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RS-01-249

November 2, 2001

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 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 Information Supporting the License Amendment Request to Permit Uprated Power Operation, Dresden Nuclear Power Station, Units 2 and 3 and Quad Cities Nuclear Power Station, Units 1 and 2

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 (TS) for Dresden Nuclear Power Station, Units 2 and 3, and Quad Cities Nuclear Power Station, Units 1 and 2, to allow operation at uprated power levels. In telephone conferences on October 16 and 23, 2001, between representatives of EGC and Mr. S. N. Bailey 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 related to this letter, please contact Mr. Allan R. Haeger at (630) 657-2807.

Respectfully,

P. R. Simpson

P. R. Simpson
Manager – Licensing
Mid-West Regional Operating Group

A001

Attachments:

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

AFFIDAVIT

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

P R Simpson

P. R. Simpson
Manager – Licensing
Mid-West Regional Operating Group

Subscribed and sworn to before me, a Notary Public in and

for the State above named, this 2nd day of

November, 2001.

Timothy A. Byam

Notary Public

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

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

<u>Question</u>

1) *What ATWS events were analyzed at EPU equilibrium versus EPU transition cycle conditions?*

<u>Response</u>

The table below summarizes the anticipated transient without scram (ATWS) events analyzed for extended power uprate (EPU). The legacy fuel case was analyzed for the transition cycles. The remaining cases were analyzed for the EPU equilibrium core.

Summary of Key Parameters for DR/QC ATWS Calculations

Event	Power (MWt) /Flow (%)	Exposure
MSIVC	2957/95	BOC
MSIVC	2957/95	EOC
PRFO	2957/95	BOC
PRFO	2957/95	EOC
LOOP	2957/95	EOC
IORV	2957/95	EOC
PRFO Legacy Fuel	2957/95	BOC

Key:

MSIVC – Main steam isolation valve closure
PRFO – Pressure regulator failure – open
LOOP – Loss of offsite power
IORV – Inadvertent opening of relief valve

BOC – Beginning of cycle
EOC – End of cycle

<u>Question</u>

2) *a. Confirm that for all limiting ATWS events, the standby liquid control system (SLCS) will be able to inject at the appropriate time without lifting the SLCS bypass relief valves, or b. if the valves lift are they capable of reseating. For example, will the SLCS be able to inject the required flow rate at the assumed time for the ATWS LOOP event without reaching the rated SLCS relief valve setpoint?*

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

Response

Exelon Generation Company (EGC), LLC has confirmed for Dresden Nuclear Power Station (DNPS), Unit 2, that for all limiting ATWS events following EPU implementation, the SLCS will be able to inject at the appropriate time without lifting the SLCS bypass relief valves. Any system modifications for the remaining units (i.e., DNPS, Unit 3 or Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2) needed to ensure that the SLCS bypass relief valves will not lift when SLCS injection is required will be completed prior to EPU implementation. As noted in the response to Question 3 below, the ATWS LOOP event is not a limiting ATWS event.

Question

3) *What are the limiting events for each of the five acceptance criteria in Section 9.4.1 of the PUSAR?*

Response

Parameter	Acceptance Criteria	EPU results	Limiting event
Peak Vessel Pressure	1500 psig	1492 psig (GE14) 1499 psig (legacy)	PRFO
Peak Suppression Pool Temperature	202 °F	201 °F	PRFO
Peak Containment Pressure	62 psig	16.5 psig	PRFO
Peak Fuel Cladding Temperature	2200 °F	1418 °F	MSIVC
Maximum Local Oxidation	17%	Negligible	MSIVC

These results contain a number of conservatisms to ensure that the results bound any actual ATWS events. Conservatisms used in the analysis include the following.

- Relief valve (RV), safety/relief valve (SRV) and safety valve (SV) at Technical Specifications (TS) maximum allowed setpoint
- RV, SRV and SV at American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel code minimum flow capacity
- RV opening delay times at maximum
- High pressure recirculation pump trip at the TS upper limit

- Used TS minimum flow rate and concentration. Actual flow rates typically exceed TS by 3-4 gallons per minute.
- Conservative boron mixing and re-mixing model compared to best-estimate model (i.e., TRACG computer code) and boron mixing test data

Question
4) *Confirm a. that the operator response to an ATWS event is not being modified from that described in Section L.3.2 of ELTR1. b. If the operator requests SLCS actuation before the time assumed in the analyses, will the relief valve be able to lift and reseat when the SLCS injection is required?*

Response
a. ATWS analysis operator responses are not being modified from those described in Section L.3.2, "Operator Actions," of ELTR1, "Generic Guidelines for General Electric Boiling Water Reactor Extended Power Uprate."

b. Operating procedures direct when to initiate SLCS injection. If the operator initiates SLCS before approximately one minute following determination of ATWS conditions, the pump discharge relief valve is likely to lift for the limiting transients. The SLCS relief valve is a Crosby type JMWK valve. In accordance with the original purchase specification, the valve is designed to reseat before the valve inlet pressure decreases to 1250 psig. This specification did not provide for any tolerance that would permit the valve to reseat below 1250 psig. The original purchase specification also required that the valve reseat without chatter. The reseat design requirement was verified by certification testing prior to original installation on each of the DNPS and QCNPS units. This testing was performed on a test rig that provided flow to the valve using two positive displacement pumps, each containing three cylinders, similar to the DNPS and QCNPS SLCS injection pumps. The certification testing verified that the installed valves met the design specification requirements, including verification of reseat pressure and the ability to reseat without chatter.

The relief valve lift setpoint is tested in accordance with the in-service testing program. The frequency of this testing is based on valve performance. As a minimum, one of the two SLCS relief valves is tested in each 48 month period. EGC will re-perform the initial testing that verified the reseat pressure and lack of chatter at the next refueling outage for each of the DNPS and QCNPS units.

If the SLCS relief valve is assumed to lift and remain fully open, with no SLCS flow to the reactor, until the SLCS relief valve reseats, the analysis results show that the system will meet the ATWS acceptance criteria noted in the response to Question 3. The valve reseat pressure was conservatively assumed at 1220 psig for this analysis. The results reported in the response to Question 3 remain bounding.