MITSUBISHI HEAVY INDUSTRIES, LTD.
16-5, KONAN 2-CHOME, MINATO-KU
TOKYO, JAPAN

July 27, 2012

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

Attention: Mr. Jeffrey A. Ciocco

Docket No. 52-021
MHI Ref: UAP-HF-12210

Subject: **MHI's Response to US-APWR DCD RAI No. 667-5235 Revision 0 (SRP Section 03.02.02)**

Reference: 1) "REQUEST FOR ADDITIONAL INFORMATION 667-5235 REVISION 0" dated on November 29, 2010

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Response to Request for Additional Information No. 667-5235 Revision 0".

In the enclosed document, MHI provides responses to Question 03.02.02-17 through Question 03.02.02-19 that are contained within Reference 1.

Please contact Mr. Joseph Tapia, General Manager of Licensing Department, Mitsubishi Nuclear Energy Systems, Inc. if the NRC has questions concerning any aspect of the submittals. His contact information is below.

Sincerely,

Y. Ogata

Yoshiki Ogata,
Director - APWR Promoting Department
Mitsubishi Heavy Industries, LTD.

Enclosure:

1. Response to Request for Additional Information No. 667-5235 Revision 0

D081
NRO

CC: J. A. Ciocco
J. Tapia

Contact Information

Joseph Tapia, General Manager of Licensing Department
Mitsubishi Nuclear Energy Systems, Inc.
1001 19th Street North, Suite 710
Arlington, VA 22209
E-mail: joseph_tapia@mnes-us.com
Telephone: (703) 908 – 8055

Enclosure 1

UAP-HF-12210
Docket No.52-021

Response to Request for Additional Information No. 667-5235
Revision 0

July 2012

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

7/27/2012

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: **NO. 667-5235 REVISION 0**

SRP SECTION: **03.02.02 – SYSTEM QUALITY GROUP CLASSIFICATION**

APPLICATION SECTION: **3.2.2**

DATE OF RAI ISSUE: **11/29/2010**

QUESTION NO.: 03.02.02-17:

GDC 1 of 10 CFR Part 50, Appendix A states in part that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. Section 3.1.1.1.1 of the DCD uses the term "safety-related" and Section 3.2.2 uses both terms to identify the SSCs that must be designed to satisfy the requirements of GDC 1. Refer to definitions in 10 CFR 50, the memo to NRC Staff dated November 20, 1981 from Harold Denton and ANS 58.14 regarding application of these terms. In RAI 03.02.02-7, the applicant was requested to clarify the application of the terms "safety-related" and "important to safety" to the quality group classification of SSCs and compliance with GDC 1. The applicant was also requested to clarify to what extent those SSCs that are important to safety that are not considered safety-related are classified so that they are designed to appropriate quality standards.

The definition of the term important to safety pertains to risk and the memorandum from Denton clarifies that safety-related and important to safety are not synonymous. Consistent with GDC 1, all SSCs that are important to safety are to be designed with appropriate quality standards commensurate with their safety function. Further, where generally recognized codes and standards are used, they shall be identified and evaluated to determine their applicability, adequacy, and sufficiency and shall be supplemented or modified as necessary to assure a quality product in keeping with the required safety function. A quality assurance program shall be established and implemented in order to provide adequate assurance that these structures, systems, and components will satisfactorily perform their safety functions. Based on DCD Chapter 19, risk-significant SSCs are to be determined by the PRA and are not limited to safety-related SSCs. The RAI 03.02.02-7 response does not mention risk significant SSCs or the PRA process to classify nonsafety-related risk-significant SSCs in regard to quality group. In RAI 03.02.02-14, the applicant was requested to provide clarification of how SSCs that are nonsafety-related, but are risk-significant and important to safety, are identified and classified with respect to the determination of appropriate quality standards and any special treatment. The applicant was also requested to replace the term "safety-related" with the term "important to safety" in DCD 3.2.2 and 3.1.1.1 in order to be consistent with GDC 1.

The RAI response states that based on the PRA process described in Section 17.4, the risk-significant, nonsafety-related SSCs that are listed in Table 17.4-1 for Seismic Event (SM) in the "Rational" column will be categorized as Seismic Category I and classified as

Equipment Class 5 and references the response to RAI 03.02.02-10 concerning changes made to the DCD.

Various industry documents such as NEI 04-01 and ANS 58.14 address the need for special requirements for important nonsafety-related SSCs. NEI 04-01 specifically identifies that the NRC/Industry issue of how and which Appendix B requirements will be implemented for important to safety equipment remains unresolved and GL 84-01 did not resolve the issue. The NEI document further states that some portion of this issue was resolved in the design certification process, if equipment quality classes were part of the certification approval. Although the RAI 03.02.02-14 response appropriately references the PRA process to identify risk-significant SSCs and PRA for consideration of seismic events, NRC Staff is concerned that the RAI response does not address changing the term "safety-related" to "important to safety" in DCD subsection 3.1.1.1 and has not clearly explained the process to apply the terms important to safety and safety-related to the classification process to satisfy GDC 1.

Therefore, the term "safety-related" should be replaced with the term "important to safety" in DCD subsection 3.1.1.1 and the applicant should clearly explain the process to apply the terms important to safety and safety-related to the classification process to satisfy GDC 1. For example, there could be a unique classification or explanatory notes added to Table 3.2-2 to identify risk-significant -related SSCs for special treatment. Other than for Seismic Category II SSCs, no QA requirements or any special treatment requirements are identified in DCD Tables 3.2-2 and 3.2-3 for Equipment Class 4 and 5 components that may be risk-significant.

ANSWER:

MHI's response to this RAI is provided in three discussions:

- Compliance with GDC 1
- Identification of Risk Significant SSCs
- Application of a Regulatory Treatment of Non-Safety Systems (RTNSS) Process in the US-APWR

Compliance with GDC 1

The quality assurance program (QAP) describes the methods for assuring quality and establishes quality assurance and administrative control requirements for SSCs important to safety per GDC 1. MHI identifies a Quality Assurance Classification during the Equipment Classification process to identify the appropriate level of quality requirements from full 10 CFR Appendix B for safety-related SSCs, to nonsafety-related SSC quality controls for SSCs that perform important to safety functions, to no special requirements for other nonsafety-related SSCs . SSCs are assigned to the appropriate Equipment Classifications based on their safety functions and, depending on these safety functions, are also classified as either safety-related or nonsafety-related. Quality assurance requirements are established and identified by the appropriate Quality Assurance Classification for safety-related and nonsafety-related SSCs based on their safety functions and the contribution to plant safety.

As described in "Quality Assurance Program (QAP) Description for Design Certification of the US-APWR (PQD-HD-19005)" (DCD Reference 17.5-4), 10 CFR 50, Appendix B requirements are applied to activities affecting the quality and performance of safety-related SSCs. Furthermore, this QAP specifies selected quality controls that are applied to certain equipment and activities that are nonsafety-related, but support safe and reliable plant operations, or where other NRC guidance establishes applicable quality assurance

requirements. The controls applied to nonsafety-related SSCs per the QAPD Part III are referred to as "augmented" quality assurance controls. Areas where these augmented quality controls are applied to nonsafety-related SSCs include anticipated transient without scram (ATWS); station blackout; fire protection; seismic category II SSCs; risk significant SSCs determined by the D-RAP; and radiological waste processing. Specific QAP controls are applied to the nonsafety-related SSCs performing these functions in a selected manner, targeted at those characteristics or critical attributes that render the SSC a significant contributor to plant safety. DCD Table 17.4-1 lists risk significant SSCs and Table 19.1-119 lists key insights and assumptions for these SSCs identified from the D-RAP and PRA. The MHI QAP description (DCD Reference 17.5-4) is based on the NRC approved Nuclear Energy Institute (NEI) QAP template (NEI, 06-14A) (Ref 17.5-3).

DCD Section 3.1.1.1.1 is revised to more clearly explain the process of applying quality assurance requirements to SSCs including the application of quality assurance requirements to nonsafety-related SSCs. As part of this change, the term "safety-related" will be replaced with the term "important to safety."

DCD Table 3.2-2 is revised to identify the applicable scope of quality assurance controls applied to each specific SSC by the "Quality Assurance Classification," supplemented by use of "Equipment Classifications" 1 through 10 and explanatory notes. The "Quality Assurance Classification" identifies SSCs that meet the full 10 CFR 50 Appendix B quality assurance requirements ("Q"), meet augmented quality assurance requirements ("A"), or do not need to meet either 10 CFR 50 Appendix B or augmented quality requirements ("N"). Explanatory notes provide additional clarification and basis.

DCD Section 3.2, including Table 3.2-2, is revised as necessary to properly reflect the identification and treatment of both safety-related and nonsafety-related SSCs with regard to quality requirements consistent with the process described above. Note that markups to Equipment Classes 1 through 3 address RAI 914-6365 but are included here for completeness. Other sections of the DCD, except Section 3.11 and Appendix 3D, that use the term "important to safety" when referring to SSC classification are revised as necessary to reflect the process described above. Markups for Section 3.11 and Appendix 3D will be included in MHI's response to RAI 805-5915, Question 3.11-41.

Identification of Risk Significant SSCs

As described in DCD Section 17.4, during the US-APWR design phase, risk-significant S SCs are identified for inclusion in the scope of the Design Reliability Assurance Program (DRAP). A list of risk-significant SSCs is developed and controlled as a design input for consideration during the design phase. The list of risk-significant SSCs is initially based on the results of the PRA and the Expert Panel (EP). DCD Table 17.4-1 contains a list of risk significant SSCs for the standard plant. Key insights and assumptions related to these SSCs identified from the PRA are listed in DCD Table 19.1-119. The COL applicant is to identify plant-specific risk significant SSCs (refer to COL item 17.4(1)). This COL item also requires that QA requirements be implemented during the procurement, fabrication, construction, and pre-operation testing of the SSCs within the scope of the reliability assurance program (RAP).

As described in DCD Section 19.1.7, key risk significant SSCs are identified through the PRA by a Fussell Vesely (FV) importance greater than 0.005 and Risk Achievement Worth (RAW) greater than 2 in accordance with "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," NUMARC 93-01 (DCD Reference 19.1-42). These thresholds are consistent with "10 CFR 50.69 SSC Categorization Guideline," NEI 00-04 (DCD Reference 19.1-43). In addition, risk significant information based on Low Power Shutdown (LPSD) PRA and external PRA, SSCs related initiating events, and key assumptions are identified.

For SSCs for which RAW/FV values have not been quantified or whose RAW/FV results do not exceed the criteria, risk significance are also identified by engineering judgment from the following points of view:

- Attribution to required mitigation functions during the accident
- Similarity of the impact of failure with other risk-significant SSCs
- Impact on risk-significant human actions or signals

For LPSD, importance analysis is performed for the representative Plant Operation State (POS), which is mid-loop operation. For POSs RAW/FV values have not been quantified. SSCs that were not credited for a mitigation function in the representative POS but can be used to mitigate accidents during other POSs were all included in the list of risk-significant SSCs.

SSCs required for severe accident management are identified as risk-significant SSCs (e.g., igniter). Additionally, SSCs that are not modeled in the PRA but the loss of whose functions may directly result in a large release are identified as risk-significant SSCs (e.g., containment vessel).

A third source in the DRAP process for identifying risk-significant SSCs is the use of an expert panel consisting of representatives from Design Engineering, persons knowledgeable in PRA, as well as other highly qualified individuals with operations and maintenance experience who are independent of the PRA Section. The expert panel also reviews the categorization of SSCs determined to be not risk-significant (NRS) from quantified PRA results (e.g., technical adequacy of the basis used in the categorization, review of defense-in-depth implications, and review of safety margin implications).

The PRA analytical results and an expert panel process are combined to develop a comprehensive list of risk-significant SSCs. The list of risk-significant SSCs identified during the design phase is updated when the plant-specific PRA is developed. In the expert panel's discussion, review of dominant failure modes are also considered in order to reflect industry operating experience.

As described in DCD Section 17.4, the PRA evaluates the US-APWR design response to a spectrum of initiating events to ensure that plant damage has a very low probability and that risk to the public is minimized. The risk-significant SSCs including both safety-related and nonsafety-related SSCs for the US-APWR are identified and made available to the design organization.

The US-APWR DRAP identifies risk-significant SSCs and provides risk insights and reliability assumptions for aspects of plant operation, maintenance, and performance monitoring to be addressed to ensure safe, reliable plant operation or mitigate plant transients or other events that could present a risk to the public. The quality controls associated with the reliability assurance program are described in DCD Section 17.4.4.

The risk and reliability organization ensures that the design engineers are provided the list of risk-significant SSCs for the DRAP and its key assumption. The design engineers take into account the list of the risk-significant SSCs for the DRAP and its key assumptions in their design activities and give some feedback to the risk and reliability organization in order to ensure that the key assumptions are realistic and achievable, if necessary.

An example of an SSC identified as nonsafety-related risk significant are the Alternate AC (AAC) power source gas turbine generators (GTGs) (added to DCD Table 3.2-2 as part of this response). DCD Table 17.4-1 lists the AAC GTGs as a risk significant SSCs and Table 19.1-119 list key insights and assumptions for the AAC GTGs that were identified from the

PRA. The D-RAP described in DCD Section 17.4 ensures that key design features are incorporated into the design. For example, Table 19.1-119 states that the AAC GTG will have different ratings, have diverse starting systems, and independent and separate auxiliary and support systems to minimize common cause failure.

During plant operations, reliability assurance activities will transition to designated onsite organizations that will ensure that reliability assurance objectives are incorporated into operational programs. Reliability assurance activities during the operations phase are integrated into the Maintenance Rule Program and other operational programs such as the quality assurance program, inservice testing and inservice inspection programs. The COL applicant ensures that the AAC GTGs maintain high availability and reliability through implementation of these programs, in part, by ensuring that regulatory guidance and standards are implemented for the risk significant SSCs as described in the respective design description. For the AAC GTG this would include implementation of Regulatory Guide 1.155, "Station Blackout."

The above process for identifying risk significant SSCs is described in DCD Sections 17.4 and 19.1.

DCD Table 17.4-1 currently provides information regarding the rational for identifying the SSC as risk significant, the failure mode modeled in the PRA, and the insights and assumptions identified through the PRA. DCD Table 19.1-119 provides key insights and assumptions from the PRA.

Application of a RTNSS Process in the US-APWR

The detailed regulatory treatment of certain non-safety systems in SECY-94-084 and SECY-95-132 was driven primarily by NRC's concern over the prevalent reliance on passive systems and consideration of active systems as non-safety systems in advanced reactor designs. The papers cite "residual uncertainties associated with passive safety system performance increase the importance of active systems in providing defense-in-depth functions to the passive systems" and "exclusive reliance on passive systems in meeting current licensing criteria is a departure from current design philosophy and licensing practice". In this SECY, NRC developed with EPRI "a process for maintaining appropriate regulatory oversight of these active systems in the passive ALWR designs" that "specifies requirements concerning design and performance of active systems and equipment that perform non-safety, defense-in-depth functions". The process depends on a "focused PRA" to select non-safety active systems important to risk.

While the process for identifying RTNSS SSCs described in SECY-094-084 and SECY-95-132 is not applicable to the US-APWR, the treatment of the risk significant nonsafety-related SSCs is similar to that specified for SSCs identified through the RTNSS process as described in SECY-95-132, namely, the application of "graded requirements for assurance of functionality, performance, reliability, environmental durability, and quality assurance (QA) and quality control consistent with the importance to safety of the system identified." The program for control of risk significant SSCs is accomplished through the reliability assurance program (RAP) described in DCD Chapter 17 and through the COL applicants' response to COL item 17.4(2). COL item 17.4(2) requires COL applicants to develop and implement a program in which the RAP activities are integrated into the existing operational programs (e.g., Maintenance Rule, surveillance testing, in-service inspection, in-service testing, and QA). This COL program will also address establishment of:

1. Reliability performance goals for risk-significant SSCs consistent with the existing maintenance and quality assurance processes on the basis of information from the DRAP (for example, implementation of the maintenance rule following the guidance

contained in RG 1.160 is one acceptable method for establishing performance goals provided that SSCs are categorized as HSS within the scope of the Maintenance Rule program), and

2. Performance and condition monitoring requirements to provide reasonable assurance that risk-significant SSCs do not degrade to an unacceptable level during plant operations.

Although much of this issue as written in SECY-94-084 and SECY-95-132 is not applicable to the US-APWR, the process used by MHI to ensure the reliability and availability of risk significant SSCs is consistent with the treatment of RTNSS SSCs as described in these SECY papers. MHI's position is that the US-APWR is designed as an evolutionary plant, based on traditional concepts of defense in depth that are heavily reliant on safety-related active systems. The MHI position is that the active systems required to protect safety and risk will already be recognized as safety-related under the US-APWR design, and do not need to be selected by a "focused PRA". MHI will use PRA as required for insights into improved plant performance and severe accidents, and that analysis is presented in Chapter 19 of the DCD. Nonsafety-related SSCs identified through the PRA as risk significant will receive special treatment as described in DCD Section 3.2 and the RAP described in Section 17.4.

DCD Table 1.9.5-3, "Detailed Treatment of Requirements of SECY-94-084 and SECY-95-132", will be revised to clarify MHI's position with respect to application of a RTNSS process.

Impact on DCD

The DCD will be revised as shown in Attachment 1.

Impact on R-COLA

The R-COLA will need to be updated to reflect the changes made in the DCD to the equipment class definitions and the format and content of Table 3.2-2.

Impact on S-COLA

The S-COLA will need to be updated to reflect the changes made in the DCD to the equipment class definitions and the format and content of Table 3.2-2.

Impact on PRA

There is no impact on the PRA.

Impact on Topical Report / Technical Report

There is no impact on the Topical Report / Technical Report.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

7/27/2012

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 667-5235 REVISION 0**
SRP SECTION:	**03.02.02 – SYSTEM QUALITY GROUP CLASSIFICATION**
APPLICATION SECTION:	**3.2.2**
DATE OF RAI ISSUE:	**11/29/2010**

QUESTION NO.: 03.02.02-18:

ASME Section III Code Class' are included in Tier 1 ITAAC design descriptions. DCD Subsection 14.3.4.4 identifies that ITAAC are specified to verify ASME Code Classifications. DCD Table 3.2-3 correlates ASME Section III Code Class 1, 2 and 3 to NRC QG A, B and C, respectively. As a result, it is understood the as-built QG classifications A, B, C will be verified for safety-related pressure retaining systems, components and their supports. Based on the changes to the QA Program described in DCD Chapter 17, it is also understood that there are to be ITAAC for non-safety-related risk-significant SSCs included in D-RAP. However, it is not clear which specific ITAAC are to be used to verify as-built classification of ASME Code Class and non-safety-related QG D systems and components that may be important to safety. In RAI 03.02.02-15, the applicant was requested to confirm that QG classifications for all important to safety SSCs, including those considered risk-significant that are not safety-related, will be verified and to identify the specific ITAAC used for these verifications.

The RAI response clarified that DCD Section 14.3 identifies the key design features which are based on SRP 14.3 guidance. The response noted that SRP 14.3 does not identify Seismic Category II as criteria for safety significant design features and does not require a generic Seismic Category II ITAAC although some non-safety SSCs were determined to require an ITAAC to verify the as-built design is Seismic Category II based on the review of design documents or on a basic walk-down inspection. An example where a non-safety SSC is verified as seismic II is identified in Tier 1 Section 2.7.6.4, Light Load Handling System, Table 2.7.6.4-2, ITAAC 2B.

Although the response identified examples of ITAAC for non-safety-related SSCs, the RAI response did not address an ITAAC for verification of non-safety-related risk significant QG D systems that may be important to safety. The requirement for an ITAAC for a seismic systems interaction walkdown is to be considered in the review of Sections 3.7 and 14.3.2. Staff believes that an ITAAC is appropriate for this verification of important to safety SSCs, including Seismic Category II SSCs, that are not considered safety-related. Until it is demonstrated that an adequate ITAAC or other verification process exists, for all applicable non-safety-related SSCs, this concern is unresolved.

Therefore, the applicant is requested to establish that an adequate ITAAC or other verification process exists for all applicable non-safety-related mechanical systems.

ANSWER:

NUREG-0800, Standard Review Plan (SRP) Section 14.3.2, SRP Acceptance Criterion 6, provides guidance that ITAAC should verify that non-seismic Category I SSCs do not interact with seismic Category I SSCs in a way that could prevent the seismic Category I SSC from performing its design basis safety function.

US-APWR DCD Tier 1 Table 2.2-4 was revised to verify appropriate seismic II/I design of non-seismic Category I SSCs as described in the response to DCD RAI 571-4365, Question 09.02.02-48 (UAP-HF-11237) and the markup identified by Change ID No. MIC-03-T1-00001 in "US-APWR DCD Revision 3 Tracking Report", Revision 0, MUAP-11021. DCD Tier 1 Table 2.2-4 ITAAC #23.a and #23.b verify that non-seismic Category I SSCs do not interact with seismic Category I SSCs in a way that could prevent the seismic Category I SSCs from performing their design basis safety function.

Impact on DCD

There is no impact on the DCD.

Impact on R-COLA

There is no impact on the R-COLA.

Impact on S-COLA

There is no impact on the S-COLA.

Impact on PRA

There is no impact on the PRA.

Impact on Topical Report / Technical Report

There is no impact on the Topical Report / Technical Report.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

7/27/2012

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 667-5235 REVISION 0

SRP SECTION: 03.02.02 – SYSTEM QUALITY GROUP CLASSIFICATION

APPLICATION SECTION: 3.2.2

DATE OF RAI ISSUE: 11/29/2010

QUESTION NO.: 03.02.02-19:

QG D systems are those that contain or may contain radioactivity that are not included in QGs A, B or C. Equipment Class 4 and Equipment Class 8 added in Revision 2 include non-safety-related systems and components that contain radioactive material. Based on its review of the information in DCD Tier 2, Section 3.2.2, Tables 3.2-2, 3.2-3, and the applicable simplified P&IDs, the staff has determined that the classifications for QG D SSCs of the US-APWR are, in general, consistent with the guidelines in SRP Section 3.2.2 and RG 1.26 and in conformance with GDC 1, and therefore they are acceptable.

However, systems such as the circulating water system (CWS) are not classified as QG D to be consistent with SRP 10.4.5 and in RAI 03.02.02-13, the applicant was requested to explain why the CWS is not considered QG D. The applicant was also requested to verify that all systems that may contain radioactivity are appropriately classified consistent with QGs A, B, C, or D and designed to RG 1.143.

The RAI response stated that the US-APWR CWS is not safety-related and it does not have any safety-related components or functions. The CWS is not a RWMS. It is designed and operated to minimize the potential for radioactive contamination. The system is not expected to be radioactively contaminated during normal plant operations and even under transient conditions involving radioactive contamination of the secondary side of the plant, the CWS is not expected to contain measurable amounts of radioactive materials. Therefore, the QG of US-APWR CWS components is not classified as QGs B, C, or D components in RG 1.26 and the guidance provided in RG 1.143 does not apply. Moreover, leakage due to CWS failure can not reach safety-related equipment located in Seismic Category I plant structures as described in DCD Subsection 3.4.1.3. Therefore, the CWS components equipment are classified as "Class 9", consistent with the definition provided in Subsection 3.2.2, with a QG of "N/A" as identified in the DCD Table 3.2-2.

Since the applicant identified that the CWS is not expected to contain measurable amounts of radioactive material, staff concludes that the CWS need not be QG D. All issues associated with the DCD Section 3.2.2 quality group classification of CWS are closed. However, the applicant did not address other non-safety-related systems outside the scope of RG 1.143 that may contain radioactive material.

Clarify if other non-safety-related systems that may contain radioactivity that are not classified as QG A, B or C, are either radwaste systems consistent with RG 1.143 or are classified as QG D consistent with RG 1.26.

ANSWER:

As defined in DCD Tier 2, Section 3.2.2, and Table 3.2-2, water-containing and steam-containing non-safety related SSCs that contain or may contain radioactivity are classified as QG D consistent with RG 1.26 (i.e., Equipment Classes 4 or 8). Non-safety related SSCs within the scope of RG 1.143 are classified as Equipment Class 6.

Impact on DCD

There is no impact on the DCD.

Impact on R-COLA

There is no impact on the R-COLA.

Impact on S-COLA

There is no impact on the S-COLA.

Impact on PRA

There is no impact on the PRA.

Impact on Topical Report / Technical Report

There is no impact on the Topical Report / Technical Report.

Attachment – 1

Table 1.9.5-3 Detailed Treatment of Requirements of SECY-94-084 and SECY-95-132 (Sheet 1 of 19)

Issue Designation	Description	Requirements	Comment
A	Regulatory Treatment of Non-Safety Systems (RTNSS)	This issue was driven primarily by NRC's concern over the prevalent reliance on passive systems and consideration of active systems as non-safety systems in advanced reactor designs. They have cited "residual uncertainties associated with passive safety system performance increase the importance of active systems in providing defense-in-depth functions to the passive systems" and "exclusive reliance on passive systems in meeting current licensing criteria is a departure from current design philosophy and licensing practice". In this SECY, NRC developed with EPRI "a process for maintaining appropriate regulatory oversight of these active systems in the passive ALWR designs" that "specifies requirements concerning design and performance of active systems and equipment that perform non-safety, defense-in-depth functions". The process depends on a "focused PRA" to select non-safety active systems important to risk.	While the process described in these SECYs for identifying RTNSS SSCs is not applicable to the US-APWR, ~~For the US-APWR,~~the treatment of risk significant nonsafety-related SSCs is consistent with the process described for RTNSS SSCs in these SECY papers, namely, the application of "graded requirements for assurance of functionality, performance, reliability, environmental durability, and quality assurance (QA) and quality control consistent with the importance to safety of the system identified." Risk significant SSCs in the US-APWR are determined by PRA results and through expert panels~~applies primarily to~~ and include fire protection systems~~,~~ and SSCs that address~~the~~ station blackout ~~event,~~ and the anticipated transient without scram (ATWS) events. The ~~RTNSS~~reliability assurance program (RAP) for control of risk significant SSCs~~RTNSS items~~ is described in ~~the~~ DCD ~~in chapter~~Chapter 17 (Quality Assurance and Reliability Assurance~~MHI'S QAPD~~). ~~Should other RTNSS equipment outside the realm of fire protection, SBO and ATWS be added as a result of PRA insights, the QA program exists for ensuring the reliability of these items.~~ The US-APWR treatment of station blackout, addressing the requirements appropriate for design certification, is presented in DCD sections 8.1.5, 8.2.2, 8.4 and 19.2.2.

DCD_03.02.02-17

Table 1.9.5-3 Detailed Treatment of Requirements of SECY-94-084 and SECY-95-132 (Sheet 2 of 19)

Issue Designation	Description	Requirements	Comment
			Fire Protection for US-APWR is addressed in DCD section 9.5.1. ATWS for US-APWR is addressed in DCD section 15.8. In the area of preventing interactions among structures that do and do not contain safety-related equipment, seismic classification, analysis and design is addressed in DCD sections 3.2.1, 3.7.1, 3.7.2, 3.7.3 and 3.8.4. Although ~~M~~much of this issue as written in SECY-94-084/SECY-95-132 is not applicable to the US-APWR the process used by MHI to ensure the reliability and availability of risk significant nonsafety-related SSCs is consistent with the treatment of RTNSS SSCs as described in these SECY papers. MHI's position is that the US-APWR is designed as an evolutionary plant, based on traditional concepts of defense in depth that are heavily reliant on safety-related active systems. The MHI position is that the active systems required to protect safety and risk will already be recognized as safety-related under the US-APWR design, and do not need to be selected by a "focused PRA". MHI will use PRA as required for insights into improved plant performance and severe accidents, and that analysis will be presented in Chapter 19 of the DCD. SSCs identified through the PRA results and expert panels as risk significant will receive special treatment as described in DCD Section 3.2 and the RAP described in Section 17.4.

DCD_03.02.02-17

DCD_03.02.02-17

3.0 DESIGN OF STRUCTURES, SYSTEMS, COMPONENTS, AND EQUIPMENT

3.1 Conformance with NRC General Design Criteria

This section briefly discusses the extent to which the design criteria for the US-APWR safety-related structures, systems, and components (SSCs) comply with Title 10, Code of Federal Regulations (CFR), Part 50, Appendix A, General Design Criteria for Nuclear Power Plants (Reference 3.1-1). As presented in this section, each criterion is first quoted and then discussed in sufficient detail to demonstrate the compliance of the US-APWR with each criterion. For some criteria, additional information may be required for a complete discussion. In such cases, detailed evaluations of compliance with the various General Design Criteria (GDC) are incorporated in other sections (identified by reference).

3.1.1 Overall Requirements

3.1.1.1 Criterion 1 – Quality Standards and Records

> Structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. Where generally recognized codes and standards are used, they shall be identified and evaluated to determine their applicability, adequacy, and sufficiency and shall be supplemented or modified as necessary to assure a quality product in keeping with the required safety function. A quality assurance program shall be established and implemented in order to provide adequate assurance that these structures, systems, and components will satisfactorily perform their safety functions. Appropriate records of the design, fabrication, erection, and testing of structures, systems, and components important to safety shall be maintained by or under the control of the nuclear power unit licensee throughout the life of the unit.

3.1.1.1.1 Discussion

The quality assurance program description (QAPD) in Section 17.5, describes the methods for assuring quality and establishes quality assurance and administrative control requirements for SSCs important to safety per GDC 1. The Equipment Classification process will assign a Quality Assurance Classification that defines the pertinent quality requirements from full 10 CFR Appendix B, to quality controls for nonsafety-related SSCs that perform important to safety functions, to no special requirements for other nonsafety-related SSCs. SSCs are assigned to the appropriate Equipment Classifications based on their important to safety functions and, depending on these safety functions, are also classified as either safety-related or nonsafety-related. Quality assurance requirements are established and identified by the appropriate Quality Assurance Classification for safety-related and nonsafety-related SSCs based on their safety functions and the contribution to plant safety. DCD_03.02.02-17

As described in the QAPD, 10 CFR 50, Appendix B requirements are applied to activities affecting the quality and performance of safety-related SSCs. Furthermore, the QAPD

specifies selected quality controls that are applied to certain equipment and activities that are nonsafety-related, but support safe and reliable plant operations, or where other NRC guidance establishes applicable quality assurance requirements. The controls applied to nonsafety-related SSCs per the QAPD Part III are referred to as "augmented" quality assurance controls. The contribution of nonsafety-related SSCs to plant safety is determined by (1) the SSC's risk-significance as determined by the D-RAP described in Section 17.4, and (2) the reliance on the SSC to address regulatory events, which are ATWS, fire protection, and Station Blackout (SBO). The list of risk significant SSCs is provided in Table 17.4-1. DCD_03.02.02-17

~~The US-APWR safety-related SSCs are identified in Section 3.2. The quality assurance program (QAP) as described in Chapter 17 of this document,~~The QAP along with the quality assurance, quality engineering, and quality control programs of the major contractors and their vendors, assure that SSCs important to safety (both safety-related SSCs and certain selected nonsafety-related SSCs) are designed, procured, fabricated, inspected, erected, and tested to standards commensurate with the ~~safety-related functions to be performed~~contribution to plant safety. This is accomplished by using recognized quality codes, standards, and design criteria that comply with the requirements of 10 CFR 50.55a (Reference 3.1-2) for safety-related SSCs, and by selecting appropriate design control measures for nonsafety-related SSCs requiring augmented quality as described in the QAPD. As necessary, additional supplemental standards, design criteria, and requirements have been developed by the Mitsubishi Heavy Industries, Ltd. and the major contractors' engineering organizations. Appropriate records that are associated with engineering and design, procurement, fabrication, inspection, erection, and testing, document compliance with recognized codes, standards, and design criteria. These records are maintained throughout the life of the plant ~~either by, or under the control of, the Combined License (COL) Applicant/Licensee~~. DCD_03.02.02-17 DCD_03.02.02-17 DCD_03.02.02-17 DCD_03.02.02-17

The principal design criteria, design bases, codes, and standards applicable to the facility are described in Section 3.2. Additional detail may be found in the pertinent section of the document dealing with the safety-related SSC(s) (e.g., containment as described in Subsection 3.8.1).

3.1.1.2 Criterion 2 – Design Bases for Protection Against Natural Phenomena

> Structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without the loss of the capability to perform their safety functions. The design bases for these structures, systems, and components shall reflect: (1) appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena, and (3) The importance of the safety functions to be performed.

3.1.1.2.1 Discussion

The safety-related SSCs are designed either to withstand the effects of natural phenomena without the loss of the capability to perform their safety functions, or are designed such that their response or failure will be in a safe condition. Additionally, nonsafety-related SSCs that must maintain their structural integrity to prevent unacceptable structural interaction or failure of seismic category I SSCs are designated as seismic category II and appropriately designed as described in Subsection 3.2.1. The nature and magnitude of the natural phenomena considered in the design of the plant are discussed in Chapter 2. The non-safety-related SSCs in the radwaste system are designed to be consistent with RG 1.143. DCD_03.02.02-17 DCD_03.02.02-17

Appropriate combinations of structural loadings from normal operation, accident conditions, and natural phenomena are considered in the plant design. This chapter discusses the design of the plant relative to natural events. Seismic, quality group classifications, and other pertinent standards and information, are provided in the sections discussing individual SSCs and in Section 3.2.

3.1.1.3 Criterion 3 – Fire Protection

> Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Noncombustible and heat-resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room. Fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to minimize the adverse effects of fires on structures, systems, and components important to safety. Firefighting systems shall be designed to assure that their rupture or inadvertent operation does not significantly impair the safety capability of these structures, systems, and components.

3.1.1.3.1 Discussion

The safety-related SSCs are designed to minimize the probability and effect of fires and explosions. Noncombustible and fire-resistant materials are used in the containment, main control room (MCR), component features of safety systems, and throughout the plant, where fire is a potential risk to safety-related systems. For example, electrical cables have a fire-retardant jacketing, and fire barriers are utilized as described in Subsection 9.5.1. Fire barriers ensure that redundant, safety-related systems and components are separated to assure that a fire in one area will not affect the redundant systems and components in an adjacent area from performing their safety functions. Equipment and facilities for fire protection, including detection, alarm, and extinguishment, are provided to protect both the plant equipment and personnel from fire, explosion, and the resultant release of toxic vapors.

Fire protection is provided by deluge systems (water spray), sprinklers, and portable extinguishers.

3.2Classification of Structures, Systems, and Components

The US-APWR SSCs are classified according to nuclear safety classification, seismic category, quality groups, quality assurance classification, and codes and standards. The US-APWR SSCs are classified as safety-related as defined in 10 CFR 50.2 (Reference 3.2-1) or non-safety related. The safety-related SSCs are those relied upon to remain functional during and following design basis events to assure the following: DCD_03.02.02-17

- The integrity of the RCPB
- The capability to shut down the reactor and maintain it in a safe-shutdown condition
- The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guideline exposures of 10 CFR 50.34(a)(1) (Reference 3.2-2) or 10 CFR 100.11 (Reference 3.2-3)

Safety-related SSCs conform to the quality assurance requirements of 10 CFR 50, Appendix B. The quality assurance program is described in Chapter 17. DCD_03.02.02-17

This section identifies those safety-related SSCs that are designed to withstand the effects of earthquakes without the loss of capability to perform their safety functions and those fluid systems or portions thereof that are safety-related, as well as the applicable industry codes and standards for pressure-retaining components.

This section also identifies those nonsafety-related SSCs that have augmented quality assurance requirements applied commensurate with the importance of the item's contribution to plant safety. DCD_03.02.02-17

3.2.1 Seismic Classification

GDC 2 of 10 CFR 50, Appendix A, (Reference 3.2-4) requires in part that SSCs important to safety be designed to withstand the effects of earthquakes without the loss of the capability to perform their safety functions. To meet these requirements, the guidance provided in NRC RG 1.29 (Reference 3.2-5) is used for identifying and classifying those SSCs. The earthquake against which these SSCs are designed to withstand and remain functional is defined as the safe-shutdown earthquake (SSE) in 10 CFR 50, Appendix S (Reference 3.2-6). The SSE is based upon an evaluation of the maximum earthquake potential, and is that earthquake which produces the maximum vibratory ground motion for which safety-related SSCs are designed to remain functional (see Subsection 3.7.1.1 for a discussion of the application of the SSE). Appendix S of 10 CFR 50 (Reference 3.2-6) also requires consideration of surface deformation and seismically induced floods and water waves from either a local or distant generated seismic activity and other design conditions determined in 10 CFR 100.23 (Reference 3.2-7) to assure that certain SSCs will remain functional.

The site-independent seismic design of the US-APWR sets the operating-basis earthquake (OBE) ground motion at 1/3 of the SSE as discussed in Subsection 3.7.1.1, which eliminates the requirement for performing explicit design analysis for OBE loads. In accordance with Appendix S of 10 CFR 50 (Reference 3.2-6), SSCs necessary for

Seismic category I SSCs are designed to withstand the effects of natural phenomena, including earthquakes, without jeopardizing the plant nuclear safety as discussed in Sections 3.7 and 3.10. The interaction of non-seismic category I structures with seismic category I structures is discussed in Subsection 3.7.2.8.

Seismic category I SSCs meet the QA requirements of 10 CFR 50, Appendix B (Reference 3.2-8).

3.2.1.1.2 Seismic Category II

Seismic category II applies to SSCs which perform no safety-related function, and whose continued function is not required, but whose structural failure or interaction could degrade the functioning or integrity of a seismic category I SSC to an unacceptable level, or could result in incapacitating injury to occupants of the control room. Seismic category II SSCs are designed so that the SSE could not cause unacceptable structural interaction or failure with seismic category I SSCs. For fluid systems, this requires an adequate level of pressure boundary integrity to prevent seismically-induced flooding that may cause adverse effects on safety-related SSCs.

Seismic category II SSCs are analyzed and designed for the SSE using methods appropriate to demonstrate position retention with no adverse interaction effects as specified for seismic category I SSCs. Seismic category II may be limited to the parts of SSCs where structural analyses show a credible failure or interaction due to the SSE, which in some instances is limited to their supports.

Seismic category II SSCs meet the ~~pertinent QA requirements of 10 CFR 50, Appendix B (Reference 3.2-8)~~augmented quality assurance controls for nonsafety-related SSCs as described in the QAPD Part III to such an extent as to assure that their structural failure or interaction does not degrade the functional or structural integrity of seismic category I SSCs. DCD_03.02.02-17

3.2.1.1.3 Non-Seismic

SSCs that are not classified as seismic category I or seismic category II are classified as NS. NS SSCs have no safety-related function or nuclear safety design requirements. The NS SSCs are primarily located outside of safety-related buildings or segregated from seismic category I SSCs so that the failure of their structural integrity would not impact the seismic category I SSCs and cause adverse system interactions. If it is determined that a SSC would cause an adverse impact on a seismic category I SSC, then it is designed and/or mounted in accordance with seismic category II requirements to withstand an SSE event so that it could not fail and cause an adverse impact or interaction with the seismic category I SSC.

NS SSCs are designed and constructed to the applicable standard building code requirements, industry codes and standards, and/or manufacturer standards.

For SSCs located in the proximity of safety-related SSCs that meet seismic category II requirements by their mounting, the pre-assigned equipment class remains unchanged.

3.2.1.2 Classifications

Table 3.2-3 provides the relationship between different equipment classes, RG 1.29 (Reference 3.2-5) seismic design requirements and the ~~pertinent~~associated QA requirements~~ of 10 CFR 50, Appendix B (Reference 3.2-8)~~. Table 3.2-2 provides a list of mechanical and fluid systems, components, and equipment and their designated seismic category along with the equipment class, quality assurance classification, and design codes and standards. The equipment classification is shown on the piping and instrumentation diagrams (P&ID) included in various sections. The seismic classification is identified in Table 3.2-2 and can be determined by the equipment class on the P&IDs, or as noted in Table 3.2-2. The COL Applicant is to identify the site-specific, safety-related systems and components that are designed to withstand the effects of earthquakes without loss of capability to perform their safety function; and those site-specific, safety-related fluid systems or portions thereof; as well as the applicable industry codes and standards for pressure-retaining components. DCD_03.02.02-17 DCD_03.02.02-17

The seismic category of ~~safety-related and important to safety~~ electrical, mechanical, and instrumentation and control (I&C) equipment included in the Equipment Qualification Program is provided in Appendix 3D. DCD_03.02.02-17

3.2.1.3 Classification of Building Structures

Table 3.2-4 provides the designated seismic category of building and structures (seismic category I, II, and NS). The US-APWR Nuclear Island consists of the R/B, PCCV, containment internal structure, A/B, access building (AC/B), and east and west power source buildings (PS/Bs). The US-APWR design includes the R/B, PCCV, containment internal structure, and PS/B (east and west). The turbine building (T/B) is part of the standard design but outside the Nuclear Island. Unique non-standard buildings and structures in Table 3.2-4 include the UHSRS, ESWPT, PSFSV, NS T/G Pedestal, and NS Outside Buildings. Minor NS Buildings and all structures in the plant yard are generally not listed in Table 3.2-4. Design of all plant buildings and structures are addressed where appropriate in Chapter 3 and its appendices.

3.2.2 System Quality Group Classification

GDC 1 of 10 CFR 50, Appendix A (Reference 3.2-4), and 10 CFR 50.55a (Reference 3.2-12), as they relate to safety-related SSCs, requires that SSCs be designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with the importance of the safety function to be performed. RG 1.26 (Reference 3.2-13) is used to meet these requirements by classifying safety-related fluid systems and components and applying corresponding quality codes and standards to such systems and components.

Safety-related fluid systems may perform any of the following functions:

- Fission product containment
- Core cooling
- Reactor shutdown

- Reactivity control
- Post-accident containment heat removal
- Post-accident containment atmosphere cleanup
- Post-accident fission product removal
- Residual heat removal from the reactor and/or from the spent fuel storage pool
- Containment of radioactive materials

Portions of fluid systems which provide cooling or heating, sealing, lubrication, fuel, motive power, isolation, flood protection, or leakage detection necessary to support the accomplishment of any of the above functions are also considered safety-related.

10 CFR 50.55a (Reference 3.2-12) identifies those ASME Code, Section III, (Reference 3.2-14), Class 1, safety-related components that are part of the RCPB. These components are designated in RG 1.26 (Reference 3.2-13) as Quality Group A. In addition, RG 1.26 (Reference 3.2-13) identifies, on a functional basis, water- and steam-containing components of those safety-related systems that are designated as Quality Groups B and C. Quality Group D applies to non-safety related water- and steam-containing components of systems that are not part of the RCPB or included in Quality Groups A, B or C, or RWMS, but are part of systems or portions of systems that contain or may contain radioactive material. DCD_03.02.02-17

NRC Generic Letter 90-06 (Reference 3.2-15) is used as guidance for classification of power operated relief valves (PORVs), associated components, and block valves. These components are classified as safety-related for performing safety functions, such as, the mitigation of design-basis steam generator tube rupture accident, low temperature overpressure protection of the RV, and/or plant cooldown. The safety-related classification addresses the redundant and diverse control systems designed to seismic category I criteria. These PORVs and block valves are included in a quality assurance program that is in compliance with 10 CFR 50, Appendix B (Reference 3.2-8), as identified in Table 3.2-2.

~~Additional safety-related systems considered that are not identified in RG 1.26 (Reference 3.2-13), and references establishing their acceptable classifications, are identified in NUREG-0800 SRP 3.2.2 (Reference 3.2-16), Appendix A. For example, some additional systems considered are: instrument and service air, emergency and normal ventilation, fuel handling, and RWMS. These systems are designed, fabricated, erected, and tested to quality standards commensurate with the safety function they perform.~~ DCD_03.02.02-17

The application of 10 CFR 50.55a (Reference 3.2-12) and GDC 1 provides assurance that established standard practices of proven or demonstrated effectiveness are used to achieve a high likelihood that these safety functions will be performed and that the codes and standards applied are commensurate with the importance to safety of these functions.

The scope of quality assurance controls to be applied to a specific SSC, either 10 CFR 50 Appendix B ("Q") or augmented quality requirements ("A"), is identified in Table 3.2-2 by the "Quality Assurance Classification," supplemented by use of "Equipment Classifications" 1 through 10 and explanatory notes. Quality assurance classification "Q" is applied to safety-related SSCs. Quality assurance classification "A" is assigned to selected nonsafety-related SSCs based on their contribution to plant safety or to meet NRC guidance that establishes applicable quality assurance requirements. The contribution of nonsafety-related SSCs to plant safety is determined by (1) the SSC's risk-significance as determined by the D-RAP and (2) the reliance on the SSC to address regulatory events, which are ATWS, fire protection and SBO. A list of risk-significant SSCs is provided in Table 17.4-1. DCD_03.02.02-17

~~The recommendations provided in RG 1.143 (Reference 3.2-10) and RG 1.151 (Reference 3.2-9) are also used in identifying system quality group classification and/or standards for RWMS, and instrument sensing lines, respectively.~~

Safety-related and non-safety related instrumentation and electrical equipment are discussed in Chapters 7 and 8. ~~Safety-related and important to safety electrical equipment and instrumentation are~~Equipment included in the Equipment Qualification Program is identified in Appendix 3D. DCD_03.02.02-17

The quality group classifications are based, in part, on the reliance placed on those systems that perform any of the following functions:

- Prevent or mitigate the consequences of accidents and malfunctions originating within the RCPB
- Permit reactor shutdown and maintenance in the safe-shutdown condition
- Contain radioactive material

The US-APWR ~~safety~~equipment classification system for safety-related SSCs follows the requirements and guidelines described above. The US-APWR SSCs are classified in ~~e~~Equipment Classes 1 to 10, in part, with respect to the Quality Group Classification. Table 3.2-3 correlates the US-APWR classification of SSCs with the ASME Code, Section III (Reference 3.2-14), RG 1.26 (Reference 3.2-13), NRC Quality Group classes, RG 1.29 (Reference 3.2-5) seismic category, Quality Assurance Classification including conformance with 10 CFR 50 Appendix B (Reference 3.2-8), and other applicable industry codes and standards. Table 3.2-2 provides the equipment classes, quality assurance classification, applicable codes and standards, and seismic category for the US-APWR mechanical and fluid systems, components (including pressure-retaining), and equipment~~and the applicable codes and standards~~. The COL Applicant is to identify the equipment class, quality assurance classification, applicable codes and standards, and seismic category of the site-specific, safety-related and non safety-related fluid systems, components (including pressure retaining), and equipment~~as well as the applicable industry codes and standards~~. DCD_03.02.02-17 DCD_03.02.02-17 DCD_03.02.02-17 DCD_03.02.02-17 DCD_03.02.02-17

The identification and standards of the US-APWR equipment classifications and their definitions and criteria are described below.

3.2.2.1 Equipment Class 1

Equipment Class 1 has the highest integrity for SSCs and is equivalent to RG 1.26 (Reference 3.2-13), NRC Quality Group A ~~as defined in 10 CFR 50.55a (Reference 3.2-12)~~ and applies to the components of the RCPB as defined in 10 CFR 50.55a (Reference 3.2-12). DCD_03.02.02-23

Equipment Class 1 SSCs are classified as safety-related, seismic category I, and the codes and standards for the NRC Quality Group A are applied. Equipment Class 1 components are designed to meet ASME Code, Section III (Reference 3.2-14), Class 1 requirements and the QA criteria of 10 CFR 50, Appendix B (Reference 3.2-8). Supports are designed and constructed to ASME Code, Section III (Reference 3.2-14), Subsection NF requirements and the same QA criteria for components applies.

~~Equipment Class 1 is also assigned to safety-related structures, structural components, instrumentation, controls, and electrical components.~~ DCD_03.02.02-23

3.2.2.2 Equipment Class 2

Equipment Class 2 ~~is equivalent to~~includes equipment addressed by RG 1.26 (Reference 3.2-13), NRC Quality Group B. Equipment Class 2 applies to water- and steam-containing pressure vessels, heat exchangers (other than turbines and condensers), storage tanks, piping, pumps, and valves or non-ASME Code Section III mechanical equipment that are either (1) part of the RCPB defined in 10 CFR 50.2 (Reference 3.2-1) but excluded from the requirements of 10 CFR 50.55a (Reference 3.2-12) pursuant to paragraph c(2) of that section, or (2) not part of the RCPB but are part of the following: DCD_03.02.02-23 DCD_03.02.02-23

- Safety-related systems or portions of systems that are designed for the following:
  - Emergency core cooling
  - Post-accident containment heat removal
  - Post-accident fission product removal
- Safety-related systems or portions of systems that are designed for the following:
  - Reactor shutdown
  - Residual heat removal
- Those portions of the steam and feedwater systems extending from and including the secondary side of steam generators up to and including the outermost containment isolation valves, and connected piping up to and including the first valve (including a safety or relief valve) that is either normally closed or capable of automatic closure during all modes of normal reactor operation.
- Systems or portions of systems that are connected to the RCPB and are not capable of being isolated from the boundary during all modes of normal reactor

operation by two valves, each of which is either normally closed or capable of automatic closure.

In addition to the above, the following systems and components designated NRC Quality Group B are classified in SRP 3.2.2 (Reference 3.2-16), Appendix A, as Equipment Class 2:

- Containment isolation system penetrations including associated piping and valves, and isolation barriers comprised of closed systems inside and outside containment described in Subsection 6.2.4.

- Containment isolation system instrument sensing lines penetrating containment described in "Instrument Lines Penetrating Primary Reactor Containment (Safety Guide 11) Supplement to Safety Guide 11, Backfitting Considerations", RG 1.11 (Reference 3.2-17) that may be used to implement containment isolation design criteria for instrument lines.

- Safety-related instrument sensing lines described in RG 1.151 (Reference 3.2-9) for classifying instrument sensing lines in terms of the ASME Code, Section III (Reference 3.2-14), Class 2.

Equipment Class 2 SSCs are classified as safety-related and seismic category I.~~, and the~~ For SSCs addressed by RG 1.26, the codes and standards for NRC Quality Group B are applied. These RG 1.26 Equipment Class 2 components are designed to meet ASME Code, Section III (Reference 3.2-14), Class 2 requirements and the QA criteria of 10 CFR 50, Appendix B (Reference 3.2-8) applies. Supports are designed and constructed to ASME Code, Section III (Reference 3.2-14), Subsection NF requirements and the same QA criteria for components applies. Other non-ASME Code Section III Equipment Class 2 components are designed to meet codes and standards described in the design bases description of the applicable system, and meet the QA criteria of 10 CFR 50, Appendix B (Reference 3.2-8).

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3.2.2.3 Equipment Class 3

Equipment Class 3 ~~is equivalent to~~includes equipment addressed by RG 1.26 (Reference 3.2-13), NRC Quality Group C. Equipment Class 3 applies, in part, to water-, steam-, and radioactive-waste-containing pressure vessels; heat exchangers (other than turbines and condensers); storage tanks; piping; pumps; and valves that are not part of the RCPB or included in Quality Group B but part of the following:

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- Safety-related cooling water and emergency feedwater systems or portions of those systems that are designed for the following:

  - Emergency core cooling

  - Post-accident containment heat removal

  - Post-accident containment atmosphere cleanup

- Residual heat removal from the reactor and from the spent fuel storage pit (including primary and secondary cooling systems), although Quality Group B includes portions of those systems that are required for their safety functions and that (i) do not operate during any mode of normal reactor operation and (ii) cannot be tested adequately

- Cooling water and seal water systems or portions of those safety-related systems that are designed for the functioning of safety-related components and systems, such as RCPs and the MCR.

- Systems or portions of systems that are connected to the RCPB and are capable of being isolated from that boundary during all modes of normal reactor operation by two valves, each of which is either normally closed or capable of automatic closure.

- Systems, other than RWMS, not covered above, that contains or may contain radioactive material and whose postulated failure would result in conservatively calculated potential offsite doses that exceed 0.5 rem to the whole body or its equivalent to any part of the body. For those systems located in seismic category I structures, only single component failures need be assumed. No credit is taken for automatic isolation from other components in the system or treatment of released materials unless isolation or treatment capability is designed to appropriate seismic and quality group standards and can withstand loss of offsite power and a single failure of an active component.

In addition to the systems and components described above, the following systems and components are designated ~~NRC Quality Group are classified in SRP 3.2.2 (Reference 3.2-16),~~ as Equipment Class 3: DCD_03.02.02-23

- Emergency power sources (gas turbines)

- Equipment and floor drainage system described in Subsection 9.3.3, SRP Section 9.3.3 (Reference 3.2-18)

- Plant ventilation systems for areas such as the MCR and engineered safety feature rooms

- Safety-related instrument sensing lines described in RG 1.151 (Reference 3.2-9) for classifying instrument sensing lines in terms of the ASME Code, Section III (Reference 3.2-14), Class 3

- Ultimate heat sink (UHS) and supporting systems described in Subsection 9.2.5.

Equipment Class 3 SSCs are classified as safety-related and seismic category I.~~, and the~~ For SSCs addressed by RG 1.26, the codes and standards for NRC, Quality Group C are applied. These RG 1.26 Equipment Class 3 components are designed to meet ASME Code, Section III (Reference 3.2-14), Class 3 requirements and the QA criteria of 10 CFR 50, Appendix B (Reference 3.2-8). Supports are designed and constructed to ASME Code, Section III (Reference 3.2-14), Subsection NF requirements, and the same QA DCD_03.02.02-23

criteria for components apply to the supports. Other non-ASME Code Section III Equipment Class 3 components are designed to meet codes and standards described in the design bases description of the applicable system, and meet the QA criteria of 10 CFR 50, Appendix B (Reference 3.2-8). DCD_03.02.02-23

3.2.2.4 Equipment Class 4

Equipment Class 4 ~~is equivalent to~~includes selected equipment addressed by NRC, Quality Group D in accordance with RG 1.26 (Reference 3.2-13). ~~Class D~~Equipment Class 4 applies to water- and steam-containing non-safety related components that: 1) are not part of the RCPB, 2) are not included in Quality Groups B or C, or RWMS, 3) are part of systems or portions of systems that contain or may contain radioactive material, and 4) require augmented quality as defined in Section 3.1.1.1.1. Augmented quality assurance requirements for nonsafety-related SSCs, as described in the quality assurance program, are applied to Equipment Class 4 SSCs. ~~are not part of the RCPB or included in Quality Groups B or C, or RWMS, but are part of systems or portions of systems that contain or may contain radioactive material.~~ DCD_03.02.02-17 DCD_03.09.03-29 DCD_03.02.02-17

Equipment Class 4 SSCs are classified as nonsafety-related and NS or seismic category II. The codes and standards for NRC Quality Group D are applied as follows:

• Pressure Vessels	ASME Code, Section VIII, Division 1 (Reference 3.2-19)
• Piping	ASME B31.1 (Reference 3.2-20)
• Pumps	Manufacturers' standards
• Valves	ASME B31.1 (Reference 3.2-20)
• Atmospheric Storage Tanks	API-650 (Reference 3.2-21), AWWA D-100 (Reference 3.2-22), or ASME B96.1 (Reference 3.2-23)
• 0-15 psig Storage Tanks	API-620 (Reference 3.2-24)
• Supports	Manufacturers' standards

3.2.2.5 Other Equipment Classes

Equipment Class 5

Equipment Class 5 is assigned to nonsafety-related components that: 1) are listed as "risk significant" in Table 17.4-1, are designed to meet special seismic requirements such as seismic category II, or perform functions that address ATWS or station blackout, and 2) are not within the purview of Equipment Classes 4, 6, 7, and 8. DCD_03.02.02-17

~~Equipment Class 5 is assigned to non-safety related components that are not part of the RWMS and not within the purview of RG 1.26 (Reference 3.2-13). Equipment Class 5 is also assigned to components that are listed as "risk significant, non-safety related" based on the seismic event identified in Section 17.4. In addition, this equipment class is also assigned to non-safety related structures and structural components, instrumentation, controls, and electrical components.~~

Equipment Class 5 SSCs are classified either as non-seismic (NS) or seismic category II. ~~Seismic category II SSCs meet the pertinent QA requirements of 10 CFR 50, Appendix B.~~Augmented quality assurance requirements for nonsafety-related SSCs, as described in the quality assurance program, are applied to Equipment Class 5 SSCs. Codes and standards, as defined in the design bases, are applied to Equipment Class 5 components. DCD_03.02.02-17

The COL Applicant is to apply DCD methods of equipment classification, quality assurance classification, and seismic categorization of risk-significant, non-safety related SSCs ~~based on their safety role assumed in the PRA and treatment by the D-RAP~~to site-specific, nonsafety-related SSCs based on their contribution to plant safety. DCD_03.02.02-17

Equipment Class 6

Equipment Class 6 is assigned to the nonsafety-related components of the RWMS and a part of SGBDS which ~~cover~~are outside the containment isolation valves ~~except for class 3 components~~. DCD_03.02.02-17

The seismic category defined in RG 1.143 (Reference 3.2-10) is applied. Augmented quality assurance requirements for nonsafety-related SSCs, as described in the quality assurance program, are applied to Equipment Class 6 SSCs. ~~and 10 CFR 50, Appendix B (Reference 3.2-8) is not applied.~~

The Equipment Class 6 components are designed in compliance with applicable codes and standards, and guidance provided in RG 1.143 (Reference 3.2-10).

Equipment Class 7

Equipment Class 7 is assigned to the ~~system, design, and~~nonsafety-related components of the ~~F~~fire ~~P~~protection ~~Program~~system. Augmented quality assurance requirements for nonsafety-related SSCs, as described in the quality assurance program, are applied to Equipment Class 7 SSCs. DCD_03.02.02-17

The codes and standards applicable to fire protection systems follow the guidance of RG 1.189 (Reference 3.2-11), Section 1.7, and National Fire Protection Association 804 (Reference. 3.2-25), Section 4.6, and are applied for fire protection system design in the US-APWR buildings.

Equipment Class 8

Equipment Class 8 is assigned to non-safety related components ~~and structures containing radioactive materials, and classified as Quality Group D.~~that contain or may contain radioactive materials, that are classified as Quality Group D, are not included in Equipment Classes 1-7, and do not require augmented quality per Section 3.1.1.1.1. DCD_03.02.02-17

Equipment Class 8 SSCs are classified as NS. ~~Codes and standards as defined in the design bases are applied to Equipment Class 8 components.~~The applicable codes and standards are the same as Equipment Class 4. See Equipment Class 4 codes and standards for NRC Quality Group D.

Equipment Class 9 and Equipment Class 10

Non-safety related components and structures that have impact on continuous power generation and do not fall into any one of Quality Groups A to D~~, and those that have impact on continuous power generation~~ or Equipment Classes 1 through 8 are classified as Equipment Class 9~~, or otherwise,~~. Nonsafety-related SSCs not in Equipment Classes 4 - 9 are classified as Equipment Class 10. DCD_03.02.02-17

The Equipment Class 9 and Equipment Class 10 SSCs are classified NS. Codes and standards as defined in the design bases are applied to Equipment Class 9 and Equipment Class 10 components.

3.2.2.6 Inspection Requirements

Safety-related SSCs built to the requirements of the ASME Code, Section III (Reference 3.2-14), are required by 10 CFR 50.55a (Reference 3.2-12) to have in-service inspections. The ISI program is discussed in Subsection 3.9.6.

3.2.3 Combined License Information

COL 3.2(1) *Deleted*

COL 3.2(2) *Deleted*

COL 3.2(3) *Deleted*

COL 3.2(4) *The COL Applicant is to identify the site-specific, safety-related systems and components that are designed to withstand the effects of earthquakes without loss of capability to perform their safety function; and those site-specific, safety-related fluid systems or portions thereof; as well as the applicable industry codes and standards for pressure-retaining components.*

COL 3.2(5) *The COL Applicant is to identify the equipment class and seismic category of the site-specific, safety-related and non safety-related fluid systems, components (including pressure retaining), and equipment as well as the applicable industry codes and standards.*

COL 3.2(6) *The COL Applicant is to apply DCD methods of equipment classification and seismic categorization of risk-significant, non-safety related SSCs based on their safety role assumed in the PRA and treatment by the D-RAP.*

3.2.4 References

3.2-1 Definitions, Domestic Licensing of Production and Utilization Facilities, Energy. Title 10, Code of Federal Regulations, Part 50.2, U.S. Nuclear Regulatory Commission, Washington, DC.

3.2-2 Design Objectives for Equipment to Control Releases of Radioactive Material in Effluents—Nuclear Power Reactors, Domestic Licensing of Production and

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 1 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Primary System								
1. Reactor Systems								
Fuel assemblies	2	PCCV	~~B~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Rod control cluster	2	PCCV	~~B~~N/A	~~YES~~Q	5	I		
(Deleted)								
(Deleted)								
Upper core support assembly	3	PCCV	~~C~~N/A	~~YES~~Q	ASME III, CS	I		DCD_03.02.02-17
Lower core support assembly	3	PCCV	~~C~~N/A	~~YES~~Q	ASME III, CS	I		
Guide tube assemblies	3	PCCV	~~C~~N/A	~~YES~~Q	5	I		
Control rod drive mechanism latch housing	1	PCCV	A	~~YES~~Q	1	I		
Control rod drive mechanism rod travel housing	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Internal structures	~~4~~5	PCCV	~~D~~N/A	~~N/A~~A	~~4~~5	II		DCD_03.02.02-17
2. Reactor Coolant System								
Reactor vessel	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Reactor vessel head	1	PCCV	A	~~YES~~Q	1	I		
Surveillance capsule guide basket	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
Reactor vessel insulation (shell)	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
Reactor vessel insulation (closure head)	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
Reactor coolant pump casing	1	PCCV	A	~~YES~~Q	1	I		
Reactor coolant pump main flange	1	PCCV	A	~~YES~~Q	1	I		
~~Reactor coolant pump thermal barrier~~	~~1~~	~~PCCV~~	~~A~~	~~YES~~	~~1~~	~~I~~		
Reactor coolant pump thermal barrier heat exchanger	1	PCCV	A	~~YES~~Q	1	I		
Reactor coolant pump #1 seal housing	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Reactor coolant pump #2 seal housing	2	PCCV	B	~~YES~~Q	2	I		
Reactor coolant pump pressure-retaining bolting	1	PCCV	A	~~YES~~Q	1	I		

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 2 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	DCD_03.02.02-17
Reactor coolant pump insulation	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Pressurizer	1	PCCV	A	~~YES~~Q	1	I		
Pressurizer insulation	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
Pressurizer piping upstream of and including the pressurizer safety valves RCS-SRV-120,121,122,123, safety depressurization valves RCS-MOV-117A,B, and depressurization valves RCS-MOV-119	1	PCCV	A	~~YES~~Q	1	I		
Pressurizer piping downstream of and excluding pressurizer safety valves RCS-SRV120,121,122,123	4	PCCV	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
Pressurizer piping downstream of and excluding safety depressurization valves RCS-MOV-117A,B	4	PCCV	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
Pressurizer piping downstream of and excluding depressurization valves RCS-MOV-119	~~4~~8	PCCV	~~D~~	~~N/A~~N	4	~~II~~NS		DCD_03.02.02-17
Pressurizer piping upstream of and including the loop seal drain stop valves: RCS-VLV-157,158,159,160	2	PCCV	B	~~YES~~Q	2	I		DCD_03.02.02-17
Pressurizer piping downstream of the loop seal drain stop valve: RCS-VLV-157,158,159,160	4	PCCV	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17
Pressurizer vent piping up to RCS-VLV-153 and the valve RCS-VLV-153	2	PCCV	B	~~YES~~Q	2	I		DCD_03.02.02-17
Auxiliary spray TC piping up to RCS-VLV-151 and the valve RCS-VLV-151	2	PCCV	B	~~YES~~Q	2	I		DCD_03.02.02-17
Reactor vessel head vent piping upstream of and including the reactor vessel head vent valves RCS-MOV-002A, B,003A,B	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 3 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Reactor vessel head vent line piping downstream of and excluding the reactor vessel head vent valves RCS-MOV-003A,B	4	PCCV	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
Letdown line piping upstream of and including the letdown line stop valves RCS-VLV-021	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Reactor coolant piping drain piping upstream of and including the second drain stop valve RCS-VLV-023A, B, C, D	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Cavity / reactor coolant system water level meter piping upstream of and including the stop valves RCS-VLV-024.025	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Steam generator tube side	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Steam generator shell side	2	PCCV	B	~~YES~~Q	2	I		
Steam generator insulation	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
Pressurizer safety valves RCS-SRV-120, 121, 122, 123	1	PCCV	A	~~YES~~Q	1	I		
Safety depressurization valves RCS-MOV-117A, B	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Safety depressurization valve block valves RCS-MOV-116A, B	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Depressurization valves for severe accident RCS-MOV-118, 119	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Pressurizer spray valves RCS-PCV-061A,B	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Pressurizer spray block valves RCS-MOV-111A, B	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
(Deleted)								
Letdown line stop valve RCS-VLV-021	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 4 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
Reactor coolant piping first drain stop valvesRCS-VLV-022A, B, C, D	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
~~(Deleted)~~Pressurizer gas phase sample line piping and valve up to and excluding valve PSS-VLV-001	2	PCCV	B	Q	2	I		DCD_03.02.02-17
~~(Deleted)~~Pressurizer liquid phase sample line piping and valve up to and excluding valve PSS-VLV-004	2	PCCV	B	Q	2	I		
Pressurizer spray bypass valves RCS-VLV-112A,B	1	PCCV	A	~~YES~~Q	1	I		
Reactor coolant piping	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Main coolant piping insulation	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
Pressurizer surge line piping	1	PCCV	A	~~YES~~Q	1	I		
Pressurizer spray line piping	1	PCCV	A	~~YES~~Q	1	I		
Pressurizer relief tank	4	PCCV	D	~~N/A~~A	4	II	Note 5.a	
Reactor coolant system piping and valves related to pressurizer relief tank excluding containment isolation valves and piping between valves	4	PCCV R/B	D	~~N/A~~A	4	NS	Note 5.d	
Following containment isolation valves and piping between valves: RCS-AOV-147, 148 RCS-AOV-132, RCS-VLV-133 RCS-AOV-138, RCS-VLV-139, 140	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
3. Chemical and Volume Control System								
Charging pumps	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Boric acid transfer pumps	4	A/B	D	~~N/A~~A	4	NS	Note 5.d	
Boric acid evaporator feed pumps	8	A/B	D	~~N/A~~N	4	NS		
Volume control tank	4	R/B	D	~~N/A~~A	4	II	Note 5.a	
Holdup tanks	8	A/B	D	~~N/A~~N	4	NS		

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 5 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
Boric acid batching tank	8	A/B	D	~~N/A~~N	4	NS	
Boric acid tanks	4	A/B	D	~~N/A~~A	4	NS	Note 5.d
Resin fill tank	8	A/B	D	~~N/A~~N	4	NS	
Chemical mixing tank	8	R/B	D	~~N/A~~N	4	NS	
Reactor coolant pump purge water head tank	8	PCCV	D	~~N/A~~N	4	NS	
Regenerative heat exchanger	3	PCCV	C	~~YES~~Q	3	I	
Letdown heat exchanger –tube side	3	PCCV	C	~~YES~~Q	3	I	
Letdown heat exchanger – component cooling water side	2	PCCV	B	~~YES~~Q	2	I	
Seal water heat exchanger –tube side	8	R/B	D	~~N/A~~N	4	NS	
Seal water heat exchanger – component cooling water side	4	R/B	D	~~N/A~~A	4	II	Note 5.a
Excess letdown heat exchanger	3	PCCV	C	~~YES~~Q	3	I	
Excess letdown heat exchanger – component cooling water side	2	PCCV	B	~~YES~~Q	2	I	
Reactor coolant filters	8	A/B	D	~~N/A~~N	4	NS	
Seal water injection filters	~~8~~4	A/B	D	~~N/A~~A	4	NS	Note 5.d
Boric acid filter	4	A/B	D	~~N/A~~A	4	NS	Note 5.d
Boric aid evaporator feed demineralizer filter	8	A/B	D	~~N/A~~N	4	NS	
Mixed bed demineralizer inlet filters	8	A/B	D	~~N/A~~N	4	NS	
Seal water return strainer	8	R/B	D	~~N/A~~N	4	NS	
Mixed bed demineralizers	8	A/B	D	~~N/A~~N	4	NS	
Cation bed demineralizer	8	A/B	D	~~N/A~~N	4	NS	
Boric acid evaporator feed demineralizer	8	A/B	D	~~N/A~~N	4	NS	
Deborating demineralizers	8	A/B	D	~~N/A~~N	4	NS	
Letdown orifices	3	PCCV	C	~~YES~~Q	3	I	
Charging pump minimum flow orifices	3	R/B	C	~~YES~~Q	3	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 6 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
Boric acid transfer pump minimum flow orifices	4	A/B	D	~~N/A~~A	4	NS	Note 5.d
Boric acid evaporator feed pumps minimum flow orifices	8	A/B	D	~~N/A~~N	4	NS	
Charging flow control orifice	3	R/B	C	~~YES~~Q	3	I	
Seal water flow control orifice	3	R/B	C	~~YES~~Q	3	I	
Chemical mixing tank orifice	8	R/B	D	~~N/A~~N	4	NS	
Boric acid evaporator	8	A/B	D	~~N/A~~N	4	NS	
Boric acid blender	8	R/B	D	~~N/A~~N	4	NS	
Letdown line and valves from reactor coolant system to and including valve CVS-LCV-362 prior to regenerative heat exchanger.	1	PCCV	A	~~YES~~Q	1	I	
Letdown line piping and valves from and excluding the valve CVS-LCV-362 prior to regenerative heat exchanger to the following valves: ~~Letdown line drain valve CVS-VLV-602 (including the valve)~~ Residual Heat Removal System valves (2 each) (excluding the valves) RHS-AOV-024B,C Containment isolation valve (excluding the valve) CVS-AOV-005 Letdown line relief valve CVS-SRV-002 (including the valve) ~~Letdown heat exchanger tube side drain valve CVS-VLV-606 (including the valve)~~	3	PCCV	C	~~YES~~Q	3	I	
Chemical and volume control system containment isolation valves and piping between the valves.	2	PCCV R/B	B	~~YES~~Q	2	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 7 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
Excess letdown piping and valves from reactor coolant system to and including valve CVS-AOV-222 just prior to excess letdown heat exchanger.	1	PCCV	A	~~YES~~Q	1	I	
Excess letdown piping and valves from but excluding valve CVS-AOV-222 just prior to excess letdown heat exchanger to and excluding containment isolation valves CVS-MOV-203 and CVS-VLV-202. This includes piping related to reactor coolant pump seal water return line to the following valves. 4 valves CVS-AOV-192A,B,C,D (excluding the valves) Seal water return line relief valve CVS-SRV-201 (including the valve)	3	PCCV	C	~~YES~~Q	3	I	
Excess letdown heat exchanger drain piping~~ and valve to and including valve CVS-VLV-685~~	3	PCCV	C	~~YES~~Q	3	I	
Reactor coolant pump purge water piping and valves up to but excluding reactor coolant pump #2 seal housings	8	PCCV	D	~~N/A~~N	4	NS	
Letdown line piping and valves outside containment from and excluding the containment isolation valve CVS-AOV-006 to and including the three way valve CVS-TCV-014	8	R/B A/B	D	~~N/A~~N	4	NS	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 8 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
Piping and valves contained within the demineralizer subsystem of chemical and volume control system. This subsystem branches off the letdown line between the two three way valves CVS-TCV-014 and CVS-LCV-031A. It includes reactor coolant purification filters and demineralizers, and deborating demineralizers	8	A/B	D	~~N/A~~N	4	NS	
Letdown line piping and valves outside containment from the three way valve CVS-LCV-031A to ~~the volume control tank~~valves CVS-VLV-102, CVS-VLV-103 (excluding the valves)	8	R/B A/B	D	~~N/A~~N	4	NS	
Letdown line piping and valves outside containment from CVS-VLV-102, CVS-VLV-103 (including the valves) to the volume control tank	4	R/B	D	~~N/A~~A	4	II	Note 5.a
Reactor coolant pump seal water return piping and valves outside containment from containment isolation valve CVS-MOV-204 to ~~all other connections in chemical and volume control system~~valves CVS-VLV-213, CVS-VLV-214, and CVS-SRV-210 (excluding the valves)	~~8~~4	R/B	D	~~N/A~~A	4	NS	Note 5.d
Reactor coolant pump seal water return piping and valves from reactor coolant pump seal to and including 4 valves CVS-AOV-192A,B,C,D	2	PCCV	B	~~YES~~Q	2	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 9 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
~~Reactor coolant pump seal water return line drain piping and valves for the strainer and the seal water heat exchanger including the 2 valves CVS-VLV-678 and CVS-VLV-681.~~	~~8~~	~~R/B~~	~~D~~	~~N/A~~	~~4~~	~~NS~~	
Reactor coolant pump seal water injection piping and valves excluding containment isolation valves, piping between these valves, piping downstream of CVS-VLV-180A, B, C, D (excluding valves), and seal water injection filter line valves and piping between and including CVS-VLV-168 and CVS-VLV-173	3	R/B PCCV	C	~~YES~~Q	3	I	
Reactor coolant pump seal water injection piping and valves downstream of including valves CVS-VLV-180A, B, C, D	1	PCCV	A	~~YES~~Q	1	I	
Seal water injection filter line valves and piping between and excluding CVS-VLV-168 and CVS-VLV-173	~~8~~4	R/B A/B	D	~~N/A~~A	4	NS	Note 5.d
Charging lines from and including valves CVS-VLV-158 and CVS-AOV-159 to their penetration into the reactor coolant system	1	PCCV	A	~~YES~~Q	1	I	
Auxiliary spray line from and including valves CVS-AOV-155 to the penetration into the RCS	1	PCCV	A	~~YES~~Q	1	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 10 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
Charging line and auxiliary spray line piping and valves between the following valves (excluding the valves) downstream of the regenerative heat exchanger: CVS-VLV-158 CVS-AOV-159 CVS-AOV-155 And the following valves: ~~Charging line drain valve CVS-VLV-655 (including the valve)~~ Containment isolation valve CVS-VLV-153 (excluding the valve)	3	PCCV	C	~~YES~~Q	3	I	
Charging line piping and valves from and including the volume control outlet valve CVS-LCV-031B to charging pump minimum flow orifices and following valves: CVS-VLV-213 (including valve) CVS-VLV-585 (including valve) CVS-VLV-557 (including valve) CVS-VLV-163 and 164 (excluding valves) CVS-MOV-152 (excluding valve) CVS-VLV-591 and 593 (including valves)	3	R/B	C	~~YES~~Q	3	I	
Volume control tank outlet line to and excluding valve CVS-LCV-031B and the line from and including CVS-VLV-568	4	R/B	D	~~N/A~~A	4	II	Note 5.a
Volume control tank drain piping and valves up to and including CVS-VLV-636	4	R/B	D	~~N/A~~A	4	II	Note 5.a

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 11 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Volume control tank drain piping and valves from and excluding CVS-VLV-636	8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Chemical and volume control system make up piping and valves ~~excluding valves CVS-FCV-128, 129 and piping between these valves~~to and excluding valve CVS-FCV-128	8	R/B A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Chemical and volume control system piping and valves on the chemical mixing tank side of and excluding the valves CVS-VLV-585 and CVS-VLV-584	8	R/B A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Chemical and volume control system piping and valves related to the chemical mixing tank and the blender	8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Chemical and volume control system piping and valves related to the boric acid tanks excluding valve CVS-VLV-557, up to and including valves CVS-VLV-542,547, CVS-AOV-549A,B, through boric acid transfer pump A,B, boric acid filter and including the downstream piping from and including valve CVS-VLV-525	4	A/B	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17
Chemical and volume control system piping and valves related to the boric acid batching tank to and excluding valve CVS-VLV-525	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
(Deleted)								

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 12 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Chemical and volume control system piping and valves related to the boric acid pump minimum flow piping up to boric acid tank, through transfer pump minimum flow orifice and valve CVS-VLV-531A,B	4	A/B	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17
Chemical and volume control system piping and valves related to the boric acid tanks up to and including valves CVS-SRV-509A,B, CVS-VLV-511A,B, CVS-VLV-508A,B	4	A/B	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17
Chemical and volume control system piping and valves related to the boric acid tanks excluding foregoing piping and valves	~~8~~4	A/B	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17
Chemical and volume control system piping and valves related to the holdup tanks and the boric acid evaporator feed pumps	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Chemical and volume control system piping and valves related to the boric acid evaporator and the boric acid evaporator feed demineralizer.	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Chemical and volume control system piping and valves related to the primary makeup water supply isolation CVS-FCV-133A, 129, 128 and CVS-VLV-581	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
4. Safety Injection System								
Safety injection pumps	2	R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 13 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
Safety injection piping and valves between the System penetration and including the second check valve SIS-VLV-012A, B, C, D upstream of the direct Vessel Injection penetration	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Safety injection piping and valves upstream of and excluding the second check valve SIS-VLV-012A, B, C, D upstream of the direct Vessel Injection penetration	2	PCCV, R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Hot leg injection piping downstream of and including the motor operated valves SIS-MOV-014A, B, C, D	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Hot leg injection piping upstream of but excluding the motor operated valves SIS-MOV-014A, B, C, D	2	PCCV	B	~~YES~~Q	2	I		DCD_03.02.02-17
Accumulator	2	PCCV	B	~~YES~~Q	2	I		DCD_03.02.02-17
Accumulator piping and valves on the reactor coolant system side of and including the second check valves SIS-VLV-102A, B, C, D	1	PCCV	A	~~YES~~Q	1	I		
Accumulator piping and valves on the accumulator side of but excluding the second check valves SIS-VLV-102A, B, C, D	2	PCCV	B	~~YES~~Q	2	I		DCD_03.02.02-17
Emergency core cooling / containment spray strainer	2	PCCV	~~B~~N/A	~~YES~~Q	5	I		MIC-03-03-00043
Emergency letdown isolation valves SIS-MOV-031A, 031D, 032A, 032D and piping between valves	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Emergency let down piping from and excluding valves SIS-MOV-032A,D	2	PCCV	B	~~YES~~Q	2	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 14 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Accumulator N2 vent piping up and including valves SIS-AOV-114,SIS-SRV-116, SIS-MOV-121A,B and SIS-HCV-017	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
(Deleted)								
Safety injection system valve leak test piping between test line isolation valves (not including), SIS-VLV-216A,B (not including) and ~~SIS-HCV-089 (not including)~~SIS-AOV-201B,C (not including)	8	PCCV	D	~~N/A~~N	4	NS		DCD_03.02.02-17 DCD_03.02.02-17
5. Residual Heat Removal System(RHRS)								
Containment Spray/Residual Heat Removal pumps	2	R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Containment spray/residual heat removal heat exchangers - tube side	2	R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Containment spray/residual heat removal heat exchangers - component cooling water side	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Residual heat removal suction piping and valves on the reactor coolant system side between the hot legs, up to and including the second motor operated valves RHS-MOV-002A, B, C, D	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17
Residual heat removal discharge piping and valves on the reactor coolant system side between the cold legs, up to and including the second check valves RHS-VLV-027A,B,C,D	1	PCCV	A	~~YES~~Q	1	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 15 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Residual heat removal system piping and valves on the residual heat removal system side from and excluding the second motor operated valves RHS-MOV-002A, B, C, D to and excluding the second check valves RHS-VLV-027A,B,C,D	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Residual heat removal system piping and valves not mentioned above up to and including the valves interfacing with systems of a lower classification.	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
6. Emergency Feedwater System (EFWS)								
Emergency feedwater pumps	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Emergency feedwater pits	3	R/B	~~C~~N/A	~~YES~~Q	5	I		
Emergency feedwater pump turbine steam drain pots	4	R/B	D	~~N/A~~A	4	II	Note 5.a	
Emergency feedwater pump discharge piping and valves up to and excluding emergency feedwater isolation valves EFS-MOV-019A,B,C,D	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Emergency feedwater pump suction piping and valves from Emergency feedwater pits	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Emergency feedwater system containment isolation valves EFS-MOV-101A,B,C,D, EFS-MOV-019A,B,C,D	2	R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
(Deleted)								
Emergency feedwater pump miniflow and fullflow piping and valves to emergency feedwater pit	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Emergency feedwater pump discharge tie line piping and valves	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 16 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02-17
Emergency feedwater pit water supply piping and valves from Emergency feedwater pit up to and including EFS-VLV-001A,B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02-17
Emergency feedwater pump suction piping and valves from and including the valve EFS-VLV-006A,B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02-17
Emergency feedwater pump suction line piping from and including EFS-VLV-004	3	R/B	C	~~YES~~Q	3	I		DCD_03.02-17
Emergency feedwater pit sampling piping up to and including EFS-VLV-041A,B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02-17
Emergency feedwater pit overflow piping	~~4~~10	R/B	~~D~~N/A	~~N/A~~N	5	NS		DCD_03.02-17
Emergency feedwater pit drain piping and valves up to and including EFS-VLV-~~042 A, B~~032 A,B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02-17
Water supply piping and valves from emergency feedwater pits to spent fuel pit up to and including EFS-VLV-031	3	R/B	C	~~YES~~Q	3	I		DCD_03.02-17
Emergency feedwater supply piping to spent fuel pit between and excluding EFS-VLV-031 and SFS-VLV-~~023~~024 A,B	4	R/B	D	~~N/A~~A	~~5~~4	~~NS~~II	Note 5.a	DCD_03.02-17
Turbine driven emergency feedwater pump steam supply piping and valves from and excluding EFS-MOV-101A,B,C,D to the pumps	3	R/B	C	~~YES~~Q	3	I		DCD_03.02-17
Turbine driven emergency feedwater pump steam supply piping drain piping and valves up to and including EFS-VLV-109A,B,C,D	3	R/B	C	~~YES~~Q	3	I		DCD_03.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 17 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	DCD_03.02.02-17
Turbine driven emergency feedwater pump steam supply piping warming piping and valves	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Turbine driven emergency feedwater pump steam supply piping drain piping and valves up to and including EFS-VLV-117A,B, 114A,B, 111A,B, ~~LCV 076, 077, 078, 086, 087, 088~~152A, D, 154A, D, 156 A,D	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17 DCD_03.02.02-17
Turbine driven emergency feedwater pump steam supply piping drain piping and valves downstream and excluding EFS-VLV-117A,B,114A,B, 111A,B, ~~LCV-076, 077, 078, 086, 087, 088~~152A, D, 154A, D, 156 A,D	4	R/B	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
Turbine driven emergency feedwater pump steam exhaust piping	4	R/B	D	~~N/A~~A	4	II	Note 5.a	
Turbine driven emergency feedwater pump steam exhaust piping drain piping	4	R/B	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
Emergency feedwater pump turbine steam drain pot drain piping and valves	4	R/B	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
Emergency feedwater pump turbine steam drain pot cooling water supply piping and valves	~~9~~4	R/B	D	~~N/A~~A	~~5~~4	~~NS~~II	Note 5.a	DCD_03.02.02-17
7. Condensate and Feedwater System								
The piping upstream of the main feedwater isolation valves FWS-SMV-512A, B, C, D to the first piping restraint at the interface between the R/B and T/B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 18 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Main feedwater piping and valves to the steam generators from and including the main feedwater isolation valves FWS-SMV-512A, B, C, D	2	R/B PCCV	B	~~YES~~Q	2	I		DCD_03.02.02-17
Main feedwater piping upstream of the restraint at the interface between the R/B and the T/B	8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Emergency feedwater piping from and excluding EFS-MOV-019A,B,C,D	2	R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
High pressure cleanup piping and valves in the R/B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
High pressure cleanup piping and valves out of the R/B	10	T/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Steam generator water filling piping and valves in the R/B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Steam generator water filling piping and valves out of the R/B	8	T/B	D	~~N/A~~N	~~5~~4	NS		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 19 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
8. Main Steam Supply System (MSS)							
Main steam piping and valves including branch pipe from steam generators up to and including the following valves: 4 Nitrogen supply piping valves MSS-VLV-531A, B, C, D Main steam isolation valves MSS-SMV-515A, B, C, D Main steam bypass isolation valves MSS-HCV-565, 575, ~~3635, 3645~~585, 595 Main steam relief valves MSS-PCV-515, 525, 535, 545 Main steam depressurization valves MSS-MOV-508A,B,C,D Main steam safety valves MSS-SRV-509A,B,C,D, 510A,B,C,D, 511A,B,C,D, 512A,B,C,D, 513A,B,C,D, 514A,B,C,D Main steam drain isolation valves MSS-MOV-701A,B,C,D	2	R/B PCCV	B	~~YES~~Q	2	I	
Branch piping from the main steam piping to the turbine driven emergency feedwater system pump turbines up to and excluding EFS-MOV-101A,B,C,D	2	R/B	B	~~YES~~Q	2	I	
Main steam drain piping and valves located upstream of main steam isolation valves downstream and excluding the main steam drain isolation valves in the R/B.	3	R/B	C	~~YES~~Q	3	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 20 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Main steam piping downstream of main steam isolation valves and main steam bypass isolation valves up to and including the first restraint at the interface between the R/B and the T/B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Main steam safety valves discharge piping in the R/B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Main steam piping downstream of the main steam relief valves and main steam depressurization valves in the R/B.	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Main steam safety valves discharge piping out of the R/B	4	O/B	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
MSS piping downstream of the main steam relief valves and main steam depressurization valves out of the R/B	4	O/B	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
Turbine driven emergency feedwater pump steam supply piping drain piping and valves downstream and excluding EFS-VLV-109A,B,C,D	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Main steam piping from the restraint at the interface between the R/B and the T/B to the turbine	8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Main steam equalization piping	8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Main steam drain piping and valves in the turbine building	8	T/B	D	~~N/A~~N	4	NS		
Nitrogen supply piping and valves up to and excluding ~~NMS-~~VLV-531A,B,C,D	10	~~T/B~~PCCV	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Turbine bypass valves MSS-TCV-550A,B,C,D,E,F,G,H,J,K,L,M,N,P,Q	~~8~~4	T/B	D	~~N/A~~A	4	NS	Note 5.d	
9. Containment Spray System (CSS)								
Spray nozzles	2	PCCV	B	~~YES~~Q	2	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 21 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Containment spray system piping and valves	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
10. Post Accident pH Control System(PHS)								
NaTB baskets	2	PCCV	~~B~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
NaTB basket containers	2	PCCV	B	~~YES~~Q	2	I		
NaTB solution transfer piping	2	PCCV	B	~~YES~~Q	2	I		
11. Component Cooling Water System (CCWS)								
Component cooling water pumps	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Component cooling water surge tanks	3	R/B	C	~~YES~~Q	3	I		
Component cooling water heat exchangers	3	R/B	C	~~YES~~Q	3	I		
Component cooling water supply/ return headers A, B ,A1 and A2 piping and valves excluding the following; Component cooling water system containment isolation valves and piping between these valves(1) Component cooling water supply/ return header A2 piping, in between but excluding the valves NCS~~-VLV-033~~AOV-058A and NCS-VLV-034A(2)	3	R/B	C	~~YES~~Q	3	I	1. Component cooling water system containment isolation valves and piping between these valves are Equipment Class 2, Quality Group B, Seismic Category I. 2. Valves NCS~~-VLV-033~~AOV-058A and NCS-VLV-034A are Equipment Class 3, Quality Group C.	DCD_03.02.02-17 DCD_09.02.02-49

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 22 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
Component cooling water supply/ return headers C, D, C1 and C2 piping and valves excluding the following; Component cooling water system containment isolation valves and piping between these valves(3) Component cooling water supply/ return header C2 piping, in between but excluding the valves NCS-~~VLV-033~~AOV-058B and NCS-VLV-034B(4)	3	R/B	C	~~YES~~Q	3	I	3. Component cooling water system containment isolation valves and piping between these valves are Equipment Class 2, Quality Group B, Seismic Category I. 4. Valves NCS-~~VLV-033~~AOV-058B and NCS-VLV-034B are Equipment Class 3, Quality Group C.
Component cooling water supply/ return header A2 piping and valves between and excluding the valves NCS-~~VLV-033~~AOV-058A and NCS-VLV-034A (excluding the valves), excluding the following; Component cooling water system containment isolation valves and piping between these valves(5) Component cooling water system piping and valves between these valves NCS-~~AOV~~VLV-661A and NCS-VLV-~~671~~669A (~~including~~excluding the valves)~~(6)~~ Component cooling water system piping and valves between these valves NCS-~~AOV~~VLV-601 and NCS-VLV-~~653~~651 (~~including~~excluding the valves)~~(7)~~	4	R/B	D	~~N/A~~A	4	II	Note 5.a 5. Component cooling water system containment isolation valves and piping between these valves are Equipment Class 2, Quality Group B, Seismic Category I. 6. ~~Valves NCS-AOV-661A and NCS-VLV-671A are Equipment Class 3, Seismic Category I.~~ 7. ~~Valves NCS-AOV-601A and NCS-VLV-653 are Equipment Class 3, Quality Group 3, Seismic Category I.~~

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 23 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
Component cooling water supply/ return header C2 piping and valves between and excluding the valves NCS-~~VLV-033~~AOV-058B and NCS-VLV-034B (excluding the valves), excluding the following; Component cooling water system containment isolation valves and piping between these valves(8) Component cooling water system piping and valves between these valves NCS-~~AOV~~VLV-661B and NCS-VLV-~~671~~669B (~~including~~excluding the valves)~~(9)~~	4	R/B	D	~~N/A~~A	4	II	Note 5.a 8. Component cooling water system containment isolation valves and piping between these valves are Equipment Class 2, Quality Group B, Seismic Category I. 9. ~~Valves NCS-AOV-661B and NCS-VLV-671B are Equipment Class 3, Seismic Category I.~~	DCD_03.02.02-17 DCD_09.02.02-49 DCD_09.02.02-49
Component cooling water system piping and valves related to the excess letdown heat exchanger inside containment between and including the valves NCS-MOV-511,517, SRV-513	2	PCCV, R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Component cooling water system piping and valves related to the letdown heat exchanger inside containment between and including the valves NCS-MOV-531,537, SRV-533	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Component cooling water system piping and valves between and including the containment isolation valves NCS-MOV-402A,436A,438A~~,445A,447A,448A~~ and NCS-VLV-403A,437A	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17 DCD_09.02.02-58
Component cooling water piping and valves between and including the containment isolation valves NCS-MOV-402B,436B,438B~~,445B,447B,448B~~ and NCS-VLV-403B,437B	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17 DCD_09.02.02-58

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 24 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
Component cooling water system piping and valves related to components installed in auxiliary building from and excluding ~~isolation~~stop valve NCS-~~AOV-602~~-VLV-601 up to and excluding stop valve NCS-VLV-651	~~4~~8	A/B R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17 DCD_09.02.02-49
Component cooling water system piping and valves related to components installed in turbine building from and excluding ~~isolation~~stop valves NCS-~~AOV-662~~VLV-661A,B up to and excluding stop valves NCS-VLV-669A,B	~~4~~8	T/B R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17 DCD_09.02.02-49
Component cooling water system piping and valves related to reactor coolant pumps between the containment isolation valves NCS-MOV-436A,447A (excluding) and NCS-VLV-403A,437A (excluding) and the valves NCS-SRV-406A,B,435A (including)	3	PCCV	C	~~YES~~Q	3	I		DCD_03.02.02-17
Component cooling water system piping and valves related to reactor coolant pumps between the containment isolation valves NCS-MOV-436B,447B (excluding) and NCS-VLV-403B,437B (excluding) and the valves NCS-SRV-406C,D,435B (including)	3	PCCV	C	~~YES~~Q	3	I		DCD_03.02.02-17
~~Component cooling water system piping and valves between and including the valves NCS-AOV-601 and 602~~	~~3~~	~~R/B~~	~~C~~	~~YES~~	~~3~~	~~I~~		DCD_09.02.02-49

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 25 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
~~Component cooling water system piping and valves between and including the valves NCS-VLV-651 and 653~~	~~3~~	~~R/B~~	~~C~~	~~YES~~	~~3~~	~~I~~		DCD_09.02.02-49
~~Component cooling water system piping and valves between and including the valves NCS-AOV-661A,B and 662A,B~~	~~3~~	~~R/B~~	~~C~~	~~YES~~	~~3~~	~~I~~		
~~Component cooling water system piping and valves between and including the valves NCS-VLV-669A,B and 671A,B~~	~~3~~	~~R/B~~	~~C~~	~~YES~~	~~3~~	~~I~~		
Component cooling water system Piping from component cooling water surge tank to and including the valve(NCS-SRV-003A,NCS-RCV-056A,NCS-PCV-012,~~NCS-VLV-045A,~~NCS-VLV-047A)	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Component cooling water system Piping from component cooling water surge tank to and including the valve(NCS-SRV-003B,NCS-RCV-056B,NCS-PCV-022,NCS-VLV-045B,NCS-VLV-047B)	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Component cooling water surge tank surge line piping	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Makeup line piping and valves from and including the valves NCS-VLV-051A,B and 054A,B up to and excluding the valves NCS-~~LCV-010,020~~VLV-053A,B	~~4~~9	R/B	~~D~~N/A	~~N/A~~N	~~4~~5	~~II~~NS		DCD_09.02.02-68 DCD_03.02.02-17
Makeup line piping and valves from and ~~including the valves NCS-VLV-061A,B up to and~~ excluding the valves NCS-VLV-~~062~~063A,B	~~4~~7	R/B	~~D~~N/A	~~N/A~~A	~~4~~5	~~II~~Note 2	Note 5.c	DCD_09.02.02-68 DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 26 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Makeup line piping and valves from and including the valves ~~NCS-VLV-065A,B up to and including the valves NCS-LCV-010,020 and~~ NCS-VLV-~~062A,B~~053A,B and NCS-VLV-063A,B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17 DCD_09.02.02-68
Nitrogen gas supply line piping and valves from and including the valves NCS-VLV-041A,B up to and excluding the valves NCS-PCV-012,022 and NCS-VLV-045~~A,~~B	~~10~~5	R/B	N/A	~~N/A~~A	5	NS	Note 5.d	DCD_03.02.02-17
Chemical addition line piping and valves up to and excluding the valves NCS-VLV-047A,B	10	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Component cooling water system piping from alternative component cooling water supply/ return headers A1 to and including the valve(NCS-MOV-321A, 323A, 325A, 326A)	3	R/B	C	Q	3	I		DCD_09.02.02-80 DCD_03.02.02-17
Component cooling water system piping from alternative component cooling water supply/ return headers C1 to and including the valve (NCS-MOV-241, 242, 321B, 323B, 325B, 326B)	3	R/B	C	Q	3	I		DCD_09.02.02-80 DCD_03.02.02-17
12. Spent Fuel Pit Cooling and Purification System (SFPCS)								
Spent fuel pit pumps	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Spent fuel pit heat exchangers	3	R/B	C	~~YES~~Q	3	I		
Spent fuel pit filters	8	A/B	D	~~N/A~~N	4	NS		
Spent fuel pit strainers	~~8~~4	A/B	D	~~N/A~~A	4	NS	Note 5.d	
Spent fuel pit demineralizers	8	A/B	D	~~N/A~~N	4	NS		

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 27 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	DCD_03.02.02-17
Spent fuel pit cooling piping and valves up to and including the following valves: Primary makeup line isolation valve SFS-VLV-026,~~027~~028 and SFS-VLV-030,031,032 Purification line isolation valves SFS-VLV-101A,B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17 DCD_03.02.02-17
Spent fuel pit purification piping and valves from but excluding valve SFS-VLV-101A, B up to but excluding valve SFS-VLV-133A,B, A,B-Purification crosstie piping and valves	8	R/B A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Spent fuel pit cooling piping and valves from but excluding RHS-VLV-032A,D (return line from containment spray/ residual heat removal system)	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Spent fuel pit cooling piping and valves up to but excluding RHS-VLV-033A,D (towards containment spray/ residual heat removal system)	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Water supply piping and valves from emergency feedwater pits from and including SFS-VLV-023 but excluding SFS-VLV-024	4	R/B	D	~~N/A~~A	4	~~NS~~II	Note 5.a	DCD_03.02.02-17
Water supply piping and valves from emergency feedwater pits to spent fuel pit from and including SFS-VLV-024	4	R/B	D	~~N/A~~A	4	~~NS~~II	Note 5.a	DCD_03.02.02-17
Water supply piping and valves from demineralized water storage tank ~~from and including SFS-VLV-025~~ up to ~~but~~and excluding SFS-VLV-026	10	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 28 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Spent fuel pit purification line return piping to spent fuel pit from and including valves SFS-VLV-133A,B	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Spent fuel pit demineralizer piping and valves within the following boundaries: A,B-Main purification line-resin backwashing/primary makeup water line junction points; From and including valves SFS-VLV-141A,B; Up to and including valves SFS-VLV-165A,B; A,B-Demineralizer resin filling and discharge piping from and including valves SFS-VLV-152A,B up to and including valves SFS-VLV-153A,B; Demineralizer backwash piping from but excluding SFS-VLV-165A,B to top of demineralizer tank	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
13. Essential Service Water System (ESWS)								
Essential service water pumps	3	UHSRS	C	~~YES~~Q	3	I		DCD_03.02.02-17
Essential service water pump discharge strainers, including essential service water supply piping and valves	3	UHSRS ESWPT	C	~~YES~~Q	3	I		
Essential service water system strainer blowdown piping and valves and vent piping and valves	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Essential service water supply header piping and valves	3	UHSRS ESWPT	C	~~YES~~Q	3	I		DCD_03.02.02-17
Essential service water return header piping and valves	3	UHSRS ESWPT	C	~~YES~~Q	3	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 29 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Essential service water supply line piping and valves to component cooling water heat exchangers, including component cooling water heat exchanger backwash piping	3	R/B ESWPT	C	~~YES~~Q	3	I		DCD_03.02.02-17
Essential service water return line piping and valves from component cooling water heat exchangers	3	R/B ESWPT	C	~~YES~~Q	3	I		DCD_03.02.02-17
Essential service water supply line piping and valves to essential chiller units	3	PS/B ESWPT	C	~~YES~~Q	3	I		DCD_03.02.02-17
Essential service water return line piping and valves from essential chiller units	3	PS/B ESWPT	C	~~YES~~Q	3	I		DCD_03.02.02-17
~~Essential service water pump motor cooling piping and valves~~	~~3~~	~~ESWPT~~	~~C~~	~~YES~~	~~3~~	~~I~~		DCD_03.02.02-17
14. Gaseous Waste Management System (GWMS)								
Waste gas surge tanks	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02.02-17
Charcoal beds	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Waste gas compressor packages	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Waste gas dryer skid	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Waste gas analyzer skid	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Oxygen gas analyzer skid	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Gaseous waste management system piping and valves in the system up to and including the first valve interfacing with a system of equipment class ~~5~~8 or 9	6	A/B	N/A	~~N/A~~A	6	Note1	Note 5.b	DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 30 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
Piping and valves in the system up to but not including the first valve interfacing with a system of a higher classification	6	R/B A/B	N/A	~~N/A~~A	6	Note1	Note 5.b	DCD_03.02.02-17
15. Liquid Waste Management System (LWMS)								
Containment vessel reactor coolant drain tank pumps	6	PCCV	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02.02-17
Containment vessel sump pumps	6	PCCV	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02.02-17
Reactor building sump pumps	6	R/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Auxiliary building sump pumps	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Waste holdup tank pumps	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Waste monitor tank pumps	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Detergent drain tank pump	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Detergent drain monitor tank pump	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Chemical drain tank pump	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Auxiliary building equipment drain sump pump	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Containment vessel reactor coolant drain tank	6	PCCV	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02.02-17
Reactor building sump tank	6	R/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02.02-17
Auxiliary building sump tank	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Auxiliary building equipment drain sump tank	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Waste holdup tanks	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02.02-17
Waste monitor tanks	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Detergent drain tank	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Detergent drain monitor tank	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Neutralizing agent measuring tank	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Waste effluent inlet filters	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Waste demineralizers	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 31 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
Activated carbon filter	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02. 02-17
Waste effluent outlet strainer	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Detergent drain strainer	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Liquid waste management system piping and valves in the system up to and including the first valve interfacing with a system of equipment class ~~5~~8, 9, or 10	6	PCCV R/B A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02. 02-17
Piping and valves in the system up to but not including the first valve interfacing with a system of a higher classification	6	PCCV, R/B A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	
Liquid waste management system containment isolation valves and the piping between the valves	2	PCCV, R/B	B	~~YES~~Q	2	I		DCD_03.02. 02-17
Piping, valves between HVAC Air cooler in C/V and the containment sump through the stand pipe	8	PCCV	D	N	4	NS	The SSE will not result in a failure and interaction of these components that adversely affect the function of containment sump level and flow monitoring system addressed by RG 1.45.	DCD_03.02. 02-17
16. Solid Waste Management System								
Spent resin storage tanks	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02. 02-17
Solid Waste Management System piping and valves in the system up to and including the first valve interfacing with a system of equipment class ~~5~~ 8 or 9	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02. 02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 32 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Piping and valves in the Solid Waste Management System up to but not including the first valve interfacing with a system of a higher classification	6	A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02.02-17
17. Refueling Water Storage System								
Refueling water recirculation pumps	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Refueling water storage pit	2	PCCV	~~B~~N/A	~~YES~~Q	5	I		
Refueling water storage auxiliary tank	4	O/B	D	~~N/A~~A	4	NS	Note 5.d	
Refueling water recirculation pumps discharge piping and valves in the refueling water storage system excluding piping downstream of the valve RWS-VLV-021	3	PCCV	C	~~YES~~Q	3	I		DCD_03.02.02-17
Piping including branch piping and valves in the refueling water storage system from the refueling water storage pit up to and including the outermost containment isolation valves RWS-MOV-004,AOV-022, and valves RWS-VLV-041,042,045,061,062,075	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Refueling water recirculation pump suction piping from RWS-MOV-004(excluding) and from RWS-VLV-101(including) up to pumps	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
~~RWSP transfer piping~~	~~2~~	~~PCCV~~	~~B~~	~~YES~~	~~2~~	~~I~~		MIC-03-03-00043
Reactor cavity overflow piping to the RWSP	2	PCCV	B	Q	2	I		DCD_03.02.02-17
Header Compartment overflow piping to the RWSP	2	PCCV	B	Q	2	I		
Refueling cavity drain piping	2	PCCV	B	~~YES~~Q	2	I		
Debris interceptor	~~5~~2	PCCV	N/A	~~N/A~~Q	5	I~~I~~		

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 33 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Piping from the refueling water storage auxiliary tank up to and excluding the valve CVS-VLV-591	4	O/R R/B	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17
RWSP overflow piping to C/V drain pump room	2	PCCV	B	Q	2	I		MIC-03-03-00043
Piping and valves in the refueling water storage system except the foregoing piping and valves	~~8~~4	PCCV R/B	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17
18. Compressed Air and Gas System								
Instrument air compressors package	~~9~~5	T/B	N/A	~~N/A~~A	5	NS	Note 5.d	DCD_03.02.02-17
Service air compressors package	9	T/B	N/A	~~N/A~~N	5	NS		
Compressed air and gas system piping and valves except the containment penetration noted below	~~9~~5	PCCV R/B A/B T/B	N/A	~~N/A~~A	5	NS	Note 5.d	
Compressed air and gas system containment isolation valves and piping between the valves	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
19. Primary Make-Up Water System								
Primary makeup water tank	8	O/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Primary makeup water pump	8	A/B	D	~~N/A~~N	4	NS		
Primary makeup water system valves and piping from and including PWS-VLV-005	8	R/B A/B O/B	D	~~N/A~~N	4	NS		
Primary makeup water system from deaerated supply line up to but excluding PWS-VLV-005, and upstream and downstream of PWS-VLV-060	9	R/B A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
20. Demineralized Water System								
Demineralized water system containment isolation valves and piping between the valves	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 34 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Demineralized water system piping and valves except the containment penetration noted above	~~9~~10	PCCV R/B A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
21. Auxiliary Steam Supply System								
(Deleted)								
(Deleted)								
(Deleted)								
Auxiliary steam supply system drain monitor heat exchanger	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Auxiliary steam supply system drain tank	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Auxiliary steam supply system drain tank pump	8	A/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
(Deleted)								
(Deleted)								
Auxiliary steam supply system piping and valves	8	T/B, A/B O/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
22. Steam Generator Blowdown System								
System components	6	T/B, R/B A/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02.02-17
Steam generator Blowdown system piping and valves from steam generators up to and including the first containment isolation valves, on the outboard side of containment	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Steam generator Blowdown system piping and valves from the outlet of the first containment isolation valves up to and including pipe anchors located in the main steam piping room wall	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 35 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Steam generator Blowdown system piping and valves in the reactor building, auxiliary building, and turbine building	6	R/B, A/B, T/B	N/A	~~N/A~~A	6	Note 1	Note 5.b	DCD_03.02.02-17
23. Fire protection water supply System								
Fire protection water supply system containment isolation valves and piping between the valves.	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Fire protection water supply system piping and valves except the containment penetration noted above	7	PCCV R/B,A/B AC/B,PS/B T/B	N/A	~~N/A~~A	~~5~~7	Note 2	Note 5.c	DCD_03.02.02-17
24. Process and Post-accident Sampling System								
Sample heat exchanger –tube side	~~4~~8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Sample heat exchanger– component cooling water side	3	R/B	C	~~YES~~Q	3	I		
Accumulator sampling piping and valves from accumulator up to and including the outermost containment isolation valve	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Hot leg sampling piping and valves from hot leg up to and including the outermost containment isolation valve	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Pressurizer liquid sampling piping and valves from hot leg up to and including the outermost containment isolation valve	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Containment isolation valves PSS-MOV-071and 072 and piping between them	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 36 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
RHS loop sampling piping and valves up to and including the valves PSS-MOV-052A,B,C,D	2	R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Containment vessel atmosphere gas sample cooler	~~4~~8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Containment vessel atmosphere gas sample moisture separator	~~4~~8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Containment vessel atmosphere gas sample cooler-component cooling water side	3	R/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Containment vessel atmosphere gas sampling hood	~~4~~8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Containment vessel atmosphere gas sampling compressor	~~4~~8	R/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Containment vessel atmosphere sampling inlet, outlet valve PSS-MOV-301, 312	~~4~~8	R/B	D	~~N/A~~N	4	~~I~~NS	The SSE will not result in a failure and interaction of these components that adversely affect the function of Containment Airborne Particulate Radioactivity Monitor addressed by RG 1.45.	DCD_03.02.02-17
Process and post-accident sampling systems piping and valves not specifically described above (excluding PSS-MOV-301, 312)	~~4~~8	R/B A/B,AC/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
~~PSS-MOV-301~~	~~4~~	~~R/B~~	~~D~~	~~N/A~~	~~4~~	~~I~~		DCD_03.02.02-17
~~PSS-MOV-312~~	~~4~~	~~R/B~~	~~D~~	~~N/A~~	~~4~~	~~I~~		
Sample hood and sample panel	~~4~~8	AC/B	D	~~N/A~~N	4	NS		
Post accident liquid sample hood	~~4~~8	R/B	D	~~N/A~~N	4	NS		

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 37 of 58)

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System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
~~2~~5. Equipment and Floor drainage System							
Drain piping, valves and sump in the containment	6	PCCV	N/A	~~N/A~~A	6	Note 1	Note 5.b The SSE will not result in a failure and interaction of these components that adversely affect the function of containment sump level and flow monitoring system addressed by RG 1.45.
Drain piping, valves in radiological controlled area	6	R/B A/B AC/B	N/A	~~N/A~~A	6	Note 1	Note 5.b
Drain piping, valves, reactor building non-radioactive sump and sump pump in reactor building except for RCA	8	R/B	D	~~N/A~~N	4	NS	
Drain piping, valves, turbine building sump and sump pump in turbine building	8	T/B	D	~~N/A~~N	4	NS	
Drain piping, valves in auxiliary building and access control building, except for RCA	10	A/B,AC/B	N/A	~~N/A~~N	5	NS	
Drain piping, valves in power source building	10	PS/B	N/A	~~N/A~~N	5	NS	
Drain piping valves related to ESF rooms drain isolation FDS-VLV-001A,B,C,D	3	R/B	C	~~YES~~Q	3	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 38 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
26. Potable and Sanitary Water System							
Potable and Sanitary Water System components, piping and valves	5 or 10	R/B,A/B,AC/B T/B	N/A	~~N/A~~A or N	5	II or NS	Piping and valves within the MCR compartment are designed as Seismic Category II.
27. Emergency Gas Turbine Auxiliary System							
Emergency Gas Turbine	3	PS/B	N/A	Q	5	I	
Fuel oil storage tanks	3	PSFSV	C	~~YES~~Q	3	I	
Fuel oil transfer pumps	3	PSFSV	C	~~YES~~Q	3	I	
Fuel oil transfer pump suction lines from EPS fuel oil storage tank to EPS fuel oil transfer pumps	3	PSFSV	C	Q	3	I	
Fuel oil transfer pump suction line outlet check valves	3	PSFSV	C	Q	3	I	
Fuel oil transfer pump suction line isolation valves	3	PSFSV	C	Q	3	I	
Fuel oil day tanks	3	PS/B	C	~~YES~~Q	3	I	
Fuel oil transfer pump discharge lines up to EPS fuel oil day tank	3	PSFSV	C	Q	3	I	
Fuel oil transfer pump discharge line check valves	3	PSFSV	C	Q	3	I	
Fuel oil transfer pump discharge line isolation valves	3	PSFSV	C	Q	3	I	
Fuel oil day tank outlet lines up to EPS	3	PS/B	C	Q	3	I	
Fuel oil day tank outlet valves	3	PS/B	C	Q	3	I	
Air receivers	3	PS/B	C	~~YES~~Q	3	I	
Starting system air Compressor	5	PS/B	N/A	A	5	II	Note 5.a

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 39 of 58)

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System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
Starting system air receiver inlet check valves and outlet lines up to air receivers	3	PS/B	C	Q	3	I	
Starting system air receiver relief valves	3	PS/B	C	Q	3	I	
Starting system cross-tie lines to air receivers	3	PS/B	C	Q	3	I	
Starting system air receiver outlet lines up to starting valve unit	3	PS/B	C	Q	3	I	
Starting system starting valves unit piping and valves	3	PS/B	C	Q	3	I	
Starting system starting valve unit outlet lines up to generator set enclosure	3	PS/B	C	Q	3	I	
Lube oil main oil pumps	3	PS/B	~~C~~N/A	~~YES~~Q	5	I	
Lube oil cooler	3	PS/B	~~C~~N/A	~~YES~~Q	5	I	
Lube oil reduction gear reservoir	3	PS/B	~~C~~N/A	~~YES~~Q	5	I	
Main oil filters	3	PS/B	N/A	Q	5	I	
Main lube oil strainers	3	PS/B	N/A	Q	5	I	
Piping, fittings and valves	3	PS/B	N/A	Q	5	I	
Ventilation and cooling equipment	3	PS/B	~~C~~N/A	~~YES~~Q	5	I	
Combustion air intake equipment and ductwork, turbine exhaust	3	PS/B	~~C~~N/A	~~YES~~Q	5	I	
Combustion air intake and exhaust system intake silencers	3	PS/B	N/A	Q	5	I	
Combustion air intake and exhaust system turbine exhaust silencers	3	PS/B	N/A	Q	5	I	
Combustion air intake and exhaust system piping	3	PS/B	N/A	Q	5	I	
GTG Room ventilation system supply side equipment and ductwork and exhaust side equipment and ductwork	3	PS/B	~~C~~N/A	~~YES~~Q	5	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 40 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
Piping and valves (Safety related portion: Off skid)	3	PS/B, PSFSV	C	~~YES~~Q	3	I		DCD_03.02.02-17
Piping and valves (Safety related portion: On skid)	3	PS/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
PSFSV Ventilation system containing exhaust fan, backdraft dampers, in-duct electric heater and ductwork	5	PSFSV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
28. Alternate alternating current Gas Turbine System								DCD_03.02.02-17
Alternate alternating current Gas Turbine	5	PS/B	N/A	A	5	NS	Note 5.d	
Fuel oil storage tanks	5	PSFSV	N/A	A	5	NS	Note 5.d	
Fuel oil transfer pumps	5	PSFSV	N/A	A	5	NS	Note 5.d	
Fuel oil day tanks	5	PS/B	N/A	A	5	NS	Note 5.d	
Lube oil main oil pumps	5	PS/B	N/A	A	5	NS	Note 5.d	
Lube oil cooler	5	PS/B	N/A	A	5	NS	Note 5.d	
Lube oil reservoir	5	PS/B	N/A	A	5	NS	Note 5.d	
Ventilation and cooling equipment	5	PS/B	N/A	A	5	NS	Note 5.d	
Combustion air intake equipment and ductwork, turbine exhaust	5	PS/B	N/A	A	5	NS	Note 5.d	
GTG Room ventilation system supply side equipment and ductwork and exhaust side equipment and ductwork	5	PS/B	N/A	A	5	NS	Note 5.d	
Piping and valves (Off skid)	5	PS/B, PSFSV	N/A	A	5	NS	Note 5.d	
Piping and valves (On skid)	5	PS/B	N/A	A	5	NS	Note 5.d	
PSFSV Ventilation system containing exhaust fan, backdraft dampers, in-duct electric heater and ductwork	5	PSFSV	N/A	A	5	NS	Note 5.d	
29. Fuel Handling and Refueling System								
Refueling machine	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 41 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
Fuel handling machine	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a
Spent fuel assembly handling tool	~~5~~10	R/B	N/A	~~N/A~~N	5	NS	
New fuel storage rack	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Spent fuel storage rack	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Fuel transfer tube	2	PCCV, R/B	B	~~YES~~Q	2	I	
Spent fuel Pit	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
New fuel pit	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Fuel transfer canal	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Cask pit	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Cask washdown pit	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Spent fuel pit gates	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Fuel inspection pit	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Fuel transfer system	5	PCCV, R/B	N/A	~~N/A~~A	5	II	Note 5.a
Suspension hoist and aux. hoist on spent fuel cask handling crane	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a
New fuel elevator	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a
Containment rack	~~5~~3	PCCV	N/A	~~N/A~~Q	5	~~II~~I	
New fuel assembly handling tool	~~5~~10	R/B	N/A	~~N/A~~N	5	NS	
Rod control cluster handling tool	~~5~~10	R/B	N/A	~~N/A~~N	5	NS	
Thimble plug handling tool	~~5~~10	R/B	N/A	~~N/A~~N	5	NS	
Burnable poison rod assembly handling tool	~~5~~10	R/B	N/A	~~N/A~~N	5	NS	
Control rod drive shaft handling tool	~~5~~10	R/B	N/A	~~N/A~~N	5	NS	
Permanent Cavity Seal	~~4~~3	PCCV	~~D~~N/A	~~N/A~~Q	5	~~II~~I	
30. Containment System							
Containment vessel	2	PCCV	B	~~YES~~Q	2	I	
Equipment hatch	2	PCCV	B	~~YES~~Q	2	I	
Personnel hatch	2	PCCV	B	~~YES~~Q	2	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 42 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
31. Miscellaneous Plant Equipment								DCD_03.02.02-17
PCCV polar crane	5	PCCV	N/A	~~N/A~~A	5	II	The main and auxiliary hoist of the polar crane, the main hoist of the spent fuel cask handling crane ~~and the equipment hatch hoist~~ are designed in accordance with ASME NOG-1 and NUREG-0554 as Type I single-failure-proof cranes.	DCD_03.02.02-17 DCD_09.01.05-18
Spent fuel cask handling crane	5	R/B	N/A	~~N/A~~A	5	II		
Equipment hatch hoist	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Miscellaneous cranes and hoists in reactor building	5 or 10	R/B	N/A	~~N/A~~A or N	5	II or NS	Note 5.a	DCD_03.02.02-17
Miscellaneous hoists in power source buildings	5	PS/B	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Crane for SWDS in auxiliary building	~~5~~10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
32. Containment Purge System								
Containment high volume purge air handling unit	10	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment high volume purge air handling unit fan	10	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment high volume purge air handling unit cooling coil	10	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment high volume purge air handling unit electric heating coil	10	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment high volume purge exhaust filtration unit	~~4~~10	A/B	~~D~~N/A	~~N/A~~N	5	NS		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 43 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification[5]	Codes and Standards[3]	Seismic Category[4]	Notes	
Containment high volume purge exhaust filtration unit fan	~~4~~10	A/B	~~D~~N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment high volume purge exhaust filtration unit high-efficiency particulate air filter	~~4~~10	A/B	~~D~~N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment low volume purge air handling units	9	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment low volume purge air handling unit fans	9	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment low volume purge air handling unit cooling coils	9	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment low volume purge air handling unit electric heating coils	9	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment low volume purge exhaust filtration units	~~4~~9	A/B	~~D~~N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment low volume purge exhaust filtration unit fans	~~4~~9	A/B	~~D~~N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment low volume purge exhaust filtration unit high-efficiency particulate air filters	~~4~~9	A/B	~~D~~N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment low volume purge exhaust filtration unit charcoal adsorbers	~~4~~9	A/B	~~D~~N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Containment penetration piping	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
Ductwork and dampers of the containment high volume purge system (supply)	5 or 10	PCCV R/B	N/A	~~N/A~~A or N	5	II or NS	Ductwork and dampers, including supports, in areas containing safety-related equipment are seismic category II. Note 5.a	DCD_03.02.02-17 DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 44 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
Ductwork and dampers of the containment high volume purge system (exhaust)	~~4 or 8~~5 or 10	PCCV R/B A/B	~~D~~N/A	~~N/A~~A or N	5	II or NS	Ductwork and dampers, including supports, in areas containing safety-related equipment are seismic category II. Note 5.a	DCD_03.02.02-17 DCD_03.02.02-17 DCD_03.02.02-17
Ductwork and dampers of the containment low volume purge system (supply)	5 or 9	PCCV R/B	N/A	~~N/A~~A or N	5	II or NS	Ductwork and dampers, including supports, in areas containing safety-related equipment are seismic category II. Note 5.a	DCD_03.02.02-17
Ductwork and dampers of the containment low volume purge system (exhaust)	~~4 or 8~~5 or 10	PCCV R/B A/B	~~D~~N/A	~~N/A~~A or N	5	II or NS	Ductwork and dampers, including supports, in areas containing safety-related equipment are seismic category II. Note 5.a	DCD_03.02.02-17
Containment isolation valves	2	PCCV R/B	B	~~YES~~Q	2	I		
(Deleted)								
33. Containment Fan Cooler System								
Containment fan cooler unit fans	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Containment fan cooler unit	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
Containment fan cooler unit cooling coils	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
Ductwork	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Dampers	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
34. Control Rod Drive Mechanism Cooling System								

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 45 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	DCD_03.02.02-17
Control rod drive mechanism cooling unit fans	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Control rod drive mechanism cooling unit	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Control rod drive mechanism cooling unit cooling coils	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Dampers	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Ductwork	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
35. Reactor Cavity Cooling System								
Reactor cavity cooling fans	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Dampers	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
Ductwork	5	PCCV	N/A	~~N/A~~A	5	II	Note 5.a	
36. Annulus Emergency Exhaust System								
Annulus emergency exhaust filtration units	2	R/B	~~B~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Annulus emergency exhaust filtration unit fans	2	R/B	~~B~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Annulus emergency exhaust filtration unit high-efficiency particulate air filters	2	R/B	~~B~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Dampers	2	R/B	~~B~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Ductwork	2	R/B	~~B~~N/A	~~YES~~Q	5	I		
37. MCR Heating, Ventilation, and Air Conditioning System								
Main control room air handling units	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Main control room air handling unit fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I		
Main control room air handling unit cooling coils	3	R/B	C	~~YES~~Q	~~5~~3	I		
Main control room air handling unit electric heating coils	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 46 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Main control room toilet/kitchen exhaust fans	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Main control room smoke purge fan	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Main control room emergency filtration units	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Main control room emergency filtration unit fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Main control room emergency filtration unit electric heating coils	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Main control room emergency filtration unit high efficiency particulate air filters	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Main control room emergency filtration unit charcoal adsorbers	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Ductwork and dampers excluding the following: - The smoke purge ductwork between VRS-AOD-132 and VRS-OTD-133 - The exhaust ductwork and backdraft dampers between VRS-AOD-122 and VRS-OTD-124	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
(Deleted)								
Duct heater	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Humidifier	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a	
The exhaust ductwork and dampers VRS-OTD-123A,B between VRS-AOD-122 and VRS-OTD-124	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a	
The smoke purge ductwork between VRS-AOD-132 and VRS-OTD-133	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 47 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
38. Class 1E Electrical Room Heating, Ventilation, and Air Conditioning System							
Class 1E electrical room air handling units	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Class 1E electrical room air handling unit fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Class 1E electrical room air handling unit cooling coils	3	R/B	C	~~YES~~Q	~~5~~3	I	
Class 1E electrical room air handling unit electric heating coils	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Class 1E electrical room return air fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Class 1E battery room exhaust fans	3	PS/B	~~C~~N/A	~~YES~~Q	5	I	
Dampers	3	R/B PS/B	~~C~~N/A	~~YES~~Q	5	I	
Ductwork	3	R/B PS/B	~~C~~N/A	~~YES~~Q	5	I	
Duct heaters	3	R/B PS/B	~~C~~N/A	~~YES~~Q	5	I	
(Deleted)							
39. Safeguard Component Area Heating, Ventilation, and Air Conditioning System							
Safeguard component area air handling units	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Safeguard component area air handling unit fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Safeguard component area air handling unit cooling coils	3	R/B	C	~~YES~~Q	~~5~~3	I	
Safeguard component area air handling unit electric heating coils	3	R/B	~~C~~N/A	~~YES~~Q	5	I	
Dampers	3	R/B	~~C~~N/A	~~YES~~Q	5	I	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 48 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Ductwork	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
40. Emergency Feedwater Pump Area Heating, Ventilation, and Air Conditioning System								
Emergency feedwater pump area air handling units	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Emergency feedwater pump area air handling unit fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Emergency feedwater pump area air handling unit cooling coils	3	R/B	C	~~YES~~Q	~~5~~3	I		DCD_03.02.02-17
Emergency feedwater pump area air handling unit electric heating coils	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Dampers VRS-OTD-403A, D and 404A, D	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Dampers	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Ductwork	3	R/B	~~C~~N/A	~~YES~~Q	5	I		
Ductwork	5	R/B	N/A	~~N/A~~A	5	II	Note 5.a	
41. Safety-related Component Area Heating, Ventilation, and Air Conditioning system								
Penetration area air handling units	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
(Deleted)								
Penetration area air handling unit fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Penetration area air handling unit cooling coils	3	R/B	C	~~YES~~Q	~~5~~3	I		
Penetration area air handling unit electric heating coils	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Annulus emergency exhaust filtration unit area air handling units	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Annulus emergency exhaust filtration unit area air handling unit fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 49 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Annulus emergency exhaust filtration unit area air handling unit cooling coils	3	R/B	C	~~YES~~Q	~~5~~3	I		DCD_03.02.02-17
Annulus emergency exhaust filtration unit area air handling unit electric heating coils	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Charging pump area air handling units	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Charging pump area air handling unit fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I		
Charging pump area air handling unit cooling coils	3	R/B	C	~~YES~~Q	~~5~~3	I		DCD_03.02.02-17
Charging pump area air handling unit electric heating coils	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Component cooling water pump area air handling units	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Component cooling water pump area air handling unit fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Component cooling water pump area air handling unit cooling coils	3	R/B	C	~~YES~~Q	~~5~~3	I		DCD_03.02.02-17
Component cooling water pump area air handling unit electric heating coils	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Essential chiller unit area air handling units	3	PS/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Essential chiller unit area air handling unit fans	3	PS/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Essential chiller unit area air handling unit cooling coils	3	PS/B	C	~~YES~~Q	~~5~~3	I		DCD_03.02.02-17
Essential chiller unit area air handling unit electric heating coils	3	PS/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Spent fuel pit pump area air handling units	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Spent fuel pit pump area air handling unit fans	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 50 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Spent fuel pit pump area air handling unit cooling coils	3	R/B	C	~~YES~~Q	~~5~~3	I		DCD_03.02.02-17
Spent fuel pit pump area air handling unit electric heating coils	3	R/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
Ductwork and dampers	3	R/B, PS/B	~~C~~N/A	~~YES~~Q	5	I		DCD_03.02.02-17
42. Main Steam/Feedwater Piping Area Heating, Ventilation, and Air Conditioning System								
(Deleted)								
Main steam/feedwater piping area air handling units	9	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Main steam/feedwater piping area air handling unit fans	9	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Main steam/feedwater piping area air handling unit cooling coils	9	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Main steam/feedwater piping area air handling unit electric heating coils	9	R/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Dampers	5 or 9	R/B	N/A	~~N/A~~A or N	5	II or NS	Ductwork and dampers, including supports, in areas containing safety-related equipment are Seismic Category II. Note 5.a	DCD_03.02.02-17 DCD_03.02.02-17
Ductwork	5 or 9	R/B	N/A	~~N/A~~A or N	5	II or NS	Ductwork and dampers, including supports, in areas containing safety-related equipment are Seismic Category II. Note 5.a	DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 51 of 58)

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System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
43. Auxiliary Building Heating, Ventilation, and Air Conditioning System							
Auxiliary building air handling units	9	A/B	N/A	~~N/A~~N	5	NS	
Auxiliary building air handling unit fans	9	A/B	N/A	~~N/A~~N	5	NS	
Auxiliary building air handling unit cooling coils	9	A/B	N/A	~~N/A~~N	5	NS	
Auxiliary building air handling unit heating coils	8	A/B	D	~~N/A~~N	~~5~~4	NS	
Auxiliary building exhaust fans	~~8~~9	A/B	~~D~~N/A	~~N/A~~N	5	NS	
Penetration and Safeguard Component area isolation dampers and ductwork between Penetration and Safeguard Component area isolation damper	2	R/B	~~B~~N/A	~~YES~~Q	5	I	
Exhaust line isolation dampers	2	R/B	~~B~~N/A	~~YES~~Q	5	I	
Supply ductwork and dampers of the auxiliary building HVAC system	5 or 9	R/B, PS/B A/B, AC/B	N/A	~~N/A~~A or N	5	II or NS	Ductwork and dampers, including supports, in areas containing safety-related equipment are seismic category II. Note 5.a
Exhaust ductwork and dampers of the auxiliary building HVAC system	~~4 or 8~~5 or 9	R/B, PS/B A/B, AC/B	~~D~~N/A	~~N/A~~A or N	5	II or NS	Ductwork and dampers, including supports, in areas containing safety-related equipment are seismic category II. Note 5.a
44. Non-Class 1E Electrical Room HVAC System							
Non-Class 1E electrical room air handling units	9	A/B	N/A	~~N/A~~N	5	NS	

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Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 52 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Non-Class 1E electrical room air handling unit fans	9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Non-Class 1E electrical room air handling unit cooling coils	9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Non-Class 1E electrical room air handling unit heating coils	8	A/B	D	~~N/A~~N	~~5~~4	NS		DCD_03.02.02-17
Non-Class 1E electrical room Return air fans	9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Non-Class 1E battery room exhaust fans	~~5~~9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Ductwork and dampers with exception of the ductwork and dampers associated with the non-class 1E battery room exhaust fans	9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Ductwork and dampers associated with the non-class 1E battery room exhaust fans	~~5~~9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Duct heaters	9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
45. Technical Support Center Heating, Ventilation, and Air Conditioning System								
Technical support center air handling unit	~~5~~10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Technical support center air handling unit fan	~~5~~10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Technical support center air handling unit cooling coil	~~5~~10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Technical support center air handling unit electric heating coil	~~5~~10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Technical support center toilet /kitchen exhaust fan	~~9~~10	AC/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 53 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Technical support center emergency filtration unit	~~5~~10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Technical support center emergency filtration unit fan	~~5~~10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Technical support center emergency filtration unit electric heating coil	~~5~~10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Technical support center emergency filtration unit high efficiency particulate air filter	~~5~~10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Technical support center emergency filtration unit charcoal adsorber	~~5~~10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Dampers	~~5 or 9~~10	A/B AC/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Ductwork	~~5 or 9~~10	A/B AC/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
46. Essential Chilled Water System								
Essential chiller units Evaporator side Condenser side	 3 3	 PS/B PS/B	 C C	 ~~YES~~Q ~~YES~~Q	 3 3	 I I		DCD_03.02.02-17
Essential chilled water pumps	3	PS/B	C	~~YES~~Q	3	I		
Essential chilled water compression tanks	3	PS/B	C	~~YES~~Q	3	I		
Essential chilled water chemical feed tank	5	PS/B	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Piping and valves within the distribution loop	3	R/B PS/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
Essential chilled water compression tank surge line piping	3	PS/B	C	~~YES~~Q	3	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 54 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Makeup line piping and valves from and including the valves VWS-VLV-262A,B,C,D and 266A,B,C,D up to and excluding the valves VWS-VLV-258A,B,C,D	~~5~~4	PS/B	D	~~N/A~~A	4	II	Note 5.a	DCD_03.02.02-17
Nitrogen gas supply line piping and valves from and including the valves VWS-VLV-251A,B,C,D up to and excluding the valves VWS-VLV-252A,B,C,D	5	PS/B	N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
Essential chilled water chemical feed tank supply and return line piping and between and excluding the valves VWS-VLV0271A,B,C,D and VWS-VLV-274A,B,C,D	5	PS/B	N/A	~~N/A~~A	~~4~~5	II	Note 5.a	DCD_03.02.02-17
Piping from essential chilled water compression tank to and including the valves VWS-SRV-253A,B,C,D and VWS-VLV-254A,B,C,D	3	PS/B	C	~~YES~~Q	3	I		DCD_03.02.02-17
47. Non-Essential Chilled Water System								
Non-essential chiller units Evaporator side Condenser side	 9 9	 A/B A/B	 N/A N/A	 ~~N/A~~N ~~N/A~~N	 5 5	 NS NS		DCD_03.02.02-17
Non-essential chilled water pumps	9	A/B	N/A	~~N/A~~N	5	NS		
Non-essential chilled water compression tanks	9	A/B	N/A	~~N/A~~N	5	NS		
Non-essential chilled water system cooling towers	9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Non-essential chilled water system condenser water pumps	9	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
Non-essential chilled water chemical feed tank	10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 55 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Piping and valves (except portion of the containment penetration)	9	PCCV R/B A/B PS/B T/B	N/A	~~N/A~~N	5	NS	~~Piping and valves within areas containing safety related equipment are designed as seismic category II.~~	DCD_03.02.02-17 DCD_09.02.02-70
Piping and valves within areas containing safety-related equipment (except portion of the containment penetration)	5	PCCV R/B A/B PS/B T/B	N/A	A	5	II	Note 5.a	DCD_09.02.02-70 DCD_03.02.02-17
(Deleted)								
Piping and valves between and including the containment isolation valves VWS-MOV-403 and 421, VWS-MOV-422, VLV-423 and 407	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17
~~Valves VWS-MOV-424,425~~	~~3~~	~~R/B~~	~~C~~	~~YES~~	~~5~~	~~I~~		DCD_09.02.02-80
Non-essential chilled water chemical feed tank supply and return line piping and valves between VWS-VLV-571 and VWS-VLV-574	10	A/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
48. Containment Hydrogen Control System								
Igniters	~~4~~5	PCCV	~~D~~N/A	~~N/A~~A	5	II	Note 5.a	DCD_03.02.02-17
49. Radiation monitoring system								
Piping and valves between and including the containment isolation valves	2	PCCV R/B	B	~~YES~~Q	2	I		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 56 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Piping and valves of the radiation monitoring system	8	PCCV R/B	D	N	4	NS	The SSE will not result in a failure and interaction of these components that adversely affect the containment radiation monitoring function (or functionality of the leakage detection systems addressed by RG 1.45).	DCD_03.02.02-17
50. Condensate Storage and Transfer System								
Condensate storage tank	8	O/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
The components downstream condensate storage tank	8	O/B T/B	D	~~N/A~~N	4	NS		
51. Turbine Component Cooling Water System								
~~All system~~TCS components	~~8~~9	T/B	~~D~~N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
52. Non-Essential Service Water System								
~~All system~~Non ESW components	9	T/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
53. Secondary Sampling System (SSS)								
~~Secondary sampling system all~~SSS components	8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
54. Turbine Building Area Ventilation System								
~~All system~~TB HVAC components	~~5 or~~ 9	T/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
55. Turbine Generator								
Main turbine	~~4 or~~ 8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Moisture separator and reheaters	8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 57 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes	
								DCD_03.02.02-17
Moisture separator and reheaters	8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Generator	9	T/B	N/A	~~N/A~~N	5	NS		
Other system components								
Containing secondary coolant	~~4 or~~ 8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Not containing secondary coolant	~~5 or~~ 9	T/B	N/A	~~N/A~~N	5	NS		
56. Main Steam Supply System (MSS)								
Main steam supply system components downstream of the first restraint located between the reactor building and turbine building	~~8~~4	T/B	D	~~N/A~~A	4	NS	Note 5.d	DCD_03.02.02-17
57. Main Condenser								
Main condensers	8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
58. Main Condenser Evacuation System (MCES)								
MCES components	~~4 or~~ 8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
59. Gland Seal System (GSS)								
~~Gland seal system~~GSS components	~~4 or~~ 8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
60. Circulating Water System (CWS)								
CWS components	9	O/B T/B	N/A	~~N/A~~N	5	NS		DCD_03.02.02-17
61. Condensate Polishing System (CPS)								
Condensate polisher	8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Other system components								
Containing secondary coolant	8	T/B	D	~~N/A~~N	4	NS		DCD_03.02.02-17
Not containing secondary coolant	10	T/B	N/A	~~N/A~~N	5	NS		
62. Condensate and Feedwater System (CFS)								

Table 3.2-2 Classification of Mechanical and Fluid Systems, Components, and Equipment (Sheet 58 of 58)

System and Components	Equipment Class	Location	Quality Group	~~10 CFR 50 Appendix B (Reference 3.2-8)~~Quality Assurance Classification(5)	Codes and Standards(3)	Seismic Category(4)	Notes
The system components up to the first piping restraint at the interface between the reactor building and the turbine building	8	T/B	D	~~N/A~~N	4	NS	
63. Secondary side Chemical Injection System (SCIS)							
~~Secondary chemical injection system~~SCIS components	9	T/B	N/A	~~N/A~~N	5	NS	

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Notes:

1. Seismic category meeting RG 1.143 (Reference 3.2-10) is applied.
2. Seismic category meeting RG 1.189 (Reference 3.2-11) is applied.
3. Identification number for "Code and Standards"
   (1) ASME Code, Section III, Class 1 (Reference 3.2-14)
   (2) ASME Code, Section III, Class 2 (Reference 3.2-14)
   (3) ASME Code, Section III, Class 3 (Reference 3.2-14)
   (4) RG 1.26 (Reference 3.2-13), Table 1, Quality Standards for Class D
   (5) Codes and standards as defined in design bases
   (6) Codes and standards, and guidelines provided in RG 1.143 (Reference 3.2-10), for design of SSCs for Radwaste Facility
   (7) The codes and standards applicable to fire protection systems follow the guidance of RG 1.189 Section 1.7, and National Fire Protection Association 804.
4. ~~Seismic category II SSCs meet the pertinent QA requirements of 10 CFR 50, Appendix B. (Refer to Subsection 3.2.1.1.2)~~Seismic category: The designations "I" or "II" indicate that the design requirements of Seismic Category I or II equipment are applied as described in Subsection 3.2.1 and Section 3.7, Seismic Design. Equipment that is not designated "I" or "II" is designated "NS."
5. Quality Assurance Classification: The designation "Q" indicates that the quality assurance requirements of 10 CFR 50, Appendix B, are applied in accordance with the quality assurance program described in Chapter 17. The designation "A" indicates that augmented quality assurance requirements are applied, commensurate with the SSCs contribution to safety or credited for regulatory events for one or more of the following reasons:
   a. Nonsafety-related equipment required to be designed in accordance with special seismic design requirements, such as seismic category II requirements. See note 4.
   b. Nonsafety-related equipment required to be designed in accordance with radioactive waste management system requirements from RG 1.143 for Category RW-IIa [See note 3(6)]. The radioactive waste management system components conform to Regulatory Guide 1.143 Table 1 [see note 3(6)].
   c. Nonsafety-related equipment required to be designed in accordance with fire protection requirements from 10 CFR 50.48 and RG 1.189. A quality assurance program meets the guidance of RG 1.189.
   d. Nonsafety-related equipment not otherwise identified in notes 5(a) though 5(c) and are identified as risk-significant in Table 17.4-1 or credited for regulatory events such as ATWS and SBO.

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The designation "N" indicates that neither 10CFR50 Appendix B nor augmented quality standards are required.

Table 3.2-3 Comparison of Various Requirements to Equipment Class

US-APWR Equipment Class	ASME Code, Section III (Reference 3.2-14), Class	RG1.29 (Reference 3.2-5) Seismic Category	RG1.26 (Reference 3.2-13) NRC Quality Group	10 CFR 50 Appendix B (Reference 3.2-8)	
1	1~~[1]~~	I	A	YES[2]	DCD_03.02.02-17
2	2[1]	I	B[13]	YES[2]	DCD_03.02.02-17
3	3[1]	I	C[13]	YES[2]	DCD_03.02.02-17
4	N/A[3]	NS or II	D	N/A[4]	
5	N/A[5]	NS or II	N/A	N/A[4]	
6	N/A[6]	N/A[7]	N/A	N/A[8]	
7	N/A[9]	N/A[10]	N/A	N/A[11]	
8	N/A[12]	NS	D	N/A	DCD_03.02.02-17
9	N/A	NS	N/A	N/A	
10	N/A	NS	N/A	N/A	

Notes:

1. Items not covered by the ASME Code are designed to other applicable codes and standards.
2. "Yes" means QA Program is required according to 10 CFR 50, Appendix B (Reference 3.2-8).
3. Refer to Subsection 3.2.2.4.
4. ~~Seismic category II SSCs meet the pertinent QA requirements of 10 CFR 50, Appendix B. (Refer to Subsection 3.2.1.1.2)~~Augment quality assurance controls are applied. DCD_03.02.02-17
5. Code and standard as defined in design bases are applied.
6. Code and standard meeting RG 1.143 (Reference 3.2-10) are applied.
7. Seismic category meeting RG 1.143 (Reference 3.2-10) is applied.
8. A QA program meeting RG 1.143 (Reference 3.2-10) is applied as augmented quality assurance controls. DCD_03.02.02-17
9. Code and standard meeting RG 1.189 (Reference 3.2-11) is applied.
10. Seismic category meeting RG 1.189 (Reference 3.2-11) is applied.
11. A QA Program meeting RG 1.189 (Reference 3.2-11) is applied as augmented quality assurance controls. DCD_03.02.02-17
12. Refer to Subsection 3.2.2.5 for Equipment Class 8.
13. N/A for items not covered by RG 1.26 (Reference 3.2-13) Table 1.

potential hazard to safety-related SSCs ~~important to safety~~, or seismically restrained to prevent it from becoming a missile. DCD_03.02.02-17

3.5.1.1.4.1 Crane Drop of Heavy Loads

As defined in ASME NOG-1 (Reference 3.5-5), a critical load is any lifted load whose uncontrolled movement or release could adversely affect any safety-related SSC when such a SSC is required for plant safety or could result in potential offsite exposure in excess of 10 CFR 100 limits.

Type I cranes are defined by ASME NOG-1 (Reference 3.5-5) as those used to handle critical loads. In accordance with ASME NOG-1, Type I cranes are designed to remain in place and are equipped with single failure-proof features to prevent load drops.

Refer to Subsection 9.1.5.1 for further discussion on the design bases for a postulated load drop by the overhead heavy load handling system.

Additionally, cranes are designed to prevent diversion and derailment. Drop prevention design is also employed based on earthquake design criteria. Therefore, load drops and derailment of cranes do not represent credible sources of missiles that would jeopardize safety-related SSCs. Therefore, the probability of occurrence, P_1, of missiles generated by a gravity load crane drop is less than 10^{-7}.

3.5.1.1.4.2 Falling Objects Resulting from Non-Seismic SSCs During Seismic Event

Seismic category II SSCs are defined as not essential for the safe shutdown of the plant, and need not remain functional during and after a SSE. However, such structures and subsystems must not fall or displace excessively where it could damage any seismic category I SSCs. Therefore, any SSCs with the potential to cause damage to safety-related SSCs are analyzed and designed using the same methods and stress limits specified for seismic category I SSCs. No non-seismic SSCs are permitted that could possibly affect the ability of the plant to achieve and maintain safe shutdown, and to maintain offsite radiological dose/concentration levels within defined limits. In addition, seismic category I SSCs are not permitted in non-seismic areas and are therefore not impacted by falling objects during a seismic event. Therefore, the product of the probability of occurrence, P_1, and the probability of significant impact, P_2, of non-seismic SSCs missiles striking seismic category I SSCs is maintained as less than 10^{-7}.

3.5.1.1.4.3 Secondary Missiles Caused by a Falling Object Striking a High-Energy System

Falling objects impacting a high-energy system or other surfaces may have the ability to generate secondary missiles. Falling objects are postulated to occur by either a crane drop of heavy load, or resulting from a non-seismic SSC during a seismic event. As described in the preceding paragraphs, these missiles sources are not credible, and no secondary missiles from these sources are capable of occurring. The probability of occurrence, P_1, is therefore inherently less than 10^{-7}.

3.6.2.1.2.1 Moderate-Energy Fluid System Piping in PCCV Penetration Areas

Leakage cracks are not postulated in those portion of the piping from PCCV wall to and including the inboard and outboard isolation valves provided that the PCCV penetration meets the requirements of ASME Code, Section III (Reference 3.6-10), Subarticle NE-1120 and the piping is designed so that the maximum stress range based on the sum of Equations (9) and (10) in Subarticle NC/ND-3653 of the ASME Code, Section III (Reference 3.6-9) does not exceed 0.4 times the sum of the stress limits given in NC/ND-3653.

3.6.2.1.2.2 Moderate-Energy Fluid System Piping in Areas Other than PCCV Penetrations

Leakage cracks are postulated in the following piping systems located adjacent to safety-related SSCs ~~important to safety~~. DCD_03.02.02-17

- For ASME Code, Section III, Class 1 piping, where the stress range calculated by Eq. (10) in NB-3653 is more than or equal to 1.2 *S(m)* DCD_03.06.02-47
- For ASME Code, Section III (Reference 3.6-9), Class 2 and 3 and non-safety class piping, at axial locations where calculated stress by the sum of Equations 9 and 10 in NC/ND-3653 exceed 0.4 times the sum of the stress limits given in NC/ND-3653.
- For non-safety class piping, which has not been evaluated to obtain stress information, leakage cracks are postulated at axial locations that produce the most severe environmental effects.

3.6.2.1.3 Types of Break/Cracks Postulated

3.6.2.1.3.1 Circumferential Pipe Breaks

Circumferential breaks are postulated in high-energy fluid system piping and branch runs exceeding a nominal pipe size of 1 inch at locations identified by the criteria in Subsection 3.6.2.1.1.2

No breaks are postulated in piping having a nominal diameter less than 1 inch, including instrument lines that are designed in accordance with RG 1.11 (Reference 3.6-13).

If the maximum stress range exceeds the limits specified in Subsection 3.6.2.1.1.2 and the circumferential stress range is greater than 1.5 times the axial stress range, no circumferential break is postulated; only a longitudinal break (Subsection 3.6.2.1.3.2) is postulated.

Where break locations are selected without the benefit of stress calculations, breaks are postulated at the piping welds to each fitting, valve, or welded attachment. The line restrictions, flow limiters, positive pump-controlled flow and the absence of energy reservoirs may be taken into account, as applicable.

The structural design and sizing of the US-APWR reactor internals are based upon current 4-loop plants. However, the pipe break sizes of current 4-loop plants were based on the largest LOCA loads that resulted from either a 1.0 ft^2 single-ended cold leg break or a double-ended hot leg break, whereas, LBB is applied to determine the break condition for the US-APWR design input. The magnitude of blowdown hydraulic loads applying LBB is smaller than either of the loads for the large cold leg or hot leg breaks. Consequently, stresses and deflections of reactor internals under faulted conditions meet the ASME Code, Section III (Reference 3.9-1) stress and deflection limits including SSE combined by SRSS.

3.9.2.6 Correlations of Reactor Internals Vibration Tests with the Analytical Results

To confirm the computational methodology for flow-Induced vibration response, including structure modeling and forcing function assessment, a simulation analysis of the APWR 1/5th scale model flow test was conducted. The computed vibration response of the core barrel with the best estimate damping coefficient, is equivalent with the measured results.

For the prediction analysis of US-APWR reactor internals vibration responses, a damping coefficient smaller than the best estimate value is used to assure a conservative evaluation.

The measured data from the reactor internals pre-operational vibration tests, described in Subsection 3.9.2.4, will be compared with the predicted and allowable responses that are based on reactor internals acceptance criteria for the expected accelerations, strain measurements, and component frequencies. The details of the acceptance criteria can be found in Chapter 3.5 of Reference 3.9-22. In accordance with RG 1.20 (Reference 3.9-21), any discrepancies between the predicted and measured values will be accounted for and fully explained. If necessary, the input parameters, such as the turbulent forcing function and the damping coefficient, in the vibration analysis will be adjusted in accordance with the measured data and the analysis repeated to resolve the differences between the analytical and measured results.

3.9.3 ASME Code Class 1, 2, and 3 Components, Component Supports, and Core Support Structures

This Subsection discusses the required regulatory compliance in accordance with NUREG-0800, SRP 3.9.3, Rev. 2 (Reference 3.9-27) for maintaining structural and leak tight integrity requirements of safety-related, pressure-retaining components, core support structures, and component supports, which are designed to the criteria of the ASME Code, Section III, Division 1 (Reference 3.9-1). Section 3.12 provides the ASME Class 1, 2, and 3 piping and pipe support design requirements related to seismic category I, II, and non-seismic piping systems. ASME Code, Section III (Reference 3.9-1) Classes 1, 2, 3, seismic category I, II, non-seismic, and related ~~ANS~~safety classification applications are defined in Section 3.2. The regulatory requirements associated with this subsection include 10 CFR 50, Appendix A (Reference 3.9-28), GDC 1, 2, 4, 14, 15, 10 CFR 50.55a (Reference 3.9-29), 10 CFR 52 (Reference 3.9-30), 10 CFR 52.47(b)(1) (Reference 3.9-31), and 10 CFR 52.80(a) (Reference 3.9-32). DCD_03.02.02-17

The US-APWR design meets the SRP 3.9.3 (Reference 3.9-27) criteria for ASME (Reference 3.9-1) Class 1, 2, and 3 components and component supports, and CSSs as described in this subsection in the following respects:

- 10 CFR 50.55a (Reference 3.9-29) and 10 CFR 50, Appendix A (Reference 3.9-28), GDC 1 as they relate to structures and components being designed, fabricated, erected, and tested to quality standards commensurate with the safety-related functions to be performed. These requirements are met for the design of safety-related components and structures by meeting the required ASME service level loading conditions, stress margins, stress limits, quality requirements, and test conditions for the operational and accident conditions defined as Design Basis Events during the life of the plant.

- GDC 2 and 10 CFR 50, Appendix S (Reference 3.9-33), as it relates to seismic category I structures and components ~~important to safety~~ being designed to withstand the effects of earthquakes without the loss of capability to perform their safety functions. These requirements are met by designing the components and structures to the ASME code using the appropriate combinations of normal and accident conditions and the associated effects of natural phenomena, such as earthquakes. DCD_03.02.02-17

- GDC 4 as it relates to safety-related structures and components being designed to accommodate the effects of, and to be compatible with, the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including LOCAs. The design of safety-related components and structures is in accordance with the ASME Code, Section III (Reference 3.9-1) and the components and structures are shown capable of performing their intended safety function(s) during all normal and accident environmental conditions as specified by GDC 4.

- GDC 14 as it relates to the RCPB being constructed[2] so as to have an extremely low probability of abnormal leakage, of rapid propagating failure, and of gross rupture. The construction of RCPB components to the ASME Code, Section III (Reference 3.9-1) assures compliance with GDC 14.

- GDC 15 as it relates to the RCS and associated auxiliary, control and protection systems being designed with sufficient margin to assure that the design conditions of the RCPB are not exceeded during any condition of normal operation, including AOO. The construction of the RCPB and associated auxiliary system components and structures to the ASME Code, Section III (Reference 3.9-1) requirements assures a sufficient safety margin for normal and accident conditions.

- 10 CFR 52 (Reference 3.9-30) requirements assure that the components and component supports, and core support structures will be constructed in accordance with the certified design. Through requirements of "as-built"

2. Construction (as used in ASME Code, Section III, Division 1): an all-inclusive term comprising documentation, materials selection and qualification, design, fabrication, examination, testing, inspection, and certification required in the manufacture and installation of an item.

17.5 Quality Assurance Program Description

During the Design Certification phase for US-APWR standard plant design, the MHI-NESH US-APWR Project Quality Assurance Program (QAP) is the top-level policy that establishes the quality assurance policy and assigns major functional responsibilities. The QAP provides for the methods and establishes the QAP and administrative control requirements described in "Quality Assurance Program (QAP) Description For Design Certification of the US-APWR (PQD-HD-19005 Rev.3)" (MHI QAPD)(Ref 17.5-4), that meet 10 CFR Part 50, Appendix B and 10 CFR Part 52 for safety-related SSCs. The MHI QAPD is based on the requirements of ASME NQA–1-1994, "Quality Assurance Requirements for Nuclear Facility Applications," Parts I and II, as specified in Ref.17.5-4. DCD_03.02.02-17

Selected elements of the QAP description (QAPD) are also applied to SSCs that are nonsafety-related in accordance with their contribution to plant safety (Part III of Reference 17.5-4) or to meet NRC guidance that establishes applicable quality assurance requirements. The controls applied to nonsafety-related SSCs per the QAPD Part III are referred to as "augmented" quality assurance controls. The contribution of nonsafety-related SSCs to plant safety is determined by (1) the SSC's risk-significance as determined by the D-RAP as described in Section 17.4 and (2) the reliance on the SSC to address regulatory events, such as ATWS, fire protection and SBO. Specific program controls are applied to these nonsafety-related SSCs in a selected manner, targeted at those characteristics or critical attributes that render the SSC a significant contributor to plant safety. DCD_03.02.02-17

The MHI QAPD for the Design Certification Phase has been prepared on the basis of the NRC approved QAP template (NEI, 06-14A Rev.4 and earlier revisions) (Ref 17.5-3) prepared by the Nuclear Energy Institute and has been evaluated against the SRP. The MHI QAPD provides the controls that implement the QAP. MHI performed a comparison of the MHI QAPD against the SRP (Mar. 2007) (Ref 17.5-2) and the draft SRP (Sept. 2006) (Ref 17.5-1) which was used as a reference for the MHI QAPD and determined that the MHI QAPD is satisfactory.

Business policies of MHI-NESH establish high level responsibilities and authority for carrying out administrative functions which are outside the scope of the QAP.

Procedures establish practices for certain activities which are common to all MHI-NESH organizations performing those activities such that the activity is controlled and carried out in a manner that meets QAP requirements. Organization specific procedures establish detailed implementation requirements and methods, and may be used to implement the business policies of MHI-NESH or be unique to particular functions or work activities.

The COL Applicant is responsible for the development of a Quality Assurance Program Description for site-specific design activities and for plant construction and operation.