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United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/RENEWED LICENSE NO. DPR-23

TECHNICAL SPECIFICATIONS SECTION 5.6.6 POST ACCIDENT MONITORING INSTRUMENTATION REPORT FOR INOPERABLE HIGH RANGE CONTAINMENT AREA RADIATION MONITORS

REFERENCES:

1. Letter from Angela D. Pullom (Duke Energy Progress) to U. S. Nuclear Regulatory Commission (USNRC)(Serial: RNP-RA/16-0078), *Technical Specifications Section 5.6.6 Post Accident Monitoring Instrumentation Report for Inoperable High Range Containment Area Radiation Monitors*, dated October 5, 2016, ADAMS Accession No. ML16279A065.

Ladies and Gentlemen:

Duke Energy Progress, LLC hereby submits a report in accordance with H. B. Robinson Steam Electric Plant, Unit No. 2, (HBRSEP2) Technical Specifications (TS) Section 3.3.3, Post Accident Monitoring Instrumentation, and TS 5.6.6, Post Accident Monitoring Instrumentation Report.

The report, which is provided as an attachment to this letter, is based on the inoperability of the two Containment Area Radiation (High Range) Monitor channels required to be operable per TS.

Please address any comments concerning this matter to Tony Pilo at (843) 857-1409.

This letter contains no new regulatory commitments.

Sincerely,

Angela D. Pullom
Acting Director – Nuc Org Effectiveness

ADP/jmw

Attachment

c: Administrator, NRC, Region II
Mr. Dennis Galvin, NRC Project Manager, NRR
NRC Resident Inspector

TECHNICAL SPECIFICATIONS SECTION 5.6.6
POST ACCIDENT MONITORING INSTRUMENTATION 14-DAY
REPORT FOR THE HIGH-RANGE CONTAINMENT AREA RADIATION MONITORS

Event Description

Containment High Range Radiation Monitors (CHRRM) R-32A and R-32B utilize Rockbestos type RSS-6-104/LE coaxial cable. As identified by NRC Information Notice (IN) 97-45 and IN 97-45 Supplement 1, Environmental Qualification Deficiency for Cables and Containment Penetration Pigtails, these coaxial cables are susceptible to Thermally Induced Currents (TIC) under design basis event (DBE) conditions. HBRSEP2 previously documented reviews of NRC IN 97-45 and IN 97-45 Supplement 1 in Operating Experience Evaluations (OE) 6539 and 6992. An NRC design basis inspection identified that the station's review of this operating experience had incorrectly evaluated the negative impact on operability of these radiation monitors for some postulated events. The station declared the CHRRM inoperable on September 19, 2016.

This condition affects R-32A and R-32B, Containment High Range Radiation Monitors. These instruments monitor for the potential of significant radiation releases and to provide release assessment for use by operators in determining the need to invoke site emergency plans. These instruments are addressed by Technical Specifications (TS) Table 3.3.3-1, Item 10. TS Limiting Condition for Operation (LCO) 3.3.3 requires that the Post-Accident Monitoring (PAM) instrumentation for each Function in Table 3.3.3-1 be Operable.

Once Operations affirmed inoperability of the CHRRMs, the station entered Conditions A and C of TS LCO 3.3.3, PAM Instrumentation, concurrently, individually tracking their respective Completion Times. Upon expiration of the Condition C 7-day Completion Time, Condition E was entered, which ultimately directed action per TS 5.6.6 resulting in the submittal of a 14-day report on October 5, 2016 (Reference 1). The 30-day Completion Time for Condition A expired on October 19, 2016. This submittal conveys a report in accordance with TS 5.6.6, as required, within the following 14 days. TS 5.6.6 states that the report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the channel to operable status.

Preplanned Alternate Method of Monitoring

CHRRM is functioning at this time and is providing valid data. Although functional, this channel will not be declared OPERABLE until changes are implemented that resolve the effects of Temperature-Induced Currents (TIC). TIC causes errors in CHRRM indication during containment temperature transients. The initial rapid increasing containment temperature transient associated with high energy line breaks causes errors due to TIC that exceed acceptable limits. HBRSEP2 has implemented procedural guidance to ensure the Operations staff understands the initial reaction of the monitors since the time duration of the significant TIC response is limited. In this guidance, the duration of the TIC event is conservatively specified to last for three minutes. During this time, other instruments shown by the HBRSEP Emergency Action Level Matrix (core exit thermocouples, letdown line radiation monitor) are available to corroborate the indication provided by radiation monitors R-32A and R-32B. Changes to Emergency Action Level Technical Bases Document (EPCLA-04) and Abnormal Operating Procedure (AOP-005), Radiation Monitoring System, implement this guidance. Preplanned alternate methods of monitoring include obtaining containment air samples and gamma spectral analyses, per PLP-069, Emergency Response Equipment Responsibilities, Attachment 3, Equipment Important to EP Matrix.

Cause of the Inoperability

This event has been entered into the HBRSEP2, Corrective Action Program. The cause of the CHRRM inoperability is the result of the TIC error during the initial rapid increase in containment temperature causing the channels to read beyond the imposed accuracy limits of +/-50%. This inaccuracy is contrary to FSAR section 12.3.3.1.2.2, which indicates that R-32A and R-32B are qualified for continuous post-accident operation.

Plans and Schedule for Restoring the Channel

Preliminary reviews indicate that the coaxial cable for the CHRRM needs to be replaced or shielded with a more robust design to restore operability. Further research into fleet and industry operating experience will be conducted to consider other viable options, including both physical hardware changes to the plant and potential licensing changes. Investigation into the scope of possible equipment needs and availability of materials deemed necessary to restore operability of the CHRRM will take place during the next refueling outage. Based on the findings, an implementation schedule will be developed to restore operability of the CHRRM within the next two refueling outages.