Reference

Nuclides Analysis Result of the Radioactive Materials in the Seawater
< Coast, Fukushima Daiichi Nuclear Power Station >

(Data summarized on May 23)

Place of Sampling	North of Unit 5-6 Discharge Channel at Fukushima Daiichi NPS (Approx. 30m North of Unit 5-6 Discharge Channel)		Around South Discharge Channel of Fukushima Daiichi NPS (Appox. 1.3km South of Unit 1-4 Discharge Channel)		② Density Limit Specified by the Reactor Regulation (Bq/L) (The density limit in the water outside the surrounding monitored areas is provided in section 6 of Appendix 2.)
Time of Sampling	May 22, 2013 6:45 AM		May 22, 2013 7:15 AM		
Detected Nuclides (Half-life)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	
I-131 (Approx. 8 days)	ND	-	ND	-	40
Cs-134 (Approx. 2 years)	ND	-	ND	-	60
Cs-137 (Approx. 30 years)	ND	-	ND	-	90

* The density specified by the Reactor Regulation is converted from Bq/cm^3 to Bq/L.
* Data of other nuclides is under evaluation.
* In the case of more than 2 nuclides, the sum of scaling factors to density limits is compared to 1.
* "ND" indicates that the measurement result is below the detection limit.
  I-131: Approx. 0.42Bq/L, Cs-134: Approx. 1.0Bq/L, Cs-137: Approx. 1.4Bq/L
  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.

Nuclides Analysis Result of Radioactive Materials in the Seawater < Offshore >

(Data summarized on May 23)

Place of Sampling (Place No.)	3km Offshore of Odaka Ward (T-14)				15km Offshore of Fukushima Daiichi NPS (T-5)				3km Offshore of Iwasawa Shore (T-11)				② Density Limit Specified by the Reactor Regulation (Bq/L) (The density limit in the water outside the surrounding monitored areas is provided in section 6 of Appendix 2.)
	Upper Layer		Lower Layer		Upper Layer		Lower Layer		Upper Layer		Lower Layer		
Time of Sampling	Apr 2, 2013 8:55 AM		Apr 2, 2013 8:55 AM		Apr 5, 2013 8:23 AM		Apr 5, 2013 8:23 AM		Apr 5, 2013 9:38 AM		Apr 5, 2013 9:38 AM		
Detected Nuclides (Half-life)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	
Cs-134 (Approx. 2 years)	0.017	0.00	0.0075	0.00	0.0056	0.00	0.0062	0.00	0.11	0.00	0.093	0.00	60
Cs-137 (Approx. 30 years)	0.034	0.00	0.014	0.00	0.012	0.00	0.012	0.00	0.20	0.00	0.16	0.00	90

Place of Sampling (Place No.)													② Density Limit Specified by the Reactor Regulation (Bq/L) (The density limit in the water outside the surrounding monitored areas is provided in section 6 of Appendix 2.)
	Upper Layer		Lower Layer		Upper Layer		Lower Layer		Upper Layer		Lower Layer		
Time of Sampling													
Detected Nuclides (Half-life)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	
Cs-134 (Approx. 2 years)													60
Cs-137 (Approx. 30 years)													90

* The density specified by the Reactor Regulation is converted from Bq/cm^3 to Bq/L.
* In the case of more than 2 nuclides, the sum of scaling factors to density limits is compared to 1.
* Analysis results by detail analysis (Phosphomolybdic acid ammonium adsorption sampling method) are noted.
* Analyzed by: THE GENERAL ENVIRONMENTAL TECHNOS Co., LTD.

Nuclides Analysis Result of Radioactive Materials in the Seawater <1/2>

(Data summarized on May 23)

Place of Sampling (Place No.)	15km Offshore of Fukushima Daiichi NPS(T-5) Upper Layer		3km Offshore of Ukedo River (T-D1) Upper Layer		3km Offshore of Fukushima Daiichi NPS (T-D5) Upper Layer		② Density Limit Specified by the Reactor Regulation (Bq/L) (The density limit in the water outside the surrounding monitored areas is provided in section 6 of Appendix 2.)
Date of Sampling	Apr 5, 2013		Apr 2, 2013		Apr 2, 2013		
Detected Nuclides (Half-life)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	
Cs-134 (Approx. 2 years)	0.0056	0.00	0.029	0.00	0.012	0.00	60
Cs-137 (Approx. 30 years)	0.012	0.00	0.057	0.00	0.023	0.00	90
H-3 (approx. 12yrs)	ND	—	ND	—	ND	—	60,000
All α	ND	—	ND	—	ND	—	—
All β	ND	—	ND	—	ND	—	—
Sr-90 (Approx. 29 years)	ND	—	0.017	0.00	ND	—	30

* The density specified by the Reactor Regulation is converted from Bq/cm^3 to Bq/L.
* In the case of more than 2 nuclides, the sum of scaling factors to density limits is compared to 1.
* Nuclide analysis results of Cs-134 and Cs-137 were announced on March 23.
* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.
  H-3: Approx. 2.8Bq/L, All α: Approx. 3.3Bq/L, All β: Approx. 22Bq/L, Sr-90: Approx. 0.02Bq/L
  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.
* Nuclides analysis of Sr-90 was done by Japan Chemical Analysis Center.

(Evaluation)

Although Sr-90 was detected supposedly as a result of this accident, it is less than the density limit in the water which is specified by the announcement.

Nuclides Analysis Result of Radioactive Materials in the Seawater <2/2>

(Data summarized on May 23)

Place of Sampling (Place No.)	3km Offshore of Fukushima Daini NPS (T-D9) Upper Layer						② Density Limit Specified by the Reactor Regulation (Bq/L) (The density limit in the water outside the surrounding monitored areas is provided in section 6 of Appendix 2.)
Date of Sampling	Apr 5, 2013						
Detected Nuclides (Half-life)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	
Cs-134 (Approx. 2 years)	0.099	0.00					60
Cs-137 (Approx. 30 years)	0.18	0.00					90
H-3 (approx. 12yrs)	ND	—					60,000
All α	ND	—					—
All β	ND	—					—
Sr-90 (Approx. 29 years)	0.035	0.00					30

* The density specified by the Reactor Regulation is converted from Bq/cm^3 to Bq/L.
* In the case of more than 2 nuclides, the sum of scaling factors to density limits is compared to 1.
* Nuclide analysis results of Cs-134 and Cs-137 were announced on March 23.
* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.
  H-3: Approx. 2.8Bq/L, All α: Approx. 3.3Bq/L, All β: Approx. 22Bq/L
  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.
* Nuclides analysis of Sr-89 and Sr-90 were done by Japan Chemical Analysis Center.

(Evaluation)

Although Sr-90 was detected supposedly as a result of this accident, it is less than the density limit in the water which is specified by the announcement.

Analysis Result of Pu in the Seawater

1. Measurement Result:

（Unit：Bq/L）

Place of Sampling	Date	Pu-238	Pu-239+Pu-240
1F, North of Unit 5-6 Discharge Channel	Apr 9, 2013	N.D. [$<6.8\times10^{-6}$]	$(1.3\pm0.28)\times10^{-5}$
1F, Around South Discharge Channel	Apr 9, 2013	N.D. [$<7.0\times10^{-6}$]	$(1.4\pm0.30)\times10^{-6}$
15km Offshore of Fukushima Daiichi NPS, Upper Layer	Apr 5, 2013	N.D. [$<8.8\times10^{-6}$]	N.D. [$<9.2\times10^{-6}$]
Around 3km Offshore of Ukedo River, Upper Layer	Apr 2, 2013	N.D. [$<8.7\times10^{-6}$]	N.D. [$<8.3\times10^{-6}$]
3km Offshore of Fukushima Daiichi NPS, Upper Layer	Apr 2, 2013	N.D. [$<5.3\times10^{-6}$]	$(5.7\pm1.8)\times10^{-6}$
3km Offshore of Fukushima Daini NPS, Upper Layer	Apr 5, 2013	N.D. [$<7.0\times10^{-6}$]	N.D. [$<7.0\times10^{-6}$]
The range of the past measurement results obtained in the ocean near Fukushima Daiichi and Daini Nuclear Power Stations (FY2001 - FY2008)*		—	ND - 1.3×10^{-5}

[ ] shows below the detection limit.

*: Source "Report on the environmental radioactivity measurement around the Nuclear Power Plant (2008)", Committee on the safety technology of Nuclear Power Plants in Fukushima.

2. Analytical Institution: Japan Chemical Analysis Center

3. Evaluation:

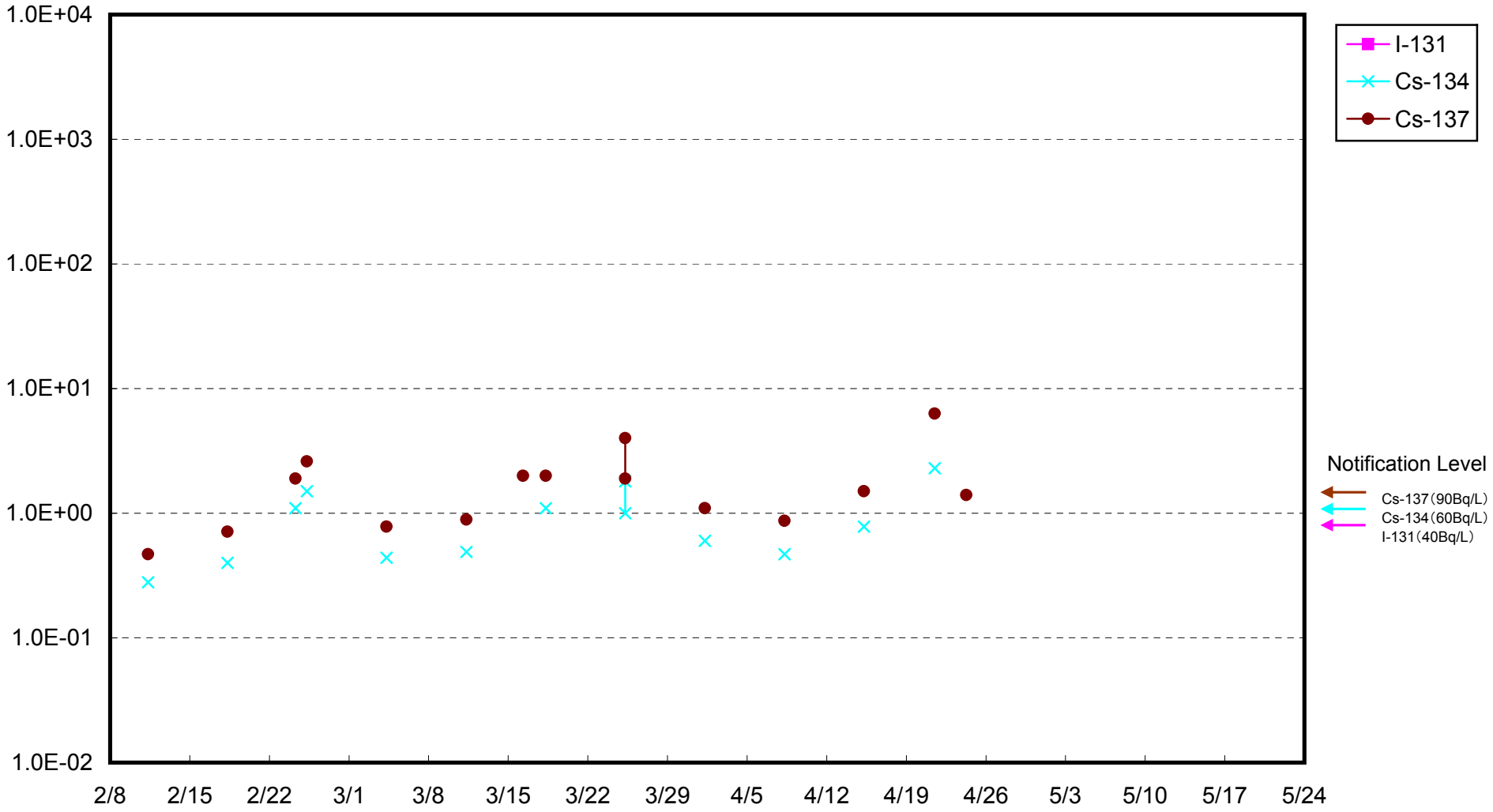
Given that the density level of Pu-239+Pu-240 detected at 3km Offshore of Fukushima Daiichi NPS, Upper Layer on April 2, 2013 is within the range of the past density measurements conducted along the seacoasts of 1F and 2F, it cannot be stated with absolute certainty that the presence of these particles is due to the accident.

Given that the density level of Pu-239+Pu-240 detected at 1F, North of Unit 5-6 Discharge Channel on April 9, 2013 shall higher than the past density measurements conducted along the seacoasts of 1F and 2F, it cannot be stated with absolute certainty that the presence of these particles is not due to the accident.

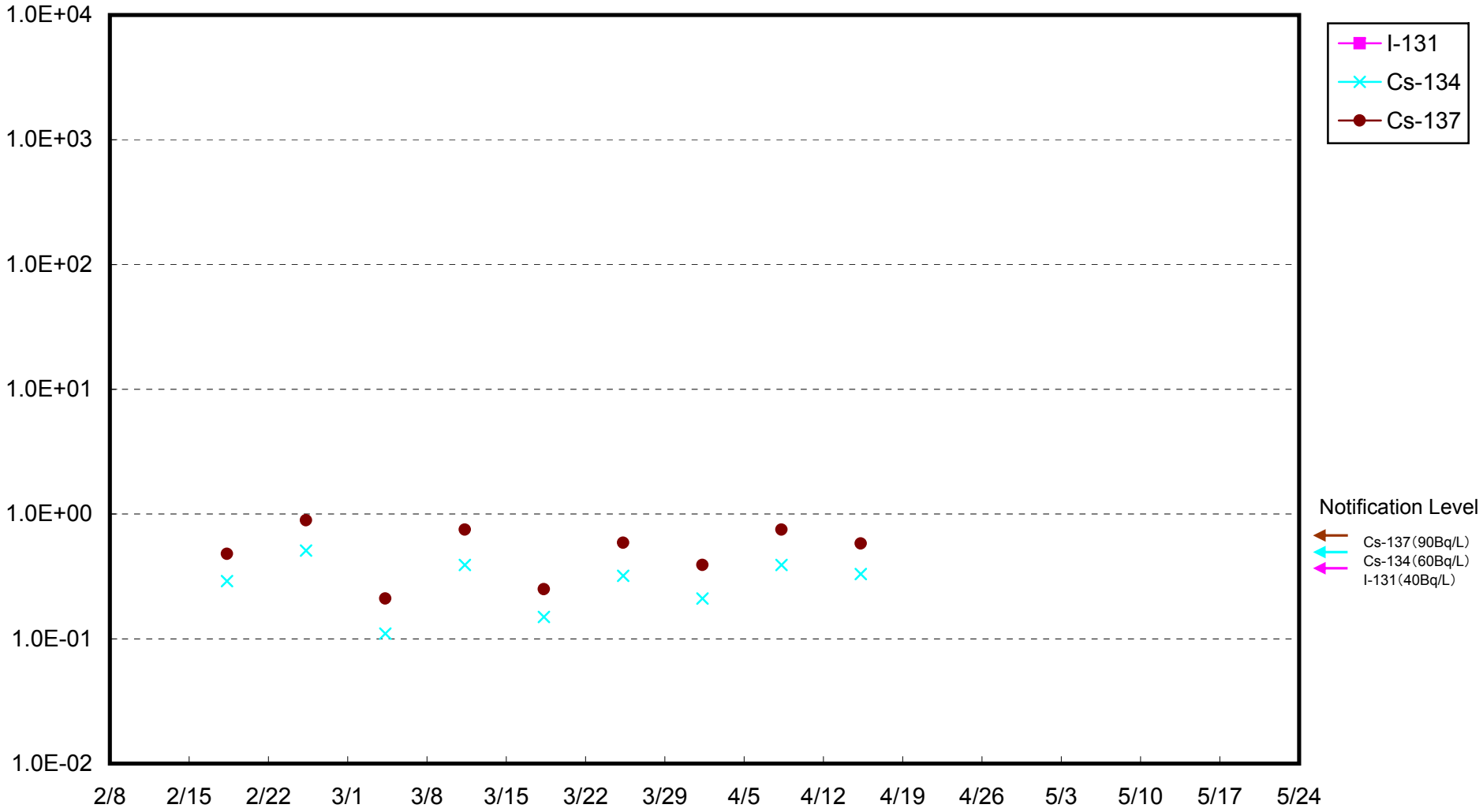
Given that the density level of Pu-239+Pu-240 detected at 1F, Around South Discharge Channel on April 9, 2013 is higher than the past density measurements conducted along the seacoasts of 1F and 2F, it can be stated that the presence of these particles is due to the accident.

End

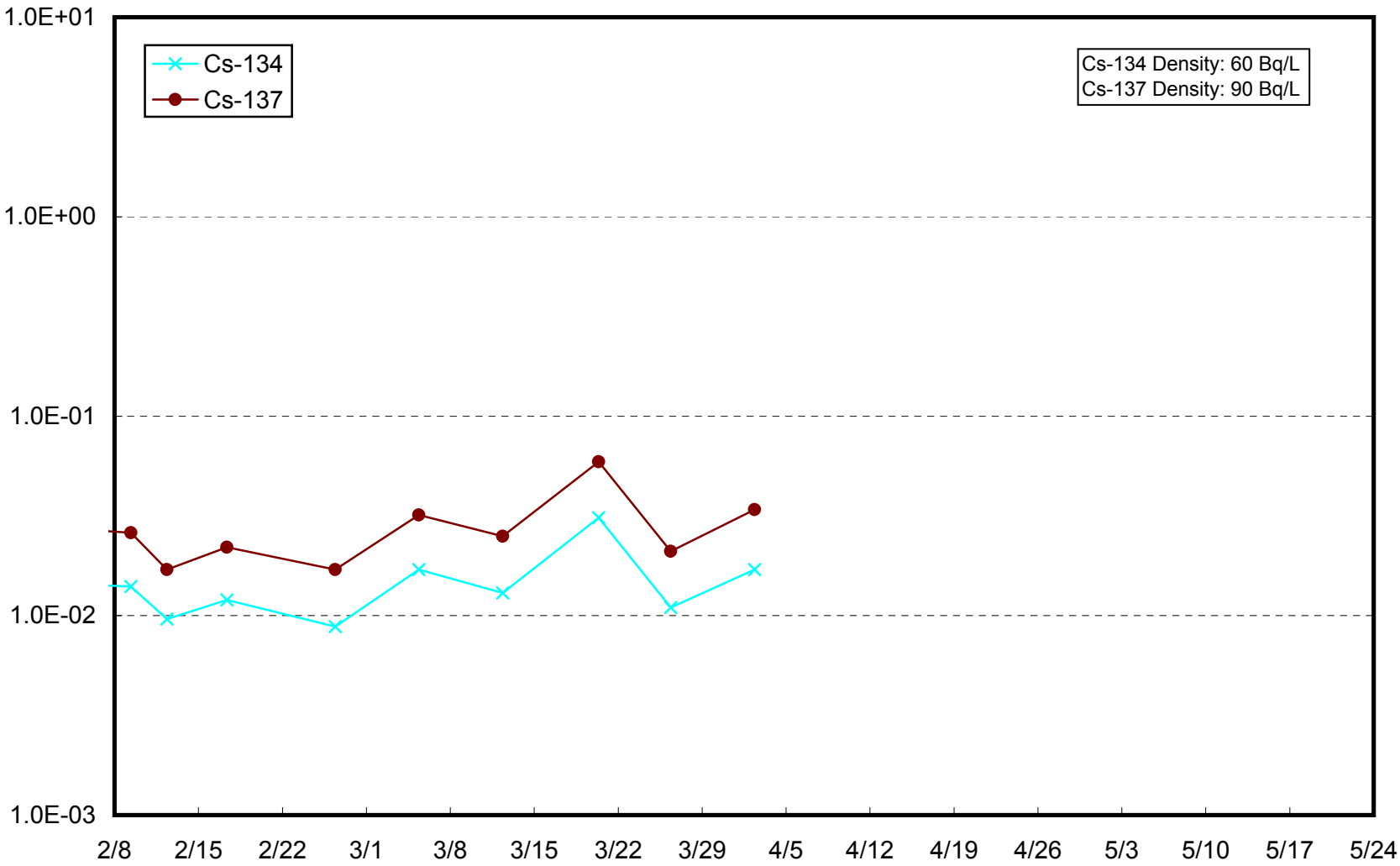
Radioactivity Density of the Seawater at 1F Units 5-6 North Discharge Channel (Bq/L)



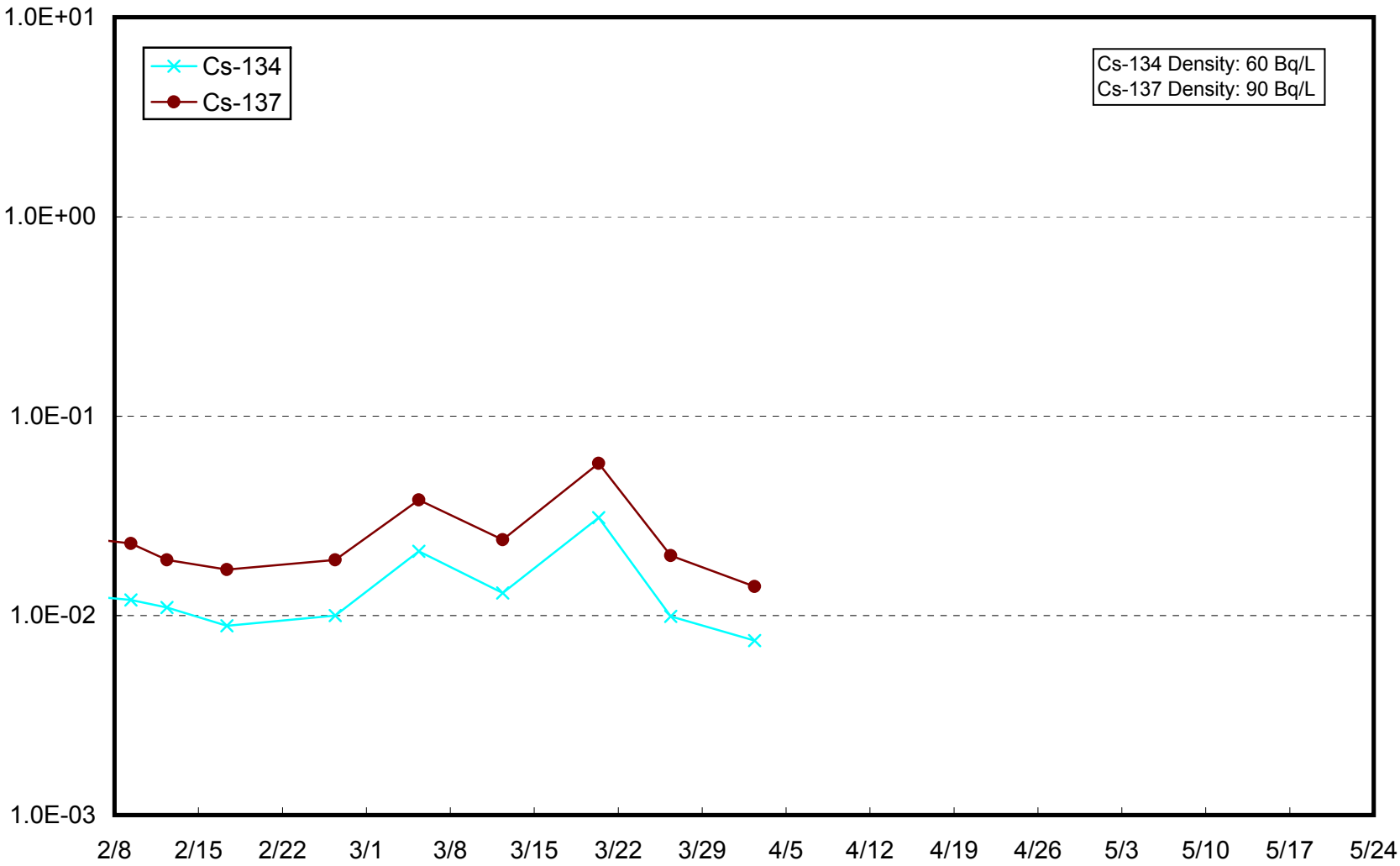
Radioactivity Density of the Seawater at 1F South Discharge Channel (Bq/L)



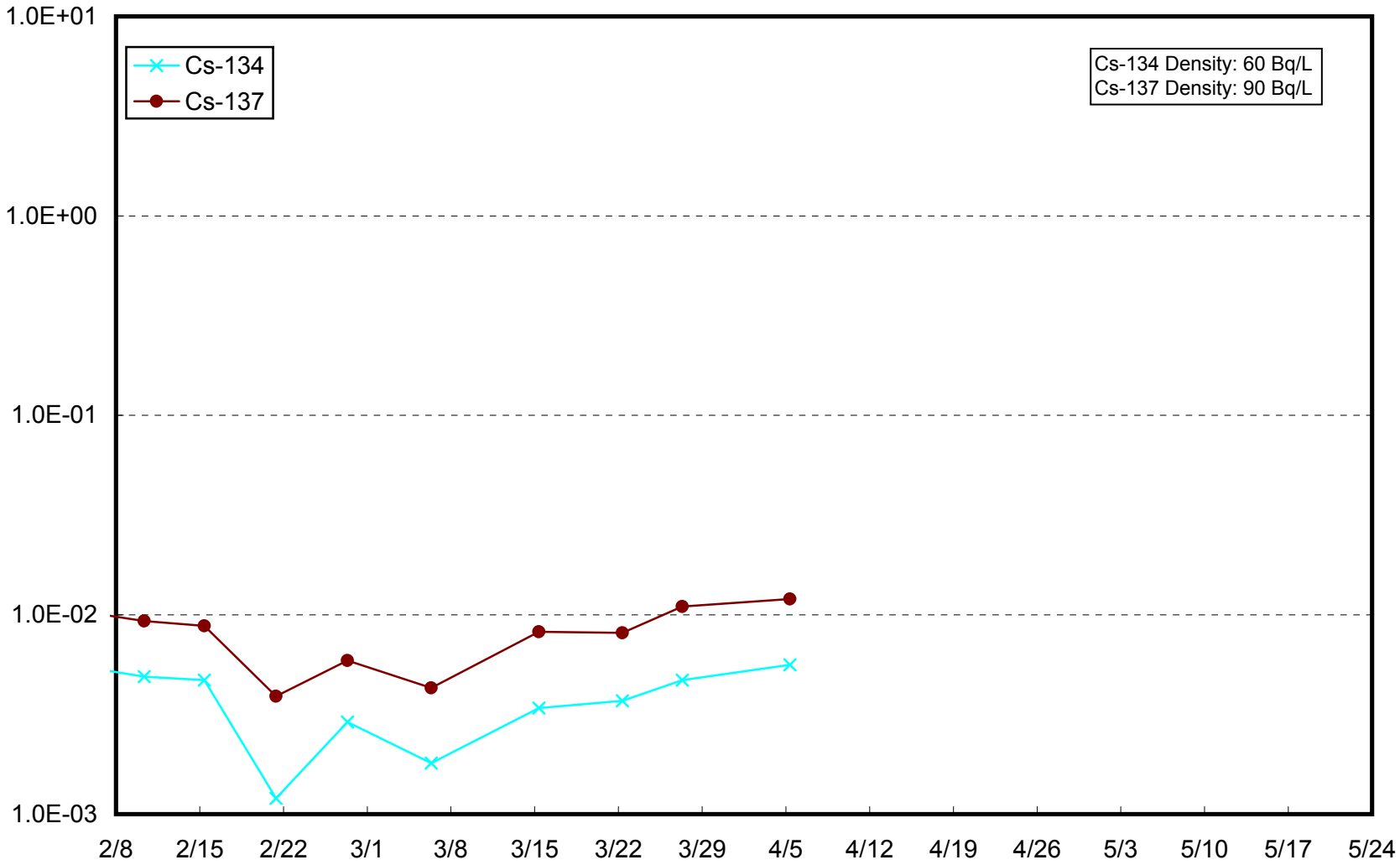
Radioactivity Density of the Seawater at 3km Offshore of Odaka Ward (T-14) Upper Layer (Bq/L)



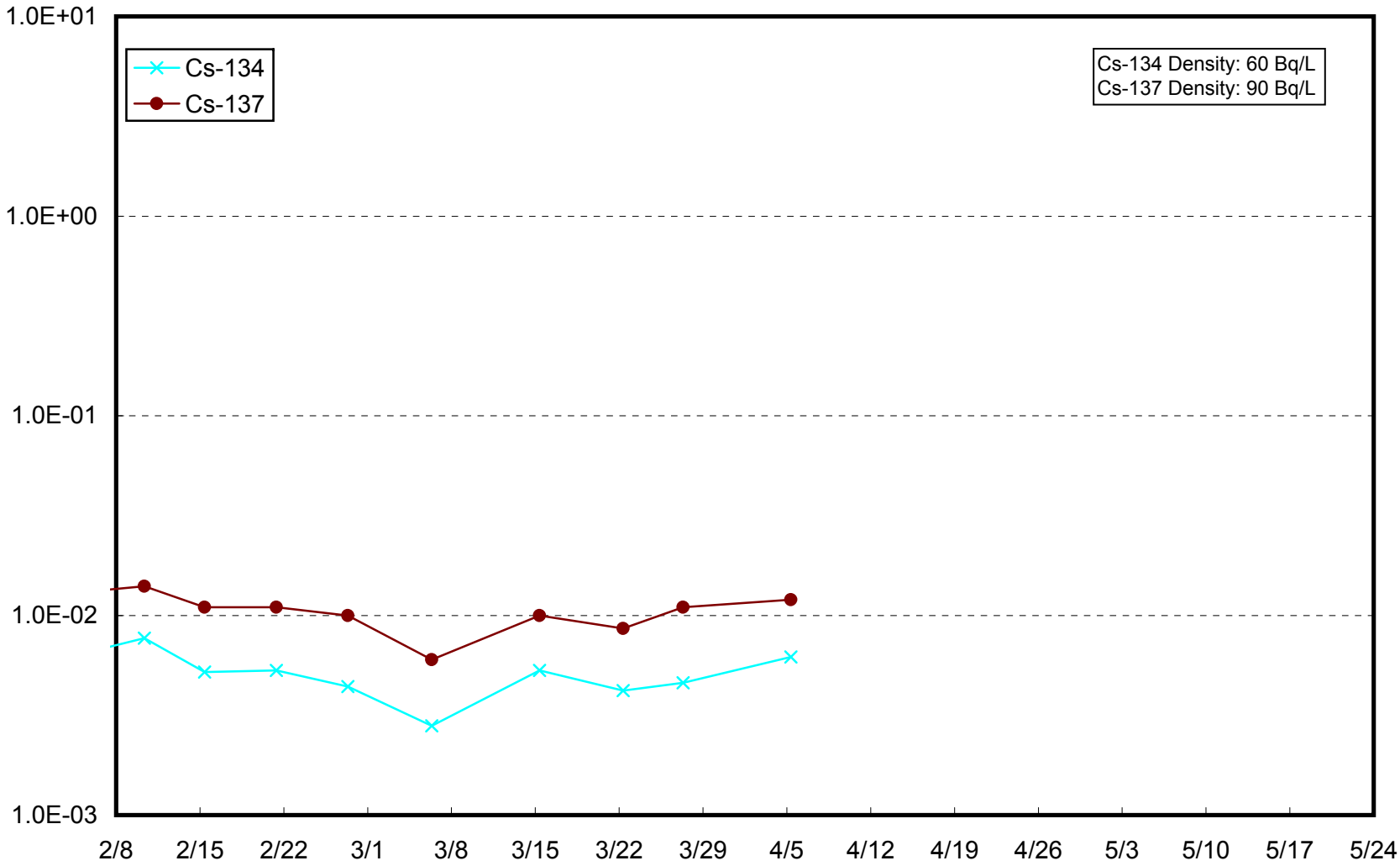
Radioactivity Density of the Seawater at 3km Offshore of Odaka Ward (T-14) Lower Layer (Bq/L)



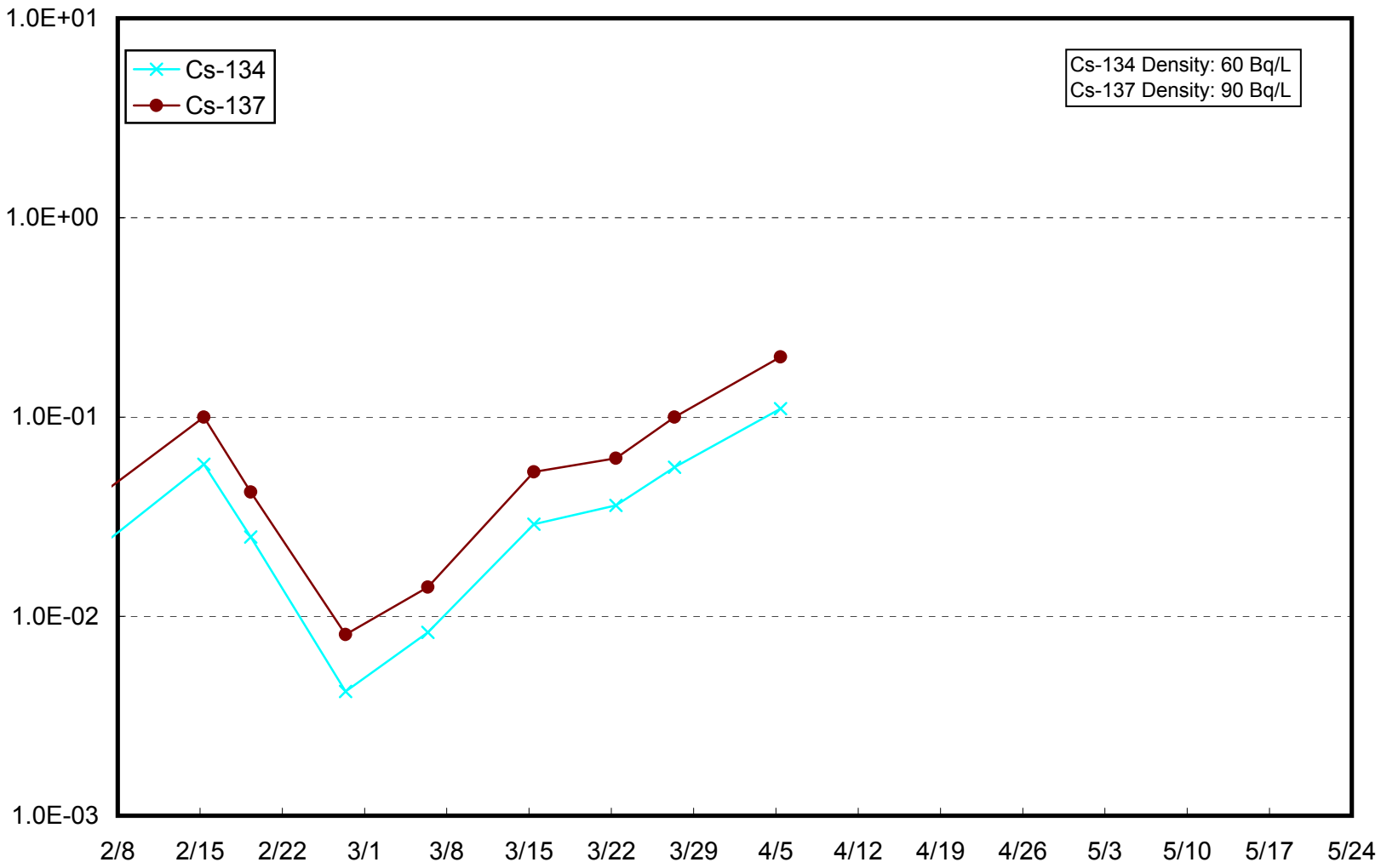
Radioactivity Density of the Seawater at 15km Offshore of Fukushima Daiichi NPS (T-5) Upper Layer (Bq/L)



Radioactivity Density of the Seawater at 15km Offshore of Fukushima Daiichi NPS (T-5) Lower Layer (Bq/L)



Radioactivity Density of the Seawater at 3km Offshore of Iwasawa Shore (T-11) Upper Layer (Bq/L)



Radioactivity Density of the Seawater at 3km Offshore of Iwasawa Shore (T-11) Lower Layer (Bq/L)