NRA , Japan
Nuclear Regulation Authority

Topics on Current Nuclear Regulation in Japan

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Contents

- New Regulatory Requirements and the Safety Review of Applications

- Recent Development in Fukushima-Daiichi NPPs

New Regulatory Requirements

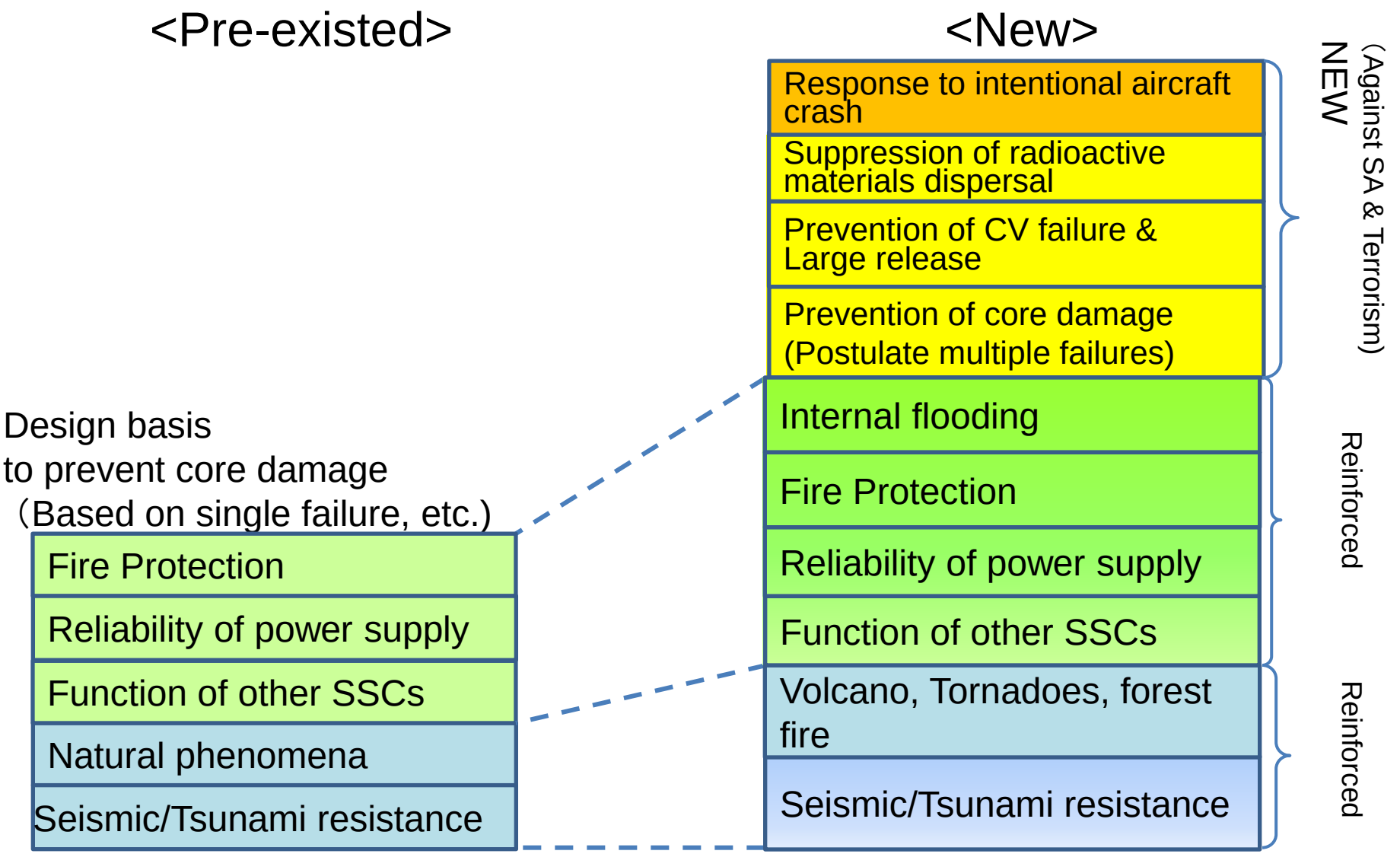
- ✓ New regulatory requirements were promulgated on

July 8, 2013	Nuclear Power Plant
December 18, 2013	Fuel Cycle Facilities and Research Reactors

Policy in New Requirements for Power Reactors

- ✓ Place emphasis on Defense-in-Depth concept
  - Prepare multi-layered protective measures and, for each layer, achieve the objective only in that layer regardless of the measures in the other layers.
- ✓ Prevent common cause failures
  - Introduce accurate approaches in assessment of earthquake and tsunami and measures against tsunami inundation.
  - Introduce assessment of volcano, tornado, & forest fire.
  - Enhance measures against fire, internal flooding, & loss of power.
  - Make much account of “diversity” and “independence”.
- ✓ Prepare multi-layered protection against severe accidents
- ✓ Introduce measures against terrorism

Structure of New Requirements for Power Reactors



Current Status of Applications of NPPs and NRA's review

- Applications of 17 Units at 8 sites, from 8 electric power companies

As of 1st March, 2014

Application	Licensee	NPP Type	Submission
Tomari 1, 2	Hokkaido	2 loop PWR	Jul.8,2013
Tomari 3	Hokkaido	3 loop PWR	Jul. 8,2013
Takahama 3, 4	Kansai	3 loop PWR	Jul.8,2013
Ohi 3, 4	Kansai	4 loop PWR	Jul.8,2013
Ikata 3	Shikoku	3 loop PWR	Jul.8,2013
Sendai 1, 2	Kyushu	3 loop PWR	Jul.8,2013
Genkai 3, 4	Kyushu	4 loop PWR	Jul. 12,2013
Kashiwazaki Kariwa 6,7	Tokyo	ABWR	Sep.27,2013
Shimane 2	Chugoku	BWR	Dec.25,2013
Onagawa 2	Tohoku	BWR	Dec.27,2013
Hamaoka 4	Chubu	BWR	Feb.14,2014

Policy in New Requirements for Fuel Cycle Facilities and Research Reactors

1. Consideration of unique characteristics of each type of facility
   - Nuclear Fuel Fabrication/ Enrichment
   - Spent Fuel Reprocessing
   - Spent Fuel Interim Storage
   - Low-Level Waste Disposal
   - Management of High-level Waste
   - Research Reactor
   - R&D Facilities using Nuclear Fuel Materials
2. Strengthening of Design Basis
   - Enhanced protective measures against extreme natural hazards
   - Elimination of common cause failure
3. Severe accident measures
   - Reprocessing
   - Fabrication/ Enrichment

Current Status of Fuel Cycle Facilities Applications and NRA's review

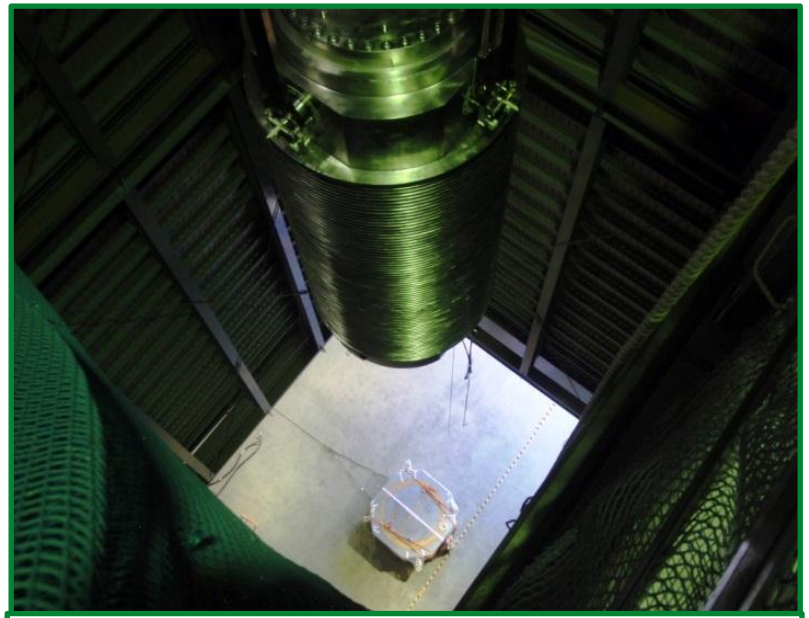
- 8 Applications of reprocessing, uranium enrichment, fuel fabrication, spent fuel storage and waste disposal/management facilities

As of 1st March, 2014

Licensee	Facility Type	Submission
Japan Nuclear Fuel	Reprocessing	January 7, 2014
Japan Nuclear Fuel	Uranium Enrichment and Low Level Waste Disposal	January 7, 2014
Japan Nuclear Fuel	MOX Fuel Fabrication	January 7, 2014
Japan Nuclear Fuel	Vitrified Waste Storage	January 7, 2014
Recyclable-Fuel Storage Company	Spent Fuel Storage	January 15, 2014
Mitsubishi Nuclear Fuel	Fuel Fabrication	January 31, 2014
Japan Atomic Energy Agency	Waste Management	February 7, 2014
Japan Nuclear Fuel	Fuel Fabrication	February 14,

Fuel removal from Unit 4 Spent Fuel Pool (1/2)

The removal of fuel stored inside the Unit 4 spent fuel pool started on 18th November, 2013 and is planned to continue until the end of 2014.



Move of the cask to downstairs

Move of the cask to downstairs

Fuel removal from Unit 4 Spent Fuel Pool (2/2)

Number of transferred fuel assemblies

462／1533

as of March 9, 2014

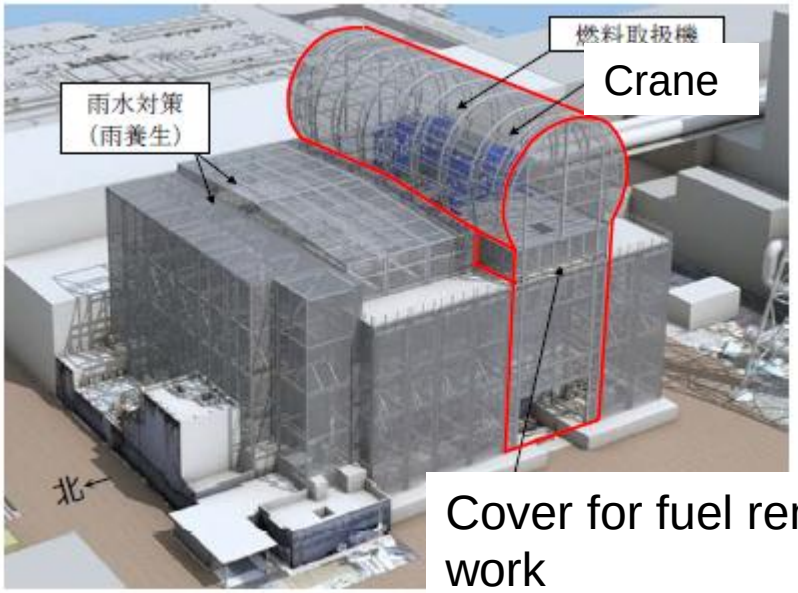
（SF：440／1331, New：22／202）

The NRA Safety Inspectors watch TEPCO's spent fuel removal operation on the fuel handling machine.

The NRA Safety Inspectors watch the situation of fuel removal operation by TEPCO through surveillance cameras.

Preparation works at Unit 3

Installation of the cover for fuel removal work and fuel handling facility is planned and the installation is scheduled to start in the first half of 2014 (Current Plan).



Modified by the NRA, Originally illustrated by TEPCO

Debris removal from Unit 3 Reactor Build. at Fukushima Dai-ichi NPS

March24, 2011

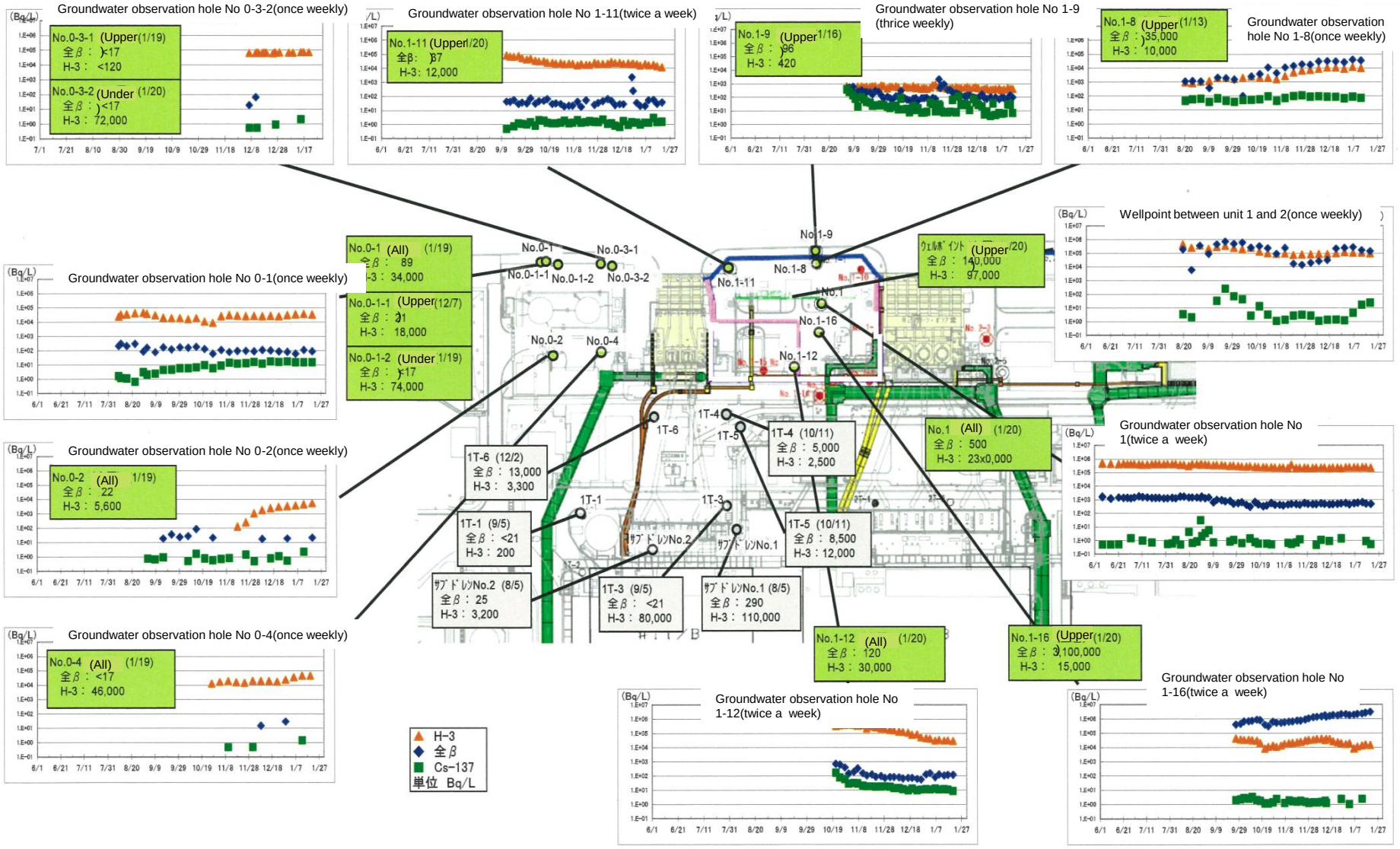
October11, 2013

February21, 2012

October11, 2013

Photo taken by TEPCO

Fukushima Daiichi
Radiation Monitoring data of Ground water



Challenges moving forward for the moment

- Decontamination of the site area to improve the work environment
- Reduce the dose rate around the boundary of the site to reduce the effect of the decommissioning activities
  - decontamination of the water stored in the tanks
  - construct waste storage building to shield the radiation from the solid radioactive waste like debris, cut trees, residues from the decontamination process, etc.
- Reduce the risk related to the storage tanks of contaminated water
  - Accelerate the decontamination of stored water by ALPS
  - Improve the design of the dike to prevent the leak or overflow of the slightly contaminated rain water over
- Reduce the risk related to the contaminated water stored in the underground floor of turbine buildings, waste management buildings and sea water trenches, etc..
  - Construct walls to impede the flow of underground water to the sea
  - Reduce the amount of the contaminated water by reducing the inflow of the underground water to turbine buildings
  - Decontaminate and dry up the water stored in sea water trenches
- Increase the capacity of tanks for the contaminated water