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EPRI (Electric Power Research Institute) MOV and Grease Related Lube Notes

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While many of their reports are only available to members and/or contributing utilities older reports and the Lube Notes are often available for downloading. See www.epri.com.

The following are Lube Notes items that could be of interest to users of MOV Long Life, MOV Extra and VSG greases.

MOV (Motor Operated Valve) Applications

High Temperature Grease Evaluation, NMAC Lube Notes #1, December 2006. Summary: For a MOV stem application compared Mobilgrease 28, Darina SD, Rheolube 797, MOV Long Life Grade 2 and DC 44. MG 28 was rejected because of early stiffening. MOV Long Life said to retain oil better, has better oxidation stability and consistency retention.

Comparison of Roller Bearing Greases, NMAC Lube Notes #3, December 2006. Summary: Compared Alvania, Premium RB, Polyrex EM and MOV Long Life Grade 2. It was said that MOV Long Life will prove to be superior in antirust and that it had significantly higher weld point and load carrying ability.

Substitution of MOV Long Life for Mobilgrease 28 in MOV Limit Switch Gearboxes, NMAC Lube Notes #4, December 2005. It was said that there was little to choose between the two greases. MOV LL is superior to MG28 in remaining soft after thermal exposure while MG was more oxidatively stable. MOV LL was qualified.

Grease Compatibilities – Mobilplex 47/MOV Long Life, Mobilplex 47/Mobil-Grease XHP, Mobilplex 47/Mobilux EP, NMAC Lube Notes #5, December 2005

MOV Stem/Stem Nut Lubrication – Rate of Loading and Temperature Effects on Friction, NMAC Lube Notes #7, December 2005. Twelve greases were evaluated, and some did better in some tests while not others. MOV LL tented to be midrange for ROL and was somewhat higher than NEB. In terms of grease selection, it was said that there would be no problem choosing MOV LL in place of Nebula.

Grease Compatibility/Incompatibility, NMAC Lube Notes #5, July 2004

Compatibility of Actuator Greases: MOV Long Life vs. Unirex N2 and Mobilux EP. NMAC Lube Notes #3, November 2003

Bearing Grease Compatibilities: MOV Long Life vs. Mobiltemp SHC 100 and Andok B vs. Unirex N2 and Polyrex EM, NMAC Lube Notes #4, November 2003

Effect of Thickening on the Ability of a Grease to Lubricate, NMAC Lube Notes #3, November 2003. Note: This LN has the reference to use a Grade 3 as the normal change out point for Limitorque greases.

Easy On-Site Determination of Grease Thicknesses, NMAC Lube Notes #4, November 2002

Grease Compatibilities: Polyrex EM/Mobilux EP; Polyrex EM/Mobilgrease 28: MOV Long Life/Nebula EP, NMAC Lube Notes #2, November 2001. Summary: For MOV LL it was found to be compatible with NEP.

Replacing ExxonMobil Nebula EP Grease with Cor-Tek MOV Long Life – First EQ Results, NMAC Lube Notes, November 2002. Summary: MOV Long Life is equal to or superior to Nebula EP and was said to be a fine replacement for the now discontinued Nebula EP. The better MOV LL properties were said to allow extended grease changeout intervals, benefiting MOV actuator maintenance.

Cor-Tek MOV Long Life vs. Mobilgrease 28 and ExxonMobil Beacon 325 for the Limitorque Limitswitch Gearbox, NMAC Lube Notes, November 2002. Summary: It was said that MOV LL is much better than MG28 and B325 in heat/oxidation stability and antiwear and it does not attack copper. In short it was said to be a fine replacement for either of the competitive greases.

Replacements for Nebula EP Greases, NMAC Lube Notes #3, November 2001. Summary: It was said that the best candidates to replace the Nebula are the MOV's, calcium carbonate/sulfonate – (CCS) gelled, mineral oil-based greases. They can be used in all areas of the actuator.

Limitorque MOV Actuator Lubrication: A Single Lubricant, Lube Notes #3, July 1996. Summary: This includes data on MOV Plus, a precursor to MOV Long Life. It was called a calcium carbonate sulphonate (CCS) grease.

Cutting Fluid Choices for Tapping Limitorque Bronze, NMAC Lube Notes #1, July 1996

Limitorque MOV Actuator Lubrication, NMAC Lubes Notes #1, December 1996. Summary: Has a list of the greases being used in the different SMB points. Interesting the use of pastes for the stems and not lubricants.

Grease Condition After 8,000+ Actuator Strokes, NMAC Lube Notes, #1, July 1993

Hardening of Nebula EP-Type Greases in Use, NMAC Lube Notes #2, June 1992

Motor-Operated Valve Stem Nut Wear, NMAC Lube Notes #3, May 1990.

Other Grease Applications

Extending Lubrication Intervals by Upgrading Grease or Bearing Type, NMAC Lube Notes #6, December 2016. Summary: Reviewed options in grease technology, bearing technology, and special materials, to determine how to reduce bearing lubrication manpower requirements while maintaining or extending bearing life. Results indicated that there are new technologies that look very promising. Complete results in EPRI report 3002008057.

Chevron SRI 2 Formulation Change and Impact to Environmental Qualification Applications, NMAC Lube Notes #1, December 2015. Summary: Because the composition of these two products is nearly identical, it is reasonable to conclude with a high degree of scientific certainty that the performance of these two products would be equal in a radiation environment.

Containment Tendon Grease Sampling, NMAC Lube Notes #4, December 2015. Summary: New methods exist for low-volume grease sample analysis for monitoring containment post-tension tendons that can reduce the overall costs of obtaining samples and enhance the monitoring of multiple potential corrosion failure modes.

Grease Compatibility, NMCA Lube Notes #4, December 2013. Summary: There were concerns about mixing Mobil Polyrex EM5 with Never Seez High-Temperature in some pump bearing. Testing showed slight changes but Never Seez has a much higher baseoil viscosity. Some housings showed suspicious amounts of oil bleeding so they will be inspected.

National Lubricating Grease Institute Grease Consistency Rating—Cone Penetration, NMAC Lube Notes #2, December 2012. Summary: There is concern about penetration values between grades and precision. It is stated that the starting point to allow for test precision when setting acceptance criteria should be at the mean value of the NLGI grade range, not from either end of the range. Their position is that if a new, unused grease cone penetration test result is outside the grade range but not into another, it is an acceptable result.

Wire Rope Lubrication, NMCA Lube Note #7, December 2010. Summary: For spent fuel bays current practice is not to lubricate the wire ropes on the cranes because the risk associated with the possibility of contaminating the coolant is by far greater than the cost of the wire rope itself. Options include purchasing a rope with a pre-lubricated core or to relubricate the core by using a pressure lubricator to force lubricant through the inner strands and core. Care has to be taken to pick a lubricant that is suitable.

Containment Use of Auto-Greasers, NMAC Lube Notes #8, December 2010. Summary: A motor-driven design is a significant improvement over the previous spring- and gas-powered models. But because of the plastic construction, embrittlement is possible, depending on the materials used, and it may be necessary to change the units out during outages to prevent cracking or loss of structural stability.

New and Better Greases for GE Magne-Blast Circuit Breakers, NMAC Lube Notes #7, November 2004. Summary: Examined Mobilgrease 28, MOV Long Life, MOV Long Life Syn, Polyrex EM and Polyrex EP. MOV Long Life Grade 2 was found to be markedly better than MG 28 in thin film oxidation tests and the MOV grease shines in antiwear properties and looks good in corrosion tests.

Lubricants in General

Radiation Exposure Study on Modern Turbine Oils, Lube Notes #2, October 2009

Compatibility of New vs. Old GST 32 Turbine Oil, NMAC Lube Notes #3, December 2005

Air Release Problems with Newer Turbine-type Oils, NMAM Lubes Notes #1, December 2005

Lube Product Line Consolidations – Update, NMAC Lube Notes #2, December 2005

Importance of Testing Incoming Lubricants, NMAC Lube Notes #4, July 2004

Lube Survival After a LOCA, NMAC Lube Notes #2, November 2002

The Usefulness of Particle Counting in Oil Analysis, NMAC Lube Notes #3, November 2002

To Change or Not to Change (An Oil)?, NMAC Lube Notes #6, November 2000. Authored by K. Brown. Summary has an attempt to include all the various costs associated with an oil change. These can be 40X the cost of just the oil.

Checking Incoming Lubricants, NMAC Lube Notes #1, October 1999