Attachment

Results of Evaluation of Effects of Ground Motion on Hamaoka Nuclear Power Station based on Results published by the Cabinet Office (Overview)

Chubu Electric Power has conducted an evaluation of effects of ground motion on the equipment and facilities essential to maintaining safety in the current state of shutdown among safety-related equipment and facilities at the Hamaoka Nuclear Power Station based on a model of a fault generating strong ground motion projected by the Committee for Modeling a Nankai Trough Megaquake of the Cabinet Office (published in the Committee's first report issued in March 2012; termed the "Cabinet Office model" below). The results of this evaluation have shown that the seismic safety of Hamaoka Nuclear Power Station Units No. 2-5 would be maintained. An overview of the evaluation is provided below.

1 Evaluation of ground motion based on the Cabinet Office's model of a fault generating strong ground motion

The Cabinet Office model published by the Committee for Modeling a Nankai Trough Megaquake of the Cabinet Office projects the earthquake of the highest magnitude that could occur along the Nankai Trough. Chubu Electric Power has therefore conducted an evaluation of ground motion at the Hamaoka Nuclear Power Station based on the Cabinet Office model.

Seismic motion at Hamaoka Nuclear Power Station based on the Cabinet Office model projecting a major earthquake of maximum intensity (termed "Cabinet Office ground motion" below) is 400-600 gals for the Cabinet Office basic case, and 800-1,000 gals for the Cabinet Office east-side case and a case formulated by Chubu Electric Power in which the zone generating strong seismic motion is shifted further eastward and the epicenter of the earthquake is directly below the facility.

In addition, because seismographic records for Unit 5 during the Suruga Bay earthquake in August 2009 show stronger vibration than is the case for other units, we have also evaluated ground motion reflecting the results of an analysis of factors producing amplification of vibration at Unit 5 based on the results of our own survey of underground structures underneath the facility and seismographic records (see Attachment).

In concrete terms, using the Cabinet Office model of an earthquake of maximum intensity, a hypothetical zone generating strong ground motion waves was concentrated in the direction of arrival of ground motion waves observed during the amplification of vibration at Unit 5 in order to calculate a level of ground motion reflecting the amplification at Unit 5 (termed "hypothetical amplified ground motion using the Cabinet Office model" below). A level of ground motion of 1,400-1,900 gals was obtained from these calculations.

2 Evaluation of effects on equipment and facilities

Effects on equipment and facilities essential to maintaining the safety of Units 2-5 in their current state of shutdown (reactor buildings, foundations, fuel racks, etc.) were evaluated for the Cabinet Office ground motion for Units 2-4 and the hypothetical amplified ground motion using the Cabinet Office model for Unit 5. The results of these evaluations showed that the seismic safety of Hamaoka Nuclear Power Station Units 2-5 would be maintained under these conditions.

(Units 2-4)

The maximum acceleration of Cabinet Office ground motion is equivalent to the current seismic resistance level (approximately 1,000 gals). In order to be certain, Unit 4 was taken as a representative example, and an evaluation of the seismic resistance of the reactor building, foundations, and fuel racks, which are essential to the maintenance of safety in the reactor's current state of shutdown, was conducted using the representative waves (1,070 gals) from among Cabinet Office ground motion that it is considered would have the greatest effect on equipment and facilities. This evaluation showed that evaluated values accorded with benchmark values.

(Unit 5)

The results of an evaluation of effects on the reactor buildings, foundations, and fuel racks essential to maintaining the safety of Unit 5 in its current state of shutdown using the representative waves (1,916 gals) from among the hypothetical amplified ground motion using the Cabinet Office model that it is considered would have the greatest effect on equipment and facilities showed that evaluated values accorded with benchmark values.

Results of evaluation of seismic resistance

Facility	Location	Item	Unit 4			Unit 5		
			Evaluated value	Benchmark value	Results	Evaluated value	Benchmark value	Results
Reactor building	Earthquake-resistant wall	Shear strain	0.39×10^{-3}	2.0×10^{-3}	○	1.26×10^{-3}	2.0×10^{-3}	○
Foundation	Support function	Slip safety rate	3.6	1.5 以上	○	1.6	1.5 以上	○
Fuel racks	Rack body	Stress	113 MPa	205 MPa	○	103 MPa	205 MPa	○