



2004

## ISOE INFORMATION SHEET

### JAPANESE OCCUPATIONAL EXPOSURE DURING PERIODICAL INSPECTION AT PWRs & BWRs ENDED IN FY 2003

#### ISOE Asian Technical Center - JNES Information Sheet No. 26

This ISOE information sheet presents the Japanese occupational exposure results during the periodical inspection at PWRs and BWRs ended in FY 2003, and trends from FY1990 to FY2003 by reactor type or generation (Conventional type/Improved type\*).

Table 1 and 2 give the average collective dose per reactor during the periodical inspection for PWRs and BWRs, respectively, ended in FY 2002 and FY 2003. The collective dose of conventional type of BWRs in FY 2003 was still relatively high level. The improved type of BWRs has also result in the increase of the end of FY2003. These were due to the inspections and repairs of the reactor recirculation pipes and shrouds. The collective dose for PWRs was comparable to FY2002.

Periodical inspections were completed at 16 BWRs and 16 PWRs. The average duration for periodical inspections was 215 days for BWRs and 61 days for PWRs.

Figures 1 to 3 show the average collective dose per reactor, by reactor type and by generation from FY 1990 to FY 2003. Figures 4 to 6 show the difference from Conventional type to Improved type for the periodical inspection period in FY 1994 to FY 2003. From these figures, it can be seen that the results for Improved type are marked in the lower level than the

Conventional type as a whole.

**Table 1. Average dose results during periodical inspection ended in FY 2002 and FY 2003: PWRs**

Plant type	Average collective dose (man-Sv)	
	FY 2002	FY 2003
Conventional type	1.37	1.11
Improved type*	1.03	1.23
Total PWRs	1.21	1.17

**Table 2. Average dose results during periodical inspection ended in FY 2002 and FY 2003: BWRs**

Plant type	Average collective dose (man-Sv)	
	FY 2002	FY 2003
Conventional type	2.23	4.00
Improved type*	0.97	2.35
Total BWRs	1.66	2.87

\* Improved type plants came into commercial operation in and after FY 1983 with improved design features intended for enhanced reliability, lower exposure and more efficient inspection works.

Figure 1

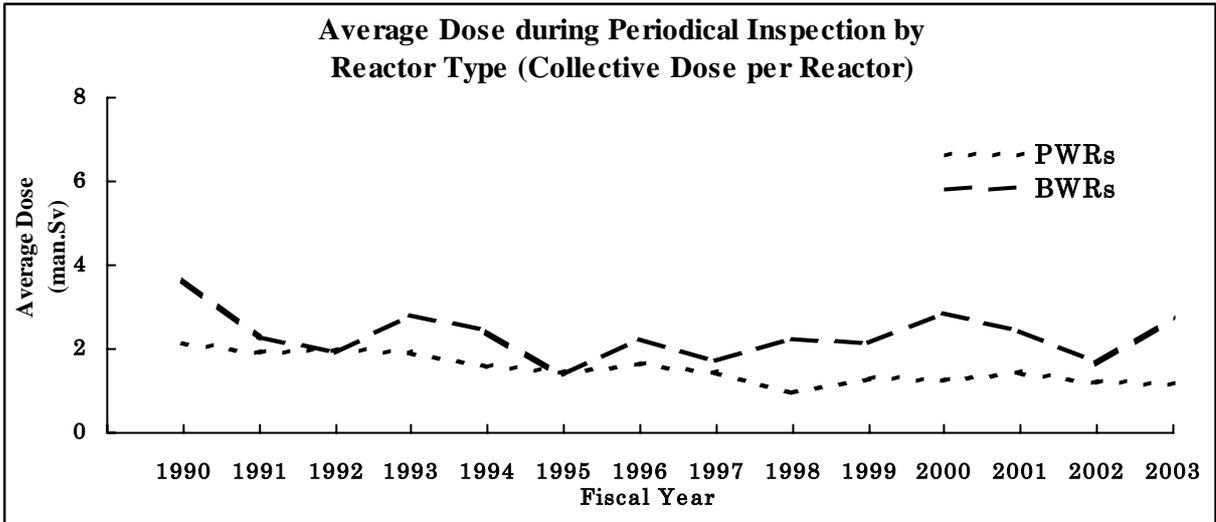


Figure 2

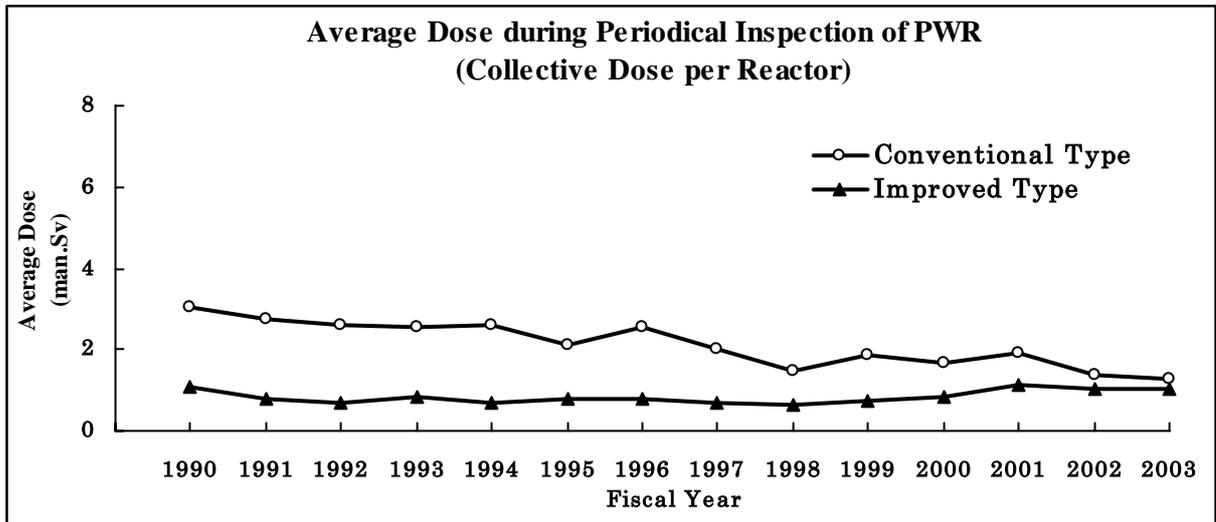
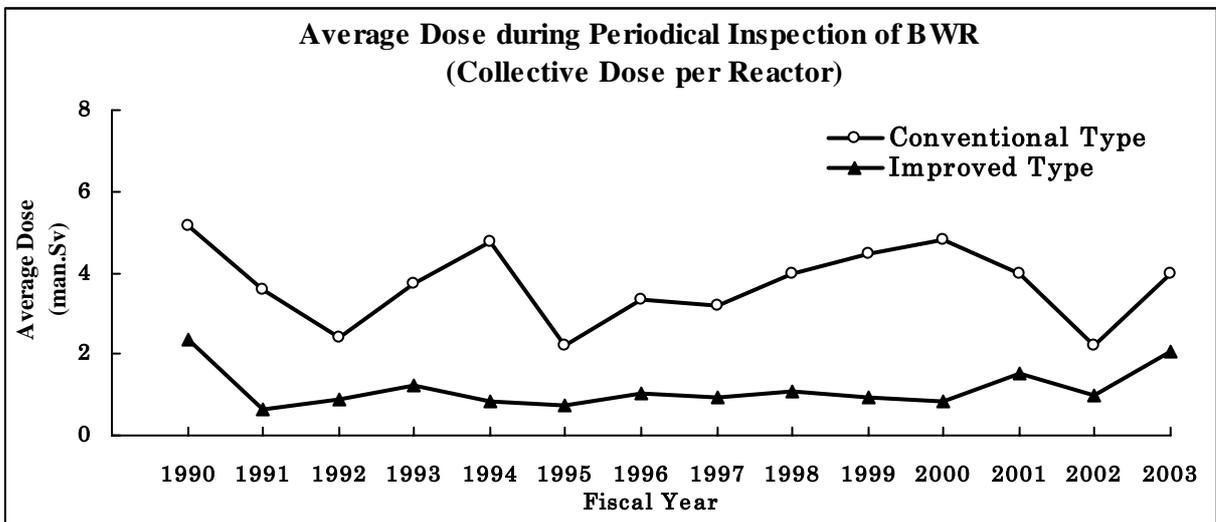
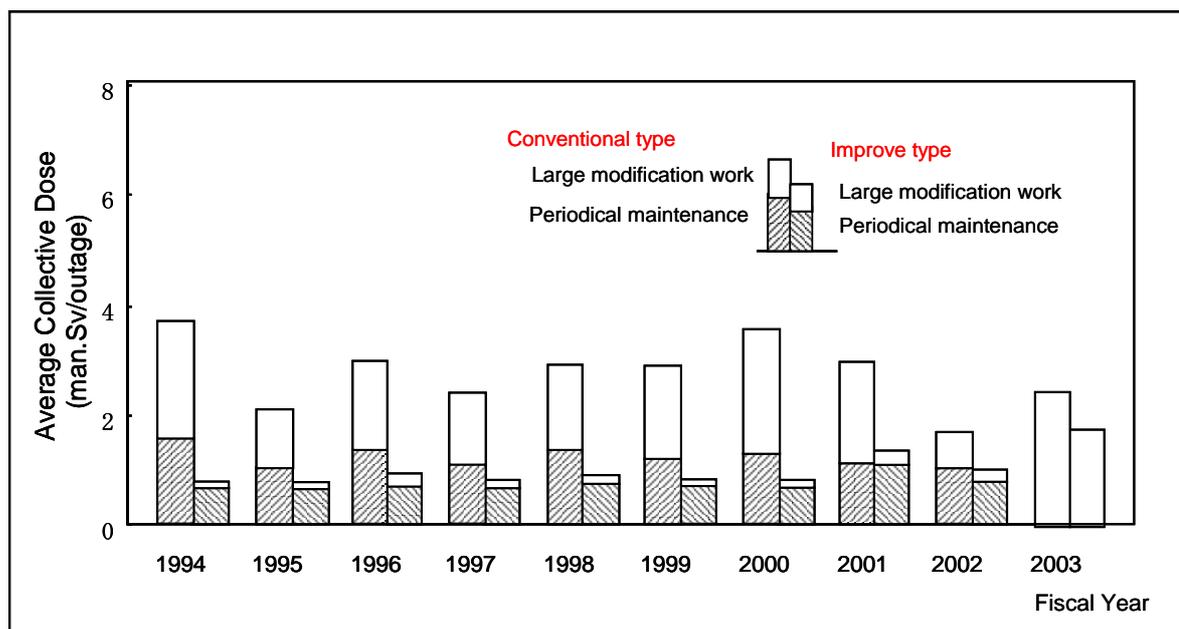


Figure 3



(Draft)

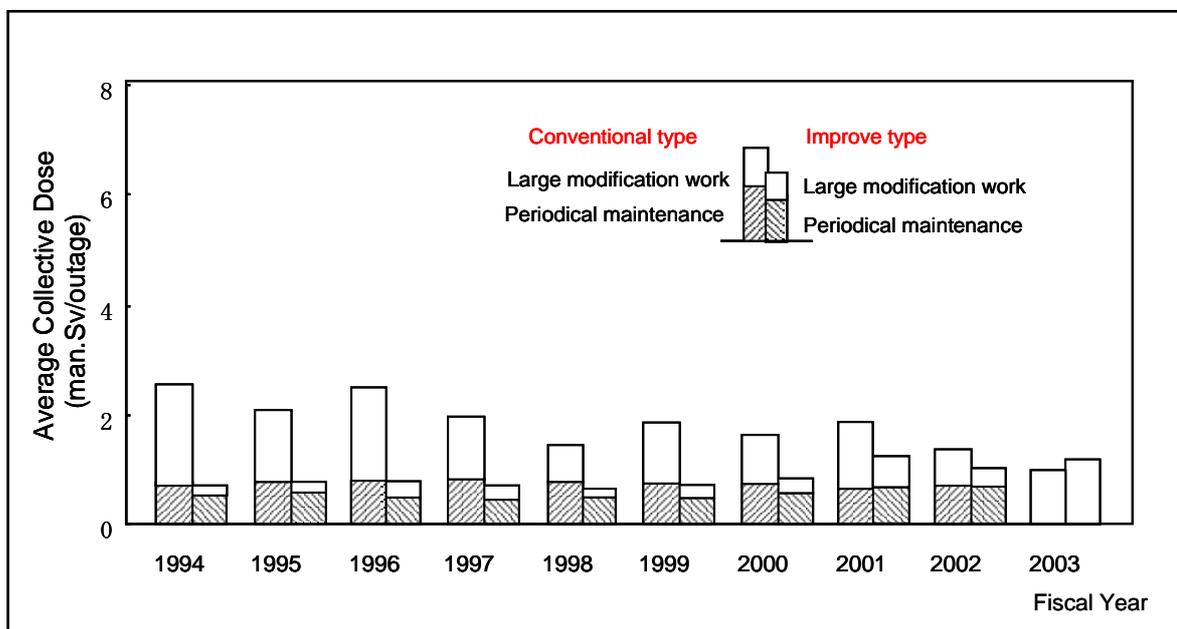
Figure 4: LWR Average Collective Doses per Annual Refueling and Maintenance Outage



\* The data of FY2003 is undivided into the large modification work and the periodical maintenance yet. The data are still being compiled.

(Draft)

Figure 5: PWR Average Collective Dose per Annual Refueling and Maintenance Outage



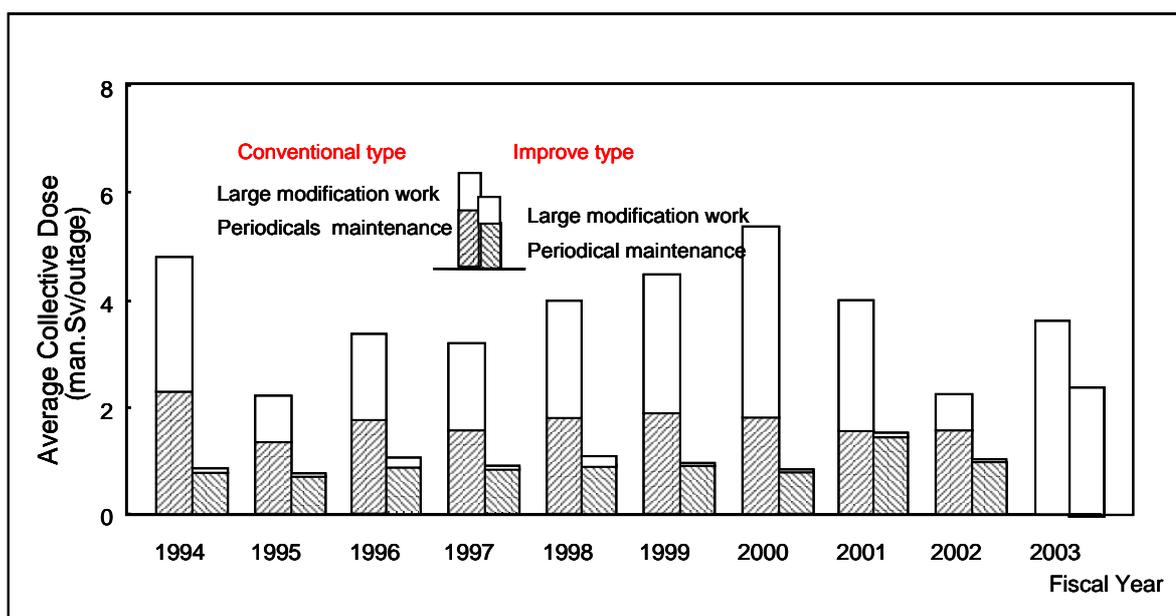
\* The data of FY2003 is undivided into the large modification work and the periodical maintenance yet. The data are still being compiled.

The number of PWR's periodical inspection

Plant type	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
Conventional type	12	10	10	11	13	13	11	13	5	11
Improve type	8	8	11	6	9	7	9	8	6	5

(Draft)

Figure 6: BWR Average Collective Dose per Annual Refueling and Maintenance Outage



\* The data of FY2003 is undivided into the large modification work and the periodical maintenance yet. The data are still being compiled.

The number of BWR's periodical inspection

Plant type	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
Conventional type	8	9	8	8	9	11	9	10	9	8
Improve type	7	8	7	10	6	10	8	7	10	8