

March 13, 2011

## References

1. Act on Special Measures Concerning Nuclear Emergency Preparedness (hereafter referred to as "Nuclear Emergency Preparedness Act")
  - (1) Specific events (related to light water reactors) under Article 10 of the Nuclear Emergency Preparedness Act
    - When a radiation dose of 5 $\mu$ Sv/h or higher is detected by a radiological survey instrument located near the boundary of the nuclear site;
    - When radioactive material equivalent to 5 $\mu$ Sv/h is detected at a usual release point, such as a stack, while the level of diffusion and other factors are taken into consideration;
    - When a radiation dose of 50 $\mu$ Sv/h or radioactive material equivalent to 5 $\mu$ Sv/h is detected at a place outside the controlled area;
    - When a radiation dose of 100 $\mu$ Sv/h is detected at a point one (1) meter away from a transport container or cask;
    - The reactor cannot be shut down with the normal shutdown method when a reactor scram is required;
    - In the event of loss of reactor coolant, which requires the operation of the emergency core cooling system during reactor operation (Fukushima Daini Unit 1);
    - When the emergency core cooling system is inoperable following loss of the function to feed water to the reactor during reactor operation;
    - Loss of all functions to feed water to the steam generator during reactor operation (pressurized water reactors);
    - Loss of the function to remove residual heat from the reactor following loss of the function to remove heat from the reactor with the main condenser during reactor operation (excluding pressurized water reactors) (Fukushima Daini, Units 2 and 4);
    - When electricity supply from all AC power supplies stops during reactor operation and such a state continues for more than five (5) minutes (Fukushima Daiichi, Units 1, 2, and 3);
    - In the event of only a single emergency DC bus being available during reactor operation, the condition in which only a single power supply is available to supply electricity to said DC bus continues for more than five (5) minutes;
    - When irradiated fuel assemblies are inside the reactor vessel during reactor shutdown and the level of water within such a reactor vessel lowers to the level at which the emergency core cooling system is activated (or, during shutdown of a pressurized water reactor, to the

level at which the function to remove residual heat from the reactor is lost);

- The level of the irradiate fuel assembly storage tank lowers to the level at which such fuel assemblies are exposed; and
- Loss of the function to shut down the reactor or the function to remove residual heat of the reactor from the main control room due to the unavailability of the main control room

(2) Nuclear emergency criteria (related to light water reactors) under Article 15 of the Nuclear Emergency Preparedness Act

- When a radiation dose of 500 $\mu$ Sv/h or higher is detected near the boundary of the nuclear site by a radiological survey instrument belonging to said nuclear site or a relevant prefectural government (Fukushima Daiichi);
- When radioactive material equivalent to 500 $\mu$ Sv/h is detected at a usual release point, such as a stack, or at a place outside the controlled area;
- When a radiation dose of 5mSv/h is detected at a place outside the controlled area;
- When a radiation dose of 10mSv/h is detected at a point one (1) meter away from a transport container or cask;
- When nuclear fuel material is in a critical state (meaning a state in which chain reaction of atomic fission continues) inside the facility for reactor operation, etc. (excluding the interior of the reactor) ;
- When reactor operation cannot be shut down even by injecting emergency neutron absorbers;
- Loss of all the functions to shutdown the reactor when a reactor scram is required;
- In the event of a reactor coolant leak requiring the operation of the emergency core cooling system during operation, or loss of all the functions to feed water to the reactor if it is a boiling water reactor, or loss of all the functions to feed water to the steam generator if it is a pressurized water reactor, and inability to flood said reactor with all of the emergency core cooling systems (Fukushima Daiichi, Units 1, 2, and 3);
- In the event of a reactor coolant leak, the pressure inside the containment vessel reaches the maximum design operating pressure of said containment vessel;
- Loss of the function to suppress the pressure of the containment vessel following loss of the function to remove residual heat from the reactor in the event of loss of the function to remove heat from the reactor with

the main condenser during reactor operation (limited to boiling water reactors) (Fukushima Daini, Units 1, 2, and 4);

- Loss of all the functions to cool down the reactor (or, if it is a pressurized water reactor, to feed water to the steam generator) during reactor operation (for boiling water reactors and pressurized water reactors, only when electricity supply from all AC power supplies stops):
- When electricity supply from all AC power supplies stops during reactor operation and such a state continues for more than five (5) minutes;
- When a radiation dose within the containment vessel or a temperature within the reactor vessel indicating a core melt is detected;
- When any change of the water level within the reactor vessel or any other event is detected, indicating that irradiated fuel assemblies are exposed within the reactor vessel during reactor shutdown;
- When irradiated fuel assemblies are inside the reactor vessel during reactor shutdown (limited to pressurized water reactors) and the level of water lowers to the level at which the function to remove residual heat from the reactor is lost and such a state continues for more than one (1) hour; and
- Loss of the function to shut down the reactor or to remove residual heat from the main control room or by other means.

End