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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

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charlie.leverett@intertek.com

Minutes from the Sequence VIII Surveillance Panel meeting held May 12, 2010 at Southwest Research Institute

The Meeting was Call to Order around 9:00 by Fred Gearhart.

Meeting minutes for the Sequence VIII, the Agenda is shown in Attachment #1 and the Attendance Sign-in is Attachment #2. Concerning membership changes Jerry Brys was the voting member for Lubrizol. There were 12 voting members present.

In Old Business the panel had a review of the guidelines they had set for an oil shown on the agenda. TMC (Jeff & Rich) presented data on two potential oils for the panels review. An action item came from this discussion and is shown in Attachment #3 Motions and Action Items and the data on the two oils presented.

The panel did a review of action Items from the November 2009 meeting, these are shown in Attachment #3.

Jo Martinez gave the Stats Group proposal of LTMS 2.0 to the panel, one initial concern was the Stats Group proposal to make Stripped Viscosity/Shear Stability a "Secondary Parameter" in the current LTMS it is considered Non-Critical with no Severity Adjustment applied. The panel had a motion to form a task force, details on this motion are shown in Attachment #4.

Clayton gave the CPD report and noted a new bearing batch will go into production soon the 01-09 batch has been depleted. A copy of the CPD report is shown in Attachment #5

Under New Business there was an editorial revision to test procedure requested to allow the use of the reduced oil gallery temperature (135 C +/- 1) shown in Table 2 of the ASTM D6709 for "0W" (SAE Straight Grades) and add the 0W to this procedure. This motion was accepted.

The Review Scope and Objectives was tabled until the next meeting.

The Next Meeting should be in ~ three weeks to review the LTMS Task Force Report, the chairman will send out the notice.

The meeting was adjourned.

Attachment #1


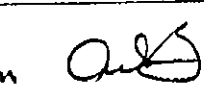


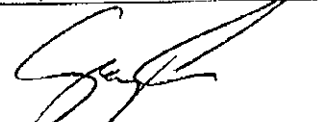
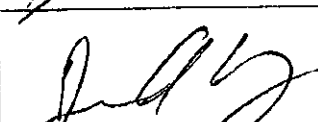
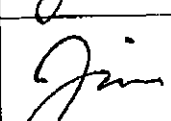

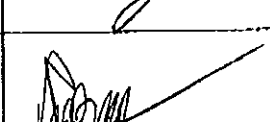
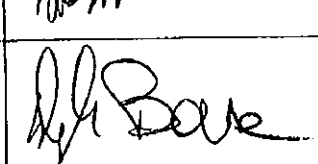
**ASTM SEQUENCE VIII SURVEILLANCE PANEL
VOTING MEMBERSHIP ATTENDANCE RECORD**

Name	Address	Phone/Fax/Email	Attendance
Knight, Clayton	Test Engineering Inc. 12718 Cimarron Path San Antonio, TX 78249-3423	Phone: 210-690-1958 Fax: 210-690-1959 cknight@tei-net.com	<i>[Signature]</i>
Caudill, Timothy	Valvoline 21st and Front Streets Ashland, KY 41101	Phone: 606-329-1960 ext 5708 Fax: 606-329-2044 Tcaudill@ashland.com	<i>[Signature]</i>
Bowden, Dwight	OH Technologies, Inc. P.O. Box 5039 Mentor, OH 44061-5039	Phone: 440-354-7007 Fax: 440-354-7080 dhbowden@ohtech.com	<i>[Signature]</i>
Buscher, Jr., Bill	Buscher Consulting Services P.O. Box 112 Hopewell Jct., NY 12533	Phone: 845-897-8069 Fax: 845-897-8069 BuschWA@aol.com	
Matthews, Bruce	GM Powertrain Mail Code 483-730-472 823 Jocyn Avenue Pontiac, MI 48340	Phone: 248-830-9197 Fax: 248-857-4441	<i>B.H.</i>
Ritchie, Andy	Infineum P.O. Box 735 1900 East Linden Ave. Linden, NJ 07036-0735	Phone: 908-474-2097 Fax: 908-474-3637	
Gerhart, Fred	Southwest Research Institute 6220 Culebra Road P.O. Box 28510 San Antonio, TX 78228-0510	Phone: 210-522-3842 Fax: 210-684-7523 fgerhart@swri.org	<i>Fred Gerhart</i>
Glaenger, David	Afton Chemical 500 Spring Street P.O. Box 2158 Richmond, VA 23218	Phone: 804-788-5214 Fax: 804-788-6358 Dave.Glaenger@aftonchemical.com	<i>[Signature]</i>
Ramono, Ron	Ford Motor Company Diagnostic Service Center II Room 410 1800 Fairlane Drive Allen Park, MI 48101	Phone: 313-845-4068 Fax: 313-323-8042	<i>Conf call</i>
Grundza, Rich	ASTM/TMC 6555 Penn Ave Pittsburgh, PA 15206-4489	Phone: 412-365-1031 Fax: 412-365-1047 reg@astmtmc.cmu.edu	
Leverett, Charlie	Intertek 5404 Bandera Road San Antonio, TX 78238	Phone: 210-647-9422 Fax: 210-523-4607 charlie.leverett@perkinelmer.com	<i>[Signature]</i>
Miranda, Timothy	BP Lubricants USA 1500 Valley Rd Wayne, NJ 07470	Phone: 973-305-3334 Fax: 973-686-4039 Timothy.Miranda@BP.com	<i>[Signature]</i>
Szappanos, George	Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	Phone: 440-347-2631 Fax: 440-347-4096 George.Szappanos@lubrizol.com	<i>[Signature]</i>
Sutherland, Mark	Chevron Oronite Company LLC 4502 Centerview Ste. 210 San Antonio, TX 78228	Phone: 731-5605 Fax: 731-5621 MSUT@chevron.com	<i>[Signature]</i>

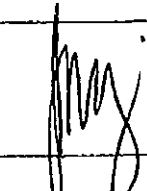

Ritchie, Andrew

[Signature]

**ASTM SEQUENCE VIII SURVEILLANCE PANEL
NON-VOTING MEMBERSHIP and GUESTS ATTENDANCE RECORD**

Name	Address	Phone/Fax/Email	Attendance
AL Lopez	5404 Barbours S.A.T 78238	al.lopez@entel.com	
Jeff Clark	TMC 6555 Penn Ave Pittsburgh, PA 15231	jace@astmtmc.com.edu	
Richard Grundza	TMC 6555 Penn Ave Pittsburgh PA 15206	rgr@astmtmc.com.edu	
Adam Bowden	OH Technologies P.O. Box 5089 Mentor, OH 44061	adbowden@ohtech.com	
Jason Bowden	OH TECHNOLOGIES, INC P.O. Box 5039 Mentor, OH 44061	jbowden@ohtech.com	
MATTHEW BOWDEN	OH TECHNOLOGIES P.O. Box 5039 Mentor, OH 44061	mjbowden@ohtech.com	
Greg Seman	29400 Lakeland Blvd Wickliffe OH 44092	greg.seman@lubrizol.com	
JERRY BRYS	LUBRIZOL	JABRS@LUBRIZOL.COM	
Jim Rutherford	Chevron Oxonite	JARU@CHEVRON.COM	
Ed Altman	Afton Chemical	Ed.Altman@AftonChemical.com	
Todd Dvorak	Afton Chemical	todd.dvorak@AftonChemical.com	
Doyle Boese	Infineum	doyle.boese@Infineum.com	

**ASTM SEQUENCE VIII SURVEILLANCE PANEL
NON-VOTING MEMBERSHIP and GUESTS ATTENDANCE RECORD**

Name	Address	Phone/Fax/Email	Attendance
Jo Martinez	Richmond, CA	510 242 5563 joym@chevron.com	
Jim CARTER HALTERMANN	2296 HULETT RD. OKemos, MI 48864	517-347-4947 JECARTER @JHALTERMANN.COM	
Bill BUSCHEN Swan			WAB

Attachment #2

Sequence VIII Surveillance Panel Agenda

Southwest Research Institute
San Antonio, Texas
Wednesday May 12, 2010
9:00 AM – 10:30 AM

1. Call to Order
 - a. Attendance Sign-in
 - i. Membership changes?
 - ii. Quorum?
 - b. Acceptance of Agenda
 - c. Motion and Action Items Recorder
 - d. Secretary?
2. Old Business
 - a. Review of Action Items from November 2009
 - b. VIII reference oils are quite dated and not representative of current technologies. The panel requests submission of potential GF-5 category reference oils that produce failing results.
 - i. Two results are sufficient.
 - ii. Enough oil should be provided – need 100 gallons minimum
 - iii. The initial two tests provided by supplier could be used to set initial targets and then rolled out later when 10 actual tests had been generated by the labs.
 - iv. Supplier data must be on the same blend as that provided to TMC for use by the test labs.
 - v. Supplier data must be from 05-08 bearings.
 - c. Review of Impact of Proposed New LTMS – Jo Martinez
2. CPD report
 - a. Bearing inventory
 - b. Availability of Pb Alloy?
 - c. Start production of new bearing batch?
3. Any Questions on TMC report?
4. New business
 - a. Editorial revision to test procedure allowing use of reduced oil temperature when testing 0 and 5 weight oils.
5. Review Scope and Objectives

6. Next Meeting – At the call of the chairman

7. Adjournment

Attachment #3

Review of Motions and Action Items from
November 18, 2009 Sequence VIII Surveillance Panel Meeting

Motions and Action Items

As Recorded at the Meeting by Bill Buscher

1. Action Item – To see if we have a potential GF-4 or GF-5 reference oil for the VIII, TMC to query suppliers of VID reference oils to see if data exists for these oils on the other GF-5 engine tests, or if they would be willing to generate data on the other GF-5 engine tests. **Completed**

2. Action Item – Plan for an LTMS review at the May 2010 Surveillance Panel meeting. **Completed**

3. Motion – Modify test procedure to allow use of either the Raycor LFS-55 or Raycor LFS-62 oil filter housings. Effective 11/18/09.
Charlie Leverett / Fred Gerhart / Passed Unanimously 8-0-0
Completed – TMC Sequence VIII Information Letter 09-2 Sequence No. 12 Issued on December 2, 2009



Ford Motor Company
Ford Customer Service Division
Service Engineering Office

Diagnostic Service Center II
1800 Fairlane Drive
Allen Park, mi. 48101

May 6, 2010

Thom Smith
PCEOCP Chairman
The Valvoline Company
P.O. Box 14000 VL-2
Lexington, Ky. 40512-4001

Dear Thom,

At the last PCEOCP meeting the group requested the submission of a candidate for a GF-5 reference oil that met at least the Sequence VID and Sequence IIIG ILSAC GF-5 limits. I'd like to submit the attached data from a candidate oil for consideration. This is an SAE 5W-20 oil that passes both the Sequence IIIG and VID and most of the other GF-5 tests. This oil doesn't meet the emulsion retention requirements of ILSAC GF-5. The test data provided are single tests, but we're confident in the data as we've run a number of tests on this DI chemistry with passing results on the Sequence VID, IIIG, VG, IVA, etc. The additional data is proprietary and can not be shared.

Please circulate this information to the PCEOCP members and Surveillance Panel chairs for consideration and discussion at the next meeting.

If you have any question please contact me.

Sincerely

A handwritten signature in black ink, appearing to read "Ron Romano".

Ron Romano
Service Lubricants Technical Expert

SAE 5W-20 GF-5 Reference Oil Candidate

<u>Performance Requirements</u>	<u>Specification</u>	<u>Test Results</u>
ASTM Ball Rust (ASTM D6557) Average Gray Value	100 min	124
Sequence IIIG Viscosity Increase at 40 °C	150% max	81
Weighted Piston Deposits	4.0 min	4.0
Hot Stuck Piston Rings	0	0
Cam Plus Lifter Wear, Average	60 µm max	12
Sequence IIIGA Aged oil CCS Viscosity at -30°C	Report	7200
MRV TP-1, cP	1 grade up max	11400@ -30°C
Yield Stress, Pa	<35 max	<35
Sequence IIIB Phosphorus Retention, %	79 min	85
Sequence IVA (ASTM D6891) Average Cam Wear (7 position average)	90 µm, max	18
Sequence VG (ASTM D6593) Average Engine Sludge	8.0 min	9.5
Rocker Arm Cover Sludge	8.3 min	9.6
Average Engine Varnish	8.9 min	9.1
Piston Skirt Varnish	7.5 min	8.1
Oil Screen Clogging	15% max	1
Hot Stuck Compression Rings	0	0
Cold Stuck Rings	Report	0
Sequence VID (ASTM D7589)		
<u>SAE 5W-20</u> FEI SUM *	2.6% min	2.79
FEI 2 at 100 Hours	1.2% min	1.41
* FEI SUM = FEI at 16 hours + FEI at 100 hours		
Sequence VIII (ASTM D6709) Bearing Weight Loss	26 mg, max	1
TEOST MHT-4 (ASTM D7097) Deposit Weight	35 mg, max	35
TEOST 33C (ASTM D6335) Deposit Weight	30 mg, max	15

SAE 5W-20 GF-5 Reference Oil Candidate

<u>Physical/Chemical Property Requirements</u>	<u>Specification</u>	<u>Results</u>
Viscosity at 100 °C (ASTM D445), mm ² /s, 5W-20	5.6 - <9.3	8.3
Viscosity at -30 °C (ASTM D5293), mPa.s	6600 max	3500
Low Temp. Pumping Viscosity at -35°C, mPa.s	60,000 max	10,000
Volatility		
Evap. Loss, 1 hr at 250 °C (ASTM D5800), %	15.0 max	14
Dist. by GC at 371 °C (ASTM D6417), %	10.0 max	5
Gelation Index (ASTM D5133)	12.0 max	5
HTHS Viscosity, mPa-sec at 150 °C & 10 ⁶ 1/sec (ASTM D4741 or ASTM D4683)	2.6 min	2.6
Filterability with short heating (ASTM D6795), %	50 max	-26
Filterability with long heating (ASTM D6794), %	50 max	-10
Foaming (ASTM D892) (after 1 minute settling time for all foaming sequences)		
Sequence I, mL*	10/0 max	0/0
Sequence II, mL*	50/0 max	0/0
Sequence III, mL*	10/0 max	0/0
High Temperature Foaming (ASTM D6082), mL*	100/0 max	50/0
Phosphorus, (ASTM D4951), % mass	0.06 - 0.08	0.077
Sulfur, (ASTM D4951 or D5453), % mass	0.50 max	0.3
Emulsion Retention, (ASTM D7563)		
0°C, 24 hours	No water separation	Water separation
25°C, 24 hours	No water separation	Water separation
Homogeneity and Miscibility (ASTM D6922)	No Separation	No Separation
Elastomer Compatibility (ASTM D7216 ANNEX A2)		
a. Polyacrylate Rubber (ACM-1)		
Volume (ASTM D471), %Δ	-5, 9	0.51
Hardness (ASTM D2240), pts.	-10, 10	-2
Tensile Strength (D412), %Δ	-40, 40	-12.5
b. Hydrogenated Nitrile Rubber (HNBR-1)		
Volume (ASTM D471), %Δ	-5, 10	-1.79
Hardness (ASTM D2240), pts.	-10, 5	0
Tensile Strength (D412), %Δ	-20, 15	10.1
c. Silicone Rubber (VMQ-1)		
Volume (ASTM D471), %Δ	-5, 40	22.98
Hardness (ASTM D2240), pts.	-30, 10	-20
Tensile Strength (D412), %Δ	-50, 5	-45.5
d. Fluorocarbon Rubber (FKM-1)		
Volume (ASTM D471), %Δ	-2, 3	-0.52
Hardness (ASTM D2240), pts.	-6, 6	-1
Tensile Strength (D412), %Δ	-65, 10	-12.9
e. Ethylene Acrylic Rubber (AEM-1)		
Volume (ASTM D471), %Δ	-5, 30	14.47
Hardness (ASTM D2240), pts.	-20, 10	-7
Tensile Strength (D412), %Δ	-30, 30	-4.4

Potential GF-5 Reference Oil Test Data

Test Method	Parameter	Unit	Limit	Test Result	
				5W-20	5W-30
Sequence VIII - D6709	10 h Stripped Viscosity	cSt	stay in grade		9.7
	Total Bearing Weight Loss	mg	26 max.	VGRA	20
Sequence IIIGB - D7320	Phosphorus Retention	%	79	VGRA	88
Sequence IVA - D6891	Average Cam Wear	µm	90 max.	VGRA	6
Sequence VID - D7589			XW20	XW30	10W30
	FEI Sum	%	2.6	1.9	1.5 min
	FEI2	%	1.2	0.9	0.6 min
	Kinematic Viscosity Increase @40 °C	%	150 max.		66
Sequence IIIG - D7320	Average Piston Skirt Varnish	merits	report		9.5
	Weighted Piston Deposits	merits	4.0 min		4.4
	Avg. Cam and Lifter Wear	µm	60 max.	VGRA	24
	Hot Stuck Rings		None		none
	Oil Consumption	Liters	Report		3.5
	Average Engine Sludge	merits	8.0 min.		9.1
Sequence VG - D6593	Rocker Cover Sludge	merits	8.3 min.		9.4
	Average Piston Skirt Varnish	merits	7.5 min.		8.1
	Average Engine Varnish	merits	8.9 min.		9.0
	Oil Screen Sludge	%	15 max.		2
	Hot Stuck Compression Rings		none	VGRA	none
	Cold Stuck Rings		report		1
Sequence V - D6593	Oil Screen Debris	%	report		20
	Oil Ring Clogging	%	report		0
	Average Follower Pin Wear	µm	30 max. (Ford spec)		3.9
	Average Ring Gap Increase	µm	225 max. (Ford spec)		76
Ball Rust Test - D6557	Average Gray Value		100 min.	VGRA	131

Attachment #4

SEQUENCE VIII LTMS VERSION 2 REVIEW

LTMS TF SS
May 11, 2010

REFERENCE OIL DATA SUMMARY

- Includes 205 chartable data
- Four (4) test laboratories (A, B, C and D)
 - A - 102 chartable
 - B - 86 chartable
 - C - 4 chartable
 - D - 13 chartable
- Latest reference oil result is March 1, 2010

LTMS VERSION 2

Primary Parameter: *Total Bearing Weight Loss*

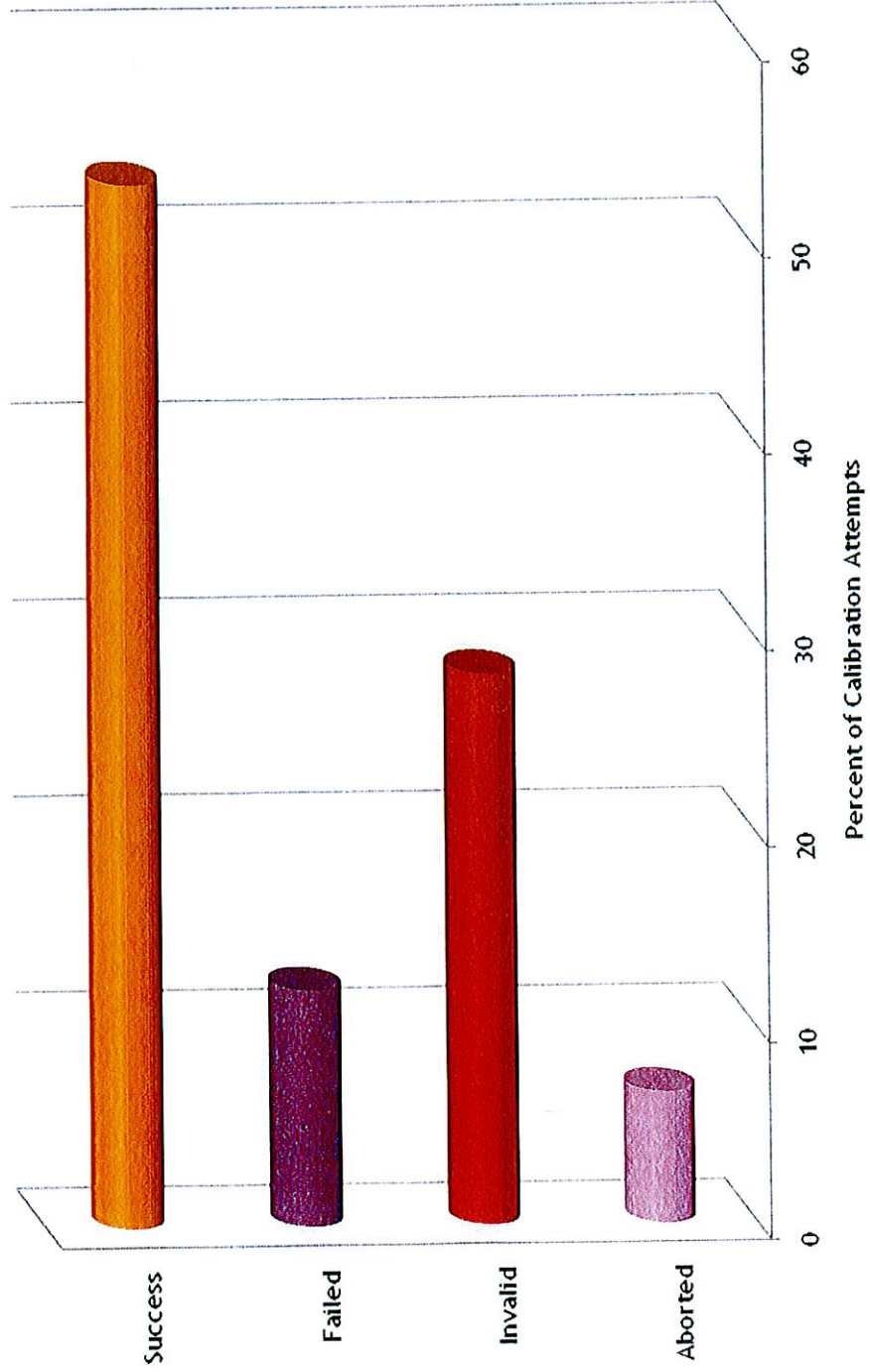
Secondary Parameter: *10-hour Stripped Viscosity*

Shewhart Chart of Prediction Error $e_i = Y_i - Z_{i-1}$	
Limit Type	Limit
Level 3	2.066
Level 2	1.734
Level 1	1.351
Undue Influence	2.066

EWMA of Standardized Test Result: Z_i	
Limit Type	Lambda
Level 2 Lower	0.2
Level 2 Upper	0.2
Level 1	0.2
	0

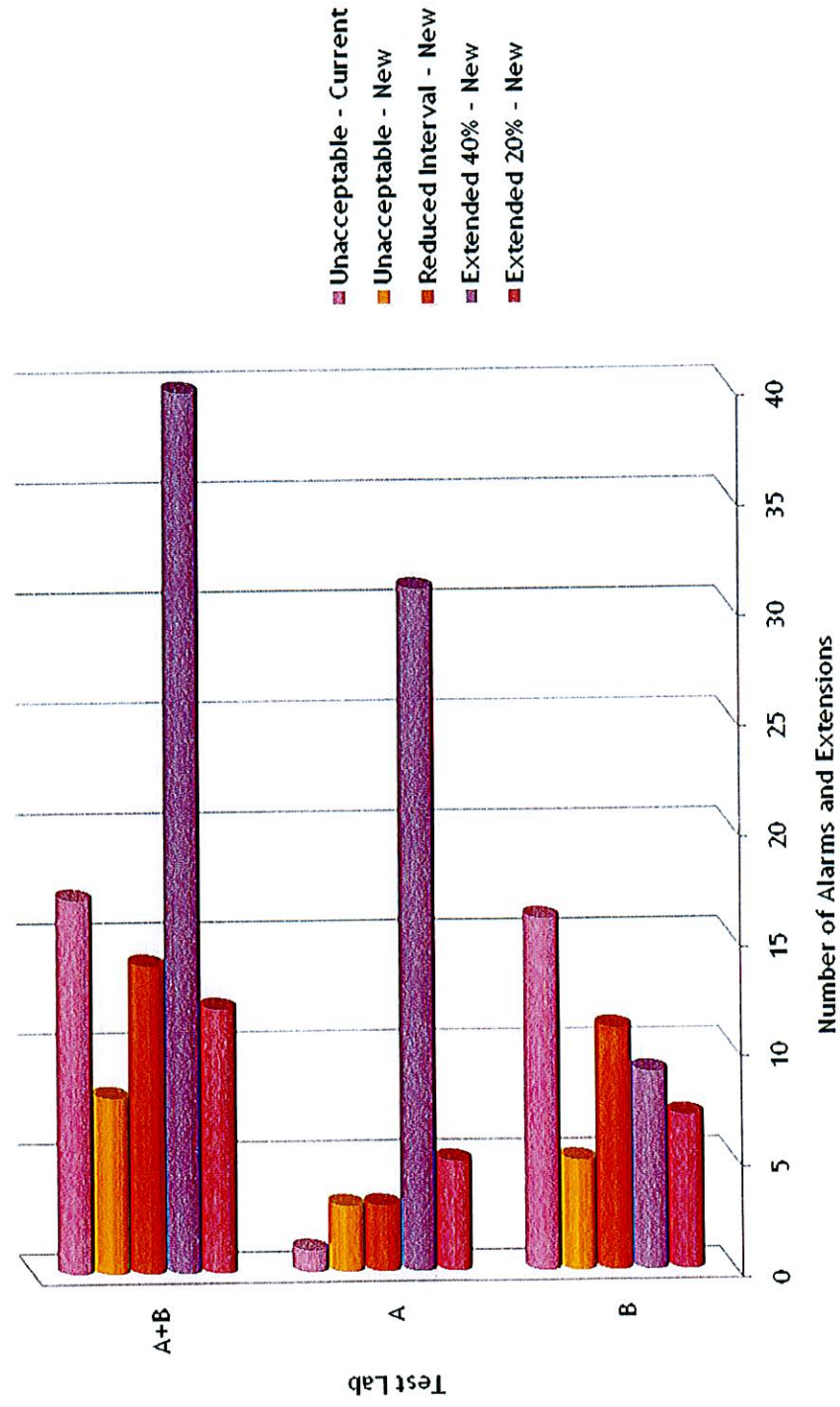
REVIEW OF ALARMS AND ACTIONS

Fate of Sequence VIII Calibration Attempts from LTMS Dataset - Current System



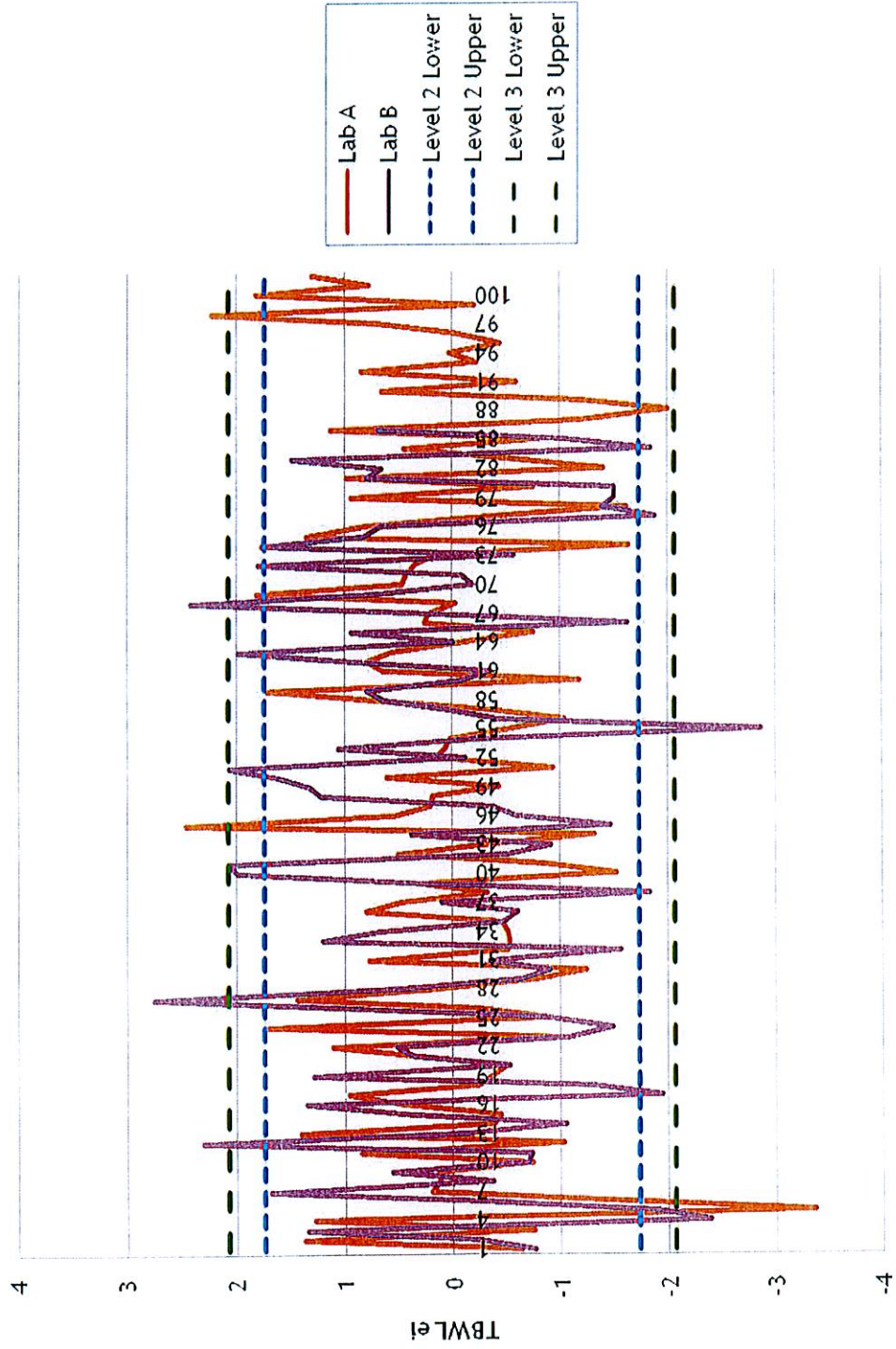
REVIEW OF ALARMS AND ACTIONS

LTMS Alarms and Reference Period Extensions in Sequence VIII (TBWL Primary)



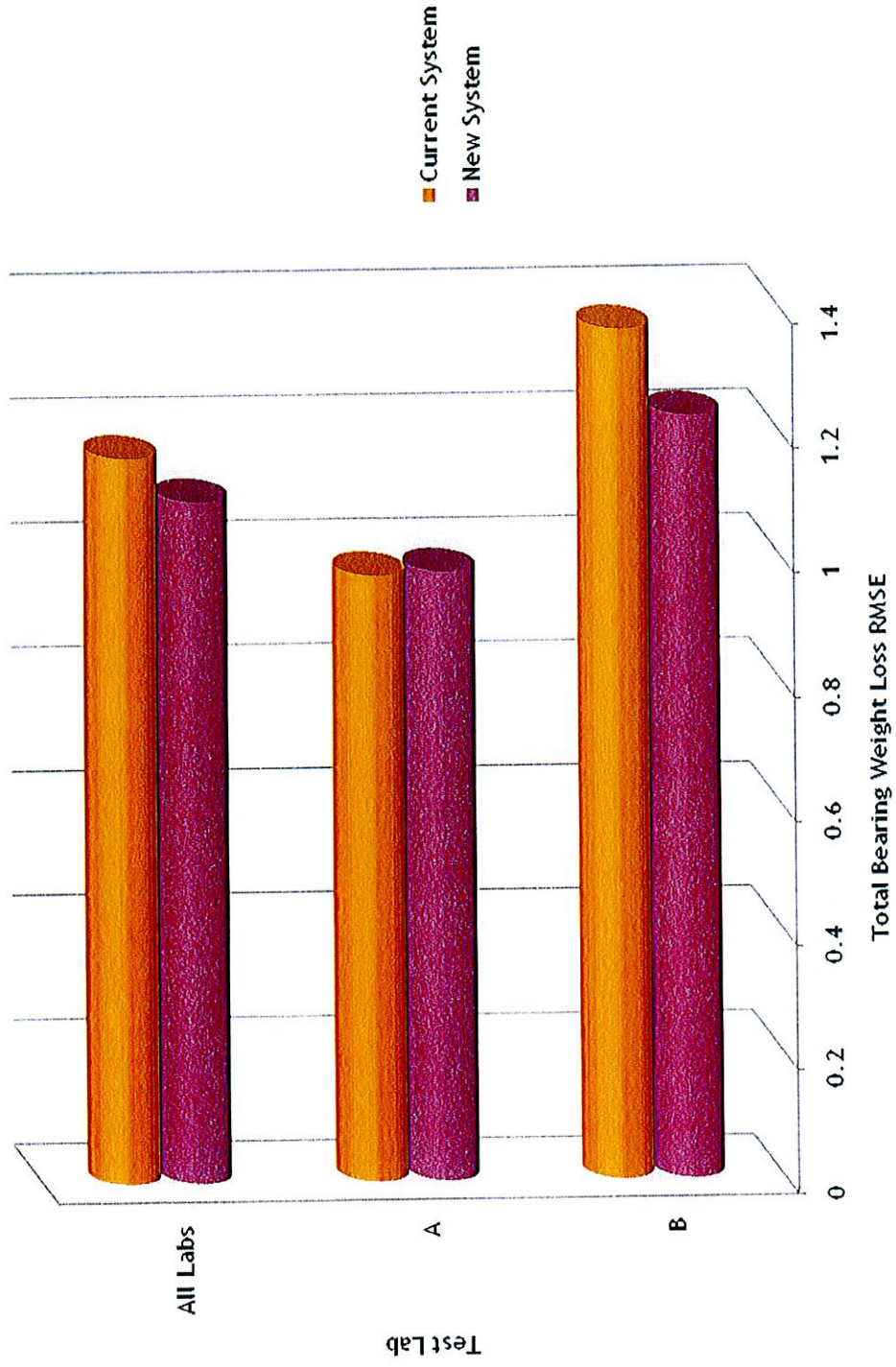
PREDICTION ERROR SHEWHART

TBWL e_i Shewhart Chart by Lab



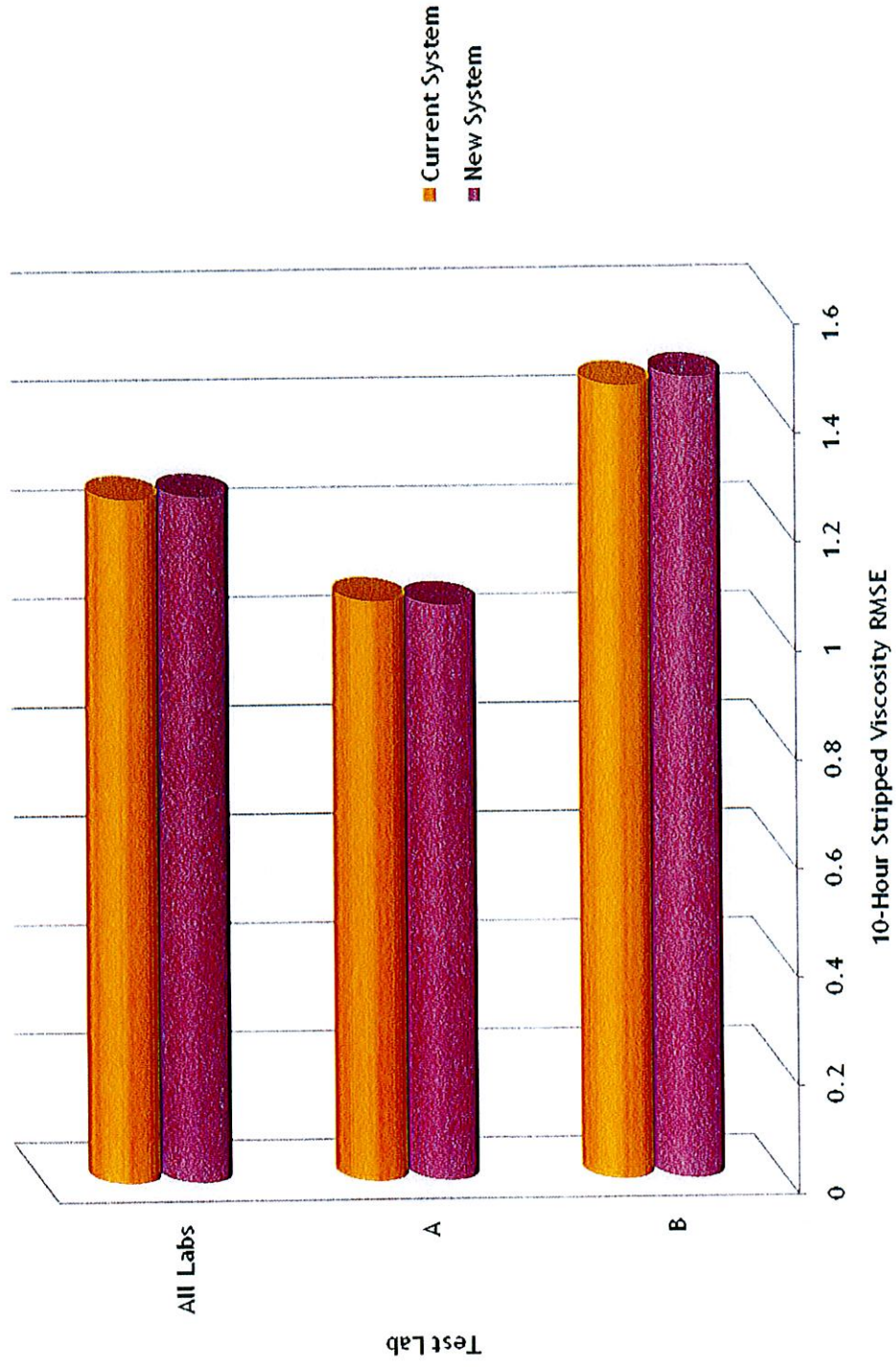
PREDICTION ERROR

Candidate Oil Test Result Target Variability in Sequence VIII



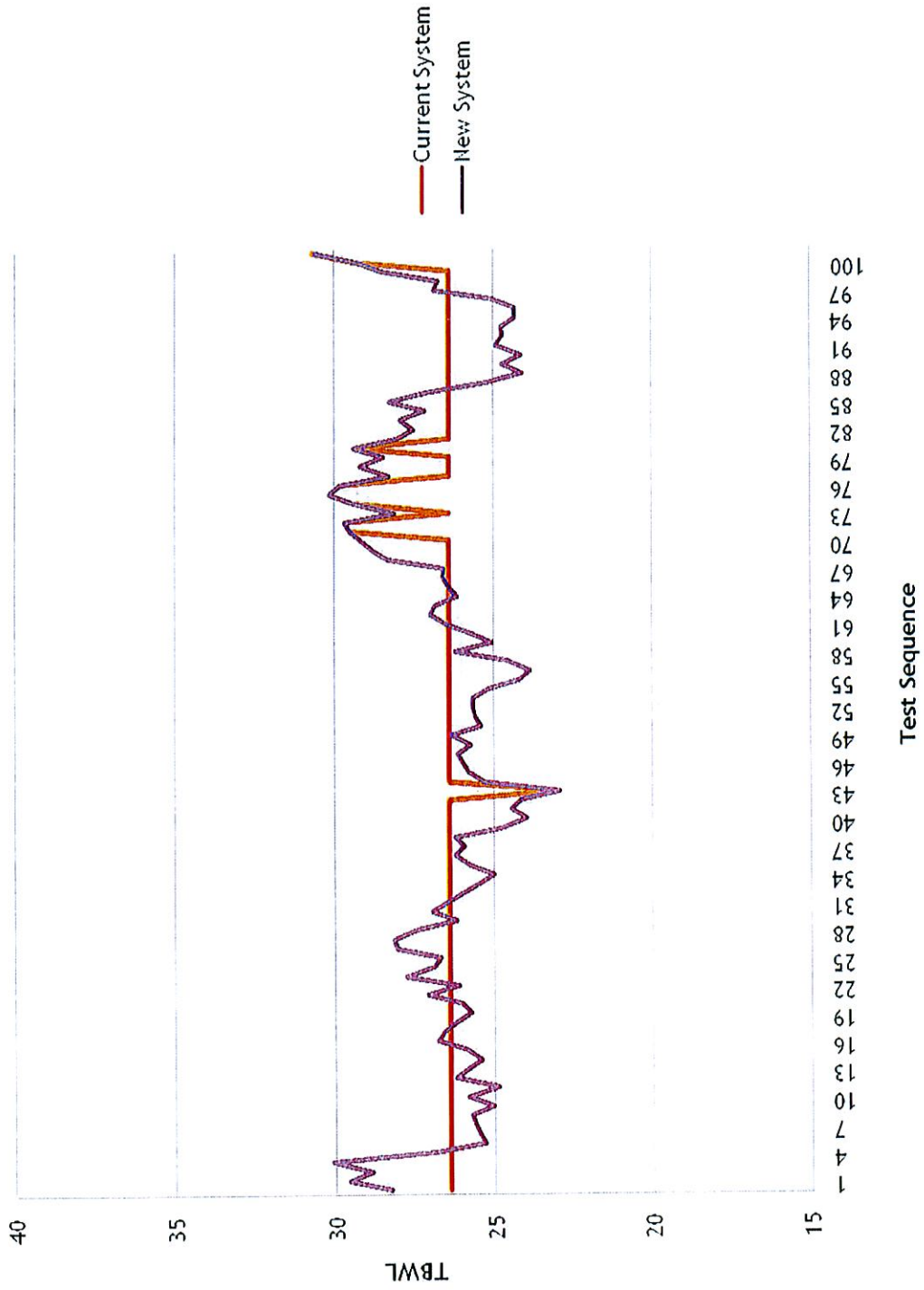
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Candidate Oil Test Result Target Variability in Sequence VIII



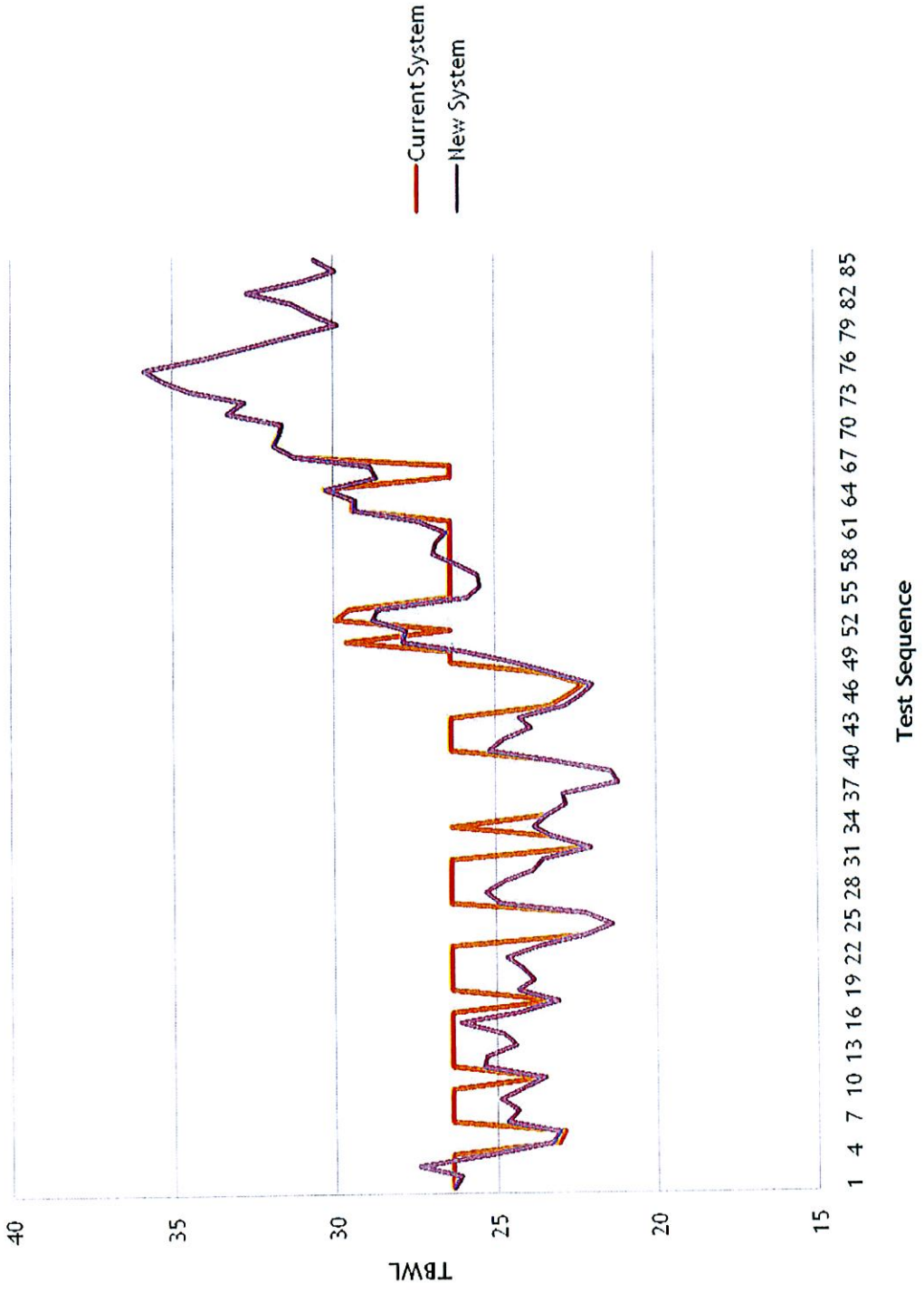
EFFECTIVE PASS LIMIT

Effective Pass Limit Given Severity Adjustment in Lab A



EFFECTIVE PASS LIMIT

Effective Pass Limit Given Severity Adjustment in Lab B



Attachment #5

CPD Report to Sequence VIII Surveillance Panel May 12, 2010

Connecting Rod Bearings

Part number 1000341

Current Batch (01-09) has been depleted.

Next batch to be ordered soon and will be manufactured in same facility as previous batch (Federal Mogul – Mexico).

TEI will not be going to Mexico to oversee the production of this new batch of bearings in light of current border tensions.

**CPD Report to
Sequence VII Surveillance Panel
May 12, 2010**

Connecting Rod Bearings (cont.)

Current plan is to order same quantity as previous batch (1000 pieces-500 sets). Will this be adequate for the near term?

We expect an ~ 15% rejection rate

All bearings will be produced using the single broach method as was done with earlier batches

**CPD Report to
Sequence VIII Surveillance Panel
May 12, 2010**

Connecting Rod Bearings (cont.)

Handling Procedure

Detailed instructions will be provided to the plant manager who has helped oversee this project in the past.

The exact same procedures will be used as with the previous batch

**CPD Report to
Sequence VIII Surveillance Panel
May 12, 2010**

Connecting Rod Bearings (cont.)

Samples from the production run of bearings will be forwarded to Federal Mogul in Plymouth, Michigan for analysis.

Percentage of Lead, Tin and Copper will be analyzed at the Puebla facility as has been done on previous batches of bearings.

**CPD Report to
Sequence VIII Surveillance Panel
May 12, 2010**

Future Bearing Batches

Federal Mogul has assured TEI that lead based bearings can continue to be manufactured at their plant in Mexico. TEI will continue asking this question on an annual basis per Sequence VIII request.

**CPD Report to
Sequence VIII Surveillance Panel
May 12, 2010**

Annual Order 2010

TEI has received the annual orders from the test labs. All parts have been received and we are in the process of inspecting, packaging and delivering them accordingly.