Entergy

Entergy Nuclear Northeast
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249
Tel 914 254 6700

Anthony J. Vitale
Site Vice President

NL-16-091

August 17, 2016

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

SUBJECT: Indian Point Fifth Ten Year Interval Inservice Inspection Program Plan
Indian Point Unit Number 2
Docket No. 50-247
License No. DPR-26

Dear Sir or Madam:

Entergy is submitting, enclosed, the fifth ten year interval Inservice Inspection Program plan for Indian Point 2 (IP2) to meet the requirements of paragraph (g)(4) of 10 CFR 50.55a. Inservice inspections comply with the requirements of 10 CFR 50.55a(g)(4)(ii) including the latest edition and addenda of the Code incorporated by reference in paragraph (a)(3)(ii) and (iii) of 10 CFR 50.55a by June 1, 2015 which was 12 months before the start of the fifth 120-month interval. The applicable code is 2007 Edition through the 2008 Addenda.

If you have any questions or require additional information, please contact Mr. Robert Walpole, Manager, Regulatory Assurance at (914) 254-6710.

Sincerely,

AJV/sp

Enclosure: Fifth Ten Year Interval Inservice Inspection Program Plan

cc: Mr. Douglas Pickett, Senior Project Manager, NRC NRR DORL
Mr. Daniel H. Dorman, Regional Administrator, NRC Region 1
NRC Resident Inspectors Office
Mr. John B. Rhodes, President and CEO, NYSERDA
Ms. Bridget Frymire, New York State Dept. of Public Service

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NRR

ENCLOSURE TO NL-16-091

FIFTH TEN YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247

IP2 FIFTH TEN-YEAR INTERVAL INSERVICE INSPECTION (ISI)/ CONTAINMENT INSERVICE INSPECTION (CII) PROGRAM PLAN

ENTERGY NUCLEAR ENGINEERING PROGRAMS

APPLICABLE SITES

All Sites: ☐

Specific Sites: ANO ☐ GGNS ☐ IPEC ☒ JAF ☐ PLP ☐ PNPS ☐ RBS ☐ VY ☐ W3 ☐ HQN ☐

Safety Related: ☒ Yes ☐ No

Program Section Revision Summary	
Current Revision	**Description of Change**
4	Revision 4 incorporated the following changes: 1. Ten-Year Interval update incorporating 2007 Edition with the 2008 Addenda of ASME Section XI

REVIEW AND CONCURRENCE SHEET

Program Section Title: IP2 Fifth Ten-Year Interval Inservice Inspection (ISI)/Containment Inservice Inspection (CII) Program Plan

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Prepared By: Lina Cossio- Gonzalez Date 5-23-16
Responsible Engineer

Checked By: Robert J. Dolansky Date 5/24/16
Programs Engineering Review

Reviewed By: Joe Zarrella Date 5/25/16
Programs Engineering Review

Reviewed By: Rich Drake Date 5/25/16
For IWE/IWL Portion Only

ANII: Allan Schiaffino Date 5/26/16
Authorized Nuclear In-Service Inspector (ANII)

Concurred: Nelson Azevedo Date 5/26/16
Responsible Supervisor

REVISION STATUS SHEET

SEP-ISI-IP2-001 R4, PAGE REVISION STATUS

SECTION	PAGE NO.	REV.
All	As Applicable	Incorporate Data for Fifth Ten-Year Interval

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SECTION 1.0

INTRODUCTION AND PLAN DESCRIPTION

1.0 INTRODUCTION AND PLAN DESCRIPTION

1.1 Introduction

This document establishes the Fifth Ten-Year Interval Inservice Inspection (ISI) Program Plan and the Containment Inservice Inspection (CII) Program Plan for Indian Point Nuclear Generating Station Unit 2 (IP2), in accordance with the Code of Federal Regulations (CFR), Title 10, Part 50, Section 55a, "Codes and Standards" (10 CFR 50.55a).

The IP2 Fifth Ten-Year Interval ISI Program Plan is compliant with ASME Section XI, Division 1, "Rules for Inservice Inspection of Nuclear Power Plant Components 2007 Edition through 2008 Addenda, as conditioned by 10 CFR 50.55a; and altered as allowed by 10 CFR 50.55a(g)(6) or 10 CFR 50.55a(z) and documented in the included requests for relief." The inspection and non-destructive examination of systems, structures, and components (SSCs) will be performed to the extent practical[1] and possible as permitted by existing designs, equipment arrangements, available access, and radiological conditions. Relief request reference documentation, is also provided for those components where meeting the code requirement is impractical or unnecessarily burdensome. Throughout the Fifth Ten-Year Interval ISI Program Plan, reference is made to SEP-ISI-IP2-002, "IP2 Fifth Ten-Year Interval Inservice Inspection (ISI)/Containment Inservice Inspection (CII) Schedule and Bases Document". The IP2 Fifth Ten-Year Interval ISI Program is also used for implementation of the license renewal commitments described in LO-LAR-2011-0174 CA 35, CA 37, CA 38, CA 40, and CA 65.

This Program Plan outlines the requirements for inspection of:

1.1.1 ISI – Pressure Retaining Components/Supports

- ISI Class 1, 2, and 3 (Quality Group A, B, and C) pressure retaining components and their supports in accordance with ASME Section XI, Subsections IWA, IWB, IWC, IWD, and IWF with the following exceptions:

- The RI-ISI Program shall be re-employed at IP2 during the 5th Ten-Year ISI Interval; however, the RI-ISI Program shall be implemented utilizing ASME Code Case N-716-1 approved for use per USNRC Regulatory Guide 1.147. This alternative Inspection Program is used in lieu of the requirements of IWB-2420, IWB-2430, Table IWB-2500-1, Examination Categories B-F and B-J, IWC-2420, IWC-2430 and Table IWC-2500-1 (excluding Examination Categories C-C and C-H), for inservice inspection of Class 1 piping welds or Class 2 components, IWB-2200 and IWC-2200 for preservice inspection of Class 1 piping welds or Class 2 components, or as additional requirements for Class 3 or Non-Class components. The Inspection Program provides alternative criteria for selection, examination method, and examination coverage based on ASME Code Case N-716-1.

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[1] The construction permit for Indian Point Unit 2 was issued on October 14, 1966. Per 10 CFR 50.55a(g)(1) *Inservice inspection requirements for older plants (pre-1971 CPs)*, "For a boiling or pressurized water-cooled nuclear power facility whose construction permit was issued before January 1, 1971, components (including supports) must meet the requirements of paragraphs (g)(4) and (g)(5) - to the extent practical."

- As defined by IWF-1300, snubber support hardware such as lugs, bolting, pins, clamps, and structural steel between the snubber pin and the pressure retaining item and between the snubber pin and the building steel are included in the support population and examined in accordance with Subsection IWF per this Program Section.

- Class 1 pressure retaining welds containing Alloy 600/82/182 in accordance with Code Case N-722-1, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated with Alloy 600/82/182 Materials", Section XI Division 1 with conditions specified in 10 CFR 50.55a(g)(6)(ii)(E)(2) through (4). (Reference Augmented Program 1.8.4).

- Reactor vessel upper head penetrations in accordance with Code Case N-729-1, "Alternative Examination Requirements for PWR Reactor Vessel Upper Heads with Nozzles Having Pressure-Retaining Partial - Penetration Welds", Section XI, Division 1 with conditions specified in 10 CFR 50.55a(g)(6)(ii)(D)(2) through (6). (Reference Augmented Program 1.8.5).

- Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities in accordance with Code Case N-770-1, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities", Section XI, Division 1," in accordance with the requirements in 10 CFR 50.55a(g)(6)(ii)(F)(2) through (10). Note: License Renewal commitment LO-LAR-2011-0174 CA37 is tracked and monitored in accordance with the Code Case N-770-1 examination requirements, and augmented existing ISI inspections as appropriate. (Reference Augmented Program 1.8.6).

1.1.2 CII – Containment ISI Pressure Boundary Liner/Concrete

- ISI Class MC pressure-retaining components (Primary Containment) and their integral attachments in accordance with ASME Section XI, Subsections IWA and IWE.

- ISI Class CC reinforced concrete containment and attachments in accordance with ASME Section XI, Subsections IWA and IWL.

1.1.3 Augmented Inspection Programs

- Augmented inspection programs are detailed in Section 1.8.

1.2 ISI Inspection Interval

1.2.1 ISI - IWA, IWB, IWC, IWD, & IWF Interval History

The commercial service date for IP2 was August 1, 1974. The table below summarizes the IP2 Interval dates.

IP2 Interval Dates Summary			
10-Year Inspection Interval	Interval Start Date	Interval End Date	Length of Interval
1	July 1, 1974	June 30, 1984	10 years, 0 months
2	July 1, 1984	June 30, 1994	10 years, 0 months
3[c]	July 1, 1994	February 28, 2007	[a]12 years, 8 months
4	March 1, 2007	May 31, 2016	[b]9 years, 3 months
5[d]	June 1, 2016	May 31, 2026	10 years, 0 months

[a] The Third Ten-Year Inspection Interval ISI program plan was originally approved for the effective dates from July 1, 1994 through June 30, 2004. ASME Boiler & Pressure Vessel Code, Section XI (1989 Edition) Paragraph IWA-2430 (e), allows inspection intervals to be extended whenever there is an outage greater than six months. An interval extension equivalent to the time that the unit has been out of service is allowed. The first period was from July 1, 1994 to September 18, 1998 having been extended 326 days for the DB50 Breaker Outage. The second period was from September 19, 1998 to December 5, 2002 having been extended 321 days for steam generator replacement outage and other plant equipment emergencies. Thus, the third period was re-scheduled from June 30, 2004 to February 28, 2007. These dates can be extended or decreased 1 year to coincide with a refueling outage.

[b] IP2 Fourth Ten-Year Inspection Interval and this ISI/CII Plan will be effective from March 1, 2007, through and including May 31, 2016. It should be noted that the plant's current (original) operating license will expire on September 28, 2013. Entergy is in the process of a license renewal application. The end date of the 4th Interval will be controlled by the ISI/CII Program Plan, commensurate with the Operating License Renewal Application.

[c] During the Third Period of the Third ISI Interval, the Risk-Informed Program (RI-ISI) was approved for use via NRC Safety Evaluation Report (TAC No. MC0303). During this time period the required percentage for the period was completed. The RI-ISI Program is re-employed at IP2 during the 4th Ten-Year ISI Interval via Relief Request RR-05. This program is comprised of Class 1 (ASME Categories B-F and B-J) piping segments/elements. As an alternative Inspection Program the criteria for selection, examination method, examination coverage, and extent is based on EPRI report TR-112657.

[d] As part of the Fifth Inspection Interval update, IP2 implemented Code Case N-716-1. This alternative Inspection Program is used in lieu of the requirements of IWB-2420, IWB-2430, Table IWB-2500-1, Examination Categories B-F and B-J, IWC-2420, IWC-2430 and Table IWC-2500-1 (excluding Examination Categories C-C and C-H), for inservice inspection of Class 1 piping welds or Class 2 components, IWB-2200 and IWC-2200 for preservice inspection of Class 1 piping welds or Class 2 components, or as additional requirements for Class 3 or Non-Class components.

1.2.2 CII – IWE/IWL Interval History

On September 9, 1996, 10 CFR 50.55a was amended to incorporate the requirements of ASME Section XI Code 1992 Edition through the 1992 Addenda of Subsections IWE and IWL, Containment Program Plan.

Subsection IWE contains the requirements for liners and penetrations of light-water cooled nuclear power plants and IWL contains the requirements for ISI of reinforced concrete containments. The rule at the time required licensees to incorporate the new requirements into their ISI programs and to complete examinations equal to the required First Period Inspections within five years (i.e., no later than September 9, 2001).

Subsection IWE requires that examinations be performed at the required inspection periods of 3, 7 and 10 calendar years of plant service within the

inspection interval. Therefore the First Period Examinations were completed by September 9, 2001 to meet 10 CFR 50.55a requirements. The IWE inspection periods were therefore:

10-Year Inspection Interval	Inspection Period	IWE Period Dates
1	1	Sep. 9, 1996 – Sep. 9, 2001
1	2	Sep. 10, 2001 – Jan. 9, 2005
1	3	Jan. 10, 2005 – [a]Feb. 28, 2007
2	1	March 1, 2007 – May 31, 2010
2	2	June 1, 2010– May 31, 2014
2	3	June 1, 2013 – May 31, 2016
3[b]	1	June 1, 2016 - May 31, 2019
3[b]	2	June 1, 2019 - May 31, 2023
3[b]	3	June 1, 2023 - May 31, 2026

[a] Based upon this extended First Period that ended on September 9, 2001, the First 10-Yr Interval for IP2 Containment ISI was originally scheduled to end on May 9, 2010, but was shortened to align with the Third ISI Interval.

[b] Although it is only the 3rd IWE Inspection Interval at IP2, the ISI Plan is combined and labeled in the Title as the 5th Ten-Year Interval as well as in the Database.

Subsection IWL requires that examination of the entire concrete surface of containment be performed every five years. The first of these examinations was completed by June, 2000; the second inspection was completed in June 2005; the third inspection was completed during 2010; and the fourth inspection completed during 2015. Subsection IWL-2421 does not apply to IP2.

1.2.3 Fifth Ten-Year Interval Schedule

The IP2 Fifth Ten-Year Interval ISI Program Plan and CII Plan will be effective from June 1, 2016 through May 31, 2026.

1.2.3.1 IWB, IWC, IWD, IWE, and IWF Inspection Schedules:

The inspection schedule for the fifth inspection interval is divided into three ISI Periods such that approximately one third of the interval's inspections will be completed each period except for items that may be deferred until the end of the interval. The IWE inspection schedule is aligned with the IWB, IWC, IWD and IWF schedules except for IWE items that are required to be 100% inspected each period. The following

table summarizes the period dates for the fifth inspection interval as defined by IWB-2411, IWC-2411, IWD-2411, IWE-2411 and IWF-2410. The inspection schedule for each ISI Period is provided in the Iddeal software. Changes to the stated Inspection Interval or Inspection Period dates, if deemed necessary, will be documented.

IP2 Fifth Interval Inspection Periods Summary Dates				
Inspection Period	Period Start Date	Period End Date	Years of Plant Operation Within Period	Plant Refueling Outages within Period
1	June 1, 2016	May 31, 2019	3 years	RFO-23 (Spring 2018)
2	June 1, 2019	May 31, 2023	4 years	RFO-24 (Spring 2020) RFO-25 (Spring 2022)
3	June 1, 2023	May 31, 2026	3 years	RFO-26 (Spring 2024) RFO-27 (Spring 2026)

1.2.3.2 IWL Inspection Schedule

In accordance with the requirements of IWL-2410, the inspections required by IWL-2500-1, Examination Category L-A, are to be completed once every 5 years within the limitations specified in IWL-2410(b), (c), and (d). Any concrete surface areas that become affected by a repair/replacement activity shall be examined in accordance with the requirements of IWL-2510 at I year (± 3 months) following completion of repair/replacement activity. If plant operating conditions are such that examination of portions of the concrete cannot be completed within this time interval, examination of those portions may be deferred until the next regularly-scheduled plant outage.

1.2.3.2.1 Notification to New York State

In compliance with Atomic Safety and Licensing Board Order (Approving Settlement of Contention NYS-24), Docket Nos. 50-247-LR and 50-286-LR, ASLBP No. 07-858-03-LR-BD01 (January 26, 2012), and the Settlement Agreement Regarding New York State Contention 24 (December 21, 2011) approved therein:

1.2.3.2.1.1 When an inspection is completed, reviewed and approved by the Unit ISI Engineer, a copy of the completed inspection report shall be forwarded to Licensing.

1.2.3.2.1.2 The Unit ISI Engineer shall issue a Work Tracking CR to Licensing to assure that copies of the report(s) are forwarded to:

State of New York Office of the Attorney General and Power Systems Operations, New York State Department of Public Service

Notes: The names and mailing addresses of the State-designated recipients of the reports are retained and updated (as necessary) by Licensing. Copies of the above-referenced Order and Settlement Agreement also are retained by Licensing. The Settlement Agreement provides that Entergy (or its successor in interest) shall provide New York State with copies of the results of future ASME Section XI IWL visual inspections and/or the results of inspections or tests that might replace, augment, or update these visual inspections of the exterior concrete surfaces of the IP2 containment.

1.2.4 Alignment of ISI and Containment ISI Intervals

An integral part of this Fourth Ten-Year Interval Program Plan was the merging of the CII Program Plan with the ISI Program Plan. The Fifth Inspection Interval will continue the merger of these two program plans. This will facilitate one set of ASME Code requirements for both program plans.

The First Interval CII Program Plan was originally effective from September 9, 1996, through and including May 9, 2010. This time period was shortened to end on February 28, 2007. IWE Containment inservice examinations scheduled for the first 40-month period were completed during the Third Period of the Third ISI Inspection Interval. These examinations now serve the same purpose as pre-service baseline examinations. The required IWL inservice examinations were also completed and re-inspections are scheduled at 5 year frequency. The next scheduled IWL inservice examination will be performed in 2020 and documented in the ISI 5th Interval Program Plan. (Tracked under WO-438424).

Henceforth, the Second Ten-Year Interval for IWE/IWL Containment ISI inspections at IP2 commenced on March 1, 2007 coincident with the start of the Fourth 10-Year ISI Program Interval. Therefore, both the ISI and the CII IWE/IWL Program Plans were aligned with the Fourth Interval ISI Program schedule and ASME Code requirements and thus will be aligned with the Fifth Interval ISI Program Schedule and ASME Code requirements.

1.3 IP2 Original Construction Codes of Record

The construction permit for Indian Point Unit 2 was issued on October 14, 1966. At that time, the ASME Boiler and Pressure Vessel Code covered fabrication of only nuclear vessels. Piping was built to the rules of USAS B31.1.0-1955, Power Piping. There were no Codes identified for pumps and valves in the record documents.

1.3.1 ISI- Systems, Structures, and Components

The primary IP2 original Construction Codes for major equipment are listed below.

Component	Construction Code
System Pressure Vessels, non-RCS	ASME Boiler & Pressure Vessel Code, Section VIII, 1968
Reactor Vessel, Pressurizer, & RCP Bowl	ASME Code, Section III, Class A, 1965 Edition thru the 1966 Addenda
Steam Generators	ASME Code, Section III, 1980 Edition, plus winter 1981 addenda (stress report to the 1965 ASME B&PV Code, Section III, plus Addenda thru summer 1966)
Piping Design – General Design Criteria	ASA Section B31.1 Pressure Piping Code 1955

1.3.1.1 ISI Pre-service Inspections

Westinghouse performed the preservice inspection of Indian Point Unit 2 in 1971 (Ref. Westinghouse letter No. LEE-1043, dated Nov. 12, 1971).

1.3.2 CII - Primary Containment Design

The reactor containment structure is a reinforced concrete vertical right cylinder with a flat base and hemispherical dome. A welded steel liner is attached to the inside face of the concrete shell to ensure a high degree of leak tightness. The design objective of the containment structure is to contain all radioactive material that might be released from the core following a loss-of-coolant accident. The structure serves as both a biological shield and a pressure container.

The flat concrete basemat is 9 ft. thick and has a 0.25-in. thick liner located on top. The 0.25-in. liner plate is covered with 3 ft. of concrete, which forms the floor of the containment and serves to carry internal equipment loads. The basemat is supported directly on rock.

The cylinder consists of side walls measuring 148 ft. from the basemat to the spring line of the dome, and has an inside diameter of 135 ft. The side walls for the cylinder are 4 ft. 6 in. thick. A steel liner is attached to the inside face of the concrete shell to form a leak tight membrane. The steel liner is 0.50 in. thick in the first three courses, thickened to 0.75 in. at penetrations, and 0.375 in. thick for the remaining portion of the cylindrical wall.

The hemispherical dome is a 135 ft. diameter 3 ft. 6 in. thick shell that is lined with a 0.50 in liner plate. The inside radius of the dome is equal to the inside radius of

the cylinder. The discontinuity that occurs at the springline due to the difference in thickness is on the outer surface. The original design of the containment preceded the issuance of ASME Section III, Division 2. As a result the reinforced concrete primary containment was designed and constructed to the requirements of the American Concrete Institute, Building Code Requirements for Reinforced Concrete, ACI 318-63. The liner, penetration sleeves and airlocks were constructed and tested to the requirements of Specification 9321-01-225-3.

1.3.2.1 **Containment ISI Initial Interval – Pre-service Inspections**

There were no regulatory requirements to implement Subsections IWE and IWL of ASME Section XI prior to IP2 commencing operations. However, in accordance with the regulatory requirements of 10 CFR 50.55a, the examinations performed during the First Period of the First Inspection Interval must serve the same purpose for operating plants as the pre-service examination specified for plants not yet in operation. The rule allowed five years for the implementation of the First Period Examinations, which were completed by September 9, 2001.

1.4 IP2 Fifth Inspection Interval ASME Code of Record

1.4.1 The regulations in 10 CFR 50.55a(g)(4) establish the effective ASME Code edition and addenda to be used by licensees for performing inservice inspections of components (including supports). Paragraph 50.55a(g)(4)(ii) requires the use of the latest edition and addenda that has been incorporated by 10 CFR 50.55a(b), one year prior to the beginning of each 120-month ISI inspection interval. This is considered the Code of Record. The Code of Federal Regulation in effect one year prior to the beginning of the fifth inspection interval was published in June 2011 as CFR76FR36232. This CFR incorporated, by reference, the ASME Section XI, 2007 Edition through 2008 Addenda in paragraph (b)(2) with limits and conditions. Subsequently, CFR73FR52749 was published in September 2008 requiring expedited implementation of Code Cases N-729-1 and N-722. In October 2008 CFR73FR57235 was published correcting errors in CFR73FR52749. In June 2011 CFR76FR36269 was published requiring implementation of Code Cases N-722-1 and N-770-1.

1.4.2 Based on the referenced CFRs in 1.4.1, the IP2 Fifth Ten-Year Interval ISI Program Plan is based on the requirements of the 2007 Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI through 2008 Addenda with the limits and conditions contained in 10 CFR 50.55a(b)(2) and listed in SEP-ISI-IP2-002. Additionally, based on specific limits, earlier editions and addenda are also being used as described below.

10 CFR 50.55a Reference	Mandated Additional Requirements/Conditions/Exemptions
10 CFR 50.55a(b)(2)(ii)	***Section XI Condition: Pressure-retaining welds in ASME Code Class 1 piping (applies to Table IWB–2500 and IWB–2500–1 and Category B–J).*** If the facility's application for a construction permit was docketed prior to July 1, 1978, the extent of examination for Code Class 1 pipe welds may be determined by the requirements of Table IWB-2500 and Table IWB-2600 Category B-J of Section XI of the ASME BPV Code in the 1974 Edition and Addenda through the Summer 1975 Addenda or other requirements the NRC may adopt. (Note: This reference is provided for information/completeness only, Category B-J welds will be examined in accordance with Code Case N-716-1.)
10 CFR 50.55a(b)(2)(xiv)	***Section XI condition: Appendix VIII personnel qualification.*** All personnel qualified for performing ultrasonic examinations in accordance with Appendix VIII must receive 8 hours of annual hands-on training on specimens that contain cracks. Licensees applying the 1999 Addenda through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section may use the annual practice requirements in VII–4240 of Appendix VII of Section XI in place of the 8 hours of annual hands-on training provided that the supplemental practice is performed on material or welds that contain cracks, or by analyzing prerecorded data from material or welds that contain cracks. In either case, training must be completed no earlier than 6 months prior to performing ultrasonic examinations at a licensee's facility.
10 CFR 50.55a(b)(2)(xviii)(A)	***Section XI Condition: NDE personnel certification: First provision.*** Level I and II nondestructive examination personnel must 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 (a)(1)(ii) of this section.
10 CFR 50.55a(b)(2)(xxi)(A)	***Section XI Condition: Table IWB–2500–1 examination requirements: Table IWB-2500-1 examination requirements: First provision.*** The provisions of Table IWB 2500–1, Examination Category B–D, Full Penetration Welded Nozzles in Vessels, Items B3.120 and B3.140 (Inspection Program B) of the 1998 Edition must be applied when using the 1999 Addenda through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section. A visual examination with magnification that has a resolution sensitivity to detect a 1-mil width wire or crack, utilizing the allowable flaw length criteria in Table IWB–3512–1, 1997 Addenda through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section, with a limiting assumption on the flaw aspect ratio (i.e., $a/l = 0.5$), may be performed instead of an ultrasonic examination.

10 CFR 50.55a Reference	Mandated Additional Requirements/Conditions/Exemptions
10 CFR 50.55a(b)(2)(xxii)	***Section XI condition: 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 (a)(1)(ii) of this section, that allows use of an ultrasonic examination method is prohibited.
10 CFR 50.55a(b)(2)(xxix)	***Section XI condition: Nonmandatory Appendix R.*** Nonmandatory Appendix R, "Risk-Informed Inspection Requirements for Piping," of Section XI, 2005 Addenda through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section, may not be implemented without prior NRC authorization of the proposed alternative in accordance with paragraph (z) of this section.
10 CFR 50.55a(g)(6)(ii)(D)(1)	***Augmented ISI requirements: Reactor vessel head inspections.*** All licensees of pressurized water reactors must augment their inservice inspection program with ASME Code Case N-729-1, subject to the conditions specified in paragraphs (g)(6)(ii)(D)(2) through (6) of this section. **(Program Note: (g)(6)(ii)(D)(4)** By September 1, 2009, ultrasonic examinations must be performed using personnel, procedures, and equipment that have been qualified by blind demonstration on representative mockups using a methodology that meets the conditions specified in paragraphs (g)(6)(ii)(D)(*4*)(*i*) through (*iv*), instead of the qualification requirements of Paragraph –2500 of ASME Code Case N-729-1. References herein to Section XI, Appendix VIII, must be to the 2004 Edition with no addenda of the ASME BPV Code.)
10 CFR 50.55a(g)(6)(ii)(E)(1)	***Augmented ISI requirements: Reactor coolant pressure boundary visual inspections.*** All licensees of pressurized water reactors must augment their inservice inspection program by implementing ASME Code Case N-722-1, subject to the conditions specified in paragraphs (g)(6)(ii)(E)(2) through (4) of this section. The inspection requirements of ASME Code Case N-722-1 do not apply to components with pressure retaining welds fabricated with Alloy 600/82/182 materials that have been mitigated by weld overlay or stress improvement.
10 CFR 50.55a(g)(6)(ii)(F)(1)	***Augmented ISI requirements: Examination requirements for Class 1 piping and nozzle dissimilar-metal butt welds.*** Licensees of existing, operating pressurized-water reactors as of July 21, 2011 must implement the requirements of ASME Code Case N-770-1, subject to the conditions specified in paragraphs (g)(6)(ii)(F)(2) through (*10*) of this section, by the first refueling outage after August 22, 2011.

1.5 Inservice Inspection Program Plan Development

1.5.1 ISI/CII - Class 1, 2, and 3 (Quality Group A, B, and C), and Class MC and CC

The Fifth Ten-Year Interval ISI Program Plan for Quality Group A, B, and C systems and components (including their supports), was developed after giving consideration to the following documents and applicable relief requests:

- Code of Federal Regulations 10 CFR 50.55a
- ASME Boiler & Pressure Vessel Code Section V – 2001 Edition through 2003 Addenda (Currently in use for Nondestructive Examinations, Repair and Replacement Activities, Pressure Testing and Flaw Evaluation Programs)
- ASME Boiler & Pressure Vessel Code Section XI – 2001 Edition through 2003 Addenda as modified by 10 CFR 50.55a(b)(2) (Currently in use for Nondestructive Examinations, Repair and Replacement Activities, Pressure Testing and Flaw Evaluations Programs)
- ASME Boiler & Pressure Vessel Code Section V – 2007 Edition through 2008 Addenda
- ASME Boiler & Pressure Vessel Code Section XI – 2007 Edition through 2008 Addenda as modified by 10 CFR 50.55a(b)(2) and (g)(6)(ii)
- United States Nuclear Regulatory Commission Regulatory Guides
  - Regulatory Guide 1.16, Rev. 4
  - Regulatory Guide 1.26, Rev. 2
  - Regulatory Guide 1.26, Rev. 4
  - Regulatory Guide 1.83, Rev. 1
  - Regulatory Guide 1.147, Latest Revision
- IP2 UFSAR
- IP2 Improved Technical Specifications
- IP2 First Interval Ten-Year Inservice Inspection Program Plan
- IP2 Second Interval Ten-Year Inservice Inspection Program Plan
- IP2 Third Interval Ten-Year Inservice Inspection Program Plan
- IP2 Fourth Interval Ten-Year Inservice Inspection Program Plan
- IP2 First Ten-Year Containment Inservice Inspection Program Plan

- IP2 Second Ten-Year Containment Inservice Inspection Program Plan

1.5.2 Systems/Lines Exempt from Examination

Systems/lines within the ASME Section XI boundaries that are exempted from examination based on ASME Section XI are identified in SEP-ISI-IP2-002.

1.6 Inservice Inspection Boundary Development

10 CFR 50.55(a) requires that systems and components be designed, constructed, fabricated, erected, tested, and inspected to quality standards commensurate with the importance of the safety function to be performed. To this end, the regulation continues to identify requirements related to defined "classes" of systems and components but, except for Class 1, does not specifically define the functional requirements for establishing classes or boundaries of these classes. Thus, in order to apply the inservice inspection (ISI) requirements of 10 CFR 50.55a to the systems and components installed at IP2, ISI class designations and boundaries have been defined and established.

Taking into consideration the fact that the Code of Federal Regulations (CFR) does not define components identified for Class 2 or 3 designations, the NRC issued Regulatory Guide 1.26. Revision 2 of Regulatory Guide 1.26, dated June 1975, provided the initial guidance for determining component[2] classification. Revision 4 of Regulatory Guide 1.26, dated March 2007, provides the current guidance for classification of components. The guidance presented in these regulatory guides, as appropriate, was/is used in establishing component classification and boundaries. In those instances where the guidance conflicted with IP2 design or licensing basis, the IP2 design or licensing basis was/is used.

ISI Class boundaries designating Quality Group A, B, C, (Class 1, 2, 3), MC, & CC piping, components, and structures are controlled and depicted on the ISI drawings listed in SEP-ISI-IP2-002. Welds, components and their supports that are subject to inservice inspection are shown on Inservice Inspection Isometric Drawings that can be obtained from Entergy's Configuration Control Management system. Pursuant to 10 CFR 50.55a, the inservice inspection requirements of ASME Section XI have been assigned to these components within the constraints of existing plant design and the guidance of Regulatory Guide 1.26.

1.6.1 ISI Boundaries and Classification

For ISI Class 1 component(s) (Quality Group A), the requirements of Subsection IWB, Code Case N-722-1, Code Case N-729-1 and Code Case N-770-1 apply, for ISI Class 2 components (Quality Group B) the requirements of Subsection IWC apply, and for ISI Class 3 components (Quality Group C) the requirements of Subsection IWD apply. The requirements of IWF for component supports apply to all three ISI Classes (Quality Groups A, B, and C).

The P&IDs are marked up with triangular shaped "flags" which include alpha characters designating Quality Group A, B, C, MC, CC, or blank for non-nuclear safety class. The blank flag has no letter symbol and is designated with a completely filled-in triangular shape in black.

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[2] Component: a vessel, concrete containment, pump, valve, storage tank, piping system, or core support structure (IWA-9000).

Classification boundary breaks (Quality Group A, B, C, or MC) at a component within the system or between systems shall include the component at the higher classification. A weld adjoining a higher class component to a component of lower classification shall be designated at the lower classification.

SEP-ISI-IP2-002 provides a list of applicable ISI and CII drawings for this program. Copies of these drawings are available through Entergy's Configuration Control Management System.

1.6.2 IWE/IWL Containment Boundaries and Classification

As stated above, Quality Group A, B and C piping systems shall be inspected in accordance with applicable subsections of Section XI. The interface boundary between the IWB, IWC, and IWD components and the containment systems are identified in the IPEC Repair and Replacement Program.

1.6.2.1 ISI Class MC (IWE)

ISI Class MC Containment components consist of the containment structure and connecting penetrations, appurtenances and parts that form the containment leak tight boundary. The components included in the boundary are:

- Dome liner
- Wall liner
- Basemat liner
- Penetration sleeves
- Personnel air lock
- Equipment access hatch/personnel lock
- Fuel transfer tube

ISI Class MC Containment components shall be inspected per the requirements of ASME Section XI, Subsection IWE Table IWE-2500-1 as modified by 10 CFR 50.55a, Code Cases, Technical Positions, and Relief Requests approved by the NRC.

1.6.2.2 ISI Class CC (IWL)

The components that make up the ISI Class CC boundary are:

- Concrete wall
- Concrete dome
- Concrete basemat

ISI Class CC containment components shall be inspected per the requirements of ASME Section XI, Subsection IWL Table IWL-2500-1 as modified by 10 CFR 50.55a, Code Cases, Technical Positions, and Relief Requests approved by the NRC.

The IP2 containment is a reinforced concrete structure and is not designed utilizing a post tensioning system. Therefore, the requirements of ASME Section XI, Subsection IWL that pertain to post tensioning systems do not apply.

1.6.3 Containment ISI (CII) Drawings

The CII drawings were created to graphically identify the components and define the boundaries. The drawings are designed to be used as an inspection tool to locate the components and verify the configuration during inspections.

An index of the CII Drawings is contained in SEP-ISI-IP2-002.

1.6.4 Piping Penetrating Containment Boundaries

1.6.4.1 Quality Group A, B, and C Piping and Components

Piping and components that penetrate containment, including their welded attachments, that are Quality Group A, B, or C based on their service function are examined and maintained in accordance with IWB, IWC and IWD, respectively.

1.6.4.2 Piping and Components other than Quality Group A, B, and C

Piping and components that penetrate containment, including their welded attachments, that are specifically excluded from classification in accordance with Regulatory Guide 1.26, Rev. 4 based on their service function, such as instrument air, station air, service air, etc., are inspected and maintained as 'ISI Class MC' (noted by triangular shape flags denoting quality group 'MC')*. Also, drawings with triangular shaped flags such as "E" are part of the MC designation for IWE components.

- The ISI MC boundary will apply to the first weld of the first containment isolation valve outside containment through the penetration to the first weld inside the containment. If there are two containment isolation valves the MC boundary ends after the second isolation valve. The MC boundary, as defined in the IWE section of the Code, will remain the same.

- Repair/Replacement shall be in accordance with the requirements of IWA-4000 and the Indian Point design specification and the construction code.

- Pressure test shall be in accordance with IWE-5000 and 10 CFR 50 Appendix J.

*Note Quality Group 'Class MC' designation is used for piping penetrations that are not classified Quality Group A, B, or C (Class 1, 2, or 3).

1.7 Inspection, Examination, and Testing Activities Not Controlled By this Plan

Although the following items may be contained within the ASME Section XI boundaries and may be subject to ASME Section XI requirements, they are not included in this Program Section. The inspection, examination, or testing activities described below are controlled and managed under IP2 Improved Technical Specifications (ITS), Technical Requirements Manual (TRM), or other applicable Entergy procedures as follows:

1.7.1 Steam Generator Tubing IWB-2500-1 Category B-Q Item No. B16.20 will be examined in accordance with the requirements of ITS Section 5.5.7.

1.7.2 System Pressure Tests for Class 1, 2, and 3 components will be scheduled and controlled in accordance with IP2 site procedures.

1.7.3 Inspection and Testing of Snubbers will be scheduled and controlled in accordance with IP2 site procedures.

1.7.4 Inservice Testing of Pumps and Valves will be performed and controlled in accordance with IP2 site procedures.

1.7.5 The ASME Section XI Repair/Replacement Program will be implemented and maintained in accordance with site procedures.

1.8 Augmented Inspection Programs

Augmented examinations are those that are outside the scope of 10 CFR 50.55a(g), but are contained and managed by the ISI Program Plan for convenience of scheduling and implementation. These examinations may result from activities including, but not limited to, commitments made to the NRC outside the scope of 10 CFR 50.55a, internal commitments, License Renewal commitments, or industry initiatives. These examinations may use ASME Section XI techniques and procedures as defined in the commitment, however, the requirements of ASME Section XI, including reporting, do not apply. The process of implementing changes to augmented examination requirements and schedules, resulting from commitments to the NRC, may not utilize the provisions of 10 CFR 50.55a(a)(z), or (g)(5)(iii) or (iv); rather, changes are required to be evaluated using the 10 CFR 50.59 screening/review processes. Current augmented examinations include:

1.8.1 Reactor Coolant Pump Flywheel Inspection Program

The Reactor Coolant Pump (RCP) Flywheel inspection is not part of ASME Section XI but is required by Section 5.5.5 of the ITS and Section 5.1.2.5.2 of the UFSAR. The flywheels are scheduled for examination under the Preventive Maintenance Program. The flywheels are inspected when an RCP motor is removed and sent out for refurbishment in order to meet the ITS and the UFSAR requirements. Entergy is not committed to USNRC Regulatory Guide 1.14 at IP2; however, the regulatory guide is used for guidance in establishing a basis for the examination.

Source Document: Technical Specification 5.5.5 and UFSAR Section 5.1.2.5.2.

Commitment No.: None.

Associated Documents:

- FSAR paragraphs 4.2.2.5 and 5.5.E.
- NRC Regulatory Guide 1.14, Reactor Coolant Pump Flywheel Integrity.
- NUREG-1431, "Standard Technical Specifications – Westinghouse Plants".
- Westinghouse WCAP-15666, "Extension of Reactor Coolant Pump Motor Flywheel Examination".

Purpose: Reactor coolant pump (RCP) motor flywheels are examined due to a concern about high-energy missiles inside containment that could potentially damage and cause the simultaneous failure of multiple trains of multiple safety-related systems.

Scope: The scope includes the examination of all four RCP upper flywheels.

Method: Surveillance of the primary coolant pump flywheels shall consist of an ultrasonic examination of the upper flywheels.

Industry Code or Standards: ASME Section XI, 2007 Edition through 2008 Addenda.

Frequency: Surveillance of the primary coolant pump flywheels shall consist of a 100% volumetric inspection of each upper flywheel each 20 years.

Acceptance Criteria or Standard: Any flaws detected during examination shall be forwarded to Entergy Engineering for resolution.

Regulatory Basis: Technical Specification 5.5.5 defines the scope and frequency of the required examinations. Even though there is no longer a commitment to Regulatory Guide 1.14, the basis for augmented examination of each reactor coolant pump flywheel is Regulatory Guide 1.14, Revision 1, August 1975.

Reporting Requirements: Any flaws detected during examination shall be forwarded to Entergy Engineering for resolution.

1.8.2 NEI Initiatives - Materials Reliability Program (MRP-146 Revision 1) for Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines

EPRI has developed a program titled "Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines"(MRP-146) guideline dated June 2005 with NEI 03-08 "needed" elements. The objective

of this guideline is to provide a common industry approach for assessing the potential for thermal fatigue cracking in normally stagnant non-isolable RCS branch piping. Supplemental guidance (MRP-146S, 1018330) was released as a nuclear QA product in January 2009. MRP-146 Rev. 1 supersedes MRP-146 Rev. 0 in its entirety and supersedes most elements of MRP-146S including the "needed" actions as described in that document. Implementation of MRP-146 Rev. 1 was completed during 2012 refueling outage.

Source Document:

- NRC Bulletin 88-08, "Thermal Stresses in Piping Connected to Reactor Coolant Systems".
- Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines"(MRP-146) guideline dated June 2005.
- Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines – Supplemental Guidance" (MRP-146S).

Commitment No.: Industry Commitment

Associated Documents: IP2 calculation IP-CALC-07-00088.

Purpose: Plan and implement a program to provide continuing assurance that unisolable sections of all piping connected to the RCS will not be subjected to combined cyclic and static thermal and other stresses that could cause fatigue failure during the remaining life of the unit.

Scope: In accordance with MRP-146 Rev. 1, guidance has been provided to inspect Reactor Coolant System Branch Lines. The following have been identified for examination:

- **MRP- 146 Rev 1 (and 146S) H Configuration Line**

  Line 96, 3 inches Normal Charging line into cold leg 21, has a MRP-146 Rev 1 (and 146S) requirement of 100% volumetric and visual examinations. IP2 has one weld, 96-2 that is classified as an H charging configuration line and is selected for examination under the MRP-146 Rev 1 (and 146S) every refueling outage.

  The selection of this weld for examination meets the requirements of Augmented Program MRP 146 Rev 1(and 146S) H model configuration Examination Requirements.

- **MRP- 146 Rev 1 (and 146S) DH Configuration Line**

  Line 82, 22 intermediate leg 2 inches drain line, Line 83, 23 intermediate leg 2 inches drain line and 84, 24 intermediate leg 2 inches drain line have a MRP-146 Rev 1 (and 146S) requirement of 100% volumetric and visual examinations. IP2 has three welds, 82-4, 83-4 and 84-4 that are classified as

DH drain configuration lines, and are selected for examination under the MRP-146 Rev 1 (and 146S) every other refueling outage.

The selection of these welds for examination meets the requirements of Augmented Program MRP 146 Rev 1(and 146S) DH model configuration Examination Requirements.

Method: Subject piping segments shall be visual and ultrasonically examined, as required.

Industry Code or Standards: MRP-146, Rev. 1, and MRP-146S.

Frequency: Reference Attachment 3, Table 2.1-3.

Acceptance Criteria or Standard: Flaws detected during examination shall be evaluated by comparing the examination results to the acceptance standards established in ASME Section XI, Subsection IWC.

Regulatory Basis: NRC Bulletin 88-08.

Reporting Requirements: Any flaws detected during examination shall be forwarded to Entergy Engineering for resolution.

1.8.3 Examination of Socket Welds

License Renewal Commitment #46 (LO-LAR-2011-0174 CA 65) requires twenty-five volumetric weld metal inspections of socket welds be performed periodically during each 10-year ISI interval scheduled as specified by IWB-2412 of the ASME Section XI Code during the period of extended operation. In lieu of volumetric examinations, destructive examinations may be performed, where one destructive examination may be substituted for two volumetric examinations. The small-bore piping socket weld sample is selected from the RI-ISI small bore socket welds population. However it is in addition to ASME B&PV Code Case N-716-1, the only examination that is required on a socket weld by the RI-ISI Program is a VT-2 visual examination each refueling outage with the exception for Item No. R1.11 which volumetrically examines the base material at the toe of the weld.

Source Document: License Renewal Commitment #46.

Commitment No.: LO-LAR-2011-0174 CA 65.

Associated Documents: LER 10-004-00, SER Related to License Renewal, Dated 08/30/2011 (ML11201A033).

Purpose: As part of License Renewal for effective aging management, the NRC requires a robust inspection program for socket welds. This action is to address concerns based on the operating experience at IP2. The inspection sampling should be statistically significant so that cracking, if present, will be detected prior

to leakage of the component. A sample of 25 welds was determined to be an adequate sample size.

Scope: Twenty-five (25) socket welds selected from the most susceptible and risk-significant welds scheduled as specified by IWB-2412 of the ASME Section XI Code. The small-bore piping socket weld sample is selected from the RI-ISI small bore socket welds population. The current RI-ISI program is based upon Code Case N-716-1. The population selected will include all high safety significant socket welds with a postulated damage mechanism. Additionally, high safety significant socket welds without a postulated damage mechanism will be selected to meet the 25 total requirement, that are located on the reactor coolant pressure boundary inside containment before the first isolation valve. Pipe breaks in these locations are not isolable and were assigned the highest conditional core damage probability in the Code Case N-716-1 analysis.

Method: Volumetric weld metal inspections of socket welds shall be performed. In lieu of volumetric examinations, destructive examinations may be performed, where one destructive examination may be substituted for two volumetric examinations.

Industry Codes or Standards: MRP-350 - Nondestructive Evaluation: Examination of Small Bore Socket Welds for Vibration and Thermal Fatigue

Frequency: The inspection sample shall be examined during each of the ISI 10-year intervals of extended operation.

Acceptance Criteria or Standard: The sample welds shall be free of cracking. If cracking is detected during the examinations, there will be an extent of condition review to evaluate the inspection sampling size to ensure that it is adequate to identify cracking that could occur at other locations.

Regulatory Basis: SER Related to License Renewal, Dated 08/30/2011 ML11201A033).

Reporting Requirements: Any flaws detected during examination shall be forwarded to Entergy Engineering for resolution.

1.8.4 Class 1 pressure retaining welds containing Alloy 600/82/182 in accordance with Code Case N-722-1, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated with Alloy 600/82/182 Materials", Section XI Division 1 with conditions specified in 10 CFR 50.55a(g)(6)(ii)(E)(1) through (4).

Source Document: ASME Code Case N–722–1, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated with Alloy 600/82/182 Materials".

Commitment No.: None

Associated Documents: 10 CFR 50.55a(g)(6)(ii)(E)(1) through (4).

Purpose: Identification of the presence of pressure boundary leakage.

Scope: Code Case N-722-1, Items B15.90 and B15.95, IP2 has four reactor vessel hot leg connections that will be visually inspected each refueling outage and four reactor vessel cold leg connections that will be visually examined each inspection interval.

Method:
- Direct VE of the bare metal surface, or alternatively,
- VE performed with the insulation in place using remote visual examination equipment that provides resolution of the component metal surface equivalent to a bare metal direct VE.

Industry Code or Standards: ASME Section XI 2007 Edition through 2008 Addenda.

Frequency: Every other refueling outage in accordance with Code Case N-722-1.

Acceptance Criteria or Standard: IWB-3522, absence of evidence of pressure leakage.

Regulatory Basis: 10 CFR 50.55a(g)(6)(ii)(E).

Reporting Requirements: Evidence of pressure leakage shall be reported immediately to Entergy Engineering. The results of the examination shall be reported in the outage inspection summary report.

1.8.5 Reactor vessel upper head penetrations in accordance with Code Case N-729-1, "Alternative Examination Requirements for PWR Reactor Vessel Upper Heads with Nozzles Having Pressure-Retaining Partial - Penetration Welds", Section XI, Division 1 with conditions specified in 10 CFR 50.55a(g)(6)(ii)(D)(1) through (6).

Source Document: ASME CC N–729–1, "Alternative Examination Requirements for PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds, Section XI, Division 1" (Approval Date: March 282006), with the conditions in 10 CFR 50.55a(g)(6)(ii)(D).

Commitment No.: None

Associated Documents: 10 CFR 50.55a(g)(6)(ii)(D)(1) through (6).

Purpose: Assess the present of PWSCC in reactor vessel upper heads with nozzles install with pressure-retaining partial-penetration welds.

Scope: Visual Examination – Outer surface of the Upper Reactor Vessel Head defined by Figure 1 of Code Case N-729-1.Volumetric/Surface Examinations – Partial penetration welds of the Nozzles and the Upper Reactor Vessel Head.

Note: Appendix I, Analysis Procedure for Alternative Examination Area or Volume Definition, of ASME CC N–729–1 must not be implemented without prior NRC approval. [10 CFR 50.55a(g)(6)(ii)(D)(6)].

Method: Visual examination areas defined by Figure 1 on CC N-729-1 of the outer surface of the Reactor Vessel Head. Volumetric and/or surface examinations of essentially 100 percent of the required volume or equivalent surface examination of essentially 100 percent of the subject J-groove welds. A demonstrated volumetric or surface leak path assessment through all J-groove welds must be performed. If a surface examination is being substituted for a volumetric examination on a portion of a penetration nozzle that is below the toe of the J-groove weld, the surface examination must be of the inside and outside wetted surface of the penetration nozzle not examined volumetrically. [10 CFR 50.55a(g)(6)(ii)(D)(3)].

Industry Code or Standards: ASME Section XI, 2007 Edition through 2008 Addenda as supplemented by 10 CFR 50.55a(g)(6)(ii)(D)(4) restricts the use of Section XI, Appendix VIII requirements to ASME Section XI, 2004 Edition with no Addenda for Code Case N-729-1. [10 CFR 50.55a(g)(6)(ii)(D)(4)].

Frequency: The examinations listed in Table 1 of CC N-729-1 shall be performed completely, once, as a baseline examination. These examinations shall include all nozzles.

Inservice examination frequencies are based on calculated RIY (Reinspection Years calculation compliant with paragraph -2410 of CC N-729-1) and the result of previous examinations. Per 10 CFR 50.55a(g)(6)(ii)(D)(5), if flaws attributed to PWSCC have been identified, whether acceptable or not for continued service under Paragraphs –3130 or –3140 of ASME CC N–729–1, the re-inspection interval must be each refueling outage instead of the re-inspection intervals required by Table 1, Note (8), of ASME Code Case N-729-1. Note 9 of the CC shall not be implemented. [10 CFR 0.55a(g)(6)(ii)(D)(2)].

Acceptance Criteria or Standard: Acceptance shall be as specified by code case paragraph -3130 and -3140. Additionally, if flaws attributed to PWSCC have been identified, whether acceptable or not for continued service under Paragraphs –3130 or –3140 of ASME Code Case N–729–1, the re-inspection interval must be each refueling outage instead of the re-inspection intervals required by Table 1, Note (8), of ASME Code Case N–729–1. [50.55a(g)(6)(ii)(D)(5)].

Regulatory Basis: 10 CFR 50.55a(g)(6)(ii)(D) "Augmented ISI requirements: Reactor vessel head inspections".

Reporting Requirements: Report of any indication of PWSCC flaws to Entergy Engineering immediately. The results of these examinations shall be included in the outage inservice inspection summary report.

1.8.6 Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities in accordance with Code Case N-770-1, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities", Section XI, Division 1," in accordance with the requirements in 10 CFR 50.55a(g)(6)(ii)(F)(1) through (10). Note: License Renewal commitment LO-LAR-2011-0174 CA37 is tracked and monitored in accordance with the Code Case 770-1 examination requirements, and augmented existing ISI inspections as appropriate.

Source Document: ASME Code Case N-770-1, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated With UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities Section XI, Division 1. 10 CFR 50.55a(g)(6)(ii)(F) "Augmented ISI requirements: Examination Requirements for Class 1 Piping and Nozzle Dissimilar-Metal Butt Welds".

Commitment No.: None

Associated Documents: 10 CFR 50.55a(g)(6)(ii)(F).

Purpose: Detection or unacceptable growth of known PWSCC Cracking.

Scope: IP2 has four reactor vessel hot leg connections that will be inspected volumetrically every 5 years and visually each refueling outage, and four reactor vessel cold leg connections that will be inspected volumetrically every second inspection period not to exceed seven years and visually once per inspection interval.

Method: Ultrasonic Examination procedures and personnel qualification in accordance with Appendix VIII of ASME Section XI.

Industry Code or Standards: ASME Section XI, 2007 Edition through 2008 Addenda.

Frequency: IP2 has four reactor vessel hot leg connections that will be inspected volumetrically every 5 years and visually each refueling outage, and four reactor vessel cold leg connections that will be inspected volumetrically every second inspection period not to exceed seven years and visually once per inspection interval.

Acceptance Criteria or Standard: Code Case paragraphs -3130 and -3140. IWB-3514 of the ASME Section XI, 2007 Edition through 2008 Addenda as supplemented by Nonmandatory Appendix Q, if applicable weld overlays are applied.

Regulatory Basis: 10 CFR 50.55a(g)(6)(ii)(F) "Augmented ISI requirements: Examination requirements for Class 1 piping and nozzle dissimilar-metal butt welds".

Reporting Requirements: Report of any indication of PWSCC flaws to Entergy Engineering immediately. The results of these examinations shall be included in the inservice inspection summary report.

For any mitigated weld whose volumetric examination detects growth of existing flaws in the required examination volume that exceed the previous IWB–3600 flaw evaluations or new flaws, a report summarizing the evaluation, along with inputs, methodologies, assumptions, and causes of the new flaw or flaw growth is to be provided to the NRC prior to the weld being placed in service other than modes 5 or 6. [10 CFR 50.55a(g)(6)(ii)(F)(6)].

1.9 Administrative Controls

1.9.1 This program is written and implemented as a Program Section meeting the requirements of EN-DC-174, "Program Sections". This Program Section will be maintained through revisions and Program Change Notices (PCN) in accordance with EN-DC-174.

1.9.2 This program will be maintained current to reflect applicable changes to plant configuration through the review process defined by EN-DC-115, Engineering Change Process".

1.9.3 Additions of items to the program resulting from changes to the plant configuration will be incorporated and scheduled for inspection or examination in accordance with IWB/IWC/IWD/IWE-2411 and IWF-2410.

1.9.4 Organizational and divisions of responsibilities for the management and implementation of the ISI Program are defined in EN-DC-120, "Engineering Code Programs".

1.9.5 In accordance with IWA-1400(c), the initial ISI Program Plan shall be provided to the NRC for "Information Only". PCNs are not required to be provided to the NRC.

1.9.6 The initial ISI Program Plan, revisions, and PCNs are subject to review by the Authorized Nuclear Inservice Inspector (ANII).

1.10 IDDEAL® Data-Management Program

IP2 ISI Components and their examination schedules are developed with the aid of the IDDEAL Software Suite®. The IDDEAL Software Suite® integrates information from the examination programs to facilitate ease and efficiency in organizing, scheduling and tracking of all inspection and examination work. The software is used as a tool in developing the ISI Program. This Program Section shall be used as the controlling entity for managing and implementing the ISI program. The Inservice Inspection Data Management software is comprised of a series of program modules assembled in a comprehensive software package entitled the Iddeal Software Suite®. This software suite is NETWORK based within the Entergy system and is accessible by any computer within Entergy. The Iddeal Software Suite® is a quality level B software. It is the Controlled copy of the ISI Schedule. The software has limited access to protect the contents of the databases. Access to the software is limited through the use of a user defined password controlled via Central Engineering Procedure CEP-COS-100. The ScheduleWorks®

Module contains the IPEC information necessary to perform ISI/CII and Augmented Program. Maintenance of the Module is controlled via Central Engineering Procedure CEP-COS-110. All changes to data in the IPEC ISI/CII Database must be made in accordance with CEP-COS-110.

1.11 Adoption and Use of ASME Section XI Code Cases

In accordance with ASME Section XI, IWA-2441(a), Code Cases to be used during a preservice or inservice inspection shall be identified in the Inservice Inspection Plan. ASME Section XI Code Cases adopted for ISI and NDE activities are listed in Tables 1.11-1 and 1.11-2. In addition, other Code Cases as approved in USNRC Regulatory Guide 1.147, latest revision, may be used as required. Code Cases applicable to Nondestructive Examination (NDE), Repair/Replacement (R/R) Activities, Pressure Testing and Flaw Evaluation are addressed in their respective program documents and are not included in this Program. The use of Code Cases is in accordance with ASME Section XI, IWA-2440, 10 CFR 50.55a, and USNRC Regulatory Guide 1.147. As permitted by ASME Section XI, USNRC Regulatory Guide 1.147, and 10 CFR 50.55a, ASME Section XI Code Cases may be adopted and used as described below:

1.11.1 Adoption of Code Cases Approved for Use in Regulatory Guide 1.147

Code Cases that are approved for use in the latest revision of Regulatory Guide 1.147 may be included in the ISI program provided any identified limitations or modifications specified in the Regulatory Guide are also incorporated. Table 1.11-1 identifies the Code Cases that have been approved for use in USNRC Regulatory Guide 1.147 and are incorporated into the ISI program.

1.11.2 Adoption of Code Cases Not Approved in USNRC Regulatory Guide 1.147

Certain Code Cases that have been approved by the ASME Board of Nuclear Codes and Standards may not have been reviewed and approved by the NRC Staff for use and are not listed in Regulatory Guide 1.147. Use of such Code Cases may be requested in the form of a "Request for Alternative" in accordance with 10 CFR 50.55a(a)(z). Code Cases that have been requested in accordance with 10 CFR 50.55a(a)(z) may not be used until NRC approval has been obtained. Section 1.13 identifies the Code Cases that have been requested in accordance with 10 CFR 50.55a(a)(z).

1.11.3 Adoption of Code Cases Mandated by 10 CFR 50.55a

Code Cases required by rule in 10 CFR 50.55a are incorporated into the ISI Program and implemented at the specified schedule. Code Cases currently required by 10 CFR 50.55a are identified in Table 1.11-2.

1.11.4 Use of Annulled Code Cases

As permitted by Regulatory Guide 1.147, Code Cases that have been adopted for use in the current inspection interval that are subsequently annulled by ASME may be used for the remainder of the inspection interval.

1.11.5 Code Case Revisions

Initial adoption of a Code Case requires use of the latest revision of that Code Case listed in Regulatory Guide 1.147. However, if an adopted Code Case is later revised and approved by the NRC, then either the earlier or later revision may be used. An exception to this provision would be the inclusion of a limitation or condition on the use of the Code Case which is necessary to enhance safety.

Code Case Number	Table 1.11-1 Code Cases Adopted by IP2 from Regulatory Guide 1.147	Applicability
N-526	Alternative Requirements for Successive Inspections of Class 1 and 2 Vessels Section XI, Division 1	2010 Edition 2011 Addenda
N-532-5	Repair/Replacement Activity Documentation Requirements and Inservice Inspection Summary Report Preparation and Submission Section XI, Division 1	2010 Edition
N-586-1	Alternative Additional Examination Requirements for Classes 1, 2, and 3 Piping, Components, and Supports Section XI, Division 1	2007 Edition 2008 Addenda
N-648-1	Alternative Requirements for Inner Radius Examination of Class 1 Reactor Vessel Nozzles Section XI, Division 1 **Conditions for Use:** In lieu of a UT examination, licensees may perform a VT-1 examination in accordance with the code of record for the Inservice Inspection Program utilizing the allowable flaw length criteria of Table IWB-3512-1 with limiting assumptions on the flaw aspect ratio.	2013 Edition
N-686-1	Alternative Requirements for Visual Examinations VT-1, VT-2, and VT-3 Section XI, Division 1	2004 Edition
N-716-1	Alternative Piping Classification and Examination Requirements Section XI, Division 1	2013 Edition
N-731	Alternative Class 1 System Leakage Test Pressure Requirements Section XI, Division 1	2013 Edition
N-735	Successive Inspection of Class 1 and 2 Piping Welds Section XI, Division 1	2013 Edition
N-747	Reactor Vessel Head-to-Flange Weld Examination Section XI, Division 1	2013 Edition
N-765	Alternative to Inspection Interval Scheduling Requirements of IWA-2430 Section XI, Division 1	2007 Edition 2008 Addenda

Table 1.11-2 Code Cases Required by 10 CFR 50.55a		
Code Case Number	Title	Notes
N-722-1	Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated With Alloy 600/82/182 Materials, Section XI, Division 1	Conditions specified in paragraphs (g)(6)(ii)(E)(2) through (4) of 10 CFR 50.55a. Implemented in the Pressure Test Program
N-729-1	Alternative Examination Requirements for PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds, Section XI, Division 1	Conditions specified in paragraphs (g)(6)(ii)(D)(2) through (6) of 10 CFR 50.55a
N-770-1	Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities, Section XI, Division 1	Conditions specified in paragraphs (g)(6)(ii)(F)(2) through (10) of 10 CFR 50.55a

1.12 Technical Positions

Technical Positions are created for areas where the Code does not provide clear direction or areas where regulation requires more attention to a specific area. Technical Position papers used as bases for the ISI program are listed in Table 1.12-1.

Table 1.12-1 Technical Position Papers		
Document Number	Title	Notes
	None at this time	

1.13 Relief Requests

Throughout this program, the term "relief request" is used interchangeably referring to submittals to the NRC requesting permission to deviate from either an ASME Section XI requirement, a 10 CFR 50.55a rule, or to use provisions from Editions or Addenda of Section XI not approved by the NRC as referenced in 10 CFR 50.55a(b). However, when communicating with the NRC and in written requests to deviate, the terms as defined below must be used for clarity and to satisfy 10 CFR 50.55a. Submittals to the NRC must clearly identify which of the below rules are being used to request the deviation.

Table 1.13-1 contains an index of Relief Requests written in accordance with 10 CFR 50.55a(a)(z) and (g)(5). The applicable Entergy submittal and NRC Safety Evaluation Report (SER) correspondence numbers are also included for each request.

Note: Requests associated with the ISI program only are listed in Table 1.13-1. Requests applicable to Nondestructive Examination (NDE), Repair/Replacement (R/R) Activities, Pressure Testing and Flaw Evaluation are identified in their respective program documents.

1.13.1 Request for Alternatives

When seeking an alternative to the rules contained in 10 CFR 50.55a(b) through (h), the request is submitted under the provision of 10 CFR 50.55a(z). Once approved by the Director, Office of Nuclear Reactor Regulation, the alternative may be incorporated into the ISI program. These types of requests are typically used to request use of Code Cases, Code Edition, or Addenda not yet approved by the NRC. Request for Alternatives must be approved by the NRC prior to their implementation or use. Within the provisions of 10 CFR 50.55a(z) there are two specific methods of submittal:

1.13.1.1 10 CFR 50.55a(a)(z)(1): Acceptable level of quality and safety. The proposed alternative would provide an acceptable level of quality and safety.

1.13.1.2 10 CFR 50.55a(a)(z)(2): Hardship without a compensating increase in quality and safety. Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

1.13.2 Relief Request Required Due to Impracticality

10 CFR 50.55(a)(g)(5)(iii) allows relief to be requested in instances when IP2 has determined conformance with a Code requirement is impractical, e.g. limited examination coverage. Under 10 CFR 50.55(a)(g)(5)(iv), relief requests for examination impracticalities must be submitted for NRC review and approval not later than 12 months after the expiration of the initial or subsequent 120-month inspection interval for which relief is sought.

In cases where the ASME Section XI requirements for inservice inspection are considered impractical, IP2 will notify the NRC and submit information to support the determination, as required by 10 CFR 50.55a(g)(5). The submittal of this information will be referred to as a Request for Relief.

1.13.3 Requests to use Later Edition and Addenda of ASME Section XI

On July 28, 2004, the NRC published Regulatory Issue Summary (RIS) 2004-12, "Clarification on Use of Later Editions and Addenda to ASME OM Code and Section XI". This RIS clarifies the NRC position on using Editions and Addenda of Section XI, in whole or in part, later than those specified in the ISI program. If the desired Edition or Addenda are referenced in 10 CFR 50.55a(b)(2), the request is submitted following the guidance of the RIS. These types of request are not required to demonstrate hardship, difficulty, or provide evidence of quality and safety. They do need to ensure that all related requirements are also used.

Table 1.13-1
Fifth Interval Relief Requests

Relief Request	Relief Request Description	Entergy Correspondence	NRC SER Correspondence	Modified
IP2-ISI-RR-01	Pressurizer shell to head, circumferential and longitudinal welds. ASME Cat. B-B, Ref. IWB-2500.	NL-15-138	N/A	
IP2-ISI-RR-02	Proposed Alternative Examination Area for Code Case N-729-1.	NL-15-139	N/A	
IP2-ISI-RR-03	Proposed Alternative to Use of Weld Reference System	NL-15-140	N/A	

1.14 Calibration Blocks

A detailed list of all ISI calibration blocks to be employed during the fifth inspection interval is provided in SEP-ISI-IP2-002.

1.15 Limited Examinations

In the event that the examination volume or surface as defined in the ASME Code or Code Cases cannot be examined due to interference by another component or part geometry, then, in accordance with ASME Code Section XI 2007 Edition through 2008 Addenda, IWA-2200(c), a reduction in examination volume or area is acceptable if the reduction is less than 10%. In the event that the reduction in examination volume or area is 10% or greater, a request for relief shall be submitted per paragraph 1.13.2. ASME Section XI examinations should meet the examination coverage criteria established in ASME Code Section XI, 2007 Edition through 2008 Addenda, IWA-2200(c). Therefore, the guidance included in ASME Code Section XI 2007 Edition through 2008 Addenda IWA-2200(c) shall be followed by Entergy IP2 when determining whether to prepare a relief request or apply the criteria of ASME Code Section XI, 2007 Edition through 2008 Addenda, IWA-220(c) examinations where less than 100% coverage is obtained. This does not apply to the bare metal visual examination required by Code Case N-729-1. When performing visual examinations to meet N-729-1, the requirements of N-729-1 shall be used for determining allowance for partial examination of the required surface.

SECTION 2.0

APPLICATION CRITERIA AND CODE COMPLIANCE

2.0 APPLICATION CRITERIA AND CODE COMPLIANCE

2.1 ASME Section XI

The following provides a summary of the application of ASME Code, Section XI, 2007 Edition through 2008 Addenda for the IP2, Fifth Ten-Year Interval ISI Program Plan. The application and distribution of examinations for this inspection interval is based upon utilizing inspection program defined by paragraphs IWB-2411, IWC-2411, IWD-2411, IWE-2411 IWF-2410 and IWL-2400 of Section XI.

The results of this application are summarized by ASME Category and Item Number and are contained within the IP2 Code Category Summary Table contained in this document. This table only contains those ASME Item Numbers that are relevant to IP2.

2.1.1 Examination Category B-A - Pressure Retaining Welds in Reactor Vessel

Reactor vessel examinations were scheduled to meet the 2007 Edition through 2008 Addenda of the ASME Code, Section XI as required by 10 CFR 50.55a. Article IWB-2420 in the 2007 Edition through 2008 Addenda of ASME Code, Section XI requires that the sequence of component examinations be repeated during each successive inspection interval, to the extent practical. Table IWB-2500-1, Examination Category B-A, Note (3) specifies at least 50% of the Shell to Flange Welds will be examined by the end of the first inspection period of the first inspection interval. In successive inspection intervals, Note 5 allows deferral of the Shell to Flanges provided conditions in Note (5) are satisfied. The conditions of Note (5) are satisfied.

The selection of these welds for examination meets the requirements of Examination Category B-A Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.2 Examination Category B-B - Pressure Retaining Welds in Vessels Other Than Reactor Vessels

The 2007 Edition through 2008 Addenda of Section XI, Examination Category B-B requires the pressurizer and primary side of steam generators (S/G) and regenerative heat exchangers be examined during the inspection interval. The examinations may be limited to one of a group of vessels with similar function.

PRESSURIZER

Section XI requires examination of both Shell to Head Welds and one foot of one intersecting Longitudinal Weld per head. Relief Request IP2-ISI-RR-01 was requested for approval which would allow Welds PZRC5 (B2.11) & PZRL4 (B2.12) to be visually examined (VT-2) after each refueling outage in lieu of the Code required volumetric examination. This will be tracked via Pressure Testing Procedure PT-R75. Therefore, only one of the two Shell to Head Welds and Longitudinal Welds are selected for 50%.

STEAM GENERATORS

IP2 has four steam generators. Table IWB-2500-1, Category B-B, Note (1) allows the examination to be limited to one vessel among a group of vessels performing a similar function or 25% for IP2. There is one Tubesheet to Head Weld on each S/G. One of four Tubesheet to Head Welds is selected for examination, thus meeting the one vessel among a group of vessels performing a similar function or 25% requirement.

REGENERATIVE HEAT EXCHANGERS

Section XI requires volumetric examination of all Regenerative Heat Exchanger Head to Shell and Tubesheet to Shell Welds. ASME Code Case N-706-1 approved through USNRC Regulatory Guide 1.147, will be implemented, and therefore all B2.60 and B2.80 welds will be visually examined (VT-2) after each refueling outage in lieu of the Code required volumetric examination. This will be tracked via Pressure Testing Procedure PT-R75. Implementation of ASME Code Case N-706-1 requires the Owner to evaluate industry experience to determine which heat exchanger designs or configurations have leaked. If any leakage is detected, it shall be corrected in accordance with IWA-4000. Use of Code Case N-706-1 shall be discontinued for the Regenerative Heat Exchangers and others of the same design or configuration. The affected Regenerative Heat Exchangers and others of the same design or configuration shall be examined in accordance with IWB-2500 or IWC-2500, as applicable.

Therefore, the selection of these welds for examination meets the requirements of Examination Category B-B Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI and ASME Code Case N-706-1.

2.1.3 Examination Category B-D - Full Penetration Welded Nozzles in Vessels

This category applies to the reactor vessel, pressurizer, steam generators and regenerative heat exchangers.

REACTOR VESSEL

ASME Code, Section XI does not allow the deferral of these examinations, except for Nozzle to Reactor Vessel Welds. Table IWB-2500-1, Category B-D, Note (3) allows partial deferral if the examinations are conducted from inside the nozzle bore and the nozzle weld is examined by straight beam UT from the nozzle bore. The examinations required to be conducted from the shell inside diameter may be performed at or near the end of the inspection interval.

PRESSURIZER

The 2007 Edition through 2008 Addenda no longer has a requirement to examine Pressurizer Nozzle Inside Radius Section. However, 10 CFR 50.55a(b)(2)(xxi)(A) requires utilities to either apply the Volumetric Examination of the 1998 Edition when using the 1999 Addenda through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section or allows a visual examination with magnification that has a resolution sensitivity to detect a 1-mil width wire or crack, utilizing the

allowable flaw length criteria in Table IWB-3512-1, 1997 Addenda through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section, with a limiting assumption on the flaw aspect ratio (i.e., a/l=0.5), may be performed instead of an ultrasonic examination. Pressurizer Nozzle Inside Radius Sections will be examined volumetrically or with an enhanced visual as required by 10 CFR 50.55a(b)(2)(xxi)(A) depending on which method is determined to be prudent to IP2. These examinations are identified in the ISI Program as Examination Category B-D, Item Number B3.120 in accordance with the 1998 Edition of ASME Section XI.

IP2 Pressurizer nozzles are integrally cast and therefore, contain no Item Number B3.110, nozzle to vessel welds.

STEAM GENERATOR

The 2007 Edition through 2008 Addenda no longer has a requirement to examine Steam Generator Nozzle Inside Radius Section. However, 10 CFR 50.55a(b)(2)(xxi)(A) requires utilities to either apply the Volumetric Examination of the 1998 Edition when using the 1999 Addenda through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii)of his section or allows a visual examination with magnification that has a resolution sensitivity to detect a 1-mil width wire or crack, utilizing the allowable flaw length criteria in Table IWB-3512-1, 1997 Addenda through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section, with a limiting assumption on the flaw aspect ratio (i.e., a/l=0.5), may be performed instead of an ultrasonic examination. Steam Generator Nozzle Inside Radius Sections will be examined volumetrically or with an enhanced visual as required by 10 CFR 50.55a(b)(2)(xxi)(A) depending on which method is determined to be prudent to IP2. These examinations are identified in the ISI Program as Examination Category B-D, Item Number B3.140 in accordance with the 1998 Edition of ASME Section.

IP2 Steam Generator nozzles are integrally cast and therefore, contain no Item Number B3.130, nozzle to vessel welds.

REGENERATIVE HEAT EXCHANGERS

Section XI requires volumetric examination of all Regenerative Heat Exchanger Nozzle to Vessel Welds and Nozzle Inside Radius Sections. ASME Code Case N-706-1 approved through USNRC Regulatory Guide 1.147, will be implemented, therefore all B3.150 nozzle to vessel welds and B3.160 nozzle inside radius sections will be visually examined (VT-2) after each refueling outage in lieu of the Code required volumetric examination. This will be tracked via Pressure Testing Procedure PT-R75. Implementation of ASME Code Case N-706-1 requires the Owner to evaluate industry experience to determine which heat exchanger designs or configurations have leaked. If any leakage is detected, it shall be corrected in accordance with IWA-4000. Use of Code Case N-706-1 shall be discontinued for the Regenerative Heat Exchangers and others of the same design or configuration. The affected Regenerative Heat Exchangers and others of the same design or configuration shall be examined in accordance with IWB-2500 or IWC-2500, as applicable.

The selection of these welds and inner radius sections for examination meets the requirements of Examination Category B-D Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI as modified by ASME Code Case N-706-1 and 10 CFR 50.55a(b)(2)(xxi)(A).

2.1.4 Examination Category B-F - Pressure Retaining Dissimilar Metal Welds in Vessel Nozzles

This category addresses Nozzle to Safe End Welds.

Risk Informed Inservice Inspection utilizing ASME Code Case N-716-1 (approved through USNRC Regulatory Guide 1.147) will be implemented for Examination Category B-F requirements. Examination of these dissimilar metal welds will not be covered under Examination Category B-F, but under Examination Category R-A Table 2.1-3, with the exception of eight (8) Reactor Vessel Nozzle to Safe End Butt Welds fabricated with UNS N060802 or UNS W86182 Weld Filler Material. The eight (8) Reactor Vessel Nozzle to Safe End Butt Welds will be examined utilizing ASME Code Case N-770-1.

2.1.5 Examination Category B-G-1 - Pressure Retaining Bolting, Greater Than 2" In Diameter

Components with bolting greater than 2" in diameter include the reactor vessel and reactor coolant pumps. Examinations will be conducted as required in Table IWB-2500-1 in the 2007 Edition through 2008 Addenda of Section XI. Examination of the Reactor Vessel Bolting will be performed in the first and third periods. For volumetric examination of reactor coolant pump studs, one of four sets of reactor coolant pump studs is selected for volumetric examination. For the visual examination of pump bolting, one of the reactor coolant pumps will be examined only if disassembled. This is the same requirement as for Examination Category B-L-2 and will be met during the maintenance or repair/replacement process.

During the first, second and third inspection intervals pump bolting examinations were scheduled by bolt. For the fourth and fifth inspection intervals these examinations have been combined to one summary number that requires examination of all the bolting of a component.

The selection of these components for examination meets the requirements of Examination Category B-G-1 Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.6 Examination Category B-G-2 - Pressure Retaining Bolting, 2" and Less in Diameter

This category includes conoseal bolting, manway bolting, valve bolting, flange bolting in piping, and reactor coolant pump seal bolting. Examinations will be conducted as required in Table IWB-2500-1 in the 2007 Edition through 2008 Addenda of Section XI. This bolting will only be examined if associated connections are disassembled or bolting is removed.

For components other than piping, bolting examinations will be required only when the component is examined under Examination Category B-B, B-L-2, or B-M-2. IP2 has grouped B-G-2 bolting in accordance with components examined under Examination Category B-B, B-L-2, or B-M-2. This grouping is identified in Tables 2.1-1 for piping and Table 2.1-2 for valves.

IP2 has 7 sets of conoseal bolting on the Reactor Vessel Closure Head. Examination of bolting is only required if disassembled or bolting is removed.

IP2 has four Steam Generators (Vessel Group 1), each with a cold leg and a hot leg manway. Examination of bolting is only required if disassembled or bolting is removed.

IP2 has sixteen Class 1 piping flanges. These flanges are grouped into five piping flange groups identified in Table 2.1-1. Each group of piping flanges contains bolted connections of similar design, size, function and service. Only one bolted connection from each flange group is required to be examined each inspection interval, and this examination is only required when a bolted connection is dissembled or bolting is removed. No piping flanges have been selected. For bolting removal involving the repair/replacement process, this requirement will be met during the repair/replacement process.

Table 2.1-1 B-G-2 PIPING FLANGE GROUPINGS		
Group 1		
DWG No	**COMP ID**	**DESCRIPTION**
206684	19 F 2	3" Blind Flange Bolting (8)
206685	27 F 4	3" Blind Flange Bolting (8)
206713	79 F 1	3" Blind Flange Bolting (8)
206714	80 F 1	3" Blind Flange Bolting (8)
Group 2		
DWG No	**COMP ID**	**DESCRIPTION**
206687	41 F 1	1.5" 21 RCP Flange Bolt (4)
206689	42 F 1	1.5" 22 RCP Flange Bolt (4)
206691	43 F 1	1.5" 23 RCP Flange Bolt (4)
206693	44 F 1	1.5" 24 RCP Flange Bolt (4)
Group 3		
DWG No	**COMP ID**	**DESCRIPTION**
206687	41 F 2	2" Pipe Flange Bolting (8)
206689	42 F 2	2" Pipe Flange Bolting (8)
206691	43 F 2	2" Pipe Flange Bolting (8)
206693	44 F 2	2" Pipe Flange Bolting (8)
Group 4		
DWG No	**COMP ID**	**DESCRIPTION**
206731	342 F 1	PZR PCV464 Flange Bolt (8)
206732	343 F 1	PZR PCV466 Flange Bolt (8)
206733	344 F 1	PZR PCV468 Flange Bolt (8)
Group 5		
DWG No	**COMP ID**	**DESCRIPTION**
206711	64 F 1	2" Blind Flange Bolting (8)

IP2 has four Reactor Coolant Pumps (Pump Group 1), each pump contains seal housing bolting. Examination of pump bolting is only required if disassembled. Examination of the bolting is only required on one RCP pump seal housing bolted connection when disassembled or bolting is removed.

IP2 has seventeen valves with bolting. The valves have been grouped, as required by Examination Category B-M-2, into four Valve Groups identified in Table 2.1-2. Examination of valve bolting is only required on one valve in each group if disassembled or bolting is removed.

During the first, second and third intervals piping, pump, and valve bolting examinations were scheduled by bolt. For the fourth and fifth inspection intervals these examinations have been combined to one summary number that requires examination of all the bolting of a component.

During the first, second and third inspection intervals Steam Generator and Pressurizer manway bolting examinations were also scheduled by bolt. For the fourth and fifth inspection intervals these examinations have been combined to

one summary number for each manway that requires examination of all the bolting of the manway.

The selection of these components for examination meets the requirements of Examination Category B-G-2 Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.7 Examination Category B-J - Pressure Retaining Welds in Piping

Examination Category B-J of the ASME Code Section XI, 2007 Edition through 2008 Addenda requires examination of Class 1 piping welds.

Risk Informed Inservice Inspection utilizing ASME Code Case N-716-1 (approved through USNRC Regulatory Guide 1.147) will be implemented for Examination Category B-J requirements. Examination of these welds will not be covered under Examination Category B-J, but under Examination Category R-A Table 2.1-3.

2.1.8 Examination Category B-K - Welded Attachments For Vessels, Piping, Pumps, And Valves

Examination Category B-K of the ASME Code Section XI, 2007 Edition 2008 Addenda requires examination of welded attachments. For vessel attachments, Note (4) allows only one welded attachment of only one of the multiple vessels to be selected for examination for multiple vessels of similar design, function, and service. For single vessels, only one welded attachment shall be selected for examination. IP2 has one Pressurizer Welded Attachment that is selected for examination.

For piping, pumps, and valves, inspection of 10% of the total population of welded attachments is required. Ten Percent (10%) of all piping welded attachments and 10% of all pump welded attachments are selected for examination. IP2 does not have any Class 1 valve welded attachments. The population of welded attachments contained in the ISI program has been evaluated and seven have been identified to be associated with whip restraints. These seven do not meet the criteria of Examination Category B-K, Note 1 and have been removed from the program.

The selection of these welded attachments for examination meets the requirements of Examination Category B-K Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.9 Examination Category B-L-2 - Pump Casings

This category involves reactor coolant pumps and requires visual examination of pump casing internal surfaces when disassembled. The reactor coolant pumps are the only Code Class 1 pumps.

B-L-2 requires examination of the pump casing internal surfaces of one pump in each group of pumps performing similar functions in the system. However, this examination is only required when a pump is dissembled for maintenance or repair. For pump disassembly involving repair/replacement activities, this requirement will be met during the repair/replacement process.

The selection of these components for examination meets the requirements of Examination Category B-L-2 Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.10 Examination Category B-M-2 - Valve Bodies

This category only involves reactor coolant, residual heat removal, and safety injection valves. Examinations will be conducted as required in Table IWB-2500-1. There are a total of 17 valves that fall into this examination category. IP2 has grouped these valves based on size, design, manufacturing method, and function into four groups of valves identified in Table 2.1-2.

B-M-2 requires examination of the valve body internal surfaces of one valve in each group of valves that are of the same size, constructural design, manufacturing method, and that performs similar functions in the system. However, this examination is only required when a valve is dissembled for maintenance or repair. No valve body internal surfaces have been selected. For valve disassembly involving repair/replacement activities, this requirement will be met during the repair/replacement process. Table 2.1-2 below lists all valves grouped by system, size, and type and subject to examination under B-M-2.

Table 2.1-2
B-M-2 VALVE GROUPINGS

Group 1				
Drawing Number	Component Number	Size	Type Valve	System
206903	351 895A	10	Darling Check	SIS
206904	352 895B			
206905	353 895C			
206901	350 895D			
206903	351 897A			
206904	352 897B			
206905	350 897C			
206901	353 897D			
Group 2				
Drawing Number	Component Number	Size	Type Valve	System
206906	355 838A	6	Velan Check	SIS
206907	356 838B			
206908	358 838C			
206910	367 838D			
Group 3				
Drawing Number	Component Number	Size	Type Valve	System
206731	PCV 464	4 X 6	Crosby Relief	RCS
206732	PCV 466			
206733	PCV 468			

Table 2.1-2 B-M-2 VALVE GROUPINGS				
Group 4				
Drawing Number	Component Number	Size	Type Valve	System
206669	10 730	14	Copes Vulcan Gate	RHR
206669	10 731			

The selection of these components for examination meets the requirements of Examination Category B-M-2 Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.11 Examination Category B-N-1 - Interior of Reactor Vessel

These examinations will be conducted each inspection period. This meets the Examination Category B-N-1 Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.12 Examination Category B-N-2 - Welded Core Support Structures and Interior Attachments to Reactor Vessel

These examinations will be scheduled to coincide with the inspection of the reactor vessel. The selection of these welds for examination meets the requirements of Examination Category B-N-2 Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.13 Examination Category B-N-3 - Removable Core Support Structures

These examinations will be conducted to coincide with the inspection of the reactor vessel. The selection of these welds for examination meets the requirements of Examination Category B-N-3 in the 2007 Edition through 2008 Addenda of Section XI.

2.1.14 Examination Category B-O - Pressure Retaining Welds in Control Rod Drive and Instrument Nozzle Housings

The ASME Code, Section XI, 2007 Edition through 2008 Addenda requires volumetric or surface examination of 10% of peripheral Control Rod Drive Housings Welds during the inspection interval. There are 28 peripheral Control Rod Drive Mechanisms (CRDMs) on the reactor vessel head. To meet the Code requirements, three CRDMs have been selected.

The selection of these components for examination meets the requirements of Examination Category B-O Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.15 Examination Category B-P - All Pressure Retaining Components

The pressure testing program at IP2 meets the requirements of ASME Code, Section XI, 2007 Edition through 2008 Addenda for Class 1 Systems. Details are contained in the pressure test program.

2.1.16 Examination Category B-Q - Steam Generator Tubing

The Steam Generator Tube inspection program at IP2 is governed by IP2 Technical Specifications.

2.1.17 Examination Category C-A - Pressure Retaining Welds In Pressure Vessels

Risk Informed Inservice Inspection utilizing ASME Code Case N-716-1 (approved through USNRC Regulatory Guide 1.147) will be implemented for Examination Category C-A requirements of the Steam Generators (HSS per N-716-1) and Residual Heat Exchangers.

Examination schedule of the Steam Generators (HSS per N-716-1), utilizing ASME Code Case N-716-1, will be under Examination Category C-A and not under Examination Category R-A Table 2.1-3.

Examination schedule of the Residual Heat Exchangers, utilizing ASME Code Case N-716-1, will not be under Examination Category C-A, but under Examination Category R-A Table 2.1-3.

2.1.18 Examination Category C-B - Pressure Retaining Nozzle Welds In Vessels

Risk Informed Inservice Inspection utilizing ASME Code Case N-716-1 (approved through USNRC Regulatory Guide 1.147) will be implemented for Examination Category C-B requirements of the Steam Generators (HSS per N-716-1) and Residual Heat Exchangers.

Examination schedule of the Steam Generators (HSS per N-716-1), utilizing ASME Code Case N-716-1, will be under Examination Category C-B and not under Examination Category R-A Table 2.1-3.

Examination schedule of the Residual Heat Exchangers, utilizing ASME Code Case N-716-1, will not be under Examination Category C-B, but under Examination Category R-A Table 2.1-3.

2.1.19 Examination Category C-C - Welded Attachments for Vessels, Piping, Pumps and Valves

Examination Category C-C of the ASME Code Section XI, 2007 Edition through 2008 Addenda requires examination of welded attachments. For vessel attachments, Note (4) allows for multiple vessels of similar design, function, and service, only one welded attachment of only one of the multiple vessels shall be selected for examination. For single vessels, only one welded attachment shall be selected for examination. IP2 has two welded attachments on each Residual Heat Exchanger. One of the four Residual Heat Exchanger welded attachments is selected for examination or 25% of all vessel welded attachments.

For piping, pumps, and valves, inspection of 10% of the total population of welded attachments is required. Ten percent (10%) of all Piping Welded Attachments are selected for examination. IP2 does not have any Class 2 pump or valve welded attachments. The population of welded attachments contained in the ISI program has been evaluated and fifty-one have been identified to be associated with whip restraints or exempt piping. These fifty-one do not meet the criteria of Examination Category C-C, Note 1 or are located on exempt pipe and have been removed from the program. The total population of welded attachments contained in the ISI program is 190 components, however in accordance with Table IWC-2500-1, Note 5, the welded attachments that are required to be examined are the welded attachments associated with the supports selected for examination under class 2 supports; at IP2 28 welded attachments are associated with the class 2 supports. The population of welded attachments contained in the ISI program has been evaluated under Table IWC-2500-1, Note 5 criteria, therefore 3 welded attachments need to be examined.

The selection of these welded attachments for examination meets the requirements of Examination Category C-C Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.20 Examination Category C-F-1 - Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping

Risk Informed Inservice Inspection utilizing ASME Code Case N-716-1 (approved through USNRC Regulatory Guide 1.147) will be implemented for Examination Category C-F-1 requirements.

Examination of these welds will not be covered under Examination Category C-F-1, but under Examination Category R-A Table 2.1-3.

2.1.21 Examination Category C-F-2 - Pressure Retaining Welds in Carbon or Low Alloy Steel Piping

Risk Informed Inservice Inspection utilizing ASME Code Case N-716-1 (approved through USNRC Regulatory Guide 1.147) will be implemented for Examination Category C-F-2 requirements.

Examination of these welds will not be covered under Examination Category C-F-2, but under Examination Category R-A Table 2.1-3.

2.1.22 Examination Category C-H - All Pressure Retaining Components

The pressure testing program at IP2 meets the requirements of ASME Code, Section XI, 2007 Edition through 2008 Addenda for Class 2 systems. Details are contained in the pressure test program.

2.1.23 Examination Category D-A - Welded Attachments for Vessels, Piping, Pumps, and Valves

Examination Category D-A of the ASME Code Section XI, 2007 Edition through 2008 Addenda requires examination of welded attachments. For vessel attachments, Note (3) allows for multiple vessels of similar design, function, and service, the welded attachments of only one of the multiple vessels shall be selected for examination. Note 3 also requires that "All welded attachments selected for examination shall be those most subject to corrosion, as determined by the Owner, such as the welded attachments of the Service Water or Emergency Service Water systems." For single vessels, only one welded attachment shall be selected for examination. IP2 has two groups of multiple vessels and a single vessel with one welded attachment. One welded attachment is selected on one of the vessels for each group of vessels. In addition, one welded attachment on the single vessel is selected for examination. Three of the 9 vessel welded attachments are selected for examination or 33% of all vessel welded attachments.

For piping, pumps and valves, inspection of 10% of the total population of Welded Attachments is required. Ten percent (10%) of all Piping and Pump Welded Attachments are selected for examination. IP2 does not have any Class 3 valve welded attachments. The population of welded attachments contained in the ISI program has been evaluated and twenty-eight have been identified to be associated with whip restraints or exempt piping. These twenty-eight do not meet the criteria of Examination Category D-A, Note 1 or are located on exempt pipe and have been removed from the program.

The selection of these welded attachments for examination meets the requirements of Examination Category D-A Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.24 Examination Category D-B - All Pressure Retaining Components

The pressure testing program at IP2 meets the requirements of ASME Code, Section XI, 2007 Edition through 2008 Addenda for Class 3 systems. Details are contained in the pressure test program.

2.1.25 Examination Category E-A - Containment Surfaces

Examination Category E-A of the ASME Code Section XI, 2007 Edition through 2008 Addenda requires examination of Class MC "Metallic Containment" pressure-retaining components and their integral attachments, as well as, the metallic shell and penetration liners of Class CC "Concrete Containment" pressure-retaining components and their integral attachments.

IP2 will examine 100% of the accessible inside surface area (192 examinations) of the containment vessel each period and 100% of the moisture barriers (6 examinations) each inspection period.

Any identified Containment Surfaces Requiring Augmented Examinations will be examined in accordance with the requirements of Examination Category E-C, Item No. E4.11 and E4.12.

This meets the Examination Category E-A Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.26 Examination Category E-C - Containment Surfaces Requiring Augmented Examination

Indian Point Unit 2 currently has no Code required Augmented examinations identified.

2.1.27 Examination Category E-G - Pressure Retaining Bolting

Examination Category E-G of the ASME Code Section XI, 2007 Edition through Addenda requires examination of Class MC pressure retaining bolting.

IP2 has 18 bolted connections scheduled for examination during the interval (6 bolted connections each period).

This meets the Examination Category E-G Examination Requirements in the 2007 Edition through 2008 Addenda of Section XI.

2.1.28 Examination Category F-A - Supports

Examination Category F-A of the ASME Code Section XI, 2007 Edition through the 2008 Addenda requires 25% of Class 1 Piping Supports, 15% of Class 2 Piping Supports, and 10% of Class 3 Piping Supports to be examined during the inspection interval. For multiple components other than piping, within a system of similar design, function, and service, the supports of only one of the multiple components are required to be examined. The supports have been separated by type as defined in Note (1) to Examination Category F-A, This type has been added to the Item Number to clearly identify each support by type. Twenty-five percent (25%) of the Class 1 supports have been selected and are prorated by type and system. Fifteen percent (15%) of the Class 2 supports have been selected and are prorated by type and system. Ten percent (10%) of the Class 3 supports have been selected and are prorated by type and system. It was discovered that whip restraints, and supports on exempt piping had been included in the original fourth interval program. Whip restraints do not provide component support. Therefore the whip restraints and exempt supports have been removed.

For supports, other than piping supports, the components have been scheduled as follows:

Note (3) requires only one component of multiple components of similar design, function, and service, to be scheduled for inspection. IP2 scheduled the following supports:

- one Pressurizer Support;
- one of four Reactor Coolant Pump Supports;
- two of six Regenerative Heat Exchanger Supports;
- one of four Steam Generator Supports;
- one of two Containment Spray Pumps Supports;
- one of two RHR Pump Supports;
- two of four RHR Heat Exchanger Supports;

- one of three Safety Injection Pump Supports;
- one of two Auxiliary Feedwater Pump Supports (Electric);
- one Auxiliary Feedwater Pump Support (Turbine);
- one of two Component Cooling Water Heat Exchanger Supports;
- one of three Component Cooling Water Pump Supports;
- one Non Regenerative Heat Exchanger Support;
- one of six Service Water Pump Plate Supports;
- one of six Service Water Pump Motor Supports;
- one of six Service Water Pump Strainer Supports;

Eighteen of the fifty-three non-piping supports are selected for examination or 33% of all non-piping supports.

The selection of these components for examination meets the requirements of Examination Category F-A Examination Requirements in the ASME Code Section XI, 2007 Edition through 2008 Addenda.

2.1.29 Examination Category L-A - Concrete

Examination Category L-A of the ASME Code Section XI, 2007 Edition through 2008 Addenda requires examination of the reinforced concrete portions of Class CC "Concrete Containment" components. This inspection divides the containment into three areas. Inspections are conducted on the dome and the upper and lower sections of the cylinder.

IP2 last examined these areas in 2015 and will examine all accessible surface area every 5 years with exams scheduled in the second and third periods. Any identified "Suspect areas" will be examined in accordance with the requirements of Item L1.12.

The selection of these components for examination meets the requirements Examination Category L-A Examination Requirements in the ASME Code Section XI, 2007 Edition through 2008 Addenda of Section XI.

2.1.30 Examination Category R-A - Risk Informed Piping

The RI-ISI Program was approved for use during the Third 10-Year Interval via NRC Safety Evaluation Report (TAC No. MC0303). The RI-ISI Program was re-employed at IP2 during the 4th Ten-Year ISI Interval via Relief Request RR-05. This program was comprised of Class 1 (ASME Categories B-F and B-J) piping segments/elements with the exception of 8 (eight) reactor vessel nozzle-to-safe end welds required to be examined per ASME Code Case N-722-1 and N-770-1. The criteria for selection, examination method, examination coverage, and extent were based on EPRI report TR-112657.

The Risk Informed Program for the Fifth 10-Year Interval is based on ASME Code Case N-716-1 (approved for use per USNRC Regulatory Guide 1.147) Alternate Classification and Examination Requirements, Section XI, Division 1. This program will be utilized in lieu of the requirements of IWB-2420, IWB-2430, Table IWB-2500-1, Examination Categories B-F and B-J, IWC-2420, IWC-2430, and

Table IWC-2500-1 (excluding Examination Categories C-C and C-H), for inservice inspection of Class 1 piping welds or Class 2 components, IWB-2200 and IWC-2200 for preservice inspection of Class 1 piping welds or Class 2 components, or as additional requirements for Class 3 or Non-Class components. Periodic updates of the program are required on an ASME period basis. The update evaluates new information such as design changes, examination history, industry and plant events, PRA changes and operational changes for program impact. Changes to program selections must be evaluated against the N-716-1 selection criteria and potential impact on the program change-in-risk calculation.

SECTION 3.0

ATTACHMENTS

Attachment 3.1
Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
B-A	Pressure Retaining Welds in Reactor Vessel									
B-A	B1.11	Reactor Vessel Circumferential Shell Welds	Volumetric	3	3	100%	All Welds	0	0	3[1]
B-A	B1.12	Reactor Vessel Longitudinal Shell Welds	Volumetric	8	8	100%	All Welds	0	0	8[1]
B-A	B1.21	Reactor Vessel Circumferential Head Welds	Volumetric	2	2	100%	Accessible Length of All Welds	0	1	1[1]
B-A	B1.22	Reactor Vessel Meridional Head Welds	Volumetric	12	12	100%	Accessible Length of All Welds	0	6	6[1]
B-A	B1.30	Reactor Vessel Shell to Flange Weld	Volumetric	1	1	100%	Weld	0	0	1[1]
B-A	B1.40	Reactor Vessel Head to Flange Weld	Volumetric and Surface	1	1	100%	Weld	0	1	0
			Category Total	27	27			0	8	19[1]
Notes for Cat. B-A		Note 1: Examinations required for performance unless proposed Request for Relief for extension from 10 years to 20 years is approved by Nuclear Regulatory Commission.								
B-B	Pressure Retaining Welds in Vessels Other Than Reactor Vessels									
B-B	B2.11	Pressurizer Shell-to-Head Welds Circumferential	Volumetric	2	1	50%[2]	1 weld	0	0	1
B-B	B2.12	Pressurizer Shell-to-Head Welds Longitudinal	Volumetric	2	1	50%[2]	1 ft. (300 mm) of one weld per head	1	0	0
B-B	B2.40	Steam Generators (Primary Side) Tubesheet to Head Weld	Volumetric	4	1	25%[1]	1 Weld	0	1	0
B-B	B2.60	Heat Exchangers (Primary Side) - Shell Tubesheet-to-Head Welds[3][4]	Volumetric	6	0	0%[3]	0	0	0	0
B-B	B2.80	Heat Exchangers (Primary Side) - Shell Tubesheet-to-Shell Welds[3][4]	Volumetric	6	0	0%[3]	0	0	0	0
			Category Total	20	3			1	1	1

Attachment 3.1
Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
Notes for Cat. B-B		Note 1: The examination may be limited to one vessel among the group of vessels performing a similar function (Ref. Table IWB-2600-1, Examination Category B-B, Note 1). Note 2: Relief Request IP2-ISI-RR-01 was requested for approval which permits Welds PZRC5 (B2.11) & PZRL4 (B2.12) to be visually examined (VT-2) after each refueling outage in lieu of the Code required volumetric examination. This will be tracked via Pressure Testing Procedure PT-R75. Note 3: Implementation of ASME Code Case N-706-1, permits all B2.60 and B2.80 welds to be visually examined (VT-2) after each refueling outage in lieu of the Code required volumetric examination. This will be tracked via Pressure Testing Procedure PT-R75. Note 4: Implementation of ASME Code Case N-706-1 requires the Owner to evaluate industry experience to determine which heat exchanger designs or configurations have leaked. If any leakage is detected, it shall be corrected in accordance with IWA-4000. Use of this Case shall be discontinued for that heat exchanger (Regenerative Heat Exchangers) and others of the same design or configuration. The affected heat exchanger (Regenerative Heat Exchangers) and others of the same design or configuration shall be examined in accordance with IWB-2500 or IWC-2500 as applicable.								
B-D	Full Penetration Welded Nozzles in Vessels									
B-D[1]	B3.90	Reactor Vessel Nozzle-to-Vessel Welds	Volumetric	8	8	100%	All Nozzles	0	0	8[1]
B-D[1]	B3.100[5]	Reactor Vessel Nozzle Inside Radius Section	Volumetric[5]	8	8	100%	All Nozzles	0	0	8[1]
B-D	B3.120[2]	Pressurizer Nozzle Inside Radius Section	Volumetric or Visual	6	6	100%	All nozzles	3	0	3
B-D	B3.140[2]	Steam Generators (Primary Side) Nozzle Inside Radius Section	Volumetric or Visual	8	8	100%	All nozzles	0	4	4
B-D	B3.150	Heat Exchangers (Primary Side) Nozzle-to-Vessel Welds[3][4]	Volumetric	12	0	0%[3]	All Nozzles	0	0	0
B-D	B3.160	Heat Exchangers (Primary Side) Nozzle Inside Radius Section[3][4]	Volumetric	12	0	0%[3]	All Nozzles	0	0	0
			Category Total	54	30			3	4	23
Notes for Cat. B-D		Note 1: Examinations required for performance unless proposed Request for Relief for extension from 10 years to 20 years is approved by Nuclear Regulatory Commission. Note 2: These Item Numbers are from the 1998 Edition of Section XI as required by 10 CFR 50.55a(b)(xxi)(A). If visual examination is performed, the examination shall be in accordance with 10 CFR 50.55a(b)(xxi)(A) as defined in Section 1.4.2 of this program plan. Note 3: Implementation of ASME Code Case N-706-1, permits all B3.150 and B3.160 welds to be visually examined (VT-2) after each refueling outage in lieu of the Code required volumetric examination. This will be tracked via Pressure Testing Procedure PT-R75. Note 4: Implementation of ASME Code Case N-706-1 requires the Owner to evaluate industry experience to determine which heat exchanger designs or configurations have leaked. If any leakage is detected, it shall be corrected in accordance with IWA-4000. Use of this Case shall be discontinued for that heat exchanger (Regenerative Heat Exchangers) and others of the same design or configuration. The affected heat exchanger (Regenerative Heat Exchangers) and others of the same design or configuration shall be examined in accordance with IWB-2500 or IWC-2500 as applicable. Note 5: IP2 has adopted ASME Code Case N-648-1, which permits visual examination in place of a UT examination.								

Attachment 3.1
Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
B-F	Pressure Retaining Dissimilar Metal Welds in Vessel Nozzles (1)									
B-F	B5.10	Reactor Vessel NPS (DN 100) or Larger Nozzle-To-Safe End Butt Welds Hot Leg	Volumetric and Visual	4	0	100%	Same as for 1st Interval	0	0	0
B-F	B5.10	Reactor Vessel NPS (DN 100) or Larger Nozzle-To-Safe End Butt Welds Cold Leg	Volumetric and Visual	4	0	100%	Same as for 1st Interval	0	0	0
			Category Total	8	0			0	0	0
Notes for Cat. B-F		Note 1: These examinations are exempt from Code Case N-716-1 and are in accordance with Code Case N-722-1 and Code Case N-770-1 as required by 10 CFR 50.55a(g)(6)(ii)(E)(2) through (4) and 10 CFR 50.55a(g)(6)(ii)(F)(2) through (10). Tables are provided below for these Code Cases.								
B-G-1	Pressure Retaining Bolting, Greater Than 2 in. (50 mm) in Diameter									
B-G-1	B6.10	Reactor Vessel Closure Head Nuts	Visual, VT-1	54	54	100%	Same as for 1st Interval	18	0	36
B-G-1	B6.20	Reactor Vessel Closure Studs	Volumetric	54	54	100%	Same as for 1st Interval	18	0	36
B-G-1	B6.40	Reactor Vessel Threads in Flange	Volumetric	54	54	100%	Same as for 1st Interval	0	0	54
B-G-1	B6.50	Reactor Vessel Closure Washers, Bushings	Visual, VT-1	54	54	100%	Same as for 1st Interval	18	0	36
B-G-1	B6.180	Pumps Bolts and Studs	Volumetric	4	1	25% (2)	Same as for 1st Interval	0	0	1
B-G-1	B6.190	Pumps Flange Surface, when connection disassembled	Visual, VT-1	4	0 (1)(3)	0% (1)(3)	Same as for 1st Interval	0	0	0
B-G-1	B6.200	Pumps Nuts, Bushings, and Washers	Visual, VT-1	4	0 (1)(3)	0% (1)(3)	Same as for 1st Interval	0	0	0
			Category Total	228	217			54	0	163
Notes for Cat. B-G-1		Note 1: Not Required unless disassembled. Note 2: Volumetric examination of bolting for heat exchangers, pumps, or valves may be conducted on one heat exchanger, one pump, or one valve among a group of heat exchangers, pumps, or valves that are similar in design, type, and function. (Ref. Table IWB-2500-1, Examination Category B-G-1, Note 3). Note 3: For heat exchangers, piping, pumps, and valves, examinations are limited to components selected for examination under Examination Category B-B, B-L-2 or B-M-2. (Ref. Table IWB-2500-1, Examination Category B-G-1, Note 4).								
B-G-2	Pressure Retaining Bolting, 2in. (50 mm) and Less in Diameter									
B-G-2	B7.10	Reactor Vessel Bolts, Studs, and Nuts (CRD Housing)	Visual, VT-1	7	0	0%	Same as for 1st Interval (1)(2)(3)	0	0	0
B-G-2	B7.20	Pressurizer Bolts, Studs, and Nuts	Visual, VT-1	1	0	0%	Same as for 1st Interval (1)(2)(3)	0	0	0

Attachment 3.1
Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
B-G-2	B7.30	Steam Generator Bolts, Studs, and Nuts	Visual, VT-1	8	0	0%	Same as for 1st interval(1)(2)(3)	0	0	0
B-G-2	B7.50	Piping Bolts, Studs, and Nuts	Visual, VT-1	16	0	0%	Same as for 1st interval(1)(2)(3)(4)	0	0	0
B-G-2	B7.60	Pumps Bolts, Studs, and Nuts	Visual, VT-1	4	0	0%	Same as for 1st interval (1)(2)(3)(5)	0	0	0
B-G-2	B7.70	Valves Bolts, Studs, and Nuts	Visual, VT-1	17	0	0%	Same as for 1st interval (1)(2)(3)(6)	0	0	0
			Category Total	53	0			0	0	0
Notes for Cat. B-G-2		Note 1: Bolting is required to be examined only when a connection is disassembled or bolting is removed. Note 2: For vessels, pumps, and valves, examinations are limited to components selected for examination under Examination Categories B-B, B-L-2, and B-M-2 (Ref. Table IWB-2500-1, Examination Category B-G-2, Note 2). Note 3: Examination is only required once per interval. Note 4: Examination is limited to at least one piping flange in each group of piping flanges that are of the similar design, size, function, and service in the system. IP2 piping flanges are grouped into five groups in Table 2.1-1. Note 5: Only one pump of each group of pumps is required as outlined in B-L-2. Note 6: Only one valve of each group of valves is required as outlined in B-M-2.								
B-K	Welded Attachments for Vessels, Piping, Pumps, and Valves									
B-K	B10.10	Pressure Vessels Welded Attachments	Surface	1	1	100%	Same as for 1st interval	0	0	1
B-K	B10.20	Piping Welded Attachments	Surface	22	3	10%	Same as for 1st interval	1	2	0
B-K	B10.30	Pumps Welded Attachments	Surface	12	2	10%	Same as for 1st interval	0	0	2
			Category Total	35	6			1	2	3
B-L-2	Pump Casings									
B-L-2	B12.20	Pump Casing	Visual, VT-3	4	0	0%	Same as for first interval(1)(2)	0	0	0
			Category Total	4	0			0	0	0

Attachment 3.1
Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
Notes for Cat. B-L-2		Note 1: Examination is limited to at least one pump in each group of pumps performing similar functions in the system. Note 2: Examination is required only when a pump or valve is disassembled for maintenance, or repair. Examination of the internal pressure boundary shall include the internal pressure retaining surfaces made accessible for examination by disassembly. If a partial examination is performed and a subsequent disassembly of that pump or valve allows a more extensive examination, an examination shall be performed during the subsequent disassembly. A complete examination is required only once during the interval.								
B-M-2	Valve Bodies									
B-M-2	B12.50	Valve Body, Exceeding NPS 4 (DN 100)	Visual, VT-3	17	0	0%	Same as for first interval (1)(2)	0	0	0
			Category Total	17	0			0	0	0
Notes for Cat. B-M-2		Note 1: Examination is limited to at least one valve within each group of valves that are of the same size, constructural design (such as globe, gate, or check valves), manufacturing method, and that perform similar functions in the system. IP2 valves are grouped into four groups in Table 2.1-2. Note 2: Examination is required only when a pump or valve is disassembled for maintenance, or repair. Examination of the internal pressure boundary shall include the internal pressure retaining surfaces made accessible for examination by disassembly. If a partial examination is performed and a subsequent disassembly of that pump or valve allows a more extensive examination, an examination shall be performed during the subsequent disassembly. A complete examination is required only once during the interval.								
B-N-1	Reactor Vessel Interior									
B-N-1	B13.10	Reactor Vessel, Vessel Interior (B-N-1)	Visual, VT-3	1	3(1)	100%	Each inspection period	1	1	1
			Category Total	1	3(1)			1	1	1
Notes for Cat. B-N-1		Note 1: Examination of this item number is required each period. Therefore the number required during the interval is three times the total number of components. This is reflected in the category total.								
B-N-2	Welded Core Support Structures and Interior Attachments to Reactor Vessels									
B-N-2	B13.60	Reactor Vessel (PWR) Interior Attachments Beyond Beltline Region (B-N-2)	Visual, VT-3	1	1	100%	Same as for 1st interval	0	0	1(1)
			Category Total	1	1			0	0	1(1)
Notes for Cat. B-N-2		Note 1: Examinations required for performance unless proposed Request for Relief for extension from 10 years to 20 years is approved by Nuclear Regulatory Commission.								
B-N-3	Removable Core Support Structures									
B-N-3	B13.70	Reactor Vessel (PWR) Core Support Structure (B-N-3)	Visual, VT-3	2	2	100%	Same as for 1st interval	0	0	2(1)

Attachment 3.1
Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
			Category Total	2	2			0	0	2[1]
Notes for Cat. B-N-3		Note 1: Examinations required for performance unless proposed Request for Relief for extension from 10 years to 20 years is approved by Nuclear Regulatory Commission.								
B-O	Pressure Retaining Welds in Control Rod Drive and Instrument Nozzle Housings									
B-O	B14.20	Reactor Vessel (PWR) Welds in Control Rod Drive (CRD) Housing	Volumetric or Surface	28	3	10%	10% peripheral CRD housings [1]	0	0	3
			Category Total	28	3			0	0	3
Notes for Cat. B-O		Note 1: There are 28 Peripheral Control Rod Drive (CRD) Housings								
C-A	Pressure Retaining Welds in Pressure Vessels (Steam Generators HSS per N-716-1)									
C-A	C1.10	Pressure Vessels Shell Circumferential Welds	Volumetric	14	4	28.5%	Each inspection interval[1(a)]	1	1	2
C-A	C1.20	Pressure Vessels Head Circumferential Welds	Volumetric	6	2	33.3%	Each inspection interval[1(c)]	1	0	1
C-A	C1.30	Pressure Vessels Tubesheet-to-Shell Weld	Volumetric	4	1	25%	Each inspection interval[1(d)]	0	1	0
			Category Total	24	7			2	2	3
Notes for Cat. C-A		Note 1: The examination may be limited to one vessel among the group of vessels of similar design, size, and service (Ref. Table IWC-2500-1, Examination Category C-A, Note 3). Note 2: There are three vessel shell welds on four S/G therefore based on Note 1, 3 of 12 S/G vessel shell circumferential welds are required to be examined, and there is one vessel shell weld on each RHR HX or 1 of 2 for a total of 4 of 14 or %. Note 3: There is one circumferential head weld on four S/Gs therefore based on Note 1, 1 of the 4 S/G vessel head circumferential welds are required to be examined, and there is one circumferential head weld on each RHR HX or 1 of 2 required for a total of 2 of 6 or 33.3%. Note 4: There is one tubesheet-to-shell weld on four S/Gs, therefore based on Note 1, 1 of the 4 tubesheet-to-shell welds are required to be examined for 25%.								
C-B	Pressure Retaining Nozzle Welds in Vessels (Steam Generators HSS per N-716-1)									

Attachment 3.1
Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
C-B	C2.21	Nozzles Without Reinforcing Plate in Vessels > 1/2 in. (13mm) Nominal Thickness Nozzle-to-Shell (Nozzle to Head or Nozzle to Nozzle) Weld	Surface and Volumetric	8	2	25%[2]	Each inspection interval[1]	0	0	2
C-B	C2.22	Nozzles Without Reinforcing Plate in Vessels > 1/2 in. (13mm) Nominal Thickness Nozzle Inside Radius Section	Volumetric	4	1	25%[3]	Each inspection interval[1]	0	0	1
C-B	C2.31	Nozzles With Reinforcing Plate in Vessels > 1/2 in. (13mm) Nominal Thickness Reinforcing Plate Welds to Nozzle and Vessel	Surface	8	4	50%[4]	Each inspection interval[1]	2	2	0
C-B	C2.33	Nozzle-to-Shell (Nozzle to Head or Nozzle to Nozzle) Welds When Inside of Vessel Is Inaccessible	VT-2	4	2	50%[5]	Each inspection period[1]	[6]	[6]	[6]
			Category Total	24	9			2	2	3
Notes for Cat. C-B		Note 1: The examination may be limited to one vessel among the group of vessels of similar design, size, and service (Ref. Table IWC-2500-1, Examination Category C-B, Note 4). Note 2: There are two nozzles on 4 S/Gs; therefore based on Note 1, 2 of the 8 nozzles are required to be examined or 25%. Note 3: There is one nozzle inside radius section on 4 S/Gs; therefore based on Note 1, 1 of the 4 nozzle inside radius section is required to be examined or 25%. Note 4: There are 2 nozzles with 2 reinforcing plates on each of the two RHR HX, or 4 of 8 or 50% required. Note 5: There are 2 inaccessible nozzle-to-shell welds on each of the two RHR HX or 2 of 4 or 50% required. Note 6: The VT-2 examination is required each period as required by Category C-H.								
C-C	Welded Attachments for Vessels, Piping, Pumps, and Valves									
C-C	C3.10	Pressure Vessels Welded Attachments	Surface	4	1	25%[1][2][3]	Each identified occurrence and each inspection interval	0	0	1
C-C	C3.20	Piping Welded Attachments	Surface	190[4]	3	1.5%[3][4]	Each identified occurrence and each inspection interval	1	1	1
			Category Total	32	4			1	1	2

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Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
Notes for Cat. C-C		Note 1: For multiple vessels of similar design, function, and service, only one welded attachment of only one of the multiple vessels shall be selected for examination. For single vessels, only one welded attachment shall be selected for examination (Ref. Table IWC-2500-1, Examination Category C-C, Note 4). Note 2: There are two welded attachments on each Residual Heat Exchanger, therefore 1 of the 4 welded attachments is required to be examined for 25%. Note 3: Examination is required whenever component support member deformation is identified (Ref. Table IWC-2500-1, Examination Category C-C, Note 6). Note 4: IP2 has a total of 85 class 2 supports scheduled for examination in the fifth interval, 28 are welded attachments supports therefore in accordance with Table IWC-2500-1 Note (5), 10% of the Category F-A supports with welded attachments are required to be examined. The total population for Code Category C-C, C3.20 is 190 as such 1.5% requires examination.								
D-A	Welded Attachments for Vessels, Piping, Pumps, and Valves									
D-A	D1.10	Pressure Vessels Welded Attachments	Visual, VT-1	9	3	33%	Each identified occurrence and each inspection interval(1)(2)(3)	0	0	3
D-A	D1.20	Piping Welded Attachments	Visual, VT-1	156	21(1)	13%	Each identified occurrence and each inspection interval(1)(3)	8(1)	5(1)	8(1)
D-A	D1.30	Pumps Welded Attachments	Visual, VT-1	9	1	10%	Each identified occurrence and each inspection interval(3)(4)	0	0	1
			Category Total	174	25			8	5	12
Notes for Cat. D-A		Note 1: For multiple vessels of similar design, function, and service, the welded attachments of only one of the multiple vessels shall be selected for examination. For single vessels, only one welded attachment shall be selected for examination. All welded attachments selected for examinations shall be those most subject to corrosion, as determined by the Owner, such as welded attachments of the Service Water or Emergency Service water Systems. For welded attachments of piping, pumps, and valves, a 10% sample shall be selected for examination. This percentage sample shall be proportional to the total number of nonexempt welded attachments connected to the piping, pumps, and valves in each system subject to these examinations. Therefore additional piping welded attachments are scheduled. (Ref. Table IWD-2500-1, Examination Category D-A, Note 3). Note 2: There are two groups of multiple vessels (one with two vessels and one with six vessels) and one single vessel; therefore, 3 of the 9 are required to be examined for 33%. Note 3: Examination is required whenever component support member deformation is identified (Ref. Table IWD-2500-1, Examination Category D-A, Note 4). Note 4: There are two sets of pumps (6 Service Water Pumps and 3 Component Cooling Water Pumps). For welded attachments of piping, pumps, and valves, a 10% sample shall be selected for examination. This percentage sample shall be proportional to the total number of nonexempt welded attachments connected to the piping, pumps, and valves in each system subject to these examinations. Thus 1 Service Water Pump is required to be examined for 10%.								

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Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
E-A	Containment Surfaces									
E-A	E1.11	Containment Vessel Accessible Surface Areas	General Visual	192	576[1]	100%	100% During each Inspection Period	192	192	192
E-A	E1.12	Containment Vessel Wetted Surfaces of Submerged Areas	VT-3	0	0%	0%	100%	0	0	0
E-A	E1.30	Containment Vessel Moisture Barriers	General Visual	6	18[1]	100%	100% During each Inspection Period	6	6	6
			Category Total	198	594[1]			198	198	198
Notes for Cat. E-A	Note 1: Examination of this item number is required each period. Therefore, the number required during the interval is three times the total number of components. This is reflected in the category total.									
E-C	Containment Surfaces Requiring Augmented Examination									
E-C	E4.11	Containment Surface Areas Visible Surfaces	VT-1	0	0%	0%	100% of surface areas identified by IWE-1242[1]	0	0	0
E-C	E4.12	Containment Surface Areas Surface Area Grid Minimum Wall Thickness Location	Ultrasonic Thickness	0	0%	0%	100% of minimum wall thickness locations during each inspection period, established in accordance with IWE-2500(b)(3)[2] and IWE-2500(b)(4)[2]	0	0	0
			Category Total	0	0			0	0	0

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Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
Notes for E-C		Note 1: Containment surface areas requiring augmented examination are those identified in IWE-1240. Note 2: The extent of examination shall be 100% for each inspection period until the areas examined remain essentially unchanged for the next inspection period. Such areas no longer require augmented examination in accordance with IWE-2420(c).								
E-G	Pressure Retaining Bolting									
E-G	E8.10	Bolted Connections[1]	VT-1	18	18	100%	100% of each bolted connection [2]	6	6	6
			Category Total	18				6	6	6
Notes for E-G		Note 1: Examination shall include bolts, studs, nuts, bushings, washers, and threads in base material and flange ligaments between fastener holes. Note 2: Examination may be performed with the connection assembled and bolting in place under tension, provided the connection is not disassembled during the interval. If the bolted connection is disassembled for any reason during the interval, the examination shall be performed with the connection disassembled.								
F-A	Supports									
F-A	F1.10A	Class 1 Piping Supports - One Directional	Visual, VT-3	113	30	26.5%	Each inspection interval	6	13	11
	System									
	CVC			57	15	[1]		2	7	6
	RCS			37	10	[1]		2	5	3
	RHR			4	1	[1]		0	0	1
	SIS			15	4	[1]		2	1	1
F-A	F1.10B	Class 1 Piping Supports - Multi-directional	Visual, VT-3	89	24	26.9%	Each inspection interval	6	10	8
	System									
	CVC			62	16	[1]		1	7	8
	RCS			14	4	[1]		4	0	0
	SIS			13	4	[1]		1	3	0
F-A	F1.10C	Class 1 Piping Supports - Thermal Movement	Visual, VT-3	81	23	28.3%	Each inspection interval	6	7	10
	System									
	CVC			33	9	[1]		2	4	3
	RCS			22	6	[1]		2	1	3
	RHR			5	2	[1]		0	1	1
	SIS			21	6	[1]		2	1	3
F-A	F1.10	Total Class 1 Piping Supports	Visual, VT-3	283	77	25%[1]	Each inspection interval	18	30	29
F-A	F1.20A	Class 2 Piping Supports - One Directional	Visual, VT-3	245	40	16.3%	Each inspection interval	11	14	15

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Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
	System									
	AFW			3	1	(1)		0	0	1
	BFD			11	2	(1)		0	1	1
	CVC			1	1	(1)		0	0	1
	HIS			45	7	(1)		0	3	4
	MS			31	5	(1)		2	3	0
	RHR			20	3	(1)		1	0	2
	SIS			134	21	(1)		8	7	6
F-A	F1.20B	Class 2 Piping Supports - Multi-directional	Visual, VT-3	117	21	17.9%	Each inspection interval	8	3	10
	System									
	BFD			13	2	(1)		1	0	1
	CVC			1	1	(1)		0	0	1
	HIS			46	7	(1)		3	3	1
	MS			18	3	(1)		1	0	2
	RHR			6	3	(1)		3	0	0
	SIS			33	5	(1)		0	0	5
F-A	F1.20C	Class 2 Piping Supports - Thermal Movement	Visual, VT-3	133	24	18%	Each inspection interval	5	7	12
	System									
	AFW			4	1	(1)		0	0	1
	BFD			8	2	(1)		1	1	0
	CVC			1	1	(1)		0	1	0
	HIS			19	3	(1)		0	0	3
	MS			35	6	(1)		1	3	2
	RHR			19	3	(1)		2	1	0
	SIS			47	8	(1)		1	1	6
F-A	F1.20	Total Class 2 Piping Supports	Visual, VT-3	495	85	16%(1)	Each inspection interval	24	24	37
F-A	F1.30A	Class 3 Piping Supports - One Directional	Visual, VT-3	235	27	11.4%	Each inspection interval	9	4	14
	System									
	ACS			1	1	(1)		0	0	1
	AFW			33	4	(1)		0	1	3
	CCW			114	12	(1)		5	3	4
	CVC			1	1	(1)		0	0	1
	SW			86	9	(1)		4	0	5
F-A	F1.30B	Class 3 Piping Supports - Multi-directional	Visual, VT-3	189	21	11.1%	Each inspection interval	3	8	10
	System									
	AFW			7	1	(1)		0	0	1
	CCW			51	6	(1)		2	2	2

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Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
	SW			131	14	(1)		1	6	7
F-A	F1.30C	Class 3 Piping Supports - Thermal Movement	Visual, VT-3	51	6	11.7%	Each inspection interval	0	5	1
	System									
	ACS			7	1	(1)		0	1	0
	AFW			8	1	(1)		0	1	0
	CCW			17	2	(1)		0	1	1
	SW			19	2	(1)		0	2	0
F-A	F1.30	Total Class 3 Piping Supports	Visual, VT-3	475	54	10%(1)	Each inspection interval	12	17	25
F-A	F1.40B	Supports other than Piping Supports	Visual, VT-3	15	5	33.3%		0	0	5
	System									
	CVC			6	2			0	0	2
	RCS			9	3			0	0	3
F-A	F1.40C	Supports other than Piping Supports	Visual, VT-3	11	5	45.4%		1	0	4
	System									
	RHR			6	3			1	0	2
	SIS			5	2			0	0	2
F-A	F1.40D	Supports other than Piping Supports	Visual, VT-3	31	14	45.1%		0	1	13
	System									
	AFW			3	2			0	1	1
	CCW			6	2			0	0	2
	SW			18	6			0	0	6
	N/A			4	4			0	0	4
F-A	F1.40	Supports other than Piping Supports (Class 1,2,3, and MC)	Visual, VT-3	57	24	42.1%	Each inspection interval(2)(3)	1	1	22
			Category Total	1310	240			56	72	113

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Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
Notes For Cat. F-A		Note 1: The total percentage sample shall be comprised of supports from each system, where the individual sample sizes are proportional to the total number of non-exempt supports of each type and function within each system (Ref. Table IWF-2500-1, Examination Category F-A, Note 2). Total may exceed percentage requirements to allow selection of at least one support of every type and system. Note 2: For multiple components other than piping, within a system of similar design, function, and service, the supports of only one of the multiple components are required to be examined (Ref. Table IWF-2500-1, Examination Category F-A, Note 3). Note 3: 1 Pressurizer Support, 1 of 4 Reactor Coolant Pump Supports, 2 of 6 Regenerative Heat Exchanger Supports, 1 of 4 Steam Generator Supports, 1 of 2 Containment Spray Pump Supports, 1 of 2 Residual Heat Removal Pump Supports, 2 of 4 Residual Heat Removal Heat Exchanger Supports, 1 of 3 Safety Injection Pump Supports, 1 of 2 Auxiliary Feedwater Pump Supports (Electric), 1 of 2 Component Cooling Water Heat Exchangers Supports, 1 of 5 Recirculation Fan Cooler Supports, 1 of 6 Service Water Pump Supports, 1 of 3 Component Cooling Water Pump Supports, 1 Auxiliary Feedwater Pump Supports (Turbine), 1 of 2 Spent Fuel Pump Supports and 1 of 6 Service Water Pump Strainer Supports. Additionally there are 4 CRDM supports, with 4 of 4 required. 24 of the 57 non piping supports are selected for examination or 42.1% of all non-piping supports.								
L-A	Concrete									
L-A	L1.11	All accessible surface areas	General Visual	48	96[1]	100%	IWL-2410	0	48	48
L-A	L1.12	Suspect areas	Detailed Visual	0	0	100%	IWL-2410	0	0	0
			Category Total	48	96[1]			0	48	48
Notes for Cat. L-A		Note 1: IWL-2410 requires 100% examination every 5 years. Therefore the number required during the interval is twice the total number of components. This is reflected in the category total.								
R-A	Risk Informed Piping and Component Welds									
R-A	R1.10	High Safety Significant Piping Structural Elements				(1)				
R-A	R1.11	Elements Subject to Thermal Fatigue	Volumetric	122	31	(1)	Each inspection interval	11	8	12
R-A	R1.11s	Elements Subject to Thermal Fatigue (socket welds of any size and branch connections NPS 2 or smaller)	Visual VT-2 of fitting and Volumetric of base metal in piping	3	3	(1)	Each inspection interval[3]	0	3	0
R-A	R1.12	Not Used								

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Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
R-A	R1.13	Elements Subject to Erosion-Cavitation	Volumetric	N/A	N/A	(1)	Each inspection interval	N/A	N/A	N/A
R-A	R1.14	Elements Subject to Crevice Corrosion Cracking	Volumetric	N/A	N/A	(1)	Each inspection interval	N/A	N/A	N/A
R-A	R1.15	Elements Subject to Primary Water Stress Corrosion Cracking (PWSCC)	Volumetric	N/A	N/A	(1)(2)	Each inspection interval	N/A	N/A	N/A
R-A	R1.16	Welds Subject to Intergranular or Transgranular Stress Corrosion Cracking (IGSCC or TGSCC)	Volumetric	12	5	(1)	Each inspection interval	3	2	0
R-A	R1.16s	Welds Subject to Intergranular or Transgranular Stress Corrosion Cracking (IGSCC or TGSCC) (socket welds of any size and branch connections NPS 2 or smaller)	Visual, VT-2	5	2	(1)	(4)	N/A	N/A	N/A
R-A	R1.17	Elements Subject to Localized Corrosion [Microbiologically-Influenced Corrosion (MIC) or Pitting]	Visual, VT-3 Internal Surfaces or Volumetric	N/A	N/A	(1)	Each inspection interval	N/A	N/A	N/A
R-A	R1.18	Elements Subject to Flow Accelerated Corrosion (FAC)	Owner's Existing Program	N/A	N/A	(1)	Each inspection interval	N/A	N/A	N/A
R-A	R1.19	Elements Subject to External Chloride Stress Corrosion Cracking (ECSCC)	Surface	N/A	N/A	(1)	Each inspection interval	N/A	N/A	N/A
R-A	R1.20	Elements not Subject to a Degradation Mechanism	Volumetric	460	37	(1)	Each inspection interval	3	115	19
R-A	R1.20s	Elements not Subject to a Degradation Mechanism (socket welds of any size and branch connections NPS 2 or smaller)	Visual, VT-2	434	28	(1)	(4)	N/A	N/A	N/A
			Category Total	1036	106			17(5)	28(5)	31(5)

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Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
Notes for Cat. R-A		Note 1: The selections are based on the requirements of Code Case N-716-1 and not by Code Item Number. Note 2: Item R1.15 is only used when multiple damage mechanisms including PWSCC is at a location. PWSCC is addressed by NRC required Code Cases N-722-1, N-729-1 and N-770-1 and not Code Case N-716-1. Note 3: Volumetric of base metal is once an interval, the Visual, VT-2 of the fitting is conducted in accordance with Categories B-P, C-H or D-B, as applicable to the component ASME classification. Note 4: The Visual, VT-2 is conducted in accordance with Categories B-P, C-H or D-B, as applicable to the component ASME classification. Note 5: Period totals do not include Visual, VT-2 only exams.								
Code Case N-722-1		Additional Examinations for PWR Pressure Retaining Welds In Class 1 Components Fabricated With Alloy 600/82/182 Materials [1]								
N-722-1	B15.60	RPV Bottom-Mounted Instrument Penetrations	Visual, VE[2]	1	3[3]	100%	Every other refueling outage	1	1	1
N-722-1	B15.90	Reactor Vessel Hot Leg Nozzle-to-Pipe Connections	Visual, VE[2]	4	20[4]	100%	Each refueling outage	4	8	8
N-722-1	B15.95	Reactor Vessel Cold Leg Nozzle-to-Pipe Connections	Visual, VE[2]	4	4[5]	100%	Once per interval	0	4	0
			Category Total	9	27[3][4]			5	13	9
Notes for Cat. N-722-1		Note 1: These examinations are in accordance with Code Case N-722-1 as required by 10 CFR 50.55a(g)(6)(ii)(E)(2) through (4). Note 2: An ultrasonic examination from either the ID or the OD in accordance with the requirements of Appendix VIII shall be acceptable in lieu of the Visual, VE. Note 3: Examination of this item number is required every other outage. Therefore, the number required during the interval is two times the total number of components. This is reflected in the category total. Note 4: Examination of this item number is required each refueling outage. Therefore, the number required during the interval is five times the total number of components. This is reflected in the category total. Visual, VE examinations required for Code Case N-722-1 of the 4 Reactor Vessel Hot Leg Nozzle-to-Pipe Connections consisting of Alloy 600/82/182 Material are performed under ASME Code Case N-770-1 Category Table 1 Item No. A-2. Note 5: Examination of this item is required once per interval. VE examinations required for Code Case N-722-1 of the 4 Reactor Vessel Cold Leg Nozzle-to-Pipe Connections consisting of Alloy 600/82/182 Material are performed under ASME Code Case N-770-1 Category Table 1 Item B.								
Code Case N-729-1		Alternative Examination Requirements for PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds [1]								
N-729-1	B4.10	Reactor Vessel Upper Head with UNS N06600 nozzles and UNS N06082 or UNS W86182 Partial Penetration Welds	Visual, VE	1	5[2]	100%	Each refueling outage	1	2	2
N-729-1	B4.20	Reactor Vessel Upper Head UNS N06600 nozzles and UNS N06082 or UNS W86182 partial-penetration welds in head	Volumetric/ Surface	1	5[2]	100%	Each refueling outage	1	2	2
			Category Total	2	10[2][3]			2	4	4

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Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
Notes for Cat. N-729-1		Note 1: These examinations are in accordance with Code Case N-729-1 as required by 10 CFR 50.55a(g)(6)(ii)(D)(2) through (6). Note 2: Examination of this item number is required each outage. Therefore, the number required during the interval is five times the total number of components. This is reflected in the category total. Note 3: Examination of this item is required each outage. Therefore, the number required during the interval is five times the total number of components. This is also reflected in the category total.								
Code Case N-770-1		Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated With UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities[1]								
N-770-1 (B-F)	A-2 (B5.10)	Reactor Vessel Unmitigated Hot Leg Welds A-2	Volumetric	4	12[3]	100%	Every five years	4	4	4
N-770-1 (B-F)	A-2 (B5.10)	Reactor Vessel Unmitigated Hot Leg Welds A-2	Visual, VE[2]	4	20[2][4]	100%	Each refueling outage	4	8	8
N-770-1 (B-F)	B (B5.10)	Reactor Vessel Unmitigated Cold Leg Welds B	Volumetric	4	4[5]	100%	Every second inspection period not to exceed seven years	0	4	0
N-7701 (B-F)	B (B5.10)	Reactor Vessel Unmitigated Cold Leg Welds B	Visual, VE[2]	4	4[2]	100%	Once per interval	0	4	0
			Category Total	16	40			8	20	12
Notes for CC N-770-1		Note 1: These examinations are in accordance with Code Case N-770-1 as required by 10 CFR 50.55a(g)(6)(ii)(F)(2) through (10). Note 2: An ultrasonic examination from either the ID or the OD in accordance with the requirements of Appendix VIII shall be acceptable in lieu of the Visual, VE. Code Case N-722-1 and Code Case N-770-1 visual examinations should be scheduled at the same time. Note 3: Examination of this item number is required every five years. Therefore, the number required during the interval is 3 times the total number of components based on 24 month refueling cycle. This is reflected in the category total. Note 4: Examination of this item number is required each refueling outage. Therefore, the number required during the interval is 5 times the total number of components. This is reflected in the category total. Visual, VE examinations performed under N-770-1 Item No. A-2 additionally credited for ASME Code Case N-722-1 Item No. B15.90. Note 5: Examination of this item number is required every seven years. Therefore, the number required during the interval is 1 time the total number of components. This is reflected in the category total. Visual, VE examinations performed under N-770-1 Item No. B additionally credited for ASME Code Case N-722-1 Item No. B15.95.								
MRP-146 Rev 1		Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines[1]								
N/A	Line 98	MRP 146 configuration H	Volumetric	1	5[2][4]	100%	Each refueling outage	1	2	2
N/A	Line 96	MRP 146 configuration H	Visual VT-2	1	5[2][4]	100%	Each refueling outage	1	2	2
			Category Total	2	10[2][4]			2	4	4
N/A	Line 82	MRP 146 configuration DH	Volumetric	1	2[3][4]	100%	Every other refueling outage	0	1	1

Attachment 3.1
Table 2.1-3
IP2 Code Category Summary

Category	Item Number	Description	Exam Method	Number of Components in Item No.	Required to be Examined During Interval	Examination Percentage Required	Number to be Examined in Interval	Number to be Examined in First Period	Number to be Examined in Second Period	Number to be Examined in Third Period
N/A	Line 82	MRP 146 configuration DH	Visual VT-2	1	2[3][4]	100%	Every other refueling outage	0	1	1
N/A	Line 83	MRP 146 configuration DH	Volumetric	1	2[3][4]	100%	Every other refueling outage	0	1	1
N/A	Line 83	MRP 146 configuration DH	Visual VT-2	1	2[3][4]	100%	Every other refueling outage	0	1	1
N/A	Line 84	MRP 146 configuration DH	Volumetric	1	2[3][4]	100%	Every other refueling outage	0	1	1
N/A	Line 84	MRP 146 configuration DH	Visual VT-2	1	2[3][4]	100%	Every other refueling outage	0	1	1
			Category Total	6	12[3][4]			0	6	6
Notes for MRP-146		Note 1: These examinations are in accordance with MRP-146 Rev 1 Guideline. Note 2: Examination of this item number is required each refueling outage. Therefore, the number required during the interval is 5 times the total number of components. This is reflected in the category total. Note 3: Examination of this item number is required every other outage. Therefore, the number required during the interval is two times the total number of components. This is reflected in the category total. Note 4: The ISI program will track and monitor the MRP-146 Rev 1 Inspections.								
Socket Welds		License Renewal Commitment #46 (LO-LAR-2011-0174 CA 65) Socket Weld Examination								
R-A	R1.11s	Elements Subject to Thermal Fatigue (socket welds of any size and branch connections NPS 2 or smaller)	Volumetric[1]	3	3	100%	Each Interval	0	3	0
R-A	R1.16s	Welds Subject to Intergranular or Transgranular Stress Corrosion Cracking (IGSCC or TGSCC) (socket welds of any size and branch connections NPS 2 or smaller)	Volumetric[1]	5	5	100%	Each Interval	2	0	3
R-A	R1.20s	Elements not Subject to a Degradation Mechanism (socket welds of any size and branch connections NPS 2 or smaller)	Volumetric[1]	17	17	100%	Each Interval	5	6	6
			Category Total	25	25			7	9	9
Notes for Socket Welds		Note 1: Volumetric weld metal inspections of socket welds shall be performed. In lieu of volumetric examinations, destructive examinations may be performed, where one destructive examination may be substituted for two volumetric examinations.								