



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

April 30, 2012

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

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE  
LIMERICK GENERATING STATION, UNITS 1 AND 2, LICENSE RENEWAL  
APPLICATION (TAC NOS. ME6555 AND ME6556)

Dear Mr. Gallagher:

By letter dated June 22, 2011, Exelon Generation Company, LLC submitted an application pursuant to Title 10 of the *Code of Federal Regulations*, Part 54, to renew the operating licenses for Limerick Generating Station, Units 1 and 2, 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 (RAIs) were discussed with Christopher Wilson, 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 by telephone at 301-415-3733 or by e-mail at [Robert.Kuntz@nrc.gov](mailto:Robert.Kuntz@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Robert F. Kuntz", written over a horizontal line.

Robert F. Kuntz, Senior Project Manager  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-352 and 50-353

Enclosure:  
Requests for Additional  
Information

cc w/encl: Listserv

LIMERICK GENERATING STATION  
LICENSE RENEWAL APPLICATION  
REQUESTS FOR ADDITIONAL INFORMATION

**RAI 3.1.1.97-1**

Background

License renewal application (LRA) item number 3.1.1-97 addresses cracking due to stress corrosion cracking (SCC) and intergranular stress corrosion cracking (IGSCC) of stainless steel and nickel alloy piping, piping components, and piping elements greater than or equal to 4 nominal pipe size (NPS). SRP-LR, Table 3.1-1, ID 97 and GALL Report, item IV.C1.R-21 recommend GALL AMP XI.M7, "BWR Stress Corrosion Cracking," and GALL AMP XI.M2, "Water Chemistry," to manage the aging effect of these components.

In comparison, LRA Table 3.1.2-1 (Page 3.1-37) relates nickel alloy piping, piping components, and piping elements to LRA item number 3.1.1-97, indicating that these components are subject to cracking due to SCC and IGSCC and the aging effect is managed by the One-Time Inspection program and the Water Chemistry program.

Issue

The LRA credits the One-Time Inspection program rather than the BWR Stress Corrosion Cracking program to manage cracking due to SCC and IGSCC of the nickel alloy components. The staff noted that the One-Time Inspection program does not include periodic inspections that are included in the BWR Stress Corrosion Cracking program. In addition, the staff found a need to clarify whether or not any of these nickel alloy components is included in the scope of the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD Program, which includes periodic inspections. The LRA does not clearly indicate whether or not any of these nickel alloy components addressed under LRA item number 3.1.1-97 (LRA Page 3.1-37) is included in the scope of the BWR Stress Corrosion Cracking program or the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program.

Request

1. Provide information to clarify why any of these nickel alloy components are not included in the scope of the BWR Stress Corrosion Cracking program or the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program, which includes periodic inspections (for example, describe pipe size, location and ASME Code Classes of the components and the coolant temperature to which the components are exposed).
2. Justify why the One-Time Inspection program, which does not include periodic inspections, is adequate to manage cracking due to SCC and IGSCC of the nickel alloy components.

As part of the response, clarify whether or not SCC or IGSCC has been observed in these components in order to demonstrate that LGS operating experience supports the adequacy of the One-Time Inspection program to manage the aging effect.

### **RAI 3.1.1.97-2**

#### Background

LRA item number 3.1.1-97 addresses cracking due to stress corrosion cracking (SCC) and intergranular stress corrosion cracking (IGSCC) of stainless steel and nickel alloy piping, piping components, and piping elements greater than or equal to 4 nominal pipe size (NPS). SRP-LR, Table 3.1-1, ID 97 and GALL Report, item IV.C1.R-21 recommends GALL AMP XI.M7, "BWR Stress Corrosion Cracking," and GALL AMP XI.M2, "Water Chemistry," to manage the aging effect of these components.

More specifically, LRA Table 3.1.2-1 (Page 3.1-40) relates the cast austenitic stainless steel (CASS) valve body to LRA item number 3.1.1-97, indicating that this component type is subject to cracking due to SCC and IGSCC and the aging effect is managed by the Water Chemistry program and the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program.

Table IWB-2500-1 of the 2001 edition of the ASME Code Section XI with 2002 and 2003 addenda requires that the valve body welds of valves, NPS 4 or larger should be examined using volumetric examination in accordance with Examination Category B-M-1, Item No. B12.40.

Appendix VIII, Supplement 9 of the 2001 edition of the ASME Code Section XI, Division 1 with 2002 and 2003 addenda indicates that the qualification requirements for ultrasonic examination of cast austenitic piping welds are in the course of preparation. In addition, the "detection of aging effects" program element of GALL Report, AMP XI.M12, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)," addresses inspection methods for CASS components by stating that current ultrasonic testing (UT) methodology cannot detect and size cracks in CASS components; thus, enhanced visual examination (EVT-1) is used until qualified UT methodology for CASS can be established. GALL Report, AMP XI.M12 further states that a description of EVT-1 is found in Boiling Water Reactor Vessel and Internals Project (BWRVIP)-03 (Revision 6).

#### Issue

LRA Table 3.1.2-1 (Page 3.1-40) indicates that cracking due to SCC and IGSCC of CASS valve bodies is managed by the Water Chemistry program and the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program. However, the LRA does not provide the following information that is necessary to determine the inspection method in accordance with the ASME Code Section XI: (1) the size of the CASS valve bodies and (2) whether or not the valve bodies have a weld. In addition, the LRA does not describe which inspection method(s) will be used to manage cracking due to SCC and IGSCC of these CASS valve bodies.

#### Request

1. Provide the following information to determine the inspection method in accordance with the ASME Code Section XI: (1) the size of the CASS valve bodies (for example, NPS 4 or larger than NPS 4), and (2) whether or not the valve bodies have a weld.

2. In view that currently there is no qualified UT methodology for the detection of cracks in CASS piping welds, describe the inspection method that will be used to detect and manage cracking in these components and justify why the inspection method is adequate to detect and manage cracking due to SCC and IGSCC.

Letter to M. Gallagher from R Kuntz dated April 30, 2012

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NOS. ME6555 AND ME6556)

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Vice President, License Renewal Projects  
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Sincerely,

*/RA/*

Robert F. Kuntz, Senior Project Manager  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-352 and 50-353

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