Appendix K
Parameters for Typical BWR-5 and PWR Reactors

TABLE K.1

Key Characteristics of the Nine Mile Point 2 General Electric BWR-5 with GE11 Fuel and of the Seabrook Station PWR

Parameters	Units	BWR	Sources	PWR	Sources
		Nine Mile Point 2, GE BWR-5		**Seabrook Station Reactor**	
Reactor General Parameters					
Thermal power, $\dot{Q}_{th}$	MWth	3323	A	3411	G
Net electric power, $\dot{Q}_e$	MWe	1062	B	1148	B
Efficiency, η	%	32.0	(1)	33.7	(1)
Nominal pressure, p	MPa	7.14	A	15.51	G
Steam dome pressure, p_{dome}	MPa	7.03	A	—	—
Total core pressure drop, Δp_{core}	MPa	0.171	A	0.197	G
Final feedwater temperature	°C	215.6	A	—	—
Core inlet temperature, T_{in}	°C	278.3	A	293.1	G
Core exit temperature, T_{exit}	°C	286.1	(2)	326.8	(12)
Core average exit quality, x	%	14.6	C	—	—
Total steam flow rate, $\dot{m}_{steam}$	kg/s	1798	A	—	—
Core coolant flow rate, $\dot{m}_{core}$	kg/s	13671	A	17476[a]	G
Number of assemblies, N_a	—	764	B	193	G
Active core equivalent diameter	m	4.75	B	3.37	B
Coolant mass in primary circuit	t	260	B	354	B
Fuel enrichment (initial core), r	%	0.7/1.8/2.2	B	1.6/2.4/3.1	B
Fuel enrichment (reloads), r	%	3.5	B	3.1/3.4/4.2[c]	B
Number of loops	—	2	B	4	B
Cycle length	months	16[d]	B	12[d]	B
Average discharge burnup	MWd/tU	32300	B	33000	B
Fuel inventory	tHM	141	B	89	(4)
	t(UO_2)	160	(4)	101	G
Average core power density	kW$_{th}$/L	52.3	(3)	104.5	(3)
Average core specific power	kW$_{th}$/kg$_{HM}$	23.6	(15)	38.3	(15)

TABLE K.1   (continued)

Key Characteristics of the Nine Mile Point 2 General Electric BWR-5 with GE11 Fuel and of the Seabrook Station PWR

Parameters	Units	BWR	Sources	PWR	Sources
Reactor General Parameters		Nine Mile Point 2, GE BWR-5		Seabrook Station Reactor	
Configuration	—	9×9	D	17×17	G
Fuel rods per assembly, N_{rods}	—	74	D	264	G
Number of part length fuel rods	—	8	D	—	—
Number of full length fuel rods	—	66	D	—	—
Number of water rods, N_{wr}	—	2	E	—	—
Channel width, l_{ch}	mm	134.1 (inside)	E	214.0	G
		138.6 (outside)	H		
Assembly pitch, l	mm	152.4	B	215.0	G
Core average flow rate per assembly, $\dot{m}_a$	kg/s	15.4	(5)	89.8	(13)
Assembly flow area, A_{fa}	m²	9.718×10^{-3b}	(6)	2.444×10^{-2}	(14)
Core average assembly mass flux, G_a	kg m⁻² s⁻¹	1584[b]	(7)	3675.4	G
Fuel Rods		GE11, 9×9 fuel		Seabrook Station Reactor	
Pellet percent of theoretical density	—	97	D	95	G
Rod-to-rod pitch, P	mm	14.37	D	12.6	G
Fuel rod outside diameter, D	mm	11.20	D	9.5	G
Cladding thickness, t_{clad}	mm	0.71	D	0.572	G
Fuel-cladding gap (cold), t_{gap}	mm	0.09	(8)	0.0826	G
Fuel pellet diameter, D_f	mm	9.60	D	8.192	G
Fuel pellet length, L_f	mm	10	D	9.8	G
Diameter of water rods, D_{wr}	mm	24.9	E	—	—
Total fuel rod height	m	4.09	D	3.876	G
Heated fuel height, L	m	3.588	D	3.658	G
Part length rod length	m	2.286	D	—	—
% of energy deposited in the fuel rods	%	96.5	I	97.4	G
Peak LHGR, q_0'	kW/m	47.24	D	44.62	G
Core average LHGR, $\langle q' \rangle$	kW/m	17.6	F	17.86	G
Core average subchannel flow rate, $\dot{m}_{ch}$	kg/s	0.175 (interior)	(9)	0.335 (interior)	(9)
		0.134 (edge)		0.159 (edge)	
		0.0922 (corner)		0.0759 (corner)	
Subchannel flow area, A_{fch}	m²	1.08×10^{-4} (int)	(10)	8.79×10^{-5} (int)	(10)
		8.83×10^{-5} (edg)		4.27×10^{-5} (edg)	
		6.70×10^{-5} (cor)		2.07×10^{-5} (cor)	