

*'Providing Tribological Solutions'*

## MOV LONG LIFE GREASES QUESTIONS & ANSWERS

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### Q 1. How is MOV Long Life different from Nebula EP grease?

**Answer: It is similar but better in most regards.** First MOV Long Life is available. Nebula EP production stopped in 2001 and the grease only had a stated 1-year shelf life. MOV Long Life is similar because the grease thickener is calcium based as a calcium sulfonate complex while Nebula EP was a calcium complex. Both have the advantage of inherent extreme pressure (EP) characteristics for wear protection. Unfortunately, calcium complex greases tend to age harden which can lead to tunneling (cavitation) in some actuators and a more variable coefficient of friction on stems. The MOV Long Life calcium sulfonate thickeners can be better because they provide outstanding corrosion protection, excellent mechanical stability and resistance to water. MOV Long Life also has an excellent antioxidant additive package to provide a long service life. So far it is lasting 3-4 times longer than previous greases with a possible savings for some actuators of \$15,000 - \$20,000 for every extended overhaul.

### Q 2. Is MOV Long Life compatible with Nebula EP grease?

**Answer: Yes.** For the 2002 EPRI report\* these greases were mixed in different ratios and they were found to be compatible. Adding MOV Long Life generally improved the mixtures. In the COG testing they also determined that new MOV Long Life was compatible with aged Nebula EP. This was for top-ups. Given the better performance of MOV Long Life remove as much of the old grease as possible. Nebula failed the COG aging and was rated marginal by EPRI.

\* *'Comparative Analysis of Nebula and MOV Long Life Greases for Limitorque Main Gearbox Applications', EPRI Report #1003483, December 2002.*

### **Q3. Is MOV Long Life EQ'd for safety related actuators?**

**Answer: Yes.** MOV Long Life has been fully tested by EPRI to replace Nebula EP. In their 2002 report MOV Long Life was considered an acceptable replacement and was “superior to NEP in all key areas”. Nebula EP was “marginal’ in some parameters. This evaluation included irradiation to over 220 Mrad, steam and temperature. MOV Long Life also did well in the testing by COG (Candu Owners Group) while Nebula EP did not survive the five-year aging. In addition, MOV Long Life is the standard factory fill by Limitorque\*\* for SMB actuators including safety related ones.

*\*\* See Limitorque Technical Updates 02-01 and 04-01*

### **Q4. Who is using MOV Long Life?**

**Answer: MOV Long Life is being used around the world.** This is across the US, at all nuclear stations in Canada as well as in France, Sweden, Slovakia, Romania, Spain, and others. US utilities include all the majors such as Dominion, Duke Energy, Exelon, Florida Power & Light, Progress Energy, TVA and others. It has been used since 2000 at Palo Verde in Arizona which is the largest US nuclear station.

### **Q5. Can we use MOV Long Life in the limit switch gearboxes?**

**Answer: Yes.** A number of utilities have been using MOV Long Life in the limit switch gearboxes and it is performing as well if not better than the previous product. It was also tested by EPRI\* for this application and with respect to compatibility. It was approved.

*\* See EPRI Lube Notes, Note Number 4, December 2005, ‘Substitution of MOV Long Life for Mobilgrease 28 in MOV Limit Switch Gearboxes’.*

### **Q6. Can we use MOV Long Life on the stems?**

**Answer: Yes.** MOV Long Life has been used on the stems at a number of utilities and has been investigated for this use by Flowserve, EPRI\*, COG and INEEL. It does very well with a coefficient of friction similar to that for Nebula EP, but it is not prone to age hardening and has better oxidation resistance. The ROL affects have been found to be very low by most investigators. Also, MOV Long Life will provide wear protection for the stem nuts unlike some antiseize pastes. So MOV Long Life is a three-for-one grease. It has been tested for use in the main gearbox, in the limit switch gearbox and on the stems. This reduces the dangers of cross contamination or adding the wrong grease.

*\* See EPRI Lube Notes, Note Number 7, December 2005, ‘MOV Stem/Stem Nut Lubrication – Rate of Loading and Temperature Effects on Friction’.*

**Q7. Can MOV Long Life be used in other actuators?**

**Answer: Yes.** MOV Long Life is a premium multipurpose grease that is the standard factory fill for Limatorque SMB and HBC actuators for both nuclear and commercial applications. It is approved for use by Limatorque in W, B, VG and B320 actuators. It can be used to top off where the previous grease was a calcium complex. For B320 actuators the fill is reportedly a lithium-based grease and while generally compatible this should be verified. For new or rebuilt actuators of any type with no grease and that had taken a mineral oil-based grease, then the correct grade of MOV Long Life should be suitable. Note that this does not include applications for natural gas, sour gas or oxygen.

**Q8. Where can we get MOV Long Life?**

**Answer: MOV Long Life is widely available.** This from Canoil as well as from several actuator repair shops across North America. In Europe it is also available from Axel (Christal Grease) in France. MOV Long Life is provided in drums, kegs, pails and tubes. In addition, the Grade 0 is available worldwide in pails from Areva but at a premium. In some cases, it can be possible to use your regular supplier

**Q9. Can MOV Long Life be used in bearings?**

**Answer: Yes.** MOV Long Life is available in NLGI Consistency Grades 0, 1 and 2. Typically bearings take a Grade 2 although if there is an automatic greasing system a Grade 1 might work better. MOV Long Life meets the NLGI requirements for wheel bearing greases and is more than suitable for most applications including sealed for life bearings. It has been tested by EPRI for bearings\*. In addition, it can be used in motor bearings safely because the EP additives are not aggressive and will not attack the windings. Also, MOV Long Life has been used on reach rod bearings and can be used in most shaft flexible couplings requiring an EP grease. It should provide a long service life, wear protection, outstanding corrosion protection and excellent mechanical stability.

*\* See EPRI Lube Notes, Note Number 3, December 2006, 'Comparison of Roller Bearing Greases'.*

**Q10. Can we use MOV Long Life at our fossil stations?**

**Answer: Yes.** MOV Long Life can be used at other power stations as well as industrial plants. For lower temperatures, for less critical applications or where the technical support is not required, we also offer MOV Extra. This is also a calcium sulfonate thickened grease but has a different base oil and a more typical antioxidant package. It will still perform very well for many applications. MOV Extra is reportedly much less prone to tunneling than some other products.

**Q11. Do you have a product for oil filled actuators?**

**Answer: Yes, when demand improves.** MOV Long Life 9000 is a semifluid grease. It has a similar baseoil viscosity to the SAE 80 oil currently recommended by one actuator supplier and to the ISO VS 150 gear oil often used in such applications. It is especially suited for leaking actuators to help reduce the leakage until repairs can be made. It is expected that it can be used full time in these actuators. It can be poured and drained. It also changes less with temperature than the current oil.

**Q12. Do you have reference reports?**

**Answer: Yes.** On the website see the reference list. There is a great deal of data so contact us if more information is required. You can also search the EPRI and MUG (Motor Operated Valve Users' Group) websites. Our recent MUG presentations are available on this and the Canoil website.

**Q13. Can we be sure that MOV Long Life is made properly and the one tested by EPRI?**

**Answer: Yes.** MOV Long Life is made in a facility that only makes calcium sulfonate grease so that cross contamination with other thickeners is not possible. The site is ISO 9001 registered. In addition, each batch is tested by the supplier and by Canoil to ensure that it meets the requirements. There is also documentation that the product can not be reformulated without prior consultation. Sometimes it was mistakenly called Crompton MOV Long Life or Cortek MOV Long Life but Crompton (now Lanxess) makes it exclusively for Eco Fluid Center Ltd. (was Utility Service Associates). Canoil are the designated distributor who make it available directly or to others around the world.

**Q14. Can be get QA documentation with MOV Long Life?**

**Answer: Yes.** For each batch of MOV Long Life we can provide a copy of the COA (certificate of analysis). This includes information on the date of manufacture, appearance, color, texture, dropping point, penetration and Timken OK Load. Each batch is also tested for chlorine and other halogens as well as for eighteen metals. These can be made available as well.

*Nebula EP and Mobilgrease 28 are Trademarks of Exxon Mobil and MOV Long Life, MOV LL and MOV Extra are trademarks of Utility Service Associates and Eco Fluid Center Ltd...*

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