

## Sequence of Developments at Nuclear Power Stations Affected by the Earthquake

March 11 (Fri)	
14:46	The M9.0 earthquake struck. Shutdown of all reactors in operation at Onagawa, Fukushima I (Daiichi) and II (Daini) and Tokai Daini was confirmed.
15:42	All AC power sources for Units 1 through 3 at Fukushima I were lost, and that was reported to the government pursuant to Article 10 of the Special Law of Emergency Preparedness for Nuclear Disaster ("the Law").
15:45	Oil tanks were washed away by tsunami.
16:10	The Nuclear Safety Commission (NSC) convened the Technical Advisory Body for Nuclear Emergencies.
16:36	Water injection failed to function in the Emergency Core Cooling System (ECCS) at Fukushima Daiichi Units 1 and 2, and that was reported to the government pursuant to Article 15 of the Law.
"	A Nuclear Emergency Response Headquarters was set up at the Prime Minister's Official Residence in Tokyo.
19:03	A Declaration of Nuclear Emergency was issued for Fukushima Daiichi.
"	The nuclear disaster task force headquarters was convened.
20:50	Fukushima Prefecture issued an evacuation directive to residents living within a 2-km radius of Fukushima Daiichi.
21:23	Prime Minister Naoto Kan (referred to as "the PM" below) directed residents living within a 3-km radius of Fukushima Daiichi to evacuate, and those living within a 10-km radius to take shelter indoors.
March 12 (Sat)	
1:17	All units at the Onagawa NPS achieved states of cold shutdown.
4:00	Pressure in the containment vessel at Unit 1 of Fukushima Daiichi rose to approx. 840 kPa beyond the design value.
5:22	The pressure-control function was lost at Unit 1 of Fukushima Daini, and that was reported to the government pursuant to Article 15 of the Law.
5:32	The pressure-control function was lost at Unit 2 of Fukushima Daini, and that was reported to the government pursuant to Article 15 of the Law.
5:44	The PM directed residents living within a 10-km radius of Fukushima Daiichi to evacuate.
7:11	The PM visited Fukushima Daiichi.
7:45	A Declaration of Nuclear Emergency was issued for Fukushima Daini.
"	The PM directed residents living with a 3-km radius of Fukushima Daini to evacuate.
9:07	A pressure relief valve on the pressure vessel at Unit 1 of Fukushima Daiichi was opened.
14:49	There was information that radioactive cesium (Cs) had been detected around Unit 1 at Fukushima Daiichi.
15:36	An hydrogen explosion occurred at Unit 1 of Fukushima Daiichi.
17:39	The PM directed residents living within a 10-km radius of Fukushima Daini to evacuate.
18:25	The PM directed residents living within a 20-km radius of Fukushima Daiichi to evacuate.
20:20	Seawater was injected into the reactor at Unit 1 of Fukushima Daiichi.

March 13 (Sun)	
5:58	Water injection failed to function in the Emergency Core Cooling System (ECCS) at Unit 3 of Fukushima Daiichi, and that was reported to the government pursuant to Article 15 of the Law.
9:20	A pressure relief valve on the pressure vessel at Unit 3 of Fukushima Daiichi was opened.
13:12	Seawater was injected into the reactor at Unit 3 of Fukushima Daiichi.
March 14 (Mon)	
4:08	Water temperature of the spent fuel storage pool at Unit 4 of Fukushima Daiichi increased to 84 degrees C.
6:10	Pressure in the containment vessel at Unit 3 of Fukushima Daiichi rose to approx. 460 kPa beyond the design value.
11:01	An hydrogen explosion occurred at Unit 3 of Fukushima Daiichi.
13:25	The reactor water level at Unit 2 of Fukushima Daiichi was found to be low, from which it was concluded that the reactor cooling function had been lost.
16:34	Seawater was injected into the reactor at Unit 2 of Fukushima Daiichi.
March 15 (Tue)	
0:40	Tokai Daini achieved states of cold shutdown.
5:35	The government established the Fukushima Nuclear Power Station Accident Task Force Headquarters.
6:20	An explosive sound was heard at Unit 2 of Fukushima Daiichi, which was judged to indicate an abnormality in the pressure suppression pool.
"	A part of a wall in the operation area of Unit 4 of Fukushima Daiichi was damaged.
7:15	All units at Fukushima Daini achieved states of cold shutdown.
9:38	A fire occurred at the reactor building of Unit 4 of Fukushima Daiichi.
10:22	A radiation level of 400 mSv/h was measured around Unit 3 of Fukushima Daiichi.
11:00	The PM directed residents living with a 20 to 30-km radius of Fukushima Daiichi to take shelter indoors.
11:26	The off-site center was evacuated to the Fukushima Prefectural Office in Fukushima City.
12:29	The fire at Unit 4 of Fukushima Daiichi was extinguished.
March 16 (Wed)	
8:37	An enormous amount of white smoke belched out of Unit 3 of Fukushima Daiichi.
16:00	Self-Defense Force helicopters were to drop water on Unit 3 of Fukushima Daiichi, but the attempt was abandoned due to the high level of radiation.
March 17 (Thu)	
9:48	Self-Defense Force helicopters began dropping water on Unit 3 of Fukushima Daiichi.