L42
Attendees:
C. Koglin
D. Smith
D. Bell
S. Higuchi
Mike Haire (chevron)
Steve Elliot (Exxon mobile)
Bill Sullivan
Don Lind
Brian Koehler
Jerry Gropp
Galen Green
Rick Graziano
Don Bartlett
Kenny Miller (Dana by phone)

L42 Agenda

Call to Order/Membership review
TF meeting note approvals
L42 Hardware

- Industry order status
- Pilot build Matrix
- Production matrix

L42 RCMS target review
New/Open issues
Adjournment

Motion to approve Posted meeting minutes on TMC website: Unanimous

Current L42 Hardware status

The chairman presented the following updates on the current hardware status.

Pinion and Rings

1. Parts are blanked-Release to cut parts pending 4 runs at SWRI

Axle housings/carriers

1. Received at Lugoff early August
2. Drawing Changes to 2006 gear batch were not incorporated into 2008 lot
3. Questions surrounding Carrier offset tolerance and square ness
4. Lugoff sent 20 random samples to Fort Wayne for inspection measurement
5. Results show offset tolerance within old drawing spec, but would not meet new intended drawing spec (~40% out)

6. Carrier square ness is within new proposed tolerance

Action Plan

1. Dana suggests adjusting cutting of ring/pinion by .0005" to account for the slight carrier out of tolerance. Corrections are made in lapping, not the physical cutting process.
2. Labs would like a proactive check prior to cutting rings/pinions
3. 6 rings and pinions from the Fort Wayne fire check process are to be sent to Lugoff for assembly (middle of week November 10th)
4. The 6 pieces will be assembled using the audited/measured carriers (#19 and #1 and random after)
5. SWRI to run 4 tests (3 TMC116, 1 TMC112) to verify performance of gear batch prior to Ft. Wayne cutting any rings and pinions.

Jerry Gropp has deep concerns over the carrier tolerance. He feels that labs should put in a stipulation that if the gear sets do not perform in the L42 test, that Dana will replace these gear sets at no cost to the labs-no questions asked. He feels the L42 hardware is following the same path as the L37 hardware. Jerry would like to see a motion made at the surveillance panel to accept the carriers and the proposed changes made by Dana on the pinions.

Kenny Miller added that the current tolerances are identical to previous hardware, except the 2006 hardware batch. The difference is the 2006 batch had carriers made to the ring/pinion offset of 1.5000" and the current proposal for the 2008 batch is to make the ring/pinion offset to match the carriers at 1.5005. This proposal was made because the drawing changes proposed in 2006 were not implemented (the correct offset is 1.5000). The drawings were reviewed again on October 23rd in Statesville, NC and those changes are currently following Dana protocol for updates on all future batches.

Motion: (Kenny Miller) Current lot of L42 material (5pcs) to be used with carrier 044CF100 per audit summary, dated November 4th, 2008.xls. This current carrier audit R value, +/- .0005, and the x-bar is 1.50067. Audit of carriers is at the end of the document.
2nd: Cory Koglin

Discussion
Brian Koehler sees 2 issues.

1. do we move forward with the carriers
2. Do we allow Dana to make the slight change in gear geometry?

Bill Sullivan: Questioned why pinions required adjustment by lapping if carriers meet current drawing specification and historic batches (not 2006) we made the same way.
Kenny Miller: Stated there would be a 4% pattern shift and this is why they proposed the slight adjustment to the pinion.

Vote
Favor: 4

No: 1 (LZ)
Abstain: 1
Motion carries

Jerry Gropp: Requested a motion be made to accept or decline the use of the preliminary 5 pinions, with adjusted offset.

Motion: For the pilot batch allow Dana to make a change to the pinion hi/lo offset. (Kenny Miller)
2nd: Brian Koehler

Vote:
For: 5
Against: 0
Abstain: 1

Motion carries.

Miscellaneous information

- PPAP information-5 pieces are to be assembled. Dana is shipping 5 pieces to Lugoff for assembly representing 1.5005 offset.
- Dana is to ship axles to SWRI attention Chris Barker.
- Kenny Miller will be present for the 5 piece assembly at Lugoff (Kenny to contact Derek today).
- Dana Ft. Wayne will be closed 2 weeks during Christmas holiday, no exceptions.
- By theory, the L2 position is 25% from toe and the L3 position is 50% from toe. From the current fire check, lapped gear set PPAP, the contact pattern is 38.5% from toe, or L2.5. This is essentially identical to the previous development from 2006. The .0005 mean shift as a ratio of the .013 total length is 4% and would represent a net L0.16 shift.

L42 RCMS review
RCMS data is included at the end of this document

Motion:(D. Bartlett) Accept L42 targets from November 12th SP handout with an implementation date of January 1, 2009
2nd: Don Lind
Discussion: Don Lind requests each lab get back with TMC including a list of raters to be included in the L42RCMS system
For: 5
Against: 0
Abstain:0
The motion carriers

Motion to adjourn 1:22pm

044CF100 audit for squareness and hi-lo

November 4, 2008

Count	Current Hi-Lo	Proposed Hi-Lo	Actual	Deviation	Current out	Proposed out	Current square	Proposed square	Actual	Deviation	Current out	Proposed out
1	1.499 - 1.502	1.4994 - 1.5006	1.5011	.0011	not	.0005	89.967° - 90°	89.983° - 90.017°	90.008°	.008°		
2	1.499 - 1.502	1.4994 - 1.5006	1.5005	.0005			89.967° - 90°	89.983° - 90.017°	90.003°	.003°		
3	1.499 - 1.502	1.4994 - 1.5006	1.5004	.0004			89.967° - 90°	89.983° - 90.017°	90.002°	.002°		
4	1.499 - 1.502	1.4994 - 1.5006	1.5006	.0006			89.967° - 90°	89.983° - 90.017°	90.006°	.006°		
5	1.499 - 1.502	1.4994 - 1.5006	1.5008	.0008	not	.0002	89.967° - 90°	89.983° - 90.017°	90.006°	.006°		
6	1.499 - 1.502	1.4994 - 1.5006	1.5006	.0006			89.967° - 90°	89.983° - 90.017°	90.003°	.003°		
7	1.499 - 1.502	1.4994 - 1.5006	1.5009	.0009	not	.0003	89.967° - 90°	89.983° - 90.017°	90.004°	.004°		
8	1.499 - 1.502	1.4994 - 1.5006	1.5006	.0006			89.967° - 90°	89.983° - 90.017°	90.009°	.009°		
9	1.499 - 1.502	1.4994 - 1.5006	1.5006	.0006			89.967° - 90°	89.983° - 90.017°	90.002°	.002°		
10	1.499 - 1.502	1.4994 - 1.5006	1.5009	.0009	not	.0003	89.967° - 90°	89.983° - 90.017°	90.009°	.009°		
11	1.499 - 1.502	1.4994 - 1.5006	1.5007	.0007	not	.0001	89.967° - 90°	89.983° - 90.017°	90.002°	.002°		
12	1.499 - 1.502	1.4994 - 1.5006	1.5005	.0005			89.967° - 90°	89.983° - 90.017°	90.009°	.009°		
13	1.499 - 1.502	1.4994 - 1.5006	1.5005	.0005			89.967° - 90°	89.983° - 90.017°	90.008°	.008°		
14	1.499 - 1.502	1.4994 - 1.5006	1.5006	.0006			89.967° - 90°	89.983° - 90.017°	90.012°	.012°		
15	1.499 - 1.502	1.4994 - 1.5006	1.5006	.0006			89.967° - 90°	89.983° - 90.017°	90.004°	.004°		
16	1.499 - 1.502	1.4994 - 1.5006	1.5009	.0009	not	.0003	89.967° - 90°	89.983° - 90.017°	90.001°	.001°		
17	1.499 - 1.502	1.4994 - 1.5006	1.5005	.0005			89.967° - 90°	89.983° - 90.017°	90.006°	.006°		
18	1.499 - 1.502	1.4994 - 1.5006	1.5002	.0002			89.967° - 90°	89.983° - 90.017°	90.005°	.005°		
19	1.499 - 1.502	1.4994 - 1.5006	1.5012	.0012	not	.0006	89.967° - 90°	89.983° - 90.017°	90.007°	.007°		
20	1.499 - 1.502	1.4994 - 1.5006	1.5008	.0008	not	.0002	89.967° - 90°	89.983° - 90.017°	90.008°	.008°		
		std dev =	0.00024									
		x-bar =	1.500675									

L42 RCMS TARGETS

Set #		AVG	Std Dev		K=1.3	UL	LL		Adjusted Std Dev	K=1.3	UL	LL		N	
1	Pinion	17.5	1.72		2.2360	19.736	15.264			0.0000				10	*
1	Ring	9.8	1.75		2.2750	12.075	7.525			0.0000				10	*
2	Pinion	27.3	1.72		2.2360	29.536	25.064			0.0000	27.300	27.300		15	*
2	Ring	19.3	1.71		2.2230	21.523	17.077		1.77	2.3010	21.601	16.999		15	*
3	Pinion	8.3	1.23		1.5990	9.899	6.701		1.31	1.7030	10.003	6.597		15	*
3	Ring	4.6	1.18		1.5340	6.134	3.066			0.0000	4.600	4.600		15	*
4	Pinion	22.4	1.98		2.5740	24.974	19.826			0.0000				14	*
4	Ring	13.9	0.83		1.0790	14.979	12.821		0.85	1.1050	15.005	12.795		14	*
5	Pinion	32.6	1.50		1.9500	34.550	30.650		2.00	2.6000	35.200	30.000		14	*
5	Ring	17.8	2.26		2.9380	20.738	14.862			0.0000				14	*
7	Pinion	14.8	0.79		1.0270	15.827	13.773		0.93	1.2090	16.009	13.591		10	*
7	Ring	10.6	1.26		1.6380	12.238	8.962			0.0000	10.600	10.600		10	*
8	Pinion	25.5	1.21		1.5730	27.073	23.927			0.0000				11	*
8	Ring	18.5	2.11		2.7430	21.243	15.757			0.0000				11	*
9	Pinion	21.5	2.07		2.6910	24.191	18.809			0.0000	21.500	21.500		11	*
9	Ring	14.9	1.76		2.2880	17.188	12.612			0.0000	14.900	14.900		11	*
10	Pinion	14.4	0.96		1.2480	15.648	13.152		1.10	1.4300	15.830	12.970		13	*
10	Ring	8.2	1.52		1.9760	10.126	6.174			0.0000				13	*
11	Pinion	21.8	1.77		2.3010	24.101	19.499			0.0000	21.800	21.800		18	*
11	Ring	17.2	1.93		2.5090	19.709	14.691			0.0000	17.200	17.200		18	*
12	Pinion	21.3	1.30		1.6900	22.990	19.610		1.77	2.3010	23.601	18.999		16	*
12	Ring	13.4	0.96		1.2480	14.648	12.152		1.08	1.4040	14.804	11.996		16	*
13	Pinion	36.0	2.25		2.9250	38.925	33.075		2.31	3.0030	39.003	32.997		20	*
13	Ring	27.6	1.90		2.4700	30.070	25.130		2.00	2.6000	30.200	25.000		20	*
14	Pinion	63.5	2.20		2.8600	66.360	60.640		2.70	3.5100	67.010	59.990		15	*
14	Ring	53.5	3.00		3.9000	57.400	49.600			0.0000	53.500	53.500		15	*
15	Pinion	9.8	1.23		1.5990	11.399	8.201			0.0000	9.800	9.800		10	*
15	Ring	5.4	1.17		1.5210	6.921	3.879		1.24	1.6120	7.012	3.788		10	*
16	Pinion	13.4	1.58		2.0540	15.454	11.346			0.0000	13.400	13.400		18	

L42 RCMS TARGETS

Set #		AVG	Std Dev		K=1.3	UL	LL		Adjusted Std Dev	K=1.3	UL	LL		N	
16	Ring	7.5	1.98		2.5740	10.074	4.926			0.0000	7.500	7.500		18	
17	Pinion	14.8	1.72		2.2360	17.036	12.564			0.0000	14.800	14.800		11	*
17	Ring	8.8	1.08		1.4040	10.204	7.396		1.39	1.8070	10.607	6.993		11	*
18	Pinion	12.7	1.49		1.9370	14.637	10.763			0.0000	12.700	12.700		11	*
18	Ring	7.5	1.04		1.3520	8.852	6.148		1.16	1.5080	9.008	5.992		11	*
19	Pinion	12.3	1.01		1.3130	13.613	10.987			0.0000	12.300	12.300		11	*
19	Ring	6.8	1.33		1.7290	8.529	5.071		1.39	1.8070	8.607	4.993		11	*
20	Pinion	44.8	4.50		5.8500	50.650	38.950			0.0000	44.800	44.800		18	*
20	Ring	35.9	3.22		4.1860	40.086	31.714			0.0000	35.900	35.900		18	*
21	Pinion	21.6	1.97		2.5610	24.161	19.039			0.0000	21.600	21.600		18	*
21	Ring	14.3	1.41		1.8330	16.133	12.467			0.0000	14.300	14.300		18	*
22	Pinion	24.6	1.93		2.5090	27.109	22.091			0.0000	24.600	24.600		25	*
22	Ring	14.9	1.26		1.6380	16.538	13.262			0.0000	14.900	14.900		25	*
23	Pinion	20.7	2.45		3.1850	23.885	17.515			0.0000	20.700	20.700		11	*
23	Ring	14.5	2.25		2.9250	17.425	11.575			0.0000	14.500	14.500		11	*
24	Pinion	15.2	1.47		1.9110	17.111	13.289			0.0000	15.200	15.200		11	*
24	Ring	8.5	1.04		1.3520	9.852	7.148		1.16	1.5080	10.008	6.992		11	*
25	Pinion	14.6	1.36		1.7680	16.368	12.832			0.0000	14.600	14.600		11	*
25	Ring	10.8	1.54		2.0033	12.803	8.797			0.0000	10.800	10.800		11	*
27	Pinion	34.4	4.36		5.6680	40.068	28.732			0.0000	34.400	34.400		18	*
27	Ring	25.9	2.27		2.9510	28.851	22.949			0.0000	25.900	25.900		18	*
28	Pinion	21.6	1.33		1.7290	23.329	19.871			0.0000				13	*
28	Ring	13.5	1.39		1.8070	15.307	11.693			0.0000				13	*
29	Pinion	19.2	2.08		2.7040	21.904	16.496			0.0000	19.200	19.200		25	*
29	Ring	13.8	1.64		2.1320	15.932	11.668		1.70	2.2100	16.010	11.590		25	*
30	Pinion	24.4	2.20		2.8600	27.260	21.540			0.0000	24.400	24.400		11	*
30	Ring	17.6	1.75		2.2750	19.875	15.325		1.85	2.4050	20.005	15.195		11	*
31	Pinion	27.9	1.92		2.4960	30.396	25.404		2.27	2.9510	30.851	24.949		11	*
31	Ring	19.7	2.10		2.7300	22.430	16.970		2.15	2.7950	22.495	16.905		11	*