Countermeasures for Contaminated Water at TEPCO's Fukushima Daiichi NPS

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METI
Ministry of Economy, Trade and Industry

Contents

1. Summary of the Status

Statements of Prime Minister

1. “Some may have concerns about Fukushima. Let me assure you, the situation is under control.”
2. “Influence of contaminated water is only observed in the limited area in the port of Fukushima Daiichi NPS (less than 0.3 km^2)”

1. Summary of the Status

Outside the port, almost radio activities have been not detectable

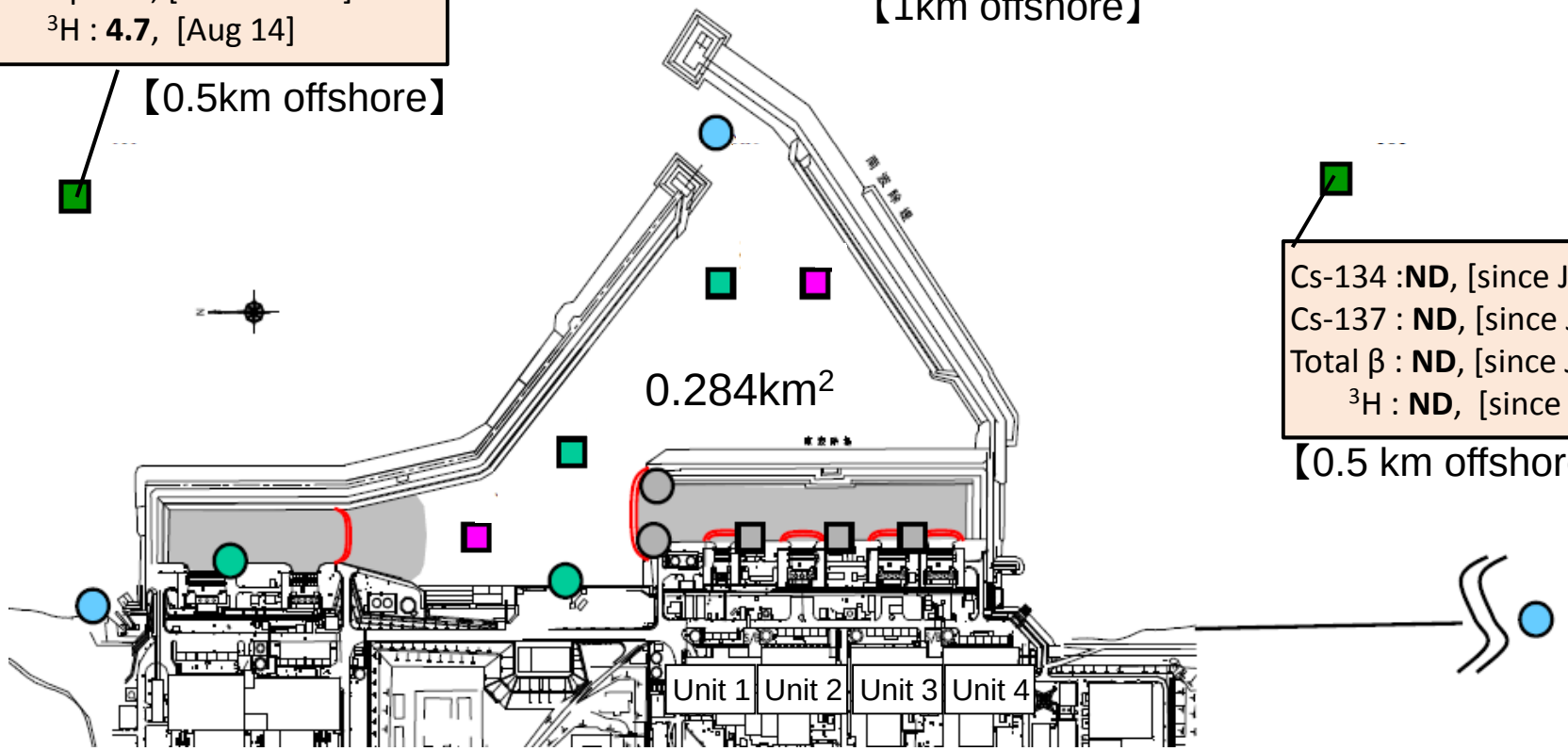
Unit: Bq/L, **ND**: Not detectable, [sampling date]

Cs-134 :**ND**, [since Jun 14]
Cs-137 : **ND**, [since Jun 14]
Total β : **ND**, [since Jun 14]
^{3}H : **ND** [since Jun 14]

【1km offshore】

Cs-134 :**ND**, [since Jun14]
Cs-137 : **ND**, [since Jun 14]
Total β: **ND**, [since Jun14]
^{3}H : **4.7**, [Aug 14]

【0.5km offshore】



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Cs-137 : **ND**, [since Jun 14]
Total β : **ND**, [since Jun 14]
^{3}H : **ND**, [since Jun 14]

【0.5 km offshore】

Data from TEPCO http://www.tepco.co.jp/en/nu/fukushima-np/f1/smp/2013/images/2tb-east_13091101-e.pdf

1. Summary of the Status

The results of monitoring of sea water in Japan are constantly below the standard of 10 Bq/L

- WHO's Guidelines for Drinking-water Quality: guidance levels for Cs-134 and Cs-137 are respectively 10 Bq/L.
- "Guidelines for Radioactive Substances in Bathing Areas" released by Ministry of Environment gives an instruction regarding the water quality for municipalities to open bathing areas as follows; the concentration of radioactive Cs (Cs-134 and Cs-137) is lower than or equal to 10 Bq/L.

Safety of food and water

- Japan adopts the world highest level of standard for food and water, and conducts strict monitoring and distribution management. In practice, even in Fukushima Prefecture where the accident occurred, annual radiation exposure from food and water is lower than one hundredth of 1mSv.
- Food safety is secured by (1) setting of the limits harmonized with the guideline levels of Codex Alimentarius, which is 1 mSv/year, (2) rigorous inspections, and (3) prompt restriction of food distribution.
- The monitoring of radionuclide levels of food in Japan was conducted for 412,959 items from 1st April 2012 to 31st August 2013, and among them only 2,866 items (0.69%) exceeded the limits.
- Products exceeding the limits are disposed. Also, the distribution of products exceeding the limits is prevented through the restriction of shipment in areas where those products are found. Therefore, the safety of foods currently on the market is guaranteed.
- For further information, please refer to the following site of the Ministry of Health, Labor and Welfare.

http://www.mhlw.go.jp/stf/kinkyu/0000020539.html

2. The New Proactive Role of the Government of Japan

Statements of Chief of Cabinet Secretary at the first meeting of the Inter-ministerial Council for Contaminated Water and Decommissioning Issues on September 10

"The Government of Japan plays a further proactive role in implementing the countermeasures for the fundamental settlement, in the preventive and multi-layered manner beyond the follow-up measures like in the past."

2. The New Proactive Role of the Government of Japan

Basic Policy

In order to realize the restoration and revitalization of Fukushima as soon as possible, it is matter of urgency to fundamentally settle the contaminated water issue.

1. The GoJ has determined to play a proactive role in TEPCO's implementing the necessary countermeasure.
2. Beyond the follow-up measures, the preventive and multi-layered measures will be taken through identification of any potential risks.
3. The appropriate measures will be taken through intensive examination in order not to miss new events and to minimize the influence of them.

Government Initiatives

1. Inter-ministerial council
2. Intergovernmental liaison office
3. Intergovernmental council for coordination

Enhanced Organizational Structure

4. Progress management and risk identification
5. Financial support
6. Monitoring activities, prevention of reputational damages, reinforcement of global communications

2. The New Proactive Role of the Government of Japan

2.1 Concrete Actions based on the Basic Policy

- The "Basic Policy for the Contaminated Water Issue at the TEPCO's Fukushima Daiichi Nuclear Power Station" (Nuclear Emergency Response Headquarters' decision on September 3, 2013) presents the followings.

i. Regarding each of the potential challenges, by sharing the procedures and the schedule among the concerned Cabinet Ministers, **a system to mobilize the related technologies and expertise at home and abroad, and to implement the countermeasures of the entire Government will be developed**. ⇒『Domestic and Overseas Expertise & Wisdom』

ii. In executing the necessary countermeasures, rather than the follow-up measures like in the past, **preventive and multi-layered measures will be taken through identification of any potential risks**. ⇒『Preventive and Multi-Layered Approach』

iii. Appropriate measures will be taken through intensive examination in order **not to miss new events and to minimize the influence of them**. ⇒『On-Site Focus』

iv. **Information sharing with the international community** on the causes of events, the progress of countermeasures, and radioactive situations of the environment and foods **will be strengthened**. ⇒『Reinforcement of Global Communications』

2. The New Proactive Role of the Government of Japan

2.1 Concrete Actions based on the Basic Policy

1. Approach for Making Use of Domestic and Overseas Wisdom and Expertise

➢ **A team will be established to collect wisdom/expertise at home and abroad on potential risks accompanying technical difficulties, and proposals of countermeasures will be broadly invited.** (Received proposals will be closely examined mainly by the Committee on Countermeasures for Contaminated Water Treatment.)

【To be intensively carried out from the middle of this month, and provisionally summarized in **2 months**. Also in future as necessary】

2. Preventive and Multi-layered Approach

➢ **The Committee on Countermeasures for Contaminated Water Treatment**, based on site considerations, **will identify potential risks and add countermeasures when necessary.** 【To be intensively carried out from the middle of this month, and provisionally summarized during this calendar year. Also in future as necessary】

➢(Rather than leaving to TEPCO), the Committee on Countermeasures for Contaminated Water Treatment will carry out the necessary on-site investigation. 【To be carried out as necessary】

3. On-Site Focused Approach

➢ Through daily on-site work and patrols, **new events will be quickly discovered and reported.**
The Intergovernmental Liaison Office for Contaminated Water Issue will **check the progress of measures**. 【Daily】

➢ At the Intergovernmental Council for Fostering Mutual Understanding on the Contaminated Water Issue, the views from a wide-range of on-site parties will be taken into account, **measures will be reviewed and revised, potential risks will be identified**, and coordination will be made with the Council for the Decommissioning of TEPCO's Fukushima Daiichi NPS. 【In principle monthly (Secretariat meetings weekly)】

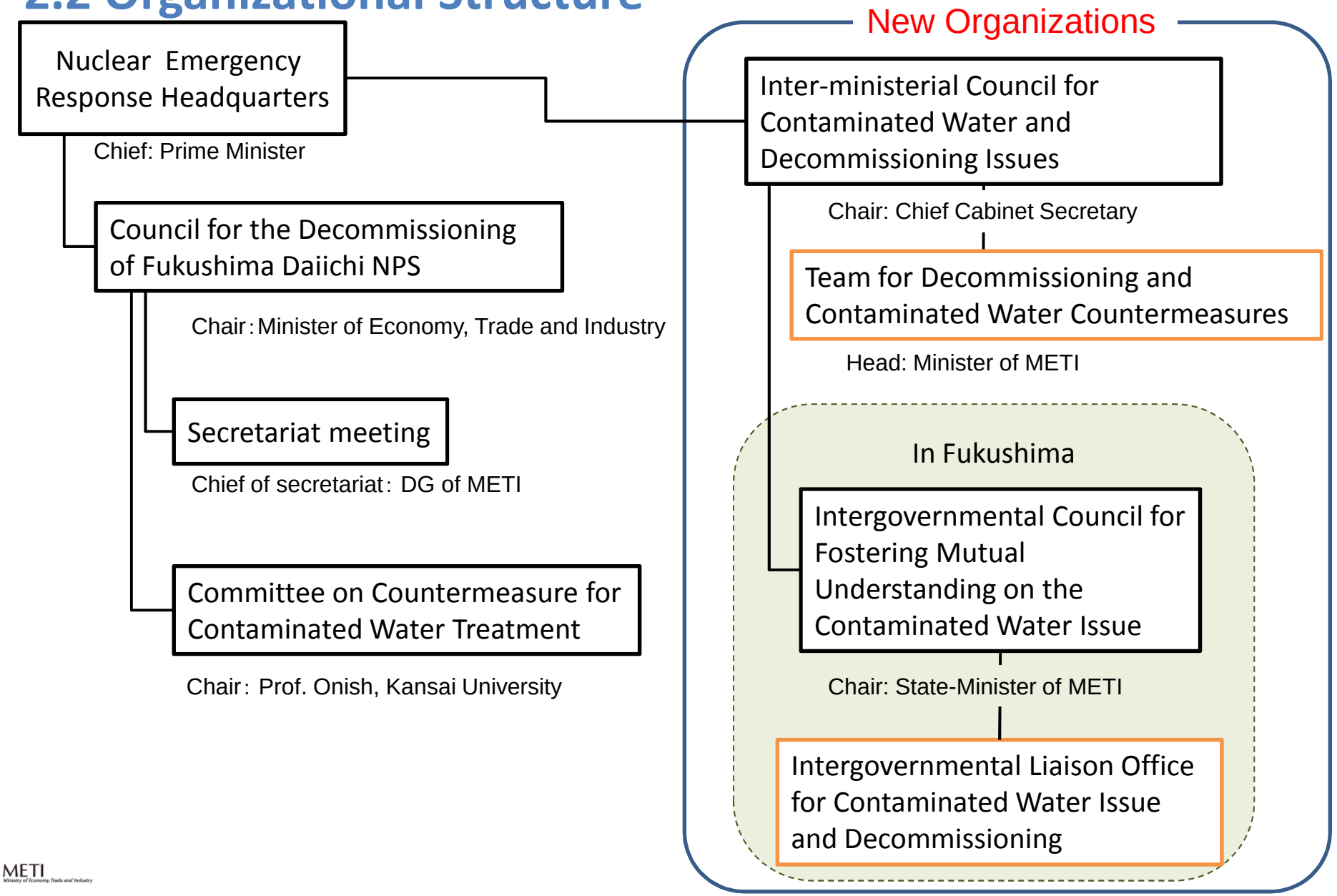
4. Reinforcement of Global Communications

➢ In addition to **related ministries' and agencies' prompt preparation and dissemination of primary information in foreign languages** (including on the progress of contaminated water countermeasures, radioactive situations of the environment and foods), the **Contaminated Water and Decommissioning Issues Team** will **summarize and disseminate primary information** corresponding to domestic and overseas needs. 【To be carried out immediately】

➢ Regarding global communications, in addition to providing information including primary information through embassies abroad and to the foreign diplomatic corps in Japan and the strengthening of it, with the cooperation of related ministries and agencies, **International Public Relations Office of Cabinet Secretariat will proactively communicate to foreign media**. 【To be carried out immediately】

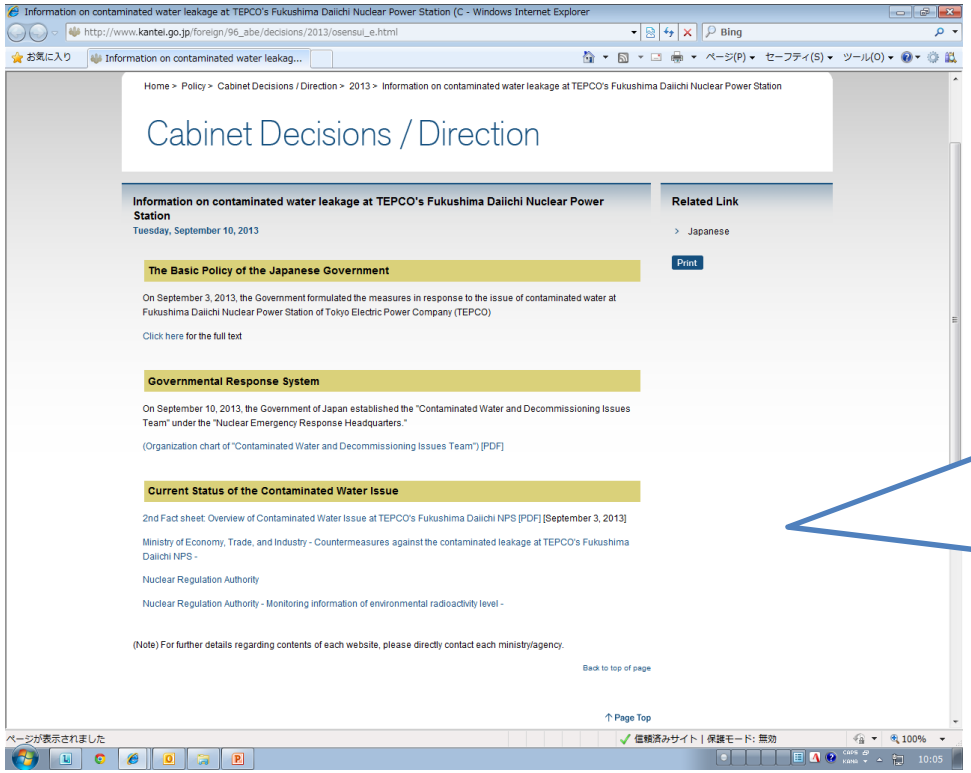
2. The New Proactive Role of the Government of Japan

2.2 Organizational Structure



2. The New Proactive Role of the Government of Japan

2.3 Sharing information with the international community



Links to the other ministries' information such as NRA and METI

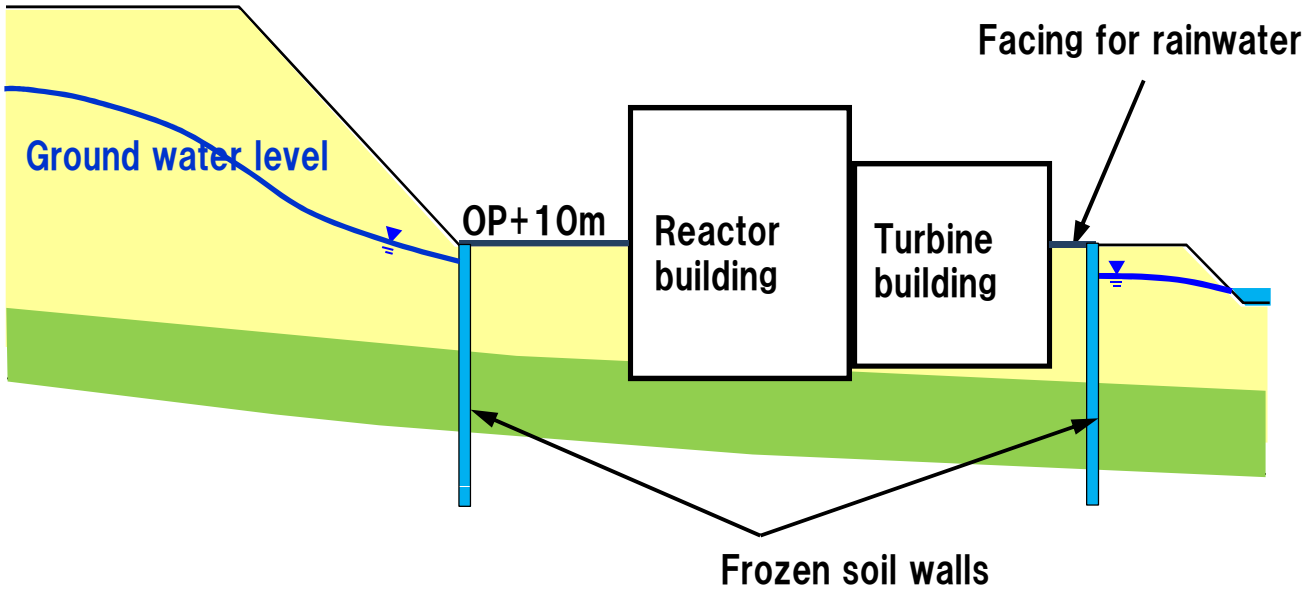
Other information will be added.

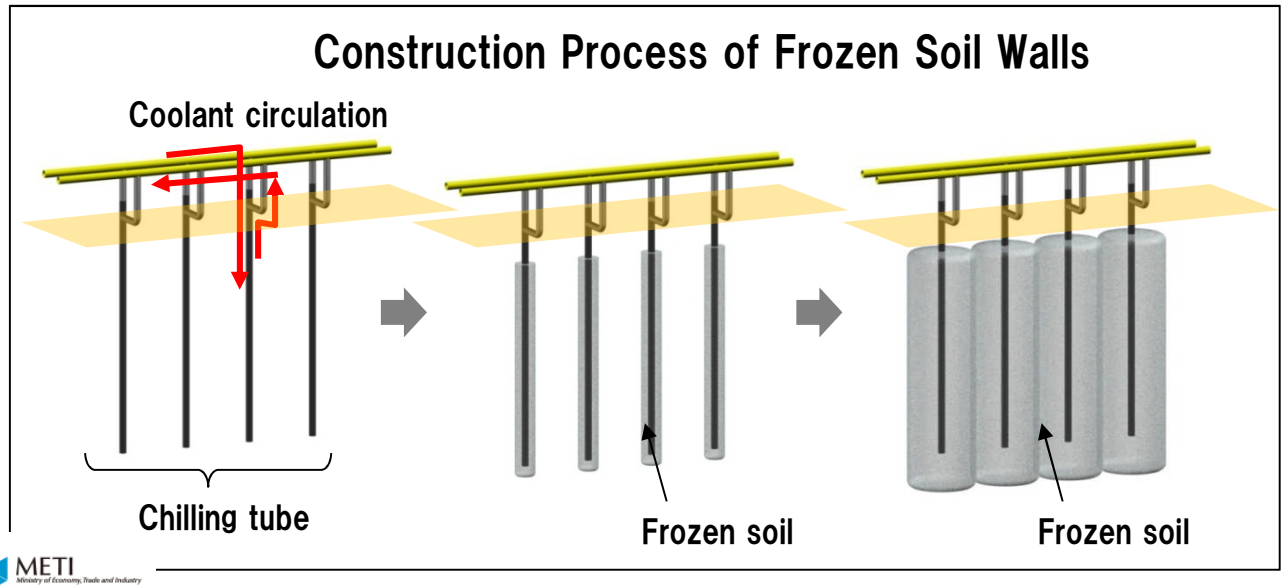
http://www.kantei.go.jp/foreign/96_abe/decisions/2013/osensui_e.html

- Close Cooperation with IAEA
  - 1st IAEA Peer Review Mission on Decommissioning (04/15/2013 – 04/22/2013)
  - 2nd Mission to be scheduled in this autumn

2. The New Proactive Role of the Government of Japan

2.4 Financial Support on Frozen Soil Method





Budget
32billion yen (320 million US$)

Purpose
- Reduction of the amount of ground water inflow around the reactor buildings

Technical Challenges
- Large-scale
- Long-term operation etc.

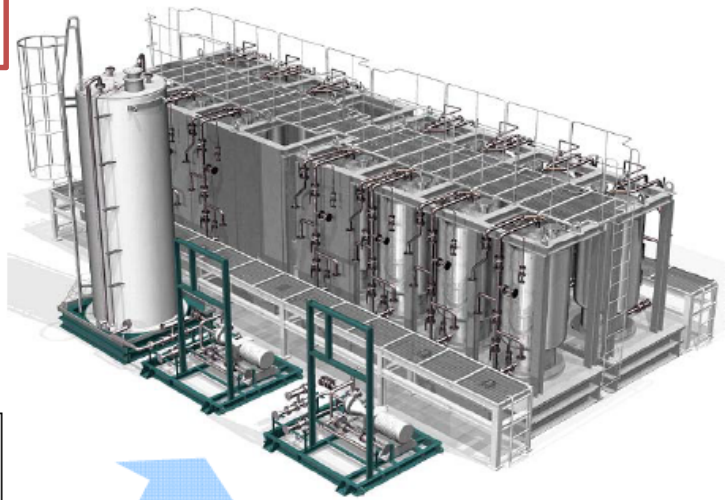
2. The New Proactive Role of the Government of Japan

2.4 Financial Support on More Efficient Multi-nuclide Removal Equipment

Purpose
- Reduction of the amount of contaminated water

Technical Challenges
- Reduction of the secondary waste etc.

Budget
15billion yen (150 million US$)



2. The New Proactive Role of the Government of Japan

2.5 Collecting Domestic and Overseas Expertise & Wisdom

1. Approach for Making Use of Domestic and Overseas Wisdom and Expertise

➢ **A team will be established to collect wisdom/expertise at home and abroad on potential risks accompanying technical difficulties, and proposals of countermeasures will be broadly invited.**

(Received proposals will be closely examined mainly by the Committee on Countermeasures for Contaminated Water Treatment.)

【To be intensively carried out from the middle of this month, and provisionally summarized in **2 months**. Also in future as necessary】

✓ **Portal for proposals to be opened soon**

✓ **Acceptance period: 1 month**

✓ **To be announced in the METI website**

http://www.meti.go.jp/english/earthquake/nuclear/decommissioning/index.html

International Research Institute for Nuclear Decommissioning (IRID) will also play a central role to collect expertise from all over the world

Thank you for your attention!

Agency for Natural Resources and Energy, METI

Please visit the following website for further information.
http://www.meti.go.jp/english/earthquake/nuclear/decommissioning/

Part 2: Detail Information

1. Major Chronologies
2. Contaminated Water
   - 2-1. Three PRINCIPLES for Contaminated Water Issue
   - 2-2. Basic Policy for the Contaminated Water Issue
   - 2-3. Overview of Countermeasures
   - 2-4. Schedules of Key Countermeasures
   - 2-5. image of Countermeasure
3. Decommissioning (D&D)

1. Major Chronologies

August 7

Nuclear Emergency Response Headquarters confirmed the 3 principals for the countermeasures dealing with the contaminated water issue

September 3

Nuclear Emergency Response Headquarters decided the "Basic Policy for the Contaminated Water Issue at the TEPCO's Fukushima Daiichi NPS"

The Government of Japan has decided, mobilizing expertise of all the government authority, to play a further proactive role in taking countermeasures against the issue.

September 10

1st meeting of Inter-ministerial Council for Contaminated Water and Decommissioning Issues confirmed the "Concrete Actions based on the Basic Policy"

2-1. Three Principle for Contaminated Water Issue

1. ISOLATING the contamination source

① Pumping up groundwater from the mountainside and near the reactor buildings

② Installation of the land-side impermeable wall using a soil freezing method

2. REMOVING the contamination source

③ Removing the highly contaminated water in the trenches

④ Contaminated water treatment(multi-nuclide removal equipment (named ALPS))

3. PREVENTING LEAKAGE

⑤ Soil improvement with sodium silicate (liquid glass) and rainproof pavement

⑥ Installation of the sea-side impermeable walls

2-2. Basic Policy for Contaminated Water Issue

Basic Policy: In order to realize the restoration and revitalization of Fukushima as soon as possible, it is matter of urgency to fundamentally settle the contaminated water issue.

1. The Government of Japan(GoJ) has determined to play a proactive role in TEPCO's implementing the necessary countermeasure.
2. Beyond the follow-up measures, the preventive and multi-layered measures will be taken through identification of any potential risks.
3. The appropriate measures will be taken through intensive examination in order not to miss new events and to minimize the influence of them.

Government Initiatives

1. Inter-ministerial council

The GoJ establishes "Inter-Ministerial Council for Contaminated Water and Decommissioning Issues" under the Nuclear Emergency Response Headquarters. It aims to mobilize the related technologies and expertise at home and abroad for the earliest and fundamental settlement of the contaminated water issue and to enable the entire Government to implement the necessary countermeasures.

2. Intergovernmental liaison office

The GoJ establishes "Intergovernmental Liaison Office for Contaminated Water Issue and Decommissioning" near the TEPCO's Fukushima Daiichi NPS. It aims to strengthen organizational structure, for example, by dispatching liaison staff from the related ministries to the site.

3. Intergovernmental council for coordination

The GoJ establishes "Intergovernmental Council for Fostering Mutual Understanding on the Contaminated Water Issue". It aims to properly responding to the contaminated water issue by strengthening cooperation and coordination among the government and stakeholders such as TEPCO at site and by swiftly responding to the needs of the municipalities and locals, as well as by enhancing information sharing structures and coordination at site.

4. Progress management and risk identification

The GoJ will play a proactive role in managing the process and progress for the sound progress of works on decommissioning and contaminated water countermeasures in addition to strengthening TEPCO's countermeasures. The GoJ will identify all of potential risks through the processes and will constantly consider concrete preventive measures and the way of emergency response utilizing such technical expertise as the Committee on Countermeasures for Contaminated Water Treatment. The timing of the implementation of each measure will be accelerated through consideration of all possible methods such as examinations of the work processes, application and modification of technologies

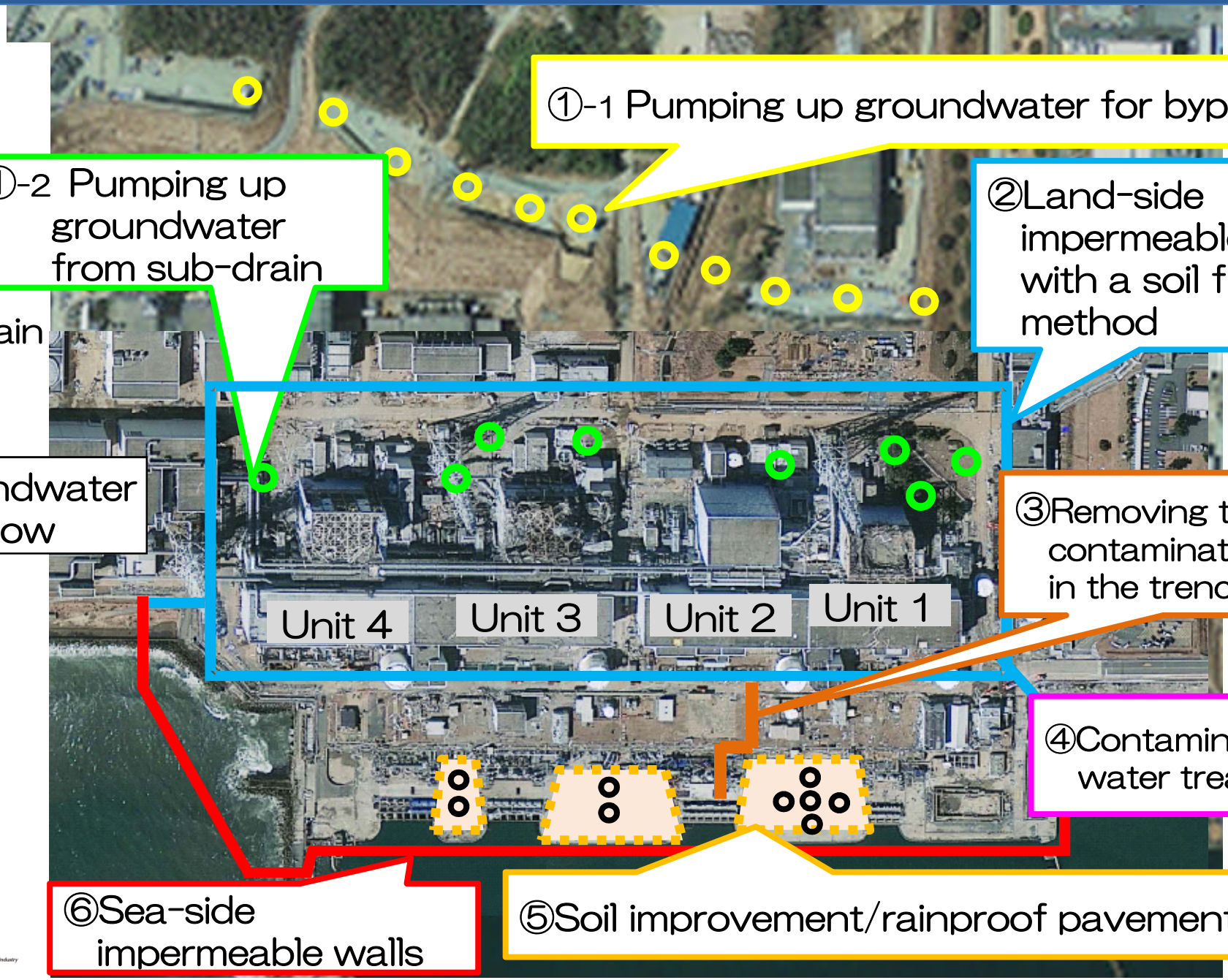
5. Financial support

The GoJ will provide budgetary support for the expenditure of the whole project in order to install the land-side impermeable walls by the frozen soil method and to develop the multi-nuclide removal equipment with superior performance.

6. Monitoring activities, prevention of reputational damages, reinforcement of global communications

In order to prevent reputational damages or misinformation, the GoJ will promptly provide the accurate information on the results of observation of radioactive levels in the sea.

2-3. Overview of Countermeasures



2-3. Overview of Countermeasures

- Contaminated ground water was detected in the area between the turbine buildings and plant port of the Fukushima Daiichi NPS.
- Fundamental countermeasures will be taken in several phases in addition to the immediate countermeasures.

Three principles for contaminated water countermeasures

1. Removing the source of the contamination
2. Isolating ground water from the contamination source
3. Preventing leakage of the contaminated water

Immediate countermeasures

1. Removing water containing high amount of radioactive materials from the trench (underground space where the pipes and electronic cables are set) (start from August 22)【Removing】
2. Improving the soil by sodium silicate (liquid glass), paving the land surface with asphalt, pumping out the underground water (pumping out: start from August 9) 【Isolating】【Preventing leakage 】
3. Pumping out ground water from the mountain side (Bypassing ground water)【Isolating】

+

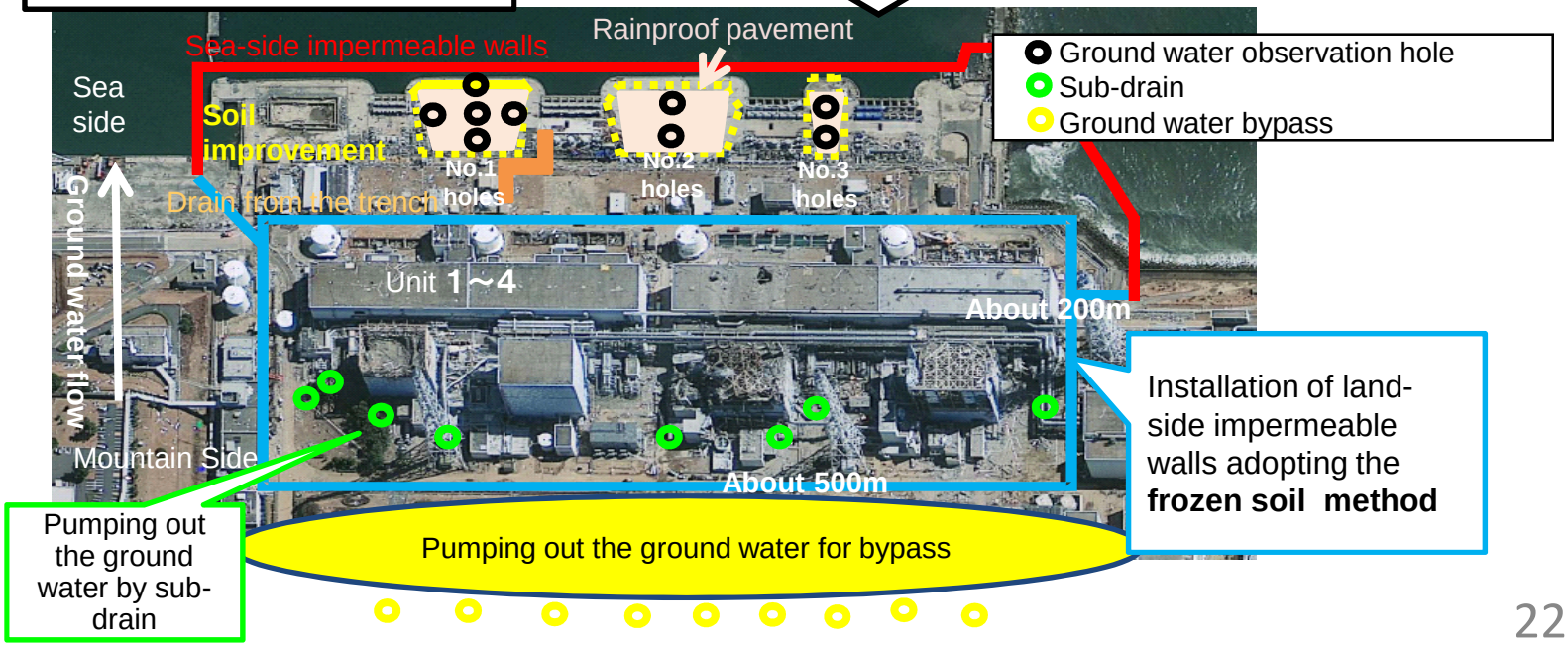
Fundamental countermeasures
(Coming 1-2years)

1. Pumping out the ground water from the sub-drains【Isolating】
2. Installation of sea-side impermeable walls 【Preventing leakage 】
3. Installation of land-side impermeable walls adopting the frozen soil method【Isolating】 【Preventing leakage 】
4. Installation of high performance contaminated water treatment equipment【Removing】 etc.

Current situation of the ground water

TEPCO estimates that the whole area of units 1 to 4 has approx. 1000 m^3 of ground water flow every day and 400 m^3 of this flows into the basement of the facility buildings. And some part of the other water is considered to be contaminated by the water in the trench and flows into the port through the soil.

Overview of the countermeasures



2-3. Overview of Countermeasures

- On August 19, TEPCO found 300 m^3 of highly-contaminated water leakage from a bolted joint tank in the H4 area. TEPCO has been investigating the root cause.
- TEPCO inspected all of bolt jointed tanks (305 units) on August 22 in accordance with the direction of METI. TEPCO found traces with high dose on two other tanks at near the bottom of the shell. These traces had dried up already and there was no indication that the leaked water had flowed out the dike. Also, the stored water level of each tank had been the same level as that of the beginning of storage.
- TEPCO started transfer of contaminated water from the leaking tank from August 19 and completed it on August 21.

Directions of METI

1. **Enhanced management of the tanks and the surrounding area** (the switch to "normally closed" drain valve operation from "normally open," reinforcing concrete at the bottom of the tanks, installation of water level gauges and leak detectors into the bolted joint tanks, and introduction of a central control system)
2. **Reinforced patrol** (increase of patrols from twice to four times a day, and checking & recording dose levels as well as detailed information)
3. **Accelerated replacement from bolted joint tanks to welded joint tanks**
4. **Acceleration of the highly-contaminated water treatment (operation of ALPS* from mid-September) and a decrease of radiation dose of the surrounding area by collecting the contaminated soil**
5. **Identification of the risks of storing highly-contaminated water and taking actions against the risks**

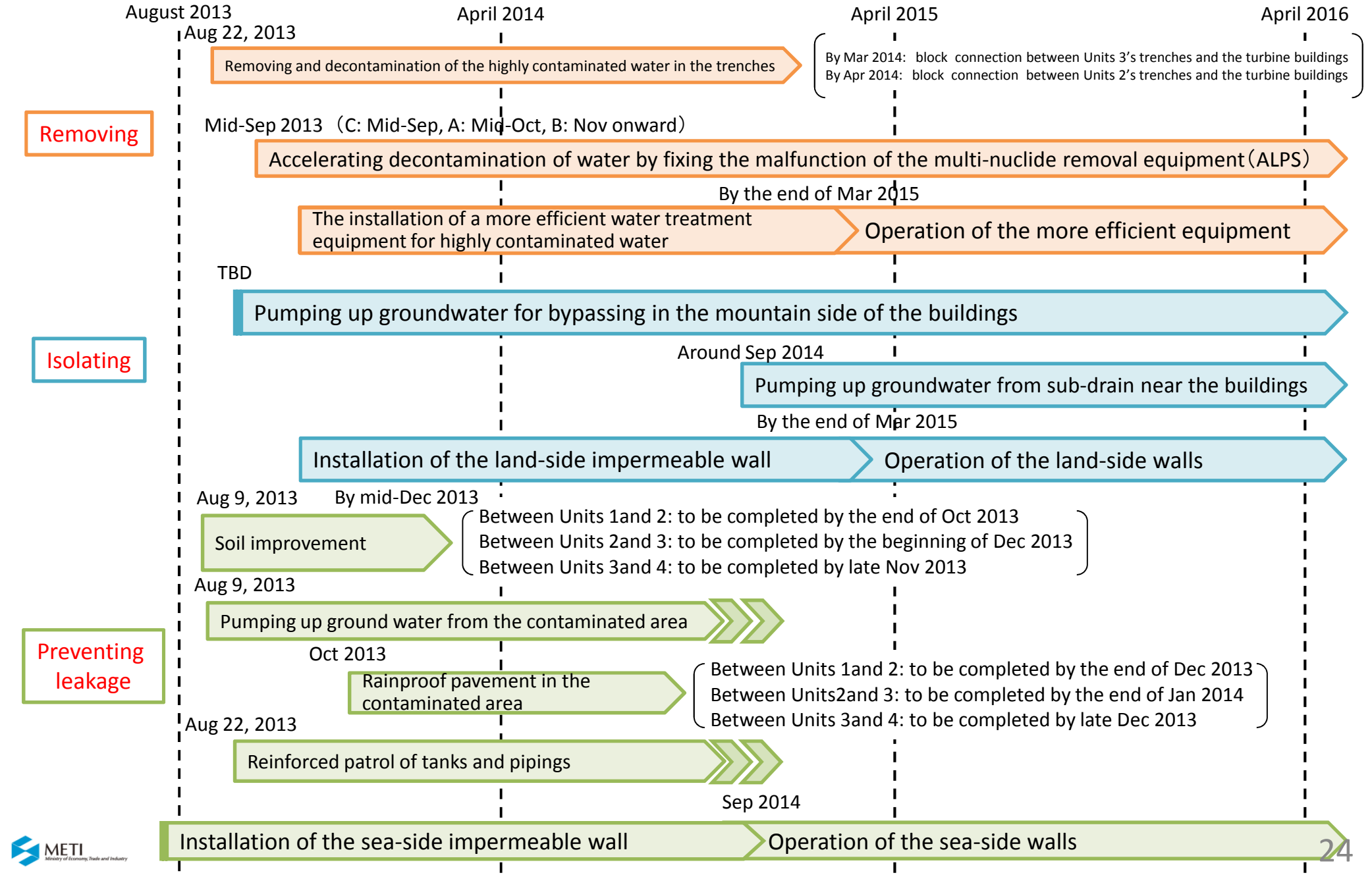
*ALPS: Advanced Liquid Processing System, multi-nuclide removal equipment

Major Countermeasures of TEPCO

1. **Total inspection of bolted joint tanks:**
2. **Water transfer from tanks, similar to No.5 tank, which were moved after installation :** Transfer of contaminated water from the two tanks with a similar history to H4-I-No.5 tank had started. One of them completed on August 27.
3. **Contaminated soil collection :** Start from August 23. It is under examination for the early completion.
4. **Inspection and reinforcement of the surrounding dikes:** The dikes around the tanks were confirmed not to be contaminated on August 22. Land embankments and waterproof sheets have been added to the sandbags outside the H4 area where the leakage occurred.
5. **Enhanced monitoring**: Since August 20, monitoring for the trenches leading to the sea has been enhanced. The possibility of leakage into the sea is under investigation.
6. **Reinforced patrol**: Urgent reinforcement to approx. 50 patrol workers. Adoption of "post responsibility system" at each tank for early recognition of any sign of accident by carefully monitoring situation, and etc.
7. **"Normally closed" drain valve operation for contaminated water tanks:** Switch to "normally closed" drain valve operation from "normally open," in addition to improvement of rainwater management in the dike.

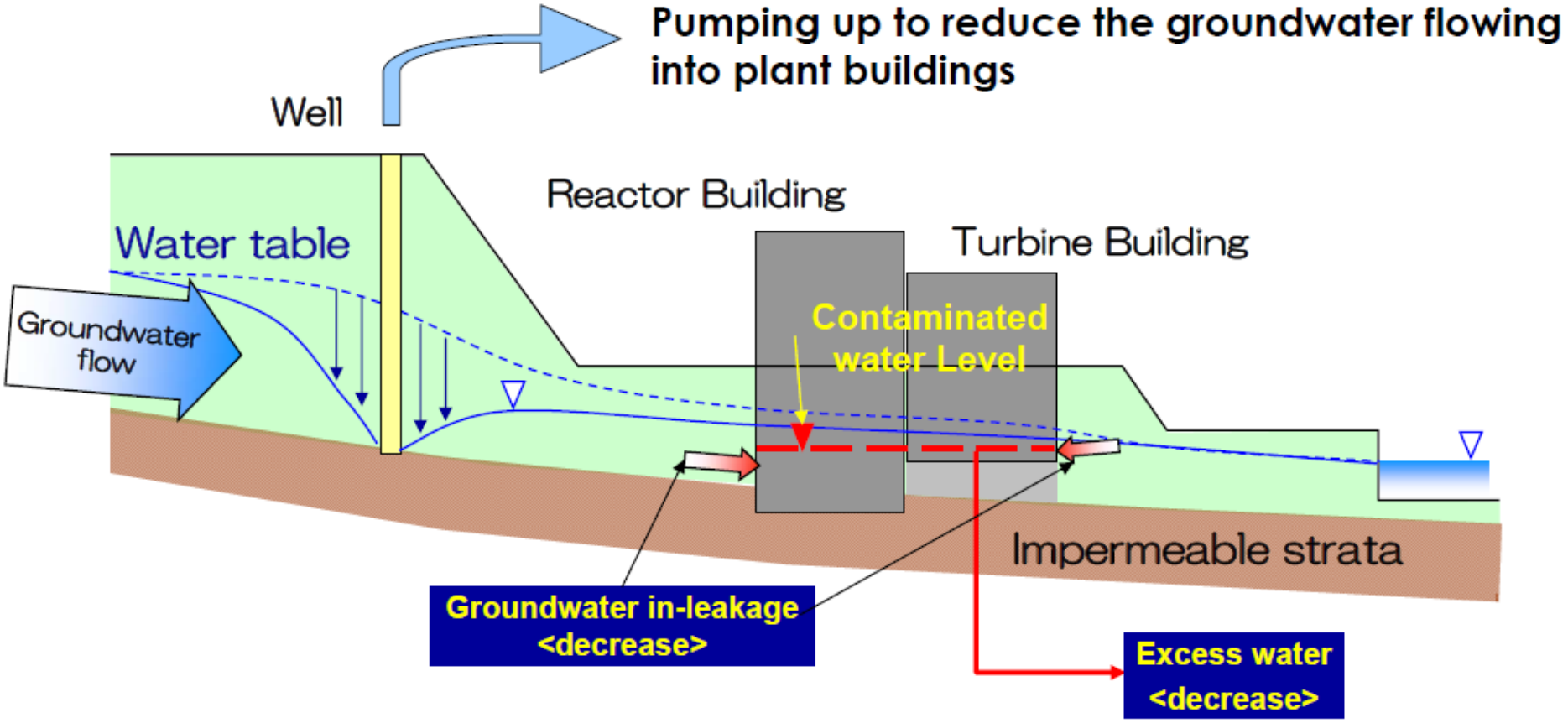
TEPCO is considering to include installation of water level gauges and leak detectors into the bolted joint tanks, introduction of a central control system and replacement from bolted joint tanks to welded joint tanks as its countermeasures.

2-4. Schedules of Key Countermeasures



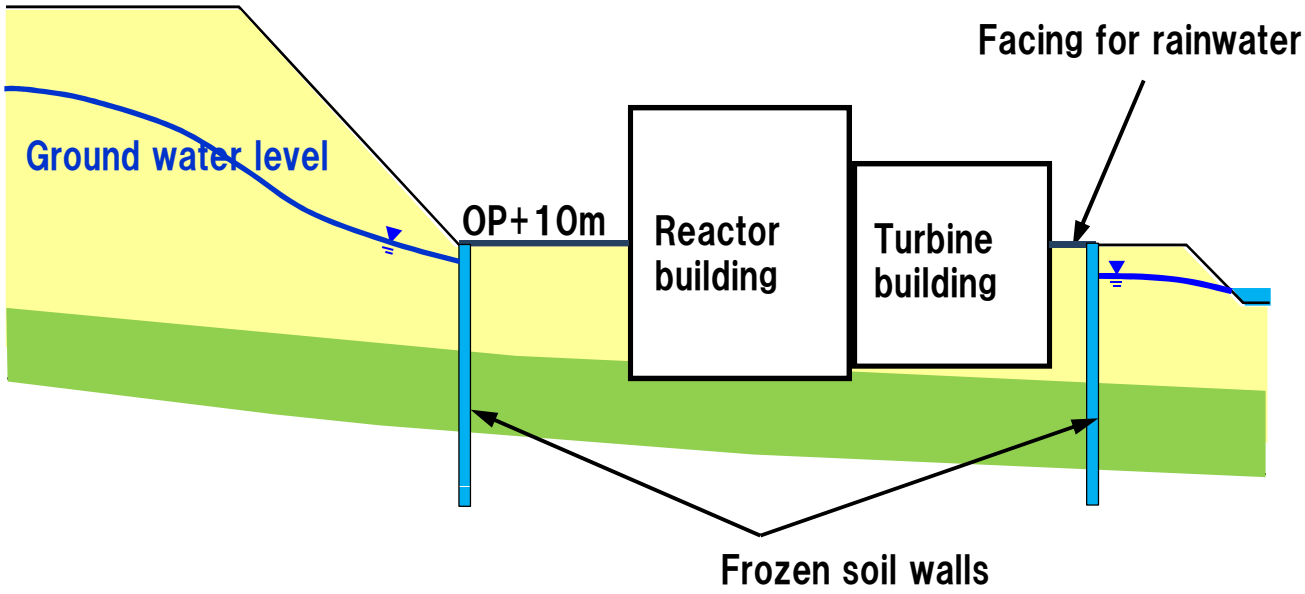
2-5. Image of Countermeasures

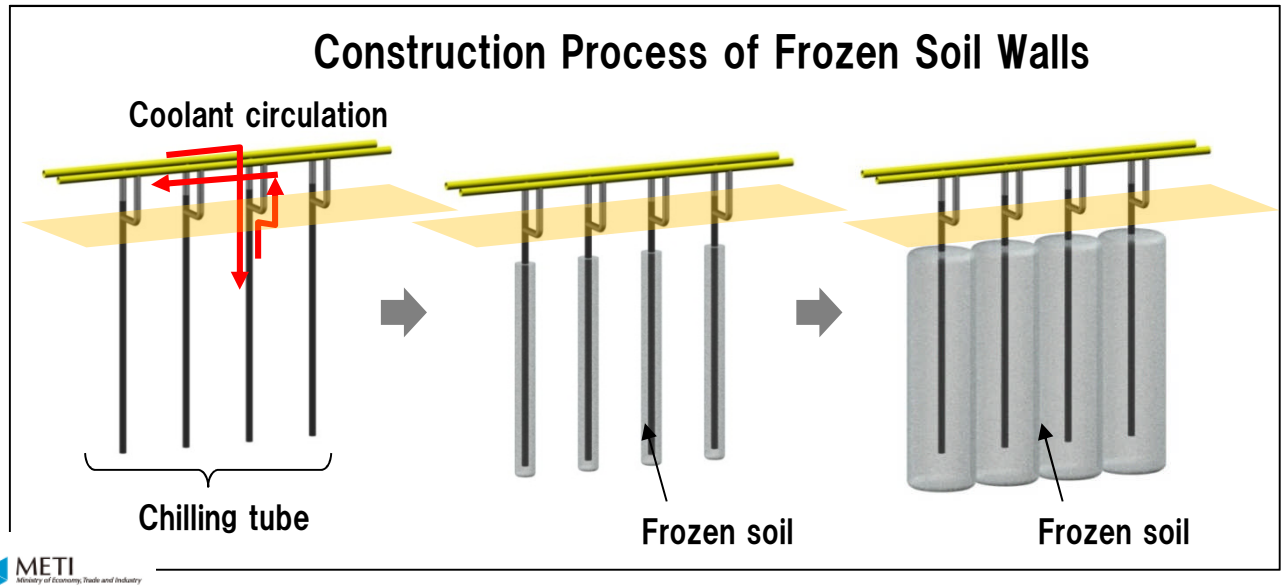
Pumping Up Ground Water for By-pass



2-5. Image of Countermeasures

Frozen Soil Method





Budget
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Purpose
- Reduction of the amount of ground water inflow around the reactor buildings

Technical Challenges
- Large-scale
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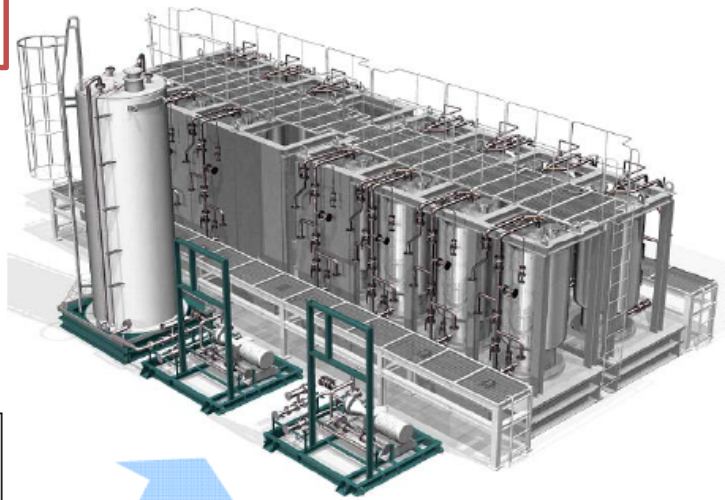
2-5. Image of Countermeasures

More Efficient Multi-nuclide Removal Equipment

Purpose
- Reduction of the amount of contaminated water

Technical Challenges
- Reduction of the secondary waste etc.

Budget
15billion yen (150 million US$)



3. D&D : Three Major Points of the revised Roadmap

1. Re-examining the schedule based on the condition of each unit

- To pursue the possibility of the acceleration of the target data for fuel debris removal
- With multiple option plans for the removal of the fuel rods and fuel debris to fit the on-site situation

2. Strengthening communications with local stake holders and across all levels of society

- Establish the Fukushima Advisory Board (provisional title), with the participation of Fukushima Prefecture, local governments, relevant local organizations, and experts in order to strengthen the information provision and communications.

3. Developing a comprehensive structure to work with international expertise

- Appoint international advisors who provide advice to the R&D management organization
- Establish an international collaboration department in the R&D management organization and an international decommissioning expert group consisting of foreign experts in various fields

3. D&D : Basic Principles of the Revised Roadmap

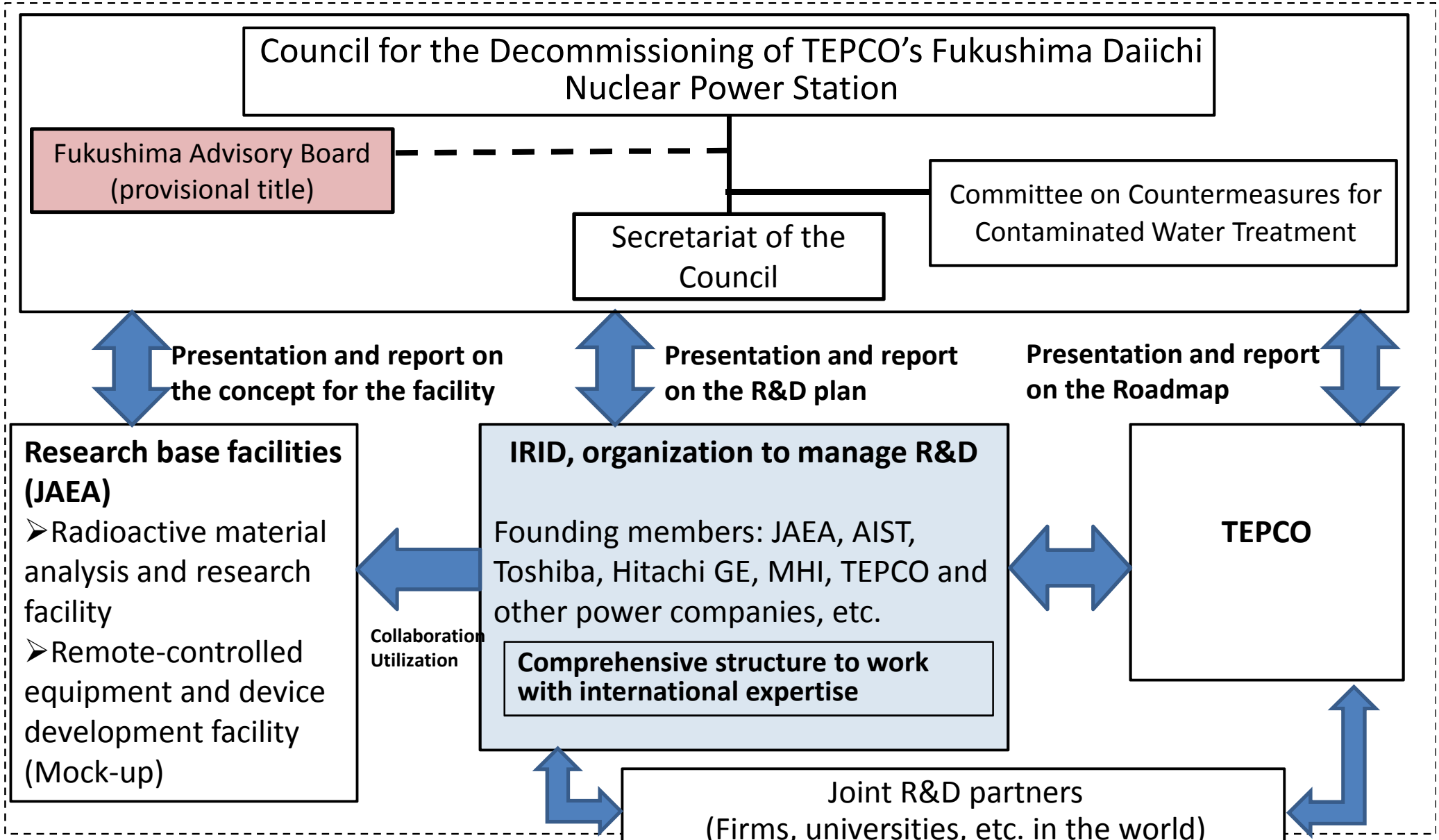
Principle 1: Systematically tackle the issues while placing top priority on the safety of local citizens and workers.

Principle 2: Move forward while maintaining transparent communications with local and national citizens to gain their understanding and respect.

Principle 3: Continuously update the roadmap in consideration of the on-site situation and the latest R&D result.

Principle 4: Harmonize the efforts of TEPCO and Government of Japan to achieve the goals indicated in this Roadmap. **The Government of Japan should take the initiative in promoting the efforts to implement decommissioning measures safely and steadily.**

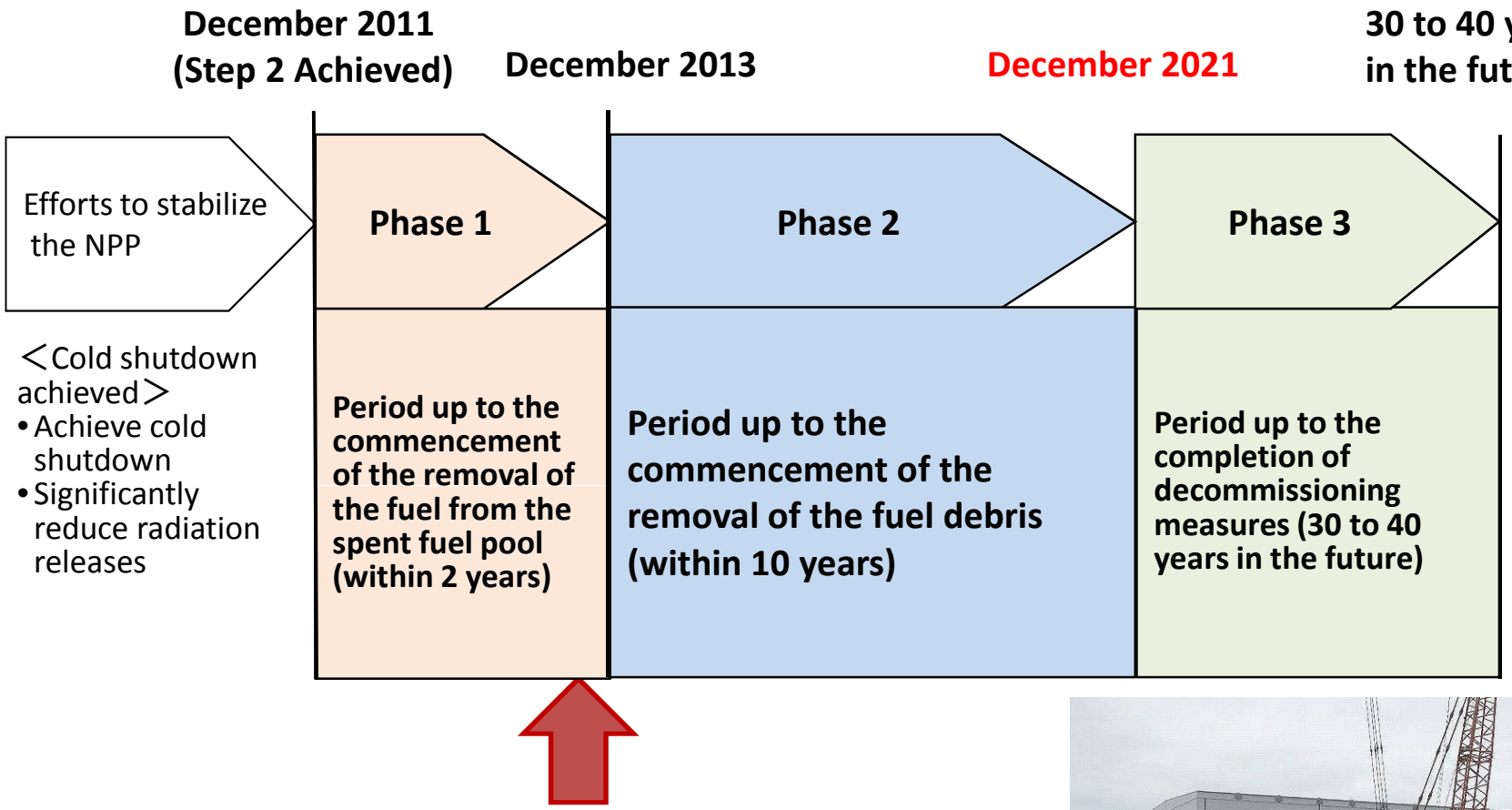
3. D&D : Organizational Structure



3. D&D : Basic Concept for Ensuring Safety

- Ensuring safety as Specified Nuclear Power Facilities (under regulation by NRA)
- Efforts to ensure safety
  - **To set the priority on the removal of the hazards such as fuel rods in Spent Fuel Pool (SFP) and fuel debris as soon as possible**
  - To set the urgent action for the **contaminated water treatment**
  - To consider on safety, gain the understanding of the local and other citizens, consider the holistic plan for the decommissioning, use the best available technologies, and employ the most rational and achievable measures
- Preparations for the Development of New Standards and Regulatory Response Actions

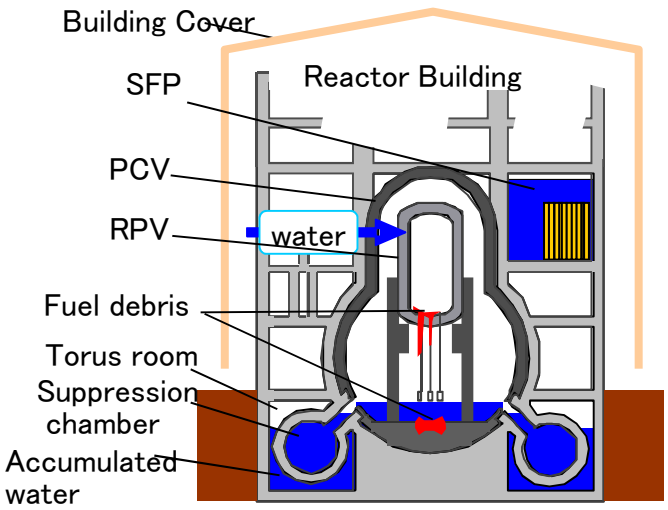
3. D&D : Targets of Roadmap



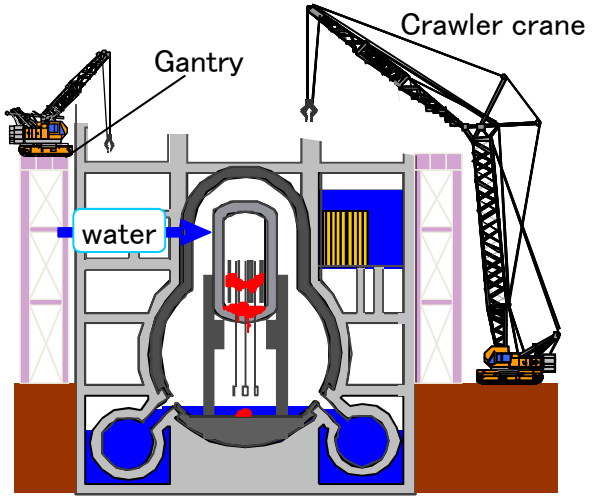
Now: Under preparation of first fuel rods removal from Unit 4 SFP as target of Phase 1

3. D&D : Current Status of Fukushima Daiichi NPP

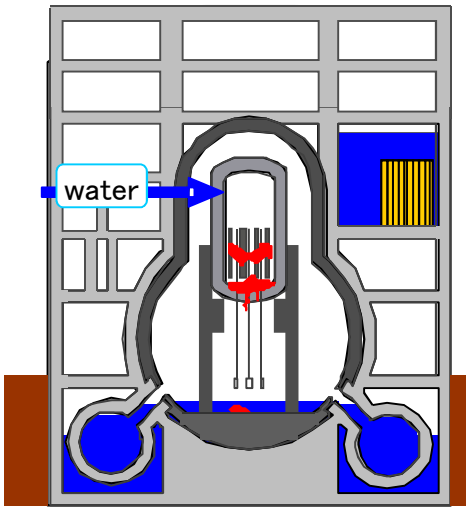
Unit 1



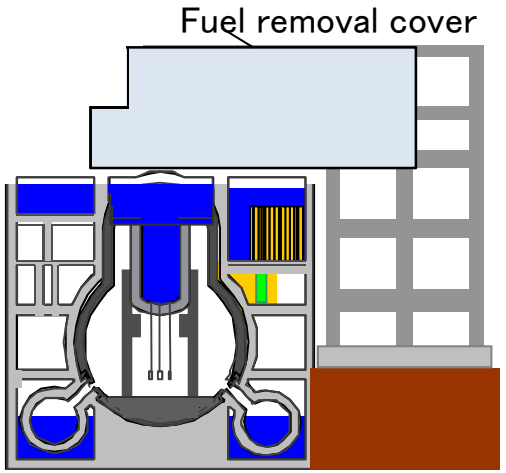
Unit 3



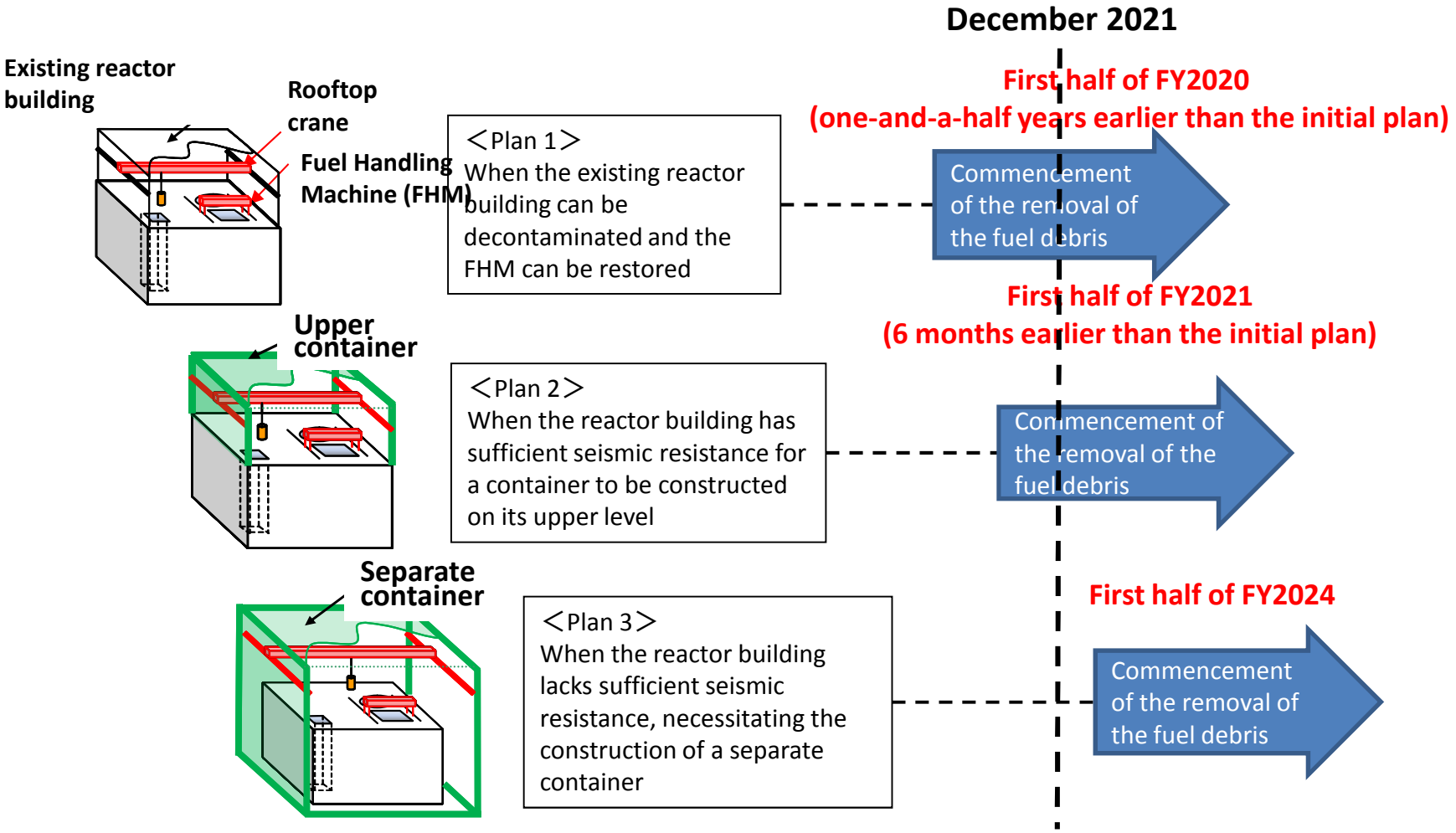
Unit 2



Unit 4



3. D&D : Plan under the Revised Roadmap (example: Unit 2)



Future plans will be narrowed down in the first half of FY2014 based on the results of analysis of the likelihood of the existing reactor building's decontamination or restoration of the FHM, as well as the results of the assessment of the seismic resistance of the existing reactor building.

3. D&D : Planned Schedule for Each Unit (Summary)

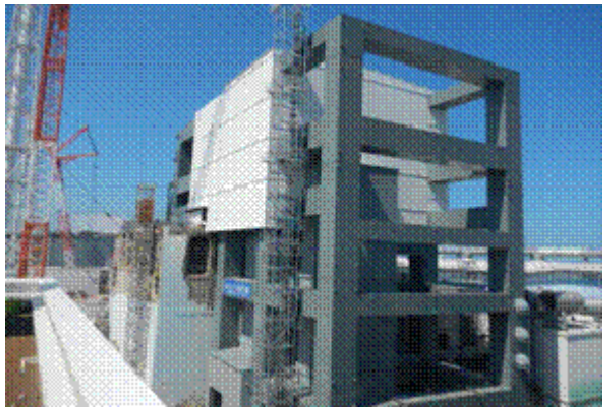
	Fuel rods removal from SFPs (Target schedule)	Fuel debris removal (Target schedule)
Initial Target	December 2013 (the earliest unit)	December 2021 (the earliest unit)
Unit 1	First half of FY2017 (the earliest case) ~ Second half of FY2017	**First half of FY2020 (one-and-a-half years earlier than the initial plan)** ~ **Second half of FY2022**
Unit 2	Second half of FY2017 (the earliest case) ~ First half of FY2023	**First half of FY2020 (one-and-a-half years earlier than the initial plan)** ~ **First half of FY2024**
Unit 3	First half of FY2015	Second half of FY2021 (the earliest case) ~ Second half of FY2023
Unit 4	**November 2013 (one month earlier than the initial plan)**	—

3. D&D : Fuel Rods Removal from SFP

1. Rubble in the upper level of the reactor building needs to be removed(Unit 4: completed, Unit 3: ongoing)
2. A cover or a container for the entire reactor building is to be constructed and the Fuel Handling Machine is to be installed (Unit 4: Under construction)
3. The fuel rods stored in the common pool is to be moved to the temporary cask custody area to make vacancy in the common pool for the fuel removed from the spent fuel pool (SFP)
4. The fuel rods removed from the spent fuel pool of each damaged units will finally be packed into transport containers after confirming the soundness and transported.

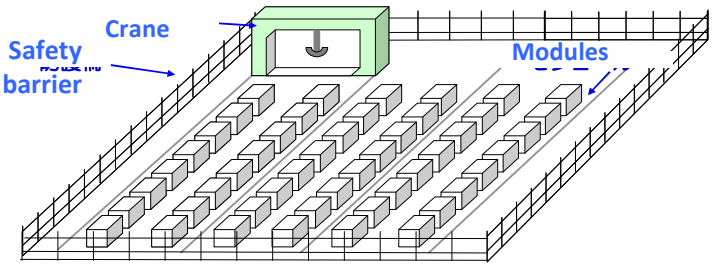
→ <u>Transportation of the fuel rods removed from Unit 4 is scheduled to commence in November 2013.</u>

Fuel Removal Cover on Unit 4



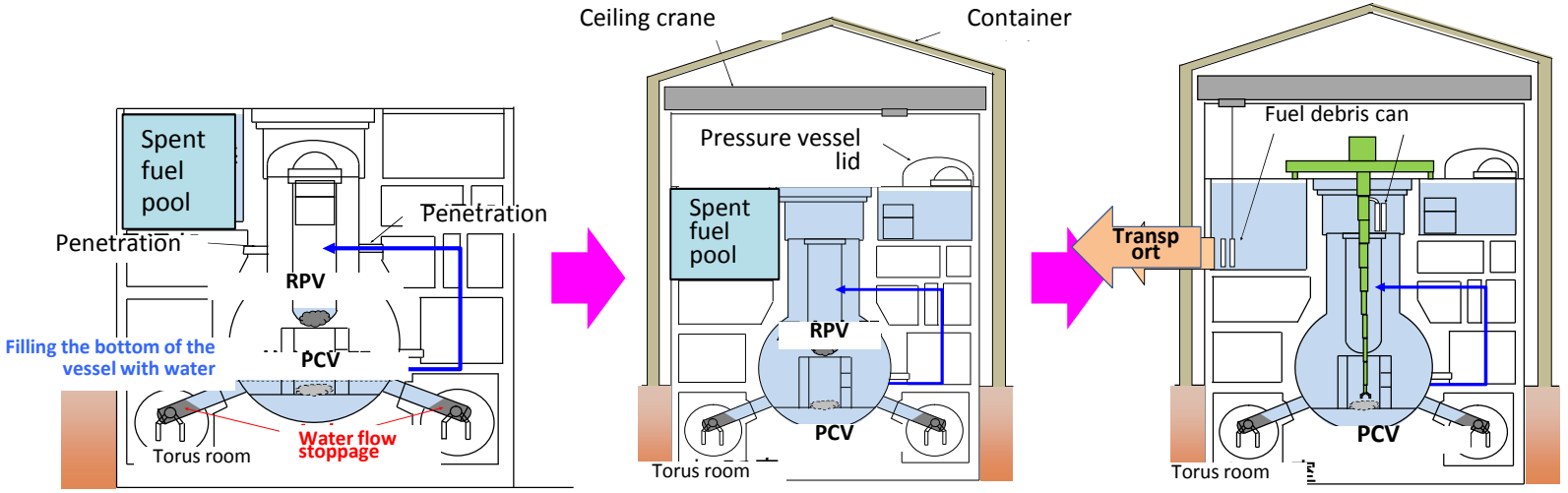
Common Pool

Temporary Cask Custody Area



3. D&D : Work Processes to the Fuel Debris Removal

- **The most reliable method of fuel debris removal is to remove the fuel debris in keeping them covered with water** in terms of reducing the risk of radiation exposure during work processes.
- The fuel debris will be examined and the primary containment vessel (PCV) will be examined and repaired for filling the PCV with water. **Furthermore, R&D for the removal and storage of fuel debris will be implemented.**
- **In addition to the submerged method, backup plans have been considered.**



Rough picture of the process from repairing the bottom of the RCV (water flow stoppage) to filling the bottom of the vessel with water

Rough picture indicating the process of removing the fuel debris

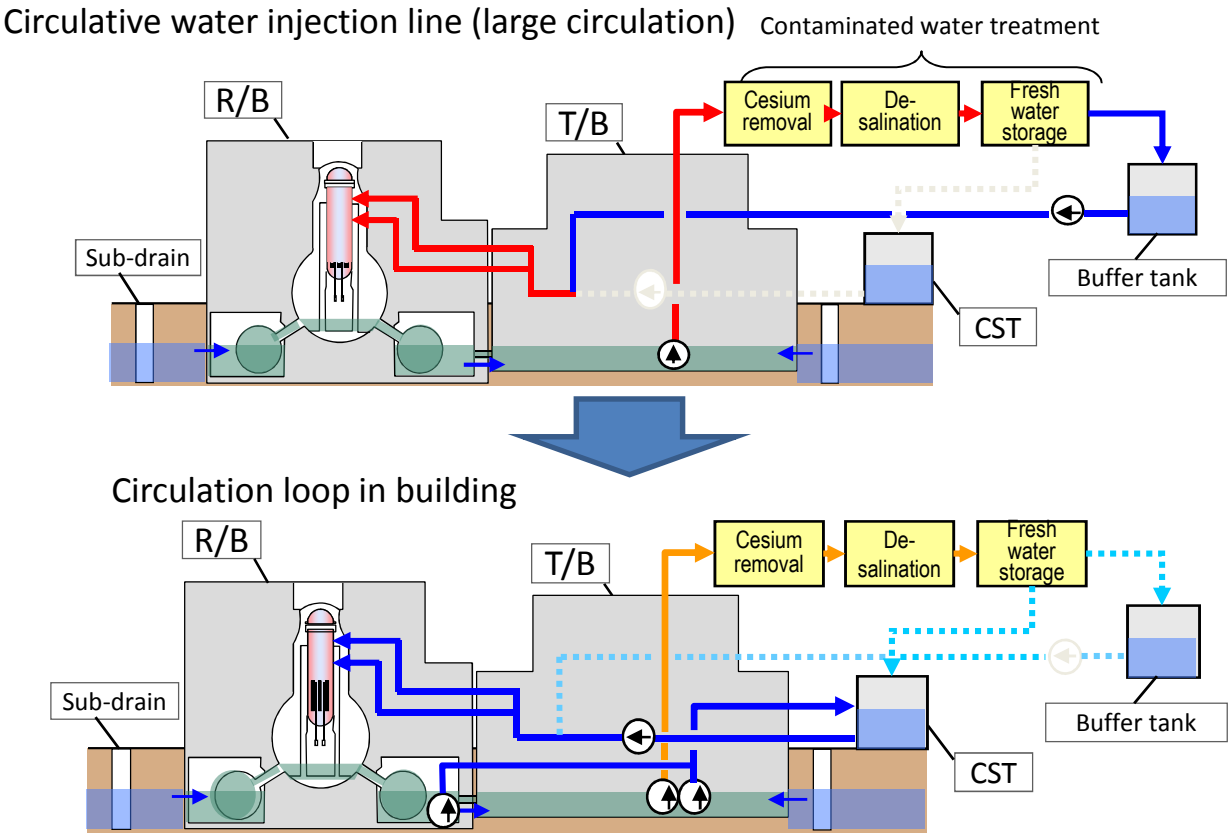
3. D&D : Continuous Monitoring Cold Shutdown State of the Reactors and Cooling Plan

☐ Keep the cold shutdown state

- ➢ Improve backup system of the monitoring temperatures in the PCVs and RPVc

☐ Improving to small circulation loop

- ➢ Completion of constructing circulation loop in buildings by the end of FY2014
- ➢ Study of constructing a small circulation loop (containment vessel circulative cooling) of the reactor water injection line



3. D&D : Radioactive Waste Management and Decommissioning Scenarios

Proper Management and Reduction of Radioactive Waste

- Proper waste management in consideration of environmental effect in and outside the site
- Priority of waste management: Reduce the amount carried in ＞ Minimize waste generation ＞ Reuse ＞ Recycle

Processing and Disposal of Radioactive Waste

- R&D for characterizing and analyzing waste properties will be promoted to explore processing and disposal methods.

Decommissioning Scenarios

- Decommissioning scenarios will be considered and established through gathering worldwide information on how to ensure safety of decommissioning in consideration of end state of facilities.

3. D&D : Personnel Plan and Improvement of Working Environment and Condition

Personnel Plan

- The number of personnel required is estimated at a same level for the next three years.
- Because it will be necessary to work under much higher dose rates in the mid-and-long-term, personnel plans will be reviewed when the Roadmap is revised.

Improving Work Environment and Conditions

- Work safety and health management: Improvement of rest area, heat stroke preventive measures, ensuring of the medical system, etc.
- Radiation control: Expansion of areas where a full-face mask is not required, improving exit/entrance bases, etc.
- Efforts to ensure appropriate working conditions: Education concerning the ensuring of working conditions, survey on efforts made by prime contractors concerning working conditions, etc.

3. D&D : Coexistence with Local Communities and Communication with All Levels of Citizens

Coexistence with Local Communities

- Provide opportunities to participate in the decommissioning work
- Foster local companies that supply required equipment and machinery on a long-term basis
- Promote to set up new companies to revitalize local economies.

Strengthen the provision of information and communications

- Establish the Fukushima Advisory Board (provisional title), with the participation of Fukushima Prefecture, surrounding local governments, relevant local organizations, and experts in the field of regional development and communications
- Enhance the PR activities for citizens and society

3. D&D : R&D Plan and Structure to promote R&D

☐ Systematic promotion of R&D Plan

- ➢ Removal of the fuel from the spent fuel pool
- ➢ Preparation for the removal of the fuel debris
- ➢ Processing and disposal of radioactive waste

☐ Establishment of an organization to manage R&D activities

- ➢ Establish an organization to manage R&D activities in an integrated way

→ **I**nternational **R**esearch **I**nstitute for Nuclear **D**ecommissioning (IRID) was established on August 1, 2013.

- ➢ Gathering international expertise

→ international advisors, international decommissioning expert group

☐ Human resource development

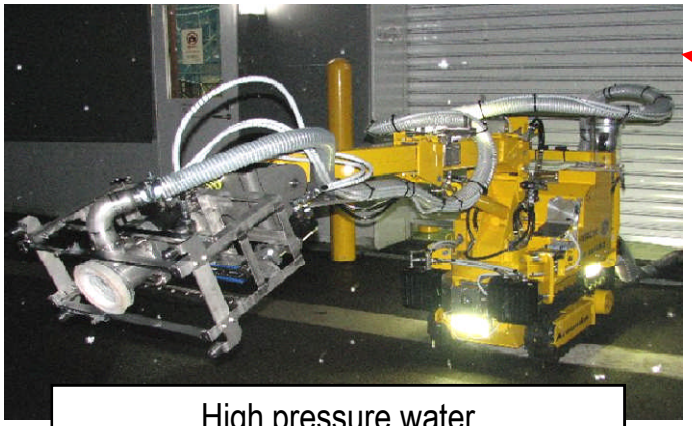
- ➢ Promote human resource development by setting priority fields and core bases from mid-and-long-term perspective.

R&D for preparation for fuel debris removal

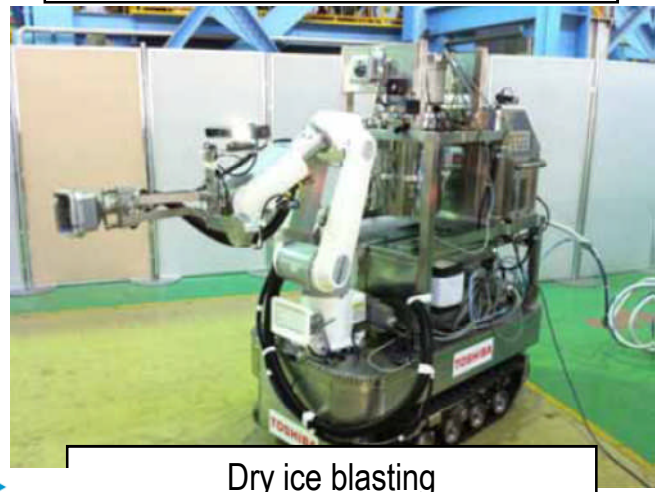
■ Development of remote decontamination technology in the reactor buildings

Decontamination equipment images

(In the past three types of remote equipment to decontaminate during development. From now on, upper floors, floor heights of buildings to apply to plans to develop remote decontamination equipment.).

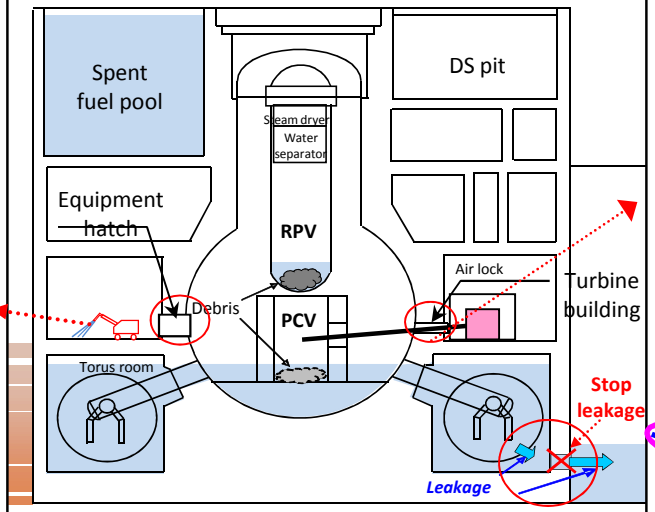


High pressure water



Dry ice blasting

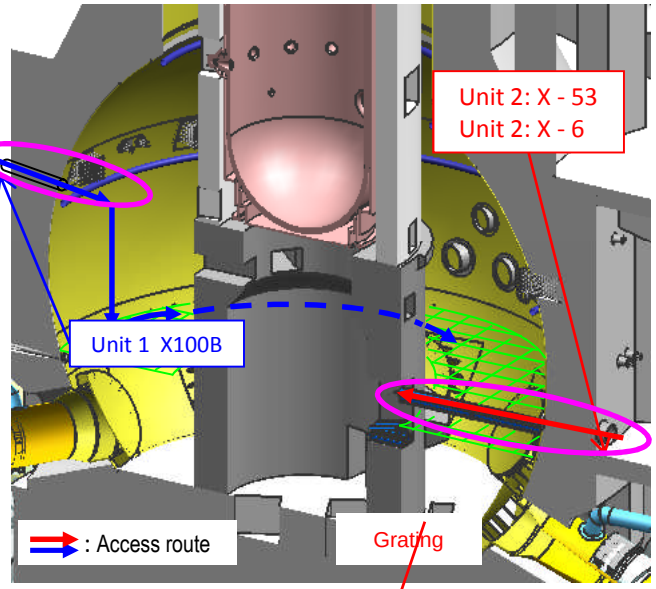
Blasting and vacuuming

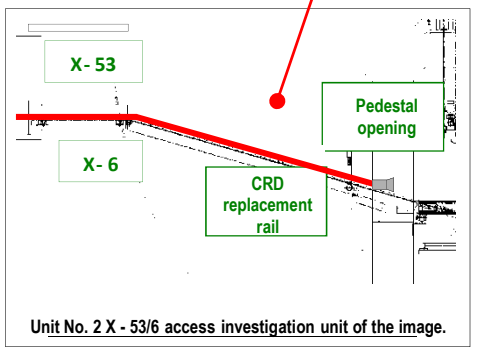


■ Development of technology for inspecting the inside of the nuclear PCV

Research equipment and access route image

(Under RPVs (pedestal) in order to check on the status of the X - 6 (CRD outfeed entrance) access from the device during development. As a preliminary survey, no. 1: X-100, no. 2 B: X - 53 to access a device during development.).





Unit No. 2 X - 53/6 access investigation unit of the image.