

## NRA presentation

## NRA's updates from the Mission in October 2023

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- 1. Optimization of protection
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Technical topics under Regulatory control and authorization:

- NRA's approach to encourage optimization of protection and safety during future reviews of the authorization.
- NRA's approach to reviewing and potentially revising discharge limits in response to TEPCO's ongoing optimisation of protection and safety.
- Periodic review of the authorization of discharge is conducted in the process of revising the document "Measures for Mid-term Risk Reduction for decommissioning TEPCO's Fukushima Daiichi NPS", typically once a year. This document is decided by the NRA after discussion with TEPCO and the other stakeholders at the Oversight and Review Meeting for Fukushima Daiichi.
- The NRA's perspectives of the review of the authorization are:
  - Whether ALPS treated water discharge in the approved way and amount continues to contribute to the progress of decommissioning
  - Whether there are any substantial changes in the assumptions or conditions made in the reviewed REIA
  - Whether there are any indications in source or environmental monitoring that might affect the reviewed REIA



- After the start of discharge in August 2023, the progress of the discharge, including the results of source and environmental monitoring, were reported and discussed at each Oversight and Review Meeting for Fukushima Daiichi, i.e., the meeting on <u>5 October 2023</u>, <u>18 December 2023</u>, and <u>19 February 2024</u>.
- Especially at the meeting on 19 February, TEPCO explained the **2024 annual plan for discharge** which was established in consideration of the anticipated amount of the contaminated water to be generated per day as well as the ALPS treated water tank removal plan to allocate land to the new facilities, such as for debris removal, in order to bring decommissioning forward.

**2024 annual plan for discharge:** Tritium about 14 TBq, about 54,600m³, 7 times

- In the course of those discussions, the NRA confirmed the following for each perspective:
  - Whether ALPS treated water discharge in the approved way and amount continues to
     contribute to the progress of decommissioning > tank removal planned, confirmed
  - Whether there are any substantial changes in the assumptions or conditions made in the
     reviewed REIA > substantial changes not reported by TEPCO nor recognized by the NRA
  - Whether there are any indications in source or environmental monitoring that might affect the reviewed REIA > indications not reported by TEPCO nor recognized by the NRA

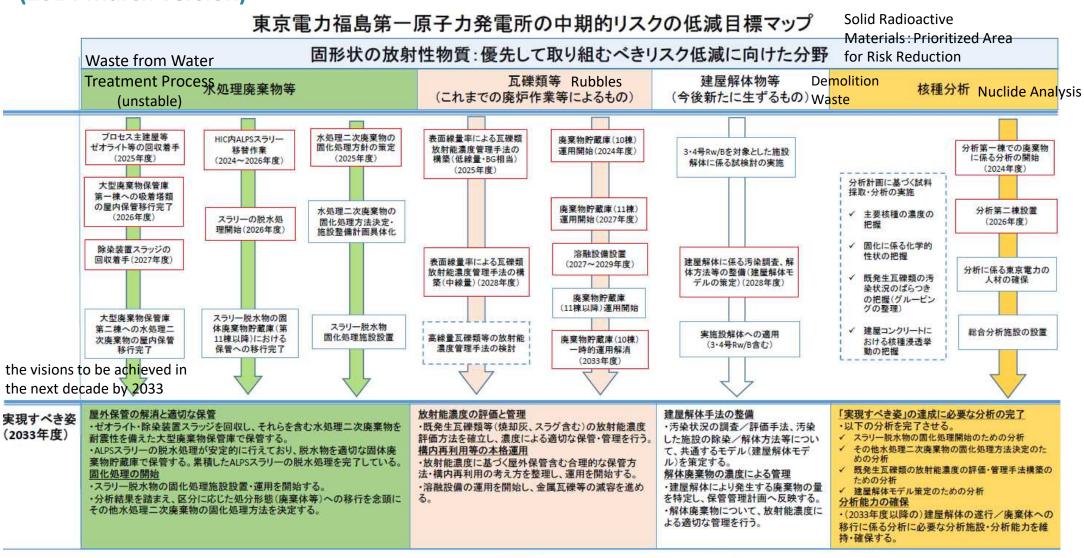




- At the meeting on 19 February, the revision of the document "Measures for Mid-term Risk Reduction for decommissioning TEPCO's Fukushima Daiichi NPS" was proposed by the NRA and discussed with TEPCO and the other stakeholders.
- This time, considering the current situation where urgent risks have been reduced during the first decade after the accident and the risks currently recognized are to be tackled rather in the mid to long-term, the NRA decided to show the visions to be achieved in the next decade by 2033 for each category, such as solid waste treatment and stable storage, nuclide analysis for solid waste, prevention of contaminated water generation, optimal management of reactor core (cooling and air), and then set specific targets toward the visions.
- The revised document (2024 March version) was approved by the NRA Committee on 28
  February. The NRA will continuously oversee the TEPCO's decommissioning activities and
  progress in light of this document.



## "Measures for Mid-term Risk Reduction for decommissioning TEPCO's Fukushima Daiichi NPS" (2024 March version)



インベントリが高い等の理由によ り時期を定めて達成すべき目標 時期を定めず柔軟に取り 組む目標 今後具体的な実施内容に 係る検討が必要な目標

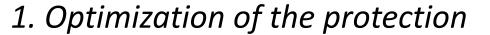


# "Measures for Mid-term Risk Reduction for decommissioning TEPCO's Fukushima Daiichi NPS" (2024 March version)

東京電力福島第一原子力発電所の中期的リスクの低減目標マップ(固形状の放射性物質以外の主要な目標) Significant items for Reduction of Risk Reduction Maintenance and decommissioning contaminated water 污染水対策 inside reactor removal of 廃炉作業を進める上で buildings 原子炉建屋内のリスクの低減 equipment an設備・施設の維持・撤去 重要なもの generation facilities 1号機原子炉建屋 原子炉建屋の健全 1/3号機S/C水位の低下 廃炉設備の維持・ 2号機燃料デブリ試験的取 カバー設置 滞留水中のα核種除 性評価手法の確立 撤去に係る計画の 出し・格納容器内部調査 (2025年度) (2024年度) 去開始(2025年度) (2024年度) 策定(2024年度) ·性状把握(2024年度) 6号機燃料 建屋外壁局所止水対 1/3号機注水停止試験: 取出し完了 策の完了(2028年度) 1号機原子炉建屋上 給排気流量変更試験等 (2025年度) 階への地震計設置 による炉内挙動の把握 1/2号機排気筒下部の (5階瓦礫類撤去後) 高線量SGTS配管等の撤 去・周辺の汚染状況調査 乾式キャスク仮保 3号機RHR(A)系統の水 (2025年度) 管設備增設 素滞留を踏まえた調査 新水処理設備の 建屋流入量の と対応 設置(新ALPS設備。 プロセス主建屋、HTI 更なる低減 WPくみ上げ抑制策 新RO設備) 建屋の水位低下 の検討 炉内雰囲気管理のため の適切な給排気流量の 分析第二棟設置 2.5m盤汚染簡所の (2026年度) 適切な炉内冷却方法の 2.5m盤汚染土壤隔 運用補助共用施 離措置・浄化策等の 1/2/5/6号機全燃料 設周辺の斜面対 共用ブール燃料搬出・高 炉内状態監視手段等の 取出し完了 策工事の完了 台での乾式保管の開始 (2031年度) 検討 凍土遮水壁の段階 the visions to be achieved in 的終了に係る検討 the next decade by 2033 燃料デブリの取出し等 劣化状況の点検・評価/信頼性の向上 燃料の取出しの完了 建屋滞留水の処理 実現すべき姿 ·α核種除去設備の運用を開始し、プロセス主建屋、HTI建屋をド ・全号機の使用済燃料ブールの燃料の取出しを完了する。 ・健全性評価手法により原子炉建屋の劣化状況を点 ・取り出した燃料デブリを安定な状態 (2033年度) ライアップする。 検・評価する。 で保管する。 炉内環境の最適な管理 ・ALPS処理水の計画的な海洋放出を 汚染水発生の抑制 ・デブリの状態、汚染水の発生等を総合的に考慮し、炉を最適な 長期使用する廃炉設備について、設備の経年劣化 ・原子炉建屋の局所止水を完了する。 冷却方法(空冷/掛け流し等)で管理する。 等のリスクを考慮し、信頼性向上のための設備更新 ALPS treated water discharge ・汚染土壌対策を含む2.5m盤の汚染水くみ上げ抑制策に着手す ・水素リスク及び設備の劣化リスクを考慮して不活性雰囲気を維 等を進める。 持しつつ、放射性物質の拡散リスクも考慮した最適な方法(均圧 ・地すべり対策等の斜面工事を完了する等、外部事 to be steadily continued 象に対する設備・施設の信頼性向上対策を進める。 ・凍土遮水壁・サブドレンの役割と汚染水発生との関係を整理し、 /負圧等)で炉内雰囲気を管理する。 段階的な終了のための計画を策定する。 ・上記の炉内環境の管理方法に対応した保安上の必要な措置 設備の撤去 according to the plan について整理を行う。 ·ALPS処理水貯槽タンクを含む不要設備の計画的な 撤去を進める。



今後具体的な実施内容に 係る検討が必要な目標





Some of the examples of the discussions at the Oversight and Review Meeting, which involves external experts and local stakeholders in addition to NRA Commissioners, NRA staff and TEPCO At the meeting on 5 October,

- One representative of the local community (provisional translation)
  - The period of the ALPS treated water discharge indirectly has influence on the feeling of the local people whether they want to come back and live in Futaba town. After a long time and difficulties, the ALPS treated water discharge was started in August. We have a slight hope that discharge could be completed not in 30 years but in 15 years, and then the land could be cleared up with the tanks being removed. · · · · · Doesn't TEPCO have a plan to speed up the activities related to the discharge?
- Another representative of the local community
  - For a while at the beginning, I hope the discharge is implemented slowly confirming safety and reducing everyone's worry and anxiety. After for example 5 years, if there have been no negative influence and more could be discharged, I think the discharge could be speeded up.





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## 2. Inspection



### Status of Operational Safety Inspection and Periodic Safety Inspection

### Operational Safety Inspection (continued during operation)

- ✓ Resident inspectors verify, as necessary, whether the operation is adequately conducted according to the approved IP, including the check points below.
- ✓ So far, no safety issue has been confirmed through operational safety inspection.

#### 1. Operation management (approx. once/week)

- ✓ Operation status at each step (1. receiving, 2. measurement/confirmation, 3. discharge), decisions made by a responsible person at the holding points
- ✓ Maintenance status based on the plan
- ✓ Status of education and training

#### 2. Quality assurance (approx. once/month)

✓ Quality assurance activities on analysis of ALPS treated water, tritium analysis during discharging operation

#### 3. Project management (approx. twice/week)

- ✓ Hearing of the status of project management
- ✓ Observing the operator's relevant meetings (e.g., safety risk management meeting, ALPS treated water program team meeting)
- ✓ Status of establishing the annual discharge plan

#### 4. Trouble management (each time)

- ✓ Status of discharge suspension by usual or emergency process in response to unusual events
- ✓ Status of countermeasures and corrective actions to troubles such as equipment failure or leakage.

## 2. Inspection



In the case of the incident on 24 April, interruption of power supply, the resident inspectors confirmed:

- Discharge was immediately shut down by the emergency isolation valves as designed.
- After operator's check on the status of the facility, discharge was restarted according to the operator's manual established in advance.

### Periodic Safety Inspection (19 Dec 2023, 28 Feb 2023)

- ✓ Periodic safety inspection was conducted on measurement/confirmation facility:
  - Circulation performance
  - Agitation performance
  - Operation Status



### 3. Independent monitoring

✓ NRA's independent source 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 TEPCO's analysis for the first batch was valid.

#### After the start of discharge

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)

Result TEPCO's analysis for the second batch was valid

The next analysis in the same manner as the second analysis is being planned for 2024.



Thank you for your attention.