Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-07-HLW	8-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to a canister drop inside the CTM bell. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD07-HLW-DROPIN, ESD07-HLW-DROPIN-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-HLW	8-5	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to a canister drop inside the CTM bell. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD07-HLW-DROPIN, ESD07-HLW-DROPIN-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-HLW	8-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to a canister drop inside the CTM bell. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD07-HLW-DROPIN, ESD07-HLW-DROPIN-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-HLW	9-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to an impact to the TC during lid removal. In this sequence the canister remains intact, and the confinement boundary fails.	ESD07-HLW-LIDIMP, /ESD07-HLW-LIDIMP-CAN, CTM-SHIELDING	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-HLW	9-3	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to an impact to the TC during lid removal. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD07-HLW-LIDIMP, ESD07-HLW-LIDIMP-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-HLW	9-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to an impact to the TC during lid removal. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD07-HLW-LIDIMP, ESD07-HLW-LIDIMP-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-HLW	9-5	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to an impact to the TC during lid removal. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD07-HLW-LIDIMP, ESD07-HLW-LIDIMP-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-HLW	9-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to an impact to the TC during lid removal. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD07-HLW-LIDIMP, ESD07-HLW-LIDIMP-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	2-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to a drop of a heavy object onto the canister. In this sequence the canister remains intact, and the confinement boundary fails.	ESD07-NVL-DROPON, /ESD07-NVL-DROPON-CAN, CTM-SHIELDING	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	2-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to a drop of a heavy object onto the canister. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD07-NVL-DROPON, ESD07-NVL-DROPON-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	2-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to a drop of a heavy object onto the canister. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD07-NVL-DROPON, ESD07-NVL-DROPON-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	2-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to a drop of a heavy object onto the canister. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD07-NVL-DROPON, ESD07-NVL-DROPON-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	5.62-E-08	4.47E-08	4.96E-08
IHF-ESD-07-NVL	2-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to a drop of a heavy object onto the canister. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD07-NVL-DROPON, ESD07-NVL-DROPON-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	8.42E-11	2.89E-11	3.37E-10
IHF-ESD-07-NVL	3-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to an impact to the canister due to spurious movement of a conveyance. In this sequence the canister remains intact, and the confinement boundary fails.	ESD07-NVL-IMPACT, /ESD07-NVL-IMPACT-CAN, CTM-SHIELDING	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	3-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to an impact to the canister due to spurious movement of a conveyance. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD07-NVL-IMPACT, ESD07-NVL-IMPACT-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	3-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to an impact to the canister due to spurious movement of a conveyance. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD07-NVL-IMPACT, ESD07-NVL-IMPACT-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	3-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to an impact to the canister due to spurious movement of a conveyance. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD07-NVL-IMPACT, ESD07-NVL-IMPACT-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	2.82E-06	1.27E-06	6.61E-06
IHF-ESD-07-NVL	3-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to an impact to the canister due to spurious movement of a conveyance. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD07-NVL-IMPACT, ESD07-NVL-IMPACT-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	3.91E-09	7.86E-10	2.27E-08

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-07-NVL	4-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to a drop of the canister from an operational height. In this sequence the canister remains intact, and the confinement boundary fails.	ESD07-NVL-DROP, /ESD07-NVL-DROP-CAN, CTM-SHIELDING	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	4-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to a drop of the canister from an operational height. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD07-NVL-DROP, ESD07-NVL-DROP-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	4-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to a drop of the canister from an operational height. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD07-NVL-DROP, ESD07-NVL-DROP-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	4-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to a drop of the canister from an operational height. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD07-NVL-DROP, ESD07-NVL-DROP-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	8.36E-07	5.46E-07	9.19E-07
IHF-ESD-07-NVL	4-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to a drop of the canister from an operational height. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD07-NVL-DROP, ESD07-NVL-DROP-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	1.22E-09	3.41E-10	4.23E-09
IHF-ESD-07-NVL	5-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to a drop of the canister above the operational height. In this sequence the canister remains intact, and the confinement boundary fails.	ESD07-NVL-2BLK, /ESD07-NVL-2BLK-CAN, CTM-SHIELDING	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	5-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to a drop of the canister above the operational height. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD07-NVL-2BLK, ESD07-NVL-2BLK-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	5-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to a drop of the canister above the operational height. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD07-NVL-2BLK, ESD07-NVL-2BLK-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	5-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to a drop of the canister above the operational height. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD07-NVL-2BLK, ESD07-NVL-2BLK-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	1.12E-10	8.53E-12	6.52E-10
IHF-ESD-07-NVL	5-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to a drop of the canister above the operational height. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD07-NVL-2BLK, ESD07-NVL-2BLK-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	1.51E-13	0.00E+00	1.56E-12
IHF-ESD-07-NVL	6-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to side impact to canister. In this sequence the canister remains intact, and the confinement boundary fails.	ESD07-NVL-SIDEIMP, /ESD07-NVL-SIDEIMP-CAN, CTM-SHIELDING	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	6-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to side impact to canister. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD07-NVL-SIDEIMP, ESD07-NVL-SIDEIMP-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	6-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to side impact to canister. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD07-NVL-SIDEIMP, ESD07-NVL-SIDEIMP-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	6-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to side impact to canister. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD07-NVL-SIDEIMP, ESD07-NVL-SIDEIMP-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	6-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to side impact to canister. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD07-NVL-SIDEIMP, ESD07-NVL-SIDEIMP-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	7-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to Canister collision or impact. In this sequence the canister remains intact, and the confinement boundary fails.	ESD07-NVL-COLLISION, /ESD07-NVL-COLLISION-CAN, CTM-SHIELDING	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	7-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to Canister collision or impact. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD07-NVL-COLLISION, ESD07-NVL-COLLISION-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	7-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to Canister collision or impact. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD07-NVL-COLLISION, ESD07-NVL-COLLISION-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	7-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to Canister collision or impact. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD07-NVL-COLLISION, ESD07-NVL-COLLISION-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	1.56E-11	1.56E-11	1.09E-12

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-07-NVL	7-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to Canister collision or impact. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD07-NVL-COLLISION, ESD07-NVL-COLLISION-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	1.38E-14	0.00E+00	5.27E-14
IHF-ESD-07-NVL	8-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to a canister drop inside the CTM bell. In this sequence the canister remains intact, and the confinement boundary fails.	ESD07-NVL-DROPIN, /ESD07-NVL-DROPIN-CAN, CTM-SHIELDING	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	8-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to a canister drop inside the CTM bell. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD07-NVL-DROPIN, ESD07-NVL-DROPIN-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	8-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to a canister drop inside the CTM bell. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD07-NVL-DROPIN, ESD07-NVL-DROPIN-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	8-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to a canister drop inside the CTM bell. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD07-NVL-DROPIN, ESD07-NVL-DROPIN-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-07-NVL	8-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to a canister drop inside the CTM bell. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD07-NVL-DROPIN, ESD07-NVL-DROPIN-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	2-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to a waste package transfer trolley collision with structures or equipment. In this sequence the canister remains intact, and the shielding function is degraded.	ESD08-HLW-COLLIDE, /ESD08-HLW-COLLIDE-CAN, ESD08-HLW-COLLIDE-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	2-3	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to a waste package transfer trolley collision with structures or equipment. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD08-HLW-COLLIDE, ESD08-HLW-COLLIDE-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	2-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to a waste package transfer trolley collision with structures or equipment. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD08-HLW-COLLIDE, ESD08-HLW-COLLIDE-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	2-5	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to a waste package transfer trolley collision with structures or equipment. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD08-HLW-COLLIDE, ESD08-HLW-COLLIDE-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	5.92E-09	3.69E-09	7.01E-09
IHF-ESD-08-HLW	2-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to a waste package transfer trolley collision with structures or equipment. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD08-HLW-COLLIDE, ESD08-HLW-COLLIDE-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	3-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to a premature tilt-down of the waste package transfer trolley. In this sequence the canister remains intact, and the shielding function is degraded.	ESD08-HLW-TILT, /ESD08-HLW-TILT-CAN, ESD08-HLW-TILT-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	3-3	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to a premature tilt-down of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD08-HLW-TILT, ESD08-HLW-TILT-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	3-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to a premature tilt-down of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD08-HLW-TILT, ESD08-HLW-TILT-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	3-5	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to a premature tilt-down of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD08-HLW-TILT, ESD08-HLW-TILT-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	5.46E-08	3.44E-08	6.65E-08
IHF-ESD-08-HLW	3-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to a premature tilt-down of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD08-HLW-TILT, ESD08-HLW-TILT-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	4-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to a derailment of the waste package transfer trolley. In this sequence the canister remains intact, and the shielding function is degraded.	ESD08-HLW-DERAIL, /ESD08-HLW-DERAIL-CAN, ESD08-HLW-DERAIL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	4-3	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to a derailment of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD08-HLW-DERAIL, ESD08-HLW-DERAIL-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-08-HLW	4-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to a derailment of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD08-HLW-DERAIL, ESD08-HLW-DERAIL-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-HLW	4-5	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to a derailment of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD08-HLW-DERAIL, ESD08-HLW-DERAIL-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	9.44E-10	9.44E-10	1.48E-11
IHF-ESD-08-HLW	4-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to a derailment of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD08-HLW-DERAIL, ESD08-HLW-DERAIL-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-NVL	2-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to a waste package transfer trolley collision with structures or equipment. In this sequence the canister remains intact, and the shielding function is degraded.	ESD08-NVL-COLLIDE, /ESD08-NVL-COLLIDE-CAN, ESD08-NVL-COLLIDE-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-NVL	2-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to a waste package transfer trolley collision with structures or equipment. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD08-NVL-COLLIDE, ESD08-NVL-COLLIDE-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-NVL	2-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to a waste package transfer trolley collision with structures or equipment. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD08-NVL-COLLIDE, ESD08-NVL-COLLIDE-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-NVL	2-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to a waste package transfer trolley collision with structures or equipment. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD08-NVL-COLLIDE, ESD08-NVL-COLLIDE-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	1.18E-08	7.37E-09	1.40E-08
IHF-ESD-08-NVL	2-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to a waste package transfer trolley collision with structures or equipment. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD08-NVL-COLLIDE, ESD08-NVL-COLLIDE-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	1.74E-11	4.66E-12	6.18E-11
IHF-ESD-08-NVL	3-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to a premature tilt-down of the waste package transfer trolley. In this sequence the canister remains intact, and the shielding function is degraded.	ESD08-NVL-TILT, /ESD08-NVL-TILT-CAN, ESD08-NVL-TILT-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-NVL	3-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to a premature tilt-down of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD08-NVL-TILT, ESD08-NVL-TILT-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-NVL	3-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to a premature tilt-down of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD08-NVL-TILT, ESD08-NVL-TILT-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-NVL	3-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to a premature tilt-down of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD08-NVL-TILT, ESD08-NVL-TILT-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	1.09E-07	6.87E-08	1.33E-07
IHF-ESD-08-NVL	3-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to a premature tilt-down of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD08-NVL-TILT, ESD08-NVL-TILT-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	1.66E-10	4.29E-11	5.86E-10
IHF-ESD-08-NVL	4-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to a derailment of the waste package transfer trolley. In this sequence the canister remains intact, and the shielding function is degraded.	ESD08-NVL-DERAIL, /ESD08-NVL-DERAIL-CAN, ESD08-NVL-DERAIL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-NVL	4-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to a derailment of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD08-NVL-DERAIL, ESD08-NVL-DERAIL-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-NVL	4-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to a derailment of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD08-NVL-DERAIL, ESD08-NVL-DERAIL-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-08-NVL	4-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to a derailment of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD08-NVL-DERAIL, ESD08-NVL-DERAIL-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	1.89E-09	1.89E-09	2.96E-11
IHF-ESD-08-NVL	4-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to a derailment of the waste package transfer trolley. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD08-NVL-DERAIL, ESD08-NVL-DERAIL-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	2.80E-12	1.20E-12	5.80E-12

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-09-HLW	2-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to welding damages canister. In this sequence the canister remains intact, and the WP fails.	ESD09-HLW-WELD, /ESD09-HLW-WELD-CAN, ESD09-HLW-WELD-WP	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-HLW	2-3	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to welding damages canister. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD09-HLW-WELD, ESD09-HLW-WELD-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-HLW	2-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to welding damages canister. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD09-HLW-WELD, ESD09-HLW-WELD-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-HLW	2-5	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to welding damages canister. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD09-HLW-WELD, ESD09-HLW-WELD-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-HLW	2-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to welding damages canister. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD09-HLW-WELD, ESD09-HLW-WELD-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-HLW	3-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to RHS drops object onto WP lid. In this sequence the canister remains intact, and the WP fails.	ESD09-HLW-DROPON, /ESD09-HLW-DROPON-CAN, ESD09-HLW-DROPON-WP	DE-SHIELD-LOSS	6.09E-07	5.71E-07	2.71E-07
IHF-ESD-09-HLW	3-3	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to RHS drops object onto WP lid. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD09-HLW-DROPON, ESD09-HLW-DROPON-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-HLW	3-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to RHS drops object onto WP lid. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD09-HLW-DROPON, ESD09-HLW-DROPON-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-HLW	3-5	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to RHS drops object onto WP lid. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD09-HLW-DROPON, ESD09-HLW-DROPON-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-HLW	3-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to RHS drops object onto WP lid. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD09-HLW-DROPON, ESD09-HLW-DROPON-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-NVL	2-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to welding damages canister. In this sequence the canister remains intact, and the WP fails.	ESD09-NVL-WELD, /ESD09-NVL-WELD-CAN, ESD09-NVL-WELD-WP	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-NVL	2-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to welding damages canister. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD09-NVL-WELD, ESD09-NVL-WELD-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-NVL	2-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to welding damages canister. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD09-NVL-WELD, ESD09-NVL-WELD-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-NVL	2-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to welding damages canister. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD09-NVL-WELD, ESD09-NVL-WELD-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-NVL	2-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to welding damages canister. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD09-NVL-WELD, ESD09-NVL-WELD-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-NVL	3-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to RHS drops object onto WP lid. In this sequence the canister remains intact, and the WP fails.	ESD09-NVL-DROPON, /ESD09-NVL-DROPON-CAN, ESD09-NVL-DROPON-WP	DE-SHIELD-LOSS	1.22E-06	1.14E-06	5.43E-07
IHF-ESD-09-NVL	3-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to RHS drops object onto WP lid. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD09-NVL-DROPON, ESD09-NVL-DROPON-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-NVL	3-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to RHS drops object onto WP lid. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD09-NVL-DROPON, ESD09-NVL-DROPON-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-09-NVL	3-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to RHS drops object onto WP lid. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD09-NVL-DROPON, ESD09-NVL-DROPON-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	1.22E-06	1.14E-06	5.43E-07

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-09-NVL	3-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to RHS drops object onto WP lid. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD09-NVL-DROPON, ESD09-NVL-DROPON-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	1.88E-09	6.68E-10	4.99E-09
IHF-ESD-10-HLW	2-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to WPTT derailment. In this sequence the WP remains intact, and the shielding function is degraded.	ESD10-HLW-DERAIL, /ESD10-HLW-DERAIL-WP, ESD10-HLW-DERAIL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	2-3	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to WPTT derailment. In this sequence the WP fails, and the canister remains intact.	ESD10-HLW-DERAIL, ESD10-HLW-DERAIL-WP, /ESD10-HLW-DERAIL-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	2-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to WPTT derailment. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD10-HLW-DERAIL, ESD10-HLW-DERAIL-WP, ESD10-HLW-DERAIL-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	2-5	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to WPTT derailment. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD10-HLW-DERAIL, ESD10-HLW-DERAIL-WP, ESD10-HLW-DERAIL-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	2-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to WPTT derailment. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD10-HLW-DERAIL, ESD10-HLW-DERAIL-WP, ESD10-HLW-DERAIL-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	9.44E-10	9.44E-10	1.48E-11
IHF-ESD-10-HLW	2-7	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to WPTT derailment. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD10-HLW-DERAIL, ESD10-HLW-DERAIL-WP, ESD10-HLW-DERAIL-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	3-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to Improper tiltdown or departure of WPTT. In this sequence the WP remains intact, and the shielding function is degraded.	ESD10-HLW-TILT, /ESD10-HLW-TILT-WP, ESD10-HLW-TILT-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	3-3	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to Improper tiltdown or departure of WPTT. In this sequence the WP fails, and the canister remains intact.	ESD10-HLW-TILT, ESD10-HLW-TILT-WP, /ESD10-HLW-TILT-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	3-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to Improper tiltdown or departure of WPTT. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD10-HLW-TILT, ESD10-HLW-TILT-WP, ESD10-HLW-TILT-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	3-5	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to Improper tiltdown or departure of WPTT. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD10-HLW-TILT, ESD10-HLW-TILT-WP, ESD10-HLW-TILT-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	3-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to Improper tiltdown or departure of WPTT. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD10-HLW-TILT, ESD10-HLW-TILT-WP, ESD10-HLW-TILT-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	3-7	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to Improper tiltdown or departure of WPTT. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD10-HLW-TILT, ESD10-HLW-TILT-WP, ESD10-HLW-TILT-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	4-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to WPTT collision. In this sequence the WP remains intact, and the shielding function is degraded.	ESD10-HLW-COLLIDE, /ESD10-HLW-COLLIDE-WP, ESD10-HLW-COLLIDE-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	4-3	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to WPTT collision. In this sequence the WP fails, and the canister remains intact.	ESD10-HLW-COLLIDE, ESD10-HLW-COLLIDE-WP, /ESD10-HLW-COLLIDE-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	4-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to WPTT collision. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD10-HLW-COLLIDE, ESD10-HLW-COLLIDE-WP, ESD10-HLW-COLLIDE-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	4-5	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to WPTT collision. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD10-HLW-COLLIDE, ESD10-HLW-COLLIDE-WP, ESD10-HLW-COLLIDE-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-HLW	4-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to WPTT collision. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD10-HLW-COLLIDE, ESD10-HLW-COLLIDE-WP, ESD10-HLW-COLLIDE-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	5.92E-09	3.69E-09	7.01E-09
IHF-ESD-10-HLW	4-7	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to WPTT collision. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD10-HLW-COLLIDE, ESD10-HLW-COLLIDE-WP, ESD10-HLW-COLLIDE-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	2-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to WPTT derailment. In this sequence the WP remains intact, and the shielding function is degraded.	ESD10-NVL-DERAIL, /ESD10-NVL-DERAIL-WP, ESD10-NVL-DERAIL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-10-NVL	2-3	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to WPTT derailment. In this sequence the WP fails, and the canister remains intact.	ESD10-NVL-DERAIL, ESD10-NVL-DERAIL-WP, /ESD10-NVL-DERAIL-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	2-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to WPTT derailment. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD10-NVL-DERAIL, ESD10-NVL-DERAIL-WP, ESD10-NVL-DERAIL-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	2-5	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to WPTT derailment. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD10-NVL-DERAIL, ESD10-NVL-DERAIL-WP, ESD10-NVL-DERAIL-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	2-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to WPTT derailment. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD10-NVL-DERAIL, ESD10-NVL-DERAIL-WP, ESD10-NVL-DERAIL-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	1.89E-09	1.89E-09	2.96E-11
IHF-ESD-10-NVL	2-7	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to WPTT derailment. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD10-NVL-DERAIL, ESD10-NVL-DERAIL-WP, ESD10-NVL-DERAIL-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	2.80E-12	1.20E-12	5.80E-12
IHF-ESD-10-NVL	3-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to Improper tiltdown or departure of WPTT. In this sequence the WP remains intact, and the shielding function is degraded.	ESD10-NVL-TILT, /ESD10-NVL-TILT-WP, ESD10-NVL-TILT-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	3-3	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to Improper tiltdown or departure of WPTT. In this sequence the WP fails, and the canister remains intact.	ESD10-NVL-TILT, ESD10-NVL-TILT-WP, /ESD10-NVL-TILT-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	3-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to Improper tiltdown or departure of WPTT. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD10-NVL-TILT, ESD10-NVL-TILT-WP, ESD10-NVL-TILT-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	3-5	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to Improper tiltdown or departure of WPTT. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD10-NVL-TILT, ESD10-NVL-TILT-WP, ESD10-NVL-TILT-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	3-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to Improper tiltdown or departure of WPTT. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD10-NVL-TILT, ESD10-NVL-TILT-WP, ESD10-NVL-TILT-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	3-7	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to Improper tiltdown or departure of WPTT. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD10-NVL-TILT, ESD10-NVL-TILT-WP, ESD10-NVL-TILT-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	4-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to WPTT collision. In this sequence the WP remains intact, and the shielding function is degraded.	ESD10-NVL-COLLIDE, /ESD10-NVL-COLLIDE-WP, ESD10-NVL-COLLIDE-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	4-3	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to WPTT collision. In this sequence the WP fails, and the canister remains intact.	ESD10-NVL-COLLIDE, ESD10-NVL-COLLIDE-WP, /ESD10-NVL-COLLIDE-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	4-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to WPTT collision. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD10-NVL-COLLIDE, ESD10-NVL-COLLIDE-WP, ESD10-NVL-COLLIDE-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	4-5	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to WPTT collision. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD10-NVL-COLLIDE, ESD10-NVL-COLLIDE-WP, ESD10-NVL-COLLIDE-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-10-NVL	4-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to WPTT collision. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD10-NVL-COLLIDE, ESD10-NVL-COLLIDE-WP, ESD10-NVL-COLLIDE-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	1.18E-05	7.37E-06	1.40E-05
IHF-ESD-10-NVL	4-7	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to WPTT collision. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD10-NVL-COLLIDE, ESD10-NVL-COLLIDE-WP, ESD10-NVL-COLLIDE-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	1.74E-08	4.67E-09	6.18E-08
IHF-ESD-11-HLW	2-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to TEV collision. In this sequence the WP remains intact, and the shielding function is degraded.	ESD11-HLW-TEV-COLL, /ESD11-HLW-WP, ESD11-HLW-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	2-3	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to TEV collision. In this sequence the WP fails, and the canister remains intact.	ESD11-HLW-TEV-COLL, ESD11-HLW-WP, /ESD11-HLW-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	2-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to TEV collision. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD11-HLW-TEV-COLL, ESD11-HLW-WP, ESD11-HLW-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-11-HLW	2-5	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to TEV collision. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD11-HLW-TEV-COLL, ESD11-HLW-WP, ESD11-HLW-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	2-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to TEV collision. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD11-HLW-TEV-COLL, ESD11-HLW-WP, ESD11-HLW-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	2-7	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to TEV collision. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD11-HLW-TEV-COLL, ESD11-HLW-WP, ESD11-HLW-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	3-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to object dropped on to Waste Package. In this sequence the WP remains intact, and the shielding function is degraded.	ESD11-HLW-DROPON, /ESD11-HLW-WP, ESD11-HLW-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	3-3	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to object dropped on to Waste Package. In this sequence the WP fails, and the canister remains intact.	ESD11-HLW-DROPON, ESD11-HLW-WP, /ESD11-HLW-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	3-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to object dropped on to Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD11-HLW-DROPON, ESD11-HLW-WP, ESD11-HLW-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	3-5	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to object dropped on to Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD11-HLW-DROPON, ESD11-HLW-WP, ESD11-HLW-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	3-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to object dropped on to Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD11-HLW-DROPON, ESD11-HLW-WP, ESD11-HLW-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	3.04E-07	2.86E-07	1.36E-07
IHF-ESD-11-HLW	3-7	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to object dropped on to Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD11-HLW-DROPON, ESD11-HLW-WP, ESD11-HLW-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	4-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to crane interference with Waste Package. In this sequence the WP remains intact, and the shielding function is degraded.	ESD11-HLW-CRANE, /ESD11-HLW-WP, ESD11-HLW-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	4-3	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to crane interference with Waste Package. In this sequence the WP fails, and the canister remains intact.	ESD11-HLW-CRANE, ESD11-HLW-WP, /ESD11-HLW-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	4-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to crane interference with Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD11-HLW-CRANE, ESD11-HLW-WP, ESD11-HLW-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	4-5	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to crane interference with Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD11-HLW-CRANE, ESD11-HLW-WP, ESD11-HLW-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	4-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to crane interference with Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD11-HLW-CRANE, ESD11-HLW-WP, ESD11-HLW-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	2.00E-10	2.00E-10	1.42E-18
IHF-ESD-11-HLW	4-7	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to crane interference with Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD11-HLW-CRANE, ESD11-HLW-WP, ESD11-HLW-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	5-2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to WPTT or WPTC malfunction. In this sequence the WP remains intact, and the shielding function is degraded.	ESD11-HLW-COLLISION, /ESD11-HLW-WP, ESD11-HLW-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	5-3	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to WPTT or WPTC malfunction. In this sequence the WP fails, and the canister remains intact.	ESD11-HLW-COLLISION, ESD11-HLW-WP, /ESD11-HLW-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	5-4	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release due to WPTT or WPTC malfunction. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD11-HLW-COLLISION, ESD11-HLW-WP, ESD11-HLW-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	5-5	This sequence represents a structural challenge to an HLW canister resulting in a filtered radionuclide release also important to criticality due to WPTT or WPTC malfunction. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD11-HLW-COLLISION, ESD11-HLW-WP, ESD11-HLW-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-HLW	5-6	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release due to WPTT or WPTC malfunction. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD11-HLW-COLLISION, ESD11-HLW-WP, ESD11-HLW-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	1.99E-06	1.30E-06	2.28E-06

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-11-HLW	5-7	This sequence represents a structural challenge to an HLW canister resulting in an unfiltered radionuclide release also important to criticality due to WPTT or WPTC malfunction. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD11-HLW-COLLISION, ESD11-HLW-WP, ESD11-HLW-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	2-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to TEV collision. In this sequence the WP remains intact, and the shielding function is degraded.	ESD11-NVL-TEV-COLL, /ESD11-NVL-WP, ESD11-NVL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	2-3	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to TEV collision. In this sequence the WP fails, and the canister remains intact.	ESD11-NVL-TEV-COLL, ESD11-NVL-WP, /ESD11-NVL-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	2-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to TEV collision. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD11-NVL-TEV-COLL, ESD11-NVL-WP, ESD11-NVL-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	2-5	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to TEV collision. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD11-NVL-TEV-COLL, ESD11-NVL-WP, ESD11-NVL-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	2-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to TEV collision. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD11-NVL-TEV-COLL, ESD11-NVL-WP, ESD11-NVL-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	2-7	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to TEV collision. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD11-NVL-TEV-COLL, ESD11-NVL-WP, ESD11-NVL-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	3-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to object dropped on to Waste Package. In this sequence the WP remains intact, and the shielding function is degraded.	ESD11-NVL-DROPON, /ESD11-NVL-WP, ESD11-NVL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	3-3	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to object dropped on to Waste Package. In this sequence the WP fails, and the canister remains intact.	ESD11-NVL-DROPON, ESD11-NVL-WP, /ESD11-NVL-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	3-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to object dropped on to Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD11-NVL-DROPON, ESD11-NVL-WP, ESD11-NVL-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	3-5	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to object dropped on to Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD11-NVL-DROPON, ESD11-NVL-WP, ESD11-NVL-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	3-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to object dropped on to Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD11-NVL-DROPON, ESD11-NVL-WP, ESD11-NVL-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	6.09E-10	5.71E-10	2.71E-10
IHF-ESD-11-NVL	3-7	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to object dropped on to Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD11-NVL-DROPON, ESD11-NVL-WP, ESD11-NVL-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	9.34E-13	3.11E-13	2.50E-12
IHF-ESD-11-NVL	4-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to crane interference with Waste Package. In this sequence the WP remains intact, and the shielding function is degraded.	ESD11-NVL-CRANE, /ESD11-NVL-WP, ESD11-NVL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	4-3	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to crane interference with Waste Package. In this sequence the WP fails, and the canister remains intact.	ESD11-NVL-CRANE, ESD11-NVL-WP, /ESD11-NVL-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	4-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to crane interference with Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD11-NVL-CRANE, ESD11-NVL-WP, ESD11-NVL-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	4-5	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to crane interference with Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD11-NVL-CRANE, ESD11-NVL-WP, ESD11-NVL-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	4-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to crane interference with Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD11-NVL-CRANE, ESD11-NVL-WP, ESD11-NVL-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	4.00E-10	4.00E-10	2.84E-18
IHF-ESD-11-NVL	4-7	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to crane interference with Waste Package. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD11-NVL-CRANE, ESD11-NVL-WP, ESD11-NVL-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	6.10E-13	2.22E-13	1.48E-12
IHF-ESD-11-NVL	5-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to WPTT or WPTC malfunction. In this sequence the WP remains intact, and the shielding function is degraded.	ESD11-NVL-COLLISION, /ESD11-NVL-WP, ESD11-NVL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-11-NVL	5-3	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to WPTT or WPTC malfunction. In this sequence the WP fails, and the canister remains intact.	ESD11-NVL-COLLISION, ESD11-NVL-WP, /ESD11-NVL-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	5-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to WPTT or WPTC malfunction. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD11-NVL-COLLISION, ESD11-NVL-WP, ESD11-NVL-CAN, /HVAC-CONF, /MOD-NOFIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	5-5	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to WPTT or WPTC malfunction. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD11-NVL-COLLISION, ESD11-NVL-WP, ESD11-NVL-CAN, /HVAC-CONF, MOD-NOFIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-11-NVL	5-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to WPTT or WPTC malfunction. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD11-NVL-COLLISION, ESD11-NVL-WP, ESD11-NVL-CAN, HVAC-CONF, /MOD-NOFIRE	RR-UNFILTERED	3.99E-06	2.60E-06	4.55E-06
IHF-ESD-11-NVL	5-7	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to WPTT or WPTC malfunction. In this sequence the WP fails, the canister fails, the confinement boundary fails, and moderator enters canister.	ESD11-NVL-COLLISION, ESD11-NVL-WP, ESD11-NVL-CAN, HVAC-CONF, MOD-NOFIRE	RR-UNFILTERED-ITC	5.96E-09	1.67E-09	1.89E-08
IHF-ESD-12A-HLW	2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to temporary loss of shielding when canister is being lifted from TC.	ESD12A-HLW-SHLD	DE-SHIELD-LOSS	1.90E-03	8.85E-04	3.56E-03
IHF-ESD-12A-NVL	2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to temporary loss of shielding when canister is being lifted from TC.	ESD12A-NVL-SHLD	DE-SHIELD-LOSS	6.79E-04	2.97E-04	1.36E-03
IHF-ESD-12B-HLW	2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to improper installation of shield ring .	ESD12B-HLW-SHLD	DE-SHIELD-LOSS	2.02E-02	2.01E-02	2.37E-04
IHF-ESD-12B-NVL	2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to improper installation of shield ring .	ESD12B-NVL-SHLD	DE-SHIELD-LOSS	1.59E-01	1.14E-01	1.40E-01
IHF-ESD-12C-HLW	2	This sequence represents a structural challenge to an HLW canister resulting in a direct exposure from loss of shielding due to direct exposure during exporting loaded WP.	ESD12C-HLW-SHLD-FACDR	DE-SHIELD-LOSS	5.72E-03	2.23E-03	1.21E-02
IHF-ESD-12C-NVL	2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to direct exposure during exporting loaded WP.	ESD12C-NVL-SHLD-FACDR	DE-SHIELD-LOSS	1.15E-02	4.47E-03	2.41E-02
IHF-ESD-13-HLW-CAN	2-2	This sequence represents a structural challenge to an canister resulting in a direct exposure from loss of shielding due to localized fire: canister in transfer room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-HLW-CAN-CTM-FIRE, /ESD13-HLW-CANF-CTM-FIRE, ESD13-HLW-SHLD-FIRE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-CAN	2-3	This sequence represents a structural challenge to an canister resulting in a filtered radionuclide release due to localized fire: canister in transfer room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-HLW-CAN-CTM-FIRE, ESD13-HLW-CANF-CTM-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-CAN	2-4	This sequence represents a structural challenge to an canister resulting in a filtered radionuclide release also important to criticality due to localized fire: canister in transfer room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-HLW-CAN-CTM-FIRE, ESD13-HLW-CANF-CTM-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-CAN	2-5	This sequence represents a structural challenge to an canister resulting in an unfiltered radionuclide release due to localized fire: canister in transfer room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-HLW-CAN-CTM-FIRE, ESD13-HLW-CANF-CTM-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	6.85E-09	6.04E-09	3.68E-09
IHF-ESD-13-HLW-CAN	2-6	This sequence represents a structural challenge to an canister resulting in an unfiltered radionuclide release also important to criticality due to localized fire: canister in transfer room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-HLW-CAN-CTM-FIRE, ESD13-HLW-CANF-CTM-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-CSK	2-2	This sequence represents a structural challenge to an cask resulting in a direct exposure from loss of shielding due to localized fire: TC in unloading room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-HLW-CSK-CUR-FIRE, /ESD13-HLW-CANF-CUR-FIRE, ESD13-HLW-SHLD-FIRE	DE-SHIELD-LOSS	1.31E-05	1.17E-05	6.54E-06
IHF-ESD-13-HLW-CSK	2-3	This sequence represents a structural challenge to an cask resulting in a filtered radionuclide release due to localized fire: TC in unloading room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-HLW-CSK-CUR-FIRE, ESD13-HLW-CANF-CUR-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-CSK	2-4	This sequence represents a structural challenge to an cask resulting in a filtered radionuclide release also important to criticality due to localized fire: TC in unloading room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-HLW-CSK-CUR-FIRE, ESD13-HLW-CANF-CUR-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-CSK	2-5	This sequence represents a structural challenge to an cask resulting in an unfiltered radionuclide release due to localized fire: TC in unloading room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-HLW-CSK-CUR-FIRE, ESD13-HLW-CANF-CUR-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	2.61E-11	1.91E-11	2.42E-11
IHF-ESD-13-HLW-CSK	2-6	This sequence represents a structural challenge to an cask resulting in an unfiltered radionuclide release also important to criticality due to localized fire: TC in unloading room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-HLW-CSK-CUR-FIRE, ESD13-HLW-CANF-CUR-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-13-HLW-CSK	3-2	This sequence represents a structural challenge to an cask resulting in a direct exposure from loss of shielding due to localized fire: TC in cask preparation room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-HLW-CSK-CPA-FIRE, /ESD13-HLW-CANF-CPA-FIRE, ESD13-HLW-SHLD-FIRE	DE-SHIELD-LOSS	6.56E-04	5.87E-04	3.27E-04
IHF-ESD-13-HLW-CSK	3-3	This sequence represents a structural challenge to an cask resulting in a filtered radionuclide release due to localized fire: TC in cask preparation room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-HLW-CSK-CPA-FIRE, ESD13-HLW-CANF-CPA-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-CSK	3-4	This sequence represents a structural challenge to an cask resulting in a filtered radionuclide release also important to criticality due to localized fire: TC in cask preparation room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-HLW-CSK-CPA-FIRE, ESD13-HLW-CANF-CPA-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-CSK	3-5	This sequence represents a structural challenge to an cask resulting in an unfiltered radionuclide release due to localized fire: TC in cask preparation room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-HLW-CSK-CPA-FIRE, ESD13-HLW-CANF-CPA-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	1.31E-09	9.94E-10	1.11E-09
IHF-ESD-13-HLW-CSK	3-6	This sequence represents a structural challenge to an cask resulting in an unfiltered radionuclide release also important to criticality due to localized fire: TC in cask preparation room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-HLW-CSK-CPA-FIRE, ESD13-HLW-CANF-CPA-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	2-2	This sequence represents a structural challenge to an HLW-WP resulting in a direct exposure from loss of shielding due to localized fire: WP in Loadout Room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-HLW-WP-LOR-FIRE, /ESD13-HLW-CANF-LOR-FIRE, ESD13-HLW-SHLD-FIRE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	2-3	This sequence represents a structural challenge to an HLW-WP resulting in a filtered radionuclide release due to localized fire: WP in Loadout Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-HLW-WP-LOR-FIRE, ESD13-HLW-CANF-LOR-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	2-4	This sequence represents a structural challenge to an HLW-WP resulting in a filtered radionuclide release also important to criticality due to localized fire: WP in Loadout Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-HLW-WP-LOR-FIRE, ESD13-HLW-CANF-LOR-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	2-5	This sequence represents a structural challenge to an HLW-WP resulting in an unfiltered radionuclide release due to localized fire: WP in Loadout Room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-HLW-WP-LOR-FIRE, ESD13-HLW-CANF-LOR-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	2.95E-08	2.06E-08	3.12E-08
IHF-ESD-13-HLW-WP	2-6	This sequence represents a structural challenge to an HLW-WP resulting in an unfiltered radionuclide release also important to criticality due to localized fire: WP in Loadout Room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-HLW-WP-LOR-FIRE, ESD13-HLW-CANF-LOR-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	3-2	This sequence represents a structural challenge to an HLW-WP resulting in a direct exposure from loss of shielding due to localized fire: WP in loading Room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-HLW-WP-LR-FIRE, /ESD13-HLW-CANF-LR-FIRE, ESD13-HLW-SHLD-FIRE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	3-3	This sequence represents a structural challenge to an HLW-WP resulting in a filtered radionuclide release due to localized fire: WP in loading Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-HLW-WP-LR-FIRE, ESD13-HLW-CANF-LR-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	3-4	This sequence represents a structural challenge to an HLW-WP resulting in a filtered radionuclide release also important to criticality due to localized fire: WP in loading Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-HLW-WP-LR-FIRE, ESD13-HLW-CANF-LR-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	3-5	This sequence represents a structural challenge to an HLW-WP resulting in an unfiltered radionuclide release due to localized fire: WP in loading Room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-HLW-WP-LR-FIRE, ESD13-HLW-CANF-LR-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	7.14E-07	6.21E-07	4.05E-07
IHF-ESD-13-HLW-WP	3-6	This sequence represents a structural challenge to an HLW-WP resulting in an unfiltered radionuclide release also important to criticality due to localized fire: WP in loading Room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-HLW-WP-LR-FIRE, ESD13-HLW-CANF-LR-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	4-2	This sequence represents a structural challenge to an HLW-WP resulting in a direct exposure from loss of shielding due to localized fire: WP in Positioning Room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-HLW-WP-PR-FIRE, /ESD13-HLW-CANF-PR-FIRE, ESD13-HLW-SHLD-FIRE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	4-3	This sequence represents a structural challenge to an HLW-WP resulting in a filtered radionuclide release due to localized fire: WP in Positioning Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-HLW-WP-PR-FIRE, ESD13-HLW-CANF-PR-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	4-4	This sequence represents a structural challenge to an HLW-WP resulting in a filtered radionuclide release also important to criticality due to localized fire: WP in Positioning Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-HLW-WP-PR-FIRE, ESD13-HLW-CANF-PR-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	4-5	This sequence represents a structural challenge to an HLW-WP resulting in an unfiltered radionuclide release due to localized fire: WP in Positioning Room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-HLW-WP-PR-FIRE, ESD13-HLW-CANF-PR-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	2.26E-06	2.02E-06	1.15E-06

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-13-HLW-WP	4-6	This sequence represents a structural challenge to an HLW-WP resulting in an unfiltered radionuclide release also important to criticality due to localized fire: WP in Positioning Room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-HLW-WP-PR-FIRE, ESD13-HLW-CANF-PR-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	5-2	This sequence represents a structural challenge to an HLW-WP resulting in a direct exposure from loss of shielding due to Large fire affects entire facility. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-HLW-LG-FIRE, /ESD13-HLW-CANF-LG-FIRE, ESD13-HLW-SHLD-FIRE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	5-3	This sequence represents a structural challenge to an HLW-WP resulting in a filtered radionuclide release due to Large fire affects entire facility. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-HLW-LG-FIRE, ESD13-HLW-CANF-LG-FIRE, /HVAC-CONF-LGF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	5-4	This sequence represents a structural challenge to an HLW-WP resulting in a filtered radionuclide release also important to criticality due to Large fire affects entire facility. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-HLW-LG-FIRE, ESD13-HLW-CANF-LG-FIRE, /HVAC-CONF-LGF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-HLW-WP	5-5	This sequence represents a structural challenge to an HLW-WP resulting in an unfiltered radionuclide release due to Large fire affects entire facility. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-HLW-LG-FIRE, ESD13-HLW-CANF-LG-FIRE, HVAC-CONF-LGF, /MOD-FIRE	RR-UNFILTERED	6.19E-06	5.45E-06	3.37E-06
IHF-ESD-13-HLW-WP	5-6	This sequence represents a structural challenge to an HLW-WP resulting in an unfiltered radionuclide release also important to criticality due to Large fire affects entire facility. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-HLW-LG-FIRE, ESD13-HLW-CANF-LG-FIRE, HVAC-CONF-LGF, MOD-FIRE	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	2-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to Localized fire: WP in loadout room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-NVL-WP-LOR-FIRE, /ESD13-NVL-CANF-LOR-FIRE, ESD13-NVL-SHLD-FIRE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	2-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to Localized fire: WP in loadout room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-NVL-WP-LOR-FIRE, ESD13-NVL-CANF-LOR-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	2-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to Localized fire: WP in loadout room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-NVL-WP-LOR-FIRE, ESD13-NVL-CANF-LOR-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	2-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to Localized fire: WP in loadout room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-NVL-WP-LOR-FIRE, ESD13-NVL-CANF-LOR-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	1.97E-08	1.37E-08	2.08E-08
IHF-ESD-13-NVL	2-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to Localized fire: WP in loadout room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-NVL-WP-LOR-FIRE, ESD13-NVL-CANF-LOR-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	1.97E-08	1.37E-08	2.08E-08
IHF-ESD-13-NVL	3-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to localized fire: WP in loading Room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-NVL-WP-LR-FIRE, /ESD13-NVL-CANF-LR-FIRE, ESD13-NVL-SHLD-FIRE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	3-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to localized fire: WP in loading Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-NVL-WP-LR-FIRE, ESD13-NVL-CANF-LR-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	3-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to localized fire: WP in loading Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-NVL-WP-LR-FIRE, ESD13-NVL-CANF-LR-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	3-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to localized fire: WP in loading Room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-NVL-WP-LR-FIRE, ESD13-NVL-CANF-LR-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	1.39E-08	1.21E-08	8.02E-09
IHF-ESD-13-NVL	3-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to localized fire: WP in loading Room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-NVL-WP-LR-FIRE, ESD13-NVL-CANF-LR-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	1.39E-08	1.21E-08	8.02E-09
IHF-ESD-13-NVL	4-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to Localized fire: WP in unloading Room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-NVL-CSK-CUR-FIRE, /ESD13-NVL-CANF-CUR-FIRE, ESD13-NVL-SHLD-FIRE	DE-SHIELD-LOSS	4.77E-06	4.27E-06	2.38E-06
IHF-ESD-13-NVL	4-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to Localized fire: WP in unloading Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-NVL-CSK-CUR-FIRE, ESD13-NVL-CANF-CUR-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	4-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to Localized fire: WP in unloading Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-NVL-CSK-CUR-FIRE, ESD13-NVL-CANF-CUR-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-13-NVL	4-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to Localized fire: WP in unloading Room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-NVL-CSK-CUR-FIRE, ESD13-NVL-CANF-CUR-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	4.73E-12	3.46E-12	4.35E-12
IHF-ESD-13-NVL	4-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to Localized fire: WP in unloading Room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-NVL-CSK-CUR-FIRE, ESD13-NVL-CANF-CUR-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	4.73E-12	3.46E-12	4.35E-12
IHF-ESD-13-NVL	5-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to Localized fire: WP in position Room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-NVL-WP-PR-FIRE, /ESD13-NVL-CANF-PR-FIRE, ESD13-NVL-SHLD-FIRE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	5-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to Localized fire: WP in position Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-NVL-WP-PR-FIRE, ESD13-NVL-CANF-PR-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	5-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to Localized fire: WP in position Room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-NVL-WP-PR-FIRE, ESD13-NVL-CANF-PR-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	5-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to Localized fire: WP in position Room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-NVL-WP-PR-FIRE, ESD13-NVL-CANF-PR-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	1.51E-06	1.35E-06	7.76E-07
IHF-ESD-13-NVL	5-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to Localized fire: WP in position Room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-NVL-WP-PR-FIRE, ESD13-NVL-CANF-PR-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	1.51E-06	1.35E-06	7.76E-07
IHF-ESD-13-NVL	6-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to Localized fire: TC in cask prep area. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-NVL-CSK-CPA-FIRE, /ESD13-NVL-CANF-CPA-FIRE, ESD13-NVL-SHLD-FIRE	DE-SHIELD-LOSS	8.75E-04	7.93E-04	4.08E-04
IHF-ESD-13-NVL	6-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to Localized fire: TC in cask prep area. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-NVL-CSK-CPA-FIRE, ESD13-NVL-CANF-CPA-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	6-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to Localized fire: TC in cask prep area. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-NVL-CSK-CPA-FIRE, ESD13-NVL-CANF-CPA-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	6-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to Localized fire: TC in cask prep area. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-NVL-CSK-CPA-FIRE, ESD13-NVL-CANF-CPA-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	8.76E-10	6.67E-10	7.33E-10
IHF-ESD-13-NVL	6-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to Localized fire: TC in cask prep area. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-NVL-CSK-CPA-FIRE, ESD13-NVL-CANF-CPA-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	8.76E-10	6.67E-10	7.33E-10
IHF-ESD-13-NVL	7-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to Localized fire: canister in transfer room. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-NVL-CAN-CTM-FIRE, /ESD13-NVL-CANF-CTM-FIRE, ESD13-NVL-SHLD-FIRE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	7-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to Localized fire: canister in transfer room. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-NVL-CAN-CTM-FIRE, ESD13-NVL-CANF-CTM-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	7-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to Localized fire: canister in transfer room. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-NVL-CAN-CTM-FIRE, ESD13-NVL-CANF-CTM-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	7-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to Localized fire: canister in transfer room. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-NVL-CAN-CTM-FIRE, ESD13-NVL-CANF-CTM-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	2.90E-09	2.51E-09	1.67E-09
IHF-ESD-13-NVL	7-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to Localized fire: canister in transfer room. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-NVL-CAN-CTM-FIRE, ESD13-NVL-CANF-CTM-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	2.90E-09	2.51E-09	1.67E-09
IHF-ESD-13-NVL	8-2	This sequence represents a structural challenge to a naval canister resulting in a direct exposure from loss of shielding due to Large fire affects entire facility. In this sequence the canister remains intact, and the shielding function is degraded.	ESD13-NVL-LG-FIRE, /ESD13-NVL-CANF-LG-FIRE, ESD13-NVL-SHLD-FIRE	DE-SHIELD-LOSS	2.74E-02	2.45E-02	1.37E-02
IHF-ESD-13-NVL	8-3	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release due to Large fire affects entire facility. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering canister.	ESD13-NVL-LG-FIRE, ESD13-NVL-CANF-LG-FIRE, /HVAC-CONF, /MOD-FIRE	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00

Table G-1. Event Sequence Quantification Summary (Continued)

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
IHF-ESD-13-NVL	8-4	This sequence represents a structural challenge to a naval canister resulting in a filtered radionuclide release also important to criticality due to Large fire affects entire facility. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters canister.	ESD13-NVL-LG-FIRE, ESD13-NVL-CANF-LG-FIRE, /HVAC-CONF, MOD-FIRE	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
IHF-ESD-13-NVL	8-5	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release due to Large fire affects entire facility. In this sequence the canister fails, the confinement boundary fails, and moderator is excluded from entering canister.	ESD13-NVL-LG-FIRE, ESD13-NVL-CANF-LG-FIRE, HVAC-CONF, /MOD-FIRE	RR-UNFILTERED	2.35E-06	2.07E-06	1.26E-06
IHF-ESD-13-NVL	8-6	This sequence represents a structural challenge to a naval canister resulting in an unfiltered radionuclide release also important to criticality due to Large fire affects entire facility. In this sequence the canister fails, the confinement boundary fails, and moderator enters canister.	ESD13-NVL-LG-FIRE, ESD13-NVL-CANF-LG-FIRE, HVAC-CONF, MOD-FIRE	RR-UNFILTERED-ITC	2.35E-06	2.07E-06	1.26E-06

NOTE: CAN = canister; CSK = cask; CTM = canister transfer machine; CTT = cask transfer trolley; HLW = high-level radioactive waste; MCO = multicanister overpack; NVL = naval; TC = transportation cask; WP = waste package; HLW-WP = HLW canister in a waste package; WPTC = waste package transfer carriage; WPTT = waste package transport trolley.

Source: Original

Table G-2. Event Sequence Grouping and Categorization

Event Sequence Group ID	End State	Description	Material at Risk	Mean[a]	Median[a]	Standard Deviation[a]	Event Sequence Category	Basis for Categorization
ESD01-HLW-SEQ2-DED	Direct exposure, degradation of shielding	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during receipt activities, resulting in a direct exposure from degradation of shielding. In this sequence the transportation cask containment function remains intact, and the cask shielding function is degraded.	5 HLW canisters	3.E-08	2.E-08	6.E-08	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD01-HLW-SEQ3-DEL	Direct exposure, loss of shielding	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during receipt activities, resulting in a direct exposure from loss of shielding. In this sequence the transportation cask fails, the canisters remain intact.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2Category 2	Mean of distribution for number of occurrences of event sequence
ESD01-HLW-SEQ4-RRF	Filtered radionuclide release	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during receipt activities, resulting in a filtered radionuclide release. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2Category 2	Mean of distribution for number of occurrences of event sequence
ESD01-HLW-SEQ5-RRC	Filtered radionuclide release, important to criticality	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during receipt activities, resulting in a filtered radionuclide release also important to criticality. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and moderatorenters the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence

Table G-2. Event Sequence Grouping and Categorization (Continued)

Event Sequence Group ID	End State	Description	Material at Risk	Mean[a]	Median[a]	Standard Deviation[a]	Event Sequence Category	Basis for Categorization
ESD01-HLW-SEQ6-RRU	Unfiltered radionuclide release	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during receipt activities, resulting in an unfiltered radionuclide release. In this sequence the transportation cask fails, the canister fails, the confinement boundary is not relied upon, and moderator is excluded from entering the canister.	5 HLW canisters	3.E-08	2.E-08	6.E-08	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD01-HLW-SEQ7-RRC	Unfiltered radionuclide release, important to criticality	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during receipt activities, resulting in an unfiltered radionuclide release also important to criticality. In this sequence the transportation cask fails, the canister fails, the confinement boundary is not relied upon, and moderator enters the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD01-NVL-SEQ2-DED	Direct exposure, degradation of shielding	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during receipt, upending, and transfer to a CTT, resulting in a direct exposure from degradation of shielding. In this sequence the transportation cask containment function remains intact, and the shielding function is degraded.	1 naval SNF canister	7.E-07	3.E-07	2.E-06	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD01-NVL-SEQ3-DEL	Direct exposure, loss of shielding	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during receipt, upending, and transfer to a CTT, resulting in a direct exposure from loss of shielding. In this sequence the transportation cask fails, and the canister remains intact.	1 naval SNF canister	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence

Table G-2. Event Sequence Grouping and Categorization (Continued)

Event Sequence Group ID	End State	Description	Material at Risk	Mean[a]	Median[a]	Standard Deviation[a]	Event Sequence Category	Basis for Categorization
ESD01-NVL-SEQ4-RRF	Filtered radionuclide release	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during receipt, upending, and transfer to a CTT, resulting in a filtered radionuclide release. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering the canister.	1 naval SNF canister	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD01-NVL-SEQ5-RRC	Filtered radionuclide release, important to criticality	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during receipt, upending, and transfer to a CTT, resulting in a filtered radionuclide release also important to criticality. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and moderator enters the canister.	1 naval SNF canister	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD01-NVL-SEQ6-RRU	Unfiltered radionuclide release	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during receipt, upending, and transfer to a CTT, resulting in an unfiltered radionuclide release. In this sequence the transportation cask fails, the canister fails, the confinement boundary is not relied upon, and moderator is excluded from entering the canister.	1 naval SNF canister	7.E-07	3.E-07	2.E-06	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD01-NVL-SEQ7-RRC	Unfiltered radionuclide release, important to criticality	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during receipt, upending, and transfer to a CTT, resulting in an unfiltered radionuclide release also important to criticality. In this sequence the transportation cask fails, the canister fails, the confinement boundary is not relied upon, and moderator enters the canister.	1 naval SNF canister	1.E-09	2.E-10	5.E-09	Beyond Category 2	Mean of distribution for number of occurrences of event sequence

Table G-2. Event Sequence Grouping and Categorization (Continued)

Event Sequence Group ID	End State	Description	Material at Risk	Mean[a]	Median[a]	Standard Deviation[a]	Event Sequence Category	Basis for Categorization
ESD02-HLW-SEQ2-DED	Direct exposure, degradation of shielding	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during upending and transfer to a CTT, resulting in a direct exposure from degradation of shielding. In this sequence the transportation cask containment function remains intact, and the shielding function is degraded.	5 HLW canisters	1.E-06	4.E-07	3.E-06	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD02-HLW-SEQ3-DEL	Direct exposure, loss of shielding	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during upending and transfer to a CTT, resulting in a direct exposure from loss of shielding. In this sequence the transportation cask fails, and the canister remains intact.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD02-HLW-SEQ4-RRF	Filtered radionuclide release	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during upending and transfer to a CTT, resulting in a filtered radionuclide release. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD02-HLW-SEQ5-RRC	Filtered radionuclide release, important to criticality	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during upending and transfer to a CTT, resulting in a filtered radionuclide release also important to criticality. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and moderator enters the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence

Table G-2. Event Sequence Grouping and Categorization (Continued)

Event Sequence Group ID	End State	Description	Material at Risk	Mean[a]	Median[a]	Standard Deviation[a]	Event Sequence Category	Basis for Categorization
ESD02-HLW-SEQ6-RRU	Unfiltered radionuclide release	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during upending and transfer to a CTT, resulting in an unfiltered radionuclide release. In this sequence the transportation cask fails, the canister fails, the confinement boundary is not relied upon, and moderator is excluded from entering the canister.	5 HLW canisters	1.E-06	4.E-07	3.E-06	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD02-HLW-SEQ7-RRC	Unfiltered radionuclide release, important to criticality	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during upending and transfer to a CTT, resulting in an unfiltered radionuclide release also important to criticality. In this sequence the transportation cask fails, the canister fails, the confinement boundary is not relied upon, and moderator enters the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD02-NVL-SEQ2-DED	Direct exposure, degradation of shielding	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during removal of impact limiters, resulting in a direct exposure from degradation of shielding. In this sequence the transportation cask containment function remains intact, and the shielding function is degraded.	1 naval SNF canister	1.E-07	4.E-08	5.E-07	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD02-NVL-SEQ3-DEL	Direct exposure, loss of shielding	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during removal of impact limiters, resulting in a direct exposure from loss of shielding. In this sequence the transportation cask fails, and the canister remains intact.	1 naval SNF canister	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence

Table G-2. Event Sequence Grouping and Categorization (Continued)

Event Sequence Group ID	End State	Description	Material at Risk	Mean[a]	Median[a]	Standard Deviation[a]	Event Sequence Category	Basis for Categorization
ESD02-NVL-SEQ4-RRF	Filtered radionuclide release	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during removal of impact limiters, resulting in a filtered radionuclide release. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering the canister.	1 naval SNF canister	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD02-NVL-SEQ5-RRC	Filtered radionuclide release, important to criticality	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during removal of impact limiters, resulting in a filtered radionuclide release also important to criticality. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and moderator enters the canister.	1 naval SNF canister	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD02-NVL-SEQ6-RRU	Unfiltered radionuclide release	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during removal of impact limiters, resulting in an unfiltered radionuclide release. In this sequence the transportation cask fails, the canister fails, the confinement boundary is not relied upon, and moderator is excluded from entering the canister.	1 naval SNF canister	1.E-07	4.E-08	5.E-07	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD02-NVL-SEQ7-RRC	Unfiltered radionuclide release, important to criticality	This event sequence represents a structural challenge to a naval SNF canister inside a transportation cask, during removal of impact limiters, resulting in an unfiltered radionuclide release also important to criticality. In this sequence the transportation cask fails, the canister fails, the confinement boundary is not relied upon, and moderator enters the canister.	1 naval SNF canister	2.E-10	3.E-11	1.E-09	Beyond Category 2	Mean of distribution for number of occurrences of event sequence

Table G-2. Event Sequence Grouping and Categorization (Continued)

Event Sequence Group ID	End State	Description	Material at Risk	Mean[a]	Median[a]	Standard Deviation[a]	Event Sequence Category	Basis for Categorization
ESD03-HLW-SEQ2-DED	Direct exposure, degradation of shielding	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during preparation activities (unbolting, lid adapter installation), resulting in a direct exposure from degradation of shielding. In this sequence the transportation cask containment function remains intact, and the shielding function is degraded.	5 HLW canisters	8.E-07	4.E-07	2.E-06	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD03-HLW-SEQ3-DEL	Direct exposure, loss of shielding	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during preparation activities (unbolting, lid adapter installation), resulting in a direct exposure from loss of shielding. In this sequence the transportation cask fails, and the canister remains intact.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD03-HLW-SEQ4-RRF	Filtered radionuclide release	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during preparation activities (unbolting, lid adapter installation), resulting in a filtered radionuclide release. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and moderator is excluded from entering the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD03-HLW-SEQ5-RRC	Filtered radionuclide release, important to criticality	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during preparation activities (unbolting, lid adapter installation), resulting in a filtered radionuclide release also important to criticality. In this sequence the transportation cask fails, the canister fails, the confinement boundary remains intact, and moderator enters the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence

Table G-2. Event Sequence Grouping and Categorization (Continued)

Event Sequence Group ID	End State	Description	Material at Risk	Mean[a]	Median[a]	Standard Deviation[a]	Event Sequence Category	Basis for Categorization
ESD03-HLW-SEQ6-RRU	Unfiltered radionuclide release	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during preparation activities (unbolting, lid adapter installation), resulting in an unfiltered radionuclide release. In this sequence the transportation cask fails, the canister fails, the confinement boundary is not relied upon, and moderator is excluded from entering the canister.	5 HLW canisters	8.E-07	4.E-07	2.E-06	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD03-HLW-SEQ7-RRC	Unfiltered radionuclide release, important to criticality	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during preparation activities (unbolting, lid adapter installation), resulting in an unfiltered radionuclide release also important to criticality. In this sequence the transportation cask fails, the canister fails, the confinement boundary is not relied upon, and moderator enters the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD04-NVL-SEQ2-DED	Direct exposure, degradation of shielding	This event sequence represents a structural challenge to a naval SNF canister, during preparation activities (transportation cask lid removal, naval SNF canister lifting adapter installation), resulting in a direct exposure from degradation of shielding. In this sequence the canister remains intact, and the shielding function is degraded.	1 naval SNF canister	6.E-07	2.E-07	1.E-06	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD04-NVL-SEQ3-RRF	Filtered radionuclide release	This event sequence represents a structural challenge to a naval SNF canister, during preparation activities (transportation cask lid removal, naval SNF canister lifting adapter installation), resulting in a filtered radionuclide release. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering the canister.	1 naval SNF canister	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence

Table G-2. Event Sequence Grouping and Categorization (Continued)

Event Sequence Group ID	End State	Description	Material at Risk	Mean[a]	Median[a]	Standard Deviation[a]	Event Sequence Category	Basis for Categorization
ESD04-NVL-SEQ4-RRC	Filtered radionuclide release, important to criticality	This event sequence represents a structural challenge to a naval SNF canister, during preparation activities (transportation cask lid removal, naval SNF canister lifting adapter installation), resulting in a filtered radionuclide release also important to criticality. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters the canister.	1 naval SNF canister	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD04-NVL-SEQ5-RRU	Unfiltered radionuclide release	This event sequence represents a structural challenge to a naval SNF canister, during preparation activities (transportation cask lid removal, naval SNF canister lifting adapter installation), resulting in an unfiltered radionuclide release. In this sequence the canister fails, the confinement boundary is not relied upon, and moderator is excluded from entering the canister.	1 naval SNF canister	6.E-07	2.E-07	1.E-06	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD04-NVL-SEQ6-RRC	Unfiltered radionuclide release, important to criticality	This event sequence represents a structural challenge to a naval SNF canister, during preparation activities (transportation cask lid removal, naval SNF canister lifting adapter installation), resulting in an unfiltered radionuclide release also important to criticality. In this sequence the canister fails, the confinement boundary is not relied upon, and moderator enters the canister.	1 naval SNF canister	8.E-10	2.E-10	3.E-09	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD05-HLW-SEQ2-DEL	Direct exposure, loss of shielding	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during CTT transfer to the Cask Unloading Room, resulting in a direct exposure from loss of shielding. In this sequence the canister remains intact, and the shielding function is degraded.	5 HLW canisters	6.E-09	4.E-09	7.E-09	Beyond Category 2	Mean of distribution for number of occurrences of event sequence

Table G-2. Event Sequence Grouping and Categorization (Continued)

Event Sequence Group ID	End State	Description	Material at Risk	Mean[a]	Median[a]	Standard Deviation[a]	Event Sequence Category	Basis for Categorization
ESD05-HLW-SEQ3-RRF	Filtered radionuclide release	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during CTT transfer to the Cask Unloading Room, resulting in a filtered radionuclide release. In this sequence the canister fails, the confinement boundary remains intact, and moderator is excluded from entering the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD05-HLW-SEQ4-RRC	Filtered radionuclide release, important to criticality	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during CTT transfer to the Cask Unloading Room, resulting in a filtered radionuclide release also important to criticality. In this sequence the canister fails, the confinement boundary remains intact, and moderator enters the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD05-HLW-SEQ5-RRU	Unfiltered radionuclide release	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during CTT transfer to the Cask Unloading Room, resulting in an unfiltered radionuclide release. In this sequence the canister fails, the confinement boundary is not relied upon, and moderator is excluded from entering the canister.	5 HLW canisters	6.E-06	4.E-06	7.E-06	Beyond Category 2	Mean of distribution for number of occurrences of event sequence
ESD05-HLW-SEQ6-RRC	Unfiltered radionuclide release, important to criticality	This event sequence represents a structural challenge to HLW canisters inside a transportation cask, during CTT transfer to the Cask Unloading Room, resulting in an unfiltered radionuclide release also important to criticality. In this sequence the canister fails, the confinement boundary is not relied upon, and moderator enters the canister.	5 HLW canisters	0.E+00	0.E+00	0.E+00	Beyond Category 2	Mean of distribution for number of occurrences of event sequence