

March 24, 2017

Mr. Tim Hanley  
Senior Vice President West Operations, Exelon  
Chairman, BWR Vessel and Internals Project  
3420 Hillview Avenue  
Palo Alto, CA 94304-1395

SUBJECT: SAFETY EVALUATION FOR THE LICENSE RENEWAL APPENDIX A FOR  
"BWRVIP-241-A: BWR VESSEL AND INTERNALS PROJECT, PROBABALISTIC  
FRACTURE MECHANICS EVALUATION FOR THE BOILING WATER  
REACTOR NOZZLE-TO-VESSEL SHELL WELDS AND NOZZLE BLEND RADII,"  
AND "BWRVIP-108NP-A: BWR VESSEL AND INTERNALS PROJECT,  
TECHNICAL BASIS FOR THE REDUCTION OF INSPECTION  
REQUIREMENTS FOR THE BOILING WATER REACTOR NOZZLE-TO-  
VESSEL SHELL WELDS AND NOZZLE BLEND" (TAC NO. MF4638)

Dear Mr. Hanley:

By letter dated October 10, 2012 (ADAMS Accession No. ML12290A017), the Boiling Water Reactor Vessel and Internals Project (BWRVIP) submitted for U.S. Nuclear Regulatory Commission (NRC) staff review a supplemental document for license renewal, Appendix A, "BWR Nozzle Radii and Nozzle-to-Vessel Welds Demonstration of Compliance with the Technical Information Requirements of the License Renewal Rule (10 CFR 54.21)." The BWRVIP stated that the license renewal Appendix A is applicable to BWRVIP-241-A, "BWR Vessel and Internals Project, Probabilistic Fracture Mechanics Evaluation For The Boiling Water Reactor Nozzle-To-Vessel Shell Welds And Nozzle Blend Radii," and BWRVIP-108NP-A. "BWR Vessel and Internals Project, Technical Basis for the Reduction of Inspection Requirements for the Boiling Water Reactor Nozzle-To-Vessel Shell Welds And Nozzle Blend."

The purpose of Appendix A is to provide applicants for license renewal a means by which to reference these topical reports (i.e., BWRVIP-214 and BWRVIP-108) in a plant-specific integrated plant assessment and time-limited aging analysis evaluation in a license renewal application. The original submittal was supplemented by a letter from the BWRVIP dated July 19, 2016 (ADAMS Accession No. ML16210A194), in response to requests from NRC staff for additional information.

By letter dated November 18, 2016 (ADAMS Accession No. ML16281A121), an NRC draft safety evaluation (SE) was provided for your review and comment. The BWRVIP provided comments on the NRC draft SE by letter dated February 10, 2017 (ADAMS Accession No. ML17011A629). The comments provided by the BWRVIP were some recommendations for clarification. No proprietary information was identified in the draft SE. The NRC staff's deposition of BWRVIP's comments on the draft SE is documented in the final SE enclosed with this letter.

The NRC staff has found that Appendix A to BWRVIP-241-A is acceptable for referencing in licensing applications for nuclear power plants to the extent specified and under the limitations delineated in the topical report (TR) and in the enclosed final SE. The final SE defines the basis for our acceptance of the TR.

Our acceptance applies only to material provided in the subject TRs. We do not intend to repeat our review of the acceptable material described in the TRs. When the TRs appear as references in license applications, our review will ensure that the material presented applies to the specific plant involved. License amendment requests that deviate from these TRs will be subject to a plant-specific review in accordance with applicable review standards.

In accordance with the guidance provided on the NRC website, we request that the BWRVIP publish an approved version of Appendix A to BWRVIP-241-A within 6 months of receipt of this letter. The approved version shall incorporate this letter and the enclosed final SE after the title page. Also, it must contain historical review information, including NRC requests for additional information and your responses. The approved version shall include an "-A" (designating approved) following the TR identification symbol.

As an alternative to including the RAIs and RAI responses behind the title page, if changes to the TR were provided to the NRC staff to support the resolution of RAI responses, and if the NRC staff reviewed and approved those changes as described in the RAI responses, there are two ways that the accepted version can capture the RAIs:

1. The RAIs and RAI responses can be included as an Appendix to the accepted version.
2. The RAIs and RAI responses can be captured in the form of a table (inserted after the final SE) which summarizes the changes as shown in the approved version of the TR. The table should reference the specific RAIs and RAI responses, which resulted in any changes, as shown in the accepted version of the TR.

If future changes to the NRC's regulatory requirements affect the acceptability of this TR, the BWRVIP will be expected to revise the TR appropriately or justify its continued applicability for subsequent referencing. Licensees referencing this TR would be expected to justify its continued applicability or evaluate their plant using the revised TR.

Sincerely,

*/RA/*

Kevin Hsueh, Chief  
Licensing Processes Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Project No. 704

Enclosure:  
Final SE

SUBJECT: SAFETY EVALUATION FOR THE LICENSE RENEWAL APPENDIX A FOR  
 “BWRVIP-241-A: BWR VESSEL AND INTERNALS PROJECT, PROBABALISTIC  
 FRACTURE MECHANICS EVALUATION FOR THE BOILING WATER REACTOR  
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 “BWRVIP-108NP-A: BWR VESSEL AND INTERNALS PROJECT, TECHNICAL  
 BASIS FOR THE REDUCTION OF INSPECTION REQUIREMENTS FOR THE  
 BOILING WATER REACTOR NOZZLE-TO-VESSEL SHELL WELDS AND  
 NOZZLE BLEND” (TAC NO. MF4638) DATED: MARCH 24, 2017

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**ADAMS Accession No.: ML17003A014;\*via e-mail; \*\*See previous concurrence      NRR-043**

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DATE	02/22/2017	03/07/2017	03/23/2017	03/23/2017	03/24/2017

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
LICENSE RENEWAL APPENDIX A FOR “BWRVIP-241: BWR VESSEL AND INTERNALS  
PROJECT, PROBABILISTIC FRACTURE MECHANICS EVALUATION FOR THE BOILING  
WATER REACTOR NOZZLE-TO-VESSEL SHELL WELDS AND NOZZLE BLEND RADII,”  
AND “BWRVIP-108NP: BWR VESSEL AND INTERNALS PROJECT, TECHNICAL BASIS FOR  
THE REDUCTION OF INSPECTION REQUIREMENTS FOR THE BOILING WATER REACTOR  
NOZZLE-TO-VESSEL SHELL WELDS AND NOZZLE BLEND”  
PROJECT NO. 704

## 1.0 INTRODUCTION AND BACKGROUND

By letter dated April 19, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13071A233, Reference 1), the U.S. Nuclear Regulatory Commission (NRC) staff issued its safety evaluation (SE), endorsing the Electric Power Research Institute (EPRI) Boiling Water Reactor (BWR) Vessel and Internals Project (BWRVIP) topical report (TR) BWRVIP-241, “Probabilistic Fracture Mechanics Evaluation for the Boiling Water Reactor Nozzle-to-Vessel Welds and Nozzle Blend RADII.” The TR BWRVIP-241 documented supplemental analyses for BWR pressure vessel (RPV) recirculation inlet and outlet nozzle-to-shell welds and nozzle inner radii, to further address the limitations and conditions specified in the staff’s SE, dated December 19, 2007 (ADAMS Accession No. ML073600374, Reference 2), for the BWRVIP-108NP, “BWR Vessel and Internals Project, Technical Basis for the Reduction of Inspection Requirements for the Nozzle-to-Vessel Shell Welds and Nozzle Inner Radii.” These two TRs (BWRVIP-241 and BWRVIP-108NP) contain the technical basis supporting American Society of Mechanical Engineers *Boiler and Pressure Vessel* (ASME B&PV) Code Case N-702, “Alternative Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds.” Specifically, Code Case N-702 provides an alternative to the requirements of the ASME B&PV Code, Section XI, “Rules for Inservice Inspection of Nuclear Power Plant Components” for BWR nozzle inner radii and nozzle-to-shell welds. The alternative could potentially reduce the number of inspections for RPV nozzle-to-vessel shell welds and nozzle inner radius areas for BWRs from essentially 100 percent to a minimum of 25 percent of the nozzles for each nozzle type and size, during a 10-year inservice inspection interval.

By letter dated October 10, 2012 (ADAMS Accession No. ML12290A017, Reference 3), EPRI submitted for NRC staff review and approval a supplemental document for license renewal, Appendix A, “BWR Nozzle Radii and Nozzle-to-Vessel Welds Demonstration of Compliance with the Technical Information Requirements of the License Renewal Rule (10 CFR 54.21).” EPRI stated that the license renewal Appendix A is applicable to TRs BWRVIP-241 and BWRVIP-108NP. The purpose of Appendix A is to provide applicants for license renewal a means by which to reference these TRs (i.e., BWRVIP-241 and BWRVIP-108) in a plant-specific integrated plant assessment (IPA) and time-limited aging analysis (TLAA) evaluation in a license-renewal application (LRA). This review includes the BWRVIP’s response dated July 19, 2016 (ADAMS Accession No. ML16210A194, Reference 4), to NRCs staff’s request for additional information (RAI).

Enclosure

## 2.0 REGULATORY EVALUATION

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g), In-service Inspection (ISI) of ASME B&PV Code, Class 1, 2, and 3, components is to be performed in accordance with Section XI of the ASME B&VP Code and applicable addenda, except where specific relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Additionally, pursuant to 10 CFR 50.55a(g)(4), ASME B&VP Code Class 1, 2, and 3, components (including supports) shall meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in the ASME B&PV Code, Section XI, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that ISI examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME B&VP Code incorporated by reference in 10 CFR 50.55a(a), 12-months prior to the start of the 120-month interval, subject to the conditions listed 10 CFR 50.55a(b). As stated in 10 CFR 50.55a(z), alternatives to the requirements of paragraphs (b) through (h) of this section or portions thereof may be used, when authorized by the Director, Office of Nuclear Reactor Regulation, or Director, Office of New Reactors, as appropriate. The proposed alternate must be submitted and authorized prior to implementation. The applicant or licensee must demonstrate that: (1) the proposed alternative(s) would provide an acceptable level of quality and safety; or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Additionally, 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," addresses the requirements for plant license renewal. Pursuant to 10 CFR 54.21, each application for license renewal must contain an IPA and an evaluation of TLAAAs. The plant-specific IPA shall identify and list those structures and components subject to an aging management review and demonstrate that the effects of aging (e.g., cracking, loss of material, loss of fracture toughness, dimensional changes, and loss of preload) will be adequately managed so that their intended functions will be maintained consistent with the current licensing basis (CLB) for the period of extended operation (PEO), as required by 10 CFR 54.29(a). In addition, 10 CFR 54.21(d) requires that the final safety analysis report (FSAR) supplement for the facility must contain a summary description of programs and activities for managing the effects of aging and TLAAAs for the PEO. Subsequent to receiving a renewed license, all ASME B&PV Code, Section XI ISI and 10 CFR 50.55a requirements continue to apply during the term of a renewed license, unless a relief request is submitted by the licensee and subsequently approved by NRC staff in accordance with 10 CFR 50.55a.

The BWRVIP-108NP and BWRVIP-241 TRs provide the technical basis for the implementation of ASME B&PV Code Case N-702 as an alternative to the ISI requirements of ASME B&PV Code, Section XI. Staff issued SEs granted conditional approval to use TRs BWRVIP-108NP and BWRVIP-241 as the technical basis for the applicability of ASME B&PV Code Case N-702. Licensees and applicants who choose to use Code Case N-702 should demonstrate plant-specific applicability of the TRs to their unit(s) by addressing the conditions and limitations specified in Sections 5.0 of the two SEs. Based on the NRC staff SEs, Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," Revision 17, dated August 2014, identified Code Case N-702 as one of the Code Cases that NRC has determined to be an acceptable alternative to the applicable parts of Section XI, subject to the limitations described above.

### 3.0 STAFF EVALUATION

#### 3.1 Summary of Information in Appendix A

The EPRI BWRVIP identifies the purpose of Appendix A of BWRVIP-108NP and BWRVIP-241, as a TR which can satisfy the technical information requirements of 10 CFR 54.21(a) and (c), 10 CFR 54.22, and 10 CFR 54.29(a). The NRC staff review and acceptance for use of Appendix A would provide BWR applicants the option to incorporate TRs BWRVIP-108NP and BWRVIP-241 by reference in plant-specific IPA and TLAAs, and include this information in their LRAs. Specifically, if a BWR license-renewal applicant confirms that BWRVIP-108NP or BWRVIP-241 are applicable to their facility's CLB, and the results of the Appendix A evaluations confirm that the IPA and TLAA evaluations that are required for license renewal are satisfied, then no further review by the NRC staff of the matters described in TRs BWRVIP-108NP or BWRVIP-241 is needed for license renewal. As such, Appendix A accomplishes the following general objectives with respect to compliance with the LR Rule:

- Section A.1 describes the nozzle-to-vessel weld and the nozzle blend radii in BWRs and the intended functions
- Section A.2 describes nozzles subject to aging management
- Section A.3 describes the aging effects and inspection programs applicable to the nozzles
- Section A.4 discusses the topic of TLAAAs for BWR nozzles
- Section A.5 discusses the topic of regulatory exemptions for BWR nozzles
- Section A.6 describes technical specification changes or additions needed for aging management of BWR nozzles
- Section A.7 describes what is needed to demonstrate that activities will continue to be conducted in accordance with the CLB and the requirements of 10 CFR 54.29
- Section A.8 provides references used in Appendix A

Appendix A, Sections A.1 through A.7, provide guidance for each of the above objectives. The NRC staff's review of Appendix A is provided below.

#### 3.2 Staff Evaluation of Appendix A

The methodologies used in TRs BWRVIP-241 and BWRVIP108-NP were evaluated and conditionally endorsed by NRC staff, subject to the limitations discussed in Section 5.0 of each of the SEs. The staff does not intend to repeat its evaluation of these TRs, this evaluation will assess how TRs BWRVIP-241 and BWRVIP-108NP, as supplemented by Appendix A, can be used as part of a plant-specific IPA and TLAA for complying with the requirements in 10 CFR Part 54.

The NRC staff noted that Appendix A provides generic guidance which license renewal applicant(s) can use in their LRA(s) to demonstrate compliance with 10 CFR Part 54, if they also choose to implement ASME Code Case N-702. In its review of Section A.2 for Appendix A, the staff noted that EPRI BWRVIP referenced Nuclear Energy Institute (NEI) publication NEI 95-10 "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule," Revision 0, March 1996, where Appendix A provides guidance in identifying the nozzles as passive and long-lived components. Appendix A further states that for nozzles greater than 2 inches, this screening methodology is not needed and nozzles having a diameter greater than 2 inches are subject to an aging management review. The NRC staff noted that Revision 6 of NEI 95-10 was issued in June 2005 (ADAMS Accession No. ML051860406,

Reference 5). This latest revision was endorsed by NRC staff as acceptable for use in implementing the license renewal rule, as discussed in Regulatory Guide (RG) 1.188, "Standard Format and Content for Application to Review Nuclear Power Plant Operating Licenses," Revision 1, September 2005 (ADAMS Accession No. ML051920430, Reference 6). The staff further noted that all RPV nozzles regardless of size should be considered for aging management review.

By letter dated October 14, 2015, the staff issued an RAI requesting EPRI BWRVIP provide the following:

1. Explain why Appendix A is referencing an old guidance document (NEI 95-10, Revision 0), which has been revised since it was first issued.
2. If it is the intent of Appendix A to state that nozzles 2 inches and smaller are not subject to aging management review, explain why these nozzles should not be subject to aging management review.
3. Identify nozzle(s), two inches and smaller that will rely on BWRVIP-108-A and BWRVIP-241-A for future licensing applications.

By letter dated July 19, 2016, EPRI BWRVIP provided its response to the staff's RAI. In its response to part 1 of the RAI, EPRI BWRVIP stated that for the purposes of Appendix A, for referenced sections of NEI 95-10 there were no differences in Revision 0 and Revision 6 of NEI 95-10. EPRI BWRVIP stated that regardless, the references will be revised to the most recent NEI 95-10, Revision 6. The NRC staff finds this acceptable, because the revised Appendix A will reference the most recent staff endorsed industry guidance document which an applicant may use for implementation of 10 CFR Part 54, as discussed in RG 1.188. In its response to part 2 of the RAI, EPRI BWRVIP stated that it was not the intent of Appendix A to place a limitation on components subject to aging management. EPRI BWRVIP further stated that all RPV nozzles are considered long-lived and passive and are within the scope of license renewal. EPRI BWRVIP proposed to revise Section A.2 of Appendix A as follows:

Paragraph 54.21(a)(1) of the rule provides the requirements for identifying if the nozzles are subject to aging management review. To satisfy the requirements of 54.21(a)(1), the guidance provided in the NEI industry guideline (Reference A2) was used to identify passive components and then to identify those that are long-lived. For the RPV nozzles, a screening methodology was not needed to make this determination. All RPV nozzles are passive and long-lived and are subject to an aging management review. However, the scope of components addressed by BWRVIP-108 and BWRVIP-241 and subject to the alternative examination requirements of ASME Code Case N-702 is limited to RPV full penetration welded nozzles.

The NRC staff finds the proposed revision acceptable, because it provides the needed clarification that all RPV nozzles are subject to aging management review.

In its response to part 3 of the RAI, EPRI BWRVIP stated that the decision to seek a renewed license, as well as the request to use the alternative provided by Code Case N-702 are voluntary. Therefore, the BWRVIP cannot provide a list of BWR pressure vessel nozzles that have in the past or will in the future rely on TRs BWRVIP-241 and BWRVIP-108NP, and request an alternate to the examination requirements of ASME B&PV Code, Section XI, Examination

Category B-D. EPRI BWRVIP further stated that in general, the list of nozzles that are potentially two inches and smaller and also are classified under Examination Category B-D include various instrument nozzles, standby liquid control nozzles, and bottom head drain nozzles. The EPRI BWRVIP stated that although it believes that TRs BWRVIP-241 and BWRVIP-108NP may be used for any of these nozzles, Code Case N-702 only provides a benefit in reduced examinations when there are multiple nozzles of the same size within the same system. The EPRI BWRVIP also stated that it is likely that use of Code Case N-702 would only be beneficial for the instrument nozzles with full penetration welds.

The NRC staff notes that for past requests to apply Code Case N-702 using the two TRs, the RPV nozzles affected by these requests have always been reviewed by the NRC staff on a plant-specific basis. Therefore, the response of providing general information without actual guidance on small nozzles (i.e.,  $\leq 2$  inches) is acceptable, because the NRC staff will continue to review the affected components (nozzles) for future requests on a plant-specific basis.

License renewal applicants are required by 10 CFR 54.21 to include in the LRA all analyses in the CLB that conform to the six criteria in 10 CFR 54.3(a) for defining an analysis as a TLAA. For those BWR license renewal applicants with a CLB that includes analysis conforming to the definition of TLAA, the applicant shall: (a) include the TLAA in the LRA in accordance with 10 CFR 54.21(c)(1); (b) demonstrate that the TLAA will be acceptable for the period of extended operation in accordance with 10 CFR 54.21(c)(1)(i), (ii), or (iii); and (c) include an FSAR, UFSAR or USAR supplement summary description for the TLAA in the LRA, as required in accordance with 10 CFR 54.21(d).

### 3.3 Use and Referencing of Appendix A and TRs BWRVIP-241 or BWRVIP-108

License renewal applicants for BWR facilities that can confirm that the technical information in TRs BWRVIP-241 or BWRVIP-108-NP is applicable to the design of their facility may reference the use of the TRs in their LRA(s), provide disposition of any applicable TLAAs, and choose to use the screening methodology described in License Renewal Appendix A. This will provide the staff the needed information to review the basis for managing the age-related degradation that may occur in the BWR nozzles during the period of extended operation. In this case, the applicant may reference the TRs as part of the set of NRC-endorsed BWRVIP reports that form the basis of their aging management programs and may rely on the License Renewal Appendix A of the TRs for demonstrating compliance with Section 54.21(a)(3) of LR Rule. Under such circumstances, the NRC staff intends to rely on the evaluation in this LR-SE and the staff's SEs approving the use of Code Case N-702 for BWR LR applicants.

## 4.0 LIMITATIONS AND CONDITIONS

As stated earlier, ASME B&PV Code Case N-702 has been conditionally approved for BWRs in the latest revision of RG 1.147, with the following conditions:

The technical basis supporting the implementation of this Code Case is addressed by BWRVIP-108: BWR Vessel and Internals Project, "Technical Basis for the Reduction of Inspection Requirements for the Boiling Water Reactor Nozzle-to-Vessel Shell Welds and Nozzle Blend Radii," EPRI Technical Report 1003557, October 2002 (ADAMS Accession No. ML023330203), and BWRVIP-241: BWR Vessel and Internals Project, "Probabilistic Fracture Mechanics Evaluation for the Boiling Water Reactor Nozzle-to-Vessel Shell Welds and Nozzle Blend Radii," EPRI Technical Report 1021005, October 2010



(ADAMS Accession No. ML11119A041). The applicability of Code Case N-702 must be shown by demonstrating that the criteria in Section 5.0 of NRC staff Safety Evaluation regarding BWRVIP-108 dated December 19, 2007 (ADAMS Accession No. ML073600374), or Section 5.0 of NRC Safety Evaluation regarding BWRVIP-241 dated April 19, 2013 (ADAMS Accession No. ML13071A240), are met. The evaluation demonstrating the applicability of the Code Case shall be reviewed and approved by the NRC prior to the application of the Code Case.

As an example, by letter dated June 4, 2015 (ADAMS Accession No. ML 15166A037), Entergy Nuclear Operations, Inc., (Entergy) submitted a request to use ASME B&PV Code Case N-702 as an alternative to the requirements of ASME B&PV Code, Section XI at Pilgrim Nuclear Power Station (PNPS). In this example Entergy provided plant specific information for PNPS, which documented the applicability of BWRVIP-241 to PNPS. The staff verified that PNPS met the conditions in Section 5.0 of staff's SE regarding BWRVIP-241, and approved Entergy's request by letter dated January 5, 2016 (ADAMS Accession No. ML15338A309).

Each BWR licensee seeking an alternate to ASME B&PV Code, Section XI, Examination Category B-D by using ASME B&PV Code Case N-702, will be required to seek approval prior to using the alternate, pursuant to 10 CFR 50.55a(z). This would apply to a licensee with a renewed operating license, regardless of use of Appendix A and TRs BWRVIP-241 or BWRVIP-108NP in its LRA during license renewal reviews.

## 5.0 CONCLUSION

The staff has reviewed the License Renewal Appendix A, as supplemented by letter dated July 19, 2016, and on the basis of its review, as set forth above, the staff concludes that the License Renewal Appendix A provides a reasonable means for LR applicants who wish to continue use of ASME Code Case N-702 during the PEO to include the necessary information in the LRA. Any BWRVIP member utility may reference this report in an LRA to satisfy the information requirements of 10 CFR 54. However, each BWR licensee seeking an alternate from ASME B&PV Code, Section XI, Examination Category B-D by using ASME B&PV Code Case N-702, will be required to seek approval prior to using the alternate, pursuant to 10 CFR 50.55a(z).

## 6.0 REFERENCES

1. Letter, Sher Bahadur (U.S. Nuclear Regulatory Commission) to Dennis Madison (EPRI BWRVIP), "*Final Safety Evaluation of the Boiling Water Reactor Vessel Internals Project (BWRVIP)-214 Report, Probabilistic Fracture Mechanics Evaluation for the Boiling Water Reactor Nozzle-to-Vessel Shell Welds and Nozzle Blend Radii*" (TAC No. ME6328)," April 19, 2013 (ADAMS Package Accession No. ML13071A35).
2. Letter, Mathew A. Mitchell (U.S. Nuclear Regulatory Commission) to Rick Libra (EPRI BWRVIP), "*Safety Evaluation of Proprietary EPRI Report, BWR Vessel and Internals Project, Technical Basis for the Reduction of Inspection Requirements for the Boiling Water Reactor Nozzle-to-Vessel Shell Welds and Nozzle Inner Radius (BWRVIP-108)*," December 19, 2007 (ADAMS Accession No. ML073600374).
3. Letter, Dennis Madison, (EPRI BWRVIP) to Joseph Holonich (U.S. Nuclear Regulatory Commission), "*Appendix A, BWR Nozzle Radii and Nozzle-to-Vessel Welds Demonstration of Compliance with the Technical Information Requirements of the*

*License Renewal Rule (10 CFR 54.21)*,” October 10, 2012 (ADAMS Accession No. ML12290A017).

4. Letter, Andrew McGehee and Tim Hanley, (EPRI BWRVIP) to Joseph Holonich (U.S. Nuclear Regulatory Commission), “*BWRVIP Response to NRC Request for Additional Information on Appendix A to BWRVIP-241*,” July 19, 2016 (ADAMS Accession No. ML16210A194).
5. Nuclear Energy Institute Technical Report No. NEI-95-10, Revision 6, “*Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule*,” June 2005 (ADAMS Accession No. ML051860406).
6. Regulatory Guide 1.188, “Standard Format and Content for Application to Review Nuclear Power Plant Operating Licenses,” Revision 1, September 2005 (ADAMS Accession No. ML051920430).

Attachment: Table: Comments and Staff Resolution

Principle Contributors:	Roger Kalikian Division of Engineering	Simon Sheng Division of Engineering
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Date: March 24, 2017

Table: Comments and Staff Resolution

Comment No.	Draft SE Location	Comment Type	Comment	NRC's Response
1	All headers and footers	Clarification	The "Official Use Only – Proprietary Information" headers and footers can be removed as the SE does not contain any EPRI proprietary information.	Markings were removed.
2	Pg. 1, Line 2	Editorial	Delete the "-A" in BWRVIP-241-A as a "-A" version of BWRVIP-241 has not yet been published.	Agreed. Text changed.
3	Pg. 1, Line 3	Editorial	Probabilistic is misspelled.	Misspelling corrected.
4	Pg. 1, Line 5	Editorial	Delete the "-A" in BWRVIP-108NP-A as a "-A" version of BWRVIP-1008NP has not yet been published.	Agreed. Text changed
5	Pg. 1, Line 7	Editorial	Add "RADII" to the end of the title.	Term added.
6	Pg. 3, Line 3	Editorial	Correct typo, "TPs" should be "TRs."	Corrected.
7	Pg. 3, Line 39	Editorial	Correct typo, "CFF" should be "CFR."	Corrected.
8	Pg. 5, Line 39	Editorial	There is a space missing in between the "2" and "inches."	Space added.
9	Pg. 5, Lines 38 to 40	Accuracy	Depending upon the response to comment 10 below, this statement may not be accurate.	Agreed, corrected
10	Pg. 7 Section 4.0, last paragraph, first sentence	Accuracy	This statement is not accurate. Code Case N-702 is now conditionally approved for use in RG 1.147, Rev. 17. Therein, it does require that an evaluation demonstrating applicability of the Code Case shall be reviewed and approved by the NRC prior to the application of the Code Case, however, that does not mean that a relief request must be submitted. By conditionally approving N-702 in RG 1.147, the NRC has already approved the technical alternative and only	Agreed, corrected

			documentation of the plant-specific applicability of the Code Case needs be submitted to the NRC for review and approval. The primary purpose of endorsing Code Cases in RG 1.147 is to preclude the need for relief requests.	
11	Pg. 7, Section 5.0, last sentence	Accuracy	Comment 10 also applies to the last sentence of the conclusions.	Agreed, corrected