ELECTRIC POWER RESEARCH INSTITUTE

2009-008 BWR Vessel & Internals Project (BWRVIP)

January 9, 2009

Chief Financial Officer
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Subject: Withdrawal of Request for Exemption of NRC Review Fees for "TR-105969-R10 (BWRVIP-03) Revision 10: BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines"

Reference: Letter from Rick Libra (BWRVIP Chairman) to Chief Financial Office (NRC), "Request for Exemption of NRC Review Fees for "TR-105969-R10 (BWRVIP-03) Revision 10: BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines," dated February 12, 2008.

The purpose of this letter is to withdraw the request for exemption of NRC review fees for "TR-105969-R10 (BWRVIP-03) Revision 10: BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines" transmitted to the NRC Chief Financial Officer by the letter referenced above (copy enclosed).

With this withdrawal, the BWRVIP report "TR-105969-R10 (BWRVIP-03) Revision 10: BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines" should be considered as provided to the NRC for information only and no NRC action is requested or expected.

If you have any questions on this subject please contact Chuck Wirtz (FirstEnergy, BWRVIP Integration Committee Technical Chairman by telephone at 440.280.7665 or by e-mail at cjwirtz@firstenergycorp.com.

Sincerely,

Rick Libra

Rick Libra
Exelon
Chairman, BWR Vessel and Internals Project

c: Vanice Perin, NRC
Matt Mitchell, NRC
Terence Chan, NRC
Chuck Wirtz, FirstEnergy
Randy Stark, EPRI

ELECTRIC POWER RESEARCH INSTITUTE

2008-050 BWR Vessel & Internals Project (BWRVIP)

February 12, 2008

Chief Financial Officer
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Subject: Request for Exemption of NRC Review Fees for "TR-105969-R10 (BWRVIP-03) Revision 10: BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines" ("Needed" in Accordance with NEI 03-08)

The purpose of this letter is to request that the document entitled "TR-105969-R10 (BWRVIP-03) Revision 10: BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines" be exempt from NRC review fees in accordance with 10CFR170.11(a)(1)(iii).

The (BWRVIP-03) Revision 10 document was submitted to the NRC by the letter enclosed as Attachment 1, which indicates that the document was submitted as a means of exchanging information for the purpose of supporting generic regulatory improvements. The basis for the exemption of BWRVIP documents from NRC review fees is described in the letter to the NRC enclosed as Attachment 2.

If you have any questions on this subject please contact Chuck Wirtz (FirstEnergy, BWRVIP Inspection Focus Group Chairman) at 440.280.7665 or by e-mail at cjwirtz@firstenergycorp.com

Sincerely,

Rick Libra

Rick Libra
Exelon
Chairman, BWR Vessel and Internals Project

c: Matt Mitchell, NRC
Holly Cruz, NRC
Jon Thompson, NRC
Chuck Wirtz, FirstEnergy
Randy Stark, EPRI

Attachment 1

ELECTRIC POWER RESEARCH INSTITUTE

2008-048 BWR Vessel & Internals Project (BWRVIP)

February 12, 2008

Document Control Desk
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Attention: Jon Thompson

Subject: Project No. 704 – TR-105696-R10 (BWRVIP-03) Revision 10: BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines

Enclosed are five (5) CD copies of the report "TR-105696-R10 (BWRVIP-03) Revision 10: BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines," EPRI Technical Report 1014993, December 2007. In accordance with NRC requirements, one of enclosed CDs is unprotected and is labeled as such. The other four (4) CDs are protected. This report is being transmitted as a means of exchanging information with the NRC for the purpose of supporting generic regulatory improvements related to inspections of BWR internals.

BWRVIP-03 is a living document that is updated periodically as inspection technology evolves. The "History of Changes to this Document Revision 10" section identifies the changes that supersede affected portions of the previous Revision 9. The enclosed CDs contain a complete copy of Revision 10 that is being published on CD only.

Please note that the enclosed report contains proprietary information. A letter requesting that the report be withheld from public disclosure and an affidavit describing the basis for withholding this information are provided as Attachment 1.

Two paper copies of the non-proprietary report "TR-105696-R10 (BWRVIP-03NP) Revision 10: BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines," EPRI Technical Report 1014993, December 2007, are also enclosed. This non-proprietary report is identical to the enclosed proprietary report except that the proprietary information has been deleted and the letters "NP" appear in the BWRVIP report number.

If you have any questions on this subject please call Chuck Wirtz (FirstEnergy, BWRVIP Inspection Focus Group Chairman) at 440.280.7665.

Sincerely,

Rick Libra

Rick Libra
Exelon
Chairman, BWR Vessel and Internals Project

Attachment 2

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

2007-307 BWR Vessel & Internals Project (BWRVIP)

October 22, 2007

Michele G. Evans
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Subject: NRC Review of BWRVIP Guidelines

The purpose of this letter is to provide the NRC with a historical perspective on the relationship between the BWR Vessel and Internals Project (BWRVIP) and the NRC and to request that the NRC review of BWRVIP guidelines continue to be exempt from NRC review fees.

Enclosed is a document entitled "Historical Perspective on the Relationship between the BWR Vessel and Internals Project (BWRVIP) and the NRC." This paper provides the background of the formation and genesis of the BWRVIP, the origin of the relationship between the BWRVIP and the NRC, a summary of BWRVIP guidelines submitted to the NRC, the basis for the NRC to approve BWRVIP guidelines in lieu of regulation, and a conclusion that the NRC reviews of BWRVIP guidelines continue to be exempt from NRC review fees.

The BWRVIP and the NRC have been working together since the inception of the BWRVIP in 1994 to address degradation of BWR internal components not previously subject to NRC regulation. This process has worked well to address the evolving issues in an effective and efficient manner that has minimized NRC and industry resources while protecting the health and safety of the public.

Based on the successful performance of the industry and NRC in achieving these goals, the BWRVIP requests that the NRC continue to review BWRVIP guidelines submitted to the NRC as a means of exchanging information for the specific purpose of supporting generic regulatory improvements without charging NRC review fees.

If you have any technical questions on this subject please contact Chuck Wirtz (FirstEnergy, BWRVIP Integration Committee Technical Chairman) by telephone at 440.280.7665 or by e-mail at cjwirtz@firstenergycorp.com

Sincerely,

Rick Libra

Rick Libra
Exelon
Chairman, BWR Vessel and Internals Project

c: Matt Mitchell, NRC
Chuck Wirtz, FirstEnergy
Randy Stark, EPRI

Historical Perspective on the Relationship between the BWR Vessel and Internals Project (BWRVIP) and the NRC

Executive Summary

In response to increasing evidence that Intergranular Stress Corrosion Cracking (IGSCC) was occurring in reactor vessel internals, US BWR executives formed the BWR Vessel and Internals Project (BWRVIP) to proactively deal with this issue by applying lessons learned from BWR pipe cracking. This effort was a voluntary industry initiative to address integrity issues arising from service-related degradation of major components. The BWRVIP has established an efficient and effective framework for dealing with BWR vessel and internals, and piping degradation issues which actively engages the NRC and continues to develop generic guidelines for the BWR industry to implement.

The BWRVIP program is implemented by the industry and has been demonstrated to be an effective means to address BWR internals degradation issues that are not addressed by the ASME Code or by NRC regulations. BWRVIP also continues to work in managing IGSCC issues in piping as well. Thus, the BWRVIP makes efficient use of industry and NRC resources while protecting the health and safety of the public. The BWR industry is committed to continuing the BWRVIP process and approach, and based on the demonstrated results documented herein, it is it is expected that the exemption from fees for NRC review of BWRVIP documents will continue for the life of the program. The BWRVIP will continue to submit documents to the NRC in accordance with 10CFR170.11 (a)(1)(iii) as a means of exchanging information for the purpose of supporting generic regulatory improvements or efforts. Consistent with 10CFR170.11 (a)(1)(iii)(A)(3), all future BWRVIP document submittals to the NRC for review will be accompanied with a review fee exemption request in writing to the NRC Chief Financial Officer.

This paper provides a historical perspective on the relationship between the BWR Vessel and Internals Project (BWRVIP) and the NRC.

Background

Intergranular stress corrosion cracking (IGSCC) occurred in BWR primary system piping in the 1980s that resulted in significant costs, outage durations, personnel radiation doses and capacity factor losses. These primary piping systems were designed and inspected in accordance with the ASME Code and are governed by NRC regulations. Events in 1993-1994 confirmed that IGSCC could become a significant issue for BWR internals. Unlike BWR primary system piping, most BWR internal components are not designed or inspected in accordance with the ASME Code and are not required to be inspected by NRC regulations.

Based on experience with primary system piping IGSCC, U. S. BWR utility executives proactively formed the BWRVIP in 1994 with the Electric Power Research Institute (EPRI) as program manager to address integrity issues arising from service-related degradation of BWR internal components. The initial goal of the BWRVIP was to develop and maintain a comprehensive program that allows utilities to manage degradation associated with the reactor vessel and internal components. The charter was later updated to include primary pressure boundary piping to its scope as well. The program addresses structural assessment, inspection, repair and mitigation for service-related degradation. Each of these four areas addresses the following issues:

Assessment: identify what needs to be inspected, when the inspections should be performed, what type of inspection needs to be conducted and how observed degradation is dispositioned.

Inspection: determine how inspections should be performed, what equipment and techniques should be used and identify relative levels of accuracy and detail that can be achieved by various method/techniques on a component basis.

Repair/replace: develop alternate repair approaches, welding options and define design criteria that must be met when repair or replacement is performed.

Mitigation: determine how stress corrosion cracking can be prevented or reduced.

All U. S. BWR utilities and most international BWR utilities are members of the BWRVIP.

BWRVIP Relationship with NRC

At the earliest stages of the formation of the BWRVIP, the BWRVIP established a working relationship with the NRC through the Office of Nuclear Reactor Regulation. Included within this relationship were agreements on how to deal with commitments that came out of the program since no NRC regulations existed for governing the BWR internal components. As a first step in the process, BWRVIP established a priority for the work to be conducted based on relative risk and operational impact. NRC reviewed and agreed with this approach. Thus, in lieu of the NRC undertaking the time consuming and resource intensive efforts to establish regulatory guidance to deal with degradation of BWR internals, the BWRVIP took the lead in developing generic industry solutions for BWR vessel internals degradation. The BWRVIP submitted the results of the technical evaluations or in some cases laboratory studies in the form of various guidelines (e.g. inspection, repair, mitigation, etc.) to the NRC for concurrence. The BWRVIP supported the NRC's review by responding to requests for additional information. In return the NRC provided a safety evaluation documenting their concurrence with the technical approaches the BWRVIP members would use.

As part of the agreements established between the BWRVIP and the NRC, the fees associated with the NRC review of the generic voluntary initiative documents (e.g., BWRVIP guidelines) were determined to be exempt under what is now 10CFR170.11 (a)(1)(iii) as a means of exchanging information for the purpose of supporting generic regulatory improvements or efforts. This agreement has been followed for all BWRVIP documents submitted to the NRC.

These agreements between the NRC and EPRI were discussed and established initially by Don Brinkman, Senior Project Manager, NRR and Robin Dyle, Technical Chair, BWRVIP Integration Committee and are reflected in the early BWRVIP transmittal letters to the NRC. For example, BWRVIP letter 95-454, "BWRVIP Vessel and Internals Project, BWR Reactor Pressure Vessel Shell Weld Inspection Recommendation (BWRVIP-05), EPRI TR-105697, September 28, 1995" and BWRVIP letter 95-466, "BWR Vessel and Internals Project, Guide for Format and Content of Core Shroud Repair Design Submittal (BWRVIP-04), EPRI TR-105692, October 5, 1995". This practice of the BWRVIP documents meeting the NRC review fee exempt status of 10CFR170.11 continues to this day.

Recognizing that the program was serving in lieu of NRC promulgating regulations, the utilities of the BWRVIP committed to the NRC to implement the guidelines produced by the BWRVIP at their BWRs. The BWRVIP utility commitment to the NRC has been transmitted to the NRC by the BWRVIP letter 97-461, "BWR Utility Commitments to the BWRVIP," May 30, 1997 and 96-870, "BWRVIP Utility Commitments to the BWRVIP," October 30, 1997. The value to the NRC of this commitment by the utilities and the understanding of these commitments by the NRC were acknowledged in NRC letter, "BWR Utility Commitments to the BWRVIP," July 29, 1997 from Brian W. Sheron, Director of Division of Engineering in the Office of NRR to Carl Terry, BWRVIP Chairman. In this letter it notes that: a) the BWRVIP has a commendable record of addressing degradation of BWR internal components; b) the "generic documents involve voluntary initiatives to assess and mitigate age-related degradation issues of BWR internals that are not covered under the ASME Code"; c) stated that "NRC staff believes it important to continue working with the industry on a generic basis in an effort to optimize the use of industry and NRC staff resources to appropriately resolve age-related degradation issues"; d) closes with "The BWRVIP has been active in working with the NRC staff to develop appropriate requirements for inspection and repair of BWR internals..." and "NRC staff believes that the cooperative efforts to resolve safety issues benefits everyone. I encourage you to continue with these efforts..."

These letters demonstrate that the BWRVIP and the NRC have consistently and openly communicated from the early stages of the BWRVIP program to this date. This has resulted in the identification of actions and improved communications with the public in developing industry generic regulatory commitments that help ensure public health and safety.

The initial efforts of the BWRVIP were recognized in the industry's response to Generic letter 94-03, "Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water

Reactors," July 25, 1994, which required licensees to inspect their shrouds and provide an analysis justifying continued operation until inspections could be completed. These efforts are documented in "Prioritization of Generic Safety Issues (NUREG 0933), Appendix D, GA-001." The BWRVIP efforts are noted as instrumental in facilitating licensee responses to GL 94-03. The NRC evaluated the BWRVIP reports submitted in 1994 and early 1995. All of the plants evaluated were able to demonstrate and provide sufficient evidence to support continued safe operation of their BWR units to their next refueling outages in which shroud inspections or repairs have been scheduled. Brian Sheron, Director of Division of Engineering in the Office of NRR further acknowledged these efforts during the February 1, 1995 Commission briefing where he presented the NRC view regarding the industry's response to GL 94-03 and used the BWRVIP work as a basis for staff comfort and noted that the NRR has requested the BWRVIP to develop a comprehensive plan to address potential cracking of all BWR internals.

The BWRVIP has established a process for utilities to use when it is necessary to take exemption from implementing guidelines developed through the BWRVIP program. Utilities do this by developing the technical bases for the exemption and completing a "Deviation Disposition" that is approved at executive levels. The owners submit the 'Deviation Disposition' to the BWRVIP. The deviation disposition identifies the BWRVIP document from which the utility is deviating, the technical reasons for the acceptability of the deviation and the actions the utility will be taking in lieu of the BWRVIP document and the duration of the deviation. In addition, the utilities are required to inform the NRC of the deviation they have submitted to the BWRVIP. This process has worked well and demonstrates the continued communication between utilities, the BWRVIP and the NRC.

Industry Documentation on BWRVIP

The following are examples of industry documentation on the benefits experienced through the implementation of the BWRVIP products.

- The use of voluntary industry initiatives (e.g. BWRVIP) to address technical issues and develop generic resolutions for the industry to implement in lieu of regulatory action has been advocated by the NRC in the past, specifically in SECY-99-063, "The Use by Industry of Voluntary Initiatives in the Regulatory Process," March 2, 1999. The NRC acknowledged that this process can result in net resource savings for both the industry and the NRC. For example, through the reduction of generic communications issued by the NRC, fewer resources have been required by the NRC to develop the generic letters, fewer resources have been required by utilities in responding or commenting to generic letters and fewer resources are required for the NRC to address the responses by utilities to generic letters. The NRC further noted the importance for the staff to continue interacting with the BWRVIP and individual licensees in the effort to lower the number of industry and staff resources that will be needed to continue the proactive efforts to resolve IGSCC of BWR internals.

- The value of industry initiatives is further confirmed by the NRC in SECY-99-143, "Revisions to Generic Communication Program," May 26, 1999, where it acknowledges the value of early interaction with industry on potential generic issues and encourages the use of industry initiatives. Again in SECY 00-0116, "Industry Initiatives in the Regulatory Process," May, 30 2000, the NRC discusses the advantages of voluntary initiatives and the success it can bring, using again the BWRVIP as an example program. Ultimately the concept of Voluntary Industry Initiatives (DSI-13) was canceled based on comments regarding lack of backfit protection and concern about NRC "enforcing voluntary programs". While this was not an issue that created problems for the BWRs or NRC, the NRC stopped its broader generic efforts to institutionalize the Voluntary Industry Initiative concept; however, they continued to work with the BWRVIP and have periodically suggested that the PWR owners consider use of a similar approach.
- The BWRVIP program has also established working relationships with Institute of Nuclear Power Operations (INPO) to support their efforts in promoting the highest levels of safety, reliability and excellence in the operation of nuclear electric generating plants. In August 2001 the BWRVIP published, "BWR Vessel and Internals Project, Program Implementation Guide (BWRVIP-94)," and requested that INPO conduct "Review Visits" to review the adequacy, timeliness and consistency of the implementation of the BWRVIP products at each BWR facility. The continued assessments by INPO and the BWRVIP on the utilities' implementation of the BWRVIP programs since 2001 has identified valuable lessons learned and feedback from plant operating experience. The BWRVIP has continued to convert these lessons into updated recommendations for improving nuclear power plant operations and incorporated them into the BWRVIP program. The NRC has acknowledged that the BWRVIP program provides an acceptable level of quality assurance of the safety-related components addressed in letter "Utility Implementation of BWRVIP Products," May 8, 2002.
- Additional value of the application of the BWRVIP products is demonstrated through NUREG-1801, "Generic Aging Lessons Learned (GALL) Report". The staff developed the GALL report to document the staff's evaluation of generic existing programs that could be augmented to improve the efficiency of the license renewal process. In this report, the BWRVIP programs are recognized as aging management tools which can be used in the license renewal process for applicants to help demonstrate reasonable assurance that they have been effective in managing the effects of aging on the functionality of structures and components during the period of extended operation.

Status

The BWRVIP has submitted guidelines for managing the degradation of most internal components and continues to develop additional guidelines as needed. For example, the BWRVIP is in the process of developing additional guidelines for managing degradation of steam dryers, including guidance for newly identified loading phenomena. The BWRVIP guidelines that have been developed and that are being developed are shown in the table below (by BWRVIP report number).

Component	Assessment Guidelines	Inspection Guidelines	Repair/Replace Guidelines	Mitigation Guidelines
Core shroud	BWRVIP-76	BWRVIP-03	BWRVIP-02-A BWRVIP-04-A	BWRVIP-62
Core spray	BWRVIP-18-A	BWRVIP-03	BWRVIP-16-A BWRVIP-19-A BWRVIP-34	N/A
Shroud support	BWRVIP-38	BWRVIP-03	BWRVIP-52-A	BWRVIP-62
Top guide	BWRVIP-26-A	BWRVIP-03	BWRVIP-50-A	N/A
Core plate	BWRVIP-25	BWRVIP-03	BWRVIP-50-A	BWRVIP-62
SLC	BWRVIP-27-A	BWRVIP-03	BWRVIP-53-A	BWRVIP-62
Jet pump assembly	BWRVIP-41	BWRVIP-03	BWRVIP-51-A	BWRVIP-62
CRD guide/stub tube	BWRVIP-47-A	BWRVIP-03	BWRVIP-17 BWRVIP-55-A BWRVIP-58-A	BWRVIP-62
In-core housing/dry tube	BWRVIP-47-A	BWRVIP-03	BWRVIP-17 BWRVIP-55-A	BWRVIP-62
Instrument penetrations	BWRVIP-49-A	BWRVIP-03	BWRVIP-57-A	BWRVIP-62
LPCI coupling	BWRVIP-42-A	BWRVIP-03	BWRVIP-56-A	N/A
Vessel ID brackets	BWRVIP-48-A	BWRVIP-03	BWRVIP-52-A	BWRVIP-62
Reactor Pressure Vessel	BWRVIP-74*	N/A	N/A	N/A
Primary system piping	BWRVIP-75-A	N/A	N/A	N/A
Steam dryer	BWRVIP-139	BWRVIP-03	TBD**	N/A
Access Hole Cover	TBD**	BWRVIP-03	TBD**	BWRVIP-62

*For License Renewal
**To Be Determined

Summary

In response to increasing evidence that Intergranular Stress Corrosion Cracking (IGSCC) was occurring in reactor vessel internals, US BWR executives formed the BWR Vessel and Internals Project (BWRVIP) to proactively deal with this issue by applying lessons learned from BWR pipe cracking. The program was formed as a voluntary industry initiative. The BWRVIP has established an efficient and effective framework for dealing with BWR vessel and internals, and piping degradation issues which actively engages the NRC and continues to develop generic guidelines for the BWR industry to implement. The NRC performs technical reviews on the documentation developed by the BWRVIP to ensure that public health and safety is protected and the BWR licensees have committed to implement the generic guidelines developed by the BWRVIP.

Conclusion

The BWRVIP and the NRC have been effectively and efficiently addressing degradation of BWR internal components through the process described above. The BWRVIP program is implemented by the industry and has demonstrated itself to be an effective means to address BWR internals degradation issues that are not addressed by the ASME Code or NRC regulation and thus makes efficient use of industry and NRC resources while protecting the health and safety of the public. The industry is committed to continue with the BWRVIP process and approach and based on the demonstrated results it is expected that the exemption from fees for NRC review of the BWRVIP documents will continue for the life of the program. The BWRVIP will continue to submit documents to the NRC in accordance with 10CFR170.11 (a)(1)(iii) as a means of exchanging information for the purpose of supporting generic regulatory improvements or efforts. Consistent with the latest update of 10CFR170.11 (a)(1)(iii)(A)(3), all future BWRVIP submittal of documents to the NRC for review will be accompanied with a review fee exemption request in writing to the NRC Chief Financial Officer.