



10 CFR 50.59  
10 CFR 72.48

SVP-19-002

January 4, 2019

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Quad Cities Nuclear Power Station, Units 1 and 2  
Renewed Facility Operating License Nos. DPR-29 and DPR-30  
NRC Docket Nos. 50-254, 50-265, and 72-53

Reference: Letter from S. Darin (Exelon Generation Company, LLC) to U. S. NRC, "10 CFR 50.59 / 10 CFR 72.48 Summary Report," dated January 5, 2017

Subject: 10 CFR 50.59 / 10 CFR 72.48 Summary Report

In accordance with 10 CFR 50.59, subpart (d)(2), and 10 CFR 72.48 subpart (d)(2), "Changes, tests, and experiments," Exelon Generation Company, LLC is submitting a summary of completed changes, tests, and experiments for Quad Cities Nuclear Power Station (QCNP). This summary is provided as an attachment to this letter, which describes the 10 CFR 50.59 evaluations that were completed for QCNP between January 1, 2017 and December 31, 2018. The referenced letter provided the previous summary report. There were no 10 CFR 72.48 evaluations completed for QCNP during the specified time period.

Should you have any questions concerning this letter, please contact Mr. Mark Humphrey at (309) 227-2800.

Respectfully,

A handwritten signature in black ink, appearing to read "K. S. Ohr", written over a white background.

Kenneth S. Ohr  
Site Vice President  
Quad Cities Nuclear Power Station

Attachment: Summary Report of Completed Changes, Tests, and Experiments

cc: Regional Administrator – NRC Region III  
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

# ATTACHMENT

## Summary Report of Completed Changes, Tests, and Experiments

Tracking Number: QC-E-2017-001

Unit: Unit 1 and 2

Activity Description:

The proposed activity will evaluate the decay heat and radiological release consequences with core inventories consisting of Westinghouse SVEA-96 Optima2 and AREVA ATRIUM 10XM fuel at an increased design basis Core Average Exposure (CAVEX) of 39,000 Megawatt Days per Metric Ton Uranium (MWD/MTU) for Quad Cities Unit 1 and 2.

AREVA ATRIUM 10XM fuel were installed in both Units beginning with Cycle 25. Technical Specification changes for AREVA ATRIUM 10XM fuel were approved via License Amendment No. 264 for Unit 1 and License Amendment No. 259 for Unit 2.

The current analyzed End of Cycle (EOC) CAVEX for the Westinghouse Optima2 fuel is 37,000 MWD MTU. The proposed activity implements an increase in the design bases EOC CAVEX to 39,000 MWD MTU referred to as CAVEX39. The proposed activity affects the decay heat and source terms used in existing design analyses.

Impact of Activity:

The impacts of the increased CAVEX39 on the UFSAR Chapter 15 analyses, Anticipated Transient With a Scram (ATWS) and Loss of Coolant Accident (LOCA) analyses are evaluated for acceptability by the fuel vendor under the fuel reload process. There is also no change to the fuel operating limits due to CAVEX39. The Maximum Allowed Planar Linear Heat Generating Rate (MAPLHGR) and Linear Heat Generation rate (LHGR) as function of the average bundle planar or the rod nodal exposure continues to follow the limits specified in cycle specific Core Operating Limits Report (COLR). Operating within the limits in the COLR ensure the fuel thermal limits will not be exceeded.

The decay heat curve used in the current design basis analyses is based on GE-14 fuel. The CAVEX39 decay heat curve was compared to the current bounding GE14 curve. The analysis concluded that the GE14 curve remained bounding for all scenarios except the long-term pool heatup for Appendix R Fire. While the GE14 results are not bounded for the long-term pool heatup, there is sufficient margin to account for the increase in long-term decay heat generation without peak suppression pool temperature exceeding the 160 deg F temperature limit for the event. This conclusion is based on the margin available to the 160 deg F limit in the calculation model. Therefore, the Appendix R fire event is not adversely affected by the new decay heat profile.

An analysis with CAVEX39 and ATRIUM 10XM fuel show that in one instance, the post-LOCA dose at the Exclusion Area Boundary (EAB) for Optima2 fuel with CAVEX39, the consequences has increased from the current licensing basis. The dose increase is not more than minimal because the increase in the dose is less than 10% of the difference between the current licensing basis and the allowable regulatory limit.

Basis for Not Requiring NRC Prior Approval:

The 50.59 safety evaluation concluded that the Optima2 fuel rods will continue to operate below their mechanical and thermal design limits. The ATRIUM 10XM fuel rods will be operated below their mechanical and thermal design limits. The operation of the plant systems is not changed. There is no possibility of a new accident or increase in frequency of any UFSAR analyzed accident. There are no new hardware or physical changes being introduced by this activity, no new failure mode is created and there is no increase in the failure of any UFSAR SSC's important to safety. Results from the safety analysis using NRC approved methodology has shown increase in the consequence of an accident is not more than minimal and there is no increase in malfunction of an SSC. There is no change to the design limit for any fission product barrier as described in the UFSAR. A review of the Operation License and Technical Specifications indicates that no change is required to these documents. Therefore, it is concluded that the proposed activity can be implemented without prior NRC approval.

Tracking Number: QC-E-2017-002

Unit: Unit 1 and 2

Activity Description:

This activity performs a full 50.59 evaluation for UFSAR change, UFSAR-99-R6-165. This UFSAR change eliminated the need for the onsite Rainbow Pumps that supported a defined UFSAR scenario associated with the postulated failure of downstream Lock and Dam No. 14 and replaced them with portable pumps that would be available from "a leasing facility". This change also eliminated a sentence from the UFSAR, added by UFSAR change UFSAR-97-R5-052, that stated "backup pump(s) would be available from another station or leasing facility". IR 01418982 identified that the 50.59 screening for this UFSAR Change appeared to be deficient. To address this deficiency, a new 50.59 screening and a full 50.59 evaluation is being performed for this legacy UFSAR change.

Impact of Activity:

The change in location of the portable diesel driven pumps from onsite to an offsite leasing facility has no effect on the design basis analyses performed to evaluate and address the mitigating actions used in response to a loss of Lock and Dam No 14. The pumps are inspected and tested by the leasing facility to ensure the reliability of the portable pumps being delivered. The pumps being obtained from the offsite leasing facility will function in the same manner as pumps that were previously stored onsite.

Basis for Not Requiring NRC Prior Approval:

The 50.59 evaluation did not identify a more than minimal increase in the frequency of occurrence of an accident, a more than minimal increase in the likelihood of a malfunction of a SSC important to safety, a more than minimal increase in the consequences of the accident, or a more than minimal in the consequences of a malfunction of an SSC important to safety previously evaluated in the UFSAR. It has been determined that change in location does not create the possibility for an accident of a different type or create the possibility for a malfunction of an SSC important to safety with a different result. This change in storage location has no effect on any design basis limits for a fission product barrier and does not cause a change to the methodology to the design basis calculation that is used to evaluate the mitigating scheme for a Loss of Lock and Dam No 14. This conclusion is based on the amount of time available to establish operation of the pumps, the contract established with the vendor to assure the availability of the equipment, and periodic verification of the vendor's ability to meet the required timeframe provides sufficient assurance of the reliability of the portable equipment. Therefore, this 50.59 evaluation has concluded that NRC approval is not required for this change.