

RS-03-210

October 31, 2003

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 Request for License Amendment Related to Application of Alternative Source Term

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

In the referenced letter, 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. To support the proposed changes, EGC evaluated the four design basis accidents (i.e., loss-of-coolant, main steam line break, fuel handling, and control rod drop accidents) that could potentially result in main control room or offsite doses.

On October 15, 2003, the NRC requested additional information to support review of the referenced letter. The attachment 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 referenced letter. 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.

A001

October 31, 2003
U. S. Nuclear Regulatory Commission
Page 2

If you have any questions or require additional information, please contact
Mr. Kenneth M. Nicely at (630) 657-2803.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 31st
day of October 2003.

Respectfully,


Patrick R. Simpson
Manager – Licensing

Attachment:
Response to Request for Additional Information

Enclosure:
CD-ROM Containing Meteorological Data

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

ATTACHMENT
Response to Request for Additional Information

NRC Request 1

Standard Review Plan 2.3.3, "Onsite Meteorological Measurements Programs," states that meteorological data used in relative concentration (X/Q) calculations should be checked for appropriateness of heights of measurements of wind direction, wind speed, and atmospheric stability. For example, generally, ground level X/Q values should be based upon the lower level wind data and delta-T measurements between the middle and lower levels and X/Q values for postulated elevated releases should be based upon upper level wind measurements and delta-T measurements between the upper and lower levels. During the September 25, 2003 telecom, Exelon personnel provided some information indicating that delta-T measurements at the Dresden and Quad Cities sites were very similar between the middle and lower levels, and the upper and lower levels for the limiting conditions. Following the telecom, staff examined several years of effluent release report meteorological data for the sites, but did not reach the same conclusion as that expressed by the licensee. Therefore, please provide 1995 through 1999 hourly wind data for the lower and middle measurement levels and delta-T measurements between the middle and lower levels to facilitate staff confirmation that the X/Q values used in the dose assessment are adequate.

Response

The requested data is provided for Dresden Nuclear Power Station (DNPS) and Quad Cities Nuclear Power Station (QCNPS) in the files labeled dnps9599.dat and duad9599.dat, respectively on the enclosed CD-ROM.

The fuel handling, control rod drop, and main steam line break accidents are all treated as ground level releases. As such, the narrow interval delta-T values were used in the X/Q calculations for these accidents. The wide interval delta-T values were used for all X/Q calculations supporting the loss-of-coolant accident (LOCA), even though the main steam isolation valve leakage component of the total effective dose equivalent (TEDE) dose for the control room, exclusion area boundary (EAB), and low population zone (LPZ) is a ground level release. This constitutes an exception to NRC Regulatory Guide 1.145, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants," Revision 1, dated November 1982, which states "atmospheric stability should be determined by vertical ΔT between the release height and the 10-meter level."

Exelon Generation Company, LLC (EGC) has performed a comparison of the narrow interval delta-T values to the wide interval delta-T values, and has determined that use of the wide interval delta-T for all LOCA calculations is conservative.

Specifically, for DNPS, all five years of hourly data were reviewed. There were 108 one-hour periods (i.e., 0.24%), where stability F or G was noted using the narrow interval without the same classification using the wide interval. For all five years, there were 4781 total F and G observations at DNPS using the narrow interval data and 7498 F and G observations using the wide interval data.

In a similar fashion, all five years of the QCNPS data were reviewed. There were 363 one-hour periods (i.e., 0.83%) where stability F or G was noted using the narrow interval without the same classification using the wide interval. For all five years, there were 7578 total F and G observations at QCNPS using the narrow interval data and 8079 F and G observations using the wide interval data.

ATTACHMENT
Response to Request for Additional Information

NRC Request 2

What are the distances between the chimneys and control room air intakes at the Dresden and Quad Cities sites and height of wind data used in the elevated release control room X/Q calculations? This information did not appear to be on the compact disk providing other data.

Response

The following table summarizes the parameters used in the X/Q calculations.

Parameter	DNPS	QCNPS
Distance from station chimney to control room fresh air intake	425 feet (129.5 meters)	405 feet (123.5 meters)
Wind direction from station chimney to control room intake	314° azimuth	344° azimuth
Plant grade elevation	517.0 feet	594.5 feet
Station chimney top elevation	827.5 feet	905.0 feet
Station chimney diameter	11.0 feet	11.0 feet
Station chimney release height above plant grade	310.5 feet (94.6 meters)	310.5 feet (94.6 meters)
Control room fresh air intake above grade	41.5 feet (12.7 meters)	29.0 feet (8.8 meters)
Fumigation layer	269.0 feet (82.0 meters)	281.5 feet (85.8 meters)
Height difference for delta-T	265 feet	263 feet
Height of wind speed/direction instruments used	300 feet	296 feet

NRC Request 3

What are the inputs, including height of wind measurements and offsite terrain heights, for the exclusion area boundary and low population zone relative concentration estimates from postulated elevated releases? Regulatory Guide 1.145, "Atmospheric Dispersion Models for Potential Consequence Assessments at Nuclear Power Plants," states that "... the maximum terrain height above plant grade between the release point and the point for which the calculation is made ..." is an input to the elevated release calculations. This information did not appear to be on the compact disk providing other data.

Response

The wind data used in the determination of X/Qs for elevated releases with respect to the EAB and LPZ are those from the upper elevation of the meteorological monitoring tower (i.e., 300 feet at DNPS and 296 feet at QCNPS). A terrain height factor of 1 was used in the calculations due to the terrain at each station being slightly hilly with a maximum relief of about 25 feet. Based on the lack of complexity to the terrain surrounding the plant, the plant grade elevation is used for all receptors in the EAB and LPZ.