
April 15, 2011
Nuclear and Industrial Safety Agency

**Regarding the discharge of the waste water,
of which the concentration of radioactive materials
exceeds the concentration limit by the notification, to the sea**

Regarding the issue above, NISA informed as attachments.

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Regarding the discharge of the waste water, of which the concentration of radioactive materials exceeds the concentration limit by the notification, to the sea (Report)

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1. Course of the event

- (1) Tokyo Electric Power Co., Inc. (TEPCO) discharged the radioactive waste water of low concentration collected in the Sub Drain Pits of Units 5 and 6 of Fukushima Dai-ichi Nuclear Power Station (NPS) as well as the Radioactive Waste Treatment Facilities to the sea, as an emergency measure in accordance with paragraph 1 of Article 64 of the Nuclear Regulation Act.
- (2) Prior to this, Nuclear and Industrial Safety Agency (NISA) collected reports from TEPCO in advance regarding the views on discharge and impact assessment, etc. and confirmed those contents. NISA also requested technical advices from the Nuclear Safety Commission. As a result, NISA judged that there was no significant impact on human health and the discharge was imperative in order to avoid substantial risks. Furthermore, NISA directed TEPCO to survey and confirm the impact of the spread of radioactive materials by strengthening the monitoring of the sea and make efforts to share information, etc. (Press Released on April 4th)
- (3) Today, TEPCO reported the result of the discharge to the sea as well as the impact assessment, etc.

2. Outlines of the report by TEPCO

- (1) Regarding the stagnant water accumulated inside the Radioactive Waste Treatment Facilities, it was discharged to the sea on the south side of the Water Discharge Canal from 19:03 April 4th till 17:40 April 10th. (Amount of discharge was about 9,070t). Regarding the stagnant water collected in Sub Drain Pits of Units 5 and 6, it was discharged to the sea on the north side of the Water Discharge Canal from 21:00 April 4th till 18:52 April 9th (Amount of discharge was about 1,323t). The total amount of discharged stagnant water was 10,393 tons and the gross amount of released radioactive materials was about 1.5×10^{11} Becquerels.
- (2) As a result of monitoring of the sea along the shore as well as off the coast, obvious deviation was not confirmed. The influence accompanied with the

discharge of stagnant water to the sea is approximately 0.6 mSv/year of effective doses per year for adults even if they are supposed to eat fish and seaweeds etc. near the site every day.

- (3) Further observation on the results of ocean monitoring currently in operation and continuous implementation of impact assessment are needed.

3. Evaluation etc. by NISA

- (1) The relationship between the report by TEPCO dated April 4th and the items directed by NISA

According to the report by TEPCO dated April 4th, it was stated that the amount of stagnant water to be discharged would be 11,500 tons and the gross amount of radioactive materials to be released would be approximately 1.7×10^{11} Becquerels. However it was confirmed that the actual amount of discharged stagnant water and radioactive materials were below the amount above.

Regarding the strengthening of monitoring, it was confirmed that TEPCO carried it out through increasing the number of monitoring points off the coast (From 3 points to 6 points) as well as the frequency of monitoring (From once a day to twice a day). Also it was confirmed that even if compared to the data of transition since a week prior to the discharge, an outstanding deviation to the radioactive concentrations including ones in the vicinity of the NPS had not occurred as below.

- (a) The result of monitoring adjacent to Units 1 to 4 (Near the Southern Water Discharge Canal)

- Regarding this area, the high-level contaminated water has already been flowed out. (The outflow from the Pits for Conduit around the Intake Channel of Unit 2 on 2 April) The radioactive concentration in the peripheral area is still in the situation that it has once risen. (Iodine 131: Approximately 1~100 Bq/cm³, Cesium 137: Approximately 0.1~20 Bq/cm³)
- In this environment, the radioactive concentrations of contaminated water discharged this time are 10 Bq/cm³ of Iodine 131 and 5 Bq/cm³ of Cesium 137, which are not outstandingly different from those of the surrounding environment.
- Even though some slight deviation is found, the results of measurement were obtained within the range almost similar to those

measured before the discharge and none of the significant differences are found.

(b) The result of monitoring adjacent to Units 5 and 6 (Northern Water Discharge Canal)

- Regarding this area, the contaminated water with the highest level of radioactive dose of all the discharged water this time, has been discharged. (Approximately 20 Bq/ cm³ of Iodine 131 regarding the water in the Sub Drain Pit of Unit 6)
- Accompanied with the discharge this time, the radioactive concentrations were observed to have once risen. However they have shifted to decline.
- However the deviation of the radioactive concentrations are within the range almost similar to those measured before the discharge and none of the significant differences are found.

(c) The result of monitoring adjacent to the Fukushima Dai-ni NPS

- Accompanied with the discharge this time, the radioactive concentrations were observed to have once risen. However they have shifted to decline.
- However the deviation of the radioactive concentrations are within the range almost similar to those measured before the discharge and none of the significant differences are found.

(d) The results of monitoring at the points 15km off the coast.

- Compared to the environment adjacent to the Fukushima Dai-ichi NPS, the level of radiation is lower by numbers in two digits. Significant differences are not found accompanied with the discharge of contaminated water this time.
- The results measured at the newly installed 3 measuring points are at the almost same level as those at the existing 3 measuring points. The addition of measuring points is thought to have contributed to the improvement of credibility of the measurement results.

Regarding the strengthening of the measurement to decrease the discharge to the sea that NISA directed, it was confirmed that TEPCO discharged from the Water Discharge Canal of NPS to the outskirts of the bay to heighten the effect of diffusion and dilution.

It was confirmed that TEPCO opened the information to the public appropriately by making press releases, etc. regarding the result of monitoring.

Observing the measured data at 30km off the coast that were obtained through the monitoring that the Ministry of Education, Culture, Sports, Science and Technology (MEXT) is carrying out, the data had a tendency to decrease as a whole. However the result that was obtained at the measuring points 30km off the coast of Fukushima Dai-ichi and Dai-ni NPS, had a tendency to increase. Even though it had not happened intentionally, as there is the course of the radioactive water of high concentration to leak from Fukushima Dai-ichi NPS, observation on the further trend is needed.

(2) Actions to be taken

Regarding before and after of the discharge, even though outstanding deviation had not been confirmed, on the other hand, as there is the course of the radioactive water of high concentration to leak in the past from Fukushima Dai-ichi NPS without any intentions, continuous observation is necessary for its effects. Therefore, TEPCO needs to continue monitoring including the effects caused by the outflow of high level radioactive water as well as the impact assessment. NISA carries on confirming the results of monitoring, etc.

For this purpose, NISA gives directions to TEPCO as follows.

- ① Regarding the impact of the discharge to the sea this time, to implement the detailed assessment based on the amount of discharge this time and the results of monitoring, and to submit the outcome.
- ② In order to grasp more extensive effect in long term, to increase the numbers of monitoring points, to implement the monitoring, and to announce publicly the results of the monitoring.
- ③ To sample fish, shellfish, etc. from the sea area in the vicinity of the NPS, to carry out the measurement of radiation dose, to assess the effect, and to announce publicly the result.

Discharge amount of the stagnant water with low-level radioactivity, etc. from the Fukushima Dai-ichi NPS

< Table 1 >

	Radioactive Concentration (Bq/cm ³)				Discharge Amount (m ³)	Periods of Discharge
	I-131	Cs-134	Cs-137	sum		
Stagnant water in the Radioactive Waste Treatment Facilities	6.3E+00	4.4E+00	4.4E+00	1.5E+01	9,070	4/4 19:03 - 4/6 6:30 4/6 18:00 - 4/8 22:20 4/8 23:45 - 4/10 17:40
Water in the Sub Drain Pit of the Unit 5	1.6E+00	2.5E-01	2.7E-01	2.1E+00	950	4/5 17:20 - 4/8 12:14
Water in the Sub Drain Pit of the Unit 6	2.0E+01	4.7E+00	4.9E+00	3.0E+01	373	4/4 21:00 - 4/9 18:52

※Radioactive Concentration (Bq/cm³) of the stagnant water in the Radioactive Waste Treatment Facilities is assessed by the maximum value of the samples in the two Facilities shown in the following table.

	Radioactive Concentration (Bq/cm ³)			
	I-131	Cs-134	Cs-137	Sum
Stagnant water in the Radioactive Waste Treatment Facilities (In the Non-Controlled)	6.3E+00	2.7E+00	2.8E+00	1.2E+01
Stagnant water in the Radioactive Waste Treatment Facilities (In the Controlled Area)	8.7E-01	4.4E+00	4.4E+00	9.7E+00

< Table 2 >

	Total Amount of Radioactivity (Bq)			
	I-131	Cs-134	Cs-137	Sum
Stagnant water in the Radioactive Waste Treatment Facilities	5.7E+00	4.0E+10	4.0E+10	1.4E+11
Water in the Sub Drain Pit of the Unit 5	1.5E+09	2.4E+08	2.6E+08	2.0E+09
Water in the Sub Drain Pit of the Unit 6	7.5E+09	1.8E+09	1.8E+09	1.1E+10
Total	6.6E+10	4.2E+10	4.2E+10	1.5E+11

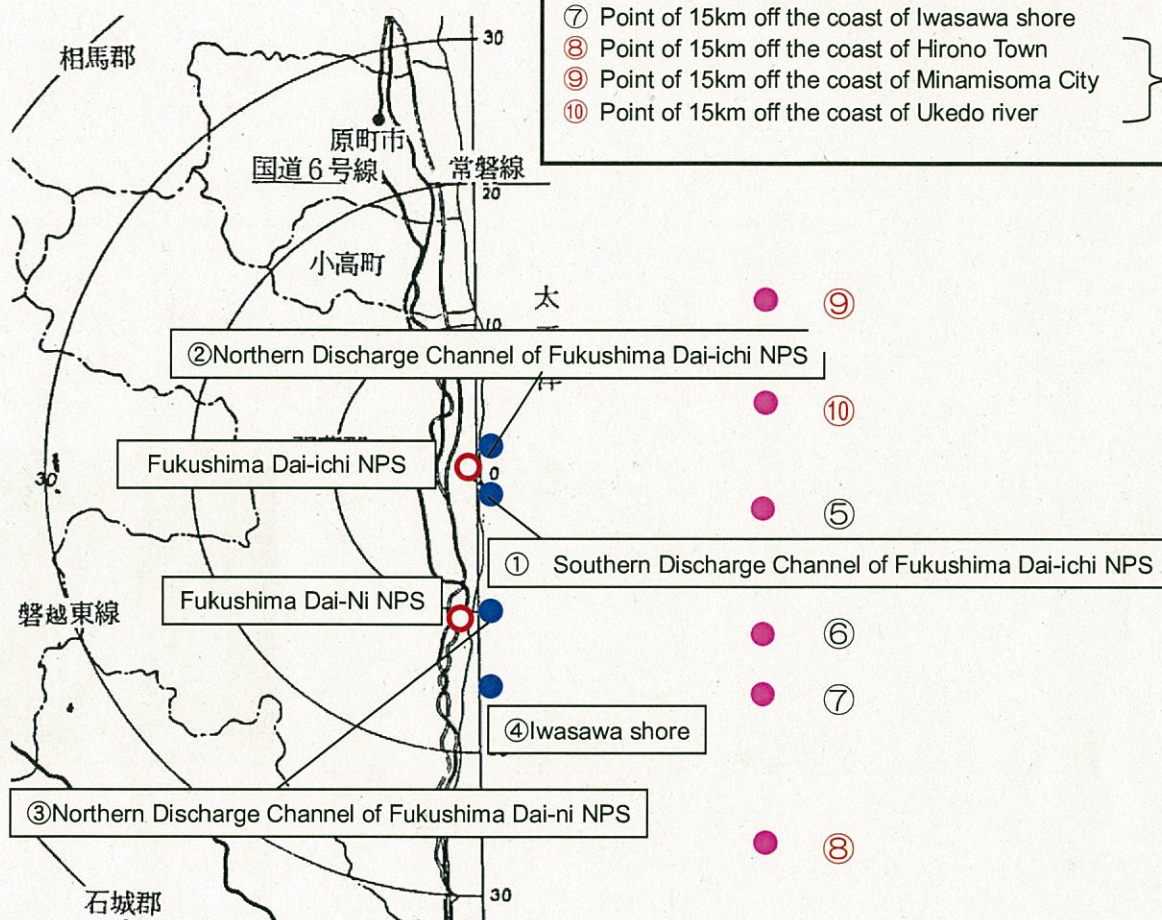
※0.0E - 0 means 0.0×10 - 0

Sampling points

Measuring once a day at the following points

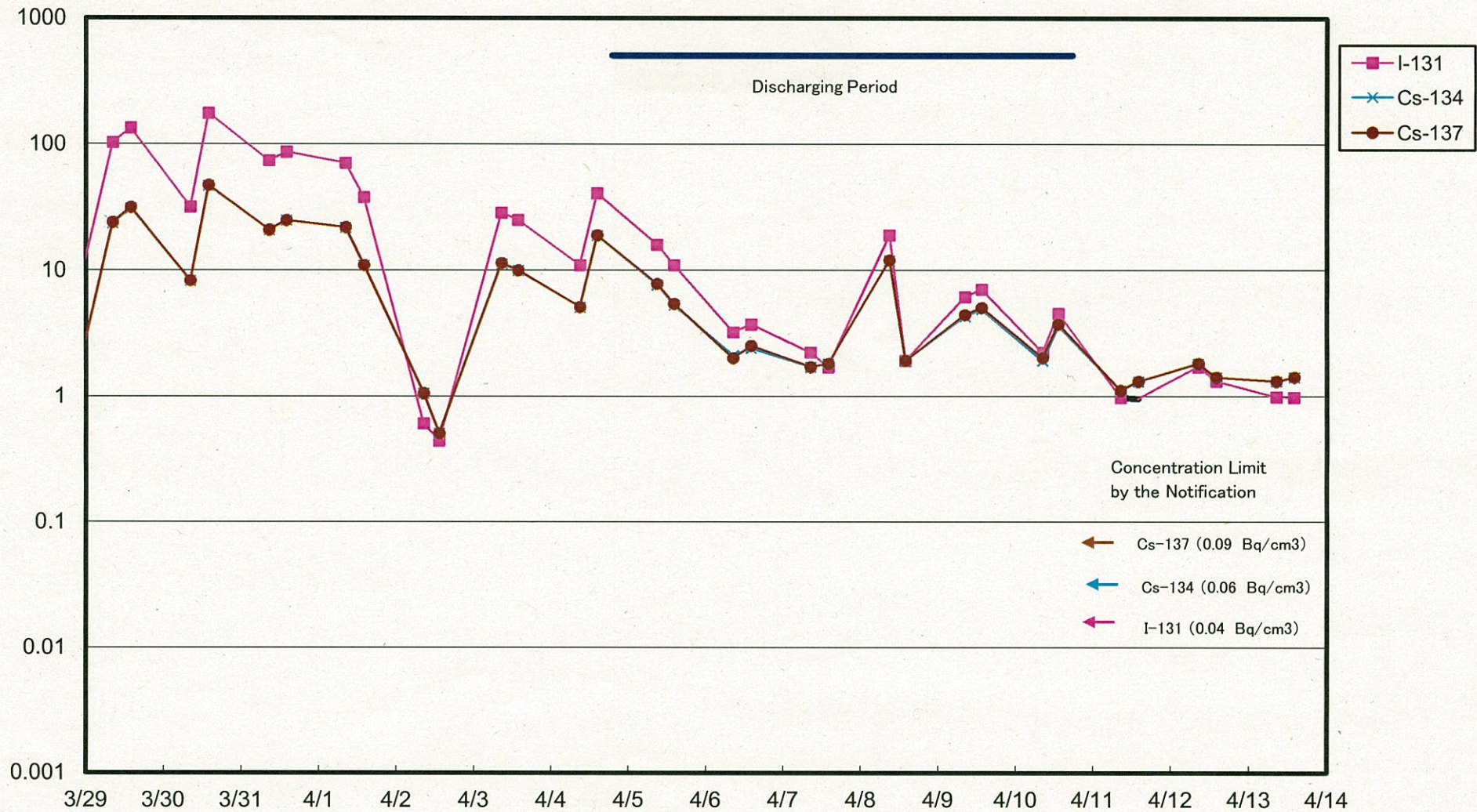
- ① Near Southern Water Discharge Canal of Fukushima Dai-ichi NPS (approx. 330m from South of Fukushima Dai-ichi NPS 1-4Us Water Discharge Canal)
- ② Point of Approx. 30m Northward from the Fukushima Dai-ichi NPS 5-6Us Water Discharge Canal
- ③ Near Northern Water Discharge Canal of Fukushima Dai-ni NPS (approx. 10km from Fukushima Dai-ichi NPS)
- ④ Near Iwasawa shore (approx. 16km from Fukushima Dai-ichi NPS)
- ⑤ Point of 15km off the coast of Fukushima Dai-ichi NPS
- ⑥ Point of 15km off the coast of Fukushima Dai-ni NPS
- ⑦ Point of 15km off the coast of Iwasawa shore
- ⑧ Point of 15km off the coast of Hirono Town
- ⑨ Point of 15km off the coast of Minamisoma City
- ⑩ Point of 15km off the coast of Ukedo river

Added
sampling
points

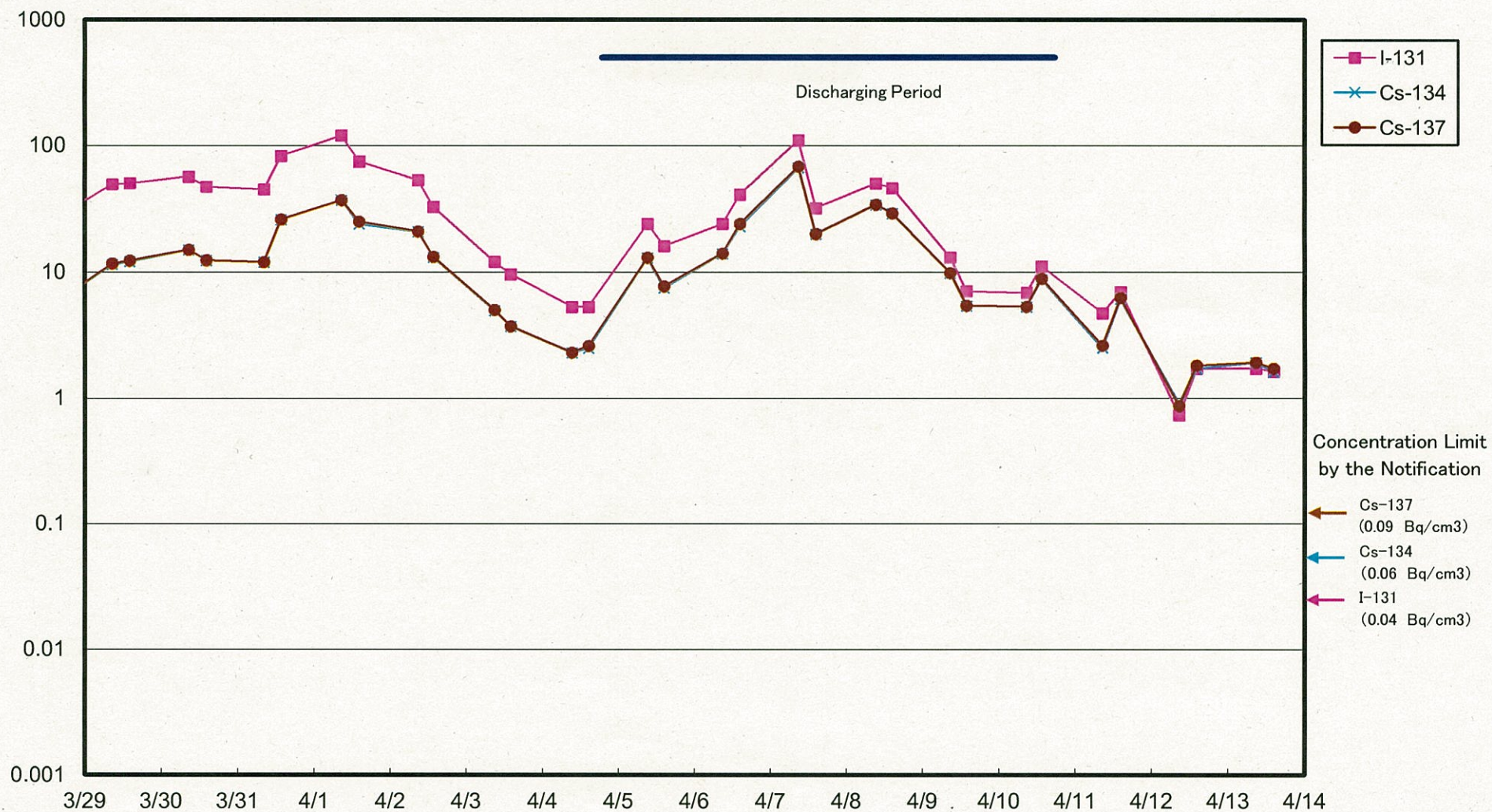


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|---|-------------------|
| ⑤ Point of 15km off the coast of Fukushima Dai-ichi NPS | 37°25'N, 141°12'E |
| ⑥ Point of 15km off the coast of Fukushima Dai-ni NPS | 37°20'N, 141°12'E |
| ⑦ Point of 15km off the coast of Iwasawa | 37°15'N, 141°12'E |
| ⑧ Point of 15km off the coast of Hirono Town 15km | 37°10'N, 141°12'E |
| ⑨ Point of 15km off the coast of Minamisoma City | 37°35'N, 141°12'E |
| ⑩ Point of 15km off the coast of Ukedo river | 37°30'N, 141°12'E |

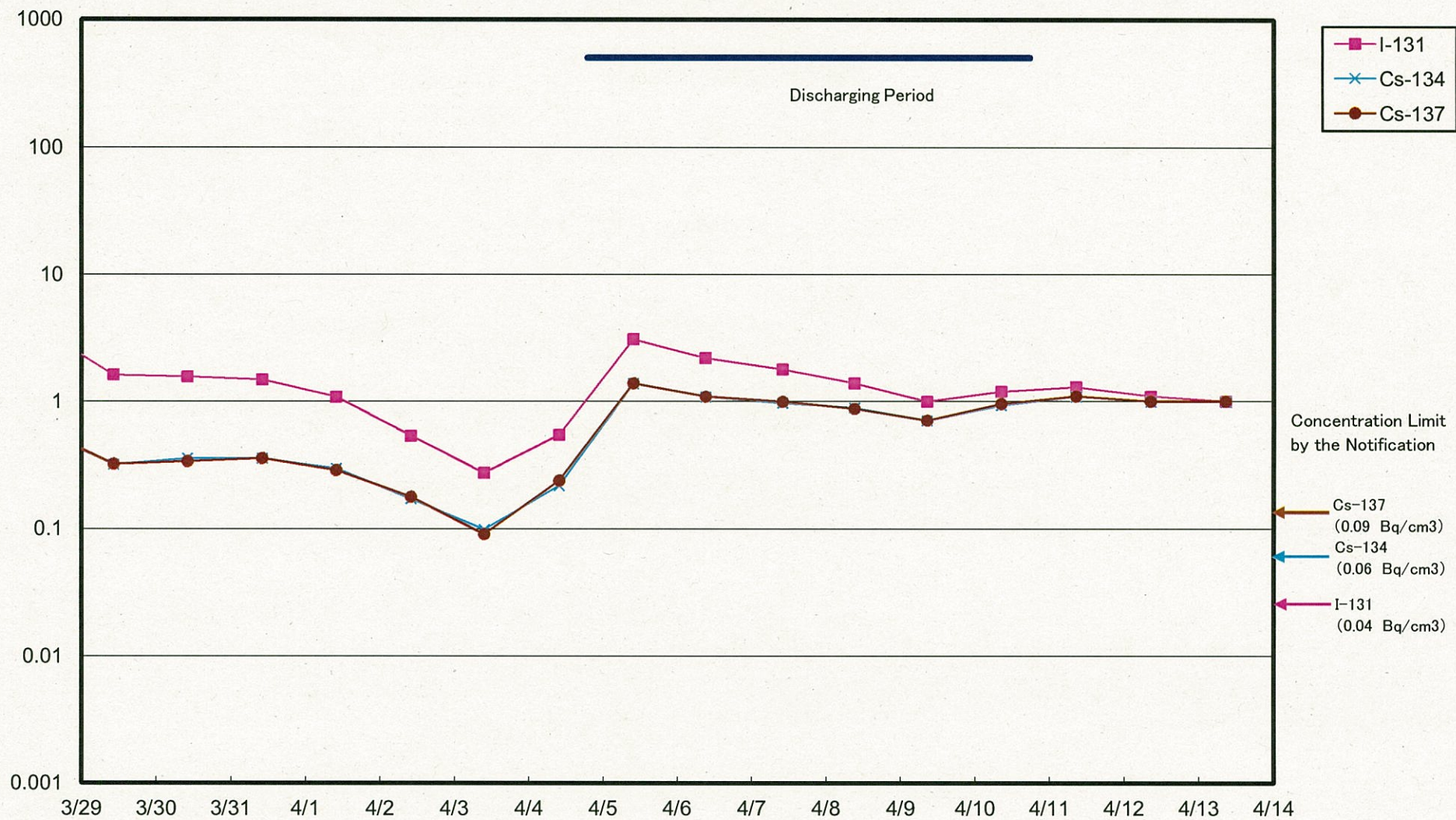
Radioactive Concentration of Seawater at Near Southern Water Discharge Canal of Fukushima Dai-ichi NPS (Bq/cm³)



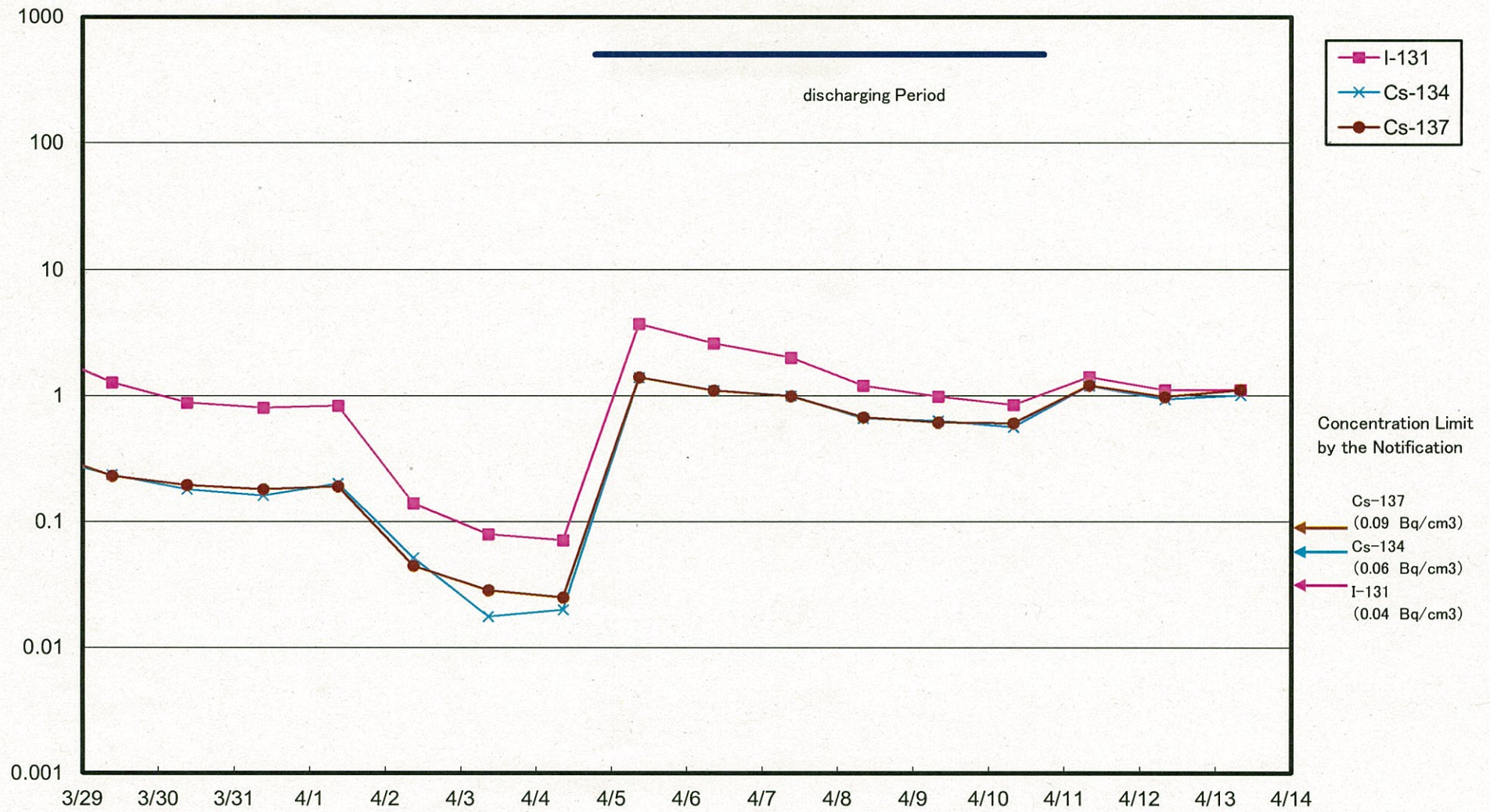
Radioactive Concentration of Seawater at the northern side of Water Discharge Canal of 5-6Us of Fukushima Dai-ichi NPS (Bq/ cm3)



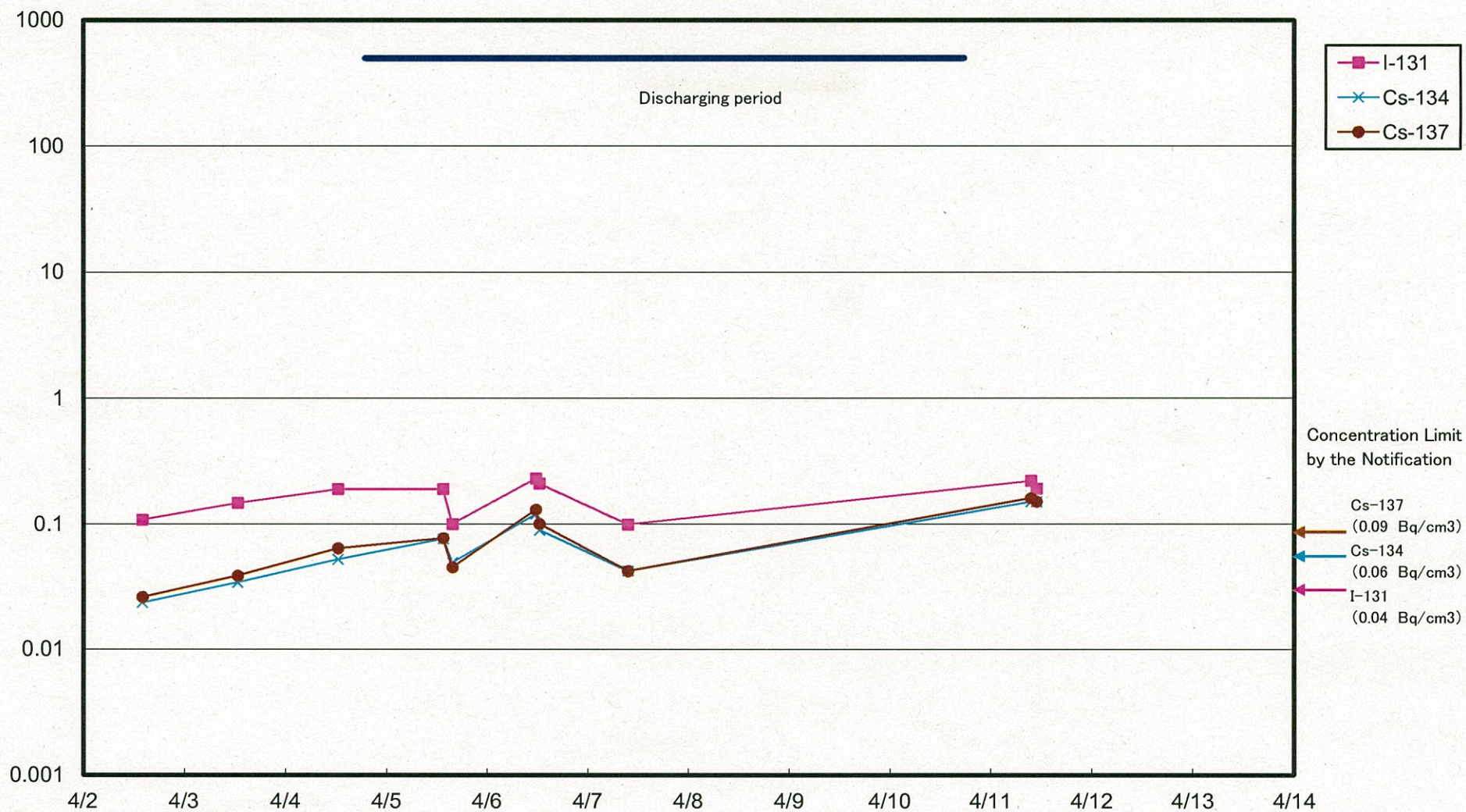
Radioactive Concentration of Seawater at Near Northern Water Discharge Canal of Fukushima Dai-ni NPS (Bq/cm³)



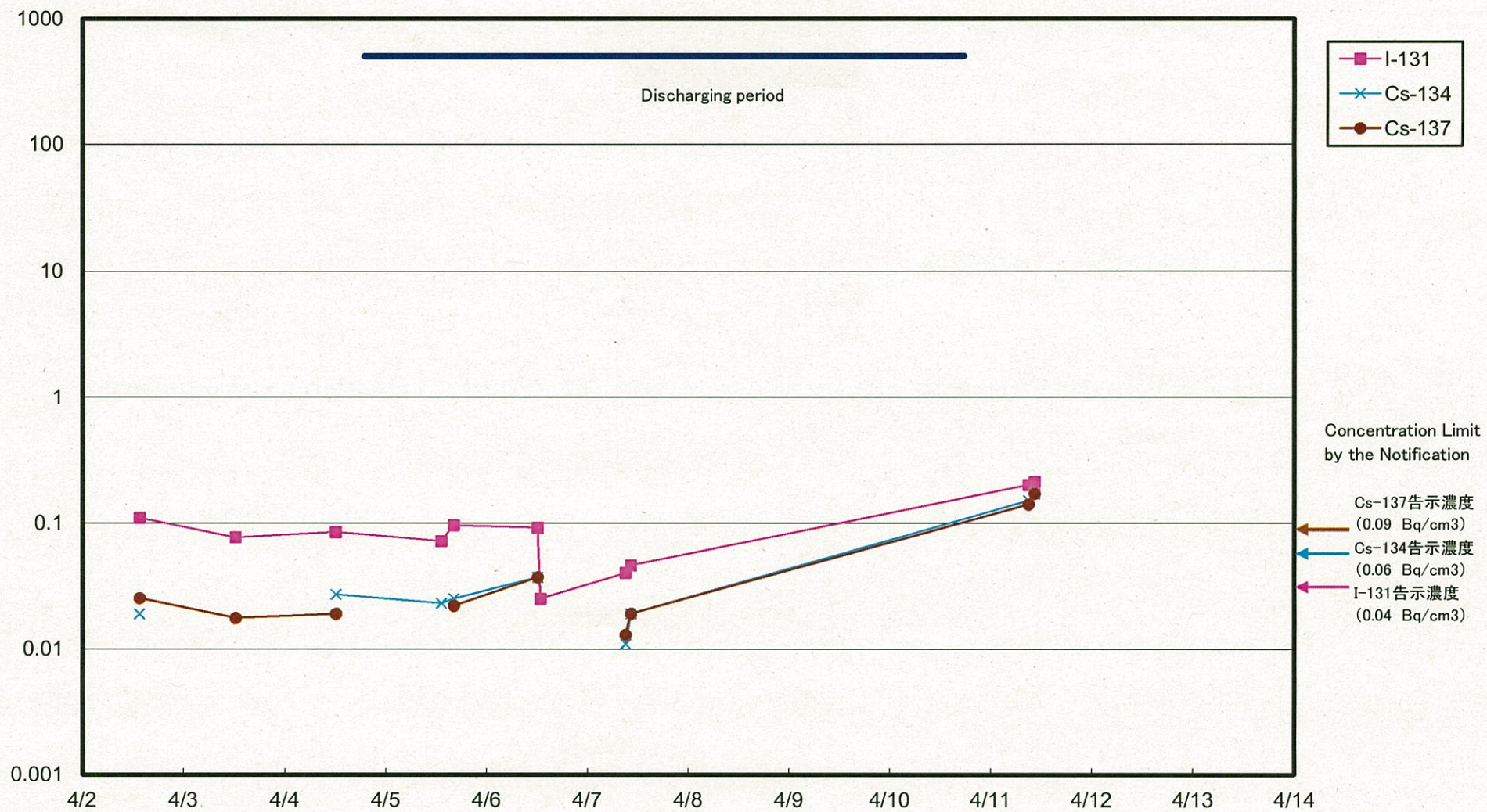
Radioactive Concentration of Seawater at Near Iwasawa Shore (Bq/cm³)



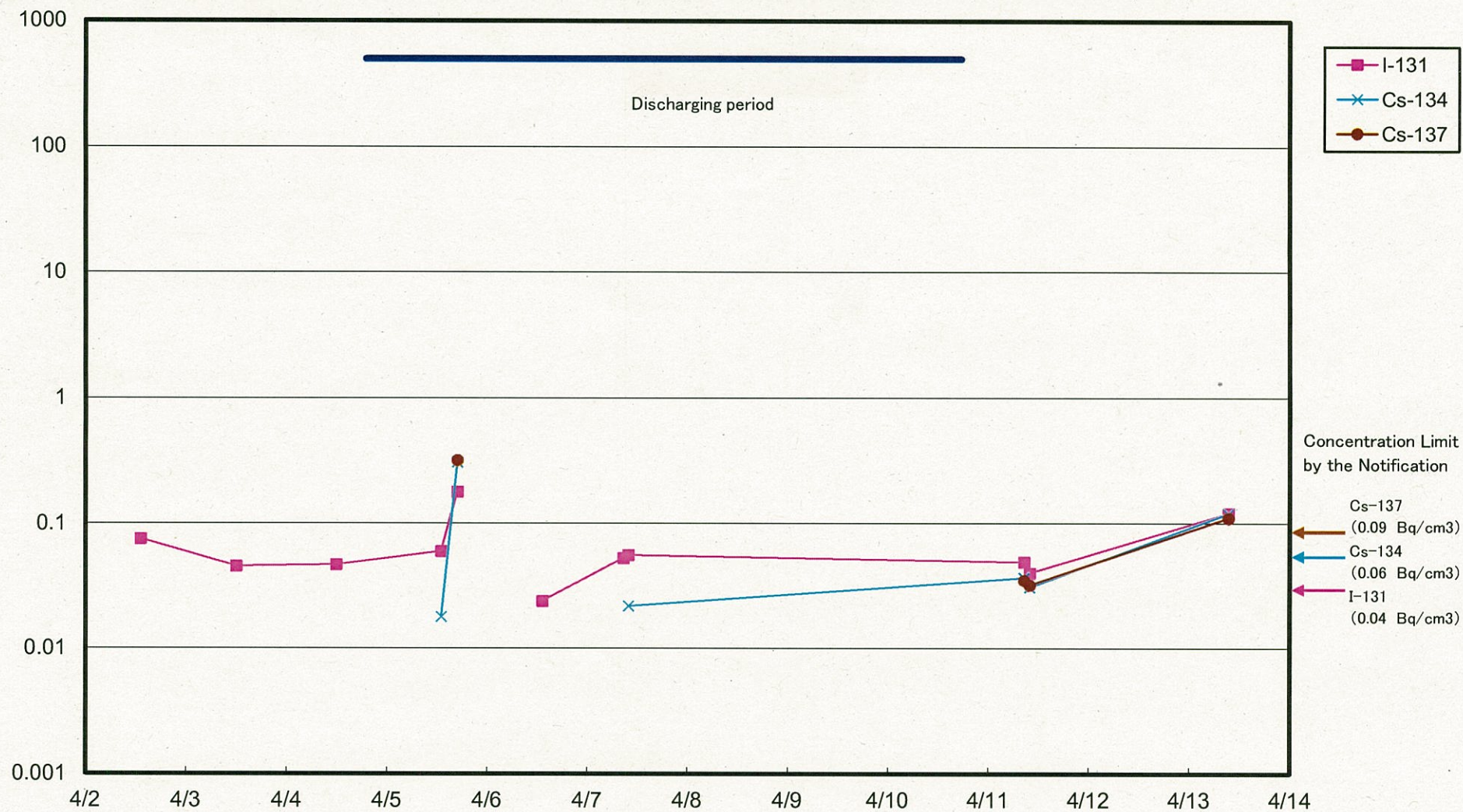
Radioactive Concentration of Seawater at the point of 15km off the coast of Fukushima Dai-ichi NPS (Bq/cm³)



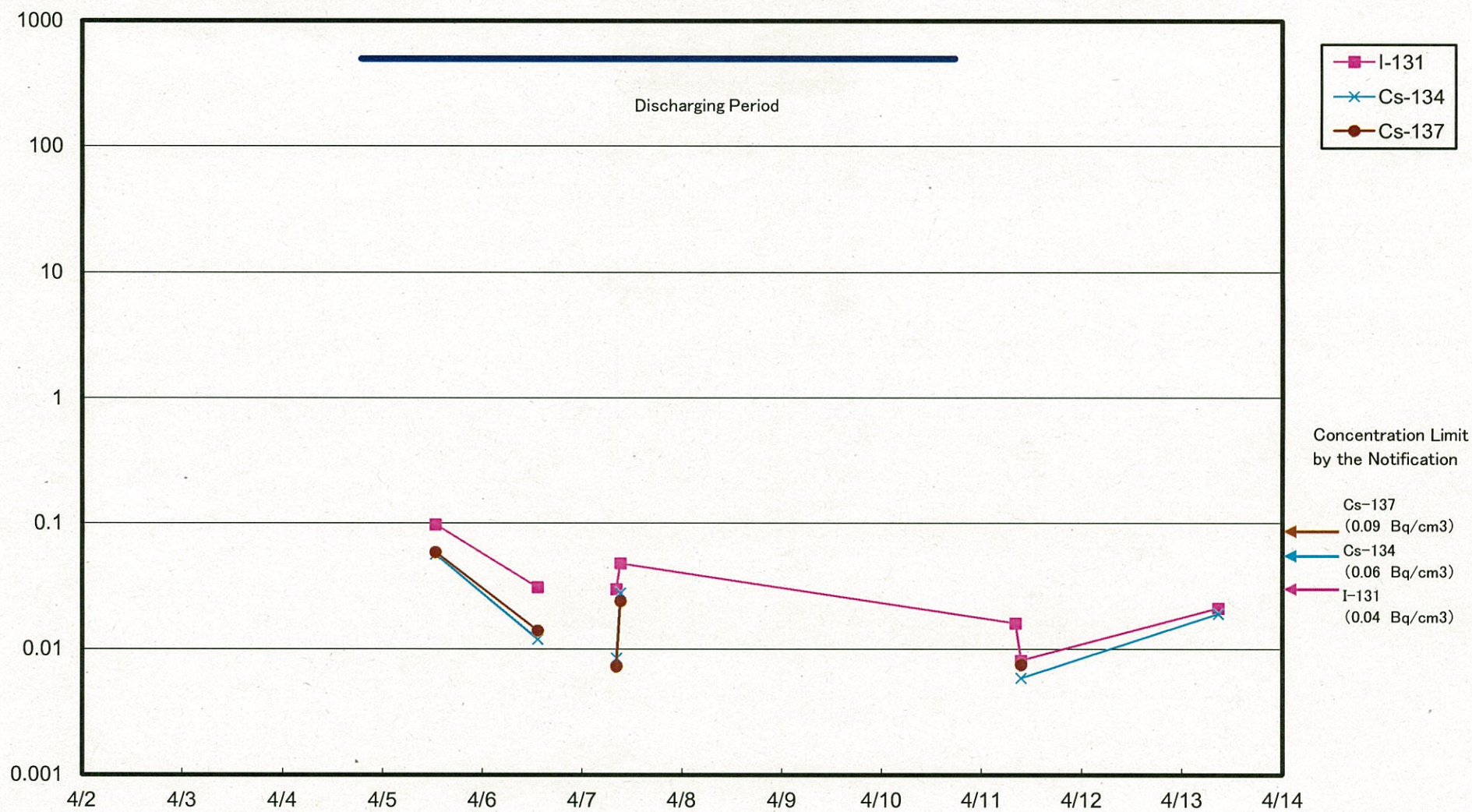
Radioactive concentration of Seawater at the point of 15km off the coast of Fukushima Dai-ni NPS (Bq/cm³)



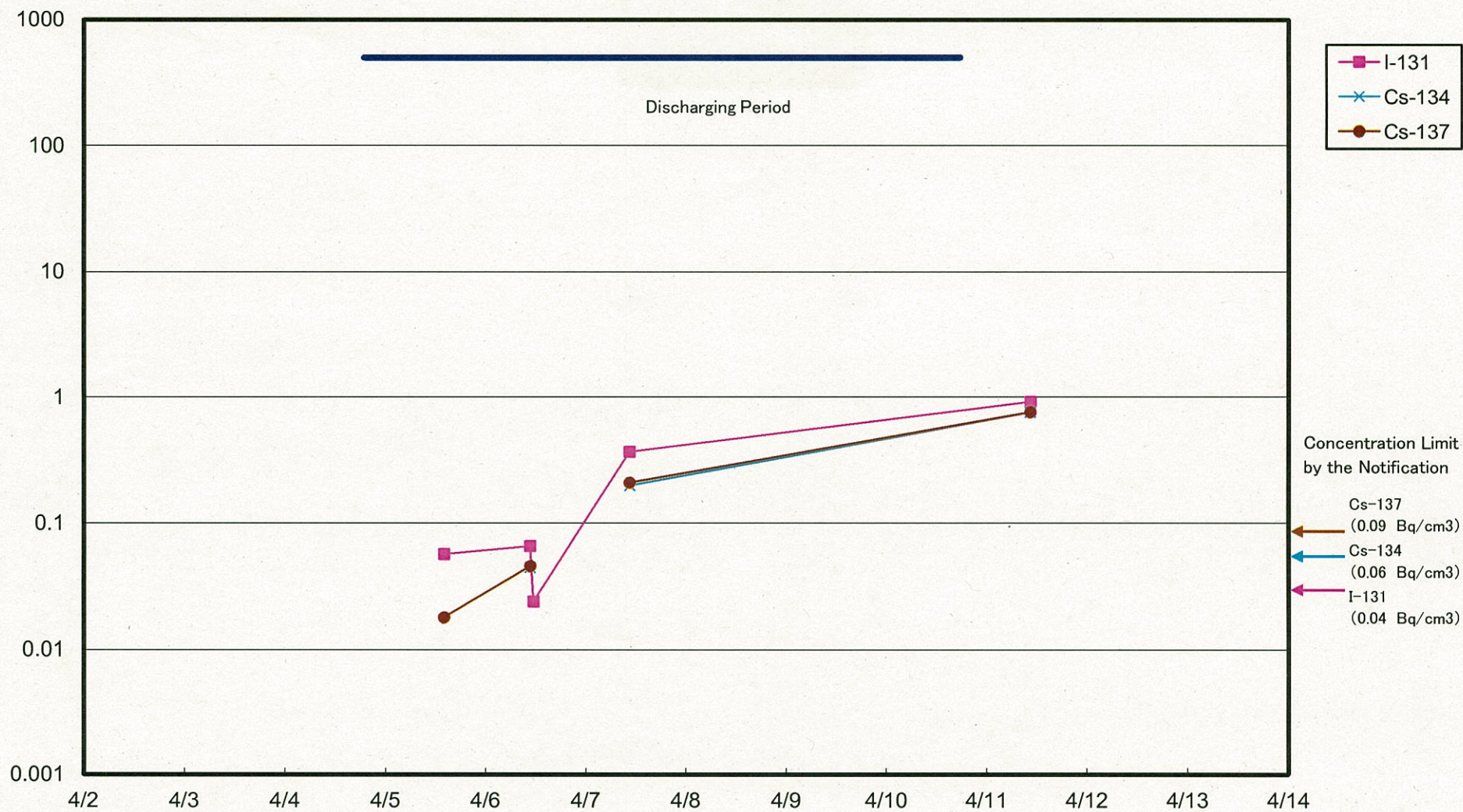
Radioactive Concentration of Seawater at the point of 15km off the coast of Iwasawa shore (Bq/cm³)



Radioactive Concentration of Seawater at the point of 15km off the coast of Hirono town (Bq/cm³)



Radioactive Concentration of Seawater at the point 15km off the coast of Minamisoma City (Bq/cm³)



Radioactive Concentration of Seawater at the point of 15km off the coast of Ukedo river (Bq/cm³)

