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10CFR50.55a

August 19, 2009

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: Submittal of Fourth Ten-Year Interval Inservice Inspection Program Plan

In accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, IWA-1400(c) ("Owner's Responsibility"), attached for your information is a copy of the Fourth Ten-Year Interval Inservice Inspection (ISI) Program Plan for Peach Bottom Atomic Power Station, Units 2 and 3. The new interval began on November 5, 2008, and will conclude on November 4, 2018. This plan complies with the ASME Boiler and Pressure Vessel Code, Section XI, 2001 Edition through 2003 Addenda.

There are no regulatory commitments contained within this letter.

If you have any questions or require additional information, please call Tom Loomis (610-765-5510).

Respectfully,

D. P. Helker

David P. Helker
Manager – Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachment: ISI Program Plan

cc: USNRC Region I, Regional Administrator
USNRC Senior Resident Inspector, PBAPS
USNRC Project Manager, PBAPS
R. R. Janati, Bureau of Radiation Protection
S. T. Gray, State of Maryland

ATTACHMENT

ISI Program Plan

Exelon
Nuclear

PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 & 3

ISI PROGRAM PLAN
FOURTH TEN-YEAR INSPECTION INTERVAL

Commercial Service Dates:

Unit 2 - 07/05/74
Unit 3 - 12/23/74

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ALION
SCIENCE AND TECHNOLOGY

REVISION APPROVAL SHEET

TITLE: ISI Program Plan
Fourth Ten-Year Inspection Interval
Peach Bottom Atomic Power Station, Units 2 & 3

DOCUMENT: PBT05.G03 REVISION: 0

PREPARED TRANSMITTAL

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REVISION APPROVAL SHEET

TITLE: ISI Program Plan
Fourth Ten-Year Inspection Interval
Peach Bottom Atomic Power Station, Units 2 & 3

DOCUMENT: PBT05.G03 REVISION: 0

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Each time this document is revised, the Revision Approval Sheet will be signed and the following Revision Control Sheet should be completed to provide a detailed record of the revision history. The signatures above apply only to the changes made in the revision noted. If historical signatures are required, Peach Bottom Atomic Power Station archives should be retrieved.

REVISION CONTROL SHEET

Major changes to this document should be outlined within the table below. Editorial and formatting revisions are not required to be logged.

Revision	Date	Revision Summary
0	11/05/08	Initial issuance. (This ISI Program Plan was developed by Alion Science and Technology Corporation as part of the Fourth Interval ISI Program update.) Prepared: S. Coleman Reviewed: D. Windhorst Approved: D. Lamond

Notes:

1. This ISI Program Plan (Sections 1 - 9 inclusive) is controlled by the Peach Bottom Atomic Power Station, Engineering Programs Group.

2. Revision 0 of this document was issued as the Fourth Interval ISI Program Plan and was submitted to the USNRC for review, including approval of the initial Fourth ISI Interval and Second CISI Interval Relief Requests. Future revisions of this document made within the Fourth ISI Interval will be maintained and controlled at Peach Bottom Atomic Power Station; however, they are not required to be and will not be submitted to the USNRC for review. The exception to this is that new or revised Relief Requests shall be submitted to the USNRC for safety evaluation and approval.

3. This Augmented Inspection Plan is controlled by the Peach Bottom Atomic Power Station Engineering Programs Group as a Nuclear Record in accordance with procedure RM-AA-101-1008, Processing and Storage of Records.

4. The SRRS record ID is 3A.117, and the Title is "Fourth Interval ISI Program Plan"

5. Passport IR 873610 has been initiated to track "Pen and Ink" changes to this document as permitted by procedure ER-AA-330, Conduct of In-Service Inspection Activities.

6. Passport assignment 873610-01 has been initiated to document the yearly revision assessment of this document (reference ER-AA-330, section 4.4.3).

REVISION SUMMARY

Section	Effective Pages	Revision	Date
Preface	i to vii	0	11/05/08
1.0	1-1 to 1-17	0	11/05/08
2.0	2-1 to 2-37	0	11/05/08
3.0	3-1 to 3-3	0	11/05/08
4.0	4-1 to 4-2	0	11/05/08
5.0	5-1 to 5-2	0	11/05/08
6.0	6-1 to 6-5	0	11/05/08
7.0	7-1 to 7-36	0	11/05/08
8.0	8-1 to 8-3	0	11/05/08
9.0	9-1 to 9-3	0	11/05/08

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1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

This Inservice Inspection (ISI) Program Plan details the requirements for the examination and testing of ISI Class 1, 2, 3, and MC pressure retaining components and supports at Peach Bottom Atomic Power Station (PBAPS) Units 2, 3, and 2/3 (Common). Unit Common components are included in the Unit 2 sections, reports, and tables. This ISI Program Plan also includes Containment Inservice Inspection (CISI), Risk-Informed Inservice Inspections (RISI), Augmented Inservice Inspections (AUG), and System Pressure Testing (SPT) requirements imposed on or committed to by PBAPS. At PBAPS, the Inservice Testing (IST) Program is maintained and implemented separately from the ISI Program. The IST Basis Document and Program Plan contain all of the applicable inservice testing requirements.

The Fourth ISI Interval for PBAPS Units 2 and 3 is effective from November 5, 2008 through November 4, 2018. With the update to the ISI Program for the Fourth ISI Interval for ISI Class 1, 2, and 3 components, including their supports, Exelon Generation Company, LLC (Exelon) has also updated the CISI Program to its Second CISI Interval for CISI Class MC components at the same time. This update will enable all of the ISI and CISI Program components / elements to be based on the same effective Edition and Addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, as well as share a common interval start and end date. The common ASME Code of Record for the Fourth ISI Interval and the Second CISI Interval is the 2001 Edition through the 2003 Addenda. This ISI Program Plan is controlled and revised in accordance with the requirements of procedure ER-AA-330, "Conduct of Inservice Inspection Activities," which implements the ASME Section XI ISI Program.

Paragraph IWA-2430(d)(1) of ASME Section XI allows an inspection interval to be extended or decreased by as much as one year, and Paragraph IWA-2430(e) allows an inspection interval to be extended when a unit is out of service continuously for six months or more. The extension may be taken for a period of time not to exceed the duration of the outage. See Tables 1.1-1 and 1.1-2 for intervals, periods, and extensions that apply to PBAPS's Fourth ISI Interval and Second CISI Interval.

The Fourth ISI Interval and the Second CISI Interval are divided into three inspection periods as determined by calendar years within the intervals. Tables 1.1-1 and 1.1-2 identify the period start and end dates for the Fourth ISI Interval and the Second CISI Interval as defined by Inspection Program B. In accordance with Paragraph IWA-2430(d)(3), the inspection periods specified in these Tables may be decreased or extended by as much as 1 year to enable inspection to coincide with PBAPS's refueling outages.

TABLE 1.1-1
UNITS 2 & 3 FOURTH ISI INTERVAL/PERIOD/OUTAGE MATRIX
(FOR ISI CLASS 1, 2, AND 3 COMPONENT EXAMINATIONS)

Unit 2		Period	Interval	Period	Unit 3	
Outage Number	**Projected Outage Start Date or Outage Duration**	**Start Date to End Date**	**Start Date to End Date**	**Start Date to End Date**	**Projected Outage Start Date or Outage Duration**	**Outage Number**
P2R18	Scheduled 9/10	1st 11/5/08 to 11/4/12	4th (Unit 2) 11/5/08 to 11/4/18 4th (Unit 3) 11/5/08 to 11/4/18[1]	1st 11/5/08 to 5/5/12	Scheduled 9/09	P3R17
P2R19	Scheduled 9/12				Scheduled 9/11	P3R18
P2R20	Scheduled 9/14	2nd 11/5/12 to 11/4/15[2]		2nd 5/6/12 to 5/5/15[2]	Scheduled 9/13	P3R19
P2R21	Scheduled 9/16	3rd 11/5/15 to 11/4/18		3rd 5/6/15 to 11/4/18	Scheduled 9/15	P3R20
P2R22	Scheduled 9/18				Scheduled 9/17	P3R21

Note 1: The PBAPS Unit 3 Third Period and Third ISI Interval were extended by 82 days per Third ISI Interval Relief Request I3R-45. Per this relief request, the extension is being carried forward to the Fourth ISI Interval to facilitate both PBAPS Units 2 and 3 having the same ISI Interval start and end dates, and codes of record, as well as this common interval date matching the CISI Program dates. As required by ASME Section XI, the intervals will be scheduled in ten-year increments from this point forward with the modifications similar to Paragraph IWA-2430 fully available to future intervals and periods including a one-year extension allowance based on the new synchronized unit interval date

Note 2: The PBAPS Units 2 and 3 Second Period was reduced by one year and the First Period was extended by one year as permitted by Paragraph IWA-2430(d)(3) in order to coincide with the plant refueling outage schedule.

TABLE 1.1-2
UNITS 2 & 3 SECOND CISI INTERVAL/PERIOD/OUTAGE MATRIX
(FOR CISI CLASS MC COMPONENT EXAMINATIONS)

Unit 2		Period	Interval	Period	Unit 3	
Outage Number	**Projected Outage Start Date or Outage Duration**	**Start Date to End Date**	**Start Date to End Date**	**Start Date to End Date**	**Projected Outage Start Date or Outage Duration**	**Outage Number**
P2R18	Scheduled 9/10	1st 11/5/08 to 11/4/12	2nd (Unit 2) 11/5/08 to 11/4/18 2nd (Unit 3) 11/5/08 to 11/4/18[1]	1st 11/5/08 to 5/5/12	Scheduled 9/09	P3R17
P2R19	Scheduled 9/12				Scheduled 9/11	P3R18
P2R20	Scheduled 9/14	2nd 11/5/12 to 11/4/15[2]		2nd 5/6/12 to 5/5/15[2]	Scheduled 9/13	P3R19
P2R21	Scheduled 9/16	3rd 11/5/15 to 11/4/18		3rd 5/6/15 to 11/4/18	Scheduled 9/15	P3R20
P2R22	Scheduled 9/18				Scheduled 9/17	P3R21

Note 1: The PBAPS Unit 3 Third Period and the First CISI Interval were extended by 365 days per First CISI Interval Relief Request CRR-12. Per this First CISI Interval relief request, the Second CISI Interval for PBAPS Unit 3 will overlap the duration of the First CISI Interval for one year in order to start the Second CISI Interval on time and keep it aligned with the Unit 2 Second CISI Interval while still finishing examinations the First CISI Interval. It will also facilitate both PBAPS Units 2 and 3 having the same CISI Interval start and end dates, and codes of record, as well as this common interval date matching the ISI Program dates. As required by ASME Section XI, the intervals will be scheduled in ten-year increments from this point forward with the modifications similar to Paragraph IWA-2430 fully available to future intervals and periods including a one-year extension allowance based on the new synchronized unit interval date.

Note 2: The PBAPS Units 2 and 3 Second Period was reduced by one year and the First Period was extended by one year as permitted by Paragraph IWA-2430(d)(3) in order to coincide with the plant refueling outage schedule.

1.2 Background

The Philadelphia Electric Company (PECO) and formerly PECO Energy Company, LLC., now known commercially as Exelon Generation Company, LLC. (Exelon), obtained a construction permit to build PBAPS Units 2 and 3 on January 31, 1968. The docket numbers assigned to PBAPS Units 2 and 3 are 50-277 and 50-278, respectively. After satisfactory plant construction and preoperational testing was completed, PBAPS was granted a full power operating license on October 25, 1973, DPR-44 for Unit 2 and on July 2, 1974, DPR-56 for Unit 3. PBAPS started commercial operation on July 5, 1974 for Unit 2 and on December 23, 1974 for Unit 3.

PBAPS's piping systems and associated components were designed and fabricated before the examination requirements of ASME Section XI were formalized and published. Since this plant was not specifically designed to meet the requirements of ASME Section XI, literal compliance is not feasible or practical within the limits of the current plant design. Certain limitations are likely to occur due to conditions such as accessibility, geometric configuration, and/or metallurgical characteristics. For some inspection categories, an alternate component may be selected for examination and the code statistical and distribution requirements can still be maintained. If ASME Section XI required examination criteria cannot be met, a relief request will be submitted in accordance with 10CFR50.55a.

1.3 First Interval ISI Program

Pursuant to the Code Of Federal Regulations (CFR), Title 10, Part 50, Section 55a, *Codes and standards*, (10CFR50.55a), PBAPS was required to meet the requirements of Paragraph (g), *Inservice inspection requirements*, of that section.

Specifically, Paragraph 10CFR50.55a(g)(4)(i) called for the inservice inspection requirements of the initial 120 month inspection interval to comply with the requirements of the latest Edition and Addenda of ASME Section XI referenced in Paragraph (b) of 10CFR50.55a on the date twelve months prior the date of issuance of the operating license, subject to the limitations and modifications listed in 10CFR50.55a(b).

PBAPS started commercial operation on July 5, 1974 for Unit 2 and on December 23, 1974 for Unit 3, which marked the beginning of the First ISI Interval. The version of 10CFR50.55a in effect twelve months prior to this date referenced the 1970 Edition with Addenda through the Winter 1970 (70W70) of the ASME Section XI. The inservice inspection requirements applicable to nondestructive examination and system pressure testing for the First Interval ISI Program were based on these rules.

The First Period of the First ISI Interval was based on 70W70. Selection of components subject to examination for the First Period was based on an owner

established "focused approach" program. 10CFR50.55a Federal regulations later required an update of ASME Section XI, ISI Program to comply with the 1974 Edition with Addenda through the Summer 1975 (74S75) for the remaining two periods of the First ISI Interval for PBAPS Units 2 and 3, respectively.

The PBAPS First ISI Interval was originally effective from July 5, 1974 to July 4, 1984 for Unit 2 and from December 23, 1974 to December 22, 1984 for Unit 3.

ASME Section XI permitted a one year interval extension to allow for outage correlation and an additional extension equivalent to the length of the outage. Also, plants which are out of service continuously for one year or more may extend the ISI Interval for an equivalent period. As such, the First ISI Interval was extended to September 18, 1986 for Unit 2 and to December 22, 1985 for Unit 3 based on plant out of service and/or to coincide with the scheduling or completion of outages.

Therefore, the PBAPS First ISI Interval was effective from July 5, 1974 to September 18, 1986 for Unit 2 and from December 23, 1974 to December 22, 1985 for Unit 3.

1.4 Second Interval ISI Program

Pursuant to 10CFR50.55a(g), PBAPS was required to update the ISI Program at the end of the First ISI Interval. The ISI Program was required to comply with the latest Edition and Addenda of ASME Section XI incorporated by reference in 10CFR50.55a twelve months prior to the start of the Second Interval per 10CFR50.55a(g)(4)(ii).

The Second Interval ISI Program Plan was developed in accordance with the requirements of 10CFR50.55a and the 1980 Edition through the Winter 1981 Addenda (80W81) of ASME Section XI. The Second Interval ISI Program Plan addressed Subsections IWA, IWB, IWC, IWD, and IWF of ASME Section XI, and utilized Inspection Program B as defined therein.

The PBAPS Second ISI Interval started on September 19, 1986 for Unit 2 and on December 23, 1985 for Unit 3. Due to extended outages and plant out of service, the PBAPS Units 2 and 3 Second ISI Interval end dates were extended to November 4, 1998 and August 14, 1998, in accordance with 80W81 of ASME Section XI, Paragraph IWA-2400(c).

Therefore, the PBAPS Second ISI Interval was effective from September 19, 1986 to November 4, 1998 for Unit 2 and from December 23, 1985 to August 14, 1998 for Unit 3.

1.5 Third Interval ISI Program

Pursuant to 10CFR50.55a(g), PBAPS was required to update the ISI Program to meet the requirements of ASME Section XI once every ten years or inspection interval. The ISI Program was required to comply with the latest Edition and Addenda of ASME Section XI incorporated by reference in 10CFR50.55a twelve months prior to the start of the Third ISI Interval per 10CFR50.55a(g)(4)(ii).

The PBAPS Third ISI Interval started on November 5, 1998 for Unit 2 and on September 15, 1998 for Unit 3 using the 1989 Edition, No Addenda of the ASME Boiler and Pressure Vessel (B&PV) Code, Section XI. The PBAPS Third Interval ISI Program Plan addressed Subsections IWA, IWB, IWC, IWD, IWF, Mandatory Appendices, approved ASME Code Cases, approved alternatives through relief requests and SER's, and utilized Inspection Program B as defined therein.

At the end of the Third ISI Interval and in preparation for the Fourth ISI Interval, PBAPS sent Relief Request I3R-45 to the United States Nuclear Regulatory Commission (USNRC) to request an extension in order to synchronize the Fourth ISI Interval between PBAPS Units 2 and 3 for ISI Classes 1, 2, and 3, and the Second CISI Interval for CISI Class MC. This relief request was approved by the USNRC and the changes assured that both the ISI and CISI Programs would use the same Code Edition and Addenda for the next and successive intervals and would likewise establish common implementing procedures for both units.

Therefore, the PBAPS Third ISI Interval was effective from November 5, 1998 through November 4, 2008 for Unit 2 and from August 15, 1998 through November 4, 2008 for Unit 3.

1.6 Fourth Interval ISI Program

Pursuant to 10CFR50.55a(g), licensees are required to update their ISI Programs to meet the requirements of ASME Section XI once every ten years or inspection interval. The ISI Program is required to comply with the latest Edition and Addenda of ASME Section XI incorporated by reference in 10CFR50.55a twelve months prior to the start of the interval per 10CFR50.55a(g)(4)(ii). As discussed in Section 1.5 above, the start of the Fourth ISI Interval will be on November 5, 2008 for PBAPS Units 2 and 3, respectively. Based on this date, the latest Edition and Addenda of ASME Section XI referenced in 10CFR50.55a(b)(2) twelve months prior was the 2001 Edition through the 2003 Addenda.

The PBAPS Fourth Interval ISI Program Plan was developed in accordance with the requirements of 10CFR50.55a including all published changes through February 19, 2006, and the 2001 Edition through the 2003 Addenda of ASME Section XI, subject to the limitations and modifications contained within Paragraph (b) of the regulation. These limitations and modifications are detailed in Table 1.9-1 of this section. This ISI Program Plan addresses Subsections IWA,

IWB, IWC, IWD, IWF, Mandatory Appendices, approved ASME Code Cases, approved alternatives through relief requests and SER's, and utilizes Inspection Program B as defined therein.

PBAPS adopted the EPRI Topical Report TR-112657, Rev. B-A methodology, which was supplemented by Code Case N-578-1, for implementing risk-informed inservice inspections. The RISI Program will be in effect for the entire Fourth Inspection Interval. This approach replaces the categorization, selection, and examination volume requirements of ASME Section XI Examination Categories B-F, B-J, C-F-1, and C-F-2 applicable to PBAPS with Examination Category R-A as defined in Code Case N-578-1. Implementation of RISI Program is in accordance with Relief Request I4R-44.

The PBAPS Fourth ISI Interval is effective from November 5, 2008 through November 4, 2018 for Units 2 and 3, respectively.

1.7 First Interval CISI Program

CISI examinations were originally invoked by amended regulations contained within a Final Rule issued by the USNRC. The amended regulation incorporated the requirements of the 1992 Edition through the 1992 Addenda of the ASME Section XI, Subsection IWE, subject to specific modifications that were included in Paragraphs 10CFR50.55a(b)(2)(ix) and 10CFR50.55a(b)(2)(x).

The final rulemaking was published in the Federal Register on August 8, 1996 and specified an effective date of September 9, 1996. Implementation of the Subsection IWE Program from a scheduling standpoint was driven by the five year expedited implementation period per 10CFR50.55a(g)(6)(ii)(B), which specified that the examinations required to be completed by the end of the first period of the first inspection interval (per Table IWE-2412-1) be completed by the effective date (by September 9, 2001).

ASME Section XI Subsections IWE, Mandatory Appendices, approved ASME Code Cases, and approved alternatives through relief requests and SER's were added to the ISI Program at beginning of the Third ISI Interval to address CISI. The First CISI Interval for the PBAPS Units 2 and 3 CISI Program was aligned with the PBAPS Units 2 and 3 ISI Program and was effective from November 5, 1998 through November 4, 2008, respectively. In accordance with Relief Request CRR-12, the First CISI Interval for Unit 3 was extended by 365 days (one-year) to encompass Outage P3R17 and allow time to complete the remaining VT-3 visual examinations for the submerged portion of the Unit 3 Torus vent header downcomers and pressure boundary structural attachment welds. These examinations were not completed in Outage P3R16 due to poor water clarity and will be performed in Outage P3R17 and credited under the requirements of ASME Section XI, 1992 Edition through the 1992 Addenda. Per this First CISI Interval relief request, the Second CISI Interval for PBAPS Unit 3 overlapped the duration

of the First CISI Interval for one year in order to start the Second CISI Interval on time and keep it aligned with the Unit 2 Second CISI Interval while still finishing examinations the First CISI Interval. These same examinations were scheduled again at the end of the Second CISI Interval per the Second CISI Interval Code of record to maintain the original sequence and frequency of examination.

As such, all of the PBAPS Units 2 and 3 First CISI Interval examinations were scheduled to be completed prior to November 5, 2009. As detailed in the submittal of the Fourth Interval ISI Program, the transition from the First CISI Interval to the Second CISI Interval coincides with the transition from the Third ISI Interval to the Fourth ISI Interval to provide a common interval start and end date and Code of record between the ISI and CISI Programs.

1.8 Second Interval CISI Program

Pursuant to 10CFR50.55a(g), licensees are required to update their CISI Programs to meet the requirements of ASME Section XI once every ten years or inspection interval. The CISI Program is required to comply with the latest Edition and Addenda of the ASME Section XI incorporated by reference in 10CFR50.55a twelve months prior to the start of the interval per 10CFR50.55a(g)(4)(ii). As discussed in Section 1.7 above, the start of the Second CISI Interval will be on November 5, 2008 for PBAPS Units 2 and 3. Based on this date, the latest Edition and Addenda of the ASME Section XI referenced in 10CFR50.55a(b)(2) twelve months prior was the 2001 Edition through the 2003 Addenda.

The PBAPS Second CISI Interval is effective from November 5, 2008 through November 4, 2018 for Units 2 and 3, respectively.

The PBAPS Second Interval CISI Program Plan was developed in accordance with the requirements of 10CFR50.55a and the 2001 Edition through the 2003 Addenda of ASME Section XI, subject to the limitations and modifications contained within Paragraph (b) of the regulation. These limitations and modifications are detailed in Table 1.9-1 of this section.

This CISI Program Plan addresses Subsections IWE, Mandatory Appendices, approved ASME Code Cases, approved alternatives through relief requests and SER's, and utilizes Inspection Program B as defined therein.

1.9 Code of Federal Regulations 10CFR50.55a Requirements

There are certain paragraphs in 10CFR50.55a that list the limitations, modifications, and/or clarifications to the implementation requirements of ASME Section XI. These paragraphs in 10CFR50.55a that are applicable to the PBAPS scheduled ISI and CISI examination programs are detailed in Table 1.9-1.

TABLE 1.9-1
CODE OF FEDERAL REGULATIONS 10CFR50.55a REQUIREMENTS

10CFR50.55a Paragraphs	Limitations, Modifications, and Clarifications (Note: The words "this section" in this column refer to the 10CFR paragraph that is the source of the Limitation, Modification, or Clarification)
10CFR50.55a(b)(2)(ix)(A)	**(CISI)** *Examination of metal containments and the liners of concrete containments:* For Class MC applications, the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the licensee shall provide the following in the ISI Summary Report as required by IWA-6000: (*1*) A description of the type and estimated extent of degradation, and the conditions that led to the degradation; (*2*) An evaluation of each area, and the result of the evaluation, and; (*3*) A description of necessary corrective actions.
10CFR50.55a(b)(2)(ix)(B)	**(CISI)** *Examination of metal containments and the liners of concrete containments:* When performing remotely the visual examinations required by Subsection IWE, the maximum direct examination distance specified in Table IWA-2210-1 may be extended and the minimum illumination requirements specified in Table IWA-2210-1 may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination.
10CFR50.55a(b)(2)(ix)(F)	**(CISI)** *Examination of metal containments and the liners of concrete containments:* VT-1 and VT-3 examinations must be conducted in accordance with IWA-2200. Personnel conducting examinations in accordance with the VT-1 or VT-3 examination method shall be qualified in accordance with IWA-2300. The "owner-defined" personnel qualification provisions in IWE-2330(a) for personnel that conduct VT-1 and VT-3 examinations are not approved for use.

TABLE 1.9-1
CODE OF FEDERAL REGULATIONS 10CFR50.55a REQUIREMENTS

10CFR50.55a Paragraphs	Limitations, Modifications, and Clarifications (Note: The words "this section" in this column refer to the 10CFR paragraph that is the source of the Limitation, Modification, or Clarification)
10CFR50.55a(b)(2)(ix)(G)	**(CISI)** *Examination of metal containments and the liners of concrete containments:* The VT-3 examination method must be used to conduct the examinations in Items E1.12 and E1.20 of Table IWE-2500-1, and the VT-1 examination method must be used to conduct the examination in Item E4.11 of Table IWE-2500-1. An examination of the pressure-retaining bolted connections in Item E1.11 of Table IWE-2500-1 using the VT-3 examination method must be conducted once each interval. The "owner-defined" visual examination provisions in IWE-2310(a) are not approved for use for VT-1 and VT-3 examinations.
10CFR50.55a(b)(2)(ix)(H)	**(CISI)** *Examination of metal containments and the liners of concrete containments:* Containment bolted connections that are disassembled during the scheduled performance of the examinations in Item E1.11 of Table IWE-2500-1 must be examined using the VT-3 examination method. Flaws or degradation identified during the performance of a VT-3 examination must be examined in accordance with the VT-1 examination method. The criteria in the material specification or IWB-3517.1 must be used to evaluate containment bolting flaws or degradation. As an alternative to performing VT-3 examinations of containment bolted connections that are disassembled during the scheduled performance of Item E1.11, VT-3 examinations of containment bolted connections may be conducted whenever containment bolted connections are disassembled for any reason.
10CFR50.55a(b)(2)(xii)	**(ISI)** *Underwater Welding:* The provisions in IWA-4660, "Underwater Welding," of Section XI, 1997 Addenda through the latest Edition and Addenda incorporated by reference in Paragraph (b)(2) of this section, are not approved for use on irradiated material.
10CFR50.55a(b)(2)(xviii)(A)	**(ISI)** *Certification of NDE personnel:* Level I and II nondestructive examination personnel shall be recertified on a 3-year interval in lieu of the 5-year interval specified in the 1997 Addenda and 1998 Edition of IWA-2314, and IWA-2314(a) and IWA-2314(b) of the 1999 Addenda through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of this section.

TABLE 1.9-1
CODE OF FEDERAL REGULATIONS 10CFR50.55a REQUIREMENTS

10CFR50.55a Paragraphs	Limitations, Modifications, and Clarifications (Note: The words "this section" in this column refer to the 10CFR paragraph that is the source of the Limitation, Modification, or Clarification)
10CFR50.55a(b)(2)(xviii)(B)	**(ISI)** *Certification of NDE personnel:* Paragraph IWA-2316 of the 1998 Edition through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of this section, may only be used to qualify personnel that observe for leakage during system leakage and hydrostatic tests conducted in accordance with IWA-5211(a) and (b), 1998 Edition through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of this section.
10CFR50.55a(b)(2)(xviii)(C)	**(ISI)** *Certification of NDE personnel:* When qualifying visual examination personnel for VT-3 visual examinations under paragraph IWA-2317 of the 1998 Edition through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of this section, the proficiency of the training must be demonstrated by administering an initial qualification examination and administering subsequent examinations on a 3-year interval.
10CFR50.55a(b)(2)(xix)	**(ISI)** *Substitution of alternative methods:* The provisions for the substitution of alternative examination methods, a combination of methods, or newly developed techniques in the 1997 Addenda of IWA-2240 must be applied. The provisions in IWA-2240, 1998 Edition through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of this section, are not approved for use. The provisions in IWA-4520(c), 1997 Addenda through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of this section, allowing the substitution of alternative examination methods, a combination of methods, or newly developed techniques for the methods specified in the Construction Code are not approved for use.
10CFR50.55a(b)(2)(xx)(B)	**(ISI)** *System leakage tests:* The NDE provision in IWA-4540(a)(2) of the 2002 Addenda of Section XI must be applied when performing system leakage tests after repair and replacement activities performed by welding or brazing on a pressure retaining boundary using the 2003 Addenda through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of this section.

TABLE 1.9-1
CODE OF FEDERAL REGULATIONS 10CFR50.55a REQUIREMENTS

10CFR50.55a Paragraphs	Limitations, Modifications, and Clarifications (Note: The words "this section" in this column refer to the 10CFR paragraph that is the source of the Limitation, Modification, or Clarification)
10CFR50.55a(b)(2)(xxi)(B)	**(ISI)** *Table IWB-2500-1 examination requirements:* The provisions of Table IWB-2500-1, Examination Category B-G-2, Item B7.80, that are in the 1995 Edition are applicable only to reused bolting when using the 1997 Addenda through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of this section.
10CFR50.55a(b)(2)(xxii)	**(ISI)** *Surface Examination:* The use of the provision in IWA-2220, "Surface Examination," of Section XI, 2001 Edition through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of this section, that allow use of an ultrasonic examination method is prohibited.
10CFR50.55a(b)(2)(xxiii)	**(ISI)** *Evaluation of Thermally Cut Surfaces:* The use of the provisions for eliminating mechanical processing of thermally cut surfaces in IWA 4461.4.2 of Section XI, 2001 Edition through the latest Edition and Addenda incorporated by reference in Paragraph (b)(2) of this section are prohibited.
10CFR50.55a(b)(2)(xxiv)	**(ISI)** *Incorporation of the Performance Demonstration Initiative and Addition of Ultrasonic Examination Criteria.* The use of Appendix VIII and the supplements to Appendix VIII and Article I-3000 of Section XI of the ASME BPV Code, 2002 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, is prohibited.
10CFR50.55a(b)(2)(xxv)	**(ISI)** *Mitigation of Defects by Modification:* The use of the provisions in IWA-4340, "Mitigation of Defects by Modification," Section XI, 2001 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section are prohibited.
10CFR50.55a(b)(2)(xxvi)	**(ISI)** *Pressure Testing Class 1, 2, and 3 Mechanical Joints.* The repair and replacement activity provisions in IWA-4540(c) of the 1998 Edition of Section XI for pressure testing Class 1, 2, and 3 mechanical joints must be applied when using the 2001 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section.

TABLE 1.9-1
CODE OF FEDERAL REGULATIONS 10CFR50.55a REQUIREMENTS

10CFR50.55a Paragraphs	Limitations, Modifications, and Clarifications (Note: The words "this section" in this column refer to the 10CFR paragraph that is the source of the Limitation, Modification, or Clarification)
10CFR50.55a(b)(2)(xxvii)	**(ISI)** *Removal of Insulation:* When performing visual examinations in accordance with IWA-5242 of Section XI, 2003 Addenda through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of the section, insulation must be removed from 17-4 PH or 410 stainless steel studs or bolts aged at a temperature below 1100 °F or having a Rockwell Method C hardness value above 30, and from A-286 stainless steel studs or bolts preloaded to 100,000 pounds per square inch or higher.
10CFR50.55a(b)(3)(v)	**(ISI)** *Subsection ISTD.* Article IWF-5000, "Inservice Inspection Requirements for Snubbers," of the ASME BPV Code, Section XI, provides inservice inspection requirements for examinations and tests of snubbers at nuclear power plants. Licensees may use Subsection ISTD, "Inservice Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Power Plants," ASME OM Code, 1995 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(3) of this section, in place of the requirements for snubbers in Section XI, IWF-5200(a) and (b) and IWF-5300(a) and (b), by making appropriate changes to their technical specifications or licensee-controlled documents. Preservice and inservice examinations must be performed using the VT-3 visual examination method described in IWA-2213.

TABLE 1.9-1
CODE OF FEDERAL REGULATIONS 10CFR50.55a REQUIREMENTS

10CFR50.55a Paragraphs	Limitations, Modifications, and Clarifications (Note: The words "this section" in this column refer to the 10CFR paragraph that is the source of the Limitation, Modification, or Clarification)
10CFR50.55a(b)(5)	**(ISI)** *Inservice Inspection Code Cases:* Licensees may apply the ASME Boiler and Pressure Vessel Code Cases listed in Regulatory Guide 1.147 through Revision 15, without prior USNRC approval subject to the following: (i) When a licensee initially applies a listed Code Case, the licensee shall apply the most recent version of that Code Case incorporated by reference in this paragraph. (ii) If a licensee has previously applied a Code Case and a later version of the Code Case is incorporated by reference in this paragraph, the licensee may continue to apply, to the end of the current 120-month interval, the previous version of the Code Case as authorized or may apply the later version of the Code Case, including any USNRC-specified conditions placed on its use. (iii) Application of an annulled Code Case is prohibited unless a licensee previously applied the listed Code Case prior to it being listed as annulled in Regulatory Guide 1.147. Any Code Case listed as annulled in any Revision of Regulatory Guide 1.147 which a licensee has applied prior to it being listed as annulled, may continue to be applied by that licensee to the end of the 120-month interval in which the Code Case was implemented.

TABLE 1.9-1
CODE OF FEDERAL REGULATIONS 10CFR50.55a REQUIREMENTS

10CFR50.55a Paragraphs	Limitations, Modifications, and Clarifications (Note: The words "this section" in this column refer to the 10CFR paragraph that is the source of the Limitation, Modification, or Clarification)
10CFR50.55a(b)(6)	**(ISI)** *Operation and Maintenance of Nuclear Power Plants Code Cases.* Licensees may apply the ASME Operation and Maintenance Nuclear Power Plants Code Cases listed in Regulatory Guide 1.192 without prior USNRC approval subject to the following: (i) When a licensee initially applies a listed Code Case, the licensee shall apply the most recent version of that Code Case incorporated by reference in this paragraph. (ii) If a licensee has previously applied a Code Case and a later version of the Code Case is incorporated by reference in this paragraph, the licensee may continue to apply, to the end of the current 120-month interval, the previous version of the Code Case as authorized or may apply the later version of the Code Case, including any USNRC-specified conditions placed on its use. (iii) Application of an annulled Code Case is prohibited unless a licensee previously applied the listed Code Case prior to it being listed as annulled in Regulatory Guide 1.192. If a licensee has applied a listed Code Case that is later listed as annulled in Regulatory Guide 1.192, the licensee may continue to apply the Code Case to the end of the current 120-month interval.

1.10 Code Cases

Per 10CFR50.55a(b)(5) and (b)(6), ASME Code Cases that have been determined to be suitable for use in ISI Program Plans by the USNRC are listed in Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability-ASME Section XI, Division 1". The approved Code Cases in Regulatory Guide 1.147, which are being utilized by PBAPS, are included in Section 2.1.1. The most recent version of a given Code Case incorporated in the revision of Regulatory Guide 1.147 referenced in 10CFR50.55a(b)(5)(i) at the time it is applied within the ISI Program shall be used. The latest version of Regulatory Guide 1.147 incorporated into this document is Revision 15. As this guide is revised, newly approved Code Cases should be assessed for plan implementation at PBAPS per Paragraph IWA-2441(d) and proposed for use in amendments to the ISI Program Plan.

The use of Code Cases, other than those listed in Regulatory Guide 1.147 may be authorized by the Director of the office of Nuclear Reactor Regulation upon request pursuant to 10CFR50.55a(a)(3). Code Cases not generically approved for use in Regulatory Guide 1.147, which are being utilized by PBAPS through associated relief requests, are included in Section 8.0.

This ISI Program Plan will also utilize Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code". The approved Code Cases in Regulatory Guide 1.192, which are being utilized by PBAPS, are included in Section 2.1.2. The latest version of Regulatory Guide 1.192 incorporated into this document is Revision 0. As this guide is revised, newly approved Code Cases should be assessed for plan implementation at PBAPS per Paragraph IWA-2441(d) and proposed for use in amendments to the ISI Program Plan.

1.11 Relief Requests

In accordance with 10CFR50.55a, when a licensee either proposes alternatives to ASME Section XI requirements which provide an acceptable level of quality and safety, determines compliance with ASME Section XI requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety, or determines that specific ASME Section XI requirements for inservice inspection are impractical, the licensee shall notify the USNRC and submit information to support the determination.

The submittal of this information will be referred to in this document as a "Relief Request." Relief requests for the Fourth ISI Interval and Second CISI Interval are included in Section 8.0 of this document. The text of the relief requests contained in Section 8.0 will demonstrate one of the following: the proposed alternatives provide an acceptable level of quality and safety per 10CFR50.55a(a)(3)(i), compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety per

10CFR50.55a(a)(3)(ii), or the code requirements are considered impractical per 10CFR50.55a(g)(5)(iii).

Per 10CFR50.55a Paragraphs (a)(3) and (g)(6)(i), the Director of the Office of Nuclear Reactor Regulation will evaluate relief requests and "may grant such relief and may impose such alternative requirements as it determines is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility."

2.0 BASIS FOR INSERVICE INSPECTION PROGRAM

2.1 ASME Section XI Examination Requirements

As required by the 10CFR50.55a, this Program was developed in accordance with the requirements detailed in the 2001 Edition through the 2003 Addenda, of the ASME Boiler and Pressure Vessel Code, Section XI, Division 1, Subsections IWA, IWB, IWC, IWD, IWE, IWF, Mandatory Appendices, Inspection Program B of Paragraph IWA-2432, approved ASME Code Cases, and approved alternatives through relief requests and SER's.

The ISI Program implements Appendix VIII "Performance Demonstration for Ultrasonic Examination Systems," ASME Section XI 2001 Edition, No Addenda as required by 10CFR50.55a(b)(2)(xxiv). Appendix VIII requires qualification of the procedures, personnel, and equipment used to detect and size flaws in piping, bolting, and the reactor pressure vessel (RPV). Each organization (e.g., owner or vendor) is required to have a written program to ensure compliance with the requirements. PBAPS initially implemented these requirements by invoking the Performance Demonstration Initiative (PDI) Program according to the schedule defined in 10CFR50.55a(g)(6)(ii)(C).

For the Fourth ISI Interval, PBAPS's inspection program for ASME Section XI Examination Categories B-F, B-J, C-F-1, and C-F-2 will be governed by risk-informed regulations. The RISI program methodology is described in the EPRI Topical Report TR-112657, Rev. B-A. To supplement the EPRI Topical Report, Code Case N-578-1 (as applicable per Relief Request I4R-44) is also being used for the classification of piping structural elements under the RISI program. The RISI program scope has been implemented as an alternative to the 2001 Edition through the 2003 Addenda of the ASME Section XI examination program for ISI Class 1 B-F and B-J welds and ISI Class 2 C-F-1 and C-F-2 welds in accordance with 10CFR50.55a(a)(3)(i). The basis for the resulting Risk Categorizations of the nonexempt ISI Class 1 and 2 piping systems at PBAPS is defined and maintained in the Final Report "Risk Informed Inservice Inspection Evaluation" as referenced in Section 9.0 of this document. References to ASME Section XI Examination Categories B-F, B-J, C-F-1, and C-F-2 have been replaced with Examination Category R-A to identify them as part of the RISI program.

The CISI Program per Subsection IWE is included in Section 6.0, "Containment ISI Plan". The CISI relief requests are included in Section 8.0 of this document.

2.1.1 ASME Section XI Code Cases

As referenced by 10CFR50.55a(b)(5) and allowed by USNRC Regulatory Guide 1.147, Revision 15, the following Code Cases are being incorporated into the PBAPS ISI Program. These Code Cases have been determined by the USNRC to be acceptable alternatives to applicable parts

of ASME Section XI. These Code Cases may be used by PBAPS without a relief request from the USNRC, provided that they are used with any identified limitations or modifications. Some of the Code Cases listed below are acceptable to the USNRC for application at PBAPS within the limitations imposed by the USNRC staff. Unless otherwise stated, limitations imposed by the USNRC are in addition to the conditions specified in the Code Case.

N-432-1 Repair Welding Using Automatic or Machine Gas Tungsten-Arc Welding (GTAW) Temper Bead Technique. Regulatory Guide 1.147, Revision 15.

N-460 Alternative Examination Coverage for Class 1 and Class 2 Welds. Regulatory Guide 1.147, Revision 15.

N-504-3 Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping

Code Case N-504-3 is acceptable subject to the following condition specified in Regulatory Guide 1.147, Revision 15:

> The provisions of Section XI, Nonmandatory Appendix Q, "Weld Overlay Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping Weldments," must also be met.

N-513-2 Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping. Regulatory Guide 1.147, Revision 15.

N-516-3 Underwater Welding

Code Case N-516-3 is acceptable subject to the following condition specified in Regulatory Guide 1.147, Revision 15:

> Licensee must obtain USNRC approval in accordance with 10CFR50.55a(a)(3) regarding the technique to be used in the weld repair or replacement of irradiated material underwater.

N-517-1 Quality Assurance Program Requirements for Owners. Regulatory Guide 1.147, Revision 15.

N-526 Alternative Requirements for Successive Inspections of Class 1 and 2 Vessels. Regulatory Guide 1.147, Revision 15.

N-528-1 Purchase, Exchange, or Transfer of Material Between Nuclear Plant Sites

Code Case N-528-1 is acceptable subject to the following condition specified in Regulatory Guide 1.147, Revision 15:

> The requirements of 10CFR Part 21, "Reporting of Defects and Noncompliance", are to be applied to the nuclear plant site supplying the material as well as to the nuclear plant site receiving the material that has been purchased, exchanged, or transferred between sites.

N-532-4 Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission as Required by IWA-4000 and IWA-6000. Regulatory Guide 1.147, Revision 15.

N-552 Alternative Methods - Qualification for Nozzle Inside Radius Section from the Outside Surface

Code Case N-552 is acceptable subject to the following conditions specified in Regulatory Guide 1.147, Revision 15:

> To achieve consistency with the 10CFR50.55a rule change published September 22, 1999 (64 FR 51370), incorporating Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," to ASME Section XI, add the following to the specimen requirements:
>
> "At least 50 percent of the flaws in the demonstration test set must be cracks and the maximum misorientation must be demonstrated with cracks. Flaws in nozzles with bore diameters equal to or less than 4 inches may be notches."
>
> Add to detection criteria, "The number of false calls must not exceed three."

N-566-2 Corrective Action for Leakage Identified at Bolted Connections. Regulatory Guide 1.147, Revision 15.

N-586-1 Alternative Additional Examination Requirements for Class 1, 2, and 3 Piping, Components, and Supports. Regulatory Guide 1.147, Revision 15.

N-597-2 Requirements for Analytical Evaluation of Pipe Wall Thinning

Code Case N-597-2 is acceptable subject to the following conditions specified in Regulatory Guide 1.147, Revision 15:

(1) Code Case must be supplemented by the provisions of EPRI Nuclear Safety Analysis Center Report 202L-R2, April 1999, "Recommendations for an Effective Flow Accelerated Corrosion Program," for developing the inspection requirements, the method of predicting the rate of wall thickness loss, and the value of the predicted remaining wall thickness. As used in NSAC-202L-R2, the term "should" is to be applied as "shall" (i.e., requirement).

(2) Components affected by flow-accelerated corrosion to which this Code Case are applied must be repaired or replaced in accordance with the construction code of record and Owner's requirements or a later USNRC approved Edition of Section III, "Rules for Construction of Nuclear Plant Components," of the ASME Code prior to the value of t_p reaching the allowable minimum wall thickness, t_{min}, as specified in -3622.1(a)(1) of this Code Case. Alternatively, use of the Code Case is subject to USNRC review and approval per 10CFR50.55a(a)(3).

(3) For Class 1 piping not meeting the criteria of -3221, the use of evaluation methods and criteria is subject to USNRC review and approval per 10CFR50.55a(a)(3).

(4) For those components that do not require immediate repair or replacement, the rate of wall thickness loss is to be used to determine a suitable inspection frequency so that repair or replacement occurs prior to reaching allowable minimum wall thickness, t_{min}.

(5) For corrosion phenomenon other than flow accelerated corrosion, use of the Code Case is subject to USNRC review and approval per 10CFR50.55a(a)(3). Inspection plans and wall

thinning rates may be difficult to justify for certain degradation mechanisms such as MIC and pitting.

N-600 Transfer of Welder, Welding Operator, Brazer, and Brazing Operator Qualifications Between Owners. Regulatory Guide 1.147, Revision 15.

N-606-1 Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique for BWR CRD Housing/Stud Tube Repairs

Code Case N-606-1 is acceptable subject to the following conditions specified in Regulatory Guide 1.147, Revision 15:

Prior to welding, an examination or verification must be performed to ensure proper preparation of the base metal, and that the surface is properly contoured so that an acceptable weld can be produced. The surfaces to be welded, and surfaces adjacent to the weld, are to be free from contaminants, such as, rust, moisture, grease, and other foreign material or any other condition that would prevent proper welding and adversely affect the quality or strength of the weld. This verification is to be required in the welding procedures.

N-613-1 Ultrasonic Examination of Full Penetration Nozzles in Vessels, Examination Category B-D, Item No's. B3.10 and B3.90, Reactor Nozzle-to-Vessel Welds, Figs. IWB-2500-7(a), (b), and (c) . Regulatory Guide 1.147, Revision 15.

N-624 Successive Inspections. Regulatory Guide 1.147, Revision 15.

N-629 Use of Fracture Toughness Test Data to Establish Reference Temperature for Pressure Retaining Materials. Regulatory Guide 1.147, Revision 15.

N-638-1 Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique

Code Case N-638-1 is acceptable subject to the following conditions specified in Regulatory Guide 1.147, Revision 15:

UT examinations shall be performed with personnel and procedures qualified for the repaired volume and qualified by demonstration using representative samples which contain construction type flaws. The acceptance criteria of NB-5330 in the 1998 Edition through the 2000 Addenda of Section III apply to all flaws identified within the repaired volume.

N-639 Alternative Calibration Block Material

Code Case N-639 is acceptable subject to the following conditions specified in Regulatory Guide 1.147, Revision 15:

Chemical ranges of the calibration block may vary from the materials specification if (1) it is within the chemical range of the component specification to be inspected, and (2) the phase and grain shape are maintained in the same ranges produced by the thermal process required by the material specification.

N-641 Alternative Pressure-Temperature Relationship and Low Temperature Overpressure Protection System Requirements. Regulatory Guide 1.147, Revision 15.

N-649 Alternative Requirements for IWE-5240 Visual Examination. Regulatory Guide 1.147, Revision 15.

N-651 Ferritic and Dissimilar Metal Welding Using SMAW Temper Bead Technique Without Removing the Weld Bead Crown of the First Layer. Regulatory Guide 1.147, Revision 15.

N-652-1 Alternative Requirements to Examination Categories B-G-1, B-G-2, and C-D Bolting Examination Methods and Selection Criteria. Regulatory Guide 1.147, Revision 15.

N-661 Alternative Requirements for Wall Thickness Restoration of Classes 2 and 3 Carbon Steel Piping for Raw Water Service

Code Case N-661 is acceptable subject to the following conditions specified in Regulatory Guide 1.147, Revision 15:

(a) If the root cause of the degradation has not been determined, the repair is only acceptable for one cycle.
(b) Weld overlay repair of an area can only be performed once in the same location.
(c) When through-wall repairs are made by welding on surfaces that are wet or exposed to water, the weld overlay repair is only acceptable until the next refueling outage.

N-664 Performance Demonstration Requirements for Examination of Unclad Reactor Pressure Vessel Welds, Excluding Flange Welds. Regulatory Guide 1.147, Revision 15.

N-665 Alternative Requirements for Beam Angle Measurements Using Refracted Longitudinal Wave Search Units. Regulatory Guide 1.147, Revision 15.

N-686 Alternative Requirements for Visual Examinations, VT-1, VT-2, and VT-3. Regulatory Guide 1.147, Revision 15.

N-695 Qualification Requirements for Dissimilar Metal Piping Welds. Regulatory Guide 1.147, Revision 15.

N-696 Qualification Requirements for Appendix VIII Piping Examinations Conducted from the Inside Surface. Regulatory Guide 1.147, Revision 15.

N-700 Alternative Rules for Selection of Classes 1, 2, and 3 Vessel Welded Attachments for Examination. Regulatory Guide 1.147, Revision 15.

Additional Code Cases invoked in the future shall be in accordance with those approved for use in the latest published revision of Regulatory Guide 1.147 at that time.

2.1.2 ASME OM Code Cases

As referenced by 10CFR50.55a(b)(6) and allowed by USNRC Regulatory Guide 1.192, Revision 0, the following Code Cases are being incorporated into the PBAPS ISI Program.

OMN-13, Rev. 0 Requirements for Extending Snubber Inservice Visual Examination Interval at LWR Power Plants.

Additional Code Cases invoked in the future shall be in accordance with those approved for use in the latest published revision of Regulatory Guide 1.192 at that time.

2.2 Augmented Inspection Plan Requirements

Augmented Inspection Plan requirements are those inspections that are performed above and beyond the requirements of ASME Section XI. Below is a summary of those examinations performed by PBAPS that are not specifically addressed by ASME Section XI, or the inspections that will be performed in addition to the requirements of ASME Section XI on a routine basis during the Fourth ISI Interval and Second CISI Interval. Implementation of the examination commitments is included in Section 7.0 of this ISI Program Plan and the associated ISI Database. See the Augmented Inspection Plan for details on the PBAPS ISI and CISI mandatory and non-mandatory augmented programs, examination requirements, and references.

2.2.1 (AUG-01), IGSCC Inspection Program; Generic Letter 88-01; USNRC Position on IGSCC in Boiling Water Reactor (BWR) Austenitic Stainless Steel Piping, Revision 2 / Supplement 1 to Generic Letter 88-01, NUREG 0313, Technical Report on Material Selection and Process Guidelines for BWR Coolant Pressure Boundary Piping, Revision 2, EPRI Report TR-113932, BWR Vessel and Internals Project Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75), and EPRI Report TR-1012621, BWR Vessel and Internals Project Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75-A)

2.2.2 (AUG-02), BWR Feedwater Nozzle Inspection Requirements; NUREG 0619, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking and Boiling Water Reactor Owners' Group (BWROG) Reports GE-NE-523-A71-0594 and GE-NE-523-A71-0594-A, Revision 1, Alternate BWR Feedwater Nozzle Inspection Requirements

Note: Augmented examination of the Feedwater Spargers has been transferred to procedure ER-PB-331-1001, "RPV & Internals Program Basis and Implementation Document", whereas augmented examination of the Feedwater Nozzles remains with this section.

2.2.3 (AUG-05), Snubber Visual Examination and Functional Testing Program

2.2.4 (AUG-12), 10CFR50.55a and BWRVIP-05, 10CFR50 Augmented Requirements for Reactor Pressure Vessel Shell Weld Examinations

2.2.5 (AUG-15), Standby Liquid Control Nozzle-to-Safe-End

2.2.6 (AUG-D), RPV Closure Flange O-ring Sealing Surfaces

2.2.7 (AUG-C2), HPCI, RHR and Core Spray Suction Strainers

2.2.8 (AUG-C3), Sludge Accumulation on the Torus Floor

2.2.9 (AUG-CA), Examination of Class MC Supports

2.2.10 (AUG -CB), Examination of Drywell External Components Located Outside Stabilizer Access Hatches

2.2.11 (AUG -CC), Examination of Drywell Airgap Drain Lines

2.2.12 (AUG -CD), Examination of Bolting in ECCS Suction Strainers

2.2.13 Augmented inspect ion programs associated with the BWRVIP and the PBAPS Vessel Internals Program have been transferred to procedure ER-PB-331-1001, "RPV & Internals Program Basis and Implementation Document" The PBAPS Vessel Internals Program procedure now includes the following:

AUG-02	BWR Feedwater Nozzle Inspection Requirements (Feedwater Sparger Only); NUREG-0619, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking and BWR Feedwater Nozzle Inspection Requirements; Boiling Water Reactor Owners' Group (BWROG) Reports GE-NE-523-A71-0594 and GE-NE-523-A71-0594-A, Revision 1, Alternate BWR Feedwater Nozzle Inspection Requirements. (See Note in Section 2.2.2 for augmented examination details for Feedwater Spargers)
AUG-03	IE Bulletin No. 80-13, Cracking in Core Spray Spargers, and BWRVIP-18-A, BWR Core Spray Internals
AUG-04	BWRVIP-41 and BWRVIP-138, Jet Pump Assembly
AUG-06	BWRVIP-26, Top Guide
AUG-07	BWRVIP-38 and BWRVIP-104, Shroud Support
AUG-08	SIL-462 Rev. 1, Shroud Access Hole Covers
AUG-09	BWRVIP-76, Core Shroud
AUG-10	BWRVIP-25, Core Plate
AUG-11	BWRVIP-47, Lower Plenum Region
AUG-14	BWRVIP-48, Vessel ID Attachment Welds
AUG-19	BWRVIP-139, Steam Dryers

2.2.14 USNRC NUREG -0737, dated November 1980

This document discusses TMI Action Plan Requirements and includes requirements in Item III.D.1.1 for leak testing and periodic visual examinations of systems outside of primary containment which could contain highly radioactive fluids during a serious transient or accident. Commitments made concerning NUREG-0737 are maintained outside of

the ISI and Pressure Testing Programs and are implemented per the PBAPS Technical Specifications (TS) Section 5.5.2 and Technical Requirements Manual (TRM) Section 5.5.2. Implementation of the PBAPS program addressing these requirements is included in a series of station surveillance tests (not part of the SPT program) that complete these examinations every 24 months.

2.3 System Classifications and P&ID Boundary Drawings

The ISI Classification Basis Document details those systems that are ISI Class 1, 2, 3, or MC that fall within the ISI scope of examinations. Below is a summary of the classification criteria used within the ISI Classification Basis Document.

Each safety related, fluid system containing water, steam, air, oil, etc. included in the PBAPS UFSAR was reviewed to determine which safety functions they perform during all modes of system and plant operation. Based on these safety functions, the systems and components were evaluated per classification documents. The systems were then designated as ISI Class 1, 2, 3, MC, or non-classed accordingly. This evaluation followed the guidelines of UFSAR Section 1.4 and Table 1.4.2

When a particular group of components is identified as performing an ISI Class 1, 2, or 3 safety function, the components are further reviewed to assure the interfaces (boundary valves and boundary barriers) meet the criteria set by 10CFR50.2, 10CFR50.55a(c)(1), 10CFR50.55a(c)(2), and Regulatory Guide 1.26, Revision 3. SRP 3.2.2 and ANSI/ANS-58.14-1993 (PBAPS is not committed to or licensed in accordance with the last two documents) were also used for guidance in determining the classification boundaries where 10CFR and the Regulatory Guide did not address a given situation.

Components within the reactor coolant pressure boundary, as defined by 10CFR50.2, are typically designated as ISI Class 1 while the other safety related components are evaluated for ISI Class 2 or 3 designation in accordance with the guidelines of Regulatory Guide 1.26. Per Regulatory Guide 1.26 Paragraphs A and B, the ISI Class 2 and 3 boundaries are limited to safety related systems and components (reference UFSAR Table 1.4.2). Where sufficient classification criteria is not provided within 10CFR50 or Regulatory Guide 1.26, other industry documents such as NUREG-0800 and ANSI/ANS standards are consulted "for guidance". PBAPS is only committed to and licensed in accordance with the rules and regulations of 10CFR50 and Regulatory Guide 1.26.

According to 10CFR50.55a, Paragraph (g)(4), the ISI requirements of ASME Section XI are assigned to these components, within the constraints of existing plant design. The PBAPS ISI Class 1, 2, and 3 components that are exempt from examination are those which meet the criteria of ASME Section XI, Paragraphs IWB-1220, IWC-1220, and IWD-1220. Supports which meet the criteria of

Paragraph IWF-1230 of ASME Section XI are also exempt from examination. For Containment, CISI Class MC components which meet Paragraph IWE-1220 are exempt from examination.

The systems and components (piping, pumps, valves, vessels, etc.), which are subject to the examinations of Articles IWB-2000, IWC-2000, IWD-2000, and IWF-2000, and pressure tests of Articles IWB-5000, IWC-5000, and IWD-5000 are identified on the Inservice Inspection Boundary Drawings with ISI classification color coding as detailed in Table 2.3-2.

Table 2.3-1 provides a listing of the System Designations used for the piping systems and components that are subject to ISI at PBAPS, Units 2 and 3. Table 2.3-2 provides a listing of the ISI Boundary Drawings that depict the Class 1, 2, and 3 components subject to the requirements of ASME, Section XI, during the Fourth ISI Interval at PBAPS. These drawings are derived from the station piping and instrumentation diagrams (P&IDs). Table 2.3-3 provides a listing of the CISI Boundary Drawings that depict the Class MC components subject to the requirements of ASME Section XI during the Second CISI Interval at PBAPS. In addition to the general boundary drawings listed below, specific boundaries for the Containment Atmosphere Control System are shown on drawings ISI-367, Sht. 1 (Unit 2) and Sht. 2 (Unit 3).

TABLE 2.3-1
SYSTEM DESIGNATORS

Designator	System
01	Main Steam (MS)
02	Main Recirculation (MR)
03	Control Rod Hydraulic (CRD)
04	Nuclear Boiler Vessel Instrumentation (NBVI)
06	Feedwater (FW)
10	Residual Heat Removal (RHR)
11	Standby Liquid Control (SLC)
12	Reactor Water Clean-Up (RWCU)
13	Reactor Core Isolation Cooling (RCIC)
14	Core Spray (CS)
23	High Pressure Coolant Injection (HPCI)
32	High Pressure Service Water (HPSW)
33	Emergency Service Water (ESW)
48	Emergency Cooling Water (ECW)

TABLE 2.3-2
INSERVICE INSPECTION BOUNDARY DRAWINGS

Drawing Number	Sheet Number	Title
ISI-303	1, 3	Main Steam, Bypass, and Crossaround
ISI-308	1, 2, 3, 4	Feedwater and Feed Pumps
ISI-309	1, 2	Condensate Storage
ISI-315	1, 2, 3, 4, 5	Emergency Service Water and High Pressure Service Water
ISI-330	1	Emergency Cooling System
ISI-331	1, 3	Off-Gas Recombiner System
ISI-351	1, 2, 3, 4	Nuclear Boiler
ISI-352	1, 2, 3, 4	Nuclear Boiler Vessel Instrumentation
ISI-353	1, 2, 3, 4	Reactor Recirculation Pump System
ISI-354	1, 2	Reactor Water Cleanup System
ISI-356	1, 2	Control Rod Drive (CRD) Hydraulic System Part A
ISI-357	1, 2	CRD Hydraulic System Part B
ISI-358	1, 2	Standby Liquid Control System
ISI-359	1, 2	Reactor Core Isolation Cooling (RCIC) System
ISI-360	1, 2	RCIC Pump Turbine Details
ISI-361	1, 2, 3, 4	Residual Heat Removal System
ISI-362	1, 2	Core Spray Cooling System
ISI-365	1, 2	High Pressure Coolant Injection (HPCI) System
ISI-366	1, 4	HPCI Pump Turbine Details
ISI-367	1, 2	Containment Atmospheric Control System
ISI-372	1, 2	Containment Atmospheric Dilution System

TABLE 2.3-3
CONTAINMENT INSERVICE INSPECTION BOUNDARY DRAWINGS

Drawing Number	Sheet Number	Unit	Title
ISI-400	1	2	Containment - General Arrangement
ISI-400	2	2	Containment Details
ISI-400	3	2	Containment Details
ISI-400	4	3	Containment - General Arrangement
ISI-400	5	3	Containment Details
ISI-400	6	3	Containment Details
ISI-401	1	2	Drywell I.D. Roll-Out and Penetrations
ISI-401	2	2	Drywell I.D. Roll-Out and Penetrations
ISI-401	3	3	Drywell I.D. Roll-Out and Penetrations
ISI-401	4	3	Drywell I.D. Roll-Out and Penetrations
ISI-402	1	2	Suppression Chamber Penetrations
ISI-402	2	3	Suppression Chamber Penetrations

2.4 ISI Isometric and Component Drawings for Nonexempt ISI Class Components and Supports

ISI Isometric and Component Drawings were developed to detail the ISI Class 1, 2, and 3 components (welds, bolting, etc.) and support locations at PBAPS. These ISI component and support locations are identified on the ISI Piping Isometric Drawings listed in Tables 2.4-1 and 2.4-2. These drawings identify piping welds, valves, pumps, and supports that are within the non-exempt piping boundaries. In addition, system identifications, pipe sizes, containment penetrations, and piping configurations are identified. Calibration Standards approved for use at PBAPS are listed in Table 2.4-3. Limerick Generating Station (LGS) Calibration Standards approved for use at PBAPS are listed in Table 2.4-4. The Primary Containment (Drywell) Penetrations penetrated by multiple Class 1, 2, 3, and non-classed piping lines, and numerous electrical and instrumentation penetrations are listed in Table 2.4-5.

PBAPS's ISI Program, including the ISI Database, ISI Classification Basis Document, ISI Selection Document and schedule, addresses the nonexempt components, which require examination and testing.

A summary of PBAPS ASME Section XI nonexempt components and supports is included in Section 7.0.

TABLE 2.4-1
UNITS 2 AND 3 ISI PIPING ISOMETRIC DRAWINGS

System	Unit 2 and Common Isometric Drawings	Unit 3 Isometric Drawings
Core Spray	DCN-14-MI-203-5-A DCN-14-MI-203-5-B GB-14-MI-202-2-A GB-14-MI-202-2-B GB-14-MI-202-2-C GB-14-MI-202-2-D GB-14-MI-203-3-A GB-14-MI-203-3-B GB-14-MI-203-4-A GB-14-MI-203-4-B HB-14-MI-201-1-A HB-14-MI-201-1-B HB-14-MI-201-1-C HB-14-MI-201-1-D HC-27-MI-201-1	DCN-14-MI-303-4-A DCN-14-MI-303-4-B GB-14-MI-302-2-A GB-14-MI-302-2-B GB-14-MI-302-2-C GB-14-MI-302-2-D GB-14-MI-303-3-A GB-14-MI-303-3-B HB-14-MI-301-1-A HB-14-MI-301-1-B HB-14-MI-301-1-C HB-14-MI-301-1-D HCR-27-MI-301-1 HCR-27-MI-301-2
Emergency Cooling Water	GB-48-MI-001-2 GB-48-MI-001-3 HB-48-MI-001-1 HB-48-MI-001-3 HB-48-MI-001-4 HB-48-MI-001-5	GB-48-MI-001-2 GB-48-MI-001-3 HB-48-MI-001-1 HB-48-MI-001-3 HB-48-MI-001-4 HB-48-MI-001-5

TABLE 2.4-1
UNITS 2 AND 3 ISI PIPING ISOMETRIC DRAWINGS

System	Unit 2 and Common Isometric Drawings	Unit 3 Isometric Drawings
Emergency Service Water	HB-33-MI-201-1 HB-33-MI-201-2 HB-33-MI-201-3 HB-33-MI-201-4 HB-33-MI-201-5 HB-33-MI-201-6 HB-33-MI-201-7 HB-33-MI-201-8 HB-33-MI-201-9 HB-33-MI-201-10 HB-33-MI-201-12 HBC-33-MI-201-13 HBC-33-MI-201-14 HBC-33-MI-201-15 HBC-33-MI-201-16 HBC-33-MI-201-17 HBC-33-MI-201-18 HBC-33-MI-201-19 HBC-33-MI-201-20 HBC-33-MI-201-21 HBC-33-MI-201-22 HBC-33-MI-201-23 HBC-33-MI-201-24 HBC-33-MI-201-25 HBC-33-MI-201-26 HBC-33-MI-201-27 HBC-33-MI-201-28 HBC-33-MI-201-29 HBC-33-MI-201-30 HBC-33-MI-201-31 HBC-33-MI-201-32	HB-33-MI-301-1 HB-33-MI-301-2 HB-33-MI-301-3 HB-33-MI-301-4 HB-33-MI-301-5 HB-33-MI-301-6 HB-33-MI-301-7 HBC-33-MI-301-8 HBC-33-MI-301-9 HBC-33-MI-301-10 HBC-33-MI-301-11 HBC-33-MI-301-12 HBC-33-MI-301-13 HBC-33-MI-301-14 HBC-33-MI-301-15 HBC-33-MI-302-16 HBC-33-MI-302-17 HBC-33-MI-302-18 HBC-33-MI-302-19 HBC-33-MI-302-20 HBC-33-MI-302-21 HBC-33-MI-302-22 HBC-33-MI-302-23 HBC-33-MI-302-24
Feedwater	DDN-06-MI-201-2-A DDN-06-MI-201-2-B DD-06-MI-201-1	DDN-06-MI-301-2-A DDN-06-MI-301-2-B DD-06-MI-301-1

TABLE 2.4-1
UNITS 2 AND 3 ISI PIPING ISOMETRIC DRAWINGS

System	Unit 2 and Common Isometric Drawings	Unit 3 Isometric Drawings
High Pressure Coolant Injection	DBN-23-MI-203-6 BN-23-MI-203-7 DDN-23-MI-202-2 DDN-23-MI-202-3 DDN-23-MI-202-4 DDN-23-MI-202-5 HB-23-MI-201-1 HB-23-MI-204-8	DBN-23-MI-303-5 DBN-23-MI-303-6 DBN-23-MI-303-7 DDN-23-MI-302-2 DDN-23-MI-302-3 DDN-23-MI-302-4 HB-23-MI-301-1 HB-23-MI-304-8
High Pressure Service Water	GB-32-MI-201-1 GB-32-MI-201-2 GB-32-MI-201-3 GB-32-MI-201-4-A GB-32-MI-201-4-B GB-32-MI-201-5-A GB-32-MI-201-5-B GB-32-MI-202-6-A GB-32-MI-202-6-B GB-32-MI-202-7	GB-32-MI-301-1 GB-32-MI-301-2 GB-32-MI-301-3 GB-32-MI-301-4 GB-32-MI-301-5-A GB-32-MI-301-5-B GB-32-MI-301-6-A GB-32-MI-301-6-B GB-32-MI-302-7-A GB-32-MI-302-7-B GB-32-MI-302-8
Main Recirculation	RCS-02-MI-201-1-A RCS-02-MI-201-1-B	RCS-02-MI-301-1-A RCS-02-MI-301-1-B
Main Steam	DBN-01-MI-201-1-A DBN-01-MI-201-1-B DBN-01-MI-201-1-C DBN-01-MI-201-1-D DB-01-MI-201-2-A DB-01-MI-201-2-B DB-01-MI-201-2-C DB-01-MI-201-2-D DB-01-MI-221-3 DB-01-MI-221-4 DB-01-MI-222-5-A DB-01-MI-222-5-B	DBN-01-MI-301-1-A DBN-01-MI-301-1-B DBN-01-MI-301-1-C DBN-01-MI-301-1-D DB-01-MI-301-2-A DB-01-MI-301-2-B DB-01-MI-301-2-C DB-01-MI-301-2-D DB-01-MI-321-3 DB-01-MI-321-4 DB-01-MI-322-5-A DB-01-MI-322-5-B

TABLE 2.4-1
UNITS 2 AND 3 ISI PIPING ISOMETRIC DRAWINGS

System	Unit 2 and Common Isometric Drawings	Unit 3 Isometric Drawings
Main Steam Relief Valve	GG-01-MI-271-A GG-01-MI-271-B GG-01-MI-271-C GG-01-MI-271-D GG-01-MI-271-E GG-01-MI-271-F GG-01-MI-271-G GG-01-MI-271-H GG-01-MI-271-J GG-01-MI-271-K GG-01-MI-271-L	GG-01-MI-371-A GG-01-MI-371-B GG-01-MI-371-C GG-01-MI-371-D GG-01-MI-371-E GG-01-MI-371-F GG-01-MI-371-G GG-01-MI-371-H GG-01-MI-371-J GG-01-MI-371-K GG-01-MI-371-L
Reactor Core Isolation Cooling	DDN-13-MI-201-1	DDN-13-MI-301-1
Reactor Drain	DCN-04-MI-201-2 DDN-04-MI-201-1	DCN-04-MI-301-2 DDN-04-MI-301-1
Reactor Water Cleanup	DCA-12-MI-201-1 DCA-12-MI-203-3 DE-12-MI-202-2 DE-12-MI-203-4 DE-12-MI-203-5 DE-12-MI-203-6	DCA-12-MI-301-1 DCA-12-MI-303-3 DE-12-MI-302-2 DE-12-MI-303-4 DE-12-MI-303-5 DE-12-MI-303-6

TABLE 2.4-1
UNITS 2 AND 3 ISI PIPING ISOMETRIC DRAWINGS

System	Unit 2 and Common Isometric Drawings	Unit 3 Isometric Drawings
Residual Heat Removal	DCN-10-MI-206-15 DCN-10-MI-207-16 DDN-10-MI-203-8-A DDN-10-MI-203-8-B DE-10-MI-203-9-A DE-10-MI-203-9-B GB-10-MI-202-3-A GB-10-MI-202-3-B GB-10-MI-202-3-C GB-10-MI-202-3-D GB-10-MI-202-4-A GB-10-MI-202-4-B GB-10-MI-202-4-C GB-10-MI-202-4-D GB-10-MI-203-5-B GB-10-MI-203-6-B GB-10-MI-203-7-A GB-10-MI-203-7-B GB-10-MI-204-10-A GB-10-MI-204-10-B GB-10-MI-204-11-A GB-10-MI-204-11-B GB-10-MI-205-12-A GB-10-MI-205-13-A GB-10-MI-205-13-B GB-10-MI-206-14 HB-10-MI-201-1-A HB-10-MI-201-1-B HB-10-MI-201-1-C HB-10-MI-201-1-D HB-10-MI-201-2-A HB-10-MI-201-2-C HB-10-MI-201-2-D HB-10-MI-207-17	DCA-10-MI-303-9-A DCA-10-MI-303-9-B DCA-10-MI-306-13 DDN-10-MI-303-8-A DDN-10-MI-303-8-B GB-10-MI-302-3-A GB-10-MI-302-3-B GB-10-MI-302-3-C GB-10-MI-302-3-D GB-10-MI-302-4-A GB-10-MI-302-4-B GB-10-MI-302-4-C GB-10-MI-302-4-D GB-10-MI-303-5-A GB-10-MI-303-5-B GB-10-MI-303-6-A GB-10-MI-303-7-A GB-10-MI-303-7-B GB-10-MI-304-10-A GB-10-MI-304-10-B GB-10-MI-304-11-A GB-10-MI-304-11-B GB-10-MI-305-12-A GB-10-MI-305-12-B HB-10-MI-301-1-A HB-10-MI-301-1-B HB-10-MI-301-1-C HB-10-MI-301-1-D HB-10-MI-301-2-A HB-10-MI-301-2-C HB-10-MI-301-1-D HB-10-MI-306-14
Scram Discharge Volume	CS-03-MI-201-1-A CS-03-MI-201-1-B CS-03-MI-201-2-A	CS-03-MI-301-1-A CS-03-MI-301-1-B

TABLE 2.4-2
UNITS 2 AND 3 COMPONENT DRAWINGS

Component	Unit 2 Component Drawings	Unit 3 Component Drawings
Main Recirculation Pumps	ISI-2-02-1 ISI-2-02-2	ISI-3-02-1 ISI-3-02-2
Reactor Pressure Vessel	ISI-2-RV-01 ISI-203-RV-02 ISI-203-RV-03 ISI-203-RV-04 ISI-2-RV-05 ISI-203-RV-06 ISI-203-RV-07 ISI-203-RV-08 ISI-203-RV-09 ISI-203-RV-10 ISI-203-RV-11 ISI-203-RV-12 ISI-203-RV-13 ISI-203-RV-14 ISI-203-RV-15 ISI-203-RV-16 ISI-203-RV-17 ISI-203-RV-18 ISI-203-RV-19 ISI-203-RV-20 ISI-203-RV-21 ISI-203-RV-22 ISI-203-RV-23 ISI-203-RV-24	ISI-3-RV-01 ISI-203-RV-02 ISI-203-RV-03 ISI-203-RV-04 ISI-3-RV-05 ISI-203-RV-06 ISI-203-RV-07 ISI-203-RV-08 ISI-203-RV-09 ISI-203-RV-10 ISI-203-RV-11 ISI-203-RV-12 ISI-203-RV-13 ISI-203-RV-14 ISI-203-RV-15 ISI-203-RV-16 ISI-203-RV-17 ISI-203-RV-18 ISI-203-RV-19 ISI-203-RV-20 ISI-203-RV-21 ISI-203-RV-22 ISI-203-RV-23 ISI-203-RV-24 ISI-3-RV-50 ISI-3-RV-51 ISI-3-RV-52
Core Spray / RHR Pump	ISI-2-10-1 ISI-2-10-2	ISI-3-10-1 ISI-3-10-2

TABLE 2.4-3
ASME SECTION XI, ISI CALIBRATION BLOCK DRAWINGS

Drawing Number	Title
CBD-1	ASME, Section XI, UT Calibration Block for PBAPS Units No. 2 & 3
CBD-1A	ASME, Section XI, UT Calibration Block for 26" Main Steam
CBD-2A	ASME, Section XI, UT Calibration Block for 24" Pipe
CBD-3	ASME, Section XI, UT Calibration Block for 12" Feedwater Riser
CBD-4	ASME, Section XI, UT Calibration Block for 6" Head Spray
CBD-5A	ASME, Section XI, UT Calibration Block for 6" Reactor Water Cleanup
CBD-6A	ASME, Section XI, UT Calibration Block for 6" Main Steam Safety and Relief
CBD-7A	ASME, Section XI, UT Calibration Block for 10" High Pressure Coolant Injection
CBD-8	ASME, Section XI, UT Calibration Block for 14" High Pressure Coolant Injection
CBD-8A	ASME, Section XI, UT Calibration Block for 14" High Pressure Coolant Injection
CBD-9A	ASME, Section XI, UT Calibration Block for 28" Main Recirc. Suction & Discharge
CBD-10	ASME, Section XI, UT Calibration Block for 4" RWCU Main Recirculation Bypass, CRD
CBD-10A	ASME, Section XI, UT Calibration Block for 4" RWCU Main Recirculation Bypass, CRD
CBD-12	ASME, Section XI, UT Calibration Block for 12" Core Spray
CBD-13A	ASME, Section XI, UT Calibration Block for 20" Feedwater (block not used)
CBD-13C	ASME, Section XI, UT Calibration Block for 20" Feedwater
CBD-14A	ASME, Section XI, UT Calibration Block for 22" Main Recirculation Manifold
CBD-15	ASME, Section XI, UT Calibration Block for 14" Feedwater Riser
CBD-16A	ASME, Section XI, UT Calibration Block for 12" Feedwater Riser
CBD-17	ASME, Section XI, UT Calibration Block for 4.5" Pipe
CBD-18A	ASME, Section XI, UT Calibration Block for 12" Main Recirc. Nozzle-To-Safe End
CBD-19A	ASME, Section XI, UT Calibration Block for 12" Main Recirc. Safe End-To-Nozzle
CBD-20A	ASME, Section XI, UT Calibration Block for 3P1-1/2" Flat Pipe
CBD-21	ASME, Section XI, UT Calibration Block for 5.125 CRD Safe End
CBD-22	ASME, Section XI, UT Calibration Block for RPV Nut

TABLE 2.4-3
ASME SECTION XI, ISI CALIBRATION BLOCK DRAWINGS

Drawing Number	Title
CBD-24	ASME, Section XI, UT Calibration Block for Closure Head Thickness
CBD-25	ASME, Section XI, UT Calibration Block for 6" Pipe
CBD-26	ASME, Section XI, UT Calibration Block for 12" Pipe
CBD-27	ASME, Section XI, UT Calibration Block for 4" Pipe
CBD-28	ASME, Section XI, UT Calibration Block for 26" Pipe
CBD-29	ASME, Section XI, UT Calibration Block for 20" Pipe
CBD-30	ASME, Section XI, UT Calibration Block for 24" Pipe
CBD-31	ASME, Section XI, UT Calibration Block for 24" Pipe
CBD-32	ASME, Section XI, UT Calibration Block for 24" Pipe
CBD-33A	ASME, Section XI, UT Calibration Block for 20" Pipe
CBD-34	ASME, Section XI, UT Calibration Block for 10" Pipe
CBD-35	ASME, Section XI, UT Calibration Block for 6" SS Pipe
CBD-36	ASME, Section XI, UT Calibration Block for 12" Pipe
CBD-38	ASME, Section XI, UT Calibration Block for OD Inner Radius
CBD-39	ASME, Section XI, UT Calibration Block for Clad Vessel
CBD-41	ASME, Section XI, UT Calibration Block for Nozzle Cap
CBD-42	ASME, Section XI, UT Calibration Block for Pump Stud
CBD-43	ASME, Section XI, UT Calibration Block for Stabilizer Bracket
CBD-44	ASME, Section XI, UT Calibration Block for Pump Nut
CBD-45	ASME, Section XI, UT Calibration Block for Nut
CBD-46	ASME, Section XI, UT Calibration Block for Stud
CBD-47	ASME, Section XI, UT Calibration Block for RPV Closure Head
CBD-48	ASME, Section XI, UT Calibration Block for RPV Stud
CBD-49	ASME, Section XI, UT Calibration Block for 10" Pipe
CBD-50	ASME, Section XI, UT Calibration Block for 6" SS Pipe
CBD-51	ASME, Section XI, UT Calibration Block for 6" CS Pipe
CBD-52	ASME, Section XI, UT Calibration Block for 20" SS Pipe
CBD-53	ASME, Section XI, UT Calibration Block for 20" CS Pipe
CBD-54	ASME, Section XI, UT Calibration Block for 24" SS Pipe

TABLE 2.4-3
ASME SECTION XI, ISI CALIBRATION BLOCK DRAWINGS

Drawing Number	Title
CBD-55	ASME, Section XI, UT Calibration Block for 24" CS Pipe
CBD-56	ASME, Section XI, UT Calibration Block for 12" SCH 100 Pipe
CBD-57	ASME, Section XI, UT Calibration Block for 22" Pipe
CBD-58	ASME, Section XI, UT Calibration Block for 28" Pipe
CBD-59	ASME, Section XI, UT Calibration Block for 28" Pipe
CBD-60	ASME, Section XI, UT Calibration Block for 30" Pipe
CBD-61	ASME, Section XI, UT Calibration Block for 24" SCH 120 CS Pipe
CBD-62	ASME, Section XI, UT Calibration Block for ¾" CS Plate
CBD-62A	ASME, Section XI, UT Calibration Block for SS 12" Clad Overlay (02-19-60)
CBD-64	ASME, Section XI, UT Calibration Block for Jet Pump Seal
CBD-65	ASME, Section XI, UT Calibration Block for 20" Pipe
CBD-65A	ASME, Section XI, UT Calibration Block for 4" Pipe
CBD-66	ASME, Section XI, UT Calibration Block for 4" RWCU Pipe
CBD-67	ASME, Section XI, UT Calibration Block for Clad Core Spray (3-453)
CBD-67A	ASME, Section XI, UT Calibration Block for Core Spray Nozzle-To- Safe End
CBD-68	ASME, Section XI, UT Calibration Block for Vessel (12-CS-5)
CBD-69	ASME, Section XI, UT Calibration Block for SS 22" Overlay (12-08-46) (block not used)
CBD-70	ASME, Section XI, UT Calibration Block for SS 20" Overlay (03-13-46) (block not used)
CBD-71	ASME, Section XI, UT Calibration Block for Jet Pump Overlay (09-08-47)
CBD-72	Alternative ASME Calibration Block (Type 304 SS)
CBD-73	Alternative ASME Calibration Block (Type 316 SS)
CBD-74	Alternative ASME Calibration Block (A516-70)

TABLE 2.4-4
LIMERICK GENERATING STATION
ISI CALIBRATION BLOCKS FOR USED AT PBAPS

CALIBRATION BLOCK NUMBER
LIM-4-.337-SS304
LIM-6-.432-CS
LIM-6-.432-SS
LIM-6-.432-SS316
LIM-10-.593-CS-R
LIM-12-.843-CS
LIM-12-.688-SS
LIM-12-.843-SS316
LIM-18-.938-CS
LIM-20-1.031-CS
LIM-22-1.009-SS
LIM-26-1.013-CS
LIM-28-1.285-SS316
LIM-U2-N1-NOZ T-1.972
LIM-20-.500-CS
LIM-12-.688-SS316
LIM-U2-N1-SE T-2.209
LIM-16-.375-CS
LIM-12-.688-CS-R
Closure Stud-L/8, L/4, L/2, 3L/4, & L (Set)
S/S NO. 4
Nut No. B61

TABLE 2.4-5
UNITS 2 AND 3 DRYWELL PENETRATIONS

Number	Nom Diameter	Process Line Size	Services	Penetration Type	QAD	Piping Classification	Notes
N-1	12'-0"	N/A	Equipment Access	detail C	M-832	N/A - No Pipe	
N-2	12'-0"	N/A	Equipment Access With Personnel Lock	detail B	M-832	N/A - No Pipe	
N-3	24"	N/A	Construction Manway	detail J	M-832	N/A - No Pipe	
N-4	24"	N/A	Head Access	detail J	M-832	N/A - No Pipe	
N-5 A to H	8'-0"	6'-9"	Vent Line	detail G	M-832	N/A - No Pipe	
N-6	36"	N/A	CRD Removal Hatch	detail D	M-832	N/A - No Pipe	
N-7 A to D	44"	26"	Steam to Turbine	2	M-851	ASME CL 1	
N-8	8"	3"	Condensate Drain, Main Steam	3	M-851	ASME CL 1 EX	
N-9 A,B	42"	24"	RPV Feedwater	2	M-851	ASME CL 1	
N-10	12"	3"	Steam to RCIC Turbine	3	M-859	ASME CL 1 EX	
N-11	26"	10"	Steam to HPCI Turbine	2	M-865	ASME CL 1	
N-12	36"	20"	RHR Pump Supply	2	M-861	ASME CL 1	
N-13 A,B	42"	24"	RHR Pump Discharge	2	M-861	ASME CL 1	
N-14	22"	6"	RWC Pump Supply	2	M-854	ASME CL 1	
N-16 A,B	28"	12"	Core Spray Pump Discharge	2	M-862	ASME CL 1	
N-17	22"	6"	RPV Head Spray	2	M-861	Unclassified	Abandoned
N-18	3"	3"	Floor Drains	3	M-868	Unclassified	
N-19	3"	3"	Equipment Drains	3	M-868	Unclassified	
N-20	8"	N/A	Spare	3	None	N/A - No Pipe	
N-21	3"	1"	Breathing Service Air	3	M-820, Sh 21	Unclassified	

TABLE 2.4-5
UNITS 2 AND 3 DRYWELL PENETRATIONS

Number	Nom Diameter	Process Line Size	Services	Penetration Type	QAD	Piping Classification	Notes
N-22	3"	1"	Instrument Air	3	M-833, Sh 1	Unclassified	
N-23	8"	8"	RB Closed Cooling Water Supply	3	M-816	Unclassified	
N-24	8"	8"	RB Closed Cooling Water Return	3	M-816	Unclassified	
N-25	18"	18"	Vent to Drywell	3	M-867	MC	
N-26	18"	18"	Vent from Drywell	3	M-867	MC	
N-26A,B	1"	1"	Vessel Instrumentation		M-852	ASME CL 1 EX	
N-27 A to D		N/A	Spares		M-853	N/A - No Pipe	
N-27 E & F	12"	1"	Core Plate Delta P	8	M-852	ASME CL 1 EX	
N-28-A,B,C,F	12"	1"	Instrumentation	8	M-852	ASME CL 1 EX	
N-28 D		1"	RPV Flange Leak-Off		M-851	ASME CL 2 EX	
N-28 E		1"	Spare		M-852	N/A - No Pipe	
N-29 A to F	12"	1"	Instrumentation	8	M-852	ASME CL 1 EX	U2: B, C are spares. U3: A-E are spares
N-30 A to F	12"	1"	Instrumentation	8	M-851	ASME CL 1 EX	
N-31 A to F	12"	1"	Instrumentation	8	M-853	ASME CL 1 EX	
N-31E,F	12"	N/A	Spare		None	N/A - No Pipe	
N-32A & B	12"	1"	Instrumentation	8	M-853	ASME CL 1 EX	
N-32C & D	12"	1"	Instrumentation	8	M-832	Unclassified	
N-32E & F	12"	1"	Instrumentation	8	M-862	ASME CL 1 EX	
N-33A & B	12"	1"	Instrumentation	8	M-853	ASME CL 1 EX	
N-33C & D	12"	1"	Instrumentation		M-853	ASME CL 1 EX	

TABLE 2.4-5
UNITS 2 AND 3 DRYWELL PENETRATIONS

Number	Nom Diameter	Process Line Size	Services	Penetration Type	QAD	Piping Classification	Notes
N-33E	12"	N/A	Spare		None	N/A - No Pipe	
N-33F	12"	1"	Instrumentation	8	M-867	Unclassified	
N-34 A to F	12"	1"	Instrumentation	8	M-851	ASME CL 1 EX	
N-35 A (Unit 2)	1-1/2"	N/A	Spare	1	M-832/ M-876	N/A - No Pipe	
N-35 B,D (Unit 3)	1-1/2"	N/A	Spare	1	M-832/ M-876	N/A - No Pipe	
N-35 B,C,D (Unit 2)	1-1/2"	3/8"	TIP Purge	1	M-832/ M-876	Unclassified	
N-35 A,C (Unit 3)	1-1/2"	3/8"	TIP Purge	1	M-832/ M-876	Unclassified	
N-35 E to G	1-1/2"	3/8"	TIP Drives	1	M-876	Unclassified	
N-36	12"	4"	CRD Hydraulic Return	3	None	N/A - No Pipe	Abandoned
N-37 A to D	80	1"	CRD Insert	--	M-857	ASME CL 1 EX	
N-38 A to D	80	1"	CRD Withdraw	--	M-857	ASME CL 1 EX	
N-39 A,B	14"	12"	Drywell Spray System	3	M-861	ASME CL 2 EX	
N-40 A,B,C,D	12"	1"	Jet Pump Instr.	8	M-852	ASME CL 1 EX	
N-41	6"	1"	Recirc. Loop Sample	3	M-853	ASME CL 1 EX	
N-42	4"	1-1/2"	Standby Liq. Control	3	M-851	ASME CL 2 EX	
N-43	30"	N/A	Spare	3	None	N/A - No Pipe	Unit 2 Only
N-44	26"	N/A	Spare	3	None	N/A - No Pipe	
N-45	34"	N/A	Spare	3	None	N/A - No Pipe	Unit 2 Only
N-46 (Unit 2)	12"	N/A	Spare	3	None	N/A - No Pipe	
N-46 A,B (Unit 3)	12"	1"	Instrumentation	3	M-861	ASME CL 2 EX	

TABLE 2.4-5
UNITS 2 AND 3 DRYWELL PENETRATIONS

Number	Nom Diameter	Process Line Size	Services	Penetration Type	QAD	Piping Classification	Notes
N-46 C to F (Unit 3)	12"	N/A	Spare	3	None	N/A - No Pipe	
N-47	6"	1"	ADS Pneumatic Supply	3	M-833	Unclassified	
N-48	6"	N/A	Spare	3	None	N/A - No Pipe	
U2 (N-49E,F); U3 (N-49B,C)	12"	1"	Containment Instrumentation	8	M-861	ASME CL 2 EX	
U2 (N-49A-D); U3 (N-49A,D-F)	12"	N/A	Spare	8	None	N/A - No Pipe	
N-50 A to E	12"	1"	Instrumentation	8	M-853, M-859, M-854	ASME CL 2 EX	
N-50F	12"	N/A	Spare	8	None	N/A - No Pipe	
N-51 A to D	12"	1"	CAC Sample	8	M-867	Unclassified	
N-51E	12"	1"	Recirc Suction Press	8	M-853	ASME CL 1 EX	
N-51F	12"	N/A	Spare	8	None		
N-52 A to D	12"	N/A	Spare	8	M-853	Unclassified	
N-52 E	12"	1"	Instrumentation	8	M-852	ASME CL 1 EX	
N-52 F	12"	1"	Instrumentation	8	M-833	Unclassified	
N-53	12"	8"	Chilled Water Return A	3	M-827, Sh 2	Unclassified	
N-54	12"	8"	Chilled Water Return B	3	M-827, Sh 2	Unclassified	
N-55	12"	8"	Chilled Water Supply B	3	M-827, Sh 2	Unclassified	

TABLE 2.4-5
UNITS 2 AND 3 DRYWELL PENETRATIONS

Number	Nom Diameter	Process Line Size	Services	Penetration Type	QAD	Piping Classification	Notes
N-56	12"	8"	Chilled Water Supply A	3	M-827, Sh 2	Unclassified	
N-57	6"	1"	Main Steam Sample	3	M-851	ASME CL 1 EX	
N-100 A-F	12"	N/A	Neutron Monitoring	B is type 3	M-832	Unclassified	Electrical
N-101 A-F	12"	N/A	Recirc. Pump Power	3	M-832	Unclassified	Electrical
N-102 A	12"	N/A	Spare	3	M-833/ M-861	Unclassified	
N-102 BA,BB	12"	1"	U2 Instrumentation; U3 Spare	3	M-833	ASME CL 2 EX	
N-102 BC	12"	1"	U2 Instrumentation; U3 Spare	3	M-873	Unclassified	
N-102 BD	12"	3"	U2 Spare, U3 Breathing Air	3	M-832	Unclassified	
N-103 A,B	12"	N/A	A Spare/B Thermocouples	A is type 3	M-832	Unclassified	
N-104 A-H	12"	N/A	CRD Rod Position Ind	3	M-853, M-859, M-854	Unclassified	Electrical
N-105 A,B,C,D	12"	N/A	PWR., Lights, Fans,	3	M-832	Unclassified	Electrical
N-106 A,B,C,D	12"	N/A	Indication and Control		M-832	Unclassified	Electrical
N-107	12"	N/A	Thermocouples		M-832	Unclassified	Electrical
N-108	12"	N/A	Spare	3	None	N/A - No Pipe	U2 only
N-109 A.B	3"	N/A	Communication and Lights	B is type 3	None	Unclassified	N-109B Spare; Thermocouples in personnel air lock

TABLE 2.4-5
UNITS 2 AND 3 DRYWELL PENETRATIONS

Number	Nom Diameter	Process Line Size	Services	Penetration Type	QAD	Piping Classification	Notes
N-110 A thru H	16"	N/A	Stabilizer Inspection Manway	3	M-832	N/A - No Pipe	16" dia opening in stabilizer insert plate
N-58	26"	N/A	Spare	2	None	N/A - No Pipe	Unit 3 Only
N-150	8"	N/A	Spare		M-832	Unclassified	
N-200 A,B	54"ID	N/A	Access Hatch	detail E	M-832	n/a - no pipe	
N-201 A to H	6'-9"	6'-9"	Drywell to Torus Vents		M-832	n/a - no pipe	
N-202 A to M	18"	18"	Drywell Vacuum Breakers	4		n/a - no pipe	off vent lines, inside Torus
N-203	1"	1"	Oxygen Analyzer	4	M-867	unclassified	
N-205 A,B	20"	20"	A – Torus Vacuum Breaker B- Drywell and Torus Purge Supply and Vacuum Relief	4	M-867	MC	
N-206 A,B	2"	2"	Level and Pressure Instrumentation	4	M-865	ASME CL 2 EX	
N-207 A to H	1"	1"	Vent Line Drain	4 - detail G			off vent lines, inside Torus
N-208 A to M	12"	12"	Electromatic Relief Valve Discharge	5			through vent lines inside Torus
N-209 A to D	1	1"	Air and Water Temp.	6	M-861 (C&D)	unclassified	A&B Abandoned
N-210 A,B	18"	18"	RHR Torus Cooling and Pump Test Line	5	M-861	ASME CL 2 EX	

TABLE 2.4-5
UNITS 2 AND 3 DRYWELL PENETRATIONS

Number	Nom Diameter	Process Line Size	Services	Penetration Type	QAD	Piping Classification	Notes
N-211 A,B	6"	6"	Containment Cooling to Spray Header (RHR)	4	M-861	ASME CL 2 EX	
N-212	12"	12"	RCIC Turbine Exhaust	5	M-859	ASME CL 2 EX	
N-213 A,B	8"	8"	Const. Drain	7	M-832	unclassified	
N-214	24"	24"	HPCI Turbine Exhaust	5	M-865	ASME CL 2 EX	
N-215	4"	Open Ended	U2 Instrumentation; U3 Spare	4	M-865	ASME CL 2 EX	
N-216	4"	4"	HPCI Min. Recirc.	5	M-865	ASME CL 2 EX	
N-217 A,B	2"	2"	N-217 A Spare; N-217 B HPCI and RCIC Vacuum Relief	4	M-865 B	ASME CL 2 EX	
N-218 A,B,C	1"	1"	Instr. Air (A), Spare (C), O2 Analyzer (B)	4	M-832 C, M-867 A B	unclassified	
N-219	18"	18"	Purge Exhaust	4	M-867	unclassified	
N-220	10"	N/A	ILRT Sensors	4	M-832	unclassified	Abandoned during ILRT
N-221	2"	2"	RCIC Vacuum Pump Discharge	5	M-859	ASME CL 2 EX	
N-223	2"	2"	Condensate from HPCI Turbine Drain Pot	5	M-865	ASME CL 2 EX	
N-224	10"	10"	Core Spray Test and Flush	5	M-862	ASME CL 2 EX	Unit 2 Only
N-225	6"	6"	RCIC Pump Suction	5	M-859	ASME CL 2 EX	
N-226 A to D	24"	24"	RHR Pump Suction	5	M-861	ASME CL 2	
N-227	16"	16"	HPCI Pump Suction	5	M-865	ASME CL 2	

TABLE 2.4-5
UNITS 2 AND 3 DRYWELL PENETRATIONS

Number	Nom Diameter	Process Line Size	Services	Penetration Type	QAD	Piping Classification	Notes
N-228 A to D	16"	16"	Core Spray Pump Suction	5	M-862	ASME CL 2	
N-229	6"	6"	Core Spray Min.Flow	5	M-862	ASME CL 2 EX	Unit 2 Only
N-230	4"	4"	RCIC Pump Min. Recirc	5	M-859	ASME CL 2 EX	
N-231 A,B	3"	N/A	Spares	4	M-832	unclassified	Electrical
N-232	10"	N/A	Spare	5	None	n/a - no pipe	
N-250	8"	Open Ended	U2 - Spare / U3- Level Instrument	4	M-832/ M-865	ASME CL 2 EX	
N-233	10"	10"	HPCI & RCIC Test Flush	5	M-865	ASME CL 2 EX	Unit 2 Only
N-234	10"	10"	Core Spray Test and Flush	5	M-862	ASME CL 2 EX	
N-235	4"	4"	HPCI and RCIC Test and Flush	5	M-865	ASME CL 2 EX	Unit 3 Only
N-236 A,B	4"	4"	Core Spray Min. Flow	5	M-862	ASME CL 2 EX	Unit 3 Only

2.5 Technical Approach and Positions

When the requirements of ASME Section XI are not easily interpreted, PBAPS has reviewed general licensing/regulatory requirements and industry practice to determine a practical method of implementing the Code requirements. The Technical Approach and Positions (TAPs) contained in this section have been provided to clarify PBAPS's implementation of ASME Section XI requirements. An index which summarizes each technical approach and position is included in Table 2.5-1.

TABLE 2.5-1
TECHNICAL APPROACH AND POSITIONS INDEX

Position Number	Revision Date[2]	Status[1]	(Program) Description of Technical Approach and Position
I4T-01	0 11/05/08	Active	**(SPT)** System Leakage Testing of Non-Isolable Buried Components.
I4T-02	0 11/05/08	Active	**(SPT)** Valve Seats as Pressurization Boundaries.

Note 1: ISI Program Technical Approach and Position Status Options: Active - Current Technical Approach and Position is being utilized at PBAPS; Deleted - Technical Approach and Position is no longer being utilized at PBAPS.

Note 2: The revision listed is the latest revision of the subject Technical Approach and Position. The date noted in the second column is the date of the ISI Program Plan revision when theTechnical Approach and Position was incorporated into the document.

TECHNICAL APPROACH AND POSITION NUMBER I4T-01
Revision 0

COMPONENT IDENTIFICATION:

Code Class:	2 and 3
Reference:	IWA-5244(b)(2)
Examination Category:	C-H, D-B
Item Number:	C7.10, D2.10
Description:	System Leakage Testing of Non-Isolable Buried Components
Component Number:	Non-Isolable Buried Pressure Retaining Components

CODE REQUIREMENT:

Paragraph IWA-5244(b)(2) requires non-isolable buried components be tested to confirm that flow during operation is not impaired.

POSITION:

Article IWA-5000 provides no guidance in setting acceptance criteria for what can be considered "adequate flow". In lieu of any formal guidance provided by the Code, PBAPS has established the following acceptance criteria:

- For opened ended lines on systems that require Inservice Testing (IST) of pumps, adherence to IST acceptance criteria is considered as reasonable proof of adequate flow through the lines.

- For lines in which the open end is accessible to visual examination while the system is in operation, visual evidence of flow discharging the line is considered as reasonable proof of adequate flow through the open ended line.

- For open ended portions of systems where the process fluid is pneumatic, evidence of gaseous discharge shall be considered reasonable proof of adequate flow through the open ended line. Such test may include passing smoke through the line, hanging balloons or streamers, using a remotely operated blimp, using thermography to detect hot air, etc.

This acceptance criteria will be utilized in order to meet the requirements of Paragraph IWA-5244(b)(2).

PBAPS's position is that proof of adequate flow is all that is required for testing these open ended lines and that no further visual examination is necessary. This is consistent with the requirements for buried piping, which is not subject to visual examination.

TECHNICAL APPROACH AND POSITION NUMBER I4T-02
Revision 0

COMPONENT IDENTIFICATION:

Code Class:	1, 2, and 3
Reference:	IWA-5221
	IWA-5222
Examination Category:	B-P, C-H, D-B
Item Number:	B15.10, C7.10, D2.10
Description:	Valve Seats as Pressurization Boundaries
Component Number:	All Pressure Testing Boundary Valves

CODE REQUIREMENT:

Paragraph IWA-5221 requires the pressurization boundary for system leakage testing extend to those pressure retaining components under operating pressures during normal system service.

POSITION:

PBAPS's position is that the pressurization boundary extends up to the valve seat of the valve utilized for isolation. For example, in order to pressure test the ISI Class 1 components, the valve that provides the Class break would be utilized as the isolation point. In this case the true pressurization boundary, and Class break, is actually at the valve seat.

Any requirement to test beyond the valve seat is dependent only on whether or not the piping on the other side of the valve seat is ISI Class 1, 2, or 3.

In order to simplify examination of classed components, PBAPS will perform a VT-2 visual examination of the entire boundary valve body and bonnet (during pressurization up to the valve seat).

3.0 COMPONENT ISI PLAN

The PBAPS Component ISI Plan includes ASME Section XI nonexempt pressure retaining welds, piping structural elements, pressure retaining bolting, attachment welds, pump casings, and valve bodies of ISI Class 1, 2, and 3 components that meet the criteria of Subarticle IWA-1300. These components are identified on the ISI Boundary Drawings listed in Section 2.3, Table 2.3-2. Procedure ER-AA-330-002, "Inservice Inspection of Welds and Components", implements the ASME Section XI Welds and Components ISI Plan. This Component ISI Plan also includes component augmented inservice inspection program information specified by documents other than ASME Section XI as referenced in Section 2.2 of this document. See the Augmented Inspection Plan for details on these additional requirements and references.

The RPV interior, core support structures, and interior attachments have been transferred to procedure ER-PB-331-1001, "RPV & Internals Program Basis and Implementation Document" per Relief Request I4R-49.

3.1 Nonexempt ISI Class Components

The ISI Class 1, 2, and 3 components subject to examination are those that are not exempted under the criteria of Paragraphs IWB-1220, IWC-1220, and IWD-1220, respectively. A summary of PBAPS Units 2, 3, and Common ASME Section XI nonexempt components is included in Section 7.0.

3.1.1 Identification of ISI Class 1, 2, and 3 Nonexempt Components

ISI Class 1, 2, and 3 nonexempt components are identified on the ISI Isometric and Component Drawings listed in Section 2.4, Table 2.4-1. Welded attachments are also identified by controlled PBAPS individual support detail drawings.

3.2 Risk-Informed Examination Requirements

Piping structural elements that fall under RISI Examination Category R-A are risk ranked as High (1, 2, and 3), Medium (4 and 5), and Low (6 and 7). Per the EPRI Topical Reports TR-112657, Rev. B-A, and Code Case N-578-1, piping structural elements ranked as High or Medium Risk are subject to examination while piping structural elements ranked as Low Risk are not subject to examinations (except for pressure testing). Thin wall welds that were excluded from volumetric examination under ASME Section XI rules per Table IWC-2500-1 are included in the element scope that is potentially subject to RISI examination at PBAPS. (PBAPS has "thin wall" welds, but most of them were evaluated and ranked as Low Risk Category "6 or 7". Therefore, none of them were selected under RISI.)

Piping structural elements may be excluded from examination (other than pressure testing) under the RISI Program if the only degradation mechanism present for a

given location is inspected for cause under certain other PBAPS programs such as the Flow Accelerated Corrosion (FAC) or IGSCC Programs. These piping structural elements will remain part of the FAC or IGSCC Programs, which already perform "for cause" inspections to detect these degradation mechanisms. Piping structural elements susceptible to FAC or IGSCC along with another degradation mechanism (e.g., thermal fatigue) are retained as part of the RISI scope and are included in the element selection for the purpose of performing examinations to detect the additional degradation mechanism.

The RISI Program element examinations are performed in accordance with Relief Request I4R-44.

3.3 Reactor Coolant Pressure Boundary Normal Makeup Exemption

In accordance with ASME Section XI, Paragraph IWB-1220(a), components that are connected to the reactor coolant pressure boundary may be exempted from the surface and volumetric examination requirements of ASME Section XI, provided they are of such a size and shape that upon a postulated pressure boundary rupture, the resulting flow of coolant under normal operating conditions is within the capacity of makeup systems.

3.3.1 Makeup Calculation

The basis for determining the makeup size exemption of ISI Class 1 water and steam lines is provided in PBAPS Calculation No. ME-34, Revision 2, dated 9/15/95. The makeup flow rate is determined from systems which are not part of the emergency core cooling system and which are operable from on-site emergency power.

The reactor coolant makeup systems at PBAPS consist of the following:

System	Pump Flow Rate	Maximum Fluid Temp.	Emergency Power
RCIC UFSAR, Section 4.7	600 GPM	95° F	Yes, On-site
CRD UFSAR, Section 3.4	176 GPM	95° F	Yes, On-site

Note that RCIC does not perform an ECCS function, therefore, this system meets the ASME Section XI criteria for inclusion as a makeup source under IWB-1220(a). This same approach applies to the alternative repair and replacement requirements of IWA-4131.1(a)(2).

Based on Calculation ME-34, the following ISI Class 1 piping qualifies for the make-up capacity exemption of Paragraph IWB-1220(a):

1. Steam system piping with an inside diameter (ID) of 2.9974" and smaller.

2. Water system piping subject to recirculation pump discharge pressure with an ID of 1.4831" and smaller.

3. Water system piping not subject to recirculation pump discharge pressure with an ID of 1.5488" and smaller.

3.3.2 Application to Peripheral CRD Housing Welds

ASME Section XI, Table IWB-2500-1, Examination Category B-O, Item Number B14.10 addresses pressure-retaining welds in the peripheral CRD Housings. For those components which fall within this category that are not exempt, examination is required for ten percent of the peripheral housings.

However, Stone and Webster Calculation No. PM-0945, Revision 1, dated 11/30/95, addresses the exemption of these components. This calculation demonstrates that the water makeup capability of the RCIC and CRD systems is greater than the potential leakage due to a failure of a CRD housing. As discussed in Section 3.3.1 above, the reactor coolant makeup systems for PBAPS are RCIC and CRD.

At the power rerate dome pressure, the total makeup capacity of these systems is approximately 698 gpm. Taking into account the design and geometry of the control rod drive units, the maximum calculated CRD leakage is approximately 604 gpm. Based on adequate makeup system capability, the welds in the peripheral CRD housings are exempted from examination per IWB-1220(a), and the requirements of Examination Category B-O do not apply.

4.0 SUPPORT ISI PLAN

The PBAPS Support ISI Plan includes the supports of ASME Section XI nonexempt ISI Class 1, 2, and 3 components as described in Section 3.0; and CISI Class MC components as described in Section 6.0. Procedure ER-AA-330-003 "Visual Examination of Section XI Component Supports", implements the ASME Section XI Support ISI Plan.

4.1 Nonexempt ISI Class Supports

The PBAPS ISI Class 1, 2, 3, and MC nonexempt supports are those which do not meet the exemption criteria of Paragraph IWF-1230 of ASME Section XI. A summary of PBAPS ASME Section XI nonexempt supports is included in Section 7.0.

4.1.1 Identification of ISI Class 1, 2, and 3 Nonexempt Supports

ISI Class 1, 2, and 3 supports are identified on the ISI Isometrics and Component Drawings listed in Section 2.4, Table 2.4-1. Supports are identified by controlled PBAPS individual support detail drawings.

CISI Class MC supports are identified on the CISI Boundary Drawings listed in Section 2.3, Table 2.3-3.

4.2 Snubber Examination and Testing Requirements

4.2.1 ASME Section XI Paragraphs IWF-5200(a) and (b) and IWF-5300(a) and (b) require VT-3 Visual Examination and Inservice Tests of snubbers to be performed in accordance with the Operation and Maintenance of Nuclear Power Plants Standard (ASME OM Code). As allowed by 10CFR50.55a(b)(3)(v), PBAPS will use Subsection ISTD, "Inservice Testing of Dynamic Restraints (Snubbers) In Light Water Reactor Power Plants," ASME OM Code, 2001 Edition through the 2003 Addenda, to meet the requirements in ASME Section XI Paragraphs IWF-5200(a) and (b) and IWF-5300(a) and (b). Per 10CFR50.55a(b)(3)(v), visual examinations shall be performed using the VT-3 visual examination method described in Paragraph IWA-2213. A summary of the PBAPS Units 2, 3, and Common safety-related and non-safety related snubbers is included in Section 7.0. The details of the PBAPS snubber program and examination requirements are located in Appendix AUG-05 of the Augmented Inspection Plan.

Procedure ER-AA-330-004, "Visual Examination of Technical Specification Snubbers", implements the visual inspection program for safety-related and non safety-related snubbers. Procedures ER-AA-330-010, "Administration of Snubber Functional Testing", ER-AA-330-011, "Snubber Service Life Monitoring Program", and station

surveillance test procedures are used to implement the functional testing and service life monitoring requirements for safety-related and non safety-related snubbers.

The ASME Section XI ISI Program uses Subsection IWF to define support inspection requirements. The ISI Program maintains the Code Class snubbers in the populations subject to inspection per Subsection IWF. This is done to accommodate scheduling and inspection requirements of the related attachment hardware per Paragraphs IWF-5200(c) and IWF-5300(c). (See Section 4.2.2 below.)

4.2.2 ASME Section XI Paragraphs IWF-5200(c) and IWF-5300(c) require integral and non-integral attachments for snubbers to be examined in accordance with Subsection IWF of ASME Section XI. This results in VT-3 visual examination of the snubber attachment hardware including the bolting, pins, and their interface to the clamp, but does not include the component-to-clamp interface.

The ASME Section XI ISI Program uses Subsection IWF to define the inspection requirements for all ISI Class 1, 2, and 3 supports, regardless of type. The ISI Program maintains the Code Class snubbers in the support populations subject to inspection per Subsection IWF. This is done to facilitate scheduling and inspection requirements of the snubber attachment hardware (e.g., bolting and pins) per Paragraphs IWF-5200(c) and IWF-5300(c).

It should be noted that the examination of snubber welded attachments will be performed in accordance with the ASME Section XI Subsections IWB, IWC, and IWD welded attachment examination requirements (e.g., Examination Categories B-K, C-C, and D-A).

5.0 SYSTEM PRESSURE TESTING ISI PLAN

The PBAPS System Pressure Testing (SPT) ISI Plan includes all pressure retaining ASME Section XI, ISI Class 1, 2, and 3 components, with the exception of those specifically excluded by Paragraphs IWA-5110(c), IWC-5222(b), and IWD-5240(b). All RISI piping structural elements, regardless of risk classification, remain subject to pressure testing as part of the current ASME Section XI program.

The SPT ISI Plan details system pressure tests and visual inspections on the ISI Class 1, 2, and 3 pressure retaining components to verify system and component structural integrity. This program conducts both Periodic and Interval (10-Year frequency) pressure tests as defined in ASME Section XI Inspection Program B. Procedure ER-AA-330-001, "Section XI Pressure Testing," as well as several PBAPS site-specific test procedures, implement the ASME Section XI System Pressure Testing ISI Plan. Additional commitments regarding the PBAPS SPT ISI Plan are discussed in Section 2.2 of this document.

5.1 ISI Class Systems

All ISI Class 1 pressure retaining components, typically defined as the reactor coolant pressure boundary, are required to be tested. Those portions of ISI Class 2 and 3 systems that are required to be tested include the pressure retaining boundaries of components required to operate or support the system safety functions. ISI Class 2 and 3 open ended discharge piping and components are excluded from the examination requirements per Paragraphs IWC-5222(b) and IWD-5240(b).

5.1.1 Identification of ISI Class 1, 2, and 3 Components

All components subject to ASME Section XI System Pressure Testing are shown within the ISI classification color coding on the PBAPS ISI Boundary Drawings listed in Section 2.3, Tables 2.3-1. Additional information on the classification of various system boundaries is provided in the ISI Classification Basis Document.

5.1.2 Identification of System Pressure Tests

The System Pressure Test Boundary Drawings used to define which systems, or portions of systems, fall under a specific test are identified in attachments to the site-specific test procedures. Individual tests are identified and maintained in the PBAPS ISI Database.

5.2 Risk-Informed Examinations of Socket Welds

Socket welds selected for examination under the RISI program are to be inspected with a VT-2 visual examination each refueling outage per ASME Code Case

N-578-1 (see footnote 12 in Table 1 of the Code Case). To facilitate this, socket welds selected for inspection under the RISI program shall be pressurized each refueling outage during a system pressure test in accordance with Paragraph IWA-5211(a).

6.0 CONTAINMENT ISI PLAN

The PBAPS Containment ISI Plan includes ASME Section XI CISI Class MC pressure retaining components and their integral attachments that meet the criteria of Subarticle IWA-1300. This Containment ISI Plan also includes information related to augmented examination areas, component accessibility, and examination review.

PBAPS has no CISI Class CC components, which meet the criteria of Subarticle IWL-1100, therefore, no requirements to perform examinations in accordance with Subsection IWL are incorporated into this Containment ISI Plan. Since both PBAPS unit's containment vessels are free-standing structural steel containment vessel, only Subsection IWE is applied.

The examination of containment components are performed per procedures ER-AA-330-007, "Visual Examination of Section XI Class MC Surfaces and Class CC Liners", ER-AA-330-008, "Exelon Service Level 1 and Safety Related (Service Level 3) Protective Coatings", ER-AA-335-004, "Manual Ultrasonic Measurement of Material Thickness", and ER-AA-335-018, "Detailed, General, VT-1, VT-1C, VT-3, and VT-3C, Visual Examination of ASME Class MC and CC Containment Surfaces and Components"

6.1 Nonexempt CISI Class Components

The PBAPS CISI Class MC components identified on the CISI Boundary Drawings are those not exempted under the criteria of Paragraph IWE-1220 in the 2001 Edition through the 2003 Addenda of ASME Section XI. A summary of PBAPS ASME Section XI nonexempt CISI components is included in Section 7.0.

The process for scoping PBAPS components for inclusion in the Containment ISI Plan is included in the containment sections of the ISI Classification Basis Document. These sections include a listing and detailed basis for inclusion of containment components.

Components that are classified as CISI Class MC must meet the requirements of ASME Section XI in accordance with 10CFR50.55a(g)(4). Although CISI Class MC supports of Subsection IWE components are not strictly required to be examined in accordance with 10CFR50.55a(g)(4)(v), PBAPS has elected to perform these examinations in accordance with Augmented Inspection Program (AUG-CA). AUG-CA describes the inspection program for CISI Class MC supports at PBAPS. For guidance, this program is based on the support examination criteria of ASME Section XI, Subsection IWF.

6.1.1 Identification of CISI Class MC Nonexempt Components

CISI Class MC components are identified on the PBAPS CISI Boundary Drawings listed in Section 2.3, Table 2.3-3. The PBAPS Drywell Penetrations are identified in Section 2.4, Table 2.4-5.

6.1.2 Identification of CISI Class MC Exempt Components

Certain containment components or parts of components may be exempted from examination based on design and accessibility per the requirements of Paragraph IWE-1220.

The process for exempting PBAPS components from the Containment ISI Plan per Paragraph IWE-1220 is included in the containment sections of the ISI Classification Basis Document. These sections include discussions of exempt components and the bases for those exemptions.

6.2 Augmented Examination Areas

Metal containment components potentially subject to augmented examination per Paragraph IWE-1240 have been evaluated in the containment sections of the ISI Classification Basis Document. These sections define the areas that are subjected to augmented examination.

A significant condition is a condition that is identified as requiring application of additional augmented examination requirements under Paragraph IWE-1240.

6.2.1 In the First CISI Interval, the Augmented Inspection Program AUG-C1 addressed wetted and submerged Suppression Chamber (Torus) Interior Surfaces for both PBAPS Units 2 and 3. However, this Augmented Inspection Program is no longer active since the First CISI Interval Relief Requests CRR-10 and CRR-11 were not resubmitted for the Second CISI Interval.

In accordance with ASME Section XI, Paragraph IWE-1241, augmented examinations were to be performed on those surface areas, which were likely to experience accelerated degradation and aging. At PBAPS, this included the wetted (i.e., immersion zone) and submerged portions of the suppression chamber. These areas have undergone examinations in the past to quantify and evaluate coating problems and pitting. Results of examinations performed in both Units in 1991, again in PBAPS Unit 3 in 1997, and in PBAPS Unit 2 in 1998, revealed numerous pits and degraded coatings. In conjunction with these results, an evaluation was performed in ABB Impell Report No. 03-0670-1360. This report concluded that the structural integrity of the suppression chamber was maintained, and continued operation was justified. The report also established an

evaluation methodology, acceptance criteria, and a suggested reexamination schedule. In 2005, MPR Associates performed an evaluation of the differences between PBAPS Units 2 and 3 water chemistry and corrosion rates. In 2006, 100% of the wetted surface of the Unit 2 torus was inspected and pit depth measurements were taken. The torus was determined to be structurally sound until 2010. The results of this inspection are documented in PIMS AR A1545908 Eval 38. In 2007, 100% of the wetted surface of the Unit 3 torus was inspected and pit depth measurements were taken. The torus was determined to be structurally sound until 2011. The results of this inspection are documented in PIMS AR A1554416 Eval 32.

Based upon the examination results and discussions, the immersion zone and submerged surfaces in the suppression chamber in both units were classified as augmented examination areas subject to Examination Category E-C. However, in lieu of the examinations stated in Table IWE-2500-1, Examination Category E-C, PBAPS followed approved Relief Request CRR-11 that established alternative examination criteria. Relief Request CRR-11 utilized results from previous examinations and evaluations to implement an alternative examination program that provided an acceptable level of quality and safety in accordance with 10CFR50.55a (a)(3)(i).

There were no other Examination Category E-C augmented examination surfaces identified during the development of this ISI Program Plan, as of its issuance. This conclusion was based on a review of design documents, and satisfactory results from thorough, documented examinations of dry, accessible containment surfaces. In 1985, three typical drywell surfaces were selected as representative examination areas. These three areas have been visually examined on a regular basis since 1985. In 1992 (Unit 2) and 1993 (Unit 3), the examinations were expanded to include a general area visual examination of the drywell and suppression chamber as well as the specific visual examinations on the three representative areas.

6.2.2 In the First CISI Interval, these wetted and submerged suppression chamber (Torus) surfaces were identified as augmented surface areas requiring examination in accordance with Table IWE-1240. These surface areas had been categorized in accordance with ASME Section XI, Table IWE-2500-1, Examination Category E-C, Item Number E4.11, requiring visual examination of 100% of the surface areas identified during each inspection period until the areas examined remain essentially unchanged for the next three inspection periods.

In the Second CISI Interval, these wetted and submerged suppression chamber (Torus) augmented surface areas will require visual examination of 100% of the surface areas identified during each inspection period until

the areas examined remain essentially unchanged for the next inspection period. Once an augmented area remains unchanged for one full period, the areas fall back to the normal Examination Category E-A examination schedule.

6.3 Component Accessibility

CISI Class MC pressure retaining components subject to examination shall remain accessible for either direct or remote visual examination from at least one side for the life of the plant per the requirements of ASME Section XI, Paragraph IWE-1230.

Paragraph IWE-1231(a)(3) requires 80% of the pressure-retaining boundary that was accessible after construction to remain accessible for either direct or remote visual examination, from at least one side of the vessel, for the life of the plant.

Portions of components embedded in concrete or otherwise made inaccessible during construction are exempted from examination, provided that the requirements of ASME Section XI, Paragraph IWE-1232 have been fully satisfied. (Note that Relief Request I4R-48 (CRR-13) has been approved to take credit for the integrated leak rate testing in accordance with the PBAPS Appendix J program in lieu of performing the required examinations for Penetration N-3 which does not meet the exemption criteria of Paragraph IWE-1232(a)(2).)

In addition, inaccessible surface areas exempted from examination include those surface areas where visual access by line of sight with adequate lighting from permanent vantage points is obstructed by permanent plant structures, equipment, or components; provided these surface areas do not require examination in accordance with the inspection plan, or augmented examination in accordance with Paragraph IWE-1240.

6.4 Responsible Individual

ASME Section XI Subsection IWE requires a Responsible Individual to be involved in the development, performance, and review of the CISI examinations. The Responsible Individual assigned to perform these duties shall meet the requirements of ASME Section XI, Paragraph IWE-2320.

6.5 Structural Attachments

Surfaces of attachment welds between structural attachments and the containment pressure boundary or reinforcing structure will be subject to examination per Subsection IWE. To establish which containment attachments are subject to this examination requirement, guidance has been taken from ASME Section III, Subsection NE. In accordance with ASME Section III, Subsection NE, Paragraph NE-1132.1 (d), structural attachments are those attachments that perform a

pressure retaining function or are in the containment vessel support load path. Therefore, examinations will be required on welded attachments associated with the containment vessel supports, such as the suppression chamber column supports. However, examinations will not be required on welded attachments associated with components that are not pressure retaining or are not in the containment vessel support load path, such as pipe supports, stairways and structural steel.

7.0 COMPONENT SUMMARY TABLES

7.1 Inservice Inspection Summary Tables

The following Table 7.1-1 and 7.1-2 provide a summary of the ASME Section XI pressure retaining components, supports, system pressure testing, and augmented program components for the Fourth ISI Interval and Second CISI Interval at PBAPS.

The format of the Inservice Inspection Summary Tables is as depicted below and provides the following information:

Examination Category (with Examination Category Description)	Item Number (or Risk Category Number or Augmented Number)	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) Examination Category (with Examination Category Description):

Provides the Examination Category and description as identified in ASME Section XI, Tables IWB-2500-1, IWC-2500-1, IWD-2500-1, IWE-2500-1, and IWF-2500-1. Only those Examination Categories applicable to PBAPS are identified.

Examination Category "R-A" from Code Case N-578-1 is used in lieu of ASME Section XI Examination Categories B-F, B-J, C-F-1, and C-F-2 to identify ISI Class 1 and 2 piping structural elements for the RISI Program.

Examination Category "AUG" is used to identify Augmented ISI components and other PBAPS commitments.

(2) Item Number (or Risk Category Number or Augmented Number):

Provides the Item Number as identified in ASME Section XI, Tables IWB-2500-1, IWC-2500-1, IWD-2500-1, IWE-2500-1, and IWF-2500-1. Only those Item Numbers applicable to PBAPS are identified.

For piping structural elements under the RISI Program, the Risk Category Number (e.g., 1-5) is used in place of the Item Number.

Specific abbreviations such as reference paragraph numbers (AUG-01, AUG-02, AUG-05, AUG-12, AUG-15, AUG-D, AUG-C2, AUG-C3, AUG-CA, AUG-CB, AUG-CC, and AUG-CD) have been developed to identify Augmented ISI examinations and other PBAPS commitments.

(3) Item Number (or Risk Category Number or Augmented Number) Description:

Provides the description as identified in ASME Section XI, Tables IWB-2500-1, IWC-2500-1, IWD-2500-1, IWE-2500-1, and IWF-2500-1.

For Risk-Informed piping examinations, a description of the Risk Category Number is provided.

For augmented inspection commitments, a description of the augmented requirement is provided.

(4) Examination Requirements:

Provides the examination methods required by ASME Section XI, Tables IWB-2500-1, IWC-2500-1, IWD-2500-1, IWE-2500-1, and IWF-2500-1.

Provides the examination requirements for piping structural elements under the RISI Program that are in accordance with the EPRI Topical Reports TR-112657, Rev. B-A, and Code Case N-578-1.

Provides the examination requirements for augmented components from PBAPS commitments or relief requests.

(5) Total Number Of Components by System

Provides the system designator (abbreviations). See Section 2.3, Table 2.3-1 for a list of these systems.

This column also provides the number of components within a particular system for that ASME Section XI Item Number, Risk Category Number, or Augmented Number.

Note that the total number of components by system are subject to change after completion of plant modifications, design changes, and ISI system classification updates, and will be maintained only within the ISI Database.

(6) Relief Request/Technical Approach & Position Number

Provides a listing of Relief Request/TAP Numbers applicable to specific components, the ASME Section XI Item Number, Risk Category Number, or Augmented Number. Relief Requests and TAP Numbers that generically apply to all components, or an entire class are not listed. If a Relief Request/TAP Number is identified, see the corresponding relief request in Section 8.0 or the TAP Number in Section 2.5.

(7) Notes

Provides a listing of program notes applicable to the ASME Section XI Item Number, Risk Category Number, or Augmented Number. If a program note number is identified, see the corresponding program note in Table 7.1-3.

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
B-A Pressure Retaining Welds in Reactor Vessel	B1.11	Circumferential Shell Welds (Reactor Vessel)	Volumetric	RPV: 5	I4R-41	
	B1.12	Longitudinal Shell Welds (Reactor Vessel)	Volumetric	RPV: 15	I4R-41	
	B1.21	Circumferential Head Welds (Reactor Vessel)	Volumetric	RPV: 3		
	B1.22	Meridional Head Welds (Reactor Vessel)	Volumetric	RPV: 16		
	B1.30	Shell-to-Flange Weld (Reactor Vessel)	Volumetric	RPV: 1		
	B1.40	Head-to-Flange Weld (Reactor Vessel)	Volumetric & Surface	RPV: 1		
	B1.51	Beltline Region Repair Weld (Reactor Vessel)	Volumetric	RPV: 1		
B-D Full Penetration Welds of Nozzles in Vessels	B3.90	Nozzle-to-Vessel Welds (Reactor Vessel)	Volumetric	RPV: 31		11
	B3.100	Nozzle Inside Radius Section (Reactor Vessel)	Volumetric	RPV: 31		

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
B-G-1 Pressure Retaining Bolting, Greater Than 2 in. In Diameter	B6.10	Closure Head Nuts (Reactor Vessel)	Visual, VT-1	RPV: 2 (92 nuts)		
	B6.20	Closure Studs (Reactor Vessel)	Volumetric	RPV: 2 (92 studs)		16
	B6.40	Threads in Flange (Reactor Vessel)	Volumetric	RPV: 2 (92 threads)		
	B6.50	Closure Washers, Bushings (Reactor Vessel)	Visual, VT-1	RPV: 6 (276 washers, bushings)		
	B6.180	Bolts and Studs (Pumps)	Volumetric	MR: 2		
	B6.190	Flange Surface, when connection disassembled (Pumps)	Visual, VT-1	MR: 2		
	B6.200	Nuts, Bushings, and Washers (Pumps)	Visual, VT-1	MR: 2		
B-G-2 Pressure Retaining Bolting, 2 in. and Less In Diameter	B7.50	Bolts, Studs, and Nuts (Piping)	Visual, VT-1	MS: 12 RPV: 3		
	B7.70	Bolts, Studs, and Nuts (Valves)	Visual, VT-1	CS: 2 FW: 4 HPCI: 1 MR: 4 MS: 21 RCIC: 2 RHR: 2 RWCU: 2		
	B7.80	Bolts, Studs, & Nuts in CRD Housing (Reactor Vessel)	Visual, VT-1	RPV: 1 (185 housings)		8

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
B-K Welded Attachments for Vessels, Piping, Pumps, and Valves	B10.10	Welded Attachments (Pressure Vessels)	Surface or Volumetric	RPV: 9		12
	B10.20	Welded Attachments (Piping)	Surface	CS: 6 FW: 11 HPCI: 2 MR: 4 MS: 34 RWCU: 2		
	B10.30	Welded Attachments (Pumps)	Surface	MR: 7		
B-L-2 Pump Casings	B12.20	Pump Casings (Pumps)	Visual, VT-3	MR: 2		
B-M-2 Valve Bodies	B12.50	Valve Bodies (Exceeding NPS 4) (Valves)	Visual, VT-3	CS: 7 FW: 8 HPCI: 4 MR: 4 MS: 21 RCIC: 2 RHR: 9 RWCU: 6		

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
B-N-1 Interior of Reactor Vessel	B13.10	Vessel Interior (Reactor Vessel)	Visual, VT-3	RPV: 2	I4R-49	13
B-N-2 Welded Core Support Structures and Interior Attachments to Reactor Vessels	B13.20	Interior Attachments Within Beltline Region (Reactor Vessel)	Visual, VT-1	RPV: 16	I4R-49	13
	B13.30	Interior Attachments Beyond Beltline Region (Reactor Vessel)	Visual, VT-3	RPV: 38	I4R-49	13
	B13.40	Core Support Structure (Reactor Vessel)	Visual, VT-3	RPV: 8	I4R-49	13
B-O Pressure Retaining Welds in Control Rod Housings	B14.10	Welds in CRD Housing (Reactor Vessel) (10% of Peripheral CRD Housings)	Volumetric or Surface	NA		9

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
B-P All Pressure Retaining Components	B15.10	System Leakage Test (IWB-5220)	Visual, VT-2	RPV: 3	I4R-47 I4T-02	

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
C-A Pressure Retaining Welds in Pressure Vessels	C1.10	Shell Circumferential Welds (Pressure Vessels)	Volumetric	RHR: 8		
C-B Pressure Retaining Nozzle Welds in Vessels	C2.31	Reinforcing Plate Welds to Nozzle & Vessel for Nozzles with Reinforcing Plates in Vessels, Greater than 1/2" Nominal Thickness (Pressure Vessels)	Surface	RHR: 8		
	C2.33	Nozzle-to-Shell (or Head) Welds with Reinforcing Plates when Inside of Vessel is Inaccessible, Greater than 1/2" Nominal Thickness (Pressure Vessels)	Visual, VT-2	RHR: 8		
C-C Welded Attachments for Vessels, Piping, Pumps, and Valve	C3.10	Welded Attachments (Pressure Vessels)	Surface	RHR: 12		12
	C3.20	Welded Attachments (Piping)	Surface	CS: 31 HPCI: 19 MS: 14 RHR: 60 SDV: 1		
	C3.30	Welded Attachments (Pumps)	Surface	CS: 4 RHR: 4		

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
C-H All Pressure Retaining Components	C7.10	System Leakage Test (IWC-5220)	Visual, VT-2	CAC: 2 CAD: 4 CS: 2 HPCI: 1 MS: 1 RCIC: 1 RHR: 5 RPV: 1 SLC: 2 SDV: 1	I4R-25 I4T-01 I4T-02	

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
D-A Welded Attachments for Vessels, Piping, Pumps, and Valves	D1.20	Welded Attachments (Piping)	Visual, VT-1	ECW: 63 + ESW: 45 HPSW: 37 MSRV: 96		10
D-B All Pressure Retaining Components	D2.10	System Leakage Test (IWD-5221)	Visual, VT-2	ECW: 1 + ESW: 1 + HPSW: 1	I4R-46 I4T-01 I4T-02	15

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components	Relief Request/ TAP Number	Notes
E-A Containment Surfaces	E1.11	Containment Vessel Pressure Retaining Boundary - Accessible Surface Areas	General Visual	19	I4R-48	
	E1.11	Containment Vessel Pressure Retaining Boundary - Bolted Connections, Surfaces	Visual, VT-3	38	I4R-48	5
	E1.12	Containment Vessel Pressure Retaining Boundary - Wetted Surfaces of Submerged Areas	Visual, VT-3	1	I4R-48	6
	E1.20	Containment Vessel Pressure Retaining Boundary - BWR Vent System Accessible Surface Areas	Visual, VT-3	1		6
	E1.30	Containment Vessel Pressure Retaining Boundary - Moisture Barriers	General Visual	1		
E-C Containment Surfaces Requiring Augmented Examination	E4.11	Containment Surface Areas - Visible Surfaces	Visual, VT-1	1		7
	E4.12	Containment Surface Areas - Surface Area Grid Minimum Wall Thickness Location	Ultrasonic Thickness	1		

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TA&P Number	Notes
F-A Supports	F1.10	Class 1 Piping Supports	Visual, VT-3	CS: 14 FW: 40 HPCI: 9 MR: 14 MS: 38 RCIC: 1 RD: 10 RHR: 11 RWCU: 10		4
	F1.20	Class 2 Piping Supports	Visual, VT-3	CS: 68 HPCI: 52 MS: 63 RHR: 158 SDV: 48		4
	F1.30	Class 3 Piping Supports	Visual, VT-3	ECW: 88 + ESW: 117 HPSW: 98 MSSW: 170		4 10
	F1.40	Supports Other Than Piping Supports (Class 1, 2, and 3)	Visual, VT-3	CS: 4 ECW: 3 + ESW: 2 HPSW: 4 MR: 16 RHR: 16 RPV: 9		4 10

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Risk Category Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TA&P Number	Notes
R-A Risk-Informed Piping Examinations	1	Risk Category 1 Elements	See Notes	FW: 51	I4R-44	1 2 3
	2	Risk Category 2 Elements	See Notes	CS: 4 MR: 10 RHR: 28 RPV: 2	I4R-44	1 2 3
	3	Risk Category 3 Elements	See Notes	FW: 1 HPCI: 20 RWCU: 1	I4R-44	1 2 3
	4	Risk Category 4 Elements	See Notes	CS: 53 HPCI: 25 MR: 62 MS: 275 RD: 27 RHR: 195 RPV: 29 RWCU: 9	I4R-44	1 2 3
	5	Risk Category 5 Elements	See Notes	HPCI: 10 RCIC: 2	I4R-44	1 2 3

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Aug Number	Description	Exam Requirements	Total Number of Components	Relief Request/ TAP Number	Notes
AUG Augmented Components	AUG-01	Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping Components, TR-113932, "BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75)", and TR-1012621, "BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75-A)"	Volumetric	Category D: 15 Category E: 2 Category S: 106		2
	AUG-02	BWROG, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking Components	Volumetric	FW: 6 RPV: 18		14
	AUG-05	Snubber Visual Examination and Functional Testing Program	Functional Test & Visual, VT-3	COND: 1 CRD: 8 CS: 6 ESW: 5 FW: 10 HPCI: 16 IN: 1 MR: 10 MS: 20 MSRV: 92 RCIC: 5 RHR: 26 RPVINST: 2 RWCU: 4		
	AUG-12	10CFR50 Augmented Requirements for Reactor Pressure Vessel Shell Weld Examinations	Volumetric	RPV: 20	I4R-41	
	AUG-15	Standby Liquid Control Nozzle-to-Safe-End	Surface	RPV: 1		
	AUG-D	RPV Closure Flange O-Ring Sealing Surfaces	Visual - Measurement	RPVCF: 3		
	AUG-C2	HPCI, RHR, and Core Spray Suction Strainers	Visual	13		

TABLE 7.1-1
UNIT 2 & COMMON INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Aug Number	Description	Exam Requirements	Total Number of Components	Relief Request/ TAP Number	Notes
AUG Augmented Components (Continued)	AUG-C3	Sludge Accumulation on the Torus Floor	Visual - Sludge Measurement	1		
	AUG-CA	Examination of Class MC Supports	Visual, VT-3	50		
	AUG-CB	Examination of Drywell External Components Located Outside Stabilizer Access Hatches	Visual, VT-3	16		
	AUG-CC	Examination of Drywell Airgap Drain Lines	Functional Test & Visual	4		
	AUG-CD	Examination of Bolting in ECCS Suction Strainers	Visual	9		

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
B-A Pressure Retaining Welds in Reactor Vessel	B1.11	Circumferential Shell Welds (Reactor Vessel)	Volumetric	RPV: 5	I4R-41	
	B1.12	Longitudinal Shell Welds (Reactor Vessel)	Volumetric	RPV: 15	I4R-41	
	B1.21	Circumferential Head Welds (Reactor Vessel)	Volumetric	RPV: 3		
	B1.22	Meridional Head Welds (Reactor Vessel)	Volumetric	RPV: 16		
	B1.30	Shell-to-Flange Weld (Reactor Vessel)	Volumetric	RPV: 1		
	B1.40	Head-to-Flange Weld (Reactor Vessel)	Volumetric & Surface	RPV: 1		
	B1.51	Beltline Region Repair Weld (Reactor Vessel)	Volumetric	RPV: 1		
B-D Full Penetration Welds of Nozzles in Vessels	B3.90	Nozzle-to-Vessel Welds (Reactor Vessel)	Volumetric	RPV: 31		11
	B3.100	Nozzle Inside Radius Section (Reactor Vessel)	Volumetric	RPV: 31		

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
B-G-1 Pressure Retaining Bolting, Greater Than 2 in. In Diameter	B6.10	Closure Head Nuts (Reactor Vessel)	Visual, VT-1	RPV: 2 (92 nuts)		
	B6.20	Closure Studs (Reactor Vessel)	Volumetric	RPV: 2 (92 studs)		16
	B6.40	Threads in Flange (Reactor Vessel)	Volumetric	RPV: 2 (92 threads)		
	B6.50	Closure Washers, Bushings (Reactor Vessel)	Visual, VT-1	RPV: 6 (276 washers, bushings)		
	B6.180	Bolts and Studs (Pumps)	Volumetric	MR: 2		
	B6.190	Flange Surface, when connection disassembled (Pumps)	Visual, VT-1	MR: 2		
	B6.200	Nuts, Bushings, and Washers (Pumps)	Visual, VT-1	MR: 2		
B-G-2 Pressure Retaining Bolting, 2 in. and Less In Diameter	B7.50	Bolts, Studs, and Nuts (Piping)	Visual, VT-1	MR: 4 MS: 12 RPV: 3		
	B7.70	Bolts, Studs, and Nuts (Valves)	Visual, VT-1	CS: 2 FW: 4 HPCI: 1 MR: 4 MS: 21 RCIC: 2 RHR: 2 RWCU: 1		
	B7.80	Bolts, Studs, & Nuts in CRD Housing (Reactor Vessel)	Visual, VT-1	RPV: 1 (185 housings)		8

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
B-K Welded Attachments for Vessels, Piping, Pumps, and Valves	B10.10	Welded Attachments (Pressure Vessels)	Surface or Volumetric	RPV: 9		12
	B10.20	Welded Attachments (Piping)	Surface	CS: 6 FW: 24 HPCI: 1 MR: 6 MS: 34 RWCU: 2		
	B10.30	Welded Attachments (Pumps)	Surface	MR: 7		
B-L-2 Pump Casings	B12.20	Pump Casings (Pumps)	Visual, VT-3	MR: 2		
B-M-2 Valve Bodies	B12.50	Valve Bodies (Exceeding NPS 4) (Valves)	Visual, VT-3	CS: 6 FW: 8 HPCI: 4 MR: 4 MS: 21 RCIC: 2 RHR: 9 RWCU: 5		

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
B-N-1 Interior of Reactor Vessel	B13.10	Vessel Interior (Reactor Vessel)	Visual, VT-3	RPV: 1	I4R-49	13
B-N-2 Welded Core Support Structures and Interior Attachments to Reactor Vessels	B13.20	Interior Attachments Within Beltline Region (Reactor Vessel)	Visual, VT-1	RPV: 16	I4R-49	13
	B13.30	Interior Attachments Beyond Beltline Region (Reactor Vessel)	Visual, VT-3	RPV: 34	I4R-49	13
	B13.40	Core Support Structure (Reactor Vessel)	Visual, VT-3	RPV: 7	I4R-49	
B-O Pressure Retaining Welds in Control Rod Housings	B14.10	Welds in CRD Housing (Reactor Vessel) (10% of Peripheral CRD Housings)	Volumetric or Surface	NA		9

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
B-P All Pressure Retaining Components	B15.10	System Leakage Test (IWB-5220)	Visual, VT-2	RPV: 3	I4R-47 I4T-01 I4T-02	

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
C-A Pressure Retaining Welds in Pressure Vessels	C1.10	Shell Circumferential Welds (Pressure Vessels)	Volumetric	RHR: 8		
C-B Pressure Retaining Nozzle Welds in Vessels	C2.31	Reinforcing Plate Welds to Nozzle & Vessel for Nozzles with Reinforcing Plates in Vessels, Greater than 1/2" Nominal Thickness (Pressure Vessels)	Surface	RHR: 8		
	C2.33	Nozzle-to-Shell (or Head) Welds with Reinforcing Plates when Inside of Vessel is Inaccessible, Greater than 1/2" Nominal Thickness (Pressure Vessels)	Visual, VT-2	RHR: 8		
C-C Welded Attachments for Vessels, Piping, Pumps, and Valve	C3.10	Welded Attachments (Pressure Vessels)	Surface	RHR: 12		12
	C3.20	Welded Attachments (Piping)	Surface	CS: 38 HPCI: 25 MS: 11 RHR: 58 SDV: 4		
	C3.30	Welded Attachments (Pumps)	Surface	CS: 4 RHR: 4		

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
C-H All Pressure Retaining Components	C7.10	System Leakage Test (IWC-5220)	Visual, VT-2	CAC: 2 CAD: 4 CS: 2 HPCI: 1 MS: 1 RCIC: 1 RHR: 5 RPV: 1 SLC: 2 SDV: 1	I4R-25 I4T-01 I4T-02	

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
D-A Welded Attachments for Vessels, Piping, Pumps, and Valves	D1.20	Welded Attachments (Piping)	Visual, VT-1	ESW: 44 HPSW: 38 MSRV: 97		
D-B All Pressure Retaining Components	D2.10	System Leakage Test (1WD-5221)	Visual, VT-2	HPSW: 1	I4R-46 I4T-01 I4T-02	

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components	Relief Request/ TAP Number	Notes
E-A Containment Surfaces	E1.11	Containment Vessel Pressure Retaining Boundary - Accessible Surface Areas	General Visual	19	I4R-48	
	E1.11	Containment Vessel Pressure Retaining Boundary - Bolted Connections, Surfaces	Visual, VT-3	38	I4R-48	5
	E1.12	Containment Vessel Pressure Retaining Boundary - Wetted Surfaces of Submerged Areas	Visual, VT-3	1	I4R-48	6
	E1.20	Containment Vessel Pressure Retaining Boundary - BWR Vent System Accessible Surface Areas	Visual, VT-3	1		6
	E1.30	Containment Vessel Pressure Retaining Boundary - Moisture Barriers	General Visual	1		
E-C Containment Surfaces Requiring Augmented Examination	E4.11	Containment Surface Areas - Visible Surfaces	Visual, VT-1	1		7
	E4.12	Containment Surface Areas - Surface Area Grid Minimum Wall Thickness Location	Ultrasonic Thickness	1		

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TA&P Number	Notes
F-A Supports	F1.10	Class 1 Piping Supports	Visual, VT-3	CS: 14 FW: 40 HPCI: 8 MR: 14 MS: 38 RCIC: 1 RD: 9 RHR: 11 RWCU: 10		4
	F1.20	Class 2 Piping Supports	Visual, VT-3	CS: 64 HPCI: 64 MS: 63 RHR: 151 SDV: 48		4
	F1.30	Class 3 Piping Supports	Visual, VT-3	ESW: 115 HPSW: 97 MSRV: 167		4
	F1.40	Supports Other Than Piping Supports (Class 1, 2, and 3)	Visual, VT-3	CS: 4 HPCI: 1 HPSW: 4 MR: 16 RHR: 16 RPV: 9		4

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Risk Category Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TA&P Number	Notes
R-A Risk-Informed Piping Examinations	1	Risk Category 1 Elements	See Notes	FW: 54	I4R-44	1 2 3
	2	Risk Category 2 Elements	See Notes	CS: 2 MR: 10 RHR: 23 RPV: 2	I4R-44	1 2 3
	3	Risk Category 3 Elements	See Notes	FW: 1 HPCI: 21 RWCU: 1	I4R-44	1 2 3
	4	Risk Category 4 Elements	See Notes	CS: 56 HPCI: 24 MR: 74 MS: 300 RD: 25 RHR: 191 RPV: 30 RWCU: 8	I4R-44	1 2 3
	5	Risk Category 5 Elements	See Notes	HPCI: 8 RCIC: 2	I4R-44	1 2 3

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Aug Number	Description	Exam Requirements	Total Number of Components	Relief Request/ TAP Number	Notes
AUG Augmented Components	AUG-01	Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping Components, TR-113932, "BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75)", and TR-1012621, "BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75-A)"	Volumetric	Category C: 5 Category E: 1 Category S: 97		2
	AUG-02	BWROG, BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking Components	Volumetric	FW: 6 RPV: 18		14
	AUG-05	Snubber Visual Examination and Functional Testing Program	Functional Test & Visual, VT-3	CRD: 8 CS: 10 ESW: 5 FW: 10 HPCI: 14 IN: 2 MR: 10 MS: 20 MSRV: 89 RCIC: 1 RHR: 23 RWCU: 4		
	AUG-12	10CFR50 Augmented Requirements for Reactor Pressure Vessel Shell Weld Examinations	Volumetric	RPV: 20	I4R-41	
	AUG-15	Standby Liquid Control Nozzle-to-Safe-End	Surface	RPV: 1		
	AUG-D	RPV Closure Flange O-Ring Sealing Surfaces	Visual - Measurement	RPVCF: 3		
	AUG-C2	HPCI, RHR, and Core Spray Suction Strainers	Visual	11		
	AUG-C3	Sludge Accumulation on the Torus Floor	Visual - Sludge Measurement	1		

TABLE 7.1-2
UNIT 3 INSERVICE INSPECTION SUMMARY TABLE

Examination Category (with Examination Category Description)	Aug Number	Description	Exam Requirements	Total Number of Components	Relief Request/ TAP Number	Notes
AUG Augmented Components (Continued)	AUG-CA	Examination of Class MC Supports	Visual, VT-3	50		
	AUG-CB	Examination of Drywell External Components Located Outside Stabilizer Access Hatches	Visual, VT-3	16		
	AUG-CC	Examination of Drywell Airgap Drain Lines	Functional Test & Visual	4		
	AUG-CD	Examination of Bolting in ECCS Suction Strainers	Visual	9		

TABLE 7.1-3
INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES

Note #	Note Summary
1	For the Fourth ISI Interval, PBAPS's ISI Class 1 and 2 piping inspection program will be governed by risk-informed regulations. The RISI Program methodology is described in the EPRI Topical Reports TR-112657, Rev. B-A and Code Case N-578-1. The RISI Program scope has been implemented as an alternative to the 2001 Edition through the 2003 Addenda of the ASME Section XI examination program for ISI Class 1 B-F and B-J welds and ISI Class 2 C-F-1 and C-F-2 welds in accordance with 10CFR50.55a(a)(3)(i).
2	Per the EPRI Topical Reports TR-112657, Rev. B-A and Code Case N-578-1, welds within the plant that are assigned to IGSCC Categories B through G will continue to meet existing IGSCC schedules, while IGSCC Category A welds have been subsumed into the RISI Program.
3	Examination requirements within the RISI Program are determined by the various degradation mechanisms present at each individual piping structural element. See EPRI Topical Reports TR-112657, Rev. B-A and Code Case N-578-1 for specific examination method requirements.
4	ISI snubber visual examinations and functional testing are performed in accordance with the ASME OM Code, Subsection ISTD Program. The number of PBAPS Unit 2, 3, and Common supports identified, include snubbers for the visual examination and functional testing of the integral and nonintegral attachments per Paragraphs IWF-5200(c), IWF-5300(c), and IWF-2500(a). The snubbers are scheduled and administratively tracked in the ISI Program; however, the ASME OM Code, Subsection ISTD Program will be the mechanism for actually performing the visual examinations and functional testing scheduled within the ISI Program. For a detailed discussion of the snubber program, see Section 4.2.
5	Bolted connections examined per Item Number E1.11 require a General Visual examination each period and a VT-3 visual examination once per interval and each time the connection is disassembled during a scheduled Item Number E1.11 examination. Additionally, a VT-1 visual examination shall be performed if degradation or flaws are identified during the VT-3 visual examination. These modifications are required by 10CFR50.55a(b)(2)(ix)(G) and 10CFR50.55a(b)(2)(ix)(H).
6	Item Numbers E1.12 and E1.20 require VT-3 visual examination in lieu of General Visual examination, as modified by 10CFR50.55a(b)(2)(ix)(G).
7	Item Number E4.11 requires VT-1 visual examination in lieu of Detailed Visual examination, as modified by 10CFR50.55a(b)(2)(ix)(G).
8	Per 10CFR50.55a(b)(2)(xxi)(B), *Table IWB-2500-1 examination requirements*, the provisions of Table IWB-2500-1, Examination Category B-G-2, Item Number B7.80, that are in the 1995 Edition are applicable only to reused bolting when using the 1997 Addenda through the latest Edition and Addenda incorporated by reference in paragraph (b)(2) of this section.
9	Per Stone and Webster Calculation No. PM-0945, Rev. 1, dated 11/30/95, welds in peripheral CRD housings are exempt from the surface and volumetric examination requirements of Table IWB-2500-1, Examination Category B-O, based on the IWB-1220(a) normal makeup exemption.
10	The Unit 2 population counts include those components that are common to both units (typically designated as "Common" or "Unit 2/3"). These Common components are referenced in Table 7.1-1 following a "+" symbol to designate Unit Common.
11	As allowed by Code Case N-613-1, PBAPS will perform a volumetric examination using a reduced examination volume (AB-C-D-E-F-G-H) of Figures 1, 2, and 3 of the Code Case in lieu of the previous examination volumes of ASME Section XI, Figures IWB-2500-7(a), (b), and (c).
12	PBAPS will utilize the alternative requirements of Code Case N-700 for Class 1, 2, and 3 welded attachments, which clarifies that for single vessels, only one welded attachment is required to be selected for examination. The welded attachment selected shall be under continuous load during normal operation, or if one does not exist, shall be one subject to potential intermittent loads (e.g., seismic, water hammer, etc.)

TABLE 7.1-3
INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES

Note #	Note Summary
13	The RPV interior requires examination per the BWRVIP in lieu of ASME Section XI Examination Categories B-N-1 and B-N-2 per Relief Request I4R-49. Augmented Inspection Programs associated with the BWRVIP and the PBAPS Vessel Internals Program are maintained independently in procedure ER-PB-331-1001, "RPV & Internals Program Basis and Implementation Document"
14	Augmented examination of the Feedwater Spargers has been transferred to procedure ER-PB-331-1001, "RPV & Internals Program Basis and Implementation Document" for the BWRVIP, whereas augmented examination of the Feedwater Nozzles remains with the ISI Program.
15	The system pressure tests required for Class 3 systems ECW and ESW utilize PBAPS Unit 2 system pressure test procedures that are common to both PBAPS Units 2 and 3.
16	Examination Category B-G-1, Item Numbers B6.20 "Closure Studs, In Place" and B6.30 "Closure Studs, When Removed" have been combined into and renamed as Item Number B6.20 "Closure Studs", in Table IWB-2500-1 of ASME Section XI, 2001 Edition through the 2003 Addenda. Two components (Studs 1-46) and (Studs 47-92) represent the ninety-two RPV closure studs per unit. For tracking purposes, one of the two B-G-1, B6.20 components (Studs 1-46) will also represent the six cattle chute studs (21, 22, 23, 24, 25, and 26) for PBAPS Unit 2 and one of the two B-G-1, B6.20 components (Studs 47-92) will also represent the six cattle chute studs (67, 68, 69, 70, 71, and 72) for PBAPS Unit 3 which are removed each refueling outage.

7.2 Snubber Inspection Summary Tables

10CFR50.55a "Codes and Standards" allows usage of ASME OM Code Subsection ISTD in place of ASME Section XI Paragraphs IWF-5200(a) and IWF-5300(a) and (b), using VT-3 visual examination methods described in Paragraph IWA-2213.

The following Tables 7.2-1 and 7.2-2 provide a summary of the ASME OM Code, Subsection ISTD, Snubber examinations and testing for the Fourth ISI Interval at PBAPS Units 2, 3, and Common.

The format of the Snubber Inspection Summary Tables is as depicted below and provides the following information:

ASME OM Code Subsection (with Subsection Description)	OM Article Number	Article Number Description	Exam Requirements	Totals	Frequency	Relief Request/ TAP Number	Notes
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

(1) ASME OM Code Subsection:

Provides the applicable Code for Operation and Maintenance of Nuclear Power Plants (OM Code) subsection number and a description as obtained from ISTD. Only applicable subsections to PBAPS are identified.

(2) OM Article Number:

Provides the article number as identified in ISTD. Only those article numbers applicable to PBAPS are identified.

(3) Article Number Description:

Provides the article description as identified in ISTD. Identifies the methods selected to be performed at PBAPS.

(4) Examination Requirements:

Provides the visual examination and functional testing methods required by ISTD.

(5) Totals:

Provides the total number of snubbers that pertain to that article of ISTD. Note that the total number of snubbers are subject to change after completion of plant modifications and design changes.

(6) Frequency:

Provides the frequency for examinations and testing as addressed in ISTD and approved ISTD Code Cases.

(7) Relief Request/TAP Number:

Provides a listing of Relief Request/TAP Numbers to specific snubber components. Relief requests and TAP Numbers that generically apply to all components, or an entire class are not listed. If a Relief Request/TAP Number is identified, see the corresponding relief request in Section 8.0 or the TAP Number in Section 2.5.

(8) Notes:

Provides a listing of program notes applicable to the ISTD article number. If a program note number is identified, see the corresponding program note in Table 7.2-3.

TABLE 7.2-1
UNIT 2 & COMMON SNUBBER INSPECTION SUMMARY

ASME OM Code Subsection (with Subsection Description)	OM Article Number	Article Number Description	Exam Requirements	Totals	Frequency	Relief Request/ TAP Number	Notes
ISTD Snubber Examinations	ISTD-4200	Accessible and Inaccessible Snubbers (1 population)	Visual, VT-3	206	Once every 10 Years		1
ISTD Snubber Testing	ISTD-5200	10% Functional Test Plan - Type 1 Snubbers (PSA-1/4, PSA-1/2)	Functional Testing	2	Every Outage		2
		10% Functional Test Plan - Type 2 Snubbers (PSA-1, PSA-3, PSA-10)	Functional Testing	65	Every Outage		2
		10% Functional Test Plan - Type 3 Snubbers (PSA-35)	Functional Testing	8	Every Outage		2
		10% Functional Test Plan - Type 4 Snubbers (Anvil International Hydraulic)	Functional Testing	131	Every Outage		2

TABLE 7.2-2
UNIT 3 SNUBBER INSPECTION SUMMARY

ASME OM Code Subsection (with Subsection Description)	OM Article Number	Article Number Description	Exam Requirements	Totals	Frequency	Relief Request/ TAP Number	Notes
ISTD Snubber Examinations	ISTD-4200	Accessible and Inaccessible Snubbers (1 population)	Visual, VT-3	196	Once every 10 Years		1
ISTD Snubber Testing	ISTD-5200	10% Functional Test Plan - Type 1 Snubbers (PSA-1/4, PSA-1/2)	Functional Testing	0	Every Outage		2
		10% Functional Test Plan - Type 2 Snubbers (PSA-1, PSA-3, PSA-10)	Functional Testing	74	Every Outage		2
		10% Functional Test Plan - Type 3 Snubbers (PSA-35)	Functional Testing	6	Every Outage		2
		10% Functional Test Plan - Type 4 Snubbers (Anvil International Hydraulic)	Functional Testing	116	Every Outage		2

TABLE 7.2-3
SNUBBER INSPECTION SUMMARY TABLE PROGRAM NOTES

Note #	Note Summary
1	Examinations performed per Code Case OMN-13, "Requirements for Extending Snubber Inservice Visual Examination Interval at LWR Power Plants".
2	Per ISTD 2001 Edition through the 2003 Addenda, Article ISTD-5240 "Test Frequency".

8.0 RELIEF REQUESTS FROM ASME SECTION XI

This section contains relief requests written per 10CFR50.55a(a)(3)(i) for situations where alternatives to ASME Section XI requirements provide an acceptable level of quality and safety; per 10CFR50.55a(a)(3)(ii) for situations where compliance with ASME Section XI requirements results in a hardship or an unusual difficulty without a compensating increase in the level of quality and safety; and per 10CFR50.55a(g)(5)(iii) for situations where ASME Section XI requirements are considered impractical.

The following USNRC guidance was utilized to determine the correct 10CFR50.55a paragraph citing for PBAPS relief requests. 10CFR50.55a(a)(3)(i) and 10CFR50.55a(a)(3)(ii) provide alternatives to the requirements of ASME Section XI, while 10CFR50.55a(g)(5)(iii) recognizes situational impracticalities.

10CFR50.55a(a)(3)(i): Cited in relief requests when alternatives to the ASME Section XI requirements which provide an acceptable level of quality and safety are proposed. Examples are relief requests which propose alternative NDE methods and/or examination frequency.

10CFR50.55a(a)(3)(ii): Cited in relief requests when compliance with the ASME Section XI requirements is deemed to be a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Examples of hardship and/or unusual difficulty include, but are not limited to, excessive radiation exposure, disassembly of components solely to provide access for examinations, and development of sophisticated tooling that would result in only minimal increases in examination coverage.

10CFR50.55a(g)(5)(iii): Cited in relief requests when conformance with ASME Section XI requirements is deemed impractical. Examples of impractical requirements are situations where the component would have to be redesigned, or replaced to enable the required inspection to be performed.

An index for PBAPS relief requests is included in Table 8.0-1. The "I4R-XX" relief requests are applicable to ISI, CISI, SPT, and PDI.

The following relief requests are subject to change throughout the inspection interval.

TABLE 8.0-1
RELIEF REQUEST INDEX

Relief Request	Revision Date[3]	Status[2]	(Program) Description/ Approval Summary[1]
I4R-08	0 11/05/08	Withdrawn	**(ISI)** Limited Volumetric Examination of RHR Heat Exchanger Pressure Retaining Shell Circumferential Welds (Shell-to-Flange Welds). **Revision 0 Withdrawn by PBAPS.**
I4R-25	0 11/05/08	Granted	**(SPT)** Pressure Testing the RPV Head Flange Seal Weld Leak Detection System. **Revision 0 Granted per SER dated 02/26/09.**
I4R-41	0 11/05/08	Authorized	**(ISI)** Alternative Volumetric Examination of RPV Circumferential Shell Welds. **Permanent relief was authorized per SER dated 06/1500 (CCN 00-00069) and thus applies to the remaining term of operation under the existing, initial operating license, including this Fourth Inspection Interval.**
I4R-44	0 11/05/08	Authorized	**(ISI)** Alternate Risk-Informed Selection and Examination Criteria for Examination Category B-F, B-J, C-F-1, and C-F-2 Pressure Retaining Piping Welds. **Revision 0 Authorized per SER dated 02/26/09.**
I4R-46	0 11/05/08	Not Required	**(SPT)** Alternative Examination Requirements of ASME Section XI, Paragraph IWA-5244, "Buried Components". **Revision 0 Not Required per SER dated 02/26/09.**
I4R-47	1 11/05/08	Authorized	**(SPT)** Testing of Control Rod Drive Boundaries. **Revision 0 Authorized per SER dated 02/26/09.**
I4R-48 (CRR-13)	0 11/05/08	Granted	**(CISI)** Alternative Examination Requirements of ASME Section XI, Paragraph IWE-1232, "Inaccessible Surface Areas". **Revision 0 Granted per SER dated 02/26/09.**

TABLE 8.0-1
RELIEF REQUEST INDEX

Relief Request	Revision Date[3]	Status[2]	(Program) Description/ Approval Summary[1]
I4R-49	1 11/05/08	Authorized Conditionally	**(ISI)** Use of BWRVIP Guidelines in Lieu of Specific ASME Code Requirements. **Revision 0 Authorized Conditionally per SER dated 04/30/08. Note that previous Third Interval I3R-45 relief subsequently was approved to modify the Unit 3 Interval date to be consistent with the Unit 2 date. The duration of this I4R-49 relief is thus modified as such to expire on 11/04/18 for both units.**

Note 1: The USNRC grants relief requests pursuant to 10CFR50.55a(g)(6)(i) when Code requirements cannot be met and proposed alternatives do not meet the criteria of 10CFR50.55(a)(3). The USNRC authorizes relief requests pursuant to 10CFR50.55a(a)(3)(i) if the proposed alternatives would provide an acceptable level of quality and safety or under 10CFR50.55a(a)(3)(ii) if compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of safety.

Note 2: This column represents the status of the latest revision. Relief Request Status Options: Authorized- Approved for use in an USNRC SER (See Note 1); Granted - Approved for use in an USNRC SER (See Note 1); Authorized Conditionally - Approved for use in an USNRC SER which imposes certain conditions; Granted Conditionally - Approved for use in an USNRC SER which imposes certain conditions; Denied - Use denied in an USNRC SER; Expired - Approval for relief has expired; Withdrawn - Relief has been withdrawn by PBAPS; Not Required - The USNRC has deemed the relief unnecessary in an SER or RAI; Cancelled - Relief has been cancelled by PBAPS prior to issue; and Submitted - Relief has been submitted to the USNRC by the station and is awaiting approval.

Note 3: The revision listed is the latest revision of the subject relief request. The date this revision became effective is the date of the approving SER, which is listed in the fourth column of the table. The date noted in the second column is the date of the ISI Program Plan revision when the relief request was incorporated into the document.

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Relief Request for Pressure Testing the
RPV Head Flange Seal Weld Leak Detection System
In Accordance with 10CFR50.55a(g)(5)(iii)

1.0 ASME CODE COMPONENTS AFFECTED:

Code Class:	2
Reference:	Table IWC-2500-1 IWC-5200
Examination Category:	C-H
Item Number:	C7.10
Description:	Pressure Testing the RPV Head Flange Seal Weld Leak Detection System
Component Number:	Class 2 RPV Head Flange Seal Weld Leak Detection System Unit 2: Piping 4DCN-1" Unit 3: Piping 4DCN-1"
Drawing Number:	ISI-351, Sht. 1 (Unit 2) ISI-351, Sht. 3 (Unit 3)

2.0 APPLICABLE CODE EDITION AND ADDENDA:

The Inservice Inspection program is based on the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, 2001 Edition through the 2003 Addenda.

3.0 APPLICABLE CODE REQUIREMENT:

Table IWC-2500-1, Examination Category C-H, Item Number C7.10, requires all Class 2 pressure retaining components be subject to a system leakage test with a VT-2 visual examination in accordance with Paragraph IWC-5220 (to operate or support the safety function up to the first normally closed valve, or valve capable of automatic closure). This pressure test is to be conducted once each inspection period.

4.0 IMPRACTICALITY OF COMPLIANCE:

Pursuant to 10CFR50.55a(g)(5)(iii), relief is requested on the basis that compliance with ASME Section XI requirements is impractical.

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The Reactor Vessel Head Flange Leak Detection Piping is separated from the reactor pressure boundary by one passive seal, an O-ring located on the vessel flange. A second O-ring is located on the outer side of the vessel flange, on the opposite side of the tap in the vessel flange (See Figures I4R-25-1 and I4R-25-2). This piping is required during plant operation to indicate failure of the inner flange O-ring seal. Failure of the O-ring results in a High Pressure Alarm in the Main Control Room. Failure of the inner O-ring is the only condition under which this piping is pressurized.

The configuration of this system precludes manual pressure testing while the vessel head is removed because the orifice in the vessel flange and the associated 1 inch piping and components do not incorporate a means for pressure testing. As shown in Figure I4R-25-2, the configuration of the vessel tap, combined with the small size of the tap and the high-test pressure requirement (approximately 1045 psig), precludes the tap from being temporarily plugged or connected to other piping. The opening of the flange is only 3/16 of an inch in diameter and is smooth walled, making the effectiveness of a temporary seal at the required test pressure very limited. Failure of a temporary pressure seal could possibly cause ejection of the device.

The configuration also precludes pressure testing with the vessel head installed, because the seal prevents complete water filling of the piping due to the absence of a vent path. Additionally, a pneumatic test performed with the head installed is not recommended due to the configuration of the top head. The top head of the vessel contains two grooves that hold the O-rings. The O-rings are in turn held in place within these grooves by a series of retainer clips that are housed in recessed cavities in the flange face. If a pressure test were performed with the head on, the inner O-ring would be pressurized in a direction opposite to what it would see in normal operation. This test pressure would result in a net inward force on the inner O-ring that would tend to push it into the recessed cavities that house the retainer clips. This inward force would very likely damage the thin O-ring material.

In addition to the problems associated with the O-ring design that preclude this testing, it is also questionable whether a pneumatic test is appropriate for this piping. The use of a pneumatic test performed at RPV nominal operating pressure would represent an unnecessary safety risk to personnel in the unlikely event of a test failure, due to the large amount of stored energy contained in pressurized air.

5.0 BURDEN CAUSED BY COMPLIANCE:

Pressure testing of this Class 2 piping during the Class 1 System Leakage Test is prevented because the piping is not connected to the source of pressure (the leak-off piping is only pressurized in the event of a failure of the inner O-ring). As discussed in section 4.0 above, the extensive modifications required to accommodate testing, without affecting the integrity of the O-ring seal, is impractical.

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Based on the above, Peach Bottom Atomic Power Station requests the following alternative examination be performed on the Reactor Vessel Head Flange Seal Leak Detection System.

6.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

A VT-2 visual examination on the Class 2 portion of the RPV Flange Leak Detection Piping will be performed during each refueling outage when the RPV head is off and the head cavity is flooded above the vessel flange. The static head developed with the leak detection piping filled with water will allow for the detection of any leaks in the piping. This examination will be performed per the frequency specified by Table IWC-2500-1.

7.0 DURATION OF PROPOSED ALTERNATIVE:

Relief is requested for the fourth ten-year inspection interval for Peach Bottom Atomic Power Station, Units 2 and 3. The Fourth ISI Interval begins on November 5, 2008 for both Units as proposed in Relief Request I3R-45 (Third ISI Interval Relief Request), and will conclude November 4, 2018 for Peach Bottom Atomic Power Station, Units 2 and 3.

8.0 PRECEDENTS:

Similar relief requests have been approved for:

1. Peach Bottom Atomic Power Station Third Inspection Interval Relief Request RR-25 was authorized per SER on July 31, 2000.

2. LaSalle County Station Second Inspection Interval Relief Request PR-04 was authorized per SER dated July 3, 1996.

3. Susquehanna Steam Electric Station Third Inspection Interval Relief Request 3RR-07 was authorized per SER dated September 24, 2004.

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FIGURE I4R-25-1

REACTOR PRESSURE VESSEL HEAD FLANGE LEAK-OFF PIPING DETAILS
(Dimensions are typical for BWR)

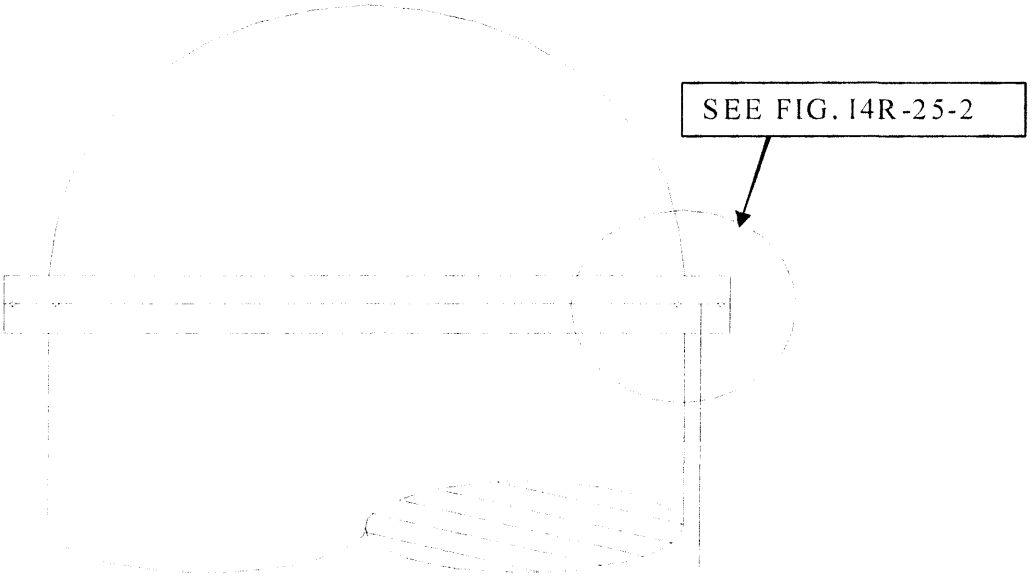

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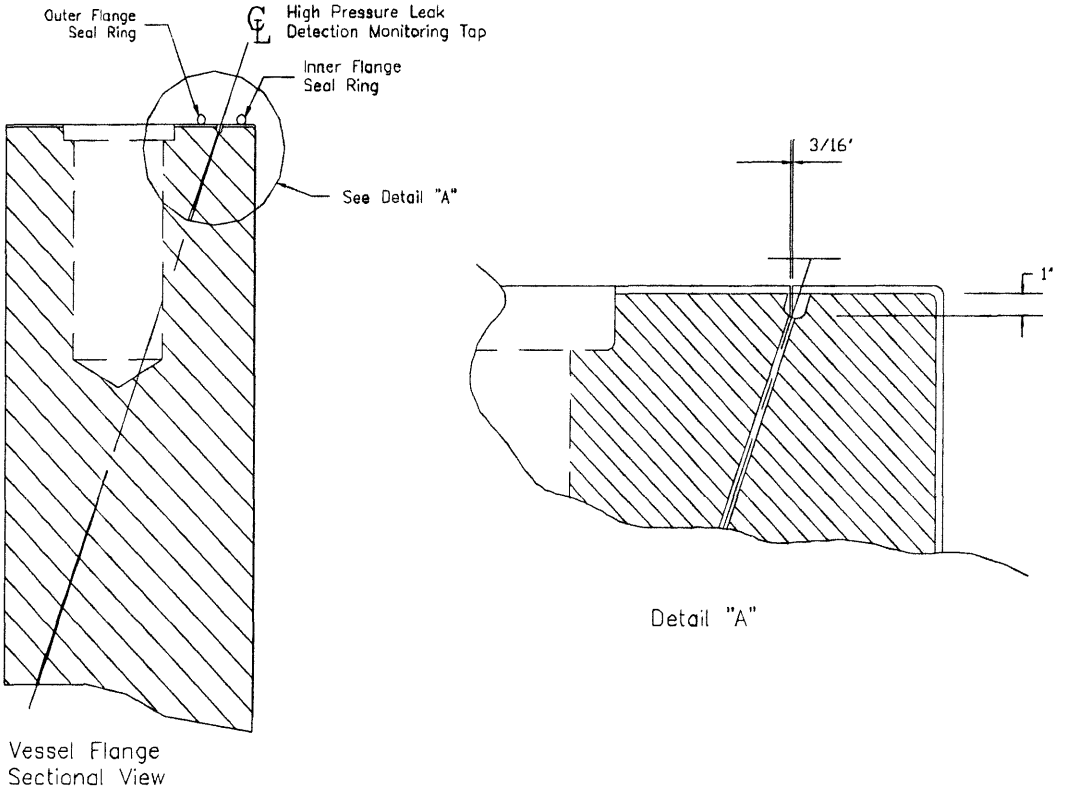
FIGURE I4R-25-2

REACTOR PRESSURE VESSEL HEAD FLANGE LEAK-OFF PIPING DETAILS



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*** NOTE ***

Peach Bottom Atomic Power Station Fourth Inspection Interval Relief Request I4R-41, Revision 0 is simply an administrative placeholder. This relief request was previously submitted on February 7, 2000 and approved under the Third Inspection Interval ISI Program Plan as Relief Request RR-41, Revision 0. The approval authorized under USNRC SER dated June 15, 2000 (CNN 00-00069) for Peach Bottom Atomic Power Station, PECO, was for permanent relief and thus applies to the remaining term of operation under the existing, initial operating license, including this Fourth Inspection Interval.

Formatting for Relief Request RR-41, Revision 0 varied from the standard ISI Program Plan format due to the fact that it also requested relief from the Augmented Vessel examination contained in 10CFR50a(g)(6)(ii)(A)(2).

The relief request is carried here and renumbered as I4R-41, Revision 0 purely for administrative purposes. All ASME Code references were made in accordance with the 1989 Edition, No Addenda of ASME Section XI. No changes to the actual approved relief request have been made and no further or revised authorization is required.

REQUEST NUMBER: RR-41
REVISION 0

Request for Permanent Relief from Circumferential Shell Weld Inspection Requirements
Peach Bottom Atomic Power Station, Units 2 and 3

References:
1. Letter from R. A. Capra (U.S. Nuclear Regulatory Commission (USUSNRC)) to G. D. Edwards (PECO Energy Company), dated December 2.1998
2. Letter from J. F. Stolz (USUSNRC) to G. A. Hunger, Jr. (PECO Energy Company), dated October 7, 1997

Proposed Relief

As discussed in USNRC Generic Letter 98-05 ("Boiling Water Reactor Licensees Use of the BWRVIP-05 Report to Request Relief from Augmented Examination Requirements on Reactor Pressure Vessel Circumferential Shell Welds"), Boiling Water Reactor (BWR) licensees may request permanent relief from the inservice inspection requirements of 10CFR50.55a(g) for the volumetric examination of circumferential reactor pressure vessel welds. Accordingly, PECO Energy Company (PECO Energy) is requesting relief from the following requirements: 1) examination of the RPV circumferential shell welds (ASME Section XI Examination Category B-A, Item Number B1.11) as required by 10CFR50.55a(g)(6)(ii)(A)(2), 2) inservice inspection

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requirements for circumferential welds contained in the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 1980 Edition through Winter 1981 Addenda (a two year delay was granted in the Reference 1 and 2 letters from performing this ISI inspection as required by the ASME Code), 3) inservice inspection requirements for circumferential welds contained in the current third ten-year interval ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition, and 4) inservice inspection requirements for circumferential welds contained in all future versions of the ASME Code through the end of the current operating licenses.

Basis for Proposed Relief

The basis for this request is documented in the report "BWR Vessel and Internals Project, BWR Reactor Pressure Vessel Shell Weld Inspection Recommendations (BWRVIP-05)", that was transmitted to the USNRC in September 1995. As discussed in Generic Letter 98-05, the staff has completed its final review of the information submitted by the BWRVIP and the staff's safety evaluation was transmitted to Carl Terry, Chairman of the BWRVIP, in a letter dated July, 1998. The staff concluded that the BWRVIP-05 proposal, as modified, to eliminate BWR vessel circumferential weld examinations, is acceptable.

As discussed in this Generic Letter, licensees may request permanent (i.e., for the remaining term of operation under the existing, initial license) relief by demonstrating that: 1) at the expiration of their license, the circumferential welds will continue to satisfy the limiting conditional failure probability for circumferential welds in the staff's July, 1998 safety evaluation, and 2) licensees have implemented operator training and established procedures that limit the frequency of cold over-pressure events to the amount specified in the staff's July, 1998 safety evaluation.

BWRVIP-05 provides the technical basis for eliminating inspection of Boiling Water Reactor (BWR) RPV circumferential shell welds. The BWRVIP-05 report concludes that the probability of failure of the BWR RPV circumferential shell welds is orders of magnitude lower than that of the axial shell welds. The USNRC staff has conducted an independent risk-informed assessment of the analysis contained in BWRVIP-05. This assessment also concluded that the probability of failure of the BWR RPV circumferential welds is orders of magnitude lower than that of the axial shell welds.

The independent USNRC assessment utilized the FAVOR code to perform a probabilistic fracture mechanics (PFM) analysis to estimate RPV failure probabilities. Three key assumptions in the PFM analysis are: the neutron fluence was that estimated to be end-of-license mean fluence, the chemistry values are mean values based on vessel types, and the potential for beyond design basis events is considered. Although BWRVIP-05 provides the technical basis supporting an alternative, the following information is provided to show the conservatisms of the USNRC analysis relative to the projected, end-of-license conditions for the PBAPS, Units 2 and 3 vessels.

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Basis for PBAPS, Unit 2 - Technical Evaluation

During refueling outage 2R12 at PBAPS, Unit 2, which occurred in the fall of 1998, the PBAPS, Unit 2 reactor vessel was examined utilizing the General Electric GERIS-2000 system. During this examination, the C6 circumferential weld was examined. A cumulative code volume of approximately 75.8% was examined with no indications. Additionally, while performing the vertical weld examinations, an average incidental cumulative code volume of approximately 7.9% was examined for the four (4) circumferential welds. No reportable indications were found. The examination performed during 2R12 was an alternative approved by the USNRC for PBAPS, Unit 2 in a safety evaluation report dated December 2, 1998 (Reference 1).

The following table illustrates that the PBAPS, Unit 2 plant has additional margin in comparison to the BWRVIP-05 Fracture Analysis limiting case (that is, B&W SN 2 in Table 7-7). The chemistry factor, ΔRT_{NDT}, margin term, mean ART, and upper bound ART are calculated consistent with the guidelines of Reg. Guide 1.99, Rev. 2.

Table 1 - Comparison of Peach Bottom 2 Fracture Analysis Parameters to the BWRVIP-05 Limiting Parameters

Parameter Description	PBAPS, Unit 2 Comparative Parameters at 32 EFPY	USNRC Independent Assessment Limiting Fracture Analysis Parameters
Fluence, n/cm^2	8.8×10^{17}	1.25×10^{18}
Initial RT_{NDT}, °F	-32	-5
Chemistry Factor	76.4	190
Cu %	0.056	0.287
Ni %	0.96	0.60
ΔRT_{NDT}	24.8	87.9
Margin Term	24.8	62.2
Mean ART	-7.2	82.9
Upper Bound ART	17.6	145.1

As shown above, every parameter used in the limiting USNRC independent assessment report (excluding Ni %) bounds the circumferential shell weld information for PBAPS, Unit 2 at 32 EFPY. 32 EFPY represents the end of the requested deferral period. The combination of the Ni

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% and Cu % determines the chemistry factor which is itself bounded by the USNRC independent assessment.

Basis for PBAPS, Unit 3 - Technical Evaluation

During refueling outage 3R11 at PBAPS, Unit 3, which occurred in the fall of 1997, the PBAPS, Unit 3 reactor vessel was examined utilizing the General Electric GERIS-2000 system. During this examination, the C6 circumferential weld was examined. A cumulative code volume of approximately 69.3% was examined with no indications. Additionally, while performing the vertical weld examinations, incidental coverage of approximately 2-3% was obtained for the four (4) circumferential welds. No reportable indications were found. The examination performed during 3R11 was an alternative approved by the USNRC for PBAPS, Unit 2 in a safety evaluation report dated October 7, 1997 (Reference 2).

The following table illustrates that the PBAPS, Unit 3 plant has additional margin in comparison to the BWRVIP-05 Fracture Analysis limiting case (that is, B&W SN 2 in Table 7-7). The chemistry factor, ΔRT_{NDT}, margin term, mean ART, and upper hound ART are calculated consistent with the guidelines of Reg. Guide 1.99, Rev. 2.

Table 2 -Comparison of PBAPS, Unit 3 Fracture Analysis Parameters to the BWRVIP-05 Limiting parameters

Parameter Description	PBAPS, Unit 3 Comparative Parameters at 32 EFPY	BWRVIP-05 Limiting Fracture Analysis Parameters
Fluence, n/cm^2	7.9×10^{17}	1.25×10^{14}
Initial RT_{NDT}, °F	-50	-5
Chemistry Factor	136.9	190
Cu %	0.102	0.287
Ni %	0.942	0.60
ΔRT_{NDT}	42.2	87.9
Margin Term	42.2	62.2
Mean ART	-7.8	82.9
Upper Bound ART	34.4	145.1

As shown above, every parameter used in the limiting USNRC independent assessment report (excluding Ni %) bounds the circumferential shell weld information for PBAPS, Unit 3 at 32 EFPY. 32 EFPY represents the end of the requested deferral period. The combination of the Ni % and Cu % determines the chemistry factor which is itself bounded by the USNRC independent assessment.

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PBAPS, Units 2 and 3 - Training and Procedures

The following information provides justification that PECO Energy has implemented operator training and established procedures at PBAPS, Units 2 and 3 that limit the frequency of cold over-pressure events to the amount specified in the staff's July, 1998 safety evaluation.

PECO Energy has in place procedures which monitor and control reactor pressure, temperature, and water inventory during all aspects of cold shutdown which would minimize the likelihood of a Low Temperature Over-Pressurization (LTOP) event from occurring. Additionally, these procedures are reinforced through operator training.

The code Leakage Pressure Test and the code Hydrostatic Pressure Test procedures which have been used at PBAPS, have sufficient procedural guidance to prevent a cold, over-pressurization event. The Leakage Pressure Test is performed at the conclusion of each refueling outage, while the Hydrostatic Pressure Test is performed once every ten years. Other pressurizations required for informational leakage inspections are performed in accordance with a procedure similar to the ASME Code test procedures. These pressurizations are infrequently-performed, complex tasks, and the test procedures are considered Plant Evolution / Special Tests. As such, a requirement is included in them for Operation's Section management to perform a "pre-job briefing" with all essential personnel. This briefing details the anticipated testing evolution with special emphasis on: conservative decision making, plant safety awareness, lessons learned from similar in-house or industry operating experiences, the importance of open communications, and, finally, the process in which the test would be aborted if plant systems responded in an adverse manner. Vessel temperature and pressure are required to be monitored throughout these tests to ensure compliance with the Technical Specification pressure-temperature curve. Also, the procedures require the designation of a Test Coordinator for the duration of the test who is a single point of accountability, responsible for the coordination of testing from initiation to closure, and maintaining Shift Management and line management cognizant of the status of the test.

Additionally, to ensure a controlled, deliberate pressure increase, the rate of pressure increase is administratively limited throughout the performance of the test. If the pressurization rate exceeds this limit, direction is provided to remove the CRD pumps, which are used for pressurization, from service.

With regard to inadvertent system injection resulting in an LTOP condition, the high pressure make-up systems (High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) systems, as well as the normal feedwater supply (via the Reactor Feedwater Pumps)) at PBAPS are all steam driven. During reactor cold shutdown conditions, no reactor steam is available for the operation of these systems. Therefore, it is not possible for these systems to contribute to an over-pressure event while the unit is in cold shutdown. Although auxiliary steam is used to test the associated turbines while the plant is shutdown, the pump is uncoupled from the turbine during the actual test which would prevent an LTOP condition.

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Procedural control is also in place to respond to an unexpected or unexplained rise in reactor water level which could result from a spurious actuation of an injection system. Actions specified in this procedure include preventing condensate pump injection, securing ECCS system injection, tripping CRD pumps, terminating all other injection sources, and lowering RPV level via the RWCU system.

In addition to procedural barriers, Licensed Operator Training is in place which further reduces the possibility of the occurrence of LTOP events. During initial Licensed Operator Training the following topics are covered: Brittle fracture and vessel thermal stress; Operational Transient (OT) procedures, including the OT on reactor high level; Technical Specification training, including Section 3.4.9, "RCS Pressure and Temperature (P/T) Limits"; and, Simulator Training of plant heatup and cooldown including performance of surveillance tests which ensure pressure-temperature curve compliance. In addition, operator training has been provided on the expectations for procedural compliance, as provided for in the Stations' Operations Manual.

In addition to the above, ongoing review of industry operating plant experiences is conducted to ensure that the PECO Energy procedures consider the impact of actual events, including LTOP events. Appropriate adjustments to the procedures and associated training are then implemented, to preclude similar situations from occurring at PBAPS.

Conclusion

Based on the documentation in BWRVIP-05, the guidance provided in GL 98-05, the risk-informed independent assessment performed by the USNRC staff, and the additional information provided above, PECO Energy believes that permanent relief from the RPV circumferential shell welds examinations at PBAPS, Units 2 and 3 is justified.

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Relief Request for Alternate Risk-Informed Selection and Examination Criteria for Examination Category B-F, B-J, C-F-1, and C-F-2 Pressure Retaining Piping Welds In Accordance with 10CFR50.55a(a)(3)(i)

1.0 ASME CODE COMPONENTS AFFECTED:

Code Class:	1 and 2
Reference:	Table IWB-2500-1, Table IWC-2500-1
Examination Category:	B-F, B-J, C-F-1, and C-F-2
Item Number:	B5.10, B5.20, B9.11, B9.21, B9.31, B9.32, B9.40, C5.11, C5.51, and C5.81
Description:	Alternate Risk-Informed Selection and Examination Criteria for Examination Category B-F, B-J, C-F-1, and C-F-2 Pressure Retaining Piping Welds
Component Number:	Unit 2 and Unit 3 Pressure Retaining Piping

2.0 APPLICABLE CODE EDITION AND ADDENDA:

The Inservice Inspection program is based on the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, 2001 Edition through the 2003 Addenda.

3.0 APPLICABLE CODE REQUIREMENT:

Table IWB-2500-1, Examination Category B-F, requires volumetric and surface examinations on all welds for Item Number B5.10 and surface examinations for all welds for Item Number B5.20.

Table IWB-2500-1, Examination Category B-J, requires volumetric and surface examinations on a sample of welds for Item Numbers B9.11 and B9.31 and surface examinations on a sample of welds for Item Numbers B9.21, B9.32, and B9.40. The weld population selected for inspection includes the following:

1. All terminal ends in each pipe or branch run connected to vessels.

2. All terminal ends and joints in each pipe or branch run connected to other components where the stress levels exceed either of the following limits under loads associated with specific seismic events and operational conditions:

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a. primary plus secondary stress intensity range of $2.4S_m$ for ferritic steel and austenitic steel.

b. cumulative usage factor U of 0.4.

3. All dissimilar metal welds not covered under Examination Category B-F.

4. Additional piping welds so that the total number of circumferential butt welds, branch connections, or socket welds selected for examination equals 25% of the circumferential butt welds, branch connection, or socket welds in the reactor coolant piping system. This total does not include welds exempted by Paragraph IWB-1220.

Table IWC-2500-1, Examination Categories C-F-1 and C-F-2 require volumetric and surface examinations on a sample of welds for Item Numbers C5.11 and C5.51 and surface examinations on a sample of welds for Item Number C5.81. The weld population selected for inspection includes the following:

1. Welds selected for examination shall include 7.5%, but not less than 28 welds, of all dissimilar metal, austenitic stainless steel and high alloy welds (Examination Category C-F-1) or of all carbon and low alloy steel welds (Examination Category C-F-2) not exempted by Paragraph IWC-1220. (Some welds not exempted by Paragraph IWC-1220 are not required to be nondestructively examined per Examination Categories C-F-1 and C-F-2. These welds, however, shall be included in the total weld count to which the 7.5% sampling rate is applied.) The examinations shall be distributed as follows:

   a. the examinations shall be distributed among the Class 2 systems prorated, to the degree practicable, on the number of nonexempt dissimilar metal, austenitic stainless steel and high alloy welds (Examination Category C-F-1) or carbon and low alloy welds (Examination Category C-F-2) in each system;

   b. within a system, the examinations shall be distributed among terminal ends, dissimilar metal welds, and structural discontinuities prorated, to the degree practicable, on the number of nonexempt terminal ends, dissimilar metal welds, and structural discontinuities in the system; and

   c. within each system, examinations shall be distributed between piping sizes prorated to the degree practicable.

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4.0 REASON FOR REQUEST:

Pursuant to 10CFR50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative utilizing Reference 1 along with two enhancements from Reference 4 will provide an acceptable level of quality and safety.

As stated in "Safety Evaluation Report Related to EPRI Risk-Informed Inservice Inspection Evaluation Procedure (EPRI TR-112657, Revision B, July 1999)" (Reference 2):

> "The staff concludes that the proposed RISI program as described in EPRI TR-112657, Revision B, is a sound technical approach and will provide an acceptable level of quality and safety pursuant to 10CFR50.55a for the proposed alternative to the piping ISI requirements with regard to the number of locations, locations of inspections, and methods of inspection."

The initial Peach Bottom Atomic Power Station Risk-Informed Inservice Inspection (RISI) program was submitted during the first period of the third interval for Unit 2 and during the second period of the third interval for Unit 3. This initial RISI program was developed in accordance with EPRI TR-112657, Revision B-A, as supplemented by Code Case N-578-1. The program was approved for use by the USNRC via a Safety Evaluation as transmitted to Exelon (Reference 5).

The transition from the 1989 Edition to the 2001 Edition through the 2003 Addenda of ASME Section XI for Peach Bottom Atomic Power Station's fourth interval does not impact the currently approved Risk-Informed ISI evaluation methods and process used in the third interval, and the requirements of the new Code Edition/Addenda will be implemented as detailed in the Peach Bottom Atomic Power Station ISI Program Plan. Therefore, with the exception of specific weld locations that may have changed due to maintenance or modification activities, the proposed alternative RISI program for the fourth interval is the same program as approved in Reference 5 for the third interval.

The Risk Impact Assessment completed as part of the original baseline RISI Program was an implementation/transition check on the initial impact of converting from a traditional ASME Section XI program to the new RISI methodology. For the fourth interval ISI update, there is no transition occurring between two different methodologies, but rather, the currently approved RISI methodology and evaluation will be maintained for the new interval. The original methodology of the calculation has not changed, and the change in risk was simply re-assessed using the initial 1989 ASME Section XI program prior to RISI and the new element selection for the fourth 10-year interval RISI program. This

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same process has been maintained in each revision to the Peach Bottom Atomic Power Station RISI assessment that has been performed to date.

The actual "evaluation and ranking" procedure including the Consequence Evaluation and Degradation Mechanism Assessment processes of the currently approved (Reference 5) RISI Program remain unchanged and are continually applied to maintain the Risk Categorization and Element Selection methods of EPRI TR-112657, Revision B-A. These portions of the RISI Program have been and will continue to be reevaluated and revised as major revisions of the site Probabilistic Risk Assessment (PRA) occur and modifications to plant configuration are made. The Consequence Evaluation, Degradation Mechanism Assessment, Risk Ranking, and Element Selection steps encompass the complete program process applied under the Peach Bottom Atomic Power Station RISI Program.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

The proposed alternative originally implemented in the risk informed in-service inspection plan for Peach Bottom Atomic Power Station Units 2 and 3 (Reference 3), along with the two enhancements noted below, provide an acceptable level of quality and safety as required by 10CFR50.55a(a)(3)(i). This original program along with these same two enhancements is currently approved for Peach Bottom Atomic Power Station's third inservice inspection interval as documented in Reference 5.

The fourth interval RISI program will be a continuation of the current application and will continue to be a living program as described in the Reason For Request section of this relief request. No changes to the evaluation methodology as currently implemented under EPRI TR-112657, Revision B-A, are required as part of this interval update. The following two enhancements will continue to be implemented.

a. In lieu of the evaluation and sample expansion requirements in Section 3.6.6.2, "RISI Selected Examinations" of EPRI TR-112657, Peach Bottom Atomic Power Station will utilize the requirements of Paragraph -2430, "Additional Examinations" contained in Code Case N-578-1 (Reference 4). The alternative criteria for additional examinations contained in Code Case N-578-1 provide a more refined methodology for implementing necessary additional examinations. The reason for this selection is that the guidance discussed in EPRI TR-112657 includes requirements for additional examinations at a high level, based on service conditions, degradation mechanisms, and the performance of evaluations to determine the scope of additional examinations, whereas ASME Code Case N-578-1 provides more specific and clearer guidance regarding the requirements for additional examinations that is structured similar to the guidance provided in ASME Section XI, Paragraphs IWB-2430 and IWC-2430. Additionally, similar

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to the current requirements of ASME Section XI, Peach Bottom Atomic Power Station intends to perform additional examinations that are required due to the identification of flaws or relevant conditions exceeding the acceptance standards, during the outage the flaws are identified.

b. To supplement the requirements listed in Table 4-1, "Summary of Degradation-Specific Inspection Requirements and Examination Methods" of EPRI TR-112657, Peach Bottom Atomic Power Station will utilize the provisions listed in Table 1, Examination Category R-A, "Risk-Informed Piping Examinations" contained in Code Case N-578-1 (Reference 4). To implement Note 10 of this table, paragraphs and figures from the 2001 Edition through the 2003 Addenda of ASME Section XI (Peach Bottom Atomic Power Station's Code of record for the Fourth Interval) will be utilized which parallel those referenced in the Code Case for the 1989 Edition. Table 1 of Code Case N-578-1 will be used as it provides a detailed breakdown for examination method and categorization of parts to be examined. Additionally, Section 4 of EPRI TR-112657 states "Application of RISI uses NDE techniques that are designed to be effective for specific degradation mechanisms and examination locations." Section 4 also identifies methods of examination for each degradation mechanism with the primary method being ultrasonic testing (UT) techniques. However, EPRI TR-112657 does not identify the examination volumes for components without a degradation mechanism. In addition, EPRI TR-112657 does not specify examination volumes and methods for socket welds. Peach Bottom Atomic Power Station has requested to use the examination methods from Code Case N-578-1 instead of the methods from EPRI TR-112657. The examination figures specified in Section 4 of EPRI TR-112657 will be used to determine the examination volume based on the degradation mechanism and component configuration.

Peach Bottom Atomic Power Station uses UT techniques for RISI volumetric examinations.

For the components addressed by the RISI program, ASME Section XI focuses primarily on weld examinations. Risk Informed examination volumes also include portions of piping and fitting base materials that are susceptible to particular degradation mechanisms.

The ASME Section XI, Mandatory Appendix I, "Ultrasonic Examinations," specifies that UT examination procedures, equipment, and personnel used to detect and size flaws in piping welds shall be qualified by performance demonstration in accordance with ASME Section XI Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems." The RISI program complies with Appendix VIII for weld examinations. In cases where the examination requirements cannot be met, Peach Bottom Atomic Power

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Station will submit a request for relief in accordance with 10CFR50.55a, "Codes and standards."

The examination methods are designed to be effective for specific degradation mechanisms and examination locations. The volumetric scanning will be in both axial and circumferential directions to detect the flaws in these orientations.

Additionally, all Peach Bottom Atomic Power Station dissimilar metals (DM) welds, as characterized in ASME Section XI, Article IWA-9000, have been evaluated for failure potential and consequence of failure along with the other non-exempt piping. The piping segments containing the DM welds were classified into the appropriate RISI categories, and appropriate elements were selected per the category requirements for examination during the third inspection interval.

Piping welds, including DM welds in vessel nozzles, that are susceptible to IGSCC (i.e., IGSCC Categories B through G, as applicable) and not subject to other degradation mechanism(s) are removed from the RISI program population. They are contained in the Peach Bottom Atomic Power Station ISI Augmented Program (AUG-01), "USNRC Generic Letter 88-01, Intergranular Stress Corrosion Cracking" and are subject to the inspection requirements of BWRVIP-75-A "BWR Vessel and Internals Project Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules". Furthermore, all piping welds and welds, including DM welds in vessel nozzles classified as Category A (resistant material) per BWRVIP-75-A are included in the RISI program.

The Peach Bottom Atomic Power Station RISI Program, as developed in accordance with EPRI TR-112657, Rev. B-A (Reference 1), requires that 25% of the elements that are categorized as "High" risk (i.e., Risk Category 1, 2, and 3) and 10% of the elements that are categorized as "Medium" risk (i.e., Risk Categories 4 and 5) be selected for inspection. For this application, the guidance for the examination volume for a given degradation mechanism is provided by the EPRI TR-112657 while the guidance for the examination method and categorization of parts to be examined are provided by the EPRI TR-112657 as supplemented by Code Case N-578-1.

In addition to this risk-informed evaluation, selection, and examination procedure, all ASME Section XI piping components, regardless of risk classification, will continue to receive Code required pressure testing as part of the current ASME Section XI program. VT-2 visual examinations are within the ASME pressure boundary and are examined each refueling outage as part of the system leakage test required by ASME Section XI. These examinations are scheduled in accordance with the Peach Bottom Atomic Power Station pressure-testing program, which remains unaffected by the RISI program.

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6.0 DURATION OF PROPOSED ALTERNATIVE:

Relief is requested for the Fourth Ten-Year Inspection Interval for Peach Bottom Atomic Power Station Units 2 and 3. The Fourth ISI Interval begins on November 5, 2008 for both Units as proposed in Relief Request I3R-45 (Third ISI Interval Relief Request), and will conclude November 4, 2018 for Peach Bottom Atomic Power Station, Units 2 and 3.

7.0 PRECEDENTS:

Similar relief requests have been approved for:

1. Peach Bottom Atomic Power Station Third Inspection Interval Relief Request RR-44 was approved per SER dated August 27, 2003. The Fourth Inspection Interval Relief Request will utilize the same RISI methodology that was previously approved in the Third Inspection Interval.

2. Limerick Generating Station Second Inspection Interval Relief Request RR-32 was approved per SER dated March 3, 2003.

3. Susquehanna Steam Electric Station Third Inspection Interval Relief Request I3R-01 was approved per SER dated July 28, 2005.

4. Dresden Station Fourth Inspection Interval Relief Request I4R-02 was approved per SER dated September 4, 2003.

5. Quad Cities Station Fourth Inspection Interval Relief Request I4R-02 was approved per SER dated January 28, 2004.

8.0 REFERENCES:

1. Electric Power Research Institute (EPRI) Topical Report (TR) 112657 Rev. B-A, "Revised Risk-Informed Inservice Inspection Evaluation Procedure," December 1999.

2. W. H. Bateman (USNRC) to G. L. Vine (EPRI) letter dated October 28, 1999 transmitting "Safety Evaluation Report Related to EPRI Risk-Informed Inservice Inspection Evaluation Procedure (EPRI TR-112657, Revision B, July 1999)."

3. Initial Risk-Informed Inservice Inspection Evaluation - Peach Bottom Atomic Power Station Units 2 and 3, dated May 16, 2002.

4. American Society of Mechanical Engineers (ASME) Code Case N-578-1, "Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method B."

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5. James W. Clifford (USNRC) to John L. Skolds (Exelon) letter dated August 27, 2003 transmitting the "Peach Bottom Atomic Power Station, Units 2 and 3 - American Society of Mechanical Engineers Boiler and Pressure Vessel Code - Relief for Risk-Informed Inservice Inspection of Piping (TAC Nos. MB5512 and MB5513)."

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(Note: Revision 0 Not Required per SER dated 02/26/09)

Relief Request for Alternative Examination Requirements of ASME Section XI, Paragraph IWA-5244, "Buried Components" In Accordance with 10CFR50.55a(a)(3)(ii)

1.0 ASME CODE COMPONENTS AFFECTED:

Code Class:	3
Reference:	IWA-5244
Examination Category:	D-B
Item Number:	D2.10
Description:	Alternative Examination Requirements of ASME Section XI, Paragraph IWA-5244, "Buried Components"
Component Number:	Return Piping: 2-32HF-24", 3-32HF-24", 0-33HF-20"
Drawing Number:	ISI-330, Sheet 1; ISI-315, Sheet 1; ISI-315, Sheet 3

2.0 APPLICABLE CODE EDITION AND ADDENDA:

The Inservice Inspection program is based on the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, 2001 Edition through the 2003 Addenda.

3.0 APPLICABLE CODE REQUIREMENT:

Table IWD-2500-1, Examination Category D-B, Item Number D2.10, requires all Class 3 pressure retaining components be subject to a system leakage test with a VT-2 visual examination in accordance with Paragraph IWD-5220. This pressure test is to be conducted once each inspection period.

Paragraph IWA-5244(b)(1) requires buried components that are isolable by means of valves be tested to determine the rate of pressure loss. Alternatively, the test may determine the change in flow between the ends of the buried components and the Owner shall establish the acceptable rate of pressure loss or flow.

4.0 REASON FOR REQUEST:

Pursuant to 10CFR50.55a(a)(3)(ii), relief is requested on the basis that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

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The buried piping in question consists of one 20" diameter common (i.e., Unit 0) return header for Emergency Service Water (ESW) downstream of MO-0-33-0498 to the discharge pond; and two 24" diameter return headers for High Pressure Service Water (HPSW) downstream of MO-2-32-2486 and MO-3-32-3486 to the discharge pond (one for Unit 2 and one for Unit 3) (See Figure I4R-46-1). These components are all buried between the Motor Operated Valves and the discharge pond with the exception of a valve pit that includes a manually operated gate valve and small amount of the associated piping on each of the HPSW and ESW returns to the discharge pond. There is no access to the buried sections without excavation. In addition, no annulus was provided during original construction that would allow for examination of these buried sections of piping.

Paragraph IWA-5244(b)(1) requires that the buried sections of piping be examined by a pressure decay test or a test that determines the change in flow between the buried ends. In order to perform a pressure decay test, it would be necessary to close the associated large gate valves[1] to isolate the buried portion of each return header. This would also result in the isolation of portions of the Emergency Core Cooling Systems (ECCS), which would place Technical Specification limitations on the plant. These gate valves in the return headers are not expected to provide the leak tight capability which would be necessary to perform a pressure decay test due to the age of the valves. In order to perform a pressure decay test, it would be necessary to either replace these gate valves with valves that possess better leakage characteristics or to install blind flanges on the piping.

The other potential test would be a change in flow test. However, the buried ECCS return headers were not designed with the plant instrumentation and flow orifices that would be required to determine the flow rates. Installation of flow measurement devices would result in plant modifications.

Compliance with the specified requirements is a hardship without a compensating increase in the level of quality and safety as discussed above.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

For the HPSW and ESW buried piping sections Peach Bottom Atomic Power Station proposes to utilize the requirements of Paragraph IWA-5244(b)(2) along with additional data obtained during quarterly Inservice Testing (IST) trending to provide an adequate level of quality and safety. The Paragraph IWA-5244(b)(2) requirements call for a test that confirms flow is unimpaired in nonisolable buried components. To confirm that flow

[1] Unit 2: HPSW: HV-2-032-22000
Unit 3: HPSW: HV-3-032-32200
Common: ESW: HV-0-033-11200

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is unimpaired in these buried pipes, Peach Bottom Atomic Power Station Inservice Testing procedures will be used to ensure adequate flow during operation.

Peach Bottom Atomic Power Station will use the Owner established minimum flow rate contained in the site IST surveillances as the acceptance criteria for Paragraph IWA-5244 pressure testing of HPSW and ESW system buried piping.

If the minimum flow could not be achieved during the course of an IST surveillance, and the cause of the deviation was not attributed to the test instruments being used, the associated system would be declared inoperable as required under the IST surveillance and an Issue Report (IR) would be generated in accordance with the Exelon Corrective Action Program. Further corrective actions (i.e., maintenance on the pump, system walk downs, etc.) would be initiated as required to restore the pump and/or the system back to an operable condition.

6.0 DURATION OF PROPOSED ALTERNATIVE:

Relief is requested for the fourth ten-year inspection interval for Peach Bottom Atomic Power Station, Units 2 and 3. The Fourth ISI Interval is scheduled to begin on November 5, 2008 as proposed in relief request I3R-45 (Third ISI Interval Relief Request) and will conclude November 4, 2018 for Peach Bottom Atomic Power Station, Units 2 and 3.

7.0 PRECEDENTS:

A similar relief request was previously approved for Byron and Braidwood Stations (M. L. Marshall, Jr. (NRR) to C.M. Crane (Exelon), "Byron Station, Unit Nos 1 and 2, and Braidwood Station, Unit Nos. 1 and 2 Evaluation of Inservice Inspection Program Relief Requests I3R-07 and I2R-46 pertaining to Essential Service Water Buried Piping (TAC NOS, MD1757, MD1758, MD1760)," dated January 16, 2007).

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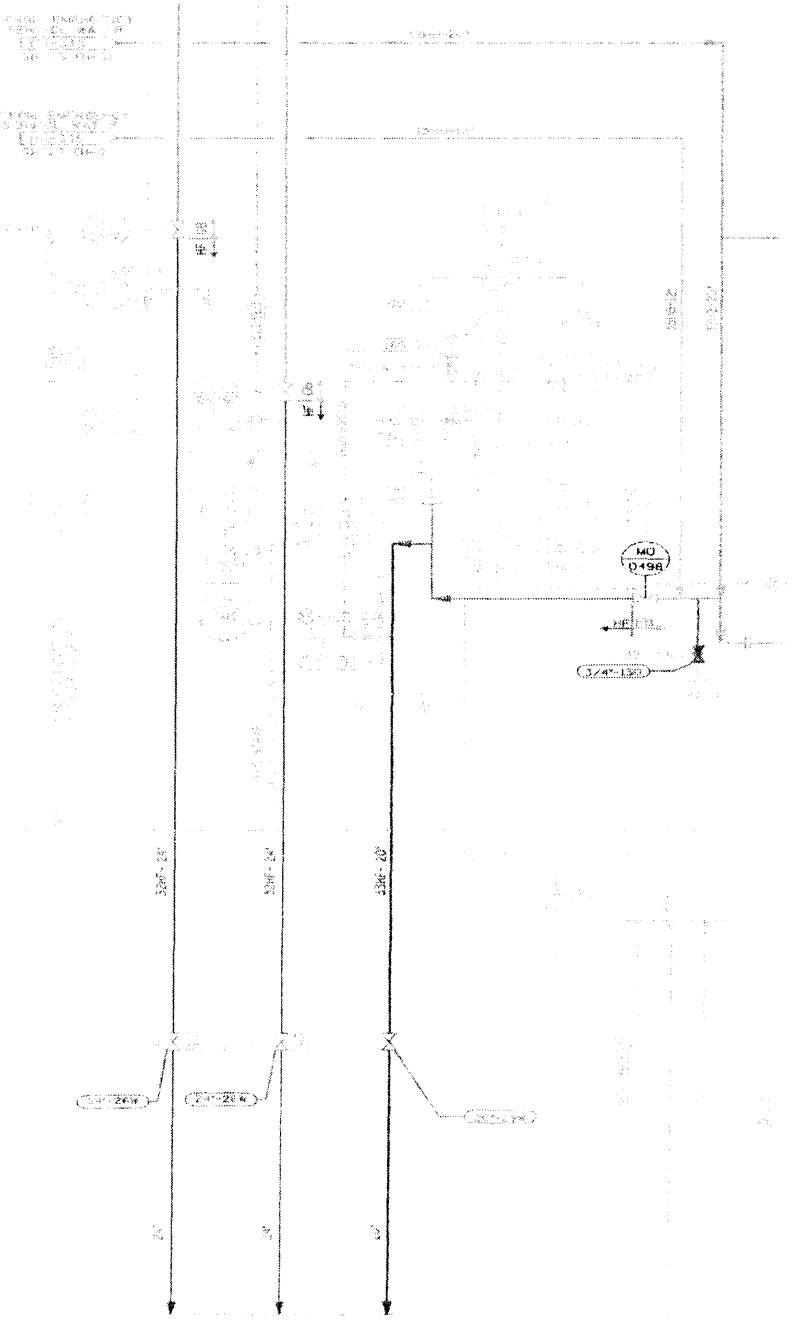
FIGURE I4R-46-1

BURIED COMPONENTS



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Relief Request for Testing of Control Rod Drive Boundaries
In Accordance with 10CFR50.55a(a)(3)(i)

1.0 ASME CODE COMPONENTS AFFECTED:

Code Class:	1
Reference:	IWB-5222(b), Table IWB-2500-1
Examination Category:	B-P
Item Number:	B15.10
Description:	Testing of Control Rod Drive Pressure Boundaries
Component Number:	Class 1 piping between CV-2(3)-03A-13-127 (valves AA through HC inclusive, total of 185 valves) and HV-2(3-03A-13112 (valves AA through HC inclusive, total of 185 valves)
Drawing Number:	ISI-357, Sheets 1 & 2

2.0 APPLICABLE CODE EDITION AND ADDENDA:

The Inservice Inspection program is based on the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, 2001 Edition through the 2003 Addenda.

3.0 APPLICABLE CODE REQUIREMENT:

IWB-5222(b) requires the pressure retaining boundary during the system leakage test conducted at or near the end of each inspection interval shall be extended to all Class 1 pressure retaining components within the system boundary.

Table IWB-2500-1, Examination Category B-P, Item Number B15.10, requires all Class 1 pressure retaining components be subject to a system leakage test with a VT-2 visual examination in accordance with Paragraph IWB-5220. This pressure test is to be conducted prior to plant startup following each reactor refueling outage.

4.0 REASON FOR REQUEST:

Pursuant to 10CFR50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

The piping in question is the Class 1 piping between the CV-2(3)-03A-13-127 valve (valves AA through HC inclusive, total of 185 valves) and the HV-2(3)-03A-13112 valve

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(valves AA through HC inclusive, total of 185 valves) for each of the 185 Control Rod Drive Mechanisms (See Figure I4R-47-1). During normal system lineup required for startup, the CV-2(3)-03A-13-127 valves are in the closed position. The HV-2(3)-03A-13112 valves are in the open position. The only time the CV-2(3)-03A-13-127 valves are open is during a plant scram or during CRD Scram Time testing.

During the performance of the system leakage test prior to plant startup following a refueling outage, the test boundary is the reactor coolant boundary with all valves in the position required for normal reactor operation startup (the CV-2(3)-03A-13-127 valves are closed). This test is conducted in accordance with Table IWB-2500-1, Examination Category B-P, Item Number B15.10, and Paragraph IWB-5222(a). As required by Paragraph IWB-5222(a), the visual examination is to extend to the second closed Class 1 valve at the extremity of the boundary. This test is conducted in accordance with the code.

However, during the system leakage test conducted at or near the end of the Ten-Year ISI Interval in accordance with Paragraph IWB-5222(b), the pressure boundary extends to all Class 1 pressure retaining components which includes the piping between CV-2(3)-03A-13-127 and the Scram Discharge Volume (HV-2(3)-03A-13112). In order to pressurize the piping between the CV-2(3)-03A-13-127 valves and the HV-2(3)-03A-13112 valves and hold it for inspection, all 185 HV-2(3)-03A-13112 valves would have to be manually closed prior to inserting a scram which is a manpower intensive activity.

Alternately, the piping could be pressurized for testing by isolating each of the 185 segments of piping, and pressurizing with a manual hydro pump. This approach would involve filling and venting of the subject piping, and manipulating 4 valves and installing a fill hose at a threaded connection for each of the 185 piping segments. This activity is also manpower intensive.

This section of piping does not pressurize to nominal reactor operating pressure except for a very brief time during plant Scrams and Scram Time testing similar to normal operating conditions.

If this piping were to develop a leak, it would be identified during the Scram Time testing by the personnel performing the testing. The piping between the HV-2(3)-3A-13112 valves and the CHK-2(3)-3A-13114 valves is pressurized and tested during the completion of the Scram Discharge Volume System leakage tests.

Table IWB-2500-1, Examination Category B-P, Item Number B15.10, Note 2, states that the system leakage test shall be conducted prior to plant startup following each reactor refueling outage. Scram Time testing is required to be 100% complete for each outage

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prior to exceeding 40% Reactor Thermal Power per Peach Bottom Technical Specifications 3.1.4, which is after plant startup following a refueling outage.

The piping in question is approximately 24 inches of ¾ inch nominal OD schedule 80 stainless steel socket welded piping for each control rod drive. This piping is not susceptible to a corrosive environment nor is it susceptible to vibrations that would induce cracking. There have been no known leaks in this piping at Peach Bottom Atomic Power Station, Units 2 and 3.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

As a proposed alternative in accordance with 10CFR50.55a(a)(3)(i), for the portion of the piping between the CV-2(3)-03A-13-127 valves and the HV-2(3)-03A-13112 valves for each of the 185 Control Rod Drives, Peach Bottom Atomic Power Station proposes to use the Scram Time Testing that is performed for each Control Rod Drive after plant startup but prior to achieving 40% power at the conclusion of the outage at or near the end of the interval as a means to pressurize this piping. A VT-2 visual qualified individual will be present during the Scram Time Testing to perform each visual examination. Additionally, as part of this test, procedures will be revised to ensure that the VT-2 visual examiner confirms with the control room that the examination is complete prior to the test switch being returned to normal.

6.0 DURATION OF PROPOSED ALTERNATIVE:

Relief is requested for the fourth ten-year inspection interval for Peach Bottom Atomic Power Station, Units 2 and 3. The Fourth ISI Interval is scheduled to begin on November 5, 2008 as proposed in relief request I3R-45 (Third ISI Interval Relief Request) and will conclude on November 4, 2018 for Peach Bottom Atomic Power Station, Units 2 and 3.

7.0 PRECEDENTS:

None

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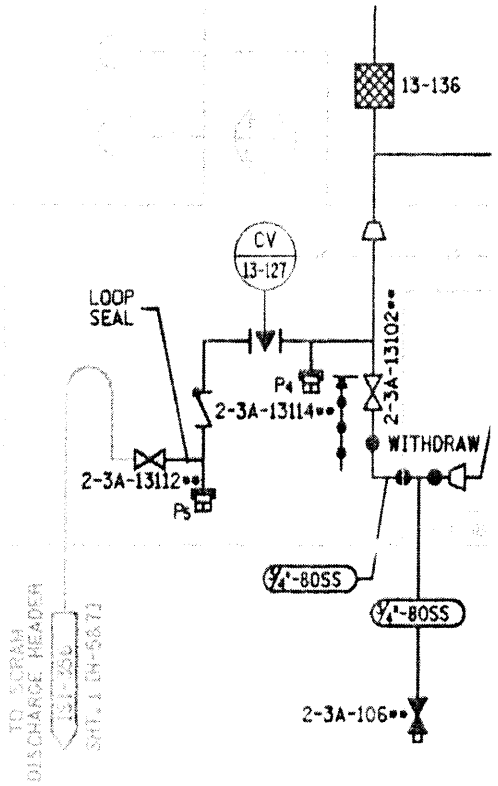
FIGURE I4R-47-1

PRESSURE RETAINING BOUNDARY



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Relief Request for Alternative Examination Requirements of ASME Section XI, Paragraph IWE-1232, "Inaccessible Surface Areas" In Accordance with 10CFR50.55a(g)(5)(iii)

1.0 ASME CODE COMPONENTS AFFECTED:

Code Class:	MC
Reference:	IWE-1232
Examination Category:	E-A
Item Number:	E1.11, E1.12
Description:	Alternative Examination Requirements of ASME Section XI, Paragraph IWE-1232, "Inaccessible Surface Areas"
Component Number:	Penetration N-3
Drawing Number:	6280-S-53, 6280-C2-103-6, and 6280-C2-341-3

2.0 APPLICABLE CODE EDITION AND ADDENDA:

The first Containment Inservice Inspection (CISI) interval began on November 5, 1998 for PBAPS, Units 2 and 3, and complied with the ASME B&PV Code, Section XI, 1992 Edition through 1992 Edition Addenda.

The Second CISI Interval will begin on November 5, 2008, and will comply with the ASME B&PV Code, Section XI, 2001 Edition through 2003 Addenda.

The original construction code for the Drywell is Section III, Type B, 1965 Edition through Summer 1966 Addenda.

3.0 APPLICABLE CODE REQUIREMENT:

Paragraph IWE-1232(a) ("Inaccessible Surface Areas") states that portions of Class MC containment vessels, parts, and appurtenances that are embedded in concrete or otherwise made inaccessible during construction of the vessel or as a result of vessel repair, modification, or replacement are exempted from examination, provided:

(1) no openings or penetrations are embedded in the concrete;

(2) all welded joints that are inaccessible for examination are double butt welded and are fully radiographed and, prior to being covered, are tested for leak tightness using a gas medium test, such as Halide Leak Detector Test; and

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(3) the vessel is leak rate tested after completion of construction or repair/replacement activities to the leak rate requirements of the Design Specifications.

4.0 IMPRACTICALITY OF COMPLIANCE:

Pursuant to 10CFR50.55a(g)(5)(iii), relief is requested on the basis that conformance with these code requirements is impractical as conformance would require extensive modifications to the primary containment.

When the drywell was being constructed, a 24-inch manhole was placed in the bottom head of the drywell. During construction, when the manhole was no longer needed, the penetration was seal welded, inspected, and embedded in concrete.

Based on the original construction drawings the manhole is a bolted, gasket connection that was seal welded, the handles were ground smooth and either a magnetic particle test or dye penetrant examination was performed. The N-3 manhole was seal welded and cannot meet the Paragraph IWE-1232(a)(2) code requirement for a double butt weld. See Figures I4R-48-1 (CRR-13-1) and I4R-48-2 (CRR-13-2) for more details.

5.0 BURDEN CAUSED BY COMPLIANCE:

Adding a double butt weld would involve a modification to the drywell that would require excavation of the concrete around the bottom head of the drywell or removal of the drywell floor thus making the code requirement impractical.

6.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

Integrated Leak Rate Testing will be performed in accordance with the station Appendix J Program, which is maintained independent of the ASME Section XI program.

7.0 DURATION OF PROPOSED ALTERNATIVE:

This relief is being requested for the first (previous) and second (upcoming) containment inservice inspection (CISI) interval.

The First CISI Interval began on November 5, 1998 for PBAPS, Units 2 and 3, and complied with the ASME B&PV Code, Section XI, 1992 Edition through 1992 Edition Addenda. The Second CISI Interval will begin on November 5, 2008 for PBAPS, Units 2 and 3, and will comply with the ASME B&PV Code, Section XI, 2001 Edition through 2003 Addenda. Refer to CRR-12 (First CISI Interval Relief Request) for the associated start and end dates of the intervals.

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8.0 PRECEDENTS:

None

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FIGURE I4R-48-1 (CRR-13-1)

INACCESSIBLE SURFACE AREAS

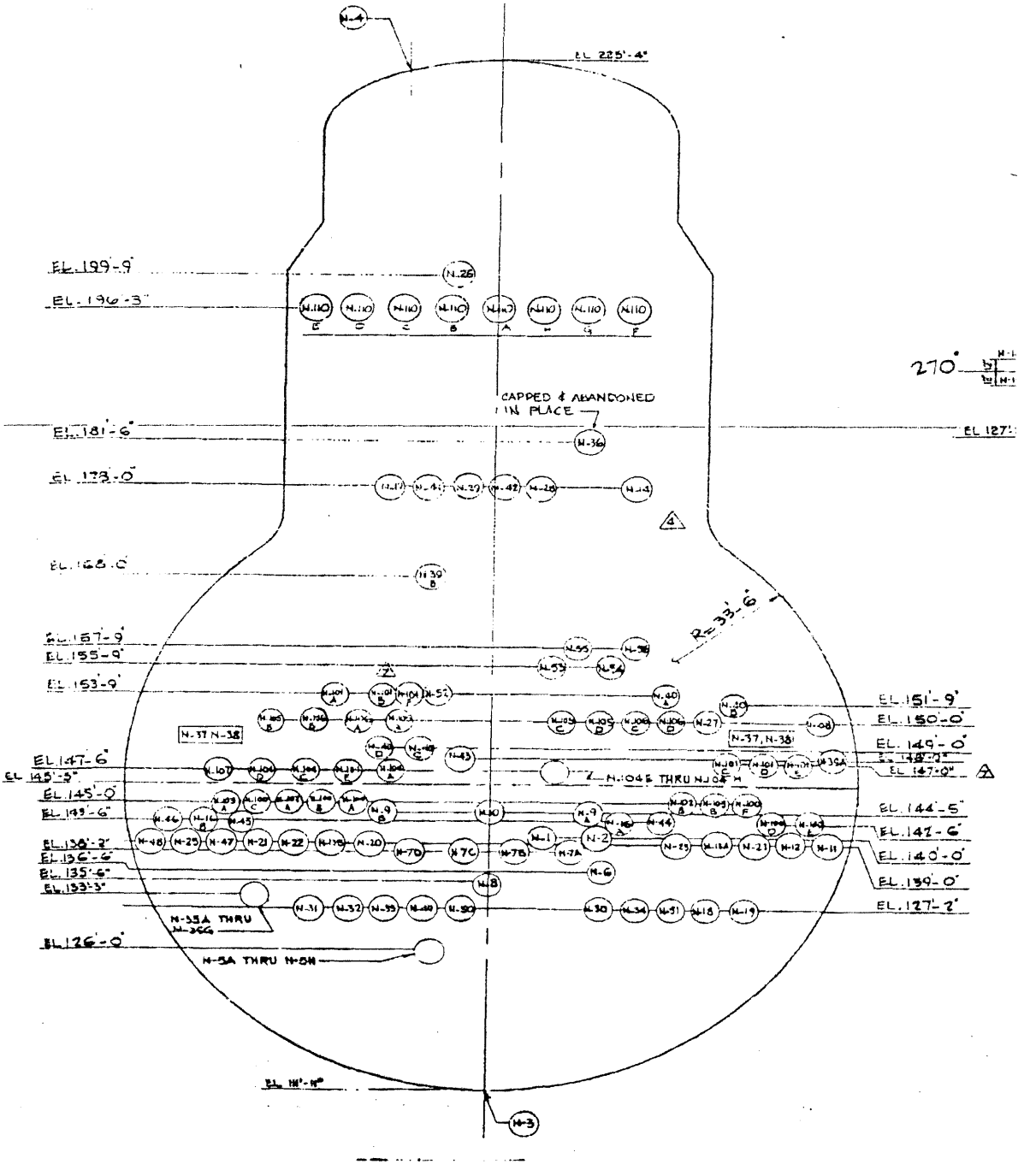

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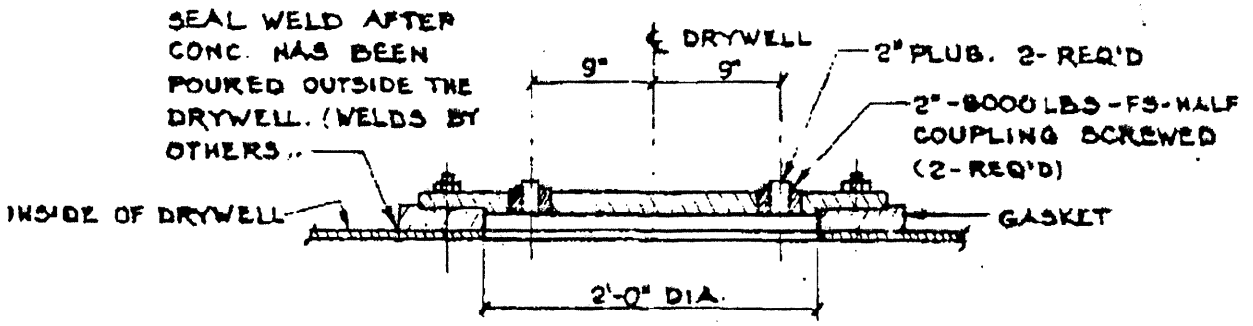
FIGURE I4R-48-2 (CRR-13-2)

INACCESSIBLE SURFACE AREAS (DETAILS)



DETAIL E (S-53) (N-3)

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Use of BWRVIP Guidelines in Lieu of Specific ASME Code Requirements
Proposed Alternative in Accordance with 10CFR50.55a(a)(3)(i)

Attachment 3

Clinton Power Station
Dresden Nuclear Power Station, Units 2 and 3
LaSalle County Station, Units 1 and 2
Limerick Generating Station, Units 1 and 2
Oyster Creek Generating Station
Peach Bottom Atomic Power Station, Units 2 and 3
Quad Cities Nuclear Power Station, Units 1 and 2

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Attachment 3

Use of BWRVIP Guidelines in Lieu of Specific ASME Code Requirements
Proposed Alternative in Accordance with 10CFR50.55a(a)(3)(i)

1.0 ASME CODE COMPONENT(S) AFFECTED

ASME Section XI, Class 1, Examination Categories B-N-1 (Interior of Reactor Vessel) and B-N-2 (Welded Core Support Structures and Interior Attachments to Reactor Vessels), Code Item Numbers B13.10 - Vessel Interior, B13.20 - Interior Attachments within Beltline Region, B13.30 - Interior Attachments beyond Beltline Region, and B13.40 - Core Support Structure.

2.0 APPLICABLE CODE EDITION AND ADDENDA

PLANT	INTERVAL	EDITION	START	END
Clinton Power Station	Second	1989 Edition, No Addenda	January 1, 2000	December 31, 2010
Dresden Nuclear Power Station, Units 2 and 3	Fourth	1995 Edition, through 1996 Addenda	January 20, 2003	January 19, 2013
LaSalle County Stations, Units 1 and 2	Third	2001 Edition, through 2003 Addenda	October 1, 2007	September 30, 2017
Limerick Generating Station, Units 1 and 2	Third	2001 Edition, through 2003 Addenda	February 1, 2007	January 31, 2017
Oyster Creek Generating Station	Fourth	1995 Edition, through 1996 Addenda	October 15, 2002	October 14, 2012
Peach Bottom Atomic Power Station, Units 2	Fourth	2001 Edition, through 2003 Addenda	November 5, 2008	November 4, 2018
Peach Bottom Atomic Power Station, Units 3	Fourth	2001 Edition, through 2003 Addenda	August 15, 2008	August 14, 2018
Quad Cities Nuclear Power Station, Units 1 and 2	Fourth	1995 Edition through 1996 Addenda	March 10, 2003	March 9, 2013

3.0 APPLICABLE CODE REQUIREMENTS

ASME Section XI requires the examination of components within the Reactor Pressure Vessel. These examinations are included in Table IWB-2500-1 Categories B-N-1 and B-N-2 and identified with the following item numbers:

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B13.10 Examine accessible areas of the reactor vessel interior each period by the VT-3 visual examination method (B-N-1).

B13.20 Examine interior attachment welds within the beltline region each interval by the VT-1 visual examination method (B-N-2).

B13.30 Examine interior attachment welds beyond the beltline region each interval by the VT-3 visual examination method (B-N-2).

B13.40 Examine surfaces of the welded core support structure each interval by the VT-3 visual examination method.

These examinations are performed to assess the structural integrity of components within the boiling water reactor pressure vessel.

4.0 REASON FOR REQUEST

In accordance 10CFR50.55a(a)(3)(i), Exelon Generation Company, LLC and AmerGen Energy Company, LLC are requesting a proposed alternative to the Code requirements provided above on the basis that the use of the BWRVIP guidelines discussed below will provide an acceptable level of quality and safety.

The BWRVIP Inspection and Evaluation (I&E) guidelines have recommended aggressive specific inspection by BWR operators to completely identify material condition issues with BWR components. A wealth of inspection data has been gathered during these inspections across the BWR industry. I&E guidelines focus on specific and susceptible components, specify appropriate inspection methods capable of identifying real anticipated degradation mechanisms, and require re-examination at conservative intervals. In contrast, the code inspection requirements were prepared before the BWRVIP initiative and have not evolved with BWR inspection experience.

Use of this proposed alternative will maintain an adequate level of quality and safety and avoid unnecessary inspections, while conserving radiological dose.

5.0 PROPOSED ALTERNATIVE

In lieu of the requirements of ASME Section XI, the proposed alternative is detailed in attached Table 1 for Examination Category B-N-1 and B-N-2.

Exelon and AmerGen will satisfy the Examination Category B-N-1 and B-N-2 requirements as described in Table 1 in accordance with BWRVIP guideline requirements. This relief request proposes to utilize the associated BWRVIP guidelines in lieu of the associated Code requirements including but not limited to examination

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method, volume, frequency, training, successive and additional examinations, flaw evaluations, and reporting.

Not all the components addressed by these guidelines are code components. The following guidelines are applicable to this Relief Request:

- BWRVIP-03, "BWR Vessel and Internals Project, Reactor Pressure Vessel and Internals Examination Guidelines"
- BWRVIP-18-A, "BWR Core Spray Internals Inspection and Flaw Evaluation Guidelines"
- BWRVIP-25, BWR Core Plate Inspection and Flaw Evaluation Guidelines"
- BWRVIP-26-A, "BWR Top Guide Inspection and Flaw Evaluation Guidelines"
- BWRVIP-27-A, "BWR Standby Liquid Control System/Core Plate ΔP Inspection and Flaw Evaluation Guidelines"
- BWRVIP-38, "BWR Shroud Support Inspection and Flaw Evaluation Guidelines"
- BWRVIP-41, Revision 1 "BWR Jet Pump Assembly Inspection and Flaw Evaluation Guidelines"
- BWRVIP-42-A, "LPCI Coupling Inspection and Flaw Evaluation Guidelines"
- BWRVIP-47-A, "BWR Lower Plenum Inspection and Flaw Evaluation Guidelines"
- BWRVIP-48-A, "Vessel ID Attachment Weld Inspection and Flaw Evaluation Guidelines"
- BWRVIP-76, "BWR Core Shroud Inspection and Flaw Evaluation Guidelines" (replaced BWRVIP-01, -07, and -63)
- BWRVIP-138, "Updated Jet Pump Beam Inspection and Flaw Evaluation"

The attached Table (Table 1) compares present ASME Examination Category B-N-1 and B-N-2 requirements with the above current BWRVIP guideline requirements, as applicable, to BWR/2 through BWR/6 units.

In addition, where guidance in existing BWRVIP documents has been supplemented or revised by subsequent correspondence approved by the BWRVIP executive committee, the most current approved guidance will be implemented. Therefore, the attached Table only represents a current comparison.

Any deviations from the referenced BWRVIP Guidelines for the duration of the proposed alternative will be appropriately documented and communicated to the USNRC, per the BWRVIP Deviation Disposition Process. Current Exelon/AmerGen deviations from the subject guidelines above are summarized in Table 2.

Inspection services, by an Authorized Inspection Agency, will be applied to the proposed alternative actions of this relief request.

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Conditions: Guidelines BWRVIP-41, Revision 1, "BWR Jet Pump Assembly Inspection and Flaw Evaluation Guidelines" and BWRVIP-138, "Updated Jet Pump Beam Inspection and Flaw Evaluation" had been under review by the USNRC staff, but were withdrawn from USNRC review on July 18, 2007, to allow for revision. The proposed alternatives based on topical reports BWRVIP-41, Revision 1, and BWRVIP-138, are, therefore, not authorized. As a result, PBAPS must continue to implement ASME Section XI ISI requirements for the jet pump assembly components for which this proposed alternative was requested.

6.0 BASIS FOR USE

BWRs now examine reactor internals in accordance with BWRVIP guidelines. These guidelines have been written to address the safety significant vessel internal components and to examine and evaluate the examination results for these components using appropriate methods and reexamination frequencies. The BWRVIP has established a reporting protocol for examination results and deviations. The USNRC has agreed with the BWRVIP approach in principal and has issued Safety Evaluations for these guidelines (see References 2 - 12 below). Therefore, use of these guidelines, as an alternative to the subject Code requirements, provides an acceptable level of quality and safety and will not adversely impact the health and safety of the public.

As additional justification, Attachment 4 ("Comparison of Code Examination Requirements to BWRVIP Examination Requirements") provides specific examples which compare the inspection requirements of ASME Code Item Numbers B13.10, B13.20, B13.30, and B13.40 in Table IWB-2500-1, to the inspection requirements in the BWRVIP documents. Specific BWRVIP documents are provided as examples. This comparison also includes a discussion of the inspection methods. These comparisons demonstrate that use of these guidelines, as an alternative to the subject Code requirements, provides an acceptable level of quality and safety and will not adversely impact the health and safety of the public.

7.0 DURATION OF PROPOSED ALTERNATIVE

The duration of the alternative is for the remainder of the interval specified above for each affected unit.

8.0 PRECEDENCE

A similar relief request was approved for Vermont Yankee Nuclear Power Station as discussed in Reference 1.

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9.0 REFERENCES

1. Letter from U. S. Nuclear Regulatory Commission (USNRC) to Entergy Nuclear Operations, "Safety Evaluation of Relief Request RI-01, Vermont Yankee Nuclear Power Station (TAC NO. MC0690)", dated September 19, 2005

2. Letter USNRC to BWRVIP, dated April 27, 1998, "Final Supplement to the Safety Evaluation of the Boiling Water Reactor Vessel Internals Project, BWRVIP-07 Report (TAC NO. M94959)"

3. Letter USNRC to BWRVIP, dated October 6, 1999, "Staff Reevaluation of Table 1 in the BWRVIP-07 Report (TAC NO. M94959)"

4. Letter USNRC to BWRVIP, dated September 6, 2005, "USNRC Approval Letter of BWRVIP-18-A, "BWR Vessel and Internals Project Boiling Water Reactor Core Spray Internals Inspection and Flaw Evaluation Guideline" "

5. Letter USNRC to BWRVIP, dated September 9, 2005, "USNRC Approval Letter of BWRVIP-26-A, "BWR Vessel and Internals Project Boiling Water Reactor Top Guide Inspection and Flaw Evaluation Guidelines" "

6. Letter USNRC to BWRVIP, dated July 24, 2000, "Final Safety Evaluation of the "BWR Vessel and Internals Project, BWR Shroud Support Inspection and Flaw Evaluation Guidelines (BWRVIP-38)," EPRI Report TR-108823 (TAC NO. M99638)"

7. Letter USNRC to BWRVIP, dated February 4, 2001, "Final Safety Evaluation of the "BWR Vessel and Internals Project, BWR Jet Pump Assembly Inspection and Flaw Evaluation Guidelines (BWRVIP-41)," (TAC NO. M99870)"

8. Letter USNRC to BWRVIP, dated September 9, 2005, USNRC approval letter of BWRVIP-42A, "BWR Vessel and Internals Project Boiling Water Reactor Low Pressure Coolant Injection and Flaw Evaluation Guidelines"

9. Letter USNRC to BWRVIP, dated September 9, 2005, "USNRC Approval Letter of BWRVIP-47-A, "BWR Vessel and Internals Project Boiling Water Reactor Lower Plenum Inspection and Flaw Evaluation Guidelines" "

10. Letter USNRC to BWRVIP, dated July 25, 2005, "USNRC Approval Letter of BWRVIP-48-A, "BWR Vessel and Internals Project Vessel ID Attachment Weld Inspection and Flaw Evaluation Guideline" "

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11. Letter USNRC to BWRVIP, dated August 20, 2001, "Final Safety Evaluation of the "BWR Vessel and Internals Project, Shroud Vertical Weld Inspection and Evaluation Guidelines (BWRVIP-63)," (TAC NO. MA6015)"

12. Letter USNRC to BWRVIP, dated June 10, 2004, Propriety Version of USNRC Staff Review of BWRVIP-27-A, "BWR Standby Liquid Control System/Core Plate ΔP Inspection and Flaw Evaluation Guidelines"

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TABLE 1
Comparison of ASME Examination Category B-N-1 and B-N-2 Requirements With BWRVIP Guidance Requirements [1]

ASME Item Number, Table IWB-2500-1	Component	ASME Exam Scope	ASME Exam	ASME Frequency	Applicable BWRVIP Document	BWRVIP Exam Scope	BWRVIP Exam	BWRVIP Frequency
B13.10	Reactor Vessel Interior	Accessible Areas (Non-specific)	VT-3	Each period	BWRVIP-18-A, 25, 26-A, 27-A, 38, 42-A, 47-A, 48-A, and 76	Overview examinations of components during BWRVIP examinations satisfy Code VT-3 visual inspection requirements.		
B13.20	Interior Attachments Within Beltline - Jet Pump Riser Braces	Accessible Welds	VT-1	Each 10-year Interval	BWRVIP-48-A, Table 3-2	Riser Brace Attachment	EVT-1	100% in first 12 years (with 50% to be inspected in the first 6 years); 25% during each subsequent 6 years
	Lower Surveillance Specimen Holder Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	VT-1	Each 10-year Interval
B13.30	Interior Attachments Beyond Beltline - Steam Dryer Hold-down Brackets	Accessible Welds	VT-3	Each 10-year Interval	BWRVIP-48-A, Table 3-2	Bracket Attachment	VT-3	Each 10-year Interval
	Guide Rod Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	VT-3	Each 10-year Interval
	Steam Dryer Support Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	EVT-1	Each 10-year Interval
	Feedwater Sparger Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	EVT-1	Each 10-year Interval

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TABLE 1
Comparison of ASME Examination Category B-N-1 and B-N-2 Requirements With BWRVIP Guidance Requirements [1]

ASME Item Number, Table IWB-2500-1	Component	ASME Exam Scope	ASME Exam	ASME Frequency	Applicable BWRVIP Document	BWRVIP Exam Scope	BWRVIP Exam	BWRVIP Frequency
	Core Spray Piping Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	EVT-1	Every 4 Refueling Cycles
	Upper and Middle Surveillance Specimen Holder Brackets				BWRVIP-48-A, Table 3-2	Bracket Attachment	VT-3	Each 10-year Interval
	Shroud Support (Weld H9) including gussets where applicable				BWRVIP-38, 3.1.3.2, Figures 3-2 and 3-5	Weld H9[2] including gussets (where applicable)	EVT-1 or UT	Maximum of 6 years for one sided EVT-1, Maximum of 10 years for UT
	Shroud Support Legs (Weld H12)	(Rarely Accessible)			BWRVIP-38, 3.2.3	Weld H12	Per BWRVIP-38 USNRC SER (7-24-2000), inspect with appropriate method [4]	When accessible
B13.40	Integrally Welded Core Support Structure - Shroud Support	Accessible Surfaces	VT-3	Each 10-year Interval	BWRVIP-38, 3.1.3.2, Figure 3-2 and 3-5	Shroud Support and Leg Welds including gussets as applicable	EVT-1 or UT	Based on as found conditions, to a maximum 6 years for one sided EVT-1, 10 years for UT where accessible

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TABLE 1
Comparison of ASME Examination Category B-N-1 and B-N-2 Requirements With BWRVIP Guidance Requirements (1)

ASME Item Number, Table IWB-2500-1	Component	ASME Exam Scope	ASME Exam	ASME Frequency	Applicable BWRVIP Document	BWRVIP Exam Scope	BWRVIP Exam	BWRVIP Frequency
	Shroud Horizontal Welds				BWRVIP-76, 2.2.1	Welds H1-H7 as applicable	EVT-1 or UT	Based on as found conditions, to a maximum 6 years for one sided EVT-1, 10 years for UT where accessible
	Shroud Vertical Welds				BWRVIP-76, 2.3, Figure 3-3	Vertical and Ring Segment Welds as applicable	EVT-1 or UT	Maximum 6 years for one-sided EVT-1, 10 years for UT
	Shroud Repairs (3)				BWRVIP-76, Section 3.5	Tie-Rod Repair	VT-3	Per designer recommendations per BWRVIP-76

NOTES:
1) This Table provides only an overview of the requirements. For more details, refer to ASME Section XI, Table IWB-2500-1, and the appropriate BWRVIP document.
2) In accordance with Appendix A of BWRVIP-38, a site specific evaluation will determine the minimum required weld length to be examined.
3) Shroud repairs are currently installed on both units at Dresden and Quad Cities, and on the single units at Oyster Creek and Clinton.
4) When inspection tooling and methodologies are available, they will be utilized to establish a baseline inspection of these welds.

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TABLE 2
BWRVIP Deviations

PLANT	BWRVIP DOCUMENT	LETTER DATE TO USNRC	DEVIATION	APPLICABILITY
LaSalle County Station, Unit 1	BWRVIP-76	Letter from S. R. Landahl (Exelon Generation Company, LLC) to U. S. nuclear Regulatory Commission, dated April 27, 2006	100% of the accessible areas of the LaSalle County Station Unit 1 core shroud was not examined in the L1R11outage in February 2006. However, sufficient coverage of the accessible areas were examined, an engineering evaluation was performed and the results indicate the Unit 1 shroud retained sufficient structural margin and should be re-examined in six years.	This deviation does not impact the basis for use of this relief request.
Oyster Creek Generating Station	BWRVIP-76	Letter from T. S. Rausch (AmerGen Energy Company) to U. S. Nuclear Regulatory Commission, dated April 27, 2007	Per BWRVIP-76 re-inspection guidelines, a one-sided visual examination technique requires reexamination in 6 years as compared to a two-sided visual or volumetric technique, which can achieve a 10-year reexamination frequency. Contrary to this requirement, the four vertical welds were not reexamined in 1R21 (2006) as required by the BWRVIP-76 guidance for single-sided examination.	This deviation does not impact the basis for use of this relief request.

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Attachment 4

Comparison Of Code Examination Requirements To BWRVIP Examination Requirements

The following discussion provides a comparison of the examination requirements provided in ASME Code Item Numbers B13.10, B13.20, B13.30, and B13.40 in Table IWB-2500-1, to the examination requirements in the BWRVIP guidelines. Specific BWRVIP guidelines are provided as examples for comparisons. This comparison also includes a discussion of the examination methods.

1.0 Code Requirement - B13.10 - Reactor Vessel Interior Accessible Areas (B-N-1)

The ASME Section XI Code requires a VT-3 visual examination of reactor vessel accessible areas, which are defined as the spaces above and below the core made accessible during normal refueling outages. The frequency of these examinations is specified as the first refueling outage, and at intervals of approximately 3 years, during the first inspection interval, and each period during each successive 10-year Inspection Interval. Typically, these examinations are performed every other refueling outage of the Inspection Interval. This examination requirement is a non-specific requirement that is a departure from the traditional ASME Section XI examinations of welds and surfaces. As such, this requirement has been interpreted and satisfied differently across the domestic fleet. The purpose of the examination is to identify relevant conditions such as distortion or displacement of parts; loose, missing, or fractured fasteners; foreign material, corrosion, erosion, or accumulation of corrosion products; wear; and structural degradation.

Portions of the various examinations required by the applicable BWRVIP Guidelines require access to accessible areas of the reactor vessel during each refueling outage. Examination of core spray piping and spargers (BWRVIP-18-A), top guide (BWRVIP-26-A), jet pump welds and components (BWRVIP-41, Rev. 1), interior attachments (BWRVIP-48-A), core shroud welds (BWRVIP-76), shroud support (BWRVIP-38), LPCI couplings (BWRVIP-42-A), and lower plenum components (BWRVIP-47-A) provides such access. Locating and examining specific welds and components within the reactor vessel areas above, below (if accessible), and surrounding the core (annulus area) entails access by remote camera systems that essentially perform equivalent VT-3 visual examination of these areas or spaces as the specific weld or component examinations are performed. This provides an equivalent method of visual examination on a more frequent basis than that required by the ASME Section XI Code. Evidence of wear, structural degradation, loose, missing, or displaced parts, foreign materials, and corrosion product buildup can be, and has been observed during the course of implementing these BWRVIP examination requirements. Therefore, the specified BWRVIP Guideline requirements meet or exceed the subject Code requirements for

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examination method and frequency of the interior of the reactor vessel. Accordingly, these BWRVIP examination requirements provide an acceptable level of quality and safety as compared to the subject Code requirements.

2.0 Code Requirement - B13.20 - Interior Attachments Within the Beltline (B-N-2)

The ASME Section XI Code requires a VT-1 visual examination of accessible reactor interior surface attachment welds within the beltline each 10-year interval. In the boiling water reactor, this includes the jet pump riser brace welds-to-vessel wall and the lower surveillance specimen support bracket welds-to-vessel wall. In comparison, the BWRVIP requires the same examination method and frequency for the lower surveillance specimen support bracket welds, and requires an EVT-1 visual examination on the remaining attachment welds in the beltline region in the first 12 years, and then 25% during each subsequent 6 years.

The jet pump riser brace examination requirements are provided below to show a comparison between the Code and the BWRVIP examination requirements.

Comparison to BWRVIP Requirements - Jet Pump Riser Braces (BWRVIP-41, Rev. 1 and BWRVIP-48-A)

- The ASME Code requires a 100% VT-1 visual examination of the jet pump riser brace-to-reactor vessel wall pad welds each 10-year interval.
- The BWRVIP requires an EVT-1 visual examination of the jet pump riser brace-to-reactor vessel wall pad welds the first 12 years and then 25% during each subsequent 6 years.
- BWRVIP-48-A specifically defines the susceptible regions of the attachment that are to be examined.

The Code VT-1 visual examination is conducted to detect discontinuities and imperfections on the surfaces of components, including such conditions as cracks, wear, corrosion, or erosion. The BWRVIP enhanced VT-1 (EVT-1) visual examination is conducted to detect discontinuities and imperfections on the surface of components and is additionally specified to detect potentially very tight cracks characteristic of fatigue and inter-granular stress corrosion cracking (IGSCC), the relevant degradation mechanisms for these components. General wear, corrosion, or erosion although generally not a concern for inherently tough, corrosion resistant stainless steel material, would also be detected during the process of performing a BWRVIP EVT-1 visual examination.

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The Code VT-1 visual examination method requires (depending on applicable Edition) that at a maximum distance of 2 feet, a 1/32" black line can be resolved or a letter character with a height of 0.044 inches can be read. The BWRVIP EVT-1 visual examination method requires resolution of a 1/2 mil (0.0005 inch) wire on the examination surface. The jet pump riser brace configuration for each plant varies with vessel manufacturer (B&W, CB&I, etc.) and generation (BWR/3-BWR/6). BWRVIP-48-A includes diagrams for each configuration and prescribes examination for each configuration.

The calibration standards used for BWRVIP EVT-1 visual examinations utilize the Code characters and the 0.0005" wire, thus assuring at least equivalent resolution compared to the Code. Although the BWRVIP examination may be less frequent, it is a more comprehensive method. Therefore, the enhanced flaw detection capability of an EVT-1 visual examination, with a less frequent examination schedule provides an acceptable level of quality and safety to that provided by the ASME Code.

3.0 Code Requirement - B13.30 - Interior Attachment Beyond the Beltline Region (B-N-2)

The ASME Section XI Code requires a VT-3 visual examination of accessible reactor interior surface attachment welds beyond the beltline each 10-year interval. In the boiling water reactor, this includes the core spray piping primary and supplemental support bracket welds-to-vessel wall, the upper surveillance specimen support bracket welds-to-vessel wall, the feedwater sparger support bracket welds-to-reactor vessel wall, the steam dryer support and hold down bracket welds-to-reactor vessel wall, the guide rod support bracket weld-to-reactor vessel wall, the shroud support plate-to-vessel wall, and the shroud support gussets. BWRVIP-48-A requires as a minimum the same VT-3 visual examination method as the Code for some of the interior attachment welds beyond the beltline region, and in some cases specifies an enhanced visual examination technique EVT-1 for these welds. For those interior attachment welds that have the same VT-3 method of visual examination, the same scope of examination (accessible welds), the same examination frequency (each 10 year interval) and ASME Section XI flaw evaluation criteria, the level of quality and safety provided by the BWRVIP requirements are equivalent to that provide by the ASME Code.

For the core spray primary and secondary support bracket attachment welds, the steam dryer support bracket attachment welds, the feedwater sparger support bracket attachment welds, and the shroud support plate-to-vessel welds, as applicable, the BWRVIP Guidelines require an EVT-1 visual examination at the same frequency as the Code, or at a more frequent rate. Therefore, the BWRVIP requirements provide the same level of quality and safety to that provided by the ASME Code.

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The core spray piping bracket-to-vessel attachment weld is used as an example for comparison between the Code and BWRVIP examination requirements as discussed below.

Comparison to BWRVIP Requirements - Core Spray piping Bracket Welds (BWRVIP-48-A)

- The Code examination requirement is a VT-3 visual examination of each weld every 10 years.
- The BWRVIP visual examination requirement is an EVT-1 for the core spray piping bracket attachment welds with each weld examined every four cycles (8 years for units with a two year fuel cycle).

The BWRVIP visual examination method EVT-1 has superior flaw detection and sizing capability, the examination frequency is greater than the Code requirements, and the same flaw evaluation criteria are used.

The Code VT-3 visual examination is conducted to detect component structural integrity by ensuring the components general condition is acceptable. An enhanced EVT-1 visual examination is conducted to detect discontinuities and imperfections on the examination surfaces, including such conditions as tight cracks caused by IGSCC or fatigue, the relevant degradation mechanisms for BWR internal attachments.

Therefore, with the EVT-1 visual examination method, the same examination scope (accessible welds), an increased examination frequency (8 years instead of 10 years) in some cases, the same flaw evaluation criteria (ASME Section XI), the level of quality and safety provided by the BWRVIP criteria is superior than that provided by the Code.

4.0 Code Requirement - B13.40 - Integrally Welded Core Support Structures (B-N-2)

The ASME Code requires a VT-3 visual examination of accessible surfaces of the welded core support structure each 10-year interval. In the boiling water reactor, the welded core support structure has primarily been considered the shroud support structure, including the shroud support plate (annulus floor), the shroud support ring, the shroud support welds, the shroud support gussets, and the shroud support legs (if accessible). In later designs, the shroud itself is considered part of the welded core support structure. Historically, this requirement has been interpreted and satisfied differently across the industry. The proposed alternate examination replaces this ASME requirement with specific BWRVIP guidelines that examine susceptible locations for known relevant degradation mechanisms.

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- The Code requires a VT-3 visual examination of accessible surfaces each 10-year interval.

- The BWRVIP requires as a minimum the same visual examination method (VT-3) as the Code for integrally welded Core Support Structures, and for specific areas, requires either an enhanced visual examination technique (EVT-1) or volumetric examination (UT).

BWRVIP recommended examinations of integrally welded core support structures are focused on the known susceptible areas of this structure, including the welds and associated weld heat affected zones. As a minimum, the same or superior visual examination technique is required for examination at the same frequency as the code examination requirements. In many locations, the BWRVIP guidelines require a volumetric examination of the susceptible welds at a frequency identical to the Code requirement.

Where shroud repair tie-rods have been installed (Dresden, Quad Cities, Oyster Creek and Clinton), the BWRVIP referenced examinations are the same as the Code requirements. Shroud repair tie-rod examinations are recommended in BWRVIP-76 and have the same basic VT-3 method of visual examination, the same scope of examination (accessible surfaces), the same examination frequency (each 10 year interval) and the same flaw evaluation criteria. Therefore, the BWRVIP requirements provide a level of quality and safety equivalent to that provided by the ASME Code. Additionally, the repair vendor has provided site-specific examination recommendations to address the unique features of each repair.

For other integrally welded core support structure components, the BWRVIP requires an EVT-1 visual examination or UT of core support structures. The core shroud is used as an example for comparison between the Code and BWRVIP examination requirements as shown below.

<u>Comparison to BWRVIP Requirements - BWR Core Shroud Examination and Flaw Evaluation Guideline (BWRVIP-76)</u>

- The Code requires a VT-3 visual examination of accessible surfaces every 10 years.

- The BWRVIP requires an EVT-1 visual examination from the inside and outside surface where accessible or ultrasonic examination of each core shroud circumferential weld that has not been structurally replaced with a shroud repair at a calculated "end of interval" (EOI) that will vary depending upon the amount of flaws present, but not to exceed ten years.

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The BWRVIP recommended examinations specify locations that are known to be vulnerable to BWR relevant degradation mechanisms rather than "all surfaces". The BWRVIP examination methods (EVT-1 or UT) are superior to the Code required VT-3 visual examination for flaw detection and characterization. The BWRVIP examination frequency is equivalent to or more frequent than the examination frequency required by the Code. The superior flaw detection and characterization capability, with an equivalent or more frequent examination frequency and the comparible flaw evaluation criteria, results in the BWRVIP criteria providing a level of quality and safety equivalent to or superior to that provided by the Code requirements.

9.0 REFERENCES

The references used to develop this Inservice Inspection Program Plan include:

1) Code of Federal Regulations, Title 10, Energy.
- Part 50, Paragraph 50.55a, "Codes and Standards".
- Part 50, Paragraph 2, "Definitions", the definition of "Reactor Coolant Pressure Boundary".
- Part 50, Appendix J, "Primary Reactor Containment Testing for Water Cooled Power Reactors".

2) ASME Boiler and Pressure Vessel Code, Section XI, Division 1, "Rules for Inservice Inspection of Nuclear Power Plant Components," 2001 Edition through the 2003 Addenda. (4^{th} ISI and 2^{nd} CISI Intervals)

3) ASME Boiler and Pressure Vessel Code, Section III, Division 1, "Rules For Construction of Nuclear Power Plant Components", 2001 Edition through the 2003 Addenda.

4) ASME OM Code, "Code for Operation and Maintenance of Nuclear Power Plants," 2001 Edition through the 2003 Addenda.

5) Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1".

6) Regulatory Guide 1.150, Rev. 1, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examination".

7) Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code".

8) Regulatory Guide 1.193, "ASME Code Cases Not Approved For Use".

9) Peach Bottom Atomic Power Station Units 2 and 3, Updated Final Safety Analysis Report (UFSAR).

10) Peach Bottom Atomic Power Station Units 2 and 3, Technical Specifications (TS).

11) Peach Bottom Atomic Power Station Units 2 and 3, Technical Requirements Manual (TRM).

12) USNRC NUREG-0737, dated November 1980, "TMI Action Plan Requirements".

13) Procedures ER-AA-330, "Conduct of Inservice Inspection Activities", ER-AA-330-001, "Section XI Pressure Testing", ER-AA-330-002, "Inservice Inspection of Welds and Components", ER-AA-330-003, "Visual Examination of

Section XI Component Supports", ER-AA-330-004, "Visual Examination of Technical Specification Snubbers", ER-AA-330-007, "Visual Examination of Section XI Class MC Surfaces and Class CC Liners", ER-AA-330-008, "Exelon Service Level 1 and Safety Related (Service Level 3) Protective Coatings", ER-AA-330-009, "ASME Section XI Repair / Replacement Program", ER-AA-330-010, "Snubber Functional Testing", ER-AA-330-011, "Snubber Service Life Monitoring Program", ER-AA-335-004, "Manual Ultrasonic Measurement of Material Thickness", ER-AA-335-018, "Detailed, General, VT-1, VT-1C, VT-3, VT-3C, Visual Examination of ASME Class MC and CC Containment Surfaces and Components", and ER-PB-331-1001, "RPV & Internals Program Basis and Implementation Document".

14) Peach Bottom Atomic Power Station ISI Classification Basis Document (PBT05.G04), Fourth Ten-Year Inservice Inspection Interval.

15) Peach Bottom Atomic Power Station ISI Selection Document (PBT05.G05), Fourth Ten-Year Inservice Inspection Interval.

16) Peach Bottom Atomic Power Station Augmented Inspection Plan (PBT05.G06), Fourth Ten-Year Inservice Inspection Interval.

17) Exelon Risk-Informed Inservice Inspection Evaluation (Final Report) for PBAPS Units 2 and 3.

18) EPRI Topical Report TR-112657, Rev. B-A, Final Report, "Revised Risk-Informed Inservice Inspection Evaluation Procedure", December 1999.

19) USNRC SER related to EPRI Topical Report TR-112657, Rev. B, Final Report, "Revised Risk-Informed Inservice Inspection Evaluation Procedure, July 1999", dated October 28, 1999.

20) Exelon Generation Company calculation ME-34, "Class 1 Exemption Sizes".

21) Stone & Webster calculation PM-945," CRD Housing Weld Exclusion Evaluation".

22) Safety Evaluation Report from USNRC to J. A. Hutton (PECO), "Request for Relief from Performing Augmented Inspections of the Circumferential Reactor Vessel Shell Welds, Peach Bottom Atomic Power Station, Units 2 and 3 (TAC Nos. MA8195, MA8196)", June 15, 2000. (Under the Fourth Interval ISI Program this Third ISI Interval permanent Relief Request (RR-41) has been renumbered as I4R-41.)

23) Safety Evaluation Report from USNRC to C. G. Pardee (Exelon), "Clinton Power Station, Unit No. 1; Dresden Nuclear Power Station, Units 2 and 3; LaSalle County Station, Units 1 and 2; Limerick Generating Station, Units 1 and 2; Oyster

Creek Nuclear Generating Station; Peach Bottom Atomic Power Station, Units 2, and 3; and Quad Cities Nuclear Power Station, Units 1 and 2 - Relief Request to use Boiling Water Reactor Vessel and Internals Project Guidelines in Lieu of Specific ASME Code Requirements (TAC Nos. MD5352 thru MD5363)", April 30, 2008. (Under the Fourth Interval ISI Program this Relief Request has been numbered as I4R-49.)

24) Safety Evaluation Report from USNRC to C. G. Pardee (Exelon), "Peach Bottom Atomic Power Station, Units 2 and 3 - Requests for Relief associated with the Third and Fourth Inservice Inspection Intervals and the First and Second Containment Inservice Intervals (TAC Nos. MD8294, MD8295, MD8296, MD8297, MD8298, MD8299, MD8300, MD8301, MD8302, MD8303, MD8304, MD8305, MD8306, MD8307, MD8308 AND MD8309)", February 26, 2009.