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May 8, 2003

SVP-03-063

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

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

Subject: Transmittal of 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light water nuclear power reactors," Annual Report for Quad Cities Nuclear Power Station, Units 1 and 2

Reference: Letter from T. J. Tulon (Exelon Generation Company, LLC) to U. S. NRC, "Transmittal of 10 CFR 50.46, Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors, Annual Report for Quad Cities Units 1 and 2," dated May 9, 2002

The purpose of this letter is to provide the annual report required by 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," for Quad Cities Nuclear Power Station, Units 1 and 2.

The attachments describe the changes in accumulated Peak Cladding Temperature (PCT) since the previous annual submittal (Reference).

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

Respectfully,



Timothy J. Tulon  
Site Vice President  
Quad Cities Nuclear Power Station

Attachments:

Attachment A: Quad Cities Nuclear Power Station Unit 1, 10 CFR 50.46 Report  
Attachment B: Quad Cities Nuclear Power Station Unit 2, 10 CFR 50.46 Report  
Attachment C: Quad Cities Nuclear Power Station Units 1 and 2, 10 CFR 50.46  
Report Assessment Notes

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

A001

**Attachment A**  
**Quad Cities Nuclear Power Station Unit 1**  
**10 CFR 50.46 Report**

PLANT NAME: Quad Cities Unit 1  
ECCS EVALUATION MODEL: SAFER/GESTR-LOCA  
REPORT REVISION DATE: 5/08/03  
CURRENT OPERATING CYCLE: 18

**ANALYSIS OF RECORD**

Evaluation Model:

The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-of-Coolant Accident, Volume III, SAFER/GESTR Application Methodology, NEDE-23785-1-PA, General Electric Company, Revision 1, October 1984.

Calculations:

"SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis for Dresden Nuclear Station 2 and 3 and Quad Cities Nuclear Station Units 1 and 2," NEDC-32990P, Revision 1, GE Nuclear Energy, September 2001.

Fuel Analyzed in Calculation: GE9/10, ATRIUM-9B and GE14

Limiting Fuel Type: GE14

Limiting Single Failure: Diesel Generator

Limiting Break Size and Location: 1.0 Double-Ended Guillotine in a Recirculation Suction Pipe

Reference Peak Cladding Temperature (PCT)

PCT = 2110°F

**MARGIN ALLOCATION**

**A. PRIOR LOCA MODEL ASSESSMENTS**

10 CFR 50.46 Report dated December 6, 2002 (2)	$\Delta PCT = 0^{\circ}F$
Net PCT	2110 °F

**B. CURRENT LOCA MODEL ASSESSMENTS**

None	$\Delta PCT = 0^{\circ}F$
Total PCT change from current assessments	$\Sigma \Delta PCT = 0^{\circ}F$
Cumulative PCT change from current assessments	$\Sigma  \Delta PCT  = 0^{\circ}F$
Net PCT	2110 °F

**Attachment B**  
**Quad Cities Nuclear Power Station Unit 2**  
**10 CFR 50.46 Report**

PLANT NAME: Quad Cities Unit 2  
ECCS EVALUATION MODEL: SAFER/GESTR-LOCA  
REPORT REVISION DATE: 5/08/03  
CURRENT OPERATING CYCLE: 17

**ANALYSIS OF RECORD**

Evaluation Model:

The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-of-Coolant Accident, Volume III, SAFER/GESTR Application Methodology, NEDE-23785-1-PA, General Electric Company, Revision 1, October 1984.

Calculations:

"SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis for Dresden Nuclear Station 2 and 3 and Quad Cities Nuclear Station Units 1 and 2," NEDC-32990P, Revision 1, GE Nuclear Energy, September 2001.

Fuel Analyzed in Calculation: GE9/10, ATRIUM-9B and GE14

Limiting Fuel Type: GE14

Limiting Single Failure: Diesel Generator

Limiting Break Size and Location: 1.0 Double-Ended Guillotine in a Recirculation Suction Pipe

Reference Peak Cladding Temperature (PCT)

PCT = 2110°F

**MARGIN ALLOCATION**

**A. PRIOR LOCA MODEL ASSESSMENTS**

10 CFR 50.46 Report dated March 28, 2002	$\Delta PCT = 0^{\circ}F$
10 CFR 50.46 Report dated May 9, 2002	$\Delta PCT = 0^{\circ}F$
<b>Net PCT</b>	<b>2110°F</b>

**B. CURRENT LOCA MODEL ASSESSMENTS**

WEVOL S1 Volume Error (1)	$\Delta PCT = 0^{\circ}F$
Change in DG start time requirement (3)	$\Delta PCT = 0^{\circ}F$
Total PCT change from current assessments	$\Sigma \Delta PCT = 0^{\circ}F$
Cumulative PCT change from current assessments	$\Sigma  \Delta PCT  = 0^{\circ}F$
<b>Net PCT</b>	<b>2110°F</b>

**Attachment C**  
**Quad Cities Nuclear Power Station Units 1 and 2**  
**10 CFR 50.46 Report Assessment Notes**

**1. Current LOCA Assessment for GE Fuel**

GE reported that an error was found in the WEVOL code, which affects the calculated vessel volume in the downcomer region. The free volume in the region of the shroud head is calculated incorrectly. The code did not properly account for the volume of the standpipes inside the shroud head thickness. This resulted in the value for the free volume in the downcomer being too small by 4-10 ft<sup>3</sup>. GE determined that the PCT impact of this error to be negligible.

[Reference: 10 CFR 50.46 Notification Letter, 2002-05, August 26, 2002.]

**2. Prior LOCA Assessment**

A new LOCA analysis was performed to support Extended Power Uprate (EPU) and transition to GE14 fuel for Quad Cities Unit 1. In the referenced letter, the impact of Core Spray (CS) and Low Pressure Coolant Injection (LPCI) leakage, GE LOCA error and change in Diesel Generator (DG) start time requirement were reported. There is no current assessment penalty.

[Reference: Letter from Timothy J. Tulon (Exelon) to U.S. NRC, "10 CFR 50.46, 30-Day Report for Quad Cities Nuclear Power Station, Unit 1," SVP-02-104, dated December 6, 2002.]

**3. Current LOCA Assessment for GE Fuel**

The emergency DG start time was changed from a 10 second requirement in ITS to 13 seconds. The LOCA analysis sequence of events was examined and determined that the results and thus PCT were not affected by this change in DG start time. The change was submitted to the NRC with the TS amendment for this change approved on July 17, 2002.

[Reference: Quad Cities LOCA Diesel Generator and ECCS Sequencing, Calculation No. QDC-6600-N-1218, February 5, 2002.]