NMSS-0020. Leaking Pools

DESCRIPTION

On September 19, 2000, BWX Technologies determined that a water leak existed in the Cask Handling Area Pool at their Lynchburg, VA facility. The pool of water is used to store irradiated commercial reactor hardware along with irradiated fuel rods. The average concentrations of radionuclides (Cs-137 and Co-60) leaking from the pool significantly exceeded the limits in 10 CFR Part 20, Appendix B, Table 2, for effluent releases to unrestricted areas (10 CFR 20.1301 and 20.1302). The leak was not identified for an extended period of time. The contaminated water, however, did not actually reach an unrestricted area.

The licensee did not have a formal program for tracking and trending pool level data or additions to the pool, or for monitoring groundwater quality near the pool. Furthermore, NRC regulations do not specifically require these measures, nor does its NRC license. As a result, the inspection program for this facility did not evaluate the licensee's ability to identify and correct pool leaks. Based on the leaking pool at BWX Technologies, the potential

for unrecognized pool leaks with long term environmental or health effects was identified as a generic issue.[1]

The existing regulations for irradiator pools were promulgated in 1994 and were developed, in part, in response to a specific type of sealed source that was susceptible to leaking. Thus, for irradiator pools, undetected pool leakage is not a concern because the current regulations require the sealed sources used in these pools to meet certain performance criteria that are designed to significantly minimize the possibility that radioactivity

will ever even reach the pool water. Any radioactivity that leaks into the pool water will be detected due to the requirement on licensees to monitor their pools for elevated levels of radioactivity. The regulations further require licensees to cease operations and immediately determine the cause of any detected elevated activity in their pools. Furthermore, irradiator pools licensed after 1994 must be designed and constructed based on criteria that prevent the likelihood of pool leakage.

CONCLUSION

The NMSS staff evaluated whether regulatory programs were adequate to ensure that leaks of contaminated water from pools would be promptly identified and corrected by licensees. The applicable licensees were those that maintained pools as wet-storage irradiators, along with the specific licensees of GE Morris, GE Vallecitos, and West Valley.

The GE Morris facility (an Independent Spent Fuel Storage Installation) was required to have a well monitoring program to verify that offsite release limits were not exceeded. Furthermore, 10 CFR Part 72 requires the licensee to have a QA program which included a monitoring program that would indicate any pool leakage. The West Valley facility was scheduled for closure in early 2001 and, as a result, the need for pool monitoring at this facility was not necessary. While there were not specific regulations requiring monitoring at GE Vallecitos, there were license conditions which required a pool monitoring and maintenance program that would indicate pool leakage. In January 2001, a series of corrective actions were being implemented at BWXT to ensure that any future leaks would not go undetected.

For all types of licensees, the staff determined that the risks associated with not monitoring pools for leakage are very low and the issue was dropped from further pursuit. This conclusion was reached based on the adequacy of the physical barriers that must be overcome in order for material to escape the pool and reach unrestricted areas. Furthermore, any material that escaped would be greatly diluted before it ever reached an unrestricted

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[1] Memorandum for W. Travers from W. Kane, "Closure of Two NMSS Generic Issues," January 26, 2001. [ML010240165]

area.[2]

[2] Memorandum for W. Travers from W. Kane, "Closure of Two NMSS Generic Issues," January 26, 2001. [ML010240165]