

# Application for compatibility check to New Regulatory Requirements

July 2013

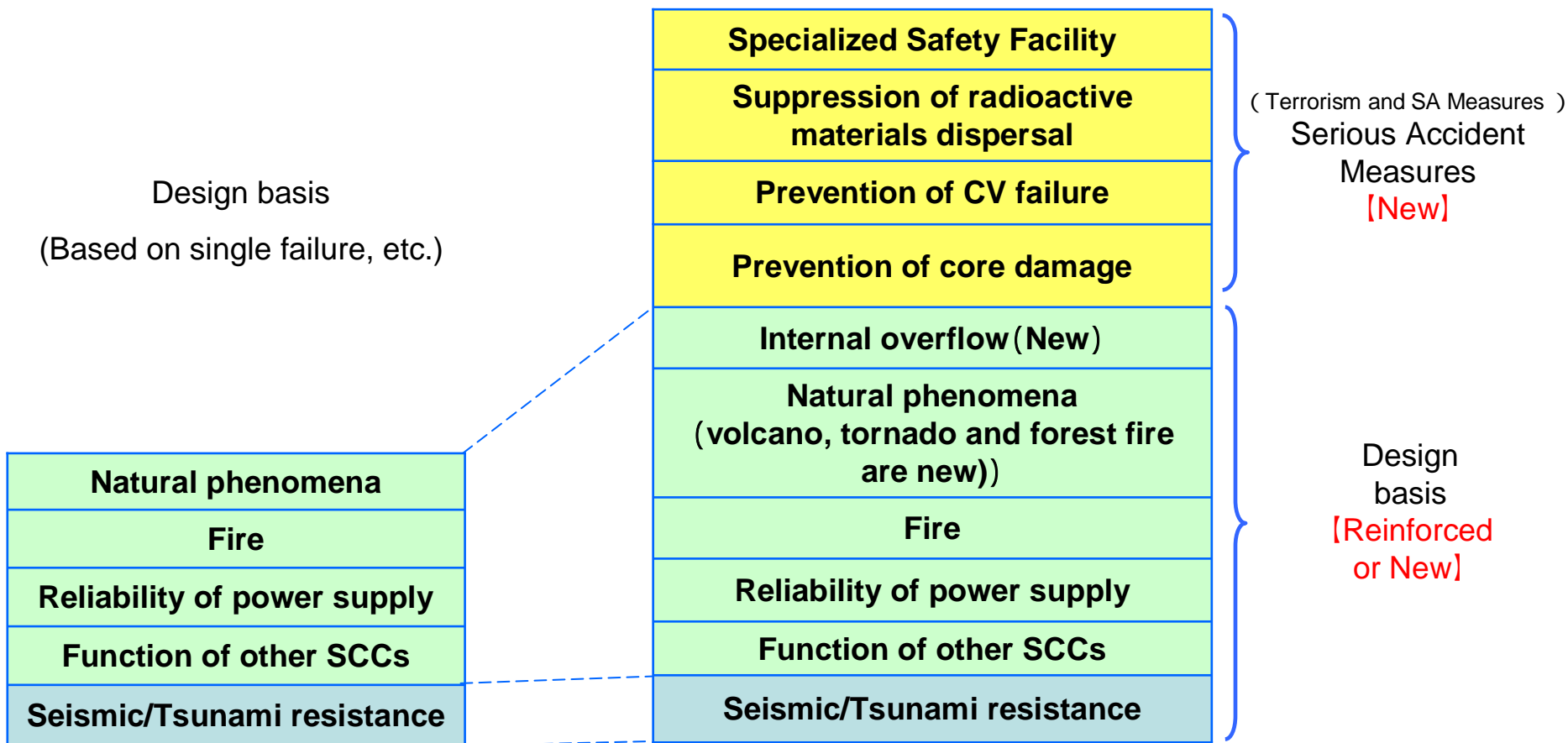


# 1. Outline of New Regulatory Requirements

New Regulatory Requirements consist of “Serious Accident Measures” and “Design Basis”.  
 (Enforcement on July 8, 2013)

< Pre-existed >

< New >



Specialized safety facility which is required in New Regulatory Requirements is given a five –year grace period by complying with as transitional measures.

Kyushu Electric Power applied for “Permission for (a change of) the installment of nuclear power reactor”, “Approval of plan for construction work” and “Approval for a change of operational safety programs” to Nuclear Regulation Authority on July 8 (Unit 1&2 at Sendai nuclear power station) and July 12 (Unit 3&4 at Genkai nuclear power station) for undergoing compatibility check to New Regulatory Requirements with the enforcement of new regulations.

### **Permission for (a change of) the installment of nuclear power reactor (Basic design)**

- **Add basic design policy and effective evaluation result of serious accident measures**

### **Approval of plan for construction work (Detailed design)**

- **Describe contents of detailed design such as capacity, lifting height and number of pump necessary to fulfill the function which is required for serious accident measures**

### **Approval for a change of operational safety programs (Operation management, System)**

- **Add system concerning serious accident measures and operational management of facilities**

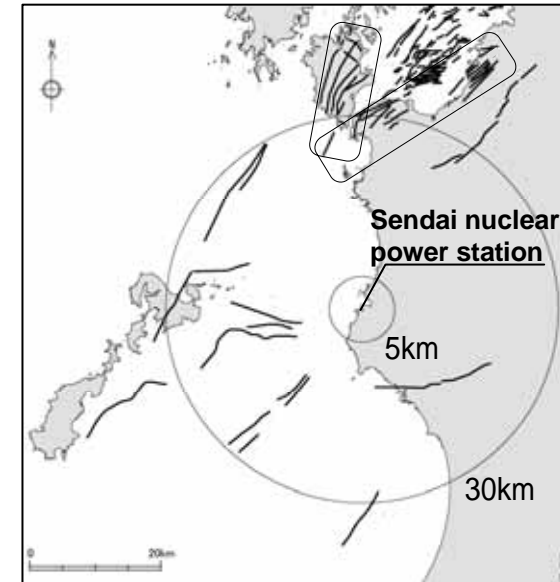
Nuclear Regulation Authority simultaneously accept the three kind of application which were submitted by electric power company, and integrally assess the side of both hard and soft.

#### (1) Basic Seismic Ground Motion

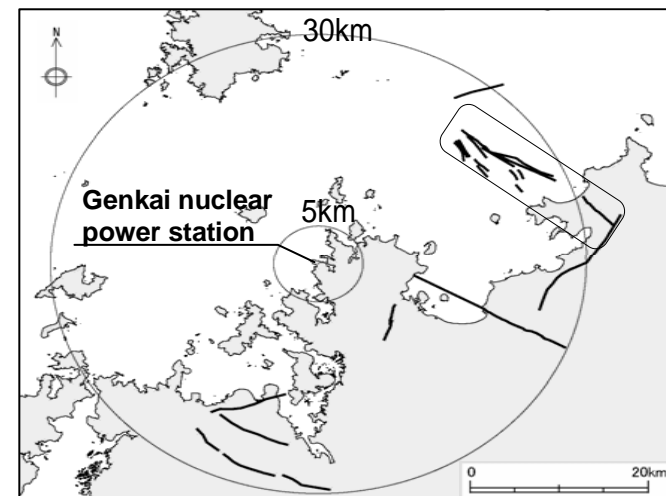
- We geologized in detail and over large area due to the seismic guideline which was revised in 2006.
  - If there is no definite information about activities later than the Late Pleistocene (later than 120,000-130,000 years ago) and length of fault, we evaluated fault as active in considering safe side.
  - Furthermore, we defined a basic seismic ground motion in consideration of various uncertainty and confirmed the facility with enough earthquake-proof safety.
- It is described in New Regulatory Requirements, “Fault with activities later than the Late Pleistocene (later than 120,000-130,000 years ago) is likely to active in the future”. So basic attitude is same as before.
- After reviewing based on New Regulatory Requirements and latest knowledge of the headquarters for earthquake research promotion (established in MEXT), we confirmed evaluation of a basic seismic ground motion (maximum acceleration is 540gal) is same as before.

[ The distribution map of active fault ]

(Sendai)



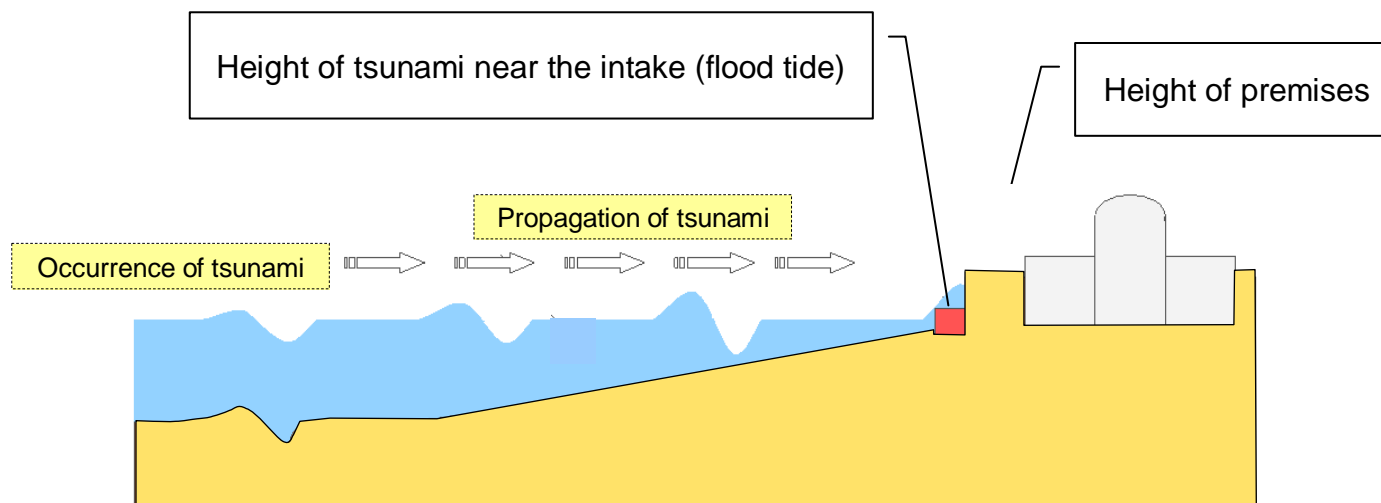
(Genkai)



## (2) Design Basis Tsunami

- Learning from the Pacific coast of Tohoku Earthquake, it was required in New Regulatory Requirements to define “Design Basis Tsunami” that exceeds the largest in the historical records based on multiple consideration.
- Reviewed Design basis tsunami based on New Regulatory Requirements is as follows.

	Height of premises	Height of tsunami near the intake	(Reference) Previous evaluation (for earthquake-proof safety)
Sendai NPS	13m above sea level	3.7m above sea level	3.7m above sea level
Genkai NPS	11m above sea level	2.9m above sea level	2.0m above sea level



Outline of tsunami evaluation

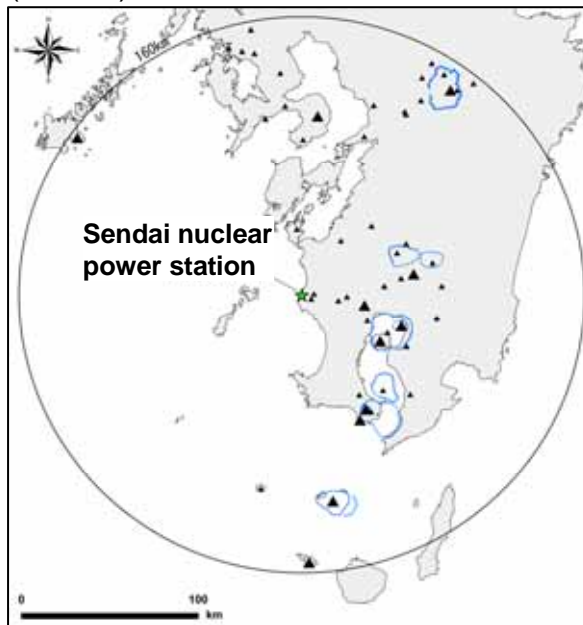
## (3) Volcanoes

It was required in New Regulatory Requirements to investigate quaternary volcanoes which are located within 160km from power stations and evaluate a reachability of pyroclastic flow and volcanic ash and an influence in case of reaching.

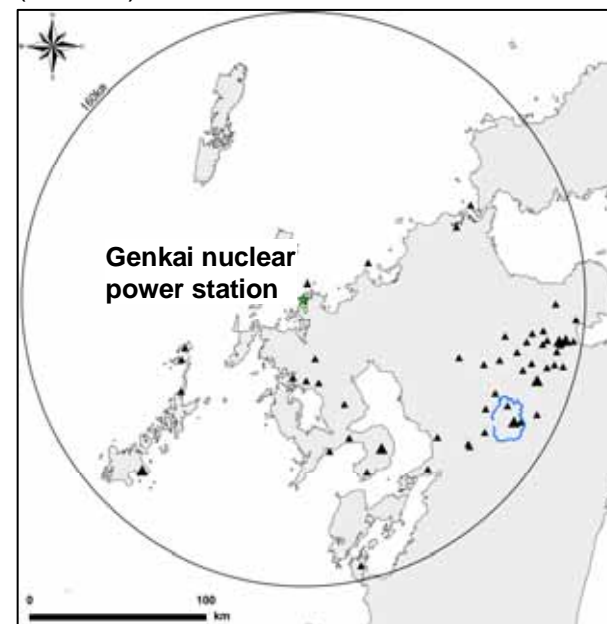
- We investigated a record of previous eruption, scale and extent of the influence about volcanoes under consideration (Sendai:39volcanoes, Genkai:50volcanoes).
  - Pyroclastic flow and lava flow don't reach the premises.
  - Expected thickness of volcanic ash in the premises is thin, so power stations are little affected by it.

[ Locality map of volcano under consideration (quaternary volcano) ]

(Sendai)



(Genkai)

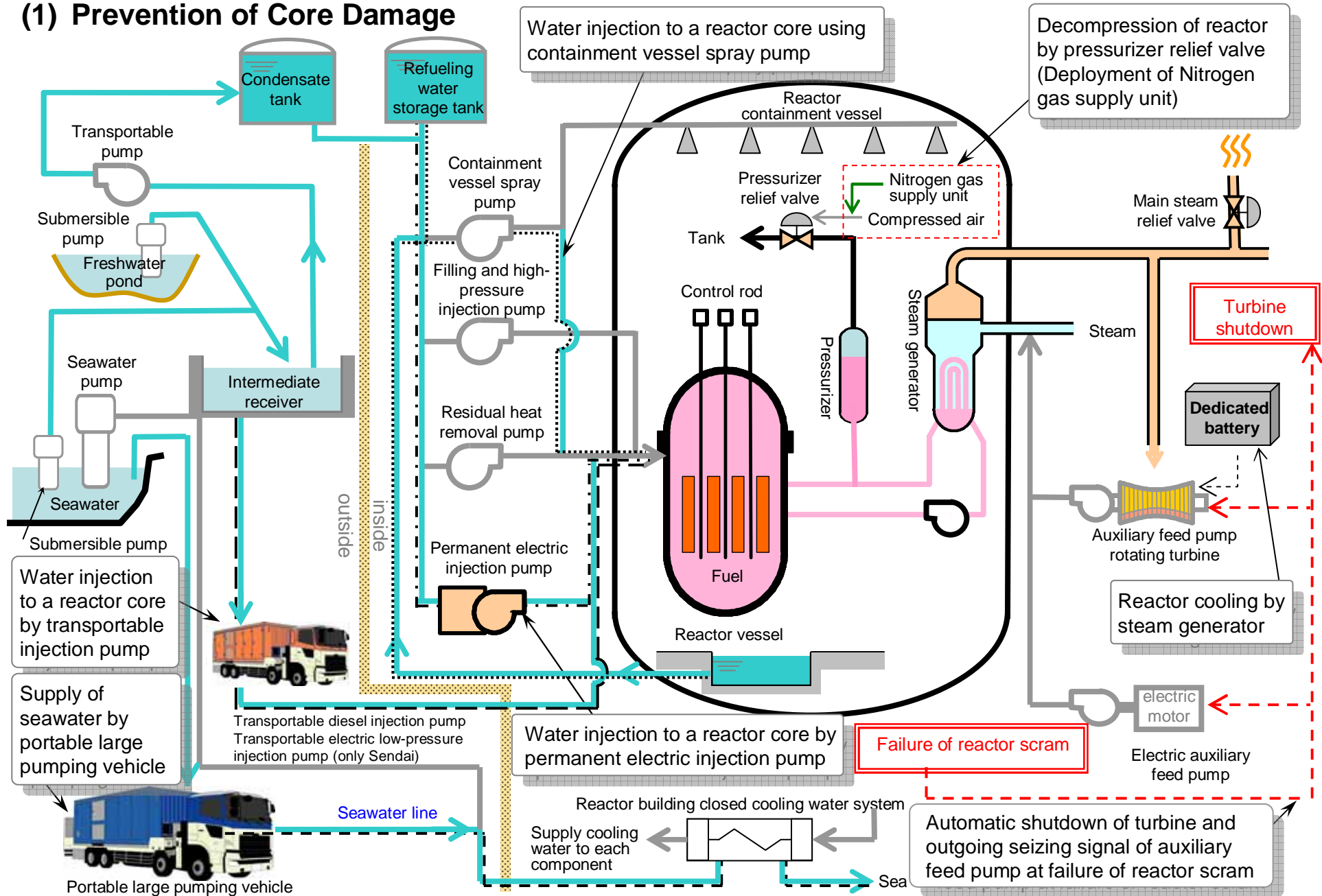


Legend	
▲	Active volcano
▲	Quaternary volcano except Active volcano

Active volcano: volcano of quaternary volcano which activated after about 10,000 years ago

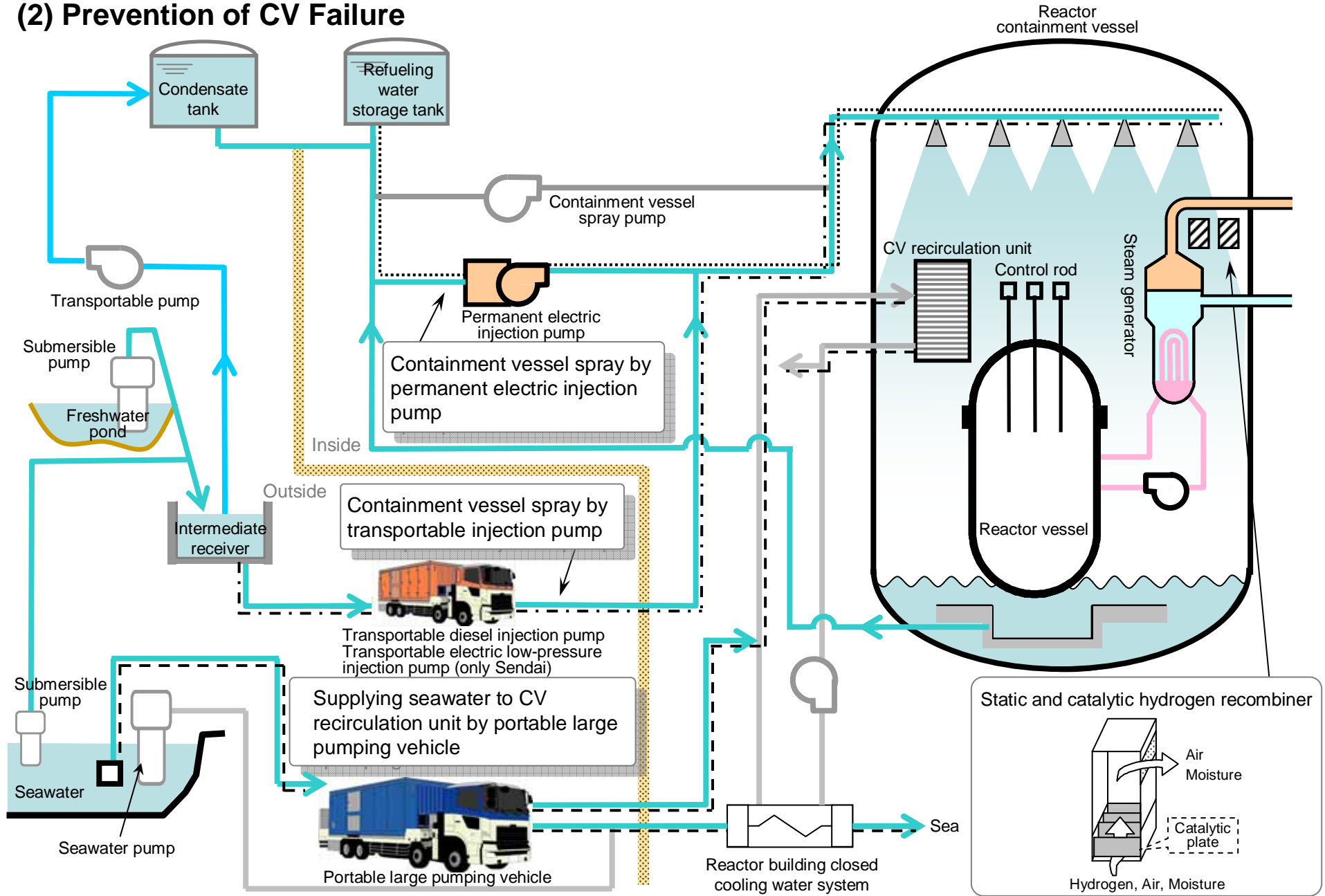
# 3-2. Permission for (a change of) the installment of nuclear power reactor (Response to Serious Accident Measures)

## (1) Prevention of Core Damage



# 3-2. Permission for (a change of) the installment of nuclear power reactor (Response to Serious Accident Measures)

## (2) Prevention of CV Failure

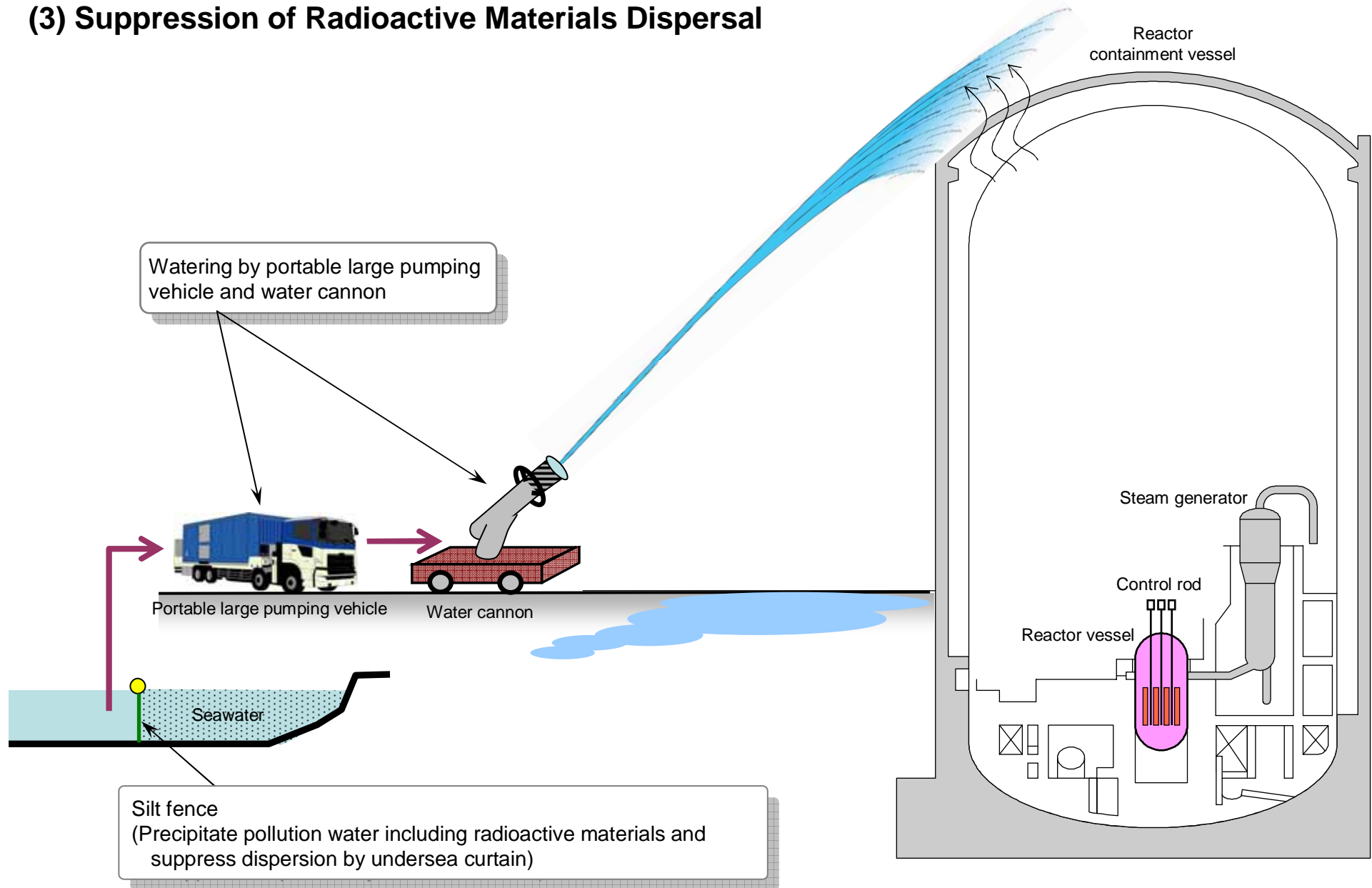




## 3-2. Permission for (a change of) the installment of nuclear power reactor (Response to Serious Accident Measures)

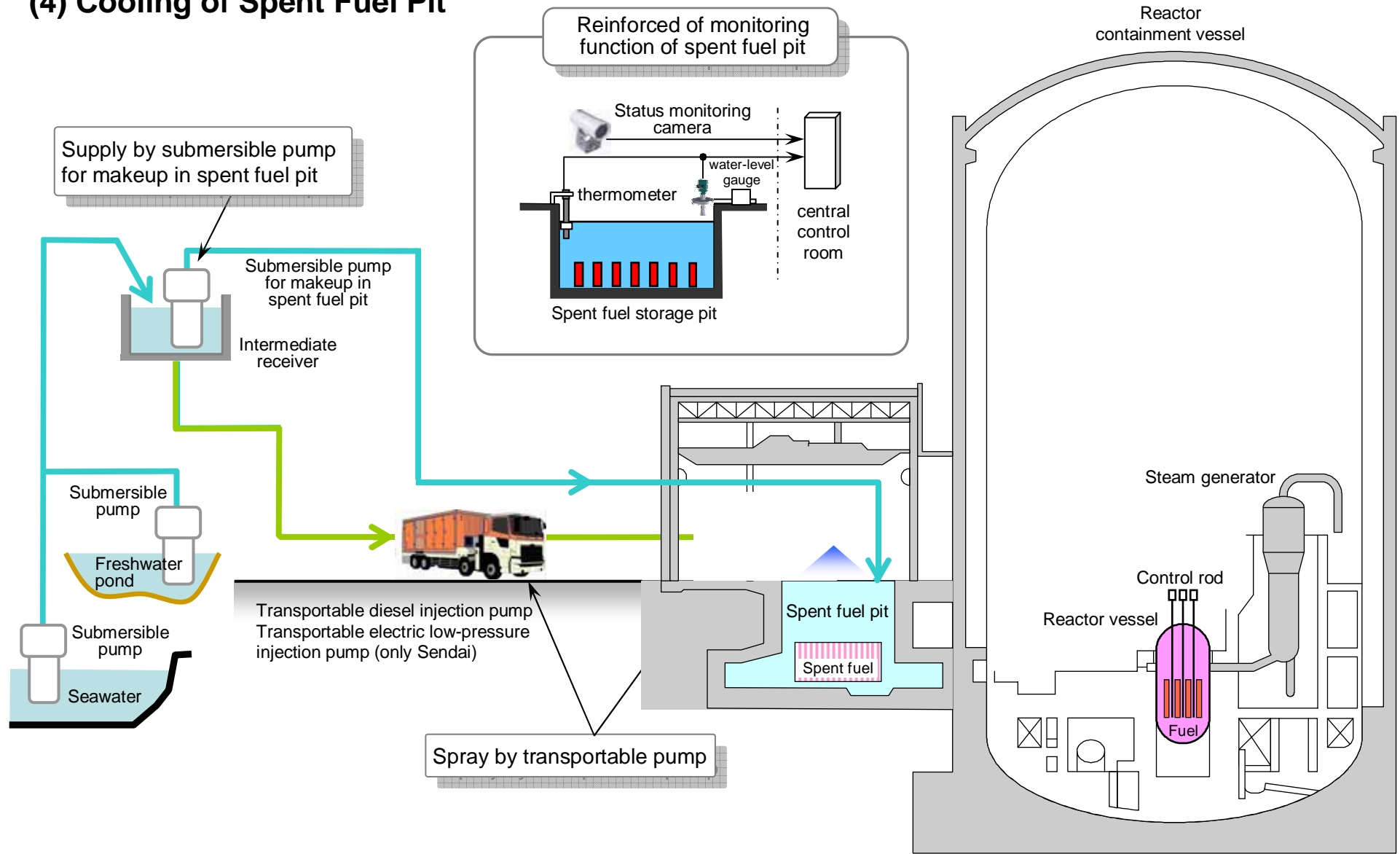
8

### (3) Suppression of Radioactive Materials Dispersal



# 3-2. Permission for (a change of) the installment of nuclear power reactor (Response to Serious Accident Measures)


## (4) Cooling of Spent Fuel Pit



# 3-2. Permission for (a change of) the installment of nuclear power reactor (Response to Serious Accident Measures)

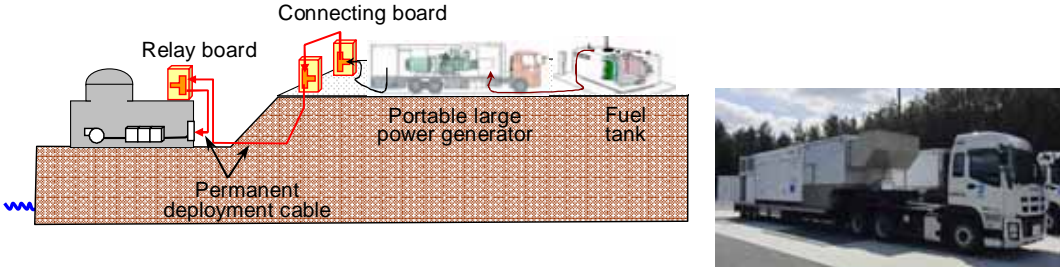
## (5) Power Source Facilities, etc.

Transportable alternate power source



Power generator vehicle

Remote start of portable large power generator (Permanent alternate power source)



Emergency Response Center

Construction of new buildings with a seismic isolation structure


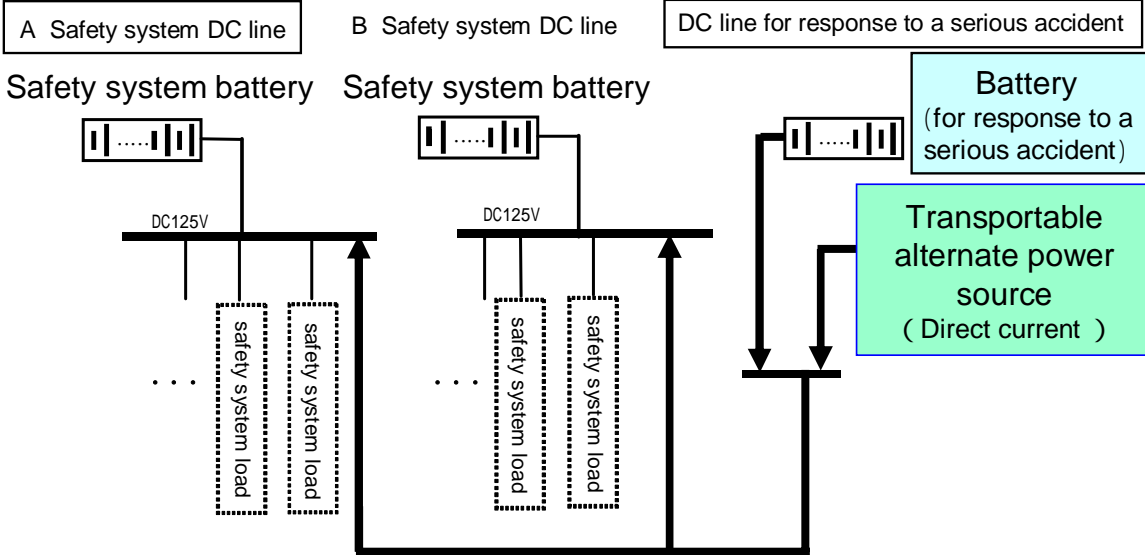


Image of new buildings with a seismic isolation structure

Respond in an alternative emergency response center until completion in 2015.

Establishment of an alternative emergency response center  
\*Refer to the following page

Battery for response to a serious accident  
Transportable alternate power source



A Safety system DC line    B Safety system DC line    DC line for response to a serious accident

Safety system battery    Safety system battery

Battery (for response to a serious accident)

Transportable alternate power source (Direct current)

DC125V    DC125V

safety system load    safety system load

...

## 1. Outline

We intend to establish a new emergency response center within a new building with a seismic isolation in 2015. Until then, we will establish an alternative emergency response center that staff, who comply with necessary instruction to response such accident in case a serious accident happened, can stay.

## 2. Function and Major Facilities

### (1) Function

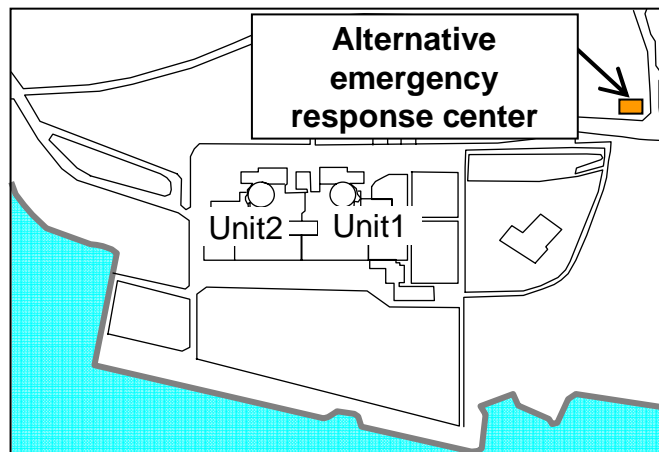
- Building which is made of cement with earthquake resistance and shielding function (windowless, air tight)

### (2) Major Facilities

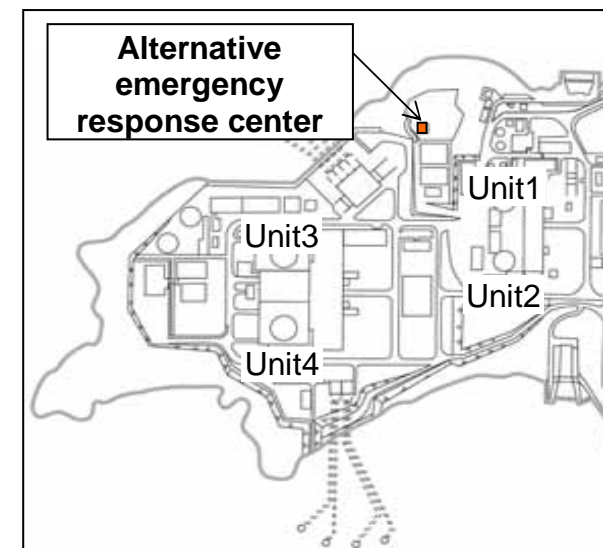
- Radiological protection facilities
- Dedicated power source facilities
- Communication and information facilities

### (3) The size

About 180m<sup>2</sup>



Sendai nuclear power station



Genkai nuclear power station

Describe contents of detailed design such as capacity, lifting height and number of pump necessary to fulfill the function which is required for serious accident measures.

Major Item	Major Description
<ul style="list-style-type: none"> <li>○ Pump                             <ul style="list-style-type: none"> <li>• Permanent electric injection pump</li> <li>• Transportable diesel injection pump</li> <li>• Portable large pumping vehicle</li> <li>• Submersible pump for makeup in spent fuel pit</li> </ul> </li> </ul>	type, capacity, lifting height or discharge pressure, size, number and mounting location of pump, etc.
<ul style="list-style-type: none"> <li>○ Power Source Facilities                             <ul style="list-style-type: none"> <li>• Portable large generator</li> <li>• Power generator vehicle</li> </ul> </li> </ul>	type, capacity, size, electric voltage, rotational speed, number and mounting location of power source facility, etc.
<ul style="list-style-type: none"> <li>○ Piping                             <ul style="list-style-type: none"> <li>• Additional piping for prevention of core damage</li> <li>• Additional piping for prevention of CV failure</li> </ul> </li> </ul>	maximum allowable working pressure, maximum allowable working temperature, outside diameter, thickness and materials of piping, etc.
<ul style="list-style-type: none"> <li>○ Alternative Emergency Response Center</li> </ul>	shield wall and air-conditioning facility in alternative emergency response center, etc.
<ul style="list-style-type: none"> <li>○ Confirmation of Earthquake-proof against Basic Seismic Ground Motion</li> </ul>	result of earthquake-proof evaluation against basic seismic ground motion

### (1) The improvement of system

Assume the following event and add the description about staffing, deployment of equipment and implementation of education and training.

- in case of a serious accident
- in case of fire
- in case of internal overflow
- in case of massive breakage

### (2) Necessary operational management in case of a serious accident

- Describe handling of the equipment which was prepared as serious accident measures in case of failure and inspection

### (3) Security control system

- Change the description to appoint a licensed engineer of reactor by core

For more information, please contact :  
Investor Relations Group  
Corporate Planning Division  
KYUSHU ELECTRIC POWER CO . , INC  
T E L +81 92 726 1575  
F A X +81 92 733 1435  
URL: [http://www1.kyuden.co.jp/en\\_ir\\_index](http://www1.kyuden.co.jp/en_ir_index)