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RS-01-183

August 31, 2001

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

Dresden Nuclear Power Station, Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

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: Additional Radiation Dose Information Supporting the License Amendment Request to Permit Uprated Power Operation

Reference: Letter from R. M. Krich (Commonwealth Edison Company) to U. S. NRC, "Request for License Amendment for Power Uprate Operation," dated December 27, 2000

In the referenced letter, Commonwealth Edison Company, now Exelon Generation Company (EGC), LLC, submitted a request for changes to the operating licenses and Technical Specifications for Dresden Nuclear Power Station, Units 2 and 3, and Quad Cities Nuclear Power Station, Units 1 and 2, to allow operation with an extended power uprate. In an August 7, 2001, teleconference between representatives of EGC and Mr. L. W. Rossbach and other members of the NRC, the NRC requested additional information regarding these proposed changes. The attachment to this letter provides the requested information.

Should you have any questions concerning this letter, please contact Mr. A. R. Haeger at (630) 657-2807.

Respectfully,

K. A. Ainger

K. A. Ainger
Director – Licensing
Mid-West Regional Operating Group

A001

Attachments:

Affidavit
Attachment: Additional Radiation Dose Information Supporting the License Amendment Request to Permit Uprated Power Operation, Dresden Nuclear Power Station, Units 2 and 3, Quad Cities Nuclear Power Station, Units 1 and 2

cc: Regional Administrator - NRC Region III
NRC Senior Resident Inspector - Dresden Nuclear Power Station
NRC Senior Resident Inspector - Quad Cities Nuclear Power Station
Office of Nuclear Facility Safety - Illinois Department of Nuclear Safety

STATE OF ILLINOIS	)	
COUNTY OF DUPAGE	)	
IN THE MATTER OF	)	
EXELON GENERATION COMPANY, LLC	)	**Docket Numbers**
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3	)	**50-237 AND 50-249**
QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2)		**50-254 AND 50-265**

SUBJECT: Additional Radiation Dose Information Supporting the License Amendment Request to Permit Uprated Power Operation

AFFIDAVIT

I affirm that the content of this transmittal is true and correct to the best of my knowledge, information and belief.

K. A. Ainger
Director – Licensing
Mid-West Regional Operating Group

Subscribed and sworn to before me, a Notary Public in and for the State above named, this 31st day of August, 2001.

Notary Public

"OFFICIAL SEAL"
Timothy A. Byam
Notary Public, State of Illinois
My Commission Expires 11/24/2001

Attachment
Additional Radiation Dose Information Supporting the License Amendment Request to Permit Uprated Power Operation, Dresden Nuclear Power Station, Units 2 and 3, Quad Cities Nuclear Power Station, Units 1 and 2

Question
A control room dose for the control rod drop accident (CRDA) has not been provided for Dresden Nuclear Power Station. You have stated that the consequences of a CRDA are bounded by the loss of coolant accident (LOCA). What is the basis for this statement?

Response
The control room personnel dose due to a CRDA is not part of the Dresden Nuclear Power Station (DNPS) licensing or design basis. Thus, a formal calculation to determine this dose for realistic plant conditions has not been previously prepared.

However, two calculations were performed prior to the EPU project to determine the setpoint for the main steam line radiation monitor (MSLRM). The MSLRM automatically trips the mechanical vacuum pump (MVP) when sensing radiation levels higher than the setpoint. This isolates a primary exposure pathway from the main steam lines. Operability of this trip function is governed by the DNPS Technical Specifications.

The first calculation determined the MSLRM dose rates during a CRDA which, if reached, would result in a control room personnel dose of 30 rem to the thyroid. The thyroid dose bounds the whole body and beta dose. This calculation included the following conservative assumptions.

- Prior to the initiation of CRDA, the plant trips from full power and is brought back to 5% power with the MVP in operation.
- The MVP operates for 10 minutes after the initiation of the CRDA and is manually de-energized in response to a main control room annunciator indicating high main steam line radiation levels.
- All leakage from the main condenser once the MVP is manually de-energized escapes to the turbine building at a rate of 1% of the non-water volume per day.
- 10% of all iodides and 100% of all noble gases are transported to the turbine/condenser.
- 100% of all noble gases are available for release from the turbine.
- 90% of all iodine isotopes plate out leaving only 10% in the gaseous form available for release from the turbine/condenser.
- The main steam turbine condenser leaks to the atmosphere for 24 hours.
- After the MVP is isolated all exhaust from the main steam condenser was assumed to release into the turbine building and to the outside at ground level.
- The control room occupancy factors were conservatively ignored in the calculation. The occupancy factors are used to account for reduced occupancy of the control room and thus reduce doses experienced by the operators. Therefore, not using occupancy factors is conservative. No credit is taken for the control room emergency

ventilation system.

The second calculation then selected the MSLRM dose rate at which the MVP will be automatically isolated and determined an allowable value for this dose rate, using EGC setpoint methodology. This dose rate value was selected to be a fraction of the dose rate corresponding to a control room personnel dose of 30 rem thyroid due to a CRDA, and effectively ensures that the radiological release from the MVP is negligible. This is consistent with the calculation of the offsite dose for the LOCA.

As a result, the pre-EPU CRDA dose to control room personnel is estimated to be approximately 16 rem thyroid due to the release that occurs through the condenser, as discussed in the assumptions stated above. Thus, the pre-EPU control room personnel dose of 22.96 rem thyroid for a LOCA reported for DNPS in Reference 1 bounds the control room personnel dose for a CRDA. Similarly, the estimated pre-EPU control room personnel whole body and beta doses based on this calculation are both well less than 0.1 rem and are thus bounded by the 0.424 rem whole body dose and the 9.70 rem beta dose reported for DNPS in Reference 1 for a LOCA.

Since the LOCA dose to the control room personnel bounds the dose due to a CRDA in the pre-EPU condition, the same is true following EPU, since the doses were simply scaled for the EPU condition. This conclusion is consistent with the results for the control room doses due to a LOCA and CRDA reported in Reference 1 for the Quad Cities Nuclear Power Station.

Reference

1. Letter from R. M. Krich (Commonwealth Edison Company) to U. S. NRC, "Request for License Amendment for Power Uprate Operation," dated December 27, 2000