Detailed Analysis Results in the Port of Fukushima Daiichi NPS, around Discharge Channel and Bank Protection (Sampling Locations of Underground Water Obtained at Bank Protection)

Sampling locations of underground water obtained at bank East seawall break Silt fence Silt fence Silt fence No.2-9 Silt fence No.0-1-2 No.2-6 No.0-1 No.1-8 No. 3-5 No. 2-7 No.1-9 O No.0-1-1 No.0-3-1 No. 3-4🗖 Well point No.0-3-2 No. 1 No.2-3-No. 3 No.1-17 ONo.1-16 No.2 No.0-275 No.1-12 🔿 No.2-5 No.1-6 No.2-2 No.1-14 No.1-13

: Location where ground improvement construction was completed, or being implemented (as of January 31, 2014)

Detailed Analysis Results in the Port of Fukushima Daiichi NPS, around Discharge Channel and Bank Protection (1/3) Underground Water Obtained at Bank Protection

Unit: Bq/L (exclude chloride)

		Underground	Underground	Underground	Underground	Underground	Underground	Underground	Underground	Underground	Underground	Underground	Underground	Underground	Underground
				water observation hole No.0-2				water observation hole No.1							water observation hole No.1-16
	Date of sampling		/	/	/	/	/	1	1	/	/	/	/	/	,
	Time of sampling		/						/					/	/
	Chloride (unit: ppm)														
С	s-134 (Approx. 2 years)														
C	s-137 (Approx.30 years)														
The															
other γ															
	Gross β														
ı	H-3 (Approx. 12 years)	1/		/	/										
S	r-90 (Approx. 29 years)	/				ĺ	ĺ				/	/		/	
		1		1		ı	ı		1		ı	ı		1	
			Groundwater							Groundwater					

		Underground water observation hole No.1-17	Groundwater pumped up from the well point (between Unit 1 and 2)	Underground water observation hole No.2	Underground water observation hole No.2-2	Underground water observation hole No.2-3	Underground water observation hole No.2-5	Underground water observation hole No.2-6	Underground water observation hole No.2-7	Groundwater pumped up from the well point (between Unit 2 and 3)	Underground water observation hole No.3	Underground water observation hole No.3-4	Underground water observation hole No.3-5
	Date of sampling	/	/	/	/	/	/	/	Feb 12, 2014	/	/	/	/
	Time of sampling								10:37 AM				
	Chloride (unit: ppm)								780				
С	s-134 (Approx. 2 years)								ND(0.45)				
Cs	s-137 (Approx.30 years)								1.2				
The													
other y													
	Gross β								210				
ŀ	H-3 (Approx. 12 years)		/	/	/				950				
Si	r-90 (Approx. 29 years)	/	/	/	/			/	-		/	/	/

^{*} Data announced this time is provided in a thick-frame. The other data was announced on February 13.

^{* &}quot;ND" indicates that the measurement result is below the detection limit, and the detection limit of each nuclide is provided in parentheses.

 $^{^{\}star}$ "-" indicates that the measurement was out of range.

Detailed Analysis Results in the Port of Fukushima Daiichi NPS, around Discharge Channel and Bank Protection (2/3) Underground Water Obtained at Bank Protection

Unit: Bq/L (exclude chlorid

		Underground water observation hole No.0-1	Underground water observation hole No.0-1-2	Underground water observation hole No.0-2	Underground water observation hole No.0-3-1	Underground water observation hole No.0-3-2	Underground water observation hole No.0-4	Underground water observation hole No.1	Underground water observation hole No.1-6	Underground water observation hole No.1-8	Underground water observation hole No.1-9	Underground water observation hole No.1-11	Underground water observation hole No.1-12	Underground water observation hole No.1-14	Underground water observation hole No.1-16
	Date of sampling	/	/	1 /	1 /	1 /	1 /	1	1 /	1	1 /	1 /	1	1	1
	Time of sampling				/				/					/	/
	Chloride (unit: ppm)														
Cs	s-134 (Approx. 2 years)														
Cs	-137 (Approx.30 years)														
The															
other γ															
•															
	Gross β														
Н	I-3 (Approx. 12 years)														
Sr-	-90 (Approx. 29 years)														

		Underground water observation hole No.1-17	Groundwater pumped up from the well point (between Unit 1 and 2)	Underground water observation hole No.2	Underground water observation hole No.2-2	Underground water observation hole No.2-3	Underground water observation hole No.2-5	Underground water observation hole No.2-6	Underground water observation hole No.2-7	Groundwater pumped up from the well point (between Unit 2 and 3)	Underground water observation hole No.3*	Underground water observation hole No.3-4	Underground water observation hole No.3-5
	Date of sampling	/	1	1	/	/	/	/	Feb 14, 2014	/	1 /	/	/
	Time of sampling								9:58 AM				
	Chloride (unit: ppm)								850				
Cs	s-134 (Approx. 2 years)								0.47				
Cs	s-137 (Approx.30 years)								1.4				
The													
other y													
	Gross β								260				
H	H-3 (Approx. 12 years)				/		/		Under analysis			/	
Sr	r-90 (Approx. 29 years)				ĺ		ĺ		-			/	

^{* &}quot;ND" indicates that the measurement result is below the detection limit, and the detection limit of each nuclide is provided in parentheses.

^{* &}quot;-" indicates that the measurement was out of range.

Detailed Analysis Results in the Port of Fukushima Daiichi NPS, around Discharge Channel and Bank Protection (3/3) Seawater

Unit: Bq/L

	1F, North side of Unit 5,6 discharge channel	1F, In front of Unit 6 water intake channel	1F, In front of shallow draft quay	1F, North side of Unit 1-4 water intake channel	1F, North side of Unit 1-4 water intake channel (north side of East Seawall Break)	1F, Unit 1 Screen (Inside the Silt Fence)	water intake	1F, Between the water intake channel of Unit 1 and Unit 2 (lower layer)	1F, Unit 2 Screen	1F, Between the water intake channel of Unit 2 and Unit 3	Screen	1F, Between the water intake channel of Unit 3 and Unit 4	Specified by the	WHO Guideline s for drinking- water quality
Date of Sampling			/			/	/				/			
Time of sampling						/				/				
Cs-134(Approx. 2 years)													60	10
Cs-137(Approx.30 years)			/										90	10
Gross β														
H-3 (Approx. 12 years)				/						/			60,000	10,000
Sr-90 (Approx. 29 years)	/		/	/	/	/	V	/	/	V	V	/	30	10

Unit: Bq/L

	1F, Unit 4 Screen (Inside the Silt Fence)	1F, Around the south discharge channel	1F, Port entrance	1F, East side in the port	1F, West side in the port	1F, North side in the port		North side of the north breakwater	OT THE HOT	East side of the port entrance	Southeast side of the port entrance	South side of the south breakwater	Density Limit Specified by the Reactor Regulatio n *	s for drinking-
Date of Sampling	/	/	Feb 14, 2014	Feb 14, 2014	Feb 14, 2014	Feb 14, 2014	Feb 14, 2014	/	/	/	/			
Time of sampling	/		9:05 AM	9:10 AM	9:13 AM	9:16 AM	9:07 AM							
Cs-134(Approx. 2 years)	/	/	ND(1.0)	1.8	1.6	ND(1.3)	2.5	/					60	10
Cs-137(Approx.30 years)	/	/	2.8	5.4	3.5	3.1	5.6	/					90	10
Gross β			ND(15)	ND(15)	ND(15)	ND(15)	ND(15)							
H-3 (Approx. 12 years)			Under analysis	Under analysis	Under analysis	Under analysis	Under analysis						60,000	10,000
Sr-90 (Approx. 29 years)	/	/	-	-	-	-	-	/			/	/	30	10

^{* &}quot;ND" indicates that the measurement result is below the detection limit, and the detection limit of each nuclide is provided in parentheses.

^{* &}quot;-" indicates that the measurement was out of range.

^{*} Density Limit Specified by the Rule for the Installation, Operation, etc. of Commercial Nuclear Power Reactors (the density limit in the water outside the surrounding monitored areas is provided in section 6 of Appendix 2 [the amount is converted from Bq/cm to Bq/L]).

<Reference> The Highest Dose Until the Previous Measurement (Groundwater Obtained at Bank Protection)

																											Unit: Bq/L
		Ground observati No.	tion hole		dwater tion hole 0-1-1	observat	dwater tion hole 0-1-2	observa	ndwater ation hole o.0-2	observa	ndwater ation hole 0-3-1	observa	dwater ition hole 0-3-2	observa	dwater tion hole 0-4	Ground observat No	ion hole	Ground observati No.	tion hole	Ground observat No.	ion hole	Ground observat No.1	ion hole	Ground observati No.	tion hole	Ground observat No.	tion hole
C	s-134 (Approx. 2 years)	7.6	[12/15]	ND		ND		0.61	[10/13]	0.44	[11/24]	0.82	<1/14>	ND		13	[8/29]	1.9	[7/8]	11,000	[7/9]	10	[9/2]	1.5	[7/8]	310	[8/5]
Cs	-137 (Approx.30 years)	19 *2	<1/26>	0.58	[12/7]	0.51	[11/17]	2.2	<1/12>	0.86	[11/20]	2.1	<1/14>	1.4	<1/12>	31	[8/29]	3.6	[7/8]	22,000	[7/9]	24	[9/2]	3.6	[7/8]	650	[8/5]
	Ru-106 (Approx. 370 days)	ND		ND		ND		ND		ND		ND		ND		26	[5/24]	7.9	[7/8]	160	[8/15]	17	(7/22) (8/8)	3.1	[8/8]	ND	
The	Mn-54 (Approx. 310 days)	ND		ND		ND		ND		ND		0.62	<2/3>	ND		ND		1.0	[7/5]	62	[7/5]	ND		ND		ND	
other y	Co-60 (Approx. 5 years)	ND		ND		ND		ND		ND		ND		ND		0.50	[7/19]	ND		3.1	[7/8]	ND		ND		ND	
	Sb-125 (Approx. 3 years)	ND		ND		ND		ND		ND		ND		ND		1.7	[7/11]	ND		250	[7/15]	1.4	(7/12) (8/26)	ND		12	[8/8]
	Gross β	300	[8/22]	21	[12/7]	21	[11/10]	87	[10/13]	ND		67 ^{*1}	[12/11]	29	[12/29]	1,900	[5/24]	4,400	[7/8]	900,000	(7/5) (7/9)	160,000	(8/12) (8/15)	380	[8/19]	56,000	[8/5]
ŀ	I-3 (Approx. 12 years)	45,000	[8/29]	18,000	[12/7]	74,000	[12/15] <1/19>	6,400	<1/26>	ND		76,000	<2/6>	48,000	<1/26> <2/3>	500,000	(5/24) (6/7)	630,000	[7/8]	430,000	[9/16]	290,000	(7/12)	98,000	(7/11)	72,000	[8/15]
S	r-90(Approx. 29 years)	140	[8/8]	Under analysis		Under analysis		0.73	[9/2]	Under analysis		Under analysis		Under analysis		1,300	[8/22]	2,300	[6/28]	5,000,000	[7/5]	130,000	[8/8]	200	[7/8]	5,100	[8/22]

		Ground observat No.	ion hole	observa	ndwater ation hole	Ground observati		Ground observat No.1	ion hole	observa	dwater tion hole 1-11	observa	dwater ition hole 1-12	observa	dwater tion hole 1-13	observa	dwater tion hole 1-14	Ground observation	tion hole	Groun observa No.	tion hole	Ground pumped the wel	up from I point
																						and	
(Ss-134 (Approx. 2 years)	2,400	<2/13>	47	[11/25]	170	[9/3]	-		1.1	<1/13>	74	[10/21]	37,000	<2/13>	1.2 *1	[11/14]	3.1 *1	[12/13]	1.2	[12/5]	110	[9/23]
C	s-137 (Approx.30 years)	5,900	<2/13>	110	[11/25]	380	[9/3]	-		2.8	<1/13>	170	[10/21]	93,000	<2/13>	2.4	<2/13>	4.0	<2/13>	0.66	[12/12]	250	[9/23]
	Ru-106 (Approx. 370 days)	ND		ND		ND		-		ND		5.4	[10/28]	ND		ND		9.2	[10/28]	4.1	[12/12]	25	[9/2]
The	Mn-54 (Approx. 310 days)	320	<2/13>	12	<2/3>	ND		-		ND		ND		ND		ND		ND		ND		1.1	<2/10>
other \	Co-60 (Approx. 5 years)	770	<2/13>	1.3	<2/3>	ND		-		ND		0.51	[10/24]	ND		ND		0.9	[11/7]	0.61	[11/25]	ND	
	Sb-125 (Approx. 3 years)	ND		ND		ND		-		ND		61	[10/21]	ND		ND		11	[12/5]	2.1	[11/25]	ND	
	Gross β	640,000	<2/13>	59,000	<2/3>	2,100*3	[11/17]	78 ^{*3}	<1/27>	2,300	[12/26]	730	[10/21]	260,000	<2/12> <2/13>	440	<1/30> <2/13>	3,100,000	<1/20> <1/30> <2/3>	130	[12/2] [12/23]	700,000	[9/23]
	H-3 (Approx. 12 years)	*3 110,000	<2/6>	12,000	<1/6> <2/3>	*3 860	[11/14]	*3 270,000	<1/27>	85,000	[9/13]	440,000	[10/31]	88,000	<2/12>	19,000	<2/3> <2/6>	43,000	[9/26]	32,000	<1/20>	460,000	[8/19]
:	Sr-90(Approx. 29 years)	-		1,300	[9/16]	170	[9/3]	-		17	[9/13]	Under analysis		Under analysis		Under analysis		Under analysis		Under analysis		-	

																											Unit: Bq/L
		observa	ndwater ation hole o.2	observa	ndwater ation hole .2-1*	observa	dwater tion hole .2-2	observa	ndwater ation hole a.2-3	observa	dwater tion hole .2-5	observa	ndwater ation hole 0.2-6	observa	dwater tion hole .2-7	Groundv observatio No.2-	n hole	pumped the we (between	idwater I up from ell point en Unit 2 d 3)	observa	ndwater ation hole lo.3	observa	dwater ition hole .3-1*	observa	ndwater ation hole 0.3-4	observa	dwater tion hole .3-5
С	s-134 (Approx. 2 years)	0.50	[7/9]	0.66	[9/1]	15	<2/12>	0.84	<1/5>	25	<2/12>	0.56	[10/30]	1.5	<1/12>	-		1.1	[12/12]	3.5	[7/25]	1.2	(7/25) (8/8)	1.9	<1/8>	64	<1/15>
C	s-137 (Approx.30 years)	1.2	(7/11) (8/1)	1.1	(8/29) (9/1)	38	<2/12>	2.6	<1/5>	62	<2/12>	0.80	<2/13>	3.6	<1/12>	0.58 *2	<2/11>	2.4	[12/7]	5.9	[8/8]	2.6	[8/1]	4.3	[11/27]	170	<1/15>
	Ru-106 (Approx. 370 days)	ND		ND		ND		ND		ND		ND		ND		6.5	<2/11>	ND		ND		ND		ND		-	
The	Mn-54 (Approx. 310 days)	ND		ND		ND		0.29	[12/6]	0.94	<1/8>	ND		ND		=		ND		ND		ND		0.54	[10/30]	-	
other y	Co-60 (Approx. 5 years)	ND		ND		ND		ND		ND		ND		ND		i		ND		ND		ND		ND		-	
	Sb-125 (Approx. 3 years)	ND		ND		ND		ND		30	<2/12>	ND		ND		-		ND		1.6	<1/1>	ND		ND		-	
	Gross β	1,700	[7/8]	380	[7/29]	540	<1/29>	1,500	[12/6]	150,000	<2/12>	3,200	[12/5]	270	[12/20]	1,700*3	<2/7>	240,000	[12/12]	1,400	[7/11]	180	[8/1]	17	<2/12>	69	<1/29>
	H-3 (Approx. 12 years)	870	[12/8]	440	[8/26]	660	<1/8>	1,700	[12/6]	6,300	[12/4]	1,200	(11/24) (11/27)	1,100	<1/17>	*3 13,000	<2/7>	5,100	[12/6]	3,200	[2012/12/ 12]	460	[8/1]	170	[9/18]	170	<1/8>
8	r-90(Approx. 29 years)	54	[5/31]	5.9	[7/25]	Under analysis		Under analysis		Under analysis		Under analysis		Under analysis		-		-		8.3	(2012/12/ 12)	4.4	[7/23]	ND		-	

[•] Since some samples are still under analysis, the highest dose of the Strontium-90 is among those previously announced.

 ¹ Analysis result of pumped water.
 2 The results are for a reference, since the water was highly turbid. (γ and Gross β were measured after filtration.)
 3 The results are for a reference, since the water was highly turbid. (γ and Gross β were measured after filtration. If filtration takes a long time, γ will not be analyzed.)

^{* &}quot;ND" indicates that the measurement result is below the detection limit.

^{*} Date of sampling is provided in parentheses. (): 2013, <>: 2014
* "*" is provided next to the name of the holes where the sampling could not be performed due to the chemical injection of ground improvement.

<Reference> The Highest Dose Until the Previous Measurement* (Seawater)

Unit: Bq/L

		side of Unit 5,6 rge channel		ont of Unit 6 ake channel		nt of shallow t quay		de of Unit 1-4 ake channel	water inta (north si	ide of Unit 1-4 ake channel ide of East ill Break)		t 1 Screen e Silt Fence)	intake cha	en the water nnel of Unit 1 surface layer	intake cha			t 2 Screen e Silt Fence)	intake char	en the water nnel of Unit 2 Unit 3		3 Screen e Silt Fence)	intake cha	een the water nnel of Unit 3 Unit 4
Cs-134(Approx. 2 years)	1.8	[6/21]	2.8	[12/2]	5.3	[8/5]	89	[10/10]	32	[10/11]	73	[10/10]	87	[10/10]	93	[10/10]	370	[10/9]	52	[12/21]	350	(7/15)	28	[9/16]
Cs-137(Approx.30 years)	3.3	[6/26]	5.8	[12/2]	8.6	[8/5]	190	[10/10]	73	[10/11]	170	[10/10]	200	[10/10]	200	[10/10]	830	[10/9]	110	[10/11] [12/21]	770	[7/15]	53	[12/16]
Gross β	17	<1/6>	46	(8/19)	40	[7/3]	1,400	[11/7]	320	[8/12]	740	[10/28]	1,200	[12/8]	450	[7/16]	1,700	[10/9]	480	[10/7]	1,000	(7/15)	390	[8/12]
H-3 (Approx. 12 years)	8.6	[6/26]	24	(8/19)	340	[6/26]	4,800	[11/7]	510	[9/2]	2,800	[10/28]	2,800	[12/8]	1,600	[9/1]	2,100	[10/28]	1,200	[10/7]	410	[9/2]	650	[8/12]
Sr-90 (Approx. 29 years)	5.8	*1 [6/26]	-		7.4	(6/26)	720	[9/22]	220	[8/19]	480	[10/14]	480	[8/22]	290	[10/20]	430	[10/14]	340	[10/14]	120	[9/23]	190	[9/23]

Unit: Bq/L

		4 Screen e Silt Fence)		nd the south ge channel	1F, Por	t entrance	1F, East si	ide in the port	1F, West s	ide in the port	1F, North s	ide in the port	1F, South s	ide in the por	North side of the north breakwater	Northeast side of the port entrance	East side of the south breakwater	Southeast side of the north breakwater	South side of the south breakwater
Cs-134(Approx. 2 years)	62	(9/16)	ND		3.3	[12/24]	3.3	[10/17]	4.4	[12/24]	5.0	[12/2]	3.5	[10/17]	ND	ND	ND	ND	ND
Cs-137(Approx.30 years)	140	[9/16]	3.0	[7/15]	7.3	[10/11]	9.0	[10/17]	10	[12/24]	8.4	[12/2]	7.8	[10/17]	ND	ND	1.6 [10/18]	ND	ND
Gross β	360	[10/7]	15	<1/13>	69	[8/19]	74	[8/19]	60	[7/4]	69	[8/19]	79	[8/19]	ND	ND	ND	ND	ND
H-3 (Approx. 12 years)	400	(8/12) (10/7)	1.9	[11/25]	68	[8/19]	67	[8/19]	59	[8/19]	52	[8/19]	60	[8/19]	4.7 [8/14]	ND	6.4 [10/8]	ND	ND
Sr-90 (Approx. 29 years)	130	[9/23]	0.36	*1 (6/26)	49	[8/19]	-		-		-		1		-	-	-	-	-

^{*} The highest result announced in "Detailed Analysis Results in the Port of Fukushima Daiichi NPS, around Discharge Channel and Bank Protection" or the other handouts is provided.

As for "1F, North side of Unit 1-4 water intake channel", the data is obtained since January 14, 2013. For the other locations, the data is obtained since June 14.

[Reference] Standard values

Unit: Bq/L

	Cs-134	Cs-137	H-3	Sr-90
Density Limit Specified by the Rule for the Installation, Operation, etc. of Commercial Nuclear Power Reactors (the density limit in the water outside the surrounding monitored areas is provided in section 6 of Appendix 2)	60	90	60,000	30
WHO Guidelines for drinking-water quality	10	10	10,000	10

[•] Since some samples are still under analysis, the highest dose of the Strontium-90 is among those previously announced.

^{*1} Since reanalysis is ongoing, the figures are just for a reference.

^{* &}quot;ND" indicates that the measurement result is below the detection limit.

^{*} Date of sampling is provided in parentheses. (): 2013, <>: 2014

^{* &}quot;-" indicates that the measurement was out of range.