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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-DPC	5-6	This sequence represents a structural challenge to a DPC resulting in an unfiltered radionuclide release also important to criticality due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD9-DPC-SIMPACT, ESD9-DPC-SIMPACT-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DPC	6-2	This sequence represents a structural challenge to a DPC 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 shielding fails.	ESD9-DPC-DROPON, /ESD9-DPC-DROPON-CAN, ESD9-DPC-DROPON-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DPC	6-3	This sequence represents a structural challenge to a DPC 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 a moderator is excluded from entering the canister.	ESD9-DPC-DROPON, ESD9-DPC-DROPON-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	4.86E-08	3.83E-08	4.38E-08
CRCF-ESD09-DPC	6-4	This sequence represents a structural challenge to a DPC 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 a moderator enters the canister.	ESD9-DPC-DROPON, ESD9-DPC-DROPON-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	5.53E-12	2.04E-12	1.59E-11
CRCF-ESD09-DPC	6-5	This sequence represents a structural challenge to a DPC 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 a moderator is excluded from entering the canister.	ESD9-DPC-DROPON, ESD9-DPC-DROPON-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	2.22E-09	1.15E-09	3.94E-09
CRCF-ESD09-DPC	6-6	This sequence represents a structural challenge to a DPC 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 a moderator enters the canister.	ESD9-DPC-DROPON, ESD9-DPC-DROPON-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	1.93E-13	0.00E+00	1.27E-12

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-DPC	7-2	This sequence represents a structural challenge to a DPC 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 shielding fails.	ESD9-DPC-CTMBELL, /ESD9-DPC-CTMBELL-CAN, ESD9-DPC-CTMBELL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DPC	7-3	This sequence represents a structural challenge to a DPC 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 a moderator is excluded from entering the canister.	ESD9-DPC-CTMBELL, ESD9-DPC-CTMBELL-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DPC	7-4	This sequence represents a structural challenge to a DPC 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 a moderator enters the canister.	ESD9-DPC-CTMBELL, ESD9-DPC-CTMBELL-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DPC	7-5	This sequence represents a structural challenge to a DPC 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 a moderator is excluded from entering the canister.	ESD9-DPC-CTMBELL, ESD9-DPC-CTMBELL-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DPC	7-6	This sequence represents a structural challenge to a DPC 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 a moderator enters the canister.	ESD9-DPC-CTMBELL, ESD9-DPC-CTMBELL-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DPC	8-2	This sequence represents a structural challenge to a DPC 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 shielding fails.	ESD9-DPC-2BLK, /ESD9-DPC-2BLK-CAN2, ESD9-DPC-2BLK-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.
CRCF-ESD09-DPC	8-3	This sequence represents a structural challenge to a DPC 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 a moderator is excluded from entering the canister.	ESD9-DPC-2BLK, ESD9-DPC-2BLK-CAN2, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	9.72E-11	7.38E-12	5.64E-10
CRCF-ESD09-DPC	8-4	This sequence represents a structural challenge to a DPC 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 a moderator enters the canister.	ESD9-DPC-2BLK, ESD9-DPC-2BLK-CAN2, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	8.50E-15	0.00E+00	7.02E-14
CRCF-ESD09-DPC	8-5	This sequence represents a structural challenge to a DPC 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 a moderator is excluded from entering the canister.	ESD9-DPC-2BLK, ESD9-DPC-2BLK-CAN2, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	4.17E-12	1.92E-13	3.20E-11
CRCF-ESD09-DPC	8-6	This sequence represents a structural challenge to a DPC 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 a moderator enters the canister.	ESD9-DPC-2BLK, ESD9-DPC-2BLK-CAN2, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	2.00E-16	0.00E+00	5.35E-15
CRCF-ESD09-DSTD	2-2	This sequence represents a structural challenge to a DSTD resulting in a direct exposure from loss of shielding due to an impact to the canister during lid removal. In this sequence the canister remains intact, and the shielding fails.	ESD9-DSNF-LIDIMP, /ESD9-DSNF-LIDIMP-CAN, ESD9-DSNF-LIDIMP-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	2-3	This sequence represents a structural challenge to a DSTD resulting in a filtered radionuclide release due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD9-DSNF-LIDIMP, ESD9-DSNF-LIDIMP-CAN, /ESD9-CONF, /ESD9-MOD	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.
CRCF-ESD09-DSTD	2-4	This sequence represents a structural challenge to a DSTD resulting in a filtered radionuclide release also important to criticality due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD9-DSNF-LIDIMP, ESD9-DSNF-LIDIMP-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	2-5	This sequence represents a structural challenge to a DSTD resulting in an unfiltered radionuclide release due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD9-DSNF-LIDIMP, ESD9-DSNF-LIDIMP-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	2-6	This sequence represents a structural challenge to a DSTD resulting in an unfiltered radionuclide release also important to criticality due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD9-DSNF-LIDIMP, ESD9-DSNF-LIDIMP-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	3-2	This sequence represents a structural challenge to a DSTD 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 shielding fails.	ESD9-DSNF-DROP, /ESD9-DSNF-DROP-CAN, ESD9-DSNF-DROP-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	3-3	This sequence represents a structural challenge to a DSTD 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 a moderator is excluded from entering the canister.	ESD9-DSNF-DROP, ESD9-DSNF-DROP-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	1.77E-06	1.39E-06	1.81E-06
CRCF-ESD09-DSTD	3-4	This sequence represents a structural challenge to a DSTD 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 a moderator enters the canister.	ESD9-DSNF-DROP, ESD9-DSNF-DROP-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	1.88E-10	7.59E-11	4.97E-10

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-DSTD	3-5	This sequence represents a structural challenge to a DSTD 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 a moderator is excluded from entering the canister.	ESD9-DSNF-DROP, ESD9-DSNF-DROP-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	8.01E-08	4.07E-08	1.49E-07
CRCF-ESD09-DSTD	3-6	This sequence represents a structural challenge to a DSTD 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 a moderator enters the canister.	ESD9-DSNF-DROP, ESD9-DSNF-DROP-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	7.44E-12	6.90E-13	2.52E-11
CRCF-ESD09-DSTD	4-2	This sequence represents a structural challenge to a DSTD 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 shielding fails.	ESD9-DSNF-SPUR, /ESD9-DSNF-SPUR-CAN, ESD9-DSNF-SPUR-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	4-3	This sequence represents a structural challenge to a DSTD 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 a moderator is excluded from entering the canister.	ESD9-DSNF-SPUR, ESD9-DSNF-SPUR-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	4.41E-05	1.98E-05	1.03E-04
CRCF-ESD09-DSTD	4-4	This sequence represents a structural challenge to a DSTD 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 a moderator enters the canister.	ESD9-DSNF-SPUR, ESD9-DSNF-SPUR-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	4.65E-09	1.06E-09	1.70E-08
CRCF-ESD09-DSTD	4-5	This sequence represents a structural challenge to a DSTD 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 a moderator is excluded from entering the canister.	ESD9-DSNF-SPUR, ESD9-DSNF-SPUR-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	1.90E-06	5.67E-07	6.78E-06

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-DSTD	4-6	This sequence represents a structural challenge to a DSTD 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 a moderator enters the canister.	ESD9-DSNF-SPUR, ESD9-DSNF-SPUR-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	2.11E-10	3.04E-11	1.29E-09
CRCF-ESD09-DSTD	5-2	This sequence represents a structural challenge to a DSTD resulting in a direct exposure from loss of shielding due to a collision/side impact to a cask. In this sequence the canister remains intact, and the shielding fails.	ESD9-DSNF-SIMPACT, /ESD9-DSNF-SIMPACT-CAN, ESD9-DSNF-SIMPACT-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	5-3	This sequence represents a structural challenge to a DSTD resulting in a filtered radionuclide release due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD9-DSNF-SIMPACT, ESD9-DSNF-SIMPACT-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	4.85E-10	4.84E-10	3.38E-11
CRCF-ESD09-DSTD	5-4	This sequence represents a structural challenge to a DSTD resulting in a filtered radionuclide release also important to criticality due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD9-DSNF-SIMPACT, ESD9-DSNF-SIMPACT-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	5.93E-15	0.00E+00	9.64E-14
CRCF-ESD09-DSTD	5-5	This sequence represents a structural challenge to a DSTD resulting in an unfiltered radionuclide release due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD9-DSNF-SIMPACT, ESD9-DSNF-SIMPACT-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	2.21E-11	1.38E-11	2.60E-11
CRCF-ESD09-DSTD	5-6	This sequence represents a structural challenge to a DSTD resulting in an unfiltered radionuclide release also important to criticality due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD9-DSNF-SIMPACT, ESD9-DSNF-SIMPACT-CAN, ESD9-CONF, ESD9-MOD	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.
CRCF-ESD09-DSTD	6-2	This sequence represents a structural challenge to a DSTD 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 shielding fails.	ESD9-DSNF-DROPON, /ESD9-DSNF-DROPON-CAN, ESD9-DSNF-DROPON-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	6-3	This sequence represents a structural challenge to a DSTD 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 a moderator is excluded from entering the canister.	ESD9-DSNF-DROPON, ESD9-DSNF-DROPON-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	1.75E-06	1.38E-06	1.57E-06
CRCF-ESD09-DSTD	6-4	This sequence represents a structural challenge to a DSTD 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 a moderator enters the canister.	ESD9-DSNF-DROPON, ESD9-DSNF-DROPON-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	2.00E-10	7.38E-11	5.71E-10
CRCF-ESD09-DSTD	6-5	This sequence represents a structural challenge to a DSTD 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 a moderator is excluded from entering the canister.	ESD9-DSNF-DROPON, ESD9-DSNF-DROPON-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	7.96E-08	4.13E-08	1.42E-07
CRCF-ESD09-DSTD	6-6	This sequence represents a structural challenge to a DSTD 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 a moderator enters the canister.	ESD9-DSNF-DROPON, ESD9-DSNF-DROPON-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	7.52E-12	6.90E-13	4.56E-11
CRCF-ESD09-DSTD	7-2	This sequence represents a structural challenge to a DSTD 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 shielding fails.	ESD9-DSNF-CTMBELL, /ESD9-DSNF-CTMBELL-CAN, ESD9-DSNF-CTMBELL-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.
CRCF-ESD09-DSTD	7-3	This sequence represents a structural challenge to a DSTD 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 a moderator is excluded from entering the canister.	ESD9-DSNF-CTMBELL, ESD9-DSNF-CTMBELL-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	7-4	This sequence represents a structural challenge to a DSTD 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 a moderator enters the canister.	ESD9-DSNF-CTMBELL, ESD9-DSNF-CTMBELL-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	7-5	This sequence represents a structural challenge to a DSTD 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 a moderator is excluded from entering the canister.	ESD9-DSNF-CTMBELL, ESD9-DSNF-CTMBELL-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	7-6	This sequence represents a structural challenge to a DSTD 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 a moderator enters the canister.	ESD9-DSNF-CTMBELL, ESD9-DSNF-CTMBELL-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	8-2	This sequence represents a structural challenge to a DSTD 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 shielding fails.	ESD9-DSNF-2BLK, /ESD9-DSNF-2BLK-CAN2, ESD9-DSNF-2BLK-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-DSTD	8-3	This sequence represents a structural challenge to a DSTD 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 a moderator is excluded from entering the canister.	ESD9-DSNF-2BLK, ESD9-DSNF-2BLK-CAN2, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	3.49E-09	2.64E-10	2.03E-08

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-DSTD	8-4	This sequence represents a structural challenge to a DSTD 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 a moderator enters the canister.	ESD9-DSNF-2BLK, ESD9-DSNF-2BLK-CAN2, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	3.25E-13	0.00E+00	2.54E-12
CRCF-ESD09-DSTD	8-5	This sequence represents a structural challenge to a DSTD 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 a moderator is excluded from entering the canister.	ESD9-DSNF-2BLK, ESD9-DSNF-2BLK-CAN2, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	1.50E-10	7.59E-12	1.15E-09
CRCF-ESD09-DSTD	8-6	This sequence represents a structural challenge to a DSTD 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 a moderator enters the canister.	ESD9-DSNF-2BLK, ESD9-DSNF-2BLK-CAN2, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	8.97E-15	0.00E+00	1.82E-13
CRCF-ESD09-HLW	2-2	This sequence represents a structural challenge to a HLW resulting in a direct exposure from loss of shielding due to an impact to the canister during lid removal. In this sequence the canister remains intact, and the shielding fails.	ESD9-HLW-LIDIMP, /ESD9-HLW-LIDIMP-CAN, ESD9-HLW-LIDIMP-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	2-3	This sequence represents a structural challenge to a HLW resulting in a filtered radionuclide release due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD9-HLW-LIDIMP, ESD9-HLW-LIDIMP-CAN, /ESD9-CONF, /HLW-MODERATOR	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	2-4	This sequence represents a structural challenge to a HLW resulting in a filtered radionuclide release also important to criticality due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD9-HLW-LIDIMP, ESD9-HLW-LIDIMP-CAN, /ESD9-CONF, HLW-MODERATOR	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.
CRCF-ESD09-HLW	2-5	This sequence represents a structural challenge to a HLW resulting in an unfiltered radionuclide release due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD9-HLW-LIDIMP, ESD9-HLW-LIDIMP-CAN, ESD9-CONF, /HLW-MODERATOR	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	2-6	This sequence represents a structural challenge to a HLW resulting in an unfiltered radionuclide release also important to criticality due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD9-HLW-LIDIMP, ESD9-HLW-LIDIMP-CAN, ESD9-CONF, HLW-MODERATOR	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	3-2	This sequence represents a structural challenge to a HLW 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 shielding fails.	ESD9-HLW-DROP, /ESD9-HLW-DROP-CAN, ESD9-HLW-DROP-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	3-3	This sequence represents a structural challenge to a HLW 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 a moderator is excluded from entering the canister.	ESD9-HLW-DROP, ESD9-HLW-DROP-CAN, /ESD9-CONF, /HLW-MODERATOR	RR-FILTERED	5.03E-03	3.96E-03	5.15E-03
CRCF-ESD09-HLW	3-4	This sequence represents a structural challenge to a HLW 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 a moderator enters the canister.	ESD9-HLW-DROP, ESD9-HLW-DROP-CAN, /ESD9-CONF, HLW-MODERATOR	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	3-5	This sequence represents a structural challenge to a HLW 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 a moderator is excluded from entering the canister.	ESD9-HLW-DROP, ESD9-HLW-DROP-CAN, ESD9-CONF, /HLW-MODERATOR	RR-UNFILTERED	2.27E-04	1.16E-04	4.22E-04

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-HLW	3-6	This sequence represents a structural challenge to a HLW 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 a moderator enters the canister.	ESD9-HLW-DROP, ESD9-HLW-DROP-CAN, ESD9-CONF, HLW-MODERATOR	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	4-2	This sequence represents a structural challenge to a HLW 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 shielding fails.	ESD9-HLW-SPUR, /ESD9-HLW-SPUR-CAN, ESD9-HLW-SPUR-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	4-3	This sequence represents a structural challenge to a HLW 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 a moderator is excluded from entering the canister.	ESD9-HLW-SPUR, ESD9-HLW-SPUR-CAN, /ESD9-CONF, /HLW-MODERATOR	RR-FILTERED	6.95E-05	3.12E-05	1.63E-04
CRCF-ESD09-HLW	4-4	This sequence represents a structural challenge to a HLW 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 a moderator enters the canister.	ESD9-HLW-SPUR, ESD9-HLW-SPUR-CAN, /ESD9-CONF, HLW-MODERATOR	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	4-5	This sequence represents a structural challenge to a HLW 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 a moderator is excluded from entering the canister.	ESD9-HLW-SPUR, ESD9-HLW-SPUR-CAN, ESD9-CONF, /HLW-MODERATOR	RR-UNFILTERED	3.00E-06	8.94E-07	1.07E-05
CRCF-ESD09-HLW	4-6	This sequence represents a structural challenge to a HLW 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 a moderator enters the canister.	ESD9-HLW-SPUR, ESD9-HLW-SPUR-CAN, ESD9-CONF, HLW-MODERATOR	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.
CRCF-ESD09-HLW	5-2	This sequence represents a structural challenge to a HLW resulting in a direct exposure from loss of shielding due to a collision/side impact to a cask. In this sequence the canister remains intact, and the shielding fails.	ESD9-HLW-SIMPACT, /ESD9-HLW-SIMPACT-CAN, ESD9-HLW-SIMPACT-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	5-3	This sequence represents a structural challenge to a HLW resulting in a filtered radionuclide release due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD9-HLW-SIMPACT, ESD9-HLW-SIMPACT-CAN, /ESD9-CONF, /HLW-MODERATOR	RR-FILTERED	4.59E-10	4.59E-10	3.19E-11
CRCF-ESD09-HLW	5-4	This sequence represents a structural challenge to a HLW resulting in a filtered radionuclide release also important to criticality due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD9-HLW-SIMPACT, ESD9-HLW-SIMPACT-CAN, /ESD9-CONF, HLW-MODERATOR	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	5-5	This sequence represents a structural challenge to a HLW resulting in an unfiltered radionuclide release due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD9-HLW-SIMPACT, ESD9-HLW-SIMPACT-CAN, ESD9-CONF, /HLW-MODERATOR	RR-UNFILTERED	2.09E-11	1.31E-11	2.46E-11
CRCF-ESD09-HLW	5-6	This sequence represents a structural challenge to a HLW resulting in an unfiltered radionuclide release also important to criticality due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD9-HLW-SIMPACT, ESD9-HLW-SIMPACT-CAN, ESD9-CONF, HLW-MODERATOR	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	6-2	This sequence represents a structural challenge to a HLW 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 shielding fails.	ESD9-HLW-DROPON, /ESD9-HLW-DROPON-CAN, ESD9-HLW-DROPON-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.
CRCF-ESD09-HLW	6-3	This sequence represents a structural challenge to a HLW 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 a moderator is excluded from entering the canister.	ESD9-HLW-DROPON, ESD9-HLW-DROPON-CAN, /ESD9-CONF, /HLW-MODERATOR	RR-FILTERED	8.27E-03	6.51E-03	7.45E-03
CRCF-ESD09-HLW	6-4	This sequence represents a structural challenge to a HLW 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 a moderator enters the canister.	ESD9-HLW-DROPON, ESD9-HLW-DROPON-CAN, /ESD9-CONF, HLW-MODERATOR	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	6-5	This sequence represents a structural challenge to a HLW 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 a moderator is excluded from entering the canister.	ESD9-HLW-DROPON, ESD9-HLW-DROPON-CAN, ESD9-CONF, /HLW-MODERATOR	RR-UNFILTERED	3.77E-04	1.96E-04	6.69E-04
CRCF-ESD09-HLW	6-6	This sequence represents a structural challenge to a HLW 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 a moderator enters the canister.	ESD9-HLW-DROPON, ESD9-HLW-DROPON-CAN, ESD9-CONF, HLW-MODERATOR	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	7-2	This sequence represents a structural challenge to a HLW 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 shielding fails.	ESD9-HLW-CTMBELL, /ESD9-HLW-CTMBELL-CAN, ESD9-HLW-CTMBELL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	7-3	This sequence represents a structural challenge to a HLW 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 a moderator is excluded from entering the canister.	ESD9-HLW-CTMBELL, ESD9-HLW-CTMBELL-CAN, /ESD9-CONF, /HLW-MODERATOR	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.
CRCF-ESD09-HLW	7-4	This sequence represents a structural challenge to a HLW 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 a moderator enters the canister.	ESD9-HLW-CTMBELL, ESD9-HLW-CTMBELL-CAN, /ESD9-CONF, HLW-MODERATOR	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	7-5	This sequence represents a structural challenge to a HLW 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 a moderator is excluded from entering the canister.	ESD9-HLW-CTMBELL, ESD9-HLW-CTMBELL-CAN, ESD9-CONF, /HLW-MODERATOR	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	7-6	This sequence represents a structural challenge to a HLW 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 a moderator enters the canister.	ESD9-HLW-CTMBELL, ESD9-HLW-CTMBELL-CAN, ESD9-CONF, HLW-MODERATOR	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	8-2	This sequence represents a structural challenge to a HLW 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 shielding fails.	ESD9-HLW-2BLK, /ESD9-HLW-2BLK-CAN2, ESD9-HLW-2BLK-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-HLW	8-3	This sequence represents a structural challenge to a HLW 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 a moderator is excluded from entering the canister.	ESD9-HLW-2BLK, ESD9-HLW-2BLK-CAN2, /ESD9-CONF, /HLW-MODERATOR	RR-FILTERED	2.31E-05	1.75E-06	1.34E-04
CRCF-ESD09-HLW	8-4	This sequence represents a structural challenge to a HLW 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 a moderator enters the canister.	ESD9-HLW-2BLK, ESD9-HLW-2BLK-CAN2, /ESD9-CONF, HLW-MODERATOR	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.
CRCF-ESD09-HLW	8-5	This sequence represents a structural challenge to a HLW 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 a moderator is excluded from entering the canister.	ESD9-HLW-2BLK, ESD9-HLW-2BLK-CAN2, ESD9-CONF, /HLW-MODERATOR	RR-UNFILTERED	9.93E-07	4.91E-08	7.62E-06
CRCF-ESD09-HLW	8-6	This sequence represents a structural challenge to a HLW 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 a moderator enters the canister.	ESD9-HLW-2BLK, ESD9-HLW-2BLK-CAN2, ESD9-CONF, HLW-MODERATOR	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	2-2	This sequence represents a structural challenge to a MCO resulting in a direct exposure from loss of shielding due to an impact to the canister during lid removal. In this sequence the canister remains intact, and the shielding fails.	ESD9-MCO-LIDIMP, /ESD9-MCO-LIDIMP-CAN, ESD9-MCO-LIDIMP-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	2-3	This sequence represents a structural challenge to a MCO resulting in a filtered radionuclide release due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD9-MCO-LIDIMP, ESD9-MCO-LIDIMP-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	2-4	This sequence represents a structural challenge to a MCO resulting in a filtered radionuclide release also important to criticality due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD9-MCO-LIDIMP, ESD9-MCO-LIDIMP-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	2-5	This sequence represents a structural challenge to a MCO resulting in an unfiltered radionuclide release due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD9-MCO-LIDIMP, ESD9-MCO-LIDIMP-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	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.
CRCF-ESD09-MCO	2-6	This sequence represents a structural challenge to a MCO resulting in an unfiltered radionuclide release also important to criticality due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD9-MCO-LIDIMP, ESD9-MCO-LIDIMP-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	3-2	This sequence represents a structural challenge to a MCO 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 shielding fails.	ESD9-MCO-DROP, /ESD9-MCO-DROP-CAN, ESD9-MCO-DROP-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	3-3	This sequence represents a structural challenge to a MCO 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 a moderator is excluded from entering the canister.	ESD9-MCO-DROP, ESD9-MCO-DROP-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	6.43E-04	5.06E-04	6.58E-04
CRCF-ESD09-MCO	3-4	This sequence represents a structural challenge to a MCO 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 a moderator enters the canister.	ESD9-MCO-DROP, ESD9-MCO-DROP-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	6.89E-08	2.79E-08	1.80E-07
CRCF-ESD09-MCO	3-5	This sequence represents a structural challenge to a MCO 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 a moderator is excluded from entering the canister.	ESD9-MCO-DROP, ESD9-MCO-DROP-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	2.91E-05	1.48E-05	5.39E-05
CRCF-ESD09-MCO	3-6	This sequence represents a structural challenge to a MCO 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 a moderator enters the canister.	ESD9-MCO-DROP, ESD9-MCO-DROP-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	3.05E-09	8.10E-10	9.17E-09

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-MCO	4-2	This sequence represents a structural challenge to a MCO 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 shielding fails.	ESD9-MCO-SPUR, /ESD9-MCO-SPUR-CAN, ESD9-MCO-SPUR-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	4-3	This sequence represents a structural challenge to a MCO 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 a moderator is excluded from entering the canister.	ESD9-MCO-SPUR, ESD9-MCO-SPUR-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	3.20E-06	1.44E-06	7.49E-06
CRCF-ESD09-MCO	4-4	This sequence represents a structural challenge to a MCO 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 a moderator enters the canister.	ESD9-MCO-SPUR, ESD9-MCO-SPUR-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	3.37E-10	7.69E-11	1.23E-09
CRCF-ESD09-MCO	4-5	This sequence represents a structural challenge to a MCO 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 a moderator is excluded from entering the canister.	ESD9-MCO-SPUR, ESD9-MCO-SPUR-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	1.38E-07	4.11E-08	4.92E-07
CRCF-ESD09-MCO	4-6	This sequence represents a structural challenge to a MCO 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 a moderator enters the canister.	ESD9-MCO-SPUR, ESD9-MCO-SPUR-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	1.53E-11	2.20E-12	9.35E-11
CRCF-ESD09-MCO	5-2	This sequence represents a structural challenge to a MCO resulting in a direct exposure from loss of shielding due to a collision/side impact to a cask. In this sequence the canister remains intact, and the shielding fails.	ESD9-MCO-SIMPACT, /ESD9-MCO-SIMPACT-CAN, ESD9-MCO-SIMPACT-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.
CRCF-ESD09-MCO	5-3	This sequence represents a structural challenge to a MCO resulting in a filtered radionuclide release due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD9-MCO-SIMPACT, ESD9-MCO-SIMPACT-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	1.76E-04	1.76E-04	1.23E-05
CRCF-ESD09-MCO	5-4	This sequence represents a structural challenge to a MCO resulting in a filtered radionuclide release also important to criticality due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD9-MCO-SIMPACT, ESD9-MCO-SIMPACT-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	1.93E-08	9.56E-09	3.68E-08
CRCF-ESD09-MCO	5-5	This sequence represents a structural challenge to a MCO resulting in an unfiltered radionuclide release due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD9-MCO-SIMPACT, ESD9-MCO-SIMPACT-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	8.02E-06	5.14E-06	9.44E-06
CRCF-ESD09-MCO	5-6	This sequence represents a structural challenge to a MCO resulting in an unfiltered radionuclide release also important to criticality due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD9-MCO-SIMPACT, ESD9-MCO-SIMPACT-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	8.66E-10	2.73E-10	2.74E-09
CRCF-ESD09-MCO	6-2	This sequence represents a structural challenge to a MCO 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 shielding fails.	ESD9-MCO-DROPON, /ESD9-MCO-DROPON-CAN, ESD9-MCO-DROPON-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	6-3	This sequence represents a structural challenge to a MCO 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 a moderator is excluded from entering the canister.	ESD9-MCO-DROPON, ESD9-MCO-DROPON-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	1.27E-03	9.98E-04	1.14E-03

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-MCO	6-4	This sequence represents a structural challenge to a MCO 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 a moderator enters the canister.	ESD9-MCO-DROPON, ESD9-MCO-DROPON-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	1.46E-07	5.48E-08	4.15E-07
CRCF-ESD09-MCO	6-5	This sequence represents a structural challenge to a MCO 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 a moderator is excluded from entering the canister.	ESD9-MCO-DROPON, ESD9-MCO-DROPON-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	5.77E-05	3.00E-05	1.03E-04
CRCF-ESD09-MCO	6-6	This sequence represents a structural challenge to a MCO 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 a moderator enters the canister.	ESD9-MCO-DROPON, ESD9-MCO-DROPON-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	6.16E-09	1.62E-09	3.32E-08
CRCF-ESD09-MCO	7-2	This sequence represents a structural challenge to a MCO 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 shielding fails.	ESD9-MCO-CTMBELL, /ESD9-MCO-CTMBELL-CAN, ESD9-MCO-CTMBELL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	7-3	This sequence represents a structural challenge to a MCO 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 a moderator is excluded from entering the canister.	ESD9-MCO-CTMBELL, ESD9-MCO-CTMBELL-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	7-4	This sequence represents a structural challenge to a MCO 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 a moderator enters the canister.	ESD9-MCO-CTMBELL, ESD9-MCO-CTMBELL-CAN, /ESD9-CONF, ESD9-MOD	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.
CRCF-ESD09-MCO	7-5	This sequence represents a structural challenge to a MCO 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 a moderator is excluded from entering the canister.	ESD9-MCO-CTMBELL, ESD9-MCO-CTMBELL-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	7-6	This sequence represents a structural challenge to a MCO 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 a moderator enters the canister.	ESD9-MCO-CTMBELL, ESD9-MCO-CTMBELL-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	8-2	This sequence represents a structural challenge to a MCO 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 shielding fails.	ESD9-MCO-2BLK, /ESD9-MCO-2BLK-CAN2, ESD9-MCO-2BLK-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-MCO	8-3	This sequence represents a structural challenge to a MCO 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 a moderator is excluded from entering the canister.	ESD9-MCO-2BLK, ESD9-MCO-2BLK-CAN2, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	1.27E-05	9.60E-07	7.35E-05
CRCF-ESD09-MCO	8-4	This sequence represents a structural challenge to a MCO 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 a moderator enters the canister.	ESD9-MCO-2BLK, ESD9-MCO-2BLK-CAN2, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	1.35E-09	5.18E-11	9.22E-09
CRCF-ESD09-MCO	8-5	This sequence represents a structural challenge to a MCO 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 a moderator is excluded from entering the canister.	ESD9-MCO-2BLK, ESD9-MCO-2BLK-CAN2, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	5.44E-07	2.69E-08	4.18E-06

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-MCO	8-6	This sequence represents a structural challenge to a MCO 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 a moderator enters the canister.	ESD9-MCO-2BLK, ESD9-MCO-2BLK-CAN2, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	6.06E-11	1.45E-12	6.87E-10
CRCF-ESD09-TAD	2-2	This sequence represents a structural challenge to a TAD canister resulting in a direct exposure from loss of shielding due to an impact to the canister during lid removal. In this sequence the canister remains intact, and the shielding fails.	ESD9-TAD-LIDIMP, /ESD9-TAD-LIDIMP-CAN, ESD9-TAD-LIDIMP-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	2-3	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD9-TAD-LIDIMP, ESD9-TAD-LIDIMP-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	6.50E-07	3.26E-07	8.54E-07
CRCF-ESD09-TAD	2-4	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD9-TAD-LIDIMP, ESD9-TAD-LIDIMP-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	7.39E-11	1.68E-11	2.95E-10
CRCF-ESD09-TAD	2-5	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD9-TAD-LIDIMP, ESD9-TAD-LIDIMP-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	2.89E-08	9.42E-09	5.98E-08
CRCF-ESD09-TAD	2-6	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release also important to criticality due to an impact to the canister during lid removal. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD9-TAD-LIDIMP, ESD9-TAD-LIDIMP-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	2.81E-12	0.00E+00	1.30E-11

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-TAD	3-2	This sequence represents a structural challenge to a TAD 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 shielding fails.	ESD9-TAD-DROP, /ESD9-TAD-DROP-CAN, ESD9-TAD-DROP-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	3-3	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD9-TAD-DROP, ESD9-TAD-DROP-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	2.16E-06	1.70E-06	2.21E-06
CRCF-ESD09-TAD	3-4	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD9-TAD-DROP, ESD9-TAD-DROP-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	2.27E-10	9.07E-11	6.05E-10
CRCF-ESD09-TAD	3-5	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD9-TAD-DROP, ESD9-TAD-DROP-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	9.74E-08	4.95E-08	1.81E-07
CRCF-ESD09-TAD	3-6	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD9-TAD-DROP, ESD9-TAD-DROP-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	8.35E-12	0.00E+00	3.06E-11

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-TAD	4-2	This sequence represents a structural challenge to a TAD 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 shielding fails.	ESD9-TAD-SPUR, /ESD9-TAD-SPUR-CAN, ESD9-TAD-SPUR-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	4-3	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD9-TAD-SPUR, ESD9-TAD-SPUR-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	1.06E-04	4.83E-05	2.24E-04
CRCF-ESD09-TAD	4-4	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD9-TAD-SPUR, ESD9-TAD-SPUR-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	1.19E-08	2.66E-09	4.89E-08
CRCF-ESD09-TAD	4-5	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD9-TAD-SPUR, ESD9-TAD-SPUR-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	4.73E-06	1.41E-06	1.73E-05

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-TAD	4-6	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD9-TAD-SPUR, ESD9-TAD-SPUR-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	5.26E-10	7.72E-11	2.42E-09
CRCF-ESD09-TAD	5-2	This sequence represents a structural challenge to a TAD canister resulting in a direct exposure from loss of shielding due to a collision/side impact to a cask. In this sequence the canister remains intact, and the shielding fails.	ESD9-TAD-SIMPACT, /ESD9-TAD-SIMPACT-CAN, ESD9-TAD-SIMPACT-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	5-3	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD9-TAD-SIMPACT, ESD9-TAD-SIMPACT-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	5.90E-10	5.91E-10	4.11E-11
CRCF-ESD09-TAD	5-4	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD9-TAD-SIMPACT, ESD9-TAD-SIMPACT-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	4.03E-15	0.00E+00	1.16E-13
CRCF-ESD09-TAD	5-5	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD9-TAD-SIMPACT, ESD9-TAD-SIMPACT-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	2.69E-11	1.68E-11	3.17E-11

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-TAD	5-6	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release also important to criticality due to a collision/side impact to a cask. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD9-TAD-SIMPACT, ESD9-TAD-SIMPACT-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	6-2	This sequence represents a structural challenge to a TAD 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 shielding fails.	ESD9-TAD-DROPON, /ESD9-TAD-DROPON-CAN, ESD9-TAD-DROPON-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	6-3	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD9-TAD-DROPON, ESD9-TAD-DROPON-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	4.25E-06	3.35E-06	3.83E-06
CRCF-ESD09-TAD	6-4	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD9-TAD-DROPON, ESD9-TAD-DROPON-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	4.87E-10	1.80E-10	1.39E-09
CRCF-ESD09-TAD	6-5	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD9-TAD-DROPON, ESD9-TAD-DROPON-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	1.94E-07	1.01E-07	3.44E-07

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-TAD	6-6	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD9-TAD-DROPON, ESD9-TAD-DROPON-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	1.83E-11	1.68E-12	1.11E-10
CRCF-ESD09-TAD	7-2	This sequence represents a structural challenge to a TAD 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 shielding fails.	ESD9-TAD-CTMBELL, /ESD9-TAD-CTMBELL-CAN, ESD9-TAD-CTMBELL-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	7-3	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD9-TAD-CTMBELL, ESD9-TAD-CTMBELL-CAN, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	7-4	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD9-TAD-CTMBELL, ESD9-TAD-CTMBELL-CAN, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	7-5	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD9-TAD-CTMBELL, ESD9-TAD-CTMBELL-CAN, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	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.
CRCF-ESD09-TAD	7-6	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD9-TAD-CTMBELL, ESD9-TAD-CTMBELL-CAN, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	8-2	This sequence represents a structural challenge to a TAD 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 shielding fails.	ESD9-TAD-2BLK, /ESD9-TAD-2BLK-CAN2, ESD9-TAD-2BLK-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD09-TAD	8-3	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD9-TAD-2BLK, ESD9-TAD-2BLK-CAN2, /ESD9-CONF, /ESD9-MOD	RR-FILTERED	4.25E-09	3.22E-10	2.46E-08
CRCF-ESD09-TAD	8-4	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD9-TAD-2BLK, ESD9-TAD-2BLK-CAN2, /ESD9-CONF, ESD9-MOD	RR-FILTERED-ITC	3.72E-13	0.00E+00	3.07E-12
CRCF-ESD09-TAD	8-5	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD9-TAD-2BLK, ESD9-TAD-2BLK-CAN2, ESD9-CONF, /ESD9-MOD	RR-UNFILTERED	1.82E-10	8.39E-12	1.40E-09

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD09-TAD	8-6	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD9-TAD-2BLK, ESD9-TAD-2BLK-CAN2, ESD9-CONF, ESD9-MOD	RR-UNFILTERED-ITC	8.73E-15	0.00E+00	2.34E-13
CRCF-ESD10-WP-H&D	2-2	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 fails.	ESD10-WP-H&D-DERAIL, /ESD10-WP-H&D-DERAIL-CAN, ESD10-WP-H&D-DERAIL-SHIE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&D	2-3	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&D-DERAIL, ESD10-WP-H&D-DERAIL-CAN, /ESD10-CONF, /ESD10-MOD	RR-FILTERED	1.56E-11	1.58E-11	2.68E-13
CRCF-ESD10-WP-H&D	2-4	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator enters the canister.	ESD10-WP-H&D-DERAIL, ESD10-WP-H&D-DERAIL-CAN, /ESD10-CONF, ESD10-MOD	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.
CRCF-ESD10-WP-H&D	2-5	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&D-DERAIL, ESD10-WP-H&D-DERAIL-CAN, ESD10-CONF, /ESD10-MOD	RR-UNFILTERED	7.02E-13	3.66E-13	8.20E-13
CRCF-ESD10-WP-H&D	2-6	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator enters the canister.	ESD10-WP-H&D-DERAIL, ESD10-WP-H&D-DERAIL-CAN, ESD10-CONF, ESD10-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&D	3-2	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 fails.	ESD10-WP-H&D-COLLIDE, /ESD10-WP-H&D-COLLIDE-CAN, ESD10-WP-H&D-COLLIDE-SHI	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&D	3-3	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&D-COLLIDE, ESD10-WP-H&D-COLLIDE-CAN, /ESD10-CONF, /ESD10-MOD	RR-FILTERED	9.77E-08	6.08E-08	1.16E-07

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD10-WP-H&D	3-4	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator enters the canister.	ESD10-WP-H&D-COLLIDE, ESD10-WP-H&D-COLLIDE-CAN, /ESD10-CONF, ESD10-MOD	RR-FILTERED-ITC	1.07E-11	3.30E-12	3.33E-11
CRCF-ESD10-WP-H&D	3-5	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&D-COLLIDE, ESD10-WP-H&D-COLLIDE-CAN, ESD10-CONF, /ESD10-MOD	RR-UNFILTERED	4.33E-09	1.77E-09	9.03E-09
CRCF-ESD10-WP-H&D	3-6	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator enters the canister.	ESD10-WP-H&D-COLLIDE, ESD10-WP-H&D-COLLIDE-CAN, ESD10-CONF, ESD10-MOD	RR-UNFILTERED-ITC	4.21E-13	0.00E+00	1.93E-12
CRCF-ESD10-WP-H&D	4-2	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 fails.	ESD10-WP-H&D-TILT, /ESD10-WP-H&D-TILT-CAN, ESD10-WP-H&D-TILT-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.
CRCF-ESD10-WP-H&D	4-3	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&D-TILT, ESD10-WP-H&D-TILT-CAN, /ESD10-CONF, /ESD10-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&D	4-4	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator enters the canister.	ESD10-WP-H&D-TILT, ESD10-WP-H&D-TILT-CAN, /ESD10-CONF, ESD10-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&D	4-5	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&D-TILT, ESD10-WP-H&D-TILT-CAN, ESD10-CONF, /ESD10-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&D	4-6	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP 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 a moderator enters the canister.	ESD10-WP-H&D-TILT, ESD10-WP-H&D-TILT-CAN, ESD10-CONF, ESD10-MOD	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.
CRCF-ESD10-WP-H&M	2-2	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 fails.	ESD10-WP-H&M-DERAIL, /ESD10-WP-H&M-DERAIL-CAN, ESD10-WP-H&M-DERAIL-SHIE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&M	2-3	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&M-DERAIL, ESD10-WP-H&M-DERAIL-CAN, /ESD10-CONF, /ESD10-MOD	RR-FILTERED	1.07E-05	1.07E-05	1.67E-07
CRCF-ESD10-WP-H&M	2-4	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator enters the canister.	ESD10-WP-H&M-DERAIL, ESD10-WP-H&M-DERAIL-CAN, /ESD10-CONF, ESD10-MOD	RR-FILTERED-ITC	1.19E-09	5.80E-10	2.19E-09
CRCF-ESD10-WP-H&M	2-5	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&M-DERAIL, ESD10-WP-H&M-DERAIL-CAN, ESD10-CONF, /ESD10-MOD	RR-UNFILTERED	4.83E-07	3.13E-07	5.55E-07

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD10-WP-H&M	2-6	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator enters the canister.	ESD10-WP-H&M-DERAIL, ESD10-WP-H&M-DERAIL-CAN, ESD10-CONF, ESD10-MOD	RR-UNFILTERED-ITC	5.21E-11	1.65E-11	1.62E-10
CRCF-ESD10-WP-H&M	3-2	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 fails.	ESD10-WP-H&M-COLLIDE, /ESD10-WP-H&M-COLLIDE-CAN, ESD10-WP-H&M-COLLIDE-SHI	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&M	3-3	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&M-COLLIDE, ESD10-WP-H&M-COLLIDE-CAN, /ESD10-CONF, /ESD10-MOD	RR-FILTERED	6.69E-02	4.17E-02	7.93E-02
CRCF-ESD10-WP-H&M	3-4	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator enters the canister.	ESD10-WP-H&M-COLLIDE, ESD10-WP-H&M-COLLIDE-CAN, /ESD10-CONF, ESD10-MOD	RR-FILTERED-ITC	7.37E-06	2.21E-06	2.28E-05

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD10-WP-H&M	3-5	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&M-COLLIDE, ESD10-WP-H&M-COLLIDE-CAN, ESD10-CONF, /ESD10-MOD	RR-UNFILTERED	2.96E-03	1.21E-03	6.18E-03
CRCF-ESD10-WP-H&M	3-6	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator enters the canister.	ESD10-WP-H&M-COLLIDE, ESD10-WP-H&M-COLLIDE-CAN, ESD10-CONF, ESD10-MOD	RR-UNFILTERED-ITC	3.21E-07	6.62E-08	1.32E-06
CRCF-ESD10-WP-H&M	4-2	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 fails.	ESD10-WP-H&M-TILT, /ESD10-WP-H&M-TILT-CAN, ESD10-WP-H&M-TILT-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&M	4-3	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&M-TILT, ESD10-WP-H&M-TILT-CAN, /ESD10-CONF, /ESD10-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&M	4-4	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator enters the canister.	ESD10-WP-H&M-TILT, ESD10-WP-H&M-TILT-CAN, /ESD10-CONF, ESD10-MOD	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.
CRCF-ESD10-WP-H&M	4-5	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator is excluded from entering the canister.	ESD10-WP-H&M-TILT, ESD10-WP-H&M-TILT-CAN, ESD10-CONF, /ESD10-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-H&M	4-6	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP 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 a moderator enters the canister.	ESD10-WP-H&M-TILT, ESD10-WP-H&M-TILT-CAN, ESD10-CONF, ESD10-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-TAD	2-2	This sequence represents a structural challenge to a TAD 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 fails.	ESD10-WP-TAD-DERAIL, /ESD10-WP-TAD-DERAIL-CAN, ESD10-WP-TAD-DERAIL-SHI	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-TAD	2-3	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD10-WP-TAD-DERAIL, ESD10-WP-TAD-DERAIL-CAN, /ESD10-CONF, /ESD10-MOD	RR-FILTERED	3.84E-11	3.89E-11	6.61E-13
CRCF-ESD10-WP-TAD	2-4	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD10-WP-TAD-DERAIL, ESD10-WP-TAD-DERAIL-CAN, /ESD10-CONF, ESD10-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-TAD	2-5	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD10-WP-TAD-DERAIL, ESD10-WP-TAD-DERAIL-CAN, ESD10-CONF, /ESD10-MOD	RR-UNFILTERED	1.73E-12	9.04E-13	2.02E-12

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD10-WP-TAD	2-6	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD10-WP-TAD-DERAIL, ESD10-WP-TAD-DERAIL-CAN, ESD10-CONF, ESD10-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-TAD	3-2	This sequence represents a structural challenge to a TAD 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 fails.	ESD10-WP-TAD-COLLIDE, /ESD10-WP-TAD-COLLIDE-CA, ESD10-WP-TAD-COLLIDE-SH	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-TAD	3-3	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD10-WP-TAD-COLLIDE, ESD10-WP-TAD-COLLIDE-CA, /ESD10-CONF, /ESD10-MOD	RR-FILTERED	2.41E-07	1.50E-07	2.86E-07
CRCF-ESD10-WP-TAD	3-4	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD10-WP-TAD-COLLIDE, ESD10-WP-TAD-COLLIDE-CA, /ESD10-CONF, ESD10-MOD	RR-FILTERED-ITC	2.65E-11	8.14E-12	8.21E-11
CRCF-ESD10-WP-TAD	3-5	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD10-WP-TAD-COLLIDE, ESD10-WP-TAD-COLLIDE-CA, ESD10-CONF, /ESD10-MOD	RR-UNFILTERED	1.07E-08	4.37E-09	2.23E-08
CRCF-ESD10-WP-TAD	3-6	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD10-WP-TAD-COLLIDE, ESD10-WP-TAD-COLLIDE-CA, ESD10-CONF, ESD10-MOD	RR-UNFILTERED-ITC	1.04E-12	0.00E+00	4.77E-12

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD10-WP-TAD	4-2	This sequence represents a structural challenge to a TAD 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 fails.	ESD10-WP-TAD-TILT, /ESD10-WP-TAD-TILT-CAN, ESD10-WP-TAD-TILT-SHIEL	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-TAD	4-3	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD10-WP-TAD-TILT, ESD10-WP-TAD-TILT-CAN, /ESD10-CONF, /ESD10-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-TAD	4-4	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD10-WP-TAD-TILT, ESD10-WP-TAD-TILT-CAN, /ESD10-CONF, ESD10-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-TAD	4-5	This sequence represents a structural challenge to a TAD 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 a moderator is excluded from entering the canister.	ESD10-WP-TAD-TILT, ESD10-WP-TAD-TILT-CAN, ESD10-CONF, /ESD10-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD10-WP-TAD	4-6	This sequence represents a structural challenge to a TAD 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 a moderator enters the canister.	ESD10-WP-TAD-TILT, ESD10-WP-TAD-TILT-CAN, ESD10-CONF, ESD10-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-H&D	2-2	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP resulting in a direct exposure from loss of shielding due to a canister that is damaged from the welding activity. In this sequence the canister remains intact, and the shielding fails.	ESD11-WP-H&D-DAMAGE, /ESD11-WP-H&D-DAMAGE-CAN, ESD11-WP-H&D-DAMAGE-SHI	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.
CRCF-ESD11-WP-H&D	2-3	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP resulting in a filtered radionuclide release due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD11-WP-H&D-DAMAGE, ESD11-WP-H&D-DAMAGE-CAN, /ESD11-CONF, /ESD11-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-H&D	2-4	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP resulting in a filtered radionuclide release also important to criticality due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD11-WP-H&D-DAMAGE, ESD11-WP-H&D-DAMAGE-CAN, /ESD11-CONF, ESD11-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-H&D	2-5	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP resulting in an unfiltered radionuclide release due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD11-WP-H&D-DAMAGE, ESD11-WP-H&D-DAMAGE-CAN, ESD11-CONF, /ESD11-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-H&D	2-6	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP resulting in an unfiltered radionuclide release also important to criticality due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD11-WP-H&D-DAMAGE, ESD11-WP-H&D-DAMAGE-CAN, ESD11-CONF, ESD11-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-H&D	3-2	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP resulting in a direct exposure from loss of shielding due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister remains intact, and the shielding fails.	ESD11-WP-H&D-DROPON, /ESD11-WP-H&D-DROPON-CAN, ESD11-WP-H&D-DROPON-SHI	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.
CRCF-ESD11-WP-H&D	3-3	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP resulting in a filtered radionuclide release due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD11-WP-H&D-DROPON, ESD11-WP-H&D-DROPON-CAN, /ESD11-CONF, /ESD11-MOD	RR-FILTERED	1.00E-05	9.43E-06	4.48E-06
CRCF-ESD11-WP-H&D	3-4	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP resulting in a filtered radionuclide release also important to criticality due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD11-WP-H&D-DROPON, ESD11-WP-H&D-DROPON-CAN, /ESD11-CONF, ESD11-MOD	RR-FILTERED-ITC	1.15E-09	4.86E-10	2.70E-09
CRCF-ESD11-WP-H&D	3-5	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP resulting in an unfiltered radionuclide release due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD11-WP-H&D-DROPON, ESD11-WP-H&D-DROPON-CAN, ESD11-CONF, /ESD11-MOD	RR-UNFILTERED	4.59E-07	2.66E-07	6.17E-07
CRCF-ESD11-WP-H&D	3-6	This sequence represents a structural challenge to a combination of HLW & DOE STD canisters inside a WP resulting in an unfiltered radionuclide release also important to criticality due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD11-WP-H&D-DROPON, ESD11-WP-H&D-DROPON-CAN, ESD11-CONF, ESD11-MOD	RR-UNFILTERED-ITC	4.84E-11	1.43E-11	1.43E-10
CRCF-ESD11-WP-H&M	2-2	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a direct exposure from loss of shielding due to a canister that is damaged from the welding activity. In this sequence the canister remains intact, and the shielding fails.	ESD11-WP-H&M-DAMAGE, /ESD11-WP-H&M-DAMAGE-CAN, ESD11-WP-H&M-DAMAGE-SHI	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.
CRCF-ESD11-WP-H&M	2-3	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a filtered radionuclide release due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD11-WP-H&M-DAMAGE, ESD11-WP-H&M-DAMAGE-CAN, /ESD11-CONF, /ESD11-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-H&M	2-4	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a filtered radionuclide release also important to criticality due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD11-WP-H&M-DAMAGE, ESD11-WP-H&M-DAMAGE-CAN, /ESD11-CONF, ESD11-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-H&M	2-5	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in an unfiltered radionuclide release due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD11-WP-H&M-DAMAGE, ESD11-WP-H&M-DAMAGE-CAN, ESD11-CONF, /ESD11-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-H&M	2-6	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in an unfiltered radionuclide release also important to criticality due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD11-WP-H&M-DAMAGE, ESD11-WP-H&M-DAMAGE-CAN, ESD11-CONF, ESD11-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-H&M	3-2	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a direct exposure from loss of shielding due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister remains intact, and the shielding fails.	ESD11-WP-H&M-DROPON, /ESD11-WP-H&M-DROPON-CAN, ESD11-WP-H&M-DROPON-SHI	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.
CRCF-ESD11-WP-H&M	3-3	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a filtered radionuclide release due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD11-WP-H&M-DROPON, ESD11-WP-H&M-DROPON-CAN, /ESD11-CONF, /ESD11-MOD	RR-FILTERED	6.88E-03	6.45E-03	3.07E-03
CRCF-ESD11-WP-H&M	3-4	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a filtered radionuclide release also important to criticality due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD11-WP-H&M-DROPON, ESD11-WP-H&M-DROPON-CAN, /ESD11-CONF, ESD11-MOD	RR-FILTERED-ITC	7.86E-07	3.32E-07	1.85E-06
CRCF-ESD11-WP-H&M	3-5	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in an unfiltered radionuclide release due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD11-WP-H&M-DROPON, ESD11-WP-H&M-DROPON-CAN, ESD11-CONF, /ESD11-MOD	RR-UNFILTERED	3.14E-04	1.82E-04	4.22E-04
CRCF-ESD11-WP-H&M	3-6	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in an unfiltered radionuclide release also important to criticality due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD11-WP-H&M-DROPON, ESD11-WP-H&M-DROPON-CAN, ESD11-CONF, ESD11-MOD	RR-UNFILTERED-ITC	3.32E-08	9.93E-09	9.79E-08
CRCF-ESD11-WP-TAD	2-2	This sequence represents a structural challenge to a TAD canister resulting in a direct exposure from loss of shielding due to a canister that is damaged from the welding activity. In this sequence the canister remains intact, and the shielding fails.	ESD11-WP-TAD-DAMAGE, /ESD11-WP-TAD-DAMAGE-CAN, ESD11-WP-TAD-DAMAGE-SHI	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.
CRCF-ESD11-WP-TAD	2-3	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD11-WP-TAD-DAMAGE, ESD11-WP-TAD-DAMAGE-CAN, /ESD11-CONF, /ESD11-MOD	RR-FILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-TAD	2-4	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD11-WP-TAD-DAMAGE, ESD11-WP-TAD-DAMAGE-CAN, /ESD11-CONF, ESD11-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-TAD	2-5	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD11-WP-TAD-DAMAGE, ESD11-WP-TAD-DAMAGE-CAN, ESD11-CONF, /ESD11-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-TAD	2-6	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release also important to criticality due to a canister that is damaged from the welding activity. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD11-WP-TAD-DAMAGE, ESD11-WP-TAD-DAMAGE-CAN, ESD11-CONF, ESD11-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-TAD	3-2	This sequence represents a structural challenge to a TAD canister resulting in a direct exposure from loss of shielding due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister remains intact, and the shielding fails.	ESD11-WP-TAD-DROPON, /ESD11-WP-TAD-DROPON-CAN, ESD11-WP-TAD-DROPON-SHI	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD11-WP-TAD	3-3	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD11-WP-TAD-DROPON, ESD11-WP-TAD-DROPON-CAN, /ESD11-CONF, /ESD11-MOD	RR-FILTERED	2.48E-05	2.33E-05	1.11E-05

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD11-WP-TAD	3-4	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD11-WP-TAD-DROPON, ESD11-WP-TAD-DROPON-CAN, /ESD11-CONF, ESD11-MOD	RR-FILTERED-ITC	2.83E-09	1.20E-09	6.65E-09
CRCF-ESD11-WP-TAD	3-5	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD11-WP-TAD-DROPON, ESD11-WP-TAD-DROPON-CAN, ESD11-CONF, /ESD11-MOD	RR-UNFILTERED	1.13E-06	6.57E-07	1.52E-06
CRCF-ESD11-WP-TAD	3-6	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release also important to criticality due to a heavy object dropped onto the canister by the remote handling system. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD11-WP-TAD-DROPON, ESD11-WP-TAD-DROPON-CAN, ESD11-CONF, ESD11-MOD	RR-UNFILTERED-ITC	1.19E-10	3.53E-11	3.53E-10
CRCF-ESD12-DPC	2-2	This sequence represents a structural challenge to a DPC resulting in a direct exposure from loss of shielding due to a side impact to an AO. In this sequence the canister remains intact, and the shielding fails.	ESD12-DPC-IMPACT, /ESD12-DPC-IMPACT-CAN, ESD12-DPC-IMPACT-SHIELD	DE-SHIELD-LOSS	2.17E-05	6.33E-06	6.65E-05
CRCF-ESD12-DPC	2-3	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release due to a side impact to an AO. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD12-DPC-IMPACT, ESD12-DPC-IMPACT-CAN, /ESD12-CONF, /ESD12-MOD	RR-FILTERED	2.18E-08	1.68E-08	1.87E-08
CRCF-ESD12-DPC	2-4	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release also important to criticality due to a side impact to an AO. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD12-DPC-IMPACT, ESD12-DPC-IMPACT-CAN, /ESD12-CONF, ESD12-MOD	RR-FILTERED-ITC	2.39E-12	9.22E-13	6.30E-12

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD12-DPC	2-5	This sequence represents a structural challenge to a DPC resulting in an unfiltered radionuclide release due to a side impact to an AO. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD12-DPC-IMPACT, ESD12-DPC-IMPACT-CAN, ESD12-CONF, /ESD12-MOD	RR-UNFILTERED	9.82E-10	4.86E-10	1.81E-09
CRCF-ESD12-DPC	2-6	This sequence represents a structural challenge to a DPC resulting in an unfiltered radionuclide release also important to criticality due to a side impact to an AO. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD12-DPC-IMPACT, ESD12-DPC-IMPACT-CAN, ESD12-CONF, ESD12-MOD	RR-UNFILTERED-ITC	8.81E-14	0.00E+00	3.93E-13
CRCF-ESD12-DPC	3-2	This sequence represents a structural challenge to a DPC resulting in a direct exposure from loss of shielding due to an AO tipover. In this sequence the canister remains intact, and the shielding fails.	ESD12-DPC-TIP, /ESD12-DPC-TIP-CAN, ESD12-DPC-TIP-SHIELD	DE-SHIELD-LOSS	3.26E-07	4.77E-08	1.76E-06
CRCF-ESD12-DPC	3-3	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release due to an AO tipover. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD12-DPC-TIP, ESD12-DPC-TIP-CAN, /ESD12-CONF, /ESD12-MOD	RR-FILTERED	3.30E-07	1.29E-07	6.95E-07
CRCF-ESD12-DPC	3-4	This sequence represents a structural challenge to a DPC resulting in a filtered radionuclide release also important to criticality due to an AO tipover. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD12-DPC-TIP, ESD12-DPC-TIP-CAN, /ESD12-CONF, ESD12-MOD	RR-FILTERED-ITC	3.87E-11	6.95E-12	1.81E-10
CRCF-ESD12-DPC	3-5	This sequence represents a structural challenge to a DPC resulting in an unfiltered radionuclide release due to an AO tipover. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD12-DPC-TIP, ESD12-DPC-TIP-CAN, ESD12-CONF, /ESD12-MOD	RR-UNFILTERED	1.51E-08	3.73E-09	5.60E-08
CRCF-ESD12-DPC	3-6	This sequence represents a structural challenge to a DPC resulting in an unfiltered radionuclide release also important to criticality due to an AO tipover. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD12-DPC-TIP, ESD12-DPC-TIP-CAN, ESD12-CONF, ESD12-MOD	RR-UNFILTERED-ITC	1.69E-12	1.92E-13	1.02E-11

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD12-TAD	2-2	This sequence represents a structural challenge to a TAD canister resulting in a direct exposure from loss of shielding due to a side impact to an AO. In this sequence the canister remains intact, and the shielding fails.	ESD12-TAD-IMPACT, /ESD12-TAD-IMPACT-CAN, ESD12-TAD-IMPACT-SHIELD	DE-SHIELD-LOSS	4.37E-04	1.28E-04	1.34E-03
CRCF-ESD12-TAD	2-3	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release due to a side impact to an AO. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD12-TAD-IMPACT, ESD12-TAD-IMPACT-CAN, /ESD12-CONF, /ESD12-MOD	RR-FILTERED	4.40E-07	3.39E-07	3.78E-07
CRCF-ESD12-TAD	2-4	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to a side impact to an AO. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD12-TAD-IMPACT, ESD12-TAD-IMPACT-CAN, /ESD12-CONF, ESD12-MOD	RR-FILTERED-ITC	4.83E-11	1.86E-11	1.27E-10
CRCF-ESD12-TAD	2-5	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release due to a side impact to an AO. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD12-TAD-IMPACT, ESD12-TAD-IMPACT-CAN, ESD12-CONF, /ESD12-MOD	RR-UNFILTERED	1.98E-08	9.81E-09	3.64E-08
CRCF-ESD12-TAD	2-6	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release also important to criticality due to a side impact to an AO. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD12-TAD-IMPACT, ESD12-TAD-IMPACT-CAN, ESD12-CONF, ESD12-MOD	RR-UNFILTERED-ITC	1.78E-12	0.00E+00	7.93E-12
CRCF-ESD12-TAD	3-2	This sequence represents a structural challenge to a TAD canister resulting in a direct exposure from loss of shielding due to an AO tipover. In this sequence the canister remains intact, and the shielding fails.	ESD12-TAD-TIP, /ESD12-TAD-TIP-CAN, ESD12-TAD-TIP-SHIELD	DE-SHIELD-LOSS	6.58E-06	9.62E-07	3.55E-05
CRCF-ESD12-TAD	3-3	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release due to an AO tipover. In this sequence the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD12-TAD-TIP, ESD12-TAD-TIP-CAN, /ESD12-CONF, /ESD12-MOD	RR-FILTERED	6.66E-06	2.60E-06	1.40E-05

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD12-TAD	3-4	This sequence represents a structural challenge to a TAD canister resulting in a filtered radionuclide release also important to criticality due to an AO tipover. In this sequence the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD12-TAD-TIP, ESD12-TAD-TIP-CAN, /ESD12-CONF, ESD12-MOD	RR-FILTERED-ITC	7.80E-10	1.40E-10	3.65E-09
CRCF-ESD12-TAD	3-5	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release due to an AO tipover. In this sequence the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD12-TAD-TIP, ESD12-TAD-TIP-CAN, ESD12-CONF, /ESD12-MOD	RR-UNFILTERED	3.05E-07	7.52E-08	1.13E-06
CRCF-ESD12-TAD	3-6	This sequence represents a structural challenge to a TAD canister resulting in an unfiltered radionuclide release also important to criticality due to an AO tipover. In this sequence the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD12-TAD-TIP, ESD12-TAD-TIP-CAN, ESD12-CONF, ESD12-MOD	RR-UNFILTERED-ITC	3.41E-11	3.87E-12	2.06E-10
CRCF-ESD13-WP-H&D	2-2	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in a direct exposure from loss of shielding due to a derailment of the waste package transfer trolley. In this sequence the WP remains intact, and the shielding fails.	ESD13-WP-H&D-DERAIL, /ESD13-WP-H&D-DERAIL-WP, ESD13-WP-H&D-DERAIL-SHIE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&D	2-3	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in a direct exposure from loss of shielding due to a derailment of the waste package transfer trolley. In this sequence the WP fails, and the canister remains intact.	ESD13-WP-H&D-DERAIL, ESD13-WP-H&D-DERAIL-WP, /ESD13-WP-H&D-DERAIL-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&D	2-4	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in a filtered radionuclide release due to a derailment of the waste package transfer trolley. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD13-WP-H&D-DERAIL, ESD13-WP-H&D-DERAIL-WP, ESD13-WP-H&D-DERAIL-CAN, /ESD13-CONF, /ESD13-MOD	RR-FILTERED	1.56E-08	1.56E-08	2.45E-10

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD13-WP-H&D	2-5	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in a filtered radionuclide release also important to criticality due to a derailment of the waste package transfer trolley. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD13-WP-H&D-DERAIL, ESD13-WP-H&D-DERAIL-WP, ESD13-WP-H&D-DERAIL-CAN, /ESD13-CONF, ESD13-MOD	RR-FILTERED-ITC	1.69E-12	7.33E-13	3.20E-12
CRCF-ESD13-WP-H&D	2-6	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in an unfiltered radionuclide release due to a derailment of the waste package transfer trolley. In this sequence the WP fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD13-WP-H&D-DERAIL, ESD13-WP-H&D-DERAIL-WP, ESD13-WP-H&D-DERAIL-CAN, ESD13-CONF, /ESD13-MOD	RR-UNFILTERED	7.05E-10	4.57E-10	8.10E-10
CRCF-ESD13-WP-H&D	2-7	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in an unfiltered radionuclide release also important to criticality due to a derailment of the waste package transfer trolley. In this sequence the WP fails, the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD13-WP-H&D-DERAIL, ESD13-WP-H&D-DERAIL-WP, ESD13-WP-H&D-DERAIL-CAN, ESD13-CONF, ESD13-MOD	RR-UNFILTERED-ITC	4.37E-14	0.00E+00	2.40E-13
CRCF-ESD13-WP-H&D	3-2	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in a direct exposure from loss of shielding due to a side impact to the waste package. In this sequence the WP remains intact, and the shielding fails.	ESD13-WP-H&D-SIMPACT, /ESD13-WP-H&D-SIMPACT-WP, ESD13-WP-H&D-SIMPACT-SHI	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&D	3-3	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in a direct exposure from loss of shielding due to a side impact to the waste package. In this sequence the WP fails, and the canister remains intact.	ESD13-WP-H&D-SIMPACT, ESD13-WP-H&D-SIMPACT-WP, /ESD13-WP-H&D-SIMPACT-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&D	3-4	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in a filtered radionuclide release due to a side impact to the waste package. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD13-WP-H&D-SIMPACT, ESD13-WP-H&D-SIMPACT-WP, ESD13-WP-H&D-SIMPACT-CAN, /ESD13-CONF, /ESD13-MOD	RR-FILTERED	9.77E-08	6.08E-08	1.16E-07

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD13-WP-H&D	3-5	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in a filtered radionuclide release also important to criticality due to a side impact to the waste package. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD13-WP-H&D-SIMPACT, ESD13-WP-H&D-SIMPACT-WP, ESD13-WP-H&D-SIMPACT-CAN, /ESD13-CONF, ESD13-MOD	RR-FILTERED-ITC	1.07E-11	3.30E-12	3.33E-11
CRCF-ESD13-WP-H&D	3-6	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in an unfiltered radionuclide release due to a side impact to the waste package. In this sequence the WP fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD13-WP-H&D-SIMPACT, ESD13-WP-H&D-SIMPACT-WP, ESD13-WP-H&D-SIMPACT-CAN, ESD13-CONF, /ESD13-MOD	RR-UNFILTERED	4.33E-09	1.77E-09	9.03E-09
CRCF-ESD13-WP-H&D	3-7	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in an unfiltered radionuclide release also important to criticality due to a side impact to the waste package. In this sequence the WP fails, the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD13-WP-H&D-SIMPACT, ESD13-WP-H&D-SIMPACT-WP, ESD13-WP-H&D-SIMPACT-CAN, ESD13-CONF, ESD13-MOD	RR-UNFILTERED-ITC	4.21E-13	0.00E+00	1.93E-12
CRCF-ESD13-WP-H&D	4-2	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP 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 WP remains intact, and the shielding fails.	ESD13-WP-H&D-TILT, /ESD13-WP-H&D-TILT-WP, ESD13-WP-H&D-TILT-SHIELD	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&D	4-3	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP 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 WP fails, and the canister remains intact.	ESD13-WP-H&D-TILT, ESD13-WP-H&D-TILT-WP, /ESD13-WP-H&D-TILT-CAN	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&D	4-4	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in a filtered radionuclide release due to a premature tilt-down of the waste package transfer trolley. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD13-WP-H&D-TILT, ESD13-WP-H&D-TILT-WP, ESD13-WP-H&D-TILT-CAN, /ESD13-CONF, /ESD13-MOD	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.
CRCF-ESD13-WP-H&D	4-5	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP 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 WP fails, the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD13-WP-H&D-TILT, ESD13-WP-H&D-TILT-WP, ESD13-WP-H&D-TILT-CAN, /ESD13-CONF, ESD13-MOD	RR-FILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&D	4-6	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP resulting in an unfiltered radionuclide release due to a premature tilt-down of the waste package transfer trolley. In this sequence the WP fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD13-WP-H&D-TILT, ESD13-WP-H&D-TILT-WP, ESD13-WP-H&D-TILT-CAN, ESD13-CONF, /ESD13-MOD	RR-UNFILTERED	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&D	4-7	This sequence represents a structural challenge to a combination of HLW and DOE STD canisters inside a WP 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 WP fails, the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD13-WP-H&D-TILT, ESD13-WP-H&D-TILT-WP, ESD13-WP-H&D-TILT-CAN, ESD13-CONF, ESD13-MOD	RR-UNFILTERED-ITC	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&M	2-2	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a direct exposure from loss of shielding due to a derailment of the waste package transfer trolley. In this sequence the WP remains intact, and the shielding fails.	ESD13-WP-H&M-DERAIL, /ESD13-WP-H&M-DERAIL-WP, ESD13-WP-H&M-DERAIL-SHIE	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&M	2-3	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a direct exposure from loss of shielding due to a derailment of the waste package transfer trolley. In this sequence the WP fails, and the canister remains intact.	ESD13-WP-H&M-DERAIL, ESD13-WP-H&M-DERAIL-WP, /ESD13-WP-H&M-DERAIL-CAN	DE-SHIELD-LOSS	1.07E-09	1.07E-09	1.67E-11

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

Event Tree	Seq.	Description	Logic	End State	Mean	Median	Std. Dev.
CRCF-ESD13-WP-H&M	2-4	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a filtered radionuclide release due to a derailment of the waste package transfer trolley. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and a moderator is excluded from entering the canister.	ESD13-WP-H&M-DERAIL, ESD13-WP-H&M-DERAIL-WP, ESD13-WP-H&M-DERAIL-CAN, /ESD13-CONF, /ESD13-MOD	RR-FILTERED	1.07E-09	1.07E-09	1.67E-11
CRCF-ESD13-WP-H&M	2-5	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a filtered radionuclide release also important to criticality due to a derailment of the waste package transfer trolley. In this sequence the WP fails, the canister fails, the confinement boundary remains intact, and a moderator enters the canister.	ESD13-WP-H&M-DERAIL, ESD13-WP-H&M-DERAIL-WP, ESD13-WP-H&M-DERAIL-CAN, /ESD13-CONF, ESD13-MOD	RR-FILTERED-ITC	1.15E-13	5.02E-14	2.19E-13
CRCF-ESD13-WP-H&M	2-6	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in an unfiltered radionuclide release due to a derailment of the waste package transfer trolley. In this sequence the WP fails, the canister fails, the confinement boundary fails, and a moderator is excluded from entering the canister.	ESD13-WP-H&M-DERAIL, ESD13-WP-H&M-DERAIL-WP, ESD13-WP-H&M-DERAIL-CAN, ESD13-CONF, /ESD13-MOD	RR-UNFILTERED	4.83E-11	3.13E-11	5.55E-11
CRCF-ESD13-WP-H&M	2-7	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in an unfiltered radionuclide release also important to criticality due to a derailment of the waste package transfer trolley. In this sequence the WP fails, the canister fails, the confinement boundary fails, and a moderator enters the canister.	ESD13-WP-H&M-DERAIL, ESD13-WP-H&M-DERAIL-WP, ESD13-WP-H&M-DERAIL-CAN, ESD13-CONF, ESD13-MOD	RR-UNFILTERED-ITC	2.99E-15	0.00E+00	1.64E-14
CRCF-ESD13-WP-H&M	3-2	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a direct exposure from loss of shielding due to a side impact to the waste package. In this sequence the WP remains intact, and the shielding fails.	ESD13-WP-H&M-SIMPACT, /ESD13-WP-H&M-SIMPACT-WP, ESD13-WP-H&M-SIMPACT-SHI	DE-SHIELD-LOSS	0.00E+00	0.00E+00	0.00E+00
CRCF-ESD13-WP-H&M	3-3	This sequence represents a structural challenge to a combination of HLW canisters and MCOs inside a WP resulting in a direct exposure from loss of shielding due to a side impact to the waste package. In this sequence the WP fails, and the canister remains intact.	ESD13-WP-H&M-SIMPACT, ESD13-WP-H&M-SIMPACT-WP, /ESD13-WP-H&M-SIMPACT-CAN	DE-SHIELD-LOSS	6.69E-09	4.17E-09	7.93E-09