

Enclosure 2

M170054

GEH Revised Response to RAI 14.03-1 ABWR DCD Markups

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1.1 Definitions

The following definitions apply to terms used in the Design Descriptions and associated ITAAC:

Acceptance Criteria means the performance, physical condition, or analysis results for a structure, system, or component that demonstrates the Design Commitment is met.

Analysis means the calculation, mathematical computation, or engineering or technical evaluation. Engineering or technical evaluations could include, but are not limited to, comparisons with operating experience or design of similar structures, systems, or components.

As-built means the physical properties of the structure, system, or component following the completion of its installation or construction activities at its final location at the plant site.

, unless specifically stated otherwise

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related to that content

ASME Code means Section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. Some Tier 1 ITAAC design commitments in the ABWR DCD specify that structures, systems, and components be designed and constructed in accordance with ASME Code Section III requirements. When this language is used, it indicates that the ITAAC for that design commitment will be met by satisfying the edition and addenda of the ASME Boiler and Pressure Vessel Code, Section III as specified in the DCD and as incorporated by reference in 10 CFR 50.55a subject to the conditions listed in 10 CFR 50.55a(b), or in accordance with alternatives to paragraphs (b), (c), (d), or (e) of 10 CFR 50.55a as authorized by the NRC pursuant to 10 CFR 50.55a(a)(3).

Basic Configuration (for a Building)--- means the arrangement of the building features (e.g., floors, ceilings, walls, basemat and doorways) and of the structures, systems, or components within, as specified in the building Design Description.

Basic Configuration (for a System)---- means the functional arrangement of structures, systems, and components specified in the Design Description; and verifications for that system as specified in Section 1.2.

Containment means the Primary Containment System, unless explicitly stated otherwise.

Design Commitment means that portion of the Design Description that is verified by ITAAC.

Design Description means that portion of the design that is certified.

Division (for electrical systems/equipment) is the designation applied to a given safety-related system or set of components which are physically, electrically, and functionally independent from other redundant sets of components.

Division (for mechanical systems/equipment) is the designation applied to a specific set of safety-related components within a system.

Subsection 2.1.1

For an RPV System that requires to be instrumented for flow-induced vibration (FIV) testing, a flanged nozzle is provided in the top head for bolting of the flange associated with the test instrumentation.

The integral reactor vessel skirt supports the vessel on the Reactor Pressure Vessel Pedestal. The vessel skirt does not have openings connecting the upper and lower drywell regions. Anchor bolts extend from the pedestal through the flange of the skirt. RPV stabilizers are provided in the upper portion of the RPV to resist horizontal loads. Lateral supports for the CRD housings and in-core housings are provided.

A restraint system is provided to prevent a RIP from being a missile in case of a postulated failure in the casing weld with the bottom head penetration. The restraint system is connected to the lugs on the RPV bottom head and the RIP motor cover.

The RPV insulation is supported from the reactor shield wall surrounding the vessel. Insulation for the upper head and flange is supported by a steel frame independent of the vessel and piping.

The RPV pressure boundary and the supports (RPV skirt, stabilizer and CRD housing/in-core housing lateral supports) are classified as Seismic Category I. These components are ASME Code Class 1 vessel and supports, respectively. The shroud support and a portion of the CRD housings inside the RPV are classified as Seismic Category I and ASME Code Class CS structures.

Section II

The following ASME materials (or their equivalents) are used in the RPV pressure boundary: SA-533, Type B, Class 1 (plate); SA-508, Class 3 (forging); SA-508, Class 1 (forging); SB-166 (UNS N06600, bar); SB-167 (UNS N06600, seamless pipe); SB-564 (UNS N06600, forging); SA-182 or SA-336, Grade/Class F316L (maximum carbon 0.020%, forging) or F316 (maximum carbon 0.020% and nitrogen from 0.060 to 0.120%, forging); and SA-540, Grade B23 or B24 (bolting).

A stainless steel weld overlay is applied to the interior of the RPV cylindrical shell and the steam outlet nozzles. Other nozzles and the RIP motor casings do not have cladding. The bottom head is clad with Ni-Cr-Fe alloy. The RIP penetrations are clad with Ni-Cr-Fe alloy or, alternatively, stainless steel.

The materials of the low alloy plates and forging used in construction of the RPV pressure boundary are melted using vacuum degassing to fine grain practice and are supplied in quenched and tempered condition.

Electroslag welding is not applied for the RPV pressure boundary welds. Preheat and interpass temperatures employed for welding of the RPV pressure boundary low alloy steel meet or exceed the values given in ASME Code Section III, Appendix D. Post-weld heat treatment at 593°C minimum is applied to these low-alloy steel welds.