

## 3/4.11 RADIOACTIVE EFFLUENTS

### BASES

#### 3/4.11.1 LIQUID EFFLUENTS

Insert E 3/4.11.1 Deleted by Amendment 104  
3/4.11.1.2  
3/4.11.1.3 ↓

#### 3/4.11.1.3 Not Used

#### 3/4.11.1.4 LIQUID HOLDUP TANKS

Restricting the quantity of radioactive material contained in the specified tanks provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting concentrations would be less than the limits of 10 CFR Part 20, Appendix B, Table II,<sup>2</sup> Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area.

#### 3/4.11.1.5 SETTLING PONDS

The inventory limits of the settling ponds (SP) are based on limiting the consequences of an uncontrolled release of the pond inventory. The expression in Specification 3.11.1.5 assumes the pond inventory is uniformly mixed, that the pond is located in an ~~uncontrolled~~ area as defined in 10 CFR 20, and that the concentration limit in Note 1 to Appendix B of 10 CFR 20 applies.

~~The batch limits of slurry to the chemical treatment ponds assure that radioactive material in the slurry transferred to the SP are "as low as is reasonably achievable" in accordance with 10 CFR 50.2(a). The expression in Specification 4.11.1.5 assures no batch of slurry will be transferred to the SP unless the sum of the ratios of the activity of the radionuclides to their respective concentration limitation is less than the ratio of the 10 CFR 50, Appendix I, Section II.A, total body level to the 10 CFR 20, 105(a), whole body dose limitation, or that:~~

$$\sum_j \frac{C_j}{C_j} < \frac{3 \text{ mrem/yr}}{500 \text{ mrem/yr}} = 0.006$$

where

$C_j$  = radioactive slurry concentration for radionuclide "j" entering the unrestricted area SP, in microcuries/milliliter

$C_j$  = 10 CFR 20, Appendix B, Table II, Column 2, concentration for single radionuclide "j", in microcuries/milliliter.

For the design of filter/demineralizers using powder resin, the slurry wash volume and the weight of resin used per batch is fixed by the cell surface area and the slurry volume to resin weight ratio is constant at 100 milliliters/gram of wet, drained resin with a moisture content of approximately 55 to 60% (bulk density of about 58 pounds per cubic feet). The wet drained slurry density is

The density of wet, drained resin is approximately the same as water (bulk density of about 58 pounds per cubic foot); and the absorption characteristics for gamma radiation are essentially that of water. Therefore, direct comparison of radionuclide specific activity in wet, drained resin to the appropriate concentration in 10 CFR 20, Appendix B, Table 2, Column 2, ensures that the limit of Specification 3.11.1.5 will not be exceeded.

SUMMER - UNIT 1

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Amendment No. 104

9512080025 951204  
PDR ADOCK 05000395  
P PDR

## 3/4.11 RADIOACTIVE EFFLUENTS

### BASES

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#### 3/4.11.1 LIQUID EFFLUENTS

3/4.11.1.1 Deleted by Amendment 104.

3/4.11.1.2 Deleted by Amendment 104.

3/4.11.1.3 Deleted by Amendment 104.

#### 3/4.11.1.4 LIQUID HOLDUP TANKS

Restricting the quantity of radioactive material contained in the specified tanks provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting concentrations would be less than the limits of 10 CFR Part 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area.

#### 3/4.11.1.5 SETTLING PONDS

The inventory limits of the settling ponds (SP) are based on limiting the consequences of an uncontrolled release of the pond inventory. The expression in Specification 3.11.1.5 assumes the pond inventory is uniformly mixed, that the pond is located in an unrestricted area as defined in 10 CFR 20, and that the concentration limit in Note 4 to Appendix B of 10 CFR 20 applies.

The density of wet, drained resin is approximately the same as water (bulk density of about 58 pounds per cubic foot); and the absorption characteristics for gamma radiation are essentially that of water. Therefore, direct comparison of radionuclide specific activity in wet, drained resin to the appropriate concentration in 10 CFR 20, Appendix B, Table 2, Column 2, ensures that the limit of Specification 3.11.1.5 will not be exceeded.