
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

03/29/2013

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 211-1946 REVISION 2
SRP SECTION: 03.07.01 – Seismic Design Parameters
APPLICATION SECTION: 3.7.1
DATE OF RAI ISSUE: 02/25/2009

QUESTION NO. 03.07.01-01 (03.07.01-07):

In Section 3.7.1.3 of the DCD, a value of 15 ksf is specified for the required allowable static bearing capacity for seismic Category I structures basemats. Provide the bases and justification for the 15 ksf value. Also, a minimum factor of safety of 2 is proposed for the ultimate bearing capacity versus the allowable dynamic bearing capacity. Provide the bases and justification for the proposed minimum factor of safety of 2.

ANSWER:

This answer revises and replaces the previous MHI answer that was transmitted by letter UAP-HF-09187 (ML091170058).

The maximum static bearing pressure demand for the US-APWR is 13.1 ksf computed for the reactor building (R/B) complex based upon the weight and footprint of the structure. Refer to the response to Question 02.05.04-01, part a) of RAI 94-1491, Rev. 1, for the calculation of the maximum static bearing pressure demand. The Design Control Document (DCD) establishes a design value, identified as the minimum allowable static bearing capacity, of 15 ksf in Tier 1 Table 2.1-1 and Tier 2 Table 2.0-1. This value is obtained by rounding up the static bearing pressure demand.

The minimum dynamic factor of safety (FS_D) was established based on minimum static factor of safety $FS_S = q_u / q_{all} = 2.5$, where q_u and q_{all} are ultimate and allowable bearing capacities respectively, and considering an accepted increase in soil strength by a factor of 1.33 under dynamic loads. If q_u is estimated for soil resistance under static loading, $FS_D = FS_S / 1.33 = 1.88 \approx 2$.

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 the Technical/Topical Report.

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