DAFTAR PUSTAKA

Affianty, D. (2014). Analisa Politik Luar Negeri. UIN Press.

Afinotan, L. A. (2014). Decision Making inInternational Relations: A theoretical Analysis. Canadian Social Science, 10(5), 249–256. https://doi.org/10.3968/4970

Aktas, A. (2023, August). South Korea Abandons Seafood as Japan Releases Nuclear Waste into Sea. Anadolu Anjasi. https://www.aa.com.tr/en/asia-pacific/south-korea-abandons-seafood-as-japan-releases-nuclear-waste-into-sea/2975592

Alaydrus, H. (2023, July). Jepang Siap Buang Limbah Fukushima, Warga Korsel Was-was. CNBC Indonesia2. https://www.cnbcindonesia.com/news/20230709052230-4-452512/jepang-siap-buang-limbah-fukushima-warga-korsel-was-was

Amijaya, C. (2018). PERANAN INTERNATIONAL ATOMIC ENERGY AGENCY (IAEA) MELALUI THE INTERNATIONAL FACT FINDING EXPERT MISSION OF THE FUKUSHIMA DALAM PENANGANAN KERUSAKAN REAKTOR NUKLIR DI JEPANG PASCA TSUNAMI 11 MARET 2011. In Global Political Studies Journal (Vol. 146, Issue 2). http://www.iaea.org/Publications/Documents/Convention

Amri, A. Y. (2019). UPAYA PEMERINTAH INDONESIA DALAM MENANGANI KASUS PERDAGANGAN MANUSIA DI PERBATASAN KALIMANTAN BARAT – SERAWAK (2014-2017). UNIVERSITAS KRISTEN SATYA WACANA.

Baylis, J., Smith, S., & Owens, P. (2011). The Globalization of World Politics An introduction to International Relations (5th ed.). Oxford University Press.

BBC. (2023, August 23). Fukushima disaster: What happened at the nuclear plant? BBC News. https://www.bbc.com/news/world-asia-56252695

Britannica. (2024, May). East Asia. Britannica. https://www.britannica.com/place/Teshio-Range

Colnaghi, W. B. (2023, October). Japanese Seafood Ban Signals China's Shady Virtues. East Asia Forum. https://eastasiaforum.org/2023/10/23/japanese-seafood-ban-signals-chinas-shady-virtues/

CRI. (2021, May). Jepang: Uang untuk Humas Citra Ada, Uang untuk Penyelesaian Air Limbah Nuklir Tiada. China Radio International. https://indonesian.cri.cn/20210529/90e9fdf0-64d7-7c7c-6022-c0f3214e68a2.html

Hasegawa, K., & Osaki, T. (2023, September 4). Japan Fishermen, Locals Seek Halt to Fukushima Water Release. PhysNews. https://phys.org/news/2023-09-japan-fishermen-locals-halt-fukushima.html

Hennida, C. (2015). Rezim dan Organisasi Internasional: Interaksi Negara, Kedaulatan dan Institusi Multilateral. Intrans Publishing.

Holsti, K. J. (1987). Politik Internasional: Kerangka Nasional. Pedoman Ilmu Jaya.

Hutabarat, L. (2005). Analisis Kebijakan Luar Negeri dalam Studi Hubungan Internasional. Sociae Polites, 5, 13–22.

IAEA. (n.d.-a). Classification of Radioactive Waste. http://www-ns.iaea.org/standards/

IAEA. (n.d.-b). Disposal of Radioactive Waste. http://www-ns.iaea.org/standards/
IAEA. (n.d.-c). Near Surface Disposal Facilities for Radioactive Waste. http://www-ns.iaea.org/standards/
IAEA. (n.d.-d). Safety Assessment for Facilities and Activities. http://www-ns.iaea.org/standards/
IAEA. (2023a). About IAEA. IAEA. https://www.iaea.org/about
IAEA. (2023b). Fukushima Daiichi ALPS Treated Water Discharge. IAEA. https://www-iaea-org.translate.goog/topics/response/fukushima-daiichi-nuclear-accident/fukushima-daiichi-alps-treated-water-discharge?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=tc
IAEA. (2023c). Fukushima Daiichi Mission Timeline.
IAEA. (2023d). IAEA COMPREHENSIVE REPORT ON THE SAFETY REVIEW OF THE ALPS-TREATED WATER AT THE FUKUSHIMA DAIICHI NUCLEAR POWER STATION.
IAEA. (2023e). IAEA Statute. IAEA. https://www.iaea.org/about/overview/statute
IAEA. (2023f). IAEA Treaties. IAEA. https://www.iaea.org/resources/legal/treaties
IAEA. (2023g). IAEA Treaties. IAEA. https://www-iaea-org.translate.goog/resources/legal/treaties?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=tc
IAEA. (2023h, September). IAEA and Japan Sign Agreement on Continuous Monitoring and Safety Assessment of ALPS Treated Water Discharge. IAEA. https://www-iaea-org.translate.goog/newscenter/pressreleases/iaea-and-japan-sign-agreement-on-continuous-monitoring-and-safety-assessment-of-alps-treated-water-discharge?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=tc
IAEA. (2024). IAEA Review of Safety Related Aspects of Handling ALPS-Treated Water at TEPCO's Fukushima Daiichi Nuclear Power Station.
Krasner, S. D. (1982). Structural Causes and Regime Consequences: Regimes as intervening variables. International Organization, 36(2), 185–205. https://doi.org/10.1017/S0020818300018920
Kurniawan, B. I. (2017). Alasan Rusia Menjadi Pengamat Dalam Organisasi Kerjasma Islam (OKI) Sejak Tahun 2005. http://ejournal.hi.fisip-unmul.ac.id/site/?p=2435
METI Japan. (2021, April 13). Basic Policy on handling of ALPS treated water at the Tokyo Electric Power Company Holdings' Fukushima Daiichi Nuclear Power Station. The Inter-Ministerial Council for Contaminated Water, Treated Water and Decommissioning Issues. https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/bp_alps.pdf
Ministry of Foreign Affairs of Japan. (2024). Approval by NRA. MOFA. https://www.mofa.go.jp/dns/inec/alps_navi05.html
Novia, R., & Gumay, S. (2016). KEBIJAKAN KEAMANAN JEPANG TERHADAP PROLIFERASI NUKLIR KOREA UTARA PASCA KELUARNYA KOREA UTARA

DARI REZIM NON-PROLIFERASI NUKLIR (PERIODE 2003-211). In Journal of International Relations (Vol. 2, Issue 2). http://ejournal-s1.undip.ac.id/index.php/jihiWebsite:http://www.fisip.undip.ac.id

Nuraini, H. (2022). ANALISIS MENGENAI KEPUTUSAN PEMERINTAH JEPANG DALAM PEMBUANGAN AIR RADIOAKTIF FUKUSHIMA TERHADAP HUKUM LINGKUNGAN INTERNASIONAL. LITRA: Jurnal Hukum Lingkungan, Tata Ruang, Dan Agraria, 1(2), 265–276. https://doi.org/10.23920/litra.v1i2.775

Pratiwi, A. Y. (2013). PERAN IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) DALAM MENYIKAPI TINDAKAN KOREA UTARA DALAM PENGEMBANGAN TENAGA NUKLIR UNTUK TUJUAN TIDAK DAMAI. Jurnal Ilmiah Mahasiswa Universitas Surabaya, 2.

Puchala, D., & Hopkins, R. F. (1982). International Regimes: Lessons From Inductive Analysis (Vol. 36). Massachussets Institute of Technology.

Putri, A. R., & Sari, V. P. (2021). ASEAN Consensus on the Protection and Promotion of the Rights of Migrant Workers sebagai Rezim Perlindungan Pekerja Migran Berketerampilan Rendah di ASEAN. Padjadjaran Journal of International Relations, 3(2), 242–264. https://doi.org/10.24198/padjir.v3i2.31172.33497

Rosyidin, M. (2020). Teori Hubungan Internasional Dari Perspektif Klasik Sampai Non-Barat (1st ed.). Raja Grafindo Persada.

Sato, A., & Lyamzina, Y. (2018). Diversity of concerns in recovery after a nuclear accident: A perspective from fukushima. In International Journal of Environmental Research and Public Health (Vol. 15, Issue 2). MDPI. https://doi.org/10.3390/ijerph15020350

Siahaan, R. G. D. (2021). KEDUDUKAN REZIM INTERNASIONAL DALAM HUKUM INTERNASIONAL KONTEMPORER (THE POSITION OF THE INTERNATIONAL REGIME IN CONTEMPORARY INTERNATIONAL LAW) Citation Structure Recommendation (Vol. 2, Issue 1). https://jhlg.rewangrencang.com/

Simbolon, E. Y. (2014). PERANAN INTERNATIONAL ATOMIC ENERGY AGENCY UNTUK MENGAWASI PROGRAM NUKLIR IRAN DALAM KAITANNYA DENGAN IMPLEMENTASI JOINT PLAN OF ACTION 2013.

Simon, H. A. (1976). Administrative Behaviour. Free Press.

Siripala, T. (2023, September 1). Japan Battles Backlash After Releasing Wastewater From Fukushima Nuclear Power Plant . The Diplomat. https://thediplomat.com/2023/09/japan-battles-backlash-after-releasing-wastewater-from-fukushima-nuclear-power-plant/

Snyder, R. C. (1962). Foreign Policy Decision Making: An Approach to the Study International Politics. Free Press.

TEPCO Japan. (n.d.). The Methods and Results of Treated Water Discharge and Monitoring Based on Scientific Evidence. TEPCO.

TEPCO Japan. (2021). What is Tritium?

The Japan Times. (2023, August). China Says Salt Supply Ample as Fukushima Prompts Panic Buying. The Japan Times. https://www.japantimes.co.jp/news/2023/08/26/japan/china-fukushima-salt-supply/#:~:text=China%20says%20salt%20supply%20ample%20as%20Fukushima%20prompts%20panic%20buying,-People%20buy%20salt&text=China's%20salt%20associations%20said%20domestic,1%20nuclear%20power%20plant.

Tifani. (2023, June). Daftar Negara di Benua Asia Beserta Ibu Kotanya. Kata Data. https://katadata.co.id/lifestyle/varia/6486eb7e36bd1/daftar-negara-di-benua-asia-beserta-ibu-kotanya

Walsh, B. (2013, March). Despite the Fear, the Health Risks from the Fukushima Accident Are Minimal. Time Magazine.

Wibowo, B. F. E. S., Susiatiningsih, R. H., & Paramasatya, S. (2022). Upaya Kepatuhan Kerjasama Pemerintah Indonesia dengan Wildlife Conservation Society terhadap CITES terkait Isu Perdagangan Ilegal Trenggiling di Indonesia. In Journal of International Relations (Vol. 8). http://ejournal-s1.undip.ac.id/index.php/jihiWebsite:http://www.fisip.undip.ac.id

Wibowo, F. E. S., Susiatiningsih, Rr. H., & Paramasatya, S. (2022). Upaya Kepatuhan Kerjasama Pemerintah Indonesia dengan Wildlife Conservation Society terhadap CITES terkait Isu Perdagangan Ilegal Trenggiling di Indonesia. In Journal of International Relations (Vol. 8). http://ejournal-s1.undip.ac.id/index.php/jihiWebsite:http://www.fisip.undip.ac.id

Widia, T. (2018). ANALISIS KEBIJAKAN THAILAND DALAM SENGKETA PERBATASAN DENGAN KAMBOJA STUDI KASUS: KONFLIK WILAYAH SEKITAR KUIL PREAH VIHEAR 2008. Universitas Islam Indonesia.

World Nuclear Association. (2022, December). Nuclear Fusion Power. World Nuclear Association.

Xing, Y. (2015). Analysis of Political Decision-Making and Its Influencing Factors. Cross-Cultural Communication, 11(3), 42–46. https://doi.org/10.3968/6531

Yamaguchi, M. (2023, October 23). IAEA officials say Fukushima's ongoing release of treated radioactive wastewater is going well. PBS News Hour. https://www.pbs.org/newshour/world/iaea-officials-say-fukushimas-ongoing-release-of-treated-radioactive-wastewater-is-going-well#:~:text=Fukushima%20Daiichi%20started%20releasing%20treated,results%20fully%20meeting%20safety%20standards.

Zulfikar, F. (2021, July). Benua Asia: Luas, Letak, dan Negara-Negara di Dalamnya. Detik Edu. https://www.detik.com/edu/detikpedia/d-5645736/benua-asia-luas-letak-dan-negara-negara-di-dalamnya

DAFTAR LAMPIRAN

LAMPIRAN 1

Approval to amend the Implementation Plan (Installation of ALPS Treated Water Discharge Facility) of Tokyo Electric Power Company Holdings Fukushima Daiichi Nuclear Power Station

Provisional translation as of 26 July 2022 of the document
(only front 2 pages) the NRA Commission decided on 22 July 2022

Approval to amend the Implementation Plan (Installation of ALPS Treated Water Discharge Facility) of Tokyo Electric Power Company Holdings Fukushima Daiichi Nuclear Power Station

22 July 2022
The Secretariat of Nuclear Regulation Authority

1. Overview

In this topic, the Secretariat consults the NRA Commission for the approval of the responses to

- Scientific/technical comments on the Draft Review Results Document (hereinafter referred to as "Submitted Comments")
- Scientific/technical comments relevant to the decommissioning but not on the Draft Review Results Document (hereinafter referred to as "Relevant Comments")

among the comments received by the NRA during the solicitation of public comments on the Draft Review Results Document, which the NRA Commission approved on 18 May 2022, on the application for approval to amend the Implementation Plan pertaining to Specified Nuclear Facility (Installation of ALPS treated water discharge facility) of Tokyo Electric Power Company Holdings Fukushima Daiichi Nuclear Power Station. The Secretariat also suggests to the NRA Commission to decide the Review Results Document which reflects the public comments as necessary, at the same time to approve the application.

2. Result of the solicitation of scientific/technical comments on the Draft Review Results Document

(1) Period: from 19 May 2022 to 17 June 2022 (30 days)

(2) Subject: Draft Review Results Document on the application for approval to amend the Implementation Plan pertaining to Specified Nuclear Facility (Installation of ALPS treated water discharge facility) of Tokyo Electric Power Company Holdings Fukushima Daiichi Nuclear Power Station

(3) Number of Submitted Comments: 670 comments[1]

3. Responses to Submitted and Relevant Comments

The Secretariat suggests to the NRA commission to approve the responses to the Submitted Comments as shown in Attachment 1 and the responses to the Relevant Comments as shown in Attachment 2.

In Attachment 1 and Attachment 2, the Submitted Comments and Relevant Comments are listed after being sorted and/or summarized.

All the comments received by the NRA are archived by the Secretariat and ready to be disclosed in accordance with the laws.

4. Review results

The Review Results Document is revised as Attachment 3 considering the Submitted Comments. The conclusion of the Document remains the same that the application fulfills the requirements relevant to the installation and operation of the Discharge Facility stipulated in the Regulatory

[1] Among 1233 comments received by the NRA, Submitted Comments are 670 and Relevant Comments are 323. These numbers are counted as designated by the Ministry of Internal Affairs and Communications.

Requirements[2] and it is also in line with the descriptions in the Government Policy relevant to the design and operation of the Discharge Facility as well as the radiological impact by discharge.

Accordingly, the Secretariat suggests to the NRA Commission to decide the Review Results as Attachment 3.

5. Approval for amendment

Considering the above, it is concluded that the application satisfies the relevant items of the Regulatory Requirements and thus is sufficient for preventing disasters to be caused by nuclear fuel materials, materials contaminated by nuclear fuel materials or nuclear reactors. Therefore, the Secretariat suggests to the NRA commission to grant an approval as Attachment 4 based on the provision of Article 64-3 (2) of the Reactor Regulation Act[3].

6. Upcoming schedule

Before the start of discharge, TEPCO plans to submit an application for approval to amend the Implementation Plan pertaining to organizational structure for discharge operation, and the NRA will review the application when it is submitted.

TEPCO will also apply for pre-service inspection on the Discharge Facility based on the Article 19 of the NRA Ordinance for Fukushima Daiichi NPS[4] and the NRA will inspect whether the equipment is installed as described in the approved Implementation Plan.

(reference) IAEA review

In the IAEA's regulatory review on discharge of ALPS treated water, the 2nd review mission is planned for the beginning of next year before the start of discharge as follow-up of the 1st review mission conducted in March this year.

(Attachment 1) Scientific/technical comments on the Draft Review Results Document and the NRA's responses (to be approved)

(Attachment 2) Scientific/technical comments relevant to the decommissioning and the NRA's responses (to be approved)

(Attachment 3) Review Results Document on the application for approval to amend the Implementation Plan pertaining to Specified Nuclear Facility (Installation of ALPS treated water discharge facility) of Tokyo Electric Power Company Holdings Fukushima Daiichi Nuclear Power Station (to be decided)

(Attachment 4) Approval to amend the Implementation Plan pertaining to Fukushima Daiichi Nuclear Power Station Specified Nuclear Facility (to be decided)

(reference material) Review Results Document (revisions are shown in track change mode)

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[2] Items required for measures which should be taken at Tokyo Electric Power Co., Inc.'s FDNPS in line with the Designation as the Specified Nuclear Facility

[3] the Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Nuclear Reactors

[4] NRA Ordinance for Operational Safety and Protection of Specified Nuclear Fuel Materials of the Nuclear Reactors at TEPCO's Fukushima Daiichi NPS (NRA Ordinance No.2 of 2013FY on 12 April 2013)

LAMPIRAN 2

Review Results Document on the Application for Approval to Amend the Implementation Plan pertaining to Specified Nuclear Facility (Operational Measures of ALPS Treated Water Discharge) of Tokyo Electric Power Company Holdings Fukushima Daiichi Nuclear Power Station

Provisional translation as of 10 May 2023 of the document decided by the NRA Commission on 10 May 2023

Review Results Document

on the Application for Approval

to Amend the Implementation Plan

pertaining to Specified Nuclear Facility

(Operational Measures of ALPS Treated Water Discharge)

of Tokyo Electric Power Company Holdings

Fukushima Daiichi Nuclear Power Station

10 May 2023

Nuclear Regulation Authority JAPAN

This translation was prepared to enhance understanding of the international communities. While the NRA tried to ensure the accuracy of translation, some parts are translated not directly but in a readable way in English. The official version is the document written in Japanese and the NRA assume no responsibility for any use of this translation.

Introduction

1. Application for approval to amend the Implementation Plan

Tokyo Electric Power Company Holdings, Inc. (hereinafter referred to as "TEPCO") submitted to the Nuclear Regulation Authority (hereinafter referred to as the “NRA”), on the basis of Article 64-3 (2) of the Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Nuclear Reactors (hereinafter referred to as "the Reactor Regulation Act"), an application document for approval to amend the Implementation Plan for Fukushima Daiichi Nuclear Power Station (hereinafter referred to as "FDNPS") Specified Nuclear Facility on operational measures of ALPS treated water discharge (hereinafter referred to as the "Application") on November 14, 2022 (partially revised on February 14, February 20, and April 24, 2023).

2. Content of the Application

TEPCO establishes the organizational structure to manage operation and maintenance of the ALPS treated water dilution/discharge facility and the outlet facility (hereinafter referred to as the "discharge facility") necessary to discharge water which has been processed by systems such as the Advanced Liquid Processing System (ALPS) to achieve the level that the sum of the ratios of the other radionuclides than tritium to each concentration limit stipulated in the Notification to Establish Requirements for Operational Safety and Physical Protection of Specified Nuclear Fuel Materials of the Nuclear Reactors at TEPCO’s FDNPS (hereinafter referred to as the "Notification") is less than 1 (hereinafter referred to as "ALPS treated water") . Also, TEPCO establishes the scheme to select radionuclides to be measured and evaluated before each discharge in order to ensure that the sum of the ratios of the other radionuclides than tritium to each concentration limit is less than 1 (hereinafter referred to as "radionuclides to be measured and evaluated").

In addition, due to the progress of the facility construction and the preparation of operational procedures, the contents of the Implementation Plan on Installation of ALPS Treated Water Discharge Facility approved on 22 July 2022 is updated and amended.

3. Structure of the Review Results Document

Following the way to review the Application on ALPS treated water discharge which the NRA Commission approved on 16 November 2022([1]), this Review Results Document consists of the following.

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[1] FY2022 51st NRA Commission Meeting Material 2 "Response to Application to Amend the Implementation Plan for TEPCO's Fukushima Daiichi Nuclear Power Station (Operational Measures of ALPS Treated Water Discharge)"」

of ALPS treated water.

- With the above source term and the same assessment method as the previous report whose validity was already confirmed, the assessment results are below the criteria which the NRA Commission approved on 16 February 2022[3] as follows, and thus the impact both on humans and the environment remains sufficiently small.
  - The estimated dose to the representative person is approximately 10^{-3} to 10^{-2} μSv/year (10^{-2} to 10^{-1} μSv/year in the previous report), which is considerably small compared to criterion, 50 μSv/year.
  - The estimated dose to the representative person in potential exposures is respectively 10^{-4} mSv/event in the scenario of the rupture of ALPS treated water transfer pipe (10^{-4} to 10^{-3} mSv/event in the previous report), and 10^{-3} to 10^{-2} mSv/event in the scenario of the breakage to the tank groups for measurement and confirmation (10^{-2} to 10^{-1} mSv/event in the previous report). In both cases, the estimated doses are considerably small compared to 5 mSv/event which is shown in GSG-10[4] as a typical criterion for radioactive material and sources with a low capacity for a radioactive discharge in an accident.
  - The estimated dose rates to marine animals and plants in normal operation are sufficiently below the lowest value of the Derived Consideration Reference Levels[5].

End

[3] Material 2 "Review Status of Application for Amendment of Implementation Plan for Fukushima Daiichi Nuclear Power Plant, TEPCO Holdings Co., Ltd. (ALPS Treated Water Discharge Facility)" of the 65th NRA Commission Meeting in FY2021, Appendix 3 "Approaches and Evaluation Guidelines for Confirmation of Radiological Impact Assessment"

[4] IAEA Safety Standards Series No.GSG-10 "Prospective Radiological Environmental Impact Assessment for Facilities and Activities",IAEA,2018.

[5] The Derived Consideration Reference Levels are described as "a set of dose rate bands within which there is either no evidence (for most of the reference animals and plants) or only some evidence of deleterious effects of ionizing radiation" in GSG-10.

Chapter 2 Review in light of the Government Policy

Following the way to review the application on ALPS treated water discharge which the NRA Commission approved on 16 November 2022, with regard to "the measures in response to the Basic Policy on handling of ALPS treated water at the Tokyo Electric Power Company Holdings' Fukushima Daiichi Nuclear Power Station" (hereinafter referred to as the "Measures in response to the Government Policy") which was submitted as reference material separately from the main text of the Implementation Plan, the NRA reviewed whether the contents amended from the approval on 22 July 2022, namely the item "Starting with a small amount of discharge, and discharge suspension when unusual values are observed by marine monitoring" and "Radiological impact assessment of discharge", are in line with the descriptions in the Government Policy relevant to the suspension of discharge as well as the assessment of the radiological impact by discharge.

As a result of reviewing the measures to the two items above, the NRA concludes that they are in line with the relevant descriptions in the Government Policy.

Specifically, the NRA reviewed the item "Starting with a small amount of discharge, and discharge suspension when unusual values are observed by marine monitoring" along with the examination based on the Reactor Regulation Act. The review results on the item "Radiological impact assessment of discharge" are described in the following "2-1 Radiological impact assessment of discharge".

2-1 Radiological Impact Assessment of discharge

TEPCO submitted to the NRA the "Radiological Environmental Impact Assessment Report regarding the Discharge of the ALPS Treated Water into the Sea (construction stage, revised version)" as an attachment to the Measures in response to the Government Policy.

The NRA confirmed the following points on the contents amended from the "Radiological Impact Assessment Report regarding the Discharge of the ALPS Treated Water into the Sea (design stage, revised version)" (hereinafter referred to as the "previous report"), which had been confirmed upon the review of the Implementation Plan on Installation of ALPS Treated Water Discharge Facility approved on 22 July 2022.

- The discharge amount of each radionuclide which is used as input to the assessment (hereinafter referred to as the "source term") is set by the concentrations of the radionuclides to be measured and evaluated, selected based on the "1-2. Scheme to select radionuclides to be measured and evaluated" in "Chapter 1 Examination based on the Reactor Regulation Act" as well as tritium, and the annual discharge volume

- Radionuclides excluded at step 5 are limited to those which concentrations in contaminated water have been clearly confirmed below 1/100 of the regulatory concentration limits in the analytical results.【Step 5】
- Considering possible changes of the condition of contaminated water depending on the progress of the future decommissioning work, TEPCO periodically checks the validity of the selection of radionuclides to be measured and evaluated by continuously conducting measurements of contaminated water and, as necessary, re-assess the selection.【Step 1~5】

1-3. Other Items (updates and amendments of the approved contents)

TEPCO states that, due to the progress of the facility construction and the preparation of operational procedures, it adds the description on how to set the unusual value at sea area monitoring which triggers discharge suspension and amends the description of the structure of the discharge tunnel as well as the operational procedure for discharge suspension to the Implementation Plan on Installation of ALPS Treated Water Discharge Facility approved on 22 July 2022.

The NRA confirmed that the updates and amendments above are to embody the contents as a result of the progressing preparation of ALPS treated water discharge, and therefore do not affect the previous review results on the Implementation Plan on Installation of ALPS Treated Water Discharge Facility approved on 22 July 2022 (i.e., it satisfies the Regulatory Requirements).

radionuclide is transferred to the water stored in the treated water storage tanks

【Yes → move on to Step 4】

Step 4 : Does the ratio of the concentration of each radionuclide to the regulatory concentration limit exceed 1/100 in the transfer assessment of the radionuclide to contaminated water

【Yes → move on to Step 5】

Step 5 : Is the ratio of the concentration of each radionuclide to the regulatory concentration limit confirmed less than 1/100 in the analytical results of contaminated water in the past

【No → except tritium, selected as radionuclides to be measured and evaluated】

Also, TEPCO states that, due to the possibility that the condition of contaminated water may change depending on the progress of the decommissioning work in the future, it periodically checks the validity of the selection of radionuclides to be measured and evaluated and, as necessary, re-assess the selection of radionuclides, considering the result of gross α, gross β and Ge semi-conductor detector measurements to be conducted for each discharge batch, as well as the trend of the concentration of major radionuclides in contaminated water,.

The NRA confirmed the following points about the scheme of the selection, and thus confirmed that this scheme is valid to identify radionuclides that may possibly exist in contaminated water and then select radionuclides to be measured and evaluated:

- TEPCO comprehensively includes fission products and activation products as radionuclides that may possibly exist in contaminated water. Also, the analysis codes used for the inventory assessment have already been validated by measures such as experiments.【Step 1】
- For selecting radionuclides to be measured and evaluated effectively, the concentration of each radionuclide in contaminated water is evaluated step by step with the decay considered. Also, the transfer to contaminated water is evaluated using the analytical results whose reliabilities including analytical methods are validated.【Step 1~4】
- The criteria to exclude radionuclides by 1/100 of the regulatory concentration limit or less are set with consideration given to the contributions to dose of the radionuclides excluded and the ones which move on to the next step.【Step 3&4】

facility, the water storage facility group performs duties on the maintenance management of mechanical equipment of the ALPS treated water dilution/discharge facility, and the water treatment instrumentation group performs duties on maintenance management of instrumentation equipment of the ALPS treated water dilution/discharge facility. Also considering the increased duties associated with the start of the operation of the discharge facility, TEPCO increases the number of workers in the operation shift team for water treatment system and conducts training to ensure the competence of workers.

The NRA confirmed that the organizational structure necessary to manage operation and maintenance of the discharge facility is to be appropriately established through clarifying the responsibility and authority of each group involved for operation management including responses to unusual occurrences and maintenance management of equipment and increasing the number of workers who have enough competence for operation.

1-2. Scheme to select radionuclides to be measured and evaluated

As confirmed in the examination of the Implementation Plan on Installation of ALPS Treated Water Discharge Facility, which the NRA approved on 22 July 2022, TEPCO planed, based on the knowledge on decommissioning and repository within the country, to identify radionuclides that may possibly exist in the highly contaminated water, which is generated in the reactor and other buildings due to the intrusion of rain and ground water (hereinafter referred to as "contaminated water"), at the time of discharge considering radioactive decay and then to select radionuclides to be measured and evaluated to ensure that the sum of the ratios of the concentration of other radionuclides than tritium to each concentration limit is less than 1, and the NRA planned to examine the result in due course before the start of discharge.

In the Application, TEPCO states the scheme to select radionuclides to be measured and evaluated is set as follows:

Step 1 : Are radionuclides present in the results of the inventory[2] assessment
【Yes → move on to Step 2】

Step 2 : Whether noble gas (except Rn) or not
【No → move on to Step 3】

Step 3 : Does the ratio of the concentration of each radionuclide to the regulatory concentration limit exceed 1/100 assuming the whole inventory of the

[2] Quantity of each radionuclide (Bq)

Chapter 1 Examination based on the Reactor Regulation Act

In this chapter, the results of the examination pertaining to Article 64-3 (3) of the Reactor Regulation Act are described for the relevant item of the Regulatory Requirements "III. Items concerning measures taken for operational safety of the Specified Nuclear Facility".

The Regulatory Requirement "III. Items concerning measures taken for operational safety of the Specified Nuclear Facility" requires that by taking appropriate measures such as operation management, maintenance management, radiation control, radioactive waste management, emergency measures, on-site and off-site environmental radiation monitoring, "II. Items concerning measures to be taken for design and facilities" shall be ensured to be appropriately and reliably implemented, as well as workers' and on-site/off-site safety shall be ensured; particularly, with regard to emergency measures during accident or disaster, systems for communication with relevant organizations and medical care system in emergency shall be prepared in addition to responses to emergency; and education and training shall be appropriately conducted for employees and workers including those of contracted and subcontracted companies to maintain and improve their skills and capabilities.

Considering the content of the Application, the NRA examined the following items:

1. Organizational structure to manage operation and maintenance of the discharge facility
2. Scheme to select radionuclides to be measured and evaluated
3. Other items (updates and amendments of the approved contents)

As a result of examining the Application for those items above, the NRA concludes that the content of the Application satisfies the Regulatory Requirements "III. Items concerning measures taken for operational safety of the Specified Nuclear Facility" and thus is sufficient for preventing disasters to be caused by nuclear fuel materials, materials contaminated by nuclear fuel materials or nuclear reactors.

The details of the examination for each item are as follows.

1-1. Organizational structure to manage operation and maintenance of the discharge facility

In the Application, TEPCO states that, as the organizational structure to manage operation and maintenance of the discharge facility after the start of operation, it establishes the following structure: the ALPS treated water program department performs duties on the planning of the operation of the ALPS treated water dilution/discharge facility, the operation shift team for water treatment system performs duties on the operation management of the ALPS treated water dilution/discharge

"Chapter 1 Examination based on the Reactor Regulation Act" provides the results of the examination whether or not the Application fulfills the requirements relevant to the organizational structure to manage operation and maintenance of the discharge facility and the scheme to select radionuclides to be measured and evaluated stipulated in the "Items required for measures which should be taken at Tokyo Electric Power Co., Inc.'s FDNPS in line with the Designation as the Specified Nuclear Facility" (decided by the NRA Commission on November 7, 2012, hereinafter referred to as the "Regulatory Requirements").

"Chapter 2 Review in light of the Government Policy" provides the results of the review whether or not the Application is in line with the descriptions in the "Basic Policy on handling of ALPS Treated Water at the Tokyo Electric Power Company Holdings' Fukushima Daiichi Nuclear Power Station" decided at the Inter-Ministerial Council for Contaminated Water, Treated Water and Decommissioning Issues held on April 13, 2021 (hereinafter referred to as the "Government Policy") relevant to the suspension of discharge as well as the assessment of the radiological impact by discharge.

In this Review Results Document, the contents of the provisions of laws and regulations as well as the Application are summarized and paraphrased as necessary.