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### **Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS**

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January 2nd, 2014

Reply to:  
Chris Prengaman  
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ASTM D02.B0.03 L-37-1 Next Generation Hardware Task Force  
Members and Guests:

Attached for your review and comment are the unconfirmed minutes of the:

- **November 19th , 2013 Next Generation Hardware Task Force Meeting; Teleconference.**

Please direct any corrections or comments to my attention.

Sincerely,

Chris Prengaman, Chairman  
L-37-1 Hardware Taskforce Chairman

**Report of Meeting**  
**L-37-1 Next Generation Hardware Task Force Meeting**  
**Teleconference**  
*November 19th, 2013 Meeting*

**Attendees:**

Voting Members in **BOLD**

**Gottwald, Thomas – Afton Chemical**

Marsh, Greg – American Axle Manufacturing

**Parke, Scott – ASTM TMC**

**Guzikowski, Joe – Dana**

**Smith, Dale – Intertek Automotive Research**

Trader, Angela – Intertek Automotive Research

**Prengaman, Chris – Lubrizol**

Gropp, Jerry – Lubrizol

Bubonic, Brad – Lubrizol

Umerley, Matt - Lubrizol

**McGlone, Bruce - Meritor**

**Koehler, Brian – Southwest Research Institute**

The meeting was called to order at 1000 EST.

**1.0 Agenda Review**

The agenda was reviewed

**2.0 Review & Discuss Test Progress**

C. Prengaman shared a test update. Initial data shows some separation between 117 and 134. Future testing will include modifying the break-in and test length.

T. Gottwald shared that 24-25 gearsets just arrived at Afton from Gleason and requested labs email him with how many gearsets they would like shared with them. Paperwork detailing setting of pattern will also be sent.

T. Gottwald shared that early data in the development of the Gleason testing did not show a difference between the fired and electric powered stands. All recent data has been on the electric stand.

**4.0 New Business**

C. Prengaman shared that a meeting on January 30<sup>th</sup> appeared to work with most peoples schedule, a official meeting notice will go out soon.

**5.0 Adjournment**

Motion to adjourn .

Respectfully Submitted

Chris Prengaman

# L-37-1 Hardware Task Force Meeting

November 19th, 2013  
 10:00 am –11:00 am EST  
 Teleconference

## Agenda

1. Call to order/Agenda review

2. Testing Update

a. Zeta donated runs

	Conditioning		Test		Test Length	Fill Volume	Modified Break In	Test EOT Early?	Pinion Rating					Ring Rating				
	Speed	Load	Speed	Load	Hours	mL			WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR
117	682	375	124	1650	16.5	1200	No	No	7	8	8	9.9	10	8	10	10	10	10
117	682	375	124	1650	16.5	1200	No	No	6	9	6	9.9	10	7	10	8	10	10
134	682	375	124	1650	16.5	1200	No	No	6	4	9	9.4	10	7	4	10	9.9	10
134	682	375	124	1650	16.5	1200	No	No	6	5	10	9.9	10	7	8	10	10	10

b. Gleason donated runs

3. January Detroit Hardware Meeting

- a. Week of January 6<sup>th</sup> : Afton proposed
- b. Week of January 13<sup>th</sup> : Detroit Auto Show
- c. Week of January 20<sup>th</sup> : Rating Workshop
- d. Week of January 27<sup>th</sup> : TMC proposed

4. New business

5. Adjournment

Call in number → 216-706-7052 code 324160

Industry Oil Code (TMC Oil)	Test Version (Standard or Canadian)	Hardware Identification	Lab	Stand	Test Hardware	EOT Date	Conditioning		Test		Test Length	Fill Volume
							Speed	Load	Speed	Load		
<b>Phase 1 Test Redesign Matrix</b>												
134	STANDARD	L-100	B	361	NONLUBRITED	20131012	682	375	124	1650	8.5	950
155	STANDARD	L-32	B	361	NONLUBRITED	20131013	682	375	124	1650	16.5	950
117	STANDARD	L-20	B	361	NONLUBRITED	20131014	682	375	124	1500	16.5	1075
117	STANDARD	L-61	B	361	NONLUBRITED	20131015	682	375	160	1500	14.4	950
117	STANDARD	LX-40	B	361	NONLUBRITED	20131017	682	375	100	1500	16.5	1200
117	STANDARD	L58-58	B	361	NONLUBRITED	20131026	682	375	124	1350	16.5	950
117	STANDARD	L-40	B	361	NONLUBRITED	20131027	682	375	160	1650	16.5	1075
117	STANDARD	L87-88	B	361	NONLUBRITED	20131029	682	375	124	1650	16.5	1200
117	STANDARD	L8-38	B	361	NONLUBRITED	20131030	682	375	160	1350	16.5	1200
117	STANDARD	L89-50	B	361	NONLUBRITED	20131031	682	375	100	1350	16.5	1075
117	STANDARD	L23-57	B	361	NONLUBRITED	20131101	682	375	100	1650	16.5	950
134	STANDARD	L12-67	B	361	NONLUBRITED	20131102	682	375	124	1650	16.5	1200
134	STANDARD	L93-39	B	361	NONLUBRITED	20131103	682	375	160	1350	16.5	1200
117	STANDARD	L44-46	B	361	NONLUBRITED	20131104	682	375	124	1650	16.5	1200
117	STANDARD	L7-45	B	361	NONLUBRITED	20131105	682	375	160	1350	16.5	1200
134	STANDARD	L34-20	B	361	NONLUBRITED	20131109	682	375	124	1500	16.5	1075
134	STANDARD	L47-31	B	361	NONLUBRITED	20131110	682	375	124	1650	16.5	1200
117	STANDARD	L7-45	B	361	NONLUBRITED	20131111	682	375	160	1650	14.8	1200
117	STANDARD	L-116-22	B	361	NONLUBRITED	20131112	682	375	100	1350	16.5	950
134	STANDARD	L10-37	B	361	NONLUBRITED	20131116	682	375	124	1500	16.5	1075
117	STANDARD	L108-110	B	361	NONLUBRITED	20131117	682	375	124	1500	16.5	1075

Industry Oil Code (TMC Oil)	Modified Break In	Test EOT Early?	Pinion Rating					Ring Rating					Broken Tooth	Broken Tooth Location	Free-form Comment	
			WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR				
IND																COMMENT
<b>Phase 1</b>																
134	No	Yes	6	4	5	8	10	4	4	10	9.8	10	Yes	Ring		
155	No	No	7	10	10	9.9	10	7	10	10	9.9	10	No			
117	No	No	7	7	9	9.9	10	7	9	10	9.9	10	No			
117	No	Yes	3	3	10	7	6	4	3	10	9	9	Yes	Ring & Pinion	6/24 broken pinion/ring gear teeth	
117	No	No	9	9	10	9.9	10	9	10	10	9.9	10	No			
117	No	No	7	4	5	9.9	10	7	6	10	9.9	10	No			
117	No	No	4	3	8	7	6	6	4	6	8	10	Yes		Most ring gear teeth cracked.	
117	No	No	7	8	8	9.9	10	8	10	10	10	10	No			
117	No	No	7	9	9	9.9	10	7	10	10	10	10	No			
117	No	No	8	10	10	9.9	10	8	10	10	9.9	10	No			
117	No	No	8	10	10	9.9	10	9	10	10	9.9	10	No			
134	No	No	6	5	10	9.9	10	7	8	10	10	10	No			
134	No	No	7	9	8	9.9	10	7	9	9	9.9	10	No			
117	No	No	6	9	6	9.9	10	7	10	8	10	10	No			
117	No	No	7	10	8	9.9	10	7	9	9	10	10	No			
134	No	No	7	4	10	9.9	10	7	4	10	9.9	10	No			
134	No	No	6	4	9	9.4	10	7	4	10	9.9	10	No			
117	No	Yes	4	4	10	9.3	7	3	3	10	9.3	10	Yes	Pinion & Ring		
117	No	No	6	6	5	9.9	10	7	6	10	9.9	10	No			
134	No	No	7	9	8	9.9	10	8	10	10	10	10	No			
117	No	No	7	9	9	9.9	10	8	10	10	10	10	No			

Industry Oil Code (TMC Oil)	Test Version (Standard or Canadian)	Hardware Identification	Lab	Stand	Test Hardware	EOT Date	Pinion Rating					Ring Rating					Free-form Comment
							WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR	
IND	TVERSION	SERIALNO	LTMSLAB	LTMSAPP	TESTHARD	LTMSDATE	WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR	COMMENT
<b>16.5 hour, 1650 lb-ft torque, Highly Modified Break-In</b>																	
134	STANDARD		D		NONLUBRITED		7	6	9	9.9	10	7	7	10	10	10	Highly Modified Break-In Run
134	STANDARD	GGAD12047085304	D		NONLUBRITED	20130514	6	6	9	9.9	10	7	7	10	10	10	Highly Modified Break-In Run
134	STANDARD	GGAD12063092213	A		NONLUBRITED	20130716	6	3	7	9.9	10	6	7	10	10	10	Non-lubricated AAM Zeta axle - Batch 2012. Conducted per SwRI highly modified break-in. 950 ml oil charge. Standard temp. Matrix test.
134	STANDARD		B		NONLUBRITED	20130720	5	4	7	9.8	10	7	5	10	10	10	Test stopped at 7.8 hours due to broken teeth.
1-B	STANDARD	GGAD12047074125	D		NONLUBRITED	20130612	4	4	8	9.9	10	5	5	9	9.9	10	Highly Modified Break-In Run Test stopped at 6 hours due to vibration.
1-B	STANDARD	GGAD12047092818	D		NONLUBRITED	20130620	4	4	8	9.9	10	5	5	9	9.9	10	Highly Modified Break-In Run Test stopped at 5:25 due to vibration
1-B	STANDARD	GGAD12063113	B		NONLUBRITED	20130730											Invalid Test Pinion Ratings: 6 Wear, 5 Ridge, 6 Ripple, 10 Spit, 10 Score. Ring Ratings: 7 Wear, 6 Ridge, 10 Ripple, 10 Spit, 10 Score.
1-B	STANDARD		G		NONLUBRITED	20130917	6	3	5	9.8	10	6	4	8	9.8	10	7 pinion teeth broken, 10 ring gear teeth broken, failure at 11.5 hours
1-B	STANDARD	GGAD12063092024	A		NONLUBRITED	20130731	6	7	7	9.9	10	6	7	8	9.9	10	Non-lubricated AAM Zeta axle - Batch 2012. Conducted per SwRI highly modified break-in. 950 ml oil charge. Standard temp. Matrix test.
155	STANDARD	GGAD12047080902	D		NONLUBRITED	20130627	7	9	10	10	10	7	10	10	10	10	Highly Modified Break-In Run
155	STANDARD	No tag on axle	A		NONLUBRITED	20130720	7	8	9	9.9	10	8	9	9	9.9	10	Non-lubricated AAM Zeta axle - Batch 2012. Conducted per SwRI highly modified break-in. 950 ml oil charge. Standard temp. Matrix test.
155	STANDARD	GGAD12063112	B		NONLUBRITED	20130731	7	10	10	9.9	10	8	10	10	9.9	10	
<b>16.5 hour, 1500 lb-ft torque, Highly Modified Break-In</b>																	
1-B	STANDARD		G		NONLUBRITED	20130917											broken teeth at 14.5 hours

Industry Oil Code (TMC Oil)	Test Version (Standard or Canadian)	Hardware Identification	Lab	Stand	Test Hardware	EOT Date	Pinion Rating					Ring Rating					Free-form Comment
							WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR	
IND	TVERSION	SERIALNO	LTMSLAB	LTMSAPP	TESTHARD	LTMSDATE	WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR	COMMENT
<b>16.5 hour, 1650 lb-ft torque</b>																	
134	STANDARD	GGAD120036- - - -	B		NONLUBRITED	20120413											AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. Test ran for 11hrs. - all teeth broken, catastrophic failure. Last 5 digits of serial number missing.
134	STANDARD	GGAD12063093932	A	5	NONLUBRITED	20120414	6	6	8	9.9	10	6	6	10	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
134	STANDARD	GGAD12063092414	B		NONLUBRITED	20120427						5	6	10	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. Test ran for 11.25hrs. - all teeth broken, pinion unrateable.
134	STANDARD	GGAD12047090125	D	3	NONLUBRITED	20120515	7	7	7	9.9	10	7	8	9	10	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. Broken teeth on pinion. Damage to ring. Shut down due to vibration at 15 hrs 37 min (on test).
134	STANDARD	GGAD12063112723	D	3	NONLUBRITED	20120519	7	7	9	9.9	10	7	7	9	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
134	STANDARD	GGAD12063134922	B		NONLUBRITED	20120521	6	4	7	5	10	6	4	10	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. High vibration at 8.5hrs. - pinion teeth cracked.
134	STANDARD	GGAD12047081449	D	3	NONLUBRITED	20120524	7	7	10	9.9	10	7	8	10	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. Shutdown due to excessive vibration at 5:01 test hours.
134	STANDARD		G		NONLUBRITED	20120822	7	5	9	9.9	10	7	5	9	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. Light coast side scoring observed
152-1	STANDARD		B		NONLUBRITED	20121101	7	10	10	9.9	10	7	10	10	9.9	10	Non-lubrited AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
152-1	CANADIAN		B		NONLUBRITED	20121103	7	10	10	9.9	10	7	10	10	9.9	10	Non-lubrited AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
155	STANDARD	GGAD12047090210	D	3	NONLUBRITED	20120504	7	7	10	10	10	7	7	10	10	10	Non-lubrited AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. Cracked tooth on ring gear
155	STANDARD	GGAD12063093332	B		NONLUBRITED	20120621	8	9	10	9.9	9	8	9	10	9.9	10	Non-lubrited AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
155	STANDARD	GGAD12063092600	A	5	NONLUBRITED	20120721	7	8	10	9.9	10	7	8	10	9.9	10	This is a non-lubrited AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
1-A	STANDARD		A	5	NONLUBRITED	20120804	6	6	8	9.9	10	6	7	9	9.9	10	Non-lubrited AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
1-A	STANDARD		G		NONLUBRITED	20120830						6	6	8			Non-lubrited AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. Non-interprettable. Distress - Heavy to Catastrophic. Broken teeth on pinion and ring.
1-B	STANDARD		A	5	NONLUBRITED	20120807	3	6	7	9.9	10	5	6	9	10	10	Non-lubrited AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
1-B	STANDARD		G		NONLUBRITED	20120905	5	3	9	9.8	10	6	5	8	9	10	Non-lubrited AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
<b>16.5 hour, 1350 lb-ft torque</b>																	
134	STANDARD	GGAD12063093015	A	5	NONLUBRITED	20120830	6	6	8	9.9	10	7	7	10	10	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. This ran at 1350 lb-ft torque.
134	STANDARD	GGAD12063093135	B		NONLUBRITED	20120830	7	10	9	9.9	10	7	10	10	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. This ran at 1350 lb-ft torque.

Industry Oil Code (TMC Oil)	Test Version (Standard or Canadian)	Hardware Identification	Lab	Stand	Test Hardware	EOT Date	Pinion Rating					Ring Rating					Free-form Comment
							WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR	
IND	TVERSION	SERIALNO	LTMSLAB	LTMSAPP	TESTHARD	LTMSDATE	WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR	COMMENT
<b>16.5 hour, 1500 lb-ft torque</b>																	
134	STANDARD	GGAS22928327218	A	5	NONLUBRITED	20120831	6	5	9	9.9	10	6	6	10	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. This ran at 1500 lb-ft torque.
152-1	STANDARD	GGAD12063113036	G		NONLUBRITED	20120827	7	8	9	9.9	10	7	10	9	9.9	10	1500 torque, 16.5 hours. This was supposed to be 134 but we had a mix up during oil assignment and 152-1 was ran instead.
<b>11 hour, 1650 lb-ft torque</b>																	
134	STANDARD	GGAD12063111151	G		NONLUBRITED	20120912	6	4	8	9.9	10	7	5	9	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. This ran at 1650 lb-ft torque for 11hrs.
134	STANDARD	GGAD12063094027	A	5	NONLUBRITED	20120912	7	5	8	9.9	10	7	6	9	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. This ran a special test length of 11 hours.
152-1	STANDARD	GGAD12063112939	G		NONLUBRITED	20120915	8	9	9	9.9	10	8	9	8	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. This ran a special test length of 11 hours.
152-1	STANDARD	GGAD12063123814	A	5	NONLUBRITED	20120917	7	7	10	10	10	7	10	10	10	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. This ran a special test length of 11 hours.
152-1	CANADIAN	GGAD12063112848	G		NONLUBRITED	20120921	7	9	10	9.9	10	7	10	9	9.9	10	1650 torque, 11 hours, Problems controlling to Canadian conditions with current valve setup (3 nozzles @ 100% on)
152-1	CANADIAN	GGAD12063110037	B		NONLUBRITED	20120925	7	10	10	9.9	10	7	10	10	10	10	AAM Zeta axle - Batch 2012. 11 hr test length, 1650 lb-ft torque.
152-1	CANADIAN	GGAD12063113138	G		NONLUBRITED	20121009	7	9	8	9.9	10	8	10	9	9.9	10	1650 torque, 11 hours, Problems controlling to Canadian conditions with current valve setup (3 nozzles @ 100% on)
155	STANDARD	GGAD12063111331	G		NONLUBRITED	20120922	7	8	9	9.9	10	7	9	9	9.9	10	1650 torque, 11 hours
155	STANDARD	GGAD12063094334	B		NONLUBRITED	20120925	7	7	9	9.9	10	7	9	10	9.9	10	AAM Zeta axle - Batch 2012. 11 hr test length, 1650 lb-ft torque.
1-A	STANDARD	GGAD12063092127	A	5	NONLUBRITED	20120926	6	5	5	10	10	7	7	9	10	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. 11 hrs.
1-A	STANDARD	GGAD12063111115	G		NONLUBRITED	20121006	7	7	8	9.9	10	7	7	8	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. 11 hrs.
1-A	CANADIAN	GGAD12063093512	A	5	NONLUBRITED	20121130	7	9	9	9.9	10	8	9	9	9.9	10	Ran Lubrizol recommended test conditions except ran oil set points as L-37 Canadian. Used Oil 1-A. Non-lubricated AAM Zeta axle - Batch 2012.
1-B	STANDARD	GGAD12063093822	A	5	NONLUBRITED	20120927	6	6	7	9.9	10	6	7	10	10	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. 11 hrs.
1-B	STANDARD	GGAD12063103742	G		NONLUBRITED	20121005	5	4	9	9.7	10	6	5	9	9.7	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. 11 hrs.
1-B	CANADIAN	GGAD12063093242	A	5	NONLUBRITED	20121214	7	9	9	9.9	10	7	9	9	9.9	10	Ran Lubrizol recommended test conditions except ran oil set points as L-37 Canadian. Used Oil 1-B. Non-lubricated AAM Zeta axle - Batch 2012.



Industry Oil Code (TMC Oil)	Test Version (Standard or Canadian)	Hardware Identification	Lab	Stand	Test Hardware	EOT Date	Pinion Rating					Ring Rating					Free-form Comment
							IND	TVERSION	SERIALNO	LTMSLAB	LTMSAPP	TESTHARD	LTMSDATE	WEAR	RIDG	RIPP	
<b>11 hour, 1650 lb-ft torque, Overfilled (1450ml)</b>																	
1-A	STANDARD	GGAD12063091633	G		NONLUBRITED	20121126	7	9	9	9.9	10	7	9	10	9.9	10	1650 torque, 11 hours - 1450 ml fill
1-B	STANDARD	N/A	G		NONLUBRITED	20121128	7	10	9	9.9	10	7	10	9	9.9	10	1650 torque, 11 hours - 1450 ml fill
134	STANDARD	N/A	G		NONLUBRITED	20121206	7	8	8	9.9	10	7	10	9	9.9	10	1650 torque, 11 hours - 1450 ml fill
<b>11 hour, 1650 lb-ft torque, Highly Modified Break-In</b>																	
1-B	STANDARD		A		NONLUBRITED	20130403	7	9	9	10	10	8	10	10	10	10	Highly Modified Break-In Run
134	STANDARD	GGAD12063112	B		NONLUBRITED	20130411	6	5	10	9.9	10	7	6	10	9.9	10	Highly Modified Break-In Run

Industry Oil Code (TMC Oil)	Test Version (Standard or Canadian)	Hardware Identification	Lab	Stand	Test Hardware	EOT Date	Pinion Rating					Ring Rating					Free-form Comment
							WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR	
IND	TVERSION	SERIALNO	LTMSLAB	LTMSAPP	TESTHARD	LTMSDATE	WEAR	RIDG	RIPP	SPIT	SCOR	WEARR	RIDGR	RIPPR	SPITR	SCORR	COMMENT
<b>16.5 hour, 1650 lb-ft torque</b>																	
134	STANDARD	GGAD12063130725	D	3	LUBRITED	20120505	7	6	9	9.9	10	7	7	10	10	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. 7 spat on inner cone of head bearing.
134	STANDARD	GGAD12063122708	A	5	LUBRITED	20120720	6	5	10	10	10	6	6	10	10	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
134	STANDARD		G		LUBRITED	20120804	6	5	9	9.9	10	7	6	8	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
155	STANDARD	GGAD12063132945	B		LUBRITED	20120406	7	7	9	9.9	10	7	8	10	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
155	STANDARD	GGAD12063124110	A	5	LUBRITED	20120425	7	8	9	9.9	10	8	9	10	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
155	STANDARD	GGAD12063140809	D	3	LUBRITED	20120517	7	7	10	9.9	10	7	8	10	10	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure.
155	STANDARD	GGAD120631- - - -	D	3	LUBRITED	20120518	7	8	10	9.9	10	7	8	10	9.9	10	AAM Zeta axle - Batch 2012. Conducted per Lubrizol proposed procedure. Last 5 digits of serial number missing.