October 17, 2001

Mr. Oliver D. Kingsley, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN UNIT 2 - SAFETY EVALUATION OF DEFERRAL OF WELD OVERLAYS - NUCLEAR REGULATORY COMMISSION STAFF REVIEW OF THE REQUEST BY EXELON GENERATION COMPANY TO ALLOW USE OF BOILING WATER REACTOR (BWR) VESSEL AND INTERNALS PROJECT (BWRVIP) GUIDELINES IN LIEU OF GENERIC LETTER 88-01 REQUIREMENTS (TAC NO. MB2772)

Dear Mr. Kingsley:

By letter dated August 20, 2001, Exelon Generation Company, LLC (EGC, the licensee) notified the Nuclear Regulatory Commission (NRC) staff of its plans to defer inspection on thirty-three weld overlays at the Dresden Nuclear Power Station (DNPS), Unit 2. EGC requested NRC staff review and approval for use of Boiling Water Reactor (BWR) Vessel and Internals Project (BWRVIP) Guidelines in lieu of Generic Letter 88-01 requirements. Resolution of the remaining nine open items of BWRVIP-75 will not be completed prior to DNPS's Unit 2 Fall 2001 outage, scheduled to begin October 20, 2001. EGC proposed to defer these inspections similar to a previous submittal dated August 6, 1999, that was subsequently approved by the NRC staff in a letter dated October 20, 2000. EGC stated that the basis for the August 6, 1999, letter requesting deferral is still applicable. EGC proposed to defer these inspections in accordance with the guidance presented in a letter dated June 17, 1999, from Jack R. Strosnider, NRC, to Carl Terry, Boiling Water Reactor Vessel and Internals Project (BWRVIP) Chairman.

The NRC staff has completed their review of your August 20, 2001, submittal and concludes that DNPS Unit 2 meets or exceeds all BWRVIP recommended criteria to defer these inspections. Therefore, due to DNPS Unit 2's inspection history, water chemistry and as low as reasonably achievable (ALARA) concerns, a deferral of one cycle is granted on thirty-three Category E welds which do not meet the criteria of Open Item 3.4 of BWRVIP-75 with regard to the number of inspections required. Enclosed is our safety evaluation.

This completes the NRC staff's effort for TAC No. MB2772.

Sincerely,

/RA/

Lawrence W. Rossbach, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-237

Enclosure: As stated

cc w/encl: See next page

This completes the staff's effort for TAC No. MB2772.

Sincerely,

/RA/

Lawrence W. Rossbach, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-237

Enclosure: As stated

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**See previous concurrence

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST TO ALLOW USE OF BWR VESSEL AND INTERNALS PROJECT (BWRVIP)

GUIDELINES IN LIEU OF GENERIC LETTER 88-01 REQUIREMENTS

DRESDEN NUCLEAR POWER STATION, UNIT 2

EXELON GENERATION COMPANY

DOCKET NO. 50-237

1.0 INTRODUCTION

By letter dated August 20, 2001, Exelon Generation Company, LLC (EGC, the licensee) submitted a request for Nuclear Regulatory Commission (NRC) review and approval for use of Boiling Water Reactor (BWR) Vessel and Internals Project (BWRVIP) Guidelines in lieu of Generic Letter (GL) 88-01 requirements for thirty-three Category E Welds. Resolution of open item 3.4 of BWRVIP-75, which deals with inspection frequency on Category E Welds, will not be completed prior to Dresden Nuclear Power Station's (DNPS), Unit 2 Fall 2001 outage, scheduled to begin October 20, 2001.

2.0 REGULATORY REQUIREMENTS AND NRC STAFF POSITIONS

In accordance with GL 88-01, "NRC Position on Intergranular Stress-Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping," dated January 25, 1988, licensees shall have an inservice inspection (ISI) program for austenitic stainless steel piping, as covered under the scope of GL 88-01, that conforms to the NRC staff positions on inspection schedules, methods and personnel, and sample expansion as delineated in GL 88-01. NUREG-0313, Revision 2, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping," dated January 1988, details the technical bases for the positions presented in GL 88-01. The required inspection frequency for Category E welds is 100 percent every 2 refueling cycles.

In October 1999, the Electric Power Research Institute (EPRI) submitted the BWRVIP-75 report, "BWR Vessel and Internals Project Basis for Revisions to Generic Letter 88-01 Inspection Schedules," which proposed to provide evidence that IGSCC is adequately managed and existing programs exceeded what is needed to manage future problems. Using this data, the BWRVIP-75 report requests revising the examination frequencies of Generic Letter 88-01 for welds classified as Categories A through E.

NRC staff review of the BWRVIP-75 report is ongoing with nine open items needing further resolution as discussed in Reference 2. Open Item 3.4, "Proposed Inspection Frequency for Category E Welds (weld overlay repair)," of the BWRVIP-75 report proposes that after receiving one qualified inservice examination within three outages after the initial post-overlay examination, a plant under normal water chemistry would have an inspection frequency of 25 percent every 10 years.

The NRC staff's letter to Carl Terry, "Safety Evaluation of the 'BWRVIP Vessel and Internals Project, BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75),'" dated September 15, 2000, states that after three successive satisfactory inspections (once every two refueling cycles) where no indication of crack growth or new cracking is found, the Category E welds repaired by weld overlay using resistant materials may be inspected at a frequency of 25 percent of the population every 10 years under normal water chemistry.

3.0 LICENSEE'S DETERMINATION

In EGC's submittal, dated August 20, 2001, the licensee stated that DNPS, Unit 2, currently has thirty-three Category E Welds which do not meet the criteria of Open Item 3.4 with regard to the number of required inspections. EGC proposes to defer inspection of the thirty-three Category E Welds until all open issues are resolved between the NRC and BWRVIP. This is based on DNPS Unit 2 otherwise meeting the requirements of the BWRVIP's report to defer the Category E Weld inspections.

EGC based its request on industry experience in examinations of Category E Welds, which shows that no cracks have been found in the overlay material. Further, DNPS has maintained a reactor water chemistry program in accordance with EPRI water chemistry guidelines, contained in Reference 3, Table 4-5b, "Chemistry Guideline- Reactor Water- [hydrogen water chemistry] HWC or WHC+[noble metal chemistry addition] NMCA- Power Operation (>10% Power)." Reactor water coolant conductivity has averaged 0.077, 0.092, 0.090 and 0.109 µS/cm for 1998 to the date of the request, which is below the Level 1 action value of 0.3 µS/cm specified in Reference 3. Hydrogen water chemistry was instituted on Unit 2 in 1983, noble metal chemistry addition in 1999, and zinc injection in 1996. Since 1998, hydrogen availability has steadily improved from 93 percent to the current 97 percent. These initiatives were performed to improve IGSCC mitigation in the recirculation piping. DNPS, Unit 2, also has reactor coolant zinc levels consistently averaging between 5 and 10 mg/l, which is used as a sacrificial anode inserted for an additional method of galvanic corrosion protection.

The expected personnel exposure for inspecting these weld overlays is 48 rem, which is 70 percent of the total ISI radiation exposure for the outage period and equivalent to the total 2001 non-outage exposure for DNPS Unit 2.

4.0 NRC STAFF EVALUATION

The BWRVIP proposed the following criteria that must be met in order to defer these inspections:

1. The plant is operated in compliance with the EPRI water chemistry guidelines.

2. The overlay for which deferral is applied meets GL 88-01 or the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Case N-504 (full structural overlay) as opposed to a temporary duty (leakage barrier) overlay.

3. The overlays for which the deferral is applied must have been inspected at least two times without IGSCC indications in the overlay. The two examinations include a baseline examination after overlay application and one examination that was completed after the overlay has been in service for at least one full fuel cycle.

The NRC staff has reviewed these criteria and finds them acceptable justification for deferral of weld overlay inspections, as required by GL 88-01 and NUREG-0313, Revision 2. The NRC staff also finds that DNPS, Unit 2, meets all three of the proposed criteria for the thirty-three Category E Welds in question for deferral.

The Dresden Technical Specifications (TS) Section 4.0, “Surveillance Requirements,” Paragraph E.6, states that “the Inservice Inspection Program for piping identified in GL 88-01 shall be performed in accordance with the staff positions on schedule, methods, and personnel approved by the NRC staff.” Therefore, no TS change will be required for this deferral.

5.0 CONCLUSION

Due to DNPS Unit 2's inspection history, water chemistry, and ALARA concerns, a deferral of one cycle is granted on thirty-three Category E welds which do not meet the criteria of Open Item 3.4 of the BWRVIP-75 report with regard to the number of inspections required. The NRC staff finds that the licensee may defer inspection until October 2003 or until the completion of the NRC staff review and approval of the BWRVIP-75 report, whichever comes first.

6.0 REFERENCES

1. P. Stafford letter to U. S. Nuclear Regulatory Commission, “Request for Use of BWR Vessel and Internals Project (BWRVIP) Guidelines in Lieu of Generic Letter 88-01 Requirements,” August 20, 2001.

2. J. Strosnider letter to C. Terry, BWRVIP Chairman, “Safety Evaluation of the “BWRVIP Vessel and Internals Project, BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75),” September 15, 2000.

3. L. Rossbach letter to O. D. Kingsley, President ComEd, “Dresden, Unit 2 - Safety Evaluation of Deferral of Weld Overlays,” October 20, 2000.

Principal Contributor: Jay Collins

Date: October 17, 2001

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