NRA presentation

NRA's updates since the January Mission

OTSUJI YAMAMOTO Ayako
Nuclear Regulation Authority JAPAN

Comprehensive Review Mission

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Contents

1. Regulatory process
2. Review
3. Inspection
4. Independent monitoring
5. Response to the actions from the January Mission

1. Regulatory process

NRA	TEPCO
Review of IP	Application of Implementation Plan (IP) (21 Dec 2021)
	IP submission
NRA Review Meetings (13 meetings)	
Draft review results reported and discussed by the NRA Commission (18 May 2022) Receiving public comments (19 May – 17 June 2022) Results of public comment reported to the NRA Commission Decision on approval by the NRA Commission Approval of IP (22 July 2022)	Submission of revised IP (28 April, 15 May 2022)
Start of Operational Safety Inspection (incl. Quality check of TEPCO's analysis)	Start of SSCs Installation
Review and approval of operational measures including selection scheme of source term and source monitoring program	Submission of IP for operational measures including selection scheme of source term and source monitoring program (14 Nov 2022)
	IP submission
NRA Review Meetings (5 meetings)	
NRA's Pre-service Inspection on SSCs (started in Jan 2023) Draft review results reported and discussed by the NRA Commission (22 Feb 2023) Receiving public comments **(23 Feb – 24 Mar 2023)** Results of public comment reported to the NRA Commission Decision on approval by the NRA Commission Approval of IP **(10 May 2023)** Pass of NRA's Pre-service Inspection	Tests on SSCs Submission of revised IP (14 Feb, 20 Feb 2023)
	We are here
	Completion of Installation
	Start of operation
Operational Safety Inspection continues (incl. Quality check of TEPCO's source monitoring) Periodic Facility Inspection Independent source monitoring by the NRA's TSO	

2. Review

The second Implementation Plan on operational measures submitted on 14 Nov 2022

Content of the application:

A: Organizational structure to manage operation and maintenance of ALPS treated water discharge facility after discharge starts

B: Selection scheme of nuclides to be measured or evaluated before ALPS treated water is discharged

C: Revision of Radiological Environmental Impact Assessment reflecting the selected nuclides as the source term (as reference materials)

Progress

- NRA solicited public comments from 23 February to 24 March 2023.
- NRA scrutinized the public comments received.

- NRA approved the application and published the review results document on 10 May 2023.

  English translation of the review results document:
  https://www.nra.go.jp/data/000429852.pdf

Review results on the second application

Structure of the Review Results Document

Introduction

Chapter 1 Examination based on the Reactor Regulation Act

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

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

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

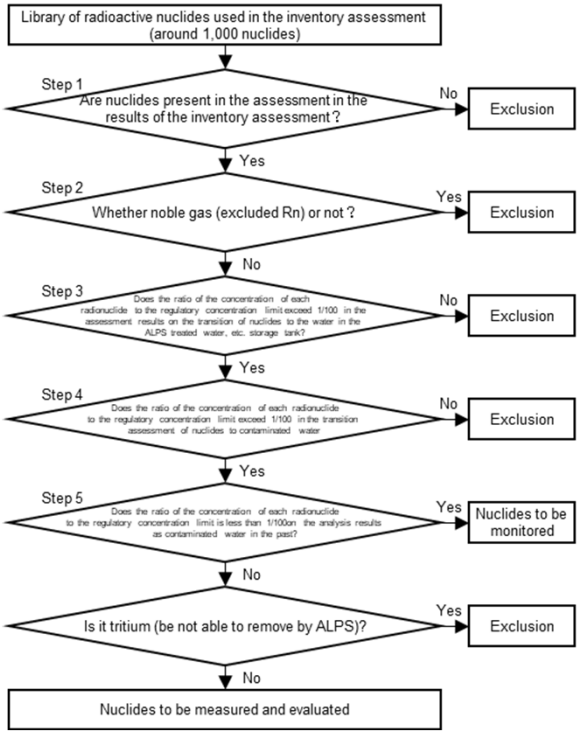
Chapter 2 Review in light of the Government Policy

2-1 Radiological Impact Assessment of discharge

The definition of abnormal values in sea area monitoring to trigger suspension of discharge was added into the IP in February 2023.

Review results on the second application

Chapter 1: Examination based on the Reactor Regulation Act



Excerpted and edited from the TEPCO's explanation material（27th December 2022）

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

【NRA confirmation result】

- 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】
- 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】

Review results on the second application

Chapter 2: Review in light of the Government Policy

2-1 Radiological Impact Assessment of discharge

【NRA confirmation result】

- 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 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 as follows, and thus the impact both on humans and the environment remains sufficiently small

Radiological Impact Assessment		Assessment results with the updated source term	Criteria	Assessment result with the previous source term
Radiological impact on humans in normal operation		0.03 μSv/year	50 μSv/year	0.4 μSv/year
Radiological impact in case of potential exposure		0.01 mSv/event	5 mSv/event	0.3 mSv/event
Radiological impact on animals and plants in the sea	Flatfish	0.7×10^{-6} mGy/day	1～10 mGy/day	60×10^{-6} mGy/day
	Crab	0.7×10^{-6} mGy/day	10～100 mGy/day	60×10^{-6} mGy/day
	Brown seaweed	0.8×10^{-6} mGy/day	1～10 mGy/day	60×10^{-6} mGy/day

Result of TEPCO's selection according to the scheme (after discussions with the NRA at the review meetings)

H-3	Se-79	Te-125m	Sm-151	Pu-238
C-14	Sr-90	I-129	Eu-154	Pu-239
Mn-54	Y-90	Cs-134	Eu-155	Pu-240
Fe-55	Tc-99	Cs-137	U-234	Pu-241
Co-60	Ru-106	Ce-144	U-238	Am-241
Ni-63	Sb-125	Pm-147	Np-237	Cm-244

Cl-36
Nb-93m
Nb-94
Mo-93
Cd-113m
Ba-133

Fe-59	Rh-103m	Te-123m	Ba-140	Gd-153
Co-58	Rh-106	Te-127	Ce-141	Tb-160
Zn-65	Ag-110m	Te-127m	Pr-144	Am-242m
Rb-86	Cd-115m	Te-129	Pr-144m	Am-243
Sr-89	Sn-119m	Te-129m	Pm-146	Cm-242
Y-91	Sn-123	Cs-135	Pm-148	**Cm-243**
Nb-95	Sn-126	Cs-136	Pm-148m	
Ru-103	Sb-124	Ba-137m	Eu-152	

Nuclides to be measured and evaluated (including H3): ***30 nuclides***

Nuclides to be monitored

Nuclides which are the target of ALPS but not selected as neither to be measured and evaluated nor to be monitored

Nuclides which category changed from the submission of "Application"

The second Implementation Plan on operational measures submitted on 14 Nov 2022 (revision made in February 2023)

Abnormal values in sea area monitoring to trigger suspension of discharge (excerption from the IP):

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:

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.

checked by operational safety inspection

Furthermore, when an unusual situation is confirmed or determined in the monitoring framework under the Comprehensives Radiation Monitoring Plan, TEPCO will take necessary measures.

Results of Public comment process

The NRA solicited public comments from February 23rd to March 24th 2023.

Main comments were on the following points;

【Examination based on Reactor Regulation Act 】

- Validation of operation and maintenance management system
- Scheme to select radionuclides to be measured and evaluated
- Concept of abnormal values in sea area monitoring

【Review in light of the Government Basic Policy 】

- Appropriateness of assessment conditions such as bio-accumulation of radionuclides, accumulation in sediment soil, and organically bound tritium in the radiological environmental impact assessment
- Implementation of comprehensive assessment of radiological Impact on humans and the environment

The NRA looked into submitted comments and concluded that these comments do not warrant substantial changes to the review results, and therefore published the review results document without any correction.

3. Inspection

Status of pre-service inspection and operational safety inspection

Currently, the NRA is conducting pre-service inspection and operational safety inspection on the installation and operational measures of the ALPS treated water discharge facility that TEPCO has been working on to check whether those activities conform to the approved IP.

Pre-service Inspection

- ✓ Pre-service inspection of measurement/confirmation facility was completed on 15th March 2023.
- ✓ Pre-service inspections of transfer facility, dilution facility and discharge facility are now being conducted. (see slide 11)

Operational Safety Inspection (see slide 12-15)

- ✓ For operational safety inspection to confirm operational measures are properly set based on the approved IP before the start of discharge, the following subjects were identified;
  1. ***Quality assurance of nuclide analysis***
  2. ***Operational framework for ALPS treated water discharge facility***
  3. ***Operational management of ALPS treated water discharge facility***
- ✓ As a progress of inspection so far, the NRA confirmed that
  - ■ quality assurance of nuclide analysis is properly established at TEPCO
  - ■ those manuals that TEPCO has already prepared are properly documented except one point.
- ✓ The rest of the manuals are to be prepared as the installation proceeds and the operational framework are to be established before the start of operation, therefore the NRA will inspect those items in due course.

Pre-service Inspection

Status of Pre-service Inspections
［Transfer, Dilution and Discharge Facility］
（As of 19th May 2023）

［Legend］
☐ : Waiting
○ : In progress
● : Done

[1] Inspection to confirm the structure or performance of the reactor facility for nuclear power plants as specified in the implementation plan, including material inspection, dimensional inspection, visual inspection, inspection to confirm the state of assembly and installation, pressure resistance inspection, and leakage inspection.

[2] Inspection to confirm the functions or performance required for the operation of the reactor facility for nuclear power plants as specified in the implementation plan.

[3] Inspection to confirm the total performance of the reactor facilities for nuclear power plants as specified in the implementation plan, and other inspections necessary to confirm completion of the construction.

	Equipment	To confirm the structure of equipment[1]	To confirm the function of the individual equipment[2]	To confirm total performance of equipment[3]
Transfer Facility	ALPS treated water transfer pump（Factory-Made）	●	–	☐
	ALPS treated water flow meter	●	☐	–
	Radiation monitor	●	☐	–
	Emergency isolation valve（Factory-Made）	–	○	–
	ALPS treated water flow rate control valve（Factory-Made）	–	–	☐
	Main pipes	●	–	☐
	Leakage detectors and alarms	○	☐	–
Dilution Facility	Seawater transfer pump（Factory-Made）	☐	–	☐
	Seawater flow meter	☐	☐	–
	Discharge vertical shaft（Upper-stream storage）	●	–	☐
	Main pipes	○	–	☐
Discharge Facility	Discharge vertical shaft（Down-stream storage）	☐	–	☐
	Discharge tunnel	☐	–	☐
	Discharge outlet	☐	–	☐

Operational Safety Inspection

Progress:

1. Quality assurance of nuclide analysis ***(also see slide 21)***

Through operational safety inspection, *the NRA confirmed that TEPCO's activities on quality assurance of nuclide analysis are conducted properly based on the Implementation Plan (IP)*, which was approved on 22nd July 2022 and 10th May 2023.

The details of the confirmation results are as follows:

- ✓ Radionuclides to be measured and evaluated are properly selected based on the selection scheme which has been stipulated in the IP.
- ✓ *Procurement process for outsourcing* as well as responsibility and authority for analytical activities are clearly defined in in-house manual. Also, requirements for procurement, validation of procured products, and corrective action are properly implemented based on the IP.
- ✓ TEPCO and its contractor implements *activities to secure human resources and train workers.*
- ✓ *Traceability* is ensured by the certification standards that the contractor has obtained, uncertainties are evaluated properly, and detection limit is below 1/100 of regulatory concentration limit. Additionally, traceability of those analytical methods which are not certificated, is also secured by inter-comparison analysis.

Operational Safety Inspection

Progress:

2. Operational framework for ALPS treated water discharge facility

Operational framework, which was approved on 10th May 2023, is to be applied from the day when the ALPS treated water discharge facility starts operation. Therefore, the NRA could not inspect it so far.

On the other hand, the NRA confirmed that *manuals about capability management, education and training for operation of ALPS treated water discharge facility are properly established.*

Operational Safety Inspection

Progress:

3. Operational management of ALPS treated water discharge facility

The NRA inspected the preparation status including manuals for operational management of ALPS treated water discharge facility (1. receiving, 2. measurement/confirmation, 3. discharge), based on the IP. The confirmed items includes:

- ✓ ***Operational procedure for the receiving process***
  - Operational procedure of ALPS treated water transfer pump and receiving valve
  - Procedure to respond to unusual events
- ✓ ***Operational procedure for the measurement/confirmation process***
  - Operational procedure for circulation and agitation
  - Procedure for sampling
  - Procedure to respond to unusual events
- ✓ ***Operational procedure for the discharging process***
  - Operational procedure of seawater transfer pumps
  - Procedure to respond to unusual events (e.g., to suspend discharge immediately)
- ✓ ***Set unusual values in sea area monitoring***
- ✓ ***Maintenance and management of the facility***
  - Addition of items to the inspection plan and the long-term maintenance management plan
  - Manuals for patrol inspection (patrol route and its frequency)

As a result of operational safety inspection, the NRA confirmed that the contents of IP are properly reflected in the in-house manuals, except for the point that persons responsible for the judgement to proceed to the next step in the discharge process are not clearly defined.

Operational Safety Inspection

Coming Inspection before the start of discharge:

Main items for the coming operational safety inspection is as follows:

[2. Operational framework of ALPS treated water discharge facility]

- Transfer of duties for the operation and maintenance of the ALPS treated water discharge facility before the start of operation.

[3. Operational management of ALPS treated water discharge facility]

✓ ***Judgement at the holding points of each process***

- Conditions to check the result of measurement and a person who makes judgement.
- Procedure to proceed to the next process and a person who makes judgement.
- A person who judge the suspension of discharge when unusual events occurs.

✓ ***Operational procedures for the discharging process which could not be inspected so far***

- Operation to input the concentration of tritium
- Setting the flow rate based on the input tritium concentration
- Planning of the annual discharge amount of tritium
- Periodic confirmation process of radionuclides to be measured and evaluated

✓ ***Operational procedure for the maintenance and management***

- Management measures of discharge vertical shaft (Down-stream storage), which is the non-controlled area

4. Independent monitoring

- ✓ NRA's independent monitoring to complement operational safety inspection on TEPCO's organizational framework for analyzing "nuclides to be measured and evaluated" and their quality assurance activities

Before the start of discharge

Analytical Institute: JAEA Nuclear Safety Research Center/ TSO of the NRA

Radionuclides measured:

Major 7 nuclides (Co-60, Sr-90, Ru-106, Sb-125, I-129, Cs-134, Cs-137),
H-3, C-14, Tc-99,
Cl-36, Fe-55, Se-79

Results *>see slide 17-18 and another presentation for details*

After the start of discharge (TBD)

Analytical Institute: JAEA Nuclear Safety Research Center / TSO of the NRA

Radionuclides to be measured:

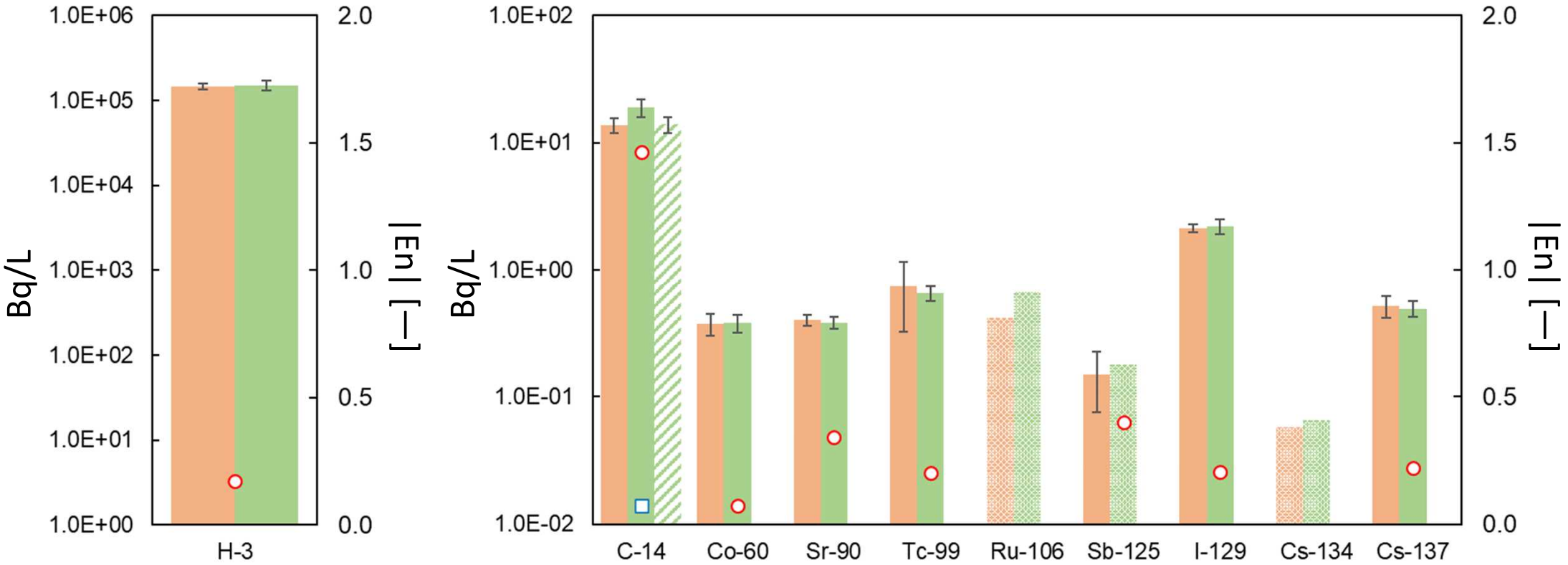
C-14 and I-129 (the main contributors in REIA), Major γ-emitter nuclides (Co-60, Ru-106, Sb-125, Cs-134, Cs-137)

Frequency of analysis: Once a year (for the first year, the second batch of discharge)

4. Independent monitoring

Nuclides	JAEA（Bq/L）	TEPCO（Bq/L）	Concentration limit (Bq/L)	|*E*n|
Co-60	0.38±0.06	0.373±0.0745	200	0.11
Sr-90	0.38±0.04	0.399±0.0383	30	0.39
Ru-106	<0.66	<0.415	100	
Sb-125	<0.18	0.150±0.0749	800	
I-129	2.2±0.3	2.13±0.162	9	0.21
Cs-134	<0.066	<0.0573	60	
Cs-137	0.49±0.07	0.517±0.100	90	0.21
H-3	(1.5±0.2)E+05	(1.46±0.102)E+05	60,000	0.0072
C-14	19±3	13.8±1.90	2,000	1.5
C-14 re-analysis	14±2			0.07
Tc-99	0.65±0.09	0.735±0.412	1,000	0.2
Cl-36	<1.5	—	900	
Fe-55	<0.36		2,000	
Se-79	<0.77		200	

4. Independent monitoring



5. Response to the actions from the January Mission

NRA categorized the actions into two groups:

- ✓ "Short-term" to be responded before the start of discharge
- ✓ "Long-term" to be responded beyond the above timeframe

Follow-up List of 2nd Review Mission to the NRA

Short-term		Cat.
1	The NRA agreed that it will ensure action levels / tolerances are defined, agreed and included in formal documentation where appropriate (e.g., approved Implementation Plan, Inspection Manuals, and documents that include source and environmental monitoring requirements). The Task Force requested that NRA provide a copy of the enforcement procedure/policy and other relevant inspections procedures to highlight how the above-mentioned issues are captured in existing documentation. NRA subsequently provided the requested information for the Task Force's review.	Inspection
2	The Task Force noted that NRA intends to conduct oversight of the quality assurance programmes at FDNPS for analysis work but requested to see a matrix of the clauses in ISO 9001 and ISO/IEC 17025 that are included in inspections under the quality assurance plan.	Inspection
3	The Task Force requested that NRA provide a copy of the enforcement procedure/policy and other relevant inspections procedures to highlight how the above-mentioned issues are captured in existing documentation. NRA subsequently provided the requested information for the Task Force's review.	Inspection
4	The Task Force requested NRA to provide further information about the roles and responsibilities of the expert group mentioned during the mission, how the group will operate and how discrepancies in monitoring data results will be investigated.	Environmental monitoring
5	Additionally, the Task Force noted that NRA should ensure TEPCO establishes a process for the collection of information following a discrepancy in monitoring data results to enable root cause analysis to be undertaken. The Task Force also advised that the NRA should ensure that TEPCO establishes a process for the collection of information when a discrepancy is found in monitoring results to enable root cause analysis to be undertaken.	Source & Environmental monitoring

Short-term		Cat.
6	The Task Force requested NRA to provide examples of how TEPCO is required (e.g., through the Implementation Plan) to conduct checks to ensure workers are adequately trained and understand how to implement activities at FDNPS (relevant to the ALPS discharges) in a way that ensures the doses to workers are consistent with expectations. Following the mission, NRA provided additional information to the Task Force. The Task Force will continue to review the latest information provided by NRA.	ORP
7	The Task Force noted that long term storage of such information in a dose registry has a crucial role for supporting a regulatory authority in their oversight role.	ORP

Long-term		Cat.
8	The Task Force encouraged NRA to set discharge limits for other radionuclides that have a more significant radiological impact (i.e., I-129 and C-14). This would become particularly important in the event the discharge limit for tritium changes in response to the future optimization of protection of people and the environment for the discharge of ALPS treated water.	Regulatory Process
9	The Task Force noted that NRA could request that TEPCO considers using alternative characterization approaches if there are future revisions of the source term, and after operational experience has been gathered.	Source term
10	The NRA agreed to require TEPCO to review optimisation of protection for the discharge of ALPS treated water based on operational experience and associated monitoring following the start of the discharges.	Optimization

5. Response to the actions from the January Mission

Short-term Action 1:

- The NRA agreed that it will ensure action levels / tolerances are defined, agreed and included in formal documentation where appropriate (e.g., approved Implementation Plan, Inspection Manuals, and documents that include source and environmental monitoring requirements).
- The Task Force requested that NRA provide a copy of the enforcement procedure/policy and other relevant inspections procedures to highlight how the above-mentioned issues are captured in existing documentation. NRA subsequently provided the requested information for the Task Force's review.

(Performance of equipment)

- As a reference document, the provisional translation of ***the Inspection Implementation Manuals for pre-service inspection*** (Attachment 1-1 & 1-2) is provided to the IAEA TF.
- Regarding pre-service inspection, the NRA conducts inspections for activation of Emergency Isolation Valve in case of unusual occurrence. (see Attachment 1-1 & 1-2)

(Operation)

- TEPCO describes the definition of unusual occurrences (e.g. failure of flowmeter or discrepancy of flowrate) in documents such as "Operating Procedure in case of alarming" based on "Operation Management Basic Manual" as well as the definition of unusual values in sea area monitoring.
- The NRA has been checking whether necessary action levels/tolerances are established in TEPCO's documents through ***operational safety inspection***. (see slide 12-15)
- As a reference document, the provisional translation of ***Implementation Plan Inspection Procedure*** (Attachment 3) is provided to the IAEA TF.

5. Response to the actions from the January Mission

Short-term Action 2:
The Task Force noted that NRA intends to conduct oversight of the quality assurance programmes at FDNPS for analysis work but requested to see a matrix of the clauses in ISO 9001 and ISO/IEC 17025 that are included in inspections under the quality assurance plan.

- The following chart (Attachment 2, slightly updated here) is provided to the IAEA TF.

Matrix of Inspection and ISO

Attachment 2

Subject to inspection	Category	Sub-category	Contents of audit program	Implementation Plan (Ⅲ Part 1, Chapter 2 Quality assurance)	Check points of inspection based on ISO				
TEPCO	Procurement	Procurement Process	Process for outsourcing	7.4.1 5.5.3	ISO/IEC 9001(8.4)	ISO/IEC 9001(5.3)	ISO/IEC 17025(6.6)	ISO/IEC 9001(8.4)	ISO/IEC 17025(6.6)
		Procurement Requirements	Specification of requirements	7.4.2	ISO/IEC 9001(8.4)	ISO/IEC 9001(8.4)	ISO/IEC 9001(8.4)	ISO/IEC 9001(8.4)	
		Validation of Products	Validation of products whether it satisfies the requirements	7.4.3 8.4	ISO/IEC 17025(7.2)	ISO/IEC 17025(7.2)	ISO/IEC 17025(7.7.2)	ISO/IEC 17025(7.2.1)	ISO/IEC 9001（8.4.2)
		Action to the nonconforming product	Action to the nonconforming product as a result of validity check	8.3	ISO/IEC 9001(10.2)	ISO/IEC 9001(10.2)	ISO/IEC 17025(7.10)		
TPT	Procurement	Procedure of procurement	Process from receiving orders of outsourcing from TEPCO till setting analytical procedure	7.4.2	ISO/IEC 17025(7.1.1)	ISO/IEC 17025(6.4.5 , 7.1.1)	ISO/IEC 17025(7.6)	ISO/IEC 17025(7. 7)	ISO/IEC 17025(7.8)
		Validity of Products	Validation of products	7.4.3	ISO/IEC 17025(7.2 , 7.7)				
		Responsibility	Authority and responsibility on management system	5.5.3	ISO/IEC 17025(5.6)				
TEPCO (TPT)	Input and Output for design and development of analytical method	Sampling point	Criteria to satisfy the objective	7.3.2 7.3.3	ISO/IEC 17025(7.2.1 , 7.3)				
		Selection of analysis method	Criteria to satisfy the objective	7.3.2 7.3.3	ISO/IEC 17025(7.2.1 , 7.3)	ISO/IEC 17025(7.2.1 , 7.3)			
TEPCO TPT	Human resources	Evaluation of necessary competence	Evaluation of necessary competence and post	6.2.2(a) 6.2.2(b)	ISO/IEC 17025(6.2)	ISO/IEC 17025(6.2)			
		Education and Training	Implementation status and contents of education and training	6.2.2(c) 6.2.2(d)	ISO/IEC 17025(6.2)	ISO/IEC 17025(6.2)	ISO/IEC 17025(6.2)		
		Keeping of record	Record and management of education and training	6.2.2(e)	ISO/IEC 17025(6.2)	ISO/IEC 17025(6.2)			
TPT	Calibration of instruments	Appropriate maintenance	Ensure proper functioning	7.6	ISO/IEC 17025(6.4)				
		Keeping of record	Pass/Fail judgement	7.6 4.2.4	ISO/IEC 17025(6.4)				
TPT	Management of monitoring instruments and measurement instruments	Calibration	Calibration	7.5.3	ISO/IEC 17025(6.4.6 , 6.5)	ISO/IEC 17025(6.4.8)	—	ISO/IEC 17025(6.4.11 , 6.5.2)	
		Record	Record of calibration	7.5.3 4.2.4	ISO/IEC 17025(6.4.13)	ISO/IEC 17025(6.4.13)	ISO/IEC 17025(6.4.13)	ISO/IEC 17025(6.4.13)	
		Pass/Fail judgement and corrective action	Pass/Fail judgement of calibration	8.5.2 4.2.4	ISO/IEC 17025(6.4.13)	ISO/IEC 17025(6.4.7)			
TEPCO TPT	Management of documents	Management Condition	Condition of arichive documents	4.1 4.2.4	ISO/IEC 17025(8.8.2)	ISO/IEC 17025(8.8.2)			
		Existence of ducuments	Existence of approved documents	4.2.3 7.5.2	ISO/IEC 17025(8.4)				
TEPCO TPT	Evaluation and improvement (including Corrective action)	Status of internal audit	Internal audit	8.2.2 8.2.2(4)	ISO/IEC 17025(8.8.2)				
		Audit program	Contents of audit program	8.2.2(2)	ISO/IEC 17025(8.8.2)				
		Ensurement of fairness	Relationships between auditors and audit target	8.2.2(5)	ISO/IEC 17025(8.8.2)	ISO/IEC 17025(8.8.2)			
		Corrective action	actions without undue delay and elimination the cause to occur elsewhere	8.2.2(9)	ISO/IEC 17025(8.8.2)	ISO/IEC 17025(8.9.1)	ISO/IEC 17025(8.7.1)		

5. Response to the actions from the January Mission

Short-term Action 3:
The Task Force requested that NRA provide a copy of the enforcement procedure/policy and other relevant inspections procedures to highlight how the above-mentioned issues are captured in existing documentation. NRA subsequently provided the requested information for the Task Force's review.

- Merged to Action 1

5. Response to the actions from the January Mission

Environmental Monitoring

Short-term Action 4:

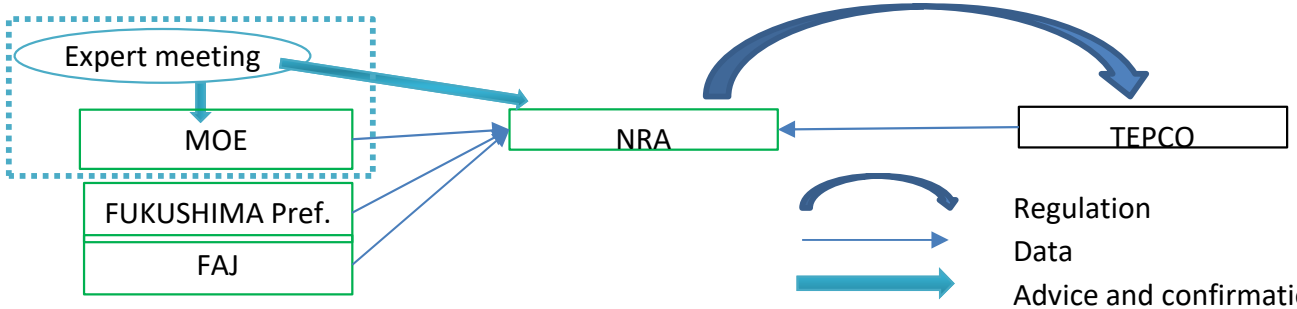
The Task Force requested NRA to provide further information about the roles and responsibilities of the expert group mentioned during the mission, how the group will operate and how discrepancies in monitoring data results will be investigated.

Short-term Action 5:

Additionally, the Task Force noted that NRA should ensure TEPCO establishes a process for the collection of information following a discrepancy in monitoring data results to enable root cause analysis to be undertaken.

○In the Implementation Plan submitted on 20 February as the amendment of the Application submitted on 14 November 2022, TEPCO states *"Furthermore, when an unusual situation is confirmed or determined in the monitoring framework under the Comprehensives Radiation Monitoring Plan, TEPCO will take necessary measures"*.

○In the CRMP, the validity of the results of individual analyses is to be appropriately evaluated by each organization including TEPCO. NRA consolidate the measurement results as conducted by relevant ministries and other entities in entire CRMP. Especially the results of sea area monitoring regarding ALPS treated water are reported and shared with the Expert Meeting. *If discrepancies are identified as a result of consolidation, the NRA will confirm the causes closely, obtaining advice and confirmation from the Expert Meeting on Sea Area Monitoring regarding ALPS treated water as necessary.* TEPCO will take necessary measures including further investigation of the cause and the suspension of discharge. The NRA will subsequently confirm the measures taken by TEPCO including through inspection. The document of these roles of the Expert Meeting (Provisional Translation) is attached as Attachment 4.



5. Response to the actions from the January Mission

Short-term Action 5 (both in source and environmental monitoring) :

Source monitoring

- The Task Force also advised that the NRA should ensure that TEPCO establishes a process for the collection of information when a discrepancy is found in monitoring results to enable root cause analysis to be undertaken.

Environmental monitoring

- the Task Force noted that NRA should ensure TEPCO establishes a process for the collection of information following a discrepancy in monitoring data results to enable root cause analysis to be undertaken.

(Regulatory requirements for quality assurance)

✓ ***NRA Ordinance for Fukushima Daiichi, Article 5 Quality Management System***

(Quality Management System)
Article 5 Pursuant to the provisions of Article 43-3-22 paragraph (1) of the Act, a licensee of nuclear power reactor shall plan, implement, evaluate and improve the operational safety activity (including measures stipulated in Article 9 through 16) based on the quality management system as well as improve the quality management system continuously as provided in the implementation plan (meaning the implementation plan stipulated in Article 64-2 paragraph (2) of the Act, the same shall apply hereinafter).

✓ Quality Management System is defined in ***NRA Ordinance on Standards for Quality Management*** including ***record management and corrective action***.

5. Response to the actions from the January Mission

Short-term Action 5 (both in source and environmental monitoring) :

(Regulatory requirements for quality assurance)

- ✓ According to NRA Ordinance for Fukushima Daiichi, TEPCO has established the ***Implementation Plan including chapter for Quality Assurance*** (III Operational Safety, I Operational Safety Measures for Unit 1-4, Chapter 2 Quality Assurance).
  https://www.tepco.co.jp/decommission/information/implementation/pdf/3_0-1-1.pdf
- ✓ Chapter 2 includes stipulations for ***record management, non-conformance management and corrective actions***.
- ✓ Under the Implementation Plan, TEPCO also established ***its in-house manuals for record management as well as non-conformance management, corrective action and preventive actions***.

In **operational safety inspection** (see slide 12-15) before start of discharge, the NRA confirmed the following points on record management and non-conformance that;

- ✓ TEPCO and TPT has ***a proper system to keep and manage records important to quality assurance of analysis, including each process of analysis and calibration record of equipment***.
- ✓ TEPCO has ***a system to manage non-conformance cases*** regardless of the magnitude of each case, according to the Implementation Plan and the in-house manual.
- ✓ TPT, a contractor for monitoring, properly manages non-conformance according to ISO/IEC 9001 and ISO/IEC 17025.
- ✓ TPT reports to TEPCO on non-conformance cases that TPT identified, and then TEPCO manages those cases as non-conformance.

5. Response to the actions from the January Mission

Short-term Action 6 (ORP):
The Task Force requested NRA to provide examples of how TEPCO is required (e.g., through the Implementation Plan) to conduct checks to ensure workers are adequately trained and understand how to implement activities at FDNPS (relevant to the ALPS discharges) in a way that ensures the doses to workers are consistent with expectations. Following the mission, NRA provided additional information to the Task Force. The Task Force will continue to review the latest information provided by NRA.

- The specific requirement for education of workers is that; “education and training shall be appropriately conducted for employees and workers including those of contracted and subcontracted companies to maintain and improve their skill and capability.”
  Specific Regulatory Requirements (https://www.nra.go.jp/data/000239901.pdf#7) P.7

- In compliance with this requirement, TEPCO have the description on the education in the Implementation Plan Chapter III, Section 1, Part 10 ”Education for Operational Safety” and their sub-rules “Manual for Operational Safety”.

5. Response to the actions from the January Mission

Short-term Action 7 (ORP):
The Task Force noted that long term storage of such information in a dose registry has a crucial role for supporting a regulatory authority in their oversight role.

- In the IRRS mission 2016, IAEA recommended that; “The Government should empower the regulatory body to establish requirements for authorization or approval processes for service providers for monitoring of occupational and public exposures, and environmental monitoring in general, and verify that these requirements are met by licensees.”
  Report of the Integrated Regulatory Review Service (IRRS) Mission to Japan (https://www.nra.go.jp/data/000148261.pdf#25) P.25

- Based on the recommendation of IRRS mission, the NRA amended the NRA Ordinance for commercial reactors to require the provision of “measurement method of radiation monitoring equipment” to be established in the Operational Safety Program. Also, the NRA Ordinance for quality control requires that monitoring equipment shall be calibrated or verified by the method that can be traced to the standard of metrology.

- Furthermore, The NRA has established a “Technical Study Team on Environmental Radiation Monitoring” to address the technical and quality aspects of radiation dose estimates. In cooperation with the Japan Accreditation Board (JAB), Implementation of requirements on accreditation of services for determination of individual dose in accordance with ISO/IEC 17025:2017 “General Requirements for the Competence of Testing and Calibration Laboratories” is established.

- Considering the situation above, in the IRRS Follow-Up mission 2022, IAEA evaluated “Closed” as follows.
  “Recommendation (R2) is closed on the basis of progress made and confidence in effective completion, based on the observation that actions initiated by the NRA are nearing completion and have already strengthened the quality arrangements among providers of dosimetry and monitoring services”
  Integrated Regulatory Review Service (IRRS) Follow-Up Report to Japan (https://www.nra.go.jp/data/000305662.pdf) P.19

5. Response to the actions from the January Mission

Long-term Action 10:
The NRA agreed to require TEPCO to review optimisation of protection for the discharge of ALPS treated water based on operational experience and associated monitoring following the start of the discharges.

- The NRA plans to require an explanation from and discuss with TEPCO regarding the optimization of protection for ALPS treated water discharge below the range of dose constraint 50μSv/y ***at the Oversight and Review Meeting for Fukushima Daiichi,*** in which the overall decommissioning activities are overseen. The Oversight and Review Meeting for Fukushima Daiichi is a meeting which external experts and local stakeholders in addition to NRA Commissioners and NRA staff participate to evaluate and give necessary technical advices on the progress management and safety measures for decommissioning activities. At the Oversight and Review Meeting for Fukushima Daiichi, ***the NRA will continue to see whether ALPS treated water discharge in the approved way and amount (discharge within the annual discharge limit 22 TBq/year of tritium) contributes to the progress of decommissioning and whether other risk reduction activities are not hampered by this way of discharge, which are the primary perspectives for the NRA to discuss the optimization of protection for ALPS treated water discharge below the range of dose constraint 50μSv/y.***

- Specifically, next time revising the document “Measures for Mid-term Risk Reduction for decommissioning TEPCO’s Fukushima Daiichi NPS” (anticipated in Feb. or March 2024), the NRA will require an explanation from TEPCO regarding the consideration results for optimization of protection based on their operational experience of discharge after the discharge starts. Then when considered necessary, the NRA will discuss re-consideration of optimization of protection with TEPCO.

Thank you for your attention.