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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 Standby Liquid Control System Information Supporting the Request for License Amendment Related to Application of Alternative Source Term

References:
1. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, "Request for License Amendments Related to Application of Alternative Source Term," dated October 10, 2002
2. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, "Additional Information Supporting the Request for License Amendment Related to Application of Alternative Source Term," dated June 30, 2004
3. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, "Additional Information Supporting the Request for License Amendment Related to Application of Alternative Source Term," dated August 6, 2004

In Reference 1, Exelon Generation Company, LLC (EGC) requested an amendment to the facility operating licenses for Dresden Nuclear Power Station, Units 2 and 3, and Quad Cities Nuclear Power Station, Units 1 and 2. The proposed changes support application of an alternative source term methodology.

In References 2 and 3, EGC submitted responses to requests for additional information related to crediting the Standby Liquid Control (SLC) system for pH control of the suppression pool following a design basis loss-of-coolant accident. During a conference call on August 23, 2004, EGC and the NRC discussed the Reference 3 response. In response to questions raised during this call, further clarification and information is provided in the attachment to this letter.

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

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If you have any questions concerning this letter, please contact Mr. David Gullott at (630) 657-2819.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 10th day of September 2004.

Respectfully,

Patrick R. Simpson

Patrick R. Simpson
Manager – Licensing

Attachment:
Response to Request for Additional Information

cc: Regional Administrator - NRC Region III
NRC Senior Resident Inspector - Dresden Nuclear Power Station
NRC Senior Resident Inspector - Quad Cities Nuclear Power Station
Illinois Emergency Management Agency - Division of Nuclear Safety

ATTACHMENT
Response to Request for Additional Information

Issue #1

The NRC requested definitive procedural guidance to ensure that the SLC system is initiated on all occasions indicating that a design basis accident (DBA) loss-of-coolant accident (LOCA) has occurred.

Issue #1 Response

In Reference 1, Exelon Generation Company, LLC (EGC), stated that, during a design basis LOCA, the Low Pressure Coolant Injection (LPCI) and Core Spray (CS) systems are among the preferred systems for maintaining reactor water level above top of active fuel. It was also stated that the emergency operating procedures (EOPs) direct operators to manually initiate the Standby Liquid Control (SLC) system as an alternate injection system when reactor water level cannot be maintained above top of active fuel. Similar actions are described in the severe accident management guidelines (SAMGs) should EOP actions be unable to maintain adequate core cooling.

One of the alternative source term events analyzed is a DBA LOCA with assumed fuel failure. The issue raised by the NRC concerned the potential that adequate core cooling may be achieved during this event, prior to initiation of SLC. If so, without the initiation of SLC, suppression pool pH might not be adequately controlled.

In order to preclude the above scenario and to ensure that SLC is injected into the reactor vessel, regardless of the ability to provide adequate core cooling, EGC will revise the appropriate station procedures. The procedure revisions will provide action statements directing the operators to initiate SLC upon determination that significant fuel failure has occurred. The significant fuel failure determination will be based on the Emergency Action Level (EAL) threshold value indicating a loss of fuel cladding barrier, as indicated by the drywell radiation monitors. The drywell radiation monitoring instrumentation is safety related and is required to be operable in Modes 1, 2, and 3 by Technical Specification 3.3.6.1.

Issue #2

The NRC requested further assurance, via procedural guidance, that the Residual Heat Removal (RHR) system is operated in the Low Pressure Coolant Injection (LPCI) mode for a time sufficient to flush the sodium pentaborate out of the reactor pressure vessel.

Issue #2 Response

In Reference 1, EGC stated that the LOCA analysis assumes a failure of one electrical division resulting in one loop of CS and one loop of LPCI being available for injection to the reactor vessel. Both the CS and LPCI injection flows are credited with providing the motive force to transport the sodium pentaborate from the reactor vessel, through the break and into the suppression pool. A detailed discussion of this flow path was presented in Reference 1.

During the August 23, 2004 conference call, the NRC concurred that the combined CS and LPCI injection flows would be sufficient to transport the sodium pentaborate to the suppression pool. However, the NRC requested a better understanding of the controls in place to ensure

LPCI injection flow was maintained for a sufficient period of time during and after the sodium pentaborate injection to flush the sodium pentaborate out of the reactor pressure vessel through the pipe break into the suppression pool. This is based on the potential that LPCI injection mode may be terminated and the system transferred to suppression pool cooling mode.

This issue will be resolved through procedure changes that will modify the suppression pool cooling return flow path. The current flow path for suppression pool cooling is for pump suction from the suppression pool, through the heat exchanger, and return to the suppression pool. The planned procedure change will direct the return flow (i.e., after the heat exchanger) to the reactor vessel via the LPCI injection line. This will provide the ability to cool containment while maintaining the LPCI mixing and flushing flow path in the reactor vessel. Therefore, regardless of the mode of operation (i.e., LPCI injection or suppression pool cooling) the LPCI injection return flow will be available to transport sodium pentaborate from the reactor pressure vessel through the break during and after SLC injection. This flow path is presently incorporated into the Dresden Nuclear Power Station procedures and will be incorporated in the Quad Cities Nuclear Power Station procedures prior to implementation of the approved amendment.

Reference

1. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, "Additional Information Supporting the Request for License Amendment Related to Application of Alternative Source Term," dated August 6, 2004