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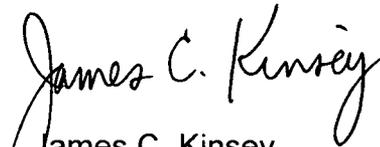
U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: **Response to Portion of NRC Request for Additional Information Letter No. 129 Related to ESBWR Design Certification Application - Auxiliary Systems - RAI Number 9.5-66**

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 dated December 19, 2007, Reference 1. GEH response to RAI Number 9.5-66 is addressed in Enclosure 1.

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

Sincerely,


James C. Kinsey
Vice President, ESBWR Licensing

D068
NRC

Reference:

1. MFN 07-701, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, GEH, *Request For Additional Information Letter No. 129 Related To ESBWR Design Certification Application*, dated December 19, 2007

Enclosure:

1. Response to Portion of NRC Request for Additional Information Letter No. 129 Related to ESBWR Design Certification Application - Auxiliary Systems - RAI Number 9.5-66

cc: AE Cabbage USNRC (with enclosure)
GB Stramback GEH/San Jose (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
eDRF 0000-0082-9705

Enclosure 1

MFN 08-307

**Response to Portion of NRC Request for
Additional Information Letter No. 129
Related to ESBWR Design Certification Application**

Auxiliary Systems

RAI Number 9.5-66

NRC RAI 9.5-66

There are apparent errors and omissions on the FPS Simplified Diagram (DCD Tier 2, Revision 4, Figure 9.5-1) as follows:

a. Figure 9.5-1 does not show the SC I/SC II interface between the discharge line from the primary electric motor driven pump (indicated as SC II) to the reactor building header (indicated as SC I).

b. The makeup interface in the turbine building should be identified (what system is it going to) and it appears that the check valve in this line is shown incorrectly - the makeup flow arrow is pointing out of the reactor building header and the orientation of the check valve symbol in this line indicates that flow can only be into the header.

c. The class break between the turbine and reactor buildings refers to Seismic Category N according to Section 3.2.1, shouldn't this be NS?

d. In the event of an earthquake, the Seismic Category NS turbine building header could fail. The P&ID indicates that this would create two large (the header connections are assumed to be at least 6-inch diameter pipe) open flow paths from the Seismic Category I reactor building header to waste [sic. wait] until the manual isolation valves in the interconnecting piping could be closed. Has this been considered in the system design?

GEH Response

Item a.

DCD Tier 2, Figure 9.5-1 of Revision 5 of DCD section is corrected to identify the SC I/SC II interface as requested. The only portion of FPS required to be Seismic Category I is the portion from the FPS storage tanks through the primary diesel FP pump which provides primary makeup to the Fuel Pool to satisfy RG 1.13, Revision 1, December 1975. There is a reliable backup from SC II primary electric FP pump. There is also a FAPCS SC I external piping connection which can be used to provide water to the Fuel Pools. For FPS system functions, RG 1.189 requires that equipment required for safe plant shutdown be analyzed for safe shutdown earthquake loading and should be provided with supports to ensure system pressure integrity. The piping and valves for the portion of hose standpipe system affected by this functional requirement should, as a minimum, satisfy ASME/ANSI B31.1. SC II piping satisfies the RG 1.189 requirements and the reactor building header is being changed to SC II.

Item b.

DCD Tier 2, Figure 9.5-1 of Revision 5 of DCD section is corrected to clarify the P21 (Reactor Component Cooling Water) interface and to correct the check valve orientation.

Item c.

DCD Tier 2, Figure 9.5-1 of Revision 5 of DCD section is corrected to show NS for the Seismic Category.

Item d.

DCD Tier 2, Figure 9.5-1 of Revision 5 of DCD section is corrected to show the two manual valves are normally closed. This isolates the SC II Reactor building piping from the NS TB piping.

DCD Impact

The subject FPS Simplified Diagram, Figure 9.5-1, and Classification Summary, Table 3.2-1, of DCD Tier 2 are revised in Revision 5 to reflect the changes noted above in items a. through d. as shown in attached markup.

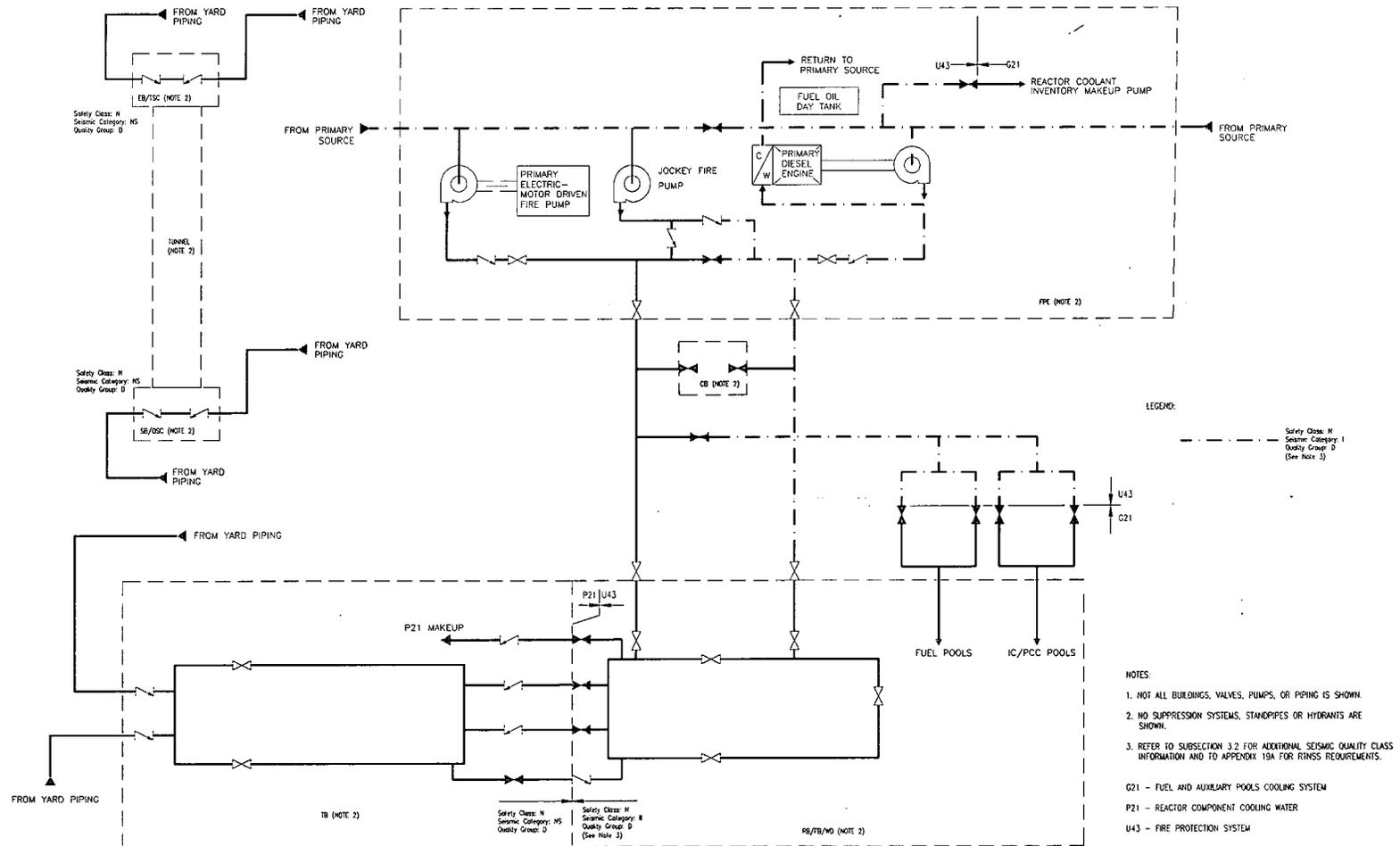
Table 3.2-1
Classification Summary

Principal Components ¹	Safety Class. ²	Location ³	Quality Group ⁴	QA Req. ⁵	Seismic Category ⁶	Notes
U42 Potable Water and Sanitary Waste System	N	CB, SB, EB, RB, OO	—	E	NS	
U43 Fire Protection System (FPS)						
1. Non-seismic yard piping and valves including supports <u>(includes secondary piping in Turbine and other Buildings supplied by yard piping)</u>	N	OO, OL, TB, EB, RW, SB	D	E	NS	Fire Protection System — A quality assurance program meeting the guidance of NRC Branch Technical Position SPLB 9.5-1 (NUREG-0800) is applied to the protection system. Also, special seismic qualification requirements are applied.
2. Seismic category I piping and valves including supports <u>providing</u> (includes source of makeup water to IC/PCC and fuel pools)	N	OO, RB, CB, FB	D	E	I	Same as above.
3. <u>Seismic Category II piping and valves including supports (includes balance of primary piping and valves)</u>	N	OO, RB, CB, FB	<u>D</u>	<u>E</u>	<u>II</u>	<u>Same as above</u>
34. Primary fire water storage tanks	N	OO	D	E	I	Same as above.
45. Secondary fire water storage	N	OO	D	E	NS	
56. Fire pump enclosure	N	OO	—	E	I	Same as above.
67. Primary nuclear island diesel-driven fire pump	N	OO	D	E	I	Same as above.
78. Primary nuclear island motor-driven fire pump <u>and other primary pumps</u>	N	OO	D	E	II	Same as above.
89. Primary diesel fire pump fuel tank	N	OO	—	E	I	Same as above.
910. Other pumps and motors	N	OO	D	E	NS	Same as above.
1011. Electrical modules and cables for RB preaction sprinklers	N	RB	—	E	NS	Same as above.

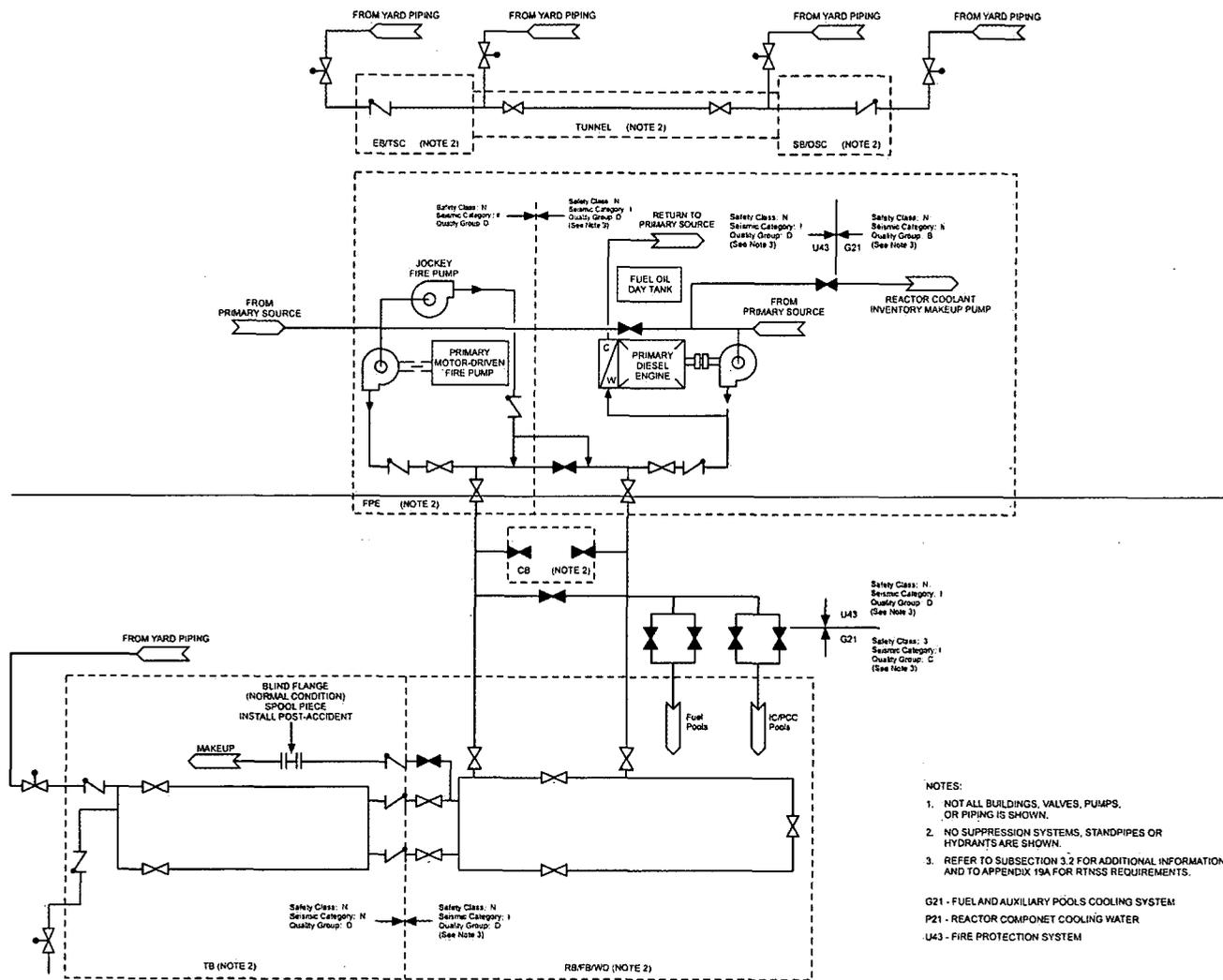
Table 3.2-1
Classification Summary

Principal Components¹	Safety Class.²	Location³	Quality Group⁴	QA Req.⁵	Seismic Category⁶	Notes
U12. All other electrical modules and cables	N	ALL	—	E	NS	Same as above.
U213. CO ₂ actuation modules	N	TB	—	E	NS	Same as above.
U314. Sprinklers	N	RB, TB, RW, SB, EB, OL	D	E	NS	Same as above.
U415. Foam, preaction or deluge	N	EB, TB, OO	—	E	NS	Same as above.
U44 Sanitary Waste Discharge System	N	CB, SB, EB, RB, OO	—	E	NS	
U50 Equipment and Floor Drain System						
1. Piping and valves forming part of the containment boundary	2	CV, RB	B	B	I	
2. Drain piping and valves, including supports, in Seismic Category I buildings	N	RB, FB	D	E	II	
3. Drain piping and valves, including supports, in other buildings	N	ALL except RB, FB	D	E	NS	
4. Other mechanical and electrical modules	N	ALL	—	E	NS	
U65 Other Building Structures	N	OO, OL	—	E	NS	
U66 Access Tunnel Structures	N	OL	—	E	II	
U67 Radwaste Tunnel	N	OL	—	E	NS	Structural acceptance and material criteria for the Radwaste Tunnel are in accordance with RG 1.143, Safety Classification RW-IIa.
U71 Reactor Building Structure						
1. Main building	3	RB	—	B	I	
2. Stair towers and elevator shafts	N	RB	—	E	II	

Design Control Document/Tier 2



Design Control Document/Tier 2



- NOTES:
1. NOT ALL BUILDINGS, VALVES, PUMPS, OR PIPING IS SHOWN.
 2. NO SUPPRESSION SYSTEMS, STANDPIPES OR HYDRANTS ARE SHOWN.
 3. REFER TO SUBSECTION 3.2 FOR ADDITIONAL INFORMATION AND TO APPENDIX 19A FOR RTNSR REQUIREMENTS.
- G21 - FUEL AND AUXILIARY POOLS COOLING SYSTEM
 P21 - REACTOR COMPONENT COOLING WATER
 U43 - FIRE PROTECTION SYSTEM

Figure 9.5-1. Fire Protection System Simplified Diagram