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Project M-32

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It has come to our attention that copies of the report "Research Plan for Investigating Radionuclide Migration at the West Valley Facility Disposal Area," were missing page 131. Attached please find page 131 to be inserted in your copy. We are sorry for the inconvenience.

15/  
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September 1982 [3]. The site records state that the average out-of-reactor time for the wastes at the time they were buried was 2 years (1). The decay time since burial until mid-1984 is about 14 years. Assuming that the isotopic ratios above are correct, the 1984 fission product activity in the FDA would be about 93,000 Ci.

The assumption that 90 % of the activity in 2-year-old spent fuel is due to  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  is questionable. Even for high burnup [33,000 megawatt-day/metric ton of uranium (MWD/MTU)], pressurized water reactor (PWR) fuel, computer calculations with the ORIGEN code show that < 40 % of the activity in 2-year-old spent fuel is due to these isotopes. The fuel processed at West Valley was of much lower burnup, averaging about 13,000 MWD/MTU for the 228 MTU of power reactor fuel and about 2000 MWD/MTU for the 380 MTU of NPR fuel. The West Valley wastes would be expected to have relatively less of the long-lived fission products like  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  and more of the shorter-lived isotopes like  $^{106}\text{Ru}$ ,  $^{144}\text{Ce}$ , and  $^{147}\text{Pm}$ . The data on the buried NPR fuel shows that at 2 years only 21 % of its activity was due to  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$ .

Calculating back from the results of the chemical analysis of the 8D-2 high-level waste (HLW) tank provides additional confirmation on the relative isotopic abundances (3). Twelve years before the chemical analysis was performed, which would correspond to an average out-of-reactor time of 2 years, the  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  accounted for about 20 % of the combined activity of the  $^{90}\text{Sr}$ ,  $^{137}\text{Cs}$ ,  $^{106}\text{Ru}$ ,  $^{144}\text{Ce}$ , and  $^{147}\text{Pm}$ . (ORIGEN calculations for 33,000 MWD/MTU PWR fuel