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Division of Administrative Services
Company Office of Administration
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Message:

SUBJECT:
EPRI Boiling Water Reactor and Vessel Internals Project (BWRVIP) comments Regarding Draft Revision 2 of NUREG-1800 (SRP-LR) and NUREG-1801 (GALL Report)

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2010-148 BWR Vessel & Internals Project (BWRVIP)

June 29, 2010

Chief, Rulemaking and Directives Branch
Division of Administrative Services
Office of Administration
Mail Stop TWB-05-B01M
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: EPRI Boiling Water Reactor and Vessel Internals Project (BWRVIP) Comments Regarding Draft Revision 2 of NUREG-1800 (SRP-LR) and NUREG-1801 (GALL Report)

Based on a review of the draft revision 2 versions of NUREG-1800 and NUREG-1801 dated May 2010, the BWRVIP provides the following comments on content related to BWRVIP program implementation in the draft revision of the 2 documents:

1) NRC license renewal guidance documents should identify the BWRVIP as an issue program addressed by the NEI 03-08 materials initiative and should employ a flexible approach that recognizes periodic revisions and updates to the BWRVIP program. Further, it is not necessary for all of the documents supporting the NEI 03-08 materials management programs be submitted to the NRC for review and approval. Providing credit for the NEI 03-08 initiative within the SRP-LR and GALL Report is an efficient use of NRC and industry resources. Under the NEI 03-08 materials initiative, utility compliance is required, implemented via site procedures, covered under 10CFR50 Appendix B, and thus is subject NRC oversight. All deviations from "mandatory" or "needed" NEI 03-08 guidance are required to be reported to the NRC.

2) The BWRVIP is an active program. Program guidance and implementation requirements are based on relevant current operating experience, substantial field inspection data, and up to date research data. New program documents are routinely published and existing guidance documents are periodically revised as appropriate. When appropriate to address emergent issues, interim guidance is issued to member utilities. Therefore, it should be recognized that it is not feasible for the SRP-LR and GALL Reports to be kept up to date with the EPRI BWRVIP program. Further, member utilities are required to implement new guidance as a part of the NEI 03-08 initiative. Discrepancies between member utility BWRVIP program implementation and the program documents and requirements cited in the SRP-LR and

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GALL Report will necessarily result. When discrepancies occur, industry and NRC resources are unnecessarily expended on reconciliation of the differences. Instead, the BWRVIP maintains that license renewal guidance related to program implementation should focus on describing program elements and the related means of NRC oversight. Toward this objective, the BWRVIP recommends the following for implementation in the SRP-LR and GALL Report:

- It is appropriate to cite BWRVIP Inspection and Evaluation Guidelines that are submitted to the NRC for review and approval as effective aging management programs. However, where cited, the SRP-LR and GALL Report should stipulate "or latest NRC approved version".

- Inspection and Evaluation Guidelines submitted to the staff for review and approval, but which are not yet approved, can and should be cited in the SRP-LR and GALL Report. This is consistent with other documents which are not directly approved by the staff, but have been cited as bases for aging management.

- Water chemistry guidelines, although not submitted to the staff for review and approval, are addressed by the NEI 03-08 materials initiative. Compliance with water chemistry action levels is considered "needed" under the initiative and implemented by site procedures. Compliance is verified by Institute of Nuclear Power Operations during review visits.

- Other BWRVIP reports can be cited as supporting references, but should not be specifically credited for aging management in the SRP-LR or GALL Report. These include repair design criteria, crack growth rate evaluations, and other technical basis documents.

3) Aging management review line items and summary items included in the SRP-LR and GALL Report should address components and materials known to be typically used in the U.S. BWR fleet in passive and long-lived applications. In many cases, aging management review items in sections IV.A1 and IV.B1 of the GALL Report include component and material combinations not typical of the domestic BWR fleet. EPRI Report 1018111, "BWRVIP-167NP, Revision 1: BWR Vessel and Internals Project: Boiling Water Reactor Issue Management Tables" is a non-proprietary, publically available document developed by the BWRVIP that can be used by NRC staff to identify typical component and material combinations for BWR reactor vessel and reactor internals components.

4) In addition to the general comments provided in 1) through 3) above, Attachment A contains specific comments on those sections of the GALL Report associated with the BWRVIP area of responsibility. Comments are focused on aging management program sections. However,

some commentary on aging management review line items in Section IV.A1, IV.B1, and IV.C1 of draft revision 2 to the GALL Report is also provided. Although similar comments may be associated with SRP-LR content, the BWRVIP believes it to be redundant to comment on these SRP-LR items as well.

Any questions regarding these comments may be directed to Charles Wirtz (FirstEnergy, BWRVIP Integration Committee Technical Chairman) by phone at 440-280-7665 or email at cjwirtz@firstenergycorp.com.

Sincerely,

Dave Czufin
Exelon
Chairman, BWR Vessel and Internals Project

ATTACHMENT A

BWRVIP Comments on the Draft Revision 2 Versions of NUREG-1800 and NUREG-1801

Table A-1: Comments on Section XI.M2 of May 2010 Draft NUREG-1801: "Water Chemistry"

ID	Comment	Basis & Discussion
1	Some locations within NUREG-1800 and NUREG-1801 cite BWRVIP-29 or BWRVIP-130. These references should be replaced by BWRVIP-190 or, wherever possible, simply refer to the "EPRI BWR Water Chemistry Guidelines."	BWRVIP-190 is the current version of the EPRI BWR Water Chemistry Guidelines. This version represents the present state of industry knowledge regarding management of BWR water chemistry. As a minimum, all references to water chemistry guidance in NUREG-1801 should be revised to cite BWRVIP-190. However, the EPRI BWR Water Chemistry Guidelines are periodically revised to incorporate recent operating experience and to address new and improved mitigation techniques (e.g. online noblechem™. Based on NEI 03-08, owners are required to update their programs to the latest needed and mandatory guidance contained in these guidelines. Therefore, when possible, reference should be made to the "EPRI BWR Water Chemistry Guidelines." Otherwise, the reference citations for the EPRI BWR Water Chemistry Guidelines will become out of date relatively soon.
2	In the context of BWR chemistry, "primary water" should be changed to "reactor water". Applicable Section: Program Description	Reactor water is the descriptive term used in BWRVIP-190.

Table A-1: Comments on Section XI.M2 of May 2010 Draft NUREG-1801: "Water Chemistry"

ID	Comment	Basis & Discussion
3	The parameters monitored / inspected discussion should be simplified for BWRs to state that control parameters for reactor water include chloride, sulfate, conductivity, and ECP. These are the parameters important for aging management of the vessel and reactor internals. Where applicable, oxygen concentrations are also monitored to ensure that they remain in an acceptable range to address both FAC and SCC concerns. Other parameters are either used as diagnostic parameters only, or are associated with operations issues, not license renewal aging management.	BWRVIP-190 lists chloride, sulfate, conductivity, and ECP as the control parameters for reactor water chemistry. These controls are focused on mitigation of corrosion and SCC of the reactor internals, vessel components, and the reactor recirculation system. In addition, oxygen concentration is monitored for some specific system locations to ensure that low oxygen does not contribute to FAC of carbon steel components. Limits on iron and copper are associated with fuel clad performance concerns. Fuel is not within the scope of license renewal. As a result, these parameters should not be included in section XI.M2.
4	BWRVIP-62 (and the associated NRC Safety Evaluation - ML100850009) should be referenced within XI.M2 since this document provides a technical basis for BWRVIP inspection program modification associated with chemistry-based mitigation.	BWRVIP-62 represents an important aspect of aging management for BWR vessel and internals components by providing a technical basis for inspection program modifications for plants implementing hydrogen water chemistry and noble metal catalyst application. Although a "-A" version of BWRVIP-62 has not been published at this date, BWRVIP-62 has received a safety evaluation from NRC (ML100850009). BWRVIP-62 and the associated NRC Safety Evaluation can and should be referenced in Section XI.M2.

Table A-2: Comments on Section XI.M4 of May 2010 Draft NUREG-1801; "BWR Penetrations"

ID	Comment	Basis & Discussion
1	The preventive actions section discussion for water chemistry should simply refer to program XI.M2.	Specific reference to a version of the EPRI BWR Water Chemistry Guidelines and discussion regarding control parameter tables should be limited to XI.M2 and not be repeated in XI.M4.
2	The detection of aging affects section incorrectly states that the enhanced visual examination method is capable of achieving 1 mil wire resolution. It should state 1/2 mil wire resolution.	Section 3.1.2 of BWRVIP-48-A defines Enhanced VT-1 as a method capable of achieving 1/2 mil wire resolution.
3	All references to the NRC approved version of BWRVIP reports should be "-A". For example, "BWRVIP-48-A", rather than "BWRVIP-48A".	This occurs not only throughout the body of the program text, but also for other BWRVIP reports cited in the references section (e.g. BWRVIP-59 and BWRVIP-60).

Table A-3: Comments on Section XI.M6 of May 2010 Draft NUREG-1801: "Control Rod Drive Return Line Nozzle"

ID	Comment	Basis & Discussion
1	This program is not generically applicable to the domestic BWR fleet and should be removed from the GALL Report.	In regards to thermal fatigue of the CRD return line nozzle, BWRVIP-74-A states: *"The CRD return line nozzles in nearly all domestic plants which had them were capped, thus eliminating the concern for those components."* If not all, the large majority of domestic BWR/3-6s have eliminated flow through their CRD return line nozzles by capping the nozzle, installation of a blind flange, or other method. NRC staff can verify this information for many BWRs through review of license renewal applications. For the BWR/2 units (i.e. Nine Mile Point Unit 1 and Oyster Creek Generating Station), the CRD return line nozzle has not been capped. NMP Unit 1 credited the ISI program in lieu of XI.M6 because the CRD return line nozzle thermal sleeve design at NMP Unit 1 makes the nozzle less susceptible to thermal fatigue cracking than the original designs used in other BWRs. Only Oyster Creek Generating Station has not capped the CRD return line nozzle and also credited XI.M6 in a license renewal application. However, the Oyster Creek Generating Station LRA indicates that exception is taken to the PT examination requirements of NUREG-0619, with UT examination used instead. Based on the above, cracking due to thermal fatigue cycling of the CRD return line nozzle is no longer a generic issue requiring aging management by the BWR fleet. Further, XI.M6 is not generally applicable to the domestic BWR fleet and should be removed from NUREG-1801 so that applicants need not address this program in license renewal submittals. Stress corrosion cracking of nickel alloy welds associated with CRD return line remains an aging management concern. However, stress corrosion cracking can be managed through program XI.M7, "BWR Stress Corrosion Cracking." Table TBD below provides EPRI BWRVIP comments regarding XI.M7, "BWR Stress Corrosion Cracking" program description.

Table A-4: Comments on Section XI.M7 of May 2010 Draft NUREG-1801: "BWR Stress Corrosion Cracking"

ID	Comment	Basis & Discussion
1	The preventive actions section discussion for water chemistry should simply refer to program XI.M2. Applicable Sections: Preventive Actions	Specific reference to a version of the EPRI BWR Water Chemistry Guidelines and discussion regarding control parameter tables should be limited to XI.M2 and not be repeated in XI.M7.
2	All references to the NRC approved version of BWRVIP reports should be "-A". For example, "BWRVIP-75-A", rather than "BWRVIP-75A".	This occurs not only throughout the body of the program text, but also for BWRVIP reports cited in the references section.

Table A-5: Comments on Section XI.M8 of May 2010 Draft NUREG-1801: "BWR Penetrations"

ID	Comment	Basis & Discussion
1	The program scope should be revised to include the CRD housing and incore-monitoring housing (ICMH) penetrations. These components are addressed by BWRVIP-47-A*. Also; NUREG-1801 item IV.A1.RP-370 should be revised to show the aging management program to be XI.M8, "BWR Penetrations" and XI.M2, "Water Chemistry." The staff should also clarify the components addressed by this line item. Reference to the component locations should be to incore monitoring housings (ICMH) and CRD stub tubes, which are BWR vessel penetrations. Finally, it is unclear what the staff intends by "jet pump nozzles". It is assumed that the staff is referring to jet pump instrument line penetrations and not the jet pump recirculation line nozzles which are full penetration welded nozzles.	The inspection approach and conclusions for the CRD housing penetrations and ICMH penetrations mirror those for instrument penetrations addressed in BWRVIP-49-A. These are ASME Class 1 pressure-retaining components. XI.M8 addresses pressure vessel penetrations. XI.M8 acknowledges that BWRVIP guidance (e.g. BWRVIP-49-A and BWRVIP-74-A) conclude that penetration locations do not require augmentation of the ASME Section XI inspection requirements. Additionally, these pressure boundary components are not, and should not be, managed by the XI.M9 "BWR Reactor Internals" program. Supporting References: BWRVIP-74-A BWRVIP-47-A* BWRVIP-49-A EPRI 1016111 * - Note: BWRVIP-47-A also addresses non-pressure retaining locations.
2	The discussion related to ASME Section XI examination categories in the detection of aging effects section could be misinterpreted and should be simplified to eliminate reference to the specific categories (e.g. B-D, B-F, B-P).	This content is somewhat confusing for a program focused on BWR penetrations since categories B-D, B-F, and B-J are not applicable to the components crediting this program. It is suggested that this superfluous content be removed.
3	The corrective actions section should not reference BWRVIP repair design criteria.	Although BWRVIP repair design criteria provide criteria for repairs, aging management strategies for repairs are provided by the repair designer, not the BWRVIP. For pressure retaining components, repairs must meet the requirements of the ASME B&PVC. Also see general comments contained in the main body of the comment letter transmitting these comments.

Table A-5: Comments on Section XI.M8 of May 2010 Draft NUREG-1801: "BWR Penetrations"

ID	Comment	Basis & Discussion
4	All references to the NRC approved version of BWRVIP reports should be "-A". For example, "BWRVIP-49-A", rather than "BWRVIP-49A".	This occurs not only throughout the body of the program text, but also for BWRVIP reports cited in the references section.

Table A-6: Comments on Section XI.M9 of May 2010 Draft NUREG-1801: "BWR Vessel Internals"

ID	Comment	Basis & Discussion
1	The program discussion should be clarified to indicate that the BWRVIP program manages not only cracking due to SCC or IASCC, but also cracking due to fatigue (e.g. steam dryer assembly) and loss of material (e.g. wear of jet pump wedges).	AMR line item VI.B1.RP-155 lists cracking due to flow induced vibration (fatigue) as applicable to steam dryers. Wear occurs in some BWR reactor internals components, for example jet pump wedge surfaces.
2	Martensitic stainless steel and precipitation hardened martensitic stainless steel materials have been added to XI.M9, "BWR Reactor Internals". Additionally, these materials have been added as aging management review items for BWR reactor internals. These materials should not be included in NUREG-1800 and NUREG-1801 for BWR reactor internals since they are not known by the BWRVIP to be in use in the domestic BWR fleet in passive and long-lived reactor internals applications. Applicable Sections: Program Description Scope Parameters Monitored / Inspected Operating Experience IV.B1.RP-182	The BWRVIP is unaware of the application of these martensitic stainless steel materials in the domestic BWR fleet. As a result, the related discussion in NUREG-1801, Section XI.M9 and the associated aging management review items is not appropriate for inclusion in NUREG-1800 or NUREG-1801. There are a number of source references available to the staff as bases: • Revision 1 of the BWR Issue Management Tables (EPRI 1018111) is a non-proprietary report available to the staff. Table A-2 in Appendix A of this report contains a listing of BWR reactor internals and associated materials of construction. Neither martensitic stainless steels nor precipitation hardened martensitic stainless steels are included. The materials listing in this document is based on a review of BWRVIP reports and available license renewal documentation. • The BWRVIP has submitted numerous inspection and evaluation guideline documents to the staff for review and approval. These documents can be reviewed by the staff to confirm that martensitic materials are not in use within the BWR fleet. • A majority of domestic BWR units have submitted license renewal applications to NRC, including all major design types (BWR/2s through BWR/6s). To date, martensitic stainless steel has not been identified as material of construction for a BWR reactor internals application. Supporting References: EPRI 1018111
3	BWRVIP repair design criteria listed in the program scope section should be removed.	Although BWRVIP repair design criteria provide criteria for repairs, aging management strategies for repairs are provided by the repair designer, not the BWRVIP and repair design criteria should not be credited by XI.M9. As discussed previously, citation of repair design criteria as supporting references is acceptable.

Table A-6: Comments on Section XI.M9 of May 2010 Draft NUREG-1801: "BWR Vessel Internals"

ID	Comment	Basis & Discussion
4	BWRVIP-07 and BWRVIP-63 have been superseded by BWRVIP-76-A and should be removed from the program scope discussion and references section. BWRVIP-76-A is the current reference.	BWRVIP-76-A has been published and a non proprietary version provided to NRC.
5	NRC should reference BWRVIP-183 as the applicable guidance for aging management of top guide grid structures. Otherwise, the BWRVIP has the following comments on the top guide grid structure content in XI.M9. The program scope section discussing top guide grid beam inspections: a) Is not clear regarding the surfaces to be inspected. Inspections are limited to more susceptible portions of the grid beam and are dependent on top guide vintage. b) Is not clear regarding inspection scope and re-inspection frequency. Re-inspection is dependent on top guide vintage. A single inspection frequency is not warranted for all top guide grid designs.	The top guide grid inspection program requirements summarized in XI.M9 appear to be associated with a specific plant design rather than the entire BWR fleet. Re-inspection frequency and scope are warranted based on differences in susceptibility of the various designs currently in service. The BWRVIP recommends that NRC cite BWRVIP-183, with acknowledgement of outstanding NRC RAIs, as the most direct method for communicating the top guide grid structure inspection program. Otherwise, the BWRVIP recommends clarifications to XI.M9 as follows: a. BWRVIP-183 prescribes the examination area to include: BWR/2-5 – Inspect the bottom 2 inches (50.8 mm) of the interior side surfaces of the grid beam cells and locations at the intersections of the grid beams near the slotted notch where a sharp corner exists. Inspection of the bottom edge of the grid beams is not required. BWR/6 – Inspect rim areas containing the weld and heat affected zone (HAZ) from the top surface of the top guide and two cells in the same plane/axis as the weld. The regions of the grid beam cells to be inspected are the bottom 2 inches (50.8 mm) of the interior side surfaces. Inspection of the bottom edge of the grid cells is not required. b. BWRVIP-183 prescribes re-inspection scope and frequency as follows: BWR/2-5 - Inspect 10% of the grid beam cells containing control rod drives/blades every twelve years with at least 5% to be performed within six years. BWR/6 - Inspect the rim areas containing the weld and heat affected zone (HAZ) from the top surface of the top guide and two cells in the same plane/axis as the weld every six years. <u>Supporting References:</u> BWRVIP-183

Table A-6: Comments on Section XI.M9 of May 2010 Draft NUREG-1801: "BWR Vessel Internals"

ID	Comment	Basis & Discussion
6	The program description includes discussion of screening criteria for CASS. This content was previously addressed in revision 1 of the GALL Report as a separate program, XI.M13. This discussion should clarify that the screening criteria described is NRC-based criteria and not a part of the BWRVIP program.	This discussion implies that the BWRVIP program includes screening criteria for CASS consistent with the May 19, 2000 correspondence from NRC (Grimes) to NEI (Walters). The BWRVIP program does not include these screening criteria as basis for inspection of CASS reactor internals. To address this concern for BWR reactor internals, the BWRVIP performed a screening of CASS reactor internals to identify those castings which meet the screening criteria for augmented examination based not only on casting chemical properties, but also on fluence and component loading. Based on this review, no castings require augmented examination for 60-year service lives. The technical report containing this screening, BWRVIP-234 has been submitted to the staff for information only.
7	The parameters monitored / inspected section contains a paragraph addressing management of CASS reactor internals. a. This paragraph includes wording implying that BWR CASS reactor internals may be subject to void swelling effects. This wording should be removed. b. Wording related to inspection of CASS should be clarified: "...The impact of loss of fracture toughness on component integrity can be managed by ASME Section XI inspections that monitor for cracking in the components..."	a. Operating temperatures and fluence exposure for CASS materials are not conducive to void nucleation and growth. This conclusion is supported by expert panel studies of aging mechanisms, EPRI 1016486 and NUREG/CR-6928. b. BWRVIP program inspections are not focused on detection of loss of fracture toughness, but are acknowledged to be capable of detecting significant cracking of CASS components. Presently, only visual inspection is possible. Further, BWRVIP inspection and evaluation guidelines do not explicitly require augmented inspection of CASS components. ASME Section XI inspection requirements are considered adequate. <u>Supporting References</u>: EPRI 1016486, EPRI Materials Degradation Matrix – Revision 1. NUREG/CR-6923, Expert Panel Report on Proactive Materials Degradation Assessment EPRI 1018111, BWR Issue Management Tables – Revision 1 *[Note: EPRI 1016486 and 1018111 are non-proprietary and available to the NRC staff for review.]*

Table A-6: Comments on Section XI.M9 of May 2010 Draft NUREG-1801: "BWR Vessel Internals"

ID	Comment	Basis & Discussion
8	Wording in the detection of aging effects section implies that augmented inspection of limiting CASS locations is recommended regardless of the results of screening. The BWRVIP disagrees. Unless special circumstances apply, augmented examination of CASS is not required. Applicable Sections: Detection of Aging Effects IV.B1.RP-219 IV.B1.RP-220	BWRVIP-234 documents the results of an EPRI BWRVIP study of CASS reactor internal components. This evaluation concludes that all the BWR CASS reactor internals components have ferrite levels below the level for which thermal aging embrittlement is a concern. Although the end-of-life fluence for the orificed fuel support and the jet pump assembly castings exceed the threshold, toughness data for irradiated austenitic stainless steels show that that these components will have sufficient fracture toughness at the end of license renewal period so that augmented inspection is not required. The report concludes that augmented inspections are not required for the BWR CASS reactor internals. BWRVIP-234 has been submitted to the staff for information only.
9	The acceptance criteria section describes flaw evaluation criteria for CASS reactor internals that come from ASME Code, specifically IWB-3640. The staff should consider removing this language.	ASME Section XI, Subsection IWB-3640 addresses flaw tolerance assessment for austenitic pressure retaining piping. These requirements are not appropriate for reactor internals components. Further, the 14% ferrite restriction is considered to be overly restrictive. ASME Section XI, Section C-4000 allows evaluation of CASS similar to wrought materials if ferrite is less than 20%. Depending on the plant vintage and component being evaluated, the casting may or may not be considered an ASME Code component. Therefore, application of pressure retaining piping criteria to all reactor internals castings is not appropriate. Based on the screening assessment documented in BWRVIP-234 and on the foregoing points, the BWRVIP maintains that specific acceptance criteria for CASS BWR reactor internals components is not warranted in the GALL Report.

Table A-6: Comments on Section XI.M9 of May 2010 Draft NUREG-1801: "BWR Vessel Internals"

ID	Comment	Basis & Discussion
10	NUREG-1801 AMR item IV.B1-RP-200 describes loss of fracture toughness due to thermal aging / irradiation embrittlement for X-750 BWR reactor internals. This line item should be revised to include only irradiation embrittlement.	Some X-750 reactor internals components will be exposed to significant EOL neutron fluence and some irradiation embrittlement could occur. To address both irradiation effects and other concerns, the BWRVIP is initiating a new testing program for alloy X-750 materials. If necessary, program requirements for X-750 will be revised based on the results of this test program. X-750 jet pump beams are managed by BWRVIP-41 and BWRVIP-138. Management of repair hardware is addressed by the repair vendor. However, regarding thermal aging, the BWRVIP is not aware of any data that would support the assertion that X-750 is susceptible to loss of fracture toughness due to thermal aging. Supporting basis documents include the NUREG/CR-6923, "Expert Panel Report on Proactive Materials Degradation Assessment" and EPRI 1016486, "Materials Degradation Matrix, Revision 1". The expert assessments documented in these reports do not identify thermal aging and loss of fracture toughness as specific concerns for BWR reactor internals components. [*Note: EPRI 1016486 is non-proprietary and available to the NRC staff for review.*]
11	The preventive actions section discussion for water chemistry should simply refer to program XI.M2.	Specific reference to a version of the EPRI BWR Water Chemistry Guidelines and discussion regarding control parameter tables should be limited to XI.M2 and need not be repeated in XI.M9.
12	The monitoring and trending section omits BWRVIP-80-A and BWRVIP-99-A.	BWRVIP-80-A provides CGR curves for shroud vertical welds. BWRVIP-99-A provides CGR curves for irradiated stainless steels.
13	The last sentence of the first para. in the detection of aging effects section may be misleading and should be changed to: "BWRVIP program requirements provide for inspection of BWR reactor internals to manage loss of material and cracking using appropriate examination techniques such as visual examinations (e.g. EVT-1, VT-1) and volumetric examinations (e.g. UT)."	As written, the sentence implies that only non-ASME Code BWR reactor internals are inspected per BWRVIP guidance and that only cracking is detectable by BWRVIP examinations. This is misleading. BWRVIP examination requirements apply to many BWR reactor internals components, regardless of ASME Code classification and are also capable of detecting loss of material (e.g. wear) as applicable to the component.

Table A-6: Comments on Section XI.M9 of May 2010 Draft NUREG-1801: "BWR Vessel Internals"

ID	Comment	Basis & Discussion
14	The operating experience section discussion for core plate should be clarified to note that inspections of the core plate assembly itself are not required. Only core plate bolts or core plate retaining wedges require inspection. There are not BWRVIP program inspection requirements for creviced regions beneath the core plate.	BWRVIP-06R1-A and BWRVIP-25 address the safety significance and inspection requirements for the core plate assembly. Only inspection of core plate bolts (for plants without retaining wedges) or inspection of the retaining wedges is required.
15	The operating experience section sentence addressing dry tubes should delete "CRD" immediately preceding "dry tubes".	Reference to "CRD dry tubes" is misleading. Dry tubes are associated with incore-monitoring, not control rod drive.
16	Notable BWR reactor internals operating experience missing from the operating experience discussion section are listed at right.	Core spray pipe cracking. (*in addition to core spray sparger cracking*) X-750 jet pump hold down beam cracking. Shroud support cracking.
17	BWRVIP-29 has been superseded by BWRVIP-190 and should be removed from the references list.	BWRVIP-190 is the current version of the EPRI BWR Water Chemistry Guidelines. This version represents the present state of industry knowledge regarding management of BWR water chemistry. As a minimum, all references to water chemistry guidance in NUREG-1801 should be revised to cite BWRVIP-190. However, the EPRI BWR Water Chemistry Guidelines are periodically revised to incorporate recent operating experience and to address new and improved mitigation techniques (e.g. online noblechem™. Based on NEI 03-08, owners are required to update their programs to the latest needed and mandatory guidance contained in these guidelines. Therefore, when possible, reference should cite the "EPRI BWR Water Chemistry Guidelines." Otherwise, the reference citations for the EPRI BWR Water Chemistry Guidelines will become out of date relatively soon.

Table A-6: Comments on Section XI.M9 of May 2010 Draft NUREG-1801: "BWR Vessel Internals"

ID	Comment	Basis & Discussion
18	IV.B1.R-94 addresses nickel alloy access hole cover components (welded). This line item should: a) Include stainless steel materials of construction and, b) Should specify aging management consistent with BWRVIP guidance contained in BWRVIP-180, which allows for either UT examination or EVT-1 visual examination on intervals depending on both inspection technique and chemistry regime (NWC vs. HWC/ NMCA).	BWRVIP-180 provides aging management requirements for access hole covers. BWRVIP-180 has been provided to NRC. a) Stainless steels are commonly used in access hole cover designs. See EPRI 1018111, BWR Issue Management Tables, Revision 1. b) BWRVIP-180 specifies examination requirements for all access hole cover designs. Inspection techniques include both Enhanced visual (EVT-1) and volumetric (UT) examination of welds. Application of inspection techniques is dependent on access hole cover design and on operating chemistry regime. Longer re-inspection intervals are allowed for plants operating under hydrogen water chemistry technologies, than for plants operating under normal water chemistry. This approach is described in BWRVIP-180. This guidance has been approved by the BWRVIP Executive Committee and is being implemented by the BWRVIP membership. However, the aging management program requirement included in the GALL Report is not consistent with the BWRVIP program. It should also be noted that BWRVIP-180 addresses not only aging management for nickel alloy materials, but also addresses SCC susceptible stainless steel locations. The GALL Report guidance should also acknowledge this BWRVIP program inspection requirement.

Table A-6: Comments on Section XI.M9 of May 2010 Draft NUREG-1801: "BWR Vessel Internals"

ID	Comment	Basis & Discussion
19	IV.B1.R-95 addresses nickel alloy mechanical access hole cover components. This line item should: a) Also include stainless steel materials of construction, b) Clarify that the line item includes mechanically repaired access hole covers (including the repaired welds) and, c) Include aging management consistent with BWRVIP guidance contained in BWRVIP-180.	a) EPRI 1018111, "BWR Issue Management Tables – Revision 1" identifies XM-19 nitrogen strengthened stainless steel as an applicable material for replacement access hole cover materials. b) BWRVIP-180 specifies VT-1 examination of the mechanical repair hardware as adequate aging management for the access hole cover assembly. Enhanced visual and volumetric examination of welds repaired by mechanical means no longer require inspection. This approach is described in BWRVIP-180 and is consistent with the approach used for mechanical repairs associated with other BWR internals assemblies. Therefore, this line item addresses not only the mechanical repair components, but also the repaired welds. c) The aging management program specified is XI.M2, "Water Chemistry" and XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD"" for Class 1 Components". ASME Section XI required inspections would include only a VT-3 visual examination of accessible surfaces once each 10-year interval. The BWRVIP requirement defined in BWRVIP-180 is a VT-1 of the access hole cover top surface on 8-year intervals. The program recommended by the BWRVIP is XI.M2 and XI.M9, "BWR Reactor Internals", with modifications to XI.M9 to address access hole cover management consistent with BWRVIP-180.
20	All references to the NRC approved version of BWRVIP reports should be "-A". For example, "BWRVIP-47-A", rather than "BWRVIP-47A".	This occurs not only throughout the body of the program text, but also for BWRVIP reports cited in the references section.