The current challenges and good practices of utilities

"Progress of the Zinc Injection in Tsuruga NPP Unit 2"

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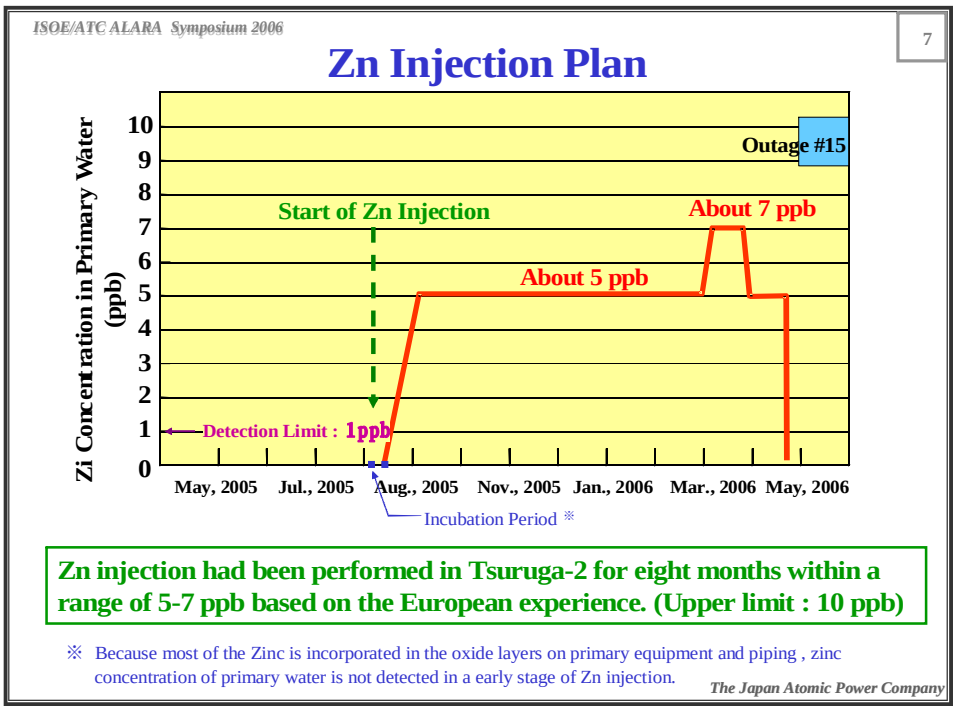
Zinc injection into the Tsuruga NPP unit 2 is implemented to assess ① Effect of water chemistry during zinc injection, ② Effect on dose reduction, and ③ Evaluation of the fuel performance. At Tsuruga unit 2, 14th Cycle were implemented from 2005/10/ to injection zinc for 8 months, and the density of cooling material zinc was 5～7ppb.

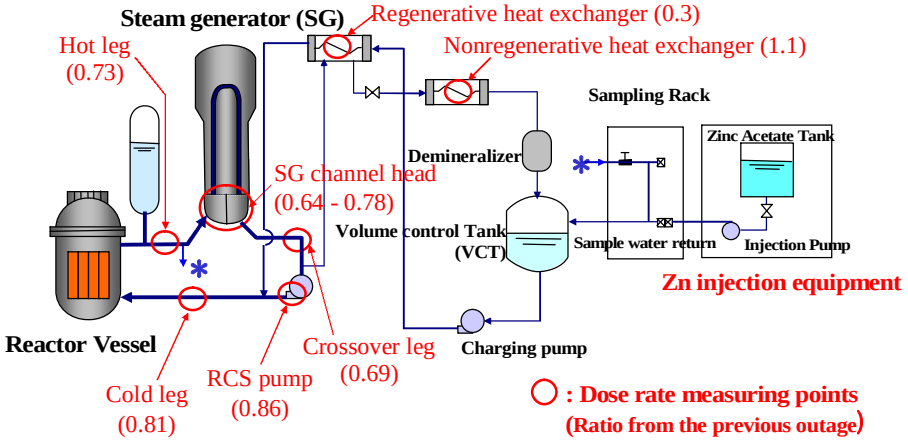
Radioactive Co density (co-58 and Co-60) in the coolant during the zinc injecting period was increased by a factor of ten. Depleted zinc was used so that the density of Zn-65 was not observed.

By the effect of zinc injection, the dose rate of the primary equipment and pipes (Hot Leg, Cold Leg, and SG Water Room) was decreased by 20-30% compared with the rate of previous periodical inspection.

The surface of fuel covering pipe was not influenced even after zinc injection. In the thickness measurement of rotted film on fuel covering pipe, there was no difference between before and after zinc injection; therefore, it is concluded that zinc injection has no influence on corrosion of covering pipe.

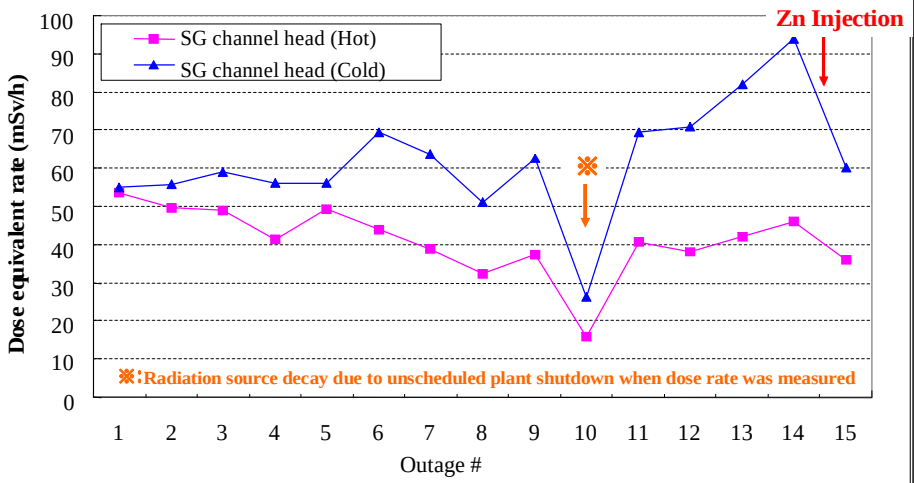


Relative dose equivalent rate on the primary equipment and pipes



The zinc injection reduced the dose rate of primary equipment and pipes to 70-80 % than that of previous outage. This effect of dose reduction is higher than expectation based on the foregoing plants.
However, low temperature nonregenerater had no effect due to zinc injection.

Behavior of dose equivalent rate in SG Channel head



Dose equivalent rate in SG channel head had increased with age, but was reduced to its about 20-30% thanks to the application of zinc injection.