L42 Surveillance Panel Meeting minutes
PRI Apollo Room, Warrendale, PA
June 21, 2006

Attendees:
Cory Koglin
Don Bell
Don Bartlett
Chris Schenkenberger
Jerry Gropp
Hector DeLaFuente
Don Lind
Dale Smith
Bill Sullivan
Salvatore Rea
Mike Follis
Thelma Marougy
Robert Burrow
Harold Chambers
John Dharte
F. Farber

Agenda
Call to Order/Membership review
Approval of Minutes
- April SP meeting
- May 9th SP meeting
    - iL06-2
- Task Force meeting minutes May-June

L42 Procedure
- Procedure Updates

2006 Industry Hardware Order Update
Scoring/Bright Burnish
L42 reference targets/statistics
Adjournment

A correction to the May 9th, 2006 SP minutes was agreed to by the SP. The words "from L42-1 Task Force work" will be added to the motion made on May 9th.

Motion: A motion Dale S./Bill S. was passed unanimously (7 approved/0 opposed/0 abstention) to approve the April 19th SP minutes, May 9th SP minutes, and TF minutes May-June.

The Chairman informed Surveillance Panel about information letter 06-2. This information letter adopted the L42-1 task force draft procedure to run L42 tests.

Procedure Updates

The following changes were proposed to the current L42 procedure.

Report form Proposed changes
1. Remove specification on Form 3 for shock series starting temperatures
2. Remove specification on Form 2 for Conditioning temperature
3. Move % deviation chart to Form 2 from form 3

4. Arithmetic rule will be used when calculating max, min, avg values of negative torques for shock series.

A1.1
NOTE 3: In shock series 2 for the Canadian test method, the cooling water control set point is set to 200ºF (93.3ºC). The maximum rise above the starting temperature during the shock sequence is to be 15º (8.3ºC), or the test is considered non-interpretable cannot be considered valid.

Footnote B
The Canadian test version is typically used for evaluation of 75W lubricants and 75Wxx lubricants

A5.2
Edit-Unscheduled shutdowns – Only one unscheduled shutdown allowed per test. The shutdown can only occur during conditioning 1, conditioning 3, or anytime the driveline is disengaged. Downtime cannot be longer than 15 minutes. Any other unscheduled shutdowns invalidate the test.
Original-Unscheduled shutdowns - One per test maximum, during conditioning 1 or conditioning 3 (steady state periods only), or anytime the driveline is disengaged (inspections). Downtime cannot be longer than 15 minutes. Any other unscheduled shutdowns invalidate the test.

A5.3
Edit-Test Length-Calculate and report total test time starting from the beginning of Conditioning 1 to the end of shock 2. Test length can not exceed 80minutes. Downtime is not to be included in the test length time.

Original Test length – From start of data logging until the end of data logging, test length can not exceed XXX hours and YYY minutes. Downtime is not to be included in the test length time.

Section 6

6.2 Add-See section 10.1 for approved axle batches

Section 8-Preparation of Apparatus

8.2.1 Pretest pattern procedure: Record coast side pattern as received. Recommended pattern should be L2/F0 or L3/F0. Recommended coast side pattern should be L2F+1, L2F0, L2F-1, L3+1, L3F0, and L3F-1.

Edit 8.2.3 Record backlash at four equally spaced locations. The readings shall between .004 and .009in. and report the 4 readings and the average.
Original 8.2.3 Record backlash at four equally spaced locations. The average of the four readings shall be between .004 and .009 in. (0.102 to 0.229 mm)

8.2.11 Lubricate the carrier bearing, pinion bearings differential gears, and the ring and pinion gears using the test lubricant or neutral base oil.

Section 10-Procedure for conducting the test

10.2.2.1 Set data acquisition to record pinion torque and wheel speed at a minimum of 10Hz and axle temperature at a minimum of 1Hz. While maintaining the fixed dynamometer excitation, slowly cycle the wheel speed from 575±20 r/min to 385±20 r/min. Maintain the fixed dynamometer excitation settings and control throttle movement slowly enough to maintain pinion torque values sufficient to properly condition the drive and coast side of the

axle. Complete four cycles, not to exceed 5 minutes, then immediately proceed to 10.2.3.

10.2.4.1 Set data acquisition to record pinion torque and wheel speed at a minimum of 10Hz and axle temperature at a minimum of 1Hz. While maintaining the fixed dynamometer excitation, slowly cycle the wheel speed from 815±20 r/min to 670±20 r/min. Maintain the fixed dynamometer excitation settings and control throttle movement slowly enough to maintain pinion torque values sufficient to properly condition the drive and coast side of the axle. Complete four cycles, not to exceed 5 minutes, then immediately proceed to 10.2.4.2.

Need to add data dictionary fields to capture the time to complete Conditioning 2 and 4.

10.5.1.1 If lubricant temperature the axle oil temperature is greater than 280ºF (137.8ºC) after Inspection 2, allow the axle oil temperature to cool (without cooling water) until it reaches 240 to 280ºF (135.0-115.6ºC).Wait until axle oil temperature differential housing is less than or equal to 280º F (137.8ºC) before shifting transmission through the gears. If the axle oil temperature is less than or equal to 280ºF (137.8ºC) after Inspection 2, proceed immediately to 10.5.1.2.

10.5.1 Record axle oil temperature at the start of Shock Series 2 on the appropriate form. Axle oil temperature shall be less than or equal to 280º F (137.8ºC) at the start of Shock Series 2. See A1.2.2.4 for L-42-1 Canadian Version test.

Motion (Bill Sullivan) 2nd Don Lind
Approved the proposed changes with a 30 day wait from date of information letter.

2006 L42 Hardware order status

- PO's issued from Labs mid July 2005
- Total axle quantity ordered=959
- L42 TF traveled to Lugoff, SC to discuss axle build with Dana personnel-March 28th
- First 10 axles sets were assembled, but the drive side contact pattern is too near toe (L1 to L .5)
    - Upon investigation, it was discovered that while the carriers where made to print, the lack of geometric dimensioning tolerances and the gearset design is the large reason for the drive side pattern not meeting spec.
- Dana's suggestion was to send the gearsets back to Ft. Wayned in order to re-lap the driveside to a L4 pattern which should give an assembled pattern closer to specification (L2/L3 F0, F+1, F-1).
- 10 gearsets were set to Ft. Wayne and the assembled result netted a L1-L3 pattern on the drive side with no change in the coast side pattern. However, the backlash has now increased to .010"-.013". Spec = .004"-.009"
- L42 Task force held a conference call April 11 and decided to present information to SP for review

Bright Burnish/Scoring

The group reviewed the previous discussions and came up with 2 possible solutions.

1. Include any bright burnish in the final scoring result
2. Exclude gears (non-interpretable) that have bright burnish

Don Lind and Robert Burrow felt the raters would prefer to include any bright burnish in the final scoring result. It was also discussed that the labs see this occurrence <5% of the time and it typically on poor oils or the failing reference oil.

The following will be attempted at the July 2006 rater workshop:

- Have raters lump everything (scoring+bright burnish) all as scoring (this experiment is preferred)
- Have raters pick-out gears with bright burnish so that it may be called non-interpretable

Consistency is the key. Chairman will send TMC gearsets with brightburnish to be evaluaqtoed at July workshop

L42 Pass/fail line simulation

Bill Sullivan presented a excel worksheet. The simulation worksheet will create a new hypothetical 100 test data base of pinion scores based on the hypothetical pass/fail line, standard dev, and LRI reject line for high pinon score values that can be entered in the yellow background cells. It will recalculate every time you hit F9. Over to the left is a population of results for 25 iterations of above by running macro1, alond with their own means and stds, and a graph of those results.

Bill forwarded this spreadsheet to his B03 distribution list for others to look at.

L42 reference sequence number

The L42 task force has asked the TMC to come up with some type of reference sequence number. This would be an alpha-numeric number which would be assigned at the beginning of a reference sequence and kept throughout as long as the lab did not change any settings on the stand. This will help to determine the actual number of tests needed to reference the stand. For instance, it is believed that labs may run 4 or 5 passing oils, but only choose “the best” 3 to present. The data dictionary can then be queried to determine the number of actual tests used over time.

The labs felt a conference call needs to take place in order to discuss different scenarios and how it would effect their numbering.