

N134. Swiss Experience With Zinc Injection And Soft Shutdown

The operating license of Swiss BWR plant KKL states a special condition: "If the average dose rate at the main circulating pipes in shutdown condition exceeds a value of 2 mSv/h or the collective dose guide-value of 4 man-Sv/year could be infringed due to a high dose rate at these pipes, then suitable counter-measures must be taken to reduce this dose rate." After about 4 years of operation, the peak collective dose was near 4 man-Sv in 1988, thus requiring a careful analysis to determine causes. Also, dose rates were 3.5 mSv/h in 1988 and about 4 in 1989. Zinc injections began in February 1990 and this reduced the mean dose rates from 4 mSv/h in 1989 to 3.2 in 1991. On the other hand, zinc-65 contaminates the systems and the water of the refueling pool. The plant also employs a "soft shutdown" which reduced the cobalt spike by a factor of 20 compared to the previous year. Another measure employed to reduce the cobalt concentration in the reactor water was to provide holding points during the cooldown period so the water quality could be returned to acceptable values by means of the RWCU-system before cooldown was continued.

Taken From: "Attitude, Awareness, and Management Organization for Effective Radiation Protection - Swiss Experience," Dr. W. Blaser and W. Jeschki (Div. of Radiation Protection, Swiss Federal Nuclear Safety, Inspectorate, 5232 Villigen - HSK). Presented at the Workshop on Work Management & Occupational Dose Control, OECD Nuclear Energy Agency, Paris, February 4-6, 1992.