Table 4.1-1 Comparison of NRC Accident Scenario for Thickener Failure and Spill with Lost Creek Project Emergency Response

NUREG CR-6733 Assumption (Section 4.2.1)	Lost Creek Project Most Credible Case	Impact on Worker Dose [1]	Impact on, Public Dose [1]
Product is insoluble $U_3 0_8$, ICRP 19 Class Y / ICRP 66 Class S. [2]	Product is relatively soluble U04 and/or U03 hydrates - ICRP 19 Class D or W / ICRP 66 Class F or M.	DAC (Y) = 2E-11; DAC (W) = 3E-10; Therefore Class W dose = 15% of Class Y dose.	Effluent concentration (Y) = 9E-14; (W) = 9E-13; Therefore Class W dose = 10% of Class Y dose.
Design features (berms, sumps) at thickener inadequate to contain entire thickener contents; 20% escapes building.	Berms are designed to contain at least the volume of the two largest tanks combined.	Cleanup within a building equipped with berms, sumps, and wash-down water minimizes cleanup time and exposure.	Spill contents remain within building thereby virtually eliminating the potential for wind blown particulate.
Takes no credit for "immediate" emergency response actions, assumes entire volume dries and is available for dispersion.	Plant alarms and/or observation would alert staff to occurrence of event quickly. Cleanup actions would be initiated before majority of volume can dry, including wetting /wash down techniques to move spilled material to bermed areas and sumps and other wet collection methods.	Much less source term available (lower release fraction) for dispersion and therefore less dose.	Much less source term available (lower release fraction) for dispersion and therefore less dose.
Takes no credit for use of PPE by cleanup workers.	Workers involved in cleanup of spilled material would be wearing respirators in accordance with an approved respiratory protection program per, e.g., 10 CFR 20, Subpart H.	Dose assignment can be reduced by appropriate protection factor for device(s) used.	None.
Takes no credit for emergency response planning, procedures and associated training.	Response to spill would be conducted in accordance with previously developed and approved emergency response protocols, which minimizes time to respond. Equipment needed is readily available, which enhances efficiency of worker performance to affect cleanup with in-place emergency response procedures, exercises and training.	In-place and exercised emergency response procedures, readily available equipment and trained workers will reduce worker dose.	In-place and exercised emergency response procedures, readily available equipment and trained workers will reduce source term and therefore off-site dose to public.

[1] DAC for workers and effluent concentrations released to unrestricted areas from 10 CFR 20, App B, Tables 1 and 2 respectively; units in µCi/mL. Although the products of interest are likely to be TGLD Class D, Class W is conservatively assumed.

[2] *The metabolism of compounds of plutonium and other actinides* (ICRP, 1972); *Human respiratory tract model for radiological protection* (ICRP 66, 1994)