

Necessity for injecting nitrogen

- In the Unit1, 2, and 3 of Fukushima Daiichi Nuclear Power Station, the effort to remove decay heat in reactor is generating steam inside of all three units. Because it is assumed that the inside of reactor containment vessel (RCV) is mostly steam, the risk of explosion by the hydrogen generated in pressure containment vessel (PCV) is limited.
- However, there is a possibility that the outside of RPV for all three units are damaged. If we continue to cool reactors through injection of water under this circumstance, there is a concern regarding possible explosion caused by concentration of hydrogen which is leaked from RPV to PCV. In order to prevent possible combustion of hydrogen for three units, it is necessary to inject nitrogen to each PCVs.

Steam within PCV will decrease through condensation at wall of PCV (Heat-transfer to the outside of the building) and condensation of injected water to the reactor which was not effective for the removal of decay heat. In addition, the impact of condensation from heat transfer is no greater than that of the ineffective injected water. On the other hand, it is necessary to continue injecting water to the reactor. Therefore, injection of water will be continued and the amount will be more than it is needed for the removal of decay heat.

- As for unit1, the damage to D/W is relatively light compared to unit 2. Therefore, in the case of increase in concentration of steam along with that of hydrogen through cooling of the reactor, pressure in PCV becomes negative. Moreover, oxygen will be supplied to PCV by in-leak and hydrogen pressure increases, which makes the atmosphere susceptible to reach combustible limit. In order to prevent this, **we will inject nitrogen to unit 1 first, then to unit 2 and 3.**

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