

August 8, 2006

Mr. David H. Hinds, Manager, ESBWR
General Electric Company
P.O. Box 780, M/C L60
Wilmington, NC 28402-0780

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 51 RELATED TO
ESBWR DESIGN CERTIFICATION APPLICATION

Dear Mr. Hinds:

By letter dated August 24, 2005, General Electric Company (GE) submitted an application for final design approval and standard design certification of the economic simplified boiling water reactor (ESBWR) standard plant design pursuant to 10 CFR Part 52. The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed design.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter. This RAI concerns the classification of structures, systems, and components as described in Section 3.2 of the ESBWR design control document. These questions were sent to you via electronic mail on June 26, 2006, and were discussed with your staff during a telecon on July 31, 2006. You agreed to respond to this RAI on September 8, 2006.

If you have any questions or comments concerning this matter, you may contact me at (301) 415-2863 or lwr@nrc.gov or you may contact Amy Cubbage at (301) 415-2875 or aec@nrc.gov.

Sincerely,

/RA/

Lawrence Rossbach, Project Manager
ESBWR/ABWR Projects Branch
Division of New Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 52-010

Enclosure: As stated

cc: See next page

Mr. David H. Hinds, Manager, ESBWR
General Electric Company
P.O. Box 780, M/C L60
Wilmington, NC 28402-0780

August 8, 2006

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 51 RELATED TO
ESBWR DESIGN CERTIFICATION APPLICATION

Dear Mr. Hinds:

By letter dated August 24, 2005, General Electric Company (GE) submitted an application for final design approval and standard design certification of the economic simplified boiling water reactor (ESBWR) standard plant design pursuant to 10 CFR Part 52. The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed design.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter. This RAI concerns the classification of structures, systems, and components as described in Section 3.2 of the ESBWR design control document. These questions were sent to you via electronic mail on June 26, 2006, and were discussed with your staff during a telecon on July 31, 2006. You agreed to respond to this RAI on September 8, 2006.

If you have any questions or comments concerning this matter, you may contact me at (301) 415-2863 or lwr@nrc.gov or you may contact Amy Cabbage at (301) 415-2875 or aec@nrc.gov.

Sincerely,

/RA/

Lawrence Rossbach, Project Manager
ESBWR/ABWR Projects Branch
Division of New Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 52-010

Enclosure: As stated

cc: See next page

ACCESSION NO. ML062190291

OFFICE	NESB/PM	NESB/BC(A)
NAME	LRossbach	JColaccino
DATE	08/08/2006	08/08/2006

OFFICIAL RECORD COPY

Distribution for DCD RAI Letter No. 51 dated August 8, 2006

Hard Copy

PUBLIC

NESB R/F

ACubbage

LRossbach

E-Mail

MGavrilas

JDanna

ACRS

OGC

KWinsberg

JColaccino

ACubbage

LRossbach

LQuinones

MBarillas

JGaslevic

CHammer

RMcNally

TLiu

Requests for Additional Information (RAIs)
ESBWR Design Control Document (DCD) Sections 3.2.1 and 3.2.2

RAI No.	Reviewer	Question Summary	Full Text
3.2-1	Hammer G	10 CFR 50.55a rule requirements and revision of RG 1.26 guidance regarding N-symbol stamp	It should be noted that the current 10 CFR 50.55a rule requires that an ASME Code N-symbol stamp be applied to all ASME Code Class 1, 2, and 3 pressure boundary components. This is contrary to a footnote b to Table 1 included in the currently issued Revision 3 of Regulatory Guide (RG) 1.26, which states that such a stamp need not be applied. The staff is currently in the process of revising RG 1.26 to conform to the requirements of 10 CFR 50.55a. Please confirm that all pressure retaining components designed to meet ASME Code requirements for Code Class 1, 2, and 3 components will have the Code N-symbol stamp applied, in accordance with 10 CFR 50.55a.
3.2-2	Hammer G	Revise Section 3.2.2 regarding applicability of RG 1.26 to component supports	In Section 3.2.2 of the DCD, it is stated that component supports are not within the scope of RG 1.26. However, it is the staff position that both components and component supports are addressed by RG 1.26. Please revise this section accordingly.
3.2-3	Hammer G	Revise Section 3.2.2.2 Quality Group B discussion	This section provides no discussion of significant safety systems described in RG 1.26 and Standard Review Plan (SRP) 3.2.2 for Quality Group B systems, such as those which provide reactor shutdown, emergency core cooling, post-accident containment heat removal, post-accident fission product removal, or decay heat removal. Please revise the Section 3.2.2.2 discussion to add these important system functions to the Quality Group B description.

3.2-4	Hammer G	Revise Section 3.2.2.3 Quality Group C discussion	This section provides no discussion of significant safety systems described in RG 1.26 and SRP 3.2.2 for Quality Group C systems, such as those which provide cooling water to systems for reactor shutdown, emergency core cooling, post-accident containment heat removal, post-accident fission product removal, decay heat removal, or those containing radioactive waste. Please revise the Section 3.2.2.3 discussion to add these important system functions to the Quality Group C description.
3.2-5	Hammer G	Revise Table 3.2-1 safety designations	In Table 3.2-1, there are numerous systems, or portions thereof, which are designated "N" (for non-safety related). However, the system or component description indicates that its function is safety-related. For example, the Table indicates that the Fuel and Auxiliary Pools Cooling System (FAPCS) Isolation Condenser/Primary Containment Cooling Pool cooling piping has a safety designation of N, which is inconsistent with the safety-related function of post-accident containment heat removal. Please revise the Table to ensure that the system safety designations account for all safety-related functions which the systems are required to perform.
3.2-6	Hammer G	Revise Table 3.2-1 Quality Assurance B designation for Seismic Category I and II items	In Table 3.2-1, there are several items which are designated as either Seismic Category I or II. Consistent with guidance provided in RG 1.29 and SRP 3.2.1, these items should also be designated as Quality Assurance B. Please revise the Table accordingly.

3.2-7	Hammer G	Need for clarity of Table 3.2-1 item configurations and a COL action regarding associated P&IDs	The piping and instrument diagrams (P&IDs) which depict the configurations associated with the items listed in Table 3.2-1 are not sufficiently clear in all cases to adequately describe the limits of the applied quality groups, quality assurances, and seismic categories within the various systems. For example, in the Fuel and Auxiliary Pools Cooling System P&ID (Figure 9.1-1), the suppression pool return lines are not clearly identified, and the necessary termination points are not labeled. As another example, a P&ID which depicts the classification boundaries for the main steam and feedwater systems outside containment could not be found. Please provide information on the system P&IDs which clearly identifies system and component classification limits identified in Table 3.2-1. Also, please provide a COL action to provide complete, detailed P&IDs of all plant systems, including unique identification numbers for all system components, to ensure that the final design classifications and the classification boundaries are acceptable.
3.2-8	Hammer G	Revise Table 3.2-1, Component B11, Item 4 - Control Rods - quality group	Table 3.2-1, Component B11, Item 4, provides no quality group designation for the Control Rods. Consistent with SRP 3.2.2 and RG 1.26 guidance regarding components designed for reactor shutdown, these should be Quality Group B components. Please revise the Table.
3.2-9	Hammer G	Revise Table 3.2-1, Component B11, Item 5 - SLC system header and spargers - quality group	Table 3.2-1, Component B11, Item 5, provides no quality group designation for the Standby Liquid Control (SLC) system header and spargers. Consistent with SRP 3.2.2 and RG 1.26 guidance regarding components designed for reactor shutdown, these should be Quality Group B components. Please revise the Table accordingly.

3.2-10	Hammer G	Revise Table 3.2-1, Component B11, Item 7 - Other safety-related reactor internals, including core support structures - quality group	Table 3.2-1, Component B11, Item 7, provides no quality group designation for these safety-related reactor internals. Consistent with SRP 3.2.2 and RG 1.26 guidance, these should be Quality Group B components, because the components are necessary to maintain core geometry and ensure reactor shutdown. Please revise the Table accordingly.
3.2-11	Hammer G	Revise Table 3.2-1, Component B11, Item 8 - Reactor internals - nonsafety-related components - quality group and quality assurance	Table 3.2-1, Component B11, Item 8, provides no quality group designation or specific quality assurance requirement for the nonsafety-related reactor internals. While these components have traditionally been regarded as having no safety function, recent operational experience for BWRs indicates that the structural integrity of these components, primarily steam separators and dryers, is important to ensure that there are no loose parts during normal operation or accident conditions, such that safety-related components are not adversely affected. For example, a steam dryer loose part could adversely affect main steam system integrity or isolation valve capability, which could increase potential offsite doses or could adversely affect other reactor internal components such that reactor shutdown could be impaired. Therefore, consistent with SRP 3.2.2 and RG 1.26 guidance, these components should be at least Quality Group C and Quality Assurance B components. This is also consistent with recently upgraded replacement steam dryers at operating plants. Please revise the Table accordingly or provide a justification for your position.
3.2-12	Hammer G	Revise Table 3.2-1, Component B21, Item 4 - SRV nitrogen accumulator piping and valves	In addition to the accumulator, all piping and valves required for performing the nitrogen actuation of the Safety Relief Valves (SRVs), need to be included in Table 3.2-1 Component B21.

3.2-13	Hammer G	Revise Table 3.2-1, Component B21, Item 6 - Seismic restraint of main steam lines and feedwater lines outside containment isolation valves	Consistent with SRP 3.2.2 and RG 1.26, a note should be added to Table 3.2-1, Component B21, Item 6, and the appropriate DCD drawings should be revised to state that the seismic restraints must be located inside a Seismic Category I structure.
3.2-14	Hammer G	Revise Table 3.2-1, Component B21, Item 7 - Main steam lines from seismic restraint to turbine stop valves - quality group, quality assurance, and seismic category	Component B21 Item 7 -Main steam lines from seismic restraints to turbine stop valves, existed in Revision 0 of Table 3.2-1, but has been deleted in Revision 1. Consistent with SRP 3.2.2 and RG 1.26 guidance, this portion of the main steam piping should be retained in the Table and categorized at least as Quality Group B, Quality Assurance B, and Seismic Category II.
3.2-15	Hammer G	Revise Table 3.2-1, Component B21, Item 8 - Feedwater lines from shutoff valve to seismic restraints - quality group	Table 3.2-1, Component B21, Item 8: Consistent with SRP 3.2.2 and RG 1.26 guidance, this portion of the feedwater piping should be designated Quality Group B. Please revise Table 3.2-1, Component B21 accordingly.
3.2-16	Hammer G	Add to Table 3.2-1 for Component B21, a new item - Condenser anchorage and piping inlet nozzles to condenser - quality group, quality assurance, and seismic category	In accordance with SRP 3.2.2 and RG 1.26 guidance, the condenser anchorage and piping inlet nozzles to the condenser should be seismically analyzed. Therefore, this portion of the main steam system should be designated at least Quality Group D, Quality Assurance E, and Seismic Category II. Please revise Table 3.2-1, Component B21 accordingly.

3.2-17	Hammer G	Add to Table 3.2-1 for Component B21, a new item - Steam lines leading away from main steam lines to power cycle auxiliary equipment including auxiliary steam shut off valves - quality group, quality assurance, and seismic category	In accordance with SRP 3.2.2 and RG 1.26 guidance, the steam lines connected to main steam lines from the power cycle auxiliary equipment including auxiliary steam shut off valves should be Quality Group D. Therefore, this portion of the main steam system should be designated at least Quality Group D, Quality Assurance E, and Seismic Category NS. Please revise Table 3.2-1, Component B21 accordingly.
3.2-18	Hammer G	Table 3.2-1, Component B21 , Item 9 - Main steam and feedwater line pipe whip restraints	Table 3.2-1, Component B21, Item 9: The seismic category of these pipe whip restraints is listed as "NS or I". Pipe whip restraints are designed for concurrent pipe break and seismic loading and should, therefore, be at least Seismic Category II to prevent damage to adjacent safety-related components. Also, the note should be revised to state that the restraints are required, except where a Leak-Before-Break evaluation has been approved by the NRC. Please revise the Table accordingly.

3.2-19	Hammer G Fair J Hernandez J	Revise Table 3.2-1, Component B21, Item 13 - piping and valves (including supports) for main steam drains beyond outermost main steam isolation valve (MSIV) and downstream of second isolation valve - normal valve position and seismic analysis methods	In Table 3.2-1, Component B21, Item 13, the piping and valves (including supports) for main steam drains beyond the outermost MSIV and downstream of the second isolation valve is designated Quality Group D. However, consistent with SRP 3.2.2 and RG 1.26 guidance, this second drain isolation valve must also be a normally closed valve to define an acceptable transition from the upstream Quality Group B piping to the downstream Quality Group D piping. Please verify that the described second valve is a normally closed valve. Also, this item is designated Seismic Category II, which requires seismic analysis methods which are described in Section 3.7 of the DCD. However, Section 15.4.4.5.2.3 of the DCD refers to earthquake experience data as a basis for seismic structural capability of the main steam lines and drains. Please verify that this item will be analyzed according to methods described in Section 3.7, and revise Section 15.4.4.5.2.3 accordingly.
3.2-20	Hammer G	Revise Table 3.2-1, Component B21, Item 16 - Other mechanical modules with safety-related function	Table 3.2-1, Component B21, Item 16 - Other mechanical modules with safety-related function: There is no description of these components in the Table. Each module component should be listed separately. Please revise the Table accordingly.
3.2-21	Hammer G	Revise Table 3.2-1, Component C12, Item 3 - Control Rod Drive Hydraulic Control Unit - quality group	Table 3.2-1, Component C12, Item 3: The Table provides no quality group designation for the Hydraulic Control Unit (HCU) and subcomponents. Table footnote (8) states that for the HCU, the quality groups are not considered applicable to the "specialty" subcomponent parts therein. However, consistent with SRP 3.2.2 and RG 1.26 guidance regarding components designed for reactor shutdown, these should be Quality Group B components. It is the staff position that, because of the safety importance of the reactivity control function, all HCU assemblies and subcomponents, must be designated Quality Group B components. Please revise the Table and footnote (8) accordingly.

3.2-22	Hammer G	Revise Table 3.2-1, Component C12, Item 6 and 7 - Control Rod Drive pumps and piping for makeup injection - quality group, quality assurance, and seismic category	Table 3.2-1, Component C12, Item 6 and 7: The Table indicates Quality Group D, Quality Assurance E, and Seismic Category NS for the Control Rod Drive pumps and piping which provide makeup injection. This portion of the system provides high pressure makeup flow to the reactor in the event of a loss of normal feedwater. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 guidance regarding components designed for reactor shutdown and decay heat removal, this portion of the system should be designated safety-related Quality Group B, Quality Assurance B, and Seismic Category I. Please revise the Table accordingly.
3.2-23	Hammer G	Revise Table 3.2-1, Component C12, Item 10 - ATWS equipment associated with ARI - quality group, quality assurance, and seismic category	Table 3.2-1, Component C12, Item 10: The Table indicates a no quality group, Quality Assurance E, and Seismic Category NS for the Anticipated Transient Without Scram (ATWS) equipment associated with Alternate Rod Insertion (ARI) equipment. A note indicates the quality assurance meets or exceeds the guidance provided in Generic Letter (GL) 85-06. However, the GL 85-06 guidance was intended for already licensed reactors, not newly designed reactors. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 guidance regarding components designed for reactor shutdown, these should be safety-related, Quality Group B, Quality Assurance B, Seismic Category I components. Please revise the Table and associated note accordingly.
3.2-24	Junge M Hammer G	Revise Table 3.2-1, Component D11, Item 3 - PRMS fission product monitoring system (other portions) - quality group, quality assurance, and seismic category	Table 3.2-1, Component D11, Item 3: In the Table, the note for the Process radiation monitoring system (PRMS) fission product monitoring system (other portions) states that there are special seismic qualification and quality assurance requirements. Please provide a description of these requirements. Also, please describe any piping components in this portion of the system and their necessary quality group designations.

3.2-25	Junge M Hammer G	Revise Table 3.2-1, Component D21 - ARMS - quality group, quality assurance, and seismic category	Table 3.2-1, Component D21: In the Table, there is no description of any piping components in the Area radiation monitoring system (ARMS). Please describe any piping components in this system and their necessary quality group, quality assurance, and seismic category designations.
3.2-26	Hammer G	Revise Table 3.2-1, Component E50, Items 2 and 3 - GDCS from the check valves upstream of the squib valves to the suppression pool and GDCS pools - quality group	Table 3.2-1, Component E50, Items 2 and 3: The Table provides a Quality Group C designation for the Gravity-Driven Cooling System (GDCS) outside the check valves upstream of the squib valves (second reactor coolant system isolation valves). However, consistent with SRP 3.2.2 and RG 1.26 guidance regarding components designed for emergency core cooling, these should be Quality Group B components. Please revise the Table accordingly.
3.2-27	Hammer G	Add a new item to Table 3.2-1, Component E50 - GDCS splash guard	Table 3.2-1, Component E50: On the GDCS P&ID (Figure 5.1-3), there is shown a GDCS pool splash guard, which is not part of the Table. Please revise the Table accordingly.
3.2-28	Hammer G	Revise Table 3.2-1, Component F16, Item 1 - Fuel Storage Facility fuel storage racks - new and spent - quality group and quality assurance	Table 3.2-1, Component F16, Item 1: The Table indicates no quality group, Quality Assurance E, and Seismic Category I for the Fuel Storage Facility fuel storage racks - new and spent. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 guidance, these components should be at least Quality Group D and Quality Assurance B. Please revise the Table accordingly.

3.2-29	Hammer G	Revise Table 3.2-1, Component F42, Item 1 - FTS transfer tube assembly from interface with upper fuel pool, through building to lower spent fuel pool terminus equipment, including drain connection - quality group and quality assurance	Table 3.2-1, Component F42, Item 1: The Table indicates no quality group, Quality Assurance E, and Seismic Category I for the Fuel Transfer System (FTS) transfer tube assembly from interface with upper fuel pool, through building to lower spent fuel pool terminus equipment, including drain connection. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 regarding Seismic Category I components designed for spent fuel heat removal, these components should be at least Quality Group D and Quality Assurance B. Please revise the Table accordingly or provide a justification for your position.
3.2-30	Hammer G	Revise Table 3.2-1, Component G21, Item 8 - FAPCS inside containment between inboard containment isolation valves and their termination points for the GDCS pool suction and return lines - quality group, quality assurance, and seismic category	Table 3.2-1, Component G21, Item 8: The Table provides a Quality Group D, Quality Assurance E, and Seismic Category II designation for the FAPCS inside containment between inboard containment isolation valves and their termination points for the suppression pool return line and drywell spray discharge line. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 guidance regarding components designed for post accident containment heat removal, these portions of the system should be safety-related Quality Group C, Quality Assurance B, and Seismic Category I. Please revise the Table accordingly or provide a justification for your position.
3.2-31	Hammer G	Revise Table 3.2-1, Component G21, Item 9 - FAPCS IC/PCC pool cooling and cleanup piping - quality group, quality assurance, and seismic category	Table 3.2-1, Component G21, Item 9: The Table provides a Quality Group D, Quality Assurance E, and Seismic Category II designation for the FAPCS Isolation Condenser/Primary Containment Cooling (IC/PCC) pool cooling and cleanup piping. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 guidance regarding components designed for post accident containment heat removal, this piping should be safety-related Quality Group C, Quality Assurance B, and Seismic Category I. Please revise the Table accordingly or provide a justification for your position.

3.2-32	Hammer G	Revise Table 3.2-1, Component G21, Item 10 - FAPCS auxiliary pools return lines between isolation valves and terminus points - quality group, quality assurance, and seismic category	Table 3.2-1, Component G21, Item 10: The Table provides a Quality Group D, Quality Assurance E, and Seismic Category NS designation for the FAPCS auxiliary pools return lines between isolation valves and terminus points. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 guidance regarding components designed for post accident containment heat removal and spent fuel heat removal, these portions of the system should be safety-related Quality Group C, Quality Assurance B, and Seismic Category I. Also, the pools which are auxiliary pools are not clearly identified on the FAPCS P&ID (Figure 9.1-1). Please revise the Table and P&ID accordingly or provide a justification for your position.
3.2-33	Hammer G	Add item to Table 3.2-1, Component G21 - FAPCS pool vent lines and skimmer lines	Table 3.2-1, Component G21: On the FAPCS P&ID (Figure 9.1-1), there are shown FAPCS pool vent lines and skimmer lines, which are not part of the Table. Please revise the Table to include these items.
3.2-34	Hammer G	Revise Table 3.2-1, Component G31, Items 3, 4, 5, 6, and 7 -RWCU/SDC vessels, heat exchangers, other piping, and nonregenerative heat exchanger tube side and piping - quality group and quality assurance	Table 3.2-1, Component G31, Items 3, 4, 5, 6, and 7: The Table indicates Quality Group C and Quality Assurance E for the Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) vessels, heat exchangers carrying reactor water, and other piping between containment isolation valves and shutoff valves at feedwater line connections, and nonregenerative heat exchanger tube side and piping. Consistent with SRP 3.2.2 and RG 1.26 guidance regarding components designed for reactor shutdown and decay heat removal, these components should be designated safety-related Quality Group B and Quality Assurance B. Please revise the Table accordingly or provide a justification for your position.

3.2-35	Hammer G	Revise Table 3.2-1, Component G31, Item 8 - RWCU/SDC nonregenerative heat exchanger shell side carrying cooling water - quality group and quality assurance	Table 3.2-1, Component G31, Item 8: The Table indicates Quality Group D and Quality Assurance E for the RWCU/SDC nonregenerative heat exchanger shell side carrying cooling water. Consistent with SRP 3.2.2 and RG 1.26 guidance regarding components providing cooling water for reactor shutdown and decay heat removal, these components should be designated safety-related Quality Group C and Quality Assurance B. Please revise the Table accordingly or provide a justification for your position.
3.2-36	Hammer G	Revise Table 3.2-1, Components J11 and J12 - Nuclear Fuel and Fuel Channels - quality group	Table 3.2-1, Components J11 and J12: The Table indicates no quality group for the Nuclear Fuel and Fuel channels. The staff position is that because of the importance of the fuel and fuel channels in maintaining core geometry to ensure reactor shutdown and reactivity control, they should be designated Quality Group B. To be consistent with this position and with staff reviews of BWR/6 plants, such as Perry and River Bend, and of the Advanced BWR design, please revise the Table accordingly.
3.2-37	Junge M Hammer G	Revise Table 3.2-1, Components K10, K20, and K30 - Liquid and solid waste management and offgas systems - quality group	Table 3.2-1, Components K10, K20, and K30: The Table provides a Quality Group D designation for the liquid and solid waste management and offgas systems. Consistent with SRP 3.2.2 and RG 1.26 guidance regarding components which contain radioactive waste, these components should be designated Quality Group C. Please revise the Table accordingly.
3.2-38	Junge M Hammer G	Revise Table 3.2-1, Components K10, K20, and K30 - Liquid and solid waste management and offgas systems - quality assurance	Table 3.2-1, Components K10, K20, and K30: The notes in the Table for the liquid and solid waste management and offgas systems state that a quality assurance program meeting the guidance of NRC RG 1.143 is applied during design and construction. RG 1.143 states that ANSI/ANS 55.6-1993, "Liquid Radioactive Waste Processing System for Pressurized Water Reactors" is an acceptable quality assurance program. Please identify the specific quality assurance program requirements for these components which meets RG 1.143 guidance and revise the Table notes accordingly.

3.2-39	Hammer G	Revise Table 3.2-1, Component N32 - TCS footnote (9)	Table 3.2-1, Component N32: Footnote (9) specifies the inspection requirements for the Turbine Control System (TCS) components; however, there are several parts of the footnote which do not conform to the guidance provided in SRP 3.2.2. The differences are: (a) The footnote (9) does not specify an edition for the ASME B31.1 Code. The edition of B31.1 is specified in the SRP to be the 1973 edition which makes it clear what the requirements of paragraph 136.4 are, and (b) The reference to the General Electric publication GEZ-4982A in the SRP is replaced in footnote (9) by the document ISO 9001:2000, which has not been reviewed or approved by the NRC for this purpose. Please revise the Table footnote (9) to conform with the SRP 3.2.2 guidance, or provide information to demonstrate that the proposed alternative meets or exceeds the intent of the SRP 3.2.2 guidance.
3.2-40	Hammer G	Revise Table 3.2-1, Component N37 - TBS - quality group, seismic category, and note	Table 3.2-1, Component N37: The Table note for the Turbine Bypass System (TBS) states that only TBS lines equal to or larger than 63.5 mm (2.5 inches) are designed to ASME Section III, Class 2. However, the SRP 3.2.2 guidance states that all piping in the TBS lines up to the turbine bypass valves should be ASME Class 2 (Quality Group B). Beginning at the turbine bypass valve and downstream to the condenser, the line may be Quality Group D, as provided in SRP 3.2.2. Also, since the TBS is seismically analyzed, it should be designated at least as Seismic Category II. Please revise the Table accordingly.
3.2-41	Hammer G	Revise Table 3.2-1, Component N61 - Main Condenser and Auxiliaries - quality assurance and seismic category	Table 3.2-1, Component N61: The Table provides a Quality Assurance E and Seismic Category NS designation for the Main Condenser and Auxiliaries. However, the condenser is described in Section 15.4.4.5.2.4 as a Seismic Category II component. Consistent with guidance provided in SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 for main steam leakage control, these components should be designated Quality Assurance B and Seismic Category II. Please revise the Table accordingly.

3.2-42	Hammer G	Proposed COL action regarding plant-specific walkdown of non-seismically designed structures, systems, and components near alternative main steam leakage paths	Consistent with the review of the ABWR, in order to verify that the alternative main steam leakage path will not be adversely affected by non-seismically designed structures, systems, and components, there should be a COL action item to perform a walkdown of the non-seismically designed components in the vicinity of the alternative main steam leakage path components. Please provide a COL action item to address this issue.
3.2-43	Hammer G	Revise Table 3.2-1, Component P10 -MWS - quality group, quality assurance, and seismic category	Table 3.2-1, Component P10: The Table provides a Quality Group D, Quality Assurance E, and Seismic Category NS designation for the Makeup Water System (MWS). However, it appears that the system performs a safety-related function of providing cooling water makeup to other systems for decay heat removal, post-accident containment heat removal and spent fuel pool cooling. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 guidance, these components should be safety-related Quality Group C, Quality Assurance B, and Seismic Category I. Please revise the Table accordingly or provide a justification for your position.
3.2-44	Hammer G	Revise Table 3.2-1, Component P25, Item 3 - CWS other mechanical and electrical modules - quality group, quality assurance, and seismic category	Table 3.2-1, Component P25, Item 3: The Table provides a Quality Group D, Quality Assurance E, and Seismic Category NS designation for the Chilled Water System (CWS) other mechanical and electrical modules. A description of each of the modules should be provided in the Table. Also, the system appears to perform safety-related functions such as providing chilled cooling water for the Control Room heating, ventilating, and air conditioning (HVAC) system to maintain Control Room habitability. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 guidance, at least some of these components should be safety-related Quality Group C, Quality Assurance B, and Seismic Category I. Please revise the Table accordingly or provide a justification for your position.

3.2-45	Hammer G	Revise Table 3.2-1, Component P41 -PSWS - quality group, quality assurance, and seismic category	Table 3.2-1, Component P41: The Table provides a Quality Group D, Quality Assurance E, and Seismic Category NS designation for the Plant Service Water System (PSWS). However, the system appears to perform safety-related functions such as providing cooling water to other systems for decay heat removal, post-accident containment heat removal and spent fuel pool cooling. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 guidance, these components should be safety-related Quality Group C, Quality Assurance B, and Seismic Category I. Please revise the Table accordingly or provide a justification for your position.
3.2-46	Hammer G	Revise Table 3.2-1, Components P51 and P52 - SAS and IAS - quality group, quality assurance, and seismic category	Table 3.2-1, Components P51 and P52: The Table provides a Quality Group D, Quality Assurance E, and Seismic Category NS designation for the Service Air System (SAS) and Instrument Air System (IAS). However, the containment isolation portions must be safety-related Quality Group B, Quality Assurance B, and Seismic Category I. Also, if there are any plant components which require the SAS or IAS to accomplish a safety function, such as providing motive power for safety-related valve functioning, those portions of the SAS or IAS need to be designated at least Quality Group C, Quality Assurance B, and Seismic Category I, consistent with the safety function designation. Therefore, please provide a more detailed listing of SAS and IAS component items in the Table, indicating which have a safety-related function.

3.2-47	Hammer G	Revise Table 3.2-1, Component P54, Items 2 and 4 - HPNSS other nonsafety-related mechanical modules and nitrogen storage bottles - quality group, quality assurance, and seismic category	Table 3.2-1, Component P54, Items 2 and 4: The Table provides a Quality Group D, Quality Assurance E, and Seismic Category NS designation for the High Pressure Nitrogen Supply System (HPNSS) other nonsafety-related mechanical modules and provides no quality group, Quality Assurance E, and Seismic Category NS for the HPNSS nitrogen storage bottles. If there are any plant components which require the HPNSS to accomplish a safety function, such as providing motive power for safety-related valve functioning, those portions of the HPNSS need to be designated at least Quality Group C, Quality Assurance B, and Seismic Category I, consistent with the safety function designation. Therefore, please provide a more detail listing of HPNSS component items in the Table, indicating which have a safety-related function.
3.2-48	Hammer G	Add a new item to Table 3.2-1 for Component T12 - Containment vacuum breakers	Table 3.2-1, Component T12: In Section 6.2.1.1.2 of the DCD, there are discussed containment vacuum breakers. Consistent with RGs 1.26 and 1.29 and SRPs 3.2.1 and 3.2.2, these components should be included in the Table as Quality Group B, Quality Assurance B, and Seismic Category I components. Please revise the Table accordingly.
3.2-49	Hammer G	Revise Table 3.2-1, Component T62, Item 1 - CMS safety-related portions - quality group	Table 3.2-1, Component T62, Item 1: The Table provides no quality group, Quality Assurance B, and Seismic Category I for the Containment Monitoring System (CMS) safety-related portions. However, some portions of the system provide a containment isolation function, and the system also monitors and ensures safety-related functions, such as providing post-accident containment heat removal. Consistent with SRP 3.2.2 and RG 1.26 guidance, the containment isolation portions of the system should be Quality Group B, and the other safety-related portions should be at least Quality Group C. Please revise the Table accordingly.

3.2-50	Hammer G	Revise Table 3.2-1, Component U31, Items 2 through 5 - Cranes, Hoists, and Elevators upper and lower drywell, main steam tunnel, and special service rooms hoists and cranes, and elevators - seismic category	Table 3.2-1, Component U31, Items 2 through 5: The Table provides a Seismic Category NS designation for these cranes, hoists, and elevators. However, these are very large massive components which are adjacent to other components performing safety-related functions. Therefore, consistent with SRPs 3.2.1 and RG 1.29 guidance, these components should be designated at least Seismic Category II. Please revise the Table accordingly.
3.2-51	Hammer G	Revise Table 3.2-1, Component U40 -RBHVC) - seismic category	Table 3.2-1, Component U40: The Table provides a Seismic Category NS for the Reactor Building HVAC (RBHVC). However, some of the system components have a safety-related function of automatically isolating following certain accident scenarios. Section 9.4.6.3 of the DCD states that the RBHVC is designed as Seismic Category II, except for the isolation dampers which are Seismic Category I. Please revise the Table accordingly.
3.2-52	Junge M Hammer G	Revise Table 3.2-1, Component U43 - FPS Seismic Category I items - quality assurance	Table 3.2-1, Component U43: Table 3.2-1 identifies some Fire Protection System (FPS) components as Quality Assurance E and Seismic Category I. Consistent with SRP3.2.1 and RG 1.29 guidance for Seismic Category I components, these components should be designated Quality Assurance B. Also, please identify in the notes the pertinent portions of 10CFR 50 Appendix B which are applied for the other Quality Assurance E components. Please revise the Table accordingly.
3.2-53	Junge M Hammer G	Revise Table 3.2-1, Component U43 - FPS Quality Group D items - referenced standards	In Table 3.2-1, Component U43, some FPS components designated as Quality Group D are designed to one of several standards referenced in Table 3.2-3. For example, Table 3,2-1 identifies the fire water storage tank as Quality Group D. Table 3.2-3 provides different standards that could apply or an equivalent evaluation could be used. Please provide the standard or equivalent evaluation which applies in the notes section of Table 3.2-1 for Quality Group D components.

3.2-54	Hammer G	Revise Table 3.2-1, Component U84- Service Water Building Structure - quality assurance and seismic category	Table 3.2-1, Component U84: In the Table, the service water building structure is designated Quality Assurance E and Seismic Category NS. However, the Plant Service Water System appears to perform safety-related functions, such as providing cooling water to other systems for decay heat removal, post-accident containment heat removal and spent fuel pool cooling. Consistent with SRP 3.2.1 RG 1.29 guidance, this structure should be safety-related Quality Assurance B and Seismic Category I. Please revise the Table accordingly or provide a justification for your position.
3.2-55	Hammer G	Revise Table 3.2-1, Component W12 - Intake and Discharge Structures - quality assurance and seismic category	Table 3.2-1, Component W12: In the Table, the Intake and Discharge Structures are designated "Not in Scope" for quality assurance and seismic category. However, some of these structures are necessary for the Plant Service Water System and/or the Ultimate Heat Sink System, which perform safety-related functions, such as providing cooling water to other systems for decay heat removal, post-accident containment heat removal and spent fuel pool cooling. Consistent with SRP 3.2.1 RG 1.29 guidance, some of these structures should be safety-related Quality Assurance B and Seismic Category I. Please revise the Table accordingly or provide a justification for your position.
3.2-56	Hammer G	Revise Table 3.2-1, Component Y41 - Station Water System - quality group, quality assurance, and seismic category	Table 3.2-1, Component Y41: In Section 9.2.9.2 of the DCD, it is stated that the COL applicant will provide the design of the Station Water System to provide makeup for the Cooling Water and Makeup Water systems. Consistent with SRPs 3.2.1 and 3.2.2 and RGs 1.26 and 1.29 guidance regarding components which provide cooling water to other systems for decay heat removal, post-accident containment heat removal, and spent fuel pool cooling, these components should be safety-related Quality Group C, Quality Assurance B, and Seismic Category I. Please revise the Table accordingly or provide a justification for your position.

3.2-57	Hammer G	Table 3.2-2 Note 1 regarding pipe whip restraints - seismic category	Table 3.2-2 Note 1: The note indicates that some pipe whip restraints are Seismic Category NS. However, pipe whip restraints are designed for concurrent pipe break and seismic loading and should, therefore, be at least Seismic Category II. Please revise the Table accordingly.
3.2-58	Hammer G	Revise Table 3.2-3 regarding reference to TEMA C standard	Table 3.2-3 references TEMA C as an acceptable code or industry standard for Quality Group A, B, C, and D pressure vessels and heat exchangers. However, the NRC has not accepted the Tubular Exchanger Manufacturers Association C (TEMA C) standard for satisfying the requirements for Quality Group A, B, C, or D components. Please revise the Table to delete the TEMA C reference or provide information which demonstrates that the TEMA C standard meets or exceeds the requirements for Quality Group A, B, C, or D components.
3.2-59	Hammer G	Revise Table 3.2-3 to include pumps	Table 3.2-3 needs to also include pumps in the table heading with pipes, valves, and piping.
3.2-60	Hammer G	Revise Table 3.2-3 to include non-ASME Section III component supports	Table 3.2-3 needs to include a new column for non-ASME Section III component supports to ensure that the B31.1 or AISC codes are listed for Quality Group D supports.
3.2-61	Hammer G	Revise Table 3.2-3 to include core support structures and reactor internals	Table 3.2-3 needs to include a new column for core support structures and reactor internals to ensure that the ASME Section III Code Article NG is listed for Quality Group B and C components.
3.2-62	Hammer G	Revise Table 3.2-3 regarding reference to ASME III Article NB for design of Class 2 pressure vessels and heat exchanger	Table 3.2-3 incorrectly refers to ASME III Article NB for the design of ASME Class 2 pressure vessels and heat exchangers. The correct reference should be ASME III Article NC. Please revise the Table accordingly.

ESBWR

cc:

Mr. David H. Hinds, Manager
ESBWR
P.O. Box 780, M/C L60
Wilmington, NC 28402-0780

Mr. George B. Stramback
Manager, Regulatory Services
GE Nuclear Energy
1989 Little Orchard Street, M/C 747
San Jose, CA 95125

Mr. David Lochbaum, Nuclear Safety
Engineer
Union of Concerned Scientists
1707 H Street, NW., Suite 600
Washington, DC 20006-3919

Mr. Paul Gunter
Nuclear Information & Resource Service
1424 16th Street, NW, Suite 404
Washington, DC 20036

Mr. James Riccio
Greenpeace
702 H Street, Suite 300
Washington, DC 20001

Mr. Adrian Heymer
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Mr. Paul Leventhal
Nuclear Control Institute
1000 Connecticut Avenue, NW
Suite 410
Washington, DC 20036

Mr. Ron Simard
6170 Masters Club Drive
Suwanne, GA 30024

Mr. Brendan Hoffman
Research Associate on Nuclear Energy
and Environmental Program
215 Pennsylvania Avenue, SE
Washington, DC 20003

Mr, Jay M. Gutierrez
Morgan, Lewis & Bockius, LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004

Mr. Glenn H. Archinoff
AECL Technologies
481 North Frederick Avenue
Suite 405
Gaithersburg, MD. 20877

Mr. Gary Wright, Director
Division of Nuclear Facility Safety
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704

Mr. Charles Brinkman
Westinghouse Electric Co.
Washington Operations
12300 Twinbrook Pkwy., Suite 330
Rockville, MD 20852

Mr. Ronald P. Vijuk
Manager of Passive Plant Engineering
AP1000 Project
Westinghouse Electric Company
P. O. Box 355
Pittsburgh, PA 15230-0355

Mr. Ed Wallace, General Manager
Projects
PBMR Pty LTD
PO Box 9396
Centurion 0046
Republic of South Africa

Mr. Russell Bell
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Ms. Sandra Sloan
Areva NP, Inc.
3315 Old Forest Road
P.O. Box 10935
Lynchburg, VA 24506-0935

Mr. Robert E. Sweeney
IBEX ESI
4641 Montgomery Avenue
Suite 350
Bethesda, MD 20814

Mr. Eugene S. Grecheck
Vice President, Nuclear Support Services
Dominion Energy, Inc.
5000 Dominion Blvd.
Glen Allen, VA 23060

Mr. George A. Zinke
Manager, Project Management
Nuclear Business Development
Entergy Nuclear, M-ECH-683
1340 Echelon Parkway
Jackson, MS 39213

E-Mail:

tom.miller@hq.doe.gov or
tom.miller@nuclear.energy.gov
sfrantz@morganlewis.com
ksutton@morganlewis.com
jgutierrez@morganlewis.com
mwetterhahn@winston.com
whorin@winston.com
gcesare@enercon.com
jerald.holm@framatome-anp.com
erg-xl@cox.net
joseph_hegner@dom.com
mark.beaumont@wsms.com
steven.hucik@ge.com
patriciaL.campbell@ge.com
bob.brown@ge.com
david.hinds@ge.com
chris.maslak@ge.com
james1beard@ge.com
louis.quintana@gene.ge.com
wayne.massie@ge.com
kathy.sedney@ge.com
mgiles@entergy.com
tansel.selekler@nuclear.energy.gov or
tansel.selekler@hq.doe.gov
george.stramback@gene.ge.com