Ongoing Voluntary Efforts to Enhance Safety

In June 2014, the Company developed a roadmap of actions to be implemented (Further Strengthening of Ongoing Voluntary Efforts to Enhance Nuclear Safety), including actions to enhance safety in compliance with the new regulatory standards as well as emergency response capabilities such as strengthened training programs, drills, and organizations. We are determined to implement the roadmap through a cohesive effort of the entire company without being restricted by the regulatory framework.

Enforcement of Defense-in-Depth

Example of Takahama Units 3 & 4

Preparations to protect the power plant from natural phenomena (accident prevention)

**Preparation for earthquakes**
- Detailed research to study the linked motion of faults near the power plant
  - The linked motion of faults has been analyzed conservatively; the Company has increased the assumed earthquake level and adopted reinforcements against earthquakes in the required locations.

**Preparation for tsunami**
- Seawall and embankments built to withstand an assumed tsunami of the largest magnitude
- Installation of watertight doors to protect safety-critical devices

**Preparation for fire**
- In order to prevent fire spreading from the adjacent forest, trees along the perimeter of the power plant have been cut down to ensure an 18-m wide fire belt.

**Preparation for tornadoes**
- Installation of tornado-resistant facilities to protect devices from flying objects
  *It is assumed that a tornado with a wind speed of 130 m/s, exceeding the highest wind speed even observed in Japan (90 m/s), would cause steel objects of 1.55 kg to become airborne.*

Measures to prevent serious accidents by cooling the reactor in a stable condition (preventing the development of accidents)

**Enhanced power supply**
- Enhancement of external power supply and ensuring redundancy and diversity of internal power supplies

**Enhanced cooling function**
- Diversified seawater intake methods
  - In the event a seawater pump is not available
- Pressurizer spill valve

Preventing serious accidents

Responding to widespread damage
- Response with high-capacity pumps
  - In the event pumps are not available
- Plan to establish a facility for dealing with specific serious accidents
  - A room intended for the purpose of the reinforcement of new regulatory standards
  - Facility for dealing with specific serious accidents
  - Pressure-release device
  - Emergency Control Room
  - Power supply (generator)
  - Water supply (pump)
  - Water source
  - Device for preventing damage to containment vessel due to depressurization event in Fukushima

Responding to the remote chance of a serious accident (containing accidents)

**Preventive measure against hydrogen explosion of containment vessel**
- Installation of hydrogen concentration reduction device
  - Containment vessel

Preventing to unlikely events

Securing access routes
- Providing heavy machinery for removing wreckage
- Water cannon (limiting atmospheric dispersion)
- Silt fence (limiting marine dispersion)