

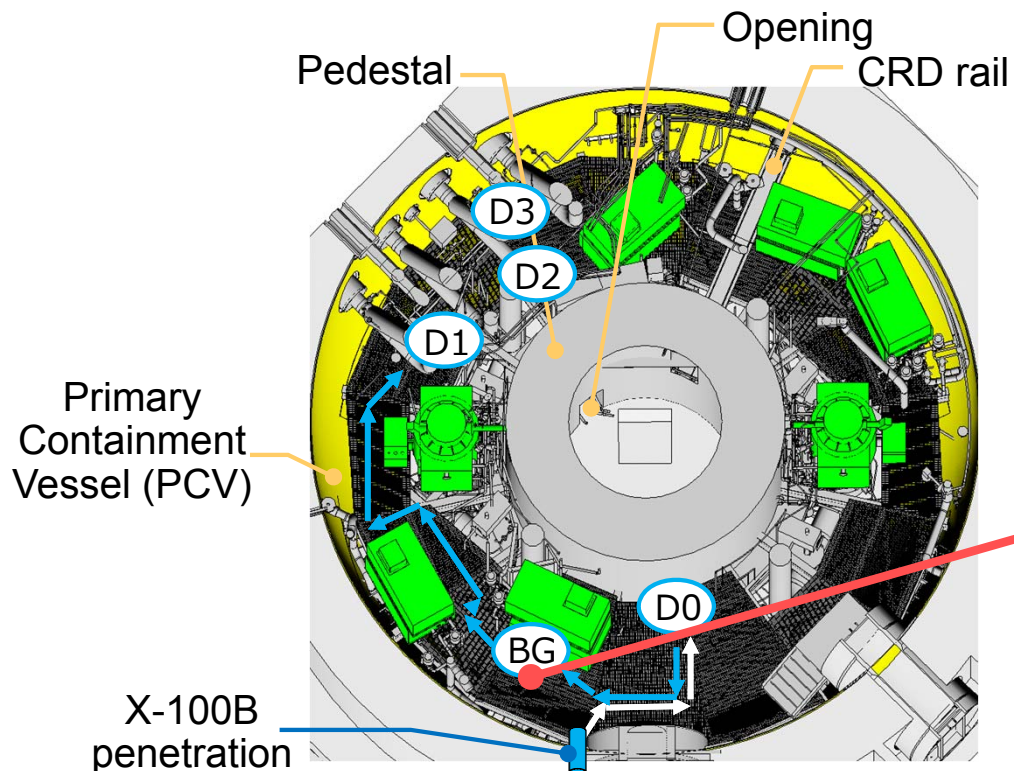
# 1. Progress of Unit 1 PCV internal investigation

(Preliminary report of March 19 investigation) 1/2

Reference  
March 21, 2017

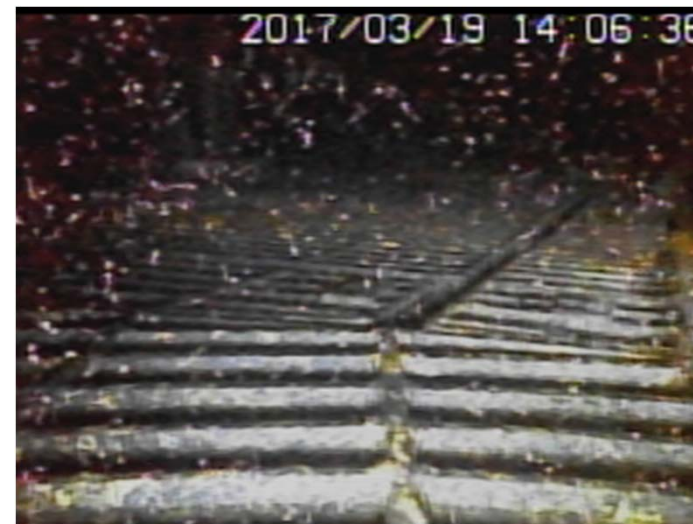
Tokyo Electric Power Company Holdings, Inc.

- March 19 investigation results are as follows.



Cross section of 1<sup>st</sup> floor PCV

→ Access route for March 19 investigation



On the metal grating  
(Front left-side camera of the investigation device)



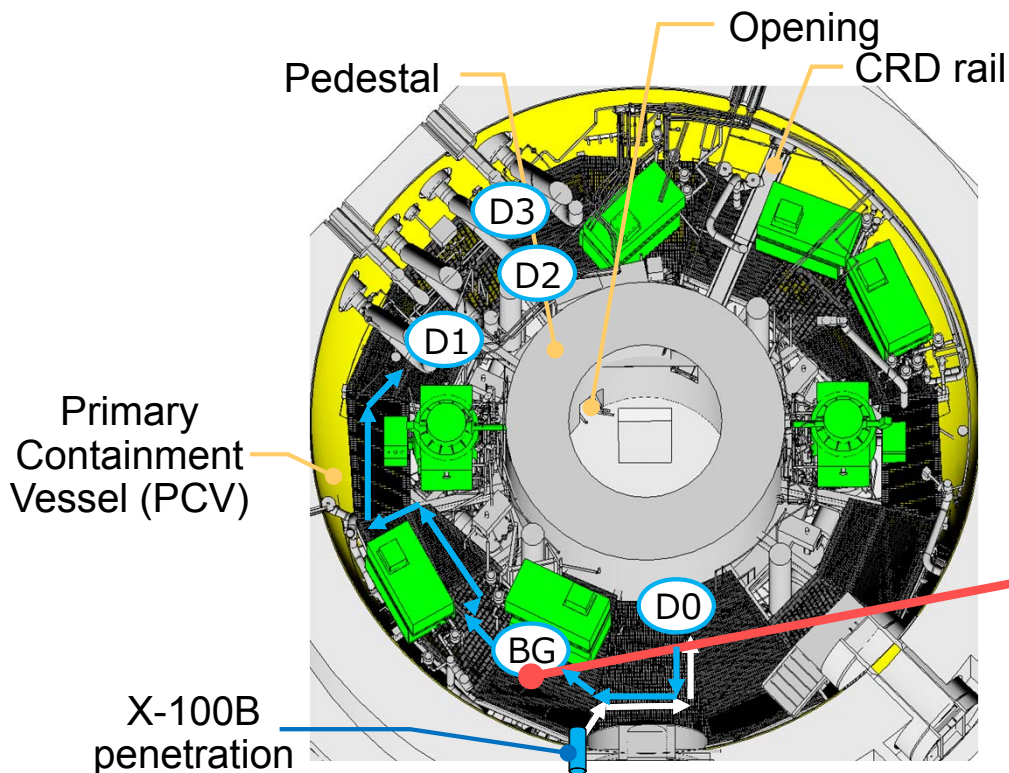
Measurement unit camera before inserted into the water

Measurement point	Contents of estimation, etc.
D0	Estimation of presence or absence of diffusion of fuel debris from the drain sump
D1, D2	Estimation of presence or absence of diffusion of fuel debris from the opening
D3	Estimating whether or not the fuel debris is likely to have reached the PCV shell
BG	Understanding the background level corresponding to measurement of D0 - D3

# 1. Progress of Unit 1 PCV internal investigation

(Preliminary report of March 19 investigation) 2/2

■ March 19 investigation results are as follows.



Cross section of 1<sup>st</sup> floor PCV

→ Access route for March 19 investigation

Measurement point	Contents of estimation, etc.
D0	Estimation of presence or absence of diffusion of fuel debris from the drain sump
D1, D2	Estimation of presence or absence of diffusion of fuel debris from the opening
D3	Estimating whether or not the fuel debris is likely to have reached the PCV shell
BG	Understanding the background level corresponding to measurement of D0 - D3

Underwater image at measuring point BG

Radiation dose at measurement point BG (Provisional values)

- On metal grating: 3.8 Sv/h
- The lowest point: 11 Sv/h (About 0.3m above the PCV basement floor\*)

The conditions of PCV basement will be evaluated after organizing digital images and radiation data.

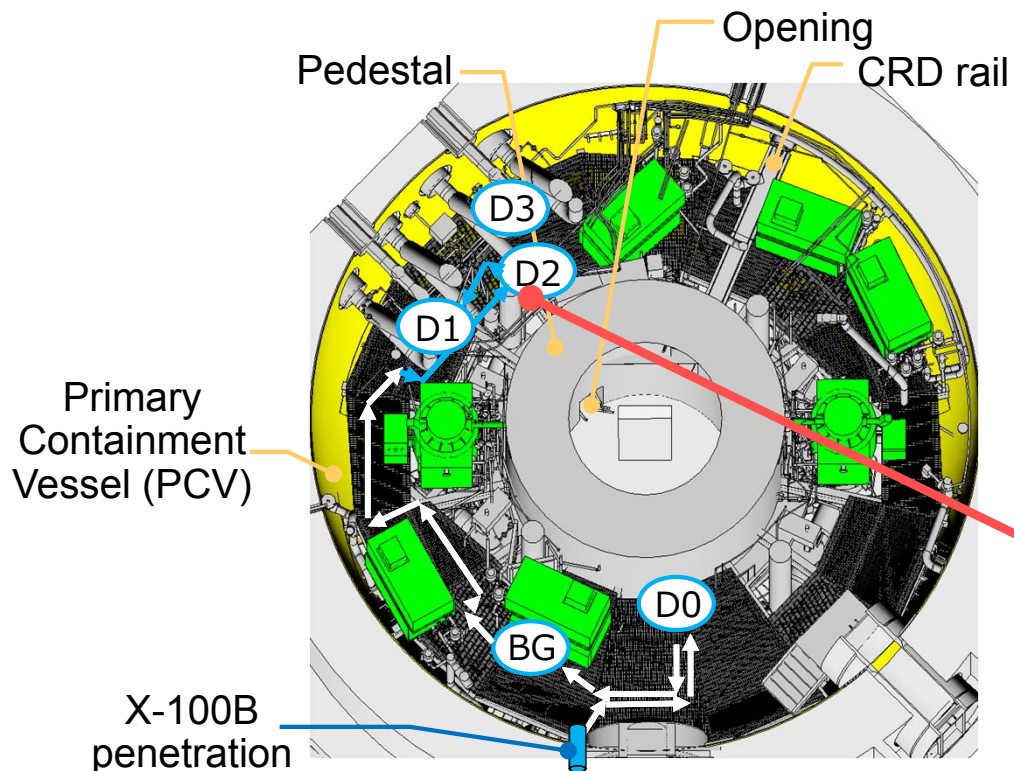
\*The exact height from the PCV basement floor will be examined later.

Measurement image

# 2. Progress of Unit 1 PCV internal investigation

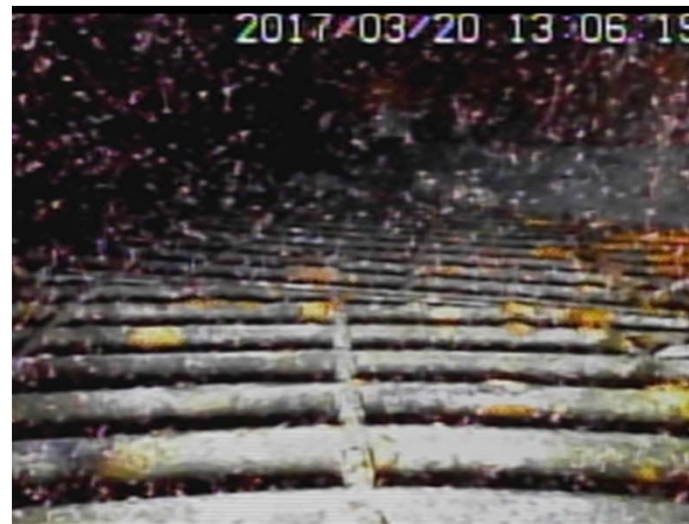
(Preliminary report of March 20 investigation) 1/3

- March 20 investigation results are as follows.



Cross section of 1<sup>st</sup> floor PCV

→ Access route for March 20 investigation



On the metal grating  
(Front left-side camera of the investigation device)



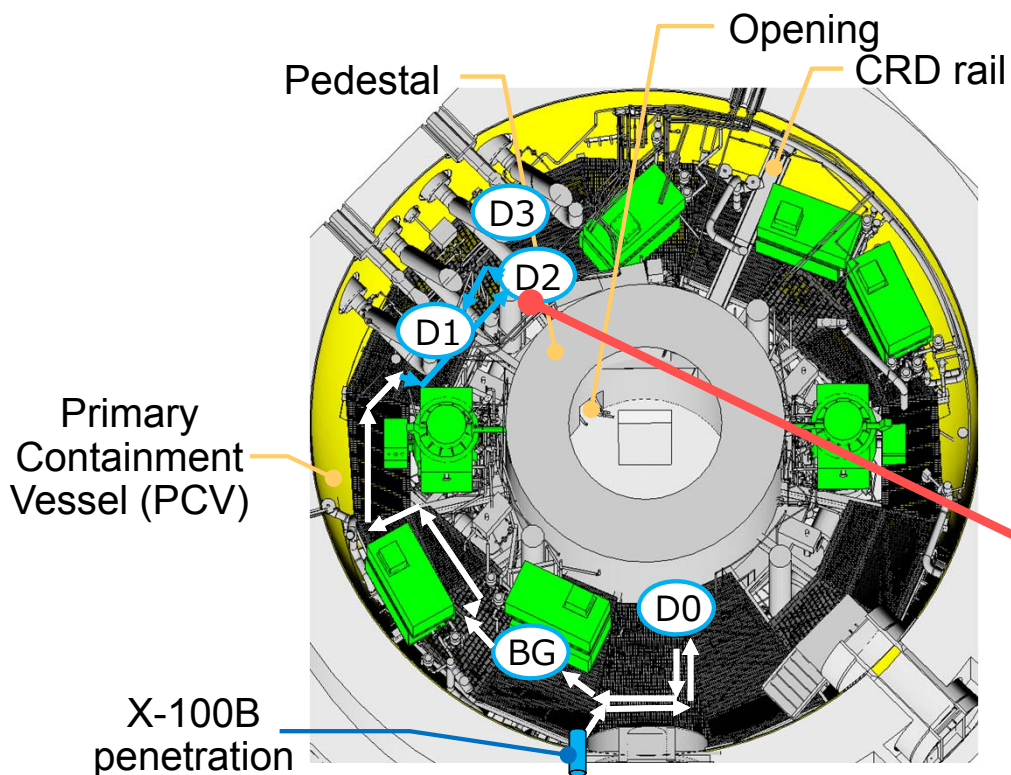
Measurement unit camera before inserted into the water

Measurement point	Contents of estimation, etc.
D0	Estimation of presence or absence of diffusion of fuel debris from the drain sump
D1, D2	Estimation of presence or absence of diffusion of fuel debris from the opening
D3	Estimating whether or not the fuel debris is likely to have reached the PCV shell
BG	Understanding the background level corresponding to measurement of D0 - D3

# 2. Progress of Unit 1 PCV internal investigation

(Preliminary report of March 20 investigation) 2/3

■ March 19 investigation results are as follows.



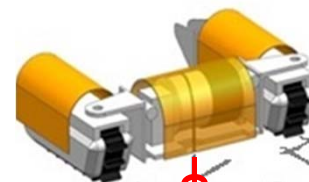
Cross section of 1<sup>st</sup> floor PCV

➡ Access route for March 20 investigation

Measurement point	Contents of estimation, etc.
D0	Estimation of presence or absence of diffusion of fuel debris from the drain sump
D1, D2	Estimation of presence or absence of diffusion of fuel debris from the opening
D3	Estimating whether or not the fuel debris is likely to have reached the PCV shell
BG	Understanding the background level corresponding to measurement of D0 - D3



Underwater image at measuring point D2



Radiation dose at measurement point BG

(Provisional values)  
 • On metal grating: 12 Sv/h  
 • The lowest point: 6.3 Sv/h (About 1m above the PCV basement floor\*)

The conditions of PCV basement will be evaluated after organizing digital images and radiation data.

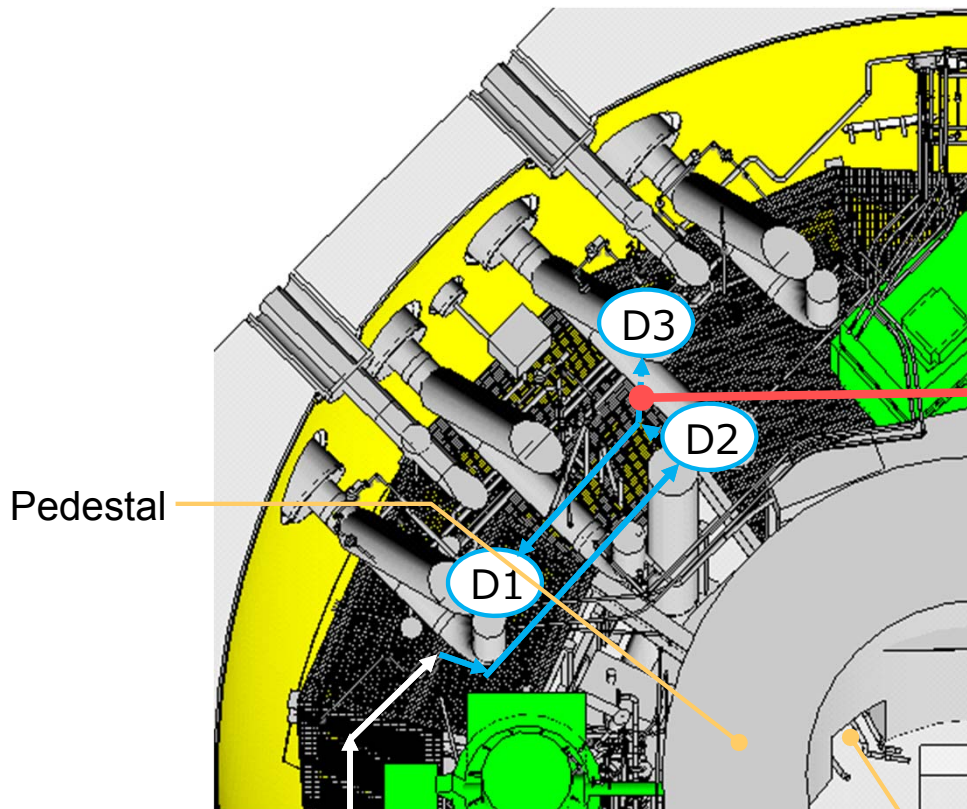
\*The exact height from the PCV basement floor will be examined later.

Measurement image

## 2. Progress of Unit 1 PCV internal investigation

(Preliminary report of March 20 investigation) 3/3

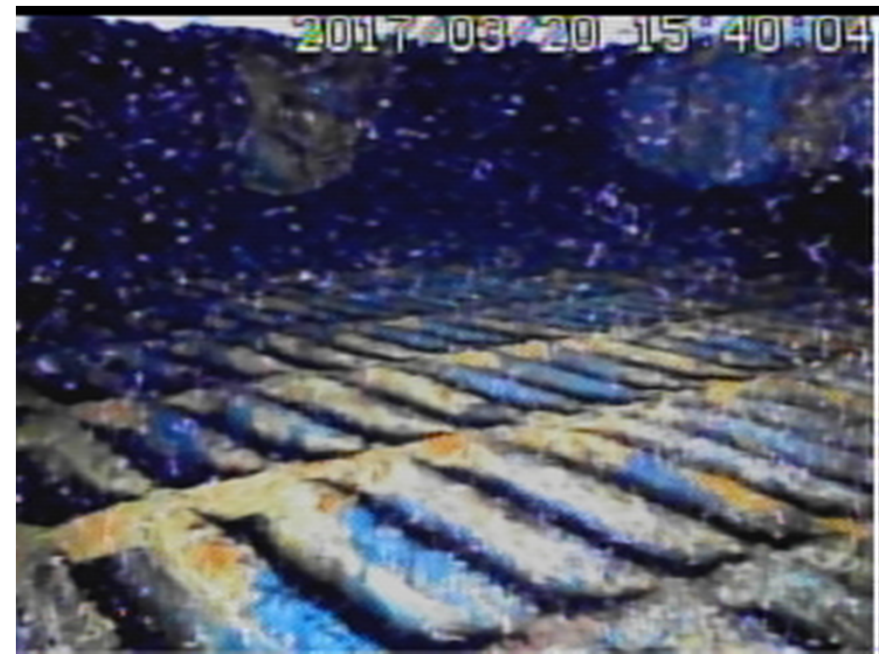
- The investigation device moved to the measurement point D1 because the access route between the measurement points D2 and D3 was narrow and there was a risk that the device cannot go through.
- The measurement point D3 will be prioritized on March 21 because it is close to the pedestal opening. The device will move to the measurement points D3 and then D1 to investigate those places.



Cross section of 1<sup>st</sup> floor PCV

Opening

→ Access route for March 20 investigation

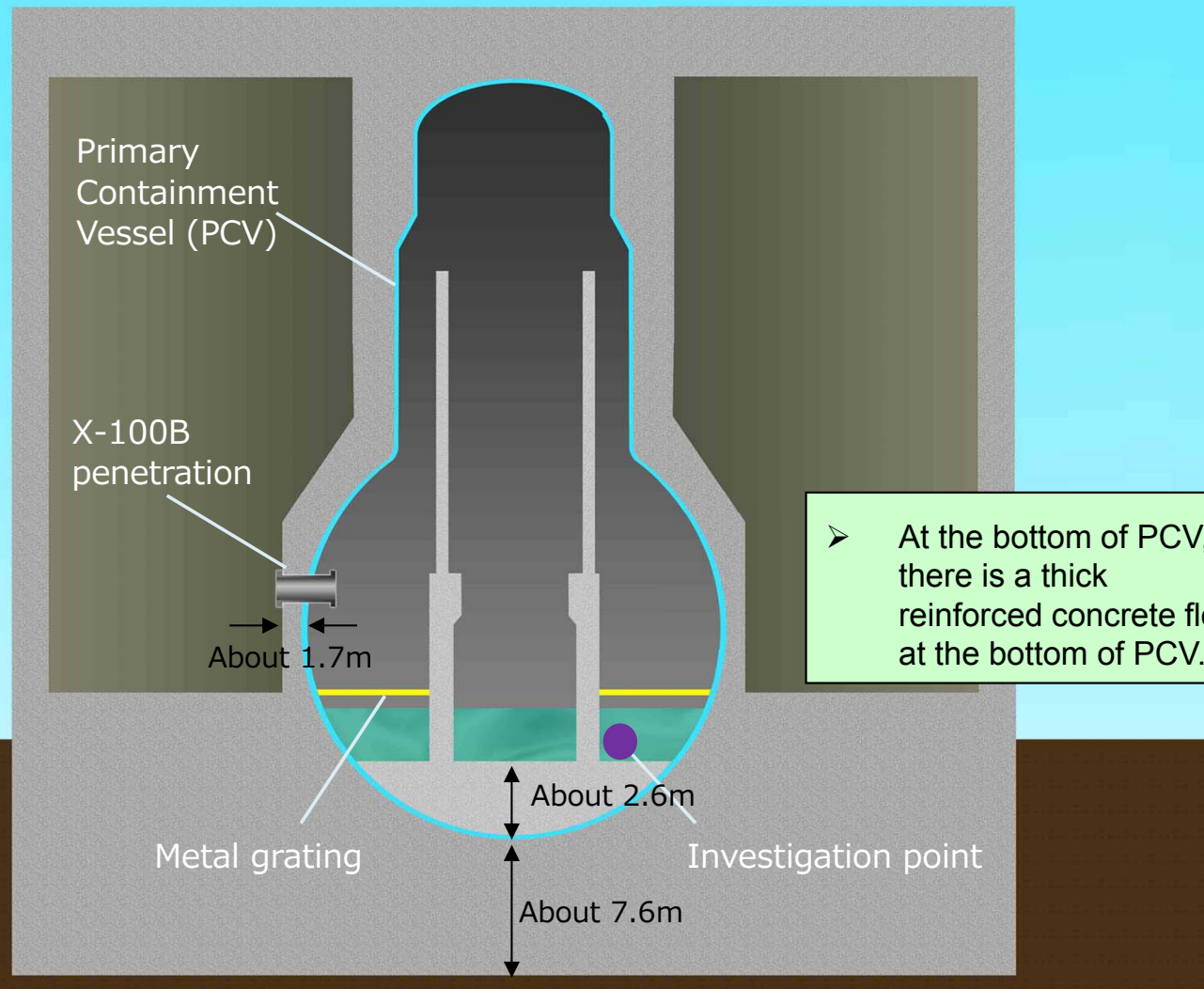
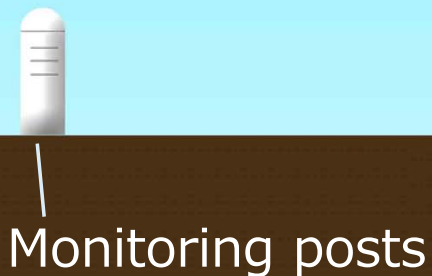
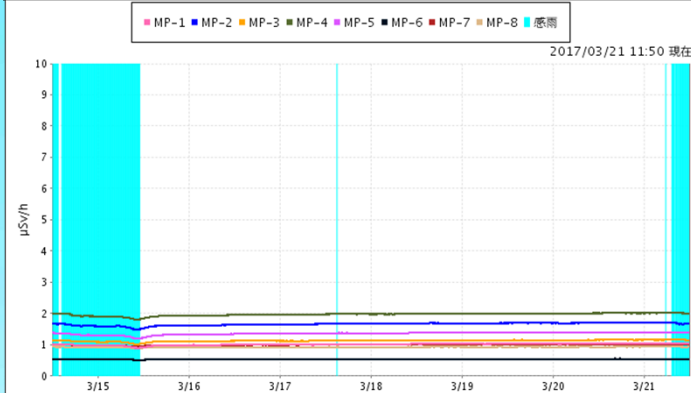


On the metal grating  
between measurement points D2 and D3  
(Front left-side camera of the investigation device)

### 3. Impact to the surrounding environment (1/3)

- **No radiation impact has occurred to the surrounding environment because the radiation has been reduced by the shielding of PCV concrete walls and steels.**

There are no changes in measurement values at the monitoring posts before and after the investigation.



### 3. Impact to the surrounding environment (2/3)

- The radiation level of 12 Sv/h\* was measured by a dosimeter during the March 20 investigation, but **the radiation impact has been reduced by the shielding** of PCV concrete walls and steel. **No radiation impact has been observed in the surrounding environment.**

\*The radiation rates measured on the metal grating in April 2016 were 4.7-9.7 Sv/h, almost the same levels as the measurement result this time.

- The investigation is conducted **while creating a boundary around the guiding pipe to prevent the air inside the PCV from leaking to the outside.**
- **No significant changes have been observed at the monitoring posts and dust monitors after the investigation, compared to the before.**
- **Real-time data of the monitoring posts and dust monitors along the site boundary are available on the website.**

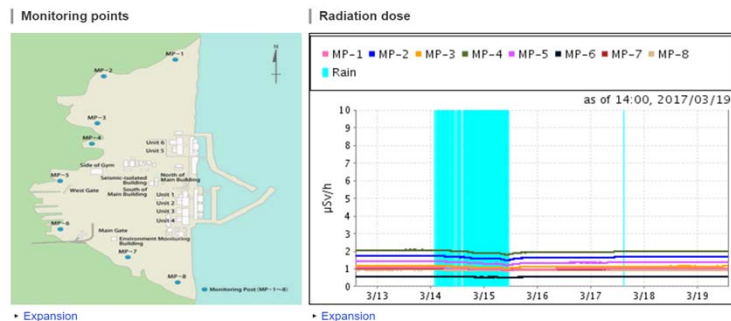
Reference URL: <http://www.tepco.co.jp/en/nu/fukushima-np/f1/index-e.html>

<http://www.tepco.co.jp/en/nu/fukushima-np/f1/dustmonitor/index-e.html>

#### Radiation Dose measured at Monitoring Post of Fukushima Daiichi Nuclear Power Station

The following is the radiation doses of the air measured by the monitoring posts (MP1-8), portable monitoring posts and monitoring cars on the premises of Fukushima Daiichi Nuclear Power Station.

##### Monitoring post (MP1 - MP8)



○Measurement value (2017/03/19 14:00)

MP-1	MP-2	MP-3	MP-4	MP-5	MP-6	MP-7	MP-8	Wind Direction	Wind Velocity	Rain
1.037	1.703	1.155	2.006	1.390	0.549	1.005	0.935	east-southeast	3.3	No

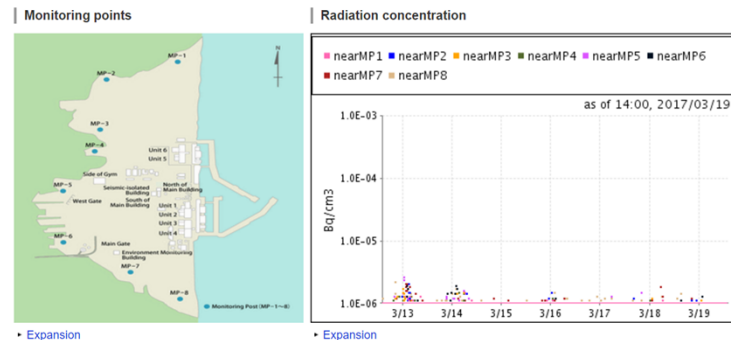
MP Unit : μSv/h Wind Velocity Unit : m/s

As of 11:30 a.m. on March 21, 2017: about 0.5-2.0 μSv/h

\*Radiation dose including the other influence than the PCV interior

#### Radioactive Concentration measured at Dust Monitors near the Site Boundary of Fukushima Daiichi Nuclear Power Station

The following are radioactive concentrations in the air measured near the monitoring posts (MP1-8) at the site boundary of Fukushima Daiichi Nuclear Power Station.



○Measurement value (2017/03/19 14:00)

nearMP1	nearMP2	nearMP3	nearMP4	nearMP5	nearMP6	nearMP7	nearMP8	Wind Direction	Wind Velocity
1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	1.0E-06	east	1.9

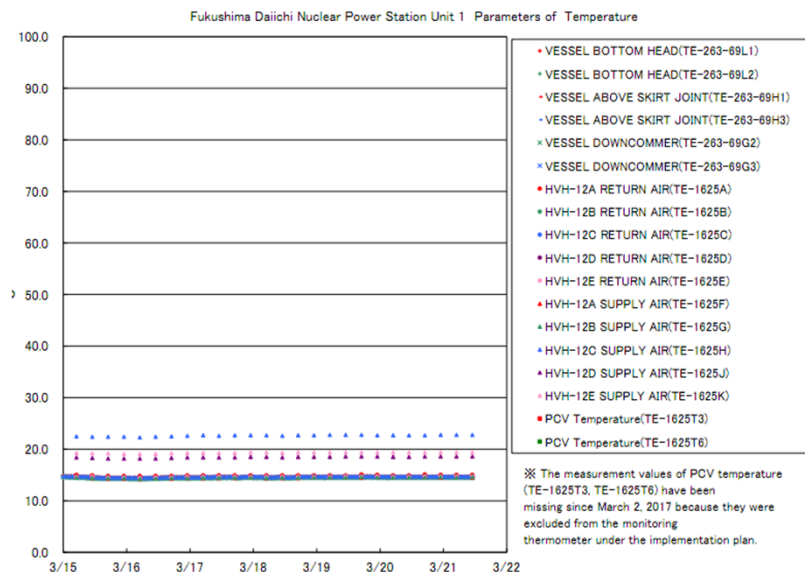
Radioactive Particles Monitor Unit : Bq/cm<sup>3</sup> Wind Velocity Unit : m/s

As of 11:50 a.m. on March 21, 2017: 1.0E-06Bq/cm<sup>3</sup>

### 3. Impact to the surrounding environment (3/3)

- The measurement result during the investigation does not mean that a new phenomenon has occurred in the PCV, but rather the area that has not been investigated since the March 2011 accident was investigated for the first time.
  - \*The radiation rates measured on the metal grating in April 2016 were 4.7-9.7 Sv/h, almost the same levels as the measurement result this time.
- Plant parameters are monitored all the time during the investigation, and **no significant changes have been observed in the PCV internal temperatures after the investigation, compared to the before. The condition of cold shutdown has not been changed.**
- Temperature data inside the PCV are available on the website.

Reference URL: <http://www.tepco.co.jp/en/nu/fukushima-np/f1/pla/index-e.html>



Fukushima Daiichi Nuclear Power Station Plant Parameters  
As of 11:00 on March 21 2017

	Unit 1	Unit 2	Unit 3	Unit 4
Status of water injection to the reactor	FDW line 1.5t/h CS line 1.8t/h (as of 11:00, 3/21)	FDW line 1.5t/h CS line 1.8t/h (as of 11:00, 3/21)	FDW line 1.5t/h CS line 1.4t/h (as of 11:00, 3/21)	
Temperature at the bottom of RPV	VESSEL BOTTOM HEAD (TE-263-69L1) : 14.7°C VESSEL ABOVE SKIRT JOINT (TE-263-69H1) : 14.6°C VESSEL DOWNCOMMER (TE-263-69G2) : 14.5°C (as of 11:00, 3/21)	VESSEL WALL ABOVE BOTTOM HEAD (TE-263-69H1) : 18.1°C RPV TEMPERATURE (TE-263-69H1) : 18.0°C (as of 11:00, 3/21)	VESSEL BOTTOM ABOVE SKIRT JOINT (TE-263-69H1) : 18.4°C VESSEL WALL ABOVE BOTTOM HEAD (TE-263-69H1) : 17.0°C (as of 11:00, 3/21)	
Temperature in PCV	HVH-12A RETURN AIR (TE-1625A) : 15.0°C HVH-12A SUPPLY AIR (TE-1625F) : 14.8°C (as of 11:00, 3/21)	RETURN AIR DRYWELL COOLER (TE-16+114B) : 19.8°C SUPPLY AIR D/W COOLER HVH-2+16B (TE-16+114E1) : 19.8°C (as of 11:00, 3/21)	RETURN AIR DRYWELL COOLER (TE-16+114A) : 19.2°C SUPPLY AIR D/W COOLER (TE-16+114E1) : 19.6°C (as of 11:00, 3/21)	
Pressure in PCV	0.78kPa g (as of 11:00, 3/21)	4.78kPa g (as of 11:00, 3/21)	0.28kPa g (as of 11:00, 3/21)	
Flow rate of nitrogen gas injection to Reactors #1-3	RPV : 28.19t/h PCV : 4t/h (as of 11:00, 3/21)	RPV : 13.56t/h PCV : 4t/h (as of 11:00, 3/21)	RPV : 16.58t/h PCV : 4t/h (as of 11:00, 3/21)	RPV : 16.58t/h PCV : 4t/h (as of 11:00, 3/21)
Outlet flow from PCV gas control system	20.7t/h (as of 11:00, 3/21)	18.47t/h (as of 11:00, 3/21)	20.72t/h (as of 11:00, 3/21)	
Hydrogen concentration in PCV #1	System A : 0.00vo% System B : 0.00vo% (as of 11:00, 3/21)	System A : 0.04vo% System B : 0.00vo% (as of 11:00, 3/21)	System A : 0.04vo% System B : 0.00vo% (as of 11:00, 3/21)	
Radioactive concentration in PCV (Xe 135) #2	System A : indicated value 1.00E+03 detection limit 5.70E+04 Ba/arf System B : indicated value 1.25E+03 detection limit 4.80E+04 Ba/arf (as of 11:00, 3/21)	System A : indicated value ND detection limit 1.7E+01 Ba/arf System B : indicated value ND detection limit 1.5E+01 Ba/arf (as of 11:00, 3/21)	System A : indicated value ND detection limit 2.5E+01 Ba/arf System B : indicated value ND detection limit 2.8E+01 Ba/arf (as of 11:00, 3/21)	
Temperature in the spent fuel pool	25.4°C (as of 11:00, 3/21)	27.7°C (as of 11:00, 3/21)	27.0°C (as of 11:00, 3/21)	14.2°C (as of 11:00, 3/21)
FPC skimmer surge tank level	2.91m (as of 11:00, 3/21)	4.01m (as of 11:00, 3/21)	3.35m (as of 11:00, 3/21)	43.84x100mm (as of 11:00, 3/21)

2) Information about measurement:  
 #1 : Please note that the measured value of hydrogen density (D<sub>H2</sub>) is recorded. Because there is the possibility of minor indication due to the instrumental precision when hydrogen density is very low.  
 #2 : The hydrogen concentration in the PCV gas control system is provided.  
 #3 : Please note that the measured value of radio-measurable iodine (I<sub>131</sub>) is recorded. The radioactivity density (Xe 135) in the PCV gas control system is provided.  
 #4 : Flow rate value are calculated according to the temperature and the pressure under surge condition.  
 #5 : Nitrogen gas injection is under suspension.

As of 11:00 p.m. on March 21, 2017: about 14-23 °C