



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

June 07, 2012

LICENSEE: Exelon Generation Company, LLC

FACILITY: Limerick Generating Station

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON APRIL 30, 2012, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND EXELON GENERATION COMPANY, LLC, CONCERNING REQUESTS FOR ADDITIONAL INFORMATION PERTAINING TO THE LIMERICK GENERATING STATION, LICENSE RENEWAL APPLICATION (TAC. NOS. ME6555 AND ME6556)

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of Exelon Generation Company, LLC held a telephone conference call on April 30, 2012, to discuss and clarify the staffs requests for additional information (RAIs) concerning the Limerick Generating Station license renewal application. The telephone conference call was useful in clarifying the intent of the staffs RAIs.

Enclosure 1 provides a listing of the participants and Enclosure 2 contains a listing of the RAIs discussed with the applicant, including a brief description on the status of the items.

The applicant had an opportunity to comment on this summary.

A handwritten signature in black ink, appearing to read "Robert F. Kuntz", written over a faint, stylized graphic element.

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

Enclosures:

1. List of Participants
2. List of Requests for Additional Information

cc w/encls: Listserv

TELEPHONE CONFERENCE CALL  
LIMERICK GENERATING STATION  
LICENSE RENEWAL APPLICATION

LIST OF PARTICIPANTS  
April 30, 2012

PARTICIPANTS

Robert Kuntz  
Seung Min  
Christopher Wilson  
Gene Kelly  
Al Fulvio  
Jim Jordan

AFFILIATIONS

Nuclear Regulatory Commission (NRC)  
NRC  
Exelon Generation Company, LLC (Exelon)  
Exelon  
Exelon  
Exelon

## **DRAI 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 four 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.

**Discussion:** The applicant indicated that the request is clear. This DRAI will be sent as a formal RAI.

### **DRAI 3.1.1.97-2**

#### Background

LRA Item Number 3.1.1-97 addresses cracking due to SCC and IGSCC of stainless steel and nickel alloy piping, piping components, and piping elements greater than or equal to four 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. If the valve bodies contain welds, and 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.

**Discussion:** The applicant indicated that the request is clear. This DRAI will be sent as a formal RAI.

### **DRAI 3.3.1.110-1**

#### Background

LRA Item Number 3.3.1-110 addresses cracking due to SCC of stainless steel piping, piping components, and piping elements in the auxiliary systems, which are exposed to treated water >60 °C (>140 °F). The GALL Report recommends GALL AMP XI.M7, "BWR Stress Corrosion Cracking," and GALL AMP XI.M2, "Water Chemistry," to manage this aging effect of the components.

The LRA also indicates that LRA item 3.3.1-110 is not applicable because the BWR Stress Corrosion Cracking program manages cracking initiation and growth in reactor coolant pressure boundary (RCPB) piping, welds and components through the implementation of an augmented Inservice Inspection (ISI) program in accordance with ASME Code, Section XI. The LRA further states that the BWR Stress Corrosion Cracking program does not apply to the auxiliary systems. In addition, the LRA states that cracking in stainless steel piping, piping components, and piping elements exposed to treated water >140 °F in the auxiliary systems is addressed in Item Numbers 3.3.1-16, 3.3.1-19, and 3.3.1-20.

#### Issue

In contrast with the statement in LRA item 3.3.1-110, the scope of the BWR Stress Corrosion Cracking program specified in the GALL Report does not preclude a piping, piping element or piping component in the auxiliary systems. The GALL Report indicates that the BWR Stress Corrosion Cracking program is applicable to the relevant BWR piping and piping welds made of austenitic stainless steel and nickel alloy, regardless of code classification. Therefore, the staff found a need to further clarify whether or not any of the stainless steel piping, piping element and piping components identified under LRA item 3.3.1-110 is included in the scope of the BWR Stress Corrosion Cracking Program.

Request

1. Provide the basis for the statement in LRA Item Number 3.3.1-110 that the BWR Stress Corrosion Cracking program manages RCPB components, but does not apply to the auxiliary systems.
2. Clarify if any of the stainless steel components identified under LRA Item Number 3.3.1-110 is included in the scope of the BWR Stress Corrosion Cracking program.

If so, justify why the use of aging management programs other than the BWR Stress Corrosion Cracking program are adequate to manage cracking due to SCC of the component.

**Discussion:** The applicant indicated that the information requested by the staff was contained in the LRA. The staff reviewed the LRA and noted that the information related to this DRAI is already provided in the LRA (LRA items 3.3.1-16, 3.3.1-19, and 3.3.1-20). Therefore, this DRAI will not be sent as a formal RAI.

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FACILITY: Limerick Generating Station

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