GE Hitachi Nuclear Energy

Richard E. Kingston
Vice President, ESBWR Licensing

PO Box 780
3901 Castle Hayne Road, M/C A-65
Wilmington, NC 28402 USA

T 910 819 6192
F 910 362 6192

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11555 Rockville Pike
Document Control Desk
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Subject: **Partial Response to NRC Request for Additional Information Letter No. 362 Related to ESBWR Design Certification Application – Quality Assurance - RAI Numbers 17.4-23 S02 and 17.4-55**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) sent by NRC letter No. 362, dated July 30, 2009 (Reference 1).

GEH response to RAIs 17.4-23 S02 and 17.4-55 is provided in Enclosure 1. DCD markups are provided in Enclosure 2.

Sincerely,

Richard E. Kingston

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Vice President, ESBWR Licensing

Reference:

1. MFN 09-527 - Letter from U.S. Nuclear Regulatory Commission to Jerald G. Head, GEH, *Request For Additional Information Letter No. 360 Related To ESBWR Design Certification Application*, dated July 28, 2009

Enclosure:

1. Partial Response to NRC Request for Additional Information Letter No. 362 Related to ESBWR Design Certification Application – Quality Assurance - RAI Numbers 17.4-23 S02 and 17.4-55.

2. Partial Response to NRC Request for Additional Information Letter No. 362 Related to ESBWR Design Certification Application – Quality Assurance - DCD Markups for RAI Numbers 17.4-23 S02 and 17.4-55.

cc: AE Cubbage USNRC (with enclosure)
JG Head GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
eDRF Section 0000-0106-1445 (RAIs 17.4-23 S02 & 17.4-55)

MFN 09-560

Enclosure 1

Partial Response to Portion of NRC Request for Additional Information Letter No. 362 Related to ESBWR Design Certification Application – Quality Assurance

RAIs 17.4-23 S02 and 17.4-55

RAI 17.4-23 S02

The staff requested in RAI 17.4-23 S01 that GEH include in the scope of D-RAP all RTNSS SSCs (i.e., SSCs identified under RTNSS criterion A, B, C, D, and E) or justify why they should not be included. In response to RAI 17.4-23 S01, GEH committed to include all RTNSS SSCs in scope of D-RAP and incorporate these changes in NEDO-33411, Revision 1, accordingly. Although Sections 19A.8.2 and 17.4.2 of the ESBWR DCD, Preliminary Revision 6, state that all RTNSS SSCs are in scope of D-RAP, based on the staff's review of NEDO-33411, Revision 1, only those RTNSS SSCs identified under RTNSS criterion C and D are actually included in scope of D-RAP, and the RTNSS SSCs identified under RTNSS criterion A, B, and E are not included.

The staff requests that GEH include in the scope of D-RAP all RTNSS SSCs (i.e., SSCs identified under RTNSS criterion A, B, C, D, and E) and update NEDO-33411 accordingly (e.g., List of Tables, Sections 2.3 and 3.1.1, Table 3, Table 6, and Figure 1 of NEDO-33411).

GEH Response

There are 2 elements within the scope of the D-RAP for the design certification: 1) all RTNSS SSCs, and 2) all risk-significant SSCs in Table 6 of NEDO-33411. The staff's request to combine these 2 elements would result in adding non-risk significant SSCs into Table 6 of NEDO-33411. In lieu of the suggested changes, GEH will revise DCD Tier 2 Section 17.4 to clarify that RTNSS and risk-significant SSCs are in the scope of D-RAP.

DCD Impact

GEH will revise DCD Tier 2 Section 17.4 to clarify that RTNSS and risk-significant SSCs are in the scope of D-RAP as shown in the attached mark-up. No update to NEDO-33411 will be made in response to this RAI.

RAI 17.4-55

All systems, structures, and components (SSCs) in the scope of RAP should be subjected to the quality assurance (QA) controls that are described in the QA program description (QAPD) submitted by the applicants for a design certification (DC) or combined license (COL) in accordance with the provisions in Section 17.5 of the Standard Review Plan (SRP). For example, the non-safety-related SSCs in the scope of RAP should be subjected to QA controls in accordance with the provisions of Subsection V ("Nonsafety-Related SSC Quality Controls") in Section 17.5 of the SRP. However, it is not clear in Section 17.4 of the ESBWR DCD (Preliminary Revision 6) and NEDO-33289 ("ESBWR Reliability Assurance Program," Revision 2) that the SSCs in the scope of RAP (i.e., safety-related risk-significant SSCs, RTNSS SSCs, and other non-safety-related SSCs identified as risk-significant) are subjected to these QA controls.

The staff requests that GEH clarify in Section 17.4 of the ESBWR DCD and NEDO-33289 that all SSCs in the scope of RAP are subjected to the QA controls that are described in the QAPD of the DC and COL applicant.

GEH Response

DCD Section 17.1.22, "Nonsafety-Related SSC Quality Controls" states that nonsafety-related SSCs that perform safety significant functions have QA requirements applied commensurate with the importance of the item's function, and that the identification of these SSCs is shown in Table 3.2-1. Notes 5 (h) and 5 (i) in Table 3.2-1 explain the basis for items designated as Quality Class S for nonsafety-related RTNSS functions. However, it does not consider nonsafety-related SSCs that are risk significant but not designated as RTNSS. Therefore, to address the staff's request, GEH will revise DCD Table 3.2-1 to clarify that nonsafety-related SSCs that are risk significant but not designated as RTNSS are assigned Quality Class S. Also, item 4 in system T31 in Table 3.2-1 will be revised to designate the "Hardened containment vent line to RB/FB stack" as Quality Class S.

DCD Impact

DCD Table 3.2-1 will be revised as shown in the attached mark-up.

MFN 09-560

Enclosure 2

Partial Response to Portion of NRC Request for Additional Information Letter No. 362 Related to ESBWR Design Certification Application – Quality Assurance

DCD Markups for RAIs 17.4-23 S02 and 17.4-55

17.4 RELIABILITY ASSURANCE PROGRAM DURING DESIGN PHASE

This section presents the ESBWR Design Reliability Assurance Program (D-RAP).

17.4.1 Introduction

The GEH ESBWR D-RAP is a program utilized during detailed design and specific equipment selection phases to assure that the important ESBWR reliability assumptions of the Probabilistic Risk Assessment (PRA) are considered throughout the plant life. The PRA is used to evaluate the plant response to initiating events and mitigation to ensure potential plant damage scenarios pose a very low risk to the public.

The D-RAP identifies relevant aspects of plant operation, maintenance, and performance monitoring of important plant SSCs for owner/operator consideration in assuring safety of the equipment and limiting risk to the public. An example is provided in Subsection 17.4.11 to demonstrate how the D-RAP applies to the Isolation Condenser System (ICS). The ICS example shows how the principles of D-RAP are applied to other systems identified by the PRA as being risk-significant.

The COL Applicant will identify the site-specific SSCs within the scope of the Reliability Assurance Program (RAP), and describe the quality elements for developing and implementing the D-RAP (that is, Organization, Design Control, Procedures and Instructions, Records, Corrective Action, and Audit Plans) that will be applied prior to the initial fuel load (COL 17.4-1-A).

The COL Applicant~~Holder~~ will provide a description of operational reliability assurance activities (COL 17.4-2~~1~~-A~~H~~). These activities are consistent with the following requirements:

- Integrate the objectives of operational reliability assurance activities into the QA program, including addressing failures of nonsafety-related, risk-significant SSCs that result from design and operational errors in accordance with SECY 95-132, Item E.
- Establish PRA importance measures, the expert panel process, and deterministic methods to determine the site-specific list of ~~risk-significant~~ SSCs under the scope of the D-RAP.
- Evaluate and maintain the reliability of ~~risk-significant~~ SSCs as identified in the D-RAP. This includes determining the dominant failure modes of SSCs. The program may cite, for example, reliability analysis, cost-effective maintenance enhancements, such as condition monitoring and using condition-directed maintenance as well as time directed or planned periodic maintenance.
- Use the Maintenance Rule (10 CFR 50.65) program to monitor the effectiveness of maintenance activities needed for operational reliability assurance.
- Consider all SSCs that are in the scope of the D-RAP as high-safety-significant (HSS) within the scope of the Maintenance Rule program, or provide Expert Panel justification for any exceptions.

  Note: The Expert Panel, in accordance with common industry practice and guidance in NUMARC 93-01, develops the final list of risk significant SSCs from various inputs, including the PRA risk importance calculations and industry operating experience. It is necessary for the Expert Panel to include all SSCs that are in the scope of the RAP to be

included in the HSS category of SSCs within the scope of the Maintenance Rule. However, risk importance calculations, plant specifics and other factors may change the risk significance of certain SSCs in the operational RAP that were previously determined to be risk-significant within the bounds of the D-RAP. Therefore, exceptions between the D-RAP and operational RAP risk significance may exist, and should be evaluated and justified by the Expert Panel.

- Establish a reliability database using historical data on equipment performance as available. The compilation and reduction of this data provides the plant with source of component reliability information. Data used in PRA fault-tree analyses may also be a viable initial source.
- Use surveillance and testing to establish the level of performance or condition being maintained for SSCs within the scope of the RAP and identifies declining trends in between surveillances prior to performance or condition degrading to unacceptable levels undetected (or failure) to the extent possible.
- Develop a maintenance plan to describe the nature and frequency of maintenance activities to be performed on plant equipment. The plan includes the selected SSCs identified in the D-RAP.

17.4.2 Scope

The scope of the ESBWR D-RAP includes all RTNSS SSCs and risk-significant SSCs, both safety-related and nonsafety-related, that provide defense-in-depth or result in significant improvement in the PRA evaluations.

A preliminary list of risk-significant SSCs within the scope of the D-RAP is developed in the design phase.

The list is updated, using a blended approach and an Expert Panel when plant-specific information is available. This updated list forms part of the basis for the HSS category, as described in NUMARC 93-01, and as endorsed by RG 1.160, of the SSCs within the scope of the Maintenance Rule program, as prescribed by 10 CFR 50.65(b). The Maintenance Rule Program ensures that risk-significant SSCs operate throughout plant life with reliable performance that is consistent with the PRA. The HSS category within the Maintenance Rule Program scope must encompass the SSCs in the RAP scope as modified for the operations phase if the Maintenance Rule Program is to be used along with the QA and maintenance and surveillance programs in implementation of the RAP in the operations phase. The PRA for the ESBWR, and other sources, such as historical records of Boiling Water Reactor (BWR) system and components are used to identify and prioritize those SSCs that are important to prevent or mitigate plant anticipated operational occurences (AOOs) or other events that could present a risk to the public.

Nonsafety-related SSCs within the scope of Regulatory Treatment of Nonsafety Systems (RTNSS) (DCD Section 19A) are included in the scope of D-RAP and have graded quality assurance controls [Reference 17.4-8].

17.4.3 Purpose

The purpose of the D-RAP is to ensure that the plant safety, as estimated by the PRA, is maintained as the detailed design evolves through the implementation and procurement phases,

and that pertinent information is provided in the design documentation to the future owner/operator so that equipment reliability, as it affects plant safety, is maintained through operation and maintenance during the entire plant life.

17.4.4 Objective

The objective of the D-RAP is to identify those plant SSCs that are significant contributors to risk, as shown by the PRA or other sources, and to assure that, during the implementation phase, the plant design continues to utilize risk-significant SSCs whose reliability is commensurate with the PRA assumptions. Reliability includes ensuring that ~~risk-significant~~ SSCs in the scope of D-RAP do not degrade to an unacceptable level during plant operations, and that the frequency of initiating events posing challenges to ~~risk-significant~~these SSCs is minimized. The D-RAP also identifies key assumptions regarding any operation, maintenance and monitoring activities that the owner/operator should consider in implementing operational reliability assurance activities to assure that such SSCs function when challenged throughout plant life with reliability consistent with that assumed in the PRA.

17.4.5 GEH Organization for D-RAP

The GEH ESBWR Engineering section is an integrated design and engineering organization that is responsible for formulating and implementing the D-RAP. The Manager, ESBWR Engineering is responsible for the design and licensing of the ESBWR, and for development of the D-RAP.

The ESBWR Engineering organization is responsible for the design analysis and PRA engineering that is necessary to support the development of the D-RAP. PRA personnel are directly involved with the design organization and keep the design staff cognizant of risk-significant items, program needs, and project status. PRA personnel participate in the design change control process, which includes providing D-RAP related inputs in the design process.

GEH ESBWR Engineering design procedural controls are applied to the D-RAP. Specific procedures provide guidance on the design process, control of design changes, and storage and retrieval controls.

The design control procedure defines the process for performing, documenting, and verifying design activities. This includes developing or modifying the design of systems, engineering evaluations, analyses, calculations and documents, (e.g., specifications, drawings, reports).

The procedure for design change control defines the process for evaluating design changes in engineering controlled documents to ensure that the total effect is considered before a change is approved, and that the affected documents are identified and changed accordingly. The procedure identifies interfaces and organizations responsible for these interfaces, including PRA review. If a proposed change could affect the safety, availability or capacity factor of the ESBWR plant, system reliability is analyzed.

Several design control procedures provide guidance for developing a high quality process for reliability assurance. The documentation procedure establishes the requirements and responsibilities for the preparation, approval, and issue of documents controlled by the engineering design organizations. The quality assurance records procedure provides requirements for quality assurance record retention. The self-assessment, corrective action and

implemented through the RAP. If the SSC is not significant, then normal controls would be implemented through the site Maintenance Rule and corrective action programs.

17.4.7 Design Considerations

The reliability of ~~risk-significant~~ SSCs in the scope of D-RAP, which are identified by the PRA and other sources, are evaluated at the detailed design stage by appropriate design reviews and reliability analyses. The procedure for design change control defines the process for evaluating design changes in engineering controlled documents to ensure that the total effect is considered before a change is approved, and the affected documents are identified and changed accordingly.

A design reliability assessment is a process in which the design engineer builds quality and reliability into the SSC, while ensuring that the basis for SSC design is properly modeled in the PRA. Due to the preliminary nature of the PRA model during the design phase, the model relies on generic information, bounding assumptions, or design requirements as a basis for model development. This design assessment can be performed for changes that occur during the plant design phase, as well as during normal plant operations. It is a systematic method to evaluate the proposed design details with respect to PRA insights. The assessment considers reliability concepts, such as redundancy, diversity, human factors, spatial interactions, external events, etc., to enhance the system design, and considers PRA insights and assumptions. If the assessment reveals that the proposed design could conflict with results and insights calculated in the PRA, or could cause significant unavailability of a safety function, then a design change is pursued.

Proposed design changes are processed by the design change control procedure, which requires PRA review. If a design change affects the PRA model, then the PRA is revised in accordance with the PRA update process described in the PRA procedure.

17.4.8 Defining Failure Modes

The determination of dominant failure modes of ~~risk-significant~~ SSCs in the scope of D-RAP includes historical information, analytical models and existing requirements. Many BWR systems and components have compiled a significant historical record, so an evaluation of that record is performed. For those SSCs for which there is not an adequate historical basis to identify critical failure modes, an analytical approach is necessary.

Inputs may include PRA importance analysis, root cause analysis, failure modes and effects analysis, and review of operating experience. In addition, equipment performance information, including vendor manuals, ASME Section XI, technical specifications, RTNSS, and other regulatory requirements are reviewed to identify important safety functions.

The design engineer analyzes this information to identify dominant failure modes, such as single failures, latent failures not detected by routine monitoring, common cause failures, or failures that could cascade into more significant safety functional failures.

17.4.9 Operational Reliability Assurance Activities

Once the dominant failure modes are determined for ~~risk-significant~~ SSCs in the scope of D-RAP, an assessment is performed to identify operational reliability assurance activities that assure acceptable performance during plant life. Such activities may consist of periodic surveillance inspections or tests, monitoring of SSC performance, and/or periodic preventive

Table 3.2-1

Classification Summary

Principal Components[1]	Safety Class.[2]	Location[3]	Quality Group[4]	~~QA Req.~~ Safety-Related Classification[5]	Seismic Category[6]	Notes
C CONTROL AND INSTRUMENT SYSTEMS						
C11 Rod Control and Information System (RC&IS)	N	RB, CB	—	S / N~~E~~	NS	(5) j
C12 Control Rod Drive (CRD) System						
1. CRD primary pressure boundary	1	CV	A	~~B~~Q	I	
2. CRD internals	3	CV	—	~~B~~Q	I	
3. Hydraulic control unit (HCU)	2	RB	—	~~B~~Q	I	(8)
4. Piping including supports – insert line	2	CV, RB	B	Q~~B~~	I	
5. High pressure makeup piping including supports, from and including the check valve and test valve in the common line, ~~and the injection~~isolation valves and isolation bypass valves up to ~~at~~ the connection to RWCU/SDC	2	RB	B	~~B~~Q	I	CRD piping classification is consistent with piping to which it connects.
6. Piping and valves with no safety-related function (pump suction, pump discharge, drive header, and other piping not part of HCU)	N	RB	D	~~E~~S	II	(5) c, (7) , (5) k – for other risk-significant equipment
7. CRD water pumps	N	RB	D	~~E~~S	II	(5) c
8. Fine motion drive motor	N	CV	—	~~E~~S	II	(5) c
9. Electrical modules, solenoids, and cable with safety-related function	3	CV, RB, CB	—	~~B~~Q	I	

Table 3.2-1

Classification Summary

Principal Components[1]	Safety Class.[2]	Location[3]	Quality Group[4]	~~QA Req.~~ Safety-Related Classification[5]	Seismic Category[6]	Notes
2. Piping and valves (including supports) from the check valves upstream of the squib valves to the suppression pool and GDCS pools	2	CV	B	~~B~~Q	I	
3. Piping and valves (including supports) from the GDCS pools to the lower drywell	2	CV	B	~~B~~Q	I	
4. Safety-related electrical modules, components and cables	3	CV, RB, CB	—	~~B~~Q	I	
5. GDCS pool splash guard and perforated plate	3	CV	—	~~B~~Q	I	
6. Nonsafety-Related electrical modules, components and cable	N	CV, RB, CB	—	S~~E~~	II	(5) c, (5) i, (5) j, (5) k – for deluge function temperature sensors
F REACTOR SERVICING EQUIPMENT						
F11 Fuel Servicing Equipment						
1. Fuel Preparation Machine	N	FB	—	~~B~~S	I	(5) a
2. New Fuel Inspection Stand	N	FB	—	~~E~~S	II	(5) c
3. All Other Equipment	N	FB, RB	—	~~E~~N	NS	
F12 Miscellaneous Servicing Equipment	N	FB, RB	—	~~E~~N	NS	
F13 Reactor Pressure Vessel Servicing Equipment						
1. RPV head holding pedestal	N	RB	—	S~~E~~	I	(5) c
2. All other RPV servicing equipment	N	RB	—	~~E~~N	NS	

Table 3.2-1

Classification Summary

Principal Components[1]	Safety Class.[2]	Location[3]	Quality Group[4]	~~QA Req.~~ Safety-Related Classification[5]	Seismic Category[6]	Notes
5. Piping and components outside containment needed for fuel pool cooling, suppression pool cooling, LPCI and drywell spray modes of operation including skimmer lines and all components in the cooling and cleanup trains.	N	RB, FB	B	S~~E~~	II	(5) b, (5) c, (5) i – for RTNSS equipment, (5) k – for other risk-significant equipment
6. Suppression pool suction line inside containment between inboard manual valve and its termination point (including suction strainers)	N	CV	C	S~~E~~	I	(5) b, (5) c, (5) i – for RTNSS equipment
7. Piping and valves inside containment between inboard containment isolation valves and their termination points inside containment for: – Suppression pool return line – Drywell spray discharge line	N	CV	C	S~~E~~	I	(5) b, (5) c, (5) i – for RTNSS equipment
8. Piping and valves inside containment between inboard containment isolation valves and their termination points inside containment for: – GDCS pool suction line – GDCS pool return line	N	CV	D	S~~E~~	II	(5) c
9. IC/PCCS pools active cooling and cleanup subsystem piping, and components.	N	RB	D	S~~E~~	II	(5) c

Table 3.2-1

Classification Summary

Principal Components[1]	Safety Class.[2]	Location[3]	Quality Group[4]	~~QA Req.~~ Safety-Related Classification[5]	Seismic Category[6]	Notes
10. Auxiliary pools skimmer lines, and auxiliary pool return lines between isolation valves and terminus points.	N	RB	D	N~~E~~	NS	
11. Instrument sensing lines for the following parameters – IC/PCCS pool water level – Spent fuel pool level – Buffer pool level	3	RB, FB	C	Q~~B~~	I	
12. Electrical modules and cables with safety-related function (containment isolation, LPCI isolation)	3	RB, CB, CV, FB	—	Q~~B~~	I	
13. Electrical modules and cables with nonsafety-related function	N	RB, CB, FB	—	S~~E~~	II	(5) c, (5) i – for RTNSS equipment, (5) j – for diverse protection equipment, (5) k – for other risk-significant equipment
14. Control and instrumentation required for safety-related functions	3	RB, CB	—	Q~~E~~	I	
15. Controls and instrumentation required for nonsafety-related functions	N	RB, FB, CB	—	S~~E~~	II	5) c, (5) i – for RTNSS equipment, (5) j – for diverse protection equipment, (5) k – for other risk-significant equipment
G31 Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System						
1. Piping including supports and valves within and including outermost containment isolation valves on pump suction	1	CV, RB	A	Q~~B~~	I	(7)

Table 3.2-1

Classification Summary

Principal Components[1]	Safety Class.[2]	Location[3]	Quality Group[4]	~~QA Req.~~ Safety-Related Classification[5]	Seismic Category[6]	Notes
2. Components supporting distribution of power from Ancillary Diesel Generators to RTNSS non-Criterion B structures, systems and components	N	ADB, CB, SB, EB	—	S	NS	(5) i
3. Nonsafety-related components designated as risk significant but not RTNSS	N	RB, EB	—	S	NS	(5) k
~~2~~4. All other components	N	ALL	—	N~~E~~	NS	
R13 Uninterruptible AC Power Supply						
1. Electrical modules and cable with safety-related function	3	CV, CB, RB	—	Q~~B~~	I	
2. Other electrical modules and cable with no safety function	N	CV, RB, CB, EB, TB, OL	—	S / N~~E~~	NS	(5) h, (5) i – for RTNSS equipment, (5) k – for other risk-significant equipment
R15 Lighting and Servicing Power Supply						
1. Lighting	N	ALL	—	N~~E~~	NS	Components of the lighting systems associated with safety-related systems and emergency exit lighting are supported to Seismic Category I requirements.
2. Emergency lighting in main control room and remote shutdown system rooms	N	CB, RB	—	S~~E~~	I	(5) c, (5) h Safety-related power is provided through isolation devices. The seismic classification applies to the supports for the lighting fixtures, not to the bulbs and fixtures.

Table 3.2-1

Classification Summary

Principal Components[1]	Safety Class.[2]	Location[3]	Quality Group[4]	~~QA Req.~~ Safety-Related Classification[5]	Seismic Category[6]	Notes
R16 Direct Current Power Supply						
1. Electrical modules and cable with safety-related function	3	RB~~, CV, CB, TB~~	—	Q~~B~~	I	
2. Other electrical modules and cable with no safety function	N	EB, ~~CV, CB,~~ RB, TB, RW, SF, CP, OO, OL	—	S / N~~E~~	NS	(5) h, (5) i – for RTNSS equipment, (5) k – for other risk-significant equipment
R21 Standby AC Power Supply						
1. Ancillary diesel generators and their support equipment	N	OO	—	S~~E~~	II	(5) c, (5) h
2. Other system equipment	N	EB	—	S / N~~E~~	NS	(5) i – for RTNSS equipment
R31 Raceway System						
1. Conduit, cable trays and supports with safety-related function	3	CV, CB, RB, FB, TB	—	Q~~B~~	I	
2. Other electrical modules with no safety function	N	CV, CB, RB, EB, TB, OL	—	S / N~~E~~	NS	(5) h, (5) i – for RTNSS equipment
3. Electrical penetrations	3	CV, RB	—	Q~~B~~	I	
R41 Plant Grounding System	N~~3~~	OO	—	N~~B~~	NS~~I~~	
R51 Communication System	N	ALL	—	S / N~~E~~	NS	(5) c System components are mounted to Seismic Category II requirements in safety-related areas.
S POWER TRANSMISSION SYSTEMS						
S21 Switch Yard	N	OO	—	N~~E~~	NS	

Table 3.2-1

Classification Summary

Principal Components[1]	Safety Class.[2]	Location[3]	Quality Group[4]	~~QA Req.~~ Safety-Related Classification[5]	Seismic Category[6]	Notes
3. Other mechanical modules (including nitrogen storage tanks, and vaporizers), piping, valves, and electrical modules and cables with no safety function	N	RB, OO	—	N~~E~~	NS	
4. Hardened containment vent line to RB/FB stack	N	RB	—	S	NS	(5) k
T41 Drywell Cooling System (DCS)	N	CV	—	S~~E~~	II	(5) c
T49 Passive Autocatalytic Recombiner System (PARS)	N	CV	—	S~~E~~	I	(5) c, (5) h
T62 Containment Monitoring System						
1. Mechanical components involved in containment isolation function	2	CV, RB	—	Q~~B~~	I	
2. Other safety-related portions of System	3	CV, RB, CB	—	Q~~B~~	I	
3. Electrical modules, cables and instrumentation supporting diverse protection functions	N	CV, RB, CB	—	S	II	(5) c, (5) j
4~~3~~. Other nonsafety-related portions of system	N	CV, RB, CB	—	N~~E~~	NS	
T64 Environmental Monitoring System	N	OL	—	N~~E~~	NS	

i. Nonsafety-related structures, systems and components assigned to RTNSS criteria other than Criterion B that are required to be designed in accordance with RTNSS requirements as specified in Appendix 19A.

j. Nonsafety-related structures, systems and components associated with the performance of Diverse I&C functions that are required to be designed in accordance with a quality assurance program that meets or exceeds the guidance of NRC Generic Letter 85-06 as specified in Subsection 7.8.3.

k. Nonsafety-related structures, systems and components designated as risk significant, but that are not designated as RTNSS.

The designation "NE" indicates that standard nonsafety-related quality assurance requirements are applied~~, commensurate with the importance of the item's function~~. See Subsection 17.1.22 for further details on the safety-related classification system.

(6) Seismic category: The designations "I" or "II" indicate that the design requirements of Seismic Category I or II structures and equipment are applied as described in Subsection 3.2.1 and Section 3.7, Seismic Design. Structures and equipment that are not designated "I" or "II" are designated "NS."

(7) Small Piping and Instrument Lines — Lines 25 mm (one inch) and smaller in diameter that are part of the RCPB are Quality Group B and meet the requirements of the ASME B&PV Code, Section III, Class 2 and Seismic Category I, with the exceptions noted below:

Instrument lines that are connected to the RCPB and are used to actuate or monitor safety-related systems are Quality Group B from the outer isolation valve or the process shutoff valve (root valve) to the sensing instrumentation. Instrument lines that are connected to the RCPB and are not used to actuate and monitor safety-related systems are nonsafety-related and Quality Group D from the outer isolation valve or the process shutoff valve (root valve) to the sensing instrumentation. Other instrument lines meet the following requirements:

- Through the root valve: the lines are the same classification as the system to which they are attached.
- Beyond the root valve, if used to actuate a safety-related system: the lines are the same classification as the system to which they are attached.
- Beyond the root valve, if not used to actuate a safety-related system: the lines may be Quality Group D.

Sample lines from the outer isolation valve or the process root valve through the remainder of the sampling system may be Quality Group D.

Safety-related instrument lines comply with the guidance of NRC Regulatory Guide 1.151.

(8) HCU for CRD system — Each HCU is a factory-assembled, engineered module of valves, tubing, piping, and stored water that controls two CRDs by the application of pressure and flow to accomplish rapid insertion for reactor scram.

Although each HCU is field installed as a unit and connected to process piping, many of its internal parts differ markedly from process piping and components because of the more complex functions of the HCUs. Thus, although the codes and standards invoked by the