

2.5.2.6.3 Horizontal GMRS

Regulatory Guide 1.208 defines the GMRS as a risk-consistent design response spectrum computed from the site-specific UHRS at a mean annual frequency of exceedance of 10^{-4} by the relationship:

$$GMRS = DF \times UHRS(10^{-4}) \quad \text{Equation 2.5.2-215}$$

Parameter DF is the design factor specified by the expression:

$$DF = \text{Maximum}(1.0, 0.6(A_R)^{0.8}) \quad \text{Equation 2.5.2-216}$$

In which A_R is the ratio of the UHRS ground motions for annual exceedance frequencies of 10^{-4} and 10^{-5} , specifically:

$$A_R = \frac{UHRS(10^{-5})}{UHRS(10^{-4})} \quad \text{Equation 2.5.2-217}$$

Regulatory Guide 1.208 also specifies that when the value of A_R exceeds 4.2, the amplitude of the GMRS is to be no less than $0.45 \times SA(0.1H_D)$ that is, 45 percent of the 10^{-5} UHRS. As the 10^{-4} UHRS with CAV is 0, this second criteria is used to define the horizontal GMRS. Figure 2.5.2-294 shows the horizontal GMRS calculated as $0.45 \times SA(0.1H_D)$.

For site-specific evaluations and design (liquefaction evaluations, seismic interaction of the Auxillary Building, Turbine Building, and Radwaste Building with the Nuclear Island, and Soil Structure Interaction analysis of the Nuclear Island), scaled PBSRS and scaled FIRS described in Subsection 2.5.2.6.6 are used. The scale factor of 1.212 was used so that the FIRS has a zero period acceleration of 0.1 g as required by 10 CFR Part 50 Appendix S. To be consistent with the site-specific evaluations and design, the horizontal GMRS was also scaled by the 1.212 factor. The scaled horizontal GMRS is listed in Table 2.5.2-226 along with the 10^{-5} UHRS and is shown on Figure 2.5.2-294. The scaled horizontal GMRS represents the licensing basis for the LNP site.

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