

RS-08-134  
October 15, 2008

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Quad Cities Nuclear Power Station, Units 1 and 2  
Renewed Facility Operating License Nos. DPR-29 and DPR-30  
NRC Docket Nos. 50-254 and 50-265

**Subject:** Additional Information Supporting Request for License Amendment to Establish Total Battery Connector Resistance Acceptance Criteria in Technical Specifications Surveillance Requirements 3.8.4.2 and 3.8.4.5

- References:**
1. Letter from J. L. Hansen (Exelon Generation Company, LLC) to U. S. NRC, "Request for License Amendment to Establish Total Battery Connector Resistance Acceptance Criteria in Technical Specifications Surveillance Requirements 3.8.4.2 and 3.8.4.5," dated December 21, 2007
  2. Letter from J. S. Wiebe (U. S. NRC) to C. G. Pardee (Exelon Generation Company, LLC), "Quad Cities Nuclear Power Station, Units 1 and 2 – Request for Additional Information Related to License Amendment to Establish Total Battery Connector Resistance Acceptance Criteria in Technical Specifications (TAC Nos. MD7539 and MD7540)," dated July 18, 2008
  3. Letter from J. L. Hansen (Exelon Generation Company, LLC) to U. S. NRC, "Additional Information Supporting Request for License Amendment to Establish Total Battery Connector Resistance Acceptance Criteria in Technical Specifications Surveillance Requirements 3.8.4.2 and 3.8.4.5," dated August 14, 2008
  4. Letter from J. S. Wiebe (U. S. NRC) to C. G. Pardee (Exelon Generation Company, LLC), "Quad Cities Nuclear Power Station, Units 1 and 2 - Request for Additional Information Related to Total Battery Resistance Technical Specification Change (TAC Nos. MD7539 and MD7540)," dated October 7, 2008

In Reference 1, Exelon Generation Company, LLC (EGC) requested an amendment to Renewed Facility Operating License Nos. DPR-29 and DPR-30 for Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2. The proposed change revises Technical Specification (TS) Surveillance Requirements (SR) 3.8.4.2 and 3.8.4.5 to add an additional acceptance criterion to verify that the total battery connector resistance is within the pre-established limits that ensure the QCNPS safety-related batteries can perform their intended design function.

In Reference 2, the NRC requested additional information to complete its review. EGC provided a response to this request in Reference 3. In Reference 4, the NRC requested additional information to complete its review. In response to Reference 4, EGC is providing the attached information.

EGC has reviewed the information supporting a finding of no significant hazards consideration that was previously provided to the NRC in Attachment 1 of Reference 1. The information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this letter, please contact Michelle Yun at (630) 657-2818.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 15th day of October 2008.

Respectfully,



Jeffrey L. Hansen  
Manager – Licensing

cc: NRC Senior Resident Inspector  
NRC Regional Administrator, Region III

Attachment: Response to Request for Additional Information, Request for License  
Amendment to Establish Total Battery Connector Resistance Acceptance Criteria

**ATTACHMENT**  
Response to Request for Additional Information  
Request for License Amendment to  
Establish Total Battery Connector Resistance Acceptance Criteria

**NRC Request**

"In reviewing the Exelon Generation Company LLC's (Exelon's) submittal dated December 21, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML073580004), and response to additional information dated August 14, 2008 (ADAMS Accession No. ML082280111), related to the request to establish total battery connector resistance acceptance criteria in technical specifications (TSs) surveillance requirements (SRs), for the Quad Cities Nuclear Power Station, Units 1 and 2, the NRC staff has determined that the following information is needed in order to complete its review:

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36(d)(2) requires TSs to include limiting conditions of operation (LCO), (the lowest functional capability or performance levels of equipment required for safe operation of the facility). Section 50.36(d)(3) of 10 CFR, in part, requires TSs to include SRs to assure that the LCOs will be met.

In response to a non-cited violation that identified a non-conservative TS SR, Exelon submitted a request for amendment dated December 21, 2007 (ADAMS Accession No. ML073580004). The proposed SR requires verification that total battery resistance is less than limits established to ensure performance of design function. The actual limits established are proposed to be included in the TS Bases, not in the TSs. The proposed TS Bases states that, 'Maintaining the resistance limits in Table B 3.8.4-1 ensures that the minimum required voltages of 105 VDC and 210 VDC for the 125 VDC and 250 VDC safety-related batteries, respectively, will not be exceeded under worst case accident conditions.'

Provide justification that demonstrates that the submittal meets the 10 CFR Section 50.36 requirements to include SRs in TSs to assure that the LCO of these batteries is met."

**Response**

10 CFR 50.36 requires Technical Specifications (TS) to include limiting conditions of operation (LCOs) for equipment required for the safe operation of the facility and Surveillance Requirements (SRs) to ensure those LCOs will be met.

In a December 21, 2007 license amendment request (LAR) for QCNPS, Exelon Generation Company, LLC (EGC) proposed to revise the existing SR 3.8.4.2 and 3.8.4.5 to include an additional requirement to: "Verify total battery connector resistance is less than limits established to ensure performance of design function" whenever inter-cell connector resistance is tested. The intent of this LAR was to correct a non-conservative TS.

In response to an NRC Request for Additional Information concerning the LAR (Reference 1), EGC stated that the existing inter-cell resistance acceptance criteria was based on industry experience as a threshold for identifying localized degradation so that issues that could potentially affect battery performance would be promptly identified and corrected. EGC also stated that the inter-cell connector resistance surveillance was not initially established for battery operability. However, the proposed expanded SRs (i.e., the combination of an inter-cell

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### Response to Request for Additional Information Request for License Amendment to Establish Total Battery Connector Resistance Acceptance Criteria

resistance test and a total resistance test) would provide the necessary surveillance to ensure battery operability, thus ensuring the applicable LCOs are met. Therefore, the proposed SR complies with the requirements of 10 CFR 50.36(d)(3).

10 CFR 50.36 does not explicitly require inclusion of acceptance criteria in the TS SR. The stated definition of an SR in 10 CFR 50.36 is "...to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." With respect to the location and control of specific SR acceptance criteria, both NUREG-1433, "Standard Technical Specifications General Electric Plants, BWR/4," and industry precedent provide multiple examples where specific SR acceptance criteria are defined and controlled by documents other than the TS (e.g., TS Bases, the plant safety analysis, plant procedures, and the Updated Final Safety Analysis Report).

One example of this is NUREG-1433, TS 3.6.4.2, "Secondary Containment Isolation Valves (SCIVs)," SR 3.6.4.2.2, which requires verification that the isolation times of power-operated, automatic SCIVs are "within limits." The isolation time is the value assumed in the safety analysis, and the verification is required to demonstrate operability. Similarly, NUREG-1433, TS 3.7.5, "[Control Room Air Conditioning (AC)] System," SR 3.7.5.1 requires verification that each control room AC subsystem has the "capability to remove the assumed heat load." As stated in the applicable TS Bases section, this acceptance criteria is the heat load that is assumed in the safety analysis. Finally, NUREG-1433, TS 3.8.4, "DC Sources - Operating," SR 3.8.4.3, as well as QCNPS SR 3.8.4.7, requires verification that "battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test." These values are typically located in and controlled by design calculations and the UFSAR, both of which are owner-controlled documents.

A specific industry example concerning acceptance criteria for battery resistance SRs is Point Beach Nuclear Plant (Point Beach) TS SRs 3.8.4.2 and 3.8.4.5 (Reference 2). These Point Beach SRs are similar to the proposed QCNPS SRs in that the SRs do not delineate inter-cell or aggregate battery resistance acceptance criteria values, but instead require Point Beach to "verify battery connection resistance is within limits." The applicable acceptance criteria are located within a surveillance test procedure that is controlled by the licensee.

There are also several examples within QCNPS TS where SRs require the verification of operability while the criteria for meeting this verification is maintained in the Bases. One example is SR 3.3.1.1.18 for the Reactor Protection System (RPS) Instrumentation, which requires verification that RPS response times are "within limits." The TS Bases for SR 3.3.1.1.18 indicate that the acceptance criteria for the SR is located in the Technical Requirements Manual, which is another licensee-controlled document.

In conclusion, it is EGC's position that the proposed TS SR satisfies 10 CFR 50.36(d)(3) and that the specific acceptance criteria for satisfying this additional surveillance should and will be appropriately located within the TS Bases. Any changes to the acceptance criteria will be controlled by TS 5.5.10, "Technical Specifications (TS) Bases Control Program," and the 10 CFR 50.59 process.

## **ATTACHMENT**

### **Response to Request for Additional Information Request for License Amendment to Establish Total Battery Connector Resistance Acceptance Criteria**

#### **References**

- 1) Letter from J. L. Hansen (Exelon Generation Company, LLC) to U. S. NRC, "Additional Information Supporting Request for License Amendment to Establish Total Battery Connector Resistance Acceptance Criteria in Technical Specifications Surveillance Requirements 3.8.4.2 and 3.8.4.5," dated August 14, 2008
- 2) Point Beach Nuclear Plant, Unit 1 Technical Specifications (ML053110031) and Unit 2 Technical Specifications (ML053110034)