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SIL No. 652

## Lubrication clarification for GE CR105X contacts

At a BWR in the United States, a GE CR105X100N auxiliary electrical contact exhibited binding. Inspection revealed a white residue along the plunger rail. Both the binding and the presence of the residue are indicative of unnecessary and inappropriate post manufacture lubrication with non-compatible lubricants.

The purpose of this SIL is to clarify the lubrication requirements of the GE CR105X family of auxiliary contacts.

### Discussion

GE Industrial System (GE-IS) manufactures the CR105X series of auxiliary contacts. The following is the recommended as manufactured lubrication of the CR105X auxiliary contacts:

<b>Model No.</b>	<b>NEMA Size</b>	<b>Lubricant</b>
CR105X100P, N, M	0 & 1	D6A4
CR105X200P, N, M	2	D6Y14A2
CR105X300P, M	3, 4 & 5	None

Lubricant D6A4 is synthetic organic diester based lubricant that can be supplied either with an inorganic gelling agent or a lithium soap gelling agent. Design documentation permits factory use of either gelling agent in the manufacture of the contacts. Lubricant D6Y14A2 is a molybdenum disulfide paste lubricant.

CR105X contact kit product instructions are identified as follows:

CR105X100P, N, M -- GEJ 2877  
 CR105X200P, N, M -- GEJ 2907  
 CR105X300P, M -- GEJ 4021

They provide general instructions for the installation, use and application of these kits in contactor and starter assemblies, instructions for changing contact kit mounting sides and instructions for changing contacts from normally open to normally closed. There is no in-service maintenance recommendation for lubrication of the CR105X series auxiliary contacts in these product instructions.

In the binding failure of the CR105X100N contact, the chemical analysis of the white residue identified magnesium silicate with traces of carbon and sulfur (a residue from a base oil). The preventive maintenance (PM) history on the failed contactor indicated that a recent PM was performed which included replacement of the auxiliary contacts. This PM history indicates that a small amount of AeroShell #7 lubricant was applied to the plunger guides.

AeroShell #7 is a microgel (clay) thickened lubricant. Clay thickened lubricants are only compatible with other clay thickened lubricants. The incompatibility of the AeroShell #7 applied during the PM with the manufacturing applied lubricant caused the clay thickener to dissociate from the oil base, which produced the white residue and caused the binding.

### **Recommended action**

GE Nuclear Energy recommends that owners of GE BWRs with CR105X series auxiliary contacts *do not* lubricate the contacts.

If sticking or binding occurs, the auxiliary contact should be replaced.

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To receive additional information on this subject or for assistance in implementing a recommendation, please contact your local GE Nuclear Energy Service Representative.

This SIL pertains only to GE BWRs. The conditions under which GE Nuclear Energy issues SILs are stated in SIL No. 001 Revision 6, the provisions of which are incorporated into this SIL by reference.

**Product Reference:** C71/72-Reactor Protection System, E22-High Pressure Core Spray System, R24-Motor Control Centers

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