agric., 2 West Edenton St. P.O. Box 27647, Raleigh, NC 27611 (919-733-3313) FAX: 919-715-0524
First Vice-Chariman: SUSAN E. LITKA, UOP LLC, 50 East Algonquin Rd., P.O. Box 5016, Des Plaines, IL 60017-5016 (847-391-3390) FAX: 847-391-3330
Second Vice-Chairman: KURT H. STRAUSS, 69 Brookside Rd., Portland, ME 04103 (207-773-4380) FAX: 207-775-6214
First Secretary: KENNETH O. HENDERSON, Cannon Instrument Company, Box 16, State College, PA 16804-0016 (814-353-8000) FAX: 814-353-8007
Second Secretary: W. JAMES BOVER, Exxon Biomedical Sciences, Inc., Mettlers Rd., CN2350, East Millstone, NJ 08875-2350 (732-873-6318) FAX: 732-873-6009
Staff Manager: EARL R. SULLIVAN, (610-832-9709) e-mail: esulliva@astm.org

November 13, 1998

Mr. Dale Muyskens, Chairman ASTM D2B03

Dear Dale,

This letter is intended to inform interested parties of the current status of the ASTM L-42 test for evaluating the scoring resistance of automotive gear oils under conditions of high speed and shock loading. The gear lubricant industry's ability to utilize the L-42 test for API GL-5 and MIL-PRF-2105E conformance testing is being severely hampered by the lack of industry approved gear units at most laboratories. The major independent laboratory has no inventory of approved axles.

The testing laboratories have been struggling over past 12 months to approve the latest batch of gears without success. Recent news from the gear supplier indicates that the rings and pinions were tempered when they should not have been. Therefore, further attempts to qualify the current batch have been suspended and a new gear batch will have to manufactured and qualified before conformance testing can resume. Approval of the next gear batch is expected to take six to nine months. The L-42 Surveillance Panel will keep Section B03 and the LRI Committee apprised of the progress of the next axle batch.

This situation has prompted the L-42 Surveillance Panel to alert the industry of the acute shortage or depletion of L-42 axles at the independent test sites, and its impact on the ability to present programs to the LRI committee.

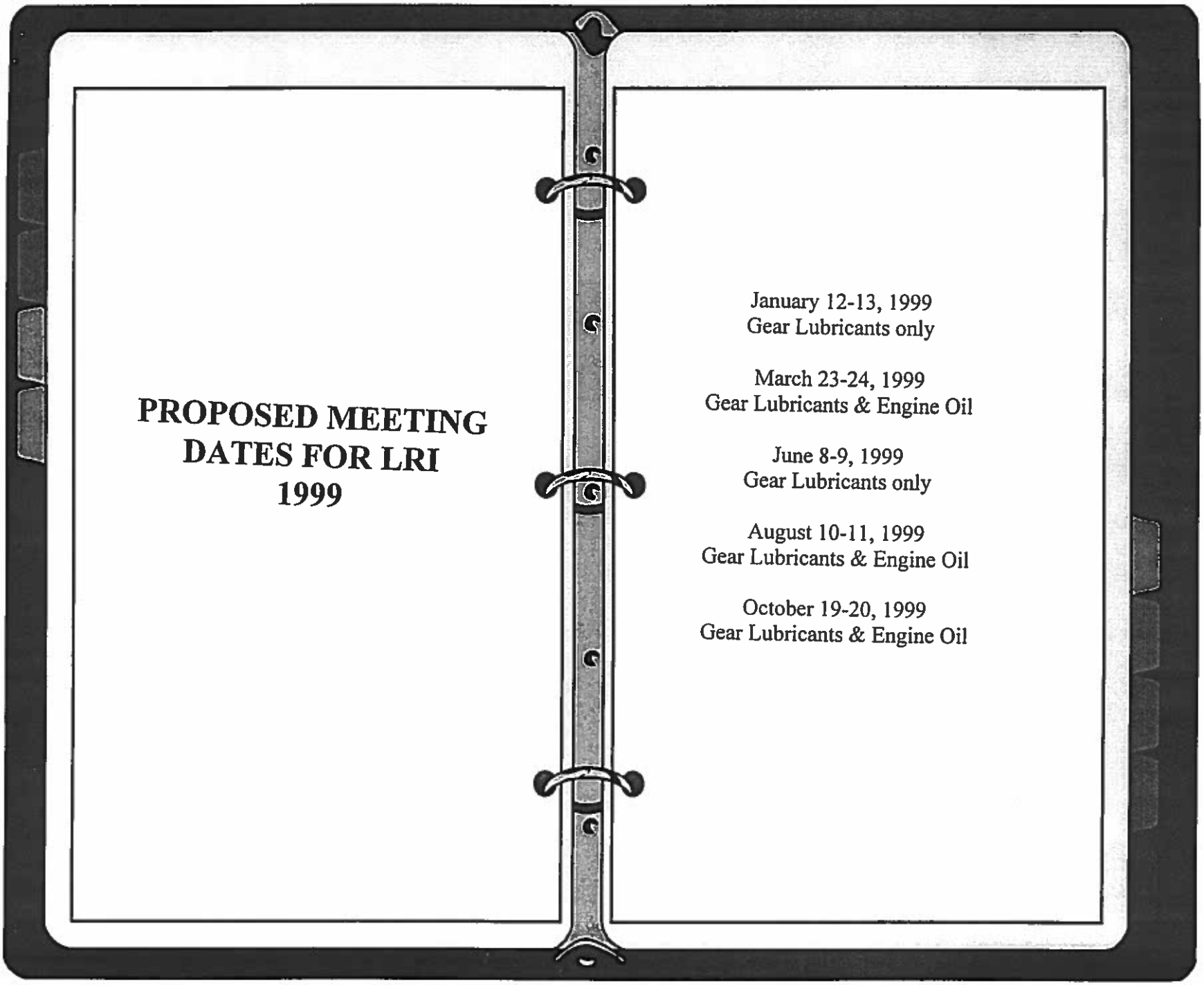
Respectfully submitted,

John W Beck

John W. Beck
Chairman, L-42 S.P.

cc: Luis Villahermosa
Dave DuBois
Francis Duffy, Chairman ASTM SC D02.B
L-42 S.P. members

Attachment 5 X-7



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Y

December 28, 1998

PRI/LRI Gear Lubricants Information Letter No. GL-98-7

TO: All Gear Lubricant Presenters and Review Committee Members

SUBJECT: Request for Information

It has come to our attention that the information presented in TABLE 2 - Summary of Production Tolerances For MIL-PRF-2105E Gear Lubricants may not be realistic. The US Army and the LRI Review Committee is requesting any organization that has data to support or refute these value to please provide it to either me directly or during one of your future LRI presentations.

No fee will be charged for presentation of such data.

Should you have any additional questions, please call.

Thank you in advance for your cooperation and assistance in this matter.

Sincerely,

David J. DuBois
PRI/LRI Secretary

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2-1

July 7, 1999

PRI/LRI Gear Lubricants Information Letter No GL-99-1

PRI/LRI Engine Oil Information Letter No EO-99-1

TO: All Participants in the PRI/LRI Engine Oil and /or Gear Lubricant Review Programs

SUBJECT: Price Increase

Effective with presentations made at LRI Meeting #107 scheduled for August 24 & 25, 1999 the following will be the fee structure:

Full Program	$550
Reference Test	$175
Resubmission	$300
Consultation/Advice	$600

A price increase has not occurred since February of 1994.

The following definitions apply:

1. **Full Program** - Any program that requires review of test hardware and/or test reports in support of lubricant qualification. This includes, but is not limited too, rig tests, bench tests, engine dynamometer tests, consistency data, field tests, and any other testing requested by the review committee.
2. **Reference Test** - Any test report that is submitted and reviewed in support of test stand referencing and/or calibration.
3. **Resubmission** - Any submission made to enter into the official record data that was not submitted during the 40 day correction period.
4. **Consultation/Advice** - Programs submitted to the Review Committee that request guidance and/or input on proceeding for lubricant qualification.

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The LRI Chairperson in consultation with PRI staff will resolve any questions regarding what classification a program meets. PRI Staff will work with all presenters to ensure proper classification of all programs.

This price increase is necessary to ensure long term viability of the program. Additionally, PRI will review on a yearly basis all fees associated with the program and adjust them as necessary.

Any questions concerning this price increase can be sent to David J. DuBois, Secretary & Acting LRI Chairman.

Sincerely,

David J. DuBois
PRI/LRI Secretary & Acting Chairman

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AA

December 29, 1999

PRI/LRI Engine Oil Information Letter No EO-99-4
PRI/LRI Gear Lubricant Information Letter GL-99-1

TO: PRI/LRI Engine Oil and Gear Lubricant Review Committee and Presenters

SUBJECT: PROPOSED SCHEDULE CHANGE

A request has come to my attention to move the Gear Lubricant Review Committee Meeting from Tuesday to Wednesday during the LRI week. If this occurred, we would move the Engine Oil Review Committee meeting to Tuesday on the weeks that it meets. This would have several positive outcomes:

- Tuesday could be a full day of ASTM Surveillance Panel Meetings
- Allow west coast people to not have to travel on weekends
- Those with no LIR business would only have to come for one day
- Most could work a full day on Monday

Please consider this and be prepared to discuss during the open meeting in January. Those who participate in Engine Oil only and will not be here in January can call me, write me or email me. My email is: dubois@sae.org

If you have any additional questions, please call.

Sincerely,

David J. DuBois
PRI/LRI Secretary & Acting Chairman

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BB-1

December 29, 1999

TO: Members of the LRI Gear Lubricant Review Committee

SUBJECT: L-37 Gear Test

Dear Members:

I hope you all had a safe and happy holiday!!

Enclosed is a copy of my letter sent to the L-37 Surveillance Panel and a copy of their response. Please review this correspondence and be prepared to discuss at the next LRI meeting scheduled for January 25, 2000.

If you have any additional questions, please call.

Sincerely,

David J. DuBois
LRI Secretary and Acting Chairman

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B-B 2

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November 10, 1999

Lubrizol Corporation
ATTN: Don Bartlett, Vice Chairman
ASTM L-37 surveillance Panel
29400 Lakeland Blvd
Wickliffe, OH 44092

Dear Don:

The LRI Gear Lubricant review Committee would like to express to you our concern relative to pitting and spalling associated with the pinions in gear batch V1L303/P4L514A.

In at least two separate reference tests run at two different laboratories we have seen spalling at levels greater than expected with the above mentioned gear batch. This primarily has occurred in the heel wear step area.

This condition may not be limited to reference test only.

We request that you further investigate this potential problem and make recommendations at or before the January 25, 2000 LRI meeting.

If you have nay further questions concerning this request please call.

Thank you for your consideration.

Sincerely,

David J. DuBois
LRI Secretary and Acting Chairman

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BB3

100 Barr Harbor Drive ■ West Conshohocken, PA 19428-2959
Telephone: 610-832-9500 ■ Fax: 610-832-9555 ■ e-mail: service@astm.org ■ Website: www.astm.org

Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

December 10th, 1999
The Lubrizol Corporation
29400 Lakeland Blvd.
Wickliffe, OH 44092

Mr. David DuBois, LRI Secretary and Acting Chairman
LRI Gear Lubricants Review Committee
SAE World Headquarters
Warrendale, PA

Dear David:

This letter is in response to the LRI Gear Lubricant Review Committee letter to the L-37 Surveillance Panel dated November 10th, 1999. In that letter, the Committee requested a recommendation from this panel at or before the January 25, 2000 LRI meeting relative to pitting and spalling associated with the pinions in gear batch V1L303/P4L514A.

The ASTM L-37 Surveillance panel has met twice since November 10th and has determined that:

- There is a tendency for gears from the V1L303/P4L514A hardware batch to produce pitting and spalling.
- This pitting and spalling is being seen with both reference oils and non-reference oils.
- This problem is related to the manufacture of the gear batch and is not a function of oil quality.
- This distress may occur with (non-reference) oils with a history of satisfactory performance in the field.

BBY

The ASTM L-37 Surveillance Panel recommends that the LRI:

- Review non-reference oil tests conducted on lubrited gears from this gear batch that have pitting and spalling present, discounting the presence of this type of distress.
- Require support data to substantiate protection against pitting and spalling for the performance additive under evaluation.
- Rate these tests for parameters other than pitting and spalling using the traditional methods and standards.

The L-37 Surveillance panel respectfully requests that the LRI Lubricant Review Committee review the recommendation and report the Committee's decision at the January 25, 2000 LRI meeting in order to allow presenters the opportunity to present candidate programs.

Thank you for your consideration.

Sincerely,

Donald T. Bartlett

Donald T. Bartlett, Vice Chairman
L-37 Surveillance Panel

CC-1

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April 12, 2000

PRI/LRI Gear Lubricants Information Letter No. GL-00-1

TO: All Gear Lubricant Presenters and Review Committee Members

SUBJECT: L-37 Gear Batch V1L303/P4L514A

At the January 25, 2000 LRI Gear Lubricants review Committee meeting, the members discussed the attached letter from the ASTM L-37 Surveillance panel concerning the above reference gear batch.

Following a brief discussion the Review Committee agreed to implement the following:

- The Committee will review non-reference oil tests (candidates) conducted on lubrited gears from this gear batch that have pitting and spalling resent. However, they will discount this type of distress in the evaluation of the lubricant performance.
- All presenters that present such candidates will be required to provide additional support data to substantiate that the performance additive under evaluation protects from pitting and spalling.
- The review Committee will rate all other parameters in the test using traditional methods and standards.

This will be in effect until further notice.

Sincerely,

David J. DuBois
PRI/LRI Secretary & Acting Review Committee Chairman

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CC-2

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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

Chairman: N DAVID SMITH, North Carolina Dept of Agric, 2 West Edenton St, PO Box 27647, Raleigh, NC 27611, (919) 733-3313, FAX: 919-715-0524, EMail: david_smith@ncdamail.agr.state.nc.us
First Vice Chairman: SUSAN E. LITKA, UOP LLC, 50 East Algonquin Road, PO Box 5016, Des Plaines, IL 60017-5016, (847) 391-3390, FAX: 847-391-3330, EMail: selitka@uop.com
Second Vice Chairman: KURT H. STRAUSS, 69 Brookside Rd, Portland, ME 04103, (207) 773-4380, FAX: 207-775-6214
Secretary: KENNETH O. HENDERSON, Cannon Instrument Co, PO Box 16, State College, PA 16804-0016, (814) 353-8000, Ext: 0265, FAX: 814-353-8007, EMail: kenohenderson@worldnet.att.net
Assistant Secretary: W JAMES BOVER, Exxon Biomedical Sciences, Mettlers Rd CN2350, East Millstone, NJ 08875-2350, (732) 873-6318, FAX: 732-873-6009, EMail: james.bover@ere.exxon.sprint.com
Staff Manager: EARL R. SULLIVAN, (610) 832-9709, EMail: esulliva@astm.org

December 10th, 1999
The Lubrizol Corporation
29400 Lakeland Blvd.
Wickliffe, OH 44092

Mr. David DuBois, LRI Secretary and Acting Chairman
LRI Gear Lubricants Review Committee
SAE World Headquarters
Warrendale, PA

Dear David:

This letter is in response to the LRI Gear Lubricant Review Committee letter to the L-37 Surveillance Panel dated November 10th, 1999. In that letter, the Committee requested a recommendation from this panel at or before the January 25, 2000 LRI meeting relative to pitting and spalling associated with the pinions in gear batch V1L303/P4L514A.

The ASTM L-37 Surveillance panel has met twice since November 10th and has determined that:

- There is a tendency for gears from the V1L303/P4L514A hardware batch to produce pitting and spalling.
- This pitting and spalling is being seen with both reference oils and non-reference oils.
- This problem is related to the manufacture of the gear batch and is not a function of oil quality.
- This distress may occur with (non-reference) oils with a history of satisfactory performance in the field.

CC-3

The ASTM L-37 Surveillance Panel recommends that the LRI:

- Review non-reference oil tests conducted on lubrited gears from this gear batch that have pitting and spalling present, discounting the presence of this type of distress.
- Require support data to substantiate protection against pitting and spalling for the performance additive under evaluation.
- Rate these tests for parameters other than pitting and spalling using the traditional methods and standards.

The L-37 Surveillance panel respectfully requests that the LRI Lubricant Review Committee review the recommendation and report the Committee's decision at the January 25, 2000 LRI meeting in order to allow presenters the opportunity to present candidate programs.

Thank you for your consideration.

Sincerely,

Donald T. Bartlett

Donald T. Bartlett, Vice Chairman
L-37 Surveillance Panel

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DD

April 12, 2000

PRI/LRI Gear Lubricants Information Letter No. GL-00-2

TO: All Gear Lubricant Presenters and Review Committee Members

SUBJECT: L-37 Gear Batch V1L686/P4L626A (Non Lubrited)

At the April 6, 2000 LRI Gear Lubricants review Committee meeting, the members discussed the approval of the above referenced gear batch based on recommendations from the ASTM L-37 Surveillance panel.

Following a brief discussion the Review Committee moved and passed a motion to accept Gear Batch V1L686/P4L626A (non-lubrited) for reference and candidate testing.

This will be in effect until further notice.

Sincerely,

David J. DuBois
PRI/LRI Secretary & Acting Review Committee Chairman

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EE

March 19, 2001

TO: All Gear Lubricant Presenters

Subject: GL-01-01 Acceptance of L-37 hardware P4L626A/V1L686

Dear Presenters:

At the January LRI meeting the Gear Lubricant Review Committee accepted for presentation the above reference gear batch and will allow a ridging correction factor of 0.5186. This correction factor is for the pinion only and not the ring.

This will be in effect until further notice.

Should you have any additional questions concerning this action please call.

Sincerely,

David J. DuBois
Secretary / Acting Chairman
LRI Gear Lubricants Review Committee

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FF

March 19, 2001

TO: All Gear Lubricant Presenters

Subject: GL-01-02 ISO/IEC 17025 Laboratory Accreditation Requirement

Dear Presenters:

The recently released LRI procedures requires laboratories that are conducting tests for presentation to the LRI must be accredited to the ISO/IEC 17025 standard. Several organizations have expressed concern over this requirement and have requested an extension. Based on these discussions, the LRI will accept test run in laboratories that do not have ISO/IEC 17025 accreditation for the next 18 months. At that time, this requirement will be reviewed and a decision made if the extension should be continued.

Should you have any additional questions concerning this action please call.

Sincerely,

David J. DuBois
Secretary / Acting Chairman
LRI Gear Lubricants Review Committee

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GG

April 24, 2001

TO: All Gear Lubricant Presenters

Information Letter: GL-01-03

Subject: Extension of three (3) Meeting Requirement of L-33

Dear Presenters:

Section 3.4 of the LRI Procedures Manual requires presentation of candidate lubricants be completed within three consecutive meetings. Due to test availability associated with the L-33, this requirement will be waived for programs presented where an L-33 test is needed to complete qualification. If, for any other reason, a program cannot be complete in the three meeting time frame, a request for an extension from the Review Committee is required.

This waiver will be in effect until further notice.

Should you have any additional questions concerning this action please call.

Sincerely,

David J. DuBois
Secretary / Acting Chairman
LRI Gear Lubricants Review Committee

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HH

August 2, 2001

TO: All Gear Lubricant Presenters

Subject: GL-01-04 Change in Acceptance of L-37 hardware P4L626A/V1L686

Dear Presenters:

At the January LRI meeting the Gear Lubricant Review Committee accepted for presentation the above reference gear batch and will allow a ridging correction factor of 0.5186. This correction factor is for the pinion only and not the ring. This correction factor remains in effect.

However, at the June LRI meeting, the L-37 Surveillance Panel made a recommendation that a correction factor of 0.9922 for the ring "ridging" distress be applied. This is for the lubrited hardware only. This recommendation was found to be acceptable by the Review Committee.

These correction factors will be in effect until further notice.

Should you have any additional questions concerning this action please call.

Sincerely,

David J. DuBois
Secretary / Acting Chairman
LRI Gear Lubricants Review Committee

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II

November 7, 2002

PRI/LRI Gear Lubricants Information Letter No. GL-02-1

TO: All Gear Lubricant Presenters and Review Committee Members

SUBJECT: L-33 Test Results Acceptance

Based on discussions and as reported at the September LRI meeting, the following will be the criteria for acceptance of the L-33 test.

If an L-33 test (run in the proposed L33-1 test procedure) receives a passing result of 9.0 or better overall rating it shall not have a rating of 5.0 or less on any individual rating area. Additionally, if the passing result is 9.0 or better overall, it shall not have more than three (3) areas rated as an 8.0 or less.

This will be in effective with all L-33's presented to the LRI since June 11, 2002 and will remain effective until further notice.

All presenters are urged to review past presentation to ensure all L-33's presented meet these criteria.

Sincerely,

David J. DuBois
PRI/LRI Secretary & Acting Review Committee Chairman

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JJ-1

January 13, 2003

PRI/LRI Engine Oil Information Letter No EO-03-1
PRI/LRI Gear Lubricant Information Letter GL-03-1

TO: PRI/LRI Engine Oil and Gear Lubricant Review Committee and Presenters

SUBJECT: Requirements for PRI QPL Listing

Enclosed please find the Affidavits that are to be completed and submitted to my office to be included on the PRI Qualified Products List (QPL). The initial list will be published and available on the PRI WEB site (www.pri.sae.org) March 3, 2003. However, as submittals are received, you will be issued a QPL qualification letter and QPL Number.

1. Gear Lubricant Qualifications will be valid for a five (5) year period. Engine Lubricant Qualifications will be valid for a four (4) year period.
2. A Qualification Listing Fee of $250/year will be required. The total fee for the entire qualification period must accompany the Affidavits and paperwork or the qualification will not be processed.
3. You will be issued a qualification letter in the order that submittals are received. This will also include allowable tolerances. It is anticipated that an aftermarket monitoring program will be started in the near future.
4. If you are currently on the US Army QPL, and want to transition to the PRI QPL, you will need to submit with the appropriate QPL letter from the Army (including the tolerance limits) and the appropriate PRI affidavit. Your expiration date will remain the same as that given to you by the US Army. If there is less than one (1) year remaining on your qualification there will be no charge to be placed on the PRI QPL. If you have more than one (1) year left, round up to the next full number of years to determine the appropriate fee (i.e. if you have 18 months this would round up to 2 years and the fee would be $500) and submit the required paper work.

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JJ-2

5. For an original qualification, you will need to submit Affidavit Form # 1 with completed and signed LRI Forms 1, 2, 2a, and 3 as appropriate. If you wish to have a re-blend qualification of an original qualification, you will need to submit Affidavit Forms 1 &2 from the original qualification holder as well as a completed Affidavit Form 3. If you are going to re-brand an original qualification, you will need to submit Affidavit Forms 1 & 4 from the original qualification holder as well a completed Affidavit Form 5.

If you have any questions please call (724-772-1616 X8136) or email me at dubois@sae.org. I want to make the transition from the Army QPL system to the PRI QPL system as smooth as possible. I look forward to being of assistance to anyone as we move forward with this project.

Sincerely,

David J. DuBois
PRI/LRI Secretary & Acting Chairman

JJ.3

PRI Lubricant QPL Affidavit Form #1
Original Qualification

Company Name: _____

Company Address: _____

_____

Contact Name: _____

Phone: _____

FAX: _____

Email: _____

I/We _____ (Company Official Name) do here by certify that this company _____ (Company Name) has verified the formulation listed below has been tested in accordance with the applicable performance and laboratory tests, as required by the standard identified below, and in agreement with LRI procedures. This formulation was presented and accepted at the following LRI Meeting/Program _____ (LRI Meeting/Program #).

(Attach appropriate completed and signed LRI Forms 1, 2, 2a, and 3 as needed)

Formulation Name/Code: _____

Brand Name: _____ *Required only if manufacturing/blending

SAE Standard: _____

SAE Viscosity: _____

Plant Blending Approval Granted: _____ (LRI Meeting/Program #). *Required only if manufacturing/blending

_____
Corporate Official Name & Title

_____
Corporate Official Signature

Notary Seal

_____
Date

_____
Notary Signature

↓ PRI Use Only ↓

Date Submitted _____ QPL Assignment Number _____

Date Accepted _____ Staff Signature _____

JJ-4

PRI Lubricant QPL Affidavit Form #2
Reblend of Original Qualification

Company Name: _____

Company Address: _____

_____

_____

Contact Name: _____

Phone: _____

FAX: _____

Email: _____

I/We _____ (Company Official Name) do here by grant permission to the company listed below to reblend our product _____ (Product Name) listed as PRI's QPL # _____ (PRI QPL #) in accordance to what was presented and accepted at LRI meeting/Program _____ (LRI Meeting/Program #)

(Attach appropriate completed and signed Affidavit #1 as needed)

Reblend Company Name: _____

Reblend Lubricant Name: _____

Reblend Company Contact Name: _____

SAE Standard: _____

SAE Viscosity: _____

_____
Original QPL Corporate Official Name & Title

_____
Original QPL Corporate Official Signature

Notary Seal

_____
Date

_____
Notary Signature

↓ PRI Use Only ↓

Date Submitted _____ QPL Assignment Number _____

Date Accepted _____ Staff Signature _____

JJ-5

PRI Lubricant QPL Affidavit Form #3
Reblend Request for Qualification

Company Name: _____

Company Address: _____

_____

_____

Contact Name: _____

Phone: _____

FAX: _____

Email: _____

I/We _____ (Company Official Name) do here certify we will manufacture the lubricant listed below in accordance with what was presented and accepted at LRI Meeting/Program _____ (LRI Meeting/Program #) and assigned PRI QPL # _____ (PRI QPL #) as granted to us by the original qualification holder evidenced by the attached PRI QPL Affidavit #2.

(Attach appropriate completed and signed Affidavit #1 and Affidavit #2 as needed)

Reblend Lubricant Name: _____

SAE Standard: _____

SAE Viscosity: _____

Plant Blending Approval Granted: _____ (LRI Meeting/Program #)

_____
Reblend QPL Corporate Official Name & Title

_____
Reblend QPL Corporate Official Signature

Notary Seal

_____
Date

_____
Notary Signature

↓ PRI Use Only ↓

Date Submitted _____ Reblend QPL Assignment Number _____

Date Accepted _____ Staff Signature _____

JJ-6

PRI Lubricant QPL Affidavit Form #4
Rebrand for Qualification

Company Name: _____

Company Address: _____

_____

_____

Contact Name: _____

Phone: _____

FAX: _____

Email: _____

I/We _____ (Company Official Name) do here certify we will provide to _____ (Lubricant Rebrand Manufacturer) the finished lubricant listed below in accordance with what was presented and accepted at LRI Meeting/Program _____ (LRI Meeting/Program #) and assigned PRI QPL # _____ (PRI QPL #) as evidenced by the attached PRI QPL Affidavit #1.

(Attach appropriate completed and signed Affidavit #1 as needed)

Lubricant Name: _____

SAE Standard: _____

SAE Viscosity: _____

Plant Blending Approval Granted: _____ (LRI Meeting/Program #)

_____
Original QPL Corporate Official Name & Title

_____
Original QPL Corporate Official Signature

Notary Seal

_____
Date

_____
Notary Signature

↓ PRI Use Only ↓

Date Submitted _____ Rebrand QPL Assignment Number _____

Date Accepted _____ Staff Signature _____

JJ-7

PRI Lubricant QPL Affidavit Form #5
Rebrand Request for Qualification

Company Name: _____

Company Address: _____

_____

_____

Contact Name: _____

Phone: _____

FAX: _____

Email: _____

I/We _____ (Company Official Name) do here certify we will market _____ (Qualified Lubricant Brand Name) as a finished lubricant accepted at LRI Meeting/Program _____ (LRI Meeting/Program #) and assigned PRI QPL # _____ (PRI QPL #) as evidenced by the attached signed and executed PRI QPL Affidavit under the brand name listed below.

(Attach appropriate PRI Affidavit as needed)

Rebrand Lubricant Name: _____

SAE Standard: _____

SAE Viscosity: _____

_____
Rebrand QPL Corporate Official Name & Title

_____
Rebrand QPL Corporate Official Signature

Notary Seal

_____
Date

_____
Notary Signature

↓ PRI Use Only ↓

Date Submitted _____ Rebrand QPL Assignment Number _____

Date Accepted _____ Staff Signature _____

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KK

January 2, 2003

PRI/LRI Gear Lubricants Information Letter No. GL-03-2

TO: All Gear Lubricant Presenters and Review Committee Members

SUBJECT: Presentation of ASTM D5662 Test Results to the LRI

The TMC requests that labs submit to the TMC the following information for review prior to the tests being presented to the LRI for the ASTM D5662:

1. Submit a list to TMC 1 week prior to LRI of tests that will be presented at the LRI. This list should include the CMIR and test number.

2. Laboratories should have a packet for the TMC Representative at LRI with the ASTM D5662 test they are presenting to confirm nothing has changed.

Packet should include CMIR, Test Number, Bath Number, Elastomer type and test results to confirm they match what was sent to the TMC in their Final Test Report.

If you have any additional questions, please contact either me or Mr. Don Lind at the ASTM Test Monitoring Center. His phone number is 412-365-1034.

Sincerely,

David J. DuBois
PRI/LRI Secretary & Acting Review Committee Chairman

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The Performance Review Institute

LL

August 26, 2004

TO: All Gear Lubricant Presenters

Information Letter GL-04-01

Subject: Correction Factors & Data Rounding

Dear Presenters:

Correction factor as presented at LRI meeting #132 for L-37 low temperature test for ridging of lubrited gear batch VIL686/P4L626A is acceptable. The Group would like to explore the upcoming data for the un-lubrited set & re-evaluate the data at that time. LRI requests a timeframe when the un-lubricated data will be available?

Rounding as proposed using ASTM E-29-02 as an acceptable industry practice. Guidelines will need to be established for each procedure and the significant digit will need to be defined for each test type and parameter. LRI requests the information be presented at meeting 133 for review. Specific instances where rounding can not be used should be defined.

Should you have any additional questions concerning this action please call.

Sincerely

Keith T. Purnell
Acting Chairman
LRI Gear Lubricants Review Committee

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040552

MM

June 16, 2005

PRI/LRI Gear Lubricant Information Letter GL-05-6

TO: PRI/LRI Gear Lubricant Review Committee

SUBJECT: Samples of Qualified Lubricant

When a lubricant is presented to the LRI Gear Lubricant Review Committee, the presenter is to supply a six (6) ounce reference sample to one of the following Army representatives:

Khaled Zriek
Chemist
US Army TACOM-TARDEC, AMSRD-TAR D/MS110
6501 East 11 Mile Road
Warren, Michigan 48397-5000
586/574-4244

Allen Comfort
Chemical Engineer
US Army TACOM-TARDEC, AMSRD-TAR D/MS110
6501 East 11 Mile Road
Warren, Michigan 48397-5000
586/574-4244

The sample shall include the following information:

Brand Name
Grade
LRI Meeting Number Presented
LRI/QPL Number

If you have any questions, please contact me at PRI Headquarters at 724/772-1616 Extension 8182 or kpurnell@sae.org.

Sincerely,

Keith Purnell
PRI/LRI Secretary

wlg/

The Performance Review Institute

NN-1

August 25, 2005

PRI/LRI Gear Lubricant Information Letter GL-05-7

TO: PRI/LRI Gear Lubricant Review Committee

SUBJECT: Samples of Qualified Lubricant

Please disregard previous Letter of Industry distributed August 15, 2005 – GL-05-6. This letter will supercede and clarify the issue.

After a gear lubricant has received qualification approval by the LRI Gear Lubricant Review Committee, presenters, submitting documentation for PRI QPL listing, are required to ship a six (6) ounce reference sample with a MSDS to one of the following Army representatives:

Khaled Zriek
Chemist
US Army TACOM-TARDEC, AMSRD-TAR D/MS110
6501 East 11 Mile Road
Warren, Michigan 48397-5000
586/574-4244

Allen Comfort
Chemical Engineer
US Army TACOM-TARDEC, AMSRD-TAR D/MS110
6501 East 11 Mile Road
Warren, Michigan 48397-5000
586/574-4244

The sample shall include the following information:

Brand Name
Grade
LRI Meeting Number Presented
LRI/QPL Number

NN-2

If you have any questions, please contact me at PRI Headquarters at 724/772-1616 X8182 or kpurnell@sae.org.

Sincerely,

Keith Purnell

PRI/LRI Secretary

The Performance Review Institute

00-1

April 21, 2006

PRI/LRI Lubricant Information Letter GL-06-04

TO: PRI/LRI Gear Lubricant Review Committee

SUBJECT: Change in Requirements for Reblending Approval

Reblending of Qualified Products

The Qualifying Activity will allow reblends of qualified products by a second manufacturer with manufacturing facility approval. The Qualifying Activity will also allow reblends of qualified products by a second manufacturer when the manufacturing facility has an ISO9000-2000 approved quality system performed by an ANAB (formerly RAB) approved registrar. All such reblend requests must be submitted with the following properly-executed affidavits:

> Affidavit Form #1 with completed and signed LRI GL Forms 1, 2, 2a and 3 as appropriate. If you wish to have a re-blend qualification of an original qualification, you will need to submit Affidavit Forms 1 and 2 from the original qualification holder as well as a completed Affidavit Form 3

a. Affidavit for Reblending (Base Stock Manufacturer) – from all base stock manufacturers
b. Affidavit for Reblending (Additive Manufacturer) – from all additive manufacturers, except for Pour Point Depressants and Anti-Foam additives used at less than 2% vol. However, it should be understood that the Pour Point Depressants and/or Anti-Foam additives used in the original qualification will be utilized.
c. Affidavit for Formulation Rights (qualified Lubricant Manufacturer) – from holder of the original qualification.
d. Affidavit for Reblending (Blending Company) – from company requesting reblend
e. Copy of the Blending Company ISO9000-2000 quality system approval that was performed by the ANAB (formerly RAB) approved registrar.
f. Appropriate fees

All affidavits shall be submitted directly to the Qualifying Activity and are not reviewed by the Committee but are reviewed by PRI.

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The reblend's QPL expiration date will be the same as the original approval on which they were based.

If you have any questions, please contact me at PRI Headquarters at 724/772-1616 X8182 or kpurnell@sae.org.

Sincerely

Keith Purnell

Keith Purnell
PRI/LRI Secretary

The Performance Review Institute

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February 27, 2009

TO: All Gear Lubricant Presenters

Information Letter: GL-09-01

Subject: Extension of Three (3) Meeting Requirement of L-37

Dear Presenters:

Section 3.4 of the LRI Procedure (PD 4000) requires the presentation of candidate lubricants to be completed within three consecutive LRI meetings. Due to the shortage of coated hardware for the D6121 (L-37) test, this requirement will temporarily be waived for programs presented when a coated D6121 (L-37) test is needed to complete qualification.

For these programs, the Presenter will have until February 11, 2010 to submit their information.

PRI/LRI will consider this a delayed submittal of the L-37 and will charge the "Resubmission" fee of $300.00 instead of the standard "Complete or Partial" fee of $550.00.

Presenters requesting a read-across submittal must provide a substantial amount of back up documentation to justify the read-across. Read-across will be reviewed on a case-by-case basis.

Should you have any questions concerning this action, please contact me at PRI Headquarters.

Sincerely,

Wendy L. Grubbs

Wendy L. Grubbs
QPL Development Coordinator

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Headquarters: 161 Thorn Hill Road, Warrendale, PA 15086-7527 USA

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The Performance Review Institute

August 17, 2009

TO: All Gear Lubricant Presenters

Information Letter: GL-09-01a

Subject: Extension of Three (3) Meeting Requirement of L-37

Dear Presenters:

Section 3.4 of the LRI Procedure (PD 4000) requires that "presentations of candidate lubricants to the Committee must be completed within three consecutive meetings, i.e., the first meeting for the initial presentation and two meetings for presentation of supplemental or retest data requested by the Committee".

Due to the continued shortage of coated hardware for the D6121 (L-37) test, presenters have been granted an extension to complete their qualification until the new hardware has been approved.

Therefore, the completion of outstanding presentations of L-37 lubrited tests ONLY are to be reviewed by Committee by the second consecutive meeting after formal notification that the hardware has been approved.

PRI/LRI will consider this a delayed submittal of the L-37 and will charge the "Resubmission" fee of $300.00 instead of the standard "Complete or Partial" fee of $550.00.

Presenters requesting a read-across submittal must provide a substantial amount of back up documentation to justify the read-across. Read-across will be reviewed on a case-by-case basis.

Should you have any questions concerning this action, please contact me at PRI Headquarters.

Sincerely,

Wendy L. Grubbs
QPL Development Coordinator

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The following letter is being distributed by PRI for the L-37 Task Force:

Response to Don Lind Requested by March 18, 2010

February 24, 2010

To: All Gear Lubricant Review Institute Members

Information Letter: GL-10-01

Subject: L-37 Hardware Survey

As you are likely aware, there have been recent challenges in producing a successful batch of L-37 hardware. The panel and the manufacturer have worked very hard over the last several years to make changes to both the hardware and the test itself to approve a batch of both lubrited and non-lubrited hardware. This work has paid off for the non-lubrited test and there is now an approved batch of hardware available. However, on the lubrited test, we have been less successful. The lubrited hardware has been more challenging in the past (when compared to the non-lubrited test). In the current situation, alterations such as correction factors and exclusion zones will not fully solve the problem as the hardware has not shown sufficient ability to discriminate between fluids. It is unknown whether further adjusting of conditions would allow for better discrimination of fluids.

In light of the history of this test and the recent challenges, the panel held a discussion at its recent meeting on the value of the lubrited test and how well it differentiates lubricant performance. A motion was made instructing the chairman to survey the rest of the panel on this matter.

The panel is asking for data that either supports, or does not support, the future use of the current lubrited test potentially until such time that a revised lubrited L-37 procedure could be developed and approved. Specifically, we are looking for data that correlates, or does not correlate, a set of lubrited results to field results. Related information on non-lubrited test results would also be appreciated. Preferably the field results would include lubrited hardware. The ultimate goal will be to determine if the non-lubrited test in its current form will suit the needs of the industry.

Don Lind of the TMC has agreed to act as the central collator for all the test results. Please have any data that is shared stripped of all company logos or other identification. We will review this data in the near future and hold a panel discussion on how to proceed.

Please have your responses to Don Lind (dml@astmtmc.cmu.edu) no later than March 18th.

SS

March 23, 2010

TO: All Gear Lubricant Presenters

Information Letter: GL-10-02

Subject: Revision of PD4000 and Revision of GL 2 Form

Dear Presenters:

Section 2.1.1 Base Stock Requirements of PD4000 has been revised to include two (2) additional base stock type codes as follows:

MO – Group I	Mineral Oil – Group I*
MO – Group II	Mineral Oil – Group II*
MO – Group III	Mineral Oil – Group III*

*API Definition

Please utilize the above codes when completing the GL Form 2. The most current version of this form is attached and is also located on the www.pri-network.org / Qualified Products / Lubricant PRI Website.

Should you have any questions concerning this action, please contact me at PRI Headquarters.

Sincerely,

Wendy L. Grubbs
QPL Development Coordinator

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Attachment – GL 2 Form