

*'Providing Tribological Solutions'*

## FOREWARNING

*As an added service a FORewarning is provided when a test parameter is either tending to go out of specification or is out of specification. This is so that effective corrective action can be taken as soon as possible.*

*Because of the many differences between designs and consumables, these have to be generic. However, specific suggestions for any system can be provided on request. Just call, fax or e-mail your inquiries. Technical Notes are also available for many fluid topics.*

## LOW ELECTRICAL RESISTIVITY

**Background:** Fluid flow through the fine clearances around the servo-valve spools can cause the generation of electric charges. The consequences can be electrokinetic wear causing pitting damage to the metering edges in the servo-valves. This can result in greater leakage through the valve. Possibly, pumps will not keep up with this leakage or at the least, particles will end up in the fluid.

Reason for Prompt Action: The limits set by the turbine manufacturers are generally conservative so if action is taken soon enough damage might be prevented. But, if action is not taken, it will only get worse with irreversible damage being more likely.

**Cause:** Fluid degradation byproducts and/or chlorine contaminants can increase the likelihood of electrokinetic wear. Chlorinated solvents are known to have caused this problem. Also, the phosphate ester fluids made 10 to 15 years ago had a higher residual chlorine content and were more susceptible to this type of wear. The damage is not the same as general corrosion because the pits are localized in the region upstream of the metering edges. There may also be a yellowish discoloration of the spools.

**Action:** Low resistivity does not necessarily mean electrokinetic wear. However, wear is reportedly less likely if the resistivity is kept high by the effective use of the proper purification media.