

September 10, 2007

Mr. Christopher M. Crane
President and Chief Nuclear Officer
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2 - ISSUANCE OF ENVIRONMENTAL
ASSESSMENT RE: EXEMPTION REQUEST RELATED TO THE USE OF
AREVA NP INC. ADVANCED MARK-BW(A) FUEL ASSEMBLIES
(TAC NOS. MD3083 AND MD3084)

Dear Mr. Crane:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for an exemption dated September 26, 2006, as supplemented on August 8, 2007. The proposed exemption would allow the use of AREVA NP Inc. modified Advanced Mark-BW fuel assemblies.

The assessment is being forwarded to the Office of the *Federal Register* for publication.

Sincerely,

/RA/

Robert F. Kuntz, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-456 and STN 50-457

Enclosure:
Environmental Assessment

cc w/encl: See next page

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Braidwood Station, Units 1 and 2

cc:

Document Control Desk - Licensing
via e-mail

Mr. Dwain W. Alexander, Project Manager
Westinghouse Electric Corporation
via e-mail

Ms. Bridget Little Rorem
Appleseed Coordinator
via e-mail

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

Braidwood Senior Resident Inspector
U.S. Nuclear Regulatory Commission
via e-mail

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

Illinois Emergency Management Agency
Division of Disaster Assistance &
Preparedness
via e-mail

County Executive
via e-mail

Attorney General
500 S. Second Street
Springfield, IL 62701

Plant Manager - Braidwood Station
via e-mail

Site Vice President - Braidwood
via e-mail

Senior Vice President - Operations Support
via e-mail

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

Manager Regulatory Assurance -
Braidwood
via e-mail

Director - Licensing and Regulatory Affairs
via e-mail

Associate General Counsel
via e-mail

Senior Vice President - Midwest Operations
via e-mail

Vice President - Regulatory Affairs
via e-mail

Manager Licensing - Braidwood, Byron
and LaSalle
via e-mail

UNITED STATES NUCLEAR REGULATORY COMMISSION
EXELON GENERATION COMPANY, LLC
DOCKET NOS. STN 50-456 AND STN 50-457
BRAIDWOOD STATION, UNITS 1 AND 2
ENVIRONMENTAL ASSESSMENT AND FINDING OF
NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an exemption from Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 46, and Appendix K to Section 50, for Facility Operating License Nos. NPF-72 and NPF-77, issued to Exelon Generation Company, LLC (the licensee), for operation of the Braidwood Station (Braidwood), Units 1 and 2 located in Will County, Illinois. Therefore, as required by 10 CFR 51.21, the NRC is issuing this environmental assessment and finding of no significant impact.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would allow the use of AREVA NP Inc. (AREVA) modified Advanced Mark-BW fuel assemblies.

The proposed action is in accordance with the licensee's application dated September 26, 2006, as supplemented by letter dated August 8, 2007.

The Need for the Proposed Action:

The proposed action would allow up to eight AREVA modified Advanced Mark-BW fuel assemblies to be placed in nonlimiting Braidwood, Unit 1 core locations. Pursuant to 10 CFR 50.12, "Specific Exemptions," the licensee has requested an exemption to 10 CFR 50.46,

“acceptance criteria for emergency core cooling systems for light-water nuclear power reactors,” that requires, among other items, that “each boiling or pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical zircaloy or ZIRLO cladding, must be provided with an emergency core cooling system (ECCS) that must be designed so that its calculated cooling performance following postulated loss-of-coolant accidents conforms to the criteria set forth in paragraph (b) of this section.” Appendix K to 10 CFR Part 50, “ECCS Evaluation Models,” requires, among other items, that the rate of energy release, hydrogen generation, and cladding oxidation from the metal/water reaction shall be calculated using the Baker-Just equation. The regulation at 10 CFR 50.46 and 10 CFR Part 50, Appendix K, make no provisions for use of fuel rods clad in a material other than zircaloy or ZIRLO. The licensee will irradiate eight assemblies using fuel rods clad with AREVA’s M5 alloy in Braidwood, Unit 1. Since the material specifications of the M5 alloy differ from the specification for zircaloy or ZIRLO, a plant-specific exemption is required to support the use of the eight assemblies.

Environmental Impacts of the Proposed Action:

The NRC has completed its safety evaluation of the proposed action and concludes that application of 10 CFR 50.46, and Appendix K to 10 CFR 50, is not necessary for the licensee to achieve its underlying purposes.

The details of the NRC staff’s safety evaluation will be provided in the exemption that will be issued as part of the letter to the licensee approving the exemption to the regulation. The proposed action will not significantly increase the probability or consequences of accidents. No changes are being made in the types of effluents that may be released off site. There is no significant increase in the amount of any effluent released off site. There is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential non-radiological impacts, the proposed action does not have a potential to affect any historic sites. It does not affect non-radiological plant effluents and has no other environmental impact. Therefore, there are no significant non-radiological environmental impacts associated with the proposed action.

Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

Environmental Impacts of the Alternatives to the Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the “no-action” alternative). Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

The action does not involve the use of any different resources than those previously considered in the Final Environmental Statement for Braidwood NUREG-1026, dated June 1984.

Agencies and Persons Consulted:

In accordance with its stated policy, on August 29, 2007, the NRC staff consulted with the Illinois State official, Mr. Frank Niziolek of the Illinois Emergency Management Agency, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated September 26, 2006, as supplemented by letter dated August 8, 2007. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the Internet at the NRC Web site, <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff by telephone at 1-800-397-4209 or 301-415-4737, or send an e-mail to pdr@nrc.gov.

Dated at Rockville, Maryland, this 10th day of September.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Robert F. Kuntz, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation