

Nuclear Energy Systems Business Operations

June 1, 2011

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Executive Vice President
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 **MITSUBISHI HEAVY INDUSTRIES, LTD.**

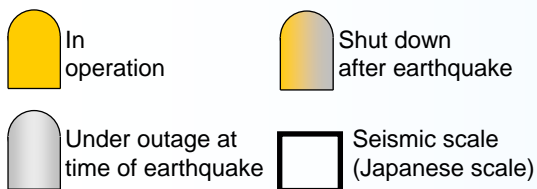
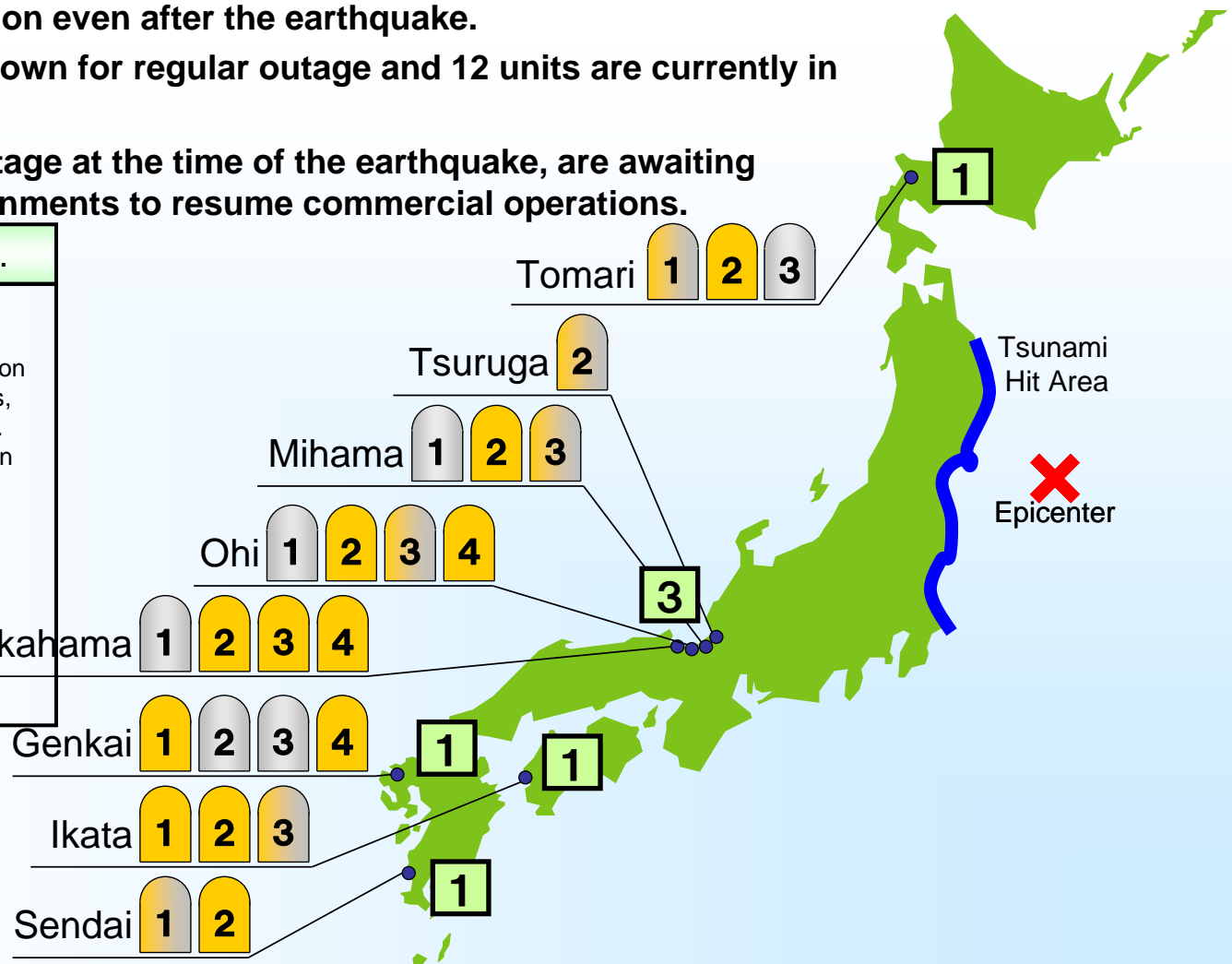
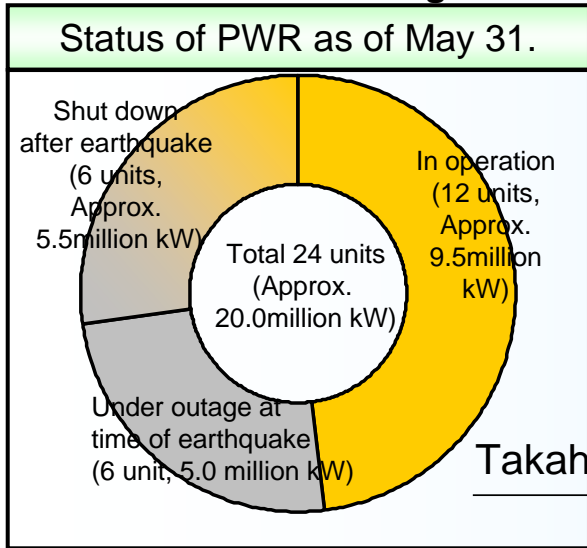
- 1. The Great East Japan Earthquake and Mitsubishi Support to PWR Operators**
- 2. Status of the 2010 Business Plan**
- 3. Domestic Business Strategy**
- 4. Global Business Strategy**
- 5. Summary**

1. The Great East Japan Earthquake and Mitsubishi Support to PWR Operators

(1) Status of PWR Power Plants

PWR Power Plants continued normal operation after the earthquake

- 18 PWR units (out of 24 units in Japan) were in operation on March 11, and continued normal operation even after the earthquake.
- Thereafter, 6 units shut down for regular outage and 12 units are currently in commercial operation.
- 6 units, under regular outage at the time of the earthquake, are awaiting consent from local governments to resume commercial operations.



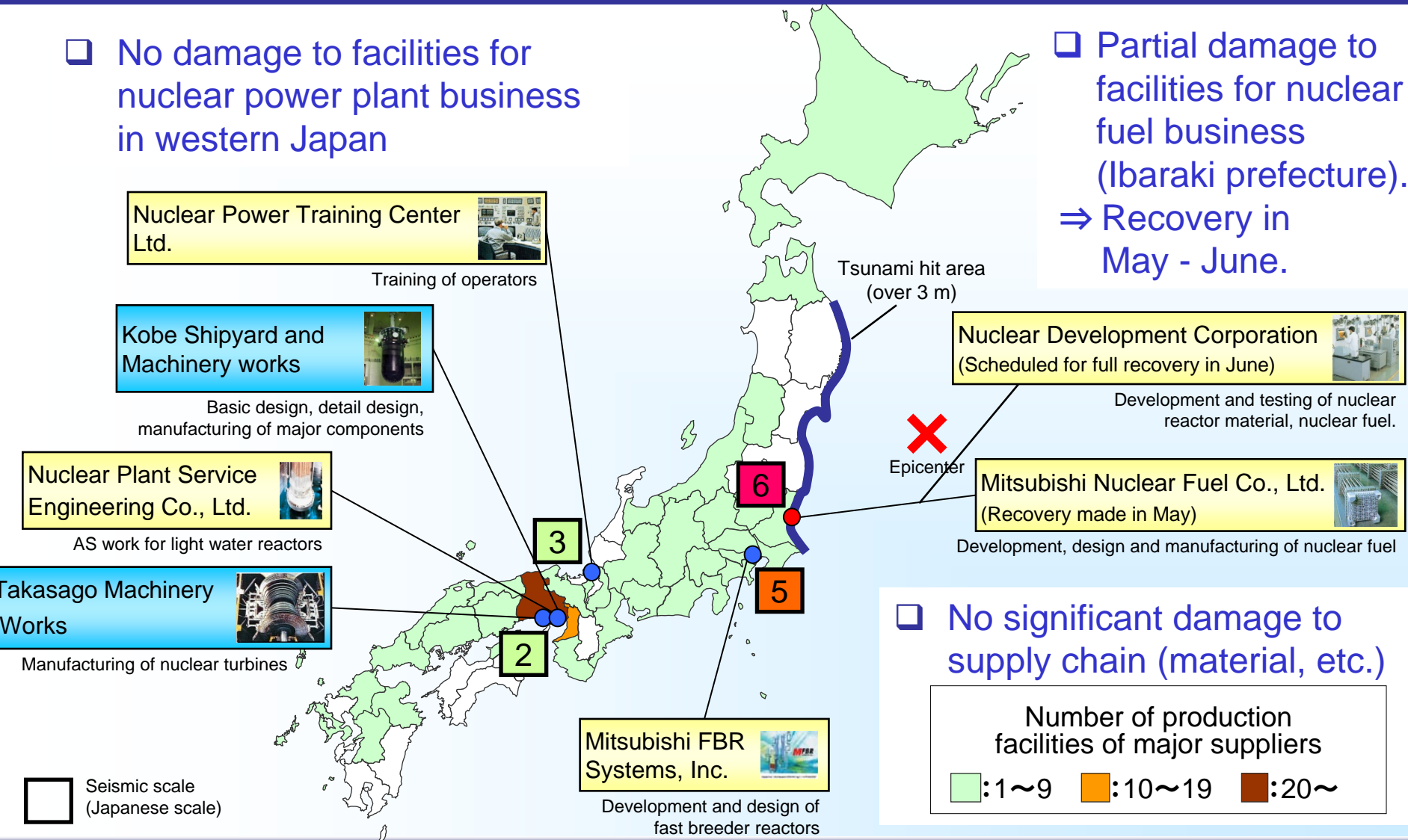
Seismic scale, Tsunami height: Japan Meteorological Agency records
* Plants in conditioning operation of regular inspection included in the 6 plants under outage at time of earthquake.

(2) Status of MHI's Nuclear Power Industry Facilities

No damage to major manufacturing facilities

❑ No damage to facilities for nuclear power plant business in western Japan

❑ Partial damage to facilities for nuclear fuel business (Ibaraki prefecture).
⇒ Recovery in May - June.



(3) Immediate MHI Response to Enable PWR Customers to Continue Operating

Responded quickly with a commitment to “support stable supply of electricity”

- ❑ An Emergency Task Force (600 engineers) was established right after the earthquake on March 11th (Fri.). Countermeasures in case of similar events (SBO) as Fukushima Daiichi were investigated.
- ❑ Relevant information was shared with all PWR Operators on 12th (Sat.) and 13th (Sun.), and countermeasures for Station Black Out (SBO) was proposed on 14th.(Mon.)
- ❑ Nuclear and Industrial Safety Agency (NISA) requested emergency safety measures to all utilities. MHI quickly supported PWR Operators based on the above proposal.



On May 11th, NISA confirmed that emergency safety measures for all PWR power plants have been completed.



Proposal and related documents



SBO measure schedule



Emergency Response HQ activities



(4) Features of the PWR Power Plants

Function to “stop”, “cool”, and “confine” under SBO condition

3. Confine

Confine in **large volume containment vessel**, even in the event of a leak of radioactive materials or hydrogen generation.

1. Stop

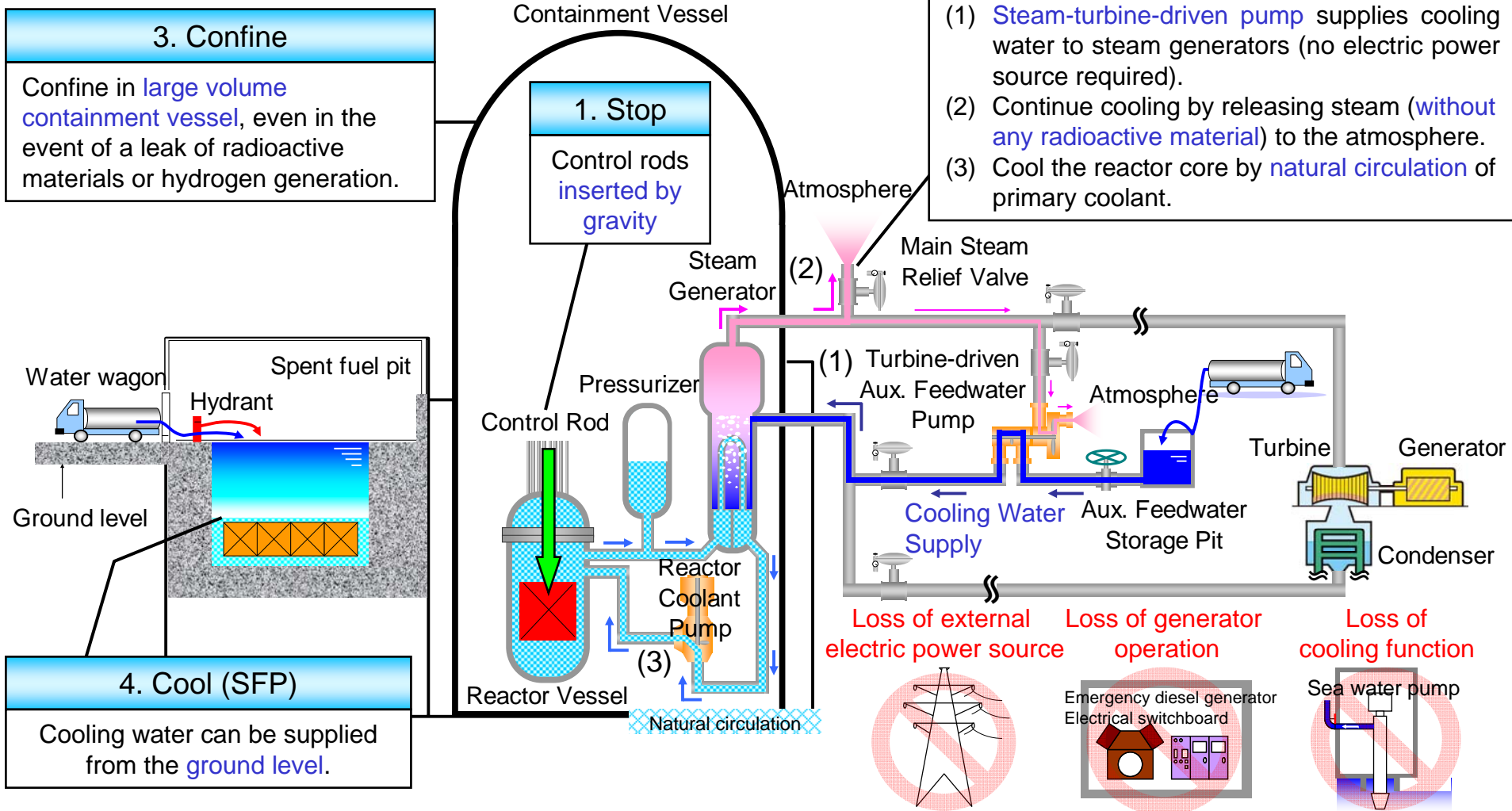
Control rods inserted by gravity

2. Cool

- (1) **Steam-turbine-driven pump** supplies cooling water to steam generators (no electric power source required).
- (2) Continue cooling by releasing steam (**without any radioactive material**) to the atmosphere.
- (3) Cool the reactor core by **natural circulation** of primary coolant.

4. Cool (SFP)

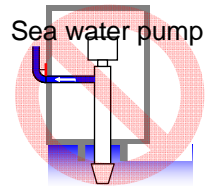
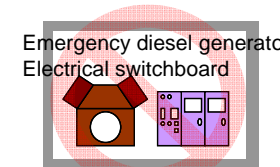
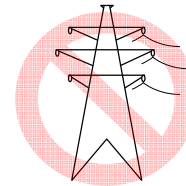
Cooling water can be supplied from the **ground level**.



Loss of external electric power source

Loss of generator operation

Loss of cooling function



Emergency diesel generator
Electrical switchboard

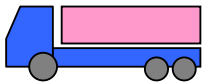
Sea water pump

(5) Countermeasures for Loss of All AC Power Sources (SBO)

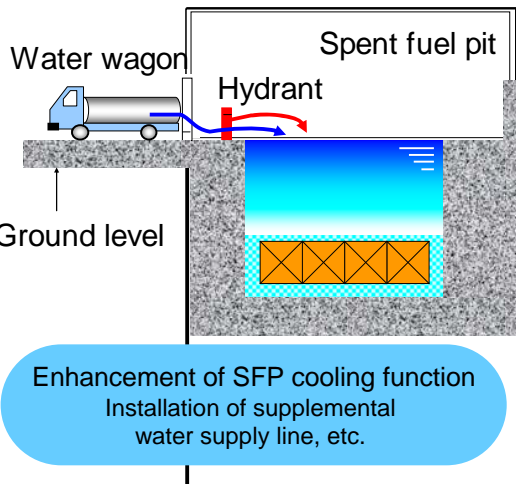
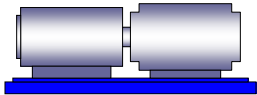
Further improvement of safety and reliability of PWR Plants

- Enhancements of emergency power supply
- Enhancement of cooling functions
- Tsunami Countermeasures
- Enhancement of SA countermeasures (Under consideration)

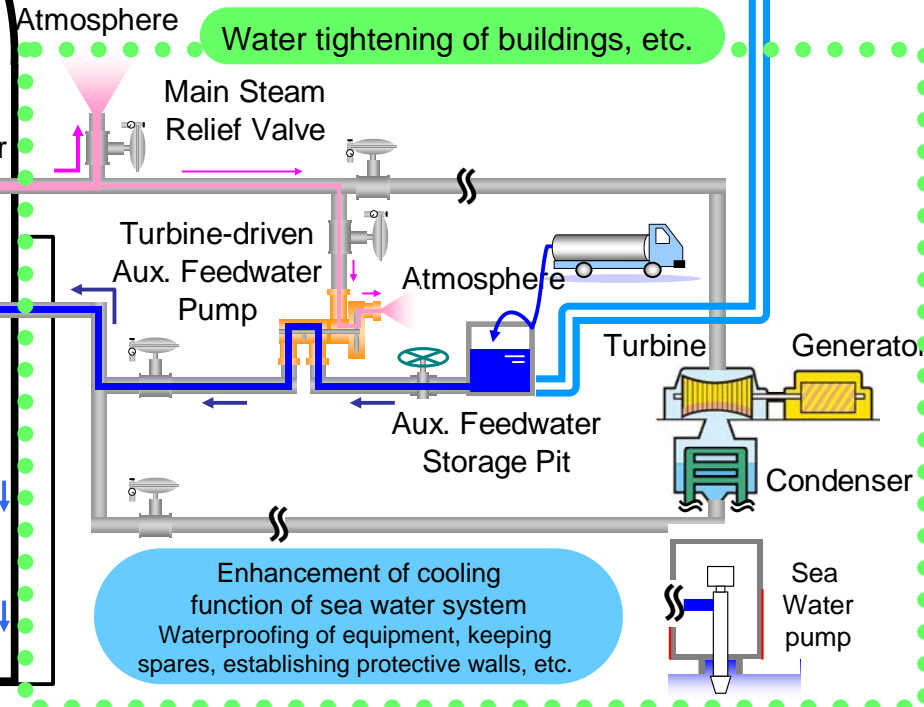
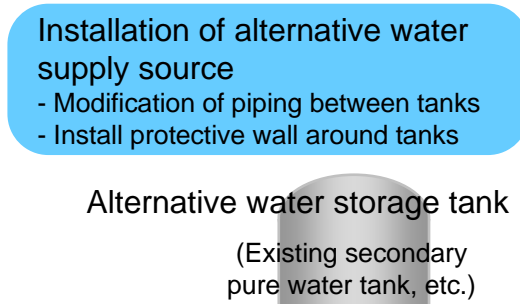
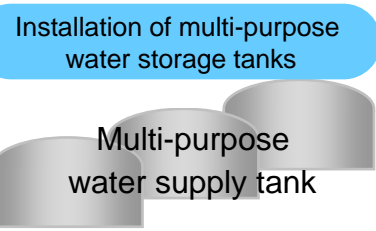
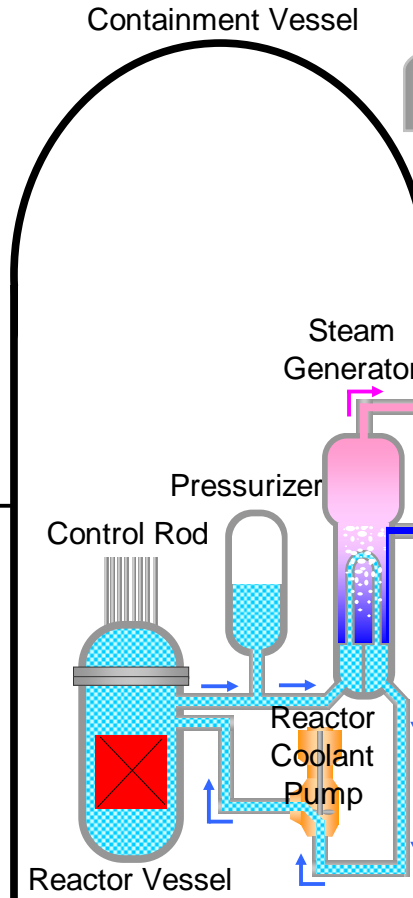
Deploy power supply vehicles, etc.



Installation of permanent emergency generators



Enhancement of SFP cooling function
Installation of supplemental water supply line, etc.



SA: Severe Accident. Serious incident that cause the melting of fuel.

(6) Schedule for SBO Countermeasures

Completed Emergency safety countermeasures (1 month)

Short term (few month) ~ Middle to Long term countermeasures (~ 3 years)

Enhancement of emergency power supply

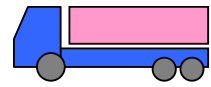
Completed NISA confirmation

Further countermeasures for safety improvement

Deployment of power supply vehicles

Deployment of large capacity power supply vehicles

Installation of permanent emergency generators



Power supply vehicle



Large capacity power generator truck



Stationary type gas turbines

Tsunami countermeasures

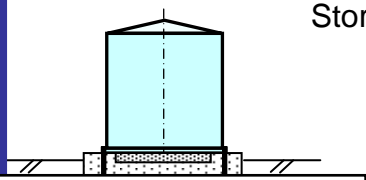
Water tightening of buildings (Sealing of buildings, etc.)

Continue to implement

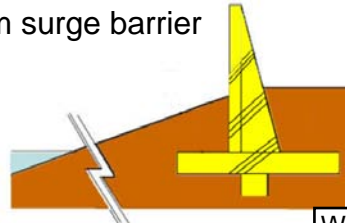
Water tightening of buildings, etc. (Introduction of watertight doors, etc.)
Installation of storm surge barriers, water tightening of sea water pump area, etc.



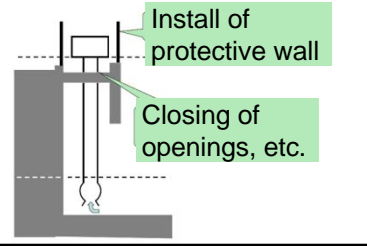
Watertight door



Install a multi-purpose water supply tank on high ground.



Storm surge barrier



Water tightening of sea water pump area

Enhancement of cooling functions

Additional deployment of fire trucks and pumper trucks.



Fire truck

Installation of multi-purpose water storage tanks

Installation of alternative water supply source (Improvement of piping among tanks, installation of protective walls around tanks, etc.)

Enhancement of sea water cooling system (water tightening equipment, keeping spares, installation of protective walls, etc.)

Enhancement of SFP cooling system (installation of water supply lines, etc.)

SA Countermeasures

Set up of SA scenarios and study of countermeasures.

Implementation of SA countermeasures.

(In addition to conventional SA countermeasures, countermeasures for Tsunami, etc. being reviewed).

2. Status of 2010 Business Plan

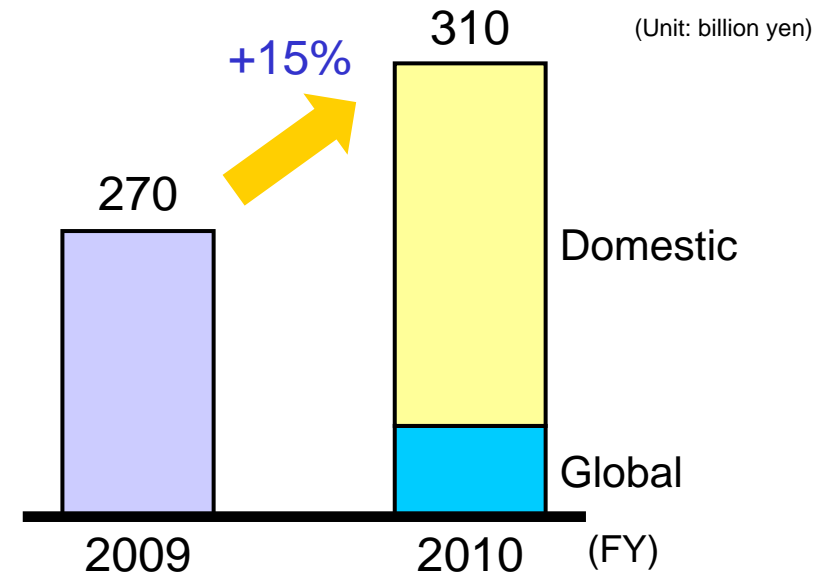
(1) Summary of 2010

Steadily proceeded with initiatives based on the business strategy

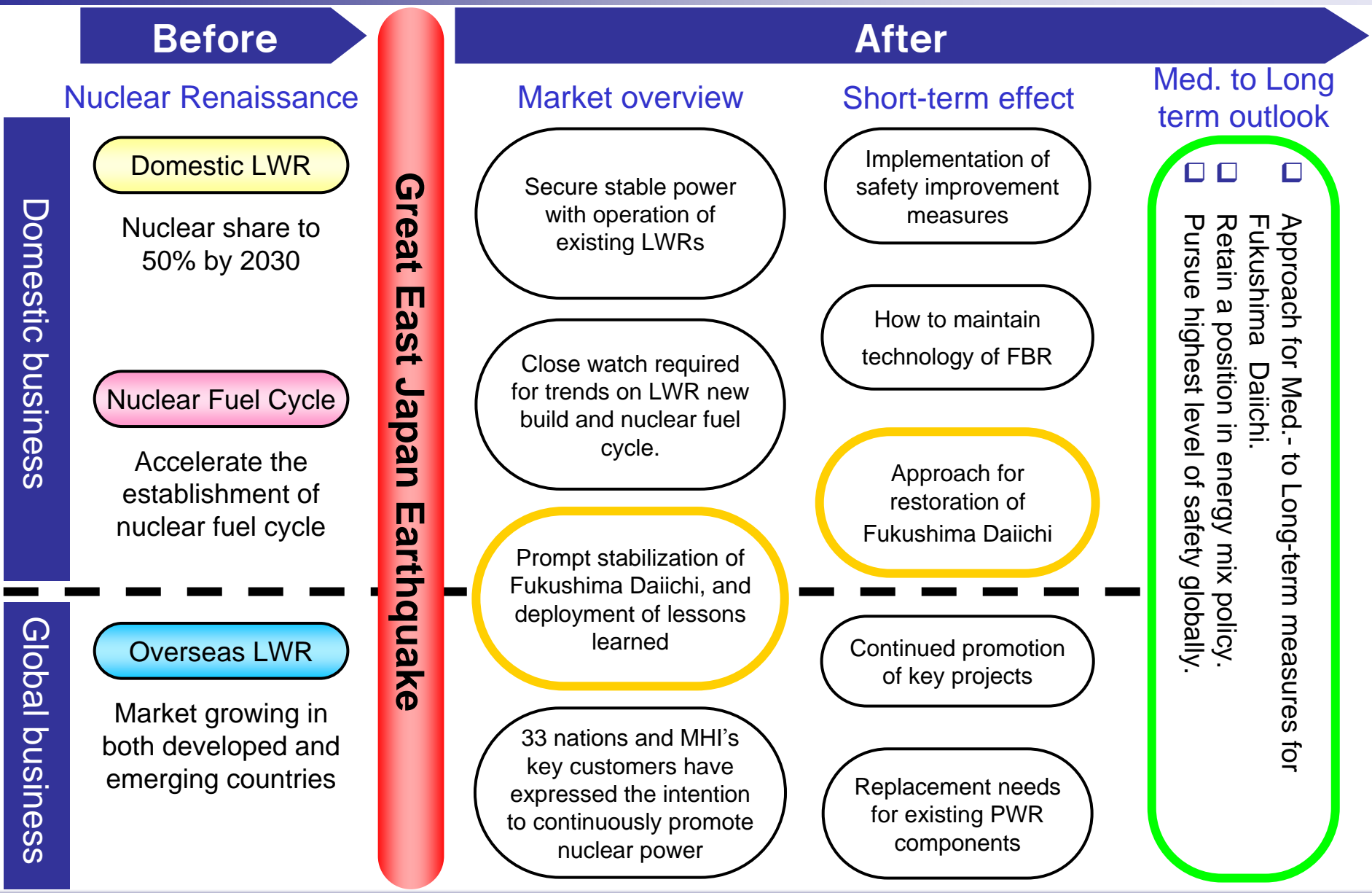
| Business | | 2010 business plan strategy | FY 2010 achievements |
|----------|--------------------|---|--|
| Domestic | LWR | <ul style="list-style-type: none"> Promotion of preventive maintenance for existing PWRs Promote APWR new build | <ul style="list-style-type: none"> Increase in AS orders (e.g. preventive maintenance for alloy 600) Support for Tsuruga 3/4 (safety review), Sendai 3 (construction permit application) |
| | Nuclear Fuel Cycle | <ul style="list-style-type: none"> Deploy nuclear fuel cycle solution Lead FBR development as a core company | <ul style="list-style-type: none"> Promote construction of RRP and MOX fuel fabrication plant. Promote FaCT Phase I (decision to/not to adopt innovative technology) |
| Global | | <ul style="list-style-type: none"> From “Component export business model” to “Plant export business model” | <ul style="list-style-type: none"> US-APWR NA3 advance engineering work agreement concluded ATMEA1™ Japanese-French consortium shortlisted in Jordan |

Order received

- 15% increase year on year for FY2010
- Exceeded 300 billion yen by contribution of increase in domestic AS and NA3 advance engineering, etc.



(2) Changes in the Business Environment



(3) MHI Business Strategy and Plan for Orders

Reallocation of resources to meet changes in the business environment, and achieve business plan

Domestic Business Strategy

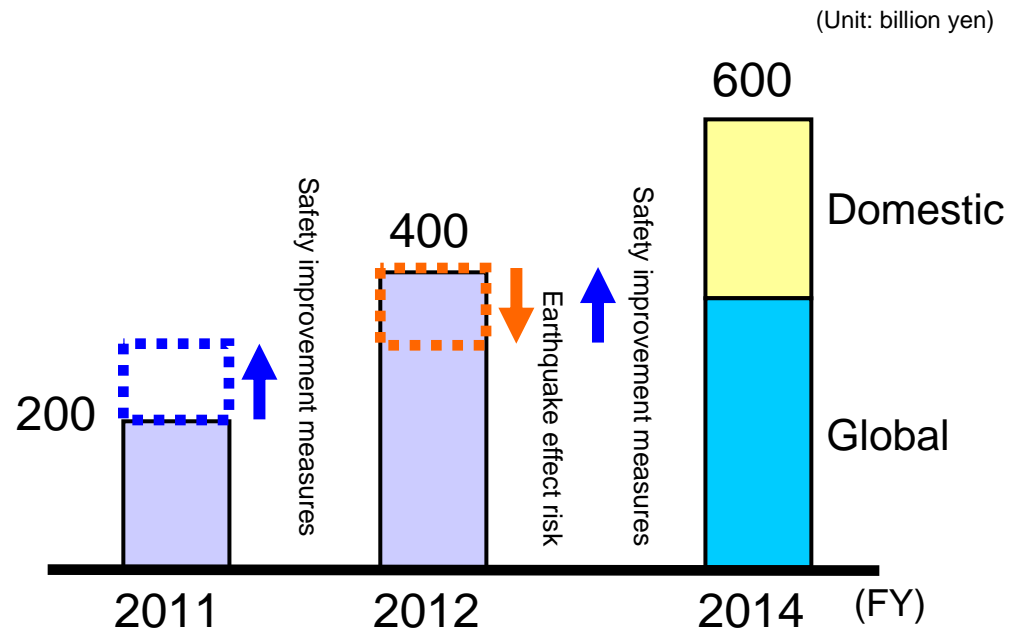
- Further improvement in safety and reliability based on lessons learned from the earthquake
- Collaborate with Hitachi, Ltd, for the support of Fukushima Daiichi, and combine all the strength of Japan, US and Europe.

Global Business Strategy

- Further enhance the safety and reliability of PWR, and promote key projects.
- Enhance project promotion of three units in USA (NA3, CP3/4 – US-APWR technology selected).
- Expand nuclear service business in global market.

Plan for Orders

- For FY2011 and 2012, back up the earthquake effect risk with expansion of AS, such as safety improvement measures.
- Achieve 600 billion yen in FY 2014, through expansion of global business.



3. Domestic Business Strategy

(1) Deployment for Domestic LWR and Nuclear Fuel Cycle

Emphasize safety measures based on lessons from the quake, maintain technical capabilities

Domestic LWR

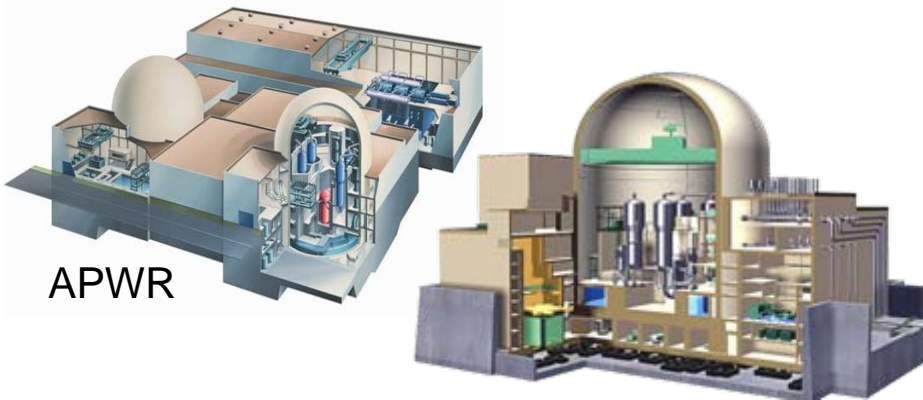
Existing PWR

- As the core of the nuclear energy business, promote further improvement of safety and contribute to the stable supply of electricity.

APWR

- Further enhance the safety and reliability of PWR power plants.

Next-generation LWR



Next-generation LWR

Nuclear fuel cycle

Re-processing

- Swiftly respond to changes in regulations, support the restart of active testing at RRP.



FBR

- Continue international cooperation, maintain technology

Prototype reactor Monju



Source: Japan Atomic Energy Agency

Demonstration of power generation, Establishment of sodium technology

Demonstration reactor*



Demonstration on innovative technologies



Commercial reactor



Commercialization of FBR

(2) Support for Fukushima Daiichi (Short-Term Countermeasures)

Participation in the “Roadmap towards Restoration from the Accident”

| Issues | As of April 17 | Step 1 (around 3 months) | Step 2 (around 3 to 6 months after achieving Step 1) | MHI participation |
|------------|-------------------|--|---|--|
| Cooling | Reactor | fresh water injection injection cooling Reuse of accumulated water Nitrogen gas injection | Stable cooling Establishment of Circulating Injection cooling | cold shutdown ----- (Response by original supplier) |
| | Spent Fuel pool | fresh water injection Circulation cooling system (Installation of heat exchanger) | Stable cooling Consideration / installation of heat exchanging function | More stable cooling Proposal of MHI technology |
| Mitigation | Accumulated water | Transferring water with high radiation level Storing water with low radiation level | Secure storage place Installation of storage / processing facilities Installation of storage facilities | Reduction amount of total contaminated water Study of storage / processing facilities and processing methods Mega-Float (in cooperation with Shipbuilding and Ocean Development HQ) |
| | Atmosphere / Soil | Removal of debris | Installing reactor building cover (with ventilation system) | Forklifts with Radiation Shielded Cabin (In cooperation with General Machinery & Special Vehicles HQ) Proposal of dome technology |
| | | | |   |

(3) Support for Fukushima Daiichi (Med.- to Long-Term Countermeasures)

Collaboration with Hitachi, Ltd. Combine the wisdom of Japan, US, and Europe.

TEPCO Roadmap (Step 1 and 2)

Support Technology for medium- to long-term issues
(Studied by MHI using TMI#2 experience)

1. Achieve stable cooling

- Permanent cooling system
- Sea water cleanup

2. Clarify external radioactive contamination

- Reduce radiation dosage
- Measurement of radioactivity

3. Remove external debris

- Remote control equipment

4. Enclose building, prevent radioactive contamination

- Enclosure equipment

5. Remove upper part of building, internal debris

- Debris removal equipment
- Remote control equipment

6. Decontaminate building interior

- Decontamination equipment
- Remote control equipment

7. Remove fuel

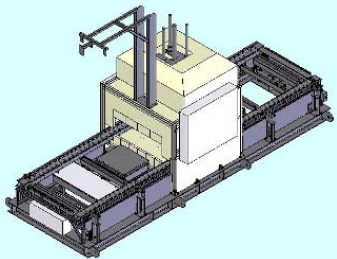
- Fuel condition survey
- Fuel removal equipment
- Fuel storage, transportation cask
- Fuel storage facilities

8. Long-term measure

(Wastes, building, fuel, etc.)

Support Framework

- ❑ Support Fukushima Daiichi **jointly with Hitachi, Ltd.**
- ❑ Collaborate with overseas partners of both companies; combine **the wisdom of Japan, US and Europe.**



Clearance level measuring equipment



Laser cutting technology



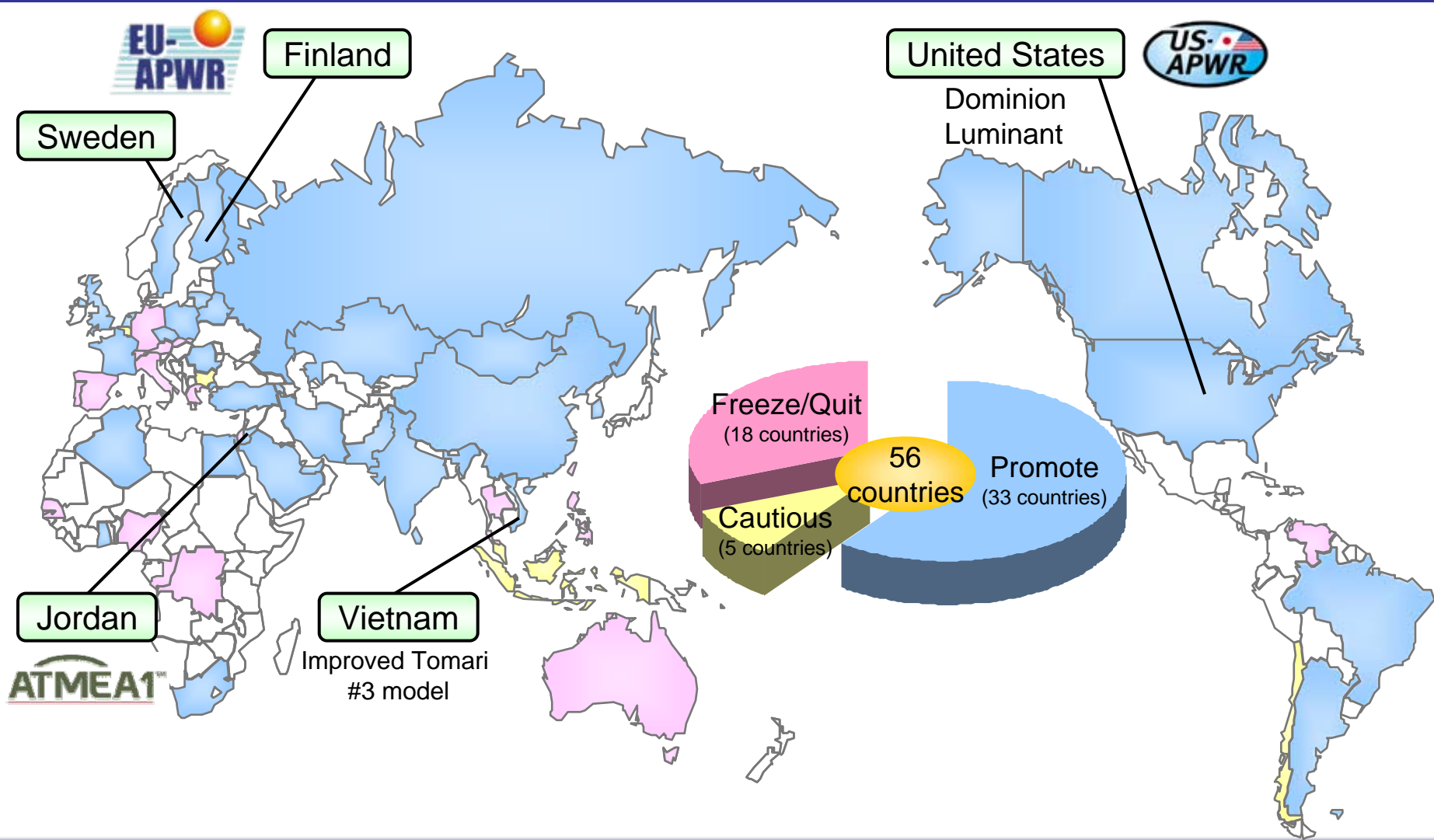
Fuel storage / transportation cask

Example of MHI owned technology

4. Global Business Strategy

(1) Nuclear Energy Policy of each country

33 nations and MHI's key customers have expressed the intention to continuously promote nuclear power



(2) Projects in the US

Customers intend to continue 3 units, DC/COL in progress

Luminant: Comanche Peak units 3 & 4

We remain committed to pursuing the development of two new units at Comanche Peak. We will work close concert with the United States Nuclear Regulatory Commission and industry groups to incorporate lessons learned from the events in Japan into the ongoing process of designing, licensing and building of our proposed units.

David Campbell,
CEO Luminant



Luminant News Release, March 14.

Dominion: North Anna unit 3

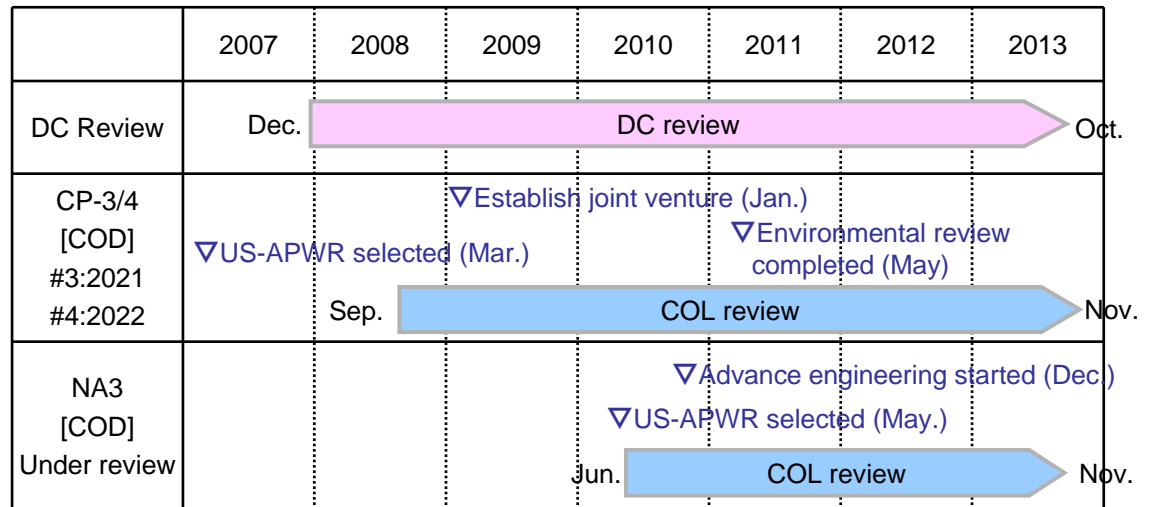
"We're going to continue seeking the combined operating license," said Thomas F. Farrell II, chairman, president and CEO of Dominion Resources Inc., the parent company of Dominion Virginia Power. The company wants to keep the option open to meet projected demand for electricity.

Thomas Farrell, CEO
Dominion Resources






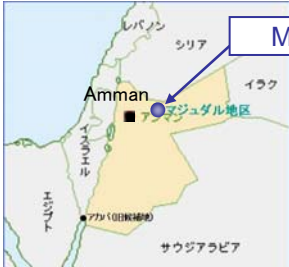
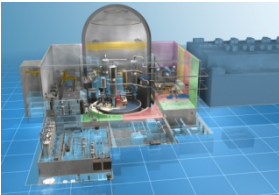


Richmond Times-Dispatch, March 15

- ❑ DC is underway with aim to complete review in 2013.
- ❑ CP3/4 COL environmental review completed in May 2011.
- ❑ As for NA3, MNES engineering center established in North Carolina in May 2011, design in progress.





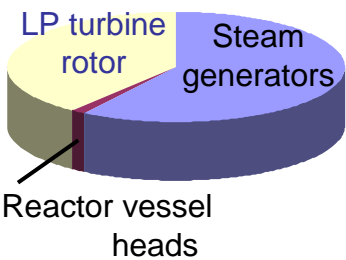
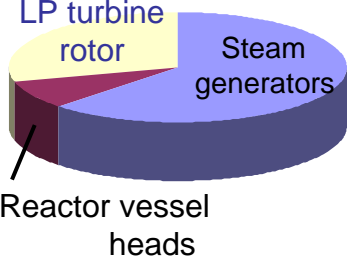
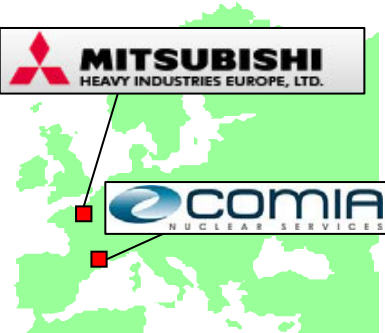
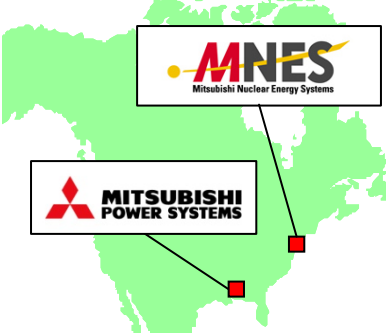
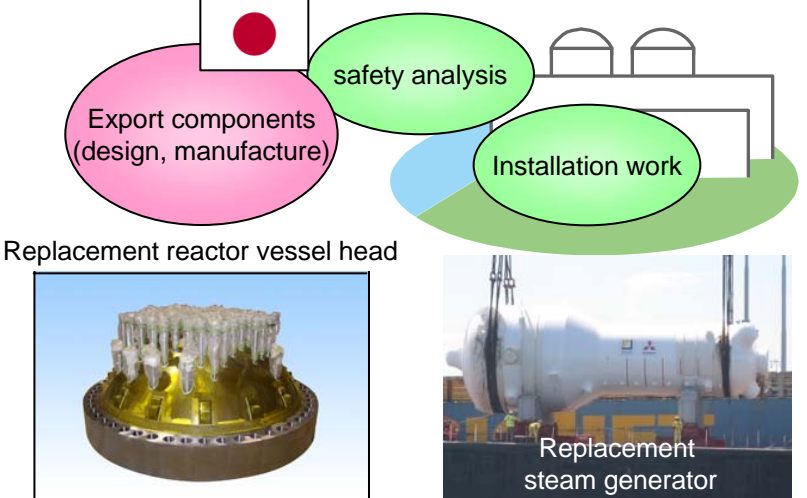
(3) Projects in Europe, Jordan and Vietnam

Continuously promote key projects

| |  Europe |  Jordan | Vietnam |
|---------------------------|---|---|---|
| Customer intention | Finland, Sweden etc. intend to maintain nuclear energy policy  <p>Source: UKI Architects Image of the completed Olkiluoto unit-4, Finland</p> | “Jordan will implement its plans for nuclear power.” (Khaled Toukan, Minister for Energy, April 18)   <p>Majdal region</p> | “Vietnam will continue the peaceful use of nuclear power plants.” (Deputy Prime Minister Hai, May 26)   <p>Binhai</p> |
| Milestones | 2008 (Finland) Apr.: TVO selected the EU-APWR as one of its candidate reactors | 2010 May: Japan-France/Canada/ Russia shortlisted Sep.: Japan and Jordan signed nuclear cooperation agreement | 2010 Oct.: JINED established Vietnam selected Japan as a partner 2011 Jan.: Japan and Vietnam signed nuclear cooperation agreement Feb.: JAPC concluded cooperation agreement with Vietnam |
| | 2011 •Planned start of EUR review for the EU-APWR | 2011 •Preparing bid in collaboration with AREVA •Selection of candidate reactor planned within the year | 2011 •JAPC plans FS contract within the year •In process of proposing improved Tomari #3 PWR through JINED |
| | early 2020s COD scheduled (Olkiluoto unit-4, Finland) | 2019 COD scheduled | 2021 COD scheduled |

(4) Nuclear service business in global market

Boost competitiveness to respond needs for component replacement

| |  Europe |  USA | Initiatives |
|--------------------|---|---|---|
| Component market | <p>500 billion yen</p>  | <p>200 - 300 billion yen</p>  | <ol style="list-style-type: none"> 1. Strengthen cost competitiveness by SPMS-based production innovation, (Modular design, 3D-CAD, use of BOM) 2. Implement global procurement, reduce exposure to currency exchange rates (Procure component materials from overseas etc.) 3. Evolution of business model for enhance customer value (package offer including safety analysis and installation work) |
| Network in EU & US |  <p>Apr. 2011 Established COMIA as a joint venture with COMEX in France (maintenance service on site)</p> |  <p>Expansion of service business through alliances with local partners</p> |  <p>Replacement reactor vessel head</p> <p>Replacement steam generator</p> |

5. Summary

G8 summit committed to promoting the highest levels of nuclear safety

- ❑ Here at home, nuclear power is also an important part of our own energy future, along with the renewable sources like wind, solar, natural gas and clean coal. (President Obama, USA)
- ❑ We all wish to get a very high standard of regulations on nuclear safety, that will apply to countries involved in civilian nuclear energy and which will take safety to the highest levels ever. (President Sarkozy, France)
- ❑ Nuclear power must play a part in energy supplies in the future. (Prime Minister Cameron, UK)
- ❑ Nuclear power is the cheapest and most ecologically sound energy. (President Medvedev, Russia)
- ❑ The cost of renewable energy is high. Nuclear power will remain important. (Prime Minister Harper, Canada)
- ❑ We will achieve the highest level of nuclear safety, drawing on the lessons of the nuclear accident. (Prime Minister Kan, Japan)

A Leading Company in the Global Nuclear Energy Field

1. Make further safety improvements for PWR
2. Support Fukushima Daiichi
3. Worldwide deployment of the experience and technologies based on Fukushima



**Global warming countermeasure,
Ensure energy security,
Contribute to stable power supply**



Our Technologies, Your Tomorrow

Forecasts regarding future performance in these materials are based on judgment made in accordance with information available at the time this presentation was prepared. As such, those projections involve risks and insecurity. For this reason, investors are recommended not to depend solely on these projections for making investment decision. It is possible that actual results may change significantly from these projections for a number of factors. Such factors include, but are not limited to, economic trends affecting the Company's operating environment, currency movement of the yen value to the U.S. dollar and other foreign currencies, and trends of stock markets in Japan.