[10] The Decision to Inject Seawater Which Would Lead to the Decommissioning of Fukushima Daiichi Nuclear Power Station Unit 1

[Main Report 8.1(2) Response Status Pertaining to Cooling Water Injection at Fukushima Daiichi Unit 1]

Injecting seawater into the reactor instead of freshwater can cause the reactor to become inoperable. Therefore, it has been pointed out that TEPCO hesitated to inject seawater in fear of leaving the reactor inoperable, thereby contributing to the accident.

However, cooling the reactor was an urgent issue, and if no freshwater was available, the only other conceivable choice was to inject seawater.

The following actions are that TEPCO made decide to inject seawater even though it might leave the reactor inoperable.

[Facts found]

- After the devastation of the tsunami, the ERC at the power station was aware that regardless of whether freshwater or seawater was used, cooling water had to be injected into the reactor in order to cool it.

- On March 11 at around 17:12, the Site superintendent ordered deliberation of methods to inject cooling water into the reactor using the FP and a fire engine.

  In response to this, the MCR confirmed an injection line to the reactor based on accident management procedures and decided to use the diesel driven fire extinguishing pump, which was the only means available since power had been lost, and at around 17:30 confirmed that the aforementioned pump was up and running and on standby.

  An injection line was configured via the core spray system, and at around 20:50 the diesel driven fire extinguishing pump was activated which enabled cooling water to be injected after depressurization of the reactor.

- However, high reactor pressure obstructed the injection of water, and at around 1:48 on March 12 the diesel driven fire extinguishing pump shutdown. The battery was changed, and operators refilled the fuel tank, but the pump could not be started again.

- At the same time, preparations were being made to configure a line from the FP using the fire engine, and at around 5:46 on March 12 the closest fire water tank on the Unit 1 was used to begin injecting freshwater into the reactor using the fire engine and a line from the FP.

- At around 12:00, while the injection of freshwater was still continuing, it was determined that there was a limit to the amount of freshwater that could be secured in the fire protection tank, and the site superintendent ordered that preparations be made

to inject seawater, which was confirmed and approved by the president of TEPCO.

- As the fire engine was about to finish injecting approximately 80,000 liters of freshwater, at around 14:54 the Site superintendent gave the order to inject seawater into the reactor at which time work to switch injecting from freshwater to seawater was implemented.

- Preparations to configure a cooling water injection line using three fire engines and water from the tsunami that had accumulated in the Unit 3 back wash valve pit were made. However, at around 15:36 right before the line up was completed, the Unit 1 reactor building exploded.

- This explosion damaged the hoses that were to be used for injecting seawater. Furthermore, the explosion caused evacuation from the field and made injured workers that needed to be rescued and carried out. It was then necessary to take radiation measurements and conduct an investigation of the field in order to ensure safety and investigate the damages from the explosion. Hoses needed to be newly laid, so new hoses were gathered from the field's fire hydrants and highly radioactive debris was cleared.

- A new seawater injection lineup was completed and the injection of seawater began at around 19:04.