

Conditions at the Fukushima Daiichi Nuclear Power Station after the earthquake on March 20

【Earthquake data】

- Time/date: Around 6:09 PM, March 20
- Epicenter: Off the coast of Miyagi Prefecture
- Unit 6 reactor building foundation mat acceleration (preliminary results): (horizontal) 38.0gals (vertical) 30.7gals
- Siting community seismic intensity: 5-Strong (Okuma Town, Futaba Town)

【Power station conditions immediately following the accident】

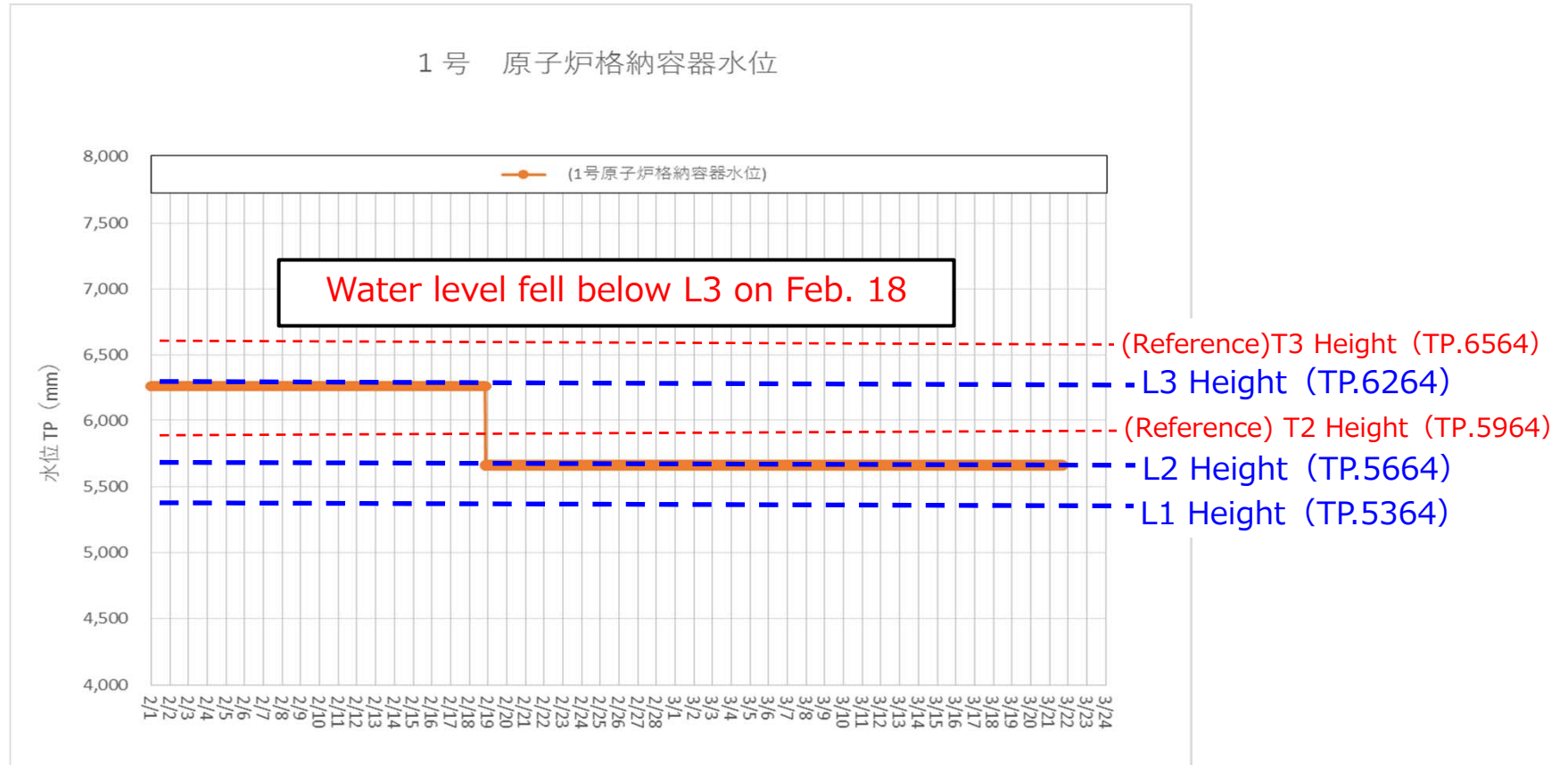
- Spent fuel pool cooling systems, reactor cooling water injection systems → Continued operation
- Nitrogen gas isolation system operation → Operation continues without issue (On non-standby since prior to the earthquake (C))
- Accumulated water transfer equipment/water treatment systems
→ Manual shutdown, accumulated water transfer equipment put back into operation on March 21 following inspection, other equipment to be inspected after March 22.
- Unit 5 spent fuel pool, Unit 6 spent fuel pool, common pool → No abnormalities, no sloshing
- Unit 1~6 equipment plant parameters, accumulated water transfer systems/water treatment system parameters
→ No significant fluctuations
- Monitoring posts, site border and on-site dust monitors, Onsite dose rate indicators → No significant fluctuations
- On-site drainage channel monitors, seawater dose monitor indicators → No significant fluctuations
- Containers etc. waste storage areas → Some containers in the rubble storage area had fallen over or were leaning as result of the earthquake on February 13
No new abnormalities found with rubble containers in the temporary storage area (AA area) (March 21)

At 9 AM, March 22), we have not found any abnormalities such as equipment abnormalities or water leaks. We will continue to monitor conditions carefully and will quickly notify you if an abnormality is discovered.

Conditions after the earthquake

Water level inside the Unit 1 primary containment vessel

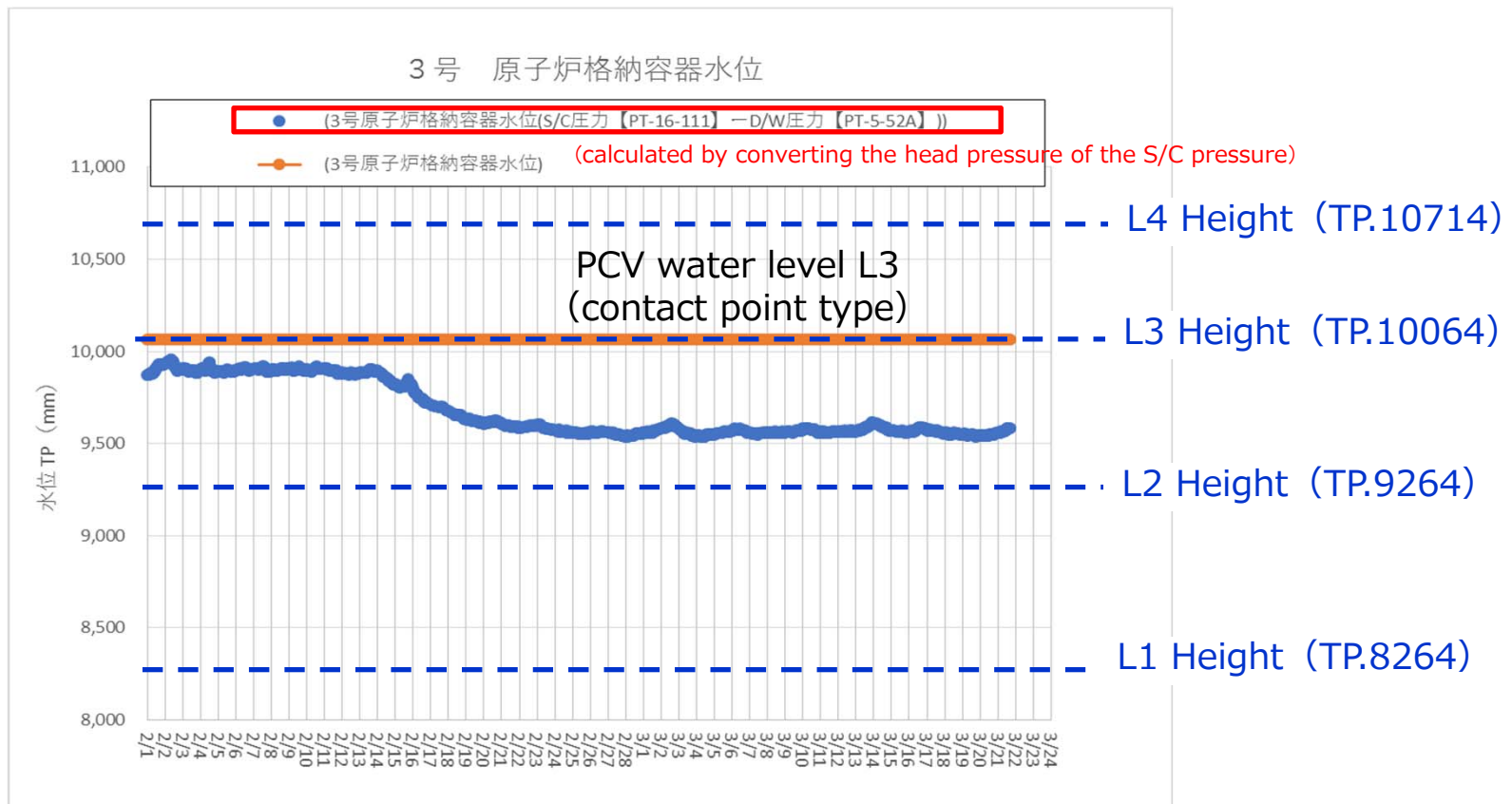
- As shown below, no significant changes have been seen with the water level inside the Unit 1 primary containment vessel.
- Current water level is between the installation locations of temperature gauge T2 (T.P.+5, 964mm) and water level gauge L2 (T.P.+5, 664mm) (The bottom of the primary containment vessel is at T.P.+4, 744mm)
- * When the earthquake occurred, the contact point of the L2 water level gauge inside the Unit 1 primary containment vessel temporarily shifted (for several seconds), but immediately returned to its original location. This was a temporary event and did not indicate a drop in primary containment vessel water level, but rather movement of the water surface caused by the earthquake.



Conditions after the earthquake

Water level inside the Unit 3 primary containment vessel



- As shown below, no significant changes have been seen with the water level inside the Unit 3 primary containment vessel.
- Current water level is between the installation locations of water level gauge L3 (T.P.+10, 064mm) and water level gauge L2 (T.P.+9, 264mm) (The bottom of the primary containment vessel is at T.P.+4, 044mm)
- * Primary containment vessel water level (calculated by converting the head pressure of the pressure in the pressure suppression chamber) was at T.P.+9, 553mm after the earthquake (9 PM, March 20) and has not fluctuated significantly compared to prior to the earthquake (4 PM on the same day:T.P.+9, 542mm). (Data fluctuation caused by the impact of atmospheric pressure, etc.)







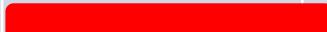

Conditions after the earthquake

Tank inspection results

- Leaks were searched for during patrols conducted in accordance with the action plan and no leaks or tank pipe ruptures were found as of 2 PM, March 21.
- Tank displacement and pipe joint displacement were checked during a detailed inspection conducted on the same day (March 21), and inspections in the treated water tank area and tank area F have concluded. Although the detailed inspection discovered slight displacement of one tank in the tank area F (7mm), there has been no impact on function. Furthermore, it was confirmed that no tank displacement occurred during the earthquake on March 20 in other tank areas.
- We will quickly make an announcement if we find any tank leaks, tank displacement, or abnormalities with pipe joints, etc.

 : Leak check  : displacement, pipe joint check

【Primary tank inspection status】

Inspection target	# of tanks	March 20	March 21	March 22
Treated water tank areas (D, H8A, G1, G4 south) ※Pipe joint (open) area	138			
Treated water tank areas (Areas excluding D, H8A, G1, G4 south) Tanks for water that has been treated with multi-nuclide removal equipment, etc.)	936			
Tank area F	62			7mm displacement of one tank in the tank area F ※Flexible polyethylene (PE) pipes used instead of pipe joint

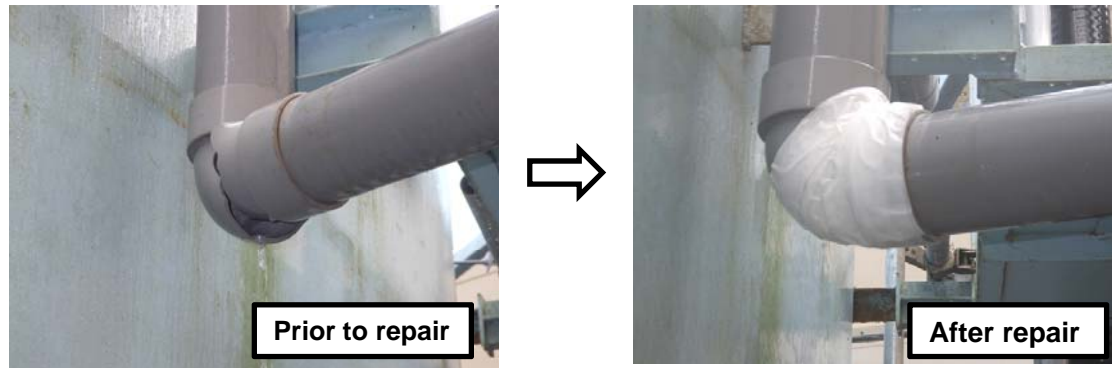
No displacement was found with tanks for reactor cooling water injection systems, water treatment facilities, such as subdrains, etc., or groundwater bypass tanks

Conditions after the earthquake

Fuel control status (tank area F)

ODamage to rain gutters installed on tanks in the Unit 5/6 tank area F

- Date of occurrence (Time discovered): Around 1:43 AM, March 21
- Overview: Damage was found to one of the rain gutters on tank K4 in tank area F
- Handling: The pipe was temporarily repaired at 11 AM on March 21. A permanent repair will be made in the future.

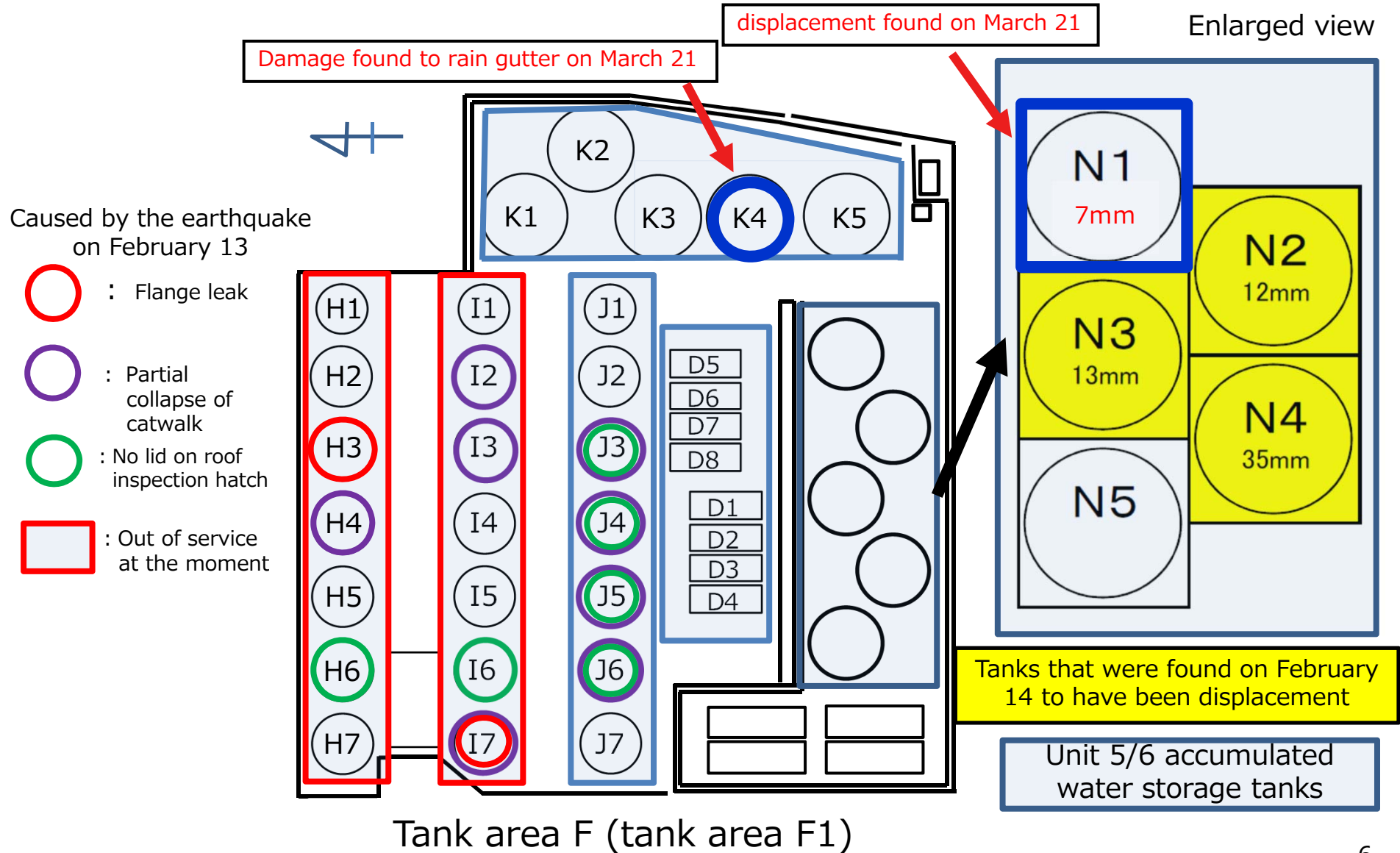


O7mm displacement found at one of the tanks in the Unit 5/6 tank area F

- Date of occurrence (Time discovered): Around 10:30 AM, March 21
- Overview: The N1 tank in tank area F was found to have been displaced slightly. Although the detailed inspection discovered slight displacement of one tank in the tank area F (7mm), there has been no impact on function. (Refer to tank position diagram on the next page)

Conditions after the earthquake

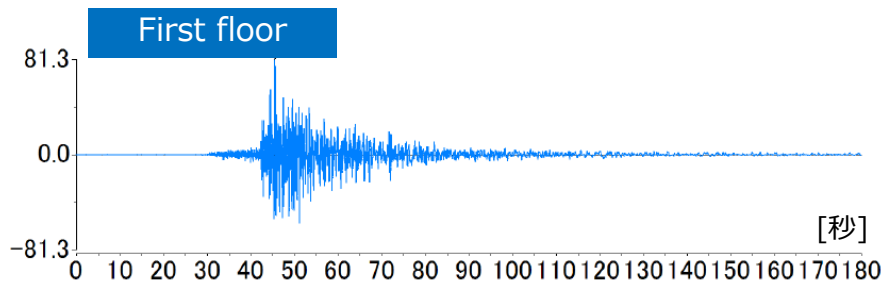
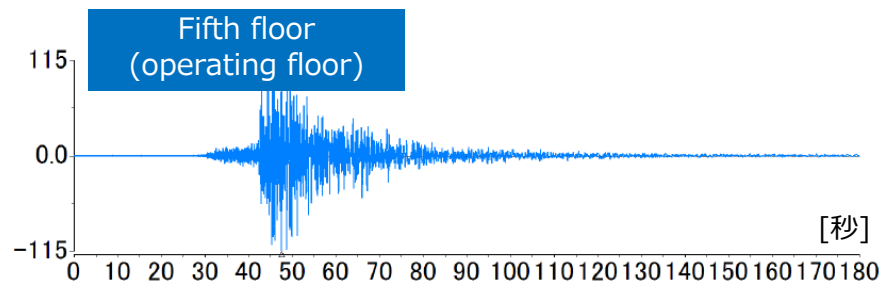
Tank area F tank diagram



Conditions after the earthquake

Unit 3 seismometer data

- [Time/Date] 6:09 PM, March 20, 2021 [Location of epicenter] Off the coast of Miyagi Prefecture [Magnitude] 6.9
- The maximum accelerations recorded by each seismometer for the earthquake mentioned above are as follows:
 - The accelerations cannot be simply compared because the structure of the buildings and the seismometer installation locations differ, however the maximum acceleration seen at Unit 3 was not especially different from that seen at Units 5 and 6.



Unit 3 seismometers March 20, 2020 observation records (North-South direction)

R/B	Installation location	Maximum acceleration (GAL)			Installation objectives
		NS	EW	UD	
Unit 3	Fifth floor (operating floor)	114.6	127.4	43.8	To gather earthquake data, and examine whether seismometers can be used to ascertain age degradation trends of buildings
	First floor	81.3	74.5	52.3	
Unit 5	Second floor	56.7	61.0	41.0	Used to analyze building vibration characteristics
	Subfloor 1 (foundation unit)	42.6	46.8	35.2	Used for power station operation (backup)
Unit 6	Sixth floor (operating floor)	89.0	78.8	42.8	Used to analyze building vibration characteristics
	Subfloor 2 (foundation unit) ^{※2}	35.8	38.8	30.8	Used for power station operation

List of observation records for March 20, 2020

※2 Maximum values recorded for each element shown from the three seismometers on the foundation.

Results are from a detailed assessment and may differ from the preliminary data already released

Conditions after the earthquake

【Location of observational seismometers at the Fukushima Daiichi Nuclear Power Station】

- Seismometers installed on the Unit 6 foundation plate are used for power station operation (for notifying/publicly announcing data to related departments, and inspections conducted in accordance with post-earthquake classifications), and for preliminary announcement of maximum acceleration.
- The other seismometers at Units 5 and 6 are used as backups and for other types of analyses. If the seismometer on the Unit 6 foundation plate is undergoing inspection, the seismometer on the Unit 5 foundation plate is used as a substitute to be able to quickly announce observation values.
- Observations taken with free foundation seismometers are used to determine standard seismic motion.

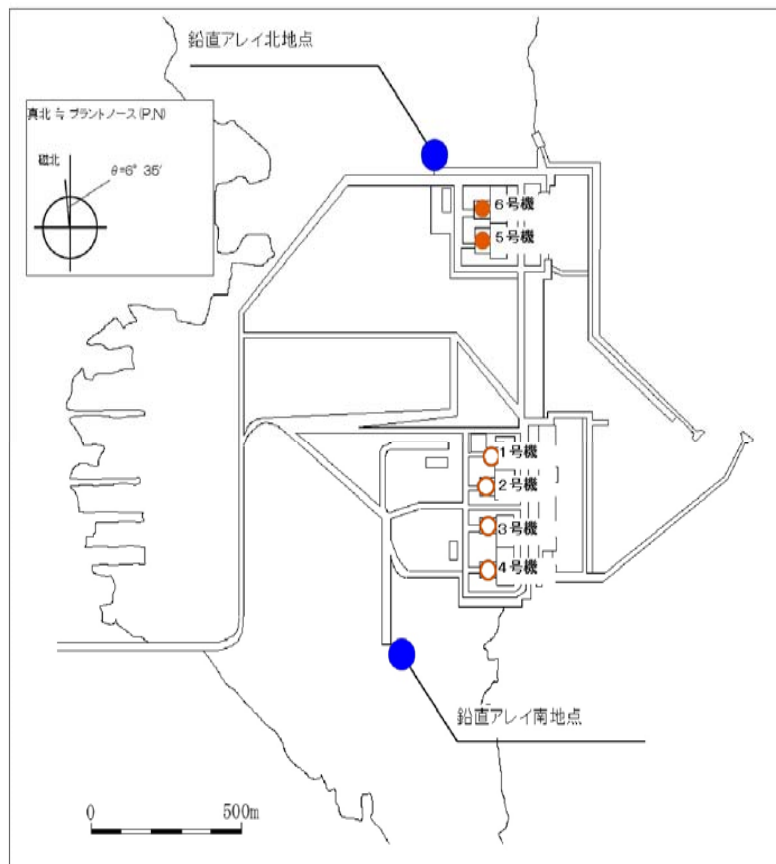


図1 福島第一における地震観測 (全体)

Reactor building

Free foundation type

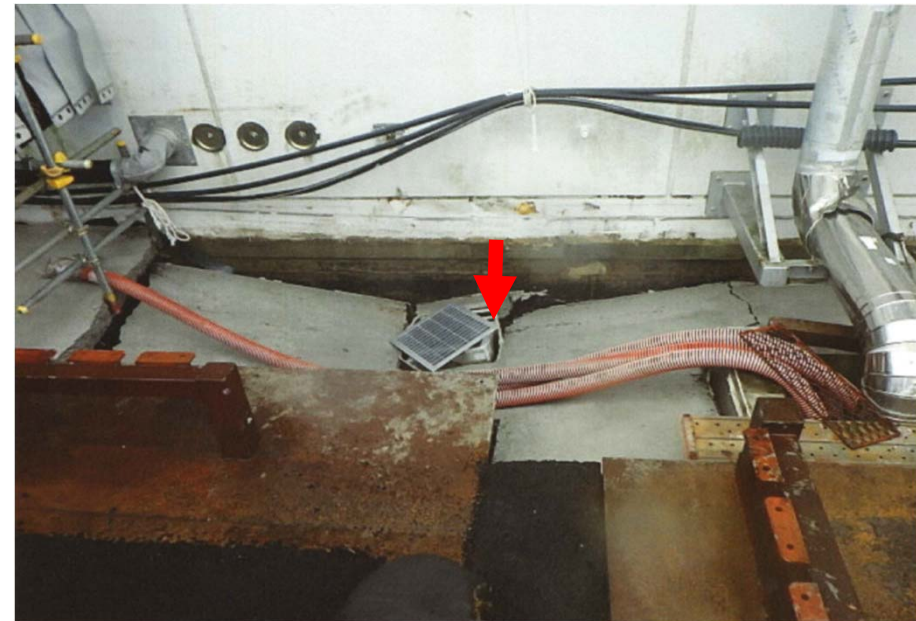
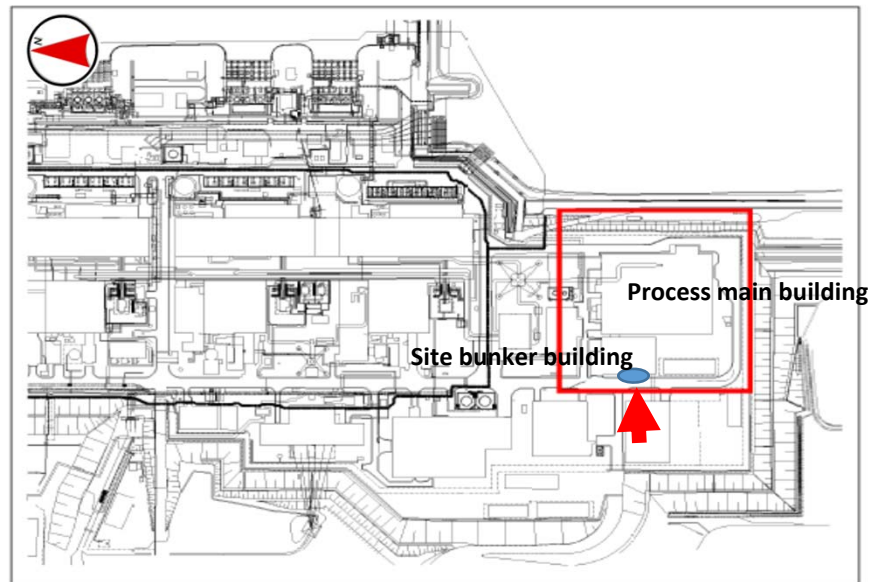
	Observation point	Purpose	
Reactor building	Unit 5 R/B	R/B (foundation plate)	Used as backup
	Unit 5 R/B	R/B (Middle floor)	Used to analyze building vibration characteristics (Unit 6 intercomparison)
	Unit 6 R/B	R/B (foundation plate)	Used for operation
		R/B (Middle floor) (Uppermost floor) One seismometer in each section	Used to analyze building vibration characteristics
Free foundation type	South point	Used to determine standard seismic motion, and also to examine the suitability of standard seismic motion when large earthquakes occur in the future	
	North point	Used to aid in the determination of standard seismic motion	

Conditions after the earthquake

Substance found on the west side of the site bunker building

Date of occurrence (time discovered): Around 11 AM, March 21

Overview: During a field patrol, ground subsistence was found near the west side of the site bunker building. Slight subsidence was found after the earthquake on February 13, but the subsidence that occurred after this earthquake resulted in fractures to the concrete surfacing around the building. No abnormalities were found with pipes in the vicinity and the aforementioned fracture will be repaired in future. The aforementioned area was also made off-limits for safety reasons.



【Reference】 Primary sequence of events

March 20

Around 6:09 PM Earthquake occurs

Plant conditions are as follows

- Monitoring post indicators No significant fluctuation
- Power station site border and on-site dust monitors No significant fluctuation
- Onsite dose display indicators No significant fluctuation
- On-site drainage channel monitors, seawater radiation monitor indicators No significant fluctuation

6:33 PM Accumulated water transfer systems and water treatment systems shut down

6:50 PM The following is checked:

- Unit 1~6 system plant parameters No abnormalities
 - Accumulated water transfer system/water treatment system parameters No abnormalities
 - Reactor cooling water injection systems (Units 1~3) Continued operation
 - Spent fuel pool cooling systems (Units 1~3, 6, common pool) Continued operation
- ※Unit 5 was in cold shutdown prior to the earthquake

6:54 PM Field patrols commenced in accordance with action plan III

8:09 PM No leaks found in tank areas in which connection valves are open
(D, H8A, G1, G4 south)

8:42 PM No significant fluctuation found in tide level gauge data

【Reference】 Primary sequence of events

March 20

9 PM

No change in Unit 1 or 3 primary containment vessel water level

The contact point of the L2 water level gauge inside the Unit 1 primary containment vessel temporarily shifted (for several seconds), but immediately returned to its original location

A slight rise was seen in some monitors in the on-site drainage channel B used for cause investigations, but sampling results from drainage channel be taken at 1:10 AM on March 21 showed that levels were lower than the management level of 1, 500Bq/L (Gross beta: 17Bq/L, Cesium-137:1.1Bq/L)

March 21

2 AM

At this point in time no abnormalities, such as water leaks, were found in treated water tank areas or other tank areas. Some damage was found to rain gutters installed at the top of a tank in the tank area. At this point in time no abnormalities, such as leaks, were found with water treatment-related equipment (desalination devices, cesium adsorption devices, multi-nuclide removal equipment, etc.) patrols by repaired teams conducted in accordance with action plan III conclude

1:11 PM

Safety team patrols (including PG4) conducted in accordance with action plan III conclude

⇒ Action plan III patrols completed

1:16 PM

Operation team and repair team patrols find no abnormalities with accumulated water transfer equipment, so transfer is recommenced

1:54 PM

It is confirmed that there are no abnormalities in the field

【Reference】 Primary sequence of events

March 21

3 PM At this point in time no abnormalities, such as water leaks, were found in treated water tank areas or other tank areas. Although the detailed inspection discovered slight displacement of one tank in tank area F there has been no impact on function

Damage was found to one of the rain gutters attached to the top of a tank in tank area F, and repairs have been completed. A detailed field inspection revealed no abnormalities with water treatment-related equipment (desalination devices, cesium adsorption devices, multi-nuclide removal equipment, etc.) caused by the earthquake on March 20

No abnormalities were found with solid waste storage buildings or temporary storage areas as a result of the earthquake on March 20.