

TABLE V-17

Moderate and Nondesign Basis Accidents Postulated for Repository in Salt

<i>Accident Description</i>	<i>Sequence of Events</i>	<i>Safety System</i>	<i>Release, Ci</i>	<i>Probability</i>
Canister drop in surface facility	Canister handling crane fails Canister breaches on impact	Positive latching grapple system and conservatively sized crane Building filter system	3×10^{-4} , ^{90}Sr ; 3×10^{-4} , ^{137}Cs ; 1.5×10^{-6} , ^{238}Pu ; 6.0×10^{-8} , ^{239}Pu ; to building atmosphere	$2 \times 10^{-7}/\text{yr}$
Canister drop down mine shaft	Canistered waste shaft hoist fails Canister breaches on impact	Failsafe wedge type braking system Mine exhaust filter system	1.5×10^4 , ^{90}Sr ; 1.5×10^4 , ^{137}Cs ; 7.5×10^1 , ^{238}Pu ; 2.9 , ^{239}Pu ; of small particles to mine atmosphere	$1.3 \times 10^{-6}/\text{yr}$
Nuclear warfare	50-megaton nuclear weapon bursts on surface above repository Crater formed to 340 m with fracture zone to 500 m	Repository depth of 600 m	None	
Repository breach by meteor	Meteor with sufficient mass and velocity to form 2-km-dia crater impacts repository area 2-km-dia crater extends to waste horizon, dispersing 1% of waste to atmosphere	Repository depth of 600 m	1.3×10^6 , ^{90}Sr ; 1.3×10^6 , ^{137}Cs ; 6×10^3 , ^{238}Pu ; 2.4×10^2 , ^{239}Pu ; half to stratosphere, half as local fallout	$2 \times 10^{-13}/\text{yr}$
Repository breach by drilling	Societal changes lead to loss of repository records and location markers Drilling occurs 1000 yr after closure	Repository depth of 600 m Repository marked by monuments and records kept securely Site criteria - not desirable resources	7×10^{-7} , ^{90}Sr ; 7×10^{-7} , ^{137}Cs ; 7×10^{-3} , ^{238}Pu ; 1.5 , ^{239}Pu ; distributed in drilling mud over 1.2 acres in the top 2 in. of soil	Not determined
Volcanism	Volcanic activity at repository carries wastes to surface	Site criteria - no history or potential for volcanic activity	Less than accident below	Not determined
Repository breach by faulting and groundwater transport	Fault intersects repository Access is created by pressure between aquifer, waste, and surface Aquifer carries waste to surface	Site criteria - low seismic risk zone Site criteria - minimal groundwater Repository depth of 600 m	6×10^{-4} , ^{90}Sr ; 6×10^{-4} , ^{137}Cs ; 6 , ^{238}Pu ; 1.2×10^3 , ^{239}Pu ; released to the groundwater 1000 yr after mine closure	$2 \times 10^{-13}/\text{yr}$
Erosion	Repository overburden subject to high erosion	Site criteria - low erosion rates Repository depth of 600 m	Less than breach by a meteor	Not determined
Criticality	Criticality not feasible	—	—	—