ENCLOSURE 1

MFN 05-142

ESBWR MAAP Run Characteristics

Level 1 Cases

MAAP Runs Described in Chapter 8

Case	CDF %	Description	Representative Initiator	SCRAM	Feedwater	IC
T_DP_nIN	89.4	Transient, Depressurization Successful, No Injection	Loss of Feedwater	Yes	Unavailable	Disabled
T_DP_nIN_nD	< 0.1	Transient, Depressurization Successful, No Injection, No Deluge	Loss of Feedwater	Yes	Unavailable	Disabled
T_AT_SL_IRV_nIN	< 0.1	ATWS following Transient, SLC Successful, No Injection, Stuck SRV	Loss of Perferred Power	No	Runback on ATWS Discovery	Disabled
ML_DP_nIN	0.7	Medium LOCA, No Injection	Equalizing Line Break	Yes	Unavailable After MSIV Closure	Disabled
T_IRV_DP_nIN	0.1	MSIV Closure with IORV, No Injdection	IORV	Yes	Failed	Disabled
T_IRV_DP_nIN_nD	< 0.1	MSIV Closure with IORV, No Injdection, No Deluge	IORV	Yes	Failed	Disabled
T_IC24_nD	0.8	Transient, No Depressurization, No IC/PCC pool refill	LOPP	Yes	Unavailable	4
T_IRV_nIN	0.2	IORV, No Injection, No Depressurization	IORV	Yes	Unavailable	Disabled
T_IRV_nIN_nD	< 0.1	IORV, No Injection, No Depressurization, No Deluge	IORV	Yes	Unavailable	Disabled
T_AT_nFWR	< 0.1	ATWS following Transient, FW Runback Failure, No Depressurization, No Injection	MSIV Closure	No	Terminated at 3 min due to loss of suction	Disabled
T_AT_DP	< 0.1	ATWS following Transient, No SLCS	MSIV Closure	No	Terminated at 3 min due to loss of suction	Disabled
MLi_nVB_nCHR	7.9	Medium LOCA, Containment Heat Removal Failure (Core does not uncover for 72 hours)	GDCS Line Break	Yes	Unavailable	Disabled

Level 1 Cases

CRD	ADS	GDCS	LPCI	Fire Water	PCCS	PCCS Pool Makeup
Failed	10 SRV, 8 DPV	Failed	Failed	Failed		6 after 24 hours
Failed	10 SRV, 8 DPV	Failed	Failed	Failed		6 after 24 hours
Off	1 Initial Stuck SRV, Later 10 SRV, 8 DPV	Failed	Failed	Failed		6 after 24 hours
Reduced to 115 gpm to maximize water in LDW but still be ineffective, Turned off at 7200 s	10 SRV, 8 DPV	Failed	Failed	Failed		6 after 24 hours
Failed	1 Initial Stuck SRV, Later 10 SRV, 8 DPV	Failed	Failed	Failed		6 after 24 hours
Failed	1 Initial Stuck SRV, Later 10 SRV, 8 DPV	Failed	Failed	Failed		6 after 24 hours
Failed	Failed	n/a	n/a	n/a		6 Failed
Failed	1 Stuck SRV, Others Failed	Failed	Failed	Failed		6 after 24 hours
Failed	1 Stuck SRV, Others Failed	Failed	Failed	Failed		6 after 24 hours
Failed	Failed	n/a	n/a	n/a		6 after 24 hours
Failed	Failed	n/a	n/a	n/a		6 after 24 hours
Off	10 SRV, 8 DPV	7 Lines, 2 pools (one pool is spilled to LDW)	n/a	n/a	6 but VB failure makes ineffective	after 24 hours

Level 1 Cases

Deluge Lines	BiMAC	Vacuum Breakers	SPC	SDC	Vent	Drywell Leak Area (mm^2)	SLCS	Drywell Failure Area (cm^2)
3 lines, 10 cm diameter, Initiated when LDW gas temp is > 533K	Success	Success	n/a	n/a	n/a	3.4	n/a	n/a
Failed	n/a	Success	n/a	n/a	n/a	3.4	n/a	730
3 lines, 10 cm diameter, Initiated when LDW gas temp is > 533K	Success	Success	n/a	n/a	n/a	3.4	2 Tanks	n/a
3 lines, 10 cm diameter, Initiated when LDW gas temp is > 533K	Success	Success	n/a	n/a	n/a	3.4	n/a	n/a
3 lines, 10 cm diameter, Initiated when LDW gas temp is > 533K	Success	Success	n/a	n/a	n/a	3.4	n/a	n/a
Failed	n/a	Success	n/a	n/a	n/a	3.4	n/a	730
Failed	Success	Success	n/a	n/a	n/a	3.4	n/a	n/a
3 lines, 10 cm diameter, Initiated when LDW gas temp is > 533K	Success	Success	n/a	n/a	n/a	3.4	n/a	n/a
Failed	n/a	Success	n/a	n/a	n/a	3.4	n/a	730
3 lines, 10 cm diameter, Initiated when LDW gas temp is > 533K	Success	Success	n/a	n/a	n/a	3.4	Off	n/a
3 lines, 10 cm diameter, Initiated when LDW gas temp is > 533K	Success	Success	n/a	n/a	n/a	3.4	Failed	n/a
n/a	n/a	Failed	n/a	n/a	n/a	3.4	n/a	730

Sequences

MAAP cases for top 99% of CDF				
Sequence	Class	Applicable Case	% CDF	Notes
T-LOPP044	CDI	T_DP_nIN	51.5	
T-FDW044	CDI	T_DP_nIN	37.8	
ML-L-014	CDI	ML_DP_nIN	0.7	
LL-S-FDWB013	CDI	Containment assumed to fail	0.07	High water in lower drywell leads to Ex-Vessel Explosion
T-IORV014	CDI	T_IRV_DP_nIN	0.07	
T-IORV028	CDI	T_IRV_DP_nIN	0.04	
T-LOPP039	CDII	core not uncovered for 72h	3.56	Containment fails at DW head
LL-S-015	CDII	core not uncovered for 72h	3.15	Containment fails at DW head
T-LOPP042	CDII	core not uncovered for 72h	0.61	Containment fails at DW head
ML-L-016	CDII	MLi_nVB_nCHR	0.24	
T-FDW039	CDII	core not uncovered for 72h	0.1	Containment fails at DW head
T-LOPP049	CDIII	T-IC24	0.76	Case not in Chapter 8 rev 0. Containment does not fail for >>24 hours after core damage
		T-nIC-nDP	0.25	Case not in Chapter 8 rev 0. Containment does not fail
T-IORV029	CDIII	T_IRV_nIN	0.22	
T-IORV015	CDIII	T_IRV_nIN	0.03	
AT-T-GEN012	CDIV	n/a	0.27	Local core damage due to uneven boration, but vessel is not challenged. Treated as tech spec leakage.
	CDIV	T_AT_SL_IRV_nIN	0.11	
AT-T-PCS012	CDIV	n/a	0.08	Local core damage due to uneven boration, but vessel is not challenged. Treated as tech spec leakage.
	CDIV	T_AT_SL_IRV_nIN	0.02	
AT-T-FDW012	CDIV	n/a	0.03	Local core damage due to uneven boration, but vessel is not challenged. Treated as tech spec leakage.
	CDIV	T_AT_SL_IRV_nIN	0	
AT-T-GEN013	CDIV	T_AT_SL_IRV_nIN	0.02	
		Total:	99.63	