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Subject: Failure of CR105X Auxiliary Contacts

This letter provides information concerning a recently discovered deviation impacting GE CR105X Auxiliary Contacts. These devices were manufactured by GE Industrial Systems and supplied to licensees by GE Nuclear Energy (GE-NE) as safety related components for balance-of-plant or unspecified applications. Since the specific applications and associated safety functions of the devices are not known to GE-NE, we have transferred information pursuant to 10 CFR Part 21.21(b) to those licensees known to be affected. However, since additional licensees may have obtained these devices through other dedicating entities, we cannot assure ourselves that all end-users have been notified. We are therefore providing this information to the NRC for appropriate action.

GE CR105X auxiliary contacts are sold safety related by GE-NE separately as a kit with convertible contacts (from normally open to normally closed), or as part of Contactor assemblies (CR105, 205 and 305 series), Starter assemblies (CR106, 206 and 306 series) and Controller assemblies (CR109, 209 and 309 series) which may be part of 7700 series Motor Control Centers (MCC).

A BWR licensee experienced a CR105X auxiliary contact failure to change state. Troubleshooting revealed the auxiliary contact was stuck open. During repair, an auxiliary contact plunger arm was found disengaged from the T-Bar (see Figure 1), which caused the contact to fail to change state. The cause of the disengaged plunger arm and loose plunger post was determined to be a missing lock washer.

The function of the lock washer was addressed in Service Advice Letter (SAL) 2.1, issued by GE in August 1978. The SAL described the experience at that time.

“It has been brought to our attention that a potential problem, loosening of the operating arm, may exist . . .”

“While the potential problem exists if the screw of operating post is not tightened securely, we feel that because of our experience of over 20 years in service, and from laboratory testing, many tests in excess of 10 million operations, the use of the screw or post with the original lock washer is entirely adequate. We have no known incidents, either in field applications or lab testing, where this assembly loosened after being properly installed.”

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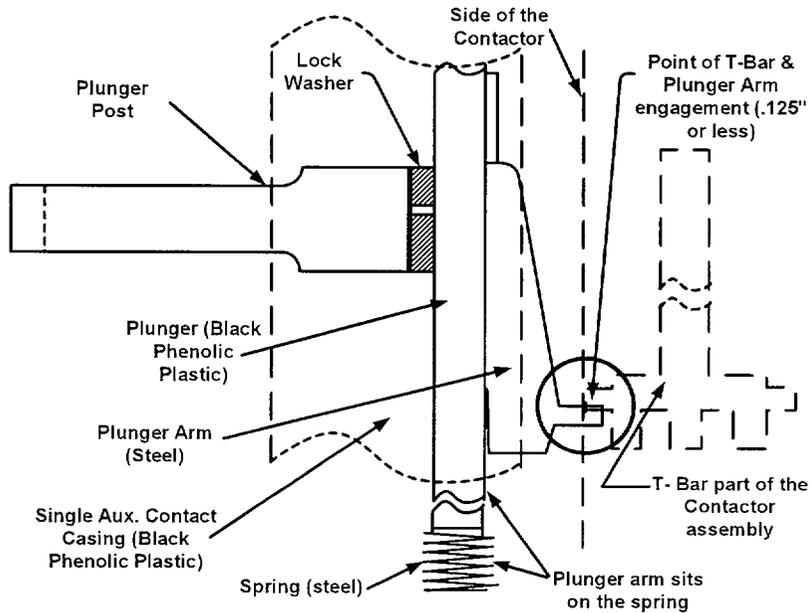


Figure 1

The CR105X auxiliary contacts sold as kits contain the lock washer; however, the instruction provided for customer installation did not contain instructions on where to install the lock washer or the required torque. Assemblies shipped from the factory containing an auxiliary contact may not have the lock washer installed. Without installation of the properly torqued lock washer the plunger arm may disengage from the T-Bar causing the contact to fail to change state.

GE-NE recommends that all CR105X auxiliary contacts be inspected. GE-NE records do not indicate that there is a high incident of failure due to the loosening of the plunger post. Based on the infrequent occurrence of this event, GE-NE recommends inspection of installed CR105X auxiliary contacts at the next available outage. CR105X auxiliary contacts in stores should be inspected prior to use. The inspection should include following:

- 1 Visually verify that the lock washer is installed between the plunger post and the plunger. There should be no gap between them.
- 2 If the lock washer is missing, either install a new lock washer or replace the auxiliary contact with a new one containing a lock washer.
- 3 If the plunger arm is determined to be loose, tighten to 8-15 in-lbs.

If you have any questions, please call me at (408) 925-1019.

Sincerely,

Jason S. Post for

Jason. S. Post, Manager
Engineering Quality and Safety Evaluations

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