



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001
April 15, 2011

Mr. Michael J. Pacilio
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 - ISSUANCE OF
AMENDMENTS REGARDING REACTOR COOLANT SYSTEM PRESSURE-
TEMPERATURE (P/T) LIMITS (TAC NOS. ME3801 AND ME3802)

Dear Mr. Pacilio:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 201 to Facility Operating License No. NPF-11 and Amendment No. 188 to Facility Operating License No. NPF-18 for the LaSalle County Station, Units 1 and 2, respectively. The amendments are in response to Exelon Generation Company, LLC application dated April 19, 2010, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101130370) as supplemented by letters dated October 15, 2010, and March 14, 2011 (ADAMS Accession Nos. ML102910355 and ML110750170, respectively).

The application requested changes to the technical specifications (TSs) to revise TS 3.4.11, "RCS [reactor coolant system] Pressure and Temperature (P/T) [or P-T] Limits," to incorporate revised P-T curves that are valid for up to 32 effective full power years of operation.

Sincerely,

A handwritten signature in black ink, appearing to read "Eva Brown", with a stylized flourish at the end.

Eva Brown, Senior Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosures:

1. Amendment No. 201 to NPF-11
2. Amendment No. 188 to NPF-18
3. Safety Evaluation

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

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-373

LASALLE COUNTY STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 201
License No. NPF-11

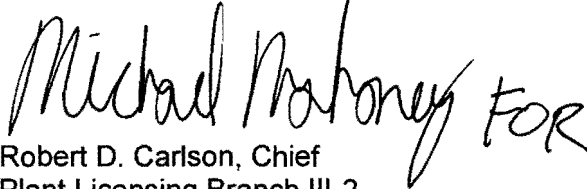
1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by the Exelon Generation Company, LLC (the licensee), dated October 19, 2010, as supplemented by letters dated October 15, 2010, and March 14, 2011, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of the Facility Operating License No. NPF-11 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 201 , and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "Michael Mahoney FOR". The signature is written in a cursive, flowing style.

Robert D. Carlson, Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications and Facility Operating License

Date of Issuance: April 15, 2011



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

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-374

LASALLE COUNTY STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 188
License No. NPF-18

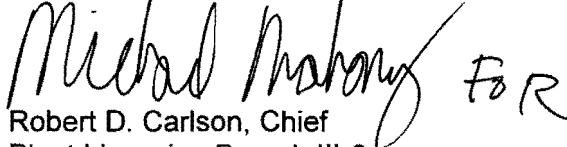
1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by the Exelon Generation Company, LLC (the licensee), dated April 19, 2010, as supplemented by letters dated October 15, 2010, and March 14, 2011, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the enclosure to this license amendment and paragraph 2.C.(2) of the Facility Operating License No. NPF-18 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 188 , and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "Michael Mahony" with "FOR" written to the right.

Robert D. Carlson, Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications and Facility Operating License

Date of Issuance: April 15, 2011

ATTACHMENT TO LICENSE AMENDMENT NOS. 201 AND 188

FACILITY OPERATING LICENSE NOS. NPF-11 AND NPF-18

DOCKET NOS. 50-373 AND 50-374

Replace the following pages of the Facility Operating Licenses and Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

License NPF-11
Page 3

License NPF-18
Page 3

TSs

3.4.11-3
3.4.11-6
3.4.11-7
3.4.11-8
3.4.11-9
3.4.11-10
3.4.11-11

Insert

License NPF-11
Page 3

License NPF-18
Page 3

TSs

3.4.11-3
3.4.11-6
3.4.11-7
3.4.11-8
3.4.11-9
3.4.11-10
3.4.11-11

- 3 -

- (4) Exelon Generation Company, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Exelon Generation Company, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of LaSalle County Station, Units 1 and 2.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

Am. 198
09/16/10

(1) Maximum Power Level

The licensee is authorized to operate the facility at reactor core power levels not in excess of full power (3546 megawatts thermal).

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No.201, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

Am. 194
08/28/09

(3) DELETED

Am. 194
08/28/09

(4) DELETED

Am. 194
08/28/09

(5) DELETED

Am. 194
08/28/09

(6) DELETED

Am. 194
08/28/09

(7) DELETED

-3-

- (5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70 possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of LaSalle County Station Units 1 and 2.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at reactor core power levels not in excess of full power (3546 megawatts thermal). Items in Attachment 1 shall be completed as specified. Attachment 1 is hereby incorporated into this license.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 188 , and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

Am. 181
08/28/09 (3) DELETED

Am. 181
08/28/09 (4) DELETED

Am. 181
08/28/09 (5) DELETED

Am. 181
08/28/09 (6) DELETED

Am. 181
08/28/09 (7) DELETED

Am. 181
08/28/09 (8) DELETED

Am. 181
08/28/09 (9) DELETED

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.11.1 -----NOTE----- Only required to be performed during RCS heatup and cooldown operations, and RCS inservice leak and hydrostatic testing. -----</p> <p>Verify:</p> <ul style="list-style-type: none"> a. RCS pressure and RCS temperature are within the applicable limits specified in Figures 3.4.11-1, 3.4.11-2, 3.4.11-3 for Unit 1 up to 32 EFPY, and Figures 3.4.11-4, 3.4.11-5, and 3.4.11-6 for Unit 2 up to 32 EFPY; b. RCS heatup and cooldown rates are $\leq 100^{\circ}\text{F}$ in any 1 hour period; and c. RCS temperature change during system leakage and hydrostatic testing is $\leq 20^{\circ}\text{F}$ in any one hour period when the RCS pressure and RCS temperature are not within the limits of Figure 3.4.11-2 for Unit 1 up to 32 EFPY and Figure 3.4.11-5 for Unit 2 up to 32 EFPY. 	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.4.11.2 Verify RCS pressure and RCS temperature are within the criticality limits specified in Figure 3.4.11-3 for Unit 1 up to 32 EFPY and Figure 3.4.11-6 for Unit 2 up to 32 EFPY.</p>	<p>Once within 15 minutes prior to control rod withdrawal for the purpose of achieving criticality</p>

(continued)

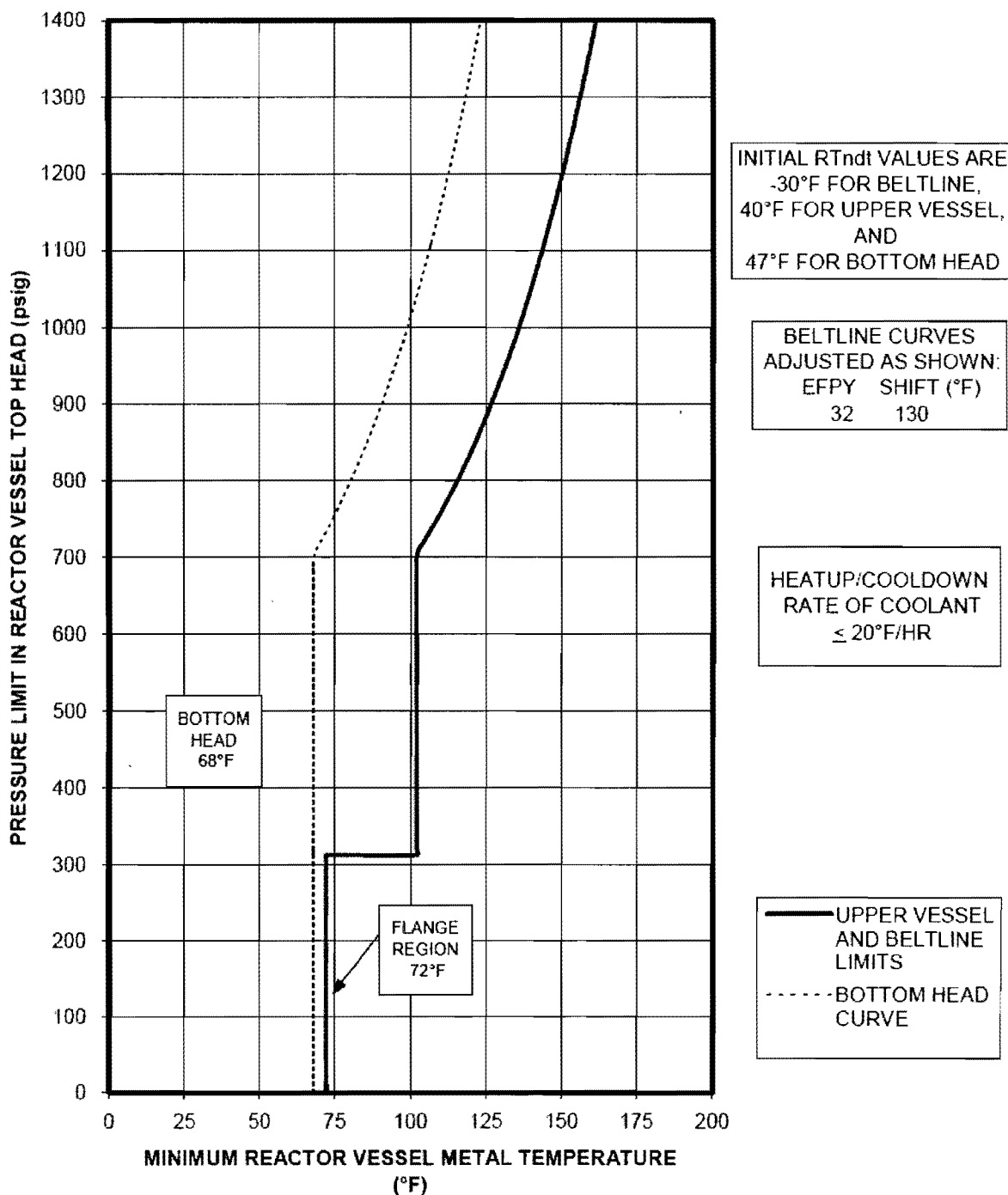


Figure 3.4.11-1 (Page 1 of 1)
Unit 1
P-T Curves for Hydrostatic or Leak Testing up to 32 EFY

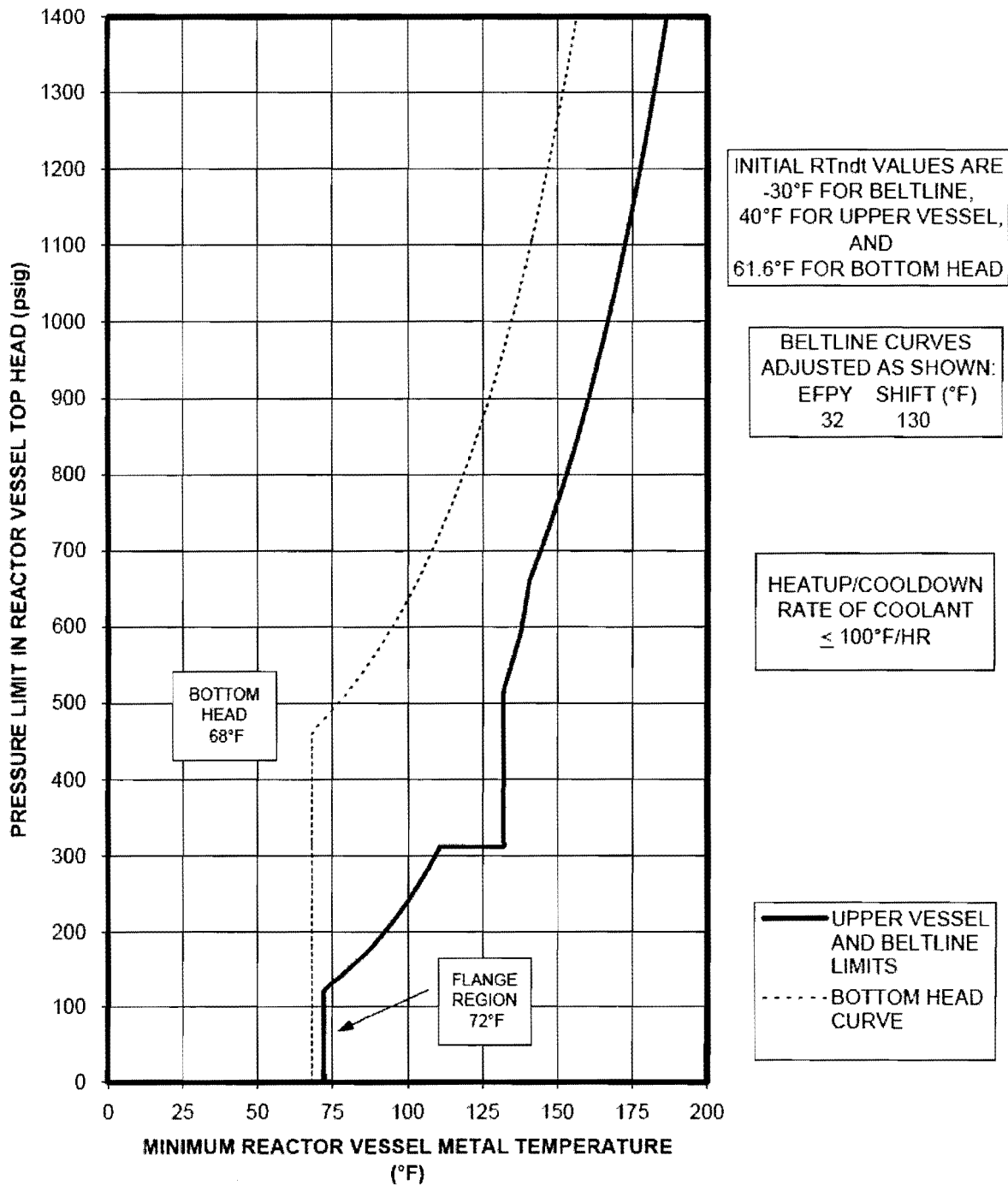


Figure 3.4.11-2 (Page 1 of 1)
Unit 1

P-T Curves for Heatup by Non-Nuclear Means, Cooldown Following
a Nuclear Shutdown and Low Power Physics Testing up to 32 EFPY

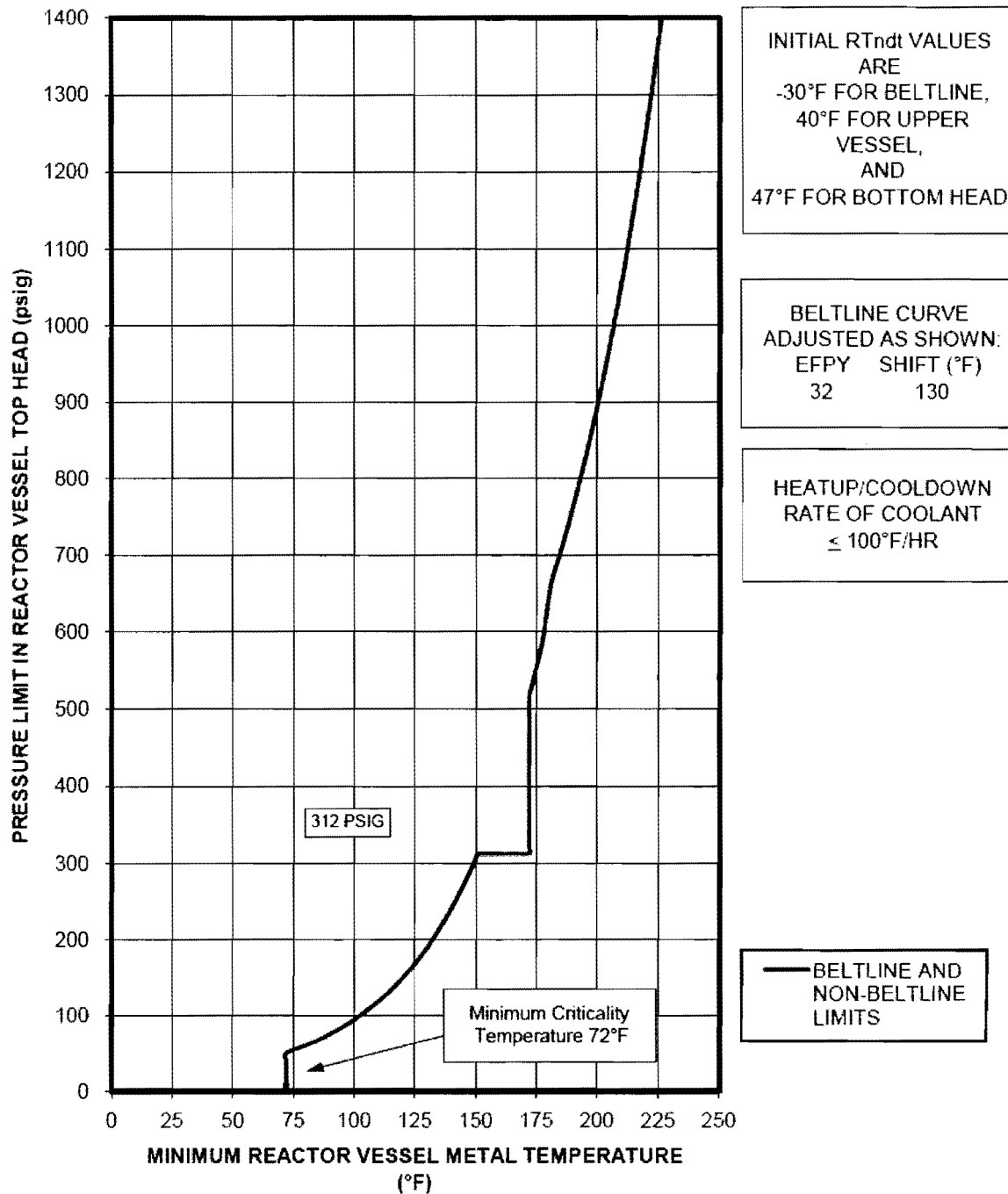


Figure 3.4.11-3 (Page 1 of 1)
Unit 1
P-T Curves for Operation with a Core Critical
other than Low Power Physics Testing up to 32 EFpy

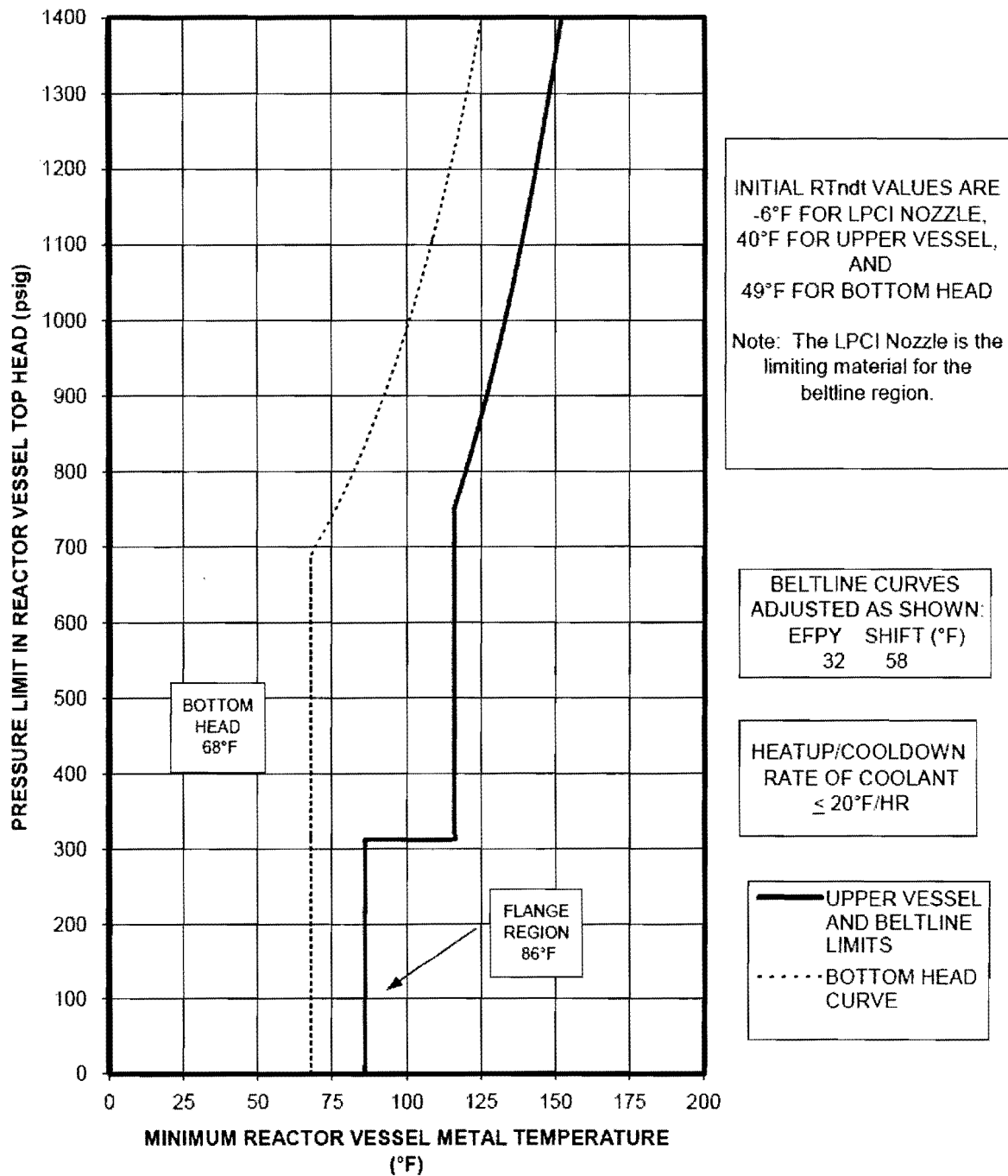


Figure 3.4.11-4 (Page 1 of 1)
Unit 2
P-T Curves for Hydrostatic or Leak Testing up to 32 EFPY

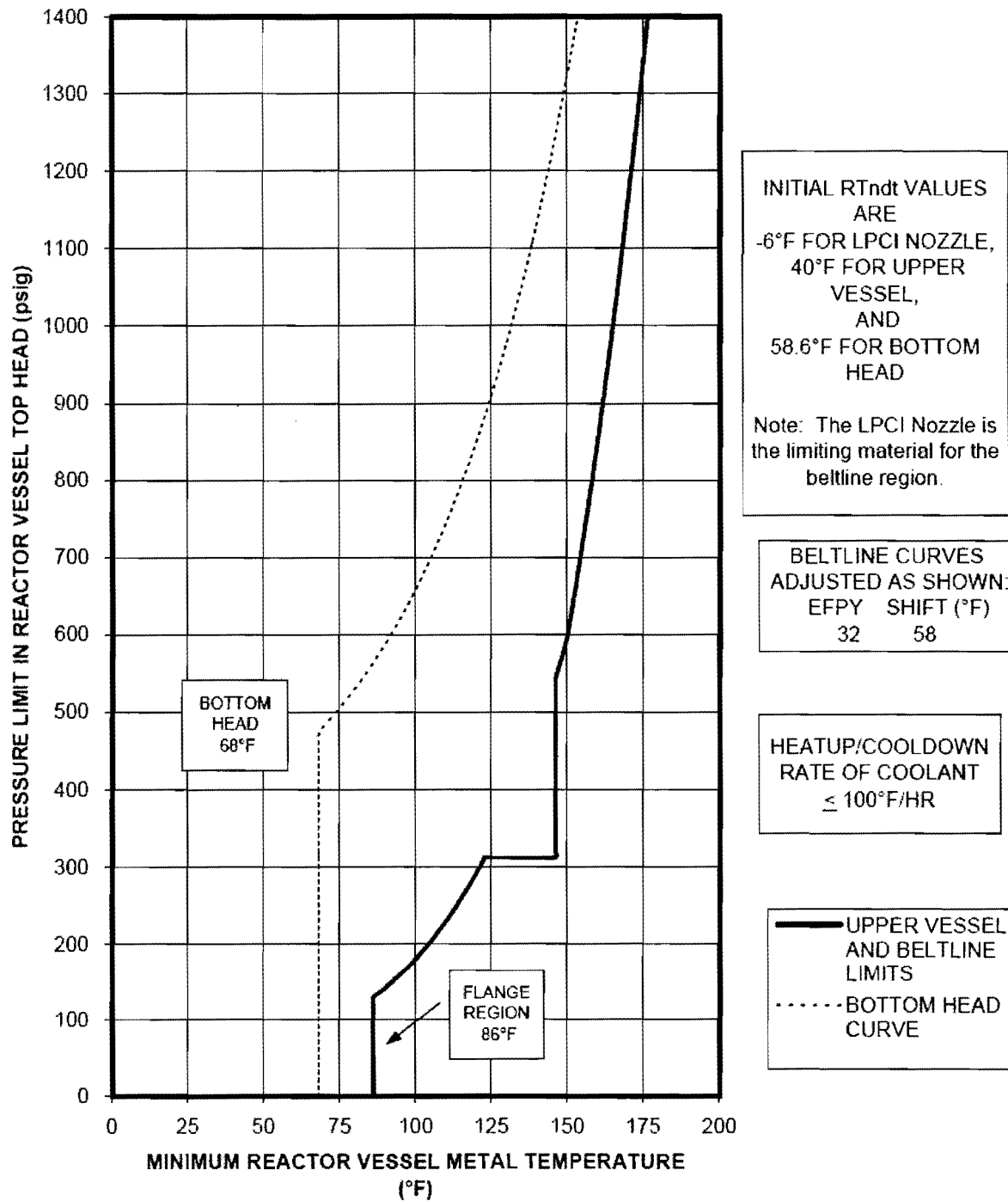


Figure 3.4.11-5 (Page 1 of 1)
Unit 2

P-T Curves for Heatup by Non-Nuclear Means, Cooldown Following
a Nuclear Shutdown and Low Power Physics Testing up to 32 EPF

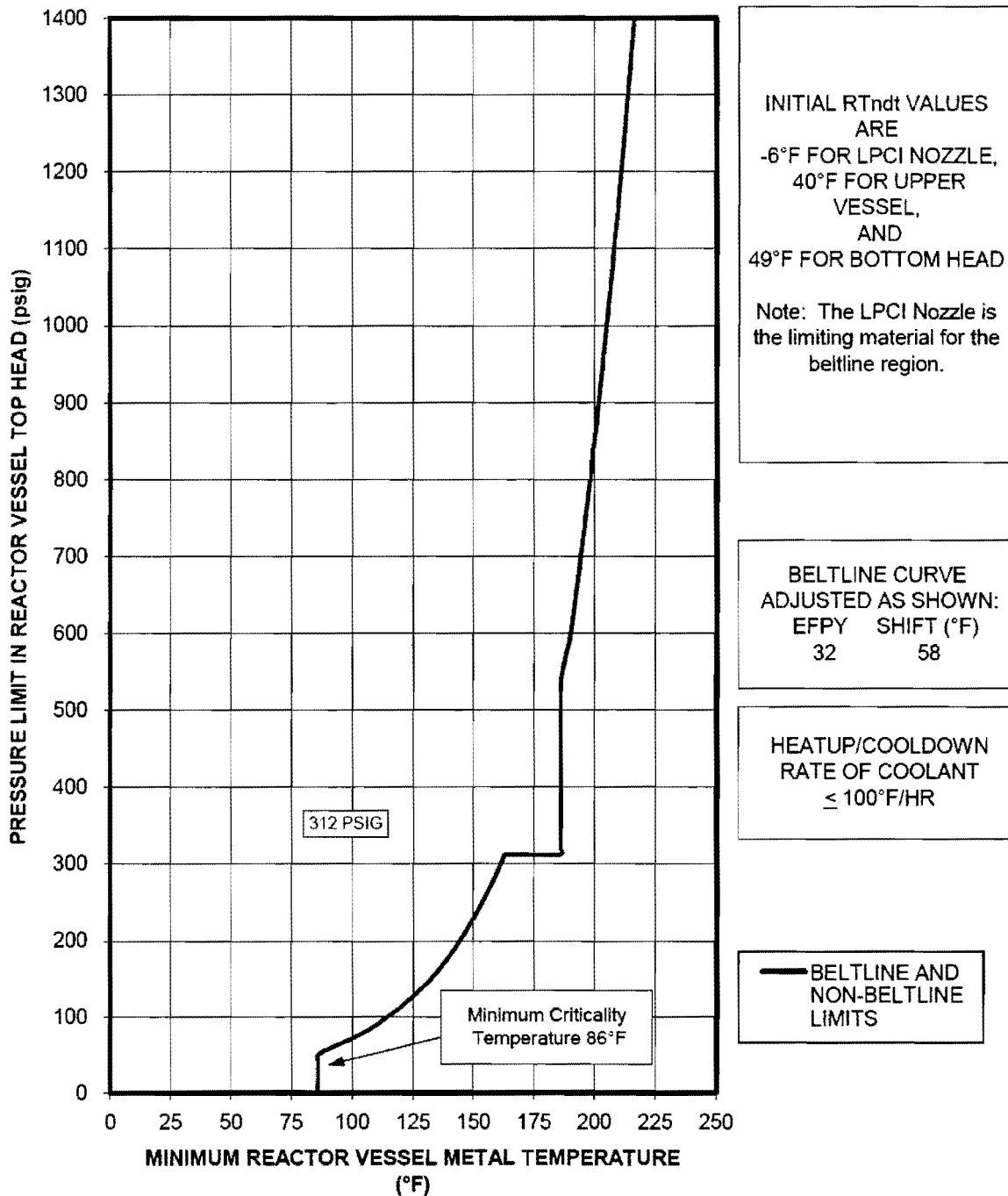


Figure 3.4.11-6 (Page 1 of 1)
 Unit 2
 P-T Curves for Operation with a Core Critical
 other than Low Power Physics Testing up to 32 EFPY



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 201 TO FACILITY OPERATING LICENSE NO. NPF-11
AND AMENDMENT NO. 188 TO FACILITY OPERATING LICENSE NO. NPF-18
EXELON GENERATION COMPANY, LLC
LASALLE COUNTY STATION, UNITS 1 AND 2
DOCKET NOS. 50-373 AND 50-374

1.0 INTRODUCTION

By letter to the Nuclear Regulatory Commission (NRC, the Commission) dated April 19, 2010, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101130370), as supplemented by letters dated October 15, 2010, and March 14, 2011 (ADAMS Accession Nos. ML102910355 and ML110750177, respectively). Exelon Generation Company, LLC (Exelon, the licensee), requested changes to the technical specifications (TSs) for LaSalle County Station (LSCS), Units 1 and 2. The requested change would revise TS 3.4.11, "RCS [reactor coolant system] Pressure and Temperature (P/T) [or P-T] Limits," to incorporate the proposed P-T curves, valid for up to 32 effective full power years (EFPY) of operation.

The licensee provided top-level information regarding its P-T limit methodology in Attachment 1, "Evaluation of Proposed Change," to its April 19, 2010, submittal. Complete details, including the adjusted reference temperatures (RT_{NDT}), or ART values for beltline, upper vessel, and bottom head, and the generation of P-T limits for these materials, are available in the General Electric Nuclear Energy (GE-NE)-0000-0003-5526-02R1 report, "Pressure-Temperature Curves For Exelon LaSalle Unit 1," dated May 2004, and the GE-NE-0000-0003-5526-01R1 report, "Pressure-Temperature Curves For Exelon LaSalle Unit 2," dated May 2004. Attachments 4 and 6 to its April 19, 2010, submittal contain the proprietary and non-proprietary versions of GE-NE-0000-0003-5526-02R1(a), and Attachments 5 and 7 to its April 19, 2010, submittal contain the proprietary and non-proprietary versions of GE-NE-0000-0003-5526-01R1(a).

The October 15, 2010, and March 14, 2011, supplements contained clarifying information and did not change the NRC staff's initial proposed finding of no significant hazards consideration published in the Federal Register (75 FR 37475, dated June 29, 2010).

2.0 REGULATORY EVALUATION

Section 50.36(c)(3) of Title 10 of the *Code of Federal Regulations* (10 CFR) states that the TS shall contain surveillances related to the test, calibration, or inspection to assure that necessary quality for systems and components is maintained, that facility operation will be with safe limits, and that the limiting conditions for operation will be met.

Enclosure

Section 50.60(a) of 10 CFR requires that, except as provided in Section 50.60(b), all light-water nuclear power reactors, other than reactor facilities for which the certifications under Section 50.82(a)(1) have been submitted, meet the fracture toughness and material surveillance program requirements for the reactor coolant program pressure boundary set forth in appendices G and H to 10 CFR Part 50.

Appendix G, "Fracture Toughness Requirements," to 10 CFR Part 50 requires that facility P-T limits for the reactor pressure vessel (RPV) be at least as conservative as those obtained by applying the linear elastic fracture mechanics methodology of Appendix G to Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code).

Appendix H, "Reactor Vessel Material Surveillance Program Requirements," to 10 CFR Part 50 establishes requirements related to facility RPV material surveillance programs.

The most recent version of Appendix G to Section XI of the ASME Code which has been endorsed in 10 CFR 50.55a, and therefore by reference in 10 CFR Part 50, Appendix G, is the 2004 Edition of the ASME Code. This edition of Appendix G to Section XI of the ASME Code incorporates the provisions of ASME Code Case N-588, "Attenuation to Reference Flaw Orientation of Appendix G for Circumferential Welds in Reactor Vessels," and ASME Code Case N-640, "Alternative Reference Fracture Toughness for Development of P-T Limit Curves." Additionally, Appendix G to 10 CFR Part 50 imposes minimum head flange temperatures when system pressure is at or above 20 percent of the pre-service hydrostatic test pressure.

NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (SRP), Section 5.3.2. "Pressure-Temperature Limits, Upper-Shelf Energy, and Pressurized Thermal Shock," provides guidance for the review of the P-T limits imposed on the reactor coolant pressure boundary (RCPB) during any condition of normal operation, including anticipated operational occurrences and hydrostatic tests to ensure adequate safety margins of structural integrity for the ferritic components of the RCPB.

Regulatory Guide (RG) 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," contains methodologies for determining the increase in transition temperature and the decrease in upper-shelf energy resulting from neutron radiation.

Generic Letter (GL) 92-01, Revision 1, "Reactor Vessel Structural Integrity," requested that licensees submit the RPV data for their plants to the NRC for review, and GL 92-01, Revision 1, Supplement 1, requested that licensees provide and assess data from other licensees that could affect their RPV integrity evaluations.

3.0 TECHNICAL EVALUATION

Attachments 4 and 5 to a letter dated April 19, 2010, document the P-T limit methodology for LSCS, Units 1 and 2, regarding their RPV beltline, bottom head, and upper head materials. The licensee identified the middle shell axial welds 3-308 A/C as the limiting beltline material for LSCS, Unit 1, and the low pressure coolant injection (LPCI) nozzle as the new limiting material for LSCS, Unit 2. The key parameters in determining the licensee's ART values for the limiting

materials at the one-quarter of the RPV wall thickness ($1/4T$) location for 32 EFYs are shown in Table 4-5 of Attachment 4 to its April 19, 2010, submittal for Unit 1 and Table 4-4 of Attachment 5 to its April 19, 2010, submittal for Unit 2. The analysis then used one of three methods for evaluating the limiting materials. For a limiting beltline plate or weld, the licensee developed the P-T limits using the ASME Code, Section XI, Appendix G, methodology. For the RPV bottom head, a plant-specific methodology based on a generic pressure versus ($T-RT_{NDT}$) curve of the control rod drive penetration under a generic transient was used. The bottom head P-T limits for LSCS, Units 1 and 2, were developed from this generic curve using the plant-specific RT_{NDT} value for each LSCS unit.

For evaluating a limiting nozzle, the licensee used the "upper vessel methodology" which is based on an evaluation of the nozzle corner pressure and thermal hoop stresses from finite element method results for a generic feedwater nozzle under the most severe transient - normal operation with cold 40 degrees Fahrenheit ($^{\circ}F$) feedwater injection. This methodology was considered to be bounding for the evaluation of any RPV nozzle since the geometry of the feedwater nozzle coupled with the aforementioned transient would bound the conditions for other RPV nozzles. The methodology based on Welding Research Council (WRC) Bulletin 175 was then used to calculate its combined applied stress intensity factor (KI). For fracture resistance, the ASME Code, Section XI, reference fracture toughness (K_{IC}) curve was used in developing the P-T limits in each of the methodologies. The proposed P-T limits for each unit were based on the most limiting curves among the three sets.

The licensee's P-T limit methodology appears to be plant-specific because the April 19, 2010, submittal, including its attachments, did not reference Topical Report, NEDC-33178P-A, "GE Hitachi Nuclear Energy Methodology for Development of Reactor Pressure Vessel Pressure-Temperature Curves," dated June 2009. However, the licensee's response dated October 15, 2010, confirmed that the licensee's P-T limit methodology is the same as that of the NEDC-33178P report. Therefore, whenever necessary, the NRC staff referenced the NEDC 33178P-A report during the review.

The proposed P-T limits were derived from a consideration of the curves for the RPV beltline plates and welds, RPV bottom head, and RPV nozzles (referred to by the licensee as "upper vessel" although the limiting nozzle was not actually located in the upper vessel region). Since the bottom head P-T limits are the least limiting for the entire pressure temperature range, consistent with the NEDC-33178P-A report conclusion, the NRC staff's independent calculations focused on the P-T limits derived from a consideration of the RPV beltline plates and welds and the RPV nozzles.

To evaluate the proposed LSCS limiting P-T limits, the NRC staff first examined and confirmed the licensee's selection of the middle shell axial welds 3-308 A/C as the limiting material for Unit 1 and the LPCI nozzle material as the limiting material for Unit 2. Although the RPV beltline lower shell plate 21-2 has the highest ART value for the Unit 2 RPV, it is not limiting because use of the "upper vessel methodology" in generating P-T limits for the LPCI nozzle makes the P-T limits based on the evaluation of the LPCI nozzle more limiting than those based on the evaluation of the Unit 2 beltline plates and welds.

For the units' RPV beltline plates and welds, the NRC staff found that their initial RT_{NDT} , copper (Cu), and nickel (Ni) values for all RPV beltline plates and the majority of RPV beltline welds are in agreement with the information in the NRC's Reactor Vessel Integrity Database (RVID),

except for the Cu and Ni values for most RPV beltline welds for both units and the initial RT_{NDT} value for one RPV beltline weld for Unit 1. The licensee's Cu and Ni values are best-estimate values from the Combustion Engineering (CE) NPSD-1039 report, Revision 2, "Best Estimate Copper and Nickel Values in CE Fabricated Vessel Welds," which was accepted for LSCS RPV application in a safety evaluation dated December 10, 2004, for the current P-T limits for 20 EFPY. The licensee's initial RT_{NDT} value for the aforementioned beltline weld for Unit 1 is also acceptable because it is consistent with the information that the NRC staff reviewed in 2004 and is more conservative than the corresponding RVID value.

Using the licensee's material data for the limiting materials and RG 1.99, Revision 2, for materials which do not have two credible surveillance data, the NRC staff has verified the licensee's limiting 32 EFPY ART values at 1/4T for both units' beltline materials. The licensee did not perform a calculation for the ART values at the 3/4T location. This is appropriate because the licensee's approach of using the maximum tensile stress for either heatup or cooldown and applying it at the 1/4T location is equivalent to using the maximum thermal stress intensity factor the minimum (K_{Ic}) in the heatup and cooldown analysis, making the proposed P-T limits bound both the heatup and cooldown curves.

For the units other RPV materials, the NRC staff confirmed that the material property values used in their evaluation were also acceptable. Since the LPCI nozzles are located within the beltline region, the effects of neutron radiation were considered when establishing their material property values. Tables 4-4 of the Attachments 5 and 6 to the April 19, 2010, submittal list materials, neutron fluence, and ART information for the LPCI nozzle along with the beltline plates and welds for LSCS, Units 1 and 2. The NRC staff's independent evaluation confirmed the 32 EFPY ART values at 1/4T for both units' LPCI nozzle materials.

For LSCS, Unit 1, the licensee developed the P-T limits for the limiting RPV beltline welds utilizing the ASME Code, Section XI, Appendix G, methodology. Based on the materials information, the pressure head accounting for the column of water in the RPV, and the calculated temperature difference through the RPV wall in the submittal, the NRC staff has verified the beltline P-T limits in the proposed TS Figure 3.4.11-2. However, this verification also revealed that the proposed P-T limits do not include temperature and pressure instrument uncertainties. The licensee's October 15, 2010, response provided clarification for this NRC staff concern. The response replied that, "[t]he pressure and temperature instruments used to monitor compliance with the [P-T] curves are monitoring instruments, not actuating instruments; therefore, they are excluded from the guidance in RG 1.105, "Setpoints for Safety Related Instrumentation." This is acceptable because temperature and pressure instrument uncertainty determination is not specified in Appendix G to 10 CFR Part 50, Appendix G to Section XI, of the ASME Code, and SRP Section 5.3.2.

For LSCS, Unit 2, the licensee developed the P-T limits for the limiting LPCI nozzles using generic boiling water reactor feedwater nozzle P versus ($T - RT_{NDT}$) limits adjusted by the highest RT_{NDT} value for the Unit 2, LPCI nozzle. The NRC staff questioned the applicability of this generic P versus ($T - RT_{NDT}$) limits to the LSCS, Unit 2, RPV. In a letter dated October 15, 2010, the licensee provided calculated results on KI, thermal transient range, and the shift of the generic curve for the LSCS, Unit 2, nozzles. These results demonstrated the applicability of the generic limits to the LSCS, Unit 2, RPV.

In this application, the P-T limits curve for the LPCI nozzles becomes more limiting than the P-T limits derived from the RPV beltline plates and welds, even though the LPCI nozzle ART value is not the highest. The NRC staff's independent evaluation revealed that the P-T limits based on the Unit 2 LPCI nozzle are only slightly more limiting than the P-T limits derived from the RPV beltline plates and welds for the LSCS, Unit 2, RPV. The LPCI nozzle of LSCS, Unit 1, does not become limiting because the ART value for the Unit 1 LPCI nozzle material is 69 °F lower than the limiting beltline material, as opposed to 35 °F for the case of LSCS, Unit 2.

Tables 4-4 of the Attachments 4 and 5 contains no information for the small nozzles, e.g., the water level instrument (WLI) nozzles, which are also in the beltline region as shown in Figure 4-1 of the GE reports. The stress concentration factor associated with the drill-hole type nozzle in the beltline may make it more limiting than the limiting beltline material that was identified and used in the proposed P-T limits for LSCS, Unit 1. In a letter dated October 15, 2010, the licensee indicated that "GEH [GE Hitachi] performed an impact assessment that demonstrated for LSCS Units 1 and 2 the WLI nozzle curves are bounded by the beltline and upper vessel curves provided in Attachments 4 and 5 to the April 19, 2010, submittal. Further details including the types of material for the WLI nozzle and the attachment weld were provided in the March 14, 2011, response. The NRC staff reviewed this information and determined that the proposed P-T limits bound the WLI nozzle curves.

In summary, the NRC staff's calculation produced almost identical P-T values for randomly selected points on the limiting LSCS, Units 1 and 2, RPV P-T limits. For the bottom head P-T curves, although the NRC staff did not perform calculations to validate them, they are acceptable because they are identical to those in the current TS. This is because the bottom head P-T limits do not depend on EFPY due to lack of identified embrittlement in the bottom head region.

Appendix G to 10 CFR 50 contains additional requirements for the minimum metal temperature of the closure head flange and vessel flange regions. These considerations were reflected in the "notches" of the P-T limits. The NRC staff has verified that for LSCS, Unit 1: when $P > 20$ percent of the hydro test pressure (approximately 313 psig), the minimum temperature of 102 °F for the pressure test curve, 132 °F for the normal operation/core not critical curve, and 172 °F for the normal operation/core critical curve are derived from adding the RT_{NDT} of 12 °F for the limiting flange material temperature to 90 °F, 120 °F, and 160 °F that were specified in 10 CFR Part 50, Appendix G, for the three operational conditions. The NRC staff has also verified that when $P \leq 313$ psig, the minimum temperature of 72 °F for the pressure test curve and the normal operation/core not critical curve is more conservative than the RT_{NDT} for the limiting flange material temperature that was specified in 10 CFR Part 50, Appendix G. Similar findings are noted for LSCS, Unit 2, with an RT_{NDT} of 26 °F instead of 12 °F for the limiting flange material and a minimum temperature of 86 °F instead of 72 °F.

Based on the above evaluation, the NRC staff determined that the licensee's proposed P-T limits are in accordance with the NEDC-33178P-A report and satisfy the requirements of Appendix G to Section XI of the ASME Code and Appendix G to 10 CFR Part 50. Hence, the licensee's proposed P-T limit curves are acceptable for operation of the LSCS RPVs valid for 32 EFPY.

Based on the NRC staff's review of the information provided in the licensee's April 19 and October 15, 2010, and March 14, 2011, submittals, the NRC staff concludes that the proposed

RPV P-T limits are based on an acceptable methodology documented in the NEDC-33178P-A report. The NRC staff performed independent evaluations and verified that the P-T limits were developed appropriately using the NEDC-33178P-A methodology, and the proposed P-T limits valid for 32 EFPY satisfy the requirements of Appendix G to Section XI of the ASME Code and Appendix G to 10 CFR Part 50. The TS revision to reflect the use of this acceptable methodology is also appropriate.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change surveillance requirements of the facilities components located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (75 *FR* 37475; June 29, 2010). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The NRC has concluded, on the basis of the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the NRC's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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