UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 4, 2014

Mr. Michael P. Gallagher
Vice President, License Renewal Projects
Exelon Generation Company, LLC
200 Exelon Way
Kennett Square, PA 19348

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE BYRON STATION, UNITS 1 AND 2, AND BRAIDWOOD STATION, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION, SET 38 (TAC NOS. MF1879, MF1880, MF1881, AND MF1882)

Dear Mr. Gallagher:

By letter dated May 29, 2013, Exelon Generation Company, LLC, submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating licenses NPF-37, NPF-66, NPF-72, and NPF-77 for Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2, respectively, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review.

These requests for additional information were discussed with John Hufnagel, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-4115 or e-mail Lindsay.Robinson@nrc.gov.

Sincerely,

/RA/

Lindsay R. Robinson, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

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

Enclosure:
Request for Additional Information

cc w/encl: Listserv

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Vice President, License Renewal Projects
Exelon Generation Company, LLC
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Letter to M.P. Gallagher from Lindsay R. Robinson dated August 4, 2014

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE BYRON STATION, UNITS 1 AND 2, AND BRAIDWOOD STATION, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION, SET 38 (TAC NOS. MF1879, MF1880, MF1881, AND MF1882)

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BYRON STATION, UNITS 1 AND 2,
AND BRAIDWOOD STATION, UNITS 1 AND 2,
LICENSE RENEWAL APPLICATION
REQUEST FOR ADDITIONAL INFORMATION, SET 38
(TAC NOS. MF1879, MF1880, MF1881, MF1882)

RAI 3.0.3-2c

Applicability:

Byron Station (Byron) and Braidwood Station (Braidwood), Units 1 and 2

Background:

By letter dated June 30, 2014, the applicant responded to the staff's request for additional information (RAI) 3.0.3-2b Request (2), which revised license renewal application (LRA) Sections B.2.1.11, B.2.1.16, and B.2.1.18 to state that:

a) the acceptance criteria for loss of coating integrity will specify that peeling, blistering, and delamination is not acceptable;
b) peeling, blistering, or delamination of the coating from the base metal will be entered into the corrective action program;
c) if the coating is not repaired or replaced, physical testing will be conducted to ensure that the remaining coating is tightly bonded to the base metal;
d) if the coating is not repaired or replaced, the potential for further degradation of the coating will be minimized, "(i.e., any loose coating is removed, the edge of the remaining coating is feathered);"
e) adhesion testing using American Society for Testing and Materials (ASTM) International standards endorsed in Regulatory Guide (RG) 1.54 will be conducted at a minimum of 3 sample points adjacent to the defective area;
f) a certified coatings inspector will assess indications of blisters, cracking, flaking, or rusting and document the condition and acceptance in a post-inspection report; and
g) if coatings exhibiting signs of peeling, blistering, or delamination will be returned to service without repair or replacement, the applicant will conduct an evaluation of the potential impact on the system, including degraded performance of downstream components due to flow blockage and loss of material of the coated component.

Issue:

The staff has concluded that immersion coatings that have exhibited delamination or peeling should be repaired or replaced prior to returning the affected component(s) to service unless the degraded coating: (a) has been inspected, tested, evaluated, and partially corrected to minimize the potential for propagation, as described above; and (b) is inspected prior to 2 years from when the degraded condition was detected and then again within 2 years to ensure that the delamination or peeling is not propagating, or the degraded coating is subsequently repaired or replaced.

Request:

Revise LRA Sections B.2.1.11, B.2.1.16, and B.2.1.18 to address corrective actions associated with coatings exhibiting peeling or delamination, which will not be repaired or replaced prior to returning the affected component(s) to service.

RAI B.2.1.16-1c

Applicability:

Byron and Braidwood

Background:

The "detection of aging effects" program element of LR-ISG-2012-02 states: " [i]nternal visual inspections used to detect loss of material are capable of detecting surface irregularities that could be indicative of wall loss below nominal pipe wall thickness due to corrosion and corrosion product deposition. Where such irregularities are detected, followup volumetric examinations are performed."

The response to RAI B.2.1.16-1b states:

"[s]ince the nominal wall thickness is the design wall thickness of new piping, any indications of loss of material, no matter how trivial, would be an indication of wall loss below nominal."

"[u]niform corrosion of steel piping in a raw water environment is expected to occur and, as such, the wall thickness of all Fire Protection System piping can be expected to be below the nominal wall thickness."

"[i]nternal visual inspections are incapable of providing a quantitative assessment of the amount of wall loss of system components and instead provide only a qualitative assessment of the internal condition of the system."

"[a]s such, visual inspection results will be entered into the corrective action program if unexpected levels of degradation are identified. Unexpected levels of degradation include excessive accumulation of corrosion products and appreciable localized corrosion (e.g., pitting) beyond a normal oxide layer."

"Corrective actions may [emphasis added by NRC staff] include follow-up volumetric inspections, if appropriate."

"[f]ollow-up volumetric inspections will be performed as determined [emphasis added by NRC staff] by the 10 CFR Part 50 Appendix B corrective action program when visual inspections identify unexpected levels of degradation."

The staff noted that in the previous RAI response dated March 13, 2014, LRA Sections A.2.1.16 and B.2.1.16 were enhanced for Byron only to require a minimum of 30 volumetric examinations during each 3-year interval, as a result of operating experience. The staff also noted that these sections state that existing volumetric non-destructive examinations will be credited to ensure age-related degradation is identified prior to loss of system intended function.

Issue:

The RAI response outlines the justification for an exception to conducting followup wall thickness measurements when opportunistic internal visual inspections detect loss of material that could be indicative of wall loss below nominal pipe wall thickness. The staff has concluded that the response justifies the basis for why it is impractical to base followup wall thickness measurements on internal qualitative visual inspections. However, the response does not state what indications of unexpected degradation will result in a followup wall thickness examination.

As an alternative to opportunistic followup wall thickness measurements, the staff recognizes that periodic planned volumetric examinations could be equally effective at detecting loss of material. However, LRA Sections A.2.1.16 and B.2.1.16 do not state a minimum number of volumetric inspections that will be conducted at Braidwood, nor do they state how volumetric inspection locations will be selected at either site. In addition, although the LRA states that the volumetric examinations are being conducted at Byron as a result of operating experience, it is not clear to the staff whether the number of inspections would be reduced based on changes in operating experience.

Request:

Either provide additional details regarding the periodic volumetric examinations to be performed by the Fire Water System program (e.g., number of inspections, provisions for expanding (or reducing) inspections, inspection location selection methology), or state what indications of unexpected degradation will result in a followup wall thickness examination for opportunistic internal visual inspections.