

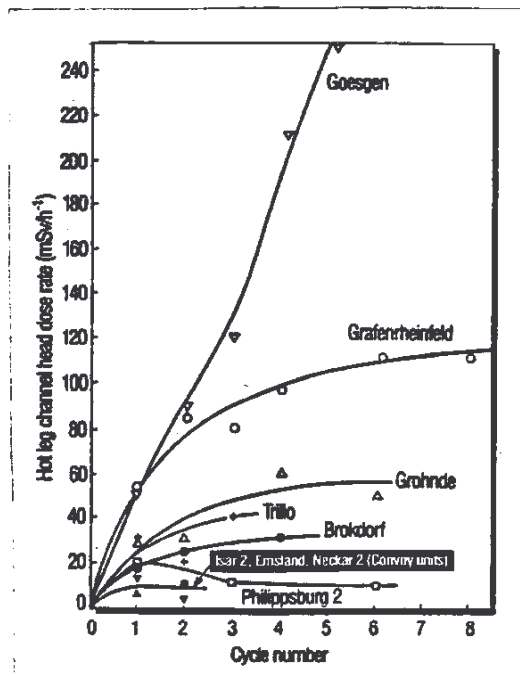
N231. CONVOY Leads the Way on Dose Reduction

Personnel doses being achieved at KWU Convoy PWRs are already 5 to 10 times lower than the 1995 target of 1850 person-mSv (185 person-rem) per year set by EPRI for U.S. plants in 1995 -- and much lower than any other Western PWRs. The major reason has been the removal of Stellite (hardfacing alloy) from the primary circuit.

These were among the conclusions presented to the recent BNES Water chemistry conference in Bournemouth, United Kingdom, in a paper by K. Garbutt of Britain's Nuclear Electric. The reported that radiation fields and concentrations of Co-60 (a major contributor to dose) were exceptionally low at Convoy units: after two cycles, channel head fields were 4 mSv/h and 11 mSv/h, respectively, at Neckar 2 and Emsland, while the figure for Isar 2 after one cycle was 7 mSv/h (see Figure). He said, "These are considerably lower than at Ringhals 4 (22-27 mSv/h after two cycles,) the Westinghouse plant with the lowest radiation fields recorded to date."

He also pointed out that since Convoys have very little exposed Stellite apart from in the control rod drive mechanisms, the prime source of Co-60 in other plants is likely to be Stellite other than that in the control rod mechanisms. As well as Stellite reduction (80% relative to the original standard 130 MWe KWU PWRs), the dose record at Convoy units has also been helped by the use of Zircaloy gridded fuel (instead of Inconel 718 grids) and a high-pH water chemistry regime.

The figure shows hot leg channel dose rates for Siemens-KWU PWRs. The Convoy units, Isar 2, Emsland and Neckar 2, have recorded remarkably low levels. The anomalously high figures for Goesgen are due to Co contaminated fuel.



Taken from, "Convoy Leads the Way on Dose Reduction," *Nuclear Engineering International*, December 1992, p. 12.