Reference

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

(Data summarized on March 19)

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	Mar 18, 2013 2:00 PM		Mar 18, 2013 7:45 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. 0.47Bq/L, Cs-134: Approx. 1.1Bq/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.

Reference

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

(Data summarized on March 19)

Place of Sampling	2F Around the North Discharge Channel (Around Unit 3-4 Discharge Channel) (Approx. 10km from 1F)		Around the North Side of Asamigawa (Approx. 12km South of Unit 1 & 2 Discharge Channel) (Approx. 24km from 1F)		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	Feb 12, 2013 10:20 AM		Feb 12, 2013 7:30 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)	0.12	0.00	0.059	0.00	60
Cs-137 (Approx. 30 years)	0.21	0.00	0.098	0.00	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. 0.47Bq/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.
* As to Cs-134 and Cs-137, analysis results by detail analysis (Phosphomolybdic acid ammonium adsorption sampling method) are noted.
  Analyzed by Tokyo Electric Power Environmental Engineering Co., Inc.

Reference

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

(Data summarized on March 19)

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	Feb 11, 2013 7:50 AM		Feb 11, 2013 8:30 AM		
Detected Nuclides (Half-life)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	①Density of Sample (Bq/L)	Scaling Factor (①/②)	
Cs-134 (Approx. 2 years)	0.28	0.00	0.28	0.00	60
Cs-137 (Approx. 30 years)	0.47	0.01	0.52	0.01	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: Tokyo Electric Power Environmental Engineering Co., Inc.

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

(Data summarized on March 19)

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	Feb 10, 2013		Feb 9, 2013		Feb 9, 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)	0.0049	0.00	0.023	0.00	0.025	0.00	60
Cs-137 (Approx. 30 years)	0.0093	0.00	0.043	0.00	0.041	0.00	90
H-3 (approx. 12yrs)	ND	－	ND	－	ND	－	60,000
All α	ND	－	ND	－	ND	－	－
All β	ND	－	ND	－	ND	－	－
Sr-89 (Approx. 51 days)	ND	－	ND	－	ND	－	300
Sr-90 (Approx. 29 years)	ND	－	ND	－	0.058	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 12 and 19.
* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.
  H-3: Approx. 3.2Bq/L，All α: Approx. 3.6Bq/L，All β: Approx. 21Bq/L，
  Sr-89: Approx. 0.03Bq/L，Sr-90: Approx. 0.009Bq/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.

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

(Data summarized on March 19)

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	Feb 6, 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)	0.0043	0.00					60
Cs-137 (Approx. 30 years)	0.0077	0.00					90
H-3 (approx. 12yrs)	ND	–					60,000
All α	ND	–					–
All β	ND	–					–
Sr-89 (Approx. 51 days)	ND	–					300
Sr-90 (Approx. 29 years)	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 12.
* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.
  H-3: Approx. 3.2Bq/L, All α: Approx. 3.6Bq/L, All β: Approx. 21Bq/L,
  Sr-89: Approx. 0.01Bq/L, Sr-90: Approx. 0.009Bq/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)

H-3, All α, All β, Sr-89 and Sr-90 were not detected in the sample collected this time.

Nuclides Analysis Result of Radioactive Materials in the Seawater

(Data summarized on March 19)

Place of Sampling (Place No.)	North of Unit 5-6 Discharge Channel at Fukushima Daiichi NPS (Approx. 30m North of Unit 5-6 Discharge Channel) (T-1)		Around South Discharge Channel of Fukushima Daiichi NPS (Appox. 1.3km South of Unit 1-4 Discharge Channel) (T-2-1)				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	Feb 11, 2013		Feb 11, 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)	
I-131 (Approx. 8 days)	ND	–	ND	–			40
Cs-134 (Approx. 2 years)	ND	–	ND	–			60
Cs-137 (Approx. 30 years)	ND	–	ND	–			90
H-3 (approx. 12yrs)	3.1	0.00	ND	–			60,000
All α	ND	–	ND	–			–
All β	ND	–	ND	–			–
Sr-89 (Approx. 51 days)	ND	–	ND	–			300
Sr-90 (Approx. 29 years)	1.1	0.04	0.24	0.01			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 I-131, Cs-134, Cs-137 and All β obtained at "Around South Discharge Channel of Fukushima Daiichi NPS " were announced on Febru
* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.
  I-131: Approx. 0.49Bq/L, Cs-134: Approx. 1.1Bq/L, Cs-137: Approx. 1.5Bq/L,
  H-3: Approx. 3.1Bq/L, All α: Approx. 0.10Bq/L, All β: Approx. 25Bq/L,
  Sr-89: Approx. 0.09Bq/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 H-3 and Sr-90 were detected supposedly as a result of this accident, H-3 and Sr-90 are less than the density limit in the water which is specified by the announcement.

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

(Data summarized on March 19)

Place of Sampling (Place No.)	3km Offshore of Odaka Ward (T-14) *1				3km Offshore of Ukedo River (T-D1) *2				3km Offshore of Fukushima Daiichi NPS (T-D5) *2				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	Feb 9, 2013 8:50 AM		Feb 9, 2013 8:50 AM		Feb 12, 2013 9:21 AM		Feb 12, 2013 9:21 AM		Feb 12, 2013 9:55 AM		Feb 12, 2013 9:55 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)	0.014	0.00	0.012	0.00	0.020	0.00	0.016	0.00	0.0040	0.00	0.0054	0.00	60
Cs-137 (Approx. 30 years)	0.026	0.00	0.023	0.00	0.032	0.00	0.032	0.00	0.0074	0.00	0.0089	0.00	90

Place of Sampling (Place No.)	3km Offshore of Fukushima Daini NPS (T-D9) *2				15km Offshore of Fukushima Daiichi NPS (T-5) *1				3km Offshore of Iwasawa Shore (T-11) *1				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	Feb 15, 2013 8:18 AM		Feb 15, 2013 8:18 AM		Feb 10, 2013 8:22 AM		Feb 10, 2013 8:22 AM		Feb 6, 2013 8:10 AM		Feb 6, 2013 8:10 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)	0.10	0.00	0.23	0.00	0.0049	0.00	0.0077	0.00	0.022	0.00	0.018	0.00	60
Cs-137 (Approx. 30 years)	0.19	0.00	0.41	0.00	0.0093	0.00	0.014	0.00	0.040	0.00	0.032	0.00	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: *1 THE GENERAL ENVIRONMENTAL TECHNOS Co., LTD.、*2 Tokyo Electric Power Environmental Engineering Co., Inc.

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

(Data summarized on March 19)

Place of Sampling (Place No.)	Around 1km Offshore of Ota River (T-S1)				Around 3km Offshore of Odaka Ward (T-S2)								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	Feb 6, 2013 6:32 AM		Feb 6, 2013 6:32 AM		Feb 6, 2013 6:02 AM		Feb 6, 2013 6:02 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)	0.011	0.00	0.0098	0.00	0.011	0.00	0.0079	0.00					60
Cs-137 (Approx. 30 years)	0.019	0.00	0.019	0.00	0.021	0.00	0.018	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.

Analysis Result of Pu in the Seawater

1. Measurement Result:

(Unit：Bq/L)

Place of Sampling	Date	Pu-238	Pu-239+Pu-240
15km Offshore of Fukushima Daiichi NPS, Upper Layer	Feb 10, 2013	N.D. [$<5.5\times10^{-6}$]	N.D. [$<5.0\times10^{-6}$]
3km Offshore of Ukedo River, Upper Layer	Feb 9, 2013	N.D. [$<4.6\times10^{-6}$]	N.D. [$<4.6\times10^{-6}$]
3km Offshore of Fukushima Daiichi NPS, Upper Layer	Feb 9, 2013	N.D. [$<4.8\times10^{-6}$]	$(8.3\pm2.0)\times10^{-6}$
3km Offshore of Fukushima Daini NPS, Upper Layer	Feb 6, 2013	N.D. [$<4.9\times10^{-6}$]	$(6.9\pm1.9)\times10^{-6}$
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.

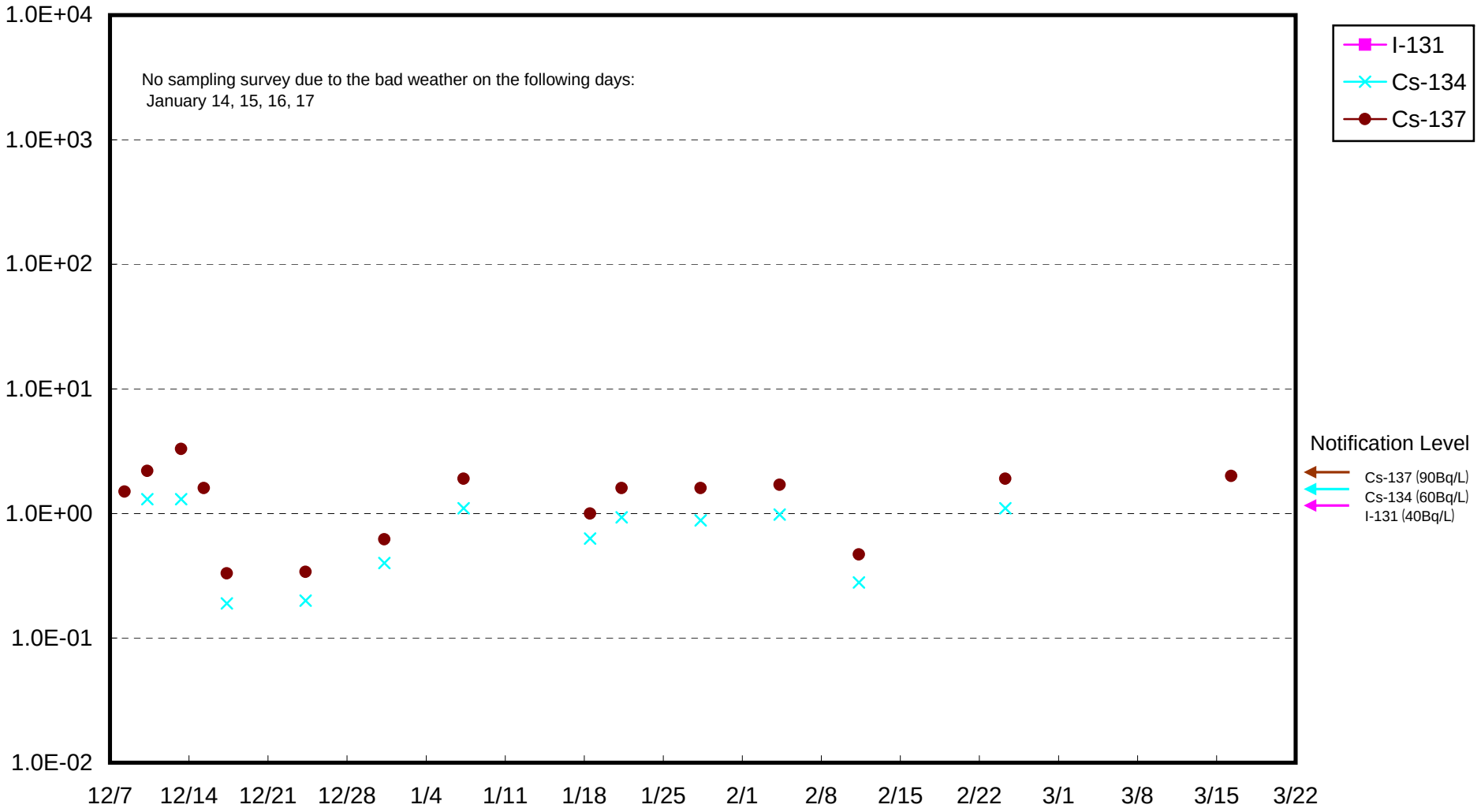
2. Analytical Institution: Japan Chemical Analysis Center

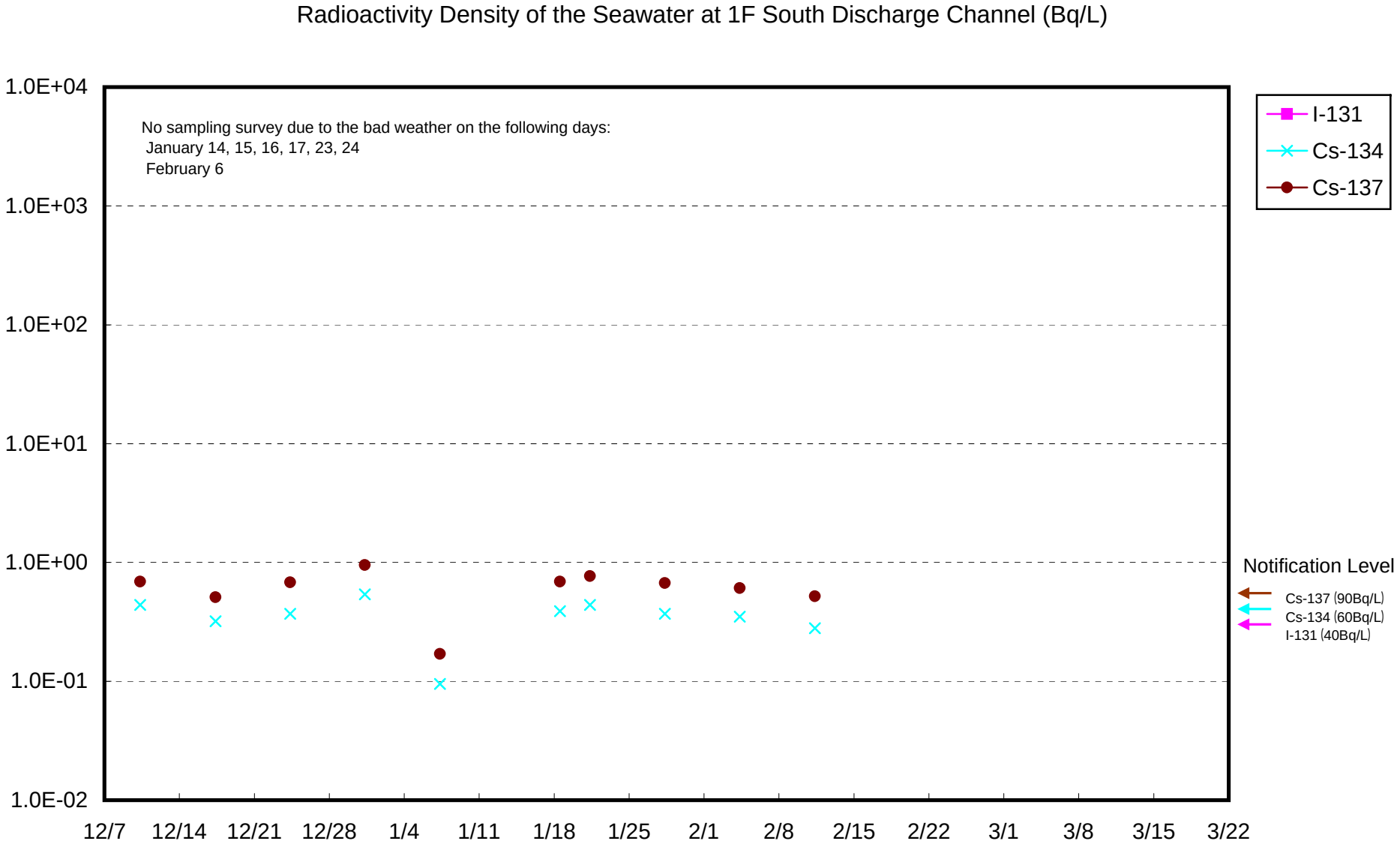
3. Evaluation:

Given that the density level of Pu-239+Pu-240 detected at 3km Offshore of Fukushima Daiichi NPS, Upper Layer and 3km Offshore of Fukushima Daini NPS, Upper Layer on February 6 and 9 are 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.

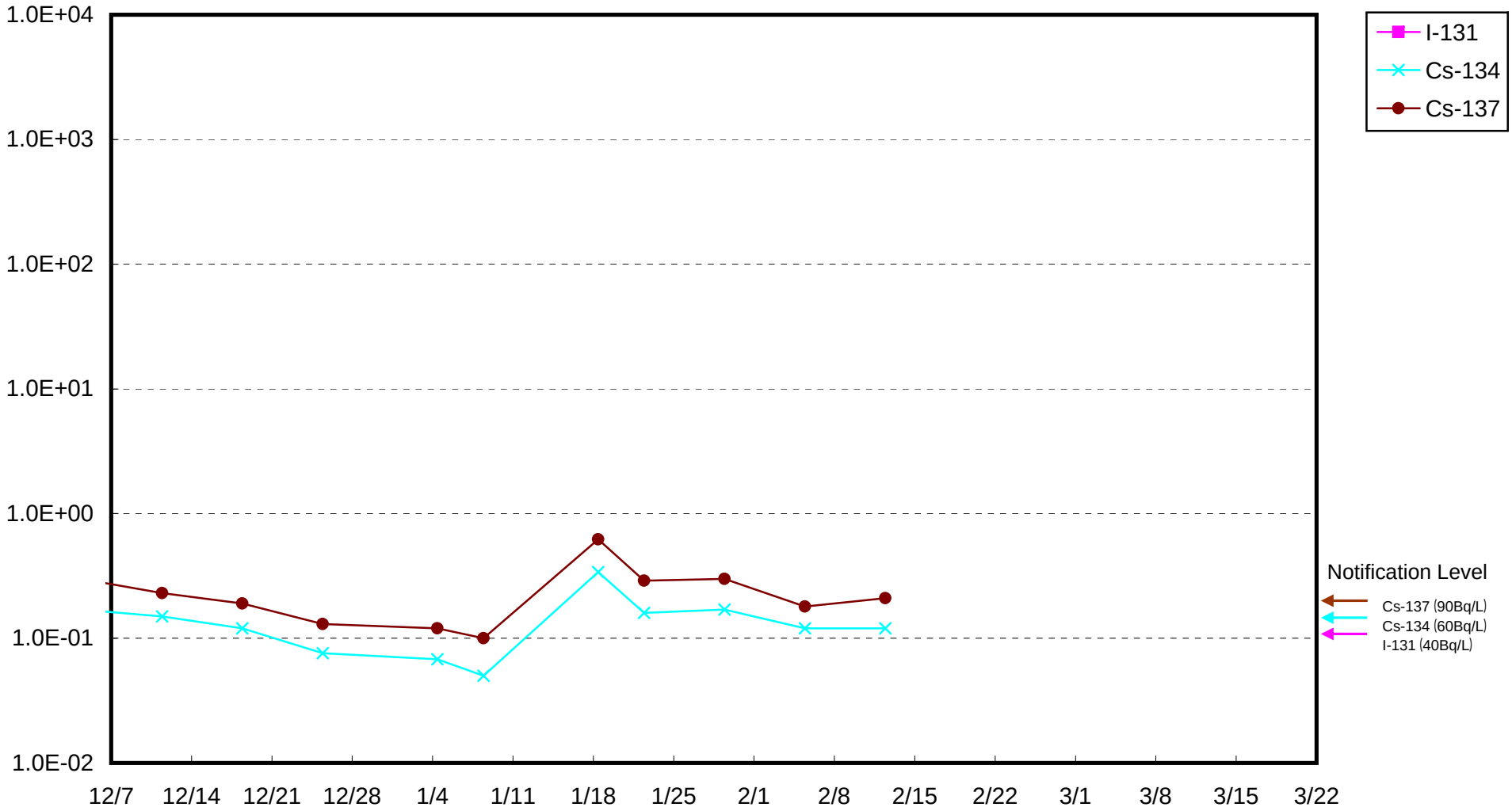
End

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

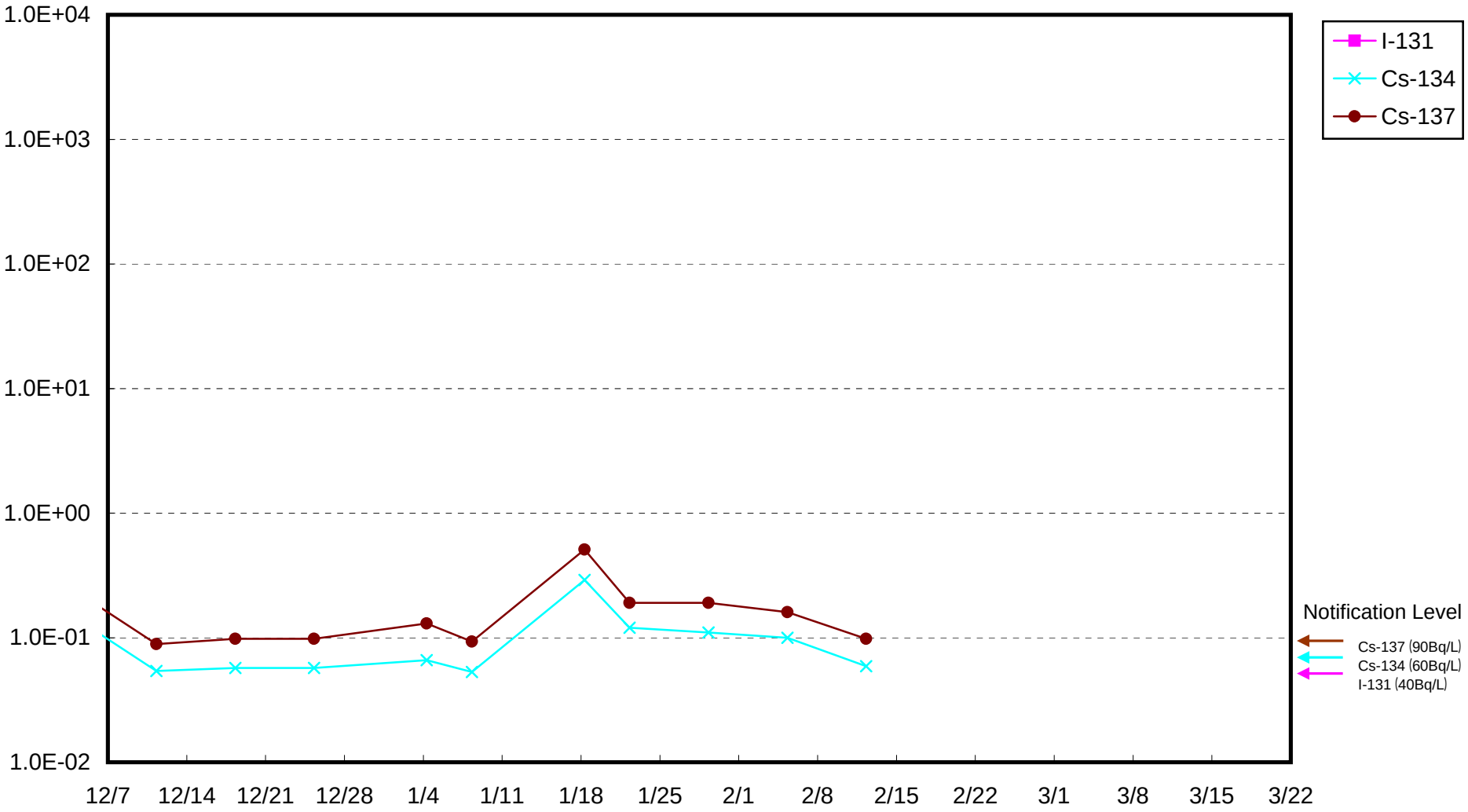



Radioactivity Density of the Seawater at 1F South Discharge Channel (Bq/L)
No sampling survey due to the bad weather on the following days:
January 14, 15, 16, 17, 23, 24
February 6
I-131
Cs-134
Cs-137
Notification Level
Cs-137 (90Bq/L)
Cs-134 (60Bq/L)
I-131 (40Bq/L)
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
1.0E-01
1.0E-02
12/7
12/14
12/21
12/28
1/4
1/11
1/18
1/25
2/1
2/8
2/15
2/22
3/1
3/8
3/15
3/22

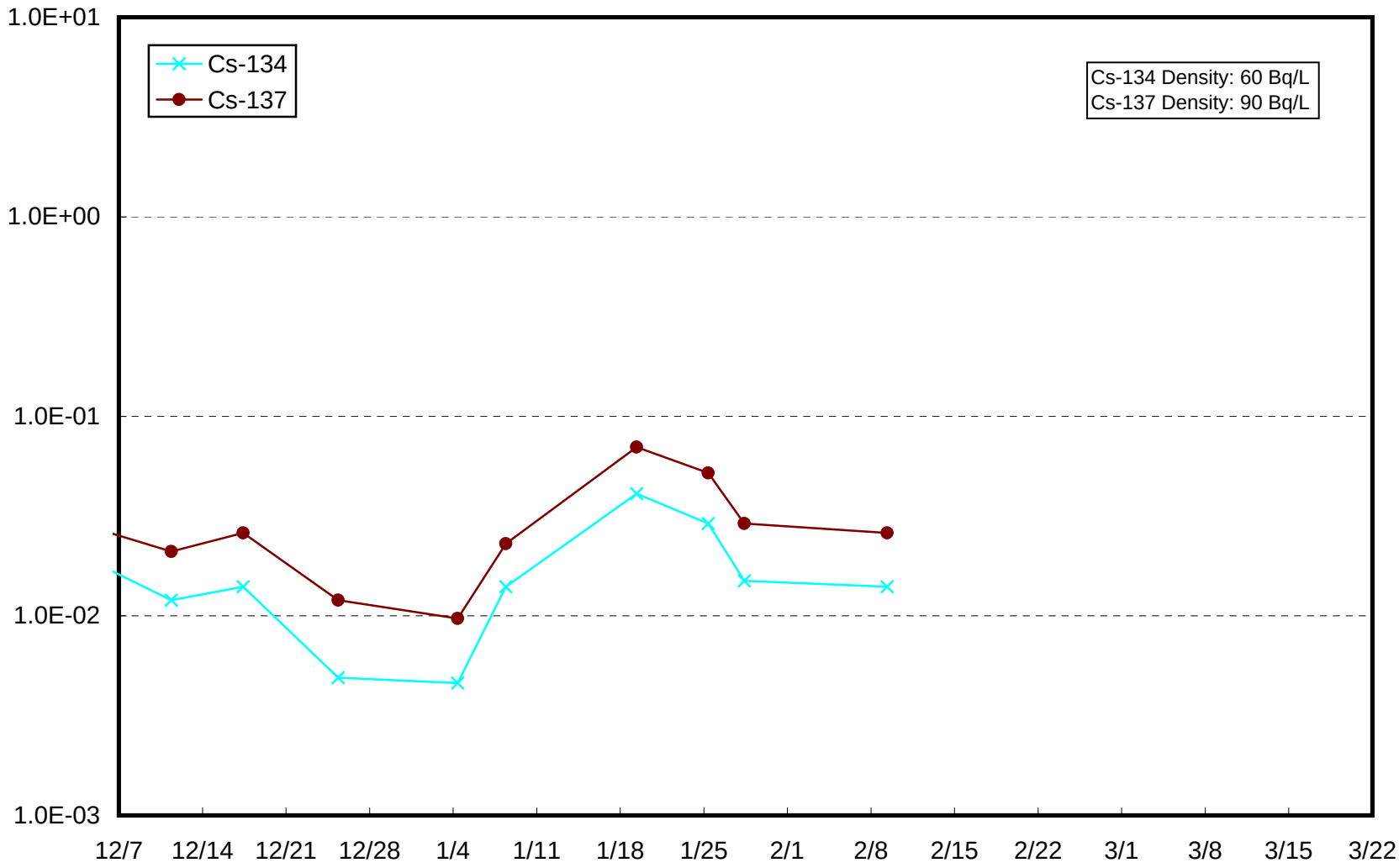
Radioactivity Density of the Seawater at 2F North Discharge Channel (Bq/L)



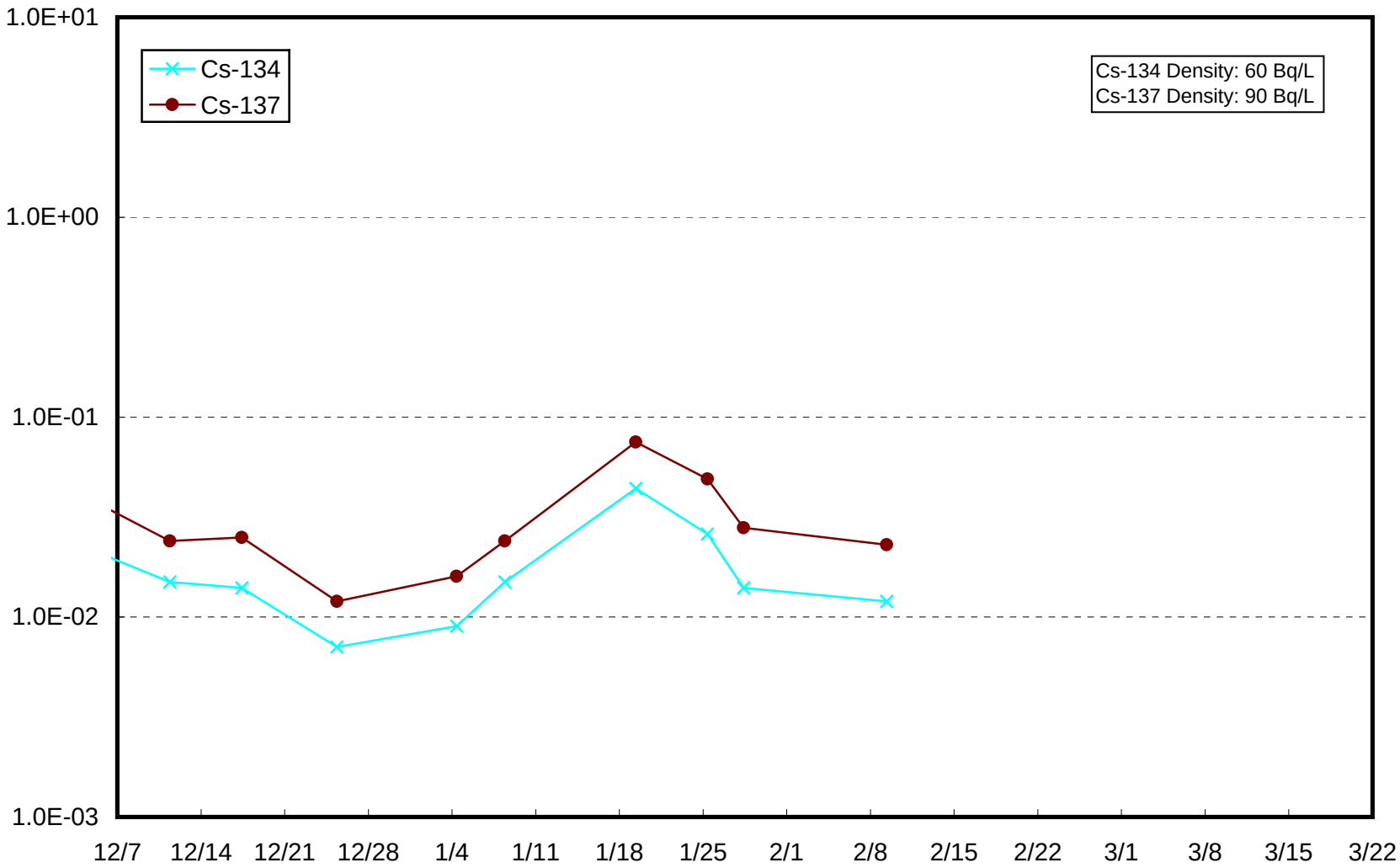
Radioactivity Density of the Seawater at Around the North of Asamigawa (Bq/L)



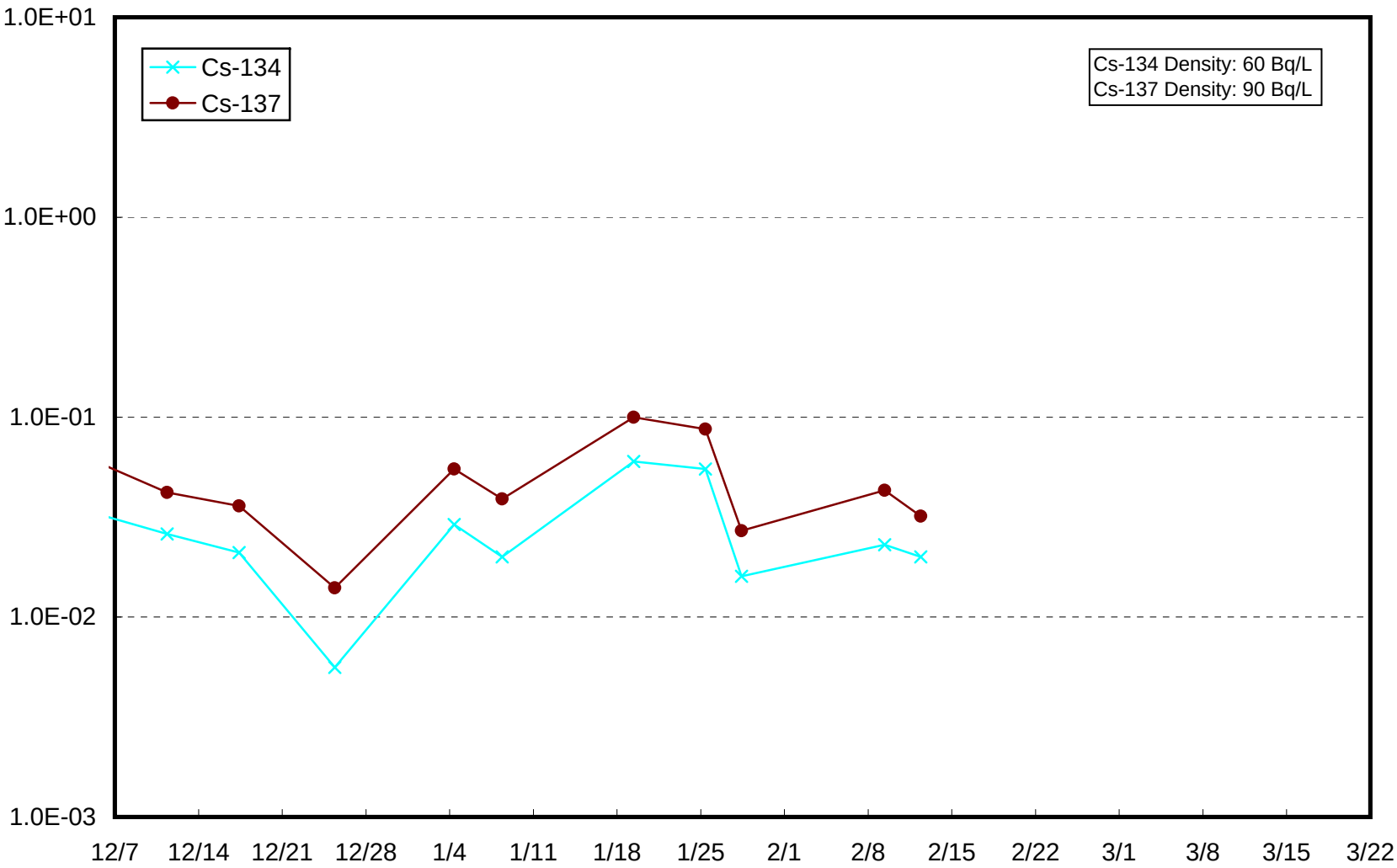
Radioactivity Density of the Seawater at 3km Offshore of Odaka Ward (T-14) Upper Layer (Bq/L)



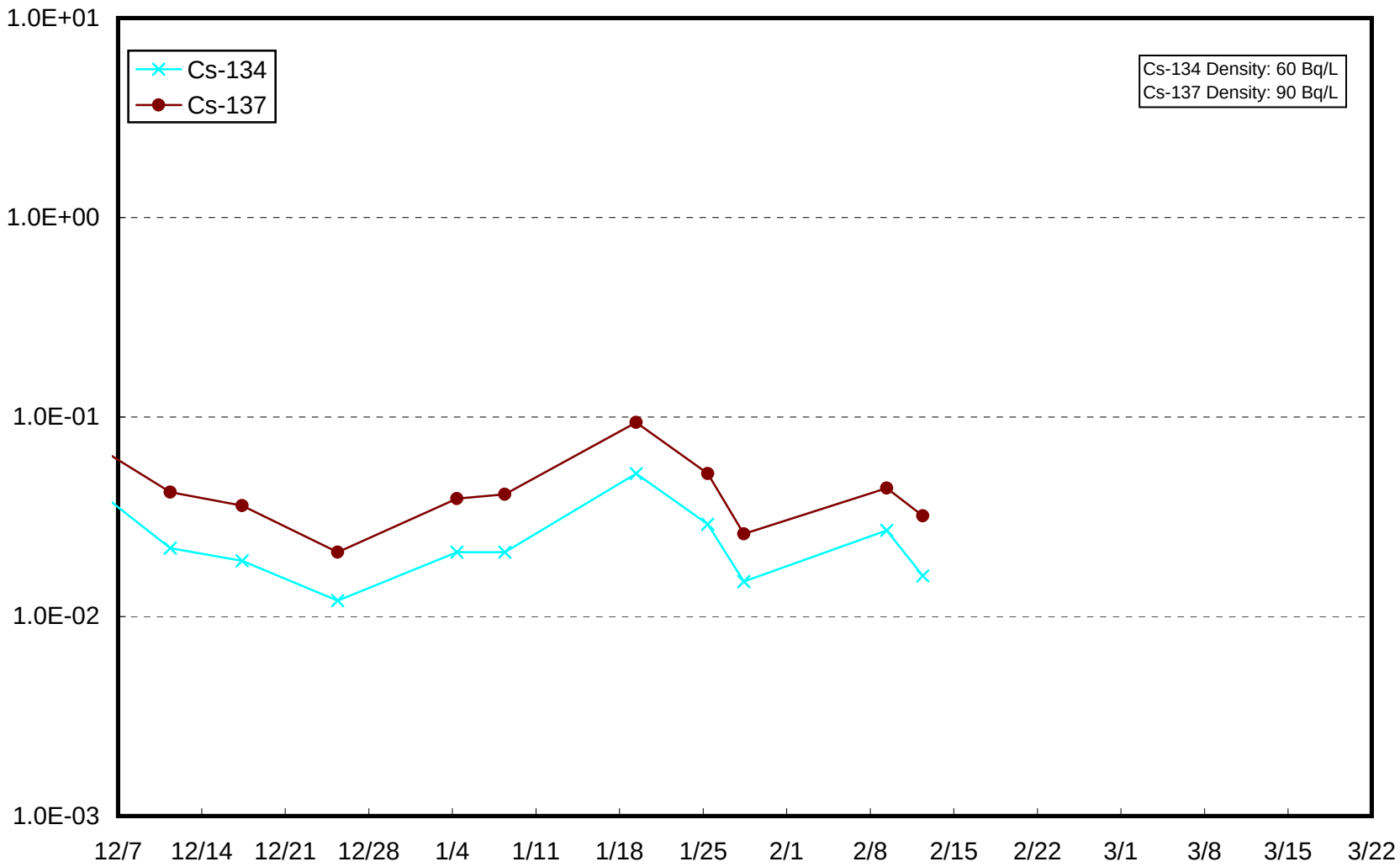
Radioactivity Density of the Seawater at 3km Offshore of Odaka Ward (T-14) Lower Layer (Bq/L)



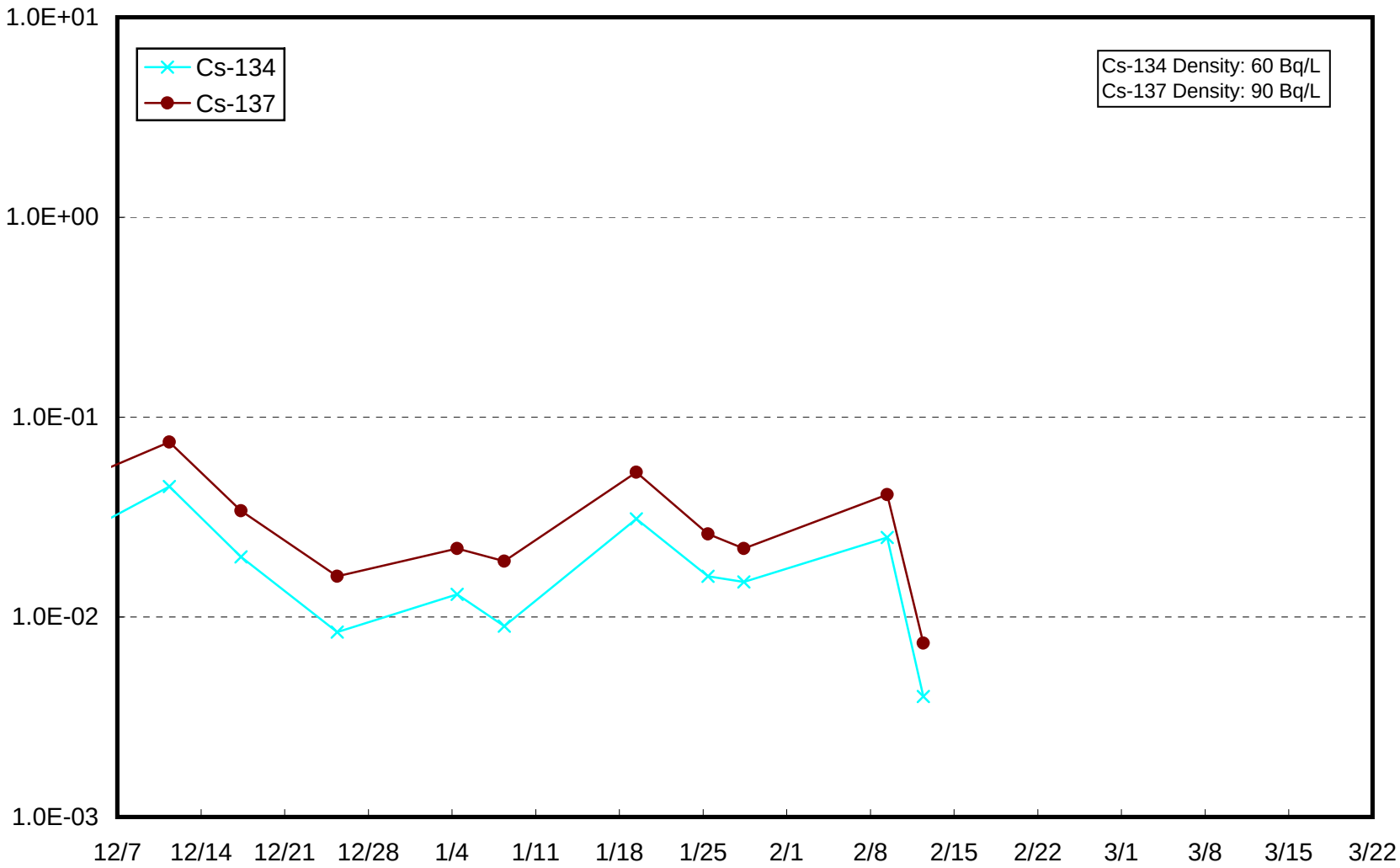
Radioactivity Density of the Seawater at 3km Offshore of Ukedo River (T-D1) Upper Layer (Bq/L)



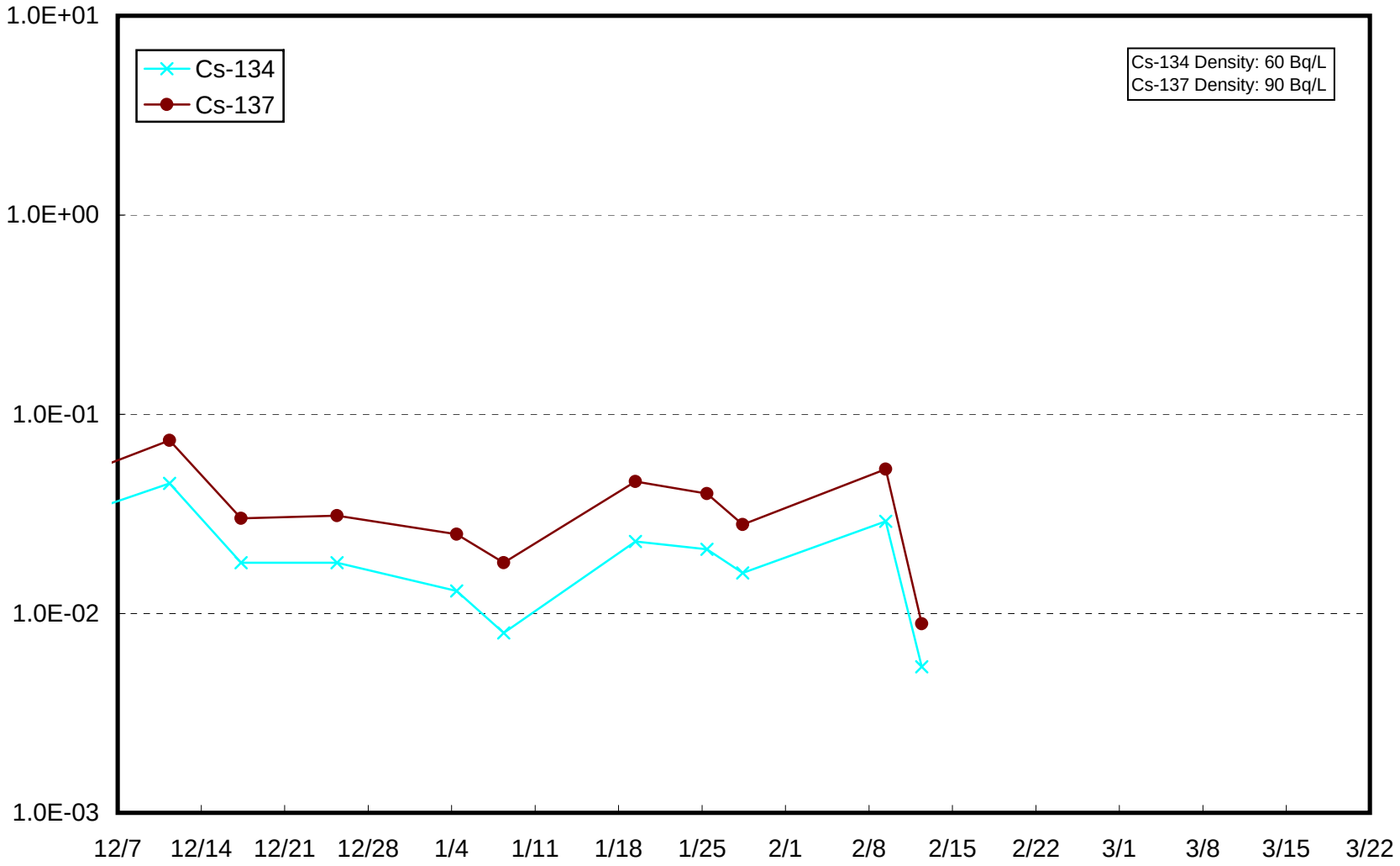
Radioactivity Density of the Seawater at 3km Offshore of Ukedo River (T-D1) Lower Layer (Bq/L)



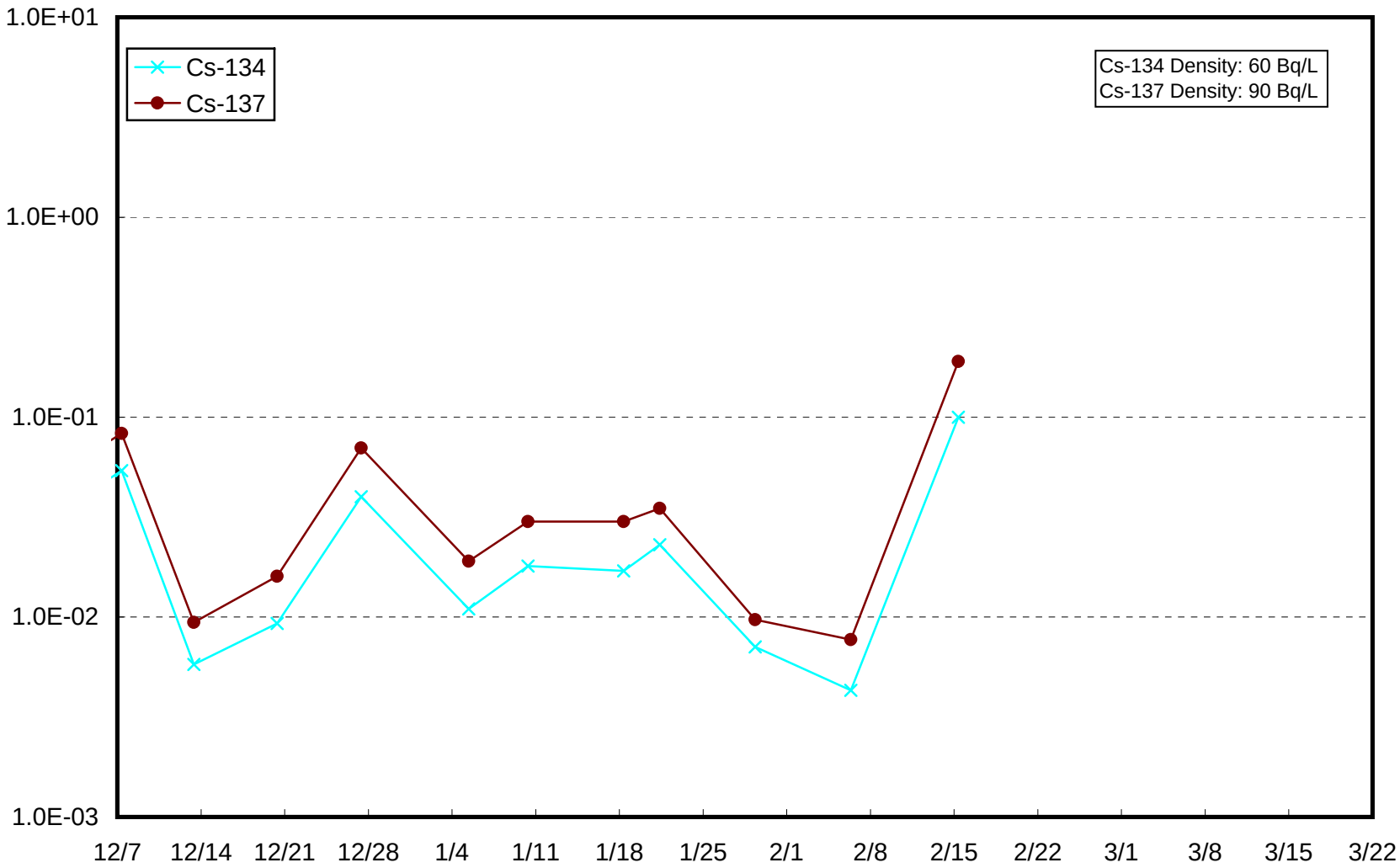
Radioactivity Density of the Seawater at 3km Offshore of Fukushima Daiichi NPS (T-D5) Upper Layer (Bq/L)



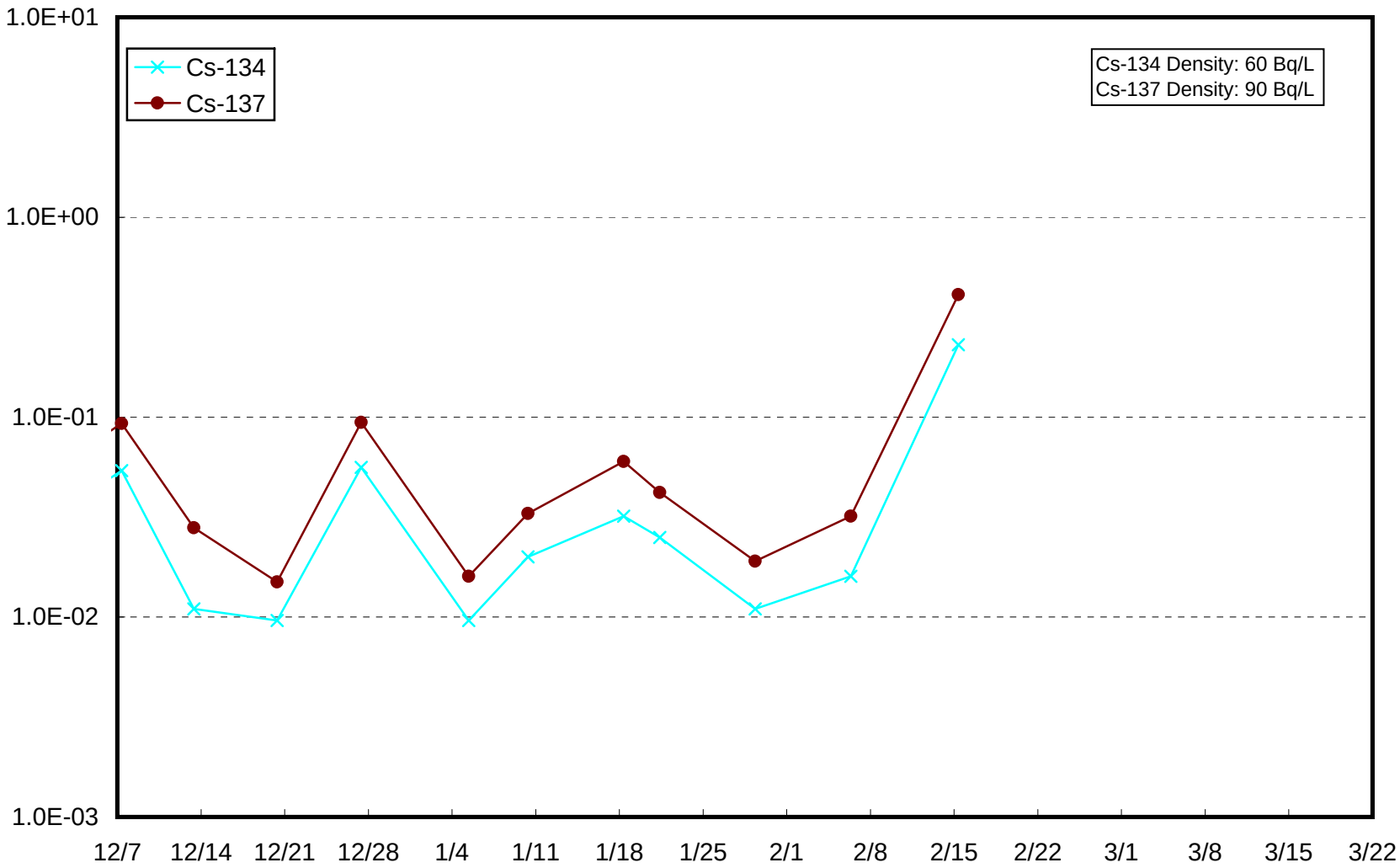
Radioactivity Density of the Seawater at 3km Offshore of Fukushima Daiichi NPS (T-D5) Lower Layer (Bq/L)



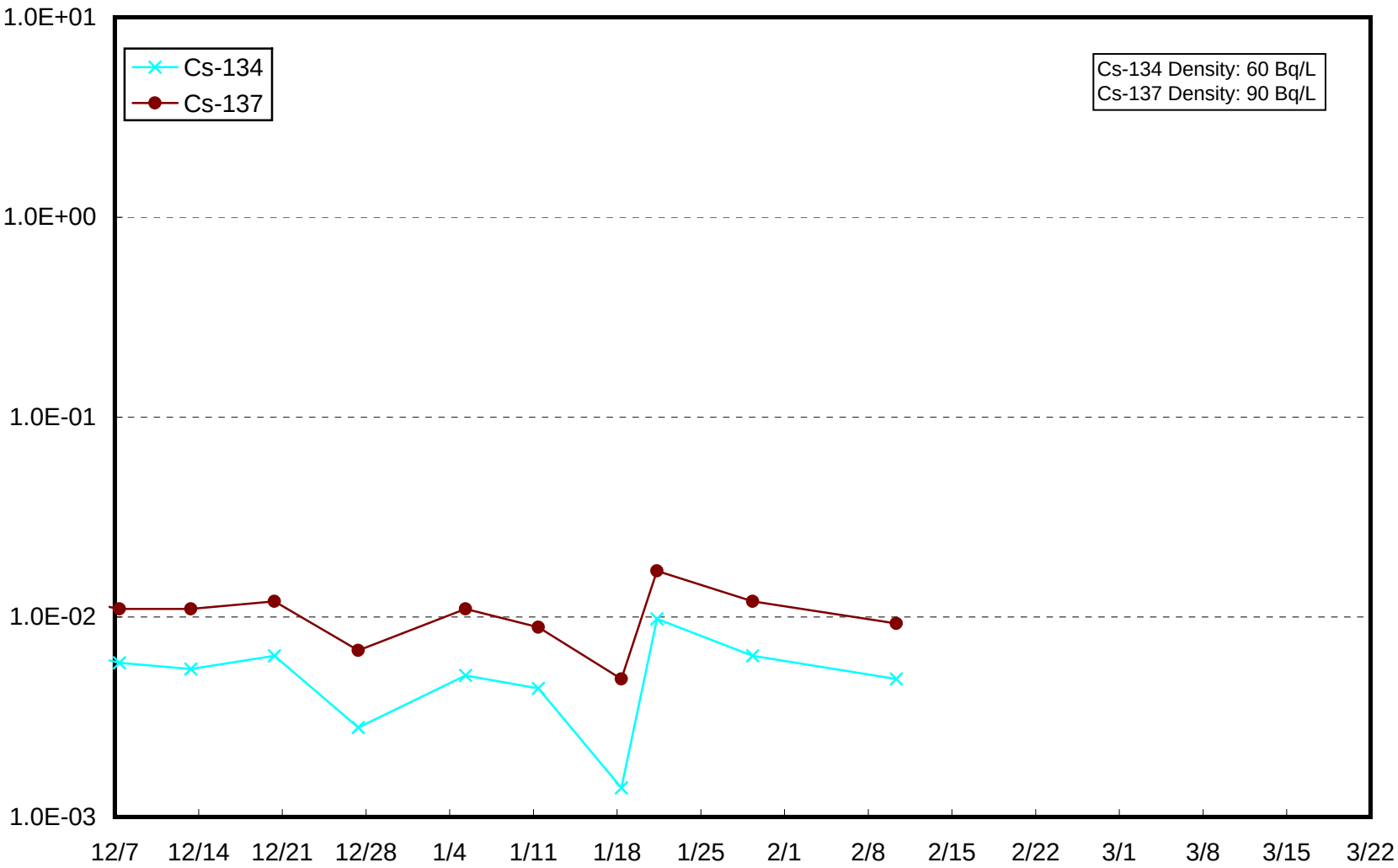
Radioactivity Density of the Seawater at 3km Offshore of Fukushima Daini NPS (T-D9) Upper Layer (Bq/L)



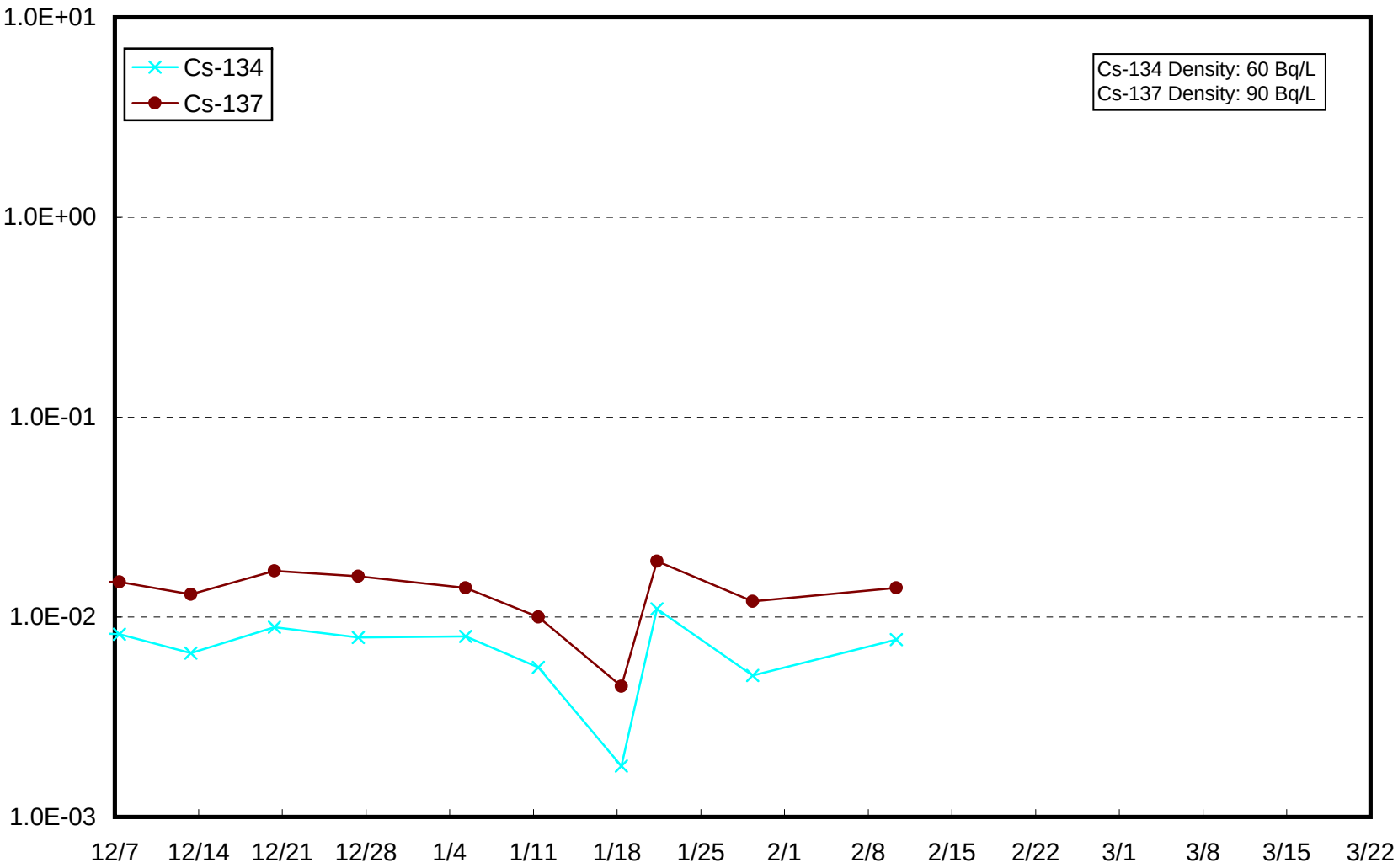
Radioactivity Density of the Seawater at 3km Offshore of Fukushima Daini NPS (T-D9) Lower Layer (Bq/L)



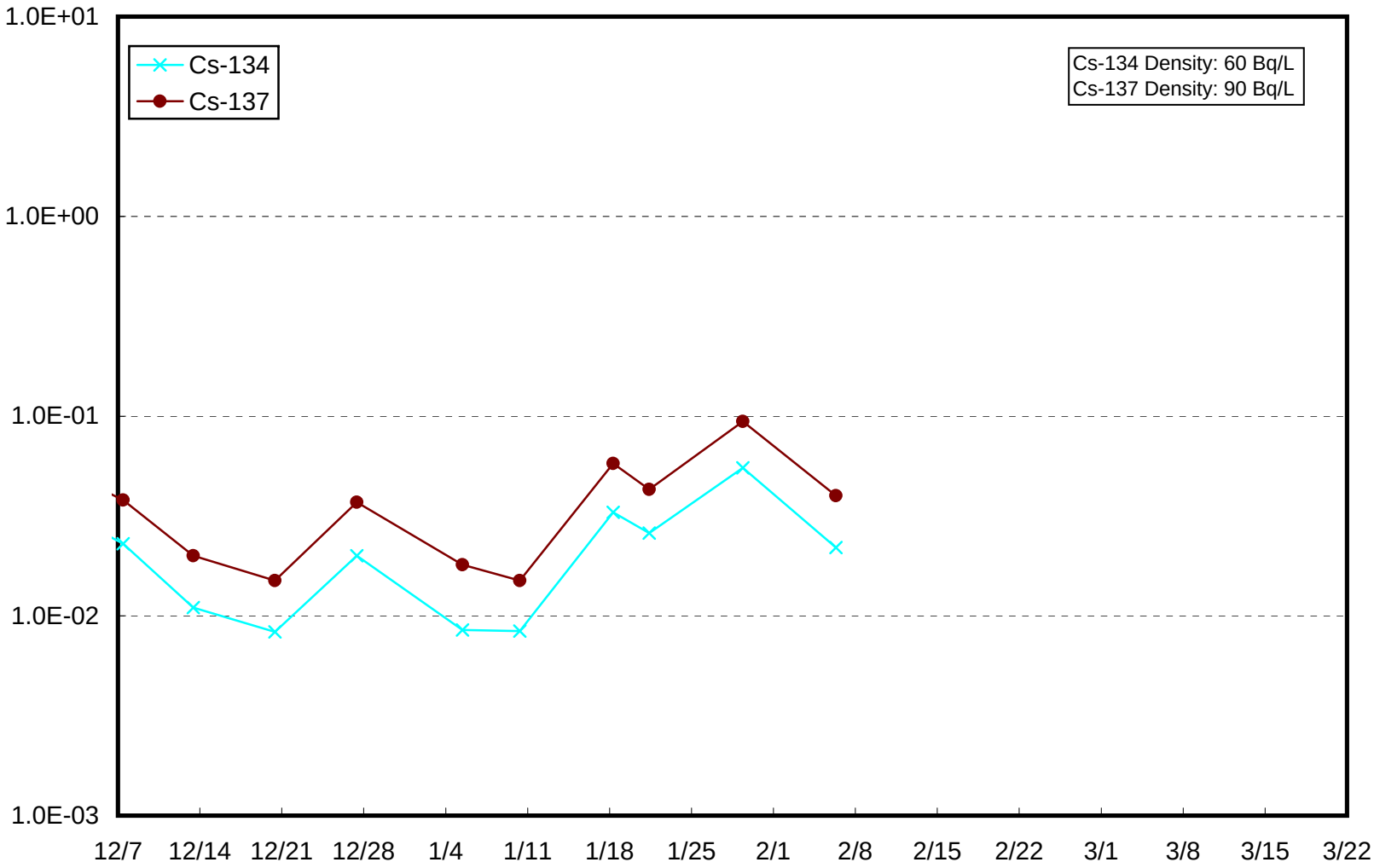
Radioactivity Density of the Seawater at 15km Offshore of Fukushima Daiichi NPS (T-5) Upper Layer (Bq/L)



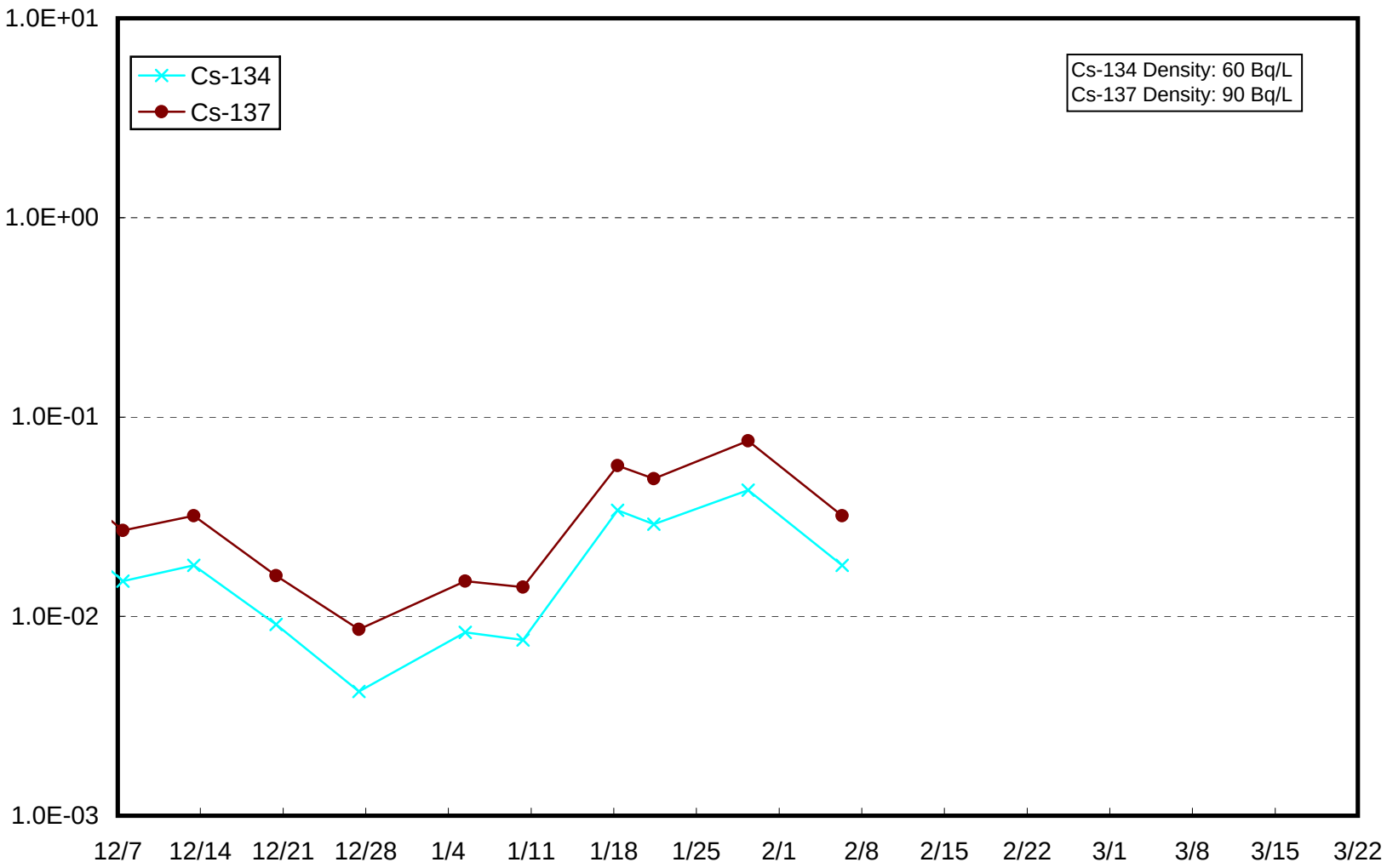
Radioactivity Density of the Seawater at 15km Offshore of Fukushima Daiichi NPS (T-5) Lower Layer (Bq/L)



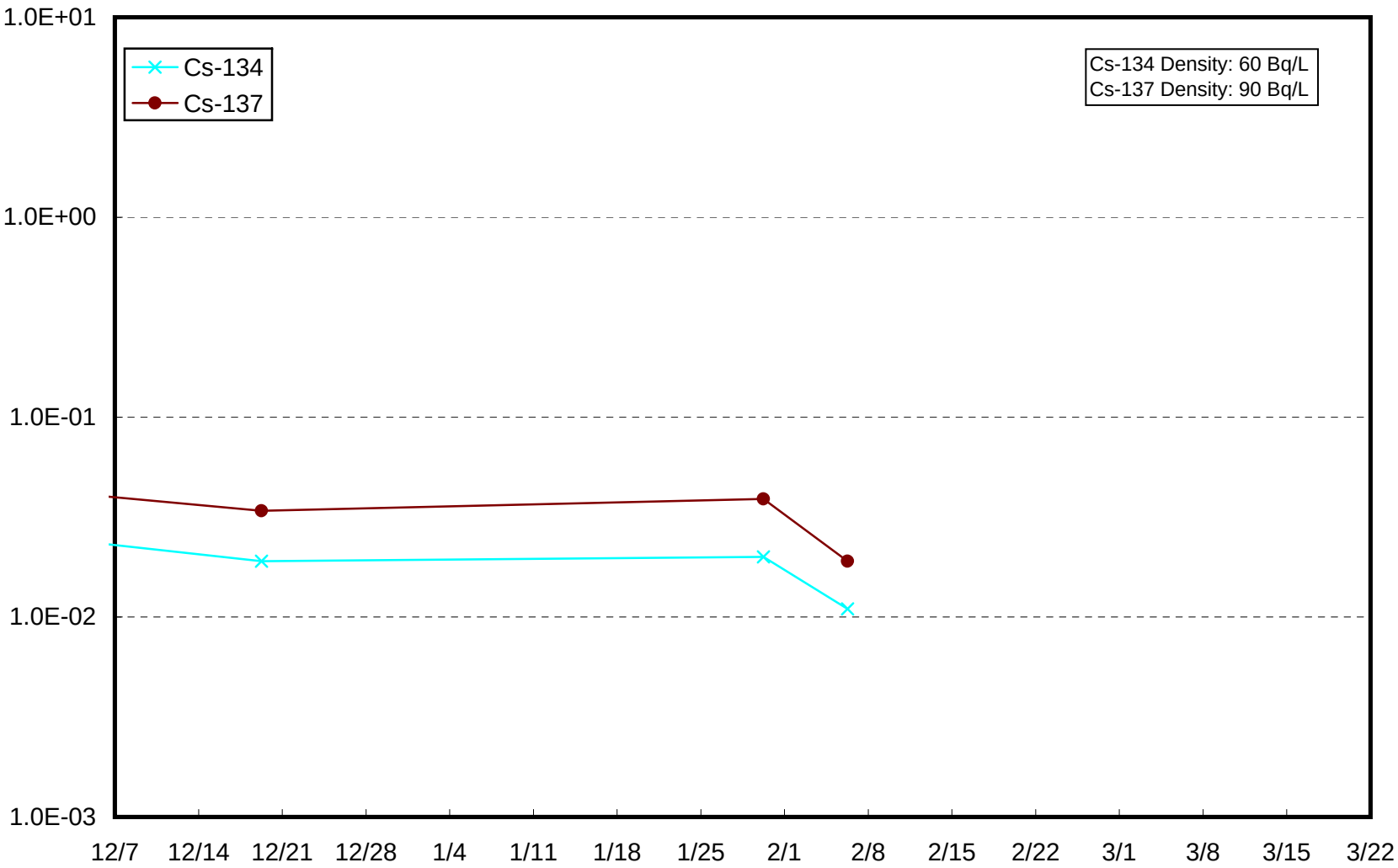
Radioactivity Density of the Seawater at 3km Offshore of Iwasawa Shore (T-11) Upper Layer (Bq/L)



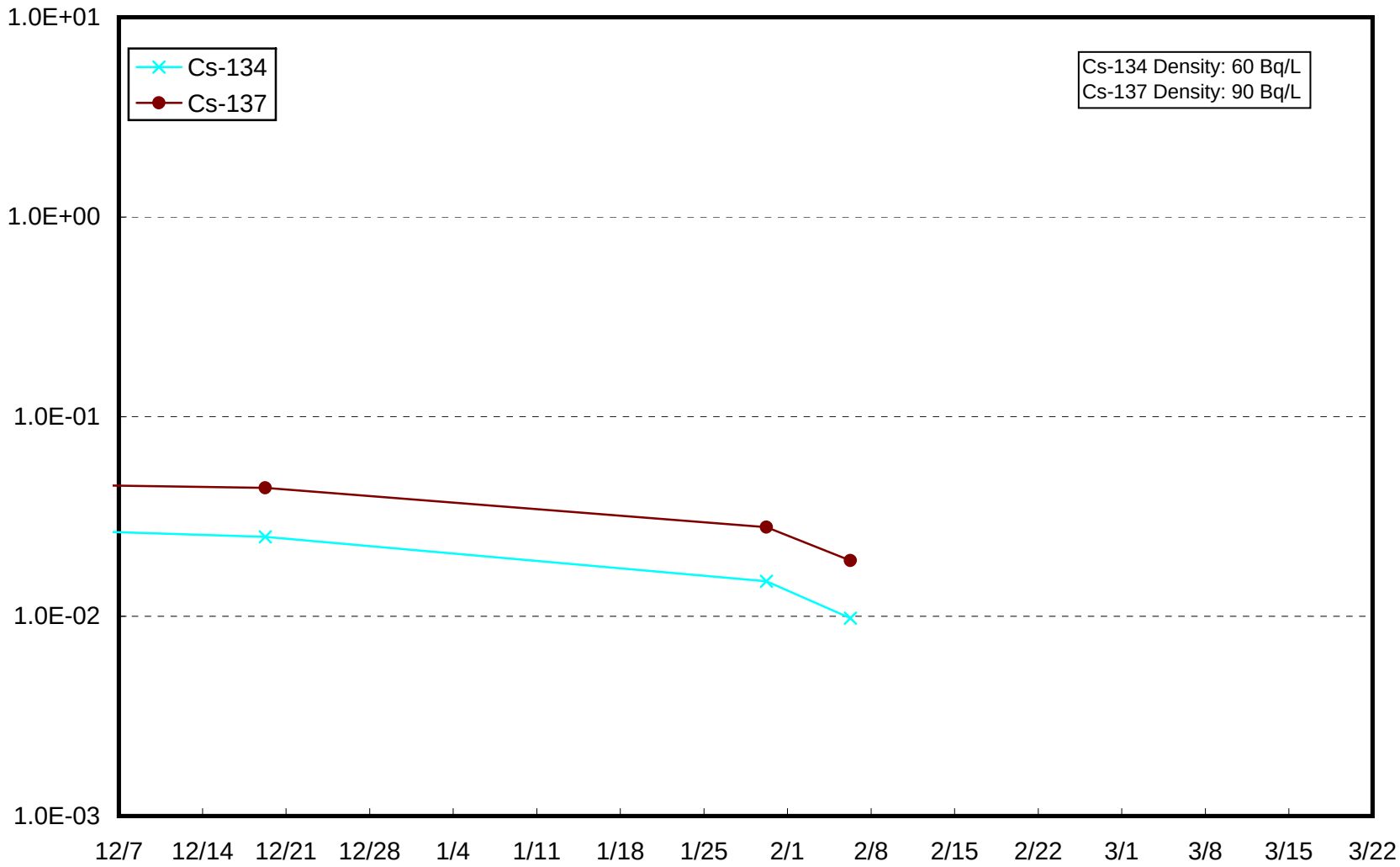
Radioactivity Density of the Seawater at 3km Offshore of Iwasawa Shore (T-11) Lower Layer (Bq/L)



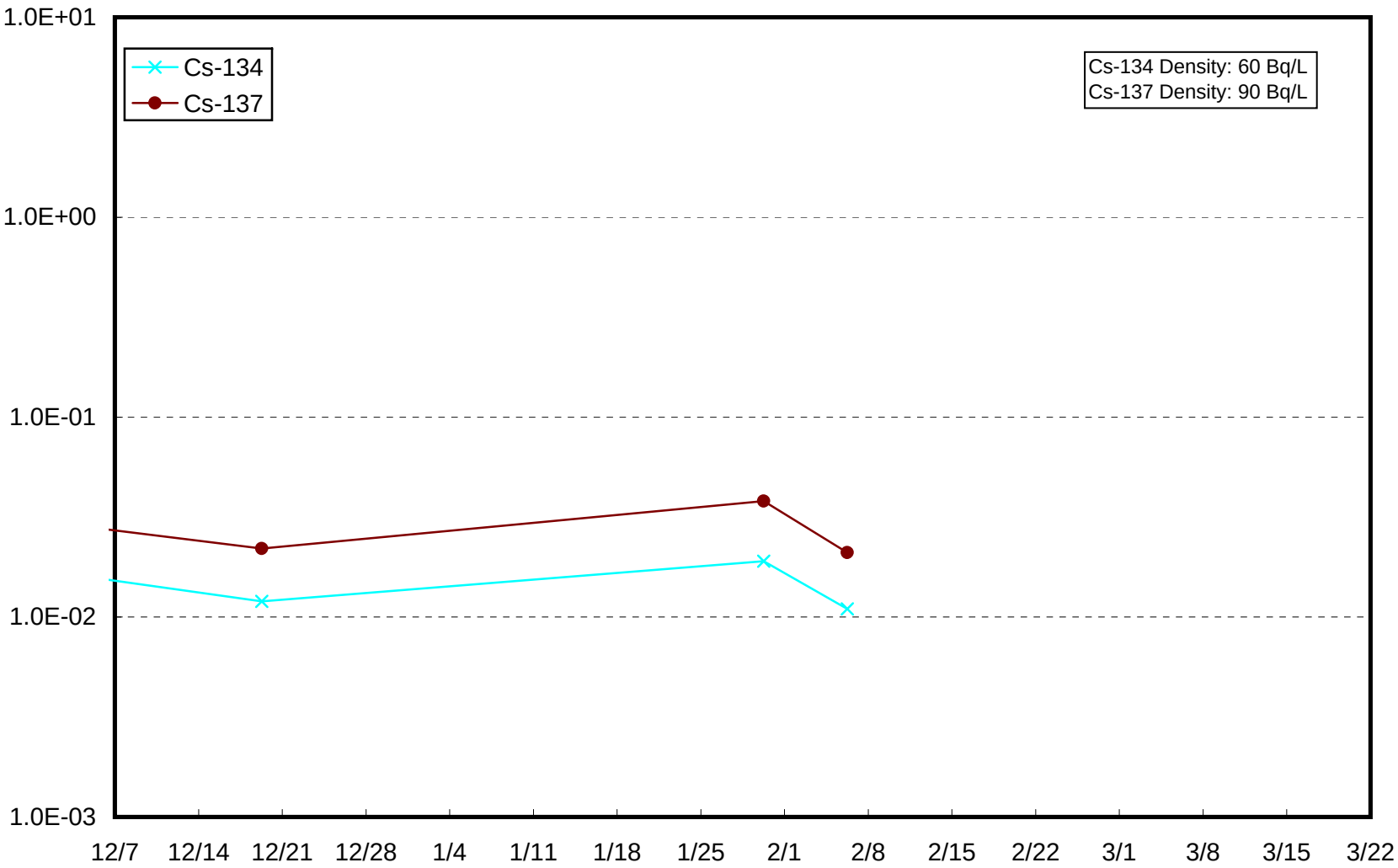
Radioactivity Density of the Seawater Around 1km Offshore of Ota River (T-S1) Upper Layer (Bq/L)



Radioactivity Density of the Seawater Around 1km Offshore of Ota River (T-S1) Lower Layer (Bq/L)



Radioactivity Density of the Seawater Around 3km Offshore of Odaka Ward (T-S2) Upper Layer (Bq/L)



Radioactivity Density of the Seawater Around 3km Offshore of Odaka Ward (T-S2) Lower Layer (Bq/L)