The current challenges and good practices of utilities

"ALARA Activities at Ohi NPP"

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Ohi Power Station presented Vision for year 2010 to be the best nuclear power station by 2010. It established 3 plans and set a goal for each plan. One of them is dose reduction to the level of 1.4 man.Sv/year. The dose level of Ohi power station is at the average level in Japan but leveled off recently. For setting goals, it refers to Belgium system. Belgium is steadily reducing the dose, and Doel nuclear power station in Belgium achieved to be in the top 5 of WANO index. Ohi power station set the goal of dose levels 1.4 man.Sv/year, which is the same level as Doel nuclear power station.

As the result of analysis of scheduled outage activities, 40% of inspection-related dose was from RCP (Reactor Coolant Pump) inspection. Therefore, as a result of analysis of RCP inspection work further more, around 90% of the RCP-related dose is from the work during pre-internal assembly, internal dismantle, and inspection. The exposure of unit 3 and 4 reactors during dismantle and inspection is twice the average PWR exposure in Japan, and it is assumed that cruds are easily to be attached and hard to be removed. Then, for dose reduction during RCP inspection, Working Group, which includes members such as radiation control department of Kansai Electric and inspection contractors that cover all areas of RCP inspection was established. Questionnaires are distributed to 50 workers including workers for RCP inspection work, and the chart of special factors are drew up from them to make plans for dose reduction. Best plans are selected from the plans based on reduction effectiveness and cost performance. The selected plans are as follows;

1) Introduction of ultrasonic cleansing machine into decontamination tank:
   Expected dose reduction: 32 man.mSv
2) Reinforcement of shielding of RCP inspection room.
   Expected dose reduction: 17man.mSv
3) Impeller shielding box
   Impeller is the most contamination part, whose inspection period is longest. Introduction of lead mattress of decontamination box made it possible to inspect without screens.
   Expected dose reduction: 15man.mSv（1/7）
4) The improvement of internal elevators
   By improvement it, workers are enable to install and dismantle from the upper

levels of internal, whose dose rate is lower.

Expected dose reduction: 9man.mSv

5) The introduction of electric tools

To remove impeller form rotor is conducted by the manual but the introduction of electric tools are enabled to reduce work time.

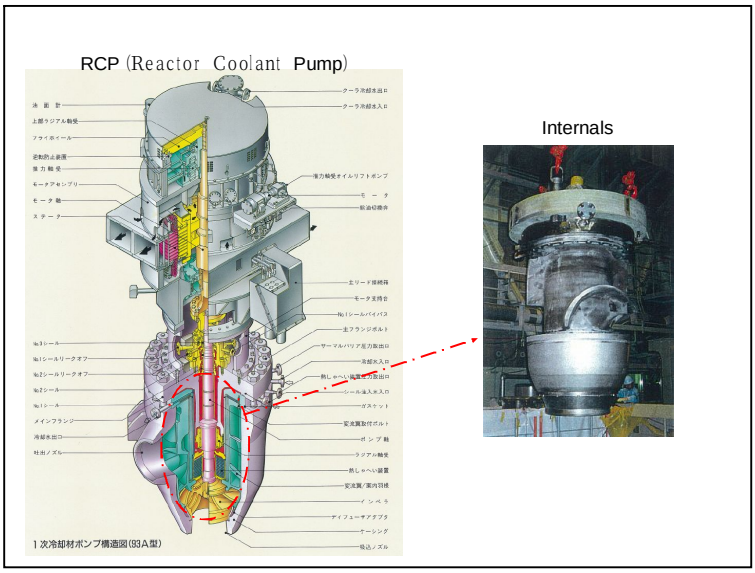
Expected dose reduction: 3man.mSv

6) Reinforcement of training

Video text is introduced to training for a little experienced worker.

Expected dose reduction: 4man.mSv

The above plans for dose reduction is planning to be introduced in 2008, and although its assessment is still not conducted, 82 man.mSv is expected to be reduced in total of 6 plans. After the implementation of the plan, assessment of plans will be conducted and by in PDCA Cycle, the further dose reduction is schemed in the future.



Preparation and evaluation of reduction measures

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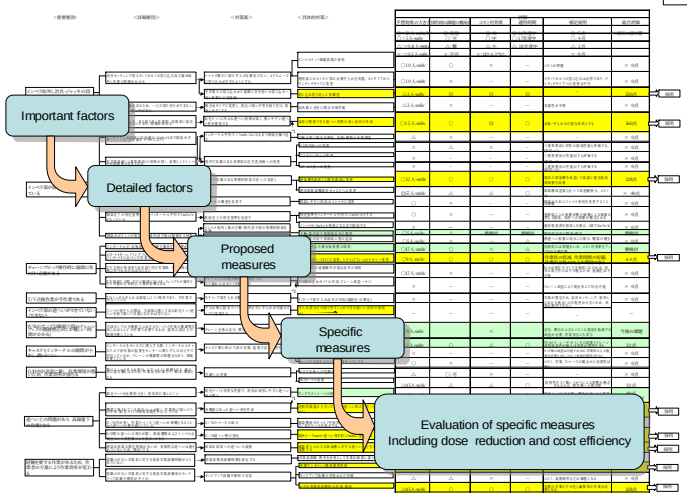

Expected reduction

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＜Measures＞	＜Expected reduction man･mSv＞
Introduction of ultrasonic cleaning unit to decontamination tank	32
Enhancement of shielding in inspection room	17
Installation of impeller shielding box	15
Improvement of Internals hoisting device	9
Time saving in removing the impeller	3
Enhancement of training	4

82 man･mSv