Causes and Countermeasures for Dust Concentration Increases and Bodily Contamination in front of the Fukushima Daiichi Nuclear Power Station's Seismic Isolated Building

September 12, 2013

Tokyo Electric Power Company

1. Bodily contamination that occurred on August 12 (1/3)

Monday, August 12

■Event

On August 12 at around 12:33pm an alarm sounded that indicated that the continuous dust monitor located in front of the seismic isolated building was measuring high concentrations of radiation.

■Sequence of events

Around 12:33 PM: Continuous dust monitor (B) high-high alarm sounds

Around 12:39 PM: Continuous dust monitor (A) high-high alarm sounds.

Around 12:48 PM: The decision was made to instruct all personnel inside the building to wear masks

Around 1:02 PM: A general announcement was made ordering personnel to wear masks

Around 1:05 PM to 1:25 PM: Dust sampling

Around 1:16 PM: A general announcement was made prohibiting the use of tap water

(seismic isolated building, Unit 5, 6, entry/exit management facilities)

Around 1:25 PM: Overhead misting in front of the seismic isolated buildings suspended

Around 4:17 PM: The decision was made to rescinded the order for all personnel inside the building to wear masks

Around 4:21 PM: A general announcement was made rescinding the order to wear masks

Around 4:45 PM: a general announcement was made rescinding the order prohibiting the use of tap water

■Results of dust sampling from in front of the seismic isolated building (GM Radiation measurement)

Around 1:05 PM to 1:25 PM:1.4×10^{-5}Bq/cm^3

Around 2:10 PM to 2:30 PM: 1.2×10^{-5}Bq/cm^3

■Contamination

At around 1:08 PM it was discovered at the entry/exit management building that 10 out of a total of 16 employees (12 TEPCO, 4 contractor) aboard a bus that had left from the seismic isolated building (around 12:35 PM) were contaminated (Max. approx.: 19Bq/cm^2)

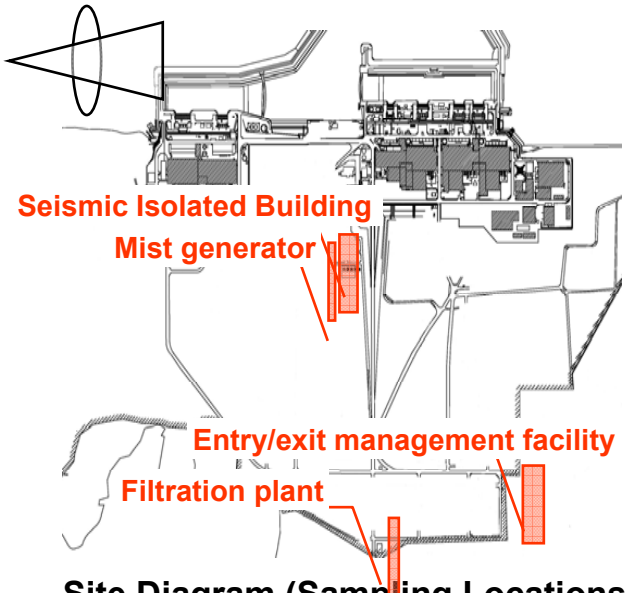
・After decontamination the employees were measured using exit monitors (less than 4Bq/cm^2) or GM contamination survey meters and exited the premises. Whole body counter results revealed that there was no internal contamination.

■Water analysis results

(seismic isolated building, mist generator, entry/exit management facilities, filtration plants)

Gamma: ND (Cesium 134: Less than approx. 3Bq/1,
Cesium 137: Less than approx. 3Bq/1)

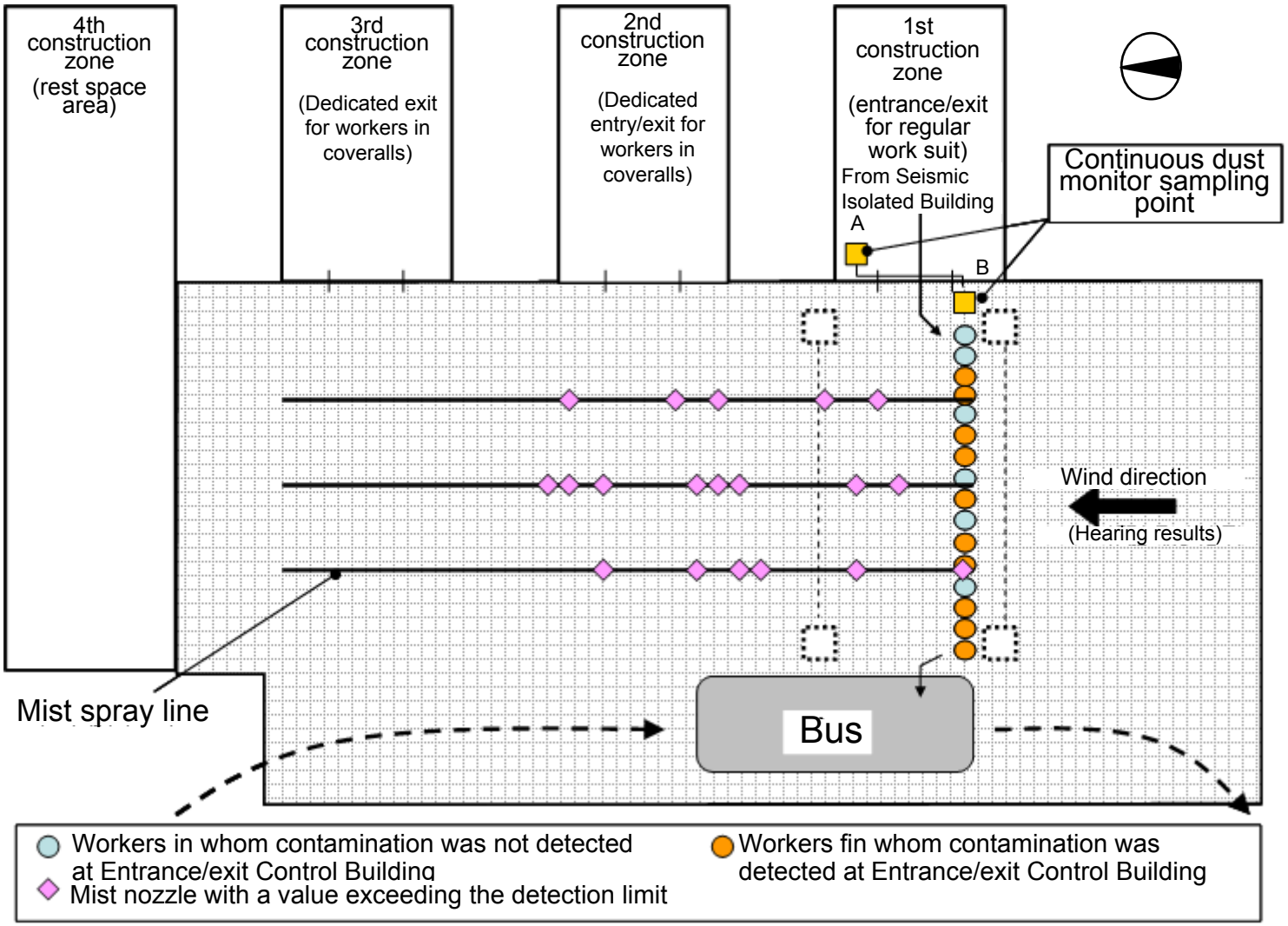
All Beta: ND (Less than approx. 13Bq/1)



Site Diagram (Sampling Locations)

1. Bodily contamination that occurred on August 12 (2/3)

- Equipment: Ordinary work clothes + shoe covers + cotton gloves + surgical mask worn
- The 10 contaminated workers were standing in a line along with the other six passengers between 12:25 and 12:30 PM on the south side of the front of the #1 construction area in front of the seismic isolated building in order to catch the 12:35 bus headed for the entry/exit management building.
- The order of the contaminated workers in the line at the bus stop was 1-3, 5·6, 8,10·11, 13·14.
  (All 16 passengers had been in the same line but monitoring values for the other six workers were below values that require decontamination according to company decontamination management policies(Below 4Bq/cm^2)*



*Exit standards from controlled areas is 40Bq/cm^2 but company policy requires that decontamination be implemented for bodily contamination that exceeds 4Bq/cm^2

1. Bodily contamination that occurred on August 12 (3/3)

Order in Line	Affiliation	Work Details	Exit monitor value prior to decontamination (Max)		Value after decontamination	APD return
			Bq/cm2	Body part	Bq/cm2	
1	TEPCO	No field work	17	Head	6.9 *	—
2	TEPCO	Power source facility field survey	7.8	Head	<4 *	○
3	TEPCO	Water sprinkling work	15	Chest	<4 *	○
4	Contractor	Water treatment-related field patrol	<4	—	—	○
5	TEPCO	No field work	6.9	Head	<4 *	—
6	TEPCO	No field work	4.8	Head	<4 *	—
7	Contractor	Water treatment-related field patrol	<4	—	—	○
8	TEPCO	Water sprinkling work	19	Head	<4	○
9	TEPCO	Nitrogen injection device switchover work	<4	—	—	○
10	TEPCO	Nitrogen injection device switchover work	10	Head	<4 *	○
11	TEPCO	Nitrogen injection device switchover work	4.3	Left shoulder	<4	○
12	TEPCO	Visitor handling	<4	—	—	○
13	TEPCO	Visitor handling	5.4	Head (neck)	<4	○
14	TEPCO	Visitor handling	12	Left side of rib cage	<4	○
15	Contractor	Waste management work	<4	—	—	○
16	Contractor	Waste management work	<4	—	—	○

: Workers confirmed for bodily contamination by exit monitor in the entry/exit management building

*Value measured by GM contamination survey meter

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2. Bodily contamination that occurred on August 19 (1/2)

Monday, August 19

■Event

On August 19 at around 10:04 AM an alarm sounded that indicated that the continuous dust monitor located in front of the seismic isolated building was measuring high concentrations of radiation.

■Sequence of events

Around 9:29 AM: Continuous dust monitor (B) high-high alarm sounds

Around 9:34 AM: Continuous dust monitor (A) high-high alarm sounds

9:50 AM-10:10 AM: Dust sampling

Around 10:04 AM: Continuous dust monitor (A) high-high alarm sounds

Around 10:12 AM: The decision was made to instruct all personnel inside the building to wear masks

Around 10:15 AM: A general announcement was made ordering personnel to wear masks

■ Results of dust sampling from in front of the seismic isolated building

9:50 AM-10:10 AM:

- Cs-134: 2.6×10^{-4}Bq/cm^3
- Cs-137: 5.8×10^{-4}Bq/cm^3

■Bodily contamination

At around 10:20AM it was discovered at the entry/exit management building that 2 out of a total of 3 employees aboard a site bus that had left from the seismic isolated building at around 9:55 AM were contaminated (Max. approx.: 13Bq/cm^2, approx. 7Bq/cm^2)

At around 10:57 AM, after decontamination, the workers exited through the exit monitor (less than 4Bq/cm^2)

At around 1:00 PM whole body counter results revealed that there was no internal contamination.

■Mist generator usage status

The mist generator has not been used since August 12.

The order to wear full (half) face masks and coveralls inside all areas remains in place.

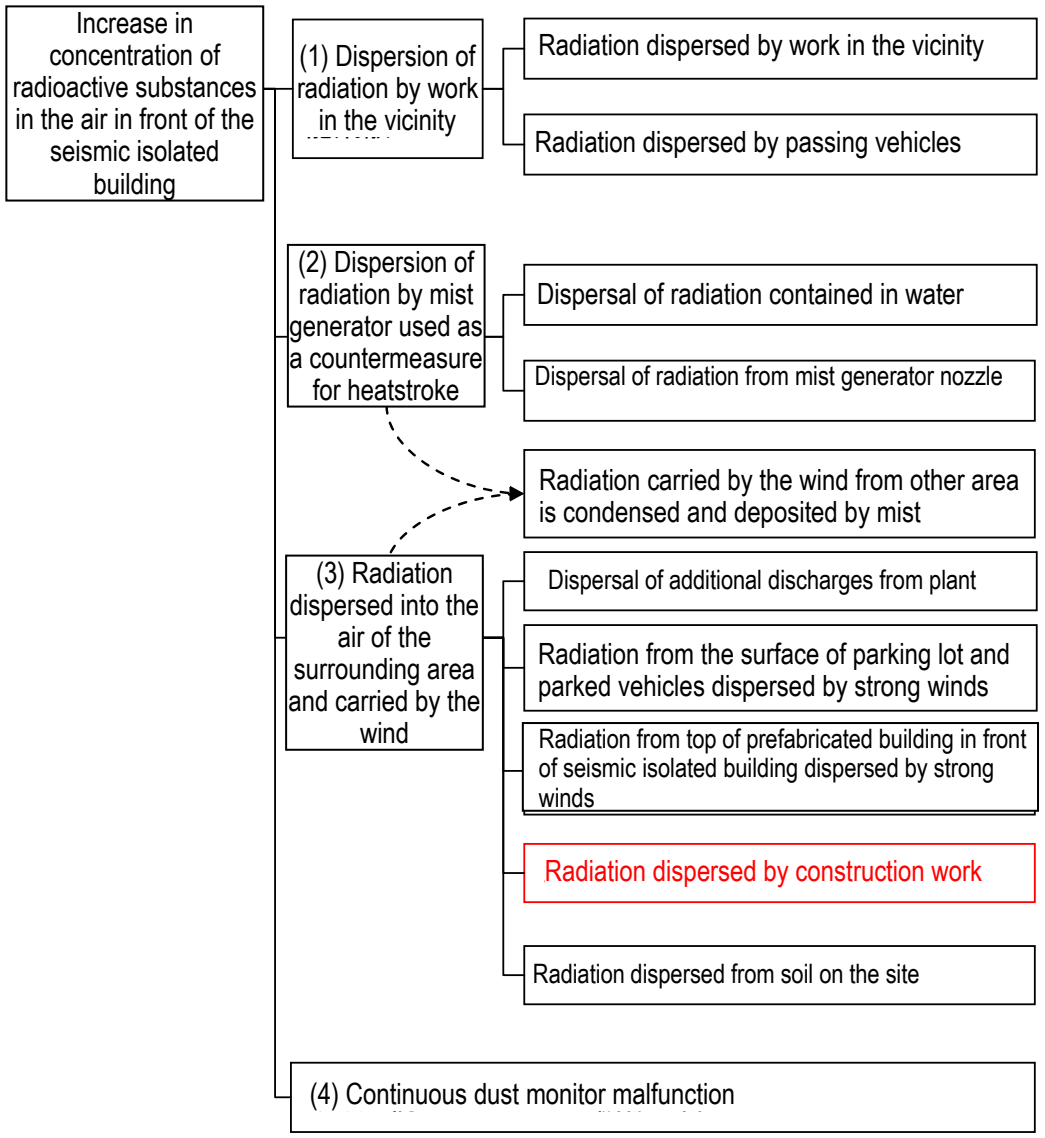
2. Bodily contamination that occurred on August 19 (2/2)

- Equipment: Ordinary work clothes + shoe covers + cotton gloves + surgical masks worn
- The two contaminated workers waited the 9:55 AM bus with one other passenger.
  - ・The first person in line waited approximately 5 min. for the bus
  - ・The second and third passengers were not in line for very long since the bus came immediately after they did.

Order in Line	Affiliation	Work Details	Exit monitor value prior to decontamination (Max)		Value after decontamination	APD return
			Bq/cm2	Body part	Bq/cm2	
1	Contractor	Disassembly of insulation outside	13	Head	<4	○
2	Contractor	No field work	6.9	Head	<4	—
3	Contractor	No field work	<4	—	—	—

*Workers confirmed for bodily contamination by exit monitor in the entry/exit management building

3. Cause analysis and status of investigation (1/3)



Investigation conditions	Possibility
Workers waiting for the bus were interviewed and it was confirmed that work was not being done at the time	Low
Continuous dust monitors have been installed at the vehicle screening area in order to monitor dispersion status of radiation from vehicles coming directly from the field, however there were no increases in dust concentration so it is unlikely that this was the cause.	Low
The analysis of the water remaining inside the mist generator revealed that there was not enough contamination to cause increases in dust.	Low
Levels of contamination on the surface of the nozzle were not high enough to cause increases in dust.	Low
This is an unlikely cause since the mist generator has been shut down since the event occurred on August 19.	Low
No fluctuations in plant parameters.	Low
Contamination levels were not high enough to cause increases in dust from the parking lot or parked vehicles.	Low
Contamination levels at the prefabricated building in front of the seismic isolated building were not high enough to cause increases in dust.	Low
Work that was being performed on August 12 and August 19 have been identified.	High
Since prior to the event measurements have been taken at fixed points to measure the concentration of dust on-site and no increasing trends were seen in the measurements.	Low
Since the alarms for two separate devices sounded simultaneously the possibility of equipment malfunction as low. Furthermore, another monitor of the same type was used to take simultaneous measurements and it was found that the pieces of equipment were sound.	Low

3. Cause analysis and status of investigation (2/3)

■Identification of work that may have caused the contamination

On August 12 and 19 “work to remove debris from the top of the Unit 3 reactor building” was conducted. During this work dust has the potential to be turned up and on these two days the wind was blowing in the direction of the front of the Seismic Isolated Building (southeast/south-southeast)

■Survey of dust from work to remove debris from the top of the Unit 3 reactor building

➢Check of what work was being done when the dust monitor alarm went off

(8/12, 8/19: Gathering and removal of debris after removal of crane girders)

⇒ This work has been suspended since August 22

➢The continuous dust monitor alarm has not gone off since suspension of work to remove debris from the Unit 3 reactor building.

It is hypothesized that during work to remove debris from the top of the Unit 3 reactor building, when debris was gathered and removed after removal of the ceiling crane girders dust that had accumulated underneath the ceiling crane girders and had not been subjected to rain or wind was turned up when the ceiling crane girders were removed and dispersed into the air.

3. Cause analysis and status of investigation (3/3)

[Narrowing down the causes]

On both August 12 and August 19 work to remove debris from the top of the Unit 3 reactor building was conducted and on these days this work was upwind of the continuous dust monitors so there is a connection. Furthermore, since the 20th when work to remove debris from the top of the Unit 3 reactor building was suspended, there have been no fluctuations with the continuous dust monitors, therefore it has been deemed highly likely that the aforementioned work was the cause of the increase in dust.

[Confirmation and assessment of causes]

	Measurement results of dust from top of Unit 3 reactor building	Dust measuring results downwind of Unit 3 reactor building	
August 22 No work done	Cs-134 : 1.2E-3 Bq/cm^3 Cs-137 : 2.6E-3 Bq/cm^3	■Unit 1, 2 switch yard Cs-134 : <3.2E-6 Bq/cm^3 Cs-137 : <4.7E-6 Bq/cm^3	■In front of Seismic Isolated Building Cs-134 : <3.1E-6 Bq/cm^3 Cs-137 : <4.1E-6 Bq/cm^3
August 29 When work was conducted after spreading agents to prevent dispersion	Cs-134 8.1E-3 Bq/cm^3 Cs-137 : 1.7E-2 Bq/cm^3	■Slope near Unit 3, 4 Cs-134 : 3.1E-6 Bq/cm^3 Cs-137 : 9.1E-6 Bq/cm^3	■Corporate building Cs-134 : 1.1E-6 Bq/cm^3 Cs-137 : 2.6E-6 Bq/cm^3
Assessment	The amount of dust increased on the top of the reactor building during work **→Work to remove Unit 3 debris has been deemed the cause of the increase in dust in front of the Seismic Isolated Building**	Whereas radiation on the same order as detection limit concentrations was detected in the dust downwind of the work no significant increase was found (standard levels that require the wearing of full face masks is 2.0E -4Bq/cm^3) **→the spreading of agents to prevent dispersion has been effective at preventing impact on locations downwind of the Unit 3 reactor building. Furthermore, no fluctuations have been seen at the monitoring posts (MP) downwind of the reactor building.**	

4. Recurrence prevention countermeasures

(1) Dust from debris removal work is being suppressed by revising methods for spreading dispersion prevention agents

➢Previously dispersion prevention agents have been spread in the area where debris was to be removed prior to debris removal in accordance with the progress of debris removal, **however now in addition to the area of debris removal, dispersion prevention agents are now being spread where dust is accumulated under ceiling crane girders prior to and following debris removal work everyday.**

➢In order to further improve the efficacy of the dispersion prevention agent the **concentration of the agent has been changed from 1/100 dilution to a 1/10 dilution**. (A mockup was conducted and the impact on dispersion equipment confirmed)

(2) Monitoring dust concentrations in and near work areas

➢Dust monitoring during work to remove debris from the operating floor has been enhanced, monitoring levels appropriately set and work is suspended before external areas can be impacted. (dust monitors will be put into service on September 12)

(1) Dust monitors have been installed on the operating floor and dust is being monitored during work. If an alarm sounds the status of dispersion of dispersion prevention agencies confirmed along with the values of continuous dust monitors on the slope.

(2) A continuous dust monitor has been installed on the top of the slope near the Unit 3 reactor building in order to detect dust increases as early as possible. If an alarm sounds work is temporarily suspended, fluctuations in other continuous dust monitors and MP's are checked and work is resumed only upon sprinkling additional dispersion prevention agent and considering wind speed and wind direction.

(3) Contamination prevention countermeasures for workers not wearing masks and wearing ordinary work clothes, and observers

➢A covered tunnel has been built as a countermeasure for preventing contamination of people waiting at bus stops near Unit 1-4 (August 23)

5. Future schedule

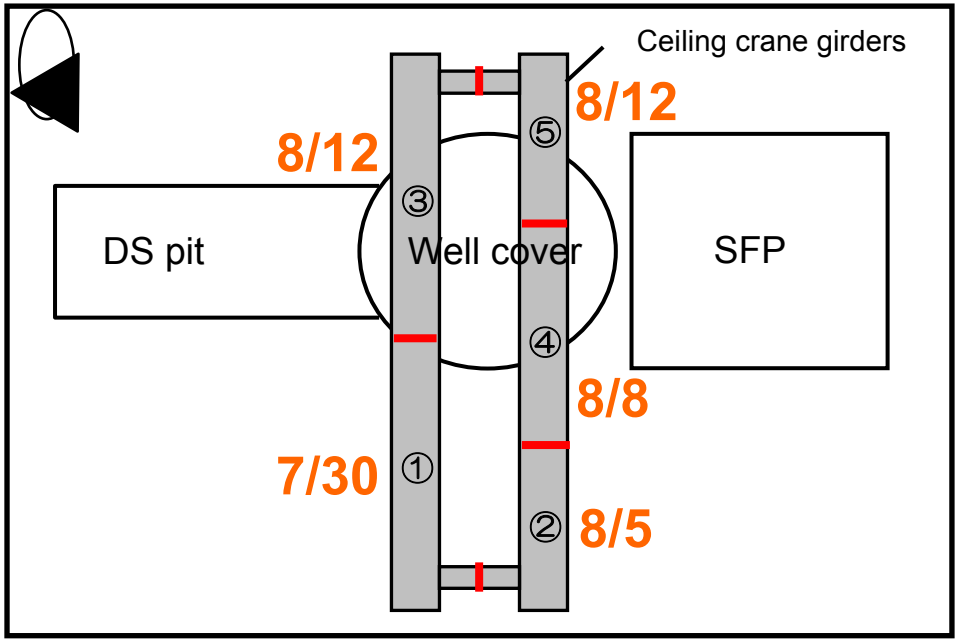
Survey Item	9/12	13	14	15	16	17	18	19	20
Lifting of mask requirement	(9/1-) When traveling: Full face masks + coveralls →**DS2 masks*** ＋coveralls **Reinstatement of areas in which full face masks need not be worn** **During work: DS2 mask + coveralls** **When travelling: Surgical mask + ordinary work clothes**								
Recurrence prevention countermeasures (Dust monitoring enhancement)	Dust monitors installed on top of Unit 3 reactor building Continuous dust monitors installed near Unit 3								
Work to remove debris from top of Unit 3 reactor building				*** Timing for resuming work as of yet undecided due to toppling of remotely operated large crane (undetermined)**					

*: Disposable dust mask with a trapping rate of more than 95%

・Each process may be changed due to weather or survey circumstances

[Reference] Unit 3 reactor building debris removal work progress

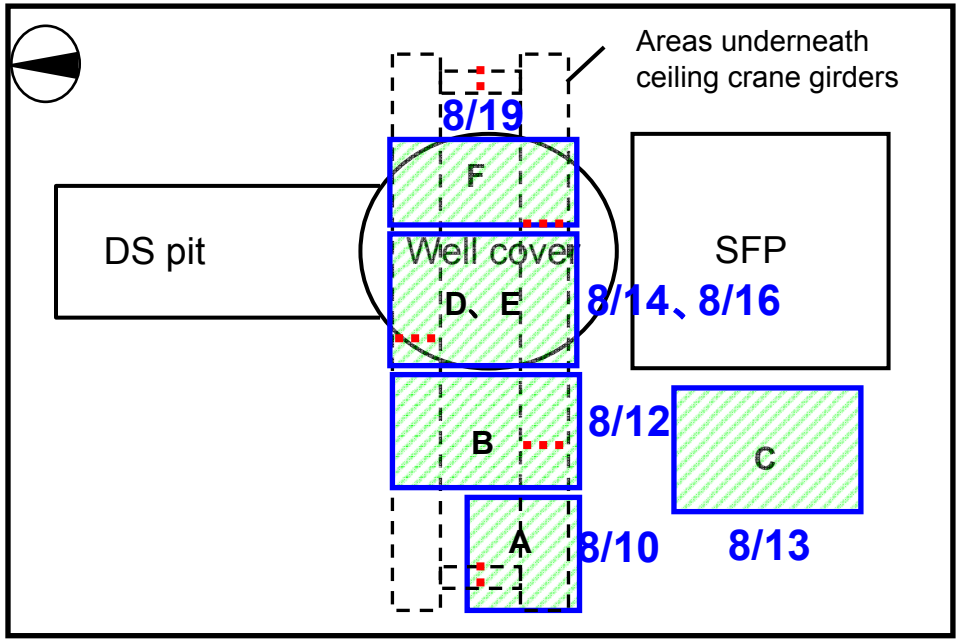
■Ceiling crane girder removal progress



Locations were sailing crane girders have been severed

[Ceiling frame girder removal progress]
7/30: Ceiling crane girder ① removed
8/5: Ceiling crane girder ② removed
8/8: Ceiling crane girder ④ removed
8/12: Ceiling crane girder ③⑤ removed

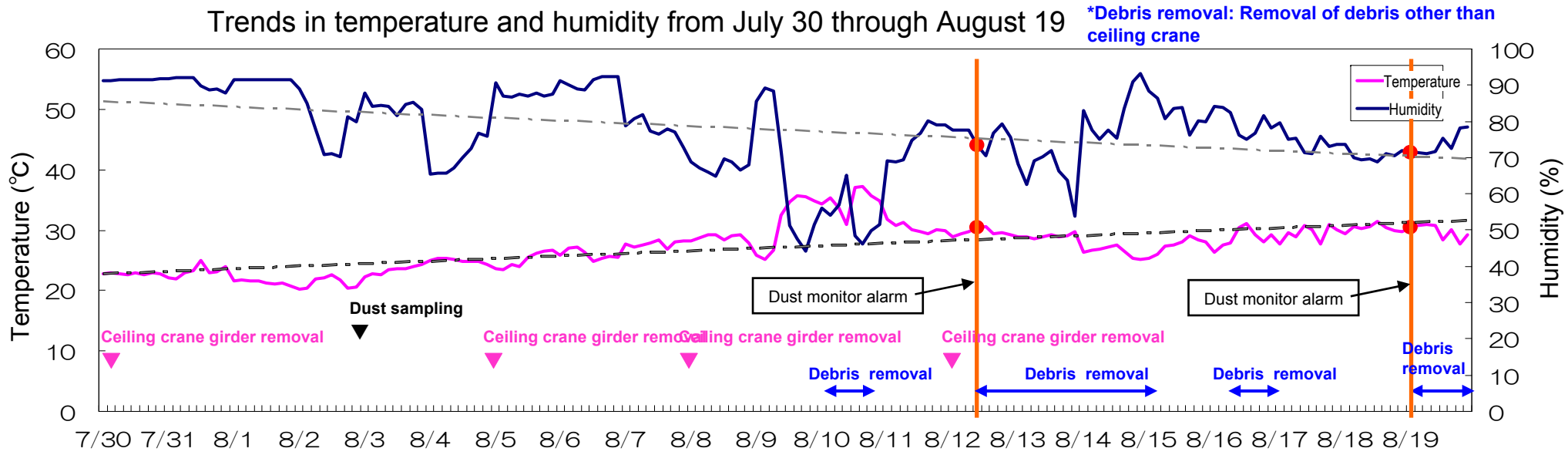
■Operating floor debris removal progress

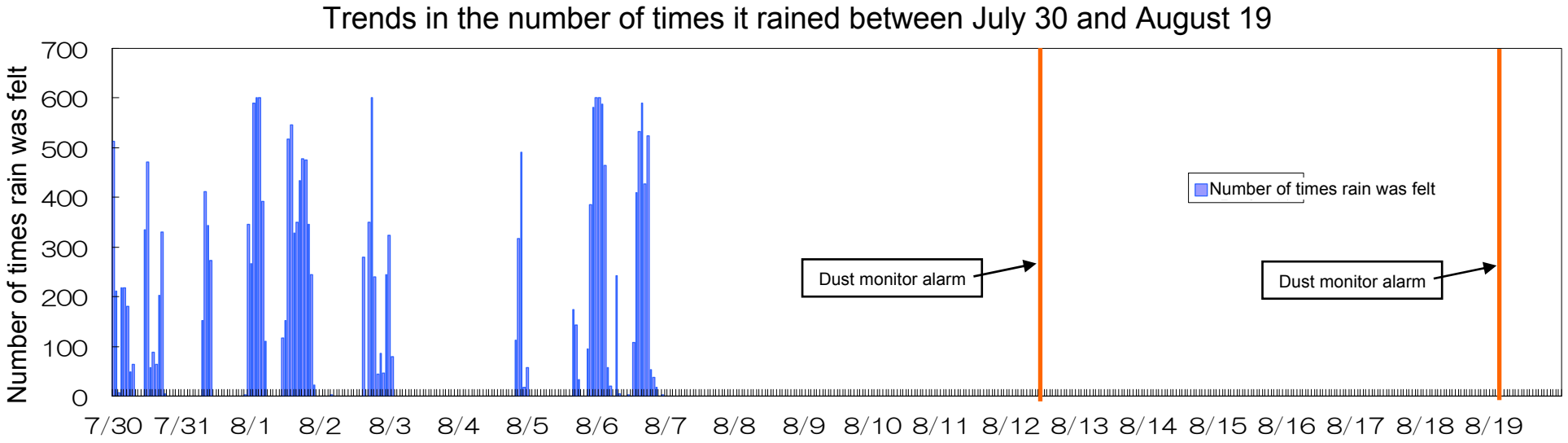


Areas where debris has been accumulated or removed

[Operating floor debris removal progress]
8/10: Debris gathering/removal A
8/12: Debris gathering/removal B
8/13: Debris gathering/removal C
8/14: Debris gathering/removal D
8/16: Debris gathering/removal E
8/19: Debris gathering/removal F

[Reference] Weather around dates when dust monitor alarms sounded





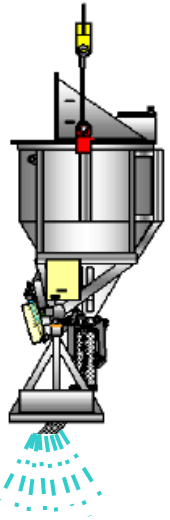
[Reference] Revamping of dispersion prevention agent sprinkling areas (1/2)

[Until now]

When performing work to remove debris from the top of reactor buildings dispersion prevention agents had been dispersed **prior to the work in the area of new debris removal** in accordance with the progress of debris removal in order to prevent dispersion of dust

■Overview of dispersion prevention agent dispersal

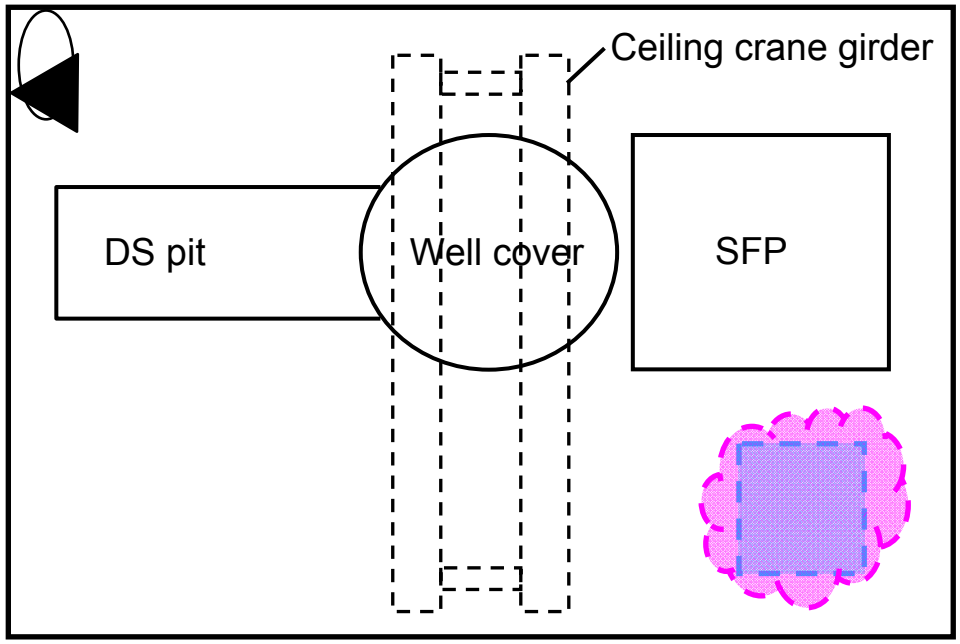
Remote operated heavy machinery is used to spray dispersion prevention agent on the dispersion area using a shower head



[Spraying capability]

Amount of time for one spraying: Approx. 1 hour

Area sprayed during one spraying: Approx. 660m^2(Approx. 1.5 ℓ/m^2)



Concept image of 5th floor of the reactor building

: New debris removal area

: Area of spraying of dispersion prevention agent

[Reference] Revamping of dispersion prevention agent sprinkling areas (2/2)

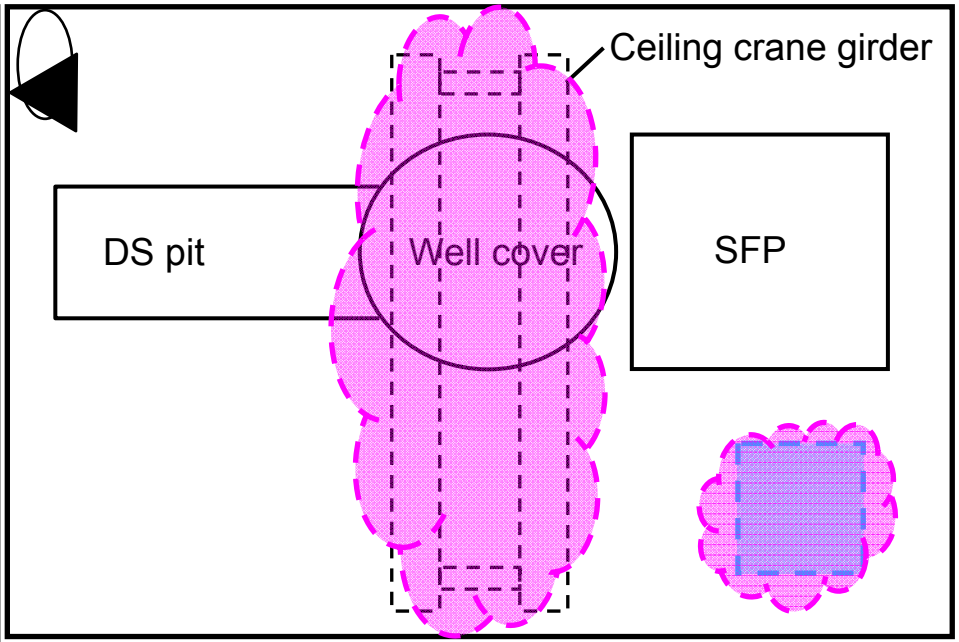
[Future handling (plan)]

In addition to the area of debris removal, dispersion prevention agents are now being spread where dust is accumulated under ceiling crane girders prior to and following debris removal work everyday.

[Assumed Cause]

Dust that had accumulated underneath the ceiling crane girders and had not been subjected to rain or wind was turned up when the ceiling crane girders were removed

- There were no alarms during debris removal work exposed to outside air until July
- On July 30 debris that had been under the ceiling crane girders was exposed to the outside air for the first time during removal work. (the debris was under the ceiling crane girders making it impossible to spread with dispersion prevention agents)
- During July the air was quite humid but at the beginning of August sunny days allowed the debris to dry.



Concept image of the 5th floor of the reactor building

: Debris removal area

: Area of spraying of dispersion pension agent

[Reference] Enhancing dust monitoring using continuous dust monitors

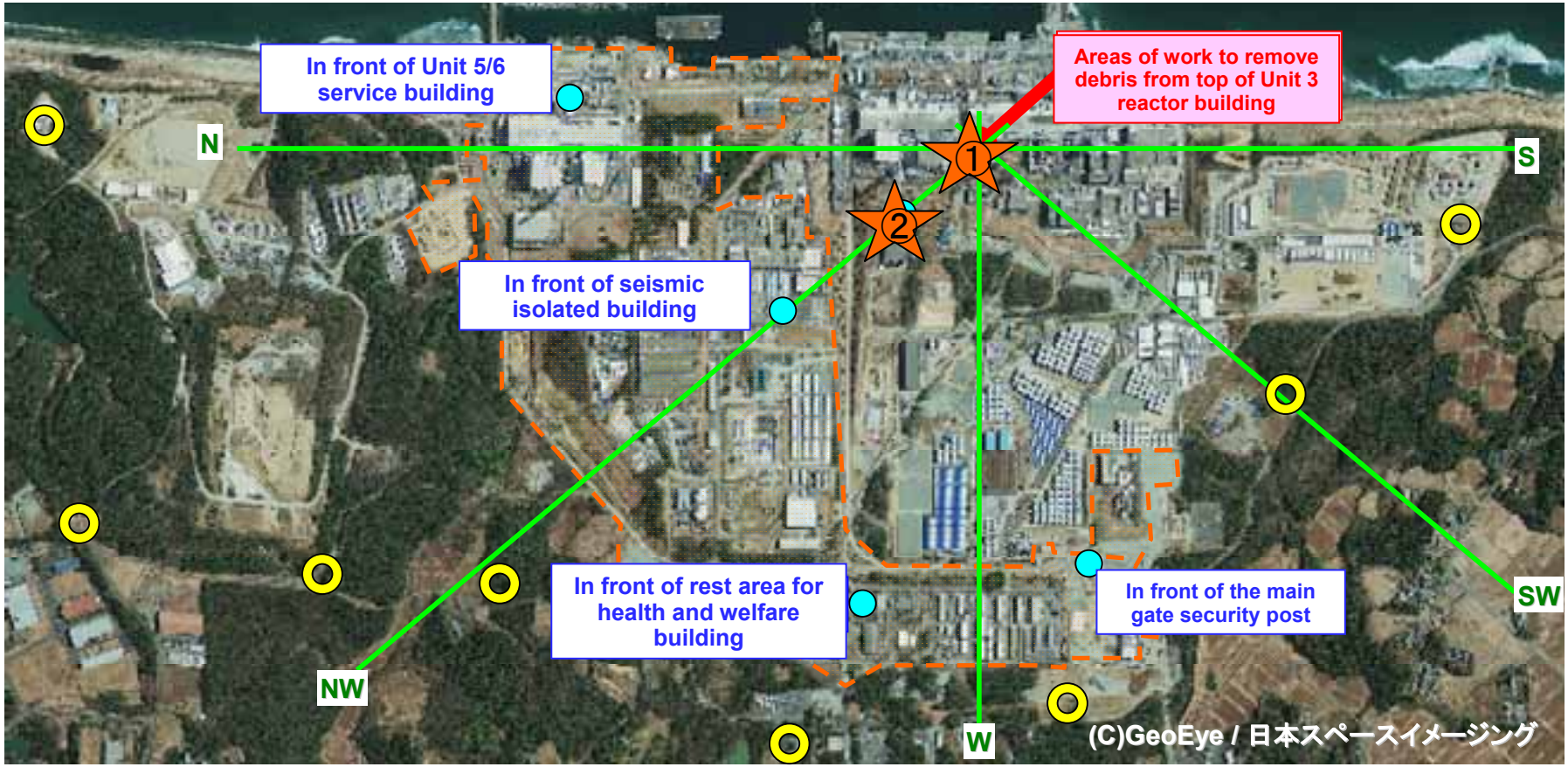
In addition to monitoring using continuous dust monitors installed inside (●) monitoring has been enhanced at ① and ②.

★① Continuous monitoring of dust during debris removal work on top of reactor buildings

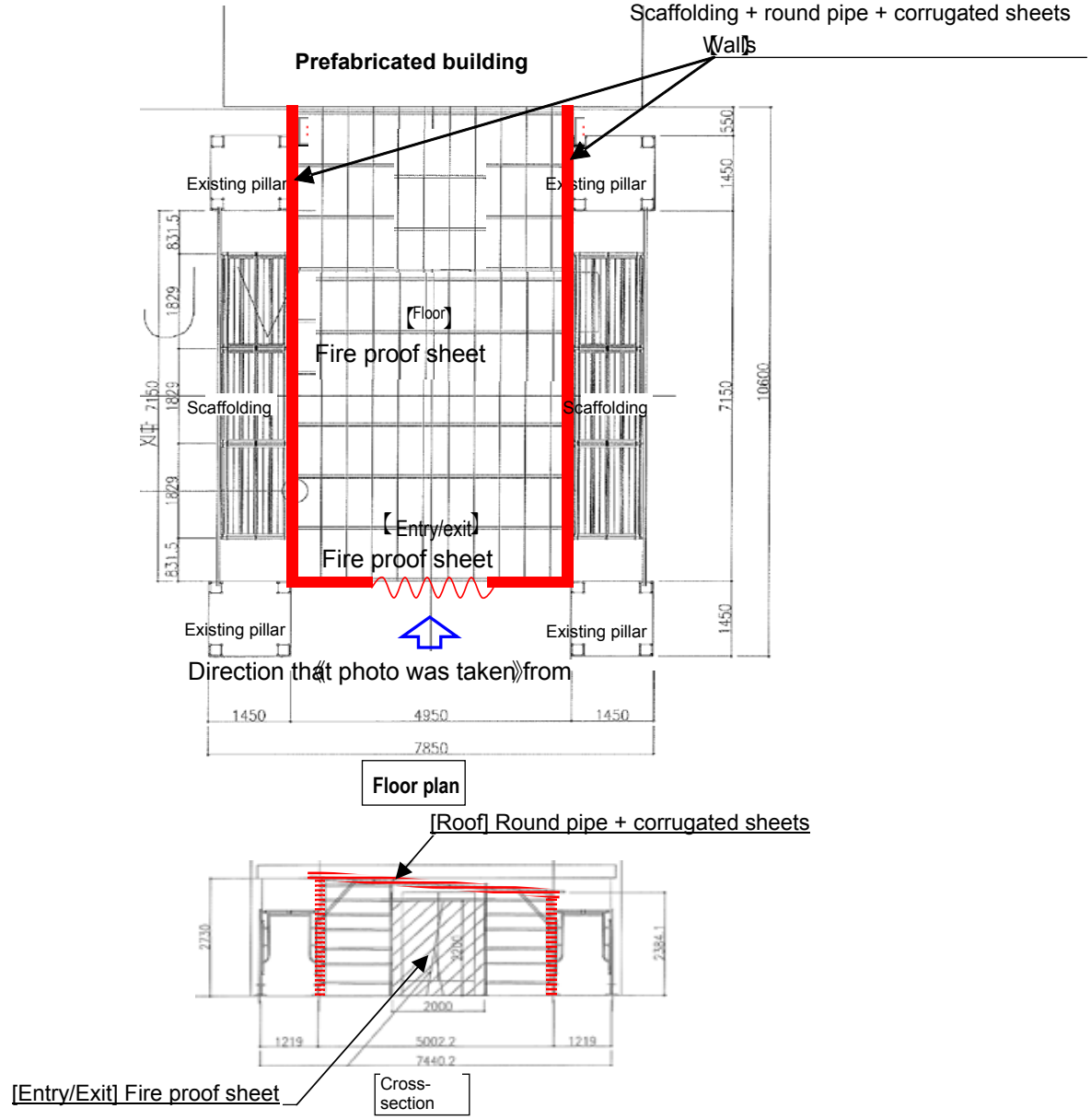
→When an alarm sounds, the status of dispersion of dispersion prevention agents is checked as well as the values of continuous dust monitors on the slope

★② Continuous dust monitors have been installed on the top slopes near the Unit 3 reactor building in order to detect dust increases as early as possible

→When an alarm sounds, work is temporarily suspended and fluctuations in other continuous dust monitors (●) and MP (◎) are checked, after which work is resumed only in consideration of wind speed/wind direction and the status of dispersion of dispersion prevention agents



【Reference】Building of covered tunnel for bus station in front of Seismic Isolated Building



《 Before building 》

《 After building》

[Reference] Results of dust sampling from site during Unit 3 reactor building debris removal

[**August 29 Measurement** (Data in parenthesis is BG data sampled on August 22)] ***Maximum values are noted in the case of multiple measurements**

Units: [Bq/cm3]

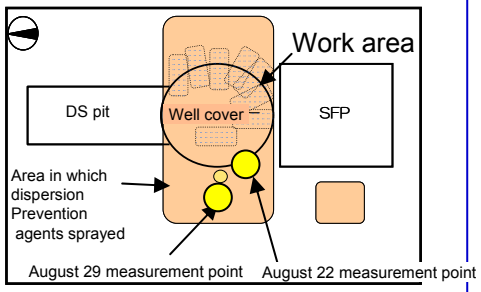
	Corporate building	In front of Seismic Isolated Building	Unit 1/2 switchyard	Unit ¾ slope	Unit 3 R/B op. floor
	13:25-13:55 (-)	**13:26-14:12** (8/22 11:05-11:25)	**13:25-14:07** (8/22 11:15-11:35)	**13:25-14:07** (-)	**13:25-13:55** (8/22 11:35-13:00)
Cs -134	**1.1×10^{-6}** (-)	**$<1.5\times10^{-6}$** ($<3.1\times10^{-6}$)	**$<1.4\times10^{-6}$** ($<3.2\times10^{-6}$)	**3.1×10^{-6}** (-)	**8.1×10^{-3}** (1.2×10^{-3})
Cs -137	**2.6×10^{-6}** (-)	**$<2.1\times10^{-6}$** ($<4.1\times10^{-6}$)	**$<1.9\times10^{-6}$** ($<4.7\times10^{-6}$)	**9.1×10^{-6}** (-)	**1.7×10^{-2}** (2.6×10^{-3})

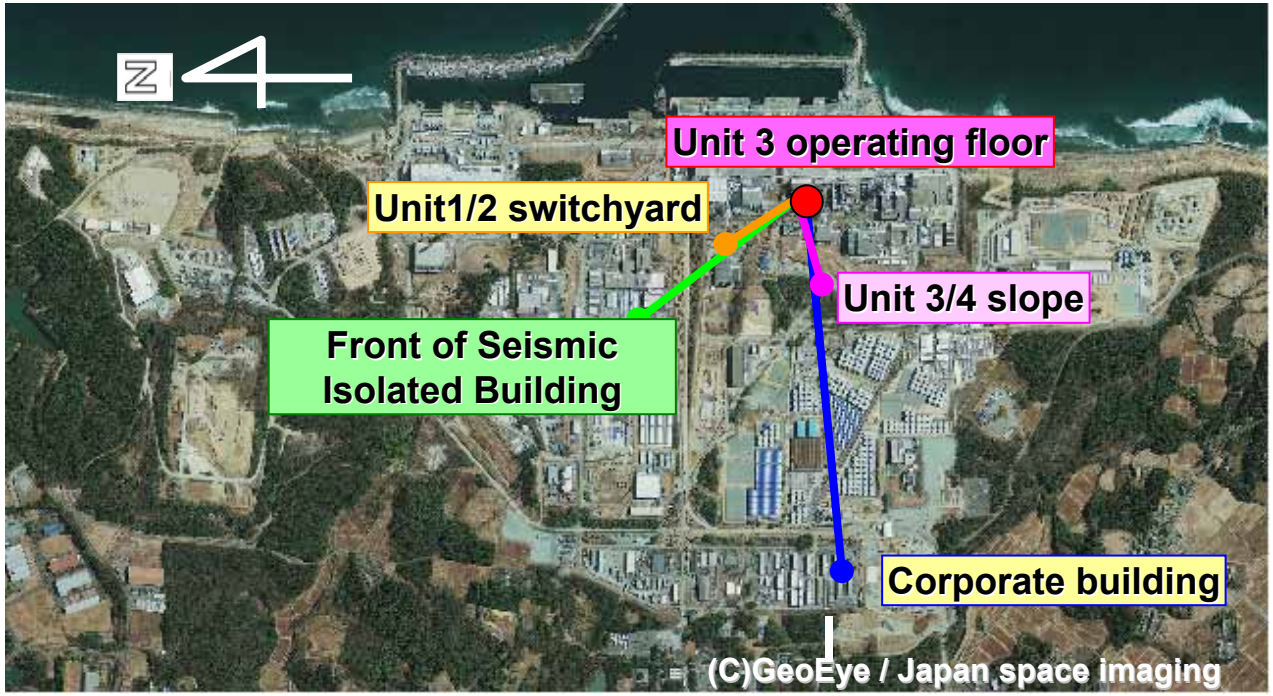
Wind direction on August 22: South-southeast, wind direction on August 29: East

*Measurement results for the corporate building after completion of work (8/29 14:03-14:33) were below detectable limits (Cs134: $<7.3\times10^{-7}$, Cs137: $<1.0\times10^{-6}$)

Weather conditions
- Weather :Sunny
- Wind speed/direction: Approx. 2m, easterly

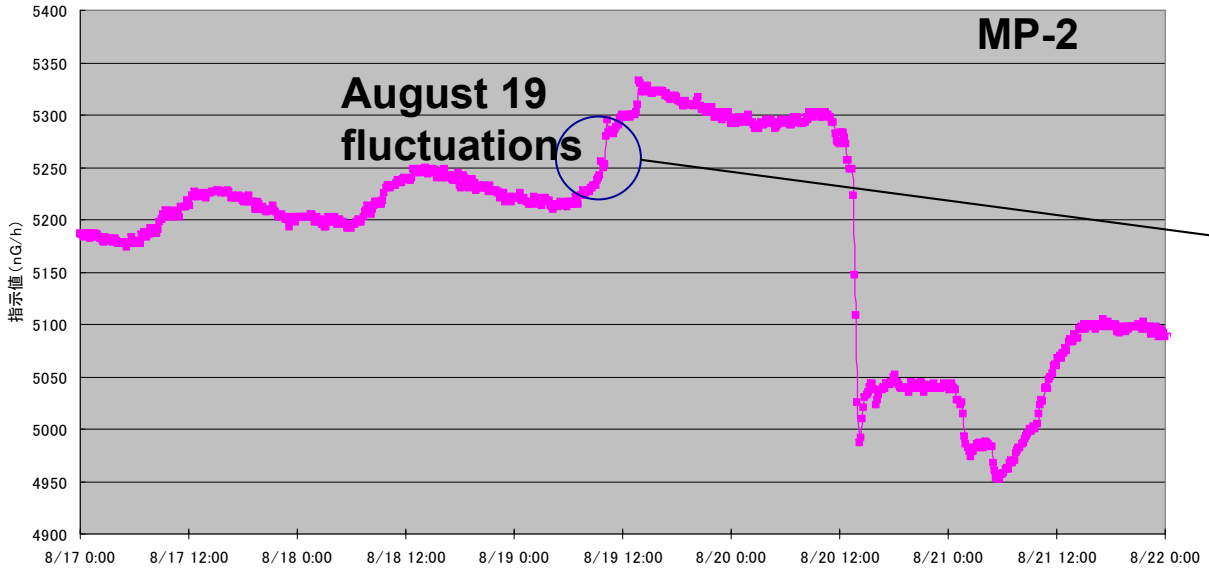
Unit 3 debris removal work
- Work times: 1:15 PM-4:03 PM
- Relationship between work area and measurement points



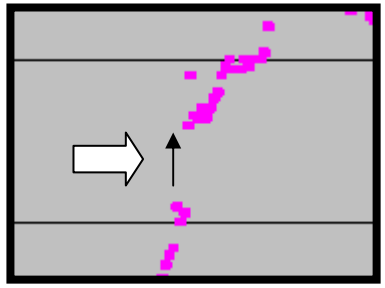


[Reference] Trends in wind direction MP-6 indicators during debris removal work

Monitoring post indicator (MP-2)

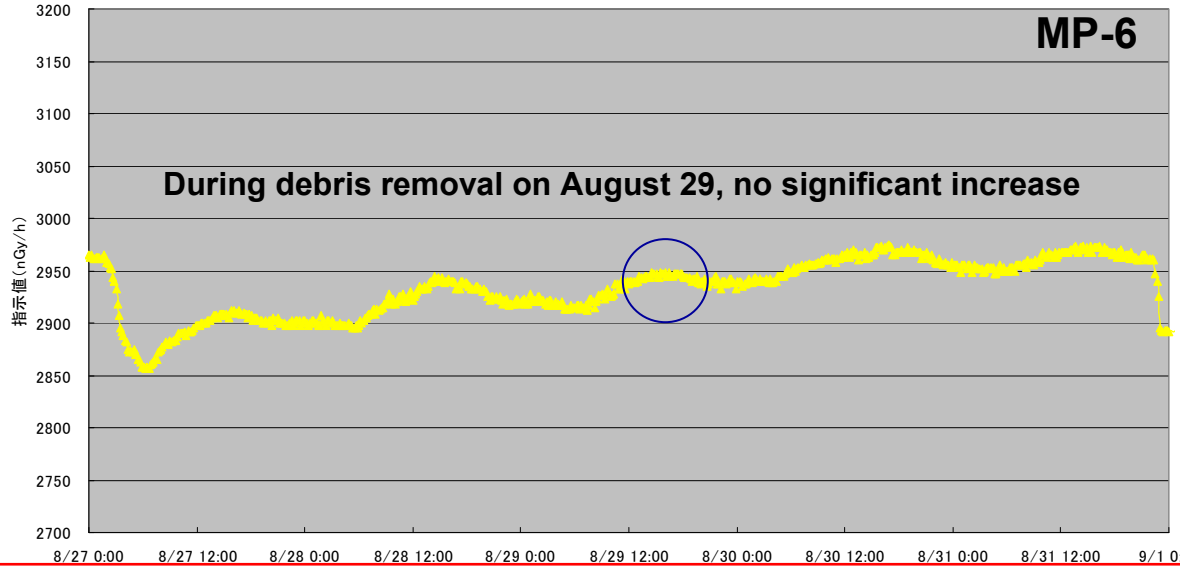


(Reference) During MP2 fluctuation at around 10:00 AM on August 19



MP indicator values fluctuate with the daily environment with levels high during the day and low at night. Furthermore, indicator values drop when rain falls and increase little by little while fluctuating up and down between evening and night when sunny days continue.

Monitoring post indicator (MP-6)

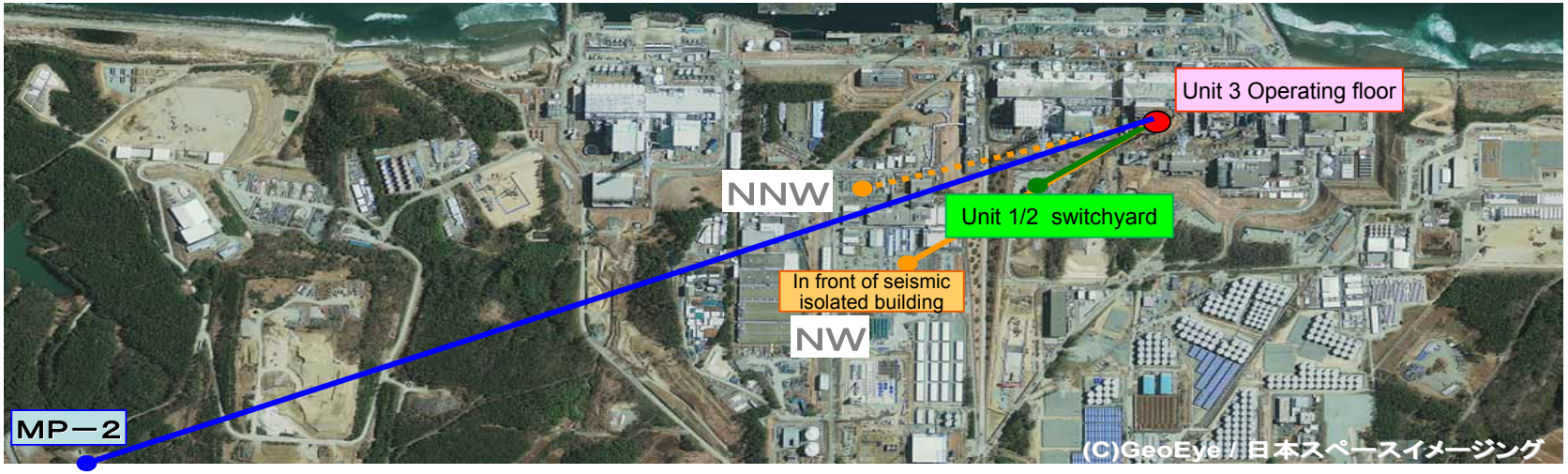


[Reference] Results of dust sampling from southeast of Unit 3

Results of dust sampling from in front of the Seismic Isolated Building

[Total of Cs-134,Cs-137, Units:Bq/cm3]

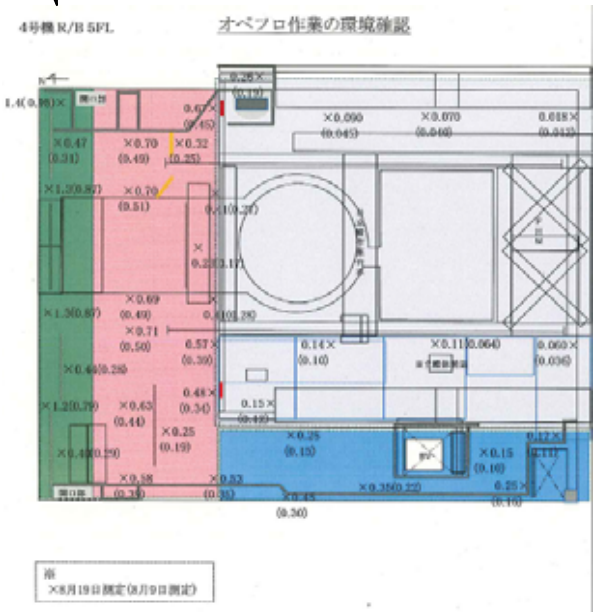
Date/Time	Wind direction (10m)	East side of Unit 1/2 switchyard	Front of Seismic Isolated Building	Near MP-2
8/12 Around 12:33	SE	—	(Continuous dust monitor alarm sounded)	—
8/12 13:05-13:25	ESE	—	2.0×10^{-6}	—
8/12 14:10-14:30	SSE	—	2.3×10^{-6}	—
8/19 Around 9:29	SE	—	(Continuous dust monitor alarm sounded)	
8/19 9:50-10:10	SSE	—	8.4×10^{-4}	—
8/19 11:10-11:30	SSE	—	4.2×10^{-5}	—
8/19 12:48-13:08	SSE	1.0×10^{-4}	—	—
8/19 13:50-14:10	SSE	2.9×10^{-5}	—	—
8/19 16:09-16:29	SSE	—	8.9×10^{-6}	—
8/19 19:55-20:25	SSW	—	—	7.7×10^{-7}
8/20 11:30-11:50	NE	1.3×10^{-5}	—	—
8/20 11:40-12:00	NE	—	$< 4.7 \times 10^{-6}$ [Cs-137]	—
8/20 11:58-12:58	NE	—	—	7.4×10^{-7}

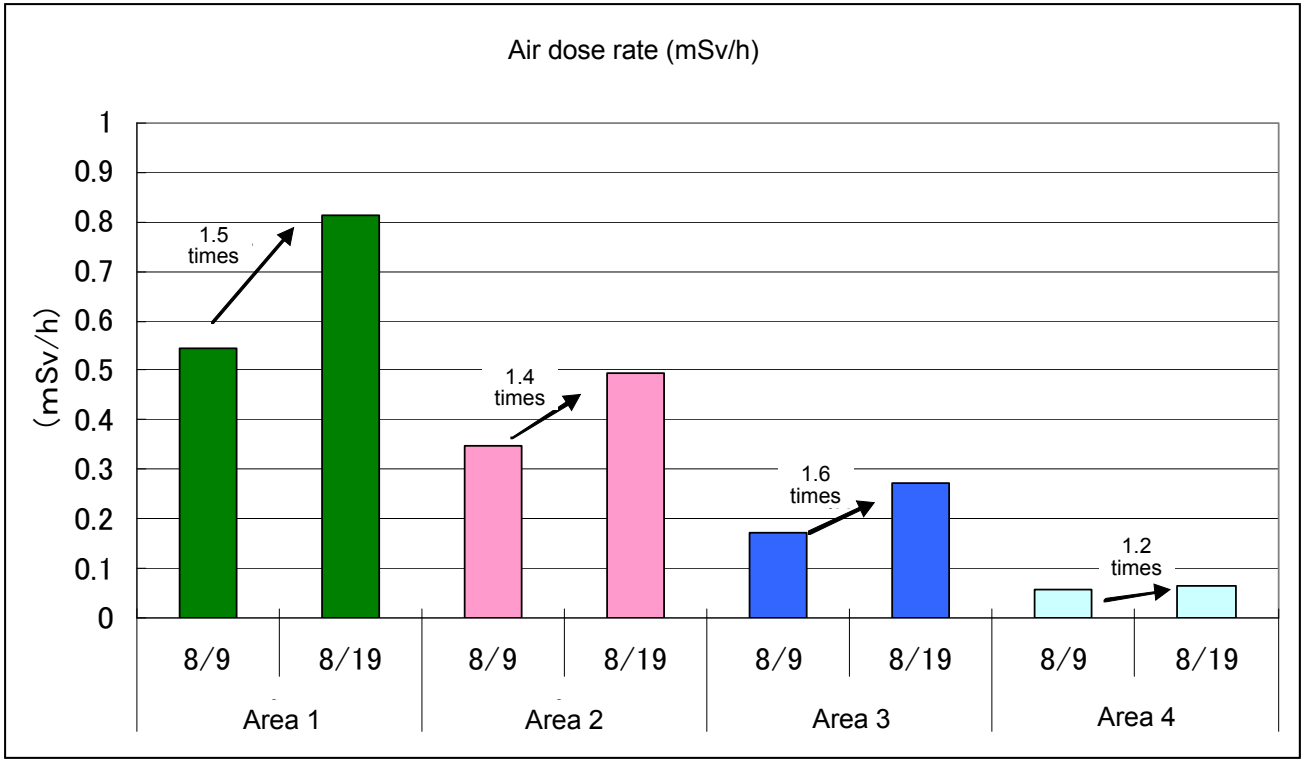


[Reference] Contamination conditions on the fifth floor of Unit 4 reactor building

Air dose rate on the 5th floor of the Unit 4 reactor building rose by 1.2- 1.6 times between August 9 and August 19 assumedly due to the impact from Unit 3.

Unit 3 side





[Reference] Contamination conditions in parking lot in front of the Seismic Isolated Building and of parked vehicles in the lot

■ Parking lot surface contamination density (liberated)

➢**Detailed survey results** [Bq/cm2] (8/16 measurement)

	Geometric mean *	Maximum
Steel plates	7.0E+00	3.1E+01
Asphalt	2.0E+00	2.4E+01
Gravel	1.1E+00	2.8E+00
Total	2.2E+00	3.1E+01

➢**Fixed point measurement results** (April through June 2013)

[Mean] **3.0×101** [Bq/cm2]

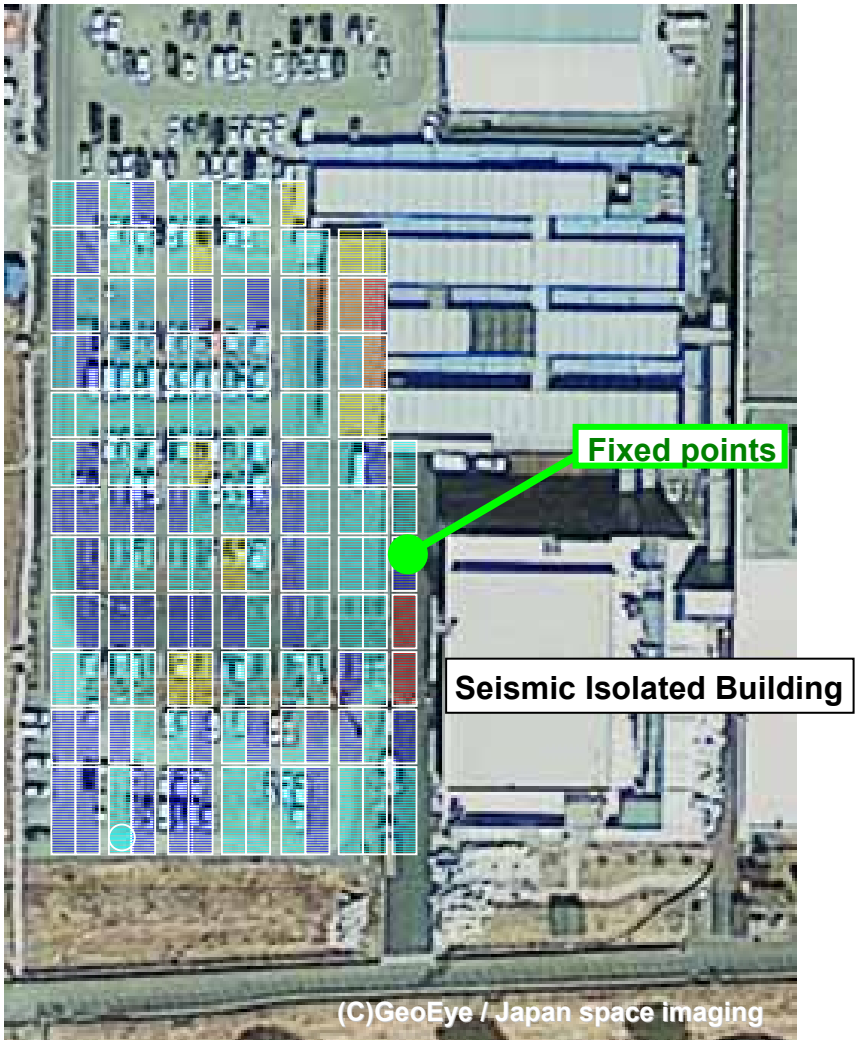
[Maximum] **1.4×10^2** [Bq/cm2]

Surface contamination (slippery) from the parking lot in front of the seismic isolated building is of the same level as past data.

■ Surface contamination density of tires of parked vehicles [Bq/cm2] (8/16 measurement)

Geometric mean *	Maximum
2.2E+00	3.7E+01

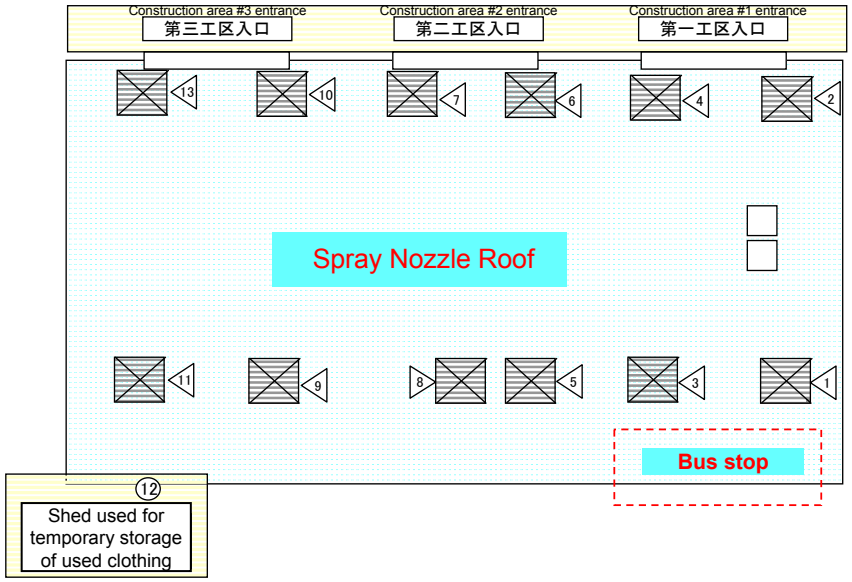
About the same as the surface contamination density of the parking lot



*Geometric mean of detection location

[Reference] Contamination check results for prefabricated roof in front of seismic isolated building

In front of seismic isolated building construction areas #1- #3

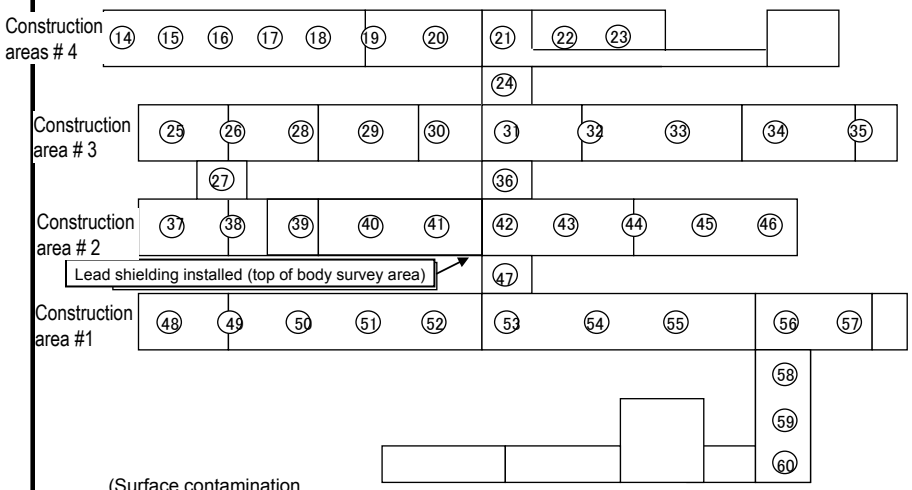


(Surface contamination density [cpm]) ○ (Roof surface) △(Steel tower sides) Refer to diagram

[measurement results]

	cpm	Bq/cm^2		cpm	Bq/cm^2		cpm	Bq/cm^2
1	308	0.6	6	1654	3.4	11	1518	3.1
2	711	1.4	7	3070	6.3	12	10800	22.2
3	702	1.4	8	1168	2.4	13	1801	3.7
4	2885	5.9	9	1379	2.8			
5	577	1.1	10	589	1.2			

In front of seismic isolated building on roofs of construction areas #1- #4



(Surface contamination density [cpm]) ○ (Roof surface) Refer to diagram

[measurement results]

	cpm	Bq/cm^2		cpm	Bq/cm^2		cpm	Bq/cm^2		cpm	Bq/cm^2
14	6557	13.5	26	1232	2.5	38	1315	2.7	50	1516	3.1
15	2674	5.5	27	815	1.6	39	3573	7.3	51	772	1.5
16	797	1.6	28	1863	3.8	40	2465	5.0	52	2307	4.7
17	2467	5.0	29	1186	2.4	41	5400	11.1	53	4633	9.5
18	3669	7.5	30	987	2.0	42	385	0.7	54	2366	4.8
19	4658	9.5	31	2151	4.4	43	3045	6.2	55	2283	4.7
20	874	1.7	32	2009	4.1	44	324	0.6	56	3702	7.6
21	5171	10.6	33	2524	5.1	45	1520	3.1	57	1864	3.8
22	5301	10.9	34	1964	4.0	46	1582	3.2	58	2011	4.1
23	2565	5.2	35	894	1.8	47	3914	8.0	59	3559	7.3
24	16160	33.2	36	5945	12.2	48	2837	5.8	60	1687	3.4
25	3394	6.9	37	1215	2.5	49	1054	2.1			

Contamination levels are approximately Bq/cm^2-33Bq/cm^2 and about the same as the parking lot in front of the Seismic Isolated Building

[Reference] Contamination check results for vehicles used to travel during work inside Unit 1-4 PP

Company K

No.	Gross cpm	Bq/cm^2
1	350	7.1E-01
2	350	7.1E-01
3	210	3.3E-01
4	2800	7.4E+00
5	1800	4.7E+00
6	1100	2.8E+00
7	210	3.3E-01
8	1000	2.5E+00
9	800	1.9E+00
10	1100	2.8E+00
11	1800	4.7E+00
12	230	3.8E-01
13	500	1.1E+00
14	550	1.3E+00
15	700	1.7E+00
16	1700	4.4E+00
17	550	1.3E+00
18	2000	5.2E+00

No.	Gross cpm	Bq/cm^2
19	800	1.9E+00
20	1300	3.3E+00
21	650	1.5E+00
22	170	2.2E-01
23	500	1.1E+00
24	600	1.4E+00
25	500	1.1E+00
26	1300	3.3E+00
27	800	1.9E+00
28	200	3.0E-01
29	1900	4.9E+00
30	800	1.9E+00
31	100	<LTD
32	850	2.1E+00
33	750	1.8E+00
34	130	<LTD
35	1800	4.7E+00
36	100	<LTD

Company T

No.	Gross cpm	Bq/cm^2
1	200	3.0E-01
2	300	5.7E-01
3	350	7.1E-01
4	150	<LTD
5	190	2.7E-01
6	180	2.5E-01
7	150	<LTD
8	400	8.5E-01
9	150	<LTD
10	150	<LTD

Contamination level is -7.4Bq/cm^{2}and approximately the same as the parking lot in front of the Seismic Isolated Building

[Reference] Mist generator (ordinary high pressure washer) survey results (1/2)

Inside of mist generator (cover open)

■ Contamination check results for remaining water in mist generator tank

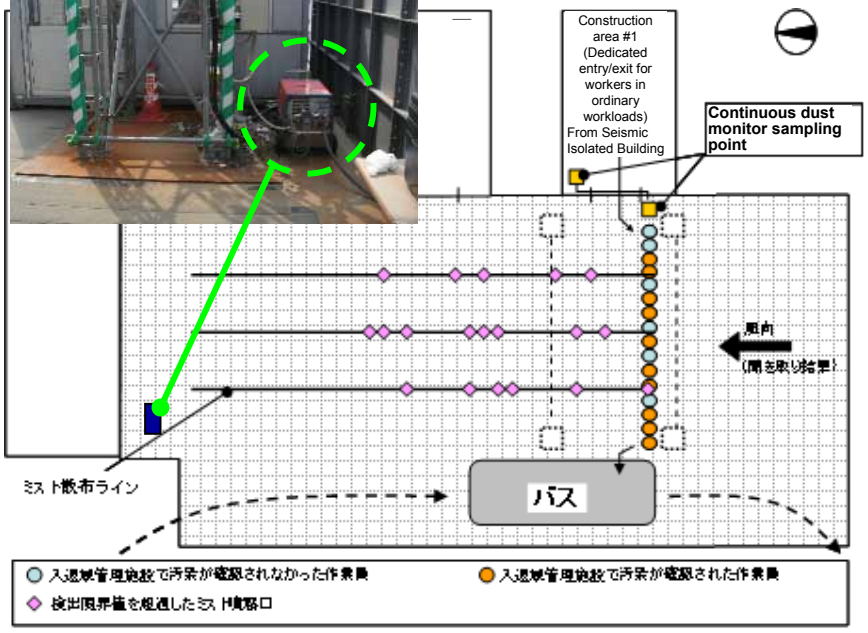
[Top water] (8/12 measurement)
Units:[Bq/cm3]

- Cs-134: < 3.1E-3
- Cs-137: < 3.2E-3
- All Beta: < 1.3E-2

[Bottom drain water] (8/16)Units:[Bq/cm3]

- Cs-134: 3.0E-2
- Cs-137: 6.8E-2
- All Beta: 3.3E-2

Contamination levels are not high enough to increase the concentration of radioactive material in the air in front of the #1 construction area (bus stop) to 1×10^{-4} [Bq/cm3] (level at which continuous dust monitor high-high alarm sounds)

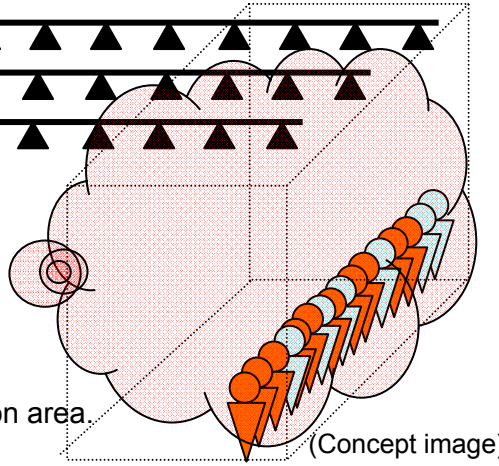


Radiation concentration of tank water
(Cs-134＋Cs-137)

9.8×10^{-2} [Bq/cm3]

100 [mL/回]

Air in front of #1 construction area
Approx. $150m^3(5 \times 10 \times 3)$



(Concept image)

Assumption: It is assumed that the mist fell locally in front of the #1 construction area (excessive condition)

$$9.8 \times 10^{-2}\ [Bq/cm^3] \times 100\ [mL] \div 1.5 \times 10^{8}\ [cm3]$$
$$= \underline{\mathbf{6.5 \times 10^{-8}}}\ [Bq/cm3]$$

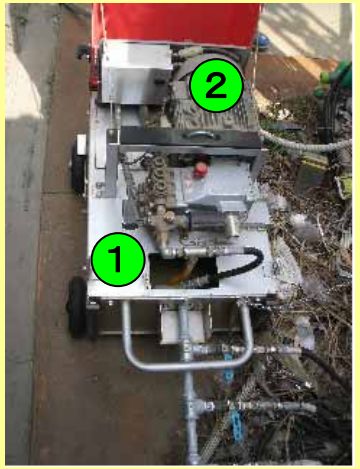
[Reference] Mist generator (ordinary high pressure washer) survey results (2/2)

■Contamination inside mist generator

・Contamination levels inside the cover was approximately the same as that outside

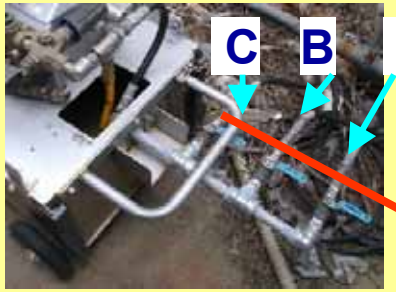
Units:[Bq/cm^2]

	Measurement point ① (Near the tank opening) ①	Measurement point ② (Dirty areas) ②
Cs－134	2.7×10^{0}	7.2×10^{0}
Cs－137	6.2×10^{0}	1.6×10^{1}
All Beta	6.2×10^{0}	1.8×10^{1}



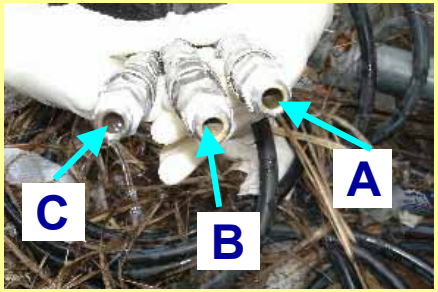
■State of contamination inside mist generator spray line

・Levels inside the spray line were below detection limits



Units：[Bq/cm^2]

	Spray line A	Spray line B	Spray line C
Cs－134	$< 3.7 \times 10^{-1}$	$< 3.7 \times 10^{-1}$	$< 3.8 \times 10^{-1}$
Cs－137	$< 4.9 \times 10^{-1}$	$< 4.8 \times 10^{-1}$	$< 4.9 \times 10^{-1}$
All Beta	$< 5.1 \times 10^{-2}$	$< 5.1 \times 10^{-2}$	$< 5.1 \times 10^{-2}$



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