



November 6, 2006

Reply to:

Donald T. Bartlett

The Lubrizol Corporation

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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:

- o **November 1, 2006 L-37 Hardware Task Force Teleconference Meeting.**

Please direct any corrections or comments to my attention.

Sincerely,

A handwritten signature in black ink that reads "Donald T. Bartlett".

Donald T. Bartlett, Chairman

L-37 Surveillance Panel

Attachments

**The Lubrizol Corporation**

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**Report of Conference Call**  
**L-37 Hardware Task Force**  
November 1, 2006, 11:00 EST  
November 1, 2006, 2:00 EST

**I. Attendees:**

ASTM TMC:	Don Lind, both	Ethyl Corp:	Cory Koglin, both
Lubrizol Corp:	Don Bartlett, both	Lubrizol Corp:	Chris Schenkenberger a.m.
Dana Corp:	Don Kreinbring, both	SwRI:	Brian Koehler, both
PARC:	Dale Smith, both	Dana Corp:	Lou Pappademos, both
Dana Corp:	Kerry Hess, a.m.	Dana Corp:	Bob Sullivan, p.m.
Lubrizol Corp:	Chris Prengaman, a.m.	Dana Corp:	Mark Bassett, p.m.

**II. Agenda:**

- Status of Ring and Pinion blanks received at Ft. Wayne
- Heat treating process
- Lapping process
- Lubriting process
- Timing of the lab TF Trip to Ft. Wayne?
- Timing of shipment to Lugoff, axle build and ship
- Timing of Lab TF visit to Lugoff facility

**III. Summary of Panel Discussion, Consensus Actions, and Motions:**

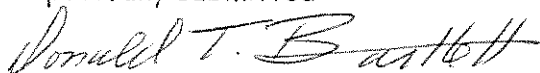
2006 Lubrited Hardware Order Placement - the following laboratory tentative hardware order was identified.

Parc	⇒	220
SwRI	⇒	275
Afton	⇒	275
Lubrizol	⇒	<u>300</u>
Count		1070

- **Status of ring:**
  - 1175 rings were received. Made of 8620 steel (8620A is spec on drawing), cut and quarantined to go through furnace for extra heat-treating. Shot peening, surface grinding, and lapping to follow. The drawing version is revision C.
- **Status of pinion:**
  - Approximately 1600 Pinion forgings (some for another job) are due to ship/arrive on Friday, 11/3/06. Made of 8625 steel. Will immediately be annealed, blanked and proceed to cutting, lapping, etc. The drawing version is revision C.
  - 200 piece cutting tool change out.
  - Cutting to be performed around November 9<sup>th</sup>.

- **Heat Treating** hardness should be set up as the last non-lubrited batch and case depth (heaver than normal production). Appropriate drawings from P4L792/V1L417 batch with quality alerts confirmed. They expressed a concern with retained austenite (pinion only) drawing requirement being less than 10 % percent. This is something they will target, but no guarantee it will be achieved.
- **Lapping process** comes after heat-treating and shot peening. Lapping compound to be used is as specified on drawing of 280-grit.
- **Lubriting process** - The question was...have there been any changes to the lubriting process at Ft. Wayne since 1999?
  - ASTM requirement is different than normal Ft. Wayne productions. Ft. Wayne normal lubrited only the ring. ASTM requires both the ring and pinion to be lubrited. Ft. Wayne must make a special tool to hang the pinion.
  - Special cleaning process before luberizing? Yes, continuous line rinsed, initiated, runs through tank, rinsed, oiled. (Alkaline cleaner and oiling chemicals are different than previous lubrited runs).
  - This is a manganese phosphate process, has temperature specification, certain soak times. Acid is continuously added.
  - **ASTM concerns expressed** and Dana confirmed their understanding:
    - Prior to running, recharge with fresh initiator (fixidyne can lead to fine crystals, which is our desired outcome).
    - Want relatively low etching and fine grain sizing.
    - We expressed our concern about the hardware not being run immediately after the tanks have been shut down. If there is a shutdown, after the bath has been brought back up to temperature, Dana agreed to run several "other" pieces/projects through first (say for 1 day).
    - We want consistency of process from front to rear of batch run through with no time breaks in their process.
- Lab TF visit to Ft. Wayne at lubriting time is scheduled for November 29<sup>th</sup>, 8:00 a.m.
- Don Kreinbring to confirm status of parts batch lot and build status for L-37 hardware.
- Lab TF Trip to Lugoff facility at assembly time is tentatively scheduled for early December (dependent on L-42 build out). There is a hardware line move to another building scheduled at Lugoff as well.

Respectfully submitted:



Donald T. Bartlett

L-37 Surveillance Panel Chairman