



10 CFR 50.55a

LR-N18-0023

**FEB 12 2018**

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

Hope Creek Generating Station  
Renewed Facility Operating License No. NPF-57  
NRC Docket No. 50-354

Subject: Inservice Inspection (ISI) Program Plan and Snubber Program Plan for  
Hope Creek, Fourth Ten-Year Interval and Containment ISI (CISI)  
Program Plan for Hope Creek Third Ten-Year Interval

PSEG Nuclear LLC (PSEG) has updated the Hope Creek Generating Station (HCGS) Inservice Inspection (ISI) Program Plan for the fourth 10-year interval, in accordance with American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section XI requirements and 10CFR50.55a(g)(4). In accordance with the ASME Boiler and Pressure Vessel (B&PV) Code, Section XI, IWA-1400(c), "Owner's Responsibility," a copy of the Fourth Ten-Year (ISI) Program and the Third Ten-Year Interval Containment ISI (CISI) Program for HCGS is attached as Enclosure 1 for your information. Also, in accordance with (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code), Subsection ISTA-3200(a), "Administrative Requirements," attached as Enclosure 2 for your information is the Snubber Program Plan for the HCGS Fourth Ten-Year ISI Interval. The Fourth 10-year ISI interval (3<sup>rd</sup> CISI Interval) for HCGS is effective from December 13, 2017 through December 31, 2026.

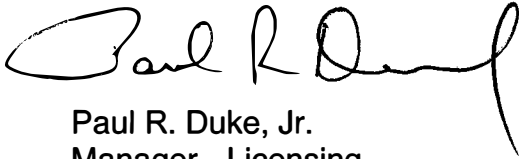
FEB 12 2018

Page 2  
LR-N18-0023

10 CFR 50.55a

There are no regulatory commitments contained within this letter. Should you have any questions concerning this matter, please contact Mr. Lee Marabella at 856-339-1208.

Sincerely,



Paul R. Duke, Jr.  
Manager - Licensing

Enclosures:

1. Hope Creek Generating Station ISI Program Plan, Revision 0, Fourth Ten-Year Inspection Interval (includes CISI Program Plan Third Ten-Year Inspection Interval) (Plan attachments not included)
2. Hope Creek Nuclear Generating Station Snubber Program Plan, Revision 0, Fourth ISI Ten-Year Inspection Interval

cc: Mr. David C. Lew, Administrator, Region I, NRC  
Mr. Justin Hawkins, NRC Senior Resident Inspector - Hope Creek  
Ms. Carleen J. Parker Project Manager, Hope Creek, USNRC  
Mr. Patrick Mulligan, Chief NJ Bureau of Nuclear Engineering /Manager IV  
Mr. Lee Marabella, Corporate Commitment Tracking Coordinator  
Mr. Tom MacEwen, Hope Creek Commitment Tracking Coordinator

LR-N18-0023

Enclosure 1

Hope Creek Nuclear Generating Station  
ISI Program Plan  
Revision 0  
Fourth Ten-Year Inspection Interval  
(Includes CISI Program Plan Third Ten-Year Inspection Interval)



## **HOPE CREEK GENERATING STATION**

# **ISI PROGRAM PLAN FOURTH TEN-YEAR INSPECTION INTERVAL**

**Commercial Service Date:**

**12/20/86**

**Hope Creek Generating Station  
End of Buttonwood Road  
Hancocks Bridge, NJ 08038**

**PSEG Nuclear (PSEG), LLC  
P.O. Box 236  
Hancocks Bridge, NJ 08038**

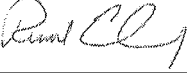
## REVISION APPROVAL SHEET

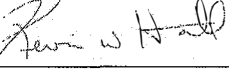
TITLE: HOPE CREEK INSERVICE INSPECTION (ISI) PROGRAM PLAN FOURTH  
TEN-YEAR INSPECTION INTERVAL

DOCUMENT: ISI-HC-LTP4-PLAN REVISION: 0


### PREPARED TRANSMITTAL


PREPARED:  9/15/2017  
Gary Park  
Iddeal Solutions LLC, Sr. Programs Engineer

REVIEWED:  9/15/2017  
Russ Day  
Iddeal Solutions LLC, Sr. Programs Engineer

APPROVED:  9/15/2017  
Kevin Hall  
Iddeal Solutions LLC, Engineering Programs Director

### PSEG ACCEPTANCE

Reviewed:  11-29-17  
Donnamarie Bush  
ISI Program Manager

APPROVED:  11/29/2017  
Tim Giles  
ISI Program Manager

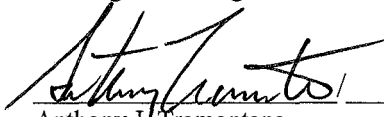
## REVISION APPROVAL SHEET

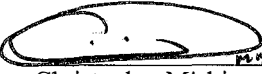
TITLE:       ISI Program Plan  
              Fourth Ten-Year Inspection Interval  
              Hope Creek Generating Station

DOCUMENT:                 ISI-HC-LTP4-PLAN                                REVISION:         0      

### PSEG PROGRAM ACCEPTANCE

REVIEWED:  11/29/2017  
              Tim Giles  
              ISI Program Manager

APPROVED:  11/30/17  
              Anthony J. Tramontana  
              Hope Creek Engineering Programs Manager

REVIEWED:  12/5/2017  
              Christopher Miskin  
              Authorized Nuclear Inservice Inspector (ANII)

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

## REVISION CONTROL SHEET

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

Revision	Date	Revision Summary
0	12/13/17	Initial issuance: ISI Program Plan was updated by Iddeal Solutions LLC to incorporate the 2007 Edition through the 2008 Addenda for the ISI Fourth and CISI Third Intervals.  Prepared: G. Park    Reviewed: R. Day    Approved: K. Hall

Notes:

1. This ISI Program Plan (Sections 1 - 9 inclusive) is controlled by the Hope Creek Generating Station, Engineering Programs Group.
2. Revision 0 of this document was issued as the Fourth Interval ISI Program Plan and the Third Interval CISI Program Plan which will be submitted to the USNRC. Future revisions of this Plan document made within the Fourth ISI Interval will be maintained and controlled at the station; however they are not required to be submitted to the USNRC. All new or revised Requests for Alternatives or Relief Requests are submitted separately from this ISI Plan to the USNRC for safety evaluation and approval.

## REVISION SUMMARY

Section	Effective Pages	Revision	Date
Preface	i to vii	0	12/13/17
1.0	1-1 to 1-16	0	12/13/17
2.0	2-1 to 2-110	0	12/13/17
3.0	3-1 to 3-2	0	12/13/17
4.0	4-1 to 4-2	0	12/13/17
5.0	5-1 to 5-3	0	12/13/17
6.0	6-1 to 6-9	0	12/13/17
7.0	7-1 to 7-17	0	12/13/17
8.0	8-1 to 8-2	0	12/13/17
9.0	9-1 to 9-5	0	12/13/17
Attachments			
A	1 - 45	0	12/13/17
B	1 - 61	0	12/13/17
C	1 - 2	0	12/13/17
SPT	1 - 29	0	12/13/17
IWE	1 - 203	0	12/13/17
RR	1 - 60	0	12/13/17



## TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
1.0	INTRODUCTION AND BACKGROUND .....	1-1
1.1	Introduction	
1.2	Background	
1.3	First Interval ISI Program	
1.4	Second Interval ISI Program	
1.5	Third Interval ISI Program	
1.6	Fourth Interval ISI Program	
1.7	First Interval CISI Program	
1.8	Second Interval CISI Program	
1.9	Third Interval CISI Program	
1.10	Code of Federal Regulations 10 CFR 50.55a Requirements	
1.11	Code Cases	
1.12	Relief Requests	
2.0	BASIS FOR INSERVICE INSPECTION PROGRAM .....	2-1
2.1	ASME Section XI Examination Requirements	
2.1.1	ASME Section XI Code Cases	
2.1.2	Snubber Program OM Code Cases	
2.2	Augmented Examination Requirements	
2.3	System Classifications and P&ID Boundary Diagrams	
2.4	ISI Isometric and Component Diagrams for Nonexempt ISI Class Components/Supports and Calibration Standards	
2.5	Technical Approach and Positions	
3.0	COMPONENT ISI PLAN .....	3-1
3.1	Nonexempt ISI Class Components	
3.2	Risk-Informed Examination Requirements	
3.3	ISI Class 1 Piping Size Exemption for Water and Steam	
4.0	SUPPORT ISI PLAN .....	4-1
4.1	Nonexempt ISI Class Supports	
4.2	Snubber Examination and Testing Requirements	
5.0	SYSTEM PRESSURE TESTING ISI PLAN .....	5-1
5.1	Non-exempt ISI Class Systems	
5.2	Risk-Informed Examination of Socket Welds	
5.3	System Pressure Test Boundary Diagrams	
6.0	CONTAINMENT ISI PLAN .....	6-1
6.1	Class MC Components	
6.2	Augmented Examination Areas	
6.3	Component Accessibility	
6.4	Responsible Individual	
6.5	IWE Isometric and Component Drawings	

**TABLE OF CONTENTS (Continued)**

SECTION	DESCRIPTION	PAGE
7.0	COMPONENT SUMMARY TABLES .....	7-1
7.1	Inservice Inspection Summary Tables	
8.0	RELIEF REQUESTS .....	8-1
9.0	REFERENCES.....	9-1
9.1	USNRC References	
9.2	Industry References	
9.3	Licensee References	
9.4	License Renewal References	

ATTACHMENTS	DESCRIPTION
-------------	-------------

A - HOPE CREEK INSERVICE INSPECTION (ISI) LONG TERM PLAN FOURTH TEN-YEAR INSPECTION INTERVAL - ISI CLASS 1 (A) FIGURE DIAGRAMS

B - HOPE CREEK INSERVICE INSPECTION (ISI) LONG TERM PLAN FOURTH TEN-YEAR INSPECTION INTERVAL - ISI CLASS 2 (B) FIGURE DIAGRAMS

C - HOPE CREEK INSERVICE INSPECTION (ISI) LONG TERM PLAN FOURTH TEN-YEAR INSPECTION INTERVAL - ISI CLASS 3 EXAMINATION (C) DIAGRAMS

SPT - HOPE CREEK INSERVICE INSPECTION (ISI) LONG TERM PLAN FOURTH TEN-YEAR INSPECTION INTERVAL - ISI SYSTEM PRESSURE TEST BOUNDARY DIAGRAMS

IWE - HOPE CREEK CONTAINMENT INSERVICE INSPECTION (CISI) LONG TERM PLAN FOURTH TEN-YEAR INSPECTION INTERVAL – (E) DIAGRAMS

RR- HOPE CREEK INSERVICE INSPECTION (ISI) RELIEF REQUESTS AND SAFETY EVALUATION FOR FOURTH TEN-YEAR INSPECTION INTERVAL

---

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

---

**TABLE OF CONTENTS (Continued)**

TABLES	DESCRIPTION	PAGE
1.1-1	Fourth ISI Interval/Period/Outage Matrix .....	1-3
1.1-2	Third CISI Interval/Period/Outage Matrix .....	1-4
1.10-1	Code of Federal Regulations 10 CFR 50.55a Requirements .....	1-10
2.3-1	Inservice Inspection Boundary Diagrams .....	2-38
2.3-2	Components, Piping and Supports Subject To Examination.....	2-39
2.4-1	ISI Isometric and Component Diagrams .....	2-92
2.4-2	Nondestructive Examination Calibration Standards.....	2-105
2.5-1	Technical Approach and Positions Index .....	2-108
5.3-1	System Pressure Test Diagrams .....	5-3
6.5-1	CISI Reference Diagrams .....	6-3
7.1-1	Inservice Inspection Summary Table .....	7-4
7.1-2	Inservice Inspection Summary Table Program Notes .....	7-16
8.0-1	Relief Request Index .....	8-2

## **1.0 INTRODUCTION AND BACKGROUND**

### **1.1 Introduction**

This Inservice Inspection (ISI) Program Plan details the requirements for the examination and testing of ISI Class 1, 2, 3, and MC pressure retaining components, supports, and containment structures at Hope Creek Generating Station (HCGS). This ISI Program Plan also includes Containment Inservice Inspection (CISI), Risk-Informed Inservice Inspection (RISI), Augmented Inservice Inspection (AUG), Snubber Visual Examination and Functional Testing (SNUB), and System Pressure Testing (SPT) requirements imposed on or committed to by Hope Creek Generating Station (HCGS).

The ISI Program Plan is also credited for License Renewal (Ref. 9.4)

- ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD (**Section 2.2.7**)
- Reactor Head Closure Studs (**Section 2.2.8**)
- BWR Vessel ID Attachment Welds (**Section 2.2.9**)
- BWR Feedwater Nozzle (**Section 2.2.10**)
- BWR Control Rod Drive Return Line Nozzle (**Section 2.2.11**)
- BWR Stress Corrosion Cracking (**Section 2.2.12**)
- BWR Penetrations (**Section 2.2.13**)
- BWR Vessel Internals (**Section 2.2.14**)
- Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) (**Section 2.2.15**)
- One Time Inspection (**Section 2.2.16**)
- ASME Section XI, Subsection IWE (**Section 2.2.17**)
- ASME Section XI, Subsection IWF (**Section 2.2.18**)
- Small-Bore Class 1 Piping Inspection (**Section 2.2.19**)
- Reactor Pressure Vessel Circumferential Weld Examination Relief (**Section 2.2.20**)

At HCGS, the Inservice Testing (IST) Program is maintained and implemented separately from the ISI Program. The IST Basis Document and Program Plan contain all applicable inservice testing requirements.

The Fourth ISI Interval for HCGS is effective from December 13, 2017 through December 31, 2026. With the update to the ISI Program for the Fourth ISI Interval for ISI Class 1, 2, and 3 components, including their supports, PSEG Nuclear, LLC (PSEG) has also elected to update the CISI Program to its Third CISI Interval for ISI Class MC components at the same time. This update will enable all of the ISI and CISI Program components / piping structural elements (elements) to be based on the same effective Edition and Addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI, as well as share a common interval start and end date. The common ASME Code of Record for the Fourth ISI Interval and the Third CISI Interval is the 2007 Edition through the 2008 Addenda. This ISI Program Plan is

controlled and revised in accordance with the requirements of procedure ER-AA-330, "Conduct of Inservice Inspection Activities," which implements the ASME Section XI ISI Program.

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

The Fourth ISI Interval and the Third CISI Interval are divided into three inspection periods as determined by calendar years within the intervals. Tables 1.1-1 and 1.1-2 identify the period start and end dates for the Fourth ISI Interval and the Third CISI Interval as defined by Inspection Program (IWA-2431). In accordance with Paragraph IWA-2430(c)(3), the inspection periods specified in these Tables may be decreased or extended by as much as 1 year.

**TABLE 1.1-1**  
**FOURTH ISI INTERVAL/PERIOD/OUTAGE MATRIX**  
(for ISI Class 1, 2, and 3 Components and Supports)

Interval	Periods	Outages	
Start Date to End Date	Start Date to End Date	Outage Dates and/or Durations	Outage Numbers
<b><u>Fourth ISI Interval</u></b>  12/13/17 to 12/31/26	1 <sup>st</sup>  12/13/17 to 12/31/20	Scheduled April, 2018	H1RF21
		Scheduled October, 2019	H1RF22
	2 <sup>nd</sup>  01/01/21 to 12/31/23	Scheduled April, 2021	H1RF23
		Scheduled October, 2022	H1RF24
	3 <sup>rd</sup>  01/01/24 to 12/31/26	Scheduled April, 2024	H1RF25
		Scheduled October, 2025	H1RF26

**TABLE 1.1-2**  
**THIRD CISI INTERVAL/PERIOD/OUTAGE MATRIX**  
 (for ISI Class MC Components and Supports)

Interval	Periods	Outages	
Start Date to End Date	Start Date to End Date	Outage Dates and/or Durations	Outage Numbers
<u>Third CISI Interval</u>  12/13/17 to 12/31/26	1 <sup>st</sup> 12/13/17 to 12/31/20	Scheduled April, 2018	H1RF21 IWE
		Scheduled October, 2019	H1RF22 IWE
	2 <sup>nd</sup> 01/01/21 to 12/31/23	Scheduled April, 2021	H1RF23 IWE
		Scheduled October, 2022	H1RF24 IWE
	3 <sup>rd</sup> 01/01/24 to 12/31/26	Scheduled April, 2024	H1RF25 IWE
		Scheduled October, 2025	H1RF26 IWE

## 1.2 Background

Public Service Enterprise Group (PSEG) obtained construction permit CPPR-120 to build HCGS on November 4, 1974. The docket number assigned to HCGS is 50-354. After satisfactory plant construction and preoperational testing was completed, HCGS was granted a full power operating license, NPF-57. HCGS commenced commercial operation on December 20, 1986.

HCGS's piping systems and associated components were designed and fabricated to be inspected and tested in accordance with the PSI/ISI requirements of ASME Section XI. Although this plant was specifically designed to meet the inspection and testing requirements of ASME Section XI, literal compliance may not be feasible or practical within the limits of the current plant design. Certain limitations are likely to occur due to conditions such as accessibility, geometric configuration, and/or metallurgical characteristics. For some inspection categories, an alternate component may be selected for examination and the code statistical and distribution requirements can still be maintained. If ASME Section XI required examination criteria cannot be met, a relief request will be submitted in accordance with 10 CFR 50.55a.

## 1.3 First Interval ISI Program

On December 20, 1986, HCGS began commercial operation, which marked the beginning of the First ISI Interval. Inservice Inspection and Repair and Replacement Programs were developed to implement the requirements of the ASME Boiler and Pressure Vessel (B&PV) Code, Section XI. At the time these programs were implemented, ASME Section XI, 1983 Edition, including Addenda through Summer 1983, were used to develop the ISI and Repair and Replacement Programs, as required by 10 CFR 50.55a(g)(4)(i).

The First ISI Interval for HCGS was scheduled to end on December 19, 1996. However, the interval was extended to coincide with completion of RF7 on December 12, 1997, as permitted by Paragraph IWA-2430 of the ASME Section XI, 1983 Edition included Addenda through Summer 1983. The First Interval extension was approximately one (1) year in duration.

## 1.4 Second Interval ISI Program

Pursuant to the Code Of Federal Regulations, Title 10, Part 50, Section 55a, *Codes and standards*, (10 CFR 50.55a), Paragraph (g), *Inservice inspection requirements*, licensees were required to update their ISI Programs at the end of the First ISI Interval. The ISI Program was required to comply with the latest Edition and Addenda of the Code incorporated by reference in 10 CFR 50.55a twelve months prior to the start of the interval per 10 CFR 50.55a(g)(4)(ii).

The Second ISI Interval commenced on December 13, 1997 using the 1989 Edition, without Addenda of the ASME Boiler and Pressure Vessel (B&PV)



Code, Section XI. The HCGS Second Interval ISI Program Plan addressed Subsections IWA, IWB, IWC, IWD, IWF, Mandatory Appendices, approved Code Cases, approved alternatives through relief requests and SER's, and utilized Inspection Program B as defined therein.

Beginning with the Third Period of the interval, PSEG elected to perform a mid-interval update to the 1998 Edition, including Addenda through 2000 of the ASME Boiler and Pressure Vessel (B&PV) Code, Section XI. By letter dated December 23, 2004; the USNRC provided approval for use of the 1998 Edition through the 2000 Addenda, subject to the limitations identified therein.

Also commencing with the Third Period of the interval, HCGS adopted the EPRI Topical Report TR-112657, Rev. B-A methodology, which was supplemented by ASME Code Case N-578-1, for implementing risk-informed inservice inspections. This approach replaced the categorization, selection, and examination volume requirements of ASME Section XI Examination Categories B-F, B-J, and C-F-2 applicable to HCGS with Examination Category R-A as defined in ASME Code Case N-578-1. Implementation of the RISI Program is in accordance with a Relief Request, and subsequent USNRC approval SER dated December 8, 2004.

Additionally, HCGS adopted the EPRI Topical Report TR-1006937, Rev. 0-A, methodology for additional guidance for adaptation of the RISI evaluation process to Break Exclusion Region (BER) piping, also referred to as the High Energy Line Break (HELB) region. This change to the BER Program was made under 10 CFR 50.59 evaluation criteria. The risk informed BER Program also commenced with the Third Period of the Second ISI Interval.

The Second ISI Interval was originally scheduled to conclude at the completion of RF13, after approximately nine (9) years duration. This reduced schedule would have recovered the interval extension taken during the First ISI Interval. However, based on changes to refueling outage schedules, PSEG elected to add RF14 to the Third Period, resulting in the full ten (10) year interval duration, and a revised completion date for the Second ISI Interval of December 12, 2007.

Therefore, the HCGS Second ISI Interval was effective from December 13, 1997 through December 12, 2007.

### 1.5 Third Interval ISI Program

Pursuant to 10 CFR 50.55a(g), licensees were required to update their ISI Programs to meet the requirements of ASME Section XI once every ten years or inspection interval. The ISI Program was required to comply with the latest Edition and Addenda of the Code incorporated by reference in 10 CFR 50.55a twelve months prior to the start of the interval per 10 CFR 50.55a(g)(4)(ii). The Third ISI Interval commenced on December 13, 2007 using the 2001 Edition through the 2003 Addenda.

The HCGS Third Interval ISI Program Plan was developed in accordance with the requirements of 10 CFR 50.55a including all published changes through February 19, 2006, and the 2001 Edition through the 2003 Addenda of ASME Section XI, subject to the limitations and modifications contained within Paragraph (b) of the regulation. This ISI Program Plan addressed Subsections IWA, IWB, IWC, IWD, IWF, Mandatory Appendices, approved Code Cases, approved alternatives through relief requests and SER's, and utilizes Inspection Program B as defined therein.

HCGS adopted the EPRI Topical Report TR-112657, Rev. B-A methodology, which was supplemented by ASME Code Case N-578-1, for implementing risk-informed inservice inspections during the Second ISI Interval. The RISI Program continued through the Third ISI Interval in accordance with Relief Request HC-I3R-01.

Note: PSEG implemented an extended power uprate (EPU) during the initial months of the Third ISI Interval, which affected the RISI Program. Accordingly, a revision to the RISI Program was performed and incorporated into the ISI Program Plan, at the Owner's request.

HCGS also adopted the EPRI Topical Report TR-1006937, Rev. 0-A, methodology for additional guidance for adaptation of the RISI evaluation process to BER piping, also referred to as the HELB region. This change to the BER program was made under 10 CFR 50.59 evaluation criteria. The RISI evaluation for BER piping continued for the Third ISI Interval.

The HCGS Third ISI Interval was effective from December 13, 2007 through December 12, 2017.

#### 1.6 Fourth Interval ISI Program

Pursuant to 10 CFR 50.55a(g), licensees are required to update their ISI Programs to meet the requirements of ASME Section XI once every ten years or inspection interval. The ISI Program is required to comply with the latest Edition and Addenda of the Code incorporated by reference in 10 CFR 50.55a twelve months prior to the start of the interval per 10 CFR 50.55a(g)(4)(ii). As discussed in Section 1.5 above, the start of the Fourth ISI Interval will be on December 13, 2017 for HCGS. Based on this date, the latest Edition and Addenda of the Code referenced in 10 CFR 50.55a(b)(2) twelve months prior to the start of the Third ISI Interval was the 2007 Edition through the 2008 Addenda.

The HCGS Fourth Interval ISI Program Plan was developed in accordance with the requirements of 10 CFR 50.55a including all published changes through August 3, 2015, and the 2007 Edition through the 2008 Addenda of ASME Section XI, subject to the conditions contained within Paragraph (b) of the regulation. These conditions are detailed in Table 1.10-1 of this section. This ISI Program Plan addresses Subsections IWA, IWB, IWC, IWD, IWF, Mandatory

Appendices, approved Code Cases, approved alternatives through relief requests and SER's, and utilizes the Inspection Program as defined in IWA-2431.

HCGS adopted the ASME Code Case N-716-1, for implementing risk-informed inservice inspections during the Fourth ISI Interval. This code case was first approved by the NRC in Regulatory Guide 1.147 Rev. 17 with no conditions. Therefore a request for alternative is not required to implement. The details for the application of Code Case N-716-1 are contained in the document "Hope Creek Generating Station Code Case N-716-1 Application", dated April 2017.

HCGS also adopted the EPRI Topical Report TR-1006937, Rev. 0-A, methodology for additional guidance for adaptation of the RISI evaluation process to BER piping, also referred to as the HELB region. This change to the BER program was made under 10 CFR 50.59 evaluation criteria. The RISI evaluation for BER piping will continue for the Fourth ISI Interval. The RISI evaluation for BER was updated and the results are contained in "Hope Creek Generating Station BER Evaluation Update" dated April 2017.

The Fourth ISI Ten-Year Interval end date is being adjusted to December 31, 2026 to recover approximately twelve months of the previously extended interval.

The HCGS Fourth ISI Interval is effective from December 13, 2017 through December 31, 2026.

#### 1.7 First Interval CISI Program

CISI examinations were originally invoked by amended regulations contained within a Final Rule issued by the USNRC. The amended regulation incorporated the requirements of the 1992 Edition through the 1992 Addenda of the ASME Section XI, Subsection IWE, subject to specific modifications that were included in Paragraphs 10 CFR 50.55a(b)(2)(ix) and 10 CFR 50.55a(b)(2)(x).

The final rulemaking was published in the Federal Register on August 8, 1996 and specified an effective date of September 9, 1996. Implementation of the Subsection IWE Program from a scheduling standpoint was driven by the five year expedited implementation period per 10 CFR 50.55a(g)(6)(ii)(B), which specified that the examinations required to be completed by the end of the First Period of the First CISI Interval (per Table IWE-2412-1) be completed by the effective date (by September 9, 2001).

PSEG submitted a request to utilize the 1998 Edition, including the 1998 Addenda of the ASME Boiler and Pressure Vessel (B&PV) Code, Subsection IWE; for the First CISI Interval at HCGS. This proposed alternative was authorized by USNRC letter, and SER dated June 6, 2000.

The CISI Program Plan was developed, and examinations commenced on April 22, 2000, with all First Period CISI examinations being completed during RF9

(prior to May 24, 2000), fully satisfying the September 9, 2001 expedited implementation requirement.

Examinations for the Second Period of the CISI Program were completed during RF10 in the Fall of 2001, and RF11 in the Spring of 2003, respectively.

Third CISI Period examinations were completed during RF12 in the Fall of 2004, and RF13 during the spring of 2006; with the remainder scheduled for completion in RF14, during the Fall of 2007.

Therefore all First CISI Interval examinations were scheduled to be completed prior to December 12, 2007; concurrent with the end date for the Second ISI Interval. As detailed in the submittal of the Third Interval ISI Program, the transition from the First CISI Interval to the Second CISI Interval coincides with the transition from the Second ISI Interval to the Third ISI Interval to provide a common interval start and end date and Code of record between the ISI and CISI Programs.

No significant examination issues were identified in this First CISI Interval requiring application of additional augmented examination requirements as detailed within Paragraph IWE-1240.

#### 1.8 Second Interval CISI Program

Pursuant to 10 CFR 50.55a(g), licensees are required to update their CISI Programs to meet the requirements of ASME Section XI once every ten years or inspection interval. The CISI Program is required to comply with the latest Edition and Addenda of the Code incorporated by reference in 10 CFR 50.55a twelve months prior to the start of the interval per 10 CFR 50.55a(g)(4)(ii). As discussed in Section 1.7 above, the start of the Second CISI Interval was December 13, 2007 using the 2001 Edition through the 2003 Addenda.

The HCGS Second Interval CISI Program Plan was developed in accordance with the requirements of 10 CFR 50.55a including all published changes through February 19, 2006, and the 2001 Edition through the 2003 Addenda of ASME Section XI, subject to the limitations and modifications contained within Paragraph (b) of the regulation. This Second Interval CISI Program Plan addressed Subsection IWE, Mandatory Appendices, approved Code Cases, approved alternatives through relief requests and SER's, and utilized Inspection Program B as defined therein.

The HCGS Second CISI Interval was effective from December 13, 2007 through December 12, 2017.

#### 1.9 Third Interval CISI Program

Pursuant to 10 CFR 50.55a(g), licensees are required to update their CISI Programs to meet the requirements of ASME Section XI once every ten years or inspection interval. The CISI Program is required to comply with the latest Edition and Addenda of the Code incorporated by reference in 10 CFR 50.55a twelve months prior to the start of the interval per 10 CFR 50.55a(g)(4)(ii). As discussed in Section 1.8 above, the start of the Third CISI Interval will be on December 13, 2017 for HCGS. Based on this date, the latest Edition and Addenda of the Code referenced in 10 CFR 50.55a(b)(2) twelve months prior to the start of the Third CISI Interval was the 2007 Edition through the 2008 Addenda.

The HCGS Third Interval CISI Program Plan was developed in accordance with the requirements of 10 CFR 50.55a including all published changes through August 3, 2015, and the 2007 Edition through the 2008 Addenda of ASME Section XI, subject to the conditions contained within Paragraph (b) of the regulation. These conditions are detailed in Table 1.10-1 of this section. This Third Interval CISI Program Plan addresses Subsection IWE, Mandatory Appendices, approved Code Cases, approved alternatives through relief requests and SER's, and utilizes the Inspection Program as defined therein.

To align with the Fourth ISI Interval, the HCGS Third CISI Interval is effective from December 13, 2017 through December 31, 2026.

#### 1.10 Code of Federal Regulations 10 CFR 50.55a Requirements

There are certain paragraphs in 10 CFR 50.55a that list the conditions to the implementation requirements of ASME Section XI. These paragraphs in 10 CFR 50.55a that are applicable to the HCGS scheduled ISI and CISI examination programs are detailed in Table 1.10-1.

**TABLE 1.10-1  
CODE OF FEDERAL REGULATIONS 10 CFR 50.55a REQUIREMENTS**

<b>10 CFR 50.55a Paragraphs</b>	<b>Conditions</b>
10 CFR 50.55a(b)(2)(ix)(A)	<p><b>(CISI)</b> <i>Metal containment examinations: First provision</i></p> <p>For Class MC applications, the following apply to inaccessible areas:</p> <ol style="list-style-type: none"><li>1) N/A for the 2007 Edition through the 2008 Addenda</li><li>2) For each inaccessible area identified for evaluation, the applicant or licensee must provide the following in the ISI Summary Report as required by IWA-6000:<ol style="list-style-type: none"><li>(i) A description of the type and estimated extent of degradation, and the conditions that led to the</li></ol></li></ol>

**TABLE 1.10-1**  
**CODE OF FEDERAL REGULATIONS 10 CFR 50.55a REQUIREMENTS**

10 CFR 50.55a Paragraphs	Conditions
	degradation; (ii) An evaluation of each area, and the result of the evaluation, and; (iii) A description of necessary corrective actions.
10 CFR 50.55a(b)(2)(ix)(B)	<b>(CISI)</b> <i>Metal containment examinations: Second provision</i> When performing remotely the visual examinations required by Subsection IWE, the maximum direct examination distance specified in Table IWA-2210-1 may be extended and the minimum illumination requirements specified in Table IWA-2210-1 may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination.
10 CFR 50.55a(b)(2)(ix)(J)	<b>(CISI)</b> <i>Metal containment examinations: Tenth provision</i> In general, a repair/replacement activity such as replacing a large containment penetration, cutting a large construction opening in the containment pressure boundary to replace steam generators, reactor vessel heads, pressurizers, or other major equipment; or other similar modification is considered a major containment modification. When applying IWE-5000 to Class MC pressure-retaining components, any major containment modification or repair/replacement must be followed by a Type A test to provide assurance of both containment structural integrity and leaktight integrity prior to returning to service, in accordance with 10 CFR part 50 Appendix J, Option A or Option B on which the applicant's or licensee's Containment Leak-Rate Testing Program is based. When applying IWE-5000, if a Type A, B, or C Test is performed, the test pressure and acceptance standard for the test must be in accordance with 10 CFR part 50, Appendix J.
10 CFR 50.55a(b)(2)(xxii)	<b>(ISI)</b> <i>Surface Examination:</i> 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 allow use of an ultrasonic examination method is prohibited.
10 CFR 50.55a(b)(2)(xxvi)	<b>(ISI)</b> <i>Pressure Testing Class 1, 2, and 3 Mechanical Joints.</i> The repair and replacement activity provisions in IWA-4540(c) of the 1998 Edition of Section XI for pressure testing Class 1, 2, and 3 mechanical joints must be applied when using the 2001 Edition through the latest edition and

**TABLE 1.10-1**  
**CODE OF FEDERAL REGULATIONS 10 CFR 50.55a REQUIREMENTS**

10 CFR 50.55a Paragraphs	Conditions
	addenda incorporated by reference in paragraph (a)(1)(ii) of this section.
10 CFR 50.55a(b)(2)(xxvii)	<b>(ISI)</b> <i>Section XI condition: Removal of Insulation.</i> When performing visual examinations in accordance with IWA-5242 of Section XI of the ASME BPV Code, 2003 Addenda through the 2006 Addenda or IWA-5241 of the 2007 Edition through the latest edition and addenda incorporated in paragraph (a)(1)(ii) of this section, insulation must be removed from 17-4 PH or 410 stainless steel studs or bolts aged at a temperature below 1100 °F or having a Rockwell Method C hardness value above 30, and from A-286 stainless steel studs or bolts preloaded to 100,000 pounds per square inch or higher.
10 CFR 50.55a(b)(3)(v)	<b>(ISI)</b> <i>OM Condition: Snubbers ISTD,</i> Article IWF-5000, “Inservice Inspection Requirements for Snubbers,” of the ASME BPV Code, Section XI, must be used when performing inservice inspection examinations and tests of snubbers at nuclear power plants, except as conditioned in paragraphs (b)(3)(v)(A) and (B) of this section.
10 CFR 50.55a(b)(3)(v)(B)	<b>(ISI)</b> <i>Snubbers: Second provision,</i> Licensees must comply with the provisions for examining and testing snubbers in Subsection ISTD of the ASME OM Code and make appropriate changes to their technical specifications or license-controlled document when using the 2006 Addenda and later editions and addenda of Section XI of the ASME BPV Code.
10 CFR 50.55a(b)(5)	<b>(ISI)</b> <i>Conditions on Inservice Inspection Code Cases:</i> Licensees may apply the ASME Boiler and Pressure Vessel Code Cases listed in Regulatory Guide 1.147, without prior USNRC approval subject to the following:
10 CFR 50.55a(b)(5)(i)	<b>(ISI)</b> <i>ISI Code Case condition: Applying Code Cases.</i> When a licensee initially applies a listed Code case, the licensee must apply the most recent version of that Code Case incorporated by reference in paragraph (a) of this section.
10 CFR 50.55a(b)(5)(ii)	<b>(ISI)</b> <i>ISI Code Case condition: Applying different revisions of Code Cases.</i> If a licensee has previously applied a Code Case and a later version of the Code Case is incorporated by reference in paragraph (a) of this section, the licensee may continue to apply, to the end of the current 120-month interval, the previous version of the Code Case as authorized,

**TABLE 1.10-1**  
**CODE OF FEDERAL REGULATIONS 10 CFR 50.55a REQUIREMENTS**

<b>10 CFR 50.55a Paragraphs</b>	<b>Conditions</b>
	or may apply the later version of the Code case, including any NRC-specified conditions placed on its use. Licensees who choose to continue use of the Code Case during subsequent 120-month ISI program intervals will be required to implement the latest version incorporated by reference into 10 CFR 50.55a as listed in Tables 1 and 2 of Regulatory Guide 1.147, Revision 17.
10 CFR 50.55a(b)(5)(iii)	<b>(ISI)</b> <i>ISI Code Case condition: Applying annulled Code Cases.</i> Application of an annulled Code Case is prohibited unless a licensee previously applied the listed Code Case prior to it being listed as annulled in Regulatory Guide 1.147. If a licensee has applied a listed Code Case that is later listed as annulled in Regulatory Guide 1.147, the licensee may continue to apply the Code Case to the end of the current 120-month interval.



**TABLE 1.10-1**  
**CODE OF FEDERAL REGULATIONS 10 CFR 50.55a REQUIREMENTS**

10 CFR 50.55a Paragraphs	Conditions
10 CFR 50.55a(b)(6)	<b>(ISI)</b> <i>Conditions on Operation and Maintenance of Nuclear Power Plants Code Cases.</i> Licensees may apply the ASME Operation and Maintenance Code Cases listed in Regulatory Guide 1.192, Revision 1, without prior NRC approval, subject to the following: (i), (ii) and (iii).
10 CFR 50.55a(b)(6)(i)	(i) <i>OM Code Case conditions: Applying Code Cases.</i> When a licensee initially applies a listed Code Case, the licensee shall apply the most recent version of that Code Case incorporated by reference in paragraph (a) of this section.
10 CFR 50.55a(b)(6)(ii)	(ii) <i>OM Code Case condition: Applying different revisions of Code Cases.</i> If a licensee has previously applied a Code Case and a later version of the Code Case is incorporated by reference in paragraph (a) of this section, the licensee may continue to apply, to the end of the current 120-month interval, the previous version of the Code Case as authorized or may apply the later version of the Code Case, including any USNRC-specified conditions placed on its use. Licensees who choose to continue use of the Code Case during subsequent 120-month ISI program intervals will be required to implement the latest version incorporated by reference into 10 CFR 50.55a as listed in Tables 1 and 2 of Regulatory Guide 1.192, Revision 1.
10 CFR 50.55a(b)(6)(iii)	(iii) <i>OM Code Case condition: Applying annulled Code Cases.</i> Application of an annulled Code Case is prohibited unless a licensee previously applied the listed Code Case prior to it being listed as annulled in Regulatory Guide 1.192. If a licensee has applied a listed Code Case that is later listed as annulled in Regulatory Guide 1.192, the licensee may continue to apply the Code Case to the end of the current 120-month interval.

## 1.11 Code Cases

Per 10 CFR 50.55a(b)(5), Code Cases that have been determined to be suitable for use in ISI Program Plans by the USNRC are listed in Regulatory Guide 1.147, “Inservice Inspection Code Case Acceptability-ASME Section XI, Division 1”. The approved Code Cases in Regulatory Guide 1.147, which are being utilized by HCGS, are included in Section 2.1.1. The most recent version of a given Code Case incorporated in the revision of Regulatory Guide 1.147 referenced in 10 CFR 50.55a(b)(5) at the time the final ISI Plan Document is approved is applied within the ISI Program. The latest version of Regulatory Guide 1.147 incorporated into this document is Revision 17. As this guide is revised, newly approved Code Cases may be assessed for plan implementation at HCGS per Paragraph IWA-2441(d) and proposed for use in revisions to the ISI Program Plan.

The use of Code Cases, other than those listed in Regulatory Guide 1.147 may be authorized by the Director of the Office of Nuclear Reactor Regulation upon request pursuant to 10 CFR 50.55a(z). Code Cases not generically approved for use in Regulatory Guide 1.147, which are being utilized by HCGS through associated requests for alternatives, are referenced in Section 8.0.

Per 10 CFR 50.55a(b)(6), this ISI Program Plan will also utilize Regulatory Guide 1.192, “Operation and Maintenance Code Case Acceptability, ASME OM Code”. The approved Code Case in Regulatory Guide 1.192, which is being utilized by HCGS, is included in Section 2.1.2. The latest version of Regulatory Guide 1.192 incorporated into this document is Revision 1. As this guide is revised, newly approved Code Cases may be assessed for plan implementation at HCGS per Paragraph ISTA-3100 of the OM Code and proposed for use in revisions to the ISI Program Plan for Snubbers.

## 1.10 Relief Requests

In accordance with 10 CFR 50.55a, when a licensee either proposes alternatives to ASME Section XI requirements which provide an acceptable level of quality and safety, determines compliance with ASME Section XI requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety, or determines that specific ASME Section XI requirements for inservice inspection are impractical, the licensee shall notify the USNRC and submit information to support the determination.

The submittal of this information will be referred to in this document as a “relief request.” Relief requests for the Fourth ISI Interval and the Third CISI Interval are included in Section 8.0 of this document. The text of the relief requests contained in Section 8.0 will demonstrate one of the following: the proposed alternatives provide an acceptable level of quality and safety per

10 CFR 50.55a(z)(1)<sup>1</sup>, compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety per 10 CFR 50.55a(z)(2), or the code requirements are considered impractical per 10 CFR 50.55a(g)(5)(iii).

Per 10 CFR 50.55a Paragraphs (z) and (g)(6)(i), the Director of the Office of Nuclear Reactor Regulation will evaluate relief requests and “may grant such relief and may impose such alternative requirements as it determines is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.”

---

<sup>1</sup> 10 CFR 50.55a(a)(3) was moved to 10 CFR 50.55a(z) in the version that endorsed the 2007 Edition through the 2008 Addenda.

## **2.0 BASIS FOR INSERVICE INSPECTION PROGRAM**

### **2.1 ASME Section XI Examination Requirements (CM-7)**

As required by the 10 CFR 50.55a, this Program was developed in accordance with the requirements detailed in the 2007 Edition through the 2008 Addenda, of the ASME Boiler and Pressure Vessel Code, Section XI, Division 1, Subsections IWA, IWB, IWC, IWD, IWE, IWF, Mandatory Appendices, Inspection Program as referenced in IWA-2431, approved Code Cases, and approved alternatives through relief requests and Safety Evaluation Reports (SER's).

The Performance Demonstration Initiative (PDI) is an organization comprised of all US nuclear utilities that was formed to provide an efficient implementation of Appendix VIII performance demonstration requirements. The Electric Power Research Institute (EPRI) NDE Center was selected as the administrator of this program. The PDI program is administered according to the "PDI Program Description". The ISI Program implements Appendix VIII "Performance Demonstration for Ultrasonic Examination Systems," ASME Section XI 2007 Edition through the 2008 Addenda as required by 10 CFR 50.55a(g)(4). Appendix VIII requires qualification of the procedures, personnel, and equipment used to detect and size flaws in piping, bolting, and the reactor pressure vessel (RPV). Each organization (e.g., owner or vendor) is required to have a written program to ensure compliance with the requirements. HCGS maintains the responsibility to ensure that Appendix VIII requirements are properly implemented.

For the Fourth ISI Interval, HCGS's inspection program for ASME Section XI Examination Categories B-F, B-J, C-A, C-B, and C-F-2 will be governed by risk-informed regulations. The RISI Program methodology described in Code Case N-716-1 is being used for the classification of piping welds and components under the RISI Program. The RISI Program scope has been implemented as an alternative to the 2007 Edition through the 2008 Addenda of the ASME Section XI Code examination program for ISI Class 1 B-F and B-J welds and ISI Class 2 C-A and C-B components and C-F-2 welds. The basis for the resulting risk classification of the nonexempt ISI Class 1 and 2 piping systems at HCGS is defined and maintained in the Final Report "Hope Creek Generating Station Code Case N-716-1 Application" as referenced in Section 9.0 of this document. References to ASME Section XI Examination Categories B-F, B-J, and C-F-2 have been replaced with Examination Category R-A to identify them as part of the RISI Program.

For the Fourth ISI Interval, the RISI Program scope has been expanded to include welds in the BER piping, also referred to as the HELB region, which includes several class 1, 2, and 3 systems. The BER program methodology is described in EPRI Topical Report TR-1006937, Rev. 0-A, which has been used to define the inspection scope in lieu of the 100% volumetric examination of all piping welds in the previous BER Augmented Inspection Program. Therefore, all welds in the original augmented inspection program for BER were evaluated under the RISI Program using an integrated risk-informed approach. As a result, this evaluation

supports a reduction in examination on BER piping from 100% to about 13%. Based on the present N-716-1 selections, about 16% of the BER welds have been selected for examination.

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

#### 2.1.1 ASME Section XI Code Cases

As referenced by 10 CFR 50.55a(b)(5) and allowed by USNRC Regulatory Guide 1.147, Revision 17, being the latest incorporated into this ISI Program Plan, the following Code Cases are being incorporated into the HCGS ISI Program. These Code Cases have been determined by the USNRC to be acceptable alternatives to applicable parts of ASME Section XI. These Code Cases may be used by HCGS without a relief request from the USNRC, provided that they are used with any identified conditions. Code Cases implemented through the relief request process are included in Section 8.0 of this document. Some of the Code Cases listed below are acceptable to the USNRC for application at HCGS within the conditions imposed by the USNRC staff. Unless otherwise stated, conditions imposed by the USNRC are in addition to the requirements specified in the Code Case. Several of these Code Cases are included as contingencies, to ensure that they are available for future activities.

N-432-1      Repair Welding Using Automatic or Machine Gas  
Tungsten-Arc Welding (GTAW) Temper Bead Technique,  
Section XI, Division 1

N-504-4      Alternative Rules for Repair of Class 1, 2, and 3 Austenitic  
Stainless Steel Piping, Section XI, Division 1

Code Case N-504-4 is acceptable subject to the following conditions specified in Regulatory Guide 1.147 Rev 17.

The provisions of Section XI, Nonmandatory Appendix Q, "Weld Overlay Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping Weldments," must also be met. In addition, the following conditions shall be met; (a) the sum of laminar flaw length in any direction shall be less than 10% of the overlay with a total reduction in area equal to or less than Table IWB-3514-3; (b) the finished overlay surface shall be 250 micro-in (6.3 micrometers) root mean square of smoother, (c) the surface flatness shall be adequate for ultrasonic examination; and (d) radiography shall not be used to detect planar flaws under or masked by laminar flaws.

- N-508-4      Rotation of Service Snubbers and Pressure Retaining Items for the Purpose of Testing, Section XI, Division 1
- Code Case N-508-4 is acceptable subject to the following conditions specified in Regulatory Guide 1.147 Rev 17.
- When Section XI requirements are used to govern the examination and testing of snubbers and the ISI Code of Record is earlier than Section XI, 2006 Addenda, Footnote 1 shall not be applied.
- N-513-3      Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping, Section XI, Division 1
- Code Case N-513-3 is acceptable subject to the following conditions specified in Regulatory Guide 1.147 Rev 17.
- The repair or replacement activity temporarily deferred under the provisions of this Code Case shall be performed during the next scheduled outage.
- N-516-3      Underwater Welding, Section XI, Division 1
- Code Case N-516-3 is acceptable subject to the following conditions specified in Regulatory Guide 1.147 Rev 17.
- Licensees must obtain NRC approval in accordance with 10 CFR 50.55a(z) regarding the technique to be used in the weld repair or replacement of irradiated material underwater.
- N-526      Alternative Requirements for Successive Inspections of Class 1 and 2 Vessels, Section XI, Division 1
- N-532-5      Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission as Required by IWA-4000 and IWA-6000, Section XI, Division 1
- N-561-2      Alternative Requirements for Wall Thickness Restoration of Class 2 and High Energy Class 3 Carbon Steel Piping, Section XI, Division 1
- Code Case N-561-2 is acceptable subject to the following conditions specified in Regulatory Guide 1.147 Rev 17.

- (1) Paragraph 5(b): for repairs performed on a wet surface, the overlay is only acceptable until the next refueling outage
- (2) Paragraph 7(c): if the cause of the degradation has not been determined, the repair is only acceptable until the next refueling outage.
- (3) The area where the weld overlay is to be applied must be examined using ultrasonic methods to demonstrate that no crack-like defects exist.
- (4) Piping with wall thickness less than the diameter of the electrode shall be depressurized before welding.

N-562-2      Alternative Requirements for Wall Thickness Restoration of Class 3 Moderate Energy Carbon Steel Piping, Section XI, Division 1

Code Case N-562-2 is acceptable subject to the following conditions specified in Regulatory Guide 1.147 Rev 17.

- (1) Paragraph 5(b): for repairs performed on a wet surface, the overlay is only acceptable until the next refueling outage
- (2) Paragraph 7(c): if the cause of the degradation has not been determined, the repair is only acceptable until the next refueling outage.
- (3) The area where the weld overlay is to be applied must be examined using ultrasonic methods to demonstrate that no crack-like defects exist.
- (4) Piping with wall thickness less than the diameter of the electrode shall be depressurized before welding.

N-586-1      Alternative Additional Examination Requirements for Class 1, 2, and 3 Piping, Components, and Supports, Section XI, Division 1

Note: This Code Case is implemented for Examination Categories other than R-A. N-716-1 requires that scope expansion for RISI piping welds will be determined using Paragraph 6(b).

N-600      Transfer of Welder, Welding Operator, Brazier, and Brazing Operator Qualifications Between Owners

N-606-1      Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique for BWR CRD Housing Stub Tube Repairs, Section XI, Division 1

Code Case N-606-1 is acceptable subject to the following conditions specified in Regulatory Guide 1.147 Rev 17.

Prior to welding, an examination or verification must be performed to ensure proper preparation of the base metal, and that the surface is properly contoured so that an acceptable weld can be produced. This verification is to be required in the welding procedure.

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

N-629      Use of Fracture Toughness Test Data to Establish Reference Temperature for Pressure Retaining Materials

N-639      Alternative Calibration Block Material, Section XI, Division 1

Code Case N-639 is acceptable subject to the following conditions specified in Regulatory Guide 1.147 Rev 17.

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

N-641      Alternative Pressure-Temperature Relationship and Low Temperature Overpressure Protection System Requirements, Section XI, Division 1

N-648-1      Alternative Requirements for Inner Radius Examination of Class 1 Reactor Vessel Nozzles, Section XI, Division 1

Code Case N-648-1 is acceptable subject to the following conditions specified in Regulatory Guide 1.147, Revision 17:

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.



N-651 Ferritic and Dissimilar Metal Welding Using SMAW Temper Bead Technique without Removing the Weld Bead Crown of the First Layer, Section XI, Division 1

N-652-1 Alternative Requirements to Categorize B-G-1, B-G-2, and C-D Bolting Examination Methods and Selection Criteria, Section XI, Division 1

N-661-2 Alternative Requirements for Wall Thickness Restoration of Classes 2 and 3 Carbon Steel Piping for Raw Water Service, Section XI, Division 1

Code Case N-661-2 is acceptable subject to the following conditions specified in Regulatory Guide 1.147 Rev 17.

- (1) Paragraph 4(b): for repairs performed on a wet surface, the overlay is only acceptable until the next refueling outage
- (2) Paragraph 7(c): if the cause of the degradation has not been determined, the repair is only acceptable until the next refueling outage.
- (3) The area where the weld overlay is to be applied must be examined using ultrasonic methods to demonstrate that no crack-like defects exist.
- (4) Piping with wall thickness less than the diameter of the electrode shall be depressurized before welding.

N-702 Alternative Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds, Section XI, Division 1

Code Case N-702 is acceptable subject to the following condition specified in Regulatory Guide 1.147, Revision 17

The technical basis supporting the implementation of this Code Case is addressed by BWRVIP-108: BWR Vessel and Internals Project, "Technical Basis for the Reduction of Inspection Requirements for the Boiling Water Reactor Nozzle-to-Vessel Shell Welds and Nozzle Blend Radii," EPRI Technical Report 1003557, October 2002 (ML-023330203) and BWRVIP-241: BWR Vessel and Internals Project, "Probabilistic Fracture Mechanics Evaluation for the Boiling Water Reactor Nozzle-to-Vessel Shell Welds and Nozzle Blend Radii," EPRI Technical Report 1021005, October 2010 (ML11119A041). The applicability of Code Case N-702 must be shown by demonstrating that

the criteria in Section 5.0 of NRC Safety Evaluation regarding BWRVIP-108 dated December 18, 2007 (ML073600374) or Section 5.0 of NRC Safety Evaluation regarding BWRVIP-241 dated April 19, 2013 (ML13071A240) are met. The evaluation demonstrating the applicability of the Code Case shall be reviewed and approved by the NRC prior to the application of the Code Case.

- |         |   |
|---------|---|
| N-705   | Evaluation Criteria for Temporary Acceptance of Degradation in Moderate Energy Class 2 or 3 Vessels and Tanks, Section XI, Division 1   |
| N-716-1 | Alternative Classification and Examination Requirements, Section XI, Division 1   |
| N-733   | Mitigation of Flaws in NPS 2 (DN 50) and Smaller Nozzles and Nozzle Partial Penetration Welds in Vessels and Piping by Use of a Mechanical Connection Modification, Section XI, Division 1  |
| N-735   | Successive Inspection of Class 1 and 2 Piping Welds, Section XI, Division 1   |
| N-747   | Reactor Vessel Head-to-Flange Weld Examinations, Section XI, Division 1   |
| N-751   | Pressure Testing of Containment Penetration Piping, Section XI, Division 1  |
|         | <p>Code Case N-751 is acceptable subject to the following condition specified in Regulatory Guide 1.147, Revision 17:</p> <p style="padding-left: 40px;">When a 10 CFR 50, Appendix J, Type C test is performed as an alternative to the requirements of IWA-4540 (IWA-4700 in the 1989 edition through the 1995 edition) during repair and replacement activities, nondestructive examination must be performed in accordance with IWA-4540(a)(2) of the 2002 Addenda of Section XI.</p> |
| N-762   | Temper Bead Procedure Qualification Requirements for Repair/Replacement Activities without Postweld Heat Treatment, Section XI, Division 1  |

N-765            Alternative to Inspection Interval Scheduling Requirements of IWA-2430 Section XI, Division 1.

N-769            Roll Expansion of Class 1 In-Core Housing Bottom Head Penetrations in BWRs, Section XI, Division 1

Additional Code Cases invoked in the future shall be in accordance with those approved for use in the latest published revision of Regulatory Guide 1.147 or 10 CFR 50.55a at that time.

#### 2.1.2 ASME OM Code Cases

As referenced by the latest approved 10 CFR 50.55a dated August 21, 2017 subsection (a) (1) (iv) (C) "Operation and Maintenance of Nuclear Power Plants, Division 1: OM Code: Section IST:" 2012 Edition the following Code Cases are being incorporated into the HCGS ISI Program.

OMN-15, Rev. 2      Performance-Based Requirements for Extending the Snubber Operational Readiness Testing Interval at LWR Power Plants

Additional Code Cases invoked in the future shall be in accordance with those approved for use in the latest published revision of Regulatory Guide 1.192 or 10 CFR 50.55a at that time.

## 2.2 **AUGMENTED EXAMINATIONS & LICENSE RENEWAL COMMITMENTS (LRC)**

Augmented Examinations are not ASME Section XI requirements, but are 1) additional examination areas or 2) increased inspection frequencies or a combination of both. Augmented Examinations can be requested by the Nuclear Regulatory Commission (NRC), recommended in General Electric (GE) Service Information Letters (SILs), recommended by the Boiling Water Reactor Vessel Internals Program (BWRVIP) or added by HCGS management direction. Below is a summary of those examinations performed by HCGS that are not specifically addressed by ASME Section XI, or the examinations that will be performed in addition to the requirements of the Code on a routine basis during the Fourth ISI Interval and the Third CISI Interval. Previous revisions of HCGS's ISI Program Plan categorized some Augmented Inspection Programs using the designations "A-E." Changes to the augmented examinations shall be in accordance with the 10 CFR 50.59 process as required.

During the review of the Hope Creek Generating Station (HCGS) license renewal application by the NRC, HCGS made commitments related to aging management programs (AMPs) to manage aging effects of structures and components prior to the period of extended operation. Below is a summary of those AMPs performed by HCGS that are not specifically addressed by ASME Section XI, or the examinations that will be performed in addition to the requirements of the Code on a routine basis during the

Fourth ISI Interval and the Third CISI Interval. Changes to the commitments shall be in accordance with the 10 CFR 50.59 process as required.

- 2.2.1 “Augmented Examination of Austenitic Stainless Steel and Dissimilar Metal Welds Susceptible to Intergranular Stress Corrosion Cracking (IGSCC) (Generic Letter (GL) 88-01, NUREG-0313, Revision 2, and BWRVIP-75-A)”

**Source Document:** GL 88-01 “NRC Position on Intergranular Stress Corrosion Cracking in BWR Austenitic Stainless Steel Piping” Revision 2 dated January 1988 and Supplement 1 to GL 88-01 dated February 1992. EPRI Topical Report TR-1012621 (BWRVIP-75-A) “Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules” dated October 2006. (**Commitment (CM-HC-2009-0806) TS Amendment (#185)**)

**Associated Documents:** NUREG-0313 Rev. 2 “Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping”, dated January 1988. GL 84-11 “Inspections of BWR Stainless Steel Piping”, dated April 1984, HC-PBD-AMP-XLM7 “License Renewal Project “BWR Stress Corrosion Cracking”.

**Background:** These documents discuss the examination requirements for Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping. References to Generic Letter (GL) 88-01 within the ISI Program refer to the comprehensive commitments to all of these documents. The final SER’s of BWRVIP-75 and BWRVIP-75-A revised inspection schedules were based on consideration of inspection results and service experience gained by the industry since issuance of GL 88-01 and USNRC NUREG-0313, and includes additional knowledge regarding the benefits of improved BWR water chemistry (**CM-8**).

The original HCGS commitments concerning GL 88-01 were sent to the USNRC in a letter dated July 29, 1988. The USNRC reviewed these commitments in a letter dated November 8, 1989. Since the issuance of GL 88-01, the BWR Vessels and Internals Project (BWRVIP) was created. This BWR owners group worked on the mitigation of IGSCC for BWR reactor vessel internal components. As part of their activities, EPRI Topical Report TR-113932, “BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75) dated October 27, 1999” and EPRI Topical Report TR-1012621, “BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75-A) dated October 2005” were submitted to the USNRC. Among other issues, this document proposed alternative inspection schedules for IGSCC susceptible welds. Two different inspection schedules were presented; one for plants on Normal Water Chemistry (NWC) and one for plants on effective Hydrogen Water Chemistry (HWC). The HWC schedule may be utilized if applicable performance criteria are met. Currently HCGS does not take credit for HWC.

After review of BWRVIP-75 and BWRVIP-75-A, the USNRC issued SER's approving the documents with minor changes. (Letter from USNRC to Carl Terry, BWRVIP Chairman, Final Safety Evaluation of the "BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75)", dated May 14, 2002 and letter from USNRC to Bill Eaton, BWRVIP Chairmen, Final Safety Evaluation of the "BWR Vessel Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75-A)", dated March 16, 2006.)

Based upon USNRC endorsement of BWRVIP-75-A, the HCGS GL 88-01 (IGSCC) inspection schedule was updated to the requirements of BWRVIP-75-A except for Category A welds. (See Risked-Informed Inservice Inspection discussion below and BWRVIP discussion in Section 2.2.4). The reduced examination schedules from BWRVIP-75-A were implemented during RF12 beginning on October 28, 2004 for HCGS.

RISI guidelines have been invoked for HCGS in this ISI Program Plan. Under these guidelines, ISI Class 1 and 2 piping are inspected in accordance with Code Case N-716-1 which is approved by the USNRC in Regulatory Guide (RG) 1.147 Revision 17. Per this code case, welds within the plant that are assigned to IGSCC Categories B through G will continue to meet existing IGSCC schedules, while IGSCC Category A welds have been incorporated into the RISI Program.

**Purpose:** Austenitic stainless steel and dissimilar metal circumferential welds in piping four inches or larger in nominal pipe diameter which contain reactor coolant at temperature above 200°F during power operation shall be examined in accordance with the requirements of BWRVIP-75-A. Sample expansion of Categories B, C, D, or E weldments shall be in accordance with BWRVIP-75-A. Generic Letter 88-01 was issued by the NRC in 1988 to seek information regarding implementation of the new staff positions covering the industry issues with IGSCC. The staff positions were developed to cover the following subjects:

1. Materials
2. Processes
3. Water Chemistry<sup>2</sup>
4. Weld Overlay Reinforcement
5. Partial Replacement
6. Stress Improvement of Cracked Weldments
7. Clamping Devices
8. Crack Characterization and Repair Criteria
9. Inspection Methods and Personnel<sup>2</sup>
10. Inspection Schedules<sup>2</sup>
11. Sample Expansion<sup>2</sup>
12. Leak Detection
13. Reports Requirements

---

<sup>2</sup> These commitments are superseded by the guidance in BWRVIP-75A.

The NRC states in the Generic Letter “The Commission has determined that, unless appropriate remedial actions are taken, BWR plants may not be in conformance with their current design and licensing bases, including 10 CFR 50, Appendix A, General Design Criteria 4, 14, and 31.”

This augmented examination implements the NRC Positions related to inspection of austenitic stainless steel piping in boiling water reactor environment which are susceptible to IGSCC. Note that the inspection frequencies of BWRVIP-75-A are used at HCGS.

The following Inspection Categories were established based on the GL 88-01/NUREG-0313 requirements.

**Category A** – Weldments with no known cracks that are made from materials that are considered resistant to IGSCC due to their metallurgical properties. Welds joining cast pump and valve bodies to resistant materials are also considered to be Category A unless the weld material is considered susceptible. Note that all Category A welds are incorporated into the total population under Code Case N-716-1.

**Category B** - Weldments made from material that is considered susceptible to IGSCC, but the propensity for IGSCC was mitigated by stress improvement prior to two cycles of operation.

**Category C** - Weldments made from material that is considered susceptible to IGSCC, but the propensity for IGSCC was mitigated by stress improvement after more than two cycles of operation.

**Category D** - Weldments made from material that is considered susceptible to IGSCC where there is no mitigation by stress improvement.

**Category E** - Weldments with cracks that have been overlaid with IGSCC-resistant material. Additionally, weldments with cracking that are mitigated by an effective stress improvement process may be considered Category E.

**Category F** – Weldments with cracking that have not been mitigated by an effective stress improvement process.

**Category G** – Weldments made from material that is considered susceptible to IGSCC that have not been examined. Because of improved water chemistry that significantly reduced the propensity for initiation and growth of IGSCC, plus improved examination procedures/techniques for the detection and sizing of IGSCC, new inspection criteria was subsequently developed and incorporated in BWRVIP-75-A.

**Scope:** The scope of this augmented program includes RCPB piping, welds and components, of four inches and larger nominal pipe size, made of stainless steel

---

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

---

and nickel alloy. The following table provides the scope for each Category described in GL 88-01 and BWRVIP-75-A for HCGS.

IGSCC Category	Total Number of Welds
A	N/A
B	2
C	17
D	2
E	3
F	N/A
G	N/A

**Method:** Ultrasonic

**Industry Code or Standards:** ASME Section XI

**Frequency:** HCGS implements the revised inspection schedules in BWRVIP-75-A.

Cat.	Weld Description	Existing Inspection Frequency of GL 88-01	Proposed Inspection Frequency (Note 1, 2, 3(b))	
			NWC	HWC
A	Resistant Materials	25% every 10 years at least 12% in 1 <sup>st</sup> 6 years	B-F = 25% every 10 years B-J = 25% every 10 years (Note 3(a))	10% every 10 years
B	Non-Resistant Materials Stress Improved within 1 <sup>st</sup> 2 years of Operation	50% every 10 years at least 25% in 1 <sup>st</sup> 6 years	25% every 10 years (Notes 4 and 5)	10% every 10 years (Notes 4 and 5)
C	Non-Resistant Materials Stress Improved after 2 years of Operation	All within 2 cycles of SI, then all within 10 years at least 50% within 1 <sup>st</sup> 6 years	25% every 10 years (Note 5)	10% every 10 years (Note 5)
D	Non-Resistant Materials, No Stress Improvement	Every 2 refueling cycles	100% every 6 years	100% every 10 years, at least 50% in 1 <sup>st</sup> 6 years
E	Cracked – Reinforced by Weld Overlay	Every 2 refueling cycles	25% every 10 years, at least 12.5% in 1 <sup>st</sup> 6 years	10% every 10 years

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

Cat.	Weld Description	Existing Inspection Frequency of GL 88-01	Proposed Inspection Frequency (Note 1, 2, 3(b))	
			NWC	HWC
E	Cracked – Mitigated by Stress Improvement	Every 2 refueling cycles	100% every 6 years	100% every 10 years, at least 50% in 1 <sup>st</sup> 6 years (Note 6)
F	Cracked – Inadequate or No repair	Every refueling cycle	Every Refueling Outage	Every Refueling Outage
G	Non-Resistant, Not Inspected	Next Outage	Next Outage	Next Outage
<ol style="list-style-type: none"> <li>For the examination sample percentages that are less than required by ASME Section XI for Category A welds, HCGS will be implementing Code Case N-716-1 which is an approved alternative and therefore no additional alternative is required.</li> <li>When examination sample is less than 100%, approximately 50% of the sample is required to be inspected during the first 6 years of the interval.</li> <li> <ol style="list-style-type: none"> <li>HCGS is implementing Code Case N-716-1 and these welds are incorporated into the total population for which the element selection is used.</li> <li>During the selection of locations for inspection, consideration should be given regarding locations where IGSCC could be accelerated by crevice corrosion or thermal fatigue. In addition, locations having attributes that would promote IGSCC should have higher priority for inspection. The attributes that may be considered include: high carbon or low ferrite content, crevice or stagnant flow condition, evidence of weld repair, surface cold work, and high fit-up, residual and operating stresses.</li> </ol> </li> <li>If qualified IGSCC examinations have not been conducted, the inspection frequency for Category B welds will be 25 percent of the population every 6 years under NWC conditions, or 25 percent every 10 years under HWC conditions.</li> <li>The licensee must ensure that an effective stress improvement was achieved. Additionally, there must have been either: <ol style="list-style-type: none"> <li>a preservice (post-stress improvement) and inservice examination with a qualified procedure with no cracking identified or</li> <li>for welds that were stress-improved prior to publication of BWRVIP-75-A did not receive a preservice examination, at least one examination performed with a qualified procedure after more than two operating cycles and no cracking detected.</li> </ol> </li> <li>If a flawed weld is stress improved and becomes Category E, a preservice examination must be performed followed by two successive inservice examinations using qualified procedures, to be performed every second refueling outage (i.e., a repeat inspection after two cycles and another inspection after two more cycles).</li> </ol>				

**Acceptance Criteria or Standard:** ASME Section XI, IWB-3640 (IWB-3514 does not apply to austenitic stainless steels and associated welds in BWR environments which are subject to stress corrosion cracking).

**Regulatory Basis:** GL 88-01 and the NRC Safety Evaluation for BWRVIP-75-A. The HCGS Updated Final Safety Analysis Report (UFSAR), Appendix A, Section A.2.1.7 requires that for components within the scope of the BWR Stress Corrosion Cracking program, resistant materials will be used for new and replacement components.

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the augmented inspection program. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

## 2.2.2 “Feedwater Nozzle Examinations In Accordance With U.S. NRC NUREG 0619”

**Background:** Boiling Water Reactor Owners’ Group (BWROG) Report GE-NE-523-A71-0594-A Revision 1, “Alternate BWR Feedwater Nozzle Inspection



Requirements, May 2000,” as approved by USNRC final SER dated March 10, 2000; Boiling Water Reactor Owners’ Group (BWROG) Report GE-NE-523-A71-0594, “Alternate BWR Feedwater Nozzle Inspection Requirements, August 1999,” as conditionally approved by USNRC final SER dated June 5, 1998; and USNRC NUREG-0619, “BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking”, dated November 1980. **(CM-6)**

These documents discuss the initial and current examination requirements for BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking. The alternate approach was developed and submitted to the USNRC by the BWROG. The USNRC accepted these alternate requirements in a final SER dated March 10, 2000.

In response to NUREG-0619, design changes were made to the feedwater nozzles prior to initial plant operation to mitigate or prevent thermally-induced fatigue cracking, which included eliminating the cladding on nozzle inner diameter and the use of a triple sleeve feedwater sparger design. In addition, mitigation of cracking in the feedwater nozzle is also accomplished through the use of a feedwater level control system that uses a startup level control valve for low power operation to decrease flow fluctuations, and the reactor water cleanup return flow is injected in both feedwater loops. Note that the Control Rod Drive Return Line Nozzle has been cut and capped and therefore the continued inspection of the nozzle as required by NUREG-0619 is no longer applicable.

HCGS committed to the initial examination requirements of the USNRC NUREG. Future inspections will comply with BWROG “Alternate BWR Feedwater Nozzle Inspection Requirements,” GE-NE-523-A71-0594-A, Revision 1, dated May 2000 as accepted by USNRC SER (TAC No. MA6787) dated March 10, 2000.

HCGS performs ultrasonic examination (UT) of the six Feedwater Nozzle Inner Radii on Nozzles N4A – F (Zone 1, 2 & 3) once every 10 years in accordance with GE-NE-523-A71-0594-A, Revision 1. HCGS performs VT-3 visual examinations of the six Feedwater Sparger N4A – F Flow Hole Welds in the Sparger Arms and Tees, once every 4<sup>th</sup> refueling outage or 6 years.

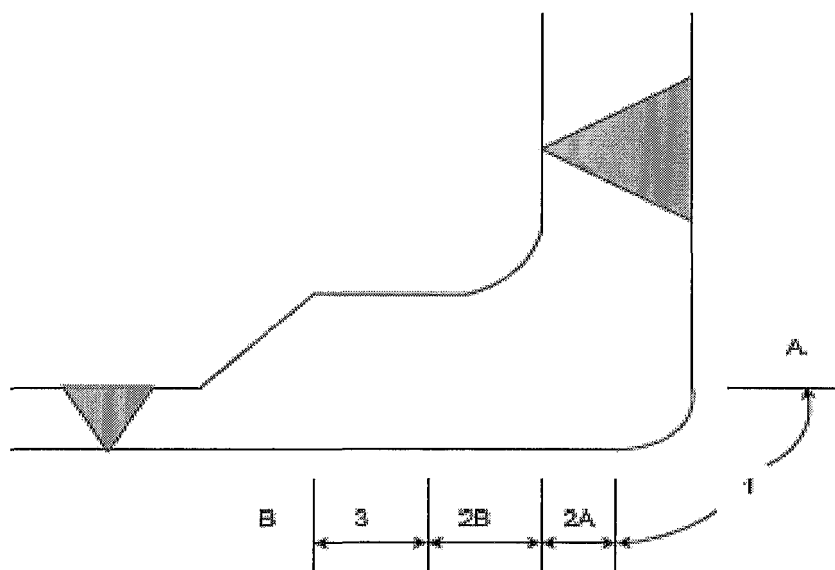
**Source Document:** The augmented examination requirements for the feedwater nozzles and spargers are contained in NUREG-0619 and BWR Owners Group (BWROG) Licensing Topical Report GE-NE-523-A71-0594, Revision 1, August 1999, Table 6-1.

**Associated Documents:** General Electric document GE-NE-523-A71-0594-A, Revision 1, May 2000, “Alternate BWR Feedwater Nozzle Inspection Requirements,” and the NRC Final Safety Evaluation of BWR Owner’s Group Alternate Boiling Water Reactor (BWR) Feedwater Nozzle Inspection. Use with

Analysis NEDC-32480P, DRF B11-00844, VTD# 431674 (EPU Updated) and SIA Report# 0900375.401.

**Purpose:** NUREG-0619 was issued by the NRC in November 1980, and described a cracking phenomenon of BWR RPV Feedwater (FW) nozzle and CRD nozzle inside radius sections. As a result of enhanced technology and more sophisticated techniques for stress and fracture mechanics analysis, the examination of the FW Nozzle Blend Radius is now performed in accordance with NRC approved guidance of GE-NE-523-A71-0594-A Rev.1.

**Scope:** The scope of this augmented examination program section includes UT of all six of the FW nozzle bores and inside radius sections as depicted in Figure 1 and VT-3 visual examinations for the FW spargers.



The volumetric UT examination region begins at the inside radius-to-vessel intersection point (A). The examination region ends at the point on the inner diameter (ID) corresponding to the point on the outer diameter (OD) where the taper on the nozzle thickness starts at (B).

Figure 1

**Method:** Volumetric UT examination will be performed on the FW nozzle inside radius sections and VT-3 visual examinations will be performed on the FW spargers.

**Industry Code or Standards:** ASME Section XI

**Frequency:** FW Nozzle Zones 1, 2, and 3 are examined once every 10 years. The Feedwater Spargers are internal to the reactor pressure vessel and shall be visually examined every fourth refueling outage.

**Acceptance Criteria or Standard:** ASME Section XI, IWB-3000 and the supplemental guidance provided in GE-NE-523-A71-0594-A, Rev. 1.

**Regulatory Basis:** The HCGS Updated Final Safety Analysis Report (UFSAR), Appendix A, Section A.2.1.5 “BWR Feedwater Nozzle”, provides the basis for inspection of the feedwater nozzles and has statements which support the use of the examinations that will be performed in accordance with ASME Section XI, Appendix VIII to achieve the level of confidence needed as specified in NUREG-0619.

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the augmented inspection program. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

### 2.2.3 “BWR Vessel and Internals Project (BWRVIP Vessel Internals)”

**Background:** Increased awareness of the presence of in-vessel component degradation has led to the formation of the BWRVIP. BWRVIP is an association of BWR utilities focused on the common purpose of investigating and developing effective, acceptable approaches for addressing in-vessel component degradation through improved detection, mitigation, and/or repair techniques. In accordance with the BWRVIP charter, the organization is tasked with providing generic resolution to BWR issues and representing the member utilities in negotiating with the USNRC for approval of the groups’ recommended actions. PSEG Nuclear, as a member utility of BWRVIP, has endorsed the objectives prescribed by the BWRVIP.

The BWRVIP is comprised of a series of Inspection & Evaluation Guidelines and documents that discuss RPV internals. The BWRVIP encompasses pertinent information and requirements presented in I.E. Bulletins (IEBs), General Electric Service Information Letters (SIL’s), and Rapid Information Communication Services Information Letters (RICSIL’s).

HCGS’s commitments to the BWRVIP are discussed in BWRVIP letters to the USNRC dated May 30, 1997 and October 30, 1997. The USNRCs response to the discussion of BWRVIP utility commitments is discussed in an USNRC letter to the BWRVIP dated July 29, 1997.

**Source Document:** BWRVIP Inspection & Evaluation Guidelines

**Associated Documents:** GE SILs and RICSILs and IEBs

**Purpose:** Manage degradation of RPV internals as addressed in procedure ER-AB-331.

**Scope:** See procedure ER-AB-331

**Method:** See procedure ER-AB-331.

**Industry Code or Standards:** See procedure ER-AB-331.

**Frequency:** See procedure ER-AB-331.

**Acceptance Criteria or Standard:** See procedure ER-AB-331.

**Regulatory Basis:** See procedure ER-AB-331.

**Responsible Organization:** See procedure ER-AB-331.

#### 2.2.4 “MEB 3-1 BER Piping”

**Background:** The USNRC Branch Technical Position, MEB 3-1 dated November 1975 discusses protection against postulated piping failures in fluid systems outside containment, and includes requirements for licensees to perform 100% volumetric examination of circumferential and longitudinal pipe welds within the pipe break exclusion areas associated with high energy piping in containment penetration areas.

HCGS has committed to the requirements of the USNRC Branch Technical Position MEB 3-1 per letters to the USNRC dated February 5, 1996 and May 9, 1996. Updated Final Safety Analysis Report (UFSAR) Sections 3.6.1 and 3.6.2 detail HCGS’s compliance with USNRC Branch Technical Position MEB 3-1.

**Source Document:** USNRC Branch Technical Position, MEB 3-1 dated November 1975

**Associated Documents:** UFSAR Section 6.6.8 “Augmented Inservice Inspection to Protect Against Postulated Piping Failures”, EPRI TR-1006937 “Extension of the EPRI Risk Informed ISI Methodology to Break Exclusion Region Programs,” dated April 4, 2002, “Break Exclusion Region Evaluation (Calculation No. 32-5030484-01), and “Consequence Evaluation of Class 1 and 2 Piping (Calculation No. 32-5030483-01).

**Purpose:** For those portions of high-energy fluid piping, inservice examinations are performed in accordance with the requirements specified in ASME Section XI. During each inspection interval, as defined in IWA-2400, an ISI is performed on all non-exempt ASME Code Section XI circumferential and longitudinal welds contained within the break exclusion region for high-energy fluid system piping as required per the approved risk-informed break exclusion region (RI-BER) process.

**Scope:** The following table identifies the system and number of welds selected.

<b><u>System</u></b>	<b><u>BER Welds</u></b>
<b><u>AB – Main Steam</u></b>	<b><u>70</u></b>
<b><u>AE - Feedwater</u></b>	<b><u>10</u></b>
<b><u>BG – RWCU Suction</u></b>	<b><u>11</u></b>
<b><u>FC – RCIC Steam</u></b>	<b><u>12</u></b>
<b><u>FD – HPCI Steam</u></b>	<b><u>16</u></b>

**Method:** Volumetric

**Industry Code or Standards:** ASME Section XI

**Frequency:** Each inspection interval

**Acceptance Criteria or Standard:** ASME Section XI

**Regulatory Basis:** UFSAR 6.6.8 and EPRI TR-1006937

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the augmented inspection program. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

#### 2.2.5 “Suppression Chamber Visual Examination”

**Background:** Technical Specification 4.6.2.1(e) requires performance of a General Visual examination of the accessible interior and exterior surfaces of the Suppression Chamber at least once per 18 months.

**Source Document:** Technical Specifications 4.6.2.1(e)

**Associated Documents:** Surveillance Frequency Control Program

**Purpose:** Verify structural integrity of the suppression chamber

**Scope:** Interior and Exterior of the Suppression Chamber

**Method:** General Visual

**Industry Code or Standards:** N/A

**Frequency:** Every 18 Months (each refueling cycle)

**Acceptance Criteria or Standard:** ASME Section XI, IWE-3511

**Regulatory Basis:** Technical Specifications 4.6.2.1(e)

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the augmented inspection program. Responsible Individual (ref. IWE-2320) is responsible for evaluating conditions of degradation for acceptance or corrective action.

#### 2.2.6 “Scram Discharge Volume Piping”

**Background:** HCGS performs a VT-2 visual examination (system pressure test) on the Control Rod Drive – Scram Discharge Volume piping sections each refueling outage per the commitments within and revised by USNRC Generic Letter 81-35, NUREG-0803, NRC Generic Letter 86-01, and BWROG-8420. This requirement has also been incorporated into the Station Leakage Reduction Program (OU-AA-335-015).

**Source Document:** USNRC Generic Letter 81-35 “Safety Concerns Associated with Pipe Breaks in the BWR Scram System”

**Associated Documents:** NUREG-0803 “Generic Safety Report Regarding Integrity of BWR Scram System Piping”, USNRC Generic Letter 86-01 “Safety Concerns Associated with Pipe Breaks in the BWR Scram System”, and BWROG-8420 “Scram Discharge Pipe Integrity”. Implementing procedure OU-AA-335-015.

**Purpose:** A VT-2 visual examination is performed to verify structural integrity of the CRD Scram Discharge Volume Piping.

**Scope:** CRD Scram Discharge Volume Piping on the North and South Side of the Reactor Building.

**Method:** VT-2 Visual Examination

**Industry Code or Standards:** ASME Section XI

**Frequency:** Every 18 Months

**Acceptance Criteria or Standard:** No pressure boundary leakage

**Regulatory Basis:** USNRC Generic Letter 81-35, NUREG-0803, NRC Generic Letter 86-01, and BWROG-8420

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the augmented inspection program. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

2.2.7 (LRC) “ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD”

**Background:** This is an existing program that is being credited to the aging management during the period of extended operations. This program consists of periodic volumetric and visual examinations of components for assessment, identification of signs of degradation, and establishment of corrective actions.

**Source Document:** UFSAR, Appendix A, A.2.1.1 “ASME Section XI Inservice Inspection, Subsection IWB, IWC, and IWD”

**Associated Documents:** ASME Section XI, 2007 Edition through the 2008 Addenda, SH-PBD-AMP-XI.M1 “License Renewal Project ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD”

**Purpose:** This program includes Volumetric and Visual VT-1, VT-2, and VT-3 examinations performed to manage cracking, loss of fracture toughness and loss of material in Class 1, 2, and 3 piping and components exposed to reactor coolant, steam and treated water environments.

**Scope:** All ASME Section XI Class 1, 2, and 3 components with their welded attachments (See Section 2.1.1)

**Method:** Volumetric, Surface, and Visual (VT-1, VT-2, and VT-3) (See Section 2.1.1)

**Industry Code or Standards:** ASME Section XI

**Frequency:** Per ASME Section XI IWX-2500-1 Table (See Section 2.1.1)

**Acceptance Criteria or Standard:** IWX-3000

**Regulatory Basis:** 10 CFR 50.55a “Codes and Standards”, UFSAR Appendix A “License Renewal Final Safety Analysis Report Supplement”

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the AMP. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

2.2.8 (LRC) “Reactor Head Closure Studs”

**Background:** This is an existing program that is being credited to the aging management during the period of extended operations. This program is implemented through station procedures based on the examination and inspection requirements specified in ASME Section XI, Table IWB-2500-1 and preventive

measures described in NRC Regulatory Guide 1.65, “Materials and Inspection for Reactor Vessel Closure Studs.”

**Source Document:** UFSAR, Appendix A, A.2.1.3 “Reactor Head Closure Studs”

**Associated Documents:** ASME Section XI, 2007 Edition through the 2008 Addenda, SH-PBD-AMP-XI.M3 “License Renewal Project Reactor Head Closure Studs”

**Purpose:** This program includes volumetric examinations performed to manage cracking, loss of fracture toughness and loss of material in reactor head closure studs and visual examination of the nuts and washers.

**Scope:** Reactor Pressure Vessel Closure Head Studs, Nuts and Washers.

**Method:** Volumetric

**Industry Code or Standards:** ASME Section XI

**Frequency:** Once per 10 year interval per ASME Section XI, Table IWB-2500-1, Category B-G-1.

**Acceptance Criteria or Standard:** ASME Section XI, IWB-3515 or IWB-3517

**Regulatory Basis:** 10 CFR 50.55a “Codes and Standards”, UFSAR Appendix A “License Renewal Final Safety Analysis Report Supplement”

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the AMP. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

#### 2.2.9 (LRC) “BWR Vessel ID Attachment Welds”

**Background:** This is an existing program that is being credited to the aging management during the period of extended operations. This program incorporates the recommendations of BWRVIP-48-A and is implemented through station procedures that are part of inservice inspection and incorporates the requirements of ASME Section XI.

**Source Document:** UFSAR, Appendix A, A.2.1.4 “BWR Vessel ID Attachment Welds”

**Associated Documents:** ASME Section XI, 2007 Edition through the 2008 Addenda, BWRVIP-48-A “BWR Vessel and Internals Project Vessel ID Attachment Weld Inspection and Flaw Evaluation Guidelines”, HC-PBD-AMP-



XI.M4 “License Renewal Project BWR Vessel ID Attachment Welds”, ER-AB-331-1001 “BWR Reactor Internals Program”

**Purpose:** This program includes visual EVT-1, VT-1 and VT-3 examinations performed to manage cracking, loss of fracture toughness and loss of material in reactor vessel internal attachment welds. This program is implemented by the Inservice Inspection (ISI) and the BWR Reactor Internals Programs.

**Scope:** Jet Pump Riser Braces, Core Spray Piping, Steam Dryer Support, Feedwater, Steam Dryer Support and Hold Down Brackets, Guide Rod, Feedwater Sparger, and Surveillance Sample Holder Brackets.

**Method:** Visual Examination EVT-1, VT-1 and VT-3

**Industry Code or Standards:** ASME Section XI

**Frequency:** BWRVIP-48-A, Table 3-2.

**Acceptance Criteria or Standard:** ASME Section XI, IWB-3520

**Regulatory Basis:** 10 CFR 50.55a “Codes and Standards”, UFSAR Appendix A “License Renewal Final Safety Analysis Report Supplement”

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the AMP. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

#### 2.2.10 (LRC) “BWR Feedwater Nozzle”

**Background:** This is an existing program that is being credited to the aging management during the period of extended operations. This program manages the effects of cracking in the feedwater nozzles by enhanced inservice inspection (ISI) in accordance with ASME Section XI, Subsection IWB, Table IWB-2500-1 and the recommendations of GE-NE-523-A71-0594-A, Rev. 1.

**Source Document:** UFSAR, Appendix A, A.2.1.5 “BWR Feedwater Nozzle”

**Associated Documents:** HC-PBD-AMP-XI.M5 “License Renewal Project BWR Feedwater Nozzle” also see 2.2.2 of this section.

**Purpose:** See 2.2.2

**Scope:** See 2.2.2

**Method:** See 2.2.2

**Industry Code or Standards:** See 2.2.2

**Frequency:** See 2.2.2

**Acceptance Criteria or Standard:** See 2.2.2

**Regulatory Basis:** UFSAR, Appendix A, A.2.1.5 “BWR Feedwater Nozzle”

**Responsible Organization:** See 2.2.2

2.2.11 (LRC) “BWR Control Rod Drive Return Line Nozzle”

**Background:** This is an existing program that is being credited to the aging management during the period of extended operations. This program provides monitoring of the N9 nozzle for cracking through station ISI procedures based on ASME Section XI requirements. HCGS has capped the N9 nozzle to mitigate fatigue cracking. The program performs volumetric examination of the nozzle-to-vessel weld and an enhanced VT-1 of the nozzle inner radius (per Code Case N-648-1). The N9 nozzle-to-cap welds is also volumetrically examined per 3.0.

**Source Document:** UFSAR, Appendix A, A.2.1.6 “BWR Control Rod Drive Return Line Nozzle”

**Associated Documents:** HC-PBD-AMP-XI.M6 “License Renewal Project BWR Control Rod Drive Return Line Nozzle” also 2.2.2 and 3.0 of this plan

**Purpose:** See 2.2.2 and 3.0

**Scope:** See 2.2.2 and 3.0

**Method:** See 2.2.2 and 3.0

**Industry Code or Standards:** See 2.2.2 and 3.0

**Frequency:** See 2.2.2 and 3.0

**Acceptance Criteria or Standard:** See 2.2.2 and 3.0

**Regulatory Basis:** UFSAR, Appendix A, A.2.1.6 “BWR Control Rod Drive Return Line Nozzle”

**Responsible Organization:** See 2.2.2 and 3.0

2.2.12 (LRC) “BWR Stress Corrosion Cracking”

**Background:** This is an existing program that is being credited to the aging management during the period of extended operations. This program manages intergranular stress corrosion cracking (IGSCC) in reactor coolant pressure boundary piping and piping components made of stainless steel (SS) and nickel based alloy components as delineated in NUREG-0313, Rev. 2 and Generic Letter (GL) 88-01 and its Supplement 1. These welds are volumetrically examined per 2.2.1 of this section. This program will be enhanced to clarify that for components within the scope of this program, resistant materials will be used for new and replacement components. This includes low carbon stainless piping and stainless steel weld material limited to a maximum carbon content 0.035wt. % and a minimum ferrite content of 7.5%.

**Source Document:** UFSAR, Appendix A, A.2.1.7 “BWR Stress Corrosion Cracking”

**Associated Documents:** See 2.2.1

**Purpose:** See 2.2.1

**Scope:** See 2.2.1

**Method:** See 2.2.1

**Industry Code or Standards:** See 2.2.1

**Frequency:** See 2.2.1

**Acceptance Criteria or Standard:** See 2.2.1

**Regulatory Basis:** UFSAR, Appendix A, A.2.1.7 “BWR Stress Corrosion Cracking”

**Responsible Organization:** See 2.2.1

#### 2.2.13 (LRC) “BWR Penetrations”

**Background:** This is an existing program that is being credited to the aging management during the period of extended operations. This program manages the effects of cracking of reactor vessel instrumentation penetrations (nozzles) exposed to reactor coolant through water chemistry and inservice inspections. This program incorporates the inspection and evaluation recommendations of BWRVIP-49-A “Instrument Penetration Inspection and Flaw Evaluation Guidelines” as well as the water chemistry recommendations of BWRVIP-130, “BWR Vessel and Intervals Project BWR Water Chemistry Guidelines.”

**Source Document:** UFSAR, Appendix A, A.2.1.8 “BWR Penetrations”

**Associated Documents:** BWRVIP-49-A, “Instrument Penetration Inspection and Flaw Evaluation Guidelines”, HC-PBD-AMP-XI.M8 “License Renewal Project BWR Penetrations”

**Purpose:** Manage the effects of cracking of reactor vessel instrumentation nozzles

**Scope:** Beltline instrumentation nozzles and other instrumentation nozzles; except for Standby Liquid Control/Core Plate Differential Pressure (dP) nozzle and the jet pumps instrumentation nozzles, which are in the scope of 2.2.7.

**Method:** Visual VT-2 in accordance with ASME Section XI, Table IWB-2500-1, Category B-P

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

**Frequency:** Every Refueling Outage

**Acceptance Criteria or Standard:** IWB-3522

**Regulatory Basis:** UFSAR, Appendix A, A.2.1.8 “BWR Penetrations”

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the AMP. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

#### 2.2.14 (LRC) “BWR Vessel Internals”

**Background:** This is an existing program that is being credited to the aging management during the period of extended operations. This program manages the effects of cracking and loss of material of reactor pressure vessel internals through condition monitoring activities that consist of examinations of the BWRVIP guidelines, as well as the requirements of ASME Section XI. This program also mitigates these aging effects through water chemistry recommendations of BWRVIP-130, “BWR Vessel and Intervals Project BWR Water Chemistry Guidelines.”

**Source Document:** UFSAR, Appendix A, A.2.1.9 “BWR Vessel Internals”, HC-PBD-AMP-XI.M9 “License Renewal Project BWR Vessel Internals”

**Associated Documents:** See 2.2.3

**Purpose:** See 2.2.3

**Scope:** See 2.2.3

**Method:** See 2.2.3

**Industry Code or Standards:** See 2.2.3

**Frequency:** See 2.2.3

**Acceptance Criteria or Standard:** See 2.2.3

**Regulatory Basis:** UFSAR, Appendix A, A.2.1.9 “BWR Vessel Internals”

**Responsible Organization:** See 2.2.3

2.2.15 (LRC) “Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS)”

**Background:** This program will provide for aging management of CASS reactor internal components within the scope of license renewal. This program includes a component specific evaluation of the loss of fracture toughness in accordance with the specified criteria. For those components where loss of fracture toughness may affect function of the component, a supplemental inspection to those performed under the BWR Vessel Internals program will be performed. This program will verify the integrity of the CASS components exposed to the high temperature and neutron fluence present in the reactor environment.

**Source Document:** UFSAR, Appendix A, A.2.1.10 “Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS)”

**Associated Documents:** HC-PBD-AMP-XI.M13 “License Renewal Project Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel”

**Purpose:** To determine whether the high temperature and neutron fluence will affect the CASS components within the reactor vessel interior.

**Scope:** The following CASS material components susceptible to thermal aging and neutron irradiation embrittlement and subject to loss of fracture toughness include:

- Control Rod Assemblies; guide tubes
- Core Spray Lines and Spargers; spray nozzles and elbows
- Fuel Supports
- Jet Pump Assemblies; transition piece, inlet, throat, and diffuser collar
- Steam Dryers; drain line fittings

**Method:** Evaluation and supplemental inspection using enhanced visual VT-1 examination method

**Industry Code or Standards:** N/A

**Frequency:** Inspections for susceptible components are scheduled in accordance with ASME Section XI, IWB-2400.

**Acceptance Criteria or Standard:** Detected flaws are evaluated in accordance with IWB-3500. Flaw tolerance evaluation for components with ferrite content up to 25% are performed according to the principles associated with IWB-3640 procedures for submerged arc welds regarding the Code restriction of 20% ferrite in IWB-3641(b)(1).

**Regulatory Basis:** UFSAR, Appendix A, A.2.1.10 “Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS)”

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the AMP. Design Engineering is responsible providing input for evaluating conditions of degradation for acceptance or corrective action.

#### 2.2.16 (LRC) “One-Time Inspection”

**Background:** This is a new program that will provide reasonable assurance that an aging effect is not occurring, or that the aging effect is occurring slowly enough to not affect a component intended function during the period of extended operations. The program will be credited for cases where either (a) an aging effect is not expected to occur but there is insufficient data to completely rule it out, (b) an aging effect is expected to progress very slowly in the specified environment, but the local environment may be more adverse than that generally expected, or (c) the characteristics of the aging effect include a long incubation period. When examinations are performed within the scope of the Inservice Inspection Program are completed, the examination results will be reviewed for credit under the One-Time Inspection Program.

**Source Document:** UFSAR, Appendix A, A.2.1.22 “One-Time Inspection”

**Associated Documents:** SH-PBD-AMP-XI.M32 “License Renewal Project One-Time Inspection”

**Purpose:** The One-Time Inspection aging management program will be used to provide additional assurance that aging that has not yet manifested itself is not occurring or that the evidence of aging shows that the aging is so insignificant that an aging management program is not warranted. The One-Time Inspection aging management program will be used for the following:

To confirm the effectiveness of the Water Chemistry program to manage the loss of material, cracking, and the reduction of heat transfer aging effects for aluminum, copper alloy, ductile cast iron, gray cast iron, nickel alloy, steel, stainless steel and cast austenitic stainless steel in treated water, steam, sodium pentaborate, and reactor coolant environments.

To confirm the effectiveness of the Fuel Oil Chemistry program to manage the loss of material aging effect for copper alloy, steel, galvanized steel and stainless steel in a fuel oil environment.

To confirm the effectiveness of the Lubricating Oil Analysis program to manage the loss of material and the reduction of heat transfer aging effects for copper alloy, gray cast iron, steel and stainless steel in a lubricating oil environment.

To confirm loss of material in carbon steel piping and fittings is insignificant in an air/gas-wetted (internal) environment.

**Scope:** Systems in the scope of the One-Time Inspection aging management program are identified in SH-PBD-AMP-XI.M32, Section 3.1.

**Method:** A sample plan for inspections associated with the One-Time Inspection program is developed to ensure there are adequate inspections to address each of the material, environment, and aging effect combinations. A sample size of 20% of the population (up to a maximum of 25 inspections) will be established for each of the sample groups. Inspection methods will include visual or volumetric examinations.

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

**Frequency:** The inspections will be scheduled as close to the end of the current operating license as practical with margin provided to ensure completion and evaluation of the inspection results including identification of any appropriate corrective actions prior to commencing the period of extended operation.

**Acceptance Criteria or Standard:** Industry guidelines, codes, and standards, including the applicable edition of ASME Boiler and Pressure Vessel Code, Section XI. Should aging effects be detected, the program triggers actions to characterize the nature and extent of the aging effect and determines what subsequent monitoring is needed to ensure intended functions are maintained during the period of extended operation.

**Regulatory Basis:** UFSAR, Appendix A, A.2.1.22 “One-Time Inspection”

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the AMP. Design Engineering is responsible

providing input for evaluating conditions of degradation for acceptance or corrective action.

2.2.17 (LRC) “ASME Section XI, Subsection IWE”

**Background:** This is an existing program that is being credited to the aging management during the period of extended operation. This program consists of periodic inspection of the primary containment surfaces and components, including its integral attachments, penetration sleeves, pressure retaining bolting, personnel airlock and equipment hatches, and other pressure retaining components for loss of material, loss or preload, and fretting or lockup. This program will be enhanced to include:

- Installation of an internal moisture barrier at the junction of the drywell concrete floor and the steel drywell shell was completed in RF16 and RF18 under DCP 80097467,
- The IWE Program (see Section 6) has been revised to require inspection of the moisture barrier for loss of sealing in accordance with IWE-2500. Note that the original design for HCGS did not require an internal moisture barrier at the junction of the drywell concrete floor and steel drywell shell.
- Verify that the reactor cavity seal rupture drain lines are clear from blockage and that the monitoring instrumentation is functioning properly once prior to the extended period of operation and one additional time during the first 10 years of the period of extended operation.
- Establish drainage capability from the bottom of the drywell air gap on or before June 30, 2015. The drywell air gap will be divided into four approximately equal quadrants. Drainage consists of one drain in each quadrant for a total of four drains. Each drain will be open at the bottom of the drywell air gap and be capable of draining water from the air gap. Verify that drains at the bottom of the drywell air gap are clear from blockage once prior to the period of extended operation and one additional time during the first 10 years of the period of extended operation.
- Investigate the source of any leakage detected by the reactor cavity seal rupture drain line instrumentation and assess its impact on the drywell shell.
- After drainage has been established from the bottom of the air gap from all four drains, monitor the drains at the bottom of the drywell air gap daily for leakage in the event leakage is detected by the reactor cavity seal rupture drain line instrumentation.
- Monitor penetration sleeve J13 daily for water leakage when the reactor cavity is flooded up. In addition, perform a walkdown of the torus room



to detect any leakage from other drywell penetrations. These actions shall continue until corrective actions are taken to prevent leakage through J13 or through the four air gap drains.

- Until drainage is established from all four drains, when the reactor cavity is flooded up, perform borescope examination of the bottom of the drywell air gap through penetration located at elevation 93' in four quadrants, 90 degrees apart. The personnel performing the borescope examination shall be certified as VT-1 inspectors in accordance with ASME Section XI, Subsection IWA-2300, requirements. The examiners will look for signs of water accumulation and drywell shell corrosion. Adverse conditions will be documented and addressed in the corrective action program. After drainage has been established from the bottom of the air gap from all four drains, monitor the lower drywell air gap drains daily for water leakage when the reactor cavity is flooded up.
- Until drainage is established from all four drains, perform UT thickness measurements each refuel outage from inside the drywell in the area of the drywell shell below the J13 penetration sleeve area to determine if there is a significant corrosion rate occurring in this area due to periodic exposure to reactor cavity leakage. In addition, UT measurements shall be performed each refuel outage around the full 360 degree circumference of the drywell between elevations 86'-11" and 88'-0" (underside of the torus down comer vent piping penetrations). Inspection and acceptance criteria will be in accordance with IWE-2000 and IWE-3000 respectively. The results of the UT measurements shall be used to establish a corrosion rate and demonstrate that the effects of aging will be adequately managed such that the drywell can perform its intended function until April 11, 2046. Evidence of drywell shell degradation will be documented and addressed in the corrective action program. After drainage has been established from the bottom of the air gap from all four drains, UT thickness measurements were taken each of the next three refueling outages at the same locations as those previously examined as described above. These UT thickness measurements were compared to the results of the previous UT inspections and no corrosion was ongoing. The containment air gap UT inspection is now part of the IWE Program, Item No. E4.12.
- The cause of the reactor cavity water leakage will be investigated and repaired, if practical, before period of extended operation. If repairs cannot be made prior to the period of extended operation, the program will be enhanced to incorporate the following aging management activities, as recommended in the Final Interim Staff Guidance LR-ISG-2006-01.

- Identify drywell surfaces requiring examination and implement augmented inspections for the period of extended operation in accordance with IWE-1240, as identified in Table IWE-2500-1, Examination Category E-C
- Demonstrate through the use of augmented inspections that corrosion is not occurring or that corrosion is progressing so slowly that the age-related degradation will not jeopardize the intended function of the drywell shell through the period extended operation.
- Develop a corrosion rate that can be inferred from past UT examinations. If degradation has occurred, evaluate the drywell shell using the developed corrosion rate to demonstrate that the drywell shell will have sufficient wall thickness to perform its intended function through the period of extended operation.

These enhancements will be implemented prior to the period of extended operation, with the inspection performed in accordance with the schedule described above.

**Source Document:** UFSAR, Appendix A, A.2.1.28 “ASME Section XI, Subsection IWE”

**Associated Documents:** ASME Section XI, 2007 Edition through the 2008 Addenda

**Purpose:** Periodic inspection looking for loss of material, loss of preload, and fretting or lockup

**Scope:** Primary containment surfaces and components, including its integral attachments, penetration sleeves, wetted submerged areas of suppression chamber and vent system, pressure retaining bolting, personnel airlock and equipment hatches, and other pressure retaining components

**Method:** Visual and volumetric

**Industry Code or Standards:** ASME Section XI, Subsection IWE

**Frequency:** As required by ASME Section XI, Table IWE-2500-1

**Acceptance Criteria or Standard:** IWE-3000

**Regulatory Basis:** UFSAR, Appendix A, A.2.1.28 “ASME Section XI, Subsection IWE”

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the AMP. Responsible Individual is

responsible for evaluating conditions of degradation for acceptance or corrective action.

2.2.18 (LRC) “ASME Section XI, Subsection IWF”

**Background:** This is an existing program that is being credited to the aging management during the period of extended operations. This program consists of periodic inspection of the ASME Class 1, 2, 3, and MC piping and component supports for identification of degradation such as loss of material, loss of mechanical function and loss of preload.

**Source Document:** UFSAR, Appendix A, A.2.1.29 “ASME Section XI, Subsection IWF”

**Associated Documents:** ASME Section XI, 2007 Edition through the 2008 Addenda, SH-PBD-AMP-XI.S3 “License Renewal Project ASME Section XI, Subsection IWF”

**Purpose:** Periodic inspection looking for loss of material, loss of mechanical function and loss of preload

**Scope:** Class 1, 2, 3, and MC piping and component supports

**Method:** Visual VT-3

**Industry Code or Standards:** ASME Section XI, Subsection IWF

**Frequency:** As required by ASME Section XI, Table IWF-2500-1

**Acceptance Criteria or Standard:** IWF-3410

**Regulatory Basis:** UFSAR, Appendix A, A.2.1.29 “ASME Section XI, Subsection IWF”

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the AMP. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

2.2.19 (LRC) “Small-Bore Class 1 Piping Inspection”

**Background:** This is a new program that will manage the aging effect of cracking in small-bore (greater than or equal to NPS 1 and less than NPS 4) Class 1 piping through the use of a combination of volumetric and visual inspections. This new program is comprised of the existing ASME Section XI ISI (Risk Informed Inservice Inspection, RISI) program that performs volumetric and visual examinations for selected small-bore socket welds and supplemental inspections

consisting of 25 Class 1 small-bore socket welds and 25 Class 1 small-bore butt welds using volumetric or other industry approved techniques.

**Source Document:** UFSAR, Appendix A, A.2.2.6 “Small-Bore Class 1 Piping Inspection”

**Associated Documents:** ASME Section XI, 2007 Edition through the 2008 Addenda, HC-PBD-AMP-PS1 “Hope Creek Generating Station License Renewal Project Small-Bore Class 1 Piping Inspection,” Notification 20215493 “Add welds to ISI Inspection Plan”

**Purpose:** Volumetric and visual examination which will effectively manage the aging effect of cracking caused by stress corrosion cracking and thermal and mechanical loading in small-bore Class 1 piping by identifying and evaluating cracking prior to loss of intended function. This License Renewal Commitment supersedes the Owner Elected Commitment under Notification 20215493.

**Scope:** 25 Class 1 small-bore socket and 25 Class 1 small-bore butt welds. Based on internal OE, the Class 1 small-bore socket welds selected for inspection will be biased toward selection of the Recirculation System Class 1 small-bore socket welds.

**Method:** Volumetric and visual examinations

**Industry Code or Standards:** ASME Section XI, Subsection IWB

**Frequency:** Once per interval

**Acceptance Criteria or Standard:** Any deficiencies identified are evaluated under the corrective action program consistent with ASME Section XI code requirements. This includes but is not limited to evaluations from thickness profiles, excess surface signals, tip signal plots, to name a few.

**Regulatory Basis:** UFSAR, Appendix A, A.2.2.6 “Small-Bore Class 1 Piping Inspection”

**Responsible Organization:** Program Engineering is responsible for the development and implementation of the AMP. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

#### 2.2.20 (LRC) “Reactor Pressure Vessel Circumferential Weld Examination Relief”

**Background:** ASME Section XI governs inspection of the reactor pressure vessel circumferential welds, as implemented by HCGS ISI Program. These welds are required to be inspected at regular intervals described in Table IWB-2500-1, Examination Category B-A. HCGS has received inspection relief for the

circumferential welds for the time remaining in the current 40 year licensed operating period. The inspection relief is based upon NRC Generic Letter 98-05, which is based on probabilistic assessments that predict an acceptably low probability of failure per reactor operating year.

The analysis is based on reactor pressure vessel metallurgical conditions as well as flaw indication sizes and frequencies of occurrence that are expected through the end of the current licensed operating period. The basis for this relief request was an analysis that satisfied the limiting conditional failure probability for the circumferential welds at the expiration of the current license based on BWRVIP-05 and the extent of neutron embrittlement expected through 40 years of operation.

A request for extension of this relief for HCGS for the extended operating period will be submitted to the NRC, in accordance with 10 CFR 50.55a(z), prior to the extended period of operation.

**Source Document:** UFSAR, Appendix A, A.4.2.4 “Reactor Pressure Vessel Circumferential Weld Examination Relief”

**Associated Documents:** ASME Section XI, 2007 Edition through the 2008 Addenda

**Purpose:** To eliminate the periodic examination of the circumferential welds on the reactor vessel

**Scope:** RPV Circumferential Weld

**Method:** N/A

**Industry Code or Standards:** ASME Section XI

**Frequency:** N/A

**Acceptance Criteria or Standard:** N/A

**Regulatory Basis:** UFSAR, Appendix A, A.4.2.4 “Reactor Pressure Vessel Circumferential Weld Examination Relief”

**Responsible Organization:** Program Engineering is responsible for the development of the updated request for alternative using BWRVIP-05. This shall be submitted prior to 04/11/2025 (one year prior to the end of the current license period 04/11/2026).

- 2.2.21 Augmented Examination of Snubber Supports that are attached to Piping Systems that are Exempt under Section XI or Non-Safety Piping Systems.

**Background:** This is an Owner Augmented program that that was developed when the station transitioned over from Technical Specification (TS) Requirements to OM Code requirements. Under the TS requirements all the Snubbers supporting elements were included in the Snubber Visual Examinations regardless of classification. Under the OM code the Snubbers are visually examined from Pin to Pin and the Snubber Supporting structures are now examined under ASME Section XI. With Section XI, the Non-Safety line Snubber supports would not be required to be examined as well as the Class 1, 2 and 3 lines that are Exempt base on line size or system conditions. This program consists of Interval examinations at a selection of 10% similar to ASME Section XI Class 3 requirements.

**Source Document:** ASME Omb Code Sections ISTA & ISTD, “ASME Section XI, Subsection IWF”

**Associated Documents:** ASME Section XI - 2007 Edition through the 2008 Addenda, ASME Omb Coded 2004 edition through the 2006 addenda

**Purpose:** Examination looking for loss of mechanical function

**Scope:** Class 1, 2 & 3 ASME Section Exempt component supports and Non-Safety component supports

**Method:** Visual VT-3

**Industry Code or Standards:** ASME Section XI, Subsection IWF

**Frequency:** ASME Section XI, Table IWF-2500-1 for Class 3 Supports

**Acceptance Criteria or Standard:** IWF-3410

**Regulatory Basis:** None

**Responsible Organization:** Program Engineering is responsible for the development and implementation of this Owner Augmented Program. Design Engineering is responsible for evaluating conditions of degradation for acceptance or corrective action.

## 2.3 System Classifications and P&ID Boundary Drawings

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

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

When a particular group of components is identified as performing an ISI Class 1, 2, or 3 safety function, the components are further reviewed to assure the interfaces (boundary valves and boundary barriers) meet the criteria set by 10 CFR 50.2, 10 CFR 50.55a(c)(1), 10 CFR 50.55a(c)(2), and Regulatory Guide 1.26, Revision 3. SRP 3.2.2 and ANSI/ANS-58.14-1993 (HCGS is not committed to or licensed in accordance with these documents) were also used for guidance in evaluating the classification boundaries where 10 CFR and the Regulatory Guide did not address a given situation.

According to 10 CFR 50.55a, Paragraph (g)(4), the ISI requirements of ASME Section XI are assigned to these components, within the constraints of existing plant design. The HCGS ISI Class 1, 2, and 3 components that are exempt from examination are those which meet the criteria of ASME Section XI, Paragraphs IWB-1220, IWC-1220, and IWD-1220. Supports which meet the criteria of Paragraph IWF-1230 of ASME Section XI are also exempt from examination. For Containment, ISI Class MC components which meet Paragraph IWE-1220 are exempt from examination. HCGS's ISI Program, including the ISI Database, basis document, and schedule, addresses the nonexempt components which require examination and testing.

The systems and components (piping, pumps, valves, vessels, etc.), which are subject to the examinations of Articles IWB-2000, IWC-2000, IWD-2000, and IWF-2000 are identified on the Inservice Inspection Boundary Diagrams with ISI classification color coding. These drawings are listed in Table 2.3-1. Components, piping, and supports subject to examination are listed in Table 2.3-2.

**TABLE 2.3-1**  
**INSERVICE INSPECTION BOUNDARY DIAGRAMS**

<b><u>Diagram No.</u></b>	<b><u>Sheet No(s).</u></b>	<b><u>P&amp;ID No.</u></b>	<b><u>Title</u></b>
HC-ISI-08-0	1	M-08-0 Sheet 1	Condensate and Refueling Water Storage and Transfer
HC-ISI-10-1	1	M-10-1 Sheet 1	Service Water
HC-ISI-10-1	2	M-10-1 Sheet 2	Service Water
HC-ISI-10-1	3	M-10-1 Sheet 3	Service Water
HC-ISI-11-1	1	M-11-1 Sheet 1	Safety Auxiliaries Cooling Reactor Building
HC-ISI-11-1	2	M-11-1 Sheet 2	Safety Auxiliaries Cooling Reactor Building
HC-ISI-11-1	3	M-11-1 Sheet 3	Safety Auxiliaries Cooling Reactor Building
HC-ISI-12-1	1	M-12-1 Sheet 1	Safety Auxiliaries Cooling Reactor Building
HC-ISI-13-1	1	M-13-1 Sheet 1	Reactor Auxiliaries Cooling
HC-ISI-15-0	4	M-15-0 Sheet 4	Compressed Air (Service)
HC-ISI-15-1	1	M-15-1 Sheet 1	Breathing Air
HC-ISI-23-1	2	M-23-1 Sheet 2	Process Sampling
HC-ISI-25-1	1	M-25-1 Sheet 1	Plant Leak Detection
HC-ISI-26-1	1	M-26-1 Sheet 1	Radiological Monitoring System (RMS)
HC-ISI-30-1	1	M-30-1 Sheet 1	Diesel Engine Auxiliary System Fuel Oil
HC-ISI-30-1	2	M-30-1 Sheet 2	Diesel Engine Auxiliary Systems Intercooler and Injector Cooling, Jacket Water, Crankcase Vacuum Air Intake, Exhaust and Vibration Monitoring System
HC-ISI-30-1	3	M-30-1 Sheet 3	Diesel Engine Auxiliary Systems Starting Air and Lube Oil
HC-ISI-38-0	1	M-38-0 Sheet 1	Post-Accident Sampling System
HC-ISI-38-0	2	M-38-0 Sheet 2	Post-Accident Sampling System
HC-ISI-41-1	1	M-41-1 Sheet 1	Nuclear Boiler
HC-ISI-41-1	2	M-41-1 Sheet 2	Nuclear Boiler
HC-ISI-42-1	1	M-42-1 Sheet 1	Nuclear Boiler Vessel Instrumentation
HC-ISI-43-1	1	M-43-1 Sheet 1	Reactor Recirculation System
HC-ISI-43-1	2	M-43-1 Sheet 2	Reactor Recirculation System
HC-ISI-44-1	1	M-44-1 Sheet 1	Reactor Water Clean Up
HC-ISI-46-1	1	M-46-1 Sheet 1	Control Rod Drive Hydraulic Part A
HC-ISI-47-1	1	M-47-1 Sheet 1	Control Rod Drive Hydraulic Part B
HC-ISI-48-1	1	M-48-1 Sheet 1	Standby Liquid Control
HC-ISI-49-1	1	M-49-1 Sheet 1	Reactor Core Isolation Cooling
HC-ISI-50-1	1	M-50-1 Sheet 1	RCIC Pump Turbine
HC-ISI-51-1	1	M-51-1 Sheet 1	Residual Heat Removal
HC-ISI-51-1	2	M-51-1 Sheet 2	Residual Heat Removal
HC-ISI-52-1	1	M-52-1 Sheet 1	Core Spray
HC-ISI-53-1	1	M-53-1 Sheet 1	Fuel Pool Cooling & Torus Water Cleanup
HC-ISI-53-1	2	M-53-1 Sheet 2	Fuel Pool Cooling & Torus Water Cleanup
HC-ISI-55-1	1	M-55-1 Sheet 1	High Pressure Coolant Injection
HC-ISI-56-1	1	M-56-1 Sheet 1	HPCI Pump Turbine
HC-ISI-57-1	1	M-57-1 Sheet 1	Containment Atmosphere Control
HC-ISI-58-1	1	M-58-1 Sheet 1	Containment Hydrogen Recombination System
HC-ISI-59-1	1	M-59-1 Sheet 1	Primary Containment Instrument Gas
HC-ISI-59-1	2	M-59-1 Sheet 2	Primary Containment Instrument Gas
HC-ISI-59-1	3	M-59-1 Sheet 3	Primary Containment Instrument Gas
HC-ISI-60-1	1	M-60-1 Sheet 1	Primary Containment Leakage Rate Testing
HC-ISI-61-1	1	M-61-1 Sheet 1	Liquid Radwaste Collection



**TABLE 2.3-1**  
**INSERVICE INSPECTION BOUNDARY DIAGRAMS**

<u>Diagram No.</u>	<u>Sheet No(s).</u>	<u>P&amp;ID No.</u>	<u>Title</u>
HC-ISI-61-1	2	M-61-1 Sheet 2	Liquid Radwaste Collection
HC-ISI-87-1	1	M-87-1 Sheet 1	Reactor Building and Drywell Chilled Water
HC-ISI-90-1	1	M-90-1 Sheet 1	Auxiliary Building Control Area Chilled Water System- Control Area Chiller
HC-ISI-90-1	2	M-90-1 Sheet 2	Auxiliary Building Control Area Chilled Water System- Control Area Chiller
HC-ISI-90-1	3	M-90-1 Sheet 3	Auxiliary Building Control Area Chilled Water System

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

<b>Component ID/ Line No.</b>	<b>System</b>	<b>Component Description</b>	<b>Class</b>	<b>Inlet/ Outlet Size</b>	<b>NDE/ Exemption</b>	<b>Notes</b>
1"-DBA-075	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
1"-DBA-076	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
10"-DBB-020	AB	Main Steam Piping	2	10"	VOL, SUR, VT	BER
10"-DBB-021	AB	Main Steam Piping	2	10"	VOL, SUR, VT	BER
10"-DBB-022	AB	Main Steam Piping	2	10"	VOL, SUR, VT	BER
10"-DBB-023	AB	Main Steam Piping	2	10"	VOL, SUR, VT	BER
14"-DBC-005	AB	Main Steam Piping	3	14"	VT	Non "Q"
14"-DBC-006	AB	Main Steam Piping	3	14"	VT	Non "Q"
18"-DBC-005	AB	Main Steam Piping	3	18"	VT	Non "Q"
18"-DBC-006	AB	Main Steam Piping	3	18"	VT	Non "Q"
8"-DBC-006	AB	Main Steam Piping	3	8"	VT	Non "Q"
1-AB-001-DBC	AB	Main Steam Piping	3	4", 2", 1"	IWD-1220(a)	
1-AB-002-DBC	AB	Main Steam Piping	3	4", 2", 1"	IWD-1220(a)	
1-AB-003-DBC	AB	Main Steam Piping	3	4", 2", 1", .75"	IWD-1220(a)	
1-AB-004-DBC	AB	Main Steam Piping	3	4", 2", 1"	IWD-1220(a)	
1-AB-005-DBC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-006-DBC	AB	Main Steam Piping	3	3", 1"	IWD-1220(a)	
1-AB-024-DBC	AB	Main Steam Piping	3	4", 3", 2"	IWD-1220(a)	
1-AB-025-DBC	AB	Main Steam Piping	3	2"	IWD-1220(a)	
1-AB-053-GBC	AB	Main Steam Piping	3	10"	VT	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-AB-054-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-055-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-056-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-057-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-058-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-059-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-060-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-061-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-062-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-063-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-064-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-065-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-066-GBC	AB	Main Steam Piping	3	10"	VT	
1-AB-079-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-080-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-081-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-082-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-083-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-084-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-085-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-086-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-087-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-088-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-089-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-090-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-091-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-092-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-097-HCC	AB	Main Steam Piping	3	1.5", 1"	IWD-1220(a)	
1-AB-098-HCC	AB	Main Steam Piping	3	1.5", 1"	IWD-1220(a)	
1-AB-099-HCC	AB	Main Steam Piping	3	1.5", 1"	IWD-1220(a)	
1-AB-100-HCC	AB	Main Steam Piping	3	1.5", 1"	IWD-1220(a)	
1-AB-138-DBC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-156-HCC	AB	Main Steam Piping	3	1.5", 1"	IWD-1220(a)	
1-AB-157-HCC	AB	Main Steam Piping	3	1.5", 1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-AB-158-HCC	AB	Main Steam Piping	3	1.5", 1"	IWD-1220(a)	
1-AB-159-HCC	AB	Main Steam Piping	3	1.5", 1"	IWD-1220(a)	
1-AB-160-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-161-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-162-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-163-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-164-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-165-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-166-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-167-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-168-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-169-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-170-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-171-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-172-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-173-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-174-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-175-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-176-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-177-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-178-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-179-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-180-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-181-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-186-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-187-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-188-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-189-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-190-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-191-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-192-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-193-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-194-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-195-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-196-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-197-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-AB-198-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-199-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-200-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-201-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-202-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-203-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-204-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-205-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-206-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-207-HCC	AB	Main Steam Piping	3	1"	IWD-1220(a)	
1-AB-212-DCC	AB	Main Steam Piping	3	.75"	IWD-1220(a)	
2"-DBA-050	AB	Main Steam Piping	1	2"	VOL, SUR, VT	
2"-DBA-051	AB	Main Steam Piping	1	2"	VOL, SUR, VT	
2"-DBA-075	AB	Main Steam Piping	1	2"	VOL, SUR, VT	
2"-DBA-076	AB	Main Steam Piping	1	2"	VOL, SUR, VT	
2"-DBA-077	AB	Main Steam Piping	1	2"	VOL, SUR, VT	
2"-DBA-078	AB	Main Steam Piping	1	2"	VOL, SUR, VT	
26"-DBB-020	AB	Main Steam Piping	2	26"	VOL, SUR, VT	BER
26"-DBB-021	AB	Main Steam Piping	2	26"	VOL, SUR, VT	BER
26"-DBB-022	AB	Main Steam Piping	2	26"	VOL, SUR, VT	BER
26"-DBB-023	AB	Main Steam Piping	2	26"	VOL, SUR, VT	BER
26"-DLA-030	AB	Main Steam Piping	1	26"	VOL, SUR, VT	BER
26"-DLA-031	AB	Main Steam Piping	1	26"	VOL, SUR, VT	BER
26"-DLA-032	AB	Main Steam Piping	1	26"	VOL, SUR, VT	BER
26"-DLA-033	AB	Main Steam Piping	1	26"	VOL, SUR, VT	BER
26"-DLA-182	AB	Main Steam Piping	1	26"	VOL, SUR, VT	BER
26"-DLA-183	AB	Main Steam Piping	1	26"	VOL, SUR, VT	BER
26"-DLA-184	AB	Main Steam Piping	1	26"	VOL, SUR, VT	BER
26"-DLA-185	AB	Main Steam Piping	1	26"	VOL, SUR, VT	BER
28"-DBC-001	AB	Main Steam Piping	3	28"	VT	Non "Q"
28"-DBC-002	AB	Main Steam Piping	3	28"	VT	Non "Q"
28"-DBC-003	AB	Main Steam Piping	3	28"	VT	Non "Q"

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
28"-DBC-004	AB	Main Steam Piping	3	28"	VT	Non "Q"
28"-DBC-138	AB	Main Steam Piping	3	28"	VT	Non "Q"
3"-DBA-050	AB	Main Steam Piping	1	3"	VOL, SUR, VT	BER
4"-DBC-024	AB	Main Steam Piping	3	4"	VOL, VT	BER
8"-DBA-030	AB	Main Steam Piping	1	8"	VOL, SUR, VT	
8"-DBA-031	AB	Main Steam Piping	1	8"	VOL, SUR, VT	
8"-DBA-032	AB	Main Steam Piping	1	8"	VOL, SUR, VT	
8"-DBA-033	AB	Main Steam Piping	1	8"	VOL, SUR, VT	
8"-DLA-030	AB	Main Steam Piping	1	8"	VOL, SUR, VT	
CCA-034	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-035	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-036	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-037	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-038	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-039	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-040	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-041	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-042	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-043	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-044	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-045	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-046	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-047	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-048	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
CCA-049	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBA-050	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBA-077	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBA-078	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBA-148	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBA-149	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBA-150	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBA-151	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBA-152	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBA-153	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
DBA-154	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBA-155	AB	Main Steam Piping	1	1"	IWB-1220(b)(1)	
DBB-020	AB	Main Steam Piping	2	<= 2"	IWC-1222(a)(1)	
DBB-021	AB	Main Steam Piping	2	<= 2"	IWC-1222(a)(1)	
DBB-022	AB	Main Steam Piping	2	<= 2"	IWC-1222(a)(1)	
DBB-023	AB	Main Steam Piping	2	<= 2"	IWC-1222(a)(1)	
DBB-027	AB	Main Steam Piping	2	2"	IWC-1222(a)(1)	
1.5"-DLA-036	AE	Feedwater Piping	1	1.5"	VT	
12"-DLA-035	AE	Feedwater Piping	1	12"	VOL, SUR, VT	
12"-DLA-036	AE	Feedwater Piping	1	12"	VOL, SUR, VT	
2"-DBB-034	AE	Feedwater Piping	2	2"	VT	
20"-DLA-035	AE	Feedwater Piping	1	20"	VOL, SUR, VT	
20"-DLA-036	AE	Feedwater Piping	1	20"	VOL, SUR, VT	
24"-DBB-034	AE	Feedwater Piping	2	24"	VOL, SUR, VT	BER
24"-DBB-037	AE	Feedwater Piping	2	24"	VOL, SUR, VT	BER
24"-DLA-035	AE	Feedwater Piping	1	24"	VOL, SUR, VT	BER
24"-DLA-036	AE	Feedwater Piping	1	24"	VOL, SUR, VT	BER
26"-DLA-035	AE	Feedwater Piping	1	26"	VOL, SUR, VT	
6"-DBB-034	AE	Feedwater Piping	2	6"	VOL, SUR, VT	
8"-DBB-037	AE	Feedwater Piping	2	8"	VOL, SUR, VT	
DBA-061	AE	Feedwater Piping	1	1"	IWB-1220(b)(1)	
DBA-062	AE	Feedwater Piping	1	1"	IWB-1220(b)(1)	
DBA-063	AE	Feedwater Piping	1	1"	IWB-1220(b)(1)	
DBA-064	AE	Feedwater Piping	1	1"	IWB-1220(b)(1)	
DBB-034	AE	Feedwater Piping	2	<= 4"	IWC-1222(a)(1)	
DBB-037	AE	Feedwater Piping	2	4"	IWC-1222(a)(1)	
DLA-035	AE	Feedwater Piping	1	1"	IWB-1220(b)(1)	
DLA-036	AE	Feedwater Piping	1	1"	IWB-1220(b)(1)	
1-AP-004-HCC	AP	Condensate Piping	3	1"	IWD-1220(a)	
1-AP-012-HCC	AP	Condensate Piping	3	2"	IWD-1220(a)	
1-AP-036-HBC	AP	Condensate Piping	3	4"	IWD-1220(a)	
DBB-003	AP	Condensate Piping	2	<= 4"	IWC-1222(a)(1)	
DBB-024	AP	Condensate Piping	2	3"	IWC-1222(a)(1)	
DBB-028	AP	Condensate Piping	2	<= 3"	IWC-1222(a)(1)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
GBB-025	AP	Condensate Piping	2	<= 3"	IWC-1222(a)(1)	
GBB-026	AP	Condensate Piping	2	4"	IWC-1222(a)(1)	
GBB-027	AP	Condensate Piping	2	4"	IWC-1222(a)(1)	
GBB-029	AP	Condensate Piping	2	4"	IWC-1222(a)(1)	
GBB-030	AP	Condensate Piping	2	4"	IWC-1222(a)(1)	
GBB-031	AP	Condensate Piping	2	<= 3"	IWC-1222(a)(1)	
HCB-002	AP	Condensate Piping	2	14"	IWC-1222(c)	
HCB-002	AP	Condensate Piping	2	20"	IWC-1222(c)	
HCB-021	AP	Condensate Piping	2	1"	IWC-1222(a)(1)	
HCB-021	AP	Condensate Piping	2	16"	IWC-1222(c)	
HCB-021	AP	Condensate Piping	2	6"	IWC-1222(c)	
1.25"-VCA-011	BB	Reactor Recirculation Piping	1	1.25"	VT-2	
1.25"-VCA-012	BB	Reactor Recirculation Piping	1	1.25"	VT-2	
1.50"-CCA-204	BB	Reactor Recirculation Piping	1	1.5"	VOL, SUR, VT	
12"-VCA-013	BB	Reactor Recirculation Piping	1	12"	VOL, SUR, VT	
12"-VCA-014	BB	Reactor Recirculation Piping	1	12"	VOL, SUR, VT	
1-BB-156-HBC	BB	Reactor Recirculation Piping	3	1", .75"	IWD-1220(a)	
1-BB-157-HBC	BB	Reactor Recirculation Piping	3	1", .75"	IWD-1220(a)	
2"-CCA-042	BB	Reactor Recirculation Piping	1	2"	VOL, SUR, VT	
2"-CCA-204	BB	Reactor Recirculation Piping	1	2"	VOL, SUR, VT	
2"-DBA-044	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-046	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-047	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-063	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-064	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-066	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-192	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-230	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-231	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-232	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-235	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-236	BB	Reactor Recirculation Piping	1	2"	VT-2	
2"-DBA-237	BB	Reactor Recirculation Piping	1	2"	VT-2	
22"-VCA-013	BB	Reactor Recirculation Piping	1	22"	VOL, SUR, VT	
22"-VCA-014	BB	Reactor Recirculation Piping	1	22"	VOL, SUR, VT	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
28"-VCA-011	BB	Reactor Recirculation Piping	1	28"	VOL, SUR, VT	
28"-VCA-012	BB	Reactor Recirculation Piping	1	28"	VOL, SUR, VT	
28"-VCA-013	BB	Reactor Recirculation Piping	1	28"	VOL, SUR, VT	
28"-VCA-014	BB	Reactor Recirculation Piping	1	28"	VOL, SUR, VT	
4"-DBA-042	BB	Reactor Recirculation Piping	1	4"	VOL, SUR, VT	
4"-VCA-011	BB	Reactor Recirculation Piping	1	4"	VOL, SUR, VT	
4"-VCA-012	BB	Reactor Recirculation Piping	1	4"	VOL, SUR, VT	
4"-VCA-013	BB	Reactor Recirculation Piping	1	4"	VOL, SUR, VT	
4"-VCA-014	BB	Reactor Recirculation Piping	1	4"	VOL, SUR, VT	
6"-DBA-003	BB	Reactor Recirculation Piping	1	6"	VOL, SUR, VT	
CCA-029	BB	Reactor Recirculation Piping	1	<= 1"	IWB-1220(b)(1)	
CCA-030	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-031	BB	Reactor Recirculation Piping	1	<= 1"	IWB-1220(b)(1)	
CCA-032	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-042	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-043	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-044	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-045	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-046	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-047	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-048	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-049	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-052	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-053	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-058	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-061	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-062	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-063	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-064	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-065	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-066	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-067	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-068	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-071	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-072	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	



**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
CCA-073	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-074	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-075	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-076	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-077	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-078	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-079	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-080	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-081	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-082	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-083	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-084	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-085	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-086	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-087	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-088	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-089	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-090	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-162	BB	Reactor Recirculation Piping	1	.75"	IWB-1220(b)(1)	
CCA-163	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-170	BB	Reactor Recirculation Piping	1	.75"	IWB-1220(b)(1)	
CCA-171	BB	Reactor Recirculation Piping	1	.75"	IWB-1220(b)(1)	
CCA-188	BB	Reactor Recirculation Piping	1	<= 1"	IWB-1220(b)(1)	
CCA-189	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-190	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-191	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-204	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-205	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-218	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-219	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-220	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-221	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-222	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-223	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-224	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-225	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-226	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-227	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
CCA-228	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-229	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-230	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-231	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-232	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-233	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-234	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-235	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-236	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCA-237	BB	Reactor Recirculation Piping	1	1"	IWB-1220(b)(1)	
CCB-104	BB	Reactor Recirculation Piping	2	<= .75"	IWC-1222(a)(1)	
CCB-105	BB	Reactor Recirculation Piping	2	<= .75"	IWC-1222(a)(1)	
CCB-206	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-207	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-208	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-209	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-210	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-211	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-212	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-213	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-214	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-215	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-216	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
CCB-217	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
H1BB -1x-P-201	BB	Reactor Recirculation Pump	1	28" x 28"	VOL, SUR, VT	Pump
HBB-054	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
HBB-055	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
HBB-056	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
HBB-057	BB	Reactor Recirculation Piping	2	1"	IWC-1222(a)(1)	
HBB-158	BB	Reactor Recirculation Piping	2	.75"	IWC-1222(a)(1)	
HBB-159	BB	Reactor Recirculation Piping	2	.75"	IWC-1222(a)(1)	
12"-CCA-115	BC	RHR Piping	1	12"	VOL, SUR, VT	
12"-CCA-116	BC	RHR Piping	1	12"	VOL, SUR, VT	
12"-DLA-014	BC	RHR Piping	1	12"	VOL, SUR, VT	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
12"-DLA-015	BC	RHR Piping	1	12"	VOL, SUR, VT	
12"-DLA-021	BC	RHR Piping	1	12"	VOL, SUR, VT	
12"-DLA-055	BC	RHR Piping	1	12"	VOL, SUR, VT	
12"-DLA-056	BC	RHR Piping	1	12"	VOL, SUR, VT	
12"-DLA-069	BC	RHR Piping	1	12"	VOL, SUR, VT	
12"-GBB-004	BC	RHR Piping	2	12"	VOL, SUR, VT	
12"-GBB-019	BC	RHR Piping	2	12"	VOL, SUR, VT	
12"-GBB-063	BC	RHR Piping	2	12"	VOL, SUR, VT	
12"-GBB-066	BC	RHR Piping	2	12"	VOL, SUR, VT	
16"-GBB-004	BC	RHR Piping	2	16"	VOL, SUR, VT	
16"-GBB-013	BC	RHR Piping	2	16"	VOL, SUR, VT	
16"-GBB-054	BC	RHR Piping	2	16"	VOL, SUR, VT	
16"-GBB-063	BC	RHR Piping	2	16"	VOL, SUR, VT	
16"-HBB-049	BC	RHR Piping	2	16"	VOL, SUR, VT	
18"-GBB-004	BC	RHR Piping	2	18"	VOL, SUR, VT	
18"-GBB-019	BC	RHR Piping	2	18"	VOL, SUR, VT	
18"-GBB-026	BC	RHR Piping	2	18"	VOL, SUR, VT	
18"-GBB-027	BC	RHR Piping	2	18"	VOL, SUR, VT	
18"-GBB-050	BC	RHR Piping	2	18"	VOL, SUR, VT	Exempt from valve V316 to torus
18"-GBB-063	BC	RHR Piping	2	18"	VOL, SUR, VT	
18"-GBB-066	BC	RHR Piping	2	18"	VOL, SUR, VT	
18"-GBB-072	BC	RHR Piping	2	18"	VOL, SUR, VT	Exempt from V317 to torus
18"-GBB-074	BC	RHR Piping	2	18"	VOL, SUR, VT	
18"-GBB-075	BC	RHR Piping	2	18"	VOL, SUR, VT	
18"-HBB-046	BC	RHR Piping	2	18"	VOL, SUR, VT	
18"-HBB-049	BC	RHR Piping	2	18"	VOL, SUR, VT	
18"-HBB-087	BC	RHR Piping	2	18"	VOL, SUR, VT	
1-BC-030-HBC	BC	RHR Piping	3	2", 1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-BC-030-HBC	BC	RHR Piping	3	6"	IWD-1220(c)	
20"-CCA-114	BC	RHR Piping	1	20"	VOL, SUR, VT	
20"-DLA-010	BC	RHR Piping	1	20"	VOL, SUR, VT	
20"-GBB-026	BC	RHR Piping	2	20"	VOL, SUR, VT	
20"-GBB-063	BC	RHR Piping	2	20"	VOL, SUR, VT	
20"-GBB-074	BC	RHR Piping	2	20"	VOL, SUR, VT	
20"-HBB-044	BC	RHR Piping	2	20"	VOL, SUR, VT	
20"-HBB-049	BC	RHR Piping	2	20"	VOL, SUR, VT	
20"-HBB-088	BC	RHR Piping	2	20"	VOL, SUR, VT	
24"-HBB-044	BC	RHR Piping	2	24"	VOL, SUR, VT	
24"-HBB-046	BC	RHR Piping	2	24"	VOL, SUR, VT	
24"-HBB-087	BC	RHR Piping	2	24"	VOL, SUR, VT	
24"-HBB-088	BC	RHR Piping	2	24"	VOL, SUR, VT	
30"-HBB-044	BC	RHR Piping	2	30"	VOL, SUR, VT	
30"-HBB-046	BC	RHR Piping	2	30"	VOL, SUR, VT	
30"-HBB-087	BC	RHR Piping	2	30"	VOL, SUR, VT	
30"-HBB-088	BC	RHR Piping	2	30"	VOL, SUR, VT	
6"-DBB-025	BC	RHR Piping	2	6"	VOL, SUR, VT	
6"-GBB-004	BC	RHR Piping	2	6"	VOL, SUR, VT	Exempt from valve V314 to torus
6"-GBB-026	BC	RHR Piping	2	6"	VOL, SUR, VT	
6"-GBB-031	BC	RHR Piping	2	6"	VOL, SUR, VT	
6"-GBB-063	BC	RHR Piping	2	6"	VOL, SUR, VT	Exempt from valve V315 to torus
6"-GBB-074	BC	RHR Piping	2	6"	VOL, SUR, VT	
8"-DBB-025	BC	RHR Piping	2	8"	VOL, SUR, VT	
8"-GBB-026	BC	RHR Piping	2	8"	VOL, SUR, VT	
8"-GBB-074	BC	RHR Piping	2	8"	VOL, SUR, VT	
CCA-011	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
CCA-012	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
CCA-016	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
CCA-017	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
CCA-052	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
CCA-053	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
CCA-067	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
CCA-200	BC	RHR Piping	1	1"	IWB-1220(b)(1)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
CCA-201	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
CCA-202	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
CCA-203	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
CCB-187	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
CCB-188	BC	RHR Piping	2	.75"	IWC-1221(a)(1)	
CCB-189	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
CCB-193	BC	RHR Piping	2	<= 1"	IWC-1221(a)(1)	
DBA-003	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBA-018	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBA-117	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBA-117	BC	RHR Piping	1	2"	IWB-1220(b)(2)	
DBA-118	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBA-118	BC	RHR Piping	1	2"	IWB-1220(b)(2)	
DBA-119	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBA-119	BC	RHR Piping	1	2"	IWB-1220(b)(2)	
DBA-120	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBA-120	BC	RHR Piping	1	2"	IWB-1220(b)(2)	
DBA-121	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBA-121	BC	RHR Piping	1	2"	IWB-1220(b)(2)	
DBA-122	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBA-122	BC	RHR Piping	1	2"	IWB-1220(b)(2)	
DBA-147	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBA-154	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBA-196	BC	RHR Piping	1	1"	IWB-1220(b)(1)	
DBB-025	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-004	BC	RHR Piping	2	6"	IWC-1221(d)	Exempt from valve V314 to torus [IWC-1221(f)]
GBB-004	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	
GBB-013	BC	RHR Piping	2	16"	IWC-1221(d)	Exempt from valve HVFO21B to spray header.
GBB-013	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-019	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	
GBB-026	BC	RHR Piping	2	<= 1"	IWC-1221(a)(1)	
GBB-027	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	
GBB-028	BC	RHR Piping	2	4"	IWC-1221(a)(1)	
GBB-034	BC	RHR Piping	2	<= 2"	IWC-1221(a)(1)	
GBB-034	BC	RHR Piping	2	10"	IWC-1221(d)	

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
GBB-034	BC	RHR Piping	2	6"	IWC-1221(d)	
GBB-042	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-047	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-050	BC	RHR Piping	2	18"	IWC-1221(d)	Exempt from valve V316 to torus [IWC- 1221(f)]
GBB-050	BC	RHR Piping	2	4"	IWC-1221(a)(1)	
GBB-051	BC	RHR Piping	2	<= 2"	IWC-1221(a)(1)	
GBB-054	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-063	BC	RHR Piping	2	6"	IWC-1221(d)	Exempt from valve V315 to torus [IWC- 1221(f)]
GBB-063	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	
GBB-066	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	
GBB-072	BC	RHR Piping	2	18"	IWC-1221(d)	Exempt from V317 to torus [IWC- 1221(f)]
GBB-072	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	
GBB-073	BC	RHR Piping	2	<= 2"	IWC-1221(a)(1)	
GBB-073	BC	RHR Piping	2	10"	IWC-1221(d)	
GBB-073	BC	RHR Piping	2	6"	IWC-1221(d)	
GBB-075	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	
GBB-076	BC	RHR Piping	2	4"	IWC-1221(a)(1)	
GBB-082	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-085	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-123	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-126	BC	RHR Piping	2	<= 2"	IWC-1221(a)(1)	
GBB-127	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-135	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-136	BC	RHR Piping	2	1"	IWC-1221(a)(1)	
GBB-186	BC	RHR Piping	2	<= 1"	IWC-1221(a)(1)	
H1BC -1x-E-205	BC	RHR Heat Exchanger	2	20" x 18"	VOL, SUR, VT	HX
H1BC -1x-P-202	BC	RHR Pump	2	30" x 18"	VT	Pump
HBB-044	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	
HBB-049	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	
HBB-059	BC	RHR Piping	2	<= 3"	IWC-1221(a)(1)	
HBB-087	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	
HBB-088	BC	RHR Piping	2	<= 4"	IWC-1221(a)(1)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
HBB-125	BC	RHR Piping	2	<= 3"	IWC-1221(a)(1)	
RHR Jockey Pump CP228	BC	RHR Jockey Pump	2	3" x 1.5"	IWC-1221(a)(2)	Pump
RHR Jockey Pump DP228	BC	RHR Jockey Pump	2	3" x 1.5"	IWC-1221(a)(2)	Pump
6"-DBB-003	BD	RCIC Piping	2	6"	VOL, SUR, VT	
DBB-003	BD	RCIC Piping	2	<= 4"	IWC-1222(a)(1)	
DBB-004	BD	RCIC Piping	2	<= 2"	IWC-1222(a)(1)	
DBB-010	BD	RCIC Piping	2	1"	IWC-1222(a)(1)	
HBB-001	BD	RCIC Piping	2	6"	IWC-1222(c)	
HBB-002	BD	RCIC Piping	2	1"	IWC-1222(a)(1)	
HBB-002	BD	RCIC Piping	2	6"	IWC-1222(c)	
HBB-006	BD	RCIC Piping	2	<= 2"	IWC-1222(a)(1)	
HBB-006	BD	RCIC Piping	2	6"	IWC-1222(c)	
HBB-009	BD	RCIC Piping	2	1"	IWC-1222(a)(1)	
HBB-014	BD	RCIC Piping	2	2"	IWC-1222(a)(1)	
HBB-020	BD	RCIC Piping	2	1"	IWC-1222(a)(1)	
HBB-021	BD	RCIC Piping	2	1"	IWC-1222(a)(1)	
HBB-022	BD	RCIC Piping	2	1"	IWC-1222(a)(1)	
HBB-026	BD	RCIC Piping	2	1"	IWC-1222(a)(1)	
Jockey Pump	BD	RCIC Jockey Pump	2	3" x 1.5"	IWC-1222(c)	Pump
10"-DLA-001	BE	Core Spray Piping	1	10"	VOL, SUR, VT	
10"-DLA-023	BE	Core Spray Piping	1	10"	VOL, SUR, VT	
10"-GBB-008	BE	Core Spray Piping	2	10"	VOL, SUR, VT	
10"-GBB-009	BE	Core Spray Piping	2	10"	VOL, SUR, VT	
10"-GBB-015	BE	Core Spray Piping	2	10"	VOL, SUR, VT	
10"-GBB-016	BE	Core Spray Piping	2	10"	VOL, SUR, VT	
10"-GBB-017	BE	Core Spray Piping	2	10"	VOL, SUR, VT	
10"-GBB-018	BE	Core Spray Piping	2	10"	VOL, SUR, VT	
12"-DBB-002	BE	Core Spray Piping	2	12"	VOL, SUR, VT	
12"-DBB-005	BE	Core Spray Piping	2	12"	VOL, SUR, VT	
12"-DLA-001	BE	Core Spray Piping	1	12"	VOL, SUR, VT	
12"-DLA-023	BE	Core Spray Piping	1	12"	VOL, SUR, VT	
12"-GBB-008	BE	Core Spray Piping	2	12"	VOL, SUR, VT	
12"-GBB-009	BE	Core Spray Piping	2	12"	VOL, SUR, VT	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
12"-GBB-015	BE	Core Spray Piping	2	12"	VOL, SUR, VT	
12"-GBB-016	BE	Core Spray Piping	2	12"	VOL, SUR, VT	
12"-GBB-017	BE	Core Spray Piping	2	12"	VOL, SUR, VT	
12"-GBB-018	BE	Core Spray Piping	2	12"	VOL, SUR, VT	
14"-DLA-023	BE	Core Spray Piping	1	14"	VOL, SUR, VT	
14"-GBB-008	BE	Core Spray Piping	2	14"	VOL, SUR, VT	
14"-GBB-009	BE	Core Spray Piping	2	14"	VOL, SUR, VT	
14"-HBB-044	BE	Core Spray Piping	2	14"	VOL, SUR, VT	
14"-HBB-045	BE	Core Spray Piping	2	14"	VOL, SUR, VT	
14"-HBB-046	BE	Core Spray Piping	2	14"	VOL, SUR, VT	
14"-HBB-047	BE	Core Spray Piping	2	14"	VOL, SUR, VT	
16"-HBB-044	BE	Core Spray Piping	2	16"	VOL, SUR, VT	
16"-HBB-045	BE	Core Spray Piping	2	16"	VOL, SUR, VT	
16"-HBB-046	BE	Core Spray Piping	2	16"	VOL, SUR, VT	
16"-HBB-047	BE	Core Spray Piping	2	16"	VOL, SUR, VT	
CCA-061	BE	Core Spray Piping	1	1"	IWB-1220(b)(1)	
CCA-062	BE	Core Spray Piping	1	1"	IWB-1220(b)(1)	
DBA-003	BE	Core Spray Piping	1	1"	IWB-1220(b)(1)	
DBA-003	BE	Core Spray Piping	1	2"	IWB-1220(b)(2)	
DBA-004	BE	Core Spray Piping	1	1"	IWB-1220(b)(1)	
DBA-004	BE	Core Spray Piping	1	2"	IWB-1220(b)(2)	
DBA-078	BE	Core Spray Piping	1	1"	IWB-1220(b)(1)	
DBA-079	BE	Core Spray Piping	1	1"	IWB-1220(b)(1)	
DBB-002	BE	Core Spray Piping	2	<= 2"	IWC-1221(a)(1)	
DBB-005	BE	Core Spray Piping	2	<= 2"	IWC-1221(a)(1)	
GBB-008	BE	Core Spray Piping	2	<= 2"	IWC-1221(a)(1)	
GBB-009	BE	Core Spray Piping	2	<= 2"	IWC-1221(a)(1)	
GBB-015	BE	Core Spray Piping	2	<= 3"	IWC-1221(a)(1)	
GBB-016	BE	Core Spray Piping	2	<= 3"	IWC-1221(a)(1)	
GBB-017	BE	Core Spray Piping	2	<= 3"	IWC-1221(a)(1)	
GBB-018	BE	Core Spray Piping	2	<= 3"	IWC-1221(a)(1)	
GBB-022	BE	Core Spray Piping	2	<= 4"	IWC-1221(a)(1)	
GBB-026	BE	Core Spray Piping	2	<= 1"	IWC-1221(a)(1)	
GBB-030	BE	Core Spray Piping	2	<= 1"	IWC-1221(a)(1)	
GBB-036	BE	Core Spray Piping	2	<= 1"	IWC-1221(a)(1)	
GBB-041	BE	Core Spray Piping	2	<= 1"	IWC-1221(a)(1)	
GBB-054	BE	Core Spray Piping	2	<= 4"	IWC-1221(a)(1)	



**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
H1BE -1x-P-206	BE	Core Spray Pump	2	16" x 12"	VT	Pump
HBB-020	BE	Core Spray Piping	2	10"	IWC-1221(d)	Exempt from valve V103 to torus [IWC- 1221(f)]
HBB-020	BE	Core Spray Piping	2	<= 4"	IWC-1221(a)(1)	
HBB-021	BE	Core Spray Piping	2	10"	IWC-1221(d)	Exempt from valve V102 to torus [IWC- 1221(f)]
HBB-021	BE	Core Spray Piping	2	<= 4"	IWC-1221(a)(1)	
HBB-044	BE	Core Spray Piping	2	<= 2"	IWC-1221(a)(1)	
HBB-045	BE	Core Spray Piping	2	<= 2"	IWC-1221(a)(1)	
HBB-046	BE	Core Spray Piping	2	<= 2"	IWC-1221(a)(1)	
HBB-047	BE	Core Spray Piping	2	<= 2"	IWC-1221(a)(1)	
CCB-042 thru CCB-411	BF	CRD Hydraulic Piping	2	4"	IWC-1222(a)(1)	
CCB-417	BF	CRD Hydraulic Piping	2	1"	IWC-1222(a)(1)	
DCB-420	BF	CRD Hydraulic Piping	2	4"	IWC-1222(a)(1)	
DCB-436	BF	CRD Hydraulic Piping	2	4"	IWC-1222(a)(1)	
EBB-421	BF	CRD Hydraulic Piping	2	4"	IWC-1222(a)(1)	
EBB-422	BF	CRD Hydraulic Piping	2	4"	IWC-1222(a)(1)	
EBB-423	BF	CRD Hydraulic Piping	2	4"	IWC-1222(a)(1)	
EBB-435	BF	CRD Hydraulic Piping	2	4"	IWC-1222(a)(1)	
ELB-040	BF	CRD Hydraulic Piping	2	12"	IWC-1222(c)	
ELB-041	BF	CRD Hydraulic Piping	2	12"	IWC-1222(c)	
1.25"-DBA-110	BG	RWCU Piping	1	1.25"	VT-2	
1-BG-002-DBC	BG	RWCU Piping	3	4", 1"	IWD-1220(a)	
1-BG-003-DBC	BG	RWCU Piping	3	4", 3"	IWD-1220(a)	
1-BG-004-DBC	BG	RWCU Piping	3	4", 3"	IWD-1220(a)	
1-BG-005-DBC	BG	RWCU Piping	3	3", 1", .75"	IWD-1220(a)	
1-BG-006-DBC	BG	RWCU Piping	3	3", 1", .75"	IWD-1220(a)	
1-BG-007-DBC	BG	RWCU Piping	3	4", 3", 1", .75"	IWD-1220(a)	
1-BG-008-DBC	BG	RWCU Piping	3	4", 3", 1"	IWD-1220(a)	
1-BG-009-DBC	BG	RWCU Piping	3	4", 1"	IWD-1220(a)	
1-BG-010-VBC	BG	RWCU Piping	3	4"	IWD-1220(a)	
1-BG-011-VBC	BG	RWCU Piping	3	4"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-BG-012-VBC	BG	RWCU Piping	3	4"	IWD-1220(a)	
1-BG-013-VBC	BG	RWCU Piping	3	4"	IWD-1220(a)	
1-BG-014-DBC	BG	RWCU Piping	3	4", 1"	IWD-1220(a)	
1-BG-015-VBC	BG	RWCU Piping	3	4"	IWD-1220(a)	
1-BG-016-EBC	BG	RWCU Piping	3	4", 3", 2", 1"	IWD-1220(a)	
1-BG-017-EBC	BG	RWCU Piping	3	4", 3", 2", 1"	IWD-1220(a)	
1-BG-018-EBC	BG	RWCU Piping	3	4"	IWD-1220(a)	
1-BG-020-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-023-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-025-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-027-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-031-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-034-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-036-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-038-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-045-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-047-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-049-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-052-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-058-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-060-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-062-DBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-065-EBC	BG	RWCU Piping	3	4", 3", 2", 1.5", 1"	IWD-1220(a)	
1-BG-066-EBC	BG	RWCU Piping	3	4", 3", 2", 1"	IWD-1220(a)	
1-BG-067-HBC	BG	RWCU Piping	3	3", 2", 1", .75"	IWD-1220(a)	
1-BG-068-EBC	BG	RWCU Piping	3	2", 1.25"	IWD-1220(a)	
1-BG-070-EBC	BG	RWCU Piping	3	2", 1.5"	IWD-1220(a)	
1-BG-071-HBC	BG	RWCU Piping	3	3", 2", 1.5", .5"	IWD-1220(a)	
1-BG-073-EBC	BG	RWCU Piping	3	.5"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-BG-074-HBC	BG	RWCU Piping	3	3", 2" .5"	IWD-1220(a)	
1-BG-075-EBC	BG	RWCU Piping	3	2", 1.5"	IWD-1220(a)	
1-BG-076-EBC	BG	RWCU Piping	3	.5"	IWD-1220(a)	
1-BG-077-EBC	BG	RWCU Piping	3	1", 1.25"	IWD-1220(a)	
1-BG-078-EBC	BG	RWCU Piping	3	4", 3", 2", 1.5"	IWD-1220(a)	
1-BG-080-EBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-081-HBC	BG	RWCU Piping	3	3", 2", 1"	IWD-1220(a)	
1-BG-082-EBC	BG	RWCU Piping	3	4", 3", 2", 1.5", 1"	IWD-1220(a)	
1-BG-084-EBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-085-HBC	BG	RWCU Piping	3	4", 2.5", 2"	IWD-1220(a)	
1-BG-086-HBC	BG	RWCU Piping	3	4", 3", 2.5", 2" 1.5 .5"	IWD-1220(a)	
1-BG-088-HBC	BG	RWCU Piping	3	4", 2"	IWD-1220(a)	
1-BG-089-HBC	BG	RWCU Piping	3	4"	IWD-1220(a)	
1-BG-089-HBC	BG	RWCU Piping	3	6"	IWD-1220(c)	
1-BG-090-HBC	BG	RWCU Piping	3	3", 2", 1"	IWD-1220(a)	
1-BG-093-HBC	BG	RWCU Piping	3	3", 1.5", 1"	IWD-1220(a)	
1-BG-094-HBC	BG	RWCU Piping	3	3"	IWD-1220(a)	
1-BG-107-EBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-109-EBC	BG	RWCU Piping	3	1"	IWD-1220(a)	
1-BG-123-HBC	BG	RWCU Piping	3	2"	IWD-1220(a)	
1-BG-138-EBC	BG	RWCU Piping	3	2"	IWD-1220(a)	
1-BG-143-DBC	BG	RWCU Piping	3	4"	IWD-1220(a)	
1-BG-219-DCC	BG	RWCU Piping	3	.75"	IWD-1220(a)	
1-BG-220-DCC	BG	RWCU Piping	3	.75"	IWD-1220(a)	
1-BG-221-DCC	BG	RWCU Piping	3	.75"	IWD-1220(a)	
2"-DBA-001	BG	RWCU Piping	1	2"	VOL, SUR, VT	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
2"-DBA-110	BG	RWCU Piping	1	2"	VOL, SUR, VT	
4"-CCA-011	BG	RWCU Piping	1	4"	VOL, SUR, VT	
4"-CCA-012	BG	RWCU Piping	1	4"	VOL, SUR, VT	
4"-DBA-001	BG	RWCU Piping	1	4"	VOL, SUR, VT	
4"-DBA-110	BG	RWCU Piping	1	4"	VOL, SUR, VT	
6"-DBA-001	BG	RWCU Piping	1	6"	VOL, SUR, VT	BER
6"-DBC-002	BG	RWCU Piping	3	6"	VOL, SUR, VT	BER
CCA-145	BG	RWCU Piping	1	1"	IWB-1220(b)(1)	
CCA-146	BG	RWCU Piping	1	1"	IWB-1220(b)(1)	
CCA-147	BG	RWCU Piping	1	1"	IWB-1220(b)(1)	
CCA-148	BG	RWCU Piping	1	1"	IWB-1220(b)(1)	
CCA-149	BG	RWCU Piping	1	1"	IWB-1220(b)(1)	
DBA-001	BG	RWCU Piping	1	1"	IWB-1220(b)(1)	
DBA-110	BG	RWCU Piping	1	1"	IWB-1220(b)(1)	
DBA-126	BG	RWCU Piping	1	1"	IWB-1220(b)(1)	
DBA-128	BG	RWCU Piping	1	1"	IWB-1220(b)(1)	
DBB-144	BG	RWCU Piping	2	1"	IWC-1222(a)(1)	
H1BG -1x-P-221	BG	RWCU Pump	3	4" x 3"	VT	Pump
1.50"-CCA-011	BH	SLC Piping	1	1.5"	VOL, SUR, VT	
1.50"-DBA-011	BH	SLC Piping	1	1.5"	VT-2 (LR UT)	
2"-CCA-011	BH	SLC Piping	1	2"	VT	
CCA-011	BH	SLC Piping	1	1"	IWB-1220(b)(1)	
DCB-001	BH	SLC Piping	2	2"	IWC-1222(a)(1)	
DCB-002	BH	SLC Piping	2	<= 1.5"	IWC-1222(a)(1)	
DCB-004	BH	SLC Piping	2	<= 1.5"	IWC-1222(a)(1)	
DCB-005	BH	SLC Piping	2	<= 1.5"	IWC-1222(a)(1)	
HCB-006	BH	SLC Piping	2	<= 4"	IWC-1222(a)(1)	
HCB-014	BH	SLC Piping	2	<= 3"	IWC-1222(a)(1)	
HCB-015	BH	SLC Piping	2	2"	IWC-1222(a)(1)	
HCB-016	BH	SLC Piping	2	<= 3"	IWC-1222(a)(1)	
Standby Liquid Control Tank	BH	SLC Control Tank	2	3" x 2"	IWC-1222(c)	Tank
Standby Liquid Control Injection Pump	BH	SLC Injection Pump	2	3" x 1.5"	IWC-1222(c)	Pump

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
AP208						
Standby Liquid Control Injection Pump BP208	BH	SLC Injection Pump	2	3" x 1.5"	IWC-1222(c)	Pump
10"-DBB-003	BJ	HPCI Piping	2	10"	VOL, SUR, VT	
12"-VBB-010	BJ	HPCI Piping	2	12"	VOL, SUR, VT	
14"-DBB-003	BJ	HPCI Piping	2	14"	VOL, SUR, VT	
14"-HBB-001	BJ	HPCI Piping	2	14"	VOL, SUR, VT	
16"-HBB-001	BJ	HPCI Piping	2	16"	VOL, SUR, VT	
16"-HBB-002	BJ	HPCI Piping	2	16"	VOL, SUR, VT	
1-BJ-1OP-204	BJ	HPCI Pump	2	14" x 12"	VT	Pump
8"-DBB-003	BJ	HPCI Piping	2	8"	VOL, SUR, VT	
DBB-003	BJ	HPCI Piping	2	<= 4"	IWC-1221(a)(1)	
DBB-005	BJ	HPCI Piping	2	4"	IWC-1221(a)(1)	
DBB-009	BJ	HPCI Piping	2	1"	IWC-1221(a)(1)	
DBB-011	BJ	HPCI Piping	2	4"	IWC-1221(a)(1)	
DBB-032	BJ	HPCI Piping	2	1"	IWC-1221(a)(1)	
GBB-008	BJ	HPCI Piping	2	<= 1"	IWC-1221(a)(1)	
GBB-012	BJ	HPCI Piping	2	1"	IWC-1221(a)(1)	
GBB-013	BJ	HPCI Piping	2	<= 2"	IWC-1221(a)(1)	
GBB-033	BJ	HPCI Piping	2	1"	IWC-1221(a)(1)	
GBB-034	BJ	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-001	BJ	HPCI Piping	2	<= 2"	IWC-1221(a)(1)	
HBB-002	BJ	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-004	BJ	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-006	BJ	HPCI Piping	2	<= 4"	IWC-1221(a)(1)	
HBB-020	BJ	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-027	BJ	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-028	BJ	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-029	BJ	HPCI Piping	2	<= 2"	IWC-1221(a)(1)	
Jockey Pump	BJ	HPCI Jockey Pump	2	3" x 1.5"	IWC-1221(a)(2)	Pump
1-EA-001-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-006-HXC	EA	Service Water Piping	3	2", 1"	IWD-1220(a)	
1-EA-007-HXC	EA	Service Water Piping	3	1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EA-008-HXC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-009-HXC	EA	Service Water Piping	3	1.5", 1"	IWD-1220(a)	
1-EA-010-HXC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-011-HXC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-019-HXC	EA	Service Water Piping	3	2", 1"	IWD-1220(a)	
1-EA-024-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-025-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-026-HXC	EA	Service Water Piping	3	2", 1"	IWD-1220(a)	
1-EA-027-HXC	EA	Service Water Piping	3	1.5", 1"	IWD-1220(a)	
1-EA-029-HXC	EA	Service Water Piping	3	1.5", 1"	IWD-1220(a)	
1-EA-030-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-031-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-032-HXC	EA	Service Water Piping	3	2", 1"	IWD-1220(a)	
1-EA-033-HXC	EA	Service Water Piping	3	1.5", 1"	IWD-1220(a)	
1-EA-034-HXC	EA	Service Water Piping	3	1.5", 1"	IWD-1220(a)	
1-EA-035-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-036-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-037-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-038-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-052-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-053-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-054-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-055-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-056-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-057-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-064-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-065-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-066-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-067-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-068-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-069-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-070-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-071-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-075-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EA-076-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-077-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-089-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-090-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-099-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-100-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-103-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-109-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-110-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-111-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-112-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-113-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-114-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-115-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-116-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-117-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-118-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-119-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-120-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-129-HGC	EA	Service Water Piping	3	2"	IWD-1220(a)	
1-EA-130-HGC	EA	Service Water Piping	3	2", 1.5"	IWD-1220(a)	
1-EA-137-HGC	EA	Service Water Piping	3	.75"	IWD-1220(a)	
1-EA-138-HGC	EA	Service Water Piping	3	.75"	IWD-1220(a)	
1-EA-140-HGC	EA	Service Water Piping	3	.75"	IWD-1220(a)	
1-EA-142-HGC	EA	Service Water Piping	3	2", 1"	IWD-1220(a)	
1-EA-143-HGC	EA	Service Water Piping	3	3", 2", 1"	IWD-1220(a)	
1-EA-144-HGC	EA	Service Water Piping	3	3", 2", 1"	IWD-1220(a)	
1-EA-145-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-146-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-147-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-148-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-155-NIC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-156-NIC	EA	Service Water Piping	3	2", 1"	IWD-1220(a)	
1-EA-157-NIC	EA	Service Water Piping	3	2", 1"	IWD-1220(a)	
1-EA-158-NIC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-173-HCC	EA	Service Water Piping	3	1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EA-174-HCC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-175-HCC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-176-HCC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-177-HCC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-180-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-181-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-182-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-183-HGC	EA	Service Water Piping	3	1"	IWD-1220(a)	
1-EA-184-HGC	EA	Service Water Piping	3	1.5", 1"	IWD-1220(a)	
1-EA-185-HGC	EA	Service Water Piping	3	1.5", 1"	IWD-1220(a)	
20"-H2C-006	EA	Service Water Piping	3	20"	VT	
20"-H2C-009	EA	Service Water Piping	3	20"	VT	
20"-H2C-012	EA	Service Water Piping	3	20"	VT	
22"-H2C-073	EA	Service Water Piping	3	22"	VT	
24"-H2C-006	EA	Service Water Piping	3	24"	VT	
24"-H2C-007	EA	Service Water Piping	3	24"	VT	
24"-H2C-009	EA	Service Water Piping	3	24"	VT	
24"-H2C-010	EA	Service Water Piping	3	24"	VT	
24"-H2C-011	EA	Service Water Piping	3	24"	VT	
24"-H2C-073	EA	Service Water Piping	3	24"	VT	
26"-H2C-019	EA	Service Water Piping	3	26"	VT	
26"-H2C-022	EA	Service Water Piping	3	26"	VT	
26"-H2C-074	EA	Service Water Piping	3	26"	VT	
28"-H2C-027	EA	Service Water Piping	3	28"	VT	
28"-H2C-029	EA	Service Water Piping	3	28"	VT	
28"-H2C-032	EA	Service Water Piping	3	28"	VT	
30"-H2C-019	EA	Service Water Piping	3	30"	VT	
33"-H2C-006	EA	Service Water Piping	3	33"	VT	
33"-H2C-009	EA	Service Water Piping	3	33"	VT	
36"-H2C-009	EA	Service Water Piping	3	36"	VT	
36"-H2C-026	EA	Service Water Piping	3	36"	VT	
36"-H2C-032	EA	Service Water Piping	3	36"	VT	
36"-H2C-006	EA	Service Water Piping	3	36"	VT	
36"-H2C-009	EA	Service Water Piping	3	36"	VT	
36"-H2C-019	EA	Service Water Piping	3	36"	VT	
36"-H2C-026	EA	Service Water Piping	3	36"	VT	



**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
36"-H2C-032	EA	Service Water Piping	3	36"	VT	
36"-H2C-074	EA	Service Water Piping	3	36"	VT	
6"-H2C-030	EA	Service Water Piping	3	6"	VT	
6"-H2C-031	EA	Service Water Piping	3	6"	VT	
6"-H2C-070	EA	Service Water Piping	3	6"	VT	
6"-H2C-071	EA	Service Water Piping	3	6"	VT	
6"-H2C-075	EA	Service Water Piping	3	6"	VT	
6"-H2C-076	EA	Service Water Piping	3	6"	VT	
6"-H2C-077	EA	Service Water Piping	3	6"	VT	
6"-H2C-099	EA	Service Water Piping	3	6"	VT	
H1EA -1x-F-509	EA	Service Water Strainer	3	28" x 28"	VT	Strainer
H1EA -1x-P-502	EA	Service Water Pump	3	28"	VT	Pump
H1EG -1xE-201	EA	SACS Heat Exchanger	3	26" x 26"	VT	HX
10"-HBC-042	EC	Fuel Pool Cooling Piping	3	10"	VT	
10"-HCC-015	EC	Fuel Pool Cooling Piping	3	10"	VT	
10"-HCC-138	EC	Fuel Pool Cooling Piping	3	10"	VT	
16"-GBB-018	EC	Fuel Pool Cooling Piping	2	16"	VT	
1-EC-013-HCC	EC	Fuel Pool Cooling Piping	3	4", 3", 2"	IWD-1220(a)	
1-EC-014-HCC	EC	Fuel Pool Cooling Piping	3	4", 3", 2"	IWD-1220(a)	
1-EC-015-HCC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-015-HCC	EC	Fuel Pool Cooling Piping	3	10", 8", 6"	IWD-1220(c)	
1-EC-016-HCC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-016-HCC	EC	Fuel Pool Cooling Piping	3	6"	IWD-1220(c)	
1-EC-017-HCC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-017-HCC	EC	Fuel Pool Cooling Piping	3	6"	IWD-1220(c)	
1-EC-019-HCC	EC	Fuel Pool Cooling Piping	3	16", 14", 10"	IWD-1220(c)	
1-EC-020-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-020-HBC	EC	Fuel Pool Cooling Piping	3	16"	IWD-1220(c)	
1-EC-021-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-023-HCC	EC	Fuel Pool Cooling Piping	3	8"	IWD-1220(c)	
1-EC-024-HCC	EC	Fuel Pool Cooling Piping	3	3", 1"	IWD-1220(a)	
1-EC-026-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-028-HCC	EC	Fuel Pool Cooling Piping	3	3"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EC-029-HCC	EC	Fuel Pool Cooling Piping	3	4", 2"	IWD-1220(a)	
1-EC-030-HCC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-033-HBC	EC	Fuel Pool Cooling Piping	3	4", 3", 2", 1.5"	IWD-1220(a)	
1-EC-037-HBC	EC	Fuel Pool Cooling Piping	3	4", 2", 1"	IWD-1220(a)	
1-EC-038-HCC	EC	Fuel Pool Cooling Piping	3	2"	IWD-1220(a)	
1-EC-038-HCC	EC	Fuel Pool Cooling Piping	3	6"	IWD-1220(c)	
1-EC-040-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-042-HBC	EC	Fuel Pool Cooling Piping	3	10", 8"	IWD-1220(c)	
1-EC-043-HBC	EC	Fuel Pool Cooling Piping	3	1", .5"	IWD-1220(a)	
1-EC-045-HBC	EC	Fuel Pool Cooling Piping	3	1", .5"	IWD-1220(a)	
1-EC-047-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-047-HBC	EC	Fuel Pool Cooling Piping	3	8", 6"	IWD-1220(c)	
1-EC-048-HBC	EC	Fuel Pool Cooling Piping	3	4"	IWD-1220(a)	
1-EC-048-HBC	EC	Fuel Pool Cooling Piping	3	6"	IWD-1220(c)	
1-EC-049-HBC	EC	Fuel Pool Cooling Piping	3	10", 8", 6"	IWD-1220(c)	
1-EC-050-HBC	EC	Fuel Pool Cooling Piping	3	4"	IWD-1220(a)	
1-EC-050-HBC	EC	Fuel Pool Cooling Piping	3	6"	IWD-1220(c)	
1-EC-051-HBC	EC	Fuel Pool Cooling Piping	3	4", 1"	IWD-1220(a)	
1-EC-051-HBC	EC	Fuel Pool Cooling Piping	3	8", 6"	IWD-1220(c)	
1-EC-052-HBC	EC	Fuel Pool Cooling Piping	3	1, 1.5"	IWD-1220(a)	
1-EC-054-HBC	EC	Fuel Pool Cooling Piping	3	1, 1.5"	IWD-1220(a)	
1-EC-056-HBC	EC	Fuel Pool Cooling Piping	3	4", 1"	IWD-1220(a)	
1-EC-056-HBC	EC	Fuel Pool Cooling Piping	3	6"	IWD-1220(c)	
1-EC-059-HBC	EC	Fuel Pool Cooling Piping	3	2", 1"	IWD-1220(a)	
1-EC-059-HBC	EC	Fuel Pool Cooling Piping	3	6"	IWD-1220(c)	
1-EC-062-HBC	EC	Fuel Pool Cooling Piping	3	4", 1"	IWD-1220(a)	
1-EC-062-HBC	EC	Fuel Pool Cooling Piping	3	10", 8", 6"	IWD-1220(c)	
1-EC-063-HBC	EC	Fuel Pool Cooling Piping	3	4", 1"	IWD-1220(a)	
1-EC-063-HBC	EC	Fuel Pool Cooling Piping	3	6"	IWD-1220(c)	
1-EC-067-HBC	EC	Fuel Pool Cooling Piping	3	4", 1"	IWD-1220(a)	
1-EC-067-HBC	EC	Fuel Pool Cooling Piping	3	6"	IWD-1220(c)	
1-EC-072-HCC	EC	Fuel Pool Cooling Piping	3	10"	IWD-1220(c)	
1-EC-074-HCC	EC	Fuel Pool Cooling Piping	3	2"	IWD-1220(a)	
1-EC-075-HCC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EC-076-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-077-HCC	EC	Fuel Pool Cooling Piping	3	2", 1.5"	IWD-1220(a)	
1-EC-079-HCC	EC	Fuel Pool Cooling Piping	3	12"	IWD-1220(c)	
1-EC-080-HCC	EC	Fuel Pool Cooling Piping	3	12"	IWD-1220(c)	
1-EC-081-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-088-HCC	EC	Fuel Pool Cooling Piping	3	4", 3", 1"	IWD-1220(a)	
1-EC-088-HCC	EC	Fuel Pool Cooling Piping	3	6"	IWD-1220(c)	
1-EC-091-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-092-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-093-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-094-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-095-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-096-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-097-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-099-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-100-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-101-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-102-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-103-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-104-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-136-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-138-HBC	EC	Fuel Pool Cooling Piping	3	2"	IWD-1220(a)	
1-EC-138-HBC	EC	Fuel Pool Cooling Piping	3	10", 6"	IWD-1220(c)	
1-EC-139-HBC	EC	Fuel Pool Cooling Piping	3	16"	IWD-1220(c)	
1-EC-140-HBC	EC	Fuel Pool Cooling Piping	3	12"	IWD-1220(c)	
1-EC-141-HBC	EC	Fuel Pool Cooling Piping	3	16"	IWD-1220(c)	
1-EC-142-HBC	EC	Fuel Pool Cooling Piping	3	12"	IWD-1220(c)	
1-EC-146-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-147-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-148-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-165-HCC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-166-HBC	EC	Fuel Pool Cooling Piping	3	1"	IWD-1220(a)	
1-EC-171-HCC	EC	Fuel Pool Cooling Piping	3	2"	IWD-1220(a)	
1-EC-172-HCC	EC	Fuel Pool Cooling Piping	3	2"	IWD-1220(a)	
GBB-018	EC	Fuel Pool Cooling Piping	2	12"	IWC-1222(c)	
GBB-018	EC	Fuel Pool Cooling Piping	2	16"	IWC-1222(c)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
HBB-023	ED	Aux Cooling Piping	2	<= 4"	IWC-1222(a)(1)	
HBB-024	ED	Aux Cooling Piping	2	<= 4"	IWC-1222(a)(1)	
HBB-003	EE	Torus Water Clean up Piping	2	1"	IWC-1222(a)(1)	
HBB-003	EE	Torus Water Clean up Piping	2	6"	IWC-1222(c)	
HCB-002	EE	Torus Water Clean up Piping	2	1"	IWC-1222(a)(1)	
HCB-002	EE	Torus Water Clean up Piping	2	6"	IWC-1222(c)	
10"-HBC-173	EG	SACS Piping	3	10"	VT	
10"-HBC-174	EG	SACS Piping	3	10"	VT	
10"-HBC-175	EG	SACS Piping	3	10"	VT	
10"-HBC-176	EG	SACS Piping	3	10"	VT	
10"-HBC-321	EG	SACS Piping	3	10"	VT	
10"-HBC-323	EG	SACS Piping	3	10"	VT	
10"-HBC-325	EG	SACS Piping	3	10"	VT	
10"-HBC-327	EG	SACS Piping	3	10"	VT	
10"-HBC-329	EG	SACS Piping	3	10"	VT	
10"-HBC-355	EG	SACS Piping	3	10"	VT	
10"-HBC-357	EG	SACS Piping	3	10"	VT	
10"-HBC-359	EG	SACS Piping	3	10"	VT	
10"-HBC-361	EG	SACS Piping	3	10"	VT	
12"-HBC-173	EG	SACS Piping	3	12"	VT	
12"-HBC-174	EG	SACS Piping	3	12"	VT	
12"-HBC-175	EG	SACS Piping	3	12"	VT	
12"-HBC-176	EG	SACS Piping	3	12"	VT	
14"-HBC-319	EG	SACS Piping	3	14"	VT	
14"-HBC-321	EG	SACS Piping	3	14"	VT	
16"-HBC-105	EG	SACS Piping	3	16"	VT	
16"-HBC-154	EG	SACS Piping	3	16"	VT	
18"-HBC-105	EG	SACS Piping	3	18"	VT	
18"-HBC-107	EG	SACS Piping	3	18"	VT	
18"-HBC-108	EG	SACS Piping	3	18"	VT	
18"-HBC-154	EG	SACS Piping	3	18"	VT	
18"-HBC-319	EG	SACS Piping	3	18"	VT	
1-EG-080-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-082-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-088-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-089-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-090-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-091-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EG-092-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-093-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-094-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-095-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-104-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-105-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-107-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-108-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-111-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-112-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-115-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-116-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-123-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-124-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-125-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-126-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-127-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-128-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-129-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-130-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-131-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-132-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-133-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-134-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-153-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-154-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-155-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-157-HBC	EG	SACS Piping	3	4"	IWD-1220(a)	
1-EG-158-HBC	EG	SACS Piping	3	4"	IWD-1220(a)	
1-EG-161-HBC	EG	SACS Piping	3	2", 1", .375"	IWD-1220(a)	
1-EG-162-HBC	EG	SACS Piping	3	2", 1", .375"	IWD-1220(a)	
1-EG-165-HBC	EG	SACS Piping	3	2", 1", .375"	IWD-1220(a)	
1-EG-166-HBC	EG	SACS Piping	3	2", 1", .375"	IWD-1220(a)	
1-EG-167-HBC	EG	SACS Piping	3	2", 1", .375"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EG-168-HBC	EG	SACS Piping	3	2", 1", .375"	IWD-1220(a)	
1-EG-169-HBC	EG	SACS Piping	3	4", 3", 2", 1"	IWD-1220(a)	
1-EG-170-HBC	EG	SACS Piping	3	4", 3", 2", 1"	IWD-1220(a)	
1-EG-171-HBC	EG	SACS Piping	3	4", 3", 2", 1"	IWD-1220(a)	
1-EG-172-HBC	EG	SACS Piping	3	4", 3", 2", 1"	IWD-1220(a)	
1-EG-173-HBC	EG	SACS Piping	3	4", 2", 1"	IWD-1220(a)	
1-EG-174-HBC	EG	SACS Piping	3	4", 1"	IWD-1220(a)	
1-EG-175-HBC	EG	SACS Piping	3	4", 2"	IWD-1220(a)	
1-EG-176-HBC	EG	SACS Piping	3	4", 2", 1"	IWD-1220(a)	
1-EG-177-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-178-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-179-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-180-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-181-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-182-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-183-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-184-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-185-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-186-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-187-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-188-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-189-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-190-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-191-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-192-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-193-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-194-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-195-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-196-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-197-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-198-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-199-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-200-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EG-201-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-202-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-203-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-204-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-206-HBC	EG	SACS Piping	3	4", 1"	IWD-1220(a)	
1-EG-208-HBC	EG	SACS Piping	3	4", 1"	IWD-1220(a)	
1-EG-210-HBC	EG	SACS Piping	3	4", 1"	IWD-1220(a)	
1-EG-212-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-213-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-216-HBC	EG	SACS Piping	3	4", 1"	IWD-1220(a)	
1-EG-284-HBC	EG	SACS Piping	3	4", 1"	IWD-1220(a)	
1-EG-286-HBC	EG	SACS Piping	3	4", 1"	IWD-1220(a)	
1-EG-288-HBC	EG	SACS Piping	3	4", 1"	IWD-1220(a)	
1-EG-290-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-292-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-294-HBC	EG	SACS Piping	3	4", 1"	IWD-1220(a)	
1-EG-299-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-300-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-301-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-302-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-303-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-304-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-305-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-306-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-307-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-308-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-309-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-310-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-311-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-312-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-313-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-314-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-315-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-316-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-317-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-318-HBC	EG	SACS Piping	3	3", 1"	IWD-1220(a)	
1-EG-323-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-324-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EG-325-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-326-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-327-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-328-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-329-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-330-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-332-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-334-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-336-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-338-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-355-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-356-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-357-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-358-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-359-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-360-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-361-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-362-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-364-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-366-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-368-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-370-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-371-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-372-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-373-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-374-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-500-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-501-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-545-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-547-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-549-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-551-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-553-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-555-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-557-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-559-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-561-HBC	EG	SACS Piping	3	1", .75"	IWD-1220(a)	



**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EG-563-HBC	EG	SACS Piping	3	1", .75"	IWD-1220(a)	
1-EG-605-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-648-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-649-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-650-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-651-HBC	EG	SACS Piping	3	2"	IWD-1220(a)	
1-EG-692-HBC	EG	SACS Piping	3	2", 1"	IWD-1220(a)	
1-EG-693-HBC	EG	SACS Piping	3	2", 1"	IWD-1220(a)	
1-EG-700-HBC	EG	SACS Piping	3	2", 1", .375"	IWD-1220(a)	
1-EG-701-HBC	EG	SACS Piping	3	2", 1", .375"	IWD-1220(a)	
1-EG-777-HBC	EG	SACS Piping	3	2", 1"	IWD-1220(a)	
1-EG-778-HBC	EG	SACS Piping	3	2", 1"	IWD-1220(a)	
1-EG-788-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-789-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-792-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-793-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-797-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-799-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-801-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-803-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-809-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-811-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-815-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-816-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-817-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-818-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-819-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
1-EG-820-HBC	EG	SACS Piping	3	1"	IWD-1220(a)	
20"-HBC-080	EG	SACS Piping	3	20"	VT	
20"-HBC-081	EG	SACS Piping	3	20"	VT	
20"-HBC-081	EG	SACS Piping	3	20"	VT	
20"-HBC-082	EG	SACS Piping	3	20"	VT	
20"-HBC-083	EG	SACS Piping	3	20"	VT	
20"-HBC-104	EG	SACS Piping	3	20"	VT	
20"-HBC-105	EG	SACS Piping	3	20"	VT	
20"-HBC-107	EG	SACS Piping	3	20"	VT	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
20"-HBC-108	EG	SACS Piping	3	20"	VT	
20"-HBC-119	EG	SACS Piping	3	20"	VT	
20"-HBC-120	EG	SACS Piping	3	20"	VT	
20"-HBC-121	EG	SACS Piping	3	20"	VT	
20"-HBC-122	EG	SACS Piping	3	20"	VT	
20"-HBC-123	EG	SACS Piping	3	20"	VT	
20"-HBC-124	EG	SACS Piping	3	20"	VT	
20"-HBC-125	EG	SACS Piping	3	20"	VT	
20"-HBC-126	EG	SACS Piping	3	20"	VT	
20"-HBC-153	EG	SACS Piping	3	20"	VT	
20"-HBC-154	EG	SACS Piping	3	20"	VT	
20"-HBC-157	EG	SACS Piping	3	20"	VT	
20"-HBC-158	EG	SACS Piping	3	20"	VT	
20"-HBC-159	EG	SACS Piping	3	20"	VT	
20"-HBC-160	EG	SACS Piping	3	20"	VT	
24"-HBC-153	EG	SACS Piping	3	24"	VT	
30"-HBC-076	EG	SACS Piping	3	30"	VT	
30"-HBC-077	EG	SACS Piping	3	30"	VT	
30"-HBC-078	EG	SACS Piping	3	30"	VT	
30"-HBC-079	EG	SACS Piping	3	30"	VT	
30"-HBC-104	EG	SACS Piping	3	30"	VT	
30"-HBC-105	EG	SACS Piping	3	30"	VT	
30"-HBC-107	EG	SACS Piping	3	30"	VT	
30"-HBC-108	EG	SACS Piping	3	30"	VT	
30"-HBC-153	EG	SACS Piping	3	30"	VT	
30"-HBC-154	EG	SACS Piping	3	30"	VT	
30"-HBC-155	EG	SACS Piping	3	30"	VT	
30"-HBC-605	EG	SACS Piping	3	30"	VT	
6"-HBC-104	EG	SACS Piping	3	6"	VT	
6"-HBC-105	EG	SACS Piping	3	6"	VT	
6"-HBC-153	EG	SACS Piping	3	6"	VT	
6"-HBC-154	EG	SACS Piping	3	6"	VT	
6"-HBC-169	EG	SACS Piping	3	6"	VT	
6"-HBC-170	EG	SACS Piping	3	6"	VT	
6"-HBC-171	EG	SACS Piping	3	6"	VT	
6"-HBC-172	EG	SACS Piping	3	6"	VT	
6"-HBC-173	EG	SACS Piping	3	6"	VT	
6"-HBC-174	EG	SACS Piping	3	6"	VT	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
6"-HBC-175	EG	SACS Piping	3	6"	VT	
6"-HBC-176	EG	SACS Piping	3	6"	VT	
6"-HBC-177	EG	SACS Piping	3	6"	VT	
6"-HBC-178	EG	SACS Piping	3	6"	VT	
6"-HBC-179	EG	SACS Piping	3	6"	VT	
6"-HBC-180	EG	SACS Piping	3	6"	VT	
6"-HBC-212	EG	SACS Piping	3	6"	VT	
6"-HBC-214	EG	SACS Piping	3	6"	VT	
6"-HBC-290	EG	SACS Piping	3	6"	VT	
6"-HBC-292	EG	SACS Piping	3	6"	VT	
6"-HBC-323	EG	SACS Piping	3	6"	VT	
6"-HBC-324	EG	SACS Piping	3	6"	VT	
6"-HBC-325	EG	SACS Piping	3	6"	VT	
6"-HBC-326	EG	SACS Piping	3	6"	VT	
6"-HBC-327	EG	SACS Piping	3	6"	VT	
6"-HBC-328	EG	SACS Piping	3	6"	VT	
6"-HBC-329	EG	SACS Piping	3	6"	VT	
6"-HBC-330	EG	SACS Piping	3	6"	VT	
6"-HBC-332	EG	SACS Piping	3	6"	VT	
6"-HBC-334	EG	SACS Piping	3	6"	VT	
6"-HBC-336	EG	SACS Piping	3	6"	VT	
6"-HBC-338	EG	SACS Piping	3	6"	VT	
6"-HBC-355	EG	SACS Piping	3	6"	VT	
6"-HBC-356	EG	SACS Piping	3	6"	VT	
6"-HBC-357	EG	SACS Piping	3	6"	VT	
6"-HBC-358	EG	SACS Piping	3	6"	VT	
6"-HBC-359	EG	SACS Piping	3	6"	VT	
6"-HBC-360	EG	SACS Piping	3	6"	VT	
6"-HBC-361	EG	SACS Piping	3	6"	VT	
6"-HBC-362	EG	SACS Piping	3	6"	VT	
6"-HBC-364	EG	SACS Piping	3	6"	VT	
6"-HBC-366	EG	SACS Piping	3	6"	VT	
6"-HBC-368	EG	SACS Piping	3	6"	VT	
6"-HBC-370	EG	SACS Piping	3	6"	VT	
8"-HBC-104	EG	SACS Piping	3	8"	VT	
8"-HBC-105	EG	SACS Piping	3	8"	VT	
8"-HBC-153	EG	SACS Piping	3	8"	VT	
8"-HBC-154	EG	SACS Piping	3	8"	VT	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
8"-HBC-169	EG	SACS Piping	3	8"	VT	
8"-HBC-173	EG	SACS Piping	3	8"	VT	
8"-HBC-174	EG	SACS Piping	3	8"	VT	
8"-HBC-175	EG	SACS Piping	3	8"	VT	
8"-HBC-176	EG	SACS Piping	3	8"	VT	
8"-HBC-299	EG	SACS Piping	3	8"	VT	
8"-HBC-300	EG	SACS Piping	3	8"	VT	
8"-HBC-301	EG	SACS Piping	3	8"	VT	
8"-HBC-302	EG	SACS Piping	3	8"	VT	
8"-HBC-323	EG	SACS Piping	3	8"	VT	
8"-HBC-325	EG	SACS Piping	3	8"	VT	
8"-HBC-327	EG	SACS Piping	3	8"	VT	
8"-HBC-329	EG	SACS Piping	3	8"	VT	
8"-HBC-355	EG	SACS Piping	3	8"	VT	
8"-HBC-357	EG	SACS Piping	3	8"	VT	
8"-HBC-359	EG	SACS Piping	3	8"	VT	
8"-HBC-361	EG	SACS Piping	3	8"	VT	
8"-HBC-371	EG	SACS Piping	3	8"	VT	
8"-HBC-372	EG	SACS Piping	3	8"	VT	
8"-HBC-373	EG	SACS Piping	3	8"	VT	
8"-HBC-374	EG	SACS Piping	3	8"	VT	
H1EG -1xE-201	EG	SACS Heat Exchanger	3	26" x 26"	VT	HX
H1EG -1x-P-210	EG	SACS Pump	3	20" x 20"	VT	Pump
H1EG -1x-T-205	EG	SACS Expansion Tank	3	18" x 1"	VT	Tank
H1EG -1x-T-412	EG	SACS Accumulators	3	30" x 30"	VT	Accumulator
1-EP-001-HGC	EP	SW Traveling Screen Piping	3	3", 2", 1.5", 1"	IWD-1220(a)	
1-EP-001-HGC	EP	SW Traveling Screen Piping	3	6"	IWD-1220(c)	
1-EP-002-HGC	EP	SW Traveling Screen Piping	3	3", 2", 1.5", 1"	IWD-1220(a)	
1-EP-002-HGC	EP	SW Traveling Screen Piping	3	6"	IWD-1220(c)	
1-EP-003-HGC	EP	SW Traveling Screen Piping	3	3", 2", 1.5" 1"	IWD-1220(a)	
1-EP-003-HGC	EP	SW Traveling Screen Piping	3	6"	IWD-1220(c)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-EP-004-HGC	EP	SW Traveling Screen Piping	3	3", 2", 1.5", 1"	IWD-1220(a)	
1-EP-004-HGC	EP	SW Traveling Screen Piping	3	6"	IWD-1220(c)	
1-EP-005-HGC	EP	SW Traveling Screen Piping	3	1"	IWD-1220(a)	
1-EP-005-HGC	EP	SW Traveling Screen Piping	3	6"	IWD-1220(c)	
1-EP-006-HGC	EP	SW Traveling Screen Piping	3	1"	IWD-1220(a)	
1-EP-006-HGC	EP	SW Traveling Screen Piping	3	6"	IWD-1220(c)	
1-EP-007-HGC	EP	SW Traveling Screen Piping	3	1"	IWD-1220(a)	
1-EP-007-HGC	EP	SW Traveling Screen Piping	3	6"	IWD-1220(c)	
1-EP-008-HGC	EP	SW Traveling Screen Piping	3	1"	IWD-1220(a)	
1-EP-008-HGC	EP	SW Traveling Screen Piping	3	6"	IWD-1220(c)	
10"-HBB-007	FC	RCIC Piping	2	10"	VOL, SUR, VT	
4"-DBA-003	FC	RCIC Piping	1	4"	VOL, SUR, VT	
4"-DBB-004	FC	RCIC Piping	2	4"	VOL, SUR, VT	BER
6"-DBB-004	FC	RCIC Piping	2	6"	VOL, SUR, VT	BER
CCA-001	FC	RCIC Piping	1	<= 1"	IWB-1220(b)(1)	
CCA-002	FC	RCIC Piping	1	<= 1"	IWB-1220(b)(1)	
CCA-030	FC	RCIC Piping	1	<= 1"	IWB-1220(b)(1)	
CCA-031	FC	RCIC Piping	1	<= 1"	IWB-1220(b)(1)	
DBA-003	FC	RCIC Piping	1	1"	IWB-1220(b)(1)	
DBA-003	FC	RCIC Piping	1	2"	IWB-1220(b)(2)	
DBB-004	FC	RCIC Piping	2	<= 4"	IWC-1222(a)(1)	
DBB-005	FC	RCIC Piping	2	<= 4"	IWC-1222(a)(1)	
DBB-006	FC	RCIC Piping	2	<= 2"	IWC-1222(a)(1)	
DBB-029	FC	RCIC Piping	2	2"	IWC-1222(a)(1)	
H1BD -10-P-203	FC	RCIC Pump	2	6" x 6"	VT	Pump
H1FC -10-S-212	FC	RCIC Turbine	2	8" x 3"	VT	Turbine
HBB-007	FC	RCIC Piping	2	8"	IWC-1221(d)	Exempt from 1st rupture disk to torus cont. atmosphere [IWC-1222(d)]
HBB-007	FC	RCIC Piping	2	10"	IWC-1221(d)	Exempt from valve V005 to torus [IWC-1222(d)]
HBB-007	FC	RCIC Piping	2	<= 4"	IWC-1222(a)(1)	
HBB-007	FC	RCIC Piping	2	12"	IWC-1222(d)	
HBB-008	FC	RCIC Piping	2	<= 4"	IWC-1222(a)(1)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
HBB-009	FC	RCIC Piping	2	<= 3"	IWC-1222(a)(1)	
HBB-010	FC	RCIC Piping	2	8"	IWC-1221(d)	Exempt from 1st rupture disk to torus cont. atmosphere [IWC-1222(d)]
HBB-010	FC	RCIC Piping	2	1"	IWC-1222(a)(1)	
HBB-011	FC	RCIC Piping	2	<= 1"	IWC-1222(a)(1)	
HBB-012	FC	RCIC Piping	2	1"	IWC-1222(a)(1)	
HBB-013	FC	RCIC Piping	2	<= 1"	IWC-1222(a)(1)	
HBB-014	FC	RCIC Piping	2	1"	IWC-1222(a)(1)	
HBB-017	FC	RCIC Piping	2	1"	IWC-1222(a)(1)	
HBB-019	FC	RCIC Piping	2	<= 2"	IWC-1222(a)(1)	
HBB-020	FC	RCIC Piping	2	<= 2"	IWC-1222(a)(1)	
HBB-021	FC	RCIC Piping	2	<= 1.5"	IWC-1222(a)(1)	
HBB-028	FC	RCIC Piping	2	<= 2"	IWC-1222(a)(1)	
Lube Oil Cooler	FC	RCIC Lube Oil Cooler	2	1" x 1"	IWC-1222(c)	HX
10"-DBA-001	FD	HPCI Piping	1	10"	VOL, SUR, VT	BER
10"-DBB-002	FD	HPCI Piping	2	10"	VOL, SUR, VT	BER
10"-DBB-004	FD	HPCI Piping	2	10"	VT	
10"-DBB-004	FD	HPCI Piping	2	10"	VOL, SUR, VT	
10"-HBB-006	FD	HPCI Piping	2	10"	VOL, SUR, VT	
12"-DBB-002	FD	HPCI Piping	2	12"	VOL, SUR, VT	BER
18"-HBB-006	FD	HPCI Piping	2	18"	VOL, SUR, VT	
1-FD-041-HBC	FD	HPCI Piping	3	1.5"	IWD-1220(a)	
6"-DBB-004	FD	HPCI Piping	2	6"	VOL, SUR, VT	
8"-DBB-002B	FD	HPCI Piping	2	8"	VOL, SUR, VT	
CCA-010	FD	HPCI Piping	1	1"	IWB-1220(b)(1)	
CCA-011	FD	HPCI Piping	1	1"	IWB-1220(b)(1)	
CCA-012	FD	HPCI Piping	1	1"	IWB-1220(b)(1)	
CCA-013	FD	HPCI Piping	1	1"	IWB-1220(b)(1)	
DBA-001	FD	HPCI Piping	1	1"	IWB-1220(b)(1)	
DBA-001	FD	HPCI Piping	1	2"	IWB-1220(b)(2)	
DBB-002	FD	HPCI Piping	2	<= 1"	IWC-1221(a)(1)	
DBB-003	FD	HPCI Piping	2	<= 2"	IWC-1221(a)(1)	
DBB-004	FD	HPCI Piping	2	1"	IWC-1221(a)(1)	
GBB-023	FD	HPCI Piping	2	2"	IWC-1221(a)(1)	

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
H1BJ -10-P-217	FD	HPCI Booster Pump	2	16" x 12"	VT	Pump
H1FD -10-S-211	FD	HPCI Turbine	2	18" x 10"	VT	Turbine
HBB-006	FD	HPCI Piping	2	20"	IWC-1221(d)	Exempt from valve V006 to torus [IWC- 1221(f)]
HBB-006	FD	HPCI Piping	2	<= 3"	IWC-1221(a)(1)	
HBB-006	FD	HPCI Piping	2	24"	IWC-1221(d)	
HBB-007	FD	HPCI Piping	2	<= 4"	IWC-1221(a)(1)	
HBB-008	FD	HPCI Piping	2	<= 3"	IWC-1221(a)(1)	
HBB-008	FD	HPCI Piping	2	6"	IWC-1221(d)	
HBB-014	FD	HPCI Piping	2	16"	IWC-1221(d)	Exempt from first rupture disk to torus containment atmosphere [IWC- 1221(f)]
HBB-014	FD	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-016	FD	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-017	FD	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-018	FD	HPCI Piping	2	.75"	IWC-1221(a)(1)	
HBB-022	FD	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-024	FD	HPCI Piping	2	<= 2"	IWC-1221(a)(1)	
HBB-025	FD	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-027	FD	HPCI Piping	2	1"	IWC-1221(a)(1)	
HBB-028	FD	HPCI Piping	2	<= 1.5"	IWC-1221(a)(1)	
HBB-030	FD	HPCI Piping	2	<= 2"	IWC-1221(a)(1)	
Lube Oil Cooler	FD	HPCI Lube Oil Cooler	2	2" x 2"	IWC-1221(a)(2)	HX
HBB-037	GB	BOP Chilled Water Piping	2	1"	IWC-1222(a)(1)	
HBB-037	GB	BOP Chilled Water Piping	2	8"	IWC-1222(c)	
HBB-038	GB	BOP Chilled Water Piping	2	1"	IWC-1222(a)(1)	
HBB-038	GB	BOP Chilled Water Piping	2	8"	IWC-1222(c)	
HBB-039	GB	BOP Chilled Water Piping	2	1"	IWC-1222(a)(1)	
HBB-039	GB	BOP Chilled Water Piping	2	8"	IWC-1222(c)	
HBB-040	GB	BOP Chilled Water Piping	2	1"	IWC-1222(a)(1)	
HBB-040	GB	BOP Chilled Water Piping	2	8"	IWC-1222(c)	
18"-HBC-187	GJ	Chilled Water Piping	3	18"	VT	
18"-HBC-188	GJ	Chilled Water Piping	3	18"	VT	
18"-HBC-189	GJ	Chilled Water Piping	3	18"	VT	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-GJ-002-HBC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-003-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-005-HBC	GJ	Chilled Water Piping	3	2", 1", .75", .25"	IWD-1220(a)	
1-GJ-007-HBC	GJ	Chilled Water Piping	3	2"	IWD-1220(a)	
1-GJ-010-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-011-HBC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-012-HBC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-014-HBC	GJ	Chilled Water Piping	3	4", 3", 2", 1"	IWD-1220(a)	
1-GJ-016-HBC	GJ	Chilled Water Piping	3	4", 3", 2", 1"	IWD-1220(a)	
1-GJ-021-HBC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-025-HBC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-026-HCC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-027-HCC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-030-HBC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-031-HBC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-036-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-037-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-038-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-039-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-040-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-041-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-042-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-043-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-044-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-045-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-046-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-047-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-048-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-049-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-050-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-051-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	



**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-GJ-052-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-053-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-054-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-055-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-056-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-057-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-058-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-059-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-060-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-061-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-062-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-063-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-064-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-065-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-066-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-067-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-088-HBC	GJ	Chilled Water Piping	3	1", .5"	IWD-1220(a)	
1-GJ-089-HBC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-111-HBC	GJ	Chilled Water Piping	3	.5", .25"	IWD-1220(a)	
1-GJ-112-HBC	GJ	Chilled Water Piping	3	2"	IWD-1220(a)	
1-GJ-114-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-115-HBC	GJ	Chilled Water Piping	3	4", 1"	IWD-1220(a)	
1-GJ-123-HBC	GJ	Chilled Water Piping	3	4", 3", 2", 1.5", 1"	IWD-1220(a)	
1-GJ-124-HBC	GJ	Chilled Water Piping	3	1", .5"	IWD-1220(a)	
1-GJ-136-HCC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-137-HCC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-138-HBC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-139-HBC	GJ	Chilled Water Piping	3	1"	IWD-1220(a)	
1-GJ-140-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-141-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-GJ-142-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-143-HBC	GJ	Chilled Water Piping	3	3", 1"	IWD-1220(a)	
1-GJ-144-HBC	GJ	Chilled Water Piping	3	4", 3"	IWD-1220(a)	
1-GJ-146-HBC	GJ	Chilled Water Piping	3	4", 2"	IWD-1220(a)	
1-GJ-147-HBC	GJ	Chilled Water Piping	3	4", 3", 2", 1.5", 1"	IWD-1220(a)	
1-GJ-148-HBC	GJ	Chilled Water Piping	3	4", 1"	IWD-1220(a)	
1-GJ-150-HBC	GJ	Chilled Water Piping	3	1", .5"	IWD-1220(a)	
1-GJ-152-HBC	GJ	Chilled Water Piping	3	4", 3"	IWD-1220(a)	
1-GJ-153-HBC	GJ	Chilled Water Piping	3	4", 1"	IWD-1220(a)	
1-GJ-161-HBC	GJ	Chilled Water Piping	3	4", 3", 1.5", 1"	IWD-1220(a)	
1-GJ-163-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-165-HBC	GJ	Chilled Water Piping	3	4", 3", 1"	IWD-1220(a)	
1-GJ-167-HBC	GJ	Chilled Water Piping	3	3", 2", 1"	IWD-1220(a)	
1-GJ-169-HBC	GJ	Chilled Water Piping	3	3", 2", 1"	IWD-1220(a)	
1-GJ-171-HBC	GJ	Chilled Water Piping	3	.5", .25"	IWD-1220(a)	
1-GJ-172-HBC	GJ	Chilled Water Piping	3	2"	IWD-1220(a)	
1-GJ-187-HCC	GJ	Chilled Water Piping	3	2", 1"	IWD-1220(a)	
1-GJ-188-HCC	GJ	Chilled Water Piping	3	2", 1"	IWD-1220(a)	
1-GJ-189-HCC	GJ	Chilled Water Piping	3	2", 1"	IWD-1220(a)	
6"-HBC-003	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-010	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-014	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-016	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-037	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-045	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-053	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-061	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-114	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-123	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-147	GJ	Chilled Water Piping	3	6"	VT	
6"-HBC-161	GJ	Chilled Water Piping	3	6"	VT	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
6"-HBC-162	GJ	Chilled Water Piping	3	6"	VT	
8"-HBC-002	GJ	Chilled Water Piping	3	8"	VT	
8"-HBC-003	GJ	Chilled Water Piping	3	8"	VT	
8"-HBC-009	GJ	Chilled Water Piping	3	8"	VT	
8"-HBC-010	GJ	Chilled Water Piping	3	8"	VT	
8"-HBC-011	GJ	Chilled Water Piping	3	8"	VT	
8"-HBC-012	GJ	Chilled Water Piping	3	8"	VT	
8"-HBC-014	GJ	Chilled Water Piping	3	8"	VT	
8"-HBC-016	GJ	Chilled Water Piping	3	8"	VT	
8"-HBC-146	GJ	Chilled Water Piping	3	8"	VT	
8"-HBC-148	GJ	Chilled Water Piping	3	8"	VT	
H1GJ -1x-K-403	GJ	Chilled Water Water Chiller	3	6"	VT	HX
H1GJ -1x-P-400	GJ	Chilled Water Pump	3	8"	VT	Pump
HBB-001	GP	Leak Rate Test Piping	2	1"	IWC-1222(a)(1)	
HBB-003	GP	Leak Rate Test Piping	2	1"	IWC-1222(a)(1)	
HBB-005	GP	Leak Rate Test Piping	2	1"	IWC-1222(a)(1)	
HCB-013	GP	Leak Rate Test Piping	2	1"	IWC-1222(a)(1)	
HCB-014	GP	Leak Rate Test Piping	2	1"	IWC-1222(a)(1)	
1-GS-065-HBC	GS	CNTMT Atmos. Control Piping	3	1"	IWD-1220(a)	
1-GS-066-HBC	GS	CNTMT Atmos. Control Piping	3	1"	IWD-1220(a)	
1-GS-071-HCC	GS	CNTMT Atmos. Control Piping	3	2", 1.5", 1", .375"	IWD-1220(a)	
1-GS-072-HCC	GS	CNTMT Atmos. Control Piping	3	2", 1.5", 1", .375"	IWD-1220(a)	
1-GS-073-HCC	GS	CNTMT Atmos. Control Piping	3	1", .375"	IWD-1220(a)	
1-GS-074-HCC	GS	CNTMT Atmos. Control Piping	3	1", .375"	IWD-1220(a)	
1-GS-075-HCC	GS	CNTMT Atmos. Control Piping	3	1", .375"	IWD-1220(a)	
1-GS-076-HCC	GS	CNTMT Atmos. Control Piping	3	1", .375"	IWD-1220(a)	
1-GS-077-HCC	GS	CNTMT Atmos. Control Piping	3	1", .375"	IWD-1220(a)	
1-GS-078-HCC	GS	CNTMT Atmos. Control Piping	3	1", .375"	IWD-1220(a)	

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
ECB-051	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
ECB-052	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
GBB-042	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
GBB-043	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HBB-001	GS	CNTMT Atmos. Control Piping	2	<= 4"	IWC-1222(a)(1)	
HBB-001	GS	CNTMT Atmos. Control Piping	2	26"	IWC-1222(c)	
HBB-002	GS	CNTMT Atmos. Control Piping	2	<= 4"	IWC-1222(a)(1)	
HBB-002	GS	CNTMT Atmos. Control Piping	2	26"	IWC-1222(c)	
HBB-002	GS	CNTMT Atmos. Control Piping	2	6"	IWC-1222(c)	
HBB-003	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HBB-003	GS	CNTMT Atmos. Control Piping	2	24"	IWC-1222(c)	
HBB-003	GS	CNTMT Atmos. Control Piping	2	6"	IWC-1222(c)	
HBB-004	GS	CNTMT Atmos. Control Piping	2	<= 2"	IWC-1222(a)(1)	
HBB-004	GS	CNTMT Atmos. Control Piping	2	24"	IWC-1222(c)	
HBB-004	GS	CNTMT Atmos. Control Piping	2	6"	IWC-1222(c)	
HBB-022	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HBB-040	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HBB-041	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HCB-009	GS	CNTMT Atmos. Control Piping	2	<= 2"	IWC-1222(a)(1)	
HCB-010	GS	CNTMT Atmos. Control Piping	2	<= 2"	IWC-1222(a)(1)	
HCB-013	GS	CNTMT Atmos. Control Piping	2	<= 2"	IWC-1222(a)(1)	
HCB-015	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HCB-021	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HCB-025	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HCB-028	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
HCB-030	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HCB-044	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HCB-045	GS	CNTMT Atmos. Control Piping	2	1"	IWC-1222(a)(1)	
HCB-061	GS	CNTMT Atmos. Control Piping	2	4"	IWC-1222(a)(1)	
HCB-062	GS	CNTMT Atmos. Control Piping	2	4"	IWC-1222(a)(1)	
HCB-063	GS	CNTMT Atmos. Control Piping	2	4"	IWC-1222(a)(1)	
HCB-064	GS	CNTMT Atmos. Control Piping	2	4"	IWC-1222(a)(1)	
HCB-064	GS	CNTMT Atmos. Control Piping	2	6"	IWC-1222(c)	
1-GU-003-HBC	GU	Filtration, Recirc. & Vent Piping	3	26"	IWD-1220(c)	
1-GU-004-HBC	GU	Filtration, Recirc. & Vent Piping	3	16"	IWD-1220(c)	
1-GU-006-HBC	GU	Filtration, Recirc. & Vent Piping	3	14"	IWD-1220(c)	
1-GU-007-HBC	GU	Filtration, Recirc. & Vent Piping	3	14"	IWD-1220(c)	
1-GU-008-HBC	GU	Filtration, Recirc. & Vent Piping	3	14"	IWD-1220(c)	
1-GU-009-HBC	GU	Filtration, Recirc. & Vent Piping	3	12"	IWD-1220(c)	
1-GU-010-HBC	GU	Filtration, Recirc. & Vent Piping	3	12"	IWD-1220(c)	
1-GU-011-HBC	GU	Filtration, Recirc. & Vent Piping	3	12"	IWD-1220(c)	
1-GU-012-HBC	GU	Filtration, Recirc. & Vent Piping	3	12"	IWD-1220(c)	
1-GU-013-HBC	GU	Filtration, Recirc. & Vent Piping	3	30"	IWD-1220(c)	
1-GU-014-HBC	GU	Filtration, Recirc. & Vent Piping	3	30"	IWD-1220(c)	
1-GU-015-HBC	GU	Filtration, Recirc. & Vent Piping	3	14"	IWD-1220(c)	
1-GU-016-HBC	GU	Filtration, Recirc. & Vent Piping	3	12"	IWD-1220(c)	
1-GU-017-HBC	GU	Filtration, Recirc. & Vent Piping	3	12"	IWD-1220(c)	
1-GU-018-HBC	GU	Filtration, Recirc. & Vent Piping	3	12"	IWD-1220(c)	

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-GU-019-HBC	GU	Filtration, Recirc. & Vent Piping	3	10"	IWD-1220(c)	
1-GU-020-HBC	GU	Filtration, Recirc. & Vent Piping	3	10"	IWD-1220(c)	
1-GU-021-HBC	GU	Filtration, Recirc. & Vent Piping	3	26"	IWD-1220(c)	
1-GU-022-HBC	GU	Filtration, Recirc. & Vent Piping	3	26"	IWD-1220(c)	
1-GU-023-HBC	GU	Filtration, Recirc. & Vent Piping	3	10"	IWD-1220(c)	
1-GU-024-HBC	GU	Filtration, Recirc. & Vent Piping	3	10"	IWD-1220(c)	
1-GU-025-HBC	GU	Filtration, Recirc. & Vent Piping	3	10"	IWD-1220(c)	
1-GU-026-HBC	GU	Filtration, Recirc. & Vent Piping	3	10"	IWD-1220(c)	
1-GU-031-HBC	GU	Filtration, Recirc. & Vent Piping	3	2"	IWD-1220(a)	
1-GU-067-HBC	GU	Filtration, Recirc. & Vent Piping	3	16"	IWD-1220(c)	
1-GU-069-HCC	GU	Filtration, Recirc. & Vent Piping	3	1", .375"	IWD-1220(a)	
1-GU-070-HCC	GU	Filtration, Recirc. & Vent Piping	3	1", .375"	IWD-1220(a)	
1-GU-071-HCC	GU	Filtration, Recirc. & Vent Piping	3	1", .375"	IWD-1220(a)	
1-GU-072-HCC	GU	Filtration, Recirc. & Vent Piping	3	1", .375"	IWD-1220(a)	
1-GU-073-HCC	GU	Filtration, Recirc. & Vent Piping	3	1", .375"	IWD-1220(a)	
1-GU-074-HCC	GU	Filtration, Recirc. & Vent Piping	3	1", .375"	IWD-1220(a)	
HBB-014	HB	Liquid Rad Waste Piping	2	3"	IWC-1222(a)(1)	
HBB-023	HB	Liquid Rad Waste Piping	2	3"	IWC-1222(a)(1)	
1-JE-001-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-002-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-002-HBC	JE	EDG Fuel Storage Piping	3	12", 6"	IWD-1220(c)	
1-JE-003-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-004-HBC	JE	EDG Fuel Storage Piping	3	2"	IWD-1220(a)	
1-JE-005-HBC	JE	EDG Fuel Storage Piping	3	2", 1.5", .75"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-JE-006-HBC	JE	EDG Fuel Storage Piping	3	2", 1.5", .75"	IWD-1220(a)	
1-JE-007-HBC	JE	EDG Fuel Storage Piping	3	2", 1"	IWD-1220(a)	
1-JE-008-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-008-HBC	JE	EDG Fuel Storage Piping	3	12", 6"	IWD-1220(c)	
1-JE-009-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-010-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-011-HBC	JE	EDG Fuel Storage Piping	3	2"	IWD-1220(a)	
1-JE-012-HBC	JE	EDG Fuel Storage Piping	3	2", 1.5", .75"	IWD-1220(a)	
1-JE-013-HBC	JE	EDG Fuel Storage Piping	3	2", 1.5", .75"	IWD-1220(a)	
1-JE-014-HBC	JE	EDG Fuel Storage Piping	3	2", 1"	IWD-1220(a)	
1-JE-016-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-017-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-018-HBC	JE	EDG Fuel Storage Piping	3	2"	IWD-1220(a)	
1-JE-019-HBC	JE	EDG Fuel Storage Piping	3	2", 1.5", .75"	IWD-1220(a)	
1-JE-020-HBC	JE	EDG Fuel Storage Piping	3	2", 1.5", .75"	IWD-1220(a)	
1-JE-021-HBC	JE	EDG Fuel Storage Piping	3	2", 1"	IWD-1220(a)	
1-JE-023-HBC	JE	EDG Fuel Storage Piping	3	2", 1"	IWD-1220(a)	
1-JE-024-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-025-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-026-HBC	JE	EDG Fuel Storage Piping	3	2"	IWD-1220(a)	
1-JE-027-HBC	JE	EDG Fuel Storage Piping	3	2", 1.5", .75"	IWD-1220(a)	
1-JE-028-HBC	JE	EDG Fuel Storage Piping	3	2", 1.5", .75"	IWD-1220(a)	
1-JE-029-HBC	JE	EDG Fuel Storage Piping	3	1.5", 1"	IWD-1220(a)	
1-JE-030-HBC	JE	EDG Fuel Storage Piping	3	1.5", 1"	IWD-1220(a)	
1-JE-031-HBC	JE	EDG Fuel Storage Piping	3	1.5", 1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-JE-032-HBC	JE	EDG Fuel Storage Piping	3	1.5", 1"	IWD-1220(a)	
1-JE-033-HBC	JE	EDG Fuel Storage Piping	3	1.5", 1"	IWD-1220(a)	
1-JE-034-HBC	JE	EDG Fuel Storage Piping	3	1.5", 1"	IWD-1220(a)	
1-JE-035-HBC	JE	EDG Fuel Storage Piping	3	1.5", 1"	IWD-1220(a)	
1-JE-036-HBC	JE	EDG Fuel Storage Piping	3	1.5", 1"	IWD-1220(a)	
1-JE-037-HBC	JE	EDG Fuel Storage Piping	3	1"	IWD-1220(a)	
1-JE-037-HBC	JE	EDG Fuel Storage Piping	3	6"	IWD-1220(c)	
1-JE-038-HBC	JE	EDG Fuel Storage Piping	3	1"	IWD-1220(a)	
1-JE-038-HBC	JE	EDG Fuel Storage Piping	3	6"	IWD-1220(c)	
1-JE-039-HBC	JE	EDG Fuel Storage Piping	3	1"	IWD-1220(a)	
1-JE-039-HBC	JE	EDG Fuel Storage Piping	3	6"	IWD-1220(c)	
1-JE-040-HBC	JE	EDG Fuel Storage Piping	3	1"	IWD-1220(a)	
1-JE-040-HBC	JE	EDG Fuel Storage Piping	3	6"	IWD-1220(c)	
1-JE-041-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-041-HBC	JE	EDG Fuel Storage Piping	3	12", 6"	IWD-1220(c)	
1-JE-042-HBC	JE	EDG Fuel Storage Piping	3	4"	IWD-1220(a)	
1-JE-042-HBC	JE	EDG Fuel Storage Piping	3	12", 6"	IWD-1220(c)	
1-JE-051-HBC	JE	EDG Fuel Storage Piping	3	1"	IWD-1220(a)	
1-JE-052-HBC	JE	EDG Fuel Storage Piping	3	1"	IWD-1220(a)	
1-JE-053-HBC	JE	EDG Fuel Storage Piping	3	1"	IWD-1220(a)	
1-JE-054-HBC	JE	EDG Fuel Storage Piping	3	1"	IWD-1220(a)	
H1JE -1x-T-403	JE	EDG Fuel Oil Day Tank	3	12"	VT	Tank
H1JE -1x-T-404	JE	EDG Fuel Oil Storage Tank	3	1.5"	VT	Tank
HBB-014	KA	Sevice Air Piping	2	4"	IWC-1222(a)(1)	
HBB-027	KB	Instrument Air Piping	2	1"	IWC-1222(a)(1)	
HBB-026	KG	Breathing Air Piping	2	4"	IWC-1222(a)(1)	
HCB-004	KG	Breathing Air Piping	2	4"	IWC-1222(a)(1)	
1-KJ-013-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-014-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-015-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-016-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-017-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-018-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-019-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	



**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-KJ-020-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-021-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-022-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-023-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-024-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-025-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-026-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-027-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-028-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-037-HBC	KJ	EDG Piping	3	1.5"	IWD-1220(a)	
1-KJ-038-HBC	KJ	EDG Piping	3	1.5"	IWD-1220(a)	
1-KJ-039-HBC	KJ	EDG Piping	3	1.5"	IWD-1220(a)	
1-KJ-040-HBC	KJ	EDG Piping	3	1.5"	IWD-1220(a)	
1-KJ-041-GCC	KJ	EDG Piping	3	3", 2", 1"	IWD-1220(a)	
1-KJ-042-GCC	KJ	EDG Piping	3	3", 2", 1"	IWD-1220(a)	
1-KJ-043-GCC	KJ	EDG Piping	3	3", 2", 1"	IWD-1220(a)	
1-KJ-044-GCC	KJ	EDG Piping	3	3", 2", 1"	IWD-1220(a)	
1-KJ-045-GCC	KJ	EDG Piping	3	3", 2", 1"	IWD-1220(a)	
1-KJ-046-GCC	KJ	EDG Piping	3	3", 2", 1"	IWD-1220(a)	
1-KJ-047-GCC	KJ	EDG Piping	3	3", 2", 1"	IWD-1220(a)	
1-KJ-048-GCC	KJ	EDG Piping	3	3", 2", 1"	IWD-1220(a)	
1-KJ-066-HBC	KJ	EDG Piping	3	2", 1"	IWD-1220(a)	
1-KJ-067-HBC	KJ	EDG Piping	3	2", 1"	IWD-1220(a)	
1-KJ-068-HBC	KJ	EDG Piping	3	2", 1"	IWD-1220(a)	
1-KJ-069-HBC	KJ	EDG Piping	3	2", 1"	IWD-1220(a)	
1-KJ-089-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-090-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-091-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-092-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-095-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-096-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-097-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-KJ-098-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-149-HBC	KJ	EDG Piping	3	1.5"	IWD-1220(a)	
1-KJ-150-HBC	KJ	EDG Piping	3	1.5"	IWD-1220(a)	
1-KJ-151-HBC	KJ	EDG Piping	3	1.5"	IWD-1220(a)	
1-KJ-152-HBC	KJ	EDG Piping	3	1.5"	IWD-1220(a)	
1-KJ-209-HBC	KJ	EDG Piping	3	2"	IWD-1220(a)	
1-KJ-210-HBC	KJ	EDG Piping	3	2"	IWD-1220(a)	
1-KJ-211-HBC	KJ	EDG Piping	3	2"	IWD-1220(a)	
1-KJ-212-HBC	KJ	EDG Piping	3	2"	IWD-1220(a)	
1-KJ-213-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-214-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-215-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
1-KJ-216-HBC	KJ	EDG Piping	3	1"	IWD-1220(a)	
36"-HBC-005	KJ	EDG Piping	3	36"	VT	
36"-HBC-006	KJ	EDG Piping	3	36"	VT	
36"-HBC-007	KJ	EDG Piping	3	36"	VT	
36"-HBC-008	KJ	EDG Piping	3	36"	VT	
36"-HBC-033	KJ	EDG Piping	3	36"	VT	
36"-HBC-034	KJ	EDG Piping	3	36"	VT	
36"-HBC-035	KJ	EDG Piping	3	36"	VT	
36"-HBC-036	KJ	EDG Piping	3	36"	VT	
H1KJ -1x-E-404	KJ	EDG Lube Oil Heat Exchanger	3	8" x 8"	VT	HX
H1KJ -1x-E-405	KJ	EDG Jacket Water Heat Exchanger	3	8" x 8"	VT	HX
H1KJ -1x-E-408	KJ	EDG Intercooler Heat Exchanger	3	8" x 8"	VT	HX
H1KJ -1x-T-406	KJ	EDG Lube Oil Make-Up Tank	3	2" x 2"	VT	Tank
H1KJ -1x-T-407	KJ	EDG Jacket Water Expansion Tank	3	1.5" x 1"	VT	Tank
H1KJ -1x-T-408	KJ	EDG Starting Air Receiver	3	2" x 2"	VT	Tank
1-KL-013-HCC	KL	Pri CNTMT Instrument Gas Piping	3	2", 1"	IWD-1220(a)	
1-KL-041-HCC	KL	Pri CNTMT Instrument Gas Piping	3	2", 1"	IWD-1220(a)	
HBB-001	KL	Pri CNTMT Instrument Gas Piping	2	<= 2"	IWC-1222(a)(1)	
HBB-002	KL	Pri CNTMT Instrument Gas Piping	2	<= 2"	IWC-1222(a)(1)	
HBB-005	KL	Pri CNTMT Instrument Gas Piping	2	1"	IWC-1222(a)(1)	

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
HBB-006	KL	Pri CNTMT Instrument Gas Piping	2	1"	IWC-1222(a)(1)	
HBB-016	KL	Pri CNTMT Instrument Gas Piping	2	2"	IWC-1222(a)(1)	
HBB-018	KL	Pri CNTMT Instrument Gas Piping	2	1"	IWC-1222(a)(1)	
HCB-052	KL	Pri CNTMT Instrument Gas Piping	2	4"	IWC-1222(a)(1)	
HCB-053	KL	Pri CNTMT Instrument Gas Piping	2	4"	IWC-1222(a)(1)	
DBB-003	KP	MSIV Seal Air Piping	2	<= 2"	IWC-1222(a)(1)	
DBB-004	KP	MSIV Seal Air Piping	2	<= 2"	IWC-1222(a)(1)	
HBB-001	KP	MSIV Seal Air Piping	2	<= 2"	IWC-1222(a)(1)	
HBB-002	KP	MSIV Seal Air Piping	2	<= 2"	IWC-1222(a)(1)	
0-RC-019-HBC	RC	Process Sampling Piping	3	1"	IWD-1220(a)	
CCA-020	RC	Process Sampling Piping	1	1"	IWB-1220(b)(1)	
CCB-004	RC	Process Sampling Piping	2	1"	IWC-1222(a)(1)	
CCB-016	RC	Process Sampling Piping	2	<= 1"	IWC-1222(a)(1)	
CCB-022	RC	Process Sampling Piping	2	1"	IWC-1222(a)(1)	
DBB-006	RC	Process Sampling Piping	2	1"	IWC-1222(a)(1)	
HCB-008	RC	Process Sampling Piping	2	1"	IWC-1222(a)(1)	
HCB-009	RC	Process Sampling Piping	2	1"	IWC-1222(a)(1)	
HCB-010	RC	Process Sampling Piping	2	1"	IWC-1222(a)(1)	
HCB-011	RC	Process Sampling Piping	2	1"	IWC-1222(a)(1)	
HCB-012	RC	Process Sampling Piping	2	1"	IWC-1222(a)(1)	
HCB-013	RC	Process Sampling Piping	2	1"	IWC-1222(a)(1)	
HCB-015	RC	Process Sampling Piping	2	1"	IWC-1222(a)(1)	
H1BB -10-S-201	RPV	Reactor Pressure Vessel	1	Various	VOL, SUR, VT	Vessel
1-SB-001-HBC	SB	Reactor Protection Piping	3	1"	IWD-1220(a)	
1-SB-002-HBC	SB	Reactor Protection Piping	3	1"	IWD-1220(a)	
1-SB-003-HBC	SB	Reactor Protection Piping	3	1"	IWD-1220(a)	
1-SB-004-HBC	SB	Reactor Protection Piping	3	1"	IWD-1220(a)	
1-SB-005-DBC	SB	Reactor Protection Piping	3	1"	IWD-1220(a)	
1-SB-006-DBC	SB	Reactor Protection Piping	3	1"	IWD-1220(a)	
HBB-002	SE	Neutron Monitoring Piping	2	4"	IWC-1222(a)(1)	
HCB-003	SK	Plant Steam Leak Detection Piping	2	1"	IWC-1222(a)(1)	
HCB-005	SK	Plant Steam Leak Detection Piping	2	1"	IWC-1222(a)(1)	

**TABLE 2.3-2**  
**COMPONENTS, PIPING AND SUPPORTS SUBJECT TO EXAMINATION**

Component ID/ Line No.	System	Component Description	Class	Inlet/ Outlet Size	NDE/ Exemption	Notes
1-SP-024-HBC	SP	Process Radiation Monitoring Piping	3	1.5", 1"	IWD-1220(a)	
1-SP-025-HBC	SP	Process Radiation Monitoring Piping	3	1.5", 1"	IWD-1220(a)	
1-SP-026-HBC	SP	Process Radiation Monitoring Piping	3	1.5", 1"	IWD-1220(a)	
1-SP-027-HBC	SP	Process Radiation Monitoring Piping	3	1.5", 1"	IWD-1220(a)	
1-SP-034-HBC	SP	Process Radiation Monitoring Piping	3	1"	IWD-1220(a)	
1-SP-035-HBC	SP	Process Radiation Monitoring Piping	3	1"	IWD-1220(a)	
<b>Inaccessible Supports</b>						
H1EA -1x-P-502	EA	Service Water Pump Support	3	28"	IWF-1230	
36"-HBC-033	KJ	EDG Piping	3	36"	IWF-1230	

2.4 ISI Isometric and Component Diagrams for Nonexempt ISI Class Components/Supports and Calibration Standards

ISI Isometric and Component Diagrams were developed to identify the ISI Class 1, 2, and 3 components (welds, bolting, etc.) and support locations at HCGS. These ISI component and support locations are identified on the ISI Isometric and Component Diagrams listed in Table 2.4-1. The ISI Class MC components are identified on the CISI Reference Diagrams listed in Table 2.4-2. Calibration Standards approved for use at HCGS are listed in Table 2.4-3. Additional standards, as approved by PSEG, may be designed and fabricated, as needed.

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

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

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<u>ISI Figure</u>	<u>System</u>	<u>ISI Line No.</u>	<u>System Isometric No.</u>	<u>Fabrication Isometric No./Sheet No</u>	<u>P&amp;ID</u>	<u>Boundary Diagram No.</u>
<b><u>Class 1 Systems</u></b>						
A-1	Reactor Pressure Vessel	H1BB -10-S-201	FSK-P-0169, FSK-P-0170	PN1-B11-A001-0118	M-42-1 Sheet 1	HC-ISI-42-1 Sheet 1
A-1A	Reactor Pressure Vessel Bottom Head	H1BB -10-S-201	FSK-P-0169, FSK-P-0170	PN1-B11-A001-0118	M-42-1 Sheet 1	HC-ISI-42-1 Sheet 1
A-2	Reactor Pressure Vessel Closure Head	H1BB -10-S-201	FSK-P-0169, FSK-P-0170	PN1-B11-A001-0118	M-42-1 Sheet 1	HC-ISI-42-1 Sheet 1
A-3	Reactor Recirculation Pumps A & B	1A-P-201, 1B-P-201	FSK-P-0169, FSK-P-0170	PN1-B31-C001-0210, PN1-B31-C001-002	M-43-1 Sheet 1	HC-ISI-43-1 Sheet 1
A-4	Main Steam	1-AB-26V(D)LA-030 1-AB-8DBA-030A 1-AB-8DBA-030B 1-AB-8DBA-030C 1-AB-2DBA-051	1-P-BB-276	PN1-B21-G001-002	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
A-5	Main Steam	1-AB-26V(D)LA-031 1-AB-8DBA-031A 1-AB-8DBA-031B 1-AB-8DBA-031C 1-AB-8DBA-031D 1-AB-8DBA-031E	1-P-BB-276	PN1-B21-G001-002	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
A-6	Main Steam	1-AB-26V(D)LA-032 1-AB-8DBA-032A 1-AB-8DBA-032B 1-AB-8DBA-032C 1-AB-8DBA-032D	1-P-BB-276	PN1-B21-G001-002	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
A-7	Main Steam	1-AB-26V(D)LA-033 1-AB-8DBA-033A 1-AB-8DBA-033B 1-AB-8DBA-033C	1-P-BB-276	PN1-B21-G001-002	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
A-8	Main Steam Drains	1-AB-3DBA-050A 1-AB-3DBA-050B 1-AB-3DBA-050D	1-P-AB-07 FSK-P-1-AB-603 FSK-P-1-AB-604	1-P-AB-012 1-P-AB-022	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
A-9	Main Steam Drains	1-AB-2DBA-050B 1-AB-2DBA-050C	1-P-AB-07 FSK-P-1-AB-601 FSK-P-1-AB-602	1-P-AB-012 1-P-AB-022	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
A-10	Main Steam - MSIV Drains	1-AB-2DBA-075 1-AB-2DBA-076	1-P-AB-06	1-P-KP-203 1-P-AB-615 1-P-AB-616 1-P-AB-617	M-41-1 Sheets 1 & 2 M-72-1 Sheet 1	HC-ISI-41-1 Sheets 1 & 2 HC-ISI-72-1 Sheet 1
A-11	Main Steam - MSIV Drains	1-AB-2DBA-077 1-AB-2DBA-078	1-P-AB-06	1-P-KP-203 1-P-AB-615 1-P-AB-616 1-P-AB-617	M-41-1 Sheets 1 & 2 M-72-1 Sheet 1	HC-ISI-41-1 Sheets 1 & 2 HC-ISI-72-1 Sheet 1
A-12	Main Steam	1-AB-26DLA-182 1-AB-26DLA-183 1-AB-26DLA-184 1-AB-26DLA-185	1-P-AB-01	1-P-AB-011	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
A-13	Feedwater	1-AE-24DLA-035 1-AE-20DLA-035 1-AE-12DLA-035A 1-AE-12DLA-035B 1-AE-12DLA-035C	1-P-AE-01 1-P-AE-04	1-P-AE-004	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
A-14	Feedwater	1-AE-24DLA-036 1-AE-20DLA-036 1-AE-12DLA-036D 1-AE-12DLA-036E 1-AE-12DLA-036F	1-P-AE-01 1-P-AE-04	1-P-AE-003	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
A-15	Feedwater	1-AE-12DLA-035A 1-AE-12DLA-035B 1-AE-12DLA-035C 1-AE-12DLA-036D 1-AE-12DLA-036E 1-AE-12DLA-036F 1-AE-1.50DLA-036D	1-P-AE-04	1-P-AE-002	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
A-16	Recirculation - B Loop	1-BB-28VCA-011 1-BB-28VCA-014 1-BB-22VCA-014 1-BB-4VCA-011 1-BB-4VCA-014 1-BB-1.25VCA-011	FSK-P-0170	PN1-B31-C001-021, PN1-B31-C001-0021	M-43-1 Sheet 1	HC-ISI-43-1 Sheet 1
A-17	Recirculation - B Loop	1-BB-12VCA-014A 1-BB-12VCA-014B 1-BB-12VCA-014C 1-BB-12VCA-014D 1-BB-12VCA-014E	FSK-P-0170	PN1-B31-C001-021, PN1-B31-C001-0021	M-43-1 Sheet 1	HC-ISI-43-1 Sheet 1

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
A-18	Recirculation - A Loop	1-BB-28VCA-012 1-BB-28VCA-013 1-BB-22VCA-013 1-BB-4VCA-012 1-BB-4VCA-013 1-BB-1.25VCA-012	FSK-P-0169	PN1-B31-C001-021, PN1-B31-C001-0021	M-43-1 Sheet 1	HC-ISI-43-1 Sheet 1
A-19	Recirculation - B Loop	1-BB-12VCA-013F 1-BB-12VCA-013G 1-BB-12VCA-013H 1-BB-12VCA-013J 1-BB-12VCA-013K	FSK-P-0169	PN1-B31-C001-021, PN1-B31-C001-0021	M-43-1 Sheet 1	HC-ISI-43-1 Sheet 1
A-20	Recirculation - Rx. Vessel Vent	1-BB-4DBA-042 1-BB-2CCA-042	1-P-BC-040	1-P-BC-040	M-41-1 Sheet 1 M-42-1 Sheet 1	HC-ISI-41-1 Sheet 1 HC-ISI-42-1 Sheet 1
A-21	Recirculation - Rx. Vessel Nozzles-Instr	1-BB-2DBA-066 1-BB-2DBA-230 1-BB-2DBA-237 1-BB-2DBA-044	1-P-BB-273 1-P-BB-287	1-P-BB-273 1-P-BB-287	M-42-1 Sheet 1	HC-ISI-42-1 Sheet 1
A-22	Recirculation - Rx. Vessel Nozzles-Instr	1-BB-2DBA-064 1-BB-2DBA-231 1-BB-2DBA-236 1-BB-2DBA-046	1-P-BB-274 1-P-BB-289	1-P-BB-274 1-P-BB-289	M-42-1 Sheet 1	HC-ISI-42-1 Sheet 1
A-23	Recirculation - Rx. Vessel Nozzles-Instr	1-BB-2DBA-063 1-BB-2DBA-232 1-BB-2DBA-235 1-BB-2DBA-047	1-P-BB-275 1-P-BB-290	1-P-BB-275 1-P-BB-290	M-42-1 Sheet 1	HC-ISI-42-1 Sheet 1
A-24	Recirculation - RPV Head Vent	1-BB-2DBA-192A 1-BB-2DBA-192B	1-P-BB-276	1-P-BB-276	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
A-25	Residual Heat Removal	1-BC-6DBA-003	1-P-BC-01 1-P-BC-02	1-P-BC-040	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
A-26	Residual Heat Removal	1-BC-20DLA-010 1-BC-20CCA-114	1-P-BC-02 1-P-BC-04	1-P-BC-032 1-P-BC-002	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
A-27	Residual Heat Removal-LPCI	1-BC-12DLA-014	1-P-BC-01 1-P-BC-02	1-P-BC-038 1-P-BC-324	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
A-28	Residual Heat Removal-LPCI	1-BC-12DLA-015	1-P-BC-01 1-P-BC-02	1-P-BC-036 1-P-BC-331	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2



**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
A-29	Residual Heat Removal	1-BC-12DLA-021 1-BC-12CCA-115 1-BC-2DBA-122	1-P-BC-01 1-P-BC-02	1-P-BC-037 1-P-BC-327	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
A-30	Residual Heat Removal-LPCI	1-BC-12DLA-055	1-P-BC-02 1-P-BC-03	1-P-BC-035 1-P-BC-338	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
A-31	Residual Heat Removal-LPCI	1-BC-12DLA-056	1-P-BC-02 1-P-BC-03	1-P-BC-033 1-P-BC-315	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
A-32	Residual Heat Removal	1-BC-12DLA-069 1-BC-12CCA-116	1-P-BC-02 1-P-BC-03	1-P-BC-034 1-P-BC-319	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
A-33	Core Spray B & D Pump Header	1-BE-12DLA-001 1-BE-10DLA-001 Nozzle Safe-End/ Safe-End Extension	1-P-BE-01 1-P-BE-03	1-P-BE-014 1-P-BE-239	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
A-34	Core Spray A & C Pump Header	1-BE-14DLA-023 1-BE-12DLA-023 1-BE-10DLA-023 Overlay Nozzle Safe-End/ Safe-End Extension	1-P-BE-02 1-P-BE-03	1-P-BE-015 1-P-BE-009 1-P-BE-237	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
A-35	Reactor Water Cleanup	1-BG-4DBA-110 1-BG-2DBA-110 1-BG-2DBA-110A 1-BG-1.25DBA-110	1-P-BG-03	1-P-BG-011 1-P-BG-262 1-P-BG-641	M-44-1 Sheet 1	HC-ISI-44-1 Sheet 1
A-36	Reactor Water Cleanup	1-BG-6DBA-001 1-BG-4DBA-001 1-BG-2DBA-001C	1-P-BG-03	1-P-BG-010	M-43-1 Sheet 1 M-44-1 Sheet 1	HC-ISI-43-1 Sheet 1 ISI-44-1 Sheet 1
A-37	Reactor Water Cleanup	1-BG-6DBA-001 1-BG-4CCA-012 1-BG-4DBA-001A 1-BG-2DBA-001A	1-P-BG-03	1-P-BG-012 1-P-BG-225	M-43-1 Sheet 1 M-44-1 Sheet 1	HC-ISI-43-1 Sheet 1 HC-ISI-44-1 Sheet 1
A-38	Reactor Water Cleanup	1-BG-4CCA-011 1-BG-4DBA-001B 1-BG-2DBA-001B	1-P-BG-03	1-P-BG-013 1-P-BG-255	M-43-1 Sheet 1 M-44-1 Sheet 1	HC-ISI-43-1 Sheet 1 ISI-44-1 Sheet 1
A-39	Standby Liquid Control	1-BH-2CCA-011 1-BH-1.5CCA-011 1-BH-1.5DLA-011	1-P-BE-03	1-P-BE-201 1-P-BE-205	M-48-1 Sheet 1	HC-ISI-48-1 Sheet 1

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<u>ISI Figure</u>	<u>System</u>	<u>ISI Line No.</u>	<u>System Isometric No.</u>	<u>Fabrication Isometric No./Sheet No</u>	<u>P&amp;ID</u>	<u>Boundary Diagram No.</u>
A-40	RCIC Turbine Steam	1-FC-4DBA-003	1-P-FC-01	1-P-FC-004 1-P-FC-221	M-49-1 Sheet 1	HC-ISI-49-1 Sheet 1
A-41	HPCI Turbine Steam	1-FD-10DBA-001	1-P-FD-01	1-P-FD-007 1-P-FD-245	M-55-1 Sheet 1	HC-ISI-55-1 Sheet 1
A-42	Reactor Pressure Vessel (CRD and Incore Pene.)	1-BB-2CCA-204 1-BB-1.50CCA-204	N/A	N/A	M-43-1 Sheet 1	HC-ISI-43-1 Sheet 1
A-43	Recirculation	Jet Pump Instrumentation A & B	N/A	N/A	M-42-1 Sheet 1	HC-ISI-42-1 Sheet 1
A-44	HPCI Turbine Steam Flow Orifice	1-FD-10DBA-001	1-P-FD-01	1-P-FD-007 1-P-FD-245 55-30599	M-55-1 Sheet 1	HC-ISI-55-1 Sheet 1
<b><u>Class 2 Systems</u></b>						
B-1	Residual Heat Removal	Heat Exchangers A & B	N/A	PN1-E11-B001-0004, 0005 & 0039	M-51-1 Sheets 1 & 2	HC-ISI-51-1 Sheets 1 & 2
B-2	Core Spray	Pumps A,B,C & D	N/A	PN1-E11-B001-0004, 0005 & 0039	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-3	Residual Heat Removal	Pumps A,B,C & D	N/A	PN1-E11-B001-0004, 0005 & 0039	M-51-1 Sheets 1 & 2	HC-ISI-51-1 Sheets 1 & 2
B-4	Main Steam	1-AB-26DBB-020 1-AB-26DBB-021 1-AB-26DBB-022 1-AB-26DBB-023 1-AB-10DBB-020 1-AB-10DBB-021 1-AB-10DBB-022 1-AB-10DBB-023	1-P-AB-01	1-P-AB-011	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
B-5	Feedwater	1-AE-24DBB-034 1-AE-24DBB-037 1-AE-8DBB-037 1-AE-6DBB-034	1-P-AE-01 1-P-BJ-01	1-P-AE-017 1-P-BJ-005	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
B-7	Residual Heat Removal	1-BC-20GBB-004 1-BC-18GBB-004A	1-P-BC-01	1-P-BC-009	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
B-8	Residual Heat Removal	1-BC-18GBB-004B 1-BC-12GBB-004B 1-BC-6GBB-004C 1-BC-6GBB-031	1-P-BC-01	1-P-BC-010	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-9	Residual Heat Removal	1-BC-18GBB-004C 1-BC-12GBB-004A 1-BC-6GBB-004B	1-P-BC-01	1-P-BC-013	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-10	Residual Heat Removal	1-BC-18GBB-004D	1-P-BC-01	1-P-BC-013	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-11	Residual Heat Removal	1-BC-16GBB-004 1-BC-16GBB-013	1-P-BC-01	1-P-BC-014	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-12	Residual Heat Removal	1-BC-6GBB-004A	1-P-BC-01	1-P-BC-014	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-13	Residual Heat Removal	1-BC-18GBB-019A 1-BC-18GBB-019B	1-P-BC-01	1-P-BC-006	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-14	Residual Heat Removal	1-BC-18GBB-019A 1-BC-12GBB-019	1-P-BC-01	1-P-BC-007	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-15	Residual Heat Removal	1-BC-8DBB-025 1-BC-6DBB-025	1-P-BC-01 1-P-FD-01	1-P-BC-012 1-P-FD-001 1-P-FD-002	M-51-1 Sheet 1 M-55-1 Sheet 1	HC-ISI-51-1 Sheet 1 HC-ISI-55-1 Sheet 1
B-16	Residual Heat Removal	1-BC-20GBB-026 1-BC-18GBB-026 1-BC-8GBB-026 1-BC-6GBB-026A 1-BC-6GBB-026B	1-P-BC-01	1-P-BC-012	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-17	Residual Heat Removal	1-BC-18GBB-027	1-P-BC-01	1-P-BC-011	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-17A	Residual Heat Removal	1-BC-18GBB-027	1-P-BC-01 1-P-BC-08	1-P-BC-046	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-17B	Residual Heat Removal	1-BC-18GBB-019A 1-BC-18GBB-027	1-P-BC-01 1-P-BC-08	1-P-BC-046	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-18	Residual Heat Removal	1-BC-20GBB-074 1-BC-18GBB-074 1-BC-6GBB-074A	1-P-BC-03	1-P-BC-015	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
B-19	Residual Heat Removal	1-BC-8DBB-029 1-BC-8GBB-074 1-BC-6DBB-029 1-BC-6GBB-074B	1-P-BC-03	1-P-BC-015	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-21	Residual Heat Removal	1-BC-30HBB-044 1-BC-24HBB-044 1-BC-20HBB-044	1-P-BC-04	1-P-BC-005	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-22	Residual Heat Removal	1-BC-30HBB-046 1-BC-24HBB-046 1-BC-18HBB-046 1-BC-18HBB-049B	1-P-BC-04	1-P-BC-004	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-23	Residual Heat Removal	1-BC-20HBB-049 1-BC-16HBB-049	1-P-BC-04	1-P-BC-002	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-24	Residual Heat Removal	1-BC-30HBB-087 1-BC-24HBB-087 1-BC-18HBB-049A 1-BC-18HBB-087	1-P-BC-04	1-P-BC-003	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-25	Residual Heat Removal	1-BC-18GBB-063A 1-BC-12GBB-063B	1-P-BC-03	1-P-BC-017 1-P-BC-018	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
B-26	Residual Heat Removal	1-BC-16GBB-054 1-BC-16GBB-063	1-P-BC-03	1-P-BC-017 1-P-BC-018	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
B-27	Residual Heat Removal	1-BC-20GBB-063 1-BC-18GBB-063C	1-P-BC-03	1-P-BC-016	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
B-28	Residual Heat Removal	1-BC-18GBB-063B 1-BC-12GBB-063A	1-P-BC-03	1-P-BC-021 1-P-BC-022	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
B-29	Residual Heat Removal	1-BC-18GBB-072	1-P-BC-03	1-P-BC-021 1-P-BC-022	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
B-30	Residual Heat Removal	1-BC-6GBB-063	1-P-BC-03	1-P-BC-020	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
B-31	Residual Heat Removal	1-BC-18GBB-066A 1-BC-12GBB-066B	1-P-BC-03	1-P-BC-021	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
B-32	Residual Heat Removal	1-BC-18GBB-066A 1-BC-12GBB-066	1-P-BC-03	1-P-BC-023	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
B-33	Residual Heat Removal	1-BC-6GBB-073	1-P-BC-06	1-P-BC-041	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
B-34	Residual Heat Removal	1-BC-18GBB-075	1-P-BC-03	1-P-BC-015 1-P-BC-017	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
B-34A	Residual Heat Removal	1-BC-18GBB-066 1-BC-18GBB-075	1-P-BC-07	1-P-BC-017 1-P-BC-021 1-P-BC-045	M-51-1 Sheet 2	HC-ISI-51-1 Sheet 2
B-35	Residual Heat Removal	1-BC-30HBB-088 1-BC-24HBB-088 1-BC-20HBB-088	1-P-BC-04	1-P-BC-001	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-36	Residual Heat Removal	1-BC-18GBB-050A 1-BC-18GBB-050B	1-P-BC-01	1-P-BC-006 1-P-BC-008	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
B-38	Reactor Core Isolation Cooling - RCIC	1-BD-6DBB-003	1-P-BD-01	1-P-BD-005	M-50-1 Sheet 1	HC-ISI-50-1 Sheet 1
B-39	Reactor Core Isolation Cooling - RCIC	1-BD-6DBB-003	1-P-BD-01	1-P-BD-006	M-50-1 Sheet 1	HC-ISI-50-1 Sheet 1
B-40	Core Spray B & D Pumps	1-BE-14GBB-008 1-BE-12DBB-002 1-BE-12GBB-008A	1-P-BE-01	1-P-BE-001 1-P-BE-002	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-41	Core Spray B & D Pumps	1-BE-10GBB-008 1-BE-10HBB-021	1-P-BE-01	1-P-BE-001	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-42	Core Spray B & D Pumps	1-BE-10GBB-009 1-BE-10HBB-020	1-P-BE-02	1-P-BE-009	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-43	Core Spray	1-BE-12GBB-008C 1-BE-12GBB-015 1-BE-10GBB-015	1-P-BE-01	1-P-BE-002	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-44	Core Spray	1-BE-12GBB-008B 1-BE-12GBB-016 1-BE-10GBB-016	1-P-BE-01	1-P-BE-002	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-45	Core Spray	1-BE-14GBB-009 1-BE-12DBB-005 1-BE-12GBB-009C	1-P-BE-02	1-P-BE-007 1-P-BE-008 1-P-BE-009	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-46	Core Spray	1-BE-12GBB-009A 1-BE-12GBB-018 1-BE-10GBB-018	1-P-BE-02	1-P-BE-006 1-P-BE-007	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-47	Core Spray	1-BE-12GBB-009B 1-BE-12GBB-017 1-BE-10GBB-017	1-P-BE-02	1-P-BE-006 1-P-BE-007	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-48	Core Spray	1-BE-16HBB-044 1-BE-14HBB-044	1-P-BE-02	1-P-BE-013	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
B-49	Core Spray	1-BE-16HBB-045 1-BE-14HBB-045	1-P-BE-02	1-P-BE-012	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-50	Core Spray	1-BE-16HBB-046 1-BE-14HBB-046	1-P-BE-01	1-P-BE-004	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-51	Core Spray	1-BE-16HBB-047 1-BE-14HBB-047	1-P-BE-01	1-P-BE-004	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
B-52	High Pressure Coolant Injection-HPCI	1-BJ-14DBB-003A 1-BJ-14DBB-003B	1-P-BJ-01	1-P-BJ-001 1-P-BJ-002 1-P-BJ-005	M-56-1 Sheet 1	HC-ISI-56-1 Sheet 1
B-53	High Pressure Coolant Injection-HPCI	1-BJ-10DBB-003A 1-BJ-8DBB-003	1-P-BJ-01	1-P-BJ-001 1-P-BJ-003 1-P-BJ-005	M-56-1 Sheet 1	HC-ISI-56-1 Sheet 1
B-54	High Pressure Coolant Injection-HPCI	1-BJ-12VBB-010	NA	2F-1420 (Byron)	M-56-1 Sheet 1	HC-ISI-56-1 Sheet 1
B-55	High Pressure Coolant Injection-HPCI	1-BJ-16HBB-001 1-BJ-16HBB-002 1-BJ-14HBB-001	1-P-BJ-01	1-P-BJ-004	M-56-1 Sheet 1	HC-ISI-56-1 Sheet 1
B-56	RCIC Turbine Steam	1-FC-6DBB-004 1-FC-4DBB-004	1-P-FC-01	1-P-FC-002	M-49-1 Sheet 1	HC-ISI-49-1 Sheet 1
B-57	RCIC Turbine Steam	1-FC-10HBB-007	1-P-FC-01	1-P-FC-003	M-49-1 Sheet 1	HC-ISI-49-1 Sheet 1
B-58	RCIC Turbine Steam	1-FC-8HBB-007 1-FC-8HBB-010	1-P-FC-01	1-P-FC-003	M-49-1 Sheet 1	HC-ISI-49-1 Sheet 1
B-59	HPCI Turbine Steam	1-FD-12DBB-002 1-FD-10DBB-002B 1-FD-8DBB-002A 1-FD-8DBB-002B	1-P-FD-01	1-P-FD-001	M-55-1 Sheet 1	HC-ISI-55-1 Sheet 1
B-60	HPCI Turbine Steam	1-FD-12DBB-002 1-FD-10DBB-002A 1-FD-10DBB-004 1-FD-6DBB-004	1-P-FD-01	1-P-FD-003	M-55-1 Sheet 1	HC-ISI-55-1 Sheet 1
B-61	HPCI Turbine Steam	1-FD-24HBB-006 1-FD-20HBB-006 1-FD-16HBB-014 1-FD-10HBB-006	1-P-FD-01	1-P-FD-004 1-P-FD-005	M-55-1 Sheet 1 M-56-1 Sheet 1	HC-ISI-55-1 Sheet 1 HC-ISI-56-1 Sheet 1

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
B-62	CRD Scram Discharge Header	1-BF-12ELB-040 1-BF-12ELB-041	1-P-BF-03	N/A	M-47-1 Sheet 1	HC-ISI-47-1 Sheet 1
<b><u>Class 3 Systems</u></b>						
C-1	Reactor Water Cleanup	1-BG-6DBC-002	1-P-BG-003	1-P-BG-002-S016	M-43-1 Sheet 1 M-44-1 Sheet 1	HC-ISI-43-1 Sheet 1 HC-ISI-44-1 Sheet 1
C-2	Main Steam	1-AB-3DBC-024 1-AB-4DBC-024	1-P-AB-012	1-AB-024-S002	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
<b><u>Component Support Location</u></b>						
N/A	Main Steam	various	1-P-AB-01	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Main Steam	various	1-P-AB-02	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Main Steam	various	1-P-AB-03	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Main Steam	various	1-P-AB-04	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Main Steam	various	1-P-AB-06	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Main Steam	various	1-P-AB-07	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Main Steam	various	1-P-AB-08	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Main Steam	various	1-P-AB-09	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Main Steam	various	1-P-AB-10	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Main Steam	various	1-P-AB-11	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Feedwater	various	1-P-AE-01	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Feedwater	various	1-P-AE-04	various	M-41-1 Sheet 1	HC-ISI-41-1 Sheet 1
N/A	Condensate	various	1-P-AP-01	various	M-08-0 Sheet 1	HC-ISI-08-0 Sheet 1
N/A	Condensate	various	1-P-AP-03	various	M-08-0 Sheet 1	HC-ISI-08-0 Sheet 1
N/A	Recirculation	various	1-BB-256	various	M-43-1 Sheet 1	HC-ISI-43-1 Sheet 1
N/A	Recirculation	various	1-BB-276	various	M-43-1 Sheet 1	HC-ISI-43-1 Sheet 1

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
N/A	Residual Heat Removal	various	1-P-BC-01	various	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
N/A	Residual Heat Removal	various	1-P-BC-02	various	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
N/A	Residual Heat Removal	various	1-P-BC-03	various	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
N/A	Residual Heat Removal	various	1-P-BC-04	various	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
N/A	Residual Heat Removal	various	1-P-BC-05	various	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
N/A	Residual Heat Removal	various	1-P-BC-06	various	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
N/A	Residual Heat Removal	various	1-P-BC-07	various	M-51-1 Sheet 1	HC-ISI-51-1 Sheet 1
N/A	Reactor Core Injection Cooling	various	1-P-BD-01	various	M-50-1 Sheet 1	HC-ISI-50-1 Sheet 1
N/A	Core Spray	various	1-P-BE-01	various	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
N/A	Core Spray	various	1-P-BE-02	various	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
N/A	Core Spray	various	1-P-BE-03	various	M-52-1 Sheet 1	HC-ISI-52-1 Sheet 1
N/A	Reactor Water Cleanup	various	1-P-BG-01	various	M-43-1 Sheet 1 M-44-1 Sheet 1	HC-ISI-43-1 Sheet 1 HC-ISI-44-1 Sheet 1
N/A	Reactor Water Cleanup	various	1-P-BG-03	various	M-43-1 Sheet 1 M-44-1 Sheet 1	HC-ISI-43-1 Sheet 1 HC-ISI-44-1 Sheet 1
N/A	Reactor Water Cleanup	various	1-P-BG-08	various	M-43-1 Sheet 1 M-44-1 Sheet 1	HC-ISI-43-1 Sheet 1 HC-ISI-44-1 Sheet 1



**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
N/A	Stand By Liquid Control	various	1-P-BH-201		M-48-1 Sheet 1	HC-ISI-48-1 Sheet 1
N/A	High Pressure Coolant Injection	various	1-P-BJ-01	various	M-56-1 Sheet 1	HC-ISI-56-1 Sheet 1
N/A	Service Water	various	0-P-EA-01	various	M-10-1 Sheet 1, 2 & 3	HC-ISI-10-1 Sheet 1, 2 & 3
N/A	Service Water	various	1-P-EA-02	various	M-10-1 Sheet 1, 2 & 3	HC-ISI-10-1 Sheet 1, 2 & 3
N/A	Fuel Pool Cooling	various	1-P-EC-02	various	M-53-1 Sheet 1	HC-ISI-53-1 Sheet 1
N/A	Fuel Pool Cooling	various	1-P-EC-05	various	M-53-1 Sheet 1	HC-ISI-53-1 Sheet 1
N/A	Fuel Pool Cooling	various	1-P-EC-06	various	M-53-1 Sheet 1	HC-ISI-53-1 Sheet 1
N/A	Fuel Pool Cooling	various	1-P-EC-08	various	M-53-1 Sheet 1	HC-ISI-53-1 Sheet 1
N/A	Torus Water Cleanup	various	1-P-EE-01	various	M-53-1 Sheet 2	HC-ISI-53-1 Sheet 2
N/A	Safety Auxiliary Cooling	various	1-P-EG-01	various	M-11-1 Sheet 1, 2, 3 M-12-1 Sheet 1	HC-ISI-11-1 Sheet 1, 2, 3 & HC-ISI-12-1 Sheet 1
N/A	Safety Auxiliary Cooling	various	1-P-EG-02	various	M-11-1 Sheet 1, 2, 3 M-12-1 Sheet 1	HC-ISI-11-1 Sheet 1, 2, 3 & HC-ISI-12-1 Sheet 1
N/A	Safety Auxiliary Cooling	various	1-P-EG-03	various	M-11-1 Sheet 1, 2, 3 M-12-1 Sheet 1	HC-ISI-11-1 Sheet 1, 2, 3 & HC-ISI-12-1 Sheet 1
N/A	Safety Auxiliary Cooling	various	1-P-EG-04	various	M-11-1 Sheet 1, 2, 3 M-12-1 Sheet 1	HC-ISI-11-1 Sheet 1, 2, 3 & HC-ISI-12-1 Sheet 1
N/A	Safety Auxiliary Cooling	various	1-P-EG-05	various	M-11-1 Sheet 1, 2, 3 M-12-1 Sheet 1	HC-ISI-11-1 Sheet 1, 2, 3 & HC-ISI-12-1 Sheet 1
N/A	Safety Auxiliary Cooling	various	1-P-EG-06	various	M-11-1 Sheet 1, 2, 3 M-12-1 Sheet 1	HC-ISI-11-1 Sheet 1, 2, 3 & HC-ISI-12-1 Sheet 1

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
N/A	Safety Auxiliary Cooling	various	1-P-EG-07	various	M-11-1 Sheet 1, 2, 3 M-12-1 Sheet 1	HC-ISI-11-1 Sheet 1, 2, 3 & HC-ISI-12-1 Sheet 1
N/A	Safety Auxiliary Cooling	various	1-P-EG-08	various	M-11-1 Sheet 1, 2, 3 M-12-1 Sheet 1	HC-ISI-11-1 Sheet 1, 2, 3 & HC-ISI-12-1 Sheet 1
N/A	RCIC Turbine Steam	various	1-P-FC-01	various	M-56-1 Sheet 1	HC-ISI-56-1 Sheet 1
N/A	HPCI Turbine Steam	various	1-P-FD-01	various	M-50-1 Sheet 1	HC-ISI-50-1 Sheet 1
N/A	Chilled Water	various	1-P-GB-02	various	M-90-1 Sheet 1, 2 & 3	HC-ISI-90-1 Sheet 1, 2 & 3
N/A	Chilled Water	various	1-P-GB-07	various	M-90-1 Sheet 1, 2 & 3	HC-ISI-90-1 Sheet 1, 2 & 3
N/A	Chilled Water	various	1-P-GJ-01	various	M-90-1 Sheet 1, 2 & 3	HC-ISI-90-1 Sheet 1, 2 & 3
N/A	Chilled Water	various	1-P-GJ-02	various	M-90-1 Sheet 1, 2 & 3	HC-ISI-90-1 Sheet 1, 2 & 3
N/A	Chilled Water	various	1-P-GJ-03	various	M-90-1 Sheet 1, 2 & 3	HC-ISI-90-1 Sheet 1, 2 & 3
N/A	Chilled Water	various	1-P-GJ-04	various	M-90-1 Sheet 1, 2 & 3	HC-ISI-90-1 Sheet 1, 2 & 3
N/A	Chilled Water	various	1-P-GJ-07	various	M-90-1 Sheet 1, 2 & 3	HC-ISI-90-1 Sheet 1, 2 & 3
N/A	Chilled Water	various	1-P-GJ-08	various	M-90-1 Sheet 1, 2 & 3	HC-ISI-90-1 Sheet 1, 2 & 3
N/A	Containment Atmosphere	various	1-P-GS-01	various	M-57-1 Sheet 1	HC-ISI-57-1 Sheet 1
N/A	Containment Atmosphere	various	1-P-GS-02	various	M-57-1 Sheet 1	HC-ISI-57-1 Sheet 1
N/A	Diesel Fuel Oil Storage & Transfer	various	1-P-JE-01	various	M-30-1 Sheet 1, 2 & 3	HC-ISI-30-1 Sheet 1, 2 & 3
N/A	Diesel Generator	various	1-P-KJ-01	various	M-30-1 Sheet 1, 2 & 3	HC-ISI-30-1 Sheet 1, 2 & 3
N/A	Diesel Generator	various	1-P-KJ-02	various	M-30-1 Sheet 1, 2 & 3	HC-ISI-30-1 Sheet 1, 2 & 3
N/A	Diesel Generator	various	1-P-KJ-03	various	M-30-1 Sheet 1, 2 & 3	HC-ISI-30-1 Sheet 1, 2 & 3
N/A	Diesel Generator	various	1-P-KJ-04	various	M-30-1 Sheet 1, 2 & 3	HC-ISI-30-1 Sheet 1, 2 & 3
N/A	Diesel Generator	various	1-P-KJ-05	various	M-30-1 Sheet 1, 2 & 3	HC-ISI-30-1 Sheet 1, 2 & 3

**TABLE 2.4-1**  
**ISI ISOMETRIC AND COMPONENT DIAGRAMS**

<b><u>ISI Figure</u></b>	<b><u>System</u></b>	<b><u>ISI Line No.</u></b>	<b><u>System Isometric No.</u></b>	<b><u>Fabrication Isometric No./Sheet No</u></b>	<b><u>P&amp;ID</u></b>	<b><u>Boundary Diagram No.</u></b>
N/A	Diesel Generator	various	1-P-KJ-06	various	M-30-1 Sheet 1, 2 & 3	HC-ISI-30-1 Sheet 1, 2 & 3
N/A	Diesel Generator	various	1-P-KJ-07	various	M-30-1 Sheet 1, 2 & 3	HC-ISI-30-1 Sheet 1, 2 & 3
N/A	Diesel Generator	various	1-P-KJ-08	various	M-30-1 Sheet 1, 2 & 3	HC-ISI-30-1 Sheet 1, 2 & 3

**TABLE 2.4-2  
NONDESTRUCTIVE EXAMINATION CALIBRATION STANDARDS**

<b><u>Ultrasonic Testing Calibration Block Number</u></b>	<b><u>Material Type</u></b>	<b><u>Product Form</u></b>	<b><u>Drawing Number</u></b>
2-CS-160-.344-1-HPC	SA106 GR B	Pipe	D-3690-040
3-CS-80-.300-2-HPC	SA106 GR B	Pipe	D-3690-025 A
4-CS-80-.337-3-HPSC	SA106 GR B	Pipe	D-3690-022 B
6-CS-STD-.280-4-HPC	SA106 GR B	Pipe	D-3690-026 A
6-CS-80-.432-5-HPC	SA106 GR B	Pipe	D-3690-024 A
6-CS-120-.562-6-HPC	SA106 GR B	Pipe	D-3690-023 A
8-CS-STD-.322-7-HPC	SA106 GR B	Pipe	D-3690-027 A
8-CS-100-.594-8-HPC	SA106 GR B	Pipe	D-3690-032 A
10-CS-STD-.365-9-HPC	SA106 GR B	Pipe	D-3690-029 A
10-CS-80-.594-10-HPC	SA106 GR B	Pipe	D-3690-028 A
10-CS-100-.719-11-HPC	SA106 GR B	Pipe	D-3690-031 A
12-CS-STD-.375-12-HPC	SA106 GR B	Pipe	D-3690-035 A
12-SS-x-.720-13-HPC	SA358 (SA240) 304L	Pipe	D-3690-034 A
12-CS-80.688-14-HPC	SA106 GR B	Pipe	D-3690-033 B
12-CS-100-.844-15-HPC	SA106 GR B	Pipe	D-3690-001 A
14-CS-STD-.375-16-HPC	SA106 GR B	Pipe	D-3690-002 A
14-CS-80.750-17-HPC	SA383 GR 6	Pipe	D-3690-003 A
14-CS-100-.938-18-HPC	SA106 GR B	Pipe	D-3690-004 A
16-CS-STD-.375-19-HPC	SA106 GR B	Pipe	D-3690-005 A
16-CS-40-.500-20-HPC	SA106 GR B	Pipe	D-3690-006
18-CS-STD-.375-21-HPC	SA106 GR B	Pipe	D-3690-007 A
18-CS-XS-.500-22-HPC	SA106 GR B	Pipe	D-3690-008
20-CS-STD-.375-23-HPC	SA106 GR B	Pipe	D-3690-009 A
20-CS-30-.500-24-HPC	SA106 GR B	Pipe	D-3690-606 A
20-SS-X-.885-25-HPC	SA358 (SA240) 304L	Pipe	D-3690-039
20-CS-80-1.031-26-HPC	SA333 GR 6	Pipe	D-3690-030
24-CS-100-1.531-27-HPC	SA106 GR B	Pipe	D-3690-036
26-CS-STD-.375-28-HPC	SA155	Pipe	D-3690-037
30-CS-STD-.375-29-HPC	SA155	Pipe	D-3690-038
28-SS-X-1.200-30-HPC	SA358 (SA240) 304L	Pipe	D-3690-601
26-CS-SPC-1.250-31-HPC	SA516 GR 70	Pipe	D-3690-605
8-CS-160-.906-32-HPC	SA106 GR B	Pipe	D-3690-604
22-SS-X-1.080-33-HPC	SA358 (SA240) 304L	Pipe	D-3690-607
12-CS-40-.406-34-HPC	SA106 GR B	Pipe	D-3690-603
VB-CS-4.5-37-HPC	SA533 GR 8-CL1	Vessel	D-3690-602 A
VB-CSCL-6.75-38-HPC	SA533 GR 8-CL1	Vessel	D-2878-601
4-SS-40-.237-39-HPC	SA312 304L	Pipe	D-3690-600
6-CS-160-.719-42-HPC	SA106 GR B	Pipe	D-3690-612
6-.828-8-CS-43-HPC	SA540 GRB24	Stud	D-3690-610
3-.500-8-CS-44-HPC	SA540 GRB23 CL4	Stud	D-3690-609
PL-CS-1.5-46-HPC	SA516 GR70	Plate	D-3690-611
12-SS-CRC-47-HPC	SA358 (SA240) 304L	Pipe	D-3690-602 B
PL-CS-.750-48-HPC	SA516 GR 70	Plate	D-3690-613
24-CS-STD-.375-49-HPC	SA106 GR B	Pipe	D-3690-614
IR-CSCL-50-HPC	SA508 CL2	Inner Radius	D-3690-616

**TABLE 2.4-2  
NONDESTRUCTIVE EXAMINATION CALIBRATION STANDARDS**

<b><u>Ultrasonic Testing Calibration Block Number</u></b>	<b><u>Material Type</u></b>	<b><u>Product Form</u></b>	<b><u>Drawing Number</u></b>
IR-CS-51-HPC	SA508 CL2	Inner Radius	D-3690-617
SE-CSCL-1.35-52-HPC	SA508 CL2	Pipe	D-3690-619
SE-CSCL-1.250-53-HPC	SB166	Pipe	D-3690-627
SE-CS-1.1-54-HPC	A508 CL2	Pipe	D-3690-618
SE-CSCL-.690-55-HPC	A508 CL2	Pipe	D-3690-620
SE-IN-.625-56-HPC	SB166	Pipe	D-3690-628
SE-CSCL-1.35-57-HPC	A508 CL2	Pipe	D-3690-621
SE-SS-1.45-58-HPC	SA182 316L	Pipe	D-3690-629
SE-CSCL-2.350-59-HPC	A508 CL2	Pipe	D-3690-622
SE-SS-2.25-60-HPC	SA182 304L	Pipe	D-3690-630
SE-CS-1.600-61-HPC	SA508 CL2	Pipe	D-3690-623
SE-CS-.500-62-HPC	SA508 CL2	Pipe	D-3690-624 A
SE-CS-.450-63-HPC	SA508 CL2	Pipe	D-3690-625 A
SE-CS-1.400-64-HPC	SA508 CL2	Pipe	D-3690-626
SE-IN-.230-65-HPC	SB166	Pipe	D-3690-633
SE-SS-.230-66-HPC	A182 304L	Pipe	D-3690-634
22-SS-CRC-67-HPC	A182 304L	Pipe	D-3690-635
28-SS-CRC-68-HPC	A182 304L	Pipe	D-3690-636
4-SS-X-337-69-HPC	A182 304L	Pipe	D-3690-637 A
10-SS-X-.594-70-HPC	A182 304L	Pipe	D-3690-638
4-SS-80-.337-71-HPC	SA376 304	Pipe	D-3690-639
SE-SS.750-72-HPC	A182 316L	Pipe	D-3690-640 A
SE-IN-.750-73-HPC	SB166	Pipe	D-3690-641 A
IR-CS-74-HPC	SA508 CL2	Pipe	D-3690-642
FW-N4-MOCKUP-75-HPC	SA508 CL2	Pipe	D-3690-643
RCP-STUD-CS-76-HPC	SA540 GRB23 CL4	Stud	D-3690-644
28-SS-BB-12-77A-HPC	SS	Pipe	N/A
28-SS-BB-12-77B-HPC	SS	Pipe	N/A
12-SS-X-.695-IGSCC-TEST BLOCK- HPC	SS	Pipe	N/A
BCB-HOPECREEK-1SB_166-P.O. 303- 7400-C61 (HEAT NX8383)	SS	Pipe	P.O. 303-7400-C61

## 2.5 Technical Approach and Positions

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

**TABLE 2.5-1**  
**TECHNICAL APPROACH AND POSITIONS INDEX**

<b>Position Number</b>	<b>Revision Date<sup>2</sup></b>	<b>Status<sup>1</sup></b>	<b>Description of Technical Approach and Position</b>
HC-I4T-01	0 12/13/17	Active	<b>(SPT)</b> System Leakage Testing of Non-Isolable Buried Components.
HC-I4T-02	0 12/13/17	Active	<b>(SPT)</b> Valve Seats/Discs as Pressurization Boundaries.

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

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

**TECHNICAL APPROACH AND POSITION NUMBER HC-I4T-01  
Revision 0**

**COMPONENT IDENTIFICATION:**

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

**CODE REQUIREMENT:**

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

**POSITION:**

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

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

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

HCGS’s position is that proof of adequate flow is all that is required for testing the buried pipe segments of these open ended lines that require Inservice Testing (IST) of pumps and that no further visual examination is necessary. This is consistent with the requirements for buried piping, which is not subject to visual examination.



**TECHNICAL APPROACH AND POSITION NUMBER HC-I4T-02  
Revision 0**

**COMPONENT IDENTIFICATION:**

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

**CODE REQUIREMENT:**

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

**POSITION:**

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

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

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

### **3.0 COMPONENT ISI PLAN**

The HCGS Component ISI Plan includes ASME Section XI nonexempt pressure retaining welds, piping structural elements, pressure retaining bolting, attachment welds, pump casings, valve bodies, reactor vessel interior, reactor vessel interior attachments, and reactor vessel core support structures of ISI Class 1, 2, and 3 components that meet the criteria of Subarticle IWA-1300. These components are identified on the ASME Section XI ISI Drawings listed in Section 2.3, Table 2.3-1. Procedure ER-AA-330-002, “Inservice Inspection of Section XI Welds and Components”, implements the ASME Section XI Welds and Components ISI Plan. This Component ISI Plan also includes augmented inspection program requirements specified by documents other than ASME Section XI as referenced in Section 2.2 of this document.

#### **3.1 Nonexempt ISI Class Components**

The ISI Class 1 nonexempt components subject to examination are those that are not exempted under the criteria of Paragraph IWB-1220 in the 2007 Edition through the 2008 Addenda. The HCGS ISI Class 2 and 3 nonexempt components identified in ISI Drawings are those not exempted under the criteria of Paragraphs IWC-1220 and IWD-1220 in the 2007 Edition through the 2008 Addenda of ASME Section XI. A summary of HCGS ASME Section XI nonexempt components is included in Section 7.0.

The process for scoping HCGS components for inclusion in the Component ISI Plan is included in the sections of the ISI Classification Basis Document.

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

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

##### **3.1.2 Components Exempt From Examination**

Certain components or parts of components may be exempted from examination based on design and accessibility per the requirements of Paragraphs IWB-1220, IWC-1220, and IWD-1220.

The process for exempting HCGS components from the Component ISI Plan per Paragraphs IWB-1220, IWC-1220, and IWD-1220 is included in the sections of the ISI Classification Basis Document. These sections include discussions of exempt components and the bases for those exemptions.

#### **3.2 Risk-Informed Examination Requirements**

Piping welds that fall under RISI Examination Category R-A are classified as either High Safety Significant (HSS) or Low Safety Significant (LSS). Per ASME Code Case N-716-1, piping welds classified as HSS are subject to examination while piping welds classified as LSS are not subject to examinations (except for pressure testing). Thin wall welds that were excluded from volumetric examination under ASME Section XI rules per Table IWC-2500-1 are included in the scope that is potentially subject to RISI examination at HCGS. Class 2 components, excluding attachment welds and support are also classified as either HSS or LSS.

Piping welds that are inspected for cause under certain other HCGS programs such as the Flow Accelerated Corrosion (FAC) or IGSCC Programs are still included in the total population where selections are made. Piping welds assigned with a degradation mechanism of FAC only are assigned to Item No. R1.20. Piping welds assigned to a degradation mechanism of IGSCC only are assigned Item No. R1.16. Piping welds susceptible to FAC or IGSCC along with another degradation mechanism (e.g., thermal fatigue) may be assigned a combined Item No. for example R1.11/16. All welds classified as HSS are included in the total population which is used for meeting the selection criteria of Code Case N-716-1.

### 3.3 ISI Class 1 Piping Size Exemption for Water and Steam

As stated above, an exemption from the surface and volumetric examination requirements of Subarticle IWB-2500 is available, provided that site specific calculations are prepared to determine the size of ISI Class 1 water and steam piping and components that would fully satisfy the makeup criteria of Paragraph IWB-1220(a) from the 2007 Edition through the 2008 Addenda of ASME Section XI.

PSEG has decided not to perform this calculation, therefore the makeup exemption of Paragraph IWB-1220(a) is not invoked for ISI Class 1 piping and components at HCGS.

## **4.0 SUPPORT ISI PLAN**

The HCGS Support ISI Plan includes the supports of ASME Section XI nonexempt ISI Class 1, 2, and 3 components as described in Section 3.0; and ISI Class MC components as described in Section 6.0. Procedure ER-AA-330-003 “Inservice Inspection of Section XI Component Supports”, implements the ASME Section XI Support ISI Plan.

### **4.1 Nonexempt ISI Class Supports**

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

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

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

ISI Class MC supports are identified on the HCGS CISI Drawings listed in Section 2.4, Table 2.4-2.

Some Non-Safety and Exempt supports are also included in ISI program for sampling and include Main Steam support between MSSV and MSV which are Class 3 non “Q” and Non-Safety and Exempt lines with Snubbers.

### **4.2 Snubber Examination and Testing Requirements**

4.2.1 The 2006 Addenda of ASME Section XI deleted the requirement for examination of snubbers and deleted reference to the OM Code subsection ISTD for snubber testing. Section XI retained the requirements for examination of the support containing the snubber, but the examination of the snubber itself is now solely under the OM Code. Per 10 CFR 50.55a(b)(3)(v), visual examinations shall be performed using the VT-3 visual examination method described in Paragraph IWA-2213.

Procedure ER-AA-330-004, “Visual Examination of Snubbers”, implements the visual inspection program for safety-related snubbers. Procedures ER-AA-330-010, “Snubber Functional Testing” and ER-AA-330-011, “Snubber Service Life Monitoring Program” implement the functional testing and service life monitoring requirements for safety-related snubbers.

The ASME Section XI ISI Program uses Subsection IWF to define support inspection requirements. The ISI Program maintains the Code

Class snubbers in the populations subject to inspection per Article IWF-2000.

- 4.2.2 ASME Section XI Paragraph IWF-2510 requires integral and non-integral attachments for snubbers to be examined in accordance with Subsection IWF of ASME Section XI. This results in VT-3 visual examination of the snubber attachment hardware including the bolting, pins, and their interface to the clamp, but does not include the component-to-clamp interface.

The ASME Section XI ISI Program uses Subsection IWF to define the inspection requirements for all ISI Class 1, 2, and 3 supports, regardless of type. The ISI Program maintains the Code Class snubbers in the support populations subject to inspection per Article IWF-2000. This is done to facilitate scheduling and inspection requirements of the snubber attachment hardware (e.g., bolting and pins).

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

## 5.0 SYSTEM PRESSURE TESTING ISI PLAN

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

The SPT ISI Plan details system pressure tests and required VT-2 visual examinations on the ISI Class 1, 2, and 3 pressure retaining components to verify system and component structural integrity. This program conducts both Periodic and Interval (10-Year frequency) pressure tests as defined in ASME Section XI Inspection Program. Procedure ER-AA-330-001, "Section XI Pressure Testing" as well as several HCGS site-specific test procedures, implement the ASME Section XI System Pressure Testing ISI Plan. In addition to the ASME Section XI requirements, HCGS's SPT ISI Plan also includes augmented examination commitments.

### 5.1 ISI Class Systems

All ISI Class 1 pressure retaining components, typically defined as the reactor coolant pressure boundary, are required to be tested. Those portions of ISI Class 2 and 3 systems that are required to be tested include the pressure retaining boundaries of components required to operate or support the system safety functions. ISI Class 2 open ended discharge piping and components are excluded from the examination requirements per Paragraphs IWC-5222(b). ISI Class 3 open-ended discharge piping that is **not periodically pressurized** to conditions described in IWD-5221 are excluded from the examination requirements per Paragraph IWD-5222(c). (Note: Per ASME Section XI, IWC-5222(a) the RHR Cross-Tie of the Spent Fuel Pool Cooling System Pressure Test is exempted from pressure testing requirements, due to the line being isolated by a normally closed valve. This system is never used or tested under Section XI and has been removed from the ISI Program.)

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

Components subject to ASME Section XI System Pressure Testing are shown within the ISI classification flags on the HCGS Inservice Inspection Boundary Diagrams listed in Section 2.3, Tables 2.3-1. Additional information on the classification of various system boundaries is provided in the ISI Classification Basis Document.

#### 5.1.2 Identification of System Pressure Tests

Individual tests and test segments are identified and maintained in the HCGS ISI Database, and are additionally depicted on system pressure testing diagrams.

## 5.2 Risk-Informed Examinations of Socket Welds

Socket welds selected for examination under the RISI Program is to be inspected with a VT-2 visual examination each refueling outage per ASME Code Case N-716-1 (see footnotes 8 and 9 in Table 1 of the Code Case). To facilitate this, socket welds selected for inspection under the RISI Program are pressurized each refueling outage during a system pressure test in accordance with Paragraph IWA-5210(a). **(CM-3)**

## 5.3 HCGS Service Water Buried Pipe ISI System Pressure Testing

The HCGS ISI Program provides for system pressure testing of the service water piping in accordance with ASME Section XI requirements. Two of the tests, EA-001 and EA-002, include underground piping between the service water building and the reactor building. Both tests are performed by confirming that flow during operation is NOT impaired. The test for whether flow is impaired is specified in system pressure test procedures and in ASME Section XI, IWA-5244, Paragraph (b)(2) for buried components for non-isolable components. Note there are different requirements for isolable components. For isolable components, a test is performed that either determines the rate of pressure loss OR determines a change in flow between the ends of the buried component. The buried pipe in the service water system is considered non-isolable since the butterfly valves in the service are not leak tight. (Note: ASME Code Interpretation XI-1-07-37, IWA-5244(b)(1) – Butterfly valves are not designed to be leak tight.) This position was supported by corporate engineering. Furthermore, an ASME code interpretation relative to buried pipe for isolable components was included in the 2011 Addenda of ASME Section XI. This change supports our position that the HCGS service water buried pipe with butterfly valves is non-isolable as defined in Technical Position HC-I4T-01.

Therefore, the testing performed meets ASME requirements and schedule. The issue at Salem Generating Station (SGS) was that no impaired flow test or pressure drop test was performed for their service water buried piping. This is not the case at HCGS.

**TABLE 5.3-1**  
**SYSTEM PRESSURE TEST BOUNDARY DIAGRAMS**

<u>Diagram No.</u>	<u>Sheet No(s).</u>	<u>P&amp;ID No.</u>	<u>Title</u>
HC-SPT-10-1	1	M-10-1 Sheet 1	Service Water
HC-SPT-10-1	2	M-10-1 Sheet 2	Service Water
HC-SPT-10-1	3	M-10-1 Sheet 3	Service Water
HC-SPT-11-1	1	M-11-1 Sheet 1	Safety Auxiliaries Cooling Reactor Building
HC-SPT-11-1	2	M-11-1 Sheet 2	Safety Auxiliaries Cooling Reactor Building
HC-SPT-11-1	3	M-11-1 Sheet 3	Safety Auxiliaries Cooling Reactor Building
HC-SPT-12-1	1	M-12-1 Sheet 1	Safety Auxiliaries Cooling Reactor Building
HC-SPT-30-1	1	M-30-1 Sheet 1	Diesel Engine Auxiliary System Fuel Oil
HC-SPT-30-1	2	M-30-1 Sheet 2	Diesel Engine Auxiliary Systems Intercooler and Injector Cooling, Jacket Water, Crankcase Vacuum Air Intake, Exhaust and Vibration Monitoring System
HC-SPT-30-1	3	M-30-1 Sheet 3	Diesel Engine Auxiliary Systems Starting Air and Lube Oil
HC-SPT-38-0	1	M-38-0 Sheet 1	Post-Accident Sampling System
HC-SPT-41-1	1	M-41-1 Sheet 1	Nuclear Boiler
HC-SPT-41-1	2	M-41-1 Sheet 2	Nuclear Boiler
HC-SPT-42-1	1	M-42-1 Sheet 1	Nuclear Boiler Vessel Instrumentation
HC-SPT-43-1	1	M-43-1 Sheet 1	Reactor Recirculation System
HC-SPT-43-1	2	M-43-1 Sheet 2	Reactor Recirculation System
HC-SPT-44-1	1	M-44-1 Sheet 1	Reactor Water Clean Up
HC-SPT-46-1	1	M-46-1 Sheet 1	Control Rod Drive Hydraulic Part A
HC-SPT-47-1	1	M-47-1 Sheet 1	Control Rod Drive Hydraulic Part B
HC-SPT-48-1	1	M-48-1 Sheet 1	Standby Liquid Control
HC-SPT-49-1	1	M-49-1 Sheet 1	Reactor Core Isolation Cooling
HC-SPT-50-1	1	M-50-1 Sheet 1	RCIC Pump Turbine
HC-SPT-51-1	1	M-51-1 Sheet 1	Residual Heat Removal
HC-SPT-51-1	2	M-51-1 Sheet 2	Residual Heat Removal
HC-SPT-52-1	1	M-52-1 Sheet 1	Core Spray
HC-SPT-53-1	1	M-53-1 Sheet 1	Fuel Pool Cooling & Torus Water Cleanup
HC-SPT-55-1	1	M-55-1 Sheet 1	High Pressure Coolant Injection
HC-SPT-56-1	1	M-56-1 Sheet 1	HPCI Pump Turbine
HC-SPT-57-1	1	M-57-1 Sheet 1	Containment Atmosphere Control



## **6.0 CONTAINMENT ISI PLAN**

The HCGS Containment CISI Plan includes ASME Section XI ISI Class MC pressure retaining components and their welded attachments. This Containment ISI Plan also includes information related to augmented examination areas, component accessibility, and examination review.

The examination of containment structures and components are performed per procedures:

1. ER-AA-330-007, "Visual Examination of Section XI Class MC Surfaces and Class CC Liners"
2. OU-AA-335-004, "Manual Ultrasonic Measurement of Material Thickness and Interfering Conditions"
3. OU-AA-335-018, "Detailed and General, VT-1 and VT-3 Visual Examination of ASME Class MC and CC Containment Surfaces and Components"

### **6.1 Nonexempt CISI Class Components**

The HCGS CISI Class MC components identified are those not exempted under the criteria of Paragraph IWE-1220 in the 2007 Edition through the 2008 Addenda of ASME Section XI. A summary of HCGS ASME Section XI nonexempt CISI components is included in Section 7.0.

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

Components that are classified as CISI Class MC, must meet the requirements of ASME Section XI in accordance with 10 CFR 50.55a(g)(4). Although supports of IWE components are not strictly required to be examined in accordance with 10 CFR 50.55a(g)(4)(v), HCGS has elected to perform these examinations in accordance with ASME Section XI, Subsection IWF.

#### **6.1.1 Identification of ISI Class MC Nonexempt Components**

ISI Class MC components are identified on the HCGS CISI Figures listed in Section 2.4, Table 2.4-2. These figures are identified with special prefixes of "E-" at HCGS (e.g.; E-014 or E-144).

#### **6.1.2 Identification of ISI Class MC Exempt Components**

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

The process for exempting HCGS components from the Containment ISI Plan per Paragraph IWE-1220 is included in the containment sections of the ISI Classification Basis Document. These sections include a listing and basis for exempting applicable components.

## 6.2 Augmented Examination Areas

The containment section of the ISI Classification Basis Document discusses the containment design and components. Metal containment surface areas subject to accelerated degradation and aging require augmented examination per Examination Category E-C and Paragraph IWE-1240.

No areas requiring under IWE-1240 were identified in the First CISI Interval. Areas were identified in the Second CISI Interval as requiring application of additional augmented examination requirements under Paragraph IWE-1240 as a result of license renewal.

- 6.2.1 For license renewal, perform augmented IWE UT measurements of the drywell shell between elevation 86'-11" (floor of the drywell concrete) and elevation 93' (bottom of penetration J13) and below penetration J13 area. In addition, UT measurements will also be performed around the full 360 degree circumference of the drywell between elevations 86'-11" and 88'-0" (underside of the torus down comer vent piping penetrations).

UT thickness measurements were required each refuel outage until drainage was established at the bottom of the air gap from all four drains, and then for the next three refueling outages. The UT thickness measurements were taken each refueling outage starting with RF17, using the same location as those examined in 2010 refueling outage. These UT thickness measurements were compared to the results of the initial UT inspections performed in 2010 refueling outage. The results of the UT measurements were used to identify drywell surfaces requiring augmented Inspections in accordance with IWE requirements and to establish corrosion rates. Functional drains have been installed at all four drains and the continuation of UT thicknesses is no longer required under the License Renewal commitment. The UT thickness inspection is now part of the IWE Program under Item E4.12.

## 6.3 Component Accessibility

ISI Class MC components subject to examination shall remain accessible for either direct or remote visual examination from at least one side for the life of the plant per the requirements of ASME Section XI, Paragraph IWE-1231.

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

Portions of components embedded in concrete or otherwise made inaccessible during construction are exempted from examination, provided that the requirements of ASME Section XI, Paragraph IWE-1232 have been fully satisfied.

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

#### 6.4 Responsible Individual

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

**TABLE 6.5-1**  
**CISI REFERENCE FIGURES**

<b><u>Figure</u></b>	<b><u>Description</u></b>	<b><u>Reference Drawing</u></b>
	<b><u>UFSAR Figures</u></b>	
E-001	Primary Containment Elevation	UFSAR Fig. 3.8-1
E-002	Typical Drywell Process Piping Penetrations	UFSAR Fig. 3.8-6
E-003	Typical Drywell Instrumentation Penetration	UFSAR Fig. 3.8-7
E-004	Typical Drywell Electrical Penetration	UFSAR Fig. 3.8-8
E-005	Typical Drywell T.I.P. System Penetration	UFSAR Fig. 3.8-9
E-006	Equipment Hatch, C-1	UFSAR Fig. 3.8-3
E-007	Equipment Hatch, C-2, and Personnel Airlock	UFSAR Fig. 3.8-4
E-008	CRD Removal Hatch, C-3	UFSAR Fig. 3.8-5
E-009	Drywell Head	UFSAR Fig. 3.8-2
E-010	Suppression Chamber (Torus) - Plan	UFSAR Fig. 3.8-10
E-011	Suppression Chamber, Horizontal Seismic Restraint	UFSAR Fig. 3.8-13
E-012	Typical SRV Piping System in the Vent Pipe	UFSAR Fig. 3.9-10
E-013	Elevation of Vent System	UFSAR Fig. 3.8-15
E-014	Torus - Section at Mitered Joint	UFSAR Fig. 3.8-12
E-015	Torus - Section at Midcylinder, Vent Line Bay	UFSAR Fig. 3.8-17
E-016	Torus - Section at Midcylinder, Non-Vent Line Bay	UFSAR Fig. 3.8-11
E-017	Detail of Vent Header - Downcomer Intersection	UFSAR Fig. 3.8-16
E-018	Vent Line - Bellows and Cladding Details	Spec. C-152, Sheet 96

**TABLE 6.5-1**  
**CISI REFERENCE FIGURES**

<b><u>Figure</u></b>	<b><u>Description</u></b>	<b><u>Reference Drawing</u></b>
E-019	Torus - SRV Piping Support Details	UFSAR Fig. 3.9-12
E-020	T-Quencher Support Details, Elevation & Section Views	UFSAR Fig. 11-2, Appendix 3B
E-021	T-Quencher, Ramshead and Support Details	UFSAR Fig. 3.9-13
E-022	Midcylinder and Mitered Joint-Ring Girder, T-Quencher Support	UFSAR Fig. 3.9-14
E-023	Ramshead and T-Quencher Arm Support Details	UFSAR Fig. 3.9-15
E-024	Torus Access Hatch	UFSAR Fig. 3.8-14
	<b><u>DRYWELL</u></b>	
E-030	Containment Vessel - Cross Section	HCDWG C-0926-0
E-031	Drywell - Flange and Seal Plate (Elev.)	HCDWG C-0993-0
E-032	Drywell - Flange and Seal Plate (Cross Sections)	HCDWG C-0993-0
E-033	Drywell - Lower Top Head Flange and Shell Details	HCVD PC 152 Q-0117
E-034	Drywell Head -Plan and Flange Details	HCVD PC 152Q-0161
E-035	Drywell - Top Head (Elev.) and Lifting Lug	HCVD PC 152Q-0130
E-036	Drywell Head - Manhole, Penetration C-5	HCVD PC 152Q-0161
E-039	Drywell - Shear Lug Support and Inspection Hatch	HCDWG C-0930-0
E-040	Drywall Shear Lug Inspection Hatch (Elev., Sections, Detail)	HCVD PC 152Q-1222
E-041	Drywell Penetrations - Hatches	HCDWG C-0930-0
E-042	Drywell - Equipment Hatch, C-1 (Elevation and Detail)	HCVD PC 152Q-0237
E-043	Drywell - Equipment Hatch, C-1, Trolley Details	HCVD PC 152Q-0238
E-044	Drywell - Equipment Hatch, C-1, Trolley Details	HCVD PC 152Q-0238
E-045	Drywell - Equipment Hatch, C-1, Trolley Support Beam and Tension Rod	HCVD PC 152Q-0239
E-046	Drywell - Equipment Hatch, C-1, Trolley Beam (Plan)	HCVD PC 152Q-0239
E-047	Drywell - Equipment Hatch, C-1, Swing Bolt and Flange Detail	HCVD PC 152Q-0237
E-048	Drywell - CRD Hatch, C-3, Sections and Flange Detail	HCVD PC 152Q-0461
E-049	Drywell - CRD Hatch, C-3, Elevation and Section	HCVD PC 152Q-0461
	<b><u>Airlock</u></b>	
E-050	Drywell- Equipment Hatch, C-2, with Airlock (Elev.)	HCVD PC 152Q-0240
E-051	Drywell - Airlock, C-2 (Cross - Section)	HCVD PC 152Q-0240
E-052	Drywell - Airlock, C-2, Floor Details	HCVD PC 152Q-0241
E-053	Drywell- Airlock, C-2, Elevation/Bulkhead, Inside Containment	HCVD PC 152Q-0242
E-054	Drywell - Airlock, C-2, Section Through Hatch Showing Floors	HCVD PC 152Q-0242
E-055	Drywell - Airlock, C-2, Swing Bolt and Flange Details	HCVD PC 152Q-0241
E-056	Drywell - Airlock Elevation View with Barrel Plate Removed	HCVD PC 152Q-0190
E-057	Drywell - Airlock, Inner Bulkhead, View from Inside Drywell	HCVD PC 152Q-0191
E-058	Drywell - Airlock, Inner Bulkhead, View from Inside Airlock	HCVD PC 152Q-0191
E-059	Drywell - Airlock, Outer Bulkhead, View from Inside Airlock	HCVD PC 152Q-0192
E-060	Drywell - Airlock, Outer Bulkhead, View from Outside	HCVD PC 152Q-0192

**TABLE 6.5-1  
CISI REFERENCE FIGURES**

<b><u>Figure</u></b>	<b><u>Description</u></b>	<b><u>Reference Drawing</u></b>
	Containment	
E-061	Drywell - Airlock, Bulkhead Penetrations - Capped and Flanged	HCVD PC 152Q-0219
E-062	Drywell - Airlock, Outer Bulkhead Reinforcement	HCVD PC 152Q-0193
E-063	Drywell - Airlock, Inner Bulkhead Reinforcement	HCVD PC 152Q-0193
E-064	Drywell - Airlock, Attachments to Inside of Barrel	HCVD PC 152Q-0193
E-065	Drywell - Airlock, Door Seal and Vacuum Relief Tubing	HCVD PC 152Q-0195
E-066	Drywell - Airlock, Bulkhead Attachments and Penetration	HCVD PC 152Q-0195
E-067	Drywell - Airlock, Inside Bulkhead, Differential Pressure Switches	HCVD PC 152Q-0195
E-068	Drywell- Airlock, Outer Bulkhead, Test Tubing Penetrations	HCVD PC 152Q-0225
E-069	Drywell- Airlock, Outer Bulkhead, Test Tubing Penetrations	HCVD PC 152Q-0225
E-070	Drywell - Airlock, Bulkhead, Pressure Diff. safety Lock Assembly	HCVD PC 152Q-0196
E-071	Drywell - Airlock, Outer Bulkhead, Attachments and Penetrations	HCVD PC 152Q-0196
E-072	Drywell - Airlock, Outer Bulkhead, Valves (Plan and Elev.)	HCVD PC 152Q-0217
E-073	Drywell - Airlock, Outer Bulkhead, Press. Diff. Safety Lock Valve	HCVD PC 152Q-0217
E-074	Drywell - Airlock Doors, Typical Hinge Arrangements	HCVD PC 152Q-0197
E-075	Drywell- Airlock Doors, Typical Hinge Sections	HCVD PC 152Q-0197
E-076	Drywell- Airlock Doors, Typical Hinge Sections	HCVD PC 152Q-0197
E-077	Drywell - Airlock, Bulkheads, Door Snubber Attachments (Plan)	HCVD PC 152Q-0220
E-078	Drywell - Airlock, Inner Bulkhead, Shaft Arrangement (Elev.)	HCVD PC 152Q-0200
E-079	Drywell - Airlock, Inner Bulkhead, Shaft Arrangement (Plan)	HCVD PC 152Q-0201
E-080	Drywell - Airlock, Inner Bulkhead, Shaft Supports	HCVD PC 152Q-0200
E-081	Drywell - Airlock, Inner Bulkhead Shaft Support Attachments	HCVD PC 152Q-0201
E-082	Drywell - Airlock, Typical Bulkhead, Support Brackets for Drive Sprocket	HCVD PC 152Q-0219
	<b><u>Typical Drywell Penetrations</u></b>	
E-090	Drywell Penetration Nozzles Process Piping	HCDWG C-0930-0
E-091	Drywell- Penetration Assembly Triple Flued Head (Type A)	HCDWG P-3002-1
E-092	Drywell - Penetration Assembly, Double Flued Head (Type B)	HCDWG P-3002-1
E-093	Drywell - Penetration Details, Flued Head Anchors	HCDWG P-3002-1
E-094	Drywell Penetration Assembly, Nukon Insulation Details (Type A)	HCVD PM164-0028
E-095	Drywell - Penetration Assembly Nukon Insulation Detail (Type B)	HCVD PM164-0029
E-096	Drywell Penetration Details, Insulation at Double	HCVD PM164-0028

**TABLE 6.5-1  
CISI REFERENCE FIGURES**

<b><u>Figure</u></b>	<b><u>Description</u></b>	<b><u>Reference Drawing</u></b>
	Bellows Exp. Jt.	
E-097	Drywell Penetrations - Misc.	HCDWG C-0930-0
	<b><u>Drywell Penetration Details</u></b>	
E-098	Drywell Penetration, P-21 Details	HCDWG C-0930-1
E-099	Drywell- J-Penetration Shielding Detail	HCDWG A-5571, Sheet 11
E-100	Drywell - J2 Penetration Shielding Detail	HCDWG A-5571, Sheet 11
E-101	Drywell Penetrations - CRD Details	HCDWG C-0930-0
E-102	Arrangement- CRD Piping (Plan)	HCVD PN1-C11-2010-0157, Sheet 1
E-103	Arrangement - CRD Piping (Elevation)	HCVD PN1-C11-2010-0157, Sheet 2
E-104	Drywell Penetrations - CRD (Plan)	HCVD PN1-C11-2010-0157, Sheet 2
E-105	Drywell Penetrations - CRD Isometric, Inboard	HCDWG 1-P-BF-236, Sheet 1
E-106	Drywell Penetrations - CRD Isometric, Outboard	HCDWG 1-P-BF-236, Sheet 3
E-107	Drywell Penetration Nozzle - T.I.P. System	HCDWG C-0930-0
E-108	Drywell Penetration - T.I.P. Nozzle Support	HCDWG C-0930-1
E-109	Drywell Penetrations - T.I.P. Tubing	HCDWG FSK-JD-1703-1-002-1, Sheet 1
E-110	Drywell - Penetration Flange Neutron Monitoring System (TIP)	HCVD PN1-C51-J003-0069
E-111	Drywell Penetrations - Tip Tubing	HCDWG FSK-JD-1703-1-002-1, Sheet 1
E-112	TIP Tubing Isometric	HCDWG FSK-JD-1703-1-002-1, Sheet 2
E-113	Drywell- Lower Spray Header, Penetration, Riser and Support	HCVD PC152Q-0873
E-114	Drywell - Spray Header and Monorail Details	HCDWG C-0927-0
E-115	Drywell- P24A Penetration Shielding Details (C.S.)	HCVD A-5571-0, Sheet 9
E-116	Drywell- P24A Penetration Shielding Details (C.S.)	HCVD A-5571-0, Sheet 9
	<b><u>Additional Drywell Penetration Shielding Details</u></b>	
E-117	Drywell Penetrations - Shielding Attachments	HCDWG C-0930-1
E-118	Drywell Penetration Shielding Details	HCVD A-5571-0, Sheet 4
E-119	Drywell Penetration Shielding Details	HCVD A-5571-0, Sheet 5
E-120	Drywell Penetration Shielding Details	HCVD A-5571-0, Sheet 5
E-121	Drywell Penetration Shielding Details	HCVD A-5571-0, Sheet 6
E-122	Drywell Penetration Shielding Details	HCVD A-5571-0, Sheet 6
E-123	Drywell Penetration Shielding Details	HCVD A-5571-0, Sheet 6
E-124	Drywell Penetration Shielding Details	HCVD A-5571-0, Sheet 7
E-125	Drywell Penetration Shielding Details	HCVD A-5571-0, Sheet 7
E-126	Drywell Penetration Shielding Details	HCVD A-5571-0, Sheet 7A
E-127	Drywell Penetration Shielding Details	HCVD A-5571-0, Sheet 7A
	<b><u>Drywell Electrical Penetrations</u></b>	
E-128	Drywell Penetration Nozzles Electrical and Instrumentation	HCDWG C-0930-0

**TABLE 6.5-1  
CISI REFERENCE FIGURES**

<b><u>Figure</u></b>	<b><u>Description</u></b>	<b><u>Reference Drawing</u></b>
E-129	Drywell - Electrical Penetration Shielding Details	HCVD A-5571-0, Sheet 10
E-130	Drywell - Medium Voltage Electrical Penetration (12" Dia. Nozzle)	HCVD PE135Q-0025
E-131	Drywell - Medium Voltage Electrical Penetration (12" Dia. Nozzle)	HCVD PE135Q-0025
E-132	Drywell - Modular Electrical Penetration Details (18" Dia. Nozzle)	HCVD PE135Q-0023
E-133	Drywell - Modular Electrical Penetration Details (18" Dia. Nozzle)	HCVD PE135Q-0023
E-134	Inboard Lead Shielding for Modular Electrical Penetration (12" Nozzle)	HCVD PE135Q-0024
E-136	Electrical Penetration Assembly - Outboard End	HCVD PE135Q-0028, Sheet EQ-29
E-137	Electrical Penetration Assembly - Outboard End-View	HCVD PE135Q-0028, Sheet EQ-30
E-138	Electrical Penetration - Module Construction	HCVD PE135Q-0028, Sheet EQ-37
E-139	Ground Pads at Penetrations	HCDWG E-1410-0, Sheet 32.1
	<b><u>Drywell Shell Attachments</u></b>	
E-140	Drywell- Upper and Lower Beam Seats	HCVD PC152Q-2756
E-141	Drywell- Monorail Support	HCVD PC152Q-1854
E-142	Drywell- Shear Lug Support" Arrangement	HCVD PC152Q-1625
E-143	Drywell - Shear Lug Supports" Plan and Elevation	HCVD PC152Q-1625
E-144	Drywell - Shear Lug Supports" Details	HCVD PC152Q-1625
	<b><u>Torus and Vent System- General Arrangement</u></b>	
E-150	Suppression Chamber -(Torus) – Plan	HCDWG C-0927-0
E-151	Torus and Vent Line - Cross Section and Details	HCDWG C-0932-0
E-152	Torus - Cross Section	HCDWG C-0927-0
E-153	Suppression Chamber and Vent Line Details	HCVD PC152Q-0100
E-154	Lower Drywell, Jet Deflector and Vent Cross Section (Elev.)	HCVD PC152Q-0094
E-155	Vent System, - Jet Deflectors	HCVD PC152Q-0156
	<b><u>Vent System</u></b>	
E-156	Vent System Details	HCVD PC152Q-0160
E-157	Vent System Details	HCVD PC152Q-0160
E-158	Vent Line Bellows - Fabrication Details	HCVD PC152Q-0255
E-159	SRV Pipe Supports Inside Vent Line	HCVD PC152Q-0166
E-160	SRV Piping Collar and Support Inside Vent Line	HCVD PC152Q-0166(2)
E-161	Vent Header Supports	HCVD PC152Q-0182
E-162	Vent Header Support Details	HCVD PC152Q-0182
E-163	Vent Header Supports at Vent Lines	HCVD PC152Q-0183
E-164	Vent Header Support Sections	HCVD PC152Q-0183
E-165	Vent Header Bracing and Support Details	HCVD PC152Q-0895
E-166	Vent Header and Downcomer Supports (Elev.)	HCVD PC152Q-0895

**TABLE 6.5-1  
CISI REFERENCE FIGURES**

<b><u>Figure</u></b>	<b><u>Description</u></b>	<b><u>Reference Drawing</u></b>
E-167	Vent Header Support Columns	HCVD PC152Q-0895
E-168	Vent Header, Supports, and Bracing at Vent Line	HCVD PC152Q-0894
E-169	Vent Header Bracing (Plan) at Vent Line	HCVD PC152Q-0894
E-170	Vent Header Support Column	HCVD PC152Q-0894
	<b><u>Ring Girders</u></b>	
E-171	Ring Girder Stiffener Beam and T -Quencher Arrangement	HCVD PC152Q-0015
E-172	Ring Girder Stiffener Beam and T -Quencher - Section (Elevation)	HCVD PC152Q-0015
E-173	Ring Girder Stiffener Beam and T -Quencher - Section (Plan)	HCVD PC152Q-0015
E-174	Ring Girder Stiffener Beam Sections	HCVD PC152Q-0016
E-175	Torus - Mitered Joint Ring Girder Detail	HCVD PC152Q-0186
E-176	Torus - Mitered Joint Ring Girder Detail	HCVD PC152Q-0186
E-177	Torus - Ring Girder Details- Stiffeners and Cover Plates	HCVD PC152Q-0247
E-180	Ring Girder and Column Modifications at Mitered Joint	HCVD PC155Q-0019
E-181	Mitered Joint Ring Girder and Column Modifications	HCVD PC155Q-0110
E-182	Mid-Cylinder Ring Girder and Column Modifications	HCVD PC155Q-0030
E-183	Ring Girder and Column Modifications at Mitered Joint	HCVD PC155Q-0021
E-184	Ring Girder and Column Modifications at Mid-Cylinder	HCVD PC155Q-0020
E-185	Ring Girder and Column Modifications at Mitered Joint	HCVD PC155Q-0109
E-186	Ring Girder Modifications at Mitered Joint	HCVD PC155Q-0022
	<b><u>Torus Penetration Details</u></b>	
E-190	Torus Penetration Nozzle Details	HCDWG C-0931-0
E-191	Torus Penetrations	HCDWG C-0932-0
E-192	Torus Penetration Details (P221A thru P221D)	HCVD PC155Q-1074
E-193	Torus - Electrical Penetration (Elevations)	HCVD PE135Q-0022
E-194	Torus Electrical Penetration Details	HCVD PE135Q-0022
E-200	Torus Penetration Nozzle Reinforcement - Arrangement	HCDWG C-0936-1, Sheet 2
E-201	Torus - Penetration Nozzle Reinforcement Details	HCDWG C-0936-1, Sheet 2
E-202	Torus Piping Penetration Modification (P210)	HCVD PC401Q-0024, Sheet 4
E-203	Torus - Piping Penetration Modification (J207)	HCVD PC401Q-0024, Sheet 4
E-204	Torus - Piping Penetration Modification (P212A, P212B)	HCVD PC401Q-0024, Sheet 3
E-205	Torus - Piping Penetration Modification (P212A, P212B)	HCVD PC401Q-0024, Sheet 3
E-206	Penetration Stiffening - Penetrations P208, P213A, P213B	HCVD PC155Q-0082
E-207	Penetration Stiffening - Penetrations P212A & P212B	HCVD PC155Q-0083
E-208	Pipe Support Modification for Penetration J207	HCVD PC155Q-0118
E-209	Torus - Pipe Support Modification for Penetration P210	HCVD PC155Q-0116
	<b><u>Torus Attached Pine Supports</u></b>	
E-210	Torus - Attaching Piping Supports	HCDWG C-0932-0
E-211	Torus - Attached Piping Penetrations	HCDWG C-0932-0
E-212	Torus- Supports for P-201, Turbine Exhaust Penetration	HCVD PC152Q-0628
E-213	Torus- Support Details for P-201 Penetration	HCVD PC152Q-0628



**TABLE 6.5-1**  
**CISI REFERENCE FIGURES**

<b><u>Figure</u></b>	<b><u>Description</u></b>	<b><u>Reference Drawing</u></b>
E-214	Torus - Penetration P203 (Elev.)	HCVD PC152Q-1262
E-215	Torus - Penetration P203 Support (Sections)	HCVD PC152Q-1262
E-216	Torus - Penetration P203 (Detail)	HCVD PC152Q-1262
E-217	Pipe Support Modifications for Penetrations 212A & B	HCVD PC155Q-0090
	<b><u>Torus Hatches</u></b>	
E-220	Torus - Access Hatches, C201A to C201D (Elevation)	HCVD PC152Q-0592
E-221	Torus - Access Hatches, C201A to C201D (Plan & Detail)	HCVD PC152Q-0592
E-222	Torus - Instrum. Penetrations. Hatch C201D	HCDWG C-0937-1, Sheet 1
	<b><u>Torus- Miscellaneous Attachments</u></b>	
E-223	Torus- Spray Header Supports at Ring Girder	HCVD PC152Q-2895
E-224	Torus- Spray Header Supports at Shell	HCVD PC152Q-1331
E-226	Torus- Spray Header Supports at Shell	HCVD PC152Q-1331
E-227	Torus - Monorail Support Details at Ring Girder	HCVD PC152Q-1043
E-228	Torus - Monorail Support Details at Shell Plate	HCVD PC152Q-1043
E-229	Torus - Walkway Hanger at Ring Girder (Elev.)	HCVD PC152Q-0229
E-230	Torus - Instrum. Support	HCDWG C-0937-1, Sheet 1
E-231	Torus - Instrum. Support	HCDWG C-0931-1, Sheet 1
E-232	Torus - Plan, Horizontal Restraints	HCVD PC152Q-0159
E-233	Torus - Detail Plan of Horizontal Restraints	HCVD PC152Q-0159
E-234	Torus - Horizontal Restraints Details (Elevations)	HCVD PC152Q-0159
E-235	Torus - Horizontal Restraints Attachments to Vessel (Details)	HCVD PC152Q-0244
E-236	Torus - Support Column	HCVD PC152Q-0246

## **7.0 COMPONENT SUMMARY TABLES**

### **7.1 Inservice Inspection Summary Tables**

The following Table 7.1-1 provides a summary of the ASME Section XI pressure retaining components, supports, containment structures, system pressure testing, and augmented inspection program components for the Fourth ISI Interval and Third CISI Interval at HCGS.

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

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

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

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

Examination Category “R-A” from ASME Code Case N-716-1 is used in lieu of ASME Section XI Examination Categories B-F, B-J, and C-F-2 to identify ISI Class 1 and 2 piping welds for the RISI Program. In addition Categories C-A and C-B Class 2 components are incorporated into the implementation of Code Case N-716-1.

Examination Category “A-E” is used to identify Augmented Inspection Program components and other HCGS commitments.

(2) Item Number (or Augmented Number):

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

For piping welds under the RISI Program, the RISI Item Number based on the degradation mechanism assigned is provided in this column of the table.

Specific abbreviations such as reference paragraph numbers (2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6, and 2.2.7) have been developed to identify Augmented Inspection Programs and other HCGS commitments.

(3) Description:

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

For Risk-Informed piping welds, a description of the RISI Item Number is provided.

For Augmented Inspection Programs, a description of the augmented basis is provided.

(4) Examination Requirements:

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

Provides the examination requirements for piping welds under the RISI Program that are in accordance with the ASME Code Case N-716-1.

Provides the examination requirements for Augmented Inspection Program components.

(5) Total Number of ISI Components by System:

Provides the system designator (abbreviations). See Table below:

Sys	System Description	Sys	System Description
AB	MAIN STEAM	EC	FUEL POOL COOLING AND CLEANUP
AE	FEEDWATER	EE	TORUS WATER CLEANUP
AP	CONDENSATE STORAGE AND TRANSFER	EG	SAFETY AND TURBINE AUX. COOLING
BB	REACTOR RECIRC	BD	REACTOR CORE ISOLATION COOLING
BC	RESIDUAL HEAT REMOVAL	BE	CORE SPRAY
BH	STANDBY LIQUID CONTROL	BF	CONTROL ROD DRIVE HYDRAULIC
BJ	HIGH PRESSURE COOLANT INJECTION	BG	REACTOR WATER CLEAN UP
CV	CONTAINMENT VESSEL	RPV	REACTOR PRESSURE VESSEL

---

**ISI Program Plan**  
**Hope Creek Generating Station, Fourth Interval**

---

Sys	System Description	Sys	System Description
FC	RCIC TURBINE STEAM	GS	CONTAINMENT ATMOSPHERE CONTROL
FD	HPCI TURBINE STEAM	JE	DIESEL FUEL OIL STORAGE AND XFER
GJ	AUX. BLDG. CHILLED WATER - CONTROL ROOM	KJ	EMERGENCY DIESEL GENERATOR

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

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

(6) Relief Request/Technical Approach & Position Number:

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

(7) Notes:

Provides a listing of program notes applicable to the ASME Section XI Item Number, RISI Item Number and Risk Category Number, or Augmented Number. If a program note number is identified, see the corresponding program note in Table 7.1-2.

**TABLE 7.1-2**  
**INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

<b>Examination Category (with Examination Category Description)</b>	<b>Item Number</b>	<b>Description</b>	<b>Exam Requirements</b>	<b>Total Number of Components by System</b>	<b>Relief Request/ TAP Number</b>	<b>Notes</b>
B-A Pressure Retaining Welds in Reactor Vessel	B1.11	Circumferential Shell Welds (Reactor Vessel)	Volumetric	RPV: 0	RR-B4	19
	B1.12	Longitudinal Shell Welds (Reactor Vessel)	Volumetric	RPV: 15	RR-B4	
	B1.21	Circumferential Head Welds (Reactor Vessel)	Volumetric	RPV: 2		
	B1.22	Meridional Head Welds (Reactor Vessel)	Volumetric	RPV: 20		
	B1.30	Shell-to-Flange Weld (Reactor Vessel)	Volumetric	RPV: 1		
	B1.40	Head-to-Flange Weld (Reactor Vessel)	Volumetric & Surface	RPV: 1		20
B-D Full Penetration Welds of Nozzles in Vessels	B3.90	Nozzle-to-Vessel Welds (Reactor Vessel)	Volumetric	RPV: 34	HC-I4R-01	14
	B3.100	Nozzle Inside Radius Section (Reactor Vessel)	Volumetric	RPV: 34	HC-I4R-01	15

**TABLE 7.1-2  
INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

<b>Examination Category (with Examination Category Description)</b>	<b>Item Number</b>	<b>Description</b>	<b>Exam Requirements</b>	<b>Total Number of Components by System</b>	<b>Relief Request/ TAP Number</b>	<b>Notes</b>
B-G-1 Pressure Retaining Bolting, Greater Than 2 in. In Diameter	B6.10	Closure Head Nuts (Reactor Vessel)	Visual, VT-1	RPV: 1 (92 Nuts)		
	B6.20	Closure Studs (Reactor Vessel)	Volumetric	RPV: 1 (92 Studs)		17
	B6.40	Threads in Flange (Reactor Vessel)	Volumetric	RPV: 1 (92 Threads)		
	B6.50	Closure Washers (Reactor Vessel)	Visual, VT-1	RPV: 1 (92 Washers)		18
	B6.180	Bolts and Studs (Pumps)	Volumetric	BB: 2 (32 Bolts, Studs)		
	B6.190	Flange Surface, when connection disassembled (Pumps)	Visual, VT-1	BB: 2		
	B6.200	Nuts, Bushings, and Washers (Pumps)	Visual, VT-1	BB: 2 (32 Nuts, Bushings, Washers)		
B-G-2 Pressure Retaining Bolting, 2 in. and Less In Diameter	B7.10	Bolts, Studs, and Nuts (Reactor Vessel)	Visual, VT-1	BB: 1		
	B7.50	Bolts, Studs, and Nuts (Piping)	Visual, VT-1	AB: 15 BB: 6		
	B7.60	Bolts, Studs, and Nuts (Pumps)		BB: 4		
	B7.70	Bolts, Studs, and Nuts (Valves)	Visual, VT-1	AB: 50 AE: 4 BB: 4 BC: 12 BE: 4		

**TABLE 7.1-2**  
**INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

<b>Examination Category (with Examination Category Description)</b>	<b>Item Number</b>	<b>Description</b>	<b>Exam Requirements</b>	<b>Total Number of Components by System</b>	<b>Relief Request/ TAP Number</b>	<b>Notes</b>
B-K Welded Attachments for Vessels, Piping, Pumps, and Valves	B10.10	Welded Attachments (Pressure Vessels)	Surface or Volumetric	RPV: 2		
	B10.20	Welded Attachments (Piping)	Surface	AB: 9 AE: 11 BB: 5 BC: 7 BE: 4 BG: 3 BH: 1		
	B10.30	Welded Attachments (Pumps)	Surface	BB: 6		
B-L-2 Pump Casings	B12.20	Pump Casings (Pumps)	Visual, VT-3	BB: 2		
B-M-2 Valve Bodies	B12.50	Valve Bodies (Exceeding NPS 4) (Valves)	Visual, VT-3	AB: 22 AE: 6 BB: 4 BC: 21 BE: 7 BG: 3 FD: 2		

**TABLE 7.1-2**  
**INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

<b>Examination Category (with Examination Category Description)</b>	<b>Item Number</b>	<b>Description</b>	<b>Exam Requirements</b>	<b>Total Number of Components by System</b>	<b>Relief Request/ TAP Number</b>	<b>Notes</b>
B-N-1 Interior of Reactor Vessel	B13.10	Vessel Interior (Reactor Vessel)	Visual, VT-3	RPV: 1		
B-N-2 Welded Core Support Structures and Interior Attachments to Reactor Vessels (CM-9 & CM-10)	B13.20	Interior Attachments Within Beltline Region (Reactor Vessel) (CM-9 & CM-10)	Visual, VT-1	RPV: 16		11
	B13.30	Interior Attachments Beyond Beltline Region (Reactor Vessel) (CM-9)	Visual, VT-3	RPV: 36		11
	B13.40	Core Support Structure (Reactor Vessel) (CM-9 & CM-10)	Visual, VT-3	RPV: 15		11
B-O Pressure Retaining Welds in Control Rod Housings	B14.10	Welds in CRD Housing (Reactor Vessel) (10% of Peripheral CRD Housings)	Volumetric or Surface	RPV: (88 of 185 are peripheral. Examine 9 upper and lower welds)		9



**TABLE 7.1-2**  
**INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

<b>Examination Category (with Examination Category Description)</b>	<b>Item Number</b>	<b>Description</b>	<b>Exam Requirements</b>	<b>Total Number of Components by System</b>	<b>Relief Request/ TAP Number</b>	<b>Notes</b>
B-P  All Pressure Retaining Components (IWB-5221(a))	B15.10	System Leakage Test (IWB-5220)	Visual, VT-2	ZZ (All): 1	HC-I4T-02	Each Outage
B-P  All Pressure  Retaining Components (IWB-5221(b))	B15.20	System Leakage Test (IWB-5220)	Visual, VT-2	ZZ (All): 1	HC-I4T-02	End of Interval

**TABLE 7.1-2  
INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

<b>Examination Category (with Examination Category Description)</b>	<b>Item Number</b>	<b>Description</b>	<b>Exam Requirements</b>	<b>Total Number of Components by System</b>	<b>Relief Request/ TAP Number</b>	<b>Notes</b>
C-A Pressure Retaining Welds in Pressure Vessels	C1.10	Shell Circumferential Welds (Pressure Vessels)	Volumetric	BC: 6		
	C1.20	Head Circumferential Welds (Pressure Vessels)	Volumetric	BC: 2		
C-B Pressure Retaining Nozzle Welds in Vessels	C2.21	Nozzle-to-Shell (Nozzle to Head or Nozzle to Nozzle) Welds Without Reinforcing Plate, Greater Than 1/2" Nominal Thickness (Pressure Vessels)	Volumetric & Surface	BC: 4		
	C2.22	Nozzle Inside Radius Section Without Reinforcing Plate, Greater Than 1/2" Nominal Thickness (Pressure Vessels)	Volumetric	BC: 4		
C-C  Welded Attachments for Vessels, Piping, Pumps, and Valve	C3.10	Welded Attachments (Pressure Vessels)	Surface	BC: 2 (4 welds per Heat Exchanger for a total of 8)		
	C3.20	Welded Attachments (Piping)	Surface	AB: 8 AE: 4 BC: 36 BD: 3 BE: 9 BF: 2 BJ: 6 FC: 4 FD: 3		

**TABLE 7.1-2  
INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

<b>Examination Category (with Examination Category Description)</b>	<b>Item Number</b>	<b>Description</b>	<b>Exam Requirements</b>	<b>Total Number of Components by System</b>	<b>Relief Request/ TAP Number</b>	<b>Notes</b>
C-H All Pressure Retaining Components	C7.10	System Leakage Test (IWC-5220)	Visual, VT-2	AE: 1 BB: 1 BC: 7 BD: 2 BE: 2 BF: 1 BH: 4 BJ: 2 FC: 1 FD: 1 GS: 2 KL: 2 RPV: 1	HC-I4T-01 HC-I4T-02	16

**TABLE 7.1-2**  
**INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System	Relief Request/ TAP Number	Notes
D-A  Welded Attachments for Vessels, Piping, Pumps, and Valves	D1.10	Welded Attachments (Pressure Vessels)	Visual, VT-1	BC: 2 EA: 6 EG: 4 GJ: 2 JE: 11 KJ: 28		
	D1.20	Welded Attachments (Piping)	Visual, VT-1	AB: 14 EA: 15 EG: 176 GJ: 29 KJ: 8		
	D1.30	Welded Attachments (Pumps)	Visual, VT-1	BG: 2 EG: 4 GJ: 2		
D-B All Pressure Retaining Components	D2.10	System Leakage Test (IWD-5221)	Visual, VT-2	AB: 1 BG: 1 EA: 4 EC: 2 EG: 2 EP: 4 GJ: 4 JE: 8 KJ: 4 GS: 2 KL: 2	HC-I4T-01 HC-I4T-02	

**TABLE 7.1-2**  
**INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

<b>Examination Category (with Examination Category Description)</b>	<b>Item Number</b>	<b>Description</b>	<b>Exam Requirements</b>	<b>Total Number of Components</b>	<b>Relief Request/ TAP Number</b>	<b>Notes</b>
E-A Containment Surfaces	E1.11	Containment Vessel Pressure Retaining Boundary - Accessible Surface Areas	General Visual	12 <sup>1</sup>		
	E1.12	Containment Vessel Pressure Retaining Boundary - Wetted Surfaces of Submerged Areas	Visual, VT-3	1		
	E1.20	Containment Vessel Pressure Retaining Boundary - BWR Vent System Accessible Surface Areas	Visual, VT-3	10		
	E1.30	Moisture Barriers	General Visual	1		
E-C Containment Surfaces Requiring Augmented Examination	E4.11	Containment Surface Areas - Visible Surfaces	Visual, VT-1	1		
	E4.12	Containment Surface Areas - Surface Area Grid Minimum Wall Thickness Location	Ultrasonic Thickness	1		12
E-G Pressure Retaining Bolting	E8.10	Bolted Connections	Visual, VT-1	38		5
NOTE 1: The number of components for Item Number E1.11 represent 12 master records that includes all of the surface areas requiring examination.						

**TABLE 7.1-2**  
**INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components by System				Relief Request/ TAP Number	Notes
				A Anchor/Rod	B Restraint	C Spring	S Snubber		
F-A Supports	F1.10	Class 1 Piping Supports	Visual, VT-3	AB: 37 AE: 5 BB: 5 BC: 18 BE: 13 BG: 9 BH: 3 FC: 3 FD: 1	AB: 10 AE: 1 BB: 3 BC: 0 BE: 0 BG: 2 BH: 3 FC: 3 FD: 0	AB: 10 AE: 16 BB: 11 BC: 16 BE: 6 BG: 16 BH: 2 FC: 2 FD: 1	AB: 18 AE: 10 BB: 16 BC: 5 BE: 3 BG: 18 BH: 3 FC: 1 FD: 4		10
	F1.20	Class 2 Piping Supports	Visual, VT-3	AB: 8 AE: 10 BC: 152 BD: 29 BE: 52 BF: 0 BJ: 47 EC: 0 FC: 19 FD: 14	AB: 0 AE: 0 BC: 35 BD: 7 BE: 13 BF: 2 BJ: 6 EC: 0 FC: 3 FD: 2	AB: 0 AE: 0 BC: 54 BD: 1 BE: 24 BF: 0 BJ: 4 EC: 0 FC: 5 FD: 10	AB: 0 AE: 1 BC: 96 BD: 2 BE: 20 BF: 0 BJ: 3 EC: 6 FC: 0 FD: 15		10
	F1.30	Class 3 Piping Supports	Visual, VT-3	AB: 114 BG: 1 EA: 48 EC: 0 EG: 440 GJ: 131 KJ: 28	AB: 30 BG: 0 EA: 22 EC: 0 EG: 395 GJ: 64 KJ: 0	AB: 47 BG: 0 EA: 10 EC: 0 EG: 75 GJ: 10 KJ: 0	AB: 32 BG: 1 EA: 0 EC: 17 EG: 54 GJ: 0 KJ: 0		10

**TABLE 7.1-2**  
**INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

Examination Category (with Examination Category Description)	Item Number	Description	Exam Requirements	Total Number of Components	Relief Request/ TAP Number	Notes
F-A Supports	F1.40	Supports Other Than Piping Supports (Class 1, 2, 3, or MC)	Visual, VT-3	BC: 8 BE: 4 BG: 2 BJ: 1 CV: 26 EA: 9 EG: 10 FC: 2 FD: 2 GJ: 4 JE: 12 KJ: 28 RPV: 2		10
	F1.40C	Supports Other Than Piping Supports (Recirc. Pump)		BB: 6		
	F1.40S	Supports Other Than Piping Supports (Recirc. Pump)		BB: 6		

**TABLE 7.1-2  
INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

<b>Examination Category (with Examination Category Description)</b>	<b>Item Number</b>	<b>Description</b>	<b>Exam Requirements</b>	<b>Total Number of Components by System</b>	<b>Relief Request/ TAP Number</b>	<b>Notes</b>
R-A Risk-Informed Piping Examinations	R0.00	Low-Safety Significant Piping Welds	See Notes	AB: 16 AE: 15 BC: 683 BD: 42 BE: 233 BF: 20 BJ: 102 FC: 38 FD: 66		1, 2, 3, 4
	R1.11	Welds Subject to Thermal Fatigue	See Notes	AE: 39 BE: 3		1, 2, 3, 4
	R1.11/16	Welds Subject to Thermal Fatigue and IGSCC	See Notes	BE: 2		1, 2, 3, 4
	R1.14/16	Welds Subject to Crevice Corrosion Cracking and IGSCC	See Notes	BB: 10		1, 2, 3, 4
	R1.16	Welds Subject to IGSCC	See Notes	BB: 5 BE: 2 BG: 2 RPV: 3		1, 2, 3, 4
	R1.20	Welds Not Subject to a Degradation Mechanism	See Notes	AB: 196 AE: 61 BB: 133 BC: 133 BE: 43 BG: 117 BH: 1 FC: 30 FD: 25 RPV: 4		1, 2, 3, 4
	R1.20S	Socket Welds Not Subject to a Degradation Mechanism	See Notes	AB: 109 AE: 1 BB: 52 BC: 1 BG: 20 BH: 41		1, 2, 3, 4, 6



**TABLE 7.1-2  
INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

<b>Note #</b>	<b>Note Summary</b>
1	For the Fourth ISI Interval, HCGS's ISI Class 1 and 2 piping inspection program will be governed by risk-informed regulations. The RISI Program methodology is described in ASME Code Case N-716-1. The RISI Program scope has been implemented as an alternative to the 2007 Edition through the 2008 Addenda of the ASME Section XI examination program for ISI Class 1 B-F and B-J welds and ISI Class 2 C-F-2 welds in accordance with Code Case N-716-1.
2	Per ASME Code Case N-716-1, welds within the plant that are assigned to IGSCC Categories B through G will continue to meet existing IGSCC schedules, while IGSCC Category A welds have been subsumed into the RISI Program.
3	Examination requirements within the RISI Program are determined by the various degradation mechanisms present at each individual piping weld. See ASME Code Case N-716-1 for specific examination method requirements.
4	The RISI Program scope includes welds in the BER piping, also referred to as the HELB region, which includes several non-class welds that fall within the BER augmented inspection program. All BER augmented welds have been evaluated under the RISI methodology and have been integrated into the RISI Program under the 10 CFR 50.59 change process. Additional guidance for adaptation of the RISI evaluation process to BER piping is given in EPRI TR-1006937, Rev. 0-A. Thus, these welds have been categorized and selected for examination in accordance with the Hope Creek Generating Station BER Evaluation Update Document in lieu of the original commitment detailed in UFSAR Section 3.6.
5	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 bolting connection is disassembled for any reason during the interval, the examination shall be performed with the connection disassembled.
6	Socket welds of any size and branch pipe connection welds NPS2 and smaller require only a VT-2 visual examination. The VT-2 visual examination shall be conducted during a system pressure test or a pressure test specific to that weld, in accordance with Examination Category B-P, C-H, or D-B, as applicable.
7	Reserved
8	Reserved
9	Examination Category B-O (Pressure-Retaining Welds In Control Rod Housings), Item Number B14.10 (Welds in CRD Housing) - the scope of examination is for pressure retaining welds in 10% of the peripheral CRD Housings. A total of 88 out of the 185 CRD Housings are classified as peripheral components. Each CRD has two welds and HCGS has selected the welds on 9 CRD Housings to be examined during the interval (10% of 88).
10	Snubber visual examinations and functional testing are performed in accordance with the ASME OM Code, Subsection ISTD. For a detailed discussion of the HCGS Snubber Program, refer Section 4.2 of this document. The snubber attachments are still examined in accordance with ASME Section XI under Category F-A, Item No. F1.10-S, F1.20-S, F1.30-S and F1.40-S, Exempt Supports connected to Snubber have Item No. ending in SE.
11	These inspections are credited by the HCGS License Renewal, BWR Vessel Internals Program. As such, they shall be considered a regulatory commitment as part of 10 CFR 54. <b>(CM-9 &amp; CM-10)</b>
12	<p>Perform augmented IWE UT measurements of the drywell shell between elevation 86'-11" (floor of the drywell concrete) and elevation 93' (bottom of penetration J13) and below penetration J13 area. In addition, UT measurements will also be performed around the full 360 degree circumference of the drywell between elevations 86'-11" and 88'-0" (underside of the torus down comer vent piping penetrations).</p> <p>UT thickness measurements shall be performed each refueling outage until drainage has been established at the bottom of the air gap from all four drains, and then for the next three refueling outages. The UT thickness measurements will be taken in each refueling outage starting with RF17, using the same location as those examined in 2010 refueling outage.</p>

**TABLE 7.1-2  
INSERVICE INSPECTION SUMMARY TABLE PROGRAM NOTES**

Note #	Note Summary
13	HCGS performs ultrasonic examination (UT) of the six Feedwater Nozzle Inner Radii on Nozzles N4A – F (Zone 1, 2 & 3) once every 10 years in accordance with GE-NE-523-A71-0594-A, Revisions 1. HCGS performs VT-3 visual examinations of the six Feedwater Sparger N4A – F Flow Hole Welds in the Sparger Arms and Tees, once every 4 <sup>th</sup> refueling outage or 6 years.
14	As allowed by ASME Code Case N-613-1, HCGS will perform a volumetric examination using a reduced examination volume (A-B-C-D-E-F-G-H) of Figures 1, 2, and 3 of the Code Case in lieu of the previous examination volumes of ASME Section XI, Figures IWB-2500-7(a), (b), and (c).
15	As allowed by ASME Code Case N-648-1 and Code Case N-702, HCGS will perform a visual examination with enhanced magnification in lieu of a volumetric examination in ASME Section XI.
16	HCGS will implement Code Case N-805 for the Reactor Vessel Head Flange Leak-off Line. This requires the test to be conducted at ambient conditions after the refueling cavity has been filled to its normal refueling water level for at least 4 hours.
17	ASME Section XI Examination Category B-G-1, Item Numbers B6.20 “Closure Studs, In Place” and B6.30 “Closure Studs, When Removed” have been combined into and renamed as Item Number B6.20 “Closure Studs”.
18	The reactor vessel at HCGS does not have bushings.
19	In accordance with Relief Request RR-B4, RPV circumferential welds are permanently deferred for the remaining term of the initial operating license. Permanent relief was authorized to eliminate the ASME Section XI required volumetric examinations for the affected HCGS components - RPV1-W4, RPV1-W5, RPV1-W6, RPV1-W7, and RPV1-W8. <b>Note that this request for alternative will need to be resubmitted on 04/11/25 to allow use for the entire Fourth Interval.</b>
20	HCGS will utilize the alternative requirements of ASME Code Case N-747 to provide the reactor vessel head-to-flange weld to be inspected by surface examination once each ten-year inspection interval, using the current surface examination area shown in Figure IWB-2500-5. This alternative requirement may only be implemented after the weld has received at least one inservice volumetric examination, which may be performed as part of the preservice inspection, with no service-induced flaws having been identified. Hence, there have been no defects detected at HCGS on this weld during pre-service or inservice examinations. It is therefore concluded that the concurrent volumetric and surface examination requirement may be eliminated for the reactor vessel head-to-flange weld, and that the outer surface examination discussed above will be performed.
21	This is a new program that will manage the aging effect of cracking in small-bore (greater than or equal to NPS 1 and less than NPS 4) Class 1 piping through the use of a combination of volumetric and visual inspections. This new program is comprised of the existing ASME Section XI ISI (Risk Informed Inservice Inspection, RISI) program that performs volumetric and visual examinations for selected small-bore socket welds and supplemental inspections consisting of 25 Class 1 small-bore socket welds and 25 Class 1 small-bore butt welds using volumetric or other industry approved techniques.

## **8.0 RELIEF REQUESTS FROM ASME SECTION XI**

This section contains relief requests written per 10 CFR 50.55a(z)(1) for situations where alternatives to ASME Section XI requirements provide an acceptable level of quality and safety; per 10 CFR 50.55a(z)(2) for situations where compliance with ASME Section XI requirements results in a hardship or an unusual difficulty without a compensating increase in the level of quality and safety; and per 10 CFR 50.55a(g)(5)(iii) for situations where ASME Section XI requirements are considered impractical.

The following USNRC guidance was utilized to determine the correct 10 CFR 50.55a paragraph citing for HCGS relief requests. 10 CFR 50.55a(z)(1) and 10 CFR 50.55a(z)(2) provide alternatives to the requirements of ASME Section XI, while 10 CFR 50.55a(g)(5)(iii) recognizes situational impracticalities.

**10 CFR 50.55a(z)(1):** Cited in relief requests when alternatives to the ASME Section XI requirements which provide an acceptable level of quality and safety are proposed. Examples are relief requests which propose alternative NDE methods and/or examination frequency.

**10 CFR 50.55a(z)(2):** Cited in relief requests when compliance with the ASME Section XI requirements is deemed to be a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Examples of hardship and/or unusual difficulty include, but are not limited to, excessive radiation exposure, disassembly of components solely to provide access for examinations, and development of sophisticated tooling that would result in only minimal increases in examination coverage.

**10 CFR 50.55a(g)(5)(iii):** Cited in relief requests when conformance with ASME Section XI requirements is deemed impractical. Examples of impractical requirements are situations where the component would have to be redesigned, or replaced to enable the required inspection to be performed.

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

The following relief requests are subject to change throughout the inspection interval (e.g., USNRC approval, withdrawal). Changes to USNRC approved alternatives (other than withdrawal) require USNRC approval.

**TABLE 8.0-1**  
**RELIEF REQUEST INDEX**

<b>Relief Request</b>	<b>Revision Date<sup>3</sup></b>	<b>Status<sup>2</sup></b>	<b>(Program) Description/ Approval Summary<sup>1</sup></b>
RR-B4 <sup>4</sup>	0 9/12/07	Authorized	LR-N99-0250 (ISI) Alternative Volumetric Examination of RPV Circumferential Shell Welds. Permanent relief was authorized per SER dated 11/01/99 and thus applies to the remaining term of operation under the existing, initial operating license, including this Fourth Inspection Interval to 04/11/26 which is the end of the current operating license. This Relief Request Number will require resubmittal prior to this date.
HC-I3R-07	0 09/07/16	Authorized	LR-N 14-0234 (ISI) Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii) hardship or unusual difficulty without a compensating increase in level of quality or safety. Revision 0 authorized by SER dated 11/02/15, ML 15281A120 with the duration of relief request HCI3R-07 is for the life of valve seats.
HC-I4R-170	0 03/31/17	Authorized	LR-N17-0066 (ISI) Alternative Examination for Nozzle-to-Vessel Welds and RPV Nozzle Inner Radius Sections. Revision 0 authorized by SER dated 8/17/2017, ML 17223A483. Approved for the duration of the fourth 10-year ISI interval.

Note 1: The USNRC grants relief requests pursuant to 10 CFR 50.55a(g)(6)(i) when Code requirements cannot be met and proposed alternatives do not meet the criteria of 10 CFR 50.55(z). The USNRC authorizes relief requests pursuant to 10 CFR 50.55a(z)(1) if the proposed alternatives would provide an acceptable level of quality and safety or under 10 CFR 50.55a(z)(2) if compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of safety.

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

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

Note 4: This request for alternative was approved for the current license (04/11/2026) and thus will apply to the 4<sup>th</sup> Interval up to 04/11/2026. With the 4<sup>th</sup> interval ending on 12/31/2026, this request for alternative will be required to be resubmitted prior to 04/11/2025.

## 9.0 REFERENCES

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

### 9.1 USNRC References

- 9.1.1 Code of Federal Regulations, Title 10, Energy.
  - Part 50, Paragraph 50.55a, "Codes and Standards."
  - Part 50, Paragraph 2, "Definitions," the definition of "Reactor Coolant Pressure Boundary."
  - Part 50, Appendix J, Primary Reactor Containment Testing for Water Cooled Power Reactors.
  - USNRC SECY-96-080, Issuance of Final Amendment To 10 CFR 50.55a To Incorporate By Reference The ASME Boiler And Pressure Vessel Code (ASME Code), Section XI, Division 1, Subsection IWE and IWL.
- 9.1.2 Regulatory Guide 1.26, Revision 3, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive Waste- Containing Components of Nuclear Power Plants."
- 9.1.3 Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1."
- 9.1.4 Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code".
- 9.1.5 Regulatory Guide 1.193, "ASME Code Cases Not Approved For Use."
- 9.1.6 USNRC NUREG-0313, Revision 2, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping."
- 9.1.7 USNRC NUREG-0578 dated July 1979, "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations."
- 9.1.8 USNRC NUREG-0619, dated November 1980, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking."
- 9.1.9 USNRC NUREG-0737, dated November 1980, "TMI Action Plan Requirements."
- 9.1.10 USNRC NUREG-0800, dated July 1981, "Standard Review Plan."
- 9.1.11 USNRC NUREG-0803, dated June 1981, "Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping."
- 9.1.12 USNRC NUREG-1048, dated October 1984, "Safety Evaluation Report related to the Operation of Hope Creek Generating Station", including Supplements 1 through 6.
- 9.1.13 USNRC Final SER related to the "BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75-A), EPRI Report TR-1012621, October 2005", dated March 16, 2006.
- 9.1.14 USNRC Final SER related to the "BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules BWRVIP-75), EPRI Report TR-113932, October 1999", (TAC No. MA5012), dated May 14, 2002.

- 9.1.15 USNRC Final SER related to the Boiling Water Reactor Owners' Group (BWROG) Report, GE-NE-523-A71-0594, "Alternate BWR Feedwater Nozzle Inspection Requirements, August 1999", (TAC No. M94090), dated June 5, 1998.
- 9.1.16 USNRC Final SER related to the Boiling Water Reactor Owner's Group (BWROG) Report, GE-NE-523-A71-0594-A, Revision 1, "Alternate BWR Feedwater Nozzle Inspection Requirements (TAC No. MA6787), dated March 10, 2000.
- 9.1.17 USNRC Mechanical Engineering Branch (MEB) Technical Position MEB 3-1, dated November 24, 1975, "High Energy Fluid Systems, Protection Against Postulated Piping Failures in Fluid Systems Outside Containment".
- 9.1.18 USNRC Final SER related to the "BWR Reactor Vessel Shell Weld Inspection Recommendations (BWRVIP-05), EPRI Report TR-105697, September, 1995", dated July 28, 1998.
- 9.1.19 EPRI Topical Report TR-112657, Rev. B-A, Final Report, "Revised Risk-Informed Inservice Inspection Evaluation Procedure," December 1999.
- 9.1.20 USNRC SER related to EPRI Topical Report TR-1006937, Rev. 0, "Extension of the EPRI Risk-Informed Inservice Inspection (RI-ISI) Methodology to Break Exclusion Region (BER) Programs", dated June 27, 2002.

## 9.2 Industry References

- 9.2.1 ASME Boiler and Pressure Vessel Code, Section XI, Division 1, "Rules for Inservice Inspection of Nuclear Power Plant Components."
    - 1977 Edition through the Summer 1978 Addenda. (PSI)
    - 1983 Edition through the Summer 1983 Addenda. (1<sup>st</sup> ISI Interval)
    - 1989 Edition, No Addenda. (2<sup>nd</sup> ISI Interval, First and Second Periods)
    - 1998 Edition through the 1998 Addenda. (1<sup>st</sup> CISI Interval)
    - 1998 Edition through the 2000 Addenda. (2<sup>nd</sup> ISI Interval, Third Period)
    - 2001 Edition through the 2003 Addenda. (3<sup>rd</sup> ISI and 2<sup>nd</sup> CISI Intervals)Exceptions:
    - 1989 Edition, no Addenda for IWB-1220.
    - 1997 Addenda for IWA-2240.
    - 1996 Addenda for Table IWB-2500-1, Examination Category B-G-2.
    - 2000 Addenda for IWA-2220.
    - 2001 Addenda for Appendix VIII and Article I-3000.
    - 2002 Addenda for IWA-5242.  - 2007 Edition through the 2008 Addenda. (4<sup>th</sup> ISI and 3<sup>rd</sup> CISI Intervals)
- 9.2.2 ASME Boiler and Pressure Vessel Code, Section III, Division 1, "Rules For Construction of Nuclear Power Plant Components," 2001 Edition through the 2003 Addenda.
- 9.2.3 ASME Boiler and Pressure Vessel Code, Section V, "Nondestructive Examination," 2007 Edition through the 2008 Addenda [The Edition and

- Addenda for ASME Section V are the same as the Edition and Addenda of ASME Section XI used for the inspection interval for both ISI and Non-ISI NDE examinations. Reference ASME Interpretation XI-1-89-02].
- 9.2.4 ASME OM Code, "Code for Operation and Maintenance of Nuclear Power Plants," 2004 Edition through the 2006 Addenda. (Subsections ISTA and ISTD)
  - 9.2.5 Generic Letter 86-01, dated January 3, 1986, "Safety Concerns Associated with Pipe Breaks in the BWR Scram System".
  - 9.2.6 Generic Letter 88-01, Revision 2, dated January 25, 1988, "USNRC Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping".
  - 9.2.7 Generic Letter 88-01, Supplement 1, dated February 4, 1992, "USNRC Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping".
  - 9.2.8 Generic Letter 98-05, "Boiling Water Reactor Licensees Use of the BWRVIP-05 Report to Request Relief From Augmented Examination Requirements on Reactor Pressure Vessel Circumferential Shell Welds", dated November 10, 1998.
  - 9.2.9 BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75-A), EPRI Report TR-1012621, October, 2005.
  - 9.2.10 BWR Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75), EPRI Report TR-113932, October 1999.
  - 9.2.11 Boiling Water Reactor Owners' Group (BWROG) Report GE-NE-523-A71-0594-A, Revision 1, "Alternate BWR Feedwater Nozzle Inspection Requirements," dated May 2000.
  - 9.2.12 Boiling Water Reactor Owners' Group (BWROG) Report GE-NE-523-A71-0594, "Alternate BWR Feedwater Nozzle Inspection Requirements," dated August 1999.
  - 9.2.13 BWR Reactor Vessel Shell Weld Inspection Recommendations (BWRVIP-05), EPRI Report TR-105697, September, 1995.
  - 9.2.14 EPRI Topical Report TR-112657, Rev. B-A, Final Report, "Revised Risk-Informed Inservice Inspection Evaluation Procedure," December 1999.
  - 9.2.15 EPRI Topical Report TR-1006937, Rev. 0-A, "Extension of the EPRI Risk-Informed Inservice Inspection (RI-ISI) Methodology to Break Exclusion Region (BER) Programs", August 2002.

### 9.3 Licensee References

- 9.3.1 Hope Creek Generating Station, Final Safety Analysis Report (FSAR).
- 9.3.2 Hope Creek Generating Station, Updated Final Safety Analysis Report (UFSAR).
- 9.3.3 Hope Creek Generating Station, Technical Specifications (TS).
- 9.3.4 Hope Creek Generating Station ISI Classification Basis Document (HOP03.G04), Third Ten-Year Inservice Inspection Interval.

- 9.3.5 Hope Creek Generating Station ISI Selection Document (HOP03.G05), Third Ten-Year Inservice Inspection Interval.
- 9.3.6 RI-ISI/RI-BER (Risk-Informed) Evaluation for Hope Creek Generating Station, Final Report. (VTD- 326942).
- 9.3.7 Procedures ER-AA-330, “Conduct of Inservice Inspection Activities”, ER-AA-330-001, “Section XI Pressure Testing”, ER-AA-330-002, “Inservice Inspection of Section XI Welds and Components”, ER-A-330-003, “Inservice Inspection of Section XI Component Supports”, ER-AA-330-004, “Visual Examination of Snubbers”, ER-AA-330-007, “Visual Examination of Section XI Class MC Surfaces and Class CC Liners”, ER-AA-330-010, “Snubber Functional Testing”, ER-AA-330-011, “Snubber Service Life Monitoring Program”, ER-AB-331, “BWR Internals Program Management”, and ER-SH-330-0009, PSEG Nuclear Repair Program Manual.
- 9.3.8 Safety Evaluation Report from USNRC to Harold W. Keiser (PSEG Company), “Request For Authorization Of Alternate Examination Of Reactor Pressure Vessel Circumferential Welds, Hope Creek Generating Station (TAC No. MA6037)”, November 1, 1999. (The approval authorized by this SER was for permanent relief and thus applies to the remaining term of operation under the existing, initial operating license, including this Third Inspection Interval.)
- 9.3.9 Safety Evaluation from USNRC to Thomas Joyce (PSEG Nuclear), “Relief Requests for the Third 10-Year Interval of the Inservice Inspection Program for Hope Creek Generating Station (TAC Nos. MD7503, MD7504, and MD7505), October 16, 2008.
- 9.3.10 Safety Evaluation from USNRC to Thomas Joyce (PSEG Nuclear), “Hope Creek Generating Station - Relief Request for the Alternate Testing and Examination Requirements for Snubbers (TAC No. MD9336)”, July 14, 2009.
- 9.3.11 Safety Evaluation from USNRC to Thomas Joyce (PSEG Nuclear), “Hope Creek Generating Station - Relief Request for the Alternative Examination for Nozzle-to-Vessel Welds and RPV Nozzle Inner Radius Sections (TAC No. ME2256)”, August 11, 2010.
- 9.3.12 Hope Creek Generating Station BER Evaluation Update, April 2017
- 9.3.13 Hope Creek Generating Station Code Case N-716-1 Application, April 2017.
- 9.4 License Renewal References
  - 9.4.1 CM-1, Hope Creek UFSAR Appendix A, A.2.1.12, Bolting Integrity, 80096881-1304 (Section 1.1).
  - 9.4.2 CM-2, Hope Creek UFSAR Appendix A, A.2.1.3, Reactor Head Closure Studs, 80096881-0904 (SH-PBD-AMP-XI.M3).
  - 9.4.3 CM-3, Hope Creek UFSAR Appendix A, A.2.2.6, Small-Bore Class 1 Piping Inspection, 80096881-4003 (HC-PBD-AMP-PSI).
  - 9.4.4 CM-4, Hope Creek UFSAR Appendix A, A.2.1.28, ASME Section XI – Subsection IWE, 80096881.



- 9.4.5 CM-5, Hope Creek UFSAR Appendix A, A.2.1.29, ASME Section XI – Subsection IWF, 80096881.
- 9.4.6 CM-6, BWR Feedwater Nozzle, 800096881, (HC-PBD-AMP-XI.M5).
- 9.4.7 CM-7, BWR Control Rod Drive Return Line Nozzle, 800096881-4401, (HC-PBD-AMP-XI.M6).
- 9.4.8 CM-8, BWR Stress Corrosion Cracking, 800096881-4501, (HC-PBD-AMP-XI.M7).
- 9.4.9 CM-9, Hope Creek UFSAR Appendix A, A.2.1.9, BWR Vessel Internals, 80096881-4703 (Step 1.1, Table 7.1-1, Table 7.1-2).
- 9.4.10 CM-10, Hope Creek UFSAR Appendix A, A.2.1.4, BWR Vessel ID Attachment Welds, 80096881-4206 (Step 1.1, Table 7.1-1, Table 7.1-2).
- 9.4.11 CM-11, Hope Creek UFSAR Appendix A, A.2.1.28, ASME Section XI – Subsection IWE, 80096881-0014 (Steps 5.0, 6.0, Table 7.1-1).
- 9.4.12 CM-HC-2009-0806, TS Amendment (#185).
- 9.4.13 SH-PBD-AMP.XI.S1, ASME Section XI Subsection IWE Aging Management Program.
- 9.4.14 License Conditions 26 and 27.

LR-N18-0023

Enclosure 2

Hope Creek Nuclear Generating Station  
Snubber Program Plan  
Rev. 0  
Fourth ISI Ten-Year Inspection Interval



## **HOPE CREEK NUCLEAR GENERATING STATION**

# **SNUBBER PROGRAM PLAN**

## **FOURTH ISI TEN-YEAR INSPECTION INTERVAL**

**Commercial Service Date: December 20, 1986**

**DECEMBER 13, 2017 TO DECEMBER 31, 2026**

**Hope Creek Generating Station  
End of Buttonwood Road  
Hancocks Bridge, NJ 08038**

**PSEG Nuclear (PSEG), LLC  
P.O. Box 236  
Hancocks Bridge, NJ 08038**

---

*Snubber Program Plan*  
*Hope Creek Generating Station, Fourth ISI Interval*

---

## REVISION APPROVAL SHEET

**TITLE:**        **Snubber Program Plan**  
                 **Fourth Ten-Year Inspection Interval**  
                 **Hope Creek Generating Station**

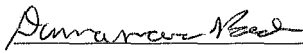
**DOCUMENT:**        ISI-HC-LTP4-SNB

**REVISION:**        0


### PSEG PROGRAM ACCEPTANCE

**PREPARED:**  10/3/17

Tim Giles  
Snubber Program Manager

**REVIEWED:**  10/3/17

Donnamarie Bush  
Hope Creek Snubber Program Manager

**APPROVED:**  10/3/17

Anthony J. Tramontana  
Hope Creek Engineering Programs Manager

---

***Snubber Program Plan***  
***Hope Creek Generating Station, Fourth ISI Interval***

---

## **REVISION CONTROL SHEET**

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

<b>Revision</b>	<b>Date</b>	<b>Revision Summary</b>
0	12/13/17	Initial issuance.

Notes:

1. This Snubber Program Plan is controlled by the Hope Creek Nuclear Generating Station Engineering Programs Department.
2. Revision 0 of this document was submitted to the NRC. Future revisions of this document made within the Fourth ISI Interval will be maintained and controlled at the station; however, they are not required to be and will not be submitted to the NRC. The exception to this is that new or revised Relief Requests shall be submitted to the NRC for safety evaluation and approval.

---

***Snubber Program Plan***  
***Hope Creek Generating Station, Fourth ISI Interval***

---

**1. General**

- 1.1 For the Hope Creek Fourth ISI Interval for Snubbers as permitted by NRC 10CFR 50.55a(b)(3)(V), PSEG will be using the ASME OM Code 2004 Edition through the 2006 Addenda.
- 1.2 No Fourth ISI Interval Relief Requests are being submitted with revision 0 of the Snubber Program Plan; prior 3<sup>rd</sup> ISI Interval Snubber Program utilized OM Code Case OMN-15 Revision 0 in accordance with relief request HC-I3R-04 and approved NRC Safety Evaluation ML091870040 dated July 14, 2009.
- 1.3 The inspection and testing of all safety related Snubbers shall be implemented and performed in accordance with PSEG Nuclear Procedure SH.RA-ST.ZZ.0105(Q), "Snubber Examination and Testing", to ensure the required operability of these Snubbers during a seismic or other design basis event that initiates dynamic loads.
- 1.4 The Snubber program, as defined within SH.RA-ST.ZZ-0105(Q), establishes visual examination, functional testing and service life monitoring requirements, pertaining to hydraulic safety related Snubbers.
- 1.5 The examination boundaries shall include the Snubber assembly from pin to pin inclusive. Coordination with the ISI program owner will be required to complete the surveillance requirements for piping and structural attachments.
- 1.6 The Snubber program described in SH.RA-ST.ZZ-0105(Q) adheres to the requirements of ASME OM Code, Subsection ISTA and ISTD 2004 Edition through the 2006 Addenda.
- 1.7 Hope Creek Generation Station Procedure ER-AA-330-004, in conjunction with SH.RA-ST.ZZ-0105(Q) establishes a Snubber visual Examination program for Hydraulic Snubbers which adheres to the requirements of ISTD-4200.
- 1.8 Hope Creek Generation Station Procedure ER-AA-330-010, in conjunction with SH.RA-ST.ZZ-0105(Q) establishes a Snubber Functional Testing program for Hydraulic Snubbers which adheres to the requirements of ISTD-5000.
- 1.9 Hope Creek Generating Station Procedure ER-AA-330-011, in conjunction with SH.RA-ST.ZZ-0105(Q) establishes a Snubber Service life Monitoring program for Hydraulic Snubbers which adheres to the requirements of ISTD-6000.

**2.0 Examination, Testing and Monitoring Requirements**

- 2.1 Visual Examination and functional Testing shall be performed to the extent specified within SH.RA-ST.ZZ-0105(Q).
- 2.2 Snubbers are grouped into defined test plan groups (DTPG) by design type, in accordance with ISTD-5252 for testing purposes. Hope Creek has one population of Snubbers which is Lisega Hydraulics. There is one Pacific Scientific compensating strut which is scheduled to be replaced in H1R21 with Lisega Hydraulic compensating strut.

---

***Snubber Program Plan***  
***Hope Creek Generating Station, Fourth ISI Interval***

---

- 2.3 The service life of all Snubbers shall be monitored and Snubbers replaced or reconditioned as required to ensure that the service life is not exceeded between surveillance inspections, during a period when the Snubber is required to be operable.

**3.0 Examination and Testing Methods**

- 3.1 Visual Examinations shall be performed by individuals qualified in accordance with PSEG Nuclear Procedures using the examination attributes described in ASME Section XI, IWA-2213. Visual examinations and Functional Testing shall be performed to meet the requirements specified within SH.RA-ST.ZZ-0105(Q) in accordance with ISTD and Code Case OMN-15 Revision 2.

**4.0 Examination and Testing Frequency**

- 4.1 Visual examinations and functional testing shall be performed at the frequency specified within SH.RA-ST.ZZ-0105(Q), which requires accessible and inaccessible Snubber visual examinations during alternating refueling outages, which results in approximately one half of the Snubber population being examined during each refueling outage.
- 4.2 Baseline visual examinations shall be performed whenever new Snubbers are installed, reinstallation of existing or swapped Snubbers that were functionally tested, or after repairs, replacements or modifications.
- 4.3 Functional testing requirements for new installations or spares shall be equal to or more stringent than that specified with SH.RA-ST.ZZ-0105(Q).

**5.0 ASME OM Code Case**

- 5.1 Hope Creek Snubber Program will be implementing Code Case OMN-15 Revision 2 **"Performance-Based Requirements for Extending the Snubber Operational readiness Testing Interval at LWR Power Plants"** during the Fourth 10-Year Inspection Period. This Code Case is approved for use in the 2012 edition of the "Operation and Maintenance of Nuclear Power Plants, Division 1: OM Code: Section IST" as referenced by the latest approved 10 CFR 50.55a dated August 21, 2017 subsection (a) (1) (iv) (C), therefore no additional Relief Request is required. Prior 3<sup>rd</sup> ISI Interval Snubber Program utilized OM Code Case OMN-15 in accordance with relief request HC-I3R-04 and approved NRC Safety Evaluation ML091870040 dated July 14, 2009. Some but not all conditions for use of OMN-15 Revision 2 at Hope Creek are:
- The maximum allowable test interval shall be three fuel cycles plus the Code-allowed 60 days prior to the start of the scheduled refueling outage specified in para. ISTD-5240

---

***Snubber Program Plan***  
***Hope Creek Generating Station, Fourth ISI Interval***

---

- This Code Case shall not be used in conjunction with Code Case OMN-13.
- Snubber failure mode group (FMG) categories as defined in Subsection ISTD shall not be used to group snubber failures for DTPGs using this Code Case.

**6.0 Examination, Testing and Monitoring Evaluation**

- 6.1 Snubbers that do not appear to conform to the Visual Examination requirements of SH.RA-ST.ZZ-0105(Q) shall be reported for evaluation and appropriate corrective action.
- 6.2 Snubbers that do not appear to conform with the visual examination acceptance requirements and are later confirmed as operable as a result of functional testing may be used to accept the Snubber for the purpose of establishing the next visual inspection interval, provided the unacceptable condition did not affect operational readiness.
- 6.3 Snubbers that do not meet the operability testing acceptance criteria in SH.RA-ST.ZZ-0105(Q) shall be evaluated to determine the cause of the failure and appropriate corrective action taken.
- 6.4 The service life of a Snubber is evaluated using manufacturing input and engineering information gained through the consideration of the Snubber service conditions and in-service functional test results. Service life monitoring is included in SH.RA-ST.ZZ-0105(Q) and Procedure ER-AA-330-011.

**7.0 Repair, Replacement and Modification Requirements**

- 7.1 Repairs, Replacements and Modifications performed on Snubbers under this program shall conform, as applicable, to the requirements specified within PSEG Nuclear Repair Program.

**8.0 Scheduling**

- 8.1 The Visual Examinations and Functional testing schedules shall be established, tracked and maintained by Engineering Programs.
- 8.2 The Snubber database software shall identify and track expanded or additional testing and/or examinations as specified and required by SH.RA-ST.ZZ-0105(Q).

**9.0 Reports and Records**

- 9.1 Reports and records generated during implementation of the Snubber program shall be maintained in accordance with RM-AA-101, Records Management Program.