

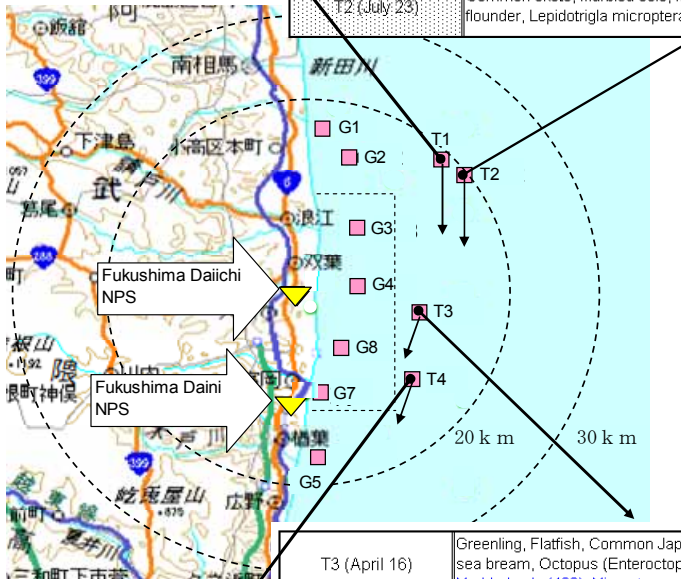
Nuclide Analysis Results of Fish and Shellfish (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS)

1. Overview of the measurement results by the measurement points

(1) Measurement results of the trawl net measurement point (shaded part is additional data from the previous report)

Measurement point (Date of Sampling)	Samples (Sample names in blue letters : 100Bq/kg or less, total amount of Cs134 and Cs137 is provided in parentheses (Bq/kg))
T1 (April 19)	Greenling, Marbled sole, Pacific cod, Microstomus achne, Common Japanese conger, Littlemouth flounder, Crimson sea bream, Lepidotrigla microptera, Lophius litilon, Octopus (Enteroctopus) dofeini Stone flounder (122)
T1 (May 31)	Common skete, Stone flounder, Microstomus achne, Marbled sole, Flatfish, Pacific cod, Lepidotrigla microptera, Greenling, Sea robin, Littlemouth flounder, Roundnose flounder
T1 (June 26)	Stone flounder, Flatfish, Microstomus achne, Lepidotrigla microptera, Littlemouth flounder, Loliginid, Loligo bleekeri
T1 (July 23)	Common skete, Microstomus achne, Marbled sole, Flatfish, Littlemouth flounder, Stone flounder, Greenling, Lepidotrigla microptera, Dory, Roundnose flounder

T2 (April 19)	Common skete, Flatfish, Microstomus achne, Marbled sole, Pacific cod, Littlemouth flounder, Greenling, Common Japanese conger, Roundnose flounder, Striped jewfish, Lepidotrigla microptera, Lophius litilon, Loliginid, Crimson sea bream, Octopus (Enteroctopus) dofeini, Ridged-eye flounder, Loligo bleekeri
T2 (May 31)	Common skete, Flatfish, Marbled sole, Microstomus achne, Littlemouth flounder, Pacific cod, Greenling, Pennahia argentata, Lepidotrigla microptera, Loliginid
T2 (June 26)	Marbled sole, Sea raven, Microstomus achne, Greenling, Flatfish, Littlemouth flounder, Pennahia argentata, Loliginid, Octopus (Enteroctopus) dofeini, Roundnose flounder
T2 (July 23)	Common skete, Marbled sole, Microstomus achne, Common horse mackerel, Sea robin, Pennahia argentata, Roundnose flounder, Lepidotrigla microptera, Lophius litilon, Flatfish, Littlemouth flounder, Dory



T3 (April 16)	Greenling, Flatfish, Common Japanese conger, Stone flounder, Pacific cod, Sea bass, Lepidotrigla microptera, Crimson sea bream, Octopus (Enteroctopus) dofeini Marbled sole (430), Microstomus achne (272), Common skete (129)
T3 (May 25)	Microstomus achne, Flatfish, Greenling, Marbled sole, Littlemouth flounder, Lepidotrigla microptera, Loliginid Common skete (105)
T3 (June 9)	Common skete, Flatfish, Marbled sole, Microstomus achne, Greenling, Stone flounder, Littlemouth flounder, Roundnose flounder, Pacific cod
T3 (July 7)	Greenling, Sea bass, Stone flounder, Pagrus major, Flatfish, Littlemouth flounder, Microstomus achne, Marbled sole, Dory Common skete(109)

T4 (April 16)	Flatfish, Pacific cod, Greenling, Sea raven, Sea bass, Littlemouth flounder, Marbled sole, Lepidotrigla microptera, Microstomus achne, Crimson sea bream, Roundnose flounder, Lophius litilon, Loliginid, Octopus (Enteroctopus) dofeini, Loligo bleekeri Common skete (105)
T4 (May 25)	Microstomus achne, Greenling, Marbled sole, Roundnose flounder, Flatfish, Lepidotrigla microptera, Littlemouth flounder, Lophius litilon, Loliginid, Common Japanese conger, Octopus (Enteroctopus) dofeini Common skete (211)
T4 (June 9)	Microstomus achne, Common skete, Greenling, Flatfish, Pacific cod, Roundnose flounder, Sea raven, Lepidotrigla microptera, Littlemouth flounder
T4 (July 7)	Common skete, Greenling, Microstomus achne, Lophius litilon, Sea raven, Littlemouth flounder, Flatfish, Stone flounder, Octopus (Enteroctopus) dofeini, Roundnose flounder

(2) Measurement results of the gill net measurement point (shaded part is additional data from the previous report)

Measurement point (Date of Sampling)	Samples (Sample names in blue letters: 100Bq/kg or less, total amount of Cs134 and Cs137 is provided in parentheses (Bq/kg))
G1 (April 12)	Common skete, Flatfish, Microstomus achne, Greenling, Pacific cod, Lophius litlon, Snailfish, Ovalipes punctatus <i>Schlegel's black rockfish (370), Sea bass (182)</i>
G1 (May 10)	Marbled sole, Microstomus achne, Flatfish, Greenling, Schlegel's black rockfish, Banded dogfish, Northern dogfish, Blue crab <i>Common skete (149)</i>
G1 (June 7)	Common skete, Stone flounder, Greenling, Flatfish, Marbled sole, Microstomus achne, Drummfish, Lophius litlon, Ovalipes punctatus <i>Schlegel's black rockfish (121)</i>
G1 (July 11)	Banded dogfish, Dasyatis matsubarae, Common skete, Greenling, Microstomus achne, Marbled sole, Smooth dogfish, Flatfish, Ovalipes punctatus, Common horse mackerel, Blue crab, Chub mackerel

G2 (April 12)	Common skete, Microstomus achne, Sea raven, Greenling, Flatfish, Pacific cod, Northern dogfish, Spotted halibut <i>Marbled sole (109)</i>
G2 (May 10)	Microstomus achne, Greenling, Flatfish, Northern dogfish <i>Sebastes cheni (230), Common skete (135)</i>
G2 (June 7)	Marbled sole, Greenling, Microstomus achne, Flatfish, Dasyatis matsubarae, Pennahia argentata <i>Common skete (114)</i>
G2 (July 11)	Common skete, Microstomus achne, Stone flounder, Marbled sole, Flatfish, Northern dogfish, Chub mackerel

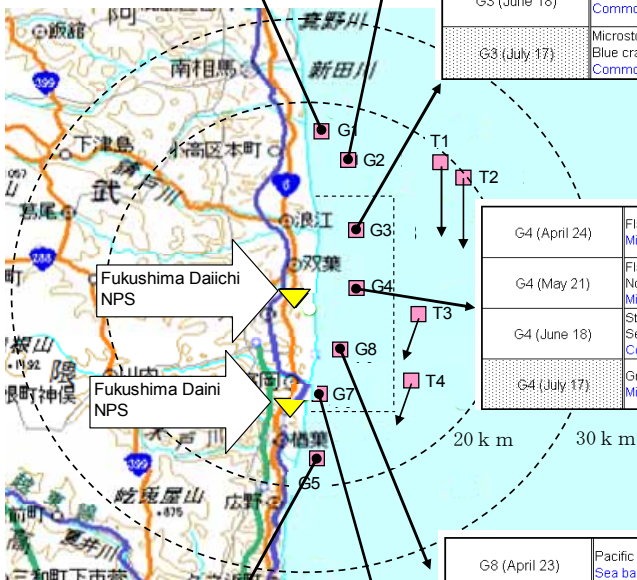
G3 (April 24)	Lophius litlon, Flatfish, Sea raven, Northern dogfish, Barfin flounder, Pacific cod, Ovalipes punctatus, Spotted halibut <i>Microstomus achne (178), Marbled sole (152), Common skete (148)</i>
G3 (May 21)	Marbled sole, Sea robin, Pacific cod, Ovalipes punctatus, Northern dogfish, Flatfish, Lophius litlon, Stone flounder, Striped jewfish <i>Common skete (123), Microstomus achne (112), Schlegel's black rockfish (103)</i>
G3 (June 18)	Flatfish, Marbled sole, Stone flounder, Lophius litlon, Ovalipes punctatus <i>Common skete (141), Microstomus achne (105)</i>
G3 (July 17)	Microstomus achne, Flatfish, Dasyatis matsubarae, Sea robin, Stone flounder, Lepidotrigla microptera, Northern dogfish, Blue crab <i>Common skete (172)</i>

G4 (April 24)	Flatfish, Pacific cod, Stone flounder, Northern dogfish, Schlegel's black rockfish, Ovalipes punctatus <i>Microstomus achne (390), Common skete (220), Marbled sole (134), Greenling (131)</i>
G4 (May 21)	Flatfish, Marbled sole, Stone flounder, Sea robin, Lepidotrigla microptera, Lophius litlon, Pacific cod, Ovalipes punctatus, Northern dogfish, Blue crab <i>Microstomus achne (188), Common skete (160)</i>
G4 (June 18)	Stone flounder, Marbled sole, Flatfish, Littlemouth flounder, Pagrus major, Roundnose flounder, Sea bass, Lophius litlon, Sea robin, Lepidotrigla microptera <i>Common skete (175), Microstomus achne (161), Schlegel's black rockfish (149), Dasyatis matsubarae (129)</i>
G4 (July 17)	Greenling, Marbled sole, Flatfish, Sea robin, Stone flounder, Lophius litlon, Northern dogfish, Chub mackerel <i>Microstomus achne (160)</i>

G8 (April 23)	Pacific cod, Lophius litlon, Ovalipes punctatus, Northern dogfish, Blue crab <i>Sea bass (370), Common skete (237), Marbled sole (199)</i>
G8 (May 24)	Flatfish, Sea robin, Lepidotrigla microptera, Pennahia argentata, Pacific cod, Lophius litlon, Stone flounder, Schlegel's black rockfish, Northern dogfish <i>Common skete (207), Microstomus achne (156), Marbled sole (145)</i>
G8 (June 24)	Microstomus achne, Stone flounder, Sea robin, Roundnose flounder, Lepidotrigla microptera, Dasyatis matsubarae, Chub mackerel, Lophius litlon, Northern dogfish <i>Marbled sole (124), Flatfish (109), Common skete (105)</i>
G8 (July 19)	Microstomus achne, Flatfish, Smooth dogfish, Sea robin, Lepidotrigla microptera, Northern dogfish, Ovalipes punctatus, Chub mackerel <i>Common skete (203)</i>

G7 (April 20)	Flatfish, Drummfish, Northern dogfish, Lophius litlon <i>Sea bass (530), Schlegel's black rockfish (420), Microstomus achne (330), Greenling (300), Common skete (233), Marbled sole (108)</i>
G7 (May 18)	Northern dogfish, Drummfish <i>Microstomus achne (350), Common skete (305), Greenling (189), Flatfish (166)</i>
G7 (June 15)	Flatfish <i>Schlegel's black rockfish (670), Marbled sole (218), Microstomus achne (216), Greenling (153)</i>
G7 (July 13)	Smooth dogfish, Sea bass, Flatfish, Ovalipes punctatus, Blue crab <i>Common skete (390)</i>

G5 (April 20)	Flatfish, Stingray, Northern dogfish <i>Microstomus achne (300), Common skete (190), Schlegel's black rockfish (173)</i>
G5 (May 18)	Flatfish, Greenling, Stone flounder, Drummfish, Sea raven, Banded dogfish <i>Common skete (278), Microstomus achne (242)</i>
G5 (June 15)	Banded dogfish, Flatfish, Greenling, Smooth dogfish <i>Common skete (189), Microstomus achne (181)</i>
G5 (July 13)	Greenling, Flatfish, Drummfish, Northern dogfish <i>Common skete (265), Microstomus achne (204)</i>



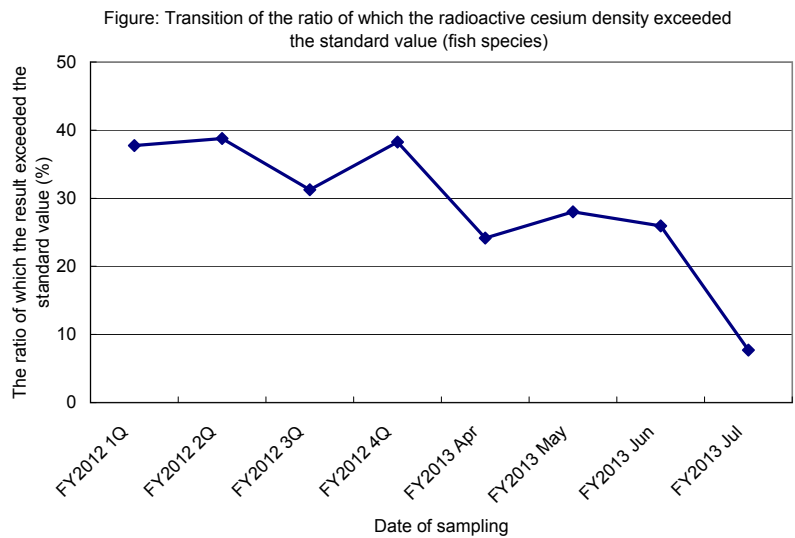
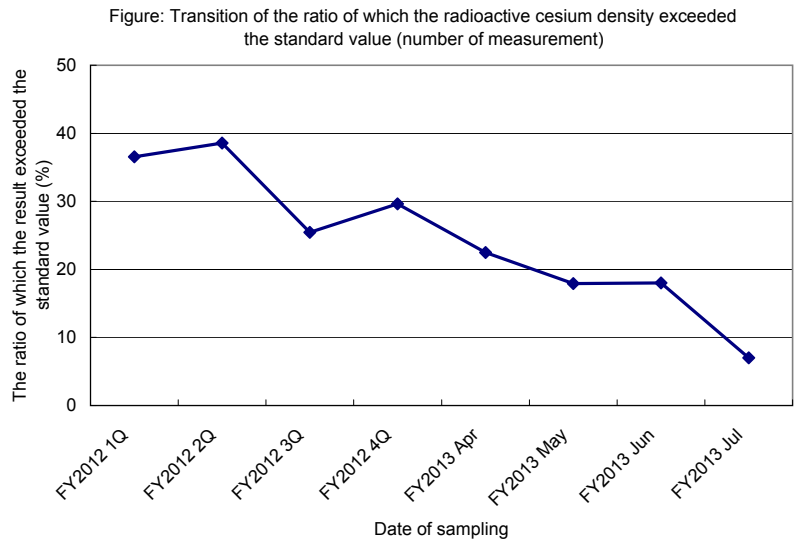
(3) Categorized by the radioactive cesium level

Measurement results obtained from May to July, 2013

[Within 20km Radius of Fukushima Daiichi NPS (exclude in the Port of Fukushima Daiichi NPS)]

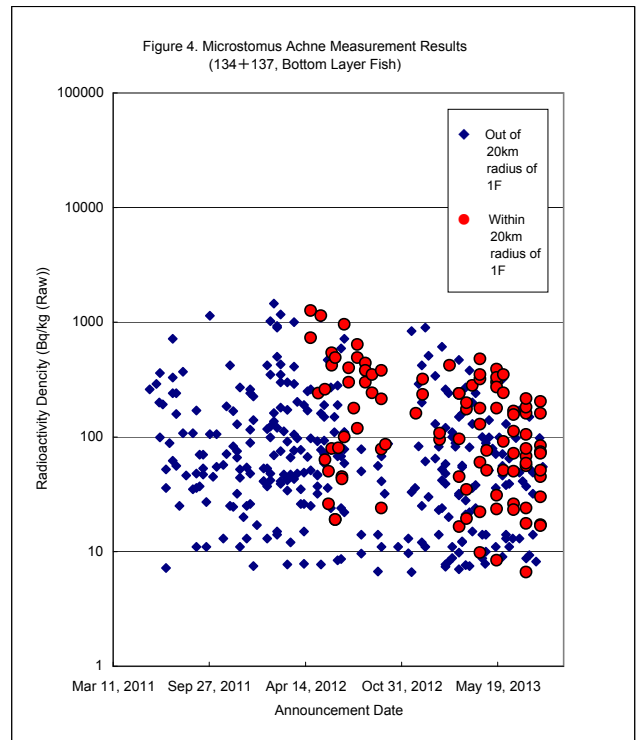
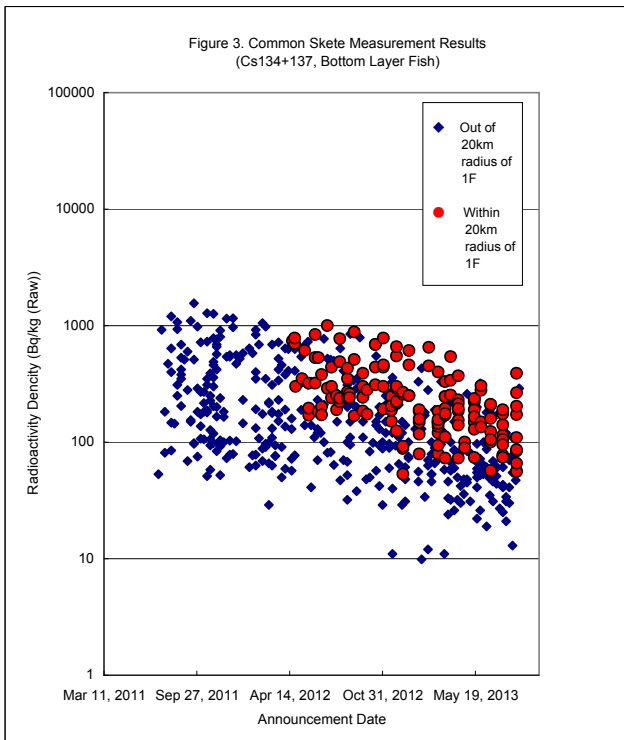
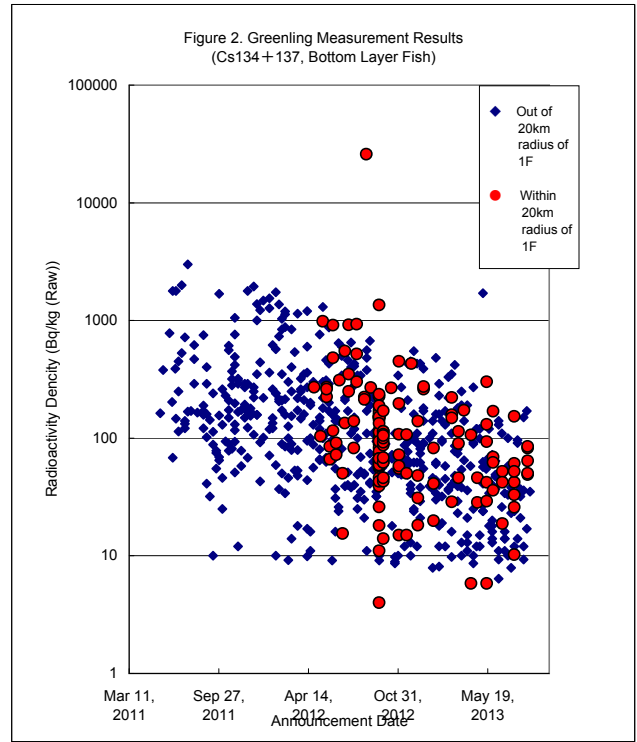
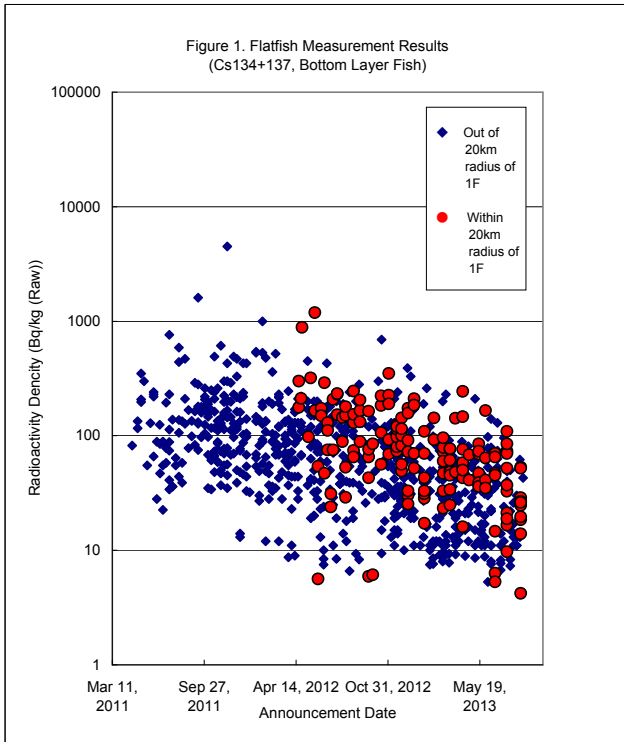
- Total amount of radioactive cesium 134 and 137
Unit: Bq/kg (Raw)
- Guideline value (April 1, 2012 and later): 100Bq/kg
- Sampling date: May 10 - July 23, 2013

Fish	Maximum	Minimum	Number of measurements (Measurement results exceeding the guideline value)
Schlegel's black rockfish	670	4.4	6 (4)
Common skete	390	56	29 (19)
Microstomus achne	350	6.6	32 (11)
Sebastes cheni	230	-	1 (1)
Marbled sole	218	15.9	22 (3)
Greenling	169	ND	21 (2)
Flatfish	166	ND	33 (2)
Dasyatis matsubarai	129	5.2	5 (1)
Banded dogfish	90	4.7	4
Smooth dogfish	86	15.4	4
Sea bass	67	7.6	3
Stone flounder	61	ND	17
Pagrus major	31	15.5	2
Sea raven	23.2	5.6	4
Sea robin	22.3	ND	10
Lepidotrigla microptera	21.7	ND	14
Drumfish	21.3	7.1	4
Littlemouth flounder	20.8	ND	13
Pacific cod	18.9	4.2	7
Northern dogfish	16.7	ND	12
Pennahia argentata	15.9	ND	5
Roundnose flounder	14.9	ND	10
Lophius litilon	13.5	ND	11
Common horse mackerel	11.4	4.6	2
Ovalipes punctatus	9.4	ND	7
Dory	5.3	ND	3
Chub mackerel	4.2	-	5
Striped jewfish	ND	-	1
Blue crab	ND	-	5
Loliginid	ND	-	5
Common Japanese conger	ND	-	1
Octopus (Enteroctopus dotleini)	ND	-	3
Loligo bleekeri	ND	-	1



(Remark) ND for Cs-134: approx. 2.7Bq/kg, Cs-137: approx. 2.9Bq/kg

(4) Change of radioactive cesium density of fish and shellfish over time



(Remark) The measurement results of "Out of 20km radius of 1F" was obtained from the Japan Meteorological Agency website.

2. Fish sampling situation in the port of Fukushima Daiichi NPS (flash report)



A: Around the Shallow Draft Quay
 B: Around the East Seawall Break
 C: Around the South Breakwater
 D: Around the North Breakwater
 E: Around the Water Intake Open Conduit at Unit 1-4
 F: Around the Port Entrance
 G: Around the Center of the Port

- (1) Since Feb 8, 2013, silt fence has been installed at point A, and gill net has been installed at point F.
- (2) Since Feb 27, 2013, gill nets have been installed continuously at inner side of silt fence at point A and point B.
- (3) Since Mar 5, 2013, 35 baskets have been installed continuously at point E. On Mar 13, 15 baskets have been added continuously at point E.
- (4) From Mar 7 to Mar 8, 2013, gill net fishing was conducted at point C.
- (5) From Mar 12 to Mar 13, 2013, gill net fishing was conducted at point A,B,D.
- (6) On Mar 15-16, 2013, gill net fishing will be conducted at point G.
- (7) Since May 9, gill net has doubled at the port entrance.

Figure. Place of Sampling

1. Basket fishing

Date of Sampling	Place of Sampling	Number of sampling	Sampling of Highest Cesium Density (Place of Sampling)	Cesium Density (Unit: Bq/kg (Raw))		
				Cs-134	Cs-137	Cesium Amount
October 2012	A	4	Common Japanese conger (A)	5,900	9,600	15,500
December 2012	A,C	29	Spotbelly rockfish (A)	94,000	160,000	254,000
January 2013	A,B,C,D	70	Spotbelly rockfish (B)	75,000	130,000	205,000
February 2013	A,,B,C,D,E*	41	Greenling (E*)	260,000	480,000	740,000
March 2013	A,B,C,D	74	Spotbelly rockfish (D)	69,000	130,000	199,000
April 2013	A,B,C,D	109	Spotbelly rockfish (D)	59,000	110,000	169,000
May 2013	A,B,C,D	69	Spotbelly rockfish (D)	55,000	110,000	165,000
Jun 6, 2013	A,B,C,D	33	Spotbelly rockfish (D)	72,000	140,000	212,000
Jun 28, 2013	A,B,C,D	26	Spotbelly rockfish (A)	61,000	120,000	181,000
Jul 4, 2013	A,B,C,D	26	Spotbelly rockfish (B)	57,000	120,000	177,000
Jul 18, 2013	A,B,C,D	15	Spotbelly rockfish (D)	45,000	92,000	137,000
Aug 6, 2013	A,B,C,D	9		The samples are currently under radioactivity density measurements		
Aug 22, 2013	A,B,C,D	6				

* Sampled at inner side of Silt Fence.

2. Gill net fishing in the port

Date of Sampling	Place of Sampling	Number of sampling	Sampling of Highest Cesium Density (Place of Sampling)	Cesium Density (Unit: Bq/kg (Raw))		
				Cs-134	Cs-137	Cesium Amount
March 2013	A,B,C,D,G	124	Spotbelly rockfish (B)	150,000	280,000	430,000
April 2013	A,B,C,D,G	67	Greenling (A)	56,000	110,000	166,000
May 2013	A,B,C,D,G	148	Jacopever (B)	93,000	180,000	273,000
Jun 6, 2013	A,B,D	16	Sebastes cheni (A)	39,000	77,000	116,000
Jun 12, 2013	C,G	13	Sebastes cheni (G)	28,000	57,000	85,000
Jun 18, 2013	A,B,D	16	Spotbelly rockfish (B)	27,000	54,000	81,000
Jun 27, 2013	C,G	9	Sebastes cheni (G)	38,000	77,000	115,000
Jul 3, 2013	A,B,D	16	Sebastes cheni (B)	23,000	48,000	71,000
Jul 12, 2013	C,G	12	Spotbelly rockfish (C)	33,000	67,000	100,000
Jul 19, 2013	A,B,D	27	Spotbelly rockfish (B)	36,000	73,000	109,000
Jul 25, 2013	C,G	8	Greenling (G)	10,000	22,000	32,000
Aug 2, 2013	A,B,D	8		The samples are currently under radioactivity density measurements		
Aug 7, 2013	C,G	10				
Aug 13, 2013	A,B,D	10				
Aug 21, 2013	C,G	11				

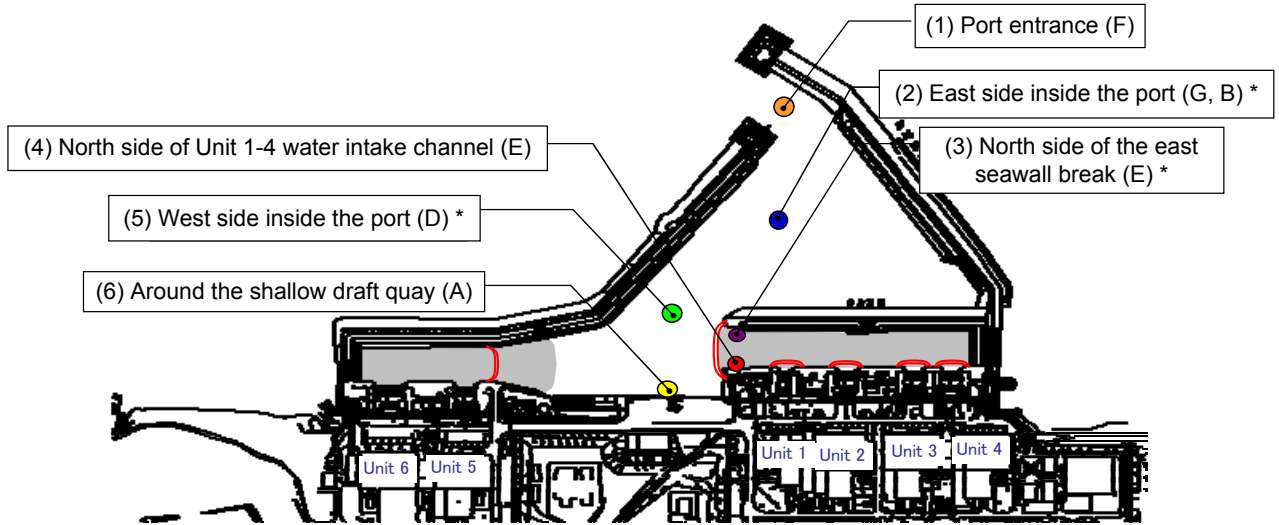
3. Gill net in the port entrance

Date of Sampling	Place of Sampling	Number of sampling	Sampling of Highest Cesium Density (Place of Sampling)	Cesium Density (Unit: Bq/kg (Raw))		
				Cs-134	Cs-137	Cesium Amount
February 2013	F	307	Greenling	180,000	330,000	510,000
March 2013	F	180	Greenling	150,000	280,000	430,000
April 2013	F	36	Sebastes cheni	31,000	59,000	90,000
May 2013	F	359	Sebastes cheni	110,000	210,000	320,000
Jun 7, 2013	F	27	Sebastes cheni	28,000	56,000	84,000
Jun 13, 2013	F	21	Marbled sole	7,300	15,000	22,300
Jun 18, 2013	F	28	Sebastes cheni	22,000	44,000	66,000
Jun 20, 2013	F	41	Sebastes cheni	45,000	90,000	135,000
Jun 21, 2013	F	15	Sebastes cheni	28,000	56,000	84,000
Jun 24, 2013	F	32	Sebastes cheni	23,000	46,000	69,000
Jun 25, 2013	F	11	Greenling	9,600	19,000	28,600
Jun 26, 2013	F	7	Sebastes cheni	20,000	41,000	61,000
Jul 1, 2013	F	22	Spotbelly rockfish	27,000	54,000	81,000
Jul 6, 2013	F	65	Jacopever	60,000	120,000	180,000
Jul 7, 2013	F	23	Sebastes cheni	50,000	100,000	150,000
Jul 8, 2013	F	9	Greenling	21,000	43,000	64,000
Jul 9, 2013	F	6	Greenling	260	590	850
Jul 10, 2013	F	7	Jacopever	39,000	80,000	119,000
Jul 11, 2013	F	17	Striped mullet	380	770	1,150
Jul 17, 2013	F	15	Marbled sole	7,500	15,000	22,500
Jul 22, 2013	F	28	Stingray	290	590	880
Jul 27, 2013	F	21	Marbled sole	760	1,600	2,360
Jul 31, 2013	F	10	Acanthopagrus schlegeli	860	1,700	2,560
Aug 1, 2013	F	4		The samples are currently under radioactivity density measurements		
Aug 5, 2013	F	15				
Aug 9, 2013	F	15				
Aug 13, 2013	F	21				
Aug 19, 2013	F	18				
Aug 23, 2013	F	37				

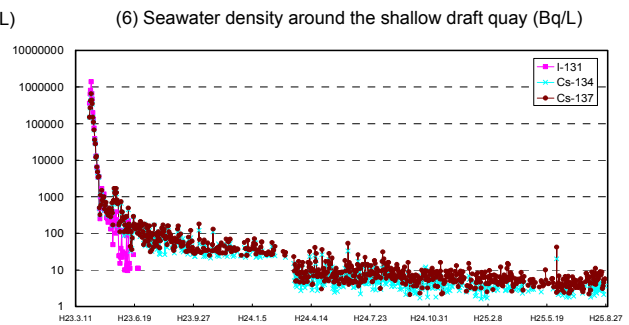
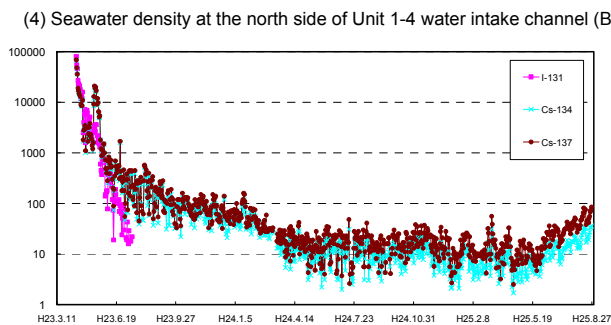
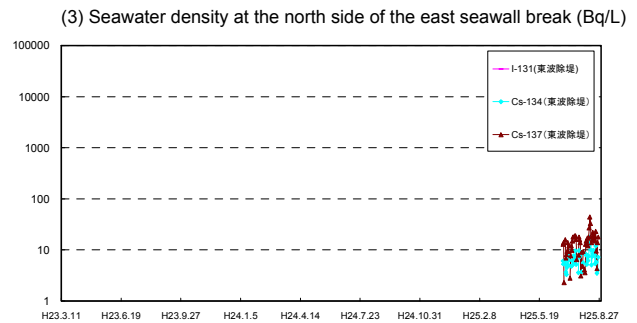
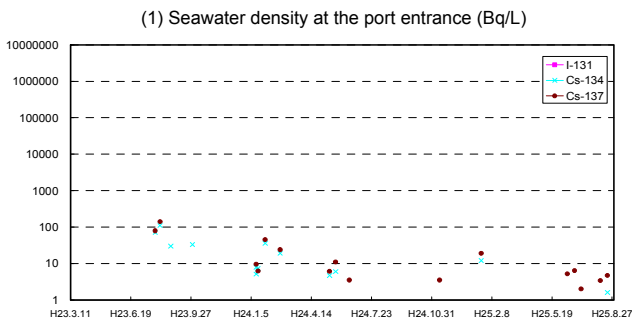
Total amount of sampling	Approx. 2,400
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Change of radioactive cesium density at each sampling point over time

Survey points of radioactivity density in the seawater



* The survey has started since June 2013, since the groundwater survey at O.P.4000 has performed.



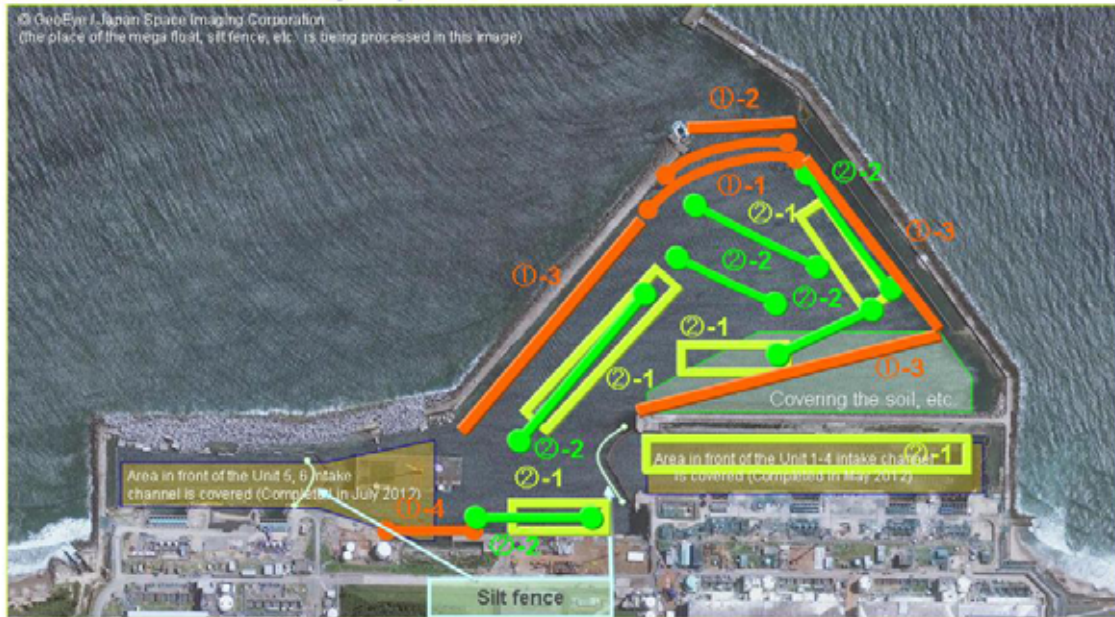
(2) East side in the port, seawater (Bq/L)

Sampling date	2013/6/26	2013/7/4	2013/7/9	2013/7/17	2013/7/22	2013/7/31	2013/8/5	2013/8/12	2013/8/19
Cs-134	ND (2.4)	ND (2.3)	ND (2.0)	ND (1.7)	ND (2.3)	ND (1.6)	ND (1.4)	ND (1.8)	2.9
Cs-137	ND (2.4)	3.3	ND (2.4)	ND (2.5)	ND (2.1)	ND (2.4)	ND (2.0)	ND (1.9)	6.6

(5) West side in the port, seawater (Bq/L)

Sampling date	2013/6/26	2013/7/4	2013/7/9	2013/7/17	2013/7/22	2013/7/31	2013/8/5	2013/8/12	2013/8/19
Cs-134	ND (2.5)	ND (2.2)	ND (2.0)	ND (2.2)	ND (2.2)	ND (1.5)	ND (1.8)	ND (2.0)	2.6
Cs-137	3.3	(2.6)	(1.9)	2.4	(2.2)	(2.4)	(1.9)	(2.3)	6.5

3. Measures to Prevent Fish From Moving to Outside the Port at Fukushima Daiichi Nuclear Power Station (Implementation Status)



① Preventing fish from moving out

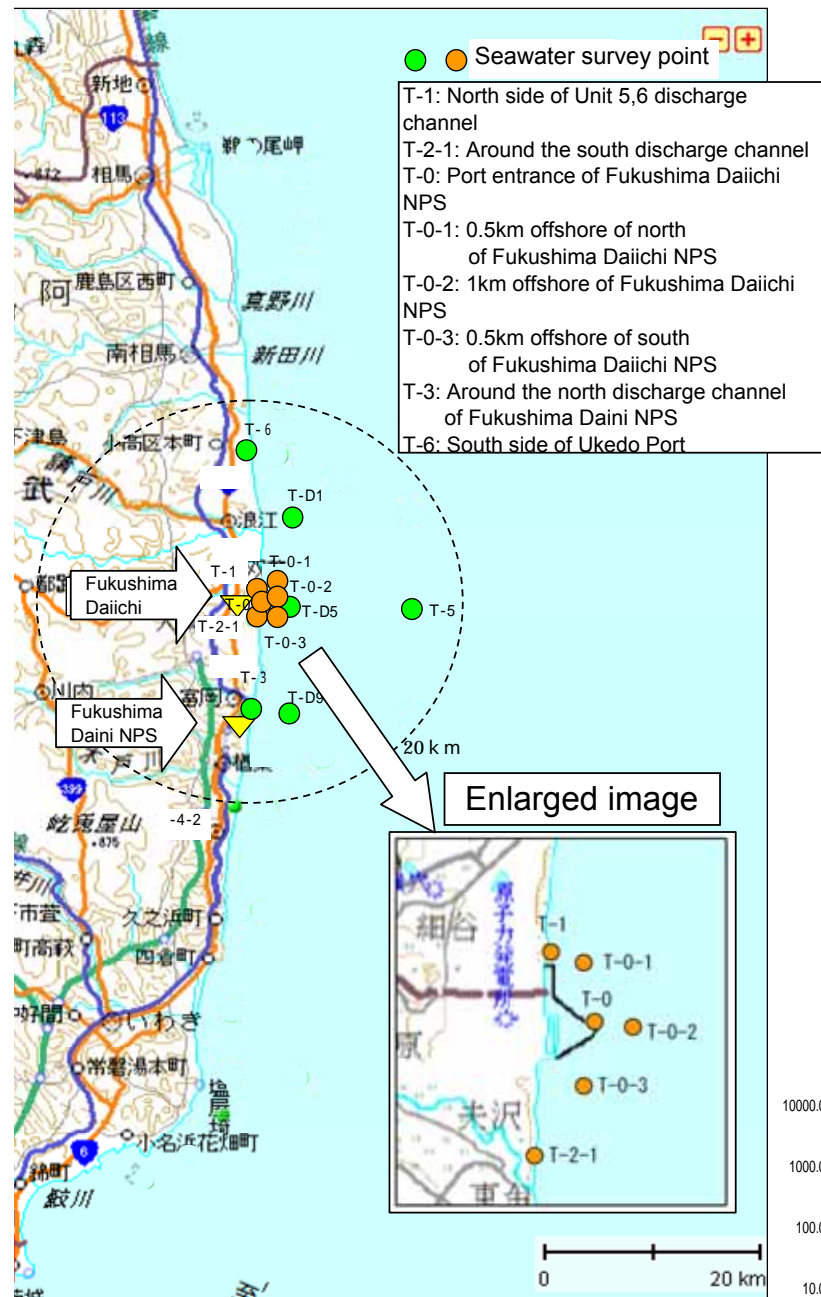
- ①-1: Installation of gill net at the port entrance
- ①-2: Installation of block fence at the port entrance
- ①-3: Installation of partition net inside the breakwater
- ①-4: Installation of silt fence and gill net at shallow draft quay

② Sampling of fish

- ②-1: Basket fishing
- ②-2: Gill net in the port

4. Transition of radioactive material densities inside seawater obtained at the sea area around Fukushima Daiichi Nuclear Power Station (1/2)

* Please refer to the next page for the sampling points which is mentioned in an enlarged image.



investigation location of seawater around the sea area of Fukushima Daiichi Nuclear Power Station

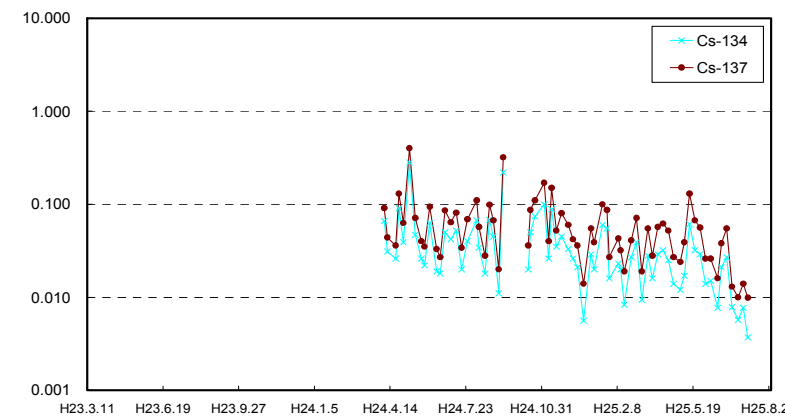
T-6

South side of Ukedo Port (Bq/L)

Sampling date	2013/8/6	2013/8/13	2013/8/20
Cs-134	Under measurement	Under measurement	Under measurement
Cs-137	Under measurement	Under measurement	Under measurement
All β	ND (18)	-	Under measurement
H-3	ND (0.3)	-	Under measurement

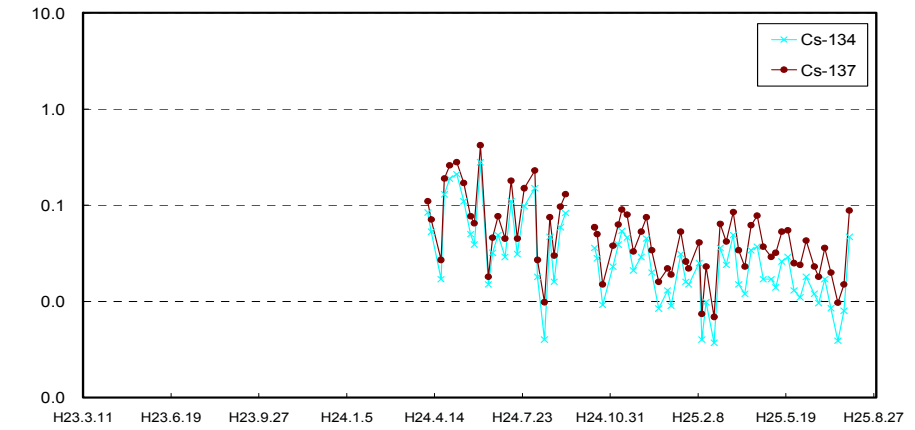
T-D1

Radioactivity density of the seawater at the 3km Offshore of Ukedo River (T-D1), upper layer



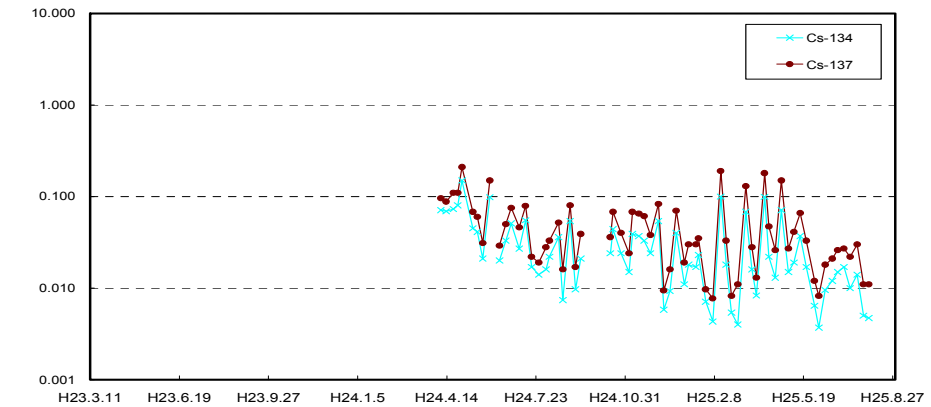
T-D5

Radioactivity density of the seawater at the 3km Offshore of Fukushima Daiichi NPS (T-D5), upper layer



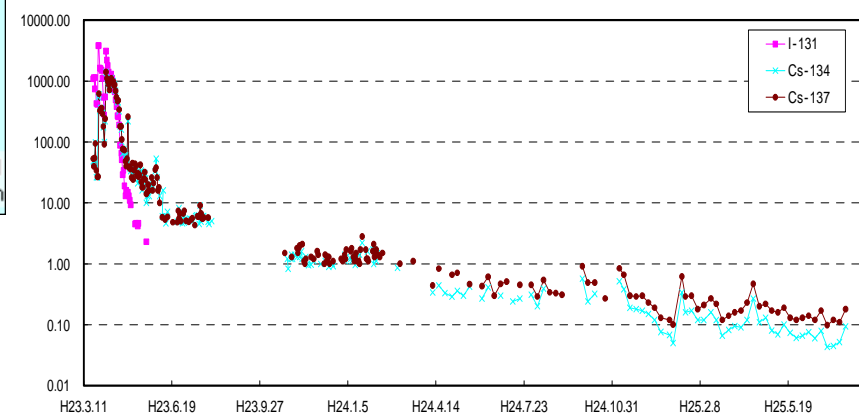
T-D9

Radioactivity density of the seawater at the 3km Offshore of Fukushima Daini NPS (T-D9), upper layer



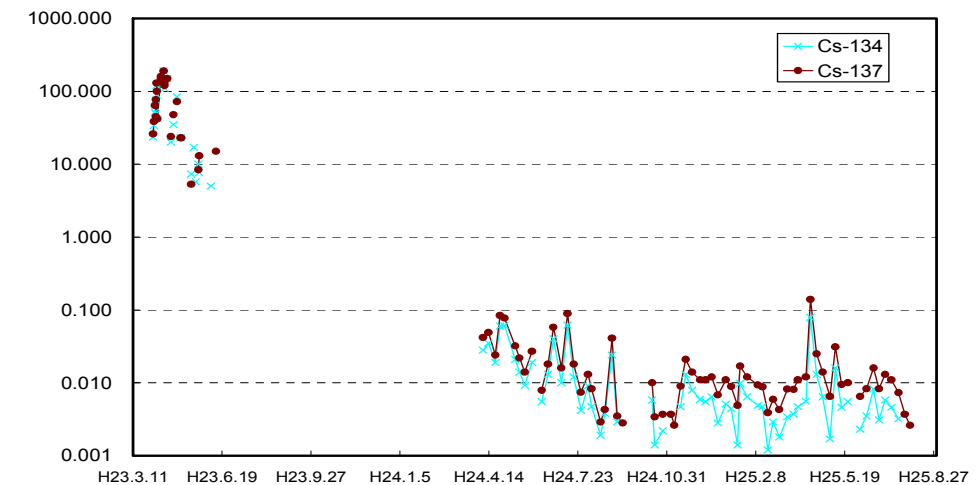
T-3

Radioactivity density around the north discharge channel of Fukushima Daini NPS (T-3)



T-5

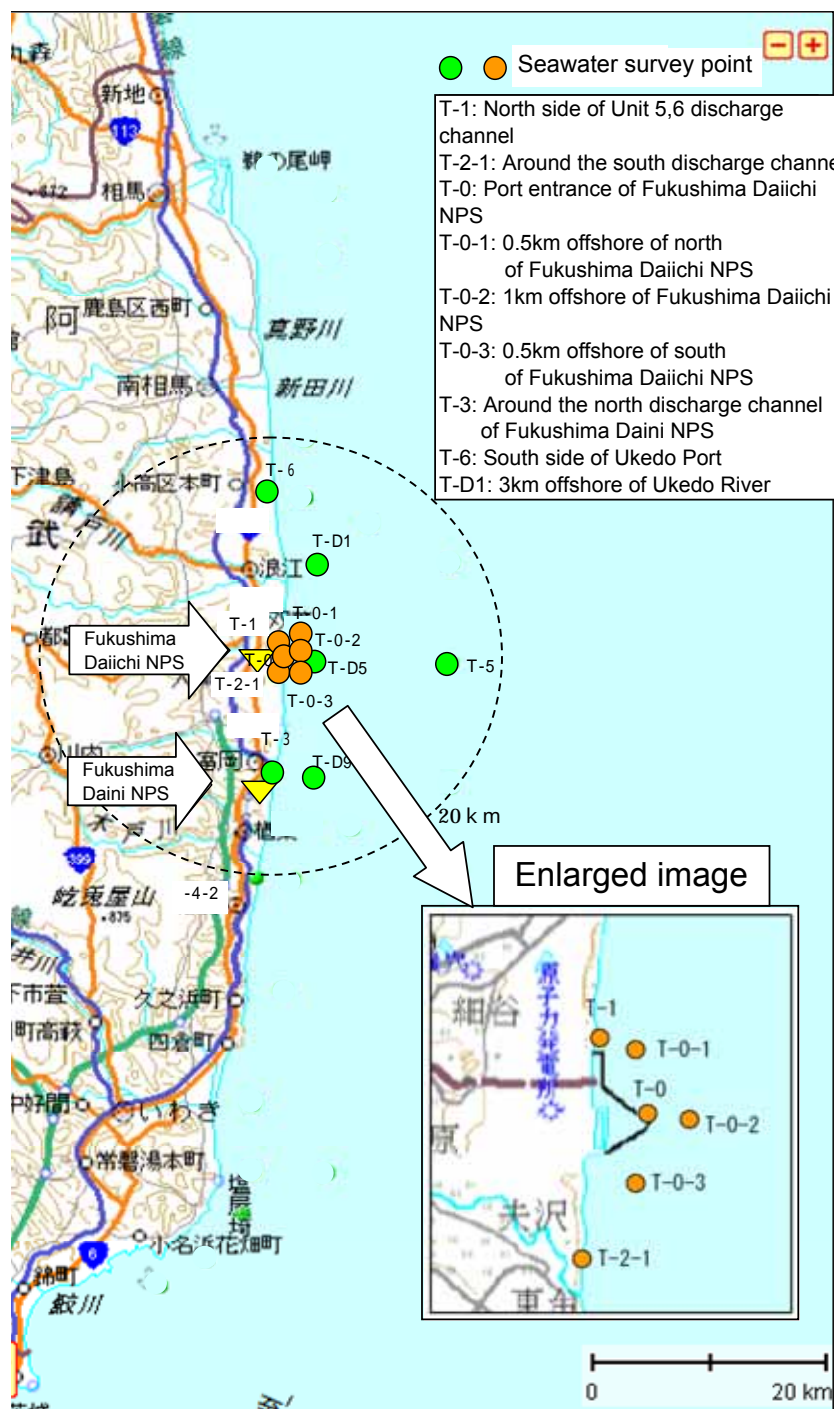
Radioactivity density of the seawater at the 15km Offshore of Fukushima Daiichi NPS (T-5), upper layer



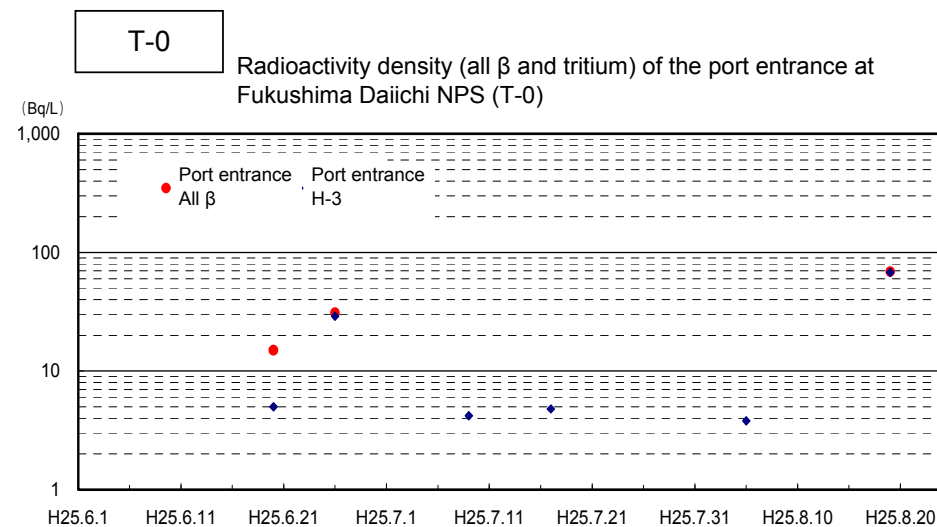
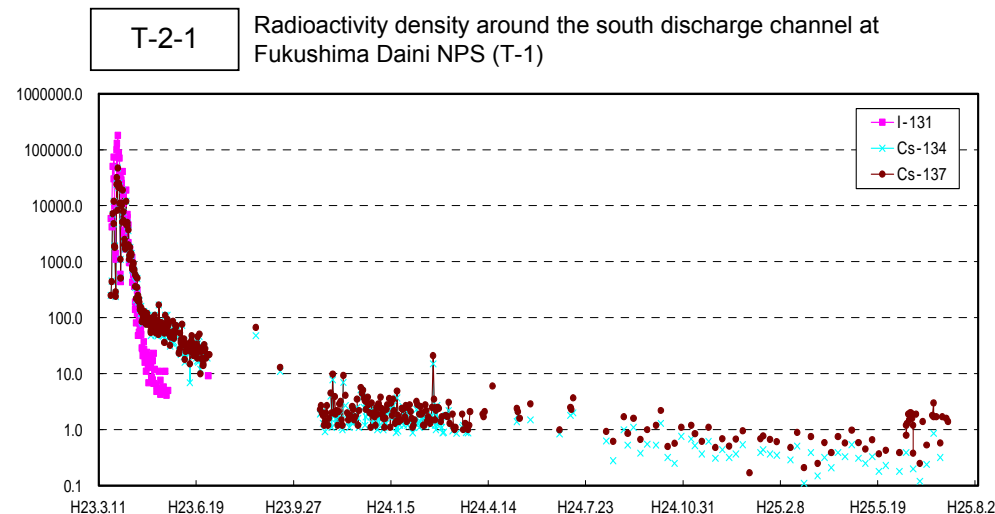
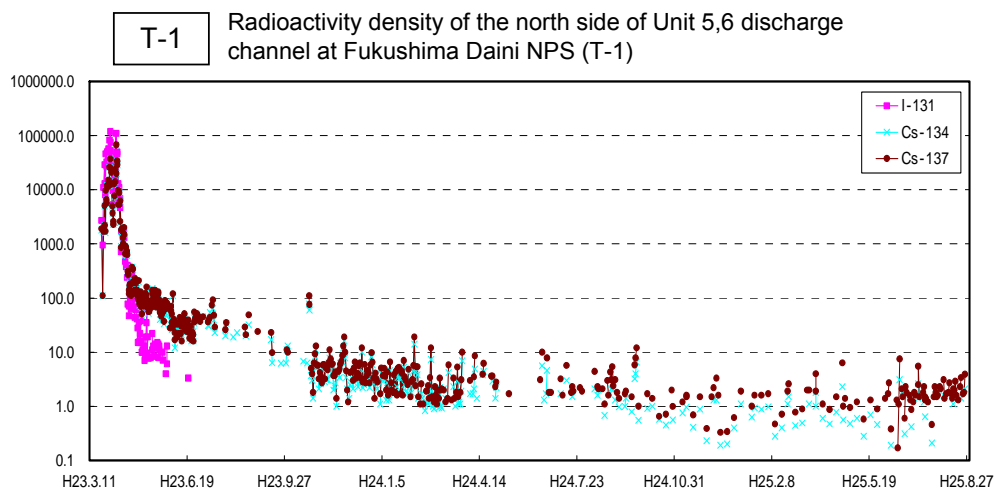
- All results of all β is below the detection limit value (approx. 20Bq/L)
 - All results of tritium is below the detection limit value (approx. 0.4Bq/L)

Notification level of Cs-134: 60Bq/L
 Notification level of Cs-137: 90 Bq/L
 Notification level of H-3: 60,000Bq/L

4. Transition of radioactive material densities inside seawater obtained at the sea area around Fukushima Daiichi Nuclear Power Station (2/2)



in investigation location of seawater around the sea area of Fukushima Daiichi Nuclear Power Station



* Please refer to the page 7 for the transition of C-134 and C-137 density at the sampling point T-0.

T-0-1

0.5km offshore of north of Fukushima Daiichi NPS (Bq/L)

Sampling date	2013/8/14	2013/8/21
Cs-134	ND (1.5)	ND (1.1)
Cs-137	ND (1.4)	ND (1.4)
All β	ND (18)	ND (20)
H-3	4.7	Under measurement

T-0-2

1km offshore of Fukushima Daiichi NPS (Bq/L)

Sampling date	2013/8/14	2013/8/21
Cs-134	ND (1.1)	ND (1.0)
Cs-137	ND (1.1)	ND (1.3)
All β	ND (18)	ND (20)
H-3	ND (2.9)	Under measurement

T-0-3

0.5km offshore of south of Fukushima Daiichi NPS (Bq/L)

Sampling date	2013/8/14	2013/8/21
Cs-134	ND (1.5)	ND (1.0)
Cs-137	ND (1.1)	ND (1.4)
All β	ND (18)	ND (20)
H-3	ND (2.9)	Under measurement

Notification level of Cs-134: 60Bq/L
 Notification level of Cs-137: 90 Bq/L
 Notification level of H-3: 60,000Bq/L