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April 29, 1981



Mr. James G. Keppler, Director
 Directorate of Inspection and
 Enforcement - Region III
 U.S. Nuclear Regulatory Commission
 799 Roosevelt Road
 Glen Ellyn, IL 60137

Subject: LaSalle County Station Units 1 and 2
 LPRM Connectors - Type 901-200
 Thirty (30) Day (Final) Report
 10 CFR 50.55(e)
 Item No. 50-373/374-81-03
NRC Docket Nos. 50-373/374

Dear Mr. Keppler:

Commonwealth Edison notified your office (Mr. F. Riemann) on March 24, 1981, of a possible deficiency associated with the insulation material used in the LaSalle County Station LPRM Connectors (Type 901-200). That notification was made in accordance with 10 CFR 50.55(e). This letter fulfills the written report requirement of that regulation.

A potential deficiency was thought to exist relative to the environmental capabilities of the Rexolite insulation used in the LPRM connectors. The initial review of the connector indicated that its insulation--characterized as "Rexolite"--had a melting point of 185°F. That melting point appeared inconsistent with the environmental capabilities of the connector stated on the General Electric (GE) data sheet #234A905 to be 235°F continuous, and 390°F for 4 hours maximum and in the LaSalle County FSAR page 7-7.50 as 270°F continuous, 482°F for a 4 hour single exposure.

This potential deficiency has since been reviewed by GE and the qualification of the connectors to the design requirements has been verified. The basis for this conclusion is discussed in the following paragraphs.

1. The LPRM assembly (power range detector assembly) is classified as an essential active device.
2. The Local Power Range Monitoring (LPRM) subsystem is not a safety system; however, the Average Power Range Monitoring subsystem, which receives its inputs from the LPRM subsystem is considered safety related.

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3. The purpose of the Neutron Monitoring System, which includes the Source Range, Intermediate Range, Local Power Range, Average Power Range, and Rod Block monitor subsystems, plus the Traversing Incore Probe subsystem, is to monitor the power level of the nuclear plant reactor core over the range from startup to full power. The system provides for local and average power monitoring in the power range (approximately 10% to 100% power) and provides automatic core protection signals in the event of power transients.
4. The Neutron Monitoring System is not a post accident monitoring system; it is necessary that it remain operational after an accident only long enough to confirm shutdown. While this is not clearly stated in the BWR 4/5 neutron monitoring specifications (22A3843AF for LaSalle), there is no requirement that this be so.
5. It is possible that the APRM would be required to operate for a short period of time after an accident in order to confirm shutdown. This is covered by the requirement in BWR Equipment Environmental Interface Data 22A3008, which is referenced in Specification 22A2843AF, that the power range detector cables be required to operate under the following conditions.

| | | |
|-------------------|---------------|---------------|
| Temperature | 340°F | 320°F |
| Pressure | -2 to 45 psig | -2 to 45 psig |
| Relative Humidity | All Steam | All Steam |
| Duration | 3 hours | 6 hours |

6. The amphenol connectors in question have a requirement on the purchased part drawing that they have satisfactory insulation resistance and mechanical stability during and after the following conditions:

390°F for 4 hours

235°F continuous

90% relative humidity

2.6×10^7 Rads gamma dose

1.3×10^9 nvt (thermal neutron fluence)

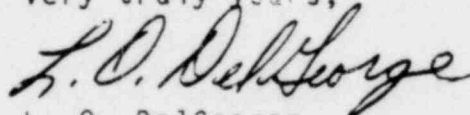
The drawings specifies Rexolite as the insulator. Rexolite is a radiation resistant, cross-linked polystyrene which, even though it is a trade name, is accepted in the industry as a generic name for this type of material. The material for these insulators can be obtained from the Polymer Company and is designated Q-200.5 by them. This material, Rexolite (or Q-200.5) doesn't melt at any temperature conceivably attainable under post accident conditions. The Polymer Company recommends this material for continuous use at temperatures up to 215°F. The material is rated for radiation exposure up to 1×10^8 Rads.

7. Recent tests performed on the subject connectors by GE-NC&ID personnel have demonstrated that the connector will perform satisfactorily during and after exposure to 390°F for 4 hours followed by 325°F for 16 hours. In addition, the Rexolite does not melt after exposure to 410° for 9 hours.
8. The solder used on the LPRM connector pin is 60% Tin - 40% Lead with a solidus temperature of 361°F and liquidus temperature of 374°F. This is safely above the maximum abnormal temperature requirement of 340°F.

Based on this information it is judged that the connector will adequately function at the required temperatures both normal and abnormal and the solder will not melt at specified abnormal temperatures. Although appropriate documentation to satisfy the record file requirements under 10 CFR 50.55(e) have not yet been completed, the qualification of the LPRM connector (Type 901-200) has been validated and no remedial action is required.

Therefore, this report is considered a final report under 10 CFR 50.55(e). In the event you have any questions in this regard, please direct them to this office.

Very truly yours,



L. O. DelGeorge
Nuclear Licensing Administrator

cc: Director of Inspection —
and Enforcement
Washington, DC 20555

NRC Resident Inspector - LaSalle