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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

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February 5th, 2017

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ASTM D02.B0.03 L-42 Surveillance Panel
Members and Guests:

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

November 8, 2017 Surveillance Panel Meeting (Automation Alley – Troy, MI)

Please direct any corrections or comments to my attention.

Very Respectfully,

Eric Donovan, Chairman
L-42 Surveillance Panel

L-42 Surveillance Panel Meeting Minutes

Automation Alley – Troy, MI

November 8, 2017

Attendees: voting members in **bold**, * indicates called in via teleconference

R. Banas (XOM)	K. Drlja (LZ)	E. Sattler (US Army)
D. Beck (TMC)	A. Goyal (BASF)	D. Smith (Intertek)
D. Bell (Afton)	P. Kanga (XOM)	R. Slocum (LZ)
B. Bubonic (LZ)	B. Kearney (Afton)	A. Trader (Intertek)
A. Comfort (US Army)	V. Marsic (LZ)	W. Venhoff (LZ)
J. Dharte (AAM)	J. Milner (Tianhe)*	R. Warden (SwRI)
T. Deany (Dana)*	D. Mosher (BASF)	
E. Donovan (Afton/C)	S. Parke (TMC)	

Call to Order

Review of Agenda

The meeting agenda is attached.

Review of Membership

No changes at this time.

Approval of Meeting Minutes

Meeting minutes for approval:

- "20170809_SP" → August 9, 2017 – Warrendale, PA

Motion to approve by D. Smith, second by J. Dharte to approve meeting minutes as presented.

Unanimous approval, no abstentions.

L-42 Hardware – 2017 order updates

E. Donovan gave a summary of the test results for the initial 9 axles. Results fell in line with expected results and all labs are happy with the gears.

T. Deany (Dana) provided an update on the order stating that all builds were complete and shipping to the labs by 11/10/2017. Dana to send Excel spreadsheet containing production data to each lab for their orders.

T. Deany also stated there are 90 axles remaining due to a 10% overrun which is done to mitigate production issues. Afton and Lubrizol will possibly by the extra axles, 45 each, and will provide feedback to Dana in the near future.

L-42-1 Development

E. Donovan stated that Afton has not been able to perform more development due to rig availability. Once the test rig becomes available for more development, Afton will continue and share progress with the panel.

Drive-by-wire throttle

As of 11/8/2017, both Afton and Lubrizol still need to perform research on drive-by-wire throttle bodies as a replacement for current, old throttle technology.

TMC 113 Dropout

S. Parke shared follow up to the previous meeting's discussion on TMC 113 dropout. Results for the analytical testing performed after the drums are mixed are reviewed and verified they meet required specifications before shipping samples to test labs.

TMC 113 is an old formulation and it is highly unlikely that a new drum can be produced. The TMC currently has 52 USG in stock which is about 104 L-42 tests. The panel agreed that a new discrimination oil needs to be developed. Afton and Lubrizol to ask internally for possible new discrimination oil candidates.

New/Open Issues

No new issues were discussed.

Adjournment

Motion by R. Warden, second by A. Goyal. All in favor, meeting adjourned.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Eric Donovan', with a long horizontal line extending to the right.

Eric Donovan

L-42 Surveillance Panel Chairman



L-42 Surveillance Panel Meeting

Automation Alley











Troy, MI

November 8, 2017



10:30 am - 11:00 am EST

Passion for Solutions™

Agenda

-  **Call to Order**
-  **Agenda**
-  **Membership Review & Update**
-  **Approval of Meeting Minutes**
-  **L-42 Hardware – 2017 order update**
-  **L-42-1 Development**
 -  Possible update to drive-by-wire throttle
-  **New/Open Issues**
 -  TMC 113 dropout
-  **Adjournment**

L-42 SP Voting Members

-  Rob Banas - ExxonMobil
-  Allen Comfort – US Army
-  John Dharte – AAM
-  Eric Donovan – Afton Chemical (Chair)
-  Arjun Goyal - BASF
-  Scott Parke – TMC
-  Jule Rucker – Meritor
-  Dale Smith – Intertek
-  Wes Venhoff– Lubrizol
-  Rebecca Warden – SwRI

Approval of Meeting Minutes

SP Meeting Minutes

- ▲ “20170809_SP” → August 9, 2017 – Warrendale, PA

L-42 Hardware – 2017 order updates

- ▲ **May 2016 – The SP agreed the best idea is to continue with Dana hardware until L-42-1 is complete**
- ▲ **August 2016 – Labs were to review current hardware status and report back to plan timing for next hardware order**
 - ▲ Afton – 2 years
 - ▲ Intertek – 2 years
 - ▲ Lubrizol – 5 years
 - ▲ SwRI – 1 year (conservatively)
- ▲ **November 2016 – The SP agreed on using the previous 2014 order batch requirements that Dana currently has on hand**
- ▲ **January 2017 – The 3 labs participating in the order sent Pos to Dana. This met previously set deadlines in order to receive axles by early 4Q2017**

L-42 Hardware – 2017 order updates cont'd

- February 2017 – The SP agreed to have a small batch of 9 axles produced and 3 axles sent to each of the 3 participating labs. Each lab will run two passing reference oil and one discrimination oil run on a currently referenced stand. Tests shall be run and results shared with the SP and Dana within approximately 2 weeks, no more than 30 days, after receiving the axles.
- September/October 2017 – Labs received and ran initial 9 axles. E. Donovan shared positive results with Dana and gave the green light for production of the remaining axles.

L-42 Hardware – 2017 order – initial 9 axles results

2017 L-42 Hardware order											
Initial 9 runs to verify gear performance											
Lab	Stand	Run No.	TMC Oil Code	CMIR	Ring Batch	Pinion Batch	Drive Side % Scoring		Coast Side % Scoring		Comments
							EOT Pinion	EOT Ring	EOT Pinion	EOT Ring	
D	2A	1867	117	124581	P8ADI32	C1L446					No results - shutdown mid-test due to facilities issues
D	2A	1868	117	124582	P8ADI32	C1L446	0	0	18	11	
D	2A	1869	113	123425	P8ADI32	C1L446	0	0	37	61	Pinion would have been 75% but some scoring was polished away
A	3A	632	117	119286	P8ADI32	C1L446	0	0	24	13	
A	3A	633	117	119285	P8ADI32	C1L446	0	0	29	18	
A	3A	634	113	119560	P8ADI32	C1L446	0	0	58	68	20% polishing on the coast side of pinion teeth
B	3		117	118360	P8ADI32	C1L446	0	0	30	14	
B	3		117	123417	P8ADI32	C1L446	0	0	22	12	
B	3		113	117787	P8ADI32	C1L446	0	0	92	66	
Note: All ratings for TMC 117 runs are corrected per TMC L-42 Information Letter 14-1											

L-42-1 Development

Summary

- ▲ Electric T-rig (input and outputs)
- ▲ Dana 44 mounted without springs

Goal is to have the rig follow L-42 setpoints first then use mathematical model for setpoints

Development to date

- ▲ Data from L-42 run was used to create 100 Hz setpoints for initial L-42-1 testing
- ▲ Initial testing shows good progress, fine tuning still needed to hit exact setpoints consistently

On hold at Afton for the near future due to rig availability

Drive-by-wire throttle

- During the August 2017 meeting, the panel discussed options of a drive-by-wire throttle body to replace the current, old design using the Jordan.
- Is it possible to use a mid-2000s Corvette or Chevy truck throttle body?

TMC 113 Dropout

From the August 2017 meeting:

- ▲ Additive dropout was found in latest QC testing
- ▲ Some settling in the drum is evident in the visual analysis, emissions, and the FTIR in both bottom quantitative (BQT) and qualitative (BQL) samples.
- ▲ There seems to be a concentration of additive at the bottom which is most notably impacting the concentration of Boron in the BQT sample (2.5X greater than the lab reference).
- ▲ Gear oil drums are mixed prior to shipment. Homogenization may be limiting the impact that this has on the performance of the oil.

Update from Scott?

New/Open Issues

Thanks!






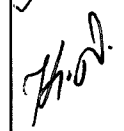
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L-42 Surveillance Panel Membership/Attendance
Automation Alley - Troy, MI
November 8, 2017



Initials	Name	Voting Non-Voting	Company Name Company Address	Contact information	
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	Barrera, Tony	NV	Intertek Automotive Research	Phone:	210-523-4653
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PHONE
D. SCHWENK
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✓ T. DEARY

L-42 Surveillance Panel Membership/Attendance
Automation Alley - Troy, MI
November 8, 2017

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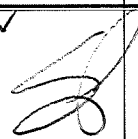



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