
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

1/31/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 212-1950 REVISION 1
SRP SECTION: 03.07.02 – Seismic System Analysis
APPLICATION SECTION: 3.7.2
DATE OF RAI ISSUE: 02/25/09

QUESTION NO. RAI 03.07.02-01 (03.07.02-06):

Section 3.7.2.8 of the DCD addresses the interaction of non-category I structures with Category I SSCs in accordance with Section 3.7.2.11.8 of the SRP. It is indicated in the DCD that the maximum displacements of the T/B and A/B have been calculated in order to determine the minimum size of the expansion joints between adjacent buildings. Clarify whether the maximum displacements calculated in analysis of the T/B and A/B include SSI effects, or whether the maximum displacements are determined from fixed base models. Also, provide a detailed description of the analyses for the ESWPT, (SC I), the T/B, and A/B (SC II) and the AC/B (NS) structures.

ANSWER:

This answer revises and replaces the previous MHI answer that was transmitted by Letter UAP-HF-09188 (ML091320443).

The standard plant power block has been re-configured. The reactor building (R/B), prestressed concrete containment vessel (PCCV), containment internal structure, east and west power source buildings (PS/Bs), auxiliary building (A/B), and essential service water pipe chase are now structurally integrated and supported on a common basemat to form the R/B complex. The Turbine Building (T/B) is horizontally separated by a minimum of approximately 13 feet from the R/B complex as shown in Technical Report MUAP-10006, Rev. 3, Figure 03.2.0-2. The Access Building (AC/B) is separated from the R/B complex by approximately 16 inches as shown in DCD Figure 1.2-13.

Due to the distances between the T/B and R/B complex and the AC/B and R/B complex, there no longer are expansion joints. Rather there is engineered fill between these structures. There is a potential that the R/B complex structure slides during a design basis earthquake. The technical basis for the potential calculated sliding distance is provided in Technical Report MUAP-12002, Rev. 1.

The T/B is analyzed using a finite element model as described in DCD Subsection 3.7.2.8.2 and Technical Report MUAP-11002, Rev. 2. The A/B is analyzed as part of the R/B complex as described in DCD Subsection 3.7.2.8.4 and Technical Report MUAP-10006, Rev. 3. Analyses for the non-seismic AC/B do not include SSI effects in calculating displacements. The AC/B is seismically analyzed and designed as described in DCD Subsection 3.7.2.8.1 and a detailed description of the analysis and design criteria is presented in Technical Report MUAP-10024, Rev. 1.

DCD Subsection 3.7.2.8 describes the interface of the ESWPT with the R/B complex. The exact configuration, orientation, and layout of the ESWPT are dependent on site conditions, and are therefore site-specific. The seismic analysis of the ESWPT is the responsibility of the COL Applicant.

Impact on DCD

There is no impact on the DCD.

Impact on R-COLA

There is no impact on the R-COLA.

Impact on S-COLA

There is no impact on the S-COLA.

Impact on PRA

There is no impact on the PRA.

Impact on Technical/Topical Report

There is no impact on a Technical/Topical Report.

This completes MHI's response to the NRC's question.