IAEA
Atoms for Peace and Development

Information Circular

INFCIRC/1084
Date: 5 May 2023

General Distribution
Original: English

Communication dated 3 May 2023 received from the Permanent Mission of Japan to the Agency

1. The Secretariat has received a Note Verbale dated 3 May 2023, together with an attachment, from the Permanent Mission of Japan to the Agency.

2. As requested, the Note Verbale and its attachment are herewith circulated for the information of all Member States.

Ref. No.: JPM/NV-86- 2023

PERMANENT MISSION OF JAPAN
VIENNA

Andromeda Tower
Donau-City-Strasse 6
A-1220 Vienna
Austria

Telephone: (+43) (1) 260 63-0
Facsimile: (+43) (1) 263 6750

NOTE VERBALE

The Permanent Mission of Japan to the International Organizations in Vienna presents its compliments to the Secretariat of the International Atomic Energy Agency and has the honour to convey, as attached, Japan's response to the feedback of the People's Republic of China and the Russian Federation concerning the handling of the ALPS treated water at the Fukushima Daiichi Nuclear Power Station, which was contained in INFCIRC/1061.

In this regard, the Permanent Mission of Japan requests the Secretariat to circulate this Note with the enclosed attachment as an Information Circular (INFCIRC) to all Member States.

The attached document contains detailed technical information related to the feedback by the People's Republic of China and the Russian Federation to Japan's previous response. The Permanent Mission of Japan hopes that this document will help Member States to obtain a clearer science-based understanding of the issue. The Permanent Mission of Japan would also like to draw Member States' attention to the background of the issue described in the introductory part of the attached document.

The Permanent Mission of Japan to the International Organizations in Vienna avails itself of this opportunity to renew to the International Atomic Energy Agency the assurances of its highest consideration.

3 May 2023
Vienna
To the Secretariat of the
International Atomic Energy Agency

Japan's Response to the Feedback from the People's Republic of China and the Russian Federation

This is a document prepared in response to the Feedback from the People's Republic of China and the Russian Federation containeds in IAEA INFCIRC/1061 dated November 17, 2022 (Feedback).

Japan had provided detailed responses to previous questions from the People's Republic of China and the Russian Federation as attached in INFCIRC/1007 dated July 20, 2022 (Japan's previous response).

As part of that response, Japan had posed questions to the People's Republic of China and the Russian Federation, aimed at promoting mutual understanding.

Regrettably, no response has been provided in that regard in the Feedback. Similarly, the People's Republic of China has failed to respond to Japan's offer to hold individual briefings from a scientific and professional standpoint regarding the discharge of ALPS treated water into the sea. Meanwhile the People's Republic of China has continued to spread scientifically unfounded claims that take no account of Japan's explanations.

Moreover, the Feedback (which Japan has carefully examined) comprises questions and views that are in many respects vague and not grounded on science.

Furthermore and significantly, the Feedback does not take due consideration of the content of Japan's previous response. Notably, with regard to the three items referred to on Page 1 of the Feedback, namely the decision-making on the discharge of ALPS treated water, long-term safety impact, and the quality assurance of monitoring, Japan provided detailed and science-based responses in Answers I-2, Ⅱ-4 and I-9 of Japan's previous response respectively.

Japan has nonetheless sought to engage constructively with the Feedback in its detailed responses below, focusing on those aspects of the Feedback raising substantive scientific issues.

I. Questions about "Nuclear Contaminated Water" Disposal

[Question 1]

The Japanese side stated that the storage tanks in which the nuclear contaminated water is currently stored occupy a vast amount of space, and dismantling the tanks is to construct facilities which temporarily store the removed fuel debris, these reasons are completely untenable. There is sufficient land space around the Fukushima Daiichi Nuclear Power Station (FDNPS) for the construction of decommissioned waste storage facilities. The Japanese government should do its best to solve the problem within its own territory, and should not transfer the risk of nuclear contaminated water to the ocean, which is the common wealth of human society, and to stakeholders including neighbouring countries.

[Japan's Answer 1]

The water to be discharged from the FDNPS complies with the international safety standards after being purified by Advanced Liquid Processing System (ALPS), this is not nuclear contaminated water. This is also the reply on the expression of "nuclear contaminated water" mentioned in the other questions as well as Question 1. Japan will never "transfer the risk" of the discharge of ALPS treated water to "stakeholders including neighbouring countries".

For the reasons stated in Answer I-2 in Japan's previous response[1] and elaborated below, Japan has carefully evaluated other technical options for the disposal of ALPS treated water and concluded that long-term storage in tanks is not a feasible option. It is recalled that that conclusion was reached following comprehensive discussions on this matter over a period of more than six years at the Tritiated Water Task Force and Subcommittee on Handling of ALPS treated water (hereinafter referred to as the "ALPS Subcommittee"), noting that the ALPS Subcommittee was comprised of technical experts from outside of the Government of Japan (hereinafter referred to as "GOJ")[2].

Japan is proceeding with the decommissioning of FDNPS in a phased manner with a view to ensuring safety, based on the main principles of the decommissioning of FDNPS. Even if there were sufficient area for additional tanks outside FDNPS in Fukushima Prefecture on a temporary basis, a fundamental solution for the disposal of ALPS treated water is required as an essential part of this process.[3] Discharging water that meets regulatory standards into the sea is a normal practice conducted by many countries around the world including the People's Republic of China and the Russian Federation.

In order to safely and steadily proceed with decommissioning, a vast amount of space is needed to construct facilities to temporarily store the removed fuel debris and other items and to store waste materials that will be generated by decommissioning operations in the future. There are already more than 1,000 tanks on the FDNPS site, and these tanks occupy a large portion of the site, including most of the space suitable for the storage of

---

[1] See pp.3-5 of the Attachment to INFCIRC/1007, IAEA, available at IAEA Website: <https://www.iaea.org/sites/default/files/publications/documents/infcircs/2022/infcirc1007.pdf>

[2] See the report of the ALPS Subcommittee, dated February 10, 2020, available at: <https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/20200210_alps.pdf>

[3] "Basic Policy on handling of ALPS treated water at the Tokyo Electric Power Company Holdings' Fukushima Daiichi Nuclear Power Station" pp.1-3, available at METI Website: <https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/bp_alps.pdf>

fuel debris and spent fuel bundles. Given these facts, and following careful review including by the ALPS Subcommittee whose report was endorsed by the IAEA review team, if Japan does not undertake efforts to safely dispose of the stored water and dismantle the storage tanks to make way for the new waste processing and storage facilities, the decommissioning process cannot proceed. Additionally, FDNPS will continue to generate contaminated water. Additional tanks would, in any event, only postpone, and not address, the need for disposal of ALPS treated water. In the areas in Fukushima Prefecture surrounding the FDNPS there are interim storage facilities for the soil and other items produced in the process of decontamination. As noted above, the ALPS Subcommittee carefully considered the possibility of installing tanks in the above-mentioned areas, and concluded that it would be difficult to utilize them as sites for additional storage tanks. Long-term storage in tanks may also pose other problems, such as those arising from leakage due to aging of the tanks or to natural disasters including earthquake. Please refer to the ALPS Subcommittee report (February 10, 2020, pp.15-16) and the IAEA Follow-up Review Report (April 2, 2020, p.18)[4].

Regarding the possibility of storing the non-diluted ALPS treated water outside the FDNPS site, it is further unrealistic and wholly inappropriate to secure a vast amount of land to store a large amount of water for an indefinite period prior to its disposal by an unidentified method in the first place, and there are also risks when transporting the water before it is diluted with sea water.

Japan has planned for and is implementing storage facilities for water as part of the decommissioning programme, and is confident that it has identified a proper balance between the storage and safe discharge of the water. As stated by the Director-General of the IAEA (Mr. Grossi) in 2021: “Japan’s chosen water disposal method is both technically feasible and in line with international practice”, noting “controlled water discharges into the sea are routinely used by operating nuclear power plants in the world” [5].

[4] IAEA (2 April 2020) "IAEA Follow-up Review of Progress Made on Management of ALPS Treated Water and the Report of the Subcommittee on Handling of ALPS treated water at TEPCO's Fukushima Daiichi Nuclear Power Station", pp.20-21, available at IAEA Website:
<https://www.iaea.org/sites/default/files/20/04/review-report-020420.pdf>

[5] IAEA Press Release (13 April 2021) “IAEA Ready to Support Japan on Fukushima Water Disposal, Director General Grossi Says ”, available at:
<https://www.iaea.org/newscenter/pressreleases/iaea-ready-to-support-japan-on-fukushima-water-disposal-director-general-grossi-says>

[Question 2]

While the IAEA Task Force has not reached a final conclusion, the Nuclear Regulation Authority (NRA) of Japan has approved the construction of dilution and discharge facilities for nuclear contaminated water. This is a clear indication that the Japanese side has not seriously taken the review result of the IAEA Task Force as the basis for the decision-making on the discharge of nuclear contaminated water into the sea. With regard to disposal options for nuclear contaminated water, the IAEA recognized the feasibility of two disposal technologies including vapor release and discharge into the sea, but the Japanese side did not explain the reason for choosing discharge into the sea but excluding vapor release, nor did it give a convincing explanation for denying other disposal methods.

The Japanese side has suggested that the discharge is planned to take place in Japan's territorial sea. However, the ocean is an open environment and the contaminants therein will not remain only in Japan's territorial sea, but also be distributed throughout the marine environment, which will certainly expand the scope of impact.

The Japanese side has stated that if the nuclear contaminated water is discharged to Japan's land territory, it would require transportation of a large volume of non-diluted nuclear contaminated water, which would bear the risks of leakage and other accidents. This fully reflects that the Japanese side also believes that these non-diluted nuclear contaminated water has safety risks and must rely on dilution and diffusion to the sea to mitigate its own impact. Therefore, discharging the nuclear contaminated water into the sea is actually transferring safety risks to the world.

[Japan's Answer 2]

There are four allegations made to which Japan responds in turn below.

The first allegation is that Japan has "not seriously taken the review result of the IAEA Task Force as the basis for the decision-making on the discharge of nuclear contaminated water into the sea", that is not correct. As explained below, Japan has carefully studied and seriously considered the findings and observations from the IAEA Task Force and incorporated them in its plan for the discharge into the sea (as acknowledged by the IAEA itself), and Japan is committed to addressing any additional findings and observations from the IAEA as necessary prior to the discharge into the sea.

The IAEA, independently from Japan's domestic regulations, reviews not only the safety of ALPS treated water but also the process of review and confirmation by the Nuclear Regulation Authority (NRA) as well as its content. As noted above, Japan has seriously considered the findings and observations from the IAEA Task Force and incorporated them in its plan for the discharge into the sea and the revised Radiological Environmental Impact Assessment report (REIA report)[6]. During the second mission to Tokyo Electric Power Company Holdings (TEPCO) and Ministry of Economy, Trade and Industry (METI) under the Safety Review of the Handling of ALPS treated water at TEPCO's

[6] See the TEPCO's REIA report, available at TEPCO's website <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>, and. For details of observations and findings from the Task Force to date, see <https://www.iaea.org/sites/default/files/report-4-review-mission-tepco-and-meti.pdf>.

FDNPS in November 2022, the IAEA noted: "The Task Force's findings from its first mission in February 2022 were considered in depth and have been reflected in Japan's revisions to the plan.[7]"

In July 2022, the NRA confirmed the safety of the installation of ALPS treated water discharge facilities and approved TEPCO's application. However, before any discharge into the sea is commenced, there are further stages to be addressed. TEPCO is currently undergoing a pre-service inspection by the NRA to confirm the state of the installation of the discharge facilities. Furthermore, the independent review by the IAEA is an ongoing process. The Government of Japan and TEPCO will address any additional findings and observations from the IAEA as necessary prior to the discharge into the sea.

The second allegation made is that Japan has not given a "convincing explanation" for rejecting vapor release and other disposal methods. In fact, detailed explanations have been provided. As described in Answer I-2 in Japan's previous response, the reason why Japan chose the option of discharge into the sea, not of vapor release, is that the ALPS Subcommittee concluded in its report dated 10 February 2020[8] that discharge into the sea can be "implemented more reliably, with respect to mitigating environmental and human health impacts, given that this discharge method is commonly used among nuclear plants around the world; discharge facilities have positive track records for safety; and controlled discharges into the sea can be monitored most accurately". The details are as below.

- *Vapor release*
  - *"part of the vapor is re-evaporated into the air after falling onto the land. Thus, it is difficult to forecast the diffusion behavior of vapor release, which poses difficulties in considering measures such as a monitoring system. "*
  - *"Furthermore, it is expected that the variation in monitoring results, which depends on climate conditions such as rainfall and wind direction, is wider than that of discharge into the sea. Therefore, in light of adverse impacts on the reputation, careful consideration will be required for release conditions, such as diluting sufficiently to make the vapor's concentration lower than the regulatory standard."*

- *Discharge into the sea*
  - *"Regarding discharge into the sea, at nuclear facilities in Japan and abroad, radioactive liquid waste containing tritium is being released into the ocean etc. after dilution with coolant seawater etc. At Fukushima Daiichi NPS, the operational standard value for discharge was set as 22 TBq/year for tritium. Annual tritium emission from nuclear facilities in Japan is about 0.0316 to 83 TBq (three-year average before the accident, per site). Seeing these discharge records, the discharge into the sea can be done within the range of preceding practices in Japan."*
  - *"this option can be implemented more reliably, considering the existence of the past track records for normal functioning reactors and ease of discharge facilities operation and proper monitoring methods. That is, facility configuration for discharge into the sea is simple comparing to that for vapor release. In addition, as*

---

7 See paragraph 7 of the IAEA press release "IAEA Task Force Makes Progress in Safety Review of Japan's Plans for Discharge of Water Stored at Fukushima Site", IAEA, Available at IAEA Website: <https://www.iaea.org/newscenter/pressreleases/iaea-task-force-makes-progress-in-safety-review-of-japans-plans-for-discharge-of-water-stored-at-fukushima-site>

8 See the report of the ALPS Subcommittee, dated February 10, 2020, available at: <https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/20200210_alps.pdf>

TEPCO has knowledge on the design of discharge system and its operation, it is possible to ensure steady disposal into the ocean in the construction and operation side."

More information on the discussions in the ALPS Subcommittee is available in its report[9]. In response to this report, in April 2020 the IAEA Review Team stated:

- *"The Review Team considers that the ALPS Subcommittee's assessment methodology and approach to be appropriate and comprehensive. The selection criteria are well-chosen, and the analysis made against each criterion is technically sound and objective."*
- *"The Review Team concurs with the ALPS Subcommittee's assertion that these three options* [i.e. those other than vapor release or discharge into the sea] *are technically immature and unproven and implementation of any of them will require resolution of challenging unresolved issues"*; and
- *"The Review Team considers the ALPS Subcommittee analysis of the two options* [i.e. vapor release and discharge into the sea] *is sufficiently comprehensive, based on a sound scientific and technical basis and based on sound past and current practice precedents".*[10]

The third allegation concerns the identification of a transportation risk mentioned in Japan's previous response. That risk is associated with the transportation of undiluted ALPS treated water containing tritium that exceeds the regulatory standard. Japan stresses once more that discharge into the sea is the international practice widely adopted by other countries including the People's Republic of China and the Russian Federation as an option for the disposal of liquid waste from nuclear facilities.

The fourth allegation is that "the contaminants therein will not remain only in Japan's territorial sea, but also be distributed throughout the marine environment". As stated in I-2 of Japan's previous response, the ocean dispersion modelling conducted by TEPCO and METI, reviewed by the IAEA, demonstrated that concentrations of tritium above natural background concentrations will be limited to within 3 km of the discharge point at FDNPS, well within the area of Japan's own territorial sea. As stated in II-5 of Japan's previous response, and II-5 of this response below, the level of tritium concentration spreading into the sea areas of other countries as a diffusion result by the discharge of ALPS treated water is lower even than background radiation. Thus, the impact of discharge is minimal and hardly detectable.[11]

[9] See the report of the ALPS Subcommittee, dated February 10, 2020, pp. 32-33, available at METI Website <https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/20200210_alps.pdf>

[10] IAEA (2 April 2020) "IAEA Follow-up Review of Progress Made on Management of ALPS Treated Water and the Report of the Subcommittee on Handling of ALPS treated water at TEPCO's Fukushima Daiichi Nuclear Power Station", pp.20-21, available at IAEA Website: <https://www.iaea.org/sites/default/files/20/04/review-report-020420.pdf>

[11] See 6-1-3 (3) and Attachment VII of the REIA Report <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>

[Question 3]

Whether the nuclear contaminated water can actually meet the standards after treatment by the ALPS is a critical issue that the Japanese side has been trying to circumvent. There is no detailed descriptions of the processing parameters and performance indicators of the ALPS from the current answer of the Japanese side. The Japanese side should fully explain the reliability of the ALPS treatment process, formulate a comprehensive and effective quality assurance procedure, and accept the supervision of stakeholders to ensure that the nuclear contaminated water does not affect the marine environment and neighbouring countries. Given the history record of data falsification by TEPCO, the data of the nuclear contaminated water treated by the ALPS has been questioned by various parties.

According to the answer provided by the Japanese side, TEPCO has conducted secondary treatment performance tests, and invited a third-party organization to conduct sample analysis. The results showed that the sum of ratios of legally required concentrations to discharge limit of radionuclides other than tritium was less than 1. Please indicate: What was the flow rate during the test? Is there a plan for the secondary (or multiple) treatment of all tanks?

[Japan's Answer 3]

The processing parameters, treatment process and performance indicators of the ALPS are as described in I-3 of Japan's previous response. Further details are available in Attachment Ⅱ of the REIA report.[12]

The NRA reviews and inspects TEPCO's plans for the discharge of ALPS treated water to ensure that they meet the existing regulatory standards established in accordance with the international standards. The safety inspections will continue even after the start of the discharge. In addition, the IAEA conducts its review of the safety of the discharge of ALPS treated water into the sea before, during and after the discharge, providing an objective third-party expert assessment. The IAEA also reviews the reliability of data from TEPCO and the GOJ. This review will include corroborative analysis and investigation of data related to source monitoring and sea area monitoring. The laboratories in France, the Republic of Korea, United States of America and Switzerland that were appointed by the IAEA from among the members of its Analytical Laboratories for the Measurement of Environmental Radioactivity ('ALMERA') network[13] have also participated in this IAEA review. Furthermore, as regards any discharge of diluted ALPS treated water, TEPCO and GOJ will ensure the quality of its analysis by requesting third-party organizations to conduct review of TEPCO's analysis[14].

As to the specific questions posed with regard to TEPCO's secondary treatment test:

- It was conducted using the additional ALPS, and the flow rate during the test was the same as that of normal treatment (the treatment rate per system of the three additional

[12] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

[13] Available at IAEA Website: <https://www.iaea.org/sites/default/files/3rd_alps_report.pdf>

[14] Such third-party organizations include KAKEN Co.,Ltd and Japan Atomic Energy Agency.

expanded ALPS systems is about 7m³/h to 10 m³/h).

With regard to the water in tanks that requires secondary treatment, the plan is to 1) transfer all the water after the second treatment to the facility for measurement and confirmation, 2) confirm it meets the regulatory standards, and 3) discharge it into the sea.

[Question 4]

The Japanese side did not answer this question directly. This question is mainly about the radioactivity monitoring before, during and after the ALPS treatment of the nuclear contaminated water, but the Japanese side's reply focuses on the environmental monitoring of the ocean after the discharge of the nuclear contaminated water, which is completely irrelevant.

Noting that the Japanese side has formulated a "Comprehensive Radiation Monitoring Plan", we hope to see the revised plan by Japan according to the opinions of the IAEA Task Force and the specific monitoring plan mentioned by the NRA, which will include the monitoring of seven major radionuclides (Cs-134, Cs-137, Co-60, Ru-106, Sb-125, Sr-90, I-129). In addition, the Japanese side should also highlight the quality assurance measures for monitoring.

Please explain how to set the early warning level of monitoring.

[Japan's Answer 4]

Since the previous Question I-4 of the Questionnaire dated June 1, 2022 asked about monitoring before, during, and after the disposal (discharge into the sea), Japan responded by explaining the sea area monitoring based on the Comprehensive Radiation Monitoring Plan that begins before the discharge and continues after the start of the discharge. While the coverage of QI-4 is unclear, Japan sets out below details on (i) another type of monitoring, source monitoring, (ii) the monitoring of seven major nuclides (Cs-134, Cs-137, Co-60, Ru-106, Sb-125, Sr-90, I-129) before discharge and in the sea area monitoring, (iii) the quality assurance measures for monitoring, and (iv) the early warning level of monitoring:

(i) When TEPCO's implementation plan was approved by the NRA in July 2022, TEPCO's measurement and assessment for source monitoring targeted 62 nuclides, which corresponds to the nuclides targeted for ALPS removal, and tritium and C-14, for a total of 64 nuclides. Initially, under the 1st REIA report, those 64 nuclides were regarded as those nuclides to be measured and assessed. Subsequently, in response to the suggestions by the IAEA and the NRA that the selection of nuclides should not be too conservative and should be more realistic, TEPCO reviewed the nuclides to be measured and assessed. As a result, TEPCO decided to target a reduced list of 29 nuclides and tritium[15], and this decision is currently under the review of the NRA and the IAEA. The 4th report of the IAEA Task Force issued in April 2023 states: "Based on the information presented by TEPCO during this mission and extensive discussion, the Task Force had an overall view that the revised methodology for characterizing the source term is sufficiently conservative yet realistic" [16].

TEPCO selected these 29 nuclides in order to ensure that the nuclides that are present in significant concentrations or could possibly be present in the water prior to ALPS

[15] For a list of 29 nuclides, see Table 5-1-2, p.19 of the REIA Report, <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>

[16] The IAEA (April 2023), "IAEA Review of Safety Related Aspects of Handling ALPS Treated Water at TEPCO's Fukushima Daiichi Nuclear Power Station - Report 4: Review Mission to TEPCO and METI (November 2022)", p.20, available at; <https://www.iaea.org/sites/default/files/report-4-review-mission-tepco-and-meti.pdf>

treatment are removed to sufficiently meet the regulatory standards before discharge. All of these nuclides will be measured and assessed each time before discharge at the measurement and confirmation facilities on the FDNPS in order to confirm that the sum of ratios of concentrations is less than 1 (one). Furthermore, as its own efforts, in addition to the 29 nuclides and tritium concentrations, TEPCO will also measure other 39nuclides that are not expected to be detected in order to confirm that they are not detected each time before discharge into the sea.

With respect to tritium, TEPCO will monitor the tritium concentrations in the water to be discharged in order to ensure that they are below 1500 Bq/L in the discharge shafts on the FDNPS. Details of TEPCO's monitoring at the FDNPS are provided in 9-2 of the REIA report[17].

(ii) Regarding the monitoring of the seven major radionuclides (Cs-134, Cs-137, Co-60, Ru-106, Sb-125, Sr-90, and I-129) before the discharge, TEPCO has been measuring the ratios of concentrations of the seven major radionuclides and gross α-radioactivity and gross β-radioactivity at the entrance and exit of the ALPS facility about once a week. In addition, in order to confirm the performance of the adsorbent, measurements of the nuclides to be adsorbed by the adsorbent have been conducted about once a week during the process (routine measurement).[18] These are described in detail in Attachment II of the REIA report[19] .

Under the Comprehensive Radiation Monitoring Plan[20], the GOJ conducts monitoring of the seven major nuclides in seawater. This sea area monitoring has been conducted since 2022.

(iii) As for quality assurance of the GOJ's sea area monitoring, analytical laboratories are selected from among institutions that obtained ISO certification for the analysis of specific nuclides with a proven track record regarding analytical capabilities. As explained in Japan's previous response to Question I-9, the Inter-Laboratory Comparison (ILC) has been conducted by the IAEA since 2014 to confirm the adequacy of radioactivity measurements by analytical laboratories. Another ILC has been conducted since 2022 to corroborate the results of GOJ's sea area monitoring as part of the IAEA's review[21]. Experts from the IAEA Marine Environment Laboratories as well as the laboratories in Finland and the Republic of Korea that were appointed by the IAEA from among the members of its Analytical Laboratories for the Measurement of Environmental Radioactivity ('ALMERA') network to further improve transparency, visited Japan from November 7 to 14 in 2022 to confirm the sampling and pretreatment status for these two

---

[17] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

[18] "Radiation concentrations measured at the multi-nuclide removal equipment (ALPS) outlet (as of December 31, 2022),available at: "https://www.tepco.co.jp/en/decommission/progress/watertreatment/images/exit_en.pdf

[19] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>

[20] Monitoring Coordination Meeting of the Nuclear Emergency Response Headquarters (revised on March 16, 2023) "Comprehensive Radiation Monitoring Plan", provisional translation available at: <https://radioactivity.nra.go.jp/en/contents/17000/16273/24/274_20230412.pdf>

[21] For details, see the 3rd report of the IAEA review. The IAEA (December 2022), "IAEA Review of Safety Related Aspects of Handling ALPS Treated Water at TEPCO's Fukushima Daiichi Nuclear Power Station - Report 3: Status of IAEA's Independent Sampling, Data Corroboration, and Analysis Activities", available at: <https://www.iaea.org/sites/default/files/3rd_alps_report.pdf>

ILCs[22].

Regarding the quality assurance of the monitoring[23] conducted by TEPCO at the FDNPS site, in addition to the comparison among the analysis laboratories as stated in Japan's previous response to Question I-9, the NRA has confirmed that the analysis methods for conducting the monitoring comply with methods prescribed in the standard manuals (Radioactivity Measurement Method Series) established by the GOJ. In addition, many analysis laboratories for TEPCO's monitoring are accredited under the ISO standard (ISO/IEC 17025). They continue to undergo periodic inspections in order to improve their performance as necessary. With regard to source monitoring to confirm the status of the water in the tanks, the IAEA conducts analysis and investigations to corroborate the data as part of its review. The laboratories in France, the Republic of Korea, United States of America and Switzerland that were appointed by the IAEA from among the members of its ALMERA network[24] also participate in this IAEA review.

(iv) As for the "early warning level of monitoring", the following answer is given on the understanding that the question concerns abnormal/unusual values or situations in relation to sea area monitoring conducted after the start of discharge.

As stated in the TEPCO's application document for approval to amend the implementation plan which was submitted to the NRA in February 2023, if any abnormal value in sea area monitoring is detected by TEPCO, the discharge into the sea will be suspended to examine analysis results obtained by other implementation entities and identify the cause. The case in which "any abnormal value in sea area monitoring is detected" means either of the following situations that would be determined based on the results of quick analysis of tritium concentration in the sea by TEPCO:

1) When values detected near the discharge outlet exceed the "operating value for discharge". The "operating value" is the value set by TEPCO, taking into account uncertainties of the equipment and measurement, to ensure that the tritium concentration does not exceed 1,500 Bq/L, which is the upper limit of tritium concentration set in the government Basic Policy.
2) When values detected outside the area stated in 1) are "deemed clearly abnormal".

Sampling locations for 1) and 2) above will be selected from the sampling locations in the Comprehensive Radiation Monitoring Plan set based on the tritium dispersion simulation. Items required for the actual operation such as specific sampling locations, values to determine abnormalities, and check list for resuming the discharge will be defined in TEPCO's internal manual. "Abnormal value" including values "deemed clearly abnormal" will be established in this process and will be made publicly available before the start of the discharge. The above-mentioned measures in relation to "abnormal value" including values "deemed clearly abnormal" were developed in response to the observations of the IAEA Task Force and is currently under the review of the IAEA.

It should be emphasized in this context that the water in the tanks will be treated, multiple

[22] NRA Press Release (15 February 2023)
<https://radioactivity.nra.go.jp/en/contents/17000/16163/24/(NRA)ILC2022_After_Press(EN)_SET.pdf>
[23] This includes; 1) source monitoring at measurement/confirmation facility, 2) monitoring at the discharge vertical shaft, and 3) monitoring in piping. For details of each monitoring and its quality assurance, see 9-1 and 9-2 of the REIA Report. <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>
[24] Available at IAEA Website: <https://www.iaea.org/sites/default/files/3rd_alps_report.pdf>

times if needed, to ensure the concentrations of nuclides other than tritium are below the regulatory limits. Third parties will also monitor the samples from the water to confirm the compliance with these regulatory limits. The IAEA will also analyze samples of ALPS treated water at IAEA's laboratories and will include third party laboratories in this independent corroboration exercise. Further, the water will subsequently be diluted with sea water 100 times or more before discharge, as a result of which the concentration of each nuclide in the discharged water will be significantly lower than its regulatory limit. Once discharged, each nuclide in the water will disperse further in the sea, and the concentration of most of the nuclides will be below the technically detectable levels. Therefore, it is highly unlikely that sea area monitoring after the discharge will detect any abnormal/unusual values of tritium or other nuclides that would adversely impact human health or the environment.

Nonetheless, in the unlikely event of identifying an unusual situation concerning nuclides other than tritium, TEPCO will take necessary measures including further investigation of the cause and the suspension of discharge.

Further, for the sake of maximum transparency, the GOJ for its part has reinforced the Comprehensive Radiation Monitoring Plan, which includes nuclides other than tritium as its scope[25]. In the unlikely event of detecting any unusual value of nuclides other than tritium that is higher than the normal range of values, the GOJ will also take steps to investigate its cause. TEPCO will take necessary measures as mentioned above. The NRA and its Secretariat will subsequently examine the measures taken by TEPCO including through inspection.

In this connection, the GOJ has publicized at its website the data on the results of sea area monitoring which has been conducted under the Comprehensive Radiation Monitoring Plan[26]. This shows the range of variation of each nuclide at each monitoring point. Japan will continue to make these data publicly available for the sake of transparency.

[25] See the following link for details of Comprehensive Radiation Monitoring Plan. Provisional translation available at: <https://radioactivity.nra.go.jp/en/contents/17000/16273/24/274_20230412.pdf>

[26] https://shorisui-monitoring.env.go.jp/en/

[Question 5]

With regard to the representativeness of sampling, the Japanese side has repeatedly stressed that homogeneity can be achieved, but has not yet fully explained it. We are concerned about the stirring method chosen by the Japanese side, the representative sampling method selected, and how to verify its homogeneity through simulation calculations and experiments.

[Japan's Answer 5]

This question concerns the method that is proposed to be used to homogenize the radioactive concentration in ALPS treated water. The question refers to "the stirring method". For the avoidance of doubt, the method comprises both circulation and stirring, with agitation equipment installed in each tank to stir the water together with circulation pumps to circulate the water across the tanks.[27]

TEPCO has explained the effect of homogeneity by circulation and stirring including at the 10th NRA's Review Meeting on the Implementation Plan Regarding the Handling of ALPS Treated Water on February 25, 2022.[28]

TEPCO conducted the following test from February 7 to 13, 2022 (for approx.144hrs).

- At the beginning of the test, TEPCO installed stirring equipment equivalent to the actual equipment at the bottom of the K4-B tanks, which will be converted to the facility for measurement and confirmation, and employed temporary circulation pipes and a temporary circulation pump equivalent to that of the actual equipment. TEPCO also placed the reagent (sodium tertiary phosphate) into one of the tanks.
- During the above-mentioned period, TEPCO monitored the operation of the equipment and assessed the effect of circulation and stirring by the reagent and the tritium concentration ratio of the stored water.

TEPCO confirmed the following after the test.

- The phosphate ion concentrations in the samples taken from the upper (10m), middle (5m), and lower (1m) layers of the 10 tanks after 144 hours after the functioning of the temporary circulation pumps varied slightly. Nonetheless, the average phosphate ion concentration in the individual tanks was 86 ppb, close to the theoretical value of 80 ppb. The tanks as a whole were well supplied with phosphoric acid.
- The tritium concentration in the 10 tanks sampled in the past, prior to the test, was the average of 1.61×10^5 Bq/L with a standard deviation of 0.13×10^5 Bq/L. After the circulation/stirring demonstration test for144 hrs, the average of tritium concentration was 1.51×10^5 Bq/L with a standard deviation of 0.029×10^5 Bq/L. The result showed that the combined operation with the equipment for stirring and the circulation pumps has confirmed the effect of homogeneity on the tritium concentration in the 10 tanks. [29]

---

[27] See response to question I-5 of Japan's previous response, and see also p. 3 of "Installation of New ALPS Treated Water Dilution/ Discharge Facilities and the Related Facilities" ,available at: https://www.tepco.co.jp/en/hd/decommission/information/committee/pdf/2022/alps_22022501-e.pdf

[28] "Installation of New ALPS Treated Water Dilution/ Discharge Facilities and the Related Facilities" ,available at: https://www.tepco.co.jp/en/hd/decommission/information/committee/pdf/2022/alps_22022501-e.pdf

[29] TEPCO, "Fukushima Daiichi Nuclear Power Station Measurement/verification tank (K4 tank group) circulation/agitation demonstration test results" July 2022, available at

The 4th report of the IAEA Task Force issued in April 2023 states: “The Task Force was content that homogeneity was demonstrated by this test and that the extent of sampling undertaken was adequate.”[30]

https://www.tepco.co.jp/en/hd/decommission/information/newsrelease/reference/pdf/2022/reference_20220711_01-e.pdf

[30] The IAEA (April 2023), “IAEA Review of Safety Related Aspects of Handling ALPS Treated Water at TEPCO’s Fukushima Daiichi Nuclear Power Station - Report 4: Review Mission to TEPCO and METI (November 2022)”, p.29, available at; <https://www.iaea.org/sites/default/files/report-4-review-mission-tepco-and-meti.pdf>

[Question 7]

In addition to the detailed description of the 64 nuclides listed, the Japanese side should also explain what exactly are the so-called radionuclides with "extremely low concentration," what detection methods are used for these radionuclides, and what are the detection limits. If the Japanese side gives detailed information on the above issues, it can be used by other laboratories with testing ability to judge whether the detection limit can be further reduced by increasing the sampling amount, extending the sample testing time and other methods, so as to make a clear judgment on whether the concentration is sufficiently low.

[Japan's Answer 7]

The "radionuclides with extremely low concentration", referred to in the Feedback above, are nuclides other than 64 radionuclides (i.e., 62 nuclides subject to removal by ALPS, H-3, and C-14) as indicated in Japan's previous response to Question I-7. Nuclides other than 64 radionuclides have never been detected in the water after ALPS treatment.

In addition, as stated in Japan's previous response to Question I-7, even if any radionuclides other than 64 radionuclides are present, the concentration would be extremely low, and thus the sum of the ratios of each radionuclide to the concentration limit will not exceed one.

Nevertheless, to be conservative in its assessment, TEPCO hypothetically assumed that non-detected nuclides are also present at the lower limit of detection. The dose assessment results for the representative individuals living near the FDNPS, identified as those who are likely to be the most affected, are 2×10^{-6} - 3×10^{-5} mSv/year. This figure is very small compared to the dose constraint value of 0.05 mSv/year (Result of the REIA in February 2023)[31].

[31] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

[Question 8]

The Japanese side should provide the basis for the measurement methods of all nuclides contained in the nuclear contaminated water and the quality assurance procedures for the measurement to ensure the credibility of the monitoring results.

[Japan's Answer 8]

TEPCO's basic policy on the analysis method for the monitoring conducted at the FDNPS is to adopt a standard manual from the "Series of Environmental Radioactivity Measuring Methods" established by the GOJ. In cases where a standard manual is not adopted for reasons such as the possibility of more efficient and accurate measurement using a newer method than the standard manual, the validity of the analysis method is confirmed by quantitative evaluation such as usage of RI standard liquid[32].

In addition, TEPCO will quantitatively evaluate any uncertainty in its measurement and ensure the reliability by comparing its analysis results with those of third-party organizations. Specifically, those organizations include KAKEN Co.,Ltd.

Chapter 9 of the REIA report describes in detail TEPCO's quality control in measurement[33]. The IAEA has reviewed this approach, and Japan will respect the result of the review. With regard to TEPCO's quality assurance regarding the analysis of ALPS treated water prior to its discharge into the sea, it is being confirmed through safety inspections conducted by the NRA that the quality assurance efforts specified in the implementation plan are being properly carried out.

[32] A method to confirm appropriateness of an analytical method using solution with a radionuclide at known concentration

[33] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

[Question 9]

The Japanese side should further explain the quality assurance procedures supporting the monitoring plan and the plan to conduct supervisory monitoring. The Japanese side should invite stakeholders including neighboring countries to sample and monitor the nuclear contaminated water as well as the sea areas where it is discharged.

[Japan's Answer 9]

The quality assurance of the respective monitoring conducted by TEPCO and the GOJ is explained in the response to Question I-4 above.

As for the monitoring conducted by Japan, a system has been put in place whereby various domestic organizations (relevant ministries, local governments, and TEPCO) work together to conduct monitoring. A large number of measuring points have been set up in sufficient ranges, and in some areas the national and prefectural measuring points overlap with those of TEPCO. Detailed information is available in the Comprehensive Radiation Monitoring Plan[34].

The validity of analytical results of individual monitoring will be appropriately evaluated by each monitoring organization with the advice of experts.[35] Furthermore, if necessary, the NRA will provide scientific and technical advice to monitoring organizations. In addition, an experts meeting was established for sea area monitoring by the Ministry of the Environment (MOE) in June 2021 with the mandate to provide confirmation and advice for the monitoring conducted by the MOE and the NRA. The meeting will also provide confirmation and advice for the monitoring conducted by other monitoring organizations including TEPCO, as necessary.

Japan considers that this monitoring is adequate, since it is based on sufficiently conservative measuring points and ranges, equipped with a thorough domestic check mechanism, and is operated with the review of the IAEA and involvement of third-country analytical laboratories.

Further information as to the role of expertise from third-countries is set out in Japan's answer I-10.

[34] Comprehensive Radiation Monitoring Plan, available at: <https://radioactivity.nra.go.jp/en/list/274/list-1.html>
[35] Ibid, p.13.

[Question 10]

Japan's reply only stated that the IAEA was invited to conduct monitoring, but did not answer directly whether it intended to invite stakeholders including neighboring countries to make evaluations, whole-process supervision and independent monitoring.
The Japanese side should make a direct and clear response to this.

[Japan's Answer 10]

The role of stakeholders including neighboring countries is secured through the significant engagement of the IAEA, which Japan recognizes as the most authoritative and independent third-party in the field of nuclear energy. Japan understands that the People's Republic of China and the Russian Federation (also IAEA Member States) agree with this recognition. The reliability of TEPCO's and the GOJ's monitoring data has been reviewed by the IAEA. The international experts in the IAEA Task Force conducting the review include experts from the People's Republic of China and the Russian Federation.

In addition, third-country institutes, including neighbouring countries, are also participating in this IAEA review. For example, experts from institutes from the Republic of Korea and Finland participated as third-country parties in the environmental monitoring conducted in November 2022[36]. Details are described in the third report of the IAEA Review published by the IAEA last December.[37]

The IAEA International Safety Standards, which the IAEA uses as the benchmark for its review, have been developed through consultation with relevant international organizations and all IAEA Member States. The IAEA is the international organization with primary responsibility for nuclear matters, and is specifically authorized by Article III of its Statute to ensure the application of the Safety Standards to a State's activities when requested to do so by that State. While the People's Republic of China and the Russian Federation apparently now take the position that the IAEA review is insufficient, Japan considers that the implementation of the IAEA review is the most appropriate action in light of its nature as described above.

[36] The IAEA press release "IAEA Team to Observe Sampling of Seawater, Marine Sediment and Fish near Fukushima Daiichi Nuclear Power Station", available at IAEA Website: <https://www.iaea.org/newscenter/pressreleases/iaea-team-to-observe-sampling-of-seawater-marine-sediment-and-fish-near-fukushima-daiichi-nuclear-power-station>

[37] Available at IAEA Website: <https://www.iaea.org/sites/default/files/3rd_alps_report.pdf>

[Question 12]

Please specify where the "radiation monitors" are installed and provide details of their performance, in particular the detection limits of radiation. "Online monitoring device" refers to the device used for the real-time dynamic monitoring.

[Japan's Answer 12]

Radiation detectors (radiation monitors) are installed in the multinuclide transfer facility building for the dilution of ALPS treated water (transfer facility). Two figures are provided below. The first figure depicts the location of the radiation detectors in that facility (highlighted in orange). The second figure depicts the location of the Multi-nuclide transfer facility within the building (again, highlighted in orange).

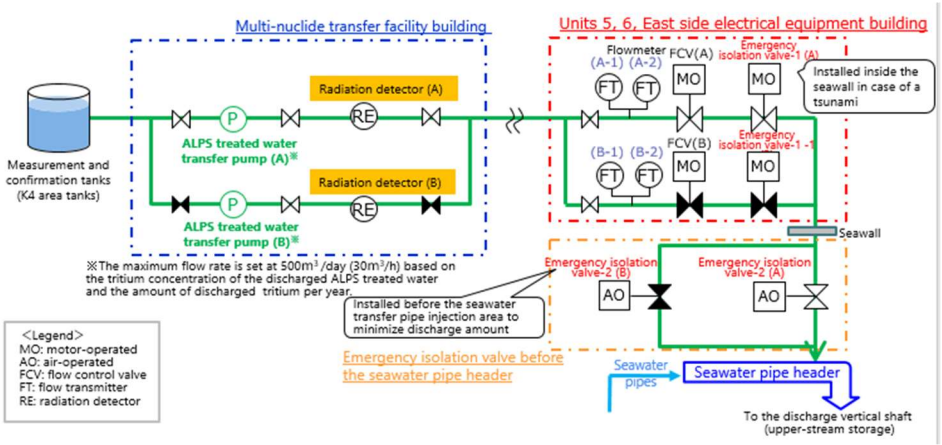
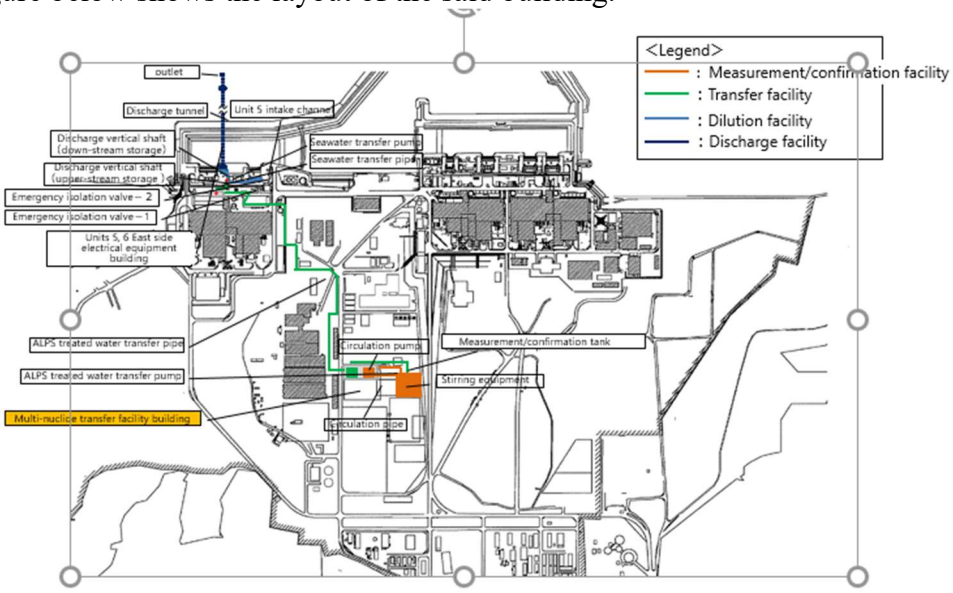


Figure below shows the layout of the said building.



The specifications of the radiation monitor are as follows:

Detector type: NaI(Tl) scintillation detector
Measurement range: 10^{-1} to $10^{5}s^{-1}$
Detection sensitivity: 2.0 x $10^{-2}Bq/cm^{3}$ or less (^{137} Cs)

[Question 13]

The Japanese side did not fully answer this question. For example, there was no adequate response to the questions on the supervision department of the implementation of the monitoring programme, and verification of the implementation of the monitoring programme by stakeholders and neighboring countries. At the same time, the types of nuclides monitored by Japan for seawater, sediments and aquatic organisms are insufficient, which do not fully cover the nuclides of concern in the nuclear contaminated water.

[Japan's Answer 13]

In addition to the answer given in Japan's previous response, supplementary information is provided on "the supervision department of the implementation of the monitoring programme" as follows.

The GOJ formulated "Comprehensive Radiation Monitoring Plan" in the Monitoring Coordination Meeting under the Nuclear Emergency Response Headquarters chaired by the Prime Minister in August 2011. Based on this plan[38], the monitoring around the FDNPS is conducted by relevant ministries, local governments, and TEPCO in cooperation with each other. The MOE and the NRA serve as the Secretariat in the Monitoring Coordination Meeting.

The validity of analytical results of individual monitoring will be appropriately evaluated by each monitoring organization with the advice of experts. Furthermore, if necessary, the NRA will provide scientific and technical advice to monitoring organizations.

In addition, an experts meeting was established for sea area monitoring in June 2021 with the mandate to provide confirmation and advice for the monitoring conducted by the MOE and the NRA. The locations, frequency, and methods (measured nuclides, etc.) of the sea area monitoring were decided taking into account experts' advice, and will be revised as necessary. The meeting will provide confirmation and advice for the monitoring conducted by TEPCO, as necessary.

As for the "verification of the implementation of the monitoring programme by stakeholders and neighbouring countries," Japan's response is described in the I-9 above.

The types of nuclides covered by Japan's sea area monitoring is described in the Comprehensive Radiation Monitoring Plan[39]. The IAEA reviewed the Plan, and Japan will respect the result of the review.

[38] The latest version published on April 12, 2023 is available at; <https://radioactivity.nra.go.jp/en/list/274/list-1.html>

[39] https://radioactivity.nra.go.jp/en/contents/17000/16273/24/274_20230412.pdf

[Question 14]

As for whether the key samples will be retained and adopted for remeasuring by international agencies, stakeholders and neighboring countries, Japan did not answer the question directly and should make clear explanation on that. If yes, please specify the plan and its implementation; if not, please provide the reasons.

[Japan's Answer 14]

TEPCO conducts about 80,000 analyses per year at the FDNPS, and the number of the analyses is expected to increase further in the future. The samples after analysis by TEPCO are kept by its outsourcing contractors in anticipation of re-analysis until the analytical values are determined, as described in I-14 of Japan's previous response. TEPCO disposes of the samples after the analysis values are determined and re-analysis becomes no longer necessary. It is also noted that the storage space is not unlimited.

As have been repeatedly stated, Japan's monitoring is carried out on the basis of ample and conservative measuring points and ranges, and with a thorough domestic check mechanism. For the reasons given in I-10 above, Japan considers that sample analysis by the IAEA is the most appropriate action, in light of its standing as the most authoritative international organization in the field of nuclear energy.

[Question 15]

In consideration of the safety of waste storage and management, please specify the methods, options and plans of the final waste disposal. How to prevent leakage so as to refrain from any impact on the Pacific Ocean and neighboring countries?

[Japan's Answer 15]

Japan ensures the safety in the storage and management of waste under the Implementation Plan approved by the NRA. As for the disposal of radioactive waste, it is necessary to understand the overall picture of the waste, including its amount, types and concentrations of radionuclides, and then to consider the specifications of the disposal facility and the technical requirements for disposal suitable for them. At present, analysis of rubbles is underway by TEPCO with the aim of determining the properties and state of radionuclides.

The GOJ will consider the specifications of the disposal facility and the technical requirements for disposal based on the overall picture of the waste. In any case, the GOJ will take measures to ensure that the waste generated from the FDNPS will be disposed of appropriately and in accordance with international safety standards.

[Question 16]

The Japanese side only briefly introduces the thaw of the frozen soil wall, but does not explain how to ensure that its impervious function can be maintained, which is key to prevent the frozen soil wall from thawing again so as to prevent the outflow of nuclear contaminated water. The Japanese side should provide further details of the test methods and quality assurance measures for the impervious performance of the frozen soil wall. In addition, the Japanese side should take timely and effective measures to control the generation of nuclear contaminated water and disclose relevant information.

[Japan's Answer 16]

The frozen soil wall is not designed to prevent contaminated water from leaking out (as indicated by the Feedback above), but to keep uncontaminated groundwater on the FDNPS away from the area around the Unit 1-4 building (i.e., to prevent new contaminated water from being generated).

In order to assess the impermeability of the frozen soil wall, TEPCO dug a hole approximately 30 to 35 meters deep in the vicinity of the frozen soil wall, installed a temperature measuring tube to monitor the underground temperature, and installed a water level gauge to check the difference in the groundwater level inside and outside the frozen soil wall. In addition, TEPCO also checks the amount of groundwater pumped up from the sub-drain installed around the Unit 1-4 building.

Results of the aforementioned monitoring and other relevant information are described in TEPCO's website[40].

It is assessed by TEPCO that the frozen soil wall has not been thawed, since no reduction in the difference between the inner and outer water levels, no increase in groundwater pumping, and no increase in groundwater inflow into the Unit 1-4 building have been observed to date.

In order to prevent temperature rise, steel sheet piles have been installed to block the flow of groundwater concentrated around the frozen soil wall, and drainage points have been changed to keep rainwater heated by the building roof away from the frozen soil wall.

In terms of measures to control the generation of contaminated water, based on the "Preventive and Multi-layered Measures for Contaminated Water Issues at TEPCO's Fukushima Daiichi NPS" in December 2013, various measures are being promoted in line with the three basic policies ((1) "Removing" contaminated water, (2) "Redirecting" from contaminated sources, and (3) "Preventing leakage" of contaminated water). Positive effects are steadily observed. Further details are available in TEPCO's website[41] .

---

[40] TEPCO, "Status of Contaminated Water Measures" available at <https://www.tepco.co.jp/decommission/information/committee/roadmap_progress/index-j.html> (only in Japanese)

[41] TEPCO, "Outline of Decommissioning, Contaminated Water and Treated Water Management" available at <https://www.tepco.co.jp/en/hd/decommission/progress/watermanagement/index-e.html>
Trends in contaminated water generation. Available at:
https://www.tepco.co.jp/en/hd/decommission/information/committee/pdf/2022/roadmap_20221027_01-e.pdf

II. Questions about Radiological Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea

[Question 2]

The social, economic, ecological and other impacts caused by the discharge of nuclear contaminated water are by no means only limited within Japan itself. It has aroused widespread attentions and serious concern of the international community. If Japan discharges nuclear contaminated water into the sea, the contaminants will inevitably spread to other countries' waters. The Japanese side should take full account of the opinions of neighboring countries and other stakeholders and enable them to participate in the relevant decision-making process.

[Japan's Answer 2]

First of all, there have been extensive opportunities of participation for neighboring countries and other stakeholders. For example, with regard to the REIA report, TEPCO held the public comment procedure from November to December 2021 to hear opinions from interested parties including those of neighbouring countries. The report was revised based on comments received from the public. For details of the revisions based on public comments, please refer to Reference E of the REIA report[42]. In addition, regarding the situation surrounding ALPS treated water at the FDNPS, Japan has held 120 briefing sessions for diplomatic missions in Tokyo to date, and provided explanations at various international conferences including the IAEA. Japan also provided a number of opportunities for individual briefings to interested countries and regions. Through these efforts, Japan has listened carefully to their voices.

Second, it should be recalled, as stated in II-5 of Japan's previous response, and Japan's Answer II-5 below, that the level of tritium concentration diffusing into the sea area of other countries would be significantly lower than the background radiation and the impact would be minimal and undetectable.

Third, Japan reiterates that the water to be discharged into the sea is ALPS treated water, which has been purified of radioactive materials other than tritium by devices such as ALPS, and further diluted with seawater until the tritium concentration is below 1500 Bq/L. This water is not "contaminated water" as the concentration of radioactive materials is far below the regulatory standards. There are two different types of water on the FDNPS: 1) "contaminated water" generated on the site and 2) "ALPS treated water" from which all the radionuclides except tritium have been removed to the level below the regulatory standards. These two terms should not be mixed up in order to avoid public confusion. This is a point also made by the IAEA.

Finally, it should be reminded that in Japan's previous response, it posed questions about the practice in the People's Republic of China and the Russian Federation with a view to learning from other countries; however, Japan has yet to receive answers. In addition, Japan has repeatedly informed the People's Republic of China that it is ready to hold

[42] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

individual briefings from a scientific and professional standpoint regarding the discharge of ALPS treated water into the sea. Japan has not received any response.

[Question 5]

The concentration distribution of nuclear contaminated water in the Pacific Ocean varies greatly due to the influence of ocean currents. The Japanese side should carry out simulation calculations on the transport diffusion of nuclides in the North Pacific Ocean, or even all global waters.

[Japan's Answer 5]

TEPCO took into account the effects of ocean currents in its REIA.

As already answered in II-5 of Japan's previous response, the diffusion simulation by TEPCO shows that even within the model range for simulating tritium dispersion, i.e., 490 km x 270 km, the impact will be very small, with the maximum value assessed at the model boundary being 0.00026 Bq/L. This figure is three to four orders of magnitude lower than the natural background level (about 0.1-1 Bq/L)[43]. The concentration will be even lower outside of the boundary due to further diffusion.

To confirm whether the result of the TEPCO's diffusion simulation could be generally reproduced, the NRA conducted its own diffusion simulation at sea using the same Regional Ocean Modeling System (ROMS) and source term as TEPCO did. In the NRA's simulation, the maximum value of the tritium concentration for 1-hour average at the boundary of the model range is 0.0018 Bq/L, that is again much lower than the natural background level[44].

Therefore, there is no rational reason to perform "simulation calculations for the transport and diffusion of radionuclides in the North Pacific or global sea areas". The current model range for the diffusion simulation (490 km x 270 km) is sufficient. As indicated above, beyond that range the concentration could only be yet further lower than the natural background level. Japan explained the TEPCO's diffusion simulation to the IAEA, and the IAEA reviewed this approach[45]. The 4th report of the IAEA Task Force issued in April 2023 states: "The Task Force accepted TEPCO's reasoning that concentrations of tritium beyond this area will be even lower and therefore there is no scientific justification for redoing the calculations for a larger area."[46]

---

[43] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

[44] NRA, "Corroborative calculations of tritium concentrations in seawater simulated in the radiological impact assessment using ROMS", available at: https://www.nra.go.jp/data/000391926.pdf

[45] The IAEA (April 2023), "IAEA Review of Safety Related Aspects of Handling ALPS Treated Water at TEPCO's Fukushima Daiichi Nuclear Power Station - Report 4: Review Mission to TEPCO and METI (November 2022)", p.24, available at; <https://www.iaea.org/sites/default/files/report-4-review-mission-tepco-and-meti.pdf>

[46] Ibid.

[Question 6]

The Japanese side assumed that tritium in the assessed mesh was spread out with uniformity immediately, but the actual process of dilution and dispersion require time and space. The tritium concentration near the discharge outlet, where tritium is not fully mixed, will be underestimated significantly. This will lead to underestimated radiological impact in the area.

In addition, when using annual average amount of tritium radioactivity and concentration at the discharge outlet to assess the radiological impact, the Japanese side has to ensure the homogeneity of daily discharge amount of radioactive substances throughout the year. How will the Japanese side control the daily discharge amount?

[Japan's Answer 6]

As for the first issue raised, it is incorrect that there is an "underestimated radiological impact" with respect to tritium concentration in the area near the discharge outlet. In TEPCO's diffusion simulation, the amount of radioactivity to be released is input into an evaluation cell corresponding to the location of the outlet at a constant annual rate. Although the size of the evaluation cell does not allow microscopically precise reproduction of the concentration near the outlet, the exposure dose showed in the REIA is not an underestimate due to the following reasons.

- The tritium concentration at the outlet cannot be the basis for assessing radiological impact because 1) people are not expected to be in the vicinity of the water outlet at all times, and 2) it is unlikely that people would eat only fish caught nearby the outlet, which is located within the area where fishing is not conducted on a daily basis, all year around.
- Even with respect to those who eat fish caught nearby the outlet, that will be only a small portion of their annual intake given the seafood they consume throughout the year be caught over a wider area. Therefore, it is reasonable to assess exposure dose based on the average concentration over the sea area[47].
- The diffusion simulation is performed under conservative conditions. In the simulation, the amount of the tritium in the water discharged into the sea is set at 22 TBq/year, which is the upper limit of the annual tritium discharge.

.

As for the second issue raised, the discharge amount will be well controlled as follows. In the actual discharge of ALPS treated water, the maximum daily discharge volume rate of ALPS treated water will be 500 m^3/day. Moreover, the discharge volume rate will be adjusted for each tank to keep the tritium concentration ratio below 1,500 Bq/L, after analytical evaluation of the target nuclides at the facility for measurement and confirmation, by adjusting the amount of ALPS treated water and seawater for dilution. Therefore, it is not the case that there will be a significant concentration of tritium near the water discharge outlet.

[47] Furthermore, the actual marine products that individuals consume include those caught in a variety of domestic and international waters, but the exposure dose assessment is very conservative by setting all of them as those caught in the vicinity of the FDNPS.

The daily amount of radioactivity discharged may vary depending on the properties and characteristics of ALPS treated water to be discharged, as the concentration of radioactive materials contained in the water varies. However, the selected source term is standard for the groups of tanks analyzed so far (6-1-2(1) of the REIA report). In addition, according to the uncertainties assessment described in REIA, the exposure dose could be three to four times higher, but the result of the exposure dose assessment is three to four orders of magnitude lower than the dose constraint value of 0.05 mSv/year (Chapter 8 of the REIA report)[48]. Therefore, even if such uncertainties are taken into account, the conclusion of the REIA that the impact will be minimal remains unchanged. The IAEA has reviewed this assessment and Japan will respect the result of the review.

[48] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

[Question 7]

Accident analysis and emergency preparedness are crucial for nuclear facilities. The Japanese side should conduct accident analysis and emergency preparedness on dilution and discharge facilities of the nuclear contaminated water, and formulate and release a detailed emergency plan. Meanwhile, the Japanese side should invite the stakeholders, including neighboring countries, to jointly participate in this process.

[Japan's Answer 7]

It is of course common ground that preparation in the event of an emergency is crucial. Accordingly, as explained in Japan's previous response to questions I-3 and II-3, appropriate measures in that regard have been taken and are in place. Reference there is made to *inter alia* the extensive monitoring in place (as also referred to above), the use of emergency isolation valves as well as installation of a spare sea water transfer pump. Details of plans in the event of an emergency are set out in Chapter III-3 section 1.9.3 of TEPCO's implementation plan as well as section 9-4 of the REIA report[49].

On top of that, Japan will explain here the evaluation of exposure of radionuclides in the event of an abnormal situation at the time of the discharge.

The dilution and discharge facility for ALPS treated water will handle only ALPS treated water from which radioactive materials other than tritium have been confirmed to be removed by ALPS and other devices to sufficiently meet the regulatory standards. Therefore, there is no risk of criticality or exposure and the characteristics of radioactive materials are such that it can be handled in the same way as during normal operation. Therefore, the target nuclides, transfer pathways, and exposure pathways for the assessment are not significantly different from those in normal operation.

Based on this premise, TEPCO assessed the potential exposure in its REIA (6-2 of the REIA report), where it assumed two cases: the case where ALPS treated water from one tank (10,000 m^3) is discharged for 20 days without dilution, and the case where ALPS treated water from three tanks (30,000 m^3) is discharged into the sea in one day. In both cases, TEPCO conservatively assessed all exposure pathways under normal conditions, and confirmed that the exposure of the representative person living near the power plant would be well below 5 mSv which is the IAEA Safety Standards in the event of an accident.[50] Even in such extreme cases, there is no serious risk from radiation.

The IAEA reviewed the approach and measures taken by TEPCO. The 4th report of the IAEA Task Force issued in April 2023 states: "(T)he Task Force noted the large effort put forward by TEPCO in designing robust engineering controls, and in considering redundant safety features to protect against unexpected, or low probability, occurrences."

---

[49] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version)", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

[50] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version)", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

"The Task Force had no remaining questions for TEPCO regarding this technical topic."[51]

[51] IAEA Review of Safety Related Aspects of Handling ALPS-Treated Water at TEPCO's Fukushima Daiichi Nuclear Power Station, November 2022, available at <https://www.iaea.org/sites/default/files/report-4-review-mission-tepco-and-meti.pdf>

[Question 8]

The Japanese side mentioned that 22 TBq/a is the limit of annual discharge amount of tritium, which is a different concept from the 60,000Bq/L concentration limit. If the concentration limit can be met by dilution, then what is the point for setting the limit of annual discharge amount?

In the meantime, it should be noted that nuclear contaminated water generated by nuclear accident is not comparable to liquid effluents discharged from normally operating nuclear power plants.

[Japan's Answer 8]

Japan has set the limits for tritium both in terms of concentration and annual discharge amount.In order to minimize the impact on the surrounding environment and the reputational damage, Japan has set not only the tritium concentration (1,500 Bq/L) for the discharge but also the total annual tritium discharge to keep the annual discharge below the pre-accident controlled discharge level (22 TBq/year) at the FDNPS. While the IAEA stated that this level is extremely conservative and suggested that Japan consider raising the total annual discharge limit after conducting an optimization study, Japan's policy is intentionally setting extremely conservative level in order to minimize all negative risks.[52]

The claim that contaminated water generated by the nuclear accident is different from water discharged from a nuclear power plant under normal operation is not based on scientific evidence. Radioactive materials other than tritium in contaminated water generated by the accident at the FDNPS are purified by the ALPS. Moreover, regulatory standards are based on the sum of the radiation effects of all nuclides, regardless of whether the reactor has experienced an accident or it is in normal operation. Under international standards, it is assessed based on whether the total dose limit (e.g., 1 mSv/year) is satisfied regardless of type of radionuclides.

The IAEA Safety Standards are the most reliable standards to be applied to all nuclear facilities, including accident reactors. Japan will not discharge water that does not meet regulatory standards based on the IAEA Safety Standards, which have been developed in consultation with all IAEA Member States, including the People's Republic of China and the Russian Federation.

[52] The IAEA (February 2022) "IAEA Review of Safety Related Aspects of Handling ALPS Treated Water at TEPCO's Fukushima Daiichi Nuclear Power Station - Report 1: review mission to TEPCO and METI, April 2022", p.41, available at: <https://www.iaea.org/sites/default/files/report_1_review_mission_to_tepco_and_meti.pdf>

[Question 9, 10 & 11]

The Japanese side did not answer these questions directly. The Japanese side did not conduct risk assessment on the combined exposure toxicity of radionuclides and other contaminants, and on the long-term health effects caused by Auger electrons of tritium and carbon-14. The Japanese side did not explain the methodology and results of the assessment on the enrichment of radionuclides in certain foods and their long-term health effects caused by biological chain transfer following the discharge of nuclear contaminated water.

Japan's answer claimed that ALPS is equipped with various filters to remove the 62 radionuclides identified to levels below regulatory standard, but the Japanese side did not explain the effect of radiation exposure and chemical toxicity on the nuclear power plant staff operating the front-end ALPS device (such as changing filters). Please provide additional information.

[Japan's Answer 9, 10 & 11]

Since no toxic contaminants are contained in ALPS treated water, there is no need to consider the combined exposure toxicity of radioactive materials and other contaminants.[53] The IAEA reviewed this point and it has not indicated any problems with this approach. In II-9 of Japan's previous response, Japan requested information from the People's Republic of China and the Russian Federation regarding combined exposure toxicity, but no information has been received to date. If the People's Republic of China and the Russian Federation have any relevant information in relation to their own nuclear power plants, Japan would appreciate being informed in this regard.

With regard to the risk due to Auger electrons from tritium and carbon-14, according to the decay diagram shown in ICRP Publication 38 "Radionuclide Transformations - Energy and Intensity of Emissions", neither tritium nor carbon-14 emits Auger electrons, and neither the ICRP nor the IAEA has provided an assessment method at this time. In TEPCO's REIA, the risk from Auger electrons is considered to be one of the uncertainties[54]. The results of the exposure assessment are much smaller than dose limits and dose constraints in any case, and it does not affect the conclusion that the risk from exposure is sufficiently small even taking uncertainties into account. The IAEA has not indicated any problems with this approach.

In II-10 of Japan's previous response, the GOJ posed a question about the safety measures implemented by the People's Republic of China and the Russian Federation for exposure to Auger electrons, but no information has been received to date. Japan would like to know if there is any knowledge that tritium and carbon-14 emit Auger electrons.

With regard to the exposure to power plant personnel engaged in the operation and management of the ALPS, including those changing filters, it is controlled up to 20 mSv

[53] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.
[54] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

per year in accordance with Japanese laws and regulations. To date, there is no record of exceeding this limit, and the exposure value has been sufficiently low.

[Question 12]

The Japanese side didn't answer the question clearly. The Japanese side did not take full consideration into relevant factors when formulating and adopting the policies. The Japanese side should make necessary adjustments or charges to relevant policies through various methods, including hearing and public consultations.

[Japan's Answer 12]

It is difficult to give a specific answer because it is unclear what "relevant factors" and "relevant policies" are referred to. The scope and scientific basis of the REIA was developed following discussions with the IAEA. It was designed to assess realistic risks by using conservative parameters to ensure that impacts of the discharge are minimized and optimized. The REIA report has been fully reviewed by the NRA and the IAEA. Japan will respect the result of the IAEA review. The REIA report also went through the public comment process, as detailed in Reference E of the report[55].

[55] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

[Question 13]

The Japanese side should further explain the range and basis for identifying abnormal values or levels of concentration exceeding the regulatory standards for discharge after dilution, and whether the current monitoring method is able to identify abnormal values.

[Japan's Answer 13]

While the coverage of this question is unclear, Japan deems that "abnormal value" in this question concerns sea area monitoring (see Japan's Answer I-4 (iv)).

[Question 15]

Please provide relevant scientific basis, including results of relevant verification experiments, etc.

[Japan's Answer 15]

This question relates to the scientific basis of the marine radionuclides transport model and transfer parameters of radionuclides in the marine environment. As stated in II-15 of Japan's previous response, TEPCO discusses, in Attachment VII of the REIA report, dispersion and transfer in the environment by comparing the reproducibility of the flow direction and the velocity as well as the result of the reproduction calculation of cesium concentration with the actual measurement data.

In addition, the conservatism of the exposure assessment method is verified by comparing it with the IAEA TECDOC-1759 methodology (Appendix V of the REIA report), and the conservatism of the external exposure dose conversion coefficients is verified by comparing it with that of the U.S. Environmental Protection Agency (EPA) (Appendix XI of the REIA report).[56] These approaches have been reviewed by the IAEA, and Japan will respect the result of the review.

[56] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

[Question 16]

The Japanese side should provide information on the radiological impact on people, food source, and offshore operations in larger sea area, including the North Pacific.

[Japan's Answer 16]

In the simulation of tritium dispersion, annual average concentration exceeding the natural background level (approximately 0.1-1 Bq/L) due to the discharge of ALPS treated water occur only within a distance of 3 km around the FDNPS. In addition, the concentration is much lower than the natural background level at the boundary of the model range (490 km x 270 km), the maximum value being 0.00026 Bq/L, which is three to four orders of magnitude lower than the natural background level (about 0.1-1 Bq/L). People, food sources and offshore operations at greater distances cannot be exposed to higher concentrations. The radiological impacts on them will necessarily be lower than the levels assessed and monitored at locations closer to the FDNPS.

In the REIA, TEPCO conducted its assessment by setting a representative person, who is assumed to engage in fishing within a "10km x 10km" area of the FDNPS, consume marine products caught in the same area, and be exposed to radiation on the beach at 3km north from the FDNPS, the closest place they are allowed to stay. It is clear that people in the wider area would be less affected by exposure than the representative person identified in the REIA. The IAEA has reviewed this assessment, and Japan will respect the result of the review.

Japan has disseminated this information to the international community in a transparent manner.

[Question 17]

The reference plants and animals set by the ICRP is mainly used for ecological impact assessment. The Japanese side should consider more about species near the discharge outlet and in surrounding sea areas.

[Japan's Answer 17]

The area around the water discharge outlet is mainly covered with reefs and sand. According to the surveys conducted by the GOJ[57], no significant sites such as large seaweed beds or tidal flats, or habitats for rare plants and animals have been found in the vicinity of the FDNPS. There are relatively large seaweed beds around Iwaki City and tidal flats in Matsukawaura, Soma City in Fukushima Prefecture, but these areas are tens of kilometers away from the FDNPS. The tritium diffusion assessment in the REIA report shows that the annual average of concentration in these areas is as low as those of natural background level. Therefore, Japan considers there will be no impact on these areas.

In addition, the result of the exposure assessment, conducted around the FDNPS for the standard plants and animals set by the ICRP, shows that the exposure dose is much lower than the derived consideration reference level (DCRL).

[57] See 7-2-4 of the REIA Report. <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>

[Question 18]

The Japanese side should take the specific population group who prefer marine product into consideration during evaluation and calculation, and the considered amount of marine product intake should include possible maximum intake.

[Japan's Answer 18]

As described in 6-1-2 (4)(2)(ii) of the REIA report, based on the data from the latest large-scale survey of the entire Japanese population, TEPCO assessed the case of high intake of seafood, which is the average intake plus twice the standard deviation.[58]

In TEPCO's REIA, conservative assumptions were made. Specifically, it was assumed that all the fish and shellfish are caught within the area of 10 km x 10 km radius of the FDNPS, and market dilution was not taken into consideration. It was also assumed that fish and shellfish are consumed immediately after capture, without taking into account attenuation of radionuclides after capture. Since the assessment was conducted based on these conservative assumptions, there are no significant risk of underestimation.

[58] TEPCO, "Radiological Environmental Impact Assessment Report Regarding the Discharge of ALPS Treated Water into the Sea (Construction stage / Revised version) ", February 2023, available at <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230220e0101.pdf#page=264>.

[Question 19]

Compared with the relatively lengthy time range of 30 years of discharging the nuclear contaminated water into the ocean and much longer time of its subsequent impacts, the ocean current data on which the Japanese report based is too short in terms of time periods to reflect the fluctuation of ocean current. The fluctuation of ocean current in a larger time period should be considered.

[Japan's Answer 19]

TEPCO conducted the assessment reflecting actual meteorological and oceanographic data from 2014 to 2020. It confirmed that the fluctuation during that period is small through the verification by reproduction calculations of the flow and radioactive cesium released from the FDNPS. The IAEA reviewed this assessment including the time range of data used, and no problems were pointed out. (The ocean currents in the assessment area include the Oyashio Current from the north and the Kuroshio Current from the south. These ocean currents have been observed by the Japan Meteorological Agency over a long period of time. Especially for the Kuroshio Current, it has been reported that large meanders have been seen periodically in some years. Recently, a large meandering has been seen since 2017. However, the seven-year period covered by TEPCO's REIA includes both pre- and post-meandering of the Kuroshio Current, and no difference in the assessments before and after the large meandering was observed[59] .)

The results of the exposure assessment for ALPS treated water discharge are extremely small compared to the dose constraint value of 0.05 mSv/year. Therefore, Japan believes that the conclusion of the assessment that the impact of the discharge would be minimal would not change even if uncertainties due to future fluctuations are taken into account. Japan has explained this approach to the IAEA, and it has been reviewed by the IAEA. Japan will respect the result of the review. In the future, when TEPCO obtains the knowledge regarding changes in ocean currents on a 30-year time scale, it will reflect it in the assessment as appropriate.

[59] The meandering of the Kuroshio Current is not included in the assessment area, but the oceanographic reanalysis data (JCOPE2) used for the boundary condition reproduces the meandering of the Kuroshio Current.

[Question 20]

The Japanese side did not answer clearly why an independent third party was not invited to carry out the relevant assessment, and the independence issue between the assessment bodies and the owner remains. The various issues raised by the IAEA Task Force have verified that there are still omissions in the relevant work of the Japanese side. Meanwhile, TEPCO has a history of repeated data falsification. The Japanese side should take more adequate measures such as inviting independent third party to carry out the environmental impact assessment seriously.

It should be highlighted that China and Russia, as stakeholders, should participate in the third party assessment. The IAEA Task Force includes experts from China and Russia, but this is not equal to the involvement of China and Russia in the third party assessment.

[Japan's Answer 20]

The TEPCO's REIA has been thoroughly reviewed by the IAEA.

As have been repeatedly explained, TEPCO's REIA has been under the review of the IAEA. The IAEA is the most authoritative independent third party in the field of nuclear energy, and it is authorized by the IAEA Statute to establish international safety standards and take measures to apply those standards at the request of its Member States. TEPCO has revised the REIA in light of findings and observations by the IAEA to date, as described in Reference E of the REIA report, and it will respect the results of the IAEA review.[60]

[60] Regarding the response to major IAEA November 2022 mission review results, please see p. 38 of "Installation of Results of the Re-evaluation of the Radiological Environmental Impact Assessment (Construction stage*) Based on a Revision of the Nuclides to be Measured and Assessed", available at: <https://www.tepco.co.jp/en/hd/newsroom/press/archives/2023/pdf/230214e0103.pdf>