

## **18D Emergency Procedures Guidelines—Input Data and Calculation Results**

### **18D.1 Introduction**

The Emergency Procedure Guidelines (EPGs) given in Appendix 18A contain various limits for emergency plant operation. These operation limits are calculated based upon specific plant design parameters. This appendix contains the plant parameter values used for calculation of operation limits and results of these calculations. The calculation methods used are in accordance with those in Appendix C of the BWROG EPG, Revision 4.

The parameter values used for calculation of operation limits are given in Section 18D.2, and the results of calculations are given in Section 18D.3. Certain input values used for calculation are estimated values for the purpose of completing the calculations. The COL applicant is required to update the input parameters based upon specific installation details and, if necessary, recalculate affected operation limits. In addition, the EPGs in Appendix 18A shall incorporate these updated calculations, if required.

### **18D.2 Input Parameters**

Table 18D-1 lists all plant parameters used for calculation of operation limits. The parameter definitions are in accordance with Appendix C of the BWROG EPG, Revision 4. Parameters indicated by a “\*” in the “Parameter” column are estimated values which cannot be established until detailed plant design is completed or until specific plant installation details are known.

### **18D.3 Calculation Results**

Table 18D-2 contains the results of calculations of operation limits. Calculations are performed in accordance with the methods given in Appendix C of the BWROG EPG, Revision 4. For each figure used in Appendix 18A, the data points used to construct the graphs are given in Table 18D-2 to provide flexibility in the use of these graphs, if desired. The graphs and other operation limits have been incorporated in the EPGs in Appendix 18A.

Table 18D-1 BWROG EPG Rev. 4 Appendix C Input Data for ABWR

Parameter	Value	Parameter Definition
IDsuct_1	RHR (LPCF)	Suction identification
Dsuct_1	42.86 cm	Internal diameter of suction inlet to suppression pool
Hsuct_1	1.115 m	Elevation (inside bottom of suppression pool = El.0) of center of suction inlet to suppression pool
Wsuct_max_1	1130 m <sup>3</sup> /h	Flow (maximum) through suction
IDsuct_2	HPCF	Suction identification
Dsuct_2	38.74 cm	Internal diameter of suction inlet to suppression pool
Hsuct_2	1.115 m	Elevation (inside bottom of suppression pool = El.0) of center of suction inlet to suppression pool
Wsuct_max_2	890 m <sup>3</sup> /h	Flow (maximum) through suction
BWR type	6	BWR type (Enter: 1, 2, 3, 4, 5 or 6) (ABWR = 6)
Tcst	66°C	Temperature (maximum normal operating) of condensate storage tank water
Hvent_pc	24.5 m	Elevation of containment vent (center) line located above TAF (Main steamline penetration is specified since drywell has no vent provisions due to COPS).
Hsp_lco	7 m	Elevation of minimum suppression pool water level LCO
Hsc_tap*	14.2 m	Elevation of suppression chamber pressure instrument tap
Psp_des	310 kPa	Pressure rise (design load), suppression pool boundary
Psp_srv	152 kPa	Pressure rise (maximum load) on suppression pool boundary resulting from SRV actuation
Mf_sp_lco	3558426 kg	Mass of water in suppression pool with water level at minimum LCO and water temperature at maximum LCO for unrestricted operation at power
Ppc_vent	651.6 kPaG	Pressure (maximum) in airspace at which containment vent will open
Pdw_maxop*	5.198 kPaG	Pressure (maximum normal operating), drywell
Psc_maxop*	5.198 kPaG	Pressure (maximum normal operating), suppression chamber
Pdw_minop	0 kPaG	Pressure (minimum normal operating), drywell
Psc_minop	0 kPaG	Pressure (minimum normal operating), suppression chamber
Pdw_scrum	11.77 kPaG	Pressure setpoint for high drywell pressure scram
Tsp_scrum	43.3°C	Temperature of suppression pool at which reactor scram is required

Table 18D-1 BWROG EPG Rev. 4 Appendix C Input Data for ABWR (Continued)

Parameter	Value	Parameter Definition
Tdw_maxop*	57.2°C	Temperature (maximum normal operating), drywell
Tsc_maxop	35.0°C	Temperature (maximum normal operating), suppression chamber airspace
Tdw_minop*	49.4°C	Temperature (minimum normal operating), drywell
Tsc_minop	10°C	Temperature (minimum normal operating), suppression chamber airspace
Tsp_minop	10°C	Temperature (minimum normal operating) suppression pool
Tsc_des	103.9°C	Temperature (design), suppression chamber
Vdw	7350 m <sup>3</sup>	Volume (free) of drywell and vent system I/II: Vol. drywell & vent system III/ABWR: Vol. drywell (vent sys=0)
Vsc_lco	6005 m <sup>3</sup>	Volume (free) of suppression chamber above minimum suppression pool water level LCO
WLsp_srv	7.1 m	Water level (inside bottom of pool = 0) of suppression pool used to determine maximum suppression pool boundary load resulting from SRV actuation
WLsp_lco	7 m	Water level (inside bottom of pool = 0) LCO (minimum) of suppression pool
dPdw_ww	20.7 kPaD	Differential pressure capability (maximum), drywell below wetwell (if value is greater than 68.95 kPaD, enter 68.95)
Hdco	N/A	Elevation of Mark I/II downcomer openings
Vsc_dco	7619 m <sup>3</sup>	Volume (free) of suppression chamber above Mark I/II downcomer openings or volume (free) of suppression chamber above top of ABWR horizontal vents
Hhorvent	3.85 m	Elevation of top of Mark III/ABWR horizontal vents
Tcn_des	N/A	Temperature (design), Mark III containment
n_1	DRYWELL HEAD	Identification
H_1	36.14 m	Elevation (inside bottom of suppression pool = El.0)
Loc_1	DW	Location (Enter: DW or WW)
Mat_1	6	Material types (Enter: 1, 2, 3, 4, 5, or 6, 7) 1=SS304, SA240, SA320 and A312 2=S21800, A193 and A194 3=A36 4=A160 Gr. B and A105 5=A201 Gr. B, A212 and SA516 6=(User Definable Material No. 1) 7=(User Definable Material No. 2)

Table 18D-1 BWROG EPG Rev. 4 Appendix C Input Data for ABWR (Continued)

Parameter	Value	Parameter Definition
Pcalc_1*	668.8 kPaG	Pressure capability (maximum)
MatS_1	YS	Strength used to determine pressure capability (Enter: YS or TS)
Tcalc_1	371.11°C	Temperature used to determine pressure capability
n_2	RUPTURE DISC	Identification
H_2	17.2 m	Elevation (inside bottom of suppression pool = EI.0)
Loc_2	WW	Location (Enter: DW or WW)
Mat_2*	7	Material types (Enter: 1, 2, 3, 4, 5, or 6, 7) 1=SS304, SA240, SA320 and A312 2=S21800, A193 and A194 3=A36 4=A160 Gr. B and A105 5=A201 Gr. B, A212 and SA516 6=(User Definable Material No. 1) 7=(User Definable Material No. 2)
Pcalc_2*	668.8 kPaG	Pressure capability (maximum)
MatS_2	TS	Strength used to determine pressure capability (Enter: YS or TS)
Tcalc_2	176.67°C	Temperature used to determine pressure capability
LHGRmax	47.24 kW/m	Linear heat generation rate (design maximum) (the maximum allowable value is 47.24 kW/m)
Kmarg_cs	N/A	Margin (demonstrated) to cold shutdown at most reactive point in life with worst rod out (only applicable for active fuel length less than or equal to 3.71 m)
Mclad	91128 kg	Mass of clad and channels
Mfuel*	171597 kg	Mass of fuel (UO <sub>2</sub> )
Nbuns	872	Number of fuel bundles
Qrx_rated	3926 MWt	Power (rated)
vhand	354.68 cm <sup>3</sup>	Volume of control rod blade handle and structure
f_1*	3.59-8GZ	Identification
Efuel_1*	0.71 Weight % U-235	Enrichment in blanket zone at top of fuel rods
Lctrl_1	12.7 cm	Control rod blade length of B <sub>4</sub> C above enriched zone
Kinf_1*	1.21	K-infinity (max) cold and uncontrolled
Lfuel_1	381 cm	Length of active fuel
Wfuel_1*	173.888 kg	Weight of U (kg/bundle)

Table 18D-1 BWROG EPG Rev. 4 Appendix C Input Data for ABWR (Continued)

Parameter	Value	Parameter Definition
f_2*	3.59-10GZ	Identification
Efuel_2*	0.71 Weight % U-235	Enrichment in blanket zone at top of fuel rods
Lctrl_2	12.7 cm	Control rod blade length of B <sub>4</sub> C above enriched zone
Kinf_2*	1.21	K-infinity (max) cold and uncontrolled
Lfuel_2	381 cm	Length of active fuel
Wfuel_2*	173.199 kg	Weight of U (kg/bundle)
f_3*	2.59-4GZ	Identification
Efuel_3*	0.71 Weight % U-235	Enrichment in blanket zone at top of fuel rods
Lctrl_3	12.7 cm	Control rod blade length of B <sub>4</sub> C above enriched zone
Kinf_3*	1.18	K-infinity (max) cold and uncontrolled
Lfuel_3	381 cm	Length of active fuel
Wfuel_3*	175.338 kg	Weight of U (kg/bundle)
f_4*	123-NOG	Identification
Efuel_4*	0.71 Weight % U-235	Enrichment in blanket zone at top of fuel rods
Lctrl_4	12.7 cm	Control rod blade length of B <sub>4</sub> C above enriched zone
Kinf_4*	1	K-infinity (max) cold and uncontrolled
Lfuel_4	381 cm	Length of active fuel
Wfuel_4*	176.748 kg	Weight of U (kg/bundle)
dPvent_rpv	N/A	Pneumatic supply-to-containment differential pressure (minimum) required to operate RPV vent valve(s) inside drywell
Hvent_rpv	N/A	Elevation (inside bottom of suppression pool=EI.0) of lowest RPV vent valve solenoid inside drywell
Mrpv	1351682 kg	Mass of RPV, internals, recirculation loops (ABWR=internal pumps), and main steamlines inboard of outboard MSIVs (less fuel, clad and channels)
Mrpv_taf	689199 kg	Mass of recirculation loops (ABWR=internal pumps) and of RPV internals below TAF (less fuel, clad and channels)
Mg_rpv_hot	7150 kg	Mass of saturated steam in RPV and main steamlines inboard of outboard MSIVs with water level at high level trip setpoint and pressure at minimum at which an SRV is set to lift (spring pressure)

Table 18D-1 BWROG EPG Rev. 4 Appendix C Input Data for ABWR (Continued)

Parameter	Value	Parameter Definition
Mf_rpv_cld*	820925 kg	Mass of water in recirculation (ABWR=internal pumps), shutdown cooling, and RWCU loops and in RPV with water level at high level trip setpoint and water temperature at 20°C (68°F)
Mf_rpv_hot*	341991 kg	Mass of water in recirculation (ABWR=internal pumps) and RWCU loops and in RPV with water level at high level trip setpoint and water temperature at saturation temperature for minimum pressure at which an SRV is set to lift (spring pressure)
Psup_rpv	N/A	Pressure (minimum normal operating), pneumatic supply system for RPV vent valve(s) inside drywell
Vrpv_taf*	429.912 m <sup>3</sup>	Volume (free) of recirculation (ABWR=internal pumps) and RWCU loops and of shutdown cooling loops and RPV below TAF
WLrpv_taf	9.0495 m	Water level at top of active fuel (from RPV invert)
WLinst_1	SHUTDOWN	Instrument identification
Href_surf_1	22.045 m	Elevation of condensing chamber water surface
Hrange_lo_1	12.604 m	Elevation of instrument range low end
Href_dw_1*	16.336 m	Elevation (centerline) of reference leg drywell penetration
Hvar_dw_1*	9.95 m	Elevation (centerline) of variable leg drywell penetration
Hvar_tap_1	12.22 m	Elevation (centerline) of variable leg RPV tap
Fhtc_1	N/A	Heat transfer coefficient (dimensionless—heated reference leg instruments only)
WLrpv_hi_1	12.825 m	Instrument range high end
WLrpv_lo_1	3.555 m	Instrument range low end
Prpv_cal_1	0 MPaG	Pressure in RPV at calibration
Tdw_cal_1	26.7°C	Temperature in drywell at calibration
Trb_cal_1	26.7°C	Temperature (normal shutdown) in Reactor Building (MK I/II/ABWR) or containment (MK III) at calibration
WLinst_2	NARROW	Instrument identification
Href_surf_2*	16.336 m	Elevation of condensing chamber water surface
Hrange_lo_2	12.604 m	Elevation of instrument range low end
Href_dw_2*	15.45 m	Elevation (centerline) of reference leg drywell penetration
Hvar_dw_2*	9.95 m	Elevation (centerline) of variable leg drywell penetration
Hvar_tap_2	12.22 m	Elevation (centerline) of variable leg RPV tap

**Table 18D-1 BWROG EPG Rev. 4 Appendix C Input Data for ABWR (Continued)**

Parameter	Value	Parameter Definition
Fhtc_2	N/A	Heat transfer coefficient (dimensionless—heated reference leg instruments only)
WLrpv_hi_2	5.080 m	Instrument range high end
WLrpv_lo_2	3.555 m	Instrument range low end
Prpv_cal_2	7.07 MPaG	Pressure in RPV at calibration
Tdw_cal_2	57.2°C	Temperature in drywell at calibration
Trb_cal_2	26.7°C	Temperature (normal shutdown) in Reactor Building (MK I/II/ABWR) or containment (MK III) at calibration
WLinst_3	WIDE	Instrument identification
Href_surf_3*	16.336 m	Elevation of condensing chamber water surface
Hrange_lo_3	9.0495 m	Elevation of instrument range low end
Href_dw_3*	15.45 m	Elevation (centerline) of reference leg drywell penetration
Hvar_dw_3*	7.7 m	Elevation (centerline) of variable leg drywell penetration
Hvar_tap_3	8.978 m	Elevation (centerline) of variable leg RPV tap
Fhtc_3	N/A	Heat transfer coefficient (dimensionless—heated reference leg instruments only)
WLrpv_hi_3	6.605 m	Instrument range high end
WLrpv_lo_3	0.0 m	Instrument range low end
Prpv_cal_3	7.07 MPaG	Pressure in RPV at calibration
Tdw_cal_3	57.2°C	Temperature in drywell at calibration
Trb_cal_3	26.7°C	Temperature (normal shutdown) in Reactor Building (MK I/II/ABWR) or containment (MK III) at calibration
WLinst_4	FUEL ZONE	Instrument identification
Href_surf_4*	16.336 m	Elevation of condensing chamber water surface
Hrange_lo_4	5.2395 m	Elevation of instrument range low end
Href_dw_4*	15.45 m	Elevation (centerline) of reference leg drywell penetration
Hvar_dw_4*	-3.25 m	Elevation (centerline) of variable leg drywell penetration
Hvar_tap_4	1.905 m	Elevation (centerline) of variable leg RPV tap
Fhtc_4	N/A	Heat transfer coefficient (dimensionless—heated reference leg instruments only)
WLrpv_hi_4	1.270 m	Instrument range high end
WLrpv_lo_4	-3.810 m	Instrument range low end

Table 18D-1 BWROG EPG Rev. 4 Appendix C Input Data for ABWR (Continued)

Parameter	Value	Parameter Definition
Prpv_cal_4	0 kPaG	Pressure in RPV at calibration
Tdw_cal_4	100°C	Temperature in drywell at calibration
Trb_cal_4	26.7°C	Temperature (normal shutdown) in Reactor Building (MK I/II/ABWR) or containment (MK III) at calibration
XB_slc	24530 ppm	Concentration (minimum normal operating) of boron in SLC tank
Wslc	11.3575 m <sup>3</sup> /h	Flow rate of SLCs (minimum)
Tslc	68°C	Temperature (maximum normal operating) of solution in SLC tank
dPrsv*	620.6 kPaD	Pneumatic supply-to-drywell differential pressure (minimum) required to open SRVs (see Note 1)
Hsrv*	25.6448 m	Elevation (inside bottom of suppression pool=El.0) of lowest SRV solenoid
Wsrv_name*	405607 kg/h	Flowrate of SRV per nameplate
Nsrv_ads	8	Number of SRVs dedicated to ADS
Prpv_tp	9343 kPaG	Pressure in RPV used for SRV tail pipe design calculations
Psup_srv	1.38 MPaG	Pressure (minimum normal operating), pneumatic supply system for SRVs (see Note 1)
Prsv_lift	7930 kPaG	Pressure (minimum) in RPV at which an SRV is set to lift (spring pressure)
Prsv_name*	7930 kPaG	Pressure corresponding to nameplate flow rate
Pq_code*	149.3 N/mm <sup>2</sup>	Stress (code allowable) for quencher
Pqs_code*	149.3 N/mm <sup>2</sup>	Stress (code allowable) for quencher support
Ptp_code*	149.3 N/mm <sup>2</sup>	Stress (code allowable) for SRV tail pipe
Ptps_code*	N/A	Stress (code allowable) for SRV tail pipe support
Pq_des*	149.3 N/mm <sup>2</sup>	Calculated stress (design basis) for quencher
Pqs_des*	60 N/mm <sup>2</sup>	Calculated stress (design basis) for quencher support
Ptp_des*	149.3 N/mm <sup>2</sup>	Calculated stress (design basis) for SRV tail pipe
Ptps_des*	N/A	Calculated stress (design basis) for SRV tail pipe support
SRVtype*	5	Type of SRV (Enter: 1, 2, 3, 4 or 5) 1=Dresser 2=Crosby 3=2-stage TR 4=3-stage TR 5=Dickers



Table 18D-1 BWROG EPG Rev. 4 Appendix C Input Data for ABWR (Continued)

Parameter	Value		Parameter Definition	
WLsp_tp	7.1 m		Water level (inside bottom of pool=0) of suppression pool used for SRV tail pipe design calculations	
IDpump_1	RHR (LPCF)		Pump (system) identification	
Hpsuct_1*	-7.2 m		Elevation (centerline) of pump suction inlet	
Hssuct_1	-7.085 m		Elevation (centerline) of system suction location in the suppression pool	
IDpump_2	HPCF		Pump (system) identification	
Hpsuct_2*	-7.2 m		Elevation (centerline) of pump suction inlet	
Hssuct_2	-7.085 m		Elevation (centerline) of system suction location in the suppression pool	
Wlpci	RPV Pressure (MPaG)	Flowrate (m <sup>3</sup> /h)	Flowrate outside core shroud from one RHR (LPCF) pump as a function of RPV pressure—maximum ten data points, runout to shutoff	
	0.00	1130		
	0.554	1105		
	0.821	933		
	1.193	684		
	1.440	489		
	1.639	293		
1.828	0			
Wlpcs	ABWR does not have LPCS System		Flowrate from one LPCS pump as a function of RPV pressure—maximum ten data points, runout to shutoff	
Vsp, Vsc_air	Pool Water Level (m)	Water Volume (m <sup>3</sup> )	Airspace Volume (m <sup>3</sup> )	Volume (free) of water and air in suppression chamber as a function of suppression pool water level (inside bottom of pool=0)—maximum ten data points, bottom to top of suppression chamber
	0.00	0	9585	
	3.85	1966	7619	
	5.00	2553	7032	
	7.00	3580	6005	
	7.10	3625	5960	
	10.00	5042	4543	
	12.00	6019	3566	
	14.00	6996	2589	
	16.00	7973	1612	
19.30	9585	0		
WLL_(n)	SRVDL Type 1 SPWL (m)	WLL (m)	Water leg length (WLL) in SRV tail pipe (SRVDL) as a function of SP water level (SPWL) (inside bottom of pool=0). Reference WLL=0 at SPWL used for SRV tail pipe design calculations—maximum 8 data points per SRVDL type, up to 6 SRVDL types. (Note: SRVDL Type=different SRVDL routing from quencher to approx. 6.7m WLL above normal water level, longest WLL per SPWL is most limiting.)	
	7.10	0.00		
	9.07	2.27		
	12.55	5.74		
	12.82	12.54		

Table 18D-1 BWROG EPG Rev. 4 Appendix C Input Data for ABWR (Continued)

Parameter	Value			Parameter Definition
sysFlow_1*	NPSH	Friction		RHR (LPCF) System Flow dependent parameters— maximum ten data points
	Flow rate	Required	Head	
	Wsuct (m <sup>3</sup> /h)	NPSHR (m)	Loss Hfl (m)	
	0	3.2	0.00	
	820	3.6	1.01	
sysFlow_2*	NPSH	Friction		HPCF System Flow dependent parameters—maximum ten data points:
	Flow rate	Required	Head	
	Wsuct (m <sup>3</sup> /h)	NPSHR (m)	Loss Hfl (m)	
	0	1.7	0.00	
	500	1.4	0.55	
User Definable Material No. 1	Temp (°C)	Normalized Yield Strength	Normalized Tensile Strength	Enter data for using optional user definable material type
	21	1.027	N/A	
	93	0.910	N/A	
	204	0.860	N/A	
	316	0.740	N/A	
	Strength/ Location	Most Limiting temp (°C)		
	TS/DW	N/A		
	TS/WW	N/A		
	YS/DW	285		
	YS/WW	N/A		
User Definable Material No. 2*	Temp (°C)	Normalized Yield Strength	Normalized Tensile Strength	Enter data for using optional user definable material type
	21	N/A	1	
	93	N/A	1	
	204	N/A	1	
	316	N/A	1	
	Strength/ Location	Most Limiting temp (°C)		
	TS/DW	N/A		
	TS/WW	176.67		
	YS/DW	N/A		
	YS/WW	N/A		

- \* These values are preliminary or approximate values used to complete the ABWR calculations. The applicant referencing the ABWR design will be required to re-evaluate these values as an “interface requirement” when plant specific installation details are completed.

Note 1: This value is dependent upon specific SRV selection. SRV pneumatic supply pressure will be established such that SRVs will be operable at the maximum COPS pressure. A consistent set of values for dPSRV and PSUP-SRV was selected for completing calculations.

Table 18D-2 BWROG EPG Rev. 4 Appendix C Results for ABWR

Parameter	Value	Parameter Definition	
CSBW	541.8 kg	Cold Shutdown Boron Weight	
MSBWP	4.2%*	Maximum Subcritical Banked Withdrawal Position	
Tsp_hctl_2	145.6°C	Heat Capacity Temperature Limit Low-Pressure Endpoint Temperature	
Tsp_hctl_1	111.8°C	Heat Capacity Temperature Limit High-Pressure Endpoint Temperature	
Ppc_pcpl_1	646 kPaG	Primary Containment Pressure Limit at Elevation of Minimum Suppression Pool Water Level LCO	
MNSRED	6	Minimum Number of SRVs Required for Emergency Depressurization	
MRFP	354 kPaG	Minimum RPV Flooding Pressure	
MSCRWL	-79.45 cm <sup>†</sup>	Minimum Steam Cooling RPV Water Level	
MZIRWL	-111.2 cm <sup>†</sup>	Minimum Zero-Injection RPV Water Level	
MSRP	0 kPaG	Minimum SRV Re-opening Pressure	
WLsp_tpl_1	12.65 m	SRV Tail Pipe Level Limit Low-Pressure Endpoint Water Level	
SCSIP	71.39 kPaG	Suppression Chamber Spray Initiation Pressure	
[None]	2	Minimum Number of SRVs for which the Minimum Alternate RPV Flooding Pressure is below the lowest SRV lifting pressure	
MARFP	SRVs (#) 8 or more 7 6 5 4 3 2	MARFP (MPaG) 0.93 1.08 1.27 1.55 1.96 2.65 4.02	Minimum Alternate RPV Flood Pressure
MCFI	SRVs (#) 8 or more 7 6	MCFI (min) 43.5 59.4 84.3	Minimum Core Flooding Interval

Table 18D-2 BWROG EPG Rev. 4 Appendix C Results for ABWR (Continued)

Parameter	Value		Parameter Definition	
WLI_1	Highest DW Run Temp (°C)	Min. Indicated Level (cm)	Water Level Instrument Number 1: Shutdown (355.5 to 1282.5 cm)	
	Low	High		
	—	65.6		402.6
	65.6	121.1		416.1
	121.1	176.7		434.3
	176.7	232.2		458.2
WLI_2	Highest DW Run Temp (°C)	Min. Indicated Level (cm)	Water Level Instrument Number 2: Narrow Range (355.5 to 508.0 cm)	
	Low	High		
	—	65.6		361.7
DWSIL	Drywell Pressure (kPaG)	Drywell Temperature (°C)	Drywell Spray Initiation Limit (See Figure in Section 18A.5)	
	20.7	46.3		
	32.4	105.4		
	46.2	173.1		
	60.0	243.8		
HCTL	RPV Pressure (MPaG)	Suppression Pool Temp (°C)	Heat Capacity Temperature Limit (See Figure in Sections 18A.4, 18A.5)	
	0.35	145.6		
	0.41	144.2		
	0.55	141.9		
	0.69	140.1		
	1.03	136.9		
	1.38	134.6		
	2.07	130.8		
	2.76	127.9		
	4.14	122.9		
	5.52	118.6		
HCLL	HCTL Margin (°C)	Suppression Pool Water Level <sup>‡</sup> (m)	Heat Capacity Level Limit See Figure in Section 18A.5  0 m = Bottom of Suppression Pool	
	0.0	7.00		
	2.8	6.48		
	5.6	6.02		
	8.3	5.62		
	11.1	5.28		
	13.9	4.97		
	16.7	4.70		
	19.4	4.46		
	44.4	4.46		

Table 18D-2 BWROG EPG Rev. 4 Appendix C Results for ABWR (Continued)

Parameter	Value	Parameter Definition	
PSP	Suppression Pool Water Level <sup>‡</sup> (m)	Suppression Chamber Pressure (kPaG)	Pressure Suppression Pressure (See Figure in Section 18A.5)
	0.0	0.00	*0 m = Bottom of Suppression Pool
	4.5	0.00	
	4.5	162.0	
	4.8	180.6	
	12.6	103.4	
	12.6	0.00	
PCPL	Primary Containment Water Level <sup>‡</sup> (m)	Suppression Chamber Pressure (MPaG)	Primary Containment Pressure Limit (See Figure in Section 18A.5)
	0.0	0.65	0 m = Bottom of Suppression Pool
	24.5	0.65	
	24.5	0.00	
MPCWLL	Suppression Chamber Pressure (MPaG)	Primary Containment Water Level <sup>‡</sup> (m)	Maximum Primary Containment Water Level Limit See Figure in Sections 18A.4, 18A.5, 18A.8, 18A.11, 18A.12, and 18A.13)
	0.0	24.5	
	0.65	24.5	0 m = Bottom of Suppression Pool
	0.65	0.0	
MCUTL	Time After Shutdown (min)	MCUTL (min)	Maximum Core Uncovery Time Limit (See Figure in Section 18A.11)
	43.5	4.19	
	60.0	4.62	
	90.0	5.24	
	120.0	5.55	
	500.0	8.46	
	1000.0	10.21	
	3000.0	14.09	
6000.0	18.29		
STPLL	RPV Pressure (MPaG)	Suppression Pool Water Level <sup>‡</sup> (m)	SRV Tail Pipe Level Limit (See Figure in Sections 18A.4, 18A.5)
	0.0	12.7	0 m = Bottom of Suppression Pool
	2.76	12.6	
	9.34	7.1	

Table 18D-2 BWROG EPG Rev. 4 Appendix C Results for ABWR (Continued)

Parameter	Value	Parameter Definition			
RHR VL	Suppression Pool	RHR (LPCF) Vortex Limit (See Figure in Sections 18A.4, 18A.12)			
	Pump Flow (m <sup>3</sup> /h)		Water Level <sup>‡</sup> (m)		
	0		1.54		
	852		1.54		
	909		1.60		
	1022		1.73		
HPCF VL	Suppression Pool	HPCF Vortex Limit (See Figure in Section 18A.4)			
	Pump Flow (m <sup>3</sup> /h)		Water Level <sup>‡</sup> (m)		
	0		1.50		
	662		1.50		
	795		1.67		
RPVS	RVP Pressure (MPaG)	Temperature (°C)	RPV Saturation (See Figure in Section 18A.3)		
	7.93	295.2			
	6.89	285.8			
	5.52	271.3			
	4.14	253.8			
	2.76	231.2			
	1.38	197.7			
	0.69	169.9			
	0.41	152.9			
	0.14	126.0			
BIIT	0.07	115.2	0 m = Bottom of Suppression Pool		
	0.00	100.0			
	BIIT	Reactor Power (%)		Suppression Pool Average Temperature (°C)	Boron Injection Initiation Temperature (See Figure in Sections 18A.4, 18A.5, and 18A.12)
		0		93.4	
		2.21		93.4	
		8.26		43.3	
10.00		43.3			

\* 0% Fully Inserted

† 0=Top of Active Fuel (TAF)

‡ 0m = Bottom of Suppression Pool

**Table 18D-2 BWROG EPG Rev. 4 Appendix C Results for ABWR (Continued)**

Parameter		Value								Parameter Definition
RHR NPSH	Pump	Suppression Pool Temp (°C)								RHR (LPCF NPSH Limits (See Figure in Section 18A.4, 18A.12))
	Flow	for Overpressure of ( MPa)								
	(m <sup>3</sup> /h)	0.00	0.034	0.069	0.103	0.173	0.241	0.276		
	0	90.6	101.7	109.4	116.1	126.7	135.6	138.9		
	820	85.6	97.8	106.7	113.9	125.0	133.9	137.2		
	954	82.8	96.1	105.6	112.8	124.4	133.3	136.7		
1130	78.9	93.3	103.3	111.1	123.3	132.2	136.1			
HPCF NPSH	Pump	Suppression Pool Temp (°C)								HPCF NPSH Limits See Figure in Section 18A.3)
	Flow	for Overpressure of ( MPa)								
	(m <sup>3</sup> /h)	0.00	0.034	0.069	0.103	0.173	0.241			
	0	95.6	105.0	112.2	118.9	128.9	136.7			
	500	95.0	104.4	112.2	118.3	128.3	136.7			
	641	93.3	103.3	111.1	117.8	127.7	136.1			
890	87.8	99.4	107.8	115.0	125.6	134.1				