

Pre-discharge Analysis Results of ALPS Treated Water in the Measurement/Confirmation Tanks (1/4)

| | | | |
|----------------------------------|--|-------|---------|
| Sample Name | ALPS Treated Water in the Measurement/Confirmation Tanks | | Group C |
| Date and Time of Sampling | June 21, 2024 | 10:40 | |
| Storage Volume (m ³) | 8943 | | |

| | | |
|---------|---|---------------------------------------|
| Summary | Nuclides to be measured and assessed (29 nuclides) : The sum of the ratios of the concentration of each radionuclide to the regulatory concentration | 0.12 (Confirmed to be less than 1) |
|---------|---|---------------------------------------|

Radioactivity Analysis: Nuclides to be measured and assessed (30 nuclides)

| No. | Nuclide | Analysis Results | | | | | | Ratios to Regulatory Concentration Limit | | Regulatory Concentration Limit *2 (Bq/L) | Analysis Method *4 |
|-----|---------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|------------------------|--|-------------------|--|---|
| | | TEPCO | | | KAKEN Co.,Ltd. | | | TEPCO | KAKEN Co.,Ltd. | | |
| | | Analysis Value (Bq/L) | Uncertainty *1 (Bq/L) | Detection Limit (Bq/L) | Analysis Value (Bq/L) | Uncertainty *1 (Bq/L) | Detection Limit (Bq/L) | | | | |
| 1 | C-14 | 1.2E+01 | ± 1.9E+00 | 1.6E+00 | 9.8E+00 | ± 8.4E-01 | 9.5E-01 | 5.8E-03 | 4.9E-03 | 2000 | Measurement |
| 2 | Mn-54 | ND | — | 2.6E-02 | ND | — | 1.8E-02 | less than 2.6E-05 | less than 1.8E-05 | 1000 | Measurement |
| 3 | Fe-55 | ND | — | 1.6E+01 | ND | — | 1.2E+01 | less than 7.9E-03 | less than 5.9E-03 | 2000 | Measurement |
| 4 | Co-60 | 4.4E-01 | ± 8.0E-02 | 2.7E-02 | 4.1E-01 | ± 5.5E-02 | 1.9E-02 | 2.2E-03 | 2.0E-03 | 200 | Measurement |
| 5 | Ni-63 | ND | — | 8.1E+00 | ND | — | 5.8E+00 | less than 1.3E-03 | less than 9.6E-04 | 6000 | Measurement |
| 6 | Se-79 | ND | — | 9.8E-01 | ND | — | 1.7E+00 | less than 4.9E-03 | less than 8.5E-03 | 200 | Measurement |
| 7 | Sr-90 | 1.2E+00 | ± 5.1E-02 | 3.5E-02 | 1.1E+00 | ± 1.4E-01 | 3.4E-02 | 4.0E-02 | 3.5E-02 | 30 | Measurement |
| 8 | Y-90 | 1.2E+00 | — | 3.5E-02 | 1.1E+00 | — | 3.4E-02 | 4.0E-03 | 3.5E-03 | 300 | Sr-90/Y-90 Radioactive Equilibrium Assessment |
| 9 | Tc-99 | 7.3E-01 | ± 1.6E-01 | 1.1E-01 | 6.4E-01 | ± 1.1E-01 | 3.5E-02 | 7.3E-04 | 6.4E-04 | 1000 | Measurement |
| 10 | Ru-106 | ND | — | 2.2E-01 | ND | — | 1.9E-01 | less than 2.2E-03 | less than 1.9E-03 | 100 | Measurement |
| 11 | Cd-113m | ND | — | 7.7E-02 | ND | — | 2.9E-02 | less than 1.9E-03 | less than 7.2E-04 | 40 | Measurement |
| 12 | Sb-125 | 2.3E-01 | ± 7.5E-02 | 9.1E-02 | 2.0E-01 | ± 6.0E-02 | 7.9E-02 | 2.9E-04 | 2.6E-04 | 800 | Measurement |
| 13 | Te-125m | 8.7E-02 | — | 3.4E-02 | 7.6E-02 | — | 2.9E-02 | 9.6E-05 | 8.4E-05 | 900 | Sb-125/Te-125m Radioactive Equilibrium Assessment |
| 14 | I-129 | 2.9E-01 | ± 6.9E-02 | 6.0E-02 | 3.3E-01 | ± 5.8E-02 | 2.6E-02 | 3.2E-02 | 3.7E-02 | 9 | Measurement |
| 15 | Cs-134 | ND | — | 3.4E-02 | ND | — | 2.2E-02 | less than 5.7E-04 | less than 3.6E-04 | 60 | Measurement |
| 16 | Cs-137 | 2.2E-01 | ± 4.4E-02 | 2.7E-02 | 2.1E-01 | ± 3.1E-02 | 2.0E-02 | 2.5E-03 | 2.3E-03 | 90 | Measurement |
| 17 | Ce-144 | ND | — | 3.8E-01 | ND | — | 2.8E-01 | less than 1.9E-03 | less than 1.4E-03 | 200 | Measurement |
| 18 | Pm-147 | ND | — | 3.3E-01 | ND | — | 2.5E-01 | less than 1.1E-04 | less than 8.5E-05 | 3000 | Eu-154 Relative Ratio Assessment |
| 19 | Sm-151 | ND | — | 1.3E-02 | ND | — | 9.7E-03 | less than 1.6E-06 | less than 1.2E-06 | 8000 | Eu-154 Relative Ratio Assessment |
| 20 | Eu-154 | ND | — | 7.4E-02 | ND | — | 5.7E-02 | less than 1.9E-04 | less than 1.4E-04 | 400 | Measurement |
| 21 | Eu-155 | ND | — | 2.1E-01 | ND | — | 1.4E-01 | less than 7.1E-05 | less than 4.7E-05 | 3000 | Measurement |
| 22 | U-234 | ND | — | 2.9E-02 | ND | — | 2.3E-02 | less than 7.2E-03 | less than 5.9E-03 | 20 | Gross Alpha |
| 23 | U-238 | | | | | | | | | 20 | Gross Alpha |
| 24 | Np-237 | | | | | | | | | 9 | Gross Alpha |
| 25 | Pu-238 | | | | | | | | | 4 | Gross Alpha |
| 26 | Pu-239 | | | | | | | | | 4 | Gross Alpha |
| 27 | Pu-240 | | | | | | | | | 4 | Gross Alpha |
| 28 | Am-241 | | | | | | | | | 5 | Gross Alpha |
| 29 | Cm-244 | | | | | | | | | 7 | Gross Alpha |
| 30 | Pu-241 | | | | | | | | | 200 | Pu-238 Relative Ratio Assessment |
| | | | | | | | | | | less than 1.2E-01 | less than 1.1E-01 |

The sum of the ratios of the concentration of each radionuclide to the regulatory concentration (sum of the ratios to regulatory concentration limit)

· ND indicates that analysis result is less than the detection limit.

· Values are expressed in exponential notation.

For example, "3.1E+01" means "3.1×10¹" and equals 31. Similarly, "3.1E+00" means "3.1×10⁰" and equals 3.1, and "3.1E-01" means "3.1×10⁻¹" and equals 0.31.

*1 "Uncertainty" refers to the accuracy of analysis data.

"Uncertainty" is calculated using "Expanded Uncertainty: Coverage Factor k=2".

*2 Regulatory concentration limits stipulated in the Regulations of the Safety and Physical Protection of Specific Nuclear Fuel Material at Fukushima Daiichi Nuclear Power Station of the Tokyo Electric Power Company, Incorporated.

(Attached Chart 1, Row 6: Concentration limits in the water outside of the environmental monitoring area [in this chart Bq/cm³ has been converted into Bq/L])

*3 The ratio to regulatory concentration limit for alpha-radionuclides has been assessed using the lowest regulatory concentration limit for all the target nuclides.

*4 Analysis methods are as follows:

Measurement - The concentrations of each radionuclide have been calculated by directly measuring/analyzing radioactivity intensity and the quantity of the element.

Gross Alpha - The total amount of alpha-radionuclides in the specimen are calculated by directly measuring alpha rays.

Radioactive Equilibrium Assessment - Calculated using a physical phenomenon in which the amount of radioactivity of one radionuclide and another radionuclide produced by the decay of that radionuclide exist in a certain ratio.

Relative Ratio Assessment - Calculated based on the assessment values of radionuclides that existed inside the reactor while considering radionuclide decay and migration into ALPS treated water.

Pre-discharge Analysis Results of ALPS Treated Water in the Measurement/Confirmation Tanks (2/4)

| | |
|---------|--|
| Summary | 20 x 10 ⁴ Bq/L (confirmed to be less than 1 million Bq/L) |
|---------|--|

Radioactivity Analysis: Tritium

| No. | Nuclide | Analysis Results | | | | | | Analysis Objective | Analysis Method *3 |
|-----|---------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|------------------------|--------------------|--------------------|
| | | TEPCO | | | KAKEN Co.,Ltd. | | | | |
| | | Analysis Value (Bq/L) | Uncertainty *1 (Bq/L) | Detection Limit (Bq/L) | Analysis Value (Bq/L) | Uncertainty *1 (Bq/L) | Detection Limit (Bq/L) | | |
| 1 | H-3 | 2.0E+05 | ± 1.2E+04 | 1.7E+01 | 2.0E+05 | ± 1.4E+04 | 2.8E+01 | *2 | Measurement |

· Values are expressed in exponential notation.

For example, "3.1E+01" means "3.1×10¹" and equals 31. Similarly, "3.1E+00" means "3.1×10⁰" and equals 3.1, and "3.1E-01" means "3.1×10⁻¹" and equals 0.31.

*1 "Uncertainty" refers to the accuracy of analysis data.

"Uncertainty" is calculated using "Expanded Uncertainty: Coverage Factor k=2".

*2 To confirm that the tritium concentration is less than 1E+06Bq/liter (less than 1 million Bq/liter), the maximum concentration stipulated in the implementation plan, ensuring that the tritium concentration after dilution is less than 1,500 Bq/liter.

*3 Analysis method is as follows:

Measurement - The concentration of radionuclide has been calculated by directly measuring/analyzing radioactivity intensity and the quantity of the element.

Pre-discharge Analysis Results of ALPS Treated Water in the Measurement/Confirmation Tanks (3/4)

| | |
|---------|--|
| Summary | No significant concentrations found of any of the nuclides |
|---------|--|

Radioactivity Analysis: Nuclides voluntarily checked to ensure that they are not significantly present (38 nuclides)

| No. | Nuclide | TEPCO | | KAKEN Co.,Ltd. | | Confirmation Method *2 |
|-----|---------|---------------|------------------------|----------------|------------------------|------------------------|
| | | Assessment *1 | Detection Limit (Bq/L) | Assessment *1 | Detection Limit (Bq/L) | |
| 1 | Fe-59 | ○ | 4.5E-02 | ○ | 3.9E-02 | Measurement |
| 2 | Co-58 | ○ | 2.6E-02 | ○ | 2.2E-02 | |
| 3 | Zn-65 | ○ | 5.0E-02 | ○ | 4.2E-02 | |
| 4 | Rb-86 | ○ | 3.4E-01 | ○ | 3.0E-01 | |
| 5 | Sr-89 | ○ | 6.9E-02 | ○ | 6.1E-02 | |
| 6 | Y-91 | ○ | 2.7E+00 | ○ | 2.9E+00 | |
| 7 | Nb-95 | ○ | 3.3E-02 | ○ | 1.9E-02 | |
| 8 | Ru-103 | ○ | 3.4E-02 | ○ | 2.8E-02 | |
| 9 | Ag-110m | ○ | 2.5E-02 | ○ | 1.9E-02 | |
| 10 | Cd-115m | ○ | 1.4E+00 | ○ | 1.2E+00 | |
| 11 | Sn-123 | ○ | 1.3E+00 | ○ | 1.0E+00 | |
| 12 | Sn-126 | ○ | 1.7E-01 | ○ | 1.2E-01 | |
| 13 | Sb-124 | ○ | 5.8E-02 | ○ | 4.3E-02 | |
| 14 | Te-123m | ○ | 5.2E-02 | ○ | 4.2E-02 | |
| 15 | Te-127 | ○ | 7.1E-01 | ○ | 6.5E-01 | |
| 16 | Te-129m | ○ | 9.1E-01 | ○ | 7.4E-01 | |
| 17 | Te-129 | ○ | 3.8E-01 | ○ | 6.2E-01 | |
| 18 | Cs-136 | ○ | 2.8E-02 | ○ | 3.0E-02 | |
| 19 | Ba-140 | ○ | 1.1E-01 | ○ | 1.4E-01 | |
| 20 | Ce-141 | ○ | 1.1E-01 | ○ | 8.7E-02 | |
| 21 | Pm-146 | ○ | 4.2E-02 | ○ | 3.4E-02 | |
| 22 | Pm-148m | ○ | 2.6E-02 | ○ | 2.4E-02 | |
| 23 | Pm-148 | ○ | 4.2E-01 | ○ | 3.5E-01 | |
| 24 | Eu-152 | ○ | 1.3E-01 | ○ | 1.0E-01 | |
| 25 | Gd-153 | ○ | 2.2E-01 | ○ | 1.3E-01 | |
| 26 | Tb-160 | ○ | 8.3E-02 | ○ | 6.6E-02 | |
| 27 | Am-243 | ○ | 2.9E-02 | ○ | 2.3E-02 | |
| 28 | Cm-242 | ○ | 2.9E-02 | ○ | 2.3E-02 | |
| 29 | Cm-243 | ○ | 2.9E-02 | ○ | 2.3E-02 | |
| 30 | Rh-103m | ○ | 3.4E-02 | ○ | 2.8E-02 | |
| 31 | Rh-106 | ○ | 2.2E-01 | ○ | 1.9E-01 | |
| 32 | Sn-119m | ○ | 6.4E-03 | ○ | 4.3E-03 | |
| 33 | Te-127m | ○ | 7.3E-01 | ○ | 6.6E-01 | |
| 34 | Cs-135 | ○ | 1.8E-07 | ○ | 1.3E-07 | |
| 35 | Ba-137m | ○ | 2.6E-02 | ○ | 1.9E-02 | |
| 36 | Pr-144m | ○ | 5.7E-03 | ○ | 4.2E-03 | |
| 37 | Pr-144 | ○ | 3.8E-01 | ○ | 2.8E-01 | |
| 38 | Am-242m | ○ | 2.0E-04 | ○ | 1.6E-04 | |

*1 "○" indicates that the absence of significant concentrations was confirmed by the following, and "x" indicates that significant concentrations of nuclide was confirmed.

- Concentration of nuclide measured was below detection limit

- For nuclide that has been assessed using radioactive equilibrium, etc., if its target nuclide is detected and the assessment value of the target nuclide is extremely small compared to the regulatory concentration limit, or in other words, if it is less than 1/100 of the regulatory concentration limit which is the value set as the detection limit, then it shall be deemed to be below the detection limit.

| Nuclide | Assessment Values (Bq/L) | | Regulatory Concentration Limit *3 |
|---------|--------------------------|----------------|-----------------------------------|
| | TEPCO | KAKEN Co.,Ltd. | |
| Rh-103m | — | — | 2.0E+05 |
| Rh-106 | — | — | 3.0E+05 |
| Sn-119m | — | — | 2.0E+03 |
| Te-127m | — | — | 3.0E+02 |
| Cs-135 | 1.5E-06 | 1.4E-06 | 6.0E+02 |
| Ba-137m | 2.1E-01 | 2.0E-01 | 8.0E+05 |
| Pr-144m | — | — | 4.0E+04 |
| Pr-144 | — | — | 2.0E+04 |
| Am-242m | — | — | 5.0E+00 |

• A hyphen "—" indicates that the concentration of the target nuclide was below the detection limit.

• Values are expressed in exponential notation.

For example, "3.1E+01" means "3.1×10¹" and equals 31. Similarly, "3.1E+00" means "3.1×10⁰" and equals 3.1, and "3.1E-01" means "3.1×10⁻¹" and equals 0.31.

*2 Analysis Methods are as follows:

Measurement - The concentrations of each radionuclide have been calculated by directly measuring/analyzing radioactivity intensity and the quantity of the element.

Measurement (substituted with gross alpha) - The total amount of alpha-radionuclides in the specimen are calculated by directly measuring alpha rays.

Radioactive Equilibrium Assessment - Calculated using a physical phenomenon in which the amount of radioactivity of one radionuclide and another radionuclide produced by the decay of that radionuclide exist in a certain ratio.

Relative Ratio Assessment - Calculated based on the assessment values of radionuclides that existed inside the reactor while considering radionuclide decay and migration into ALPS treated water.

*3 Regulatory concentration limits stipulated in the Regulations of the Safety and Physical Protection of Specific Nuclear Fuel Material

at Fukushima Daiichi Nuclear Power Station of the Tokyo Electric Power Company, Incorporated.

(Attached Chart 1, Row 6: Concentration limits in the water outside of the environmental monitoring area [in this chart Bq/cm³ has been converted into Bq/L])

Pre-discharge Analysis Results of ALPS Treated Water in the Measurement/Confirmation Tanks (4/4)

| | |
|---------|--------------------|
| Summary | Criteria satisfied |
|---------|--------------------|

General Water Quality Analysis: Voluntary check to confirm that there are no unusual water quality (44 criteria)

| No. | Measurement Items | Unit | Analysis Result | Criteria *1 |
|-----|--|---------------------|-----------------|---|
| 1 | Hydrogen Ions (pH) | – | 8.6 | Sea Area 5.0~9.0 |
| 2 | Suspended Solids (SS) | mg/L | <1 | Maximum: 70 or less Average: 50 or less |
| 3 | Chemical Oxygen Demand (COD) | mg/L | <0.5 | Maximum: 40 or less Average: 30 or less |
| 4 | Boron | mg/L | 0.4 | Sea Area 230 or less |
| 5 | Soluble Iron | mg/L | <1 | 10 or less |
| 6 | Copper | mg/L | <0.1 | 2 or less |
| 7 | Nickel | mg/L | <0.1 | 2 or less |
| 8 | Chrome | mg/L | <0.1 | 2 or less |
| 9 | Zinc | mg/L | <0.1 | 2 or less |
| 10 | Biochemical Oxygen Demand (BOD) | mg/L | <1 | Maximum: 40 or less Average: 30 or less |
| 11 | Coliform Count | pcs/cm ³ | 0 | 3000 or less |
| 12 | Cadmium | mg/L | <0.01 | 0.03 or less |
| 13 | Cyanide | mg/L | <0.05 | 0.5 or less |
| 14 | Organic Phosphorus | mg/L | <0.1 | 1 or less |
| 15 | Lead | mg/L | <0.01 | 0.1 or less |
| 16 | Hexavalent Chromium | mg/L | <0.05 | 0.2 or less |
| 17 | Arsenic | mg/L | <0.01 | 0.1 or less |
| 18 | Mercury | mg/L | <0.0005 | 0.005 or less |
| 19 | Alkyl Mercury | mg/L | <0.0005 | Not Detected *2 |
| 20 | Polychlorinated Biphenyl | mg/L | <0.0005 | 0.003 or less |
| 21 | Trichlorethylene | mg/L | <0.03 | 0.1 or less |
| 22 | Tetrachloroethylene | mg/L | <0.01 | 0.1 or less |
| 23 | Dichloromethane | mg/L | <0.02 | 0.2 or less |
| 24 | Carbon Tetrachloride | mg/L | <0.002 | 0.02 or less |
| 25 | 1,2-Dichloroethane | mg/L | <0.004 | 0.04 or less |
| 26 | 1,1-Dichloroethylene | mg/L | <0.1 | 1 or less |
| 27 | Cis-1,2-Dichloroethylene | mg/L | <0.04 | 0.4 or less |
| 28 | 1,1,1-Trichloroethane | mg/L | <0.3 | 3 or less |
| 29 | 1,1,2-Trichloroethane | mg/L | <0.006 | 0.06 or less |
| 30 | 1,3-Dichloropropene | mg/L | <0.002 | 0.02 or less |
| 31 | Thiuram | mg/L | <0.006 | 0.06 or less |
| 32 | Simazine | mg/L | <0.003 | 0.03 or less |
| 33 | Thiobencarb | mg/L | <0.02 | 0.2 or less |
| 34 | Benzene | mg/L | <0.01 | 0.1 or less |
| 35 | Selenium | mg/L | <0.01 | 0.1 or less |
| 36 | Fenitrothion | mg/L | <0.003 | 0.03 or less |
| 37 | Phenols | mg/L | <0.1 | 1 or less |
| 38 | Fluorine | mg/L | <0.5 | Sea Area 10 or less |
| 39 | Soluble Manganese | mg/L | <1 | 10 or less |
| 40 | Ammonia, Ammonium Compounds | mg/L | <1 | 100 or less |
| 41 | Nitrite Compounds and Nitrate Compounds | mg/L | 5 | |
| 42 | 1,4-Dioxane | mg/L | <0.05 | 0.5 or less |
| 43 | n-Hexane Extractables (Mineral Oils) | mg/L | <0.5 | 1 or less |
| 44 | n-Hexane Extractables (Animal and Vegetable Oils and Fats) | mg/L | <1 | 10 or less |

• A "less than" symbol (<) indicates that the quantity is below quantitation limit.

*1 In accordance with Fukushima Prefecture's "Ordinance on Discharge Standards Based on the Air Pollution Control Act and Wastewater Standards based on the Water Pollution Prevention Act (attached Chart 2) [大気汚染防止法に基づく排出基準及び水質汚濁防止法に基づく排水基準を定める条例(別表第2)]", and "the Ordinance Enforcement Regulations Pertaining to the Preservation of the Living Environment in Fukushima (attached Chart 5) [福島県生活環境の保全等に関する条例施行規則(別表第5)]".

*2 "Not Detected" indicates that, as described in "Ministerial Ordinance on Effluent standards (attached Table 1) [排水基準を定める省令(別表第一)]", when the state of water pollution is assessed in discharged water using the methods established by the Minister of the Environment, the result is below the limit of quantification (Alkyl Mercury: 0.0005 mg/liter) of the assessment method.