September 27, 2002

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: HOT LEG SWITCHOVER CONFIRMATORY ANALYSIS - BRAIDWOOD STATION, UNITS 1 AND 2, AND BYRON STATION, UNITS 1 AND 2 (TAC NOS. MB5237, MB5238, MB5239, AND MB5240)

Dear Mr. Skolds:

By letter dated April 12, 2002, Exelon Generation Company, LLC (Exelon) submitted its hot leg switchover confirmatory analysis in accordance with the license condition imposed on Braidwood Station, Units 1 and 2 (Braidwood), and Byron Station, Units 1 and 2 (Byron) in license amendments 113 and 119 respectively. The license conditions required submittal of the analysis by June 1, 2002.

As a part of the analysis supporting its request for approval of a power uprate for Braidwood and Byron, Exelon calculated the value of 8.5 hours as the maximum allowable time in which operators must direct some emergency core cooling system (ECCS) recirculation flow to the reactor coolant system hot legs (i.e., hot leg switchover [HLSO]) during a loss of coolant accident scenario in order to prevent boron precipitation in the reactor core. In its review of Exelon's analysis (section 3.1.3 of the safety evaluation, dated May 4, 2001, supporting license amendments 113 and 119), the NRC staff questioned several of the assumptions used in the formulation of the calculation. The NRC staff concluded that continued operation of the plants was acceptable in the short term but that additional information was required to support the HLSO calculations. Consequently, a license condition was added to the license. The license condition stated, "The licensee shall submit to the NRC a confirmatory analysis using a model acceptable to the NRC justifying the value of 8.5 hours for the time of switchover to hot leg injection following a loss-of-coolant accident; or recalculate the switchover time using the currently accepted methodology."

There were two assumptions that were in question: (1) Exelon used a decay heat generation rate of 1.0 times the 1971 ANS standard for a finite operating time rather than 1.2 times the standard as required by Section I.A.4 of Appendix K to 10 CFR Part 50 (Appendix K); and (2) Exelon's HLSO analysis assumed that the ECCS water subcooling was 170 °F. The staff questioned the assumption on the basis that the licensee had only justified that interaction with 33 percent of the steam could be accommodated when assuming a 170 °F lower plenum temperature and the decay heat generation rate of 1.0 times the 1971 ANS standard for a finite operating time.

In Exelon's letter of April 12, 2002, it reported the results of its reanalysis of the HLSO time using an assumed decay heat generation rate as required in Appendix K and without the assumption of subcooling. Also, Exelon used a boron measurement uncertainty value of 25 ppm rather than the 50 ppm used in previous calculations. The lower uncertainty value was

used on the basis that it is consistent with the Institute for Nuclear Power Operations (INPO) guidelines and that the Exelon chemistry procedures follow the INPO guideline. Exelon also stated that the performance check done for the boron titration equipment at both Byron and Braidwood bounds the 25 ppm uncertainty value. The results of the reanalysis yielded a HLSO time of 6.0 hours.

The NRC staff has reviewed the information provided by Exelon in support of its reanalysis of the HLSO time and found it to be acceptable. Further, we have concluded that Exelon has satisfied the license condition related to HLSO time.

Sincerely,

/RA/

George Dick, Jr., Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-456, STN 50-457,
STN 50-454, and STN 50-455

cc: See next page

used on the basis that it is consistent with the Institute for Nuclear Power Operations (INPO) guidelines and that the Exelon chemistry procedures follow the INPO guideline. Exelon also stated that the performance check done for the boron titration equipment at both Byron and Braidwood bounds the 25 ppm uncertainty value. The results of the reanalysis yielded a HLSO time of 6.0 hours.

The NRC staff has reviewed the information provided by Exelon in support of its reanalysis of the HLSO time and found it to be acceptable. Further, we have concluded that Exelon has satisfied the license condition related to HLSO time.

Sincerely,
/RA/

George Dick, Jr., Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-456, STN 50-457,
STN 50-454, and STN 50-455

cc: See next page

Distribution:
PUBLIC
PD3-2 r/f
A. Mendiola
C. Rosenberg
G. Dick
M. Chawla
F. Akstulewicz
W. Lyon
OGC
ACRS
G. Grant, RIII
A. Stone, RIII

ADAMS Accession Number: ML022390175 ***See previous concurrence**

OFFICE	PM:LPD3-2	PM:LPD3-2	LA:LPD3-2	SC:RTSB*	SC:LPD3-2
NAME	GDick	MChawla	CRosenberg	FAkstulewicz	AMendiola
DATE	09/24/02	09/24/02	09/24/02	09/24/02	09/27/02

OFFICIAL RECORD COPY

Byron/Braidwood Stations

cc:

Ms. C. Sue Hauser, Project Manager
Westinghouse Electric Corporation
Energy Systems Business Unit
Post Office Box 355
Pittsburgh, PA 15230

Joseph Gallo
Gallo & Ross
1025 Connecticut Ave., NW, Suite 1014
Washington, DC 20036

Howard A. Learner
Environmental Law and Policy
Center of the Midwest
35 East Wacker Dr., Suite 1300
Chicago, IL 60601-2110

U.S. Nuclear Regulatory Commission
Byron Resident Inspectors Office
4448 N. German Church Road
Byron, IL 61010-9750

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Ms. Lorraine Creek
RR 1, Box 182
Manteno, IL 60950

Chairman, Ogle County Board
Post Office Box 357
Oregon, IL 61061

Mrs. Phillip B. Johnson
1907 Stratford Lane
Rockford, IL 61107

George L. Edgar
Morgan, Lewis and Bockius
1800 M Street, NW
Washington, DC 20036-5869

Attorney General
500 S. Second Street
Springfield, IL 62701

Illinois Department of Nuclear Safety
Office of Nuclear Facility Safety
1035 Outer Park Drive
Springfield, IL 62704

Byron Station Manager
Exelon Generation Company, LLC
4450 N. German Church Road
Byron, IL 61010-9794

Site Vice President - Byron
Exelon Generation Company, LLC
4450 N. German Church Road
Byron, IL 61010-9794

U.S. Nuclear Regulatory Commission
Braidwood Resident Inspectors Office
35100 S. Rt. 53, Suite 79
Braceville, IL 60407

Illinois Emergency Management
Agency
Division of Disaster Assistance &
Preparedness
110 East Adams Street
Springfield, IL 62701-1109

Chairman
Will County Board of Supervisors
Will County Board Courthouse
Joliet, IL 60434

Braidwood Station Manager
Exelon Generation Company, LLC
35100 S. Rt. 53, Suite 84
Braceville, IL 60407-9619

Ms. Bridget Little Rorem
Appleseed Coordinator
117 N. Linden Street
Essex, IL 60935

Document Control Desk-Licensing
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Exelon Generation Company, LLC
Site Vice President - Braidwood
35100 S. Rt. 53, Suite 84
Braceville, IL 60407-9619

Senior Vice President, Nuclear Services
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Vice President
Mid-West Operations Support
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Senior Vice President
Mid-West Regional Operating Group
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Director Licensing
Mid-West Regional Operating Group
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Exelon Generation Company, LLC
Regulatory Assurance Supervisor - Braidwood
35100 S. Rt. 53, Suite 84
Braceville, IL 60407-9619

Exelon Generation Company, LLC
Regulatory Assurance Supervisor - Byron
4450 N. German Church Road
Byron, IL 61010-9794

Senior Counsel, Nuclear
Mid-West Regional Operating Group
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Vice President - Licensing and Regulatory Affairs
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Manager Licensing - Braidwood and Byron
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555