Outline of the Tohoku-Pacific Ocean Earthquake

Date of Occurrence:

14:46 on Friday, March 11, 2011

Epicenter:

Offshore Sanriku

Latitude, Longitude and Depth of Hypocenter:

38°06.2' N, 142°51.6' E, 24km

Magnitude:

9.0 (Moment magnitude scale)

Seismic Intensity (Japanese seismic scale)

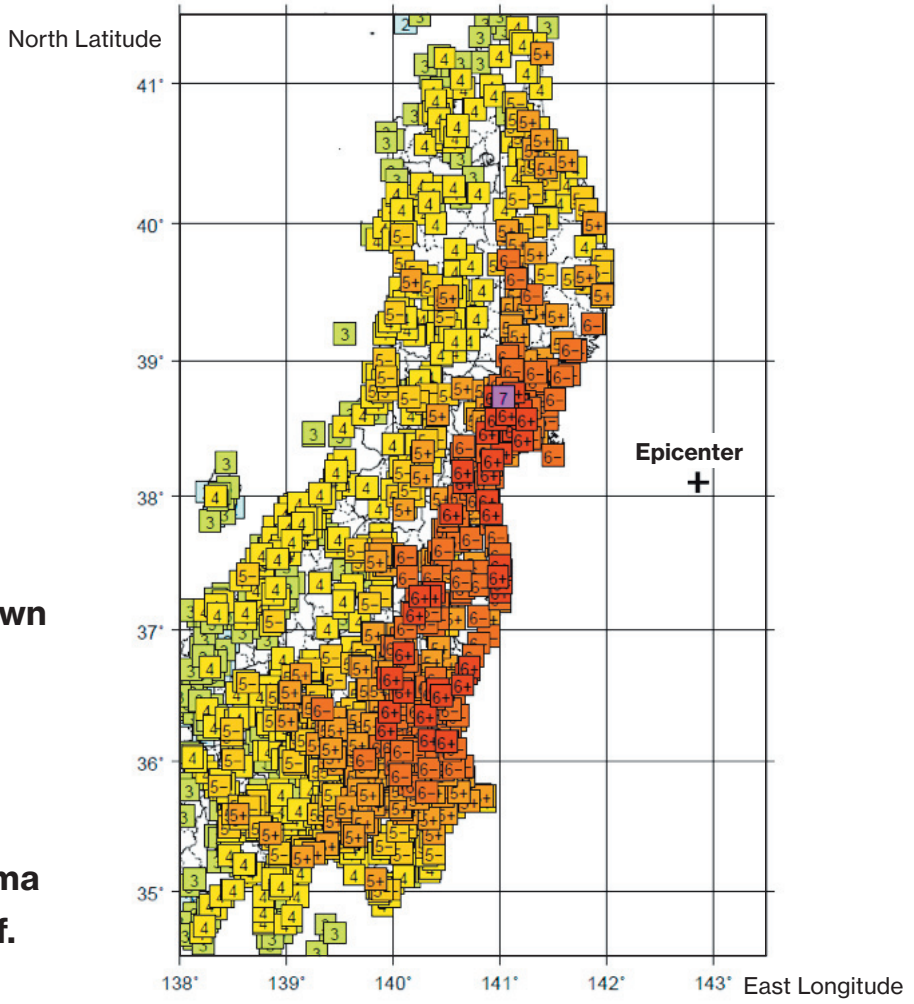
7: Kurihara City of Miyagi Pref.

Upper 6: Naraha Town, Tomioka Town, Okuma Town and Futaba Town of Fukushima Pref.

Lower 6: Ishinomaki City and Onagawa Town of Miyagi Pref. and Tokai Village of Ibaraki Pref.

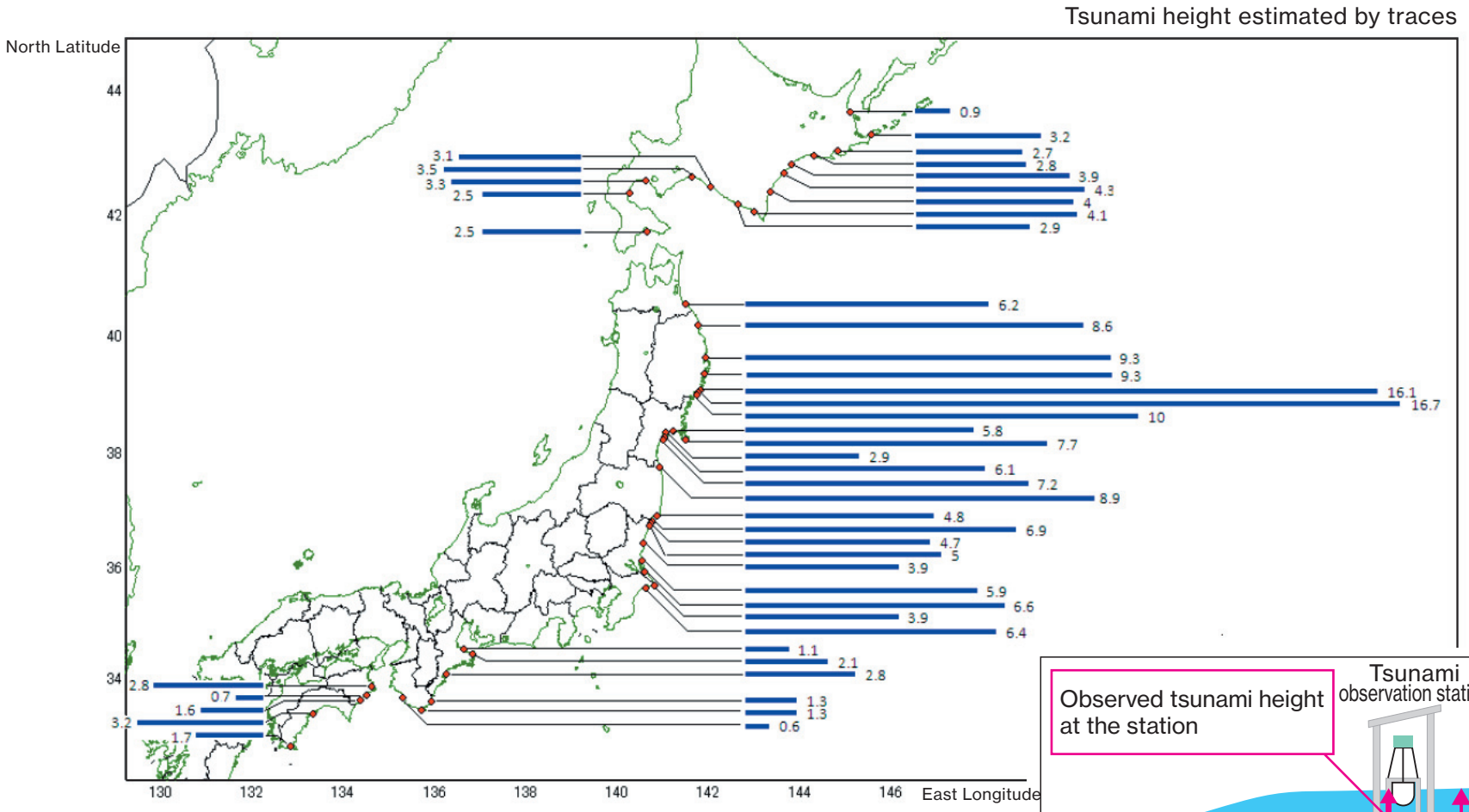
Lower 5: Kariwa Village of Niigata Pref.

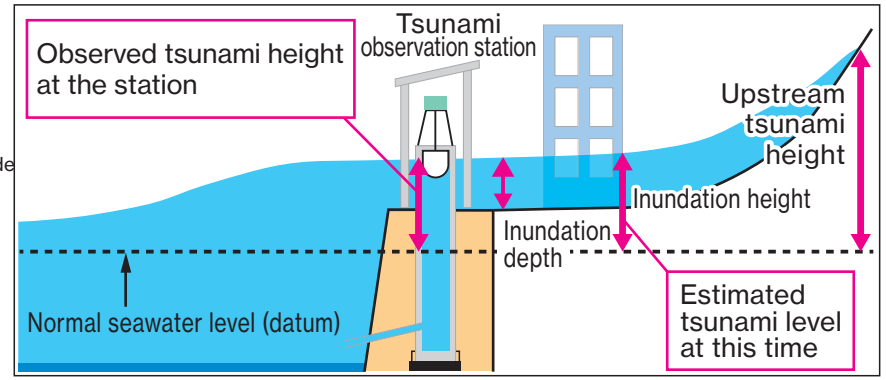
4: Rokkasho Village, Higashidori Village, Mutsu City and Ohma Town of Aomori Pref. and Kashiwazaki City of Niigata Pref.



Source: Japan Meteorological Agency, Prompt Disaster Reports of Earthquake & Tsunami, the Tohoku-Pacific Ocean Earthquake, 2011

Height of Tsunami Triggered by the Tohoku-Pacific Ocean Earthquake

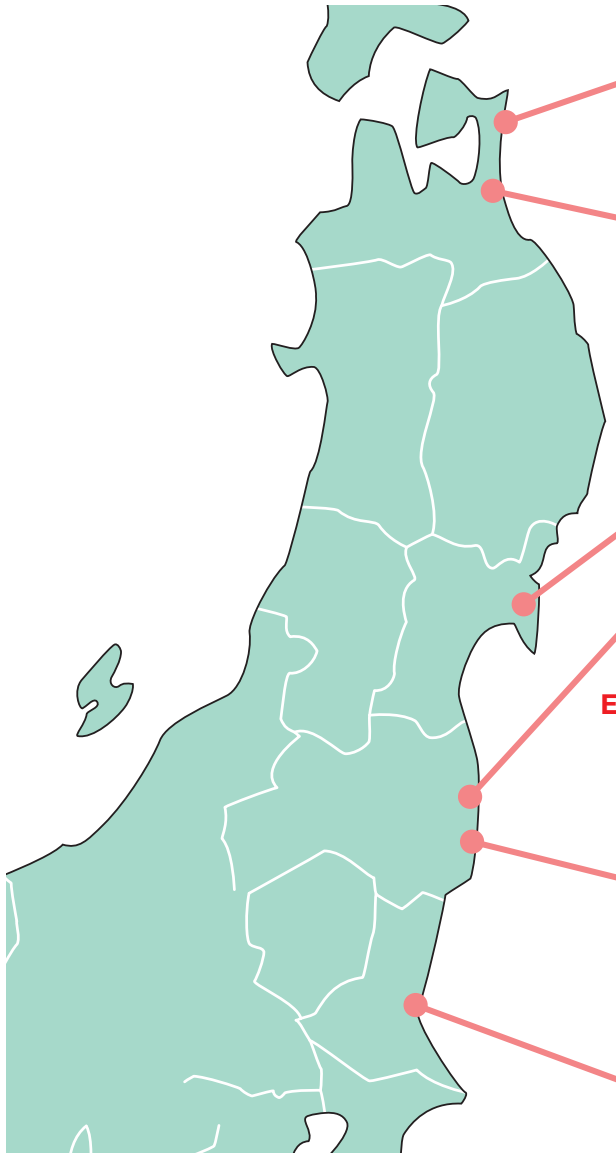




Source: Japan Meteorological Agency, Prompt Disaster Reports of Earthquake & Tsunami, the Tohoku-Pacific Ocean Earthquake, 2011

Current Status of NPSs Affected by the Tohoku-Pacific Ocean Earthquake

(as of December 2014)



Tohoku Electric Power's Higashidori NPP
Unit 1
Previously shut down for periodic inspection at the time the earthquake occurred

JNFL reprocessing plant
No significant event

Tohoku Electric Power's Onagawa NPPs		
Unit 1	Unit 2	Unit 3
Shut down automatically due to the earthquake		

Tokyo Electric Power's Fukushima Daiichi NPPs					
Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Shut down automatically due to the earthquake and shifted to cold shutdown status*			Previously shut down for periodic inspection at the time the earthquake occurred		

Tokyo Electric Power's Fukushima Daini NPPs			
Unit 1	Unit 2	Unit 3	Unit 4
Shut down automatically due to the earthquake			

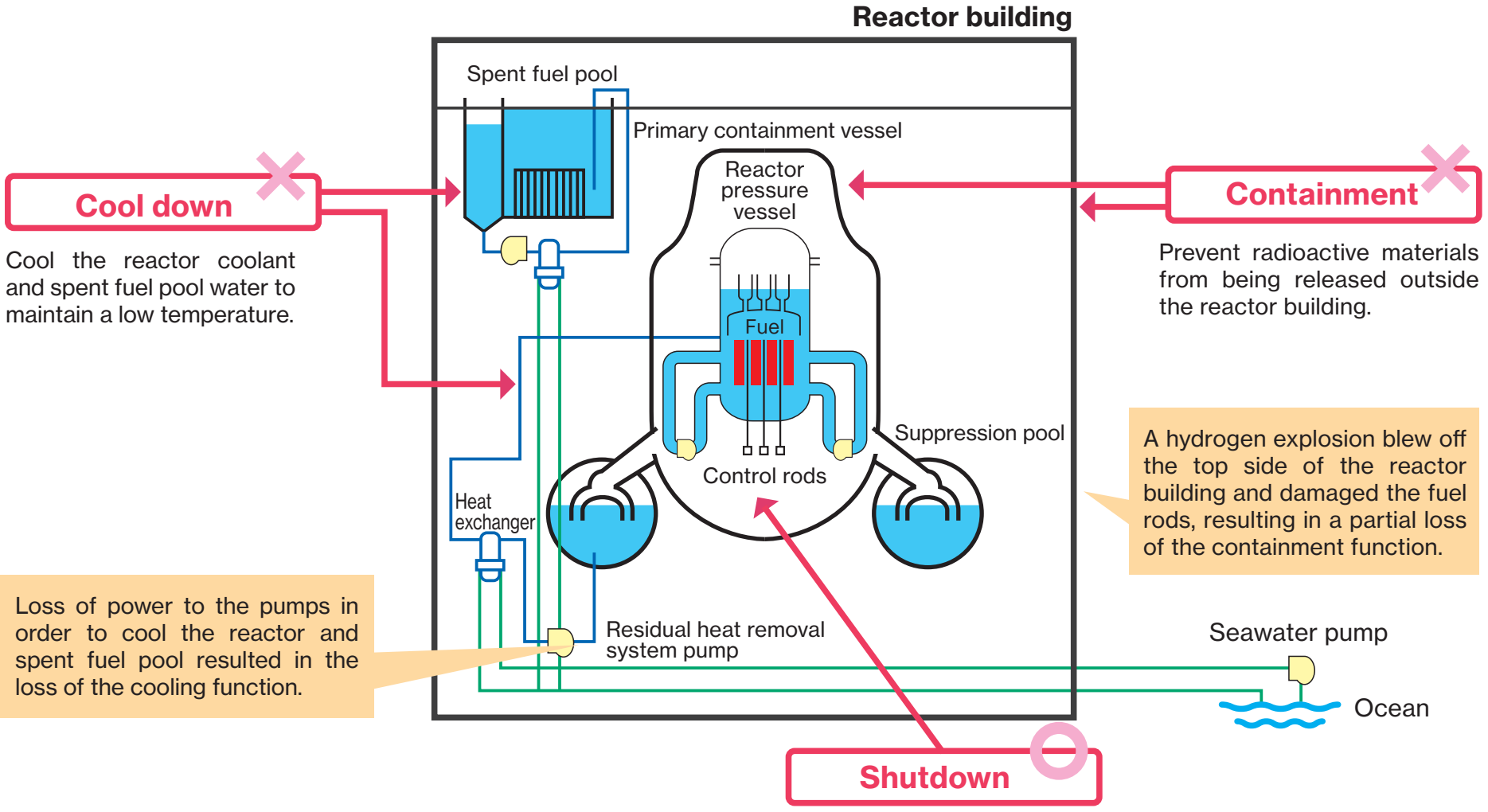
JAPC's Tokai II NPP
Shut down automatically due to the earthquake

※Work ongoing at units 1 to 4 to remove fuel and decommission them.

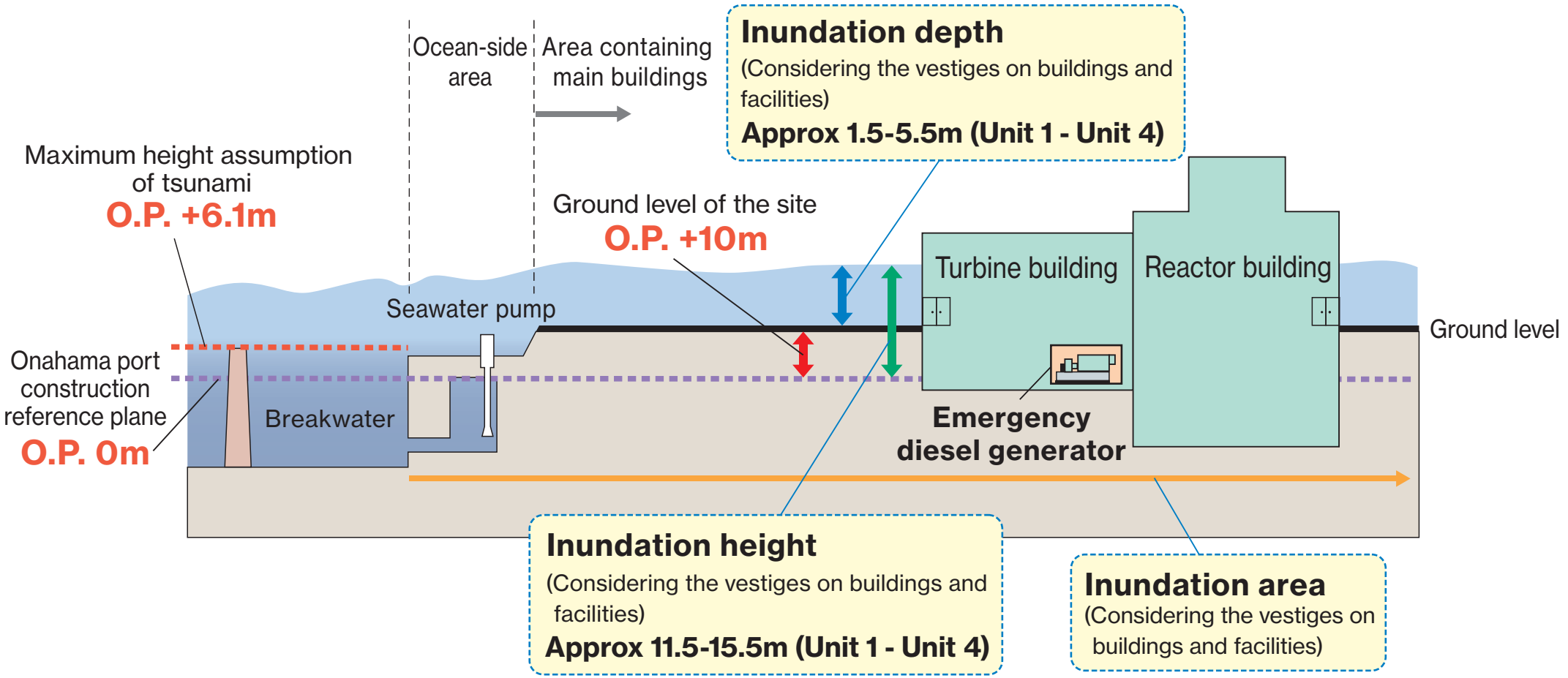
***Definition of cold shutdown state**

- Temperature at the bottom of the pressure vessel is below 100°C
- The release of radioactive material from the containment vessel is under control and the dosage of radiation to the public from additional releases is greatly suppressed (the target at the time of evaluation for the radiation dosage at the site boundary from additional releases from the container vessel is 1 mSv/year)
- In order to maintain the two conditions above, the medium-term safety of the circulating injection cooling system must be ensured.

Outline of the Accident at the Fukushima Daiichi Nuclear Power Station



Scale of Tsunami and Inundation at the Fukushima Daiichi Nuclear Power Station



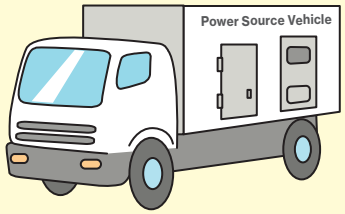
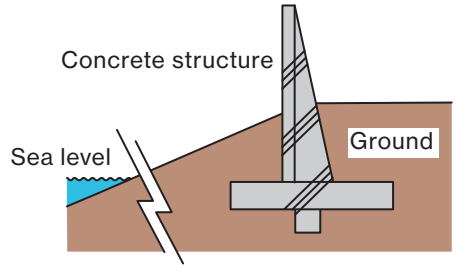
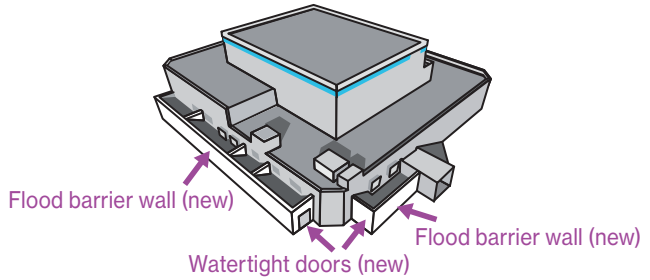
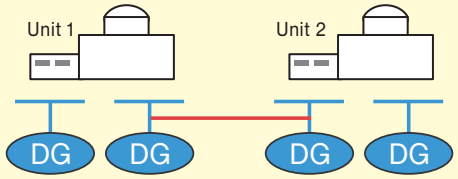
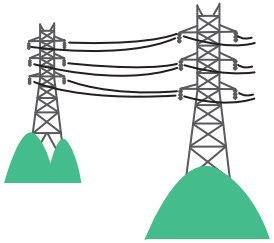
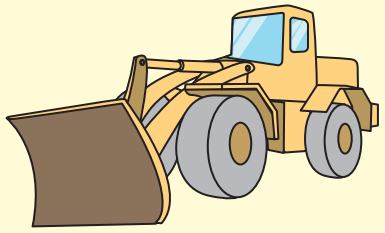
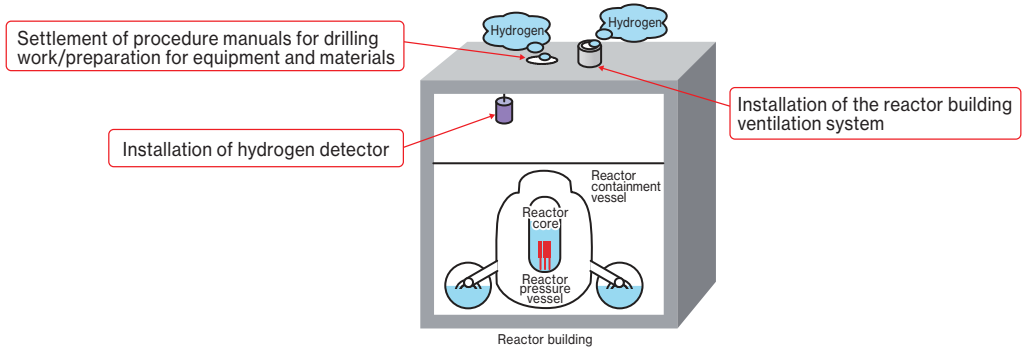
Source: Nuclear and Industrial Safety Agency

Outline of Safety Assurance Measures Implemented After the Fukushima Daiichi Accident

	Short Term Measures (completed)	Mid & Long Term Measures (to be implemented in a few years)	
Emergency Safety Measures	○ Review of emergency response manuals, etc. ○ Additional deployment of emergency power source vehicles ○ Additional deployment of fire engines ○ Additional deployment of fire hoses ○ Conduct emergency response drills	○ Installation of coastal levee ○ Strengthening watertightness of the buildings ○ Preparing spare equipment (seawater pump, etc.) ○ Installation of large-sized air-cooled generators	Prevention of the occurrence
Measures for Enhancing Power Supplies	○ Interconnection of emergency diesel generators between units	○ Connection between all units and grids ○ Inspection of transmission line towers and measures against earthquakes and tsunamis ○ Seismic measures for switch yards, etc.	Prevention of the occurrence
Severe Accident Measures	○ Securing work environment at the main control room ○ Securing hydrogen discharge measures ○ Securing communication tools ○ Preparing high-dose-resistant protective clothing ○ Deployment of wheel loaders	○ Transfer of equipment (PBX, etc.) to high ground ○ Installation of the static hydrogen combiner, etc. (PWR) ○ Installation of ventilation and hydrogen detectors (BWR)	Response to the occurrence
Measures to Further Improve Safety	○ Establish and strengthen systems ○ Set up emergency command center ○ Set up facilities for handling specific serious accidents		Response to the occurrence

Source: Atomic Energy Commission's New Nuclear Policy-planning Council

Examples of Safety Assurance Measures Implemented After the Fukushima Daiichi Accident

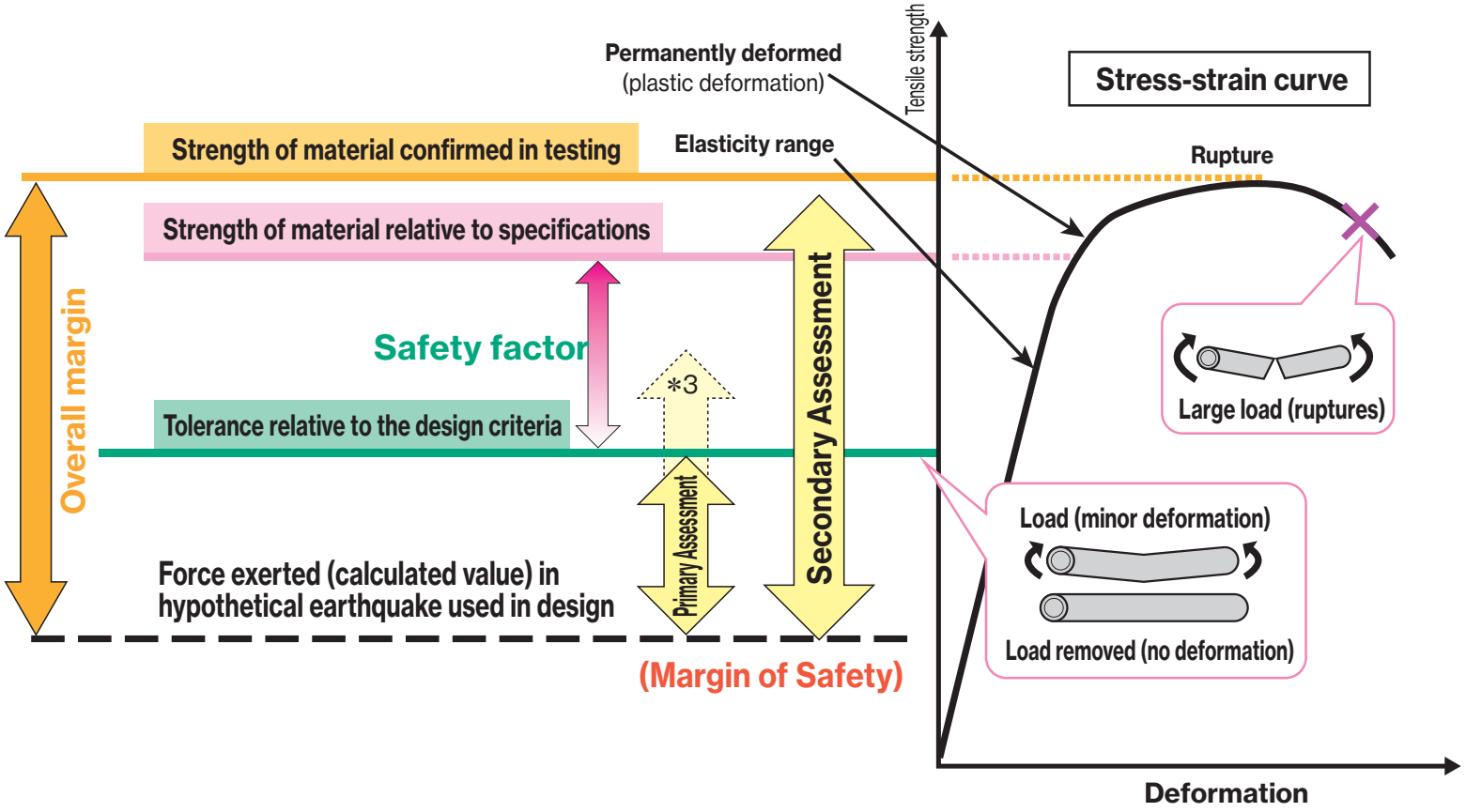
	Short Term Measures (completed)	Mid & Long Term Measures (to be implemented in a few years)
Emergency Safety Measures	Additional deployment of emergency power source vehicles 	Installation of coastal levee  Installation of flood barrier wall 
Measures for Enhancing Power Supplies	Interconnection of emergency diesel generators between units 	Inspection of transmission line towers and measures against earthquakes and tsunamis 
Severe Accident Measures	Deployment of wheel loaders 	Installation of the reactor building ventilation and hydrogen detectors (BWR) 

Source: Atomic Energy Commission's New Nuclear Policy-planning Council

Overview of Stress Tests

Safety margin of vessel and piping structural integrity

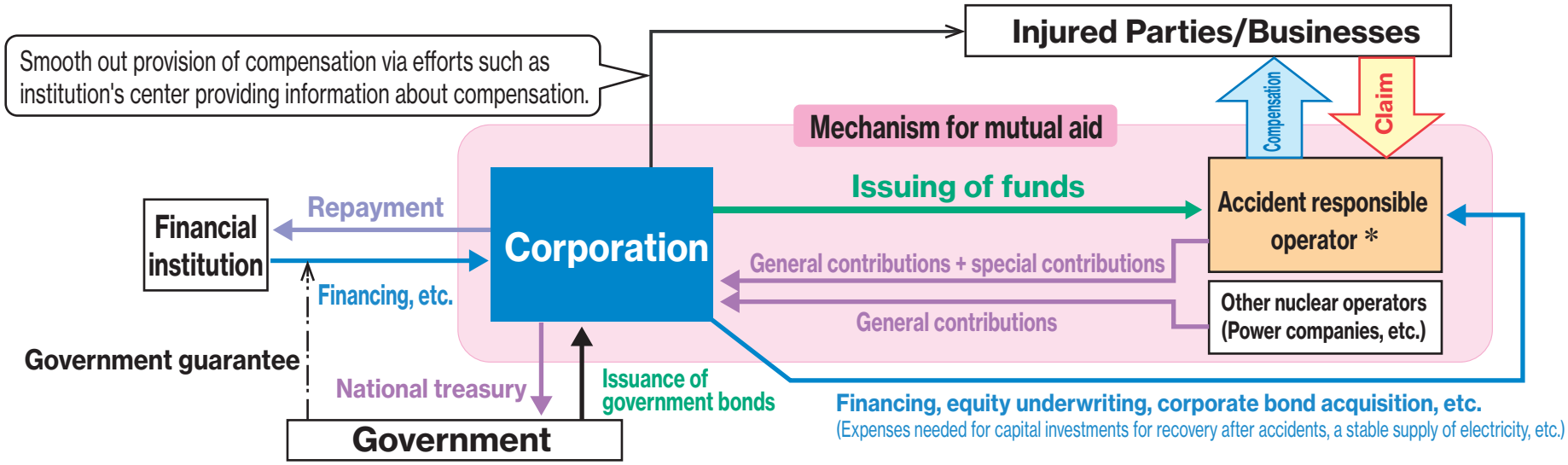
In the primary assessment*1, apply tolerances to the standards used in the system as a benchmark for the margin of safety.
In the secondary assessment*2, apply the value at which structural integrity or functionality is actually lost.



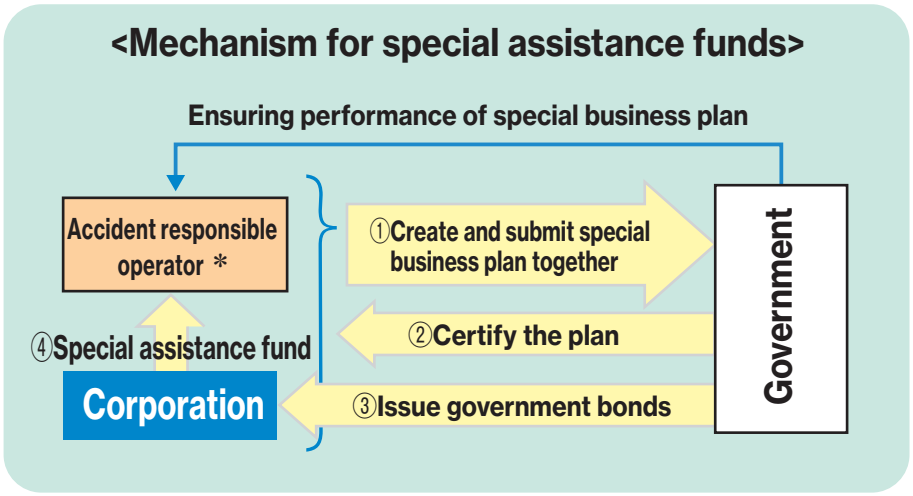
*1: During periodic inspections of nuclear energy plants that have met their start-up standards, evaluate how much margin of safety exists for safety-critical facilities and equipment relative to events that exceed their design assumptions.
*2: Perform a comprehensive safety assessment for all nuclear energy plants, including power stations that are in operation as well as those that become subject to primary assessment.
*3: If a plant demonstrates it is technically able to maintain its structural integrity and functions during the primary assessment, then apply values that exceed the tolerances as well.

Source: Atomic Energy Commission, New Framework for Nuclear Energy Policy Council Material, with others

Overview of Compensation Support from the Nuclear Damage Compensation and Decommissioning Facilitation Corporation



<Mechanism for special assistance funds>



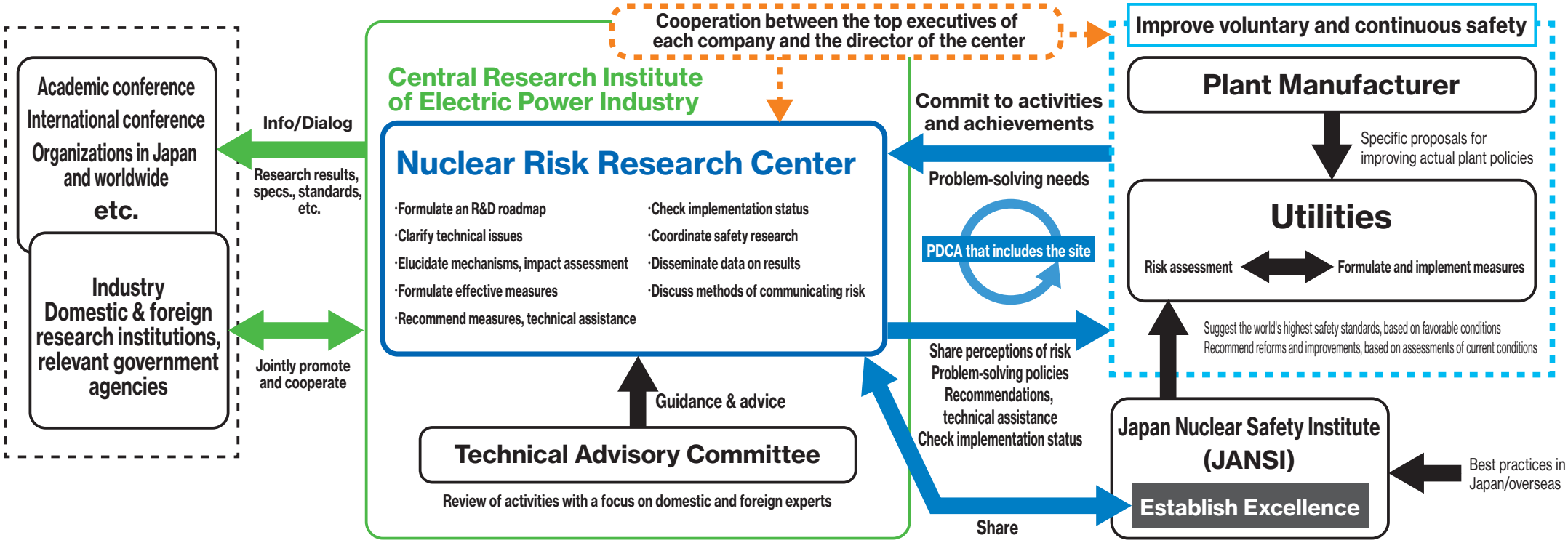
<Items set forth in the special business plan>

1. Circumstances of nuclear-related damage
2. Projections of compensation and plan for making compensation
3. Documents outlining mid-term business budget plan
4. Management rationalization measures
5. Plan for requesting cooperation of stakeholders
6. Evaluation of assets, income & expenditures
7. Plan for clarifying management responsibilities
8. Details and amounts of assistance funds, etc.

*When it creates the special business plan, the Corporation shall make a thorough review of the valuation of assets and the management of TEPCO, as well as confirm that the request for cooperation of the stakeholders is appropriate and sufficient.

Source: Ministry of Economy, Trade and Industry website, with others

Nuclear Risk Research Center



Aims of the Nuclear Risk Research Center

○Further reduce the likelihood of an accident and reduce the damage if one should occur

·Elucidate the mechanisms of infrequent, external events and assess their impacts to plants, etc., via R&D and technical investigations that bring together the wisdom of relevant institutions.

·Formulate more effective safety policies based on research results and reduce risk by reflecting them at each plant.

○Utilize PRAs for high-uncertainty, low-frequency external events

·Develop PRAs and establish the procedures for using PRAs to improve safety with respect to low-frequency external events.

·Improve the rationality of safety-enhancing efforts throughout Japan by introducing PRAs to operators and developing and sharing verification results.

○Create a "fountain of knowledge" by consolidating the R&D and research results aimed at reducing risk.

·Formulate an R&D Roadmap based on an objective and comprehensive awareness of risk, consolidate management of research results and build an effective R&D system.

·Coordinate safety research by working and cooperating with external experts and research institutions, not just the operators and plant manufacturers.

Source: The Federation of Electric Power Companies of Japan materials