

3492. ALARA Progress in the European Union and Russia

In the framework of European Union (EU) - Russian Federation (FR) cooperation, a study into the reduction of occupational exposure was taken with the aim of enhancing the ALARA ("as low as reasonably achievable") features of future reactors. The study assessed the exposure data at the latest operating plants, identified the most important ALARA features in the latest designs, and looked at approaches for making further improvements in future designs.

The German Konvoi plants indicate that it is possible to attain annual collective doses in the range of 0.1 to 0.2 manSv. This is the continuation of a steady reduction in dose at the earlier 1300 MWe plants and is a result of the German ALAP ("as low as possible") strategy of minimizing corrosion product activity levels in the primary coolant through: placing a high importance on the reliability of components such as steam generators, valves and pumps; material selection, particularly the elimination of Stellite from the primary circuit; optimization of the primary and secondary coolant chemistry; and improving the degree of segregation and shielding together with adopting good work practices and techniques.

The French N4 plants and the U.K.'s Sizewell B include most of the ALARA design features present in the Konvoi plants. The French have eliminated Stellite at some of the earlier P4 plants (at Penly and Golfech) and this has resulted in collective dose levels at these plants were more than a factor of two lower than the P4 mean values for the period 1993-95. The U.K. has partially eliminated Stellite (for hard facing surfaces in flow control valves) and there is a design commitment to eliminate it in the other areas when providing tests on alternative alloys have been completed. Both designs have improved features on the steam generators including the use of Inconel 690, and design features to prevent tube degradation.

As a result of the detailed analysis of the available plant data, an assessment was made of the relative importance of the various aspects of the plants design and the operational features which affect occupational exposure. Those aspects which were identified as having the most potential for further initiatives to reduce occupational exposure levels are discussed and topics were chosen for further study.

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