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Information of Kashiwazaki-Kariwa Nuclear Power Station (The 5th news)

Tokyo Electric Power Company has analyzed seismic observation data, obtained during the main shock of the recent earthquake.Upon completing the collection and summarization of all records, we compiled a report (Report 1) outlining the findings of the study thus far and submitted it to the Nuclear and Industrial Safety Agency on July 30, while also publicly releasing the information.This report (Report #5) summarizes and presents the trends identified thus far concerning seismic observation data.The “relative position of the power station against the epicenter of the main shock” and “relative positions of reactor units on the power station compound” are shown in Attachment 1 and Attachment 2 respectively.

1. Past developments

(1)Public release of seismic observation data recorded by TEPCO at its nuclear power station

a. On July 16, when the earthquake struck, the maximum acceleration (observation figures) recorded on the lowest floor (above the mat foundation) of the reactor buildings at Units 1, 5 and 6 as a bulletin report (interim figures), along with the design acceleration response defined for the same locations (design values).

b. After all units completed gathering and summarizing seismic observation records for the main shock of the earthquake, TEPCO released the observation figures recorded on the lowest floor (above the mat foundation) of the reactor buildings at all units, and design values for the same locations as listed below:

(Unit: Gal)

Observation location	Observation figures recorded on the lowest floor of the reactor building			Design values for the same location		
	North-south component	East-west component	Up-down component	North-south componen	East-west component	Up-down component
Unit 1	311	680	408	274	273	(235)
Unit 2	304	606	282	167	167	(235)
Unit 3	308	384	311	192	193	(235)
Unit 4	310	492	337	193	194	(235)
Unit 5	277	442	205	249	254	(235)
Unit 6	271	322	488	263	263	(235)
Unit 7	267	356	355	263	263	(235)

(Note 1)The figures for Units 1, 5 and 6 are the same as those released on July 16.

(Note 2)The up-down component figures in brackets are used in static design.

(2)Instruction from the Nuclear and Industrial Safety Agency

The observation figures on the lowest floor of the reactor buildings at Units 1, 5 and 6 were above the design values based on the standard seismic motion defined.Based on the finding, the Agency instructed TEPCO to report on the following:

a.Analysis of seismic observation data obtained during the recent earthquake

b.Confirmation of seismic safety of important plant facilities in terms of safety in respect to the recent earthquake

2. TEPCO’s response to NISA’s instruction

In response to the instruction from NISA, received on July 16, TEPCO analyzed seismic observation data obtained during the main shock of the recent earthquake, compiled the findings thus far into a report (Report #1) and submitted it to NISA on July 30.The content of the report was also publicly released.

TEPCO will continue to gather and sort records of aftershocks data obtained, and use the information to analyze seismic observation data and confirm the anti-quake safety of important facilities in terms of safety.

The outlines of the report are as follows:

<Report outlines>

(1)Observation records

a. The “acceleration time-history waveform” obtained during the main shock on the lowest floor of the reactor buildings at Units 1 to 7, and “maximum observed acceleration and maximum design acceleration response” based on the waveform, are presented in Attachment 3 and the table below.The locations of seismometers are as indicated in Attachment 4.

b. The comparison between the “floor response spectrum based on observation records” observed on the lowest floor of the reactor buildings at Units 1 to 7 and “floor response spectrum calculated based on the Design Basis Earthquake Ground Motion in the seismic response analysis model used in the design stage”, are presented in Attachment 3.
These figures may be subject to change according to the future progress of analysis and study.

(2)Analysis of seismic observation data

TEPCO will continue to gather and sort aftershock records to conduct assessment of seismic motions for confirming seismic safety of the power station in respect to the recent earthquake, and examine seismic motions on the hypothetical free surface of the base stratum on the station premises, with the influence of upper strata analytically removed.

(3)Seismic safety confirmation of important facilities in terms of safety

Seismic motion data used for confirming anti-quake safety in respect to the recent earthquake will be used to assess seismic response analysis and anti-quake safety assessment on important plant facilities in terms of safety.

(4)Future seismic safety assessment

Based on knowledge obtained from the recent earthquake, including findings from active fault probes in sea areas and analysis of seismic observation data, TEPCO will explore future anti-quake safety assessment and items to be reflected to earthquake resistance measures.

(Unit: Gal)

Observation location				Maximum observed acceleration figures and design values (Note 1)			Remarks
				North-south component	East-west component	Up-down component	
Unit 1	Reactor building	2nd floor	1-R1	599(460)	884(463)	394	
		5th basement floor (lowest floor)	1-R2	311(274)	680(273)	408	Note 2
	Turbine building	1st floor (pedestal)	1-T2	1862(274)	1459(274)	741	Note 3
Unit 2	Reactor building	2nd floor	2-R1	517(271)	718(271)	412	
		5th basement floor (lowest floor)	2-R2	304(167)	606(167)	282	Note 2
	Turbine building	1st floor	2-T1	431(295)	764(259)	594	
		1st floor (pedestal)	2-T2	642(588)	1159(478)	650	
		3rd basement floor (lowest floor)	2-T3	387(233)	681(232)	470	
Unit 3	Reactor building	2nd floor	3-R1	525(314)	650(309)	518	
		5th basement floor (lowest floor)	3-R2	308(192)	384(193)	311	Note 2
	Turbine building	1st floor (pedestal)	3-T1	1350(854)	2058(834)	619	
		3rd basement floor (lowest floor)	3-T2	581(239)	549(243)	513	

Unit 4	Reactor building	2nd floor	4-R1	606(299)	713(293)	548	
		5th basement floor (lowest floor)	4-R2	310(193)	492(194)	337	Note 2
	Turbine building	1st floor	4-T1	411(269)	560(267)	494	
		1st floor (pedestal)	4-T2	614(832)	763(838)	526	
		3rd basement floor (lowest floor)	4-T3	763(838)	442(242)	443	
Unit 5	Reactor building	3rd floor	5-R1	472(354)	697(350)	331	
		4th basement floor (lowest floor)	5-R2	277(249)	442(254)	205	Note 2
	Turbine building	2nd floor (pedestal)	5-T2	1166(995)	1157(754)	533	
Unit 6	Reactor building	3rd floor	6-R1	554(415)	545(411)	578	
		3rd basement floor (lowest floor)	6-R2	271(263)	322(263)	488	Note 2
Unit 7	Reactor building	3rd floor	7-R1	367(415)	435(411)	464	
		3rd basement floor (lowest floor)	7-R2	267(263)	356(263)	355	Note 2
	Turbine building	2nd floor	7-T1	418(394)	506(418)	342	
		2nd floor (pedestal)	7-T2	673(1096)	1007(859)	362	
		2nd basement floor (lowest floor)	7-T3	318(299)	322(312)	336	

(Note 1) The design values are shown in brackets.
(Note 2) As released on July 19
(Note 3) This table only shows design values based on dynamic analysis in principle (Design values for the up-down component are omitted as they are based on static design).The design response values (in brackets) for the first floor of the turbine building at Unit 1 are reference figures based on static design.

3. The Chuetsu-Oki Earthquake Investigation and Countermeasures Committee concerning Nuclear Power Facilities

The Ministry of Economy, Trade and Industry has set up the Chuetsu-Oki Earthquake Investigation and Countermeasures Committee concerning Nuclear Power Facilities" to investigate facts regarding specific impact of the Chuetsu-Oki Earthquake on the Kashiwazaki-Kariwa Nuclear Power Station, and identify future tasks and responses the government and electric utilities must address in reflection of the said Earthquake.
On July 31, the Committee convened its first meeting, and agreed to set up Working Groups to examine specific issues listed below, and deliberate on their findings as the main Committee framework.

a. The in-house fire-fighting corps, information liaison system and the mechanism for distributing information to local communities in the event of an earthquake
b. Seismic safety assessment based on the knowledge obtained from the Chuetsu-Oki Earthquake
c. The status of reactor operation management at the time of the Chuetsu-Oki Earthquake, integrity of plant facilities and future response

Information contained in this report will be updated as future detailed investigation

by TEPCO makes new findings.

＜References＞ Tokyo Electric Power Company
Nuclear and Industrial Safety Agency
Nuclear Safety Commission of Japan

Japan Nuclear Technology Institute
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