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U. S. Nuclear Regulatory Commission
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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 Request for License Amendment Related to Application of Alternative Source Term

Reference: Letter from K. R. Jury (Exelon Generation Company, LLC) to U. S. NRC, "Request for License Amendments Related to Application of Alternative Source Term," dated October 10, 2002

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

Conference calls were held on June 9, 2004 to discuss DNPS and on June 17, 2004 to discuss DNPS and QCNPS. The primary focus of these calls was the control room emergency ventilation system and its relationship to the alternative source term amendment. Subsequent to these conference calls, the NRC requested additional information. This letter provides the requested information.

EGC has reviewed the information supporting a finding of no significant hazards consideration that was previously provided to the NRC in Attachment C of the Reference. 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 2nd day of November 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**

**Request**

For Dresden, address the staff's single failure concerns involving catastrophic failure of the dampers, the capability to identify whether inleakage is occurring through damper 5741-57, the quantity of inleakage, and how it is ensured that the Dresden control room habitability analyses are not negated as result of leakage past this damper.

For Quad Cities, address the staff's single failure concerns involving catastrophic failure of the dampers, the capability to identify whether inleakage is occurring through damper 331, the quantity of inleakage, and how it is ensured that the Quad Cities control room habitability analyses are not negated as result of leakage past this damper.

**Response**

Damper 331/5741-57, Quad Cities Nuclear Power Station (QCNPS) and Dresden Nuclear Power Station (DNPS) damper designations, respectively, is normally closed. This damper is air operated and is designed to fail closed on a loss of instrument air or control power through the use of a spring in the actuator. The damper is a single blade bubble tight damper. A review of work history has found no history of mechanical failures in the damper or actuator. The work history for similar dampers located elsewhere in the control room heating, ventilation, and air conditioning (HVAC) system were also reviewed. No mechanical failures were identified.

The damper opens only if the B Air Handling Unit (AHU) is running, no isolation signal is present, and neither of the Air Filtration Unit (AFU) Booster Fans is running. This mode of operation occurs very infrequently during the course of an operating cycle.

In the event of a loss of coolant accident (LOCA), the sequence of events would be as follows:

1) At QCNPS: An isolation signal for the control room HVAC system would be received based on low reactor water level or high drywell pressure,

   At DNPS: Control room HVAC isolation is manually initiated by a control room operator upon receipt, in the control room, of a radiation detection alarm of high radiation levels (4 millirem) in the reactor building ventilation manifolds,

2) The B Control Room AHU will start either automatically or manually (manually only at DNPS),

3) The AFU will then be manually started to pressurize the control room emergency zone.

In the above sequence the 331/5741-57 damper will not open, and if it were open it would be manually closed.

At QCNPS, there is a fuse in the isolation logic that, if failed, would allow the 331 damper to open despite an isolation signal being present. The only credible failure that could cause the 331 damper to open is failure of this fuse. This failure is electrical and mitigated through

removal of the damper control fuse, which results in the damper closing. Therefore, this fuse failure does not constitute an irreversible or catastrophic failure.

Based on the damper and actuator design discussed above, there is no credible mechanical failure that would cause the 331/5741-57 damper to catastrophically fail from closed to open. Therefore, when the control room HVAC system is in its normal line up, the potential for a single active failure leading to the 331/5741-57 damper catastrophically failing open does not exist.

During certain limited time periods, with the A Control Room AHU is shutdown, the B Control Room AHU is in operation, and the AFU is shutdown, the 331/5741-57 damper will be open. This condition is not the preferred system operating line-up and only occurs when the A Control Room HVAC system is removed from service for maintenance or testing. Historically, these conditions have had a duration of approximately eight hours per quarter at each site.

In order to minimize the time that the 331/5741-57 damper is in the open position, EGC will implement administrative controls to limit the amount of time that the 331/5741-57 damper is in the open position during the conditions described above.

Reasonable assurance that any inleakage past the closed 331/5741-57 damper is within the control room habitability analyses requirements is provided by the damper design and the periodic testing that is performed. Damper 331/5741-57 is a bubble tight damper that is designed with a leakage factor of zero. Additionally, the control room emergency zone and the control room emergency ventilation system (CREVS) are periodically inspected during the performance of a periodic test. The implementing testing procedures at each station provide a methodology for visual inspection of the control room emergency zone pressure boundary and CREVS components. The inspections performed in this test ensure degradation of the control room emergency zone is detected early and repaired. During the performance of this periodic test the CREVS negative pressure ductwork, dampers, AHUs, AFU, and control room doors are visually inspected internally and externally by using smoke tubes and soap bubbles (snoop). If leakage is identified it is documented in the corrective action program and repaired. By correcting any deficiencies found during this periodic test, the overall goal of maintaining inleakage as low as possible is achieved.

The damper design and periodic testing ensure that inleakage past the damper is minimized. This ensures that the control room habitability analysis is not negated by maintaining the actual leakage less than the analytical value.

**Request**

For both Quad Cities and Dresden, address how leakage past the dampers in the return lines, to B Train AHU, is identified and quantified, whether such leakage is accounted for in the analyses to demonstrate that the plants meet GDC 19, and how it is ensured that the control room habitability analyses are not negated as a result of leakage past these dampers.

**Response**

As described above, the control room emergency zone pressure boundary and its supporting CREVS are subjected to extensive inspections on a periodic basis to ensure they are

maintained in reliable condition and can provide their design function as required by their licensing and design bases.

Periodic testing and repair of any identified leakage ensures that the total quantifiable unfiltered inleakage is maintained less than the current analyzed design limit and less than the assumed AST inleakage limit of 600 scfm. If any leakage is identified, it is addressed through the corrective action program. Work documents are written and tracked as corrective action work documents until repairs are completed and tested. Leakage in the control room emergency zone pressure boundary, whether it is identified as out leakage or inleakage, is documented and repaired to ensure all modes of operation are addressed and maintained within licensing design bases. Identified leakage and differential pressures are documented and trended to ensure corrective actions are properly implemented and recurrences are addressed for impact and resolution effectiveness.

With these implemented periodic tests, resulting corrective action follow up, and trending, the control room emergency zone is meeting GDC 19 requirements. Additionally, by repairing any identified inleakage, it is ensured that the system is operated within the inleakage conditions and assumptions of the control room habitability analysis.