100 Barr Harbor Drive ▪ PO Box C700 ▪ West Conshohocken, PA 19428-2959 ▪ 2001
Telephone: (610) 832-9500 ▪ Fax: (610) 832-9666 ▪ email: service@astm.org ▪ Website: www.astm.org

Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

Chairman: W JAMES BOVER, Exxonmobil Biomedical Sciences, 1545 Route 22 East, Po Box 971, Annandale, NJ 08801-0971, (908) 730-1048, Fax: (908) 730-1197, email: wjbover@erenj.com
First Vice Chairman: KENNETH O. HENDERSON, Cannon Instrument Co, 30 Doe Dr, Port Matilda, PA 16870, (814) 353-8000 ext:265, Fax: (814) 353-8007, email: kenohenderson@worldnet.att.net
Second Vice Chairman: SALVATORE J. RAND, Consultant, 811 Staco Rd, Hannacroix, NY 12087, (518) 966-8929, Fax: (518) 966-8929, email: sjrand@earthlink.net
Secretary: MICHAEL A. COLLIER, Petroleum Analyzer Co. LP, 21114 Rte. 113, PO Box 206, Wilmington, IL 60481, (815) 458-0216, Fax: (815) 458-0217, email: macvarlen@aol.com
Assistant Secretary: JANET L. LANE, ExxonMobil Research & Engrg, 600 Billingsport Rd, PO Box 480, Paulsboro, NJ 08066-0480, (856) 224-3302, Fax: (856) 224-3616, email: janet.l.lane@exxonmobil.com
Staff Manager: DAVID R. BRADLEY, (610) 832-9681, Fax: (610) 832-9668, email: dbradley@astm.org

April 10, 2006

Reply to:
Chris Schenkenberger
The Lubrizol Corporation
29400 Lakeland Blvd.
Wickliffe, OH 44092
(440) 347-2388
(440) 347-2878 (FAX)

ASTM D02.B0.03 L-60-1 Surveillance Panel
Members and Guests:

Attached for your review and comment are the unconfirmed minutes of the August 24, 2005 L-60-1 Surveillance Panel meetings held at the PRI Headquarters, Warrendale, PA. Please direct any corrections or comments to my attention.

Sincerely,

Chris Schenkenberger

Chris Schenkenberger, Chairman
L-60-1 Surveillance Panel

Attachments

Report of Meeting
L-60-1 Surveillance Panel
PRI Headquarters, Apollo Room, Warrendale, Pa.
August 24, 2005

Sign-in/Review of Membership: The meeting was called to order at 8:09 am. The sign-in sheet is included as ***Attachment 1***. A review of membership was not performed.

Meeting Agenda

The meeting agenda (***Attachment 2***) was focused on:

1. Approval of meeting minutes.
2. Revisit April Surveillance Panel meeting motion affecting precision for reporting data.
3. July 2005 ASTM Rater Workshop Data
4. TMC 133 Reference Fluid
5. Review the intent of Section 8.6.4

Approval of minutes:

The meeting minutes from the February 2, 2005 and April 6, 2005 Surveillance Panel are on the TMC website which can be found from the following path (ftp://ftp.astmtmc.cmu.edu/docs/gear/l601/minutes/).

Motion 1 (Motion ⇒ Cory Koglin, Second ⇒ Brian Koehler) To approve the February 2, 2005 and April 6, 2005 Surveillance Panel meeting minutes as written with no corrections. The motion passed unanimously.

Summary of Meeting Discussions

Revisit April Surveillance Panel meeting motion affecting precision for reporting data

The chairman provided a recap of the April 2005 Surveillance Panel motion. In April, the panel decided that the precision level for L-60-1 results in SAE J2360 provided a more accurate reflection of how fine the parameters (ACV, Sludge, Viscosity Increase, Pentane, Toluene) can be measured. The SP motion made changes to the D5704 data dictionary for reporting the 'Final Original Unit Result' for ACV, sludge, viscosity increase, pentane, and toluene. LTMS Shewhart and Precision test bands were not affected. It was discussed that the following scenario could happen. For reference tests that are extremely close to the LTMS bands, the change in precision level for rounding results could now cause some tests to be statistically unacceptable. The opposite is also true in that some tests which were previously unacceptable are now statistically acceptable. It was pointed out by the TMC that this change would most likely only affect a small amount of tests and should not change over-all pass to fail ratios.

The TMC completed an action item of reviewing LTMS reference tests for the L-60-1 to confirm that the rounding change would have a negligible affect. ***Attachment 3*** is an e-mail message from Mr. Farber to the SP chairman showing that 3 tests that once were statistically acceptable would now be unacceptable. In addition there are 3 tests that were statistically unacceptable that would now round within the acceptance bands. The data analysis concludes that the rounding change to the 'final original unit results' would not cause a significant affect on reference pass to fail ratios.

Mr. Koehler shared his opinion that the data dictionary change could potentially result in a coarser or grainy appearance in the industry and laboratory control charts. With only a limited amount of reference data being reported since the change, this opinion could not be confirmed by the panel. As an action item, the TMC volunteered to chart the historical reference data by the new and old levels of rounding. This action would only be for the purpose of viewing the affect of the change and the panel did not wish to alter the LTMS acceptance bands for reference tests.

As some panel members had notified the chairman prior the meeting, there was one additional point of clarification needed on Form 1 and 2. Some panel members had felt that it was confusing to have different levels of precision between the rows called 'Original Results' and 'Final Original Unit Results.' After some discussion, it was decided to round the 'Original Results' to the same level of precision as the 'Final Original Unit Results'. The outcome of the surveillance panel discussion was the following motion and action item.

Motion 2 (Motion ⇒ Mr. Farber, Second ⇒ Mr. Koehler)

- Effective 30 days from the information letter issue date, the L-60-1 data dictionary will change the precision level of the 'Original Results' to match the 'Final Original Unit Results' on Forms 1 and Forms 2. Precision for original and final original results will be such that large gear average carbon varnish, sludge, pentane, and toluene will be shown to tenths of a whole number (ex. XX.X) and viscosity increase to a whole number (ex. XXX.). This is only a data dictionary revision and is not in the D5704 procedure.

Motion Results: Passed Unanimously
In favor: 5
Opposed: 0
Abstain: 0

Action Item: Mr. Farber will create charts for severity and precision on all parameters using the historical LTMS reference data by the new and old levels of rounding. This action is for the purpose of making a visual comparison of the change in rounding results.

There was additional discussion on the reference bands for the active fluids in the L-60-1 reference system. Mr. Lind reminded the surveillance panel of the history behind the current targets. The active reference fluids are TMC 148-1 and TMC 151-2. TMC 148 was brought in the system when the L-60 transitioned to the L-60-1. As is current practice, reference bands for statistically acceptable tests are updated when the industry has completed 10, 20, and 30 tests. As is also the current practice for creating reference bands for new fluids having less than 10 tests, a pooled standard deviation encompassing other reference tests can be used. When TMC 151-2 was introduced into the L-60-1 referencing system, the industry was in a severity trend for average carbon varnish. With only 9 initial tests being conducted on TMC 151-2 for targets, a pooled standard deviation was created which includes the 30 tests for TMC 148. With the reblend of TMC 148-1, statistical differences between TMC 148 and 148-1 were observed. Due to the severity trend, the reblend (TMC 148-1) used the reference targets for TMC 148. All of these decisions were made by the L-60-1 surveillance panel.

At the present time, the TMC states that the cusums are flat and appear to be close to target for the industry. However lab-to-lab variation can be observed.

Action Item - TMC to review L-60-1 reference fluid data and present philosophy and process for updating reference oil acceptance bands.

July 2005 Rater Workshop Data Review – TMC

Information Letter 05-2, which was issued in February 2005, contained numerous changes to Annex A10 of the D5704. Annex A10 was the result of a Rating Task Force recommendation aimed at improving rater reproducibility of average carbon varnish. An action item from the February 2005 surveillance panel meeting was to review the data from next rater workshop. At the rating workshop, Mr. Lind helped to show the impact of rater variability by comparing the standard deviation of ratings to the standard deviation of the reference fluid. This technique helped to show how a 1 number offset from the merit target is approximately a 2 standard deviation (Y_i) difference on the LTMS shewart severity plot. An 'as found' rating calibration check was performed first. Rater's were then allowed to discuss ratings in an attempt to make consensus on the ratings.

The L-60-1 data from the rating workshop is included as ***Attachment 4***. Observations drawn from the experiment included the following.

- Raters 1, 4, 6, 10, 11 and 16 are considered to be industry high volume raters.
- Gear numbers 1 through 4 are the calibration gear sets.
- Gear numbers 5 through 10 were selected for the workshop evaluation.
- Gears 1 through 7 were stand qualification tests using the TMC 151-2 reference fluid.
- Gears 9 and 10 were stand qualification tests using the TMC 148-1 reference fluid
- Changes implemented in February have had a positive effect on reducing rater variability.

As a mechanism for analyzing the over-all variability in future workshops, Mr. Koehler mentioned that calculating a pooled Y_i for all of the calibration gear sets might be helpful. The surveillance panel asked the TMC to make a notation on the chart to include a Yi summary for the panel to better understand the logarithmic calculation from merit numbers to transformed units. Mr. Farber suggested the TMC could compile data from 3 workshops and calculate a running mean and standard deviation for review. The surveillance panel often hears that some raters feel it is more difficult to rate references using TMC 148-1 than TMC 151-2.

TMC 133 Reference Fluid –

Since 2000, the L-60-1 surveillance panel has wished to have an oil that would yield an average viscosity increase near the SAE J2360 pass/fail line of 100%. In 2000, TMC 133 was created and an industry test matrix conducted. The precision of the viscosity increase was affected by lab-to-lab differences. The surveillance panel decision was to put this work on hold. With the formation of the L-60 Task Force to investigate the carbon varnish severity trend and lab differences in 2002, an audit of chemical labs D445 tests were also performed. The laboratory visits resulted in many findings that have since been addressed. LTMS control chart data has shown improvements

in precision and the chairman asked the surveillance panel if there was value in trying to bring TMC 133 into the referencing system. Many surveillance panel members acknowledged that improvements have been made in standardizing the D5704 and processes involved in capturing a homogenous drain sample. The panel questioned the shelf life of TMC 133 and asked that the TMC contact the supplier to confirm it is okay for use. A decision on running any tests was delayed until a future meeting.

Action Item: Mr. Lind to contact the supplier of TMC 133 and confirm if the existing batch could be used for testing. The surveillance panel would also like to know if there are now any issues with making a reblend.
Action Item: Chairman/TMC to bring historical matrix data from TMC 133.

Review the intent of Section 8.6.4. TMC -
Prior to the meeting, a surveillance panel member had asked if the use of nitrile gloves was acceptable for handling the catalyst strip during test preparation. After some discussion, the surveillance panel agreed that nitrile or latex gloves could be used as long as they were new.

Motion 3 (Motion ⇒ Mr. Bartlett, Second ⇒ Mr. Koglin) In addition to tweezers or ashless filter paper, allow the use of new nitrile or latex gloves for handling the catalyst. This change pertains to section 8.6.4 of the D5704.

Motion Results: Pass
In favor: 4
Opposed: 0
Abstain: 1

The meeting was adjourned at 10:12 am (Smith/Koglin).

Respectfully submitted,

Chris Schenkenberger
L-60-1 Surveillance Panel Chairman

ASTM L-60-1 Surveillance Panel Membership/Mailing List

Meeting Date: August 24, 2005

Initials*	Name	Voting Status	Company Name & Address	Phone & Fax & E-Mail
	Anderson, H.	Non-voting	Falex Corporation 1020 Airpark Drive Sugar Grove, Illinois 60554-9585	Phone: 630-556-3669 Fax: 630-556-3679 E-Mail:
DTB	Bartlett, Don	Non-voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-2388 Fax: 440-347-2878 E-Mail: dtb@lubrizol.com
DRB	Bell, Don	Non-voting	Afton Chemical Corporation 500 Spring Street Richmond, Virginia 23219	Phone: 804-788-6332 Fax: 804-788-6342 E-Mail: Don.Bell@aftonchemical.com
	Boschert, Tom	Non-voting	Afton Chemical Corporation 2000 Town Center, Suite 1750 Southfield, MI 48075	Phone: 248-350-0640 Fax: 248-350-0025 E-Mail: tom_boschert@ethyl.com
	Bryson, Tom	Voting	Mack Trucks 13302 Pennsylvania Avenue Hagerstown, Maryland 21740	Phone: 301-790-5454 Fax: 301-790-6744 E-Mail: tom.bryson@macktrucks.com
	Buitrago, Juan	Voting	Chevron Oronite Co. 100 Chevron Way Richmond, California 94802-0627	Phone: 510-242-1161 Fax: 510-242-3392 E-Mail: jabu@chevrontexaco.com

Attachment
Page
Reference

* Initial to indicate attendance at subject meeting

Attachment 1
Page Page 1 of 6
Reference L-60-1

ASTM L-60-1 Surveillance Panel Membership/Mailing List

Meeting Date: August 24, 2005

Initials*	Name	Voting Status	Company Name & Address	Phone & Fax & E-Mail
	Chambers, Harold	Non-voting	Cube C290 81 17000 Rotunda Drive Dearborn, MI 48120	Phone: (313) 755-4246 Fax: E-Mail: hchamber@visteon.com
	Comfort, Allen	Non-voting	AMSTA-TR-D/210 (Allen Comfort) U S Army Tank, Automotive, and Armament Command Warren, Michigan 48397-5000	Phone: 586-574-4225 Fax: 586-574-4244 E-Mail: comforta@cc.tacom.army.mil
	De La Fuente, Hector	Voting	Southwest Research Institute 6220 Culebra Road San Antono, Texas 78238	Phone: 210-522-5996 Fax: 210-680-1777 E-Mail: hdelafuente@swri.edu
	DuBois, David	Non-voting	Performance Review Institute 161 Thornhill Road Warrendale, Pennsylvania 15086-7527	Phone: 724-772-1616, ext. 8136 Fax: 724-772-1699 E-Mail: dubois@sae.org
	Duckstein, Ron	Non-voting	Parc Technical Services Inc. 100 William Pitt Way Pittsburgh, Pennsylvania 15238	Phone: 412-826-5115 Fax: 412-826-5443 E-Mail: rhd@usaor.net
fmf	Farber, Frank	Non-voting	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, Pensylvania 15206	Phone: 412-365-1030 Fax: 412-365-1047 E-Mail: fmf@astmtmc.cmu.edu

* Initial to indicate attendance at subject meeting

ASTM L-60-1 Surveillance Panel Membership/Mailing List

Meeting Date: August 24, 2005

Initials*	Name	Voting Status	Company Name & Address	Phone & Fax & E-Mail
	Figueredo, Pedro	Non-voting	Intevep, S. A. Los Teques Edo. Miranda Apdo. 76343 Caracas 1070A Venezuela	Phone: (02) 9086793 Fax: (02) 9087723 E-Mail:
	Goyal, Arjun	Non-voting	ExxonMobil Research and Engineering Company 600 Billingsport Road Paulsboro, New Jersey 08066-0480	Phone: 609-224-2115 Fax: 609-224-3613 E-Mail:
JLG	Gropp, Jerry	Non-voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-1223 Fax: 440-347-1555 E-Mail: jlg@lubrizol.com
	Harold, Scott	Non-voting	Infineum USA L.P. 1900 East Linden Avenue PO Box 735 Linden NJ, 07036	Phone: 908-474-2318 Fax: 908-474-3597 E-Mail: Scott.Harold@Infineum.com
	Huron, John	Non-voting	Chevron Oronite 4502 Centerview Drive, Suite 210 San Antonio, Texas 78228	Phone: 210-731-5609 Fax: 210-731-5699 E-Mail: HURO@ChevronTexaco.com
	Johnson, Ron	Non-voting	Chevron Products Company 100 Chevron Way Richmond, California 94802-0627	Phone: 510-242-4374 Fax: 510-242-3385 E-Mail: rljo@chevron.com

* Initial to indicate attendance at subject meeting

ASTM L-60-1 Surveillance Panel Membership/Mailing List

Meeting Date: August 24, 2005

Initials*	Name	Voting Status	Company Name & Address	Phone & Fax & E-Mail
BK	Koehler, Brian	Voting for this meeting only. Non-voting	Southwest Research Institute 6220 Culebra Road Bldg. 61 San Antonio, TX 78238-5166	Phone: (210) 522-3588 Fax: (210) ~~680-1777~~ 684-7523 E-Mail: bkoehler@swri.org
C.K.	Koglin, Cory	~~Non-voting~~ Voting	Afton Chemical Corporation 500 Spring Street Richmond, Virginia 23219	Phone: 804-788-5305 Fax: 804-788-6358 E-Mail: cory.koglin@aftonchemical.com
	Layton, Kevin	~~Voting~~ Non voting	Afton Chemical Corporation 500 Spring Street Richmond, Virginia 23219	Phone: 804-788-5363 Fax: 804-788-6358 E-Mail: kevin.layton@aftonchemical.com
	Lee, Don	Non-voting	Elco Corporation 1000 Beltline Road Cleveland, Ohio 44109-2848	Phone: 216-749-2605 Fax: E-Mail:
DML	Lind, Don	Voting	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, Pensylvania 15206	Phone: 412-365-1034 Fax: 412-365-1047 E-Mail: dml@astmtmc.cmu.edu
	Marougy, Thelma	Voting	Eaton Corporation 26201 Northwestern Highway Southfield, Michigan 48037	Phone: 248-354-6985 Fax: 248-354-2739 E-Mail: thelmaemarougy@eaton.com

* Initial to indicate attendance at subject meeting

ASTM L-60-1 Surveillance Panel Membership/Mailing List

Meeting Date: August 24, 2005

Initials*	Name	Voting Status	Company Name & Address	Phone & Fax & E-Mail
	Marty, Steve	Non-voting	Southwest Research Institute 6220 Culebra Road San Antonio, Texas 78238	Phone: 210-522-5929 Fax: 210-680-1777 E-Mail: smarty@swri.edu
	McGlone, Bruce	Voting	ArvinMeritor 2135 West Maple Troy, Michigan 48084	Phone: 248-435-9929 Fax: 248-435-1411 E-Mail: mcglonbf@meritorauto.com
	Rettmann, Kevin	Non-voting	PerkinElmer Fluid Sciences 5404 Bandera Road San Antonio, Texas 78238	Phone: 210-706-1546 Fax: 210-523-4614 E-Mail: Kevin.Rettmann@perkinelmer.com
CS	Schenkenberger, Chris	Voting	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, Ohio 44092	Phone: 440-347-2927 Fax: 440-347-2878 E-Mail: csc@lubrizol.com
	Shah, Rajesh	Non-voting	Koehler Instrument Company 1595 Sycamore Avenue Bohemia, New York 11716	Phone: 516-589-3800 Fax: 516-589-3815 E-Mail:
DSD	Smith, Dale	Non-voting	Parc Technical Services Inc. 100 William Pitt Way Pittsburgh, Pennsylvania 15238	Phone: 412-826-5051 Fax: 412-826-5443 E-Mail: dsmith@parctech.com

* Initial to indicate attendance at subject meeting

Attachment 1
Page Page 5 of 6
Reference L-60-1

ASTM L-60-1 Surveillance Panel Membership/Mailing List

Meeting Date: August 24, 2005

Initials*	Name	Voting Status	Company Name & Address	Phone & Fax & E-Mail
WS	Sullivan, Bill	Voting	ExxonMobil Chemical Company P. O. Box 3140 Edison, New Jersey 08818	Phone: 732-321-3354 Fax: 732-321-6064 E-Mail: william.t.sullivan@exxonmobil.com
	Vettel, Paula	Voting	D. A. Stuart Company 4580 Weaver Parkway Warrenville, Illinois 60555	Phone: 630-393-8859 Fax: 630-393-8577 E-Mail: pvettel@dastuart.net
	Villahermosa, Luis	Non-voting	AMSTA-TR-D/210 (Luis Villahermosa) U S Army Tank, Automotive, and Armament Command Warren, Michigan 48397-5000	Phone: 586-574-4207 Fax: 586-574-4123 E-Mail: villahel@cc.tacom.army.mil
	Whitton, Claire	Non-voting	Ethyl Research Center 500 Spring Street P. O. Box 2158 Richmond, Virginia 23218-2158	Phone: 804-788-5052 Fax: 804-788-6243 E-Mail: Claire_Whitton@ethyl.com
	Zakarian, Jack	Non-voting	Chevron Products Company 100 Chevron Way Richmond, California 94802-0627	Phone: 510-242-3595 Fax: 510-242-3758 E-Mail: jaza@chevron.com
	Zreik, Khaled	Voting	US Army TACOM AMSRD-TAR-D U S Army Tank, Automotive, and Armament Command Warren, Michigan 48397-5000	Phone: 586-574-4227 Fax: 586-574-4244 E-Mail: zreikk@tacom.army.mil

* Initial to indicate attendance at subject meeting

Attachment 1
Page Page 6 of 6
Reference L-60-1

L-60-1 Surveillance Panel

August 24, 2005
PRI Apollo Room – Warrendale, PA

Agenda

I. Call to order/Review Membership

II. Review agenda

III. Approval of meeting minutes
- February 2, 2005 L-60-1 SP Meeting
- April 6, 2005 L-60-1 SP Meeting

IV. Revisit Information Letter 05-2

V. July 2005 ASTM Rater Workshop Data

VI. TMC 133 Reference Fluid

VII. Review the intent of Section 8.6.4

VIII. New Business

IX. Adjournment

Attachment 3
Page 1 of 2
Reference L-60-1

Schenkenberger, Chris

From: Frank Farber [fmf@astmtmc.cmu.edu]
Sent: Wednesday, August 10, 2005 2:17 PM
To: Schenkenberger, Chris
Cc: Don Lind
Subject: RE: rounding effects on reference bands for L-60-1

Chris:
Here are the numbers. Let me know if you need anything else.

Frank

46765 151-2 AC 20030813	would now become a fail
42265 151-2 OC 20020422	would now become a pass
20128 148 AC YES 19940718	
20130 148 AC YES 19940831	
21274 148 AC YES 19941118	
21277 148 AC YES 19941122	
21452 148 AC YES 19950817	would all now become a fail
29924 148 AC YES 19971209	
30345 148 AC YES 19980417	
26207 148 AC YES 19980513	
22217 148 AC YES 19990219	
35987 148 AC YES 20000807	
21281 148 OC NO 19941216	
21282 148 OC NO 19941223	
21425 148 OC NO 19950216	
22958 148 OC NO 19950415	
22959 148 OC NO 19950421	
22449 148 OC NO 19950708	would all become passes
22179 148 OC NO 19960405	
31405 148 OC NO 19980709	
31240 148 OC NO 19980806	
32591 148 OC NO 19981105	
33335 148 OC NO 19981207	
34442 148 OC NO 19990730	
34443 148 OC NO 19990805	
35593 148 OC NO 19991017	
42786 148-1 AC YES 20020518	
46761 148-1 AC YES 20030807	would all become fails
49767 148-1 AC YES 20040221	
53864 148-1 AC YES 20050311	
44500 148-1 OC NO 20020920	would all become passes
49692 148-1 OC NO 20031025	

-----Original Message-----
From: Schenkenberger, Chris [mailto:CSC@Lubrizol.com]
Sent: Wednesday, August 10, 2005 1:08 PM
To: Don Lind; Frank Farber
Cc: Bartlett, Donald
Subject: RE: rounding effects on reference bands for L-60-1

Don,
That would be fine with me. There would be less confusion that way. Knowing that the SP would ask, could you check the TMC data set and confirm the # of references on TMC 148-1 and TMC 152-2 that would become passes and the # of references that would be fails? I'm sure this would help in the discussion.

Thanks,
Chris

From: Don Lind [mailto:dml@astmtmc.cmu.edu]
Sent: Wednesday, August 10, 2005 12:13 PM
To: Schenkenberger, Chris; Frank Farber
Cc: Bartlett, Donald
Subject: RE: rounding effects on reference bands for L-60-1

Chris,

As I've stated before, if the panel feels that the correct result for candidate tests is the rounded result, then the result that is charted should also be the rounded result.

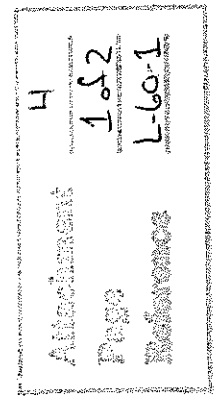
> -----Original Message-----
> **From:** Schenkenberger, Chris [mailto:CSC@Lubrizol.com]
> **Sent:** Wednesday, August 10, 2005 12:08 PM
> **To:** Frank Farber; Don Lind
> **Cc:** Bartlett, Donald
> **Subject:** rounding effects on reference bands for L-60-1
>
> Don & Frank,
>
> Using TMC 148-1, I tried to summarize the effects of back-transforming the 'final original results' with our change in rounding. I know that we discussed how there would be gains and losses but they should equal out. I've tried to summarize the effects. I'll admit that I found it a bit confusing and would ask that you take a look at the spreadsheet to confirm that I'm correct. It's possible that I have made a mistake.
>
> Rather than going back and pulling the amount of tests in the LTMS system that would now become fails and others that would now become passes, would the TMC see anything wrong with continuing to chart the 'original result' and using that for the bands as opposed to using the 'final original results'? Please feel free to give me a call before the L-60-1 SP meeting.
>
> Thanks,
>
> Chris
>
> <<L60-1_Reference_Bands.xls>>

ASTM Gear Calibration Workshop

San Antonio, TX July 12, 13, & 14, 2005

L-60 GEARS Varnish (Large Gear Only)

	RATER															
SET #	1	2	4	6	7	10	11	16	22	25	27		MAX	MIN	AVG	Std Dev
1C	8.68	8.00	8.63			9.03	8.19	8.86	8.91		9.10		9.10	8.00	8.68	0.394
2C	9.4	7.80	8.56			9.08	8.39	8.80	9.00		9.00		9.40	7.80	8.75	0.497
3C	8.7	7.40	7.60			7.72	8.12	8.00	8.45		9.00		9.00	7.40	8.12	0.558
4C	9.45	8.40	8.85			9.12	8.57	8.85	9.14		9.20		9.45	8.40	8.95	0.347
5	9.30	9.40	8.60			9.10	8.65	8.95	8.90		9.45		9.45	8.60	9.04	0.326
6	9.45	9.30	8.80			9.17	8.85	9.00	9.15		9.30		9.45	8.80	9.13	0.229
7	8.36	7.80	8.42			8.45	8.40	8.30	8.45		8.55		8.55	7.80	8.34	0.230
8	8.05	7.7	7.9			7.75	7.95	7.90	7.85		8		8.05	7.70	7.89	0.119
9	7.50	7.9	7.7			7.85	7.25	7.90	7.6		7.75		7.90	7.25	7.68	0.225
10	7.75	8	7.8			8	7.5	7.95	7.7		8.25		8.25	7.50	7.87	0.230
RERATE																
R1/6	9.29	9.20	8.95			9.20	8.90	9.00	8.85		9.20		9.29	8.85	9.07	0.167
R1/7	8.55	7.90	8.54			8.86	8.60	8.70	8.75		8.45		8.86	7.90	8.54	0.291



* Calibration Set

ASTM Gear Calibration Workshop

San Antonio, TX July 12, 13, & 14, 2005

L-60 GEARS Varnish (Large Gear Only)

	RATER														
SET #	1	2	4	6	7	10	11	16	22	25	27	MAX	MIN	AVG	Std Dev
1C	8.68	8.00	8.63			9.03	8.19	8.86	8.91		9.10	9.03	8.00	8.68	0.394
T.U.	1.88	1.39	1.84	####	####	2.23	1.51	2.05	2.10	####	2.31				
Yi	0.18	-1.06	0.08	####	####	1.05	-0.75	0.60	0.73	####	1.26				
2C	9.4	7.80	8.56			9.08	8.39	8.80	9.00		9.00	9.40	7.80	8.75	0.497
T.U.	2.75	1.27	1.78	####	####	2.29	1.65	1.99	2.20	####	2.20				
Yi	2.35	-1.36	-0.07	####	####	1.20	-0.40	0.46	0.97	####	0.97				
3C	8.7	7.40	7.60			7.72	8.12	8.00	8.45		9.00	8.70	7.40	8.12	0.558
T.U.	1.90	1.05	1.15	####	####	1.22	1.46	1.39	1.70	####	2.20				
Yi	0.23	-1.91	-1.64	####	####	-1.48	-0.87	-1.06	-0.29	####	0.97				
4C	9.45	8.40	8.85			9.12	8.57	8.85	9.14		9.20	9.45	8.40	8.95	0.347
T.U.	2.84	1.66	2.04	####	####	2.34	1.79	2.04	2.36	####	2.44				
Yi	2.58	-0.38	0.58	####	####	1.32	-0.05	0.58	1.38	####	1.58				
5	9.30	9.40	8.60			9.10	8.65	8.95	8.90		9.45	9.40	8.60	9.04	0.326
T.U.	2.59	2.75	1.82	####	####	2.31	1.86	2.14	2.09	####	2.84				
Yi	1.94	2.35	0.01	####	####	1.26	0.12	0.83	0.70	####	2.58				
6	9.45	9.30	8.80			9.17	8.85	9.00	9.15		9.30	9.45	8.80	9.13	0.229
T.U.	2.84	2.59	1.99	####	####	2.40	2.04	2.20	2.38	####	2.59				
Yi	2.58	1.94	0.46	####	####	1.48	0.58	0.97	1.42	####	1.94				
7	8.36	7.80	8.42			8.45	8.40	8.30	8.45		8.55	8.45	7.80	8.34	0.230
T.U.	1.63	1.27	1.67	####	####	1.70	1.66	1.59	1.70	####	1.77				
Yi	-0.45	-1.36	-0.34	####	####	-0.29	-0.38	-0.56	-0.29	####	-0.09				
8	8.05	7.7	7.9			7.75	7.95	7.90	7.85		8	8.05	7.70	7.89	0.119
T.U.	1.42	1.21	1.32	####	####	1.24	1.36	1.32	1.30	####	1.39				
Yi	-0.37	-0.81	-0.56	####	####	-0.75	-0.50	-0.56	-0.63	####	-1.06				
9	7.50	7.9	7.7			7.85	7.25	7.90	7.6		7.75	7.90	7.25	7.68	0.225
T.U.	1.10	1.32	1.21	####	####	1.30	0.97	1.32	1.15	####	1.24				
Yi	-1.05	-0.56	-0.81	####	####	-0.63	-1.32	-0.56	-0.93	####	-1.43				
10	7.75	8	7.8			8	7.5	7.95	7.7		8.25	8.00	7.50	7.87	0.230
T.U.	1.24	1.39	1.27	####	####	1.39	1.10	1.36	1.21	####	1.55				
Yi	-0.75	-0.43	-0.69	####	####	-0.43	-1.05	-0.50	-0.81	####	-0.65				

Attachment 4
Page 2 of 2
Reference L-60-1

* Calibration Set