4.2 Radioactive Waste

The Big Rock Point Plant contains waste treatment systems designed to collect and process the gaseous, liquid, and solid waste that might contain radioactive material. The waste treatment systems are evaluated with respect to the requirements of Appendix I to 10 CFR Part 50 in the NRC staff's evaluation dated May 1981. There will be no change in the waste treatment systems described in the above cited evaluation because of the proposed modification.

4.3 Purpose of the SFP

Spent fuel assemblies are intensely radioactive due to their fresh fission product content when initially removed from the core and they have a high thermal output. The SFP was designed for storage of these assemblies to allow for radioactive and thermal decay prior to shipping them to a reprocessing facility. The major portion of decay occurs in the first 150 days following removal from the reactor core. After this period, the spent fuel assemblies may be withdrawn and placed in heavily shielded casks for shipment. Space permitting, the assemblies may be stored for longer periods, allowing continued fission product decay and thermal cooling.

4.4 Spent Fuel Pool Purification System

The spent fuel pool purification system consists of the pool sock filter precoated with diatomaceous earth and the radwaste system demineralizer and the required piping, valves and instrumentation. Cleanup of the pool is provided by a continuous flow through the pool filter and, during periods of high pool radioactivity, through the demineralizer.

Because we expect only a small increase in radioactivity to be released to the pool water as a result of the proposed modification as discussed in Section 5.3 of this Environmental Impact Appraisal, we conclude that the spent fuel pool purification system is adequate for the proposed modification and will keep concentrations of radioactivity in the pool water to acceptably low levels.

5.3.5 Occupational Radiation Exposures

The NRC staff has reviewed the licensee's plans for the removal and storage of the failed fuel rack and the installation of the high density racks with respect to occupational radiation exposure. The occupational exposure for the entire operation is estimated by the licensee to be about 23 man-rem. This is based on realistic dose rates and occupancy factors for individuals performing a specific job during the pool modification. This exposure is a small fraction of the total annual man-rem burden from occupational exposure.

The NRC staff has estimated the increment in onsite occupational dose resulting from the proposed increase in stored fuel assemblies on the basis of information supplied by the licensee for dose rates in the spent fuel pool area from radionuclide concentrations in the SFP water and from the spent fuel assemblies. The spent fuel assemblies themselves will contribute a negligible amount to dose rates in the pool area because of the depth of the water shielding the fuel. Consequently, the occupational radiation exposure resulting from the additional spent fuel in the pool represents a negligible burden. Based on present and projected operations in the spent fuel pool area, we estimate that the proposed modifications should add only a small fraction to the total annual occupational radiation exposure burden at this facility. Thus, we conclude that storing additional fuel in the SFP will not result in any significant increase in doses received by occupational workers.

5.3.6 Evaluation of Radiological Impact

As discussed above, the proposed modification does not significantly change the radiological impacts evaluated in the NRC staff's evaluation of the Big Rock Point waste treatment systems with respect to the requirements of Appendix I to 10 CFR Part 50 dated May 1981.

The radiological impacts discussed above take into account mixed oxide fuel at the Big Rock Point Plant. This is based on the discussions in Sections 4.3 and 5.1 of Chapter IV, Section C, NUREG-0002, (Final Generic Environmental