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MFN 09-604

Docket No. 52-010

September 21, 2009

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

Subject: Response to Follow-up Actions from Summary Report of the July 20 to 24, 2009, Regulatory Audit Of Design Specifications Of Risk Significant ESBWR Components – Additional Information Provided for RAIs 3.2-6, 3.2-63 and 3.9-177

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to follow-up actions transmitted in Reference 1 as a result of the Regulatory Audit Of Design Specifications of Risk Significant ESBWR Components held July 20 to 24 2009 in GEH offices in Wilmington NC by the U.S. Nuclear Regulatory Commission (NRC).

Enclosure 1 contains GEH's detailed responses to the follow-up actions identified in Reference 1. Enclosure 1 provides additional information to close out RAIs 3.2-6, 3.2-63 or 3.9-177.

Enclosure 2 contains DCD Revision 7 make-ups for Table 3.3-2 as a result of GEH's response to Classification Design Basis Documents – Follow-up item number 4.

If you have any questions or require additional information, please contact me.

Sincerely,

Richard E. Kingston
Vice President, ESBWR Licensing

References:

1. MFN 09-594, Letter from U.S. Nuclear Regulatory Commission to Gerald G Head, GEH, *SUMMARY OF THE JULY 20 TO 24, 2009, REGULATORY AUDIT OF DESIGN SPECIFICATION OF RISK SIGNIFICANT ESBWR COMPONENTS AT GENERAL ELECTRIC HITACHI (GEH) OFFICE IN WILMINGTON, NC*, dated September 1, 2006

Enclosures:

1. Response to Follow-up Actions from Summary Report Of the July 20 to 24, 2009, Regulatory Audit Of Design Specifications Of Risk Significant ESBWR Components – Additional Information Provided for RAIs 3.2-6, 3.2-63 and 3.9-177
2. Response to Follow-up Actions from Summary Report Of the July 20 to 24, 2009, Regulatory Audit Of Design Specifications Of Risk Significant ESBWR Components – Classification Design Basis Documents – Item Number 4, DCD R7 Table 3.2-2 Mark-up

cc:	AE Cabbage	USNRC (with enclosures)
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	DH Hinds	GEH/Wilmington (with enclosures)
	eDRF Section	0000-0107-2761 (Follow-up Action Responses)

ENCLOSURE 1

MFN 09-604

**Response to Follow-up Actions from
Summary Report Of the July 20 to 24, 2009,
Regulatory Audit Of Design Specifications Of Risk Significant ESBWR
Components –**

Additional Information Provided for RAls 3.2-6, 3.2-63 and 3.9-177

Follow-Up Items for ASME Components

1. *In accordance with RPV system design specification (26A6631), the fatigue evaluation of all ASME Class 1 components will be performed per Regulatory Guide (RG) 1.207 and NUREG/CR-6909 guidance for including environmental effects. However, ESBWR DCD (preliminary) Revision 6, Section 3.9.3 has not indicated that this is applicable for component design, although for Class 1 piping design GEH is committed in the DCD to include the environmental effects using RG 1.207 and NUREG/CR-6909 guidance.*

The staff requests the applicant incorporates ESBWR DCD Revision 6, Section 3.9.3.1 to indicate that the fatigue evaluation of ASME Class 1 components will be performed using RG 1.207 and NUREG/CR 6909 guidance for including the environmental effects.

GEH Response

This comment was addressed in DCD Revision 6. The following sentence was added at the end of the second paragraph of Section 3.9.3.1.

For Class I components where analysis for cyclic operation is evaluated in accordance with ASME B&PV Code, Section III, subarticle NB-3222.4, the fatigue usage evaluation shall include the use of environmental fatigue curves in accordance with RG 1.207 and NUREG/CR-6909.

Follow-Up Items for Classification Design Basis Documents

1. *During the audit, GEH committed to revise DCD Table 3.2-2 to identify that ASME Section III Code Class CC, MC or CS are applicable in addition to Code Class 2 for Quality Group B. This change will be submitted in DCD Rev 6 and is considered a confirmatory item.*

GEH Response

DCD Table 3.2-2 was revised in DCD Revision 6 to address this commitment. The ASME Code Class column of DCD Table 3.2-2 now lists "2, CC, MC or CS" in the Safety Class 2 row.

2. *During the audit, GEH committed to revise DCD Table 6.1-1 regarding materials associated with PCCS. GEH will change the Class 2 (Subsection NC) to Class MC (Subsection NE) in Table 6.1-1 in Revision 6 of the DCD. This change is considered a confirmatory item.*

GEH Response

This comment was addressed in DCD Revision 6. Table 6.1-1 was revised to indicate that the PCCS condenser and the associated piping that is part of the containment pressure boundary will meet Subsection NE, rather than Subsection NC of the ASME Boiler & Pressure Vessel Code. No change was made in Table 6.1-1 for the PCCS components inside containment.

3. *DCD Table 3.2-2 should be revised to reference ASME NG to include Class IS for RPV internals, or otherwise clarify classification.*

GEH Response

It was never the intent of DCD Section 3.2 to provide a detailed discussion of ASME code classes, but they are introduced in DCD Tables 3.2-2 and 3.2-3. In response to this comment, the text in the second paragraph of DCD Section 3.2.2 was modified in DCD Revision 6 to better describe how DCD Tables 3.2-2 and 3.2-3 relate to DCD Table 3.2-1. In addition, a new Note 5 was added to DCD Table 3.2-2 to specifically address the comment about including Class IS in DCD Table 3.2-2.

4. *DCD Table 3.2-2 should be revised to more clearly identify quality assurance applicable to Quality Group D Special class and seismic Category II.*

GEH Response

Note 4 of DCD Table 3.2-2 will be revised in DCD Revision 7 to add the following as a new next-to-last sentence: "Structures, systems and components designated as Safety-Related Class S

in Table 3.2-1 have special quality assurance requirements consistent with the portions of Note (5) that are referred to in the Notes column." This change is shown in the attached DCD markup.

5. *Descriptions in DCD Table 3.2-1 may not be consistent with detailed P&ID drawings and should be reviewed for consistency. For example, classification changes at a venturi on the isolation condenser are not consistent with the DCD description.*

GEH Response

The P&IDs for Nuclear Steam Supply systems were reviewed against DCD Table 3.2-1 to identify inconsistencies. This review identified the following inconsistencies, which were corrected in DCD Revision 6:

- The classification boundaries between Quality Group A and B for the Isolation Condenser were found to be inconsistent with DCD Figure 5.1-3 and the discussion in DCD Subsection 5.4.6.3. It was determined that the information in DCD Chapter 5 was correct, so DCD Table 3.2-1 System B32 items 1 and 2 were revised into three items in DCD Revision 6 to describe the classification breaks more accurately.
- It was determined that there is no specific listing under System B32 in DCD Table 3.2-1 for the pool cross-connect valves. A new item 8 was added to the table for System B32 to represent these valves.
- It was determined that a previous classification change from Quality Group C to B for System G21 item 6 that resulted from a design change was inadvertently overlooked both in DCD Table 3.2-1 and DCD Table 9.1-3. This was corrected in DCD Revision 6.

6. *P&ID classification boundaries may not be consistent with actual configuration boundary and should be reviewed for consistency. For example, the containment boundary connection to the isolation condenser tee is not shown correctly on the P&ID drawing.*

GEH Response

This comment was addressed in DCD Revision 6. Table 3.2-1 was revised to more explicitly define the classification boundaries for the Isolation Condenser system. P&IDs will be completed based on the schedule shown in Table 1, and the review process will validate or correct the classification boundaries, consistent with DCD Revision 6.

7. *The simplified diagram of the main steam drains in the DCD does not appear to be consistent with the detailed P&ID and should be updated accordingly.*

GEH Response

DCD Figure 3.2-1 was reviewed against the detailed Nuclear Boiler System P&ID for the main steam drains and other process lines. Three inconsistencies were noted, only one of which affected DCD Figure 3.2-1. The identified inconsistencies and actions taken in response to them are as follows:

- The main steam drain lines that contain an orifice show the classification break from Quality Group B to D occurring on the downstream side of the orifice on sheet 4 of the P&ID, not upstream of the orifice as was shown on DCD Figure 3.2-1. It was concluded that the P&ID is correct, so DCD Figure 3.2-1 was revised to match the P&ID for this classification boundary for the two affected lines.
 - At the same location, the P&ID shows a change in Seismic Classification from Category I to II, while DCD Figure 3.2-1 shows a change from I to NS with special analysis requirements [denoted as (D)* on the figure]. DCD Figure 3.2-1 is consistent with what has been agreed to with the NRC in the revised response to RAI 3.2-19 Supplement 2 (MFN 06-308 Supplement 20). The P&ID will be updated to be consistent with DCD Figure 3.2-1 based on the schedule shown in Table 1.
 - P&ID sheet 2 does not show the classification break to Quality Group D after the closed isolation valve that is shown in DCD Figure 3.2-1 for instrument line (K). The P&ID will be updated to be consistent with DCD Figure 3.2-1 based on the schedule shown in Table 1.
8. *Special treatment, such as Special QA Class, for RTNSS SSCs based on the PRA requires further clarification in DCD and/or RTNSS requirements document.*

GEH Response

RAI 3.2-6 Supplement 2 requested GEH to revise DCD Table 3.2-1 to identify which components are classified for special treatment (safety-related classification “S”) and describe the special treatment that applies. In response, GEH revised DCD Table 3.2-1 to identify the nonsafety-related SSCs that have special QA requirements and to explain the reasons why they are put into classification “S.” In addition, special treatment for classification “S” SSCs is described in DCD Section 17.1.22, “Nonsafety-Related SSC Quality Controls” and NEDO-33181 “NP-2010 COL Demonstration Project Quality Assurance Program” Section 24, “Quality Class S Controls.”

9. *Design basis documents such as P&IDs and ASME design specifications should be finalized to enhance the level of design completion.*

GEH Response

At the audit, most P&IDs and system design specifications that were available for NRC review were not issued. These documents will be updated to be consistent with Revision 6 of the DCD and will be completed based on the schedule shown in Table 1. The ASME design specifications that were made available for NRC review during the audit were issued.

10. *Classification review checklists should be completed to establish the basis for each component classification from a safety function aspect.*

GEH Response

The classification review checklist that appears in the GEH Common Procedure CP-03-02 is normally completed in detail at the time an item (component or part) is added to the applicable parts list, which is within the GE corporate document structure for the project. Completing the classification review checklist is one of the final steps because the classification process is applied from the top down within GEH.

The GEH process for classifying structures, systems and components (SSCs) starts with the definition of safety-related SSCs in 10 CFR 50.2. Plant systems and functions are reviewed to determine those that will be relied upon to perform the three safety-related functions in the definition of safety-related SSCs. This review process includes identification of all systems and functions that are credited in the Chapter 6 and Chapter 15 accident analyses to ensure that all accident analysis acceptance criteria are satisfied. For SSCs that are to be designed by GEH, classification of the individual parts of the SSCs is then performed. Appendix C of Common Procedure CP-03-02 provides guidance for this stage of the classification process.

Once the safety-related systems and functions were determined for ESBWR, the Probabilistic Risk Assessment (PRA) was used as discussed in DCD Appendix 19A to establish a basis for classifying certain nonsafety-related systems and functions as RTNSS.

The Composite Design Specification (26A6007) defines specific systems and functions that are required to be safety-related for ESBWR based on the results of the review process described above. The RTNSS requirements specification, when completed, will define the SSCs that are designated as RTNSS and the design requirements that apply to them, consistent with commitments made in DCD Appendix 19A. The Composite Design Specification Classification List Data Sheet (26A6007AD) converts the system and functional requirements from the Composite Design Specification and RTNSS requirements into specific classifications of systems or portions of systems based on the role(s) performed by the individual SSCs. It should be noted that the commitments made in DCD Section 3.2 are incorporated into formal design requirements via the Classification List Data Sheet. While a formal classification review checklist is not used or completed during the preparation of the Classification List Data Sheet, the process followed to produce it includes the same logic steps as those that appear on the

component classification review checklist (Form CP-03-02-01). SSCs that are involved in ensuring safety-related functions can be performed successfully are assigned a safety-related classification of Q, nonsafety-related SSCs with special QA requirements are assigned a safety-related classification of S with notes provided to describe the reason for the special QA requirements, then the remaining nonsafety-related SSCs are assigned a safety-related classification of N.

System design specifications that are prepared for each plant system include a list of all safety-related functions performed by the system. From this list, one can easily determine the reason(s) why specific system components have been classified as safety-related.

Based on the above discussion, GEH does not believe there is any significant benefit to preparing classification review checklists at this point in the design process. The system design specifications provide the basis for why specific system components have been classified as safety-related, and the Classification List Data Sheet combined with the RTNSS requirements specification provide the basis for assigning a safety-related classification of S to each nonsafety-related SSC so classified. The real benefit of the classification review checklist occurs when one starts looking in detail at some of the smaller and less significant system components and the individual parts of safety classification Q or S SSCs to ensure they are properly classified and meet the proper requirements. GEH will prepare classification review checklists consistent with the requirements of Common Procedure CP-03-02 close to the time an SSC or part is added to the applicable parts list.

11. *Basis for seismic requirements applicable to RTNSS SSCs should be better defined in the DCD and/or RTNSS requirements document.*

GEH Response

The draft RTNSS Requirements Document provides high-level design requirements and identifies the appropriate general or system-level design specifications that provide the design details. The details for seismic requirements applicable to RTNSS SSCs are provided in Section A50.2 of the General Civil Design Criteria specification, which is referenced in the draft RTNSS Requirements Document. These details have also been provided by GEH in response to RAIs 22.5-6 and 22.5-7 and their supplements. The RTNSS Requirements Document will be issued based on the schedule shown in Table 1.

12. *Classification of risk-significant SSCs and DCD to be updated as needed to be consistent with Topical Reports such as NEDO-33411 Rev.1 currently being reviewed by other NRC staff.*

GEH Response

Table 3.2-1 was revised in DCD Revision 6 to ensure the classification of risk-significant components is consistent with applicable topical reports, including NEDO-33411, Revision 1.

13. *Special treatment for any passive components such as nonmetallic piping used in risk significant RTNSS systems should be coordinated with the COLA.*

GEH Response

The GEH response to RAI 3.2-6 Supplement 2 explains that detailed supplemental requirements that apply to a specific safety-related classification “S” component are defined during the design and procurement specification preparation processes. This includes passive components such as nonmetallic piping used in systems designated as RTNSS. As described in DCD Chapter 17, both GEH and the COL Applicant have quality assurance requirements that apply to Class “S” SSCs. This includes control of design specifications and purchased items and services. Measures are established to ensure that applicable design inputs are included or correctly translated into the design documents and all purchased items and services conform to appropriate procurement documents.

Follow-Up Items for ASME Valves and Environmental Qualification

1. *ESBWR DCD Tier 2, Table 3.9-8, "Inservice Testing," needs to be clarified for some valve entries. In particular, the table is missing the number of applicable valves and their valve numbers for some valve entries. Further, the table includes multiple valve and actuator types for some valve entries.*

GEH Response

This comment was addressed in DCD Revision 6. Valve numbers were provided for the Equipment and Floor Drain System valves and valve numbers and quantities were provided for the Service Air System valves. In addition, alternate valve and actuator types were deleted from the table such that each valve application lists a single valve type and a single actuator type.

2. *General Valve Requirements Specification SR3-1-A11-TRD-5302 should be clarified as follows:*
 - a. *The specification should require that the valve supplier provide the vibration level for which applicable valves (such as safety and relief valves) are qualified for use as acceptance criteria when measuring flow-induced vibration (FIV) during plant startup testing.*
 - b. *Update the reference of Regulatory Guide (RG) 1.100 to Revision 3 (when issued) for acceptance of the use of ASME Standard QME-1-2007, and remove the reference to RG 1.148 (to be withdrawn by NRC when RG 1.100 updated).*
 - c. *Clarify the use of sealed gear operators on Page 20 to manual valves.*
 - d. *Clarify the degraded voltage criteria for AC and DC motors on Page 39.*
 - e. *Clarify the measurement of thrust and torque for rising stem and quarter-turn valves on Page 50 when referring to running load.*
 - f. *Address the use (if any) of thermal overload devices for MOVs.*
 - g. *The specification provides gate and globe seat coefficients of friction and butterfly valve bearing coefficient of friction for the initial sizing of valve actuators that the supplier will need to justify as part of the valve qualification process with GEH review of each valve design calculation.*

GEH Response

Responses to items a - g are provided below. See Table 1 for the schedule for revising documentation.

- a. Specification SR3-1-A11-TRD-5302 will be revised to add a requirement that the Supplier provide the vibration level for which the valve is qualified if specified in the purchase order, purchase specification or valve data sheet. GEH will identify valves that are subject to this requirement based on the availability of FIV test data during plant startup testing.

- b. Reg Guide 1.100, Revision 3, has not yet been issued and is not part of the licensing basis of the ESBWR. The ESBWR DCD discusses how ASME QME-1-2007, which will be endorsed by Reg Guide 1.100, Revision 3, will be used for valve and piping support qualification. Any reference to Reg Guide 1.100, Revision 3, would have to be by the COL applicant. Potential changes to specification SR3-1-A11-TRD-5302 will be addressed after RG 1.100, Revision 3, is issued.
 - c. Specification SR3-1-A11-TRD-5302 will be revised to indicate that this section is applicable to manual operators.
 - d. Specification SR3-1-A11-TRD-5302 will be revised to clarify degraded voltage requirements for safety-related AC/DC motors and nonsafety-related motors.
 - e. Specification SR3-1-A11-TRD-5302 will be revised to clarify that for MOVs direct measurement of thrust/torque is required, and for AOVs thrust/torque may be measured by direct measurement (i.e., strain gage) or by measurement of actuator pressure.
 - f. There are no safety-related MOVs in the ESBWR. Thermal overloads may be used for nonsafety-related MOVs; however, design of the thermal overloads is performed as part of the design of the electrical supply to the valves. Therefore, there is no need to include requirements related to thermal overloads in specification SR3-1-A11-TRD-5302 or in the individual valve purchase specifications.
 - g. Section 8.2.1 of Specification SR3-1-A11-TRD-5302 requires that the supplier justify the methods used for functional qualification of valves and includes requirements related to specific phenomena that must be addressed in the qualification method. Further, Section 8.2 states that the “intent is to functionally qualify valves consistent with Section QV of ASME QME-1-2007 and to evaluate and justify any deviations,” and a gap analysis is required by paragraph 8.2.b to document and justify any deviations from QME-1-2007. QME-1-2007 requires that the friction coefficients used to size valve actuators be supported by valve test data and that relevant phenomena, such as preconditioning, be addressed. Table 2 of Specification SR3-1-A11-TRD-5302 requires that the gap analysis be approved by GEH. Therefore, there is no need for Specification SR3-1-A11-TRD-5302 to provide friction coefficients, and they will be deleted from this specification.
3. *Check Valve Purchase Specification SR3-1-A60-PSP-0002 should be clarified in that it refers to “active” check valves although all check valves in the IST program should be considered to be active. Further, the ESBWR DCD IST table should be clarified, as necessary, where check valve P10-F016 is identified as a passive valve.*

GEH Response

The “Valve Function” for check valve P10-F016 in Table 3.9-8 was changed in DCD Revision 6 to “A” for active. In addition, the “Test Parameters” and “Test Frequencies” were revised to reflect that the valve is active. No change will be made to the check valve purchase specification. Since all IST check valves are considered active, all such valves will be included

in Specification SR3-1-A60-PSP-0002. Check valves outside the IST program will likely be covered in a separate purchase specification.

4. *Pyrotechnic-Operated Valve Purchase Specification SR3-1-A60-PSP-0001 should be compared to the applicable piping & instrumentation diagram to clarify the specification listing of Gravity-Driven Cooling System (GDCCS) deluge valves and their valve numbers in the diagram.*

GEH Response

Specification SR3-1-A60-PSP-0001 will be revised based on the schedule shown in Table 1 to correct the valve numbers for the GDCCS deluge valves. The valve numbers should be GDCCS-PTV-0010A1-D1, A2-D2 and A3-D3, rather than GDCCS-PTV-0010A1-D1 and A2-D2.

5. *Equipment Qualification Specification SR3-1-A11-TRD-1002 should be completed to allow the NRC staff to rely on the information in the EQ specification for the audit report.*

GEH Response

Specification SR3-1-A11-TRD-1002 will be completed based on the schedule shown in Table 1.

6. *GEH should review its EQ specifications and EQ Engineering Operating Procedure EOP 35-4.00, and determine those operational aspects (such as establishment of maintenance intervals) of the environmental qualification program that should be described in the ESBWR DCD.*

GEH Response

GEH's EQ specification and EQ EOP are intended to support procurement of equipment for the ESBWR. Operational aspects (such as establishment of equipment maintenance intervals) are beyond the scope of ESBWR certification and will be addressed by the COL applicant.

7. *Condition Monitoring Specification SR3-1-A11-TRD-1003 should clarify the application of the Condition Monitoring Program with respect to regulatory programs. For example, the Condition Monitoring Specification should address its potential application in meeting IST provisions in the ASME OM Code and 10 CFR 50.55a. Further, the specification should address the quality assurance aspects of the Condition Monitoring Program where the program will be used to support regulatory programs.*

GEH Response

The condition monitoring program is a non-regulatory program. Some aspects of the program may be useful in satisfying the requirements of regulatory programs, such as the Inservice Testing (IST) Program; however, if a plant licensee chooses to use aspects of the condition

monitoring program to support a regulatory program, the licensee would be responsible for ensuring that those aspects meet the applicable regulatory and quality assurance requirements. Specification SR3-1-A11-TRD-1003 will be revised, based on the schedule shown in Table 1, to clarify that:

- The condition monitoring program, as described in the specification, is not designed to meet regulatory or quality assurance requirements, and
 - If certain aspects of the program are to be used to support regulatory programs, the plant licensee is responsible for ensuring applicable regulatory and quality assurance requirements are met.
8. *RTNSS Requirements Document A11-5310 that provides specifications for the design of equipment within the Regulatory Treatment of Non-Safety Systems (RTNSS) program should be completed for NRC staff review.*

GEH Response

RTNSS Requirements Document A11-5310 is scheduled to be complete by December 16, 2009.

9. *GEH should inform the NRC staff of the qualification testing plans and schedule for valves and dynamic restraints, when available.*

GEH Response

GEH understands the NRC's interest in the qualification testing plans and schedule for valves and dynamic restraints, and GEH will keep the NRC informed of the status of these efforts. However, verification of equipment qualification is covered by ITAAC, completion of which is the responsibility of the COL applicant.

Table 1. Document Completion Schedule

Document Number and Title	Scheduled Completion Date
General Documents	
SR3-1-A11-TRD-5302, General Valve Requirements	October 23, 2009
SR3-1-A60-PSP-0001, Pyrotechnic-Operated Valve Purchase Specification	December 16, 2009
SR3-1-A11-TRD-4040, Equipment Qualification Requirements Specification	December 11, 2009
SR3-1-A11-TRD-5310, Regulatory Treatment of Non-Safety Systems (RTNSS) Requirements Document	December 16, 2009
SR3-1-A11-TRD-1003, Condition Monitoring	November 12, 2009
System Design Specifications	
SR3-1-B21-SDS-0001, Nuclear Boiler System	November 3, 2009
SR3-1-B32-SDS-0001, Isolation Condenser System	December 7, 2009
SR3-1-C12-SDS-0001, Control Rod Drive System	December 7, 2009
SR3-1-C41-SDS-0001, Standby Liquid Control (SLC) System	November 12, 2009
SR3-1-E50-SDS-0001, Gravity-Driven Cooling System	October 28, 2009
SR3-1-G21-SDS-0001, Fuel and Auxiliary Pools Cooling System	December 11, 2009
SR3-1-G31-SDS-0001, Reactor Water Cleanup/Shutdown Cooling System	December 11, 2009
SR3-1-T10-SDS-0001, Containment	December 11, 2009
SR3-1-T15-SDS-0001, Passive Containment Cooling System	November 12, 2009
P&IDs	
SR3-1-B21-PID-0001 thru 0009, Nuclear Boiler System (NBS)	November 3, 2009
SR3-1-B32-PID-0001 thru 5, Isolation Condenser System (ICS)	December 7, 2009
SR3-1-C12-PID-0001 thru 4, Control Rod Drive System	December 7, 2009
SR3-1-C41-PID-0001 thru 0004, Standby Liquid Control (SLC) System	November 12, 2009
SR3-1-E50-PID-0001 thru 4, Gravity-Driven Cooling System (GDCCS)	October 28, 2009
SR3-1-G31-PID-0001 thru 0009, Reactor Water Cleanup/Shutdown Cooling System (RWCU/SDC)	December 11, 2009
SR3-1-T10-PID-0001, Containment	December 11, 2009
SR3-1-T15-PID-0001, Passive Containment Cooling System (PCCS)	November 12, 2009

ENCLOSURE 2

MFN 09-604

**Response to Follow-up Actions from
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Regulatory Audit Of Design Specifications Of Risk Significant
ESBWR Components –**

Classification Design Basis Documents – Item Number 4

DCD R7 Table 3.2-2 Mark-ups

Table 3.2-2
Minimum Safety Class Requirements

Safety Class	Minimum Design Requirements for Specific Safety Class				
	Quality Group	ASME B&PV Section III Code Class	Seismic Category ¹	Electrical Classification ²	Quality Assurance ⁴
1	A	1	I	N/A	10 CFR 50 Appendix B
2	B	2, CC, MC or CS	I	N/A	10 CFR 50 Appendix B
3	C	3	I	Class 1E	10 CFR 50 Appendix B
N	D ³	N ⁵	II or NS	Non-Class 1E	—

¹ Seismic Category I structures, systems, and components meet the design and analysis requirements of Section 3.7. Some safety-related items (e.g., pipe whip restraints) have no safety-related function in the event of an SSE and are Seismic Category II.

² Safety-related electrical equipment and instrumentation meet the design requirements of Institute of Electrical and Electronics Engineers (IEEE) Class 1E (as well as Seismic Category I). Some nonsafety-related electrical equipment and instrumentation are optionally designed to IEEE Class 1E requirements as noted in Table 3.2-1.

³ Some nonsafety-related structures, systems, and components are optionally designed to Quality Group B or C requirements, as designated in Table 3.2-1. Nonsafety-Related structures, systems, and components that are not assigned a quality group are designed to requirements of applicable industry codes and standards (see Subsection 3.2.3.4).

⁴ Safety-related (Safety Class 1, 2 and 3) structures, systems, and components meet the quality assurance requirements of 10 CFR 50, Appendix B, as described in Chapter 17. Nonsafety-Related (N) structures, systems and components meet quality assurance requirements as defined in the quality assurance program that are commensurate with the importance of the equipment's function. [Structures, systems and components designated as Safety-Related Class S in Table 3.2-1 have special quality assurance requirements consistent with the portions of Note \(5\) that are referred to in the Notes column.](#) See Subsection 17.1.22 for further details.

⁵ Nonsafety-related reactor internal structures subject to the requirements of ASME B&PV Code Section III, Division 1, Subsection NG, are assigned to Class IS.