

Oil Seal Compatibility Test (OSCT) Surveillance Panel Meeting Minutes

September 28, 2022

Don Bell

Participants listed on attachment in Appendix.

An OSCT Surveillance Panel meeting was called to order by D. Bell at 2:03 pm on 9/28/2022.

A motion made by D. Bell and 2nd by W. Venhoff was unanimously approved with 7 votes to approve the previous OSCT Surveillance Panel minutes from meeting held 8/24/2022.

A review of the 8/24/2022 OSCT Surveillance Panel meeting was discussed. On 8/2010, the LRI Committee approved removal of the ASTM D471 1000 hours/100°C test conducted on PA, FL, and NI as part of PD4000 J2360 field trial requirements. The justification for discontinuing the D471 testing was:

- 1000 hours data did not discriminate a gear oil that caused leaks in the field with gear oils that passed the 1000 hours test
- The seal materials used for the 1000 hour test were obsoleted
- Insufficient data to set statical limits
- TMC did not monitor the test
- No leaking seal issues noted in the field, thus the ASTM D5662 seal test deemed

It was emphasized that axle OEMs prefer seal data to at least 1000 hours to provide confidence that the seals will not cause oil leakage in the field. The Panel agreed that the D471 test temperatures of 100°C needed to be raised to 150°C for PA and FL, but 100°C is acceptable for the more sensitive NI seals that do not see these conditions in the field since they are for wheel ends only. The 1000 hour test had limits for each measured parameter, but no one knew how the limits were established or what reference fluids were used to generate the data. Discussions about reference oils for the 1000 hour tests concluded that TMC 155-1 oil, BASF FE 75W-90, and Dana approved HiTEC[®] 355 75W-90 were good representative J2360 gear oils for testing via ASTM D471. Both Labs C and G can conduct the D471 testing.

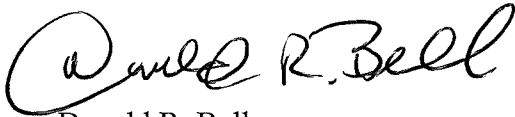
It was agreed that the three proposed reference oils noted above will be tested via ASTM D471 (3 dumbbells using Die C + 3 rectangles using ASTM D5662 for measurement), one tube/elastomer/interval) with PA and FL at 150°C and NI at 100°C with samples tested for the following parameters in the current baths using the current donated D5662 PA, FL and NI seals from TEL. Test parameters to be measured at 240, 500, and 1000 hours include:

- % Elongation change
- Points hardness change
- % Volume change
- % Tensile strength change
- Reversion (1)
- Bend test (2)
- Visual sediment

Labs to follow the general procedures of ASTM D471 and D5662. Arjun Goyal will sponsor and schedule the testing for the BASF 75W-90 at Labs C and G. D. Bell will do the same for the Dana approved 75W-90 and TMC 155-1 at both labs. Both labs should use the same batches of seal material for comparing data. Some D471 data may be available for review at the November 9th OSCT Surveillance Panel meeting.

A motion made by D. Bell and 2nd by A. Goyal to adjourn the OSCT Panel Webex at 2:59 pm was unanimously approved with 7 votes.

Respectfully submitted,



Donald R. Bell

OSCT Chairman

(1) Reversion Measurement Instructions (Smear Test):

Slide the aged specimen across a section of white cardboard under ~1.8 kg thumb force. Color smear shall be no greater than that produced by sliding an unaged coupon across an identical section of white cardboard under the same 1.8 kg thumb force. (Taken from the 1987 MERCON[®] specification for the ATRR 300 elastomer.)

- (2) Use the 25mm x 50mm x 2 mm rectangles. Loop the specimen until the two short ends meet. Without magnification, report cracks.

Appendix

OIL SEAL COMPATIBILITY SURVEILLANCE PANEL

Date: Sept. 28, 2022 1 of 3

Initials	V = Voting NV = Non-	Name	Company & Address	Phone:	
RB	V	Rob Banas	ExxonMobil Technology and Engineering Co. 535 Thomas Lane Waleska GA 30183	770-833-5920	Rob.a.banas@exxonmobil.com
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DB	V	Don Bell <i>Chairperson</i>	Afton Chemical Corp. 500 Spring Street Richmond, VA 23219	804-788-6332	don.bell@aftonchemical.com
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HV

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