

J12. Oskarshamn 1: BWR**Sweden****Feedwater Sparger Replacement**

Description: Replacement of feed water sparger inside the reactor vessel (close to upper core grid).

Comments: During a normal shutdown in 1974 for inspection, maintenance, service and refueling, cracks were detected in the ring-formed sparger which is situated inside the reactor vessel just above the core and which distributes the feedwater in the tank. The exchange of the feed water distributor was carried out during 2.5 months. The total outage: ca. 7 months

The old feedwater ring was cut off and new spargers were welded in their place. During the repair period, all fuel was removed from the reactor vessel and the water level was kept approximately 50 cm over the upper edge of the core grid to reduce radiation levels. Nevertheless, the dose rates were so high that it was necessary to manufacture a radiation shield in the form of an especially made lead box 197 x 145 x 74 cm (inside), 10 cm lead shield, total weight 30 ton. It could contain two repair persons simultaneously and was equipped with overpressure ventilation as well as the equipment for the necessary operations. The work was carried out in the continuous three-shift personnel subcontracted from ABB ATOM. One hundred and seven people were engaged during shorter or longer periods in the reactor hall work. Out of these, 55 persons carried out work from the submerged lead box. In the reactor hall one health physicist was on duty per shift. The collective dose for the work was 440 mmanSv, and, out of this, only 50 mmanSv was received during work in the lead box. The remaining collective dose, 390 mmanSv, was received from work at floor level in the reactor hall. The highest registered personal dose was 20 mSv, and the highest registered hand dose was 34 mSv. This was the first work of its kind in Sweden. The mock-up training gave essential experience. Some of the activities have to be done with the arms outside the lead box which gave special shielding problems (ca. 15 mSv/h in that area after shielding) and ventilation problems. As seen from the dose results, the main problem during the operation was to prevent people from unnecessary presence in the reactor hall.

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