Item B-34: Occupational Radiation Exposure Reduction

DESCRIPTION

Compilation of occupational radiation exposure reports from operating reactors has shown that exposures to station and contractor personnel have generally been increasing over the past 7 years for both PWRs and BWRs. The overriding problem at LWRs at present with respect to occupational exposure is system and equipment maintenance. The exposures connected with this function are higher than expected due to unexpectedly high activation and fission product depositions, lower than expected equipment reliability, unanticipated failures in steam generators (PWRs) and piping (BWRs), and the continuing necessity to perform contact maintenance in most cases. The violation of 10 CFR Part 20 limits has in general been avoided by licensees during high-exposure tasks by obtaining the temporary services of transient workers, both skilled and unskilled. In some cases, this has been done instead of spending sufficient effort on reducing exposures. If this practice continues, shortages in skilled tradesmen are expected as the nuclear industry grows. However, the most unfortunate consequence of this approach, i.e., using large numbers of people rather than better designs (as the case of earlier facilities) and operating procedures, is the unnecessary exposure and risk that could have been minimized.

This NUREG-0471[1] task will provide an improved basis for the staff to review reactor plant designs and projected operations to assure that occupational radiation exposure is maintained as low as is reasonably achievable. The following areas will be studied under this task: (1) activated corrosion product reduction at LWRs; (2) reducing exposure from maintenance and inspection of reactor plants; (3) shielding source terms;

(4) compilation of exposure data; (5) development of inplant radiation dose rates; and (6) evaluation of neutron streaming at PWRs.

CONCLUSION

This item is covered[2] under TMI Action Plan Item III.D.3.1, "Radiation Protection Plans," in Section 3 of this report.

[1] NUREG-0471, "Generic Task Problem Descriptions (Categories B, C, and D)," U.S. Nuclear Regulatory Commission, June 1978.
[2] Memorandum for T. Speis from J. Funches, "Prioritization of Generic Issues—Environmental and Licensing Improvements," February 24, 1983. [8303090540]