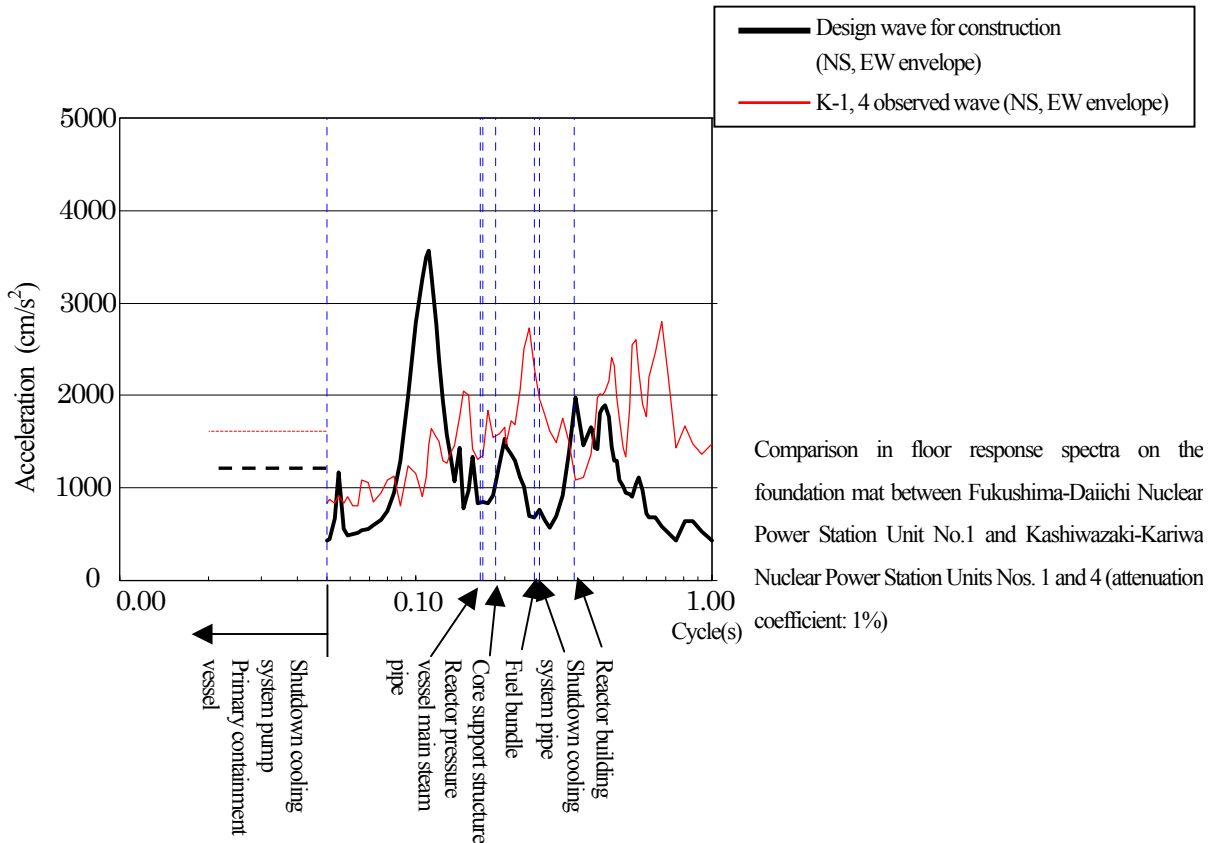


A summary of the “Report on the results of a general study of potential seismic impact on the main facilities of the nuclear power stations made on the basis of the observational data at the Kashiwazaki-Kariwa Nuclear Power Station”

1 Content of study

The floor response spectra on the foundation mat of the reactor building observed at the Kashiwazaki-Kariwa Nuclear Power Station and those from the design-basis earthquake motions for the Fukushima-Daiichi and Fukushima-Daini Nuclear Power Stations were compared to investigate impact on functional maintenance of the main facilities of the nuclear power stations of our company.



2 Results of study

It is believed that safety functions of the main facilities which play an important function for safety of the individual units of the Fukushima-Daiichi and Fukushima-Daini Nuclear Power Stations can be maintained to withstand such earthquake motions as were observed in the Kashiwazaki-Kariwa Nuclear Power Station during the Niigata-Chuetsu-oki Earthquake in 2007.

Results of a general study on seismic influences (an example of the Fukushima-Daiichi Nuclear Power Station Unit No.1)

Object facilities	Spectral ratio: α *1	Capacity margin of facilities: β *2	Judgment
Reactor pressure vessel	1.59	2.30	○
Core support structure	1.55	2.24	○
Shutdown cooling system pump	1.94	3.55	○
Shutdown cooling system pipe	2.57	2.77	○
Main steam system pipe	1.59	3.28	○

*1 represents the “response acceleration spectrum from the earthquake motions observed at the Kashiwazaki-Kariwa Nuclear Power Station / response acceleration spectrum from the design earthquake motions for the Fukushima-Daiichi Nuclear Power Station” in the proper period of the object facilities. When α is 1 or below, it means that the floor response spectrum from the design earthquake motions for the Fukushima-Daiichi Nuclear Power Station exceeds that for the Kashiwazaki-Kariwa Nuclear Power Station, and thus, safety functions are considered to be maintainable.

*2 indicates the “permitted value / response value” of the design

Primary containment vessel	1.94	4.64	○	<p>earthquake motions for the object facilities. Even in the event that α exceeds 1, but so far as $\alpha \leq \beta$ is maintained, safety functions can be maintained since the margin to the permitted value of the object facilities exceeds the ratio of the floor response spectrum of the Kashiwazaki-Kariwa Nuclear Power Station to the floor response spectrum of the Kashiwazaki-Kariwa Nuclear Power Station.</p> <p>*3 With respect to the Fukushima-Daiichi Nuclear Power Station Units Nos. 1 through 5, an analysis was made using the fuel bundle analytical model concerning control rod insertability based on the earthquake motions observed at the Kashiwazaki-Kariwa Nuclear Power Station to identify that it is below the permitted value (40mm).</p>
Reactor building	1 or less	—	○	
Control rod (insertability)	$24.5\text{mm}^{*3} \leq 40\text{mm}$ Response value Permitted value		○	

It was also confirmed for units other than the Fukushima-Daiichi Nuclear Power Station Unit No.1 that safety functions can be similarly maintained with respect to major safety-significant facilities.