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November 12th, 2010

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ASTM D02.B0.03 L-37 Surveillance Panel Members and Guests:

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

• November 3rd, 2010 L-37 Surveillance Panel Meeting

Please direct any corrections or comments to my attention.

Sincerely,

Galen Greene, Chairman L-37 Surveillance Panel

Report of Meeting L-37 Surveillance Panel Meeting BRTRC Facility – Warren, MI

November 3rd, 2010

Attendees:

Dana - Guzikowski (TC)

SwRI - Koehler

Lubrizol - **Greene**, Gropp, Venhoff
Afton - **Koglin**, Bell, Higuchi, Kearney

Intertek-Parc - Smith
TMC - Parke, Lind

US Army - **Comfort**, Dwornick Arvin Meritor - **McGlone**, Muransky

AAM - **Dharte**Conoco Phillips - Gao
Eaton - **Marougy**

Voting Members in **BOLD** TC = Teleconference

The meeting was called to order at 2:00 pm EDT.

1.0 Approval of Minutes:

- August 11th, 2010 Surveillance Panel Meeting (Warrendale, PA)
- September 10th, 2010 (Teleconference)
- October 5th, 2010 (Teleconference)

Motion # 1 \rightarrow Mr. Dharte / 2^{nd} Mr. Koehler to approve the minutes as presented. Motion for approval was passed with a vote of 10-Yes, 0-No, and 0-Abstentions.

2.0 Summary of Meeting Discussions

2.1 Hardware Update

The group discussed the recent events in the attempts to obtain a successful batch of Lubrited test hardware. Mr. Guzikowski commented that Fort Wayne was still waiting on parts for the ring gear finishing machine. He commented that they are on track for the parts to be done in the final week of November, at least as of now. From there, some gears will be lubrited and they will be shipped to Maumee for retrofit.

2.2 Instrument Calibration Frequency

The current wording for instrument calibration does not currently coincide with two full reference periods. The wording specifies a time and test count. The problem is that this includes test numbers and time consumed for stand referencing. This creates a potential situation where the lab is referenced, but the instrument calibration is out of specification. The group agreed that the intent of the instrument calibration frequency was to be before every other reference sequence. The following motion was proposed:

Motion # $2 \rightarrow$ Mr. Koehler / 2^{nd} Mr. Greene – Motion to change the instrument calibration frequency to: no less frequent than before every other reference sequence not to exceed 9 months. The motion passed with a vote of Yes-9, No-0, Abstensions-1.

This intent of this motion is for the labs to calibrate the stand before every other reference unless the stand is taken out of commission (hence the 9 month maximum).

2.3 Restarting a Test after a Shutdown

A discrepancy between sections 10.2.3 and 10.3.1.4 was noted now that we have adopted the new reduced load procedure. Section 10.2.3 (transitioning a test from conditioning phase to test phase) explicitly states to load the axle to 1044 ft. lbs. at each wheel until an axle temperature of 175 Deg-F is reached. However, Section 10.3.1.4 (restarting after a shutdown) states to run the test at 60% of set point when the shutdown occurred which is not 1044 ft. lbs. for the reduced load procedure. The group discussed that it may take an increased amount of time for the axle oil temperature to reach 175 Deg-F at 60% of the reduced load. Therefore, after further discussion, the following motion was proposed:

Motion # 3 \rightarrow Mr. Koehler / 2nd Mr. Greene – Change section 10.3.1.4 to explicitly call out 1044 ft. lbs. for a test phase shutdown on any procedure. The wording for 10.3.1.4 should be changed to read similar to: "For a shutdown occurring during test phase, apply a dynamometer load on each wheel to achieve a torque value of 1044 ± 35 ft. lbs. until a lubricant temperature of 175 Deg-F is reached. For a shutdown occurring during conditioning phase, follow sections 10.1.1 through 10.1.4 to restart the test." The motion passed with a vote of Yes-8, No-0, Abstensions-0.

2.4 Next Generation L-37 Test

The chairman initiated a discussion on the future of L-37 testing. There have been many informal discussions over the last several years about initiating a new test that better represents current hardware in the field. The group discussed some key improvements to the stand as well. After discussion, the group agreed that there is a need to begin a serious and organized effort to develop a new generation test. Some key points were agreed to:

- 1. The next generation test will be electric motor powered. This is because electric motors provide better control and could lead to less variability in test results. The electric motor could eliminate the need for a transmission which would lower the complexity of test stands. Also, a fully regenerative electric power test stand could recover a significant portion of energy used to power the test. This would lead to lower test operating costs.
- **2.** The new test stands will not require the exact same motors. This was decided because the group agreed that the exact size and model of electric motor would not have much, if any, effect on the test. This is similar to the current L-37 approach, where different engines can be used.
- 3. Any lab wishing to participate and ultimately run the new generation test should work to install an electric powered test stand capable of developing a new generation test. While the next generation test is not defined, the labs agreed that a stand being able to operate the current L-37 test conditions with some degree of judged over capacity should be a good start.
- 4. The stands would likely be arranged in a "T" setup similar to the current L-37 test stand.

The group also discussed some possible options for test hardware. A task force group is going to be formed to investigate the new test including possible hardware options. This group will begin working with the intent of having a realistic test option(s) identified within approximately 1 year. This group will work to identify hardware and conduct test development in this timeframe.

2.5 New Reference Acceptance Bands

The TMC briefly reviewed the new reference acceptance bands that were approved at the October 5th, 2010 meeting. These bands went into effect on November 1st, 2010. The group did a final check of these bands and agreed that there were no obvious problems.

3.0 Adjournment

Motion by Mr. Smith to Adjourn, Meeting Adjourned at 4:35 pm EDT

Respectfully submitted,

Galen Greene L-37 Surveillance Panel Chairman

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