

'Providing Tribological Solutions'

NEWS RELEASE
MOV LONG LIFE EPRI QUALIFIED FOR
LIMITORQUE LIMIT SWITCH GEARBOXES

Reference: EPRI NMAC December 2005 Lube Notes*

Notes #4 'Substitution of MOV Long Life for Mobilgrease 28 in MOV Limit Switch Gearboxes'

Query: A station wants to simplify maintenance practices and to use MOV Long Life (LL) grease in the limit switch gearboxes. How does MOV Long Life stack up against Mobilgrease 28 (M28)?

Summary: MOV Long Life is an "acceptable replacement for M28 for the MOV limit switch gearbox".

Testing: The work was undertaken to qualify MOV LL by comparison with M28 in thermal and radiation exposures simulating service and loss of coolant accident (LOCA) conditions. Testing was done under Herguth Laboratories 10 CFR50, Appendix B, Quality Assurance Program. This included;

- Bulk oven aging at 150°C (302F) for 300 hours,
- Irradiation to 220 Mrad,
- Thin film tests in air at 149°C (300F) for 100 hours, and
- Thin film steam tests 149°C (300F) for 24 hours.

It was said to be a "very thorough study". Tests included consistency, dropping points, oxidative stability (HPDSC), shear stability/separation, wear resistance (pin-on-disc), and copper strip corrosion testing.

Consistency: The treatments reportedly softened all greases except Mobilgrease 28 which hardened in thin film testing. Mobilgrease 28 was said to get "much harder" in some cases which was said to be a "real disadvantage for M28". They also found some incompatibility in mixtures between the greases because of softening but it was said to be of little consequence because the grease is contained in the gearbox.

Dropping Point: When mixed the dropping point did not change with all the results being at the limit of their test equipment. Our Note: This does not confirm any significant incompatibility.

Oxidation Stability: M28 was said to have better oxidative stability based on high pressure differential scanning calorimetry. Aged samples of MOVLL gave higher onset-of-oxidation times.

Oil Bleeding: Both MOVLL and M28 are said to be low bleeders and resist separation.

POD: In pin-on-disc wear tests both greases were said to be about the same with coefficients of friction between 0.11 and 0.14 for all test samples.

Benign to Metals: In the copper strip corrosion testing MOVLL was said to allow more tarnish. With irradiation the tarnishing from MOVLL was less and the same as M28. Using actual gears they got mixed results and concluded that the two greases were nearly equivalent.

Conclusions: It was stated that there was little to choose between the two but that MOVLL is superior to Mobilgrease 28 in remaining soft after thermal exposures.

Dropping points, separation, wear resistance and resistance to copper/brass corrosion was a "push" in the evaluation.

The "qualification is complete".

Notes: Mobilgrease 28 is a trademark of Exxon Mobil. MOV Long Life is called MOV LL in the Lube Notes.

*Also, EPRI MOV Long Life Grease – Evaluation for Limitorque Limit Switch Gearboxes, 1010058.