



# Nuclear Power Reactors in the World



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REFERENCE DATA SERIES No. 2

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# INTRODUCTION

This is the twenty-fifth edition of Reference Data Series No. 2, *Nuclear Power Reactors in the World*, which is published once per year, to present the most recent reactor data available to the Agency. It contains the following summarized information:

- General information as of the end of 2004 on power reactors operating or under construction, and shut down;
- Performance data on reactors operating in the Agency's Member States, as reported to the IAEA.

The information is collected by the Agency by circulating questionnaires to Member States through the designated national correspondents. The replies are used to maintain computerized files on general and design data of, and operating experience with, power reactors.

The Agency's Power Reactor Information System (PRIS) comprising the above files provides all the information and data previously published in the Agency's *Power Reactors in Member States* and currently published in the Agency's *Operating Experience with Nuclear Power Stations in Member States* and available at the Internet address <http://www.iaea.org/programmes/a2>. Enquiries should be addressed to:

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# Definitions

## Performance Factors

$$\text{LF (\%)} = \frac{\text{EG}}{\text{REG}} \times 100$$

$$\text{UCF (\%)} = \frac{(\text{REG} - \text{PEL} - \text{UEL}) \times 100}{\text{REG}}$$

where

- LF (%) is the load factor, expressed in per cent.
- EG is the net electrical energy (MW(e)·h) produced during the reference period under consideration.
- REG is the net electrical energy (MW(e)·h) which would have been produced at maximum net capacity  $C_n$  (MW(e)) under continuous operation during the entire reference period.
- UCF (%) is the unit capability factor, expressed in per cent.
- PEL is the planned energy loss: the energy (MW(e)·h) that was not produced during the period because of planned shut-downs or load reductions due to causes under plant management control. Energy losses are considered planned if they are scheduled at least four weeks in advance.
- UEL is the unplanned energy loss: the energy (MW(e)·h) that was not produced during the period because of unplanned shut-downs, outage extensions, or load reductions due to causes under plant management control. Energy losses are considered to be unplanned if they are not scheduled at least four weeks in advance.

### **Construction Start**

Date when first major placing of concrete, usually for the base mat of the reactor building, is done.

### **First Criticality**

Date when the reactor is made critical for the first time.

### **Grid Connection**

Date when the plant is first connected to the electrical grid for the supply of power.

### **Commercial Operation**

Date when the plant is handed over by the contractors to the owner and declared officially to be in commercial operation.

### **Shutdown**

Date when the plant is officially declared to be shut down by the owner and taken out of operation permanently.

### **Units and Energy Conversion**

1 terawatt-hour (TW(e)·h) =  $10^6$  megawatt-hours (MW(e)·h).

For an average power plant,

1 TW(e)·h = 0.39 megatonnes of coal equivalent (input)  
= 0.23 megatonnes of oil equivalent (input)

**Note:** *Net capacity and energy values are used in all calculations.*



TABLE 1. NUCLEAR POWER REACTORS IN OPERATION AND UNDER CONSTRUCTION, 31 DEC. 2004

Country	Reactors in Operation		Reactors under Construction		Nuclear Electricity Supplied in 2004		Total Operating Experience to 31 Dec. 2004	
	No of Units	Total MW(e)	No of Units	Total MW(e)	TW(e).h	% of Total	Years	Months
ARGENTINA	2	935	1	692	7.31	8.24	52	7
ARMENIA	1	376			2.21	38.83	37	3
BELGIUM	7	5801			44.86	55.13	198	7
BRAZIL	2	1901			11.54	3.00	27	3
BULGARIA	4	2722			15.60	41.58	133	3
CANADA	17	12113			85.27	15.02	509	7
CHINA	9	6602	2	2000	47.80	2.19	47	11
CZECH R.	6	3548			26.32	31.22	80	10
FINLAND	4	2656			21.78	26.59	103	4
FRANCE	59	63363			426.80	78.08	1405	2
GERMANY	18	20679			158.39	32.11	666	0
HUNGARY	4	1755			11.21	33.83	78	2
INDIA	14	2550			15.04	2.82	237	5
IRAN	1		9	4092			0	0
JAPAN	54	45468	3	915	273.81	29.31	1176	4
KOREA RP	19	15850	1	960	123.97	37.95	239	8
LITHNIA	1	1185			13.92	72.11	38	6
MEXICO	2	1310			10.58	5.20	25	11
NETHLNDS	1	449			3.61	3.79	60	0
PAKISTAN	2	425			1.93	2.37	37	10

TABLE 1. NUCLEAR POWER REACTORS IN OPERATION AND UNDER CONSTRUCTION, 31 DEC. 2004 — continued

Country	Reactors in Operation		Reactors under Construction		Nuclear Electricity Supplied in 2004		Total Operating Experience to 31 Dec. 2004	
	No of Units	Total MW(e)	No of Units	Total MW(e)	TW(e).h	% of Total	Years	Months
ROMANIA	1	655	1	655	5.14	10.08	8	6
RUSSIA	31	21743	4	3775	133.02	15.61	791	5
S.AFRICA	2	1800			14.28	6.61	40	3
SLOVAKIA	6	2442			15.62	55.18	106	6
SLOVENIA	1	656			5.20	38.85	23	3
SPAIN	9	7585			60.89	22.86	228	2
SWEDEN	11	9451			75.04	51.82	322	1
SWITZRLD	5	3220			25.43	40.04	148	10
UK	23	11852			73.68	19.43	1354	8
UKRAINE	15	13107	2	1900	81.81	51.11	293	6
USA	104	99210			788.56	19.95	2975	8
Total	440	366293	26	20826	2618.56		11588	6

Note: The total includes the following data in Taiwan, China:

- 6 units, 4884 MW(e) in operation; 2 units, 2600 MW(e) under construction;
- 37.94 TW(e).h of nuclear electricity generation, representing 20.93% of the total electricity generated there;
- 140 years 1 month of total operating experience.

TABLE 2. REACTOR TYPES AND NET ELECTRICAL POWER, REACTORS CONNECTED TO THE GRID, 31 DEC. 2004

Country	PWR		BWR		ABWR		GCR		AGR		PHWR		LWGR		WWER		FBR		HWLWR		Total	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
ARGENTINA											2	935			1	376					2	935
ARMENIA	7	5801																			1	376
BELGIUM		1901																			7	5801
BRAZIL	2																				2	1901
BULGARIA											17	12113			4	2722					4	2722
CANADA	7	5272								2	1330										17	12113
CHINA															6	3548					9	6602
CZECH R.																					6	3548
FINLAND			2	1680											2	976					4	2656
FRANCE	58	63130																1			59	63363
GERMANY	12	14308	6	6371																	18	20679
HUNGARY															4	1755					4	1755
INDIA			2	300							12	2250									14	2550
JAPAN	23	18425	27	22842														1			54	45468
KOREA RP	15	13271			3	3955					4	2579									19	15850
LITHNIA													1	1185							1	1185
MEXICO			2	1310																	2	1310
NETHLNDS	1	449																			1	449
PAKISTAN	1	300									1	125									2	425
ROMANIA											1	655									1	655
RUSSIA													15	10219							31	21743
S.AFRICA	2	1800													6	2442					2	1800
SLOVAKIA																					6	2442

TABLE 2. REACTOR TYPES AND NET ELECTRICAL POWER, REACTORS CONNECTED TO THE GRID, 31 DEC. 2004 — continued

Country	PWR		BWR		ABWR		GCR		AGR		PHWR		LWGR		WWER		FBR		HWLWR		Total	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
SLOVENIA	1	656																			1	656
SPAIN	7	6075	2	1510																	9	7585
SWEDEN	3	2705	8	6746																	11	9451
SWITZRLD	3	1700	2	1520																	5	3220
UK	1	1188					8	2284	14	8380											23	11852
UKRAINE																					15	13107
USA	69	65984	35	33226											15	13107					104	99210
TOTAL	214	204745	90	78609	3	3955	8	2284	14	8380	39	19987	16	11404	53	35890	3	1039			440	366293

The totals include 6 units, 4884 MW(e) in Taiwan, China.  
 During 2004, 5 reactors, 4785 MW(e) were newly connected to the grid.

TABLE 3. REACTOR TYPES AND NET ELECTRICAL POWER, REACTORS UNDER CONSTRUCTION, 31 DEC. 2004

Country	PWR		BWR		ABWR		GCR		AGR		PHWR		LWGR		WWER		FBR		HWLWR		Total	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
ARGENTINA											1	692			2	2000					1	692
CHINA											6	1788			2	1834					2	2000
INDIA															1	915					9	4092
IRAN																					1	915
JAPAN	1	866	1	1067	1	1304					1	655			3	2850					3	3237
KOREA RP	1	960																			1	960
ROMANIA																					1	655
RUSSIA														1	925						4	3775
UKRAINE															2	1900					2	1900
TOTAL	2	1826	1	1067	3	3904					8	3135	1	925	10	9499	1	470			26	20826

The totals include 2 units, 2600 MW(e) in Taiwan, China.  
During 2004, 2 reactors, 1336 MW(e) started construction.

TABLE 4. CONSTRUCTION STARTS DURING 2004

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation
	Code	Name		Net	Gross						
INDIA	IN-29	PFBR	FBR	470	500	BHAVINI		2004-10	—	—	—
JAPAN	JP-64	TOMARI-3	PWR	866	912	HEPCO	M	2004-11	—	—	2009-12

During 2004, 2 reactors (1336 MW(e)) started construction.

TABLE 5. CONNECTIONS TO THE GRID DURING 2004

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation
	Code	Name		Net	Gross						
CHINA	CN -5	QINSHAN 2 - 2	PWR	610	650	NPQJVC	CNNC	1997-4	2004-2	2004-3	2004-5
JAPAN	JP -60	HAMAOKA-5	ABWR	1325	1380	CHUBU	TOSHIBA	2000-7	2004-3	2004-4	2005-1
RUSSIA	RU -36	KALININ-3	WWER	950	1000	REA	FAEA	1985-10	2004-11	2004-12	—
UKRAINE	UA -41	KHIMELNITSKI-2	WWER	950	1000	NNEGC		1985-2	2004-8	2004-8	—
	UA -69	ROVNO-4	WWER	950	1000	NNEGC		1986-8	2004-9	2004-10	—

During 2004, 5 reactors (4785 MW(e)) were newly connected to the grid.

TABLE 6. SCHEDULED CONNECTIONS TO THE GRID DURING 2005

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation
	Code	Name		Net	Gross						
CHINA	CN -11	TIANWAN 2	WWER	1000	1060	JNPC	AEE&ZAES	2000-10	2005-4	2005-4	2005-12
INDIA	IN -24	TARAPUR-4	PHWR	490	540	NPCIL	NPCIL	2000-3	2005-3	2005-12	2006-4
JAPAN	JP -58	HIGASHI DORI 1	BWR	1087	1100	TOHOKU	TOSHIBA	2000-11	2005-1	—	2005-10
KOREA RP	KR -20	ULCHIN-6	PWR	960	1000	KHNP	DHICKOPC	2000-9	2004-12	2005-1	2005-6

During 2005, 4 reactors (3517 MW(e)) are expected to achieve grid connection.



TABLE 7. REACTOR YEARS EXPERIENCE, UP TO 31 DEC. 2004

Country	Reactors Connected to the Grid				Shut Down Reactors				Total, Operating and Shut Down				Cumulative Generation TW(e).h Net to end 2004	
	Capacity		Experience		Capacity		Experience		Capacity		Experience			
	No	MW(e) Net	Years	Months	No	MW(e) Net	Years	Months	No	MW(e) Net	Years	Months		
ARGENTINA	2	935	52	7						2	935	52	7	155.0
ARMENIA	1	376	25		1	376	12	3	2	752	37	3	64.0	
BELGIUM	7	5801	173	10	1	11	24	9	8	5812	198	7	966.0	
BRAZIL	2	1901	27	3					2	1901	27	3	80.0	
BULGARIA	4	2722	77	4	2	816	55	11	6	3538	133	3	362.0	
CANADA	17	12113	342		8	3561	167	7	25	15674	509	7	1275.0	
CHINA	9	6602	47	11					9	6602	47	11	212.0	
CZECH R.	6	3548	80	10					6	3548	80	10	245.0	
FINLAND	4	2656	103	4					4	2656	103	4	473.0	
FRANCE	59	63363	1185	11	11	3951	219	3	70	67314	1405	2	7494.0	
GERMANY	18	20679	425	5	18	5604	240	7	36	26283	666		3420.0	
HUNGARY	4	1755	78	2					4	1755	78	2	249.0	
INDIA	14	2550	237	5					14	2550	237	5	209.0	
ITALY					4	1423	81		4	1423	81			
JAPAN	54	45468	1106	8	3	320	69	8	57	45788	1176	4	5517.0	
KAZAKHS.					1	52	25	10	1	52	25	10		
KOREA RP	19	15850	239	8					19	15850	239	8	1397.0	
LITHNIA	1	1185	17	5	1	1185	21	1	2	2370	38	6	78.0	
MEXICO	2	1310	25	11					2	1310	25	11	108.0	
NETHLNDS	1	449	31	6	1	55	28	6	2	504	60		102.0	

TABLE 7. REACTOR YEARS EXPERIENCE, UP TO 31 DEC. 2004 — continued

Country	Reactors Connected to the Grid			Shut Down Reactors			Total, Operating and Shut Down			Cumulative Generation TW(e).h Net to end 2004	
	No	Capacity MW(e) Net	Experience Years	No	Capacity MW(e) Net	Experience Years	No	Capacity MW(e) Net	Experience Years		Months
PAKISTAN	2	425	37	10			2	425	37	10	16.0
ROMANIA	1	655	8	6			1	655	8	6	40.0
RUSSIA	31	21743	706	2	4	781	35	22524	791	5	2703.0
S.AFRICA	2	1800	40	3			2	1800	40	3	215.0
SLOVAKIA	6	2442	102	4	1	110	7	2552	106	6	272.0
SLOVENIA	1	656	23	3			1	656	23	3	100.0
SPAIN	9	7585	209	11	1	480	10	8065	228	2	1150.0
SWEDEN	11	9451	287	4	2	610	13	10061	322	1	1327.0
SWITZRLD	5	3220	148	10			5	3220	148	10	567.0
UK	23	11852	611	22	22	2454	45	14306	1354	8	1412.0
UKRAINE	15	13107	239	10	4	3500	19	16607	293	6	1460.0
USA	104	99210	2617	9	22	8774	126	107984	2975	8	15485.0
Total	440	366293	9451	3	107	34063	547	400356	11695	4	46837.0

Note: The total includes the following data in Taiwan, China:

— reactors connected to the grid: 6 units, 4884 MW(e), 140 years 1 month;  
 — cumulative generation of 71.6 TW(e).h.

SUMMARY, AS OF: 31 DECEMBER 2004:

— Total World Operating Experience is 11695 years 4 months for Operating and Shut Down Reactors.

— Total Cumulative Generation is 46837.0 TW(e).h, or 18266.4 Megatonnes of Coal Equivalent, or 10772.5 Megatonnes of Oil Equivalent.

TABLE 8. REACTOR UNITS AND NET ELECTRICAL POWER, 1970 TO 2005

Country	Number of Units and Net Capacity (MW(e)) Connected to the Grid at 31st Dec. of Each Year																	
	1970		1975		1980		1985		1990		1995		2000		2004		(2005)	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
ARGENTINA			1	335	1	335	2	935	2	935	2	935	2	935	2	935	2	935
ARMENIA			2	752	2	752	2	376	1	376	1	376	1	376	1	376	1	376
BELGIUM	1	11	4	1798	4	1798	8	5801	7	5801	7	5801	7	5801	7	5801	7	5801
BRAZIL					1	626	1	626	1	626	1	626	2	1901	2	1901	2	1901
BULGARIA			2	816	3	1224	4	1632	5	2585	6	3538	6	3538	4	2722	4	2722
CANADA	2	228	7	2538	10	5406	16	9598	20	13434	21	14427	17	12113	17	12113	17	12113
CHINA											3	2176	3	2176	9	6602	10	7602
CZECH R.							1	412	4	1648	4	1648	5	2598	6	3548	6	3548
FINLAND					4	2656	4	2656	4	2656	4	2656	4	2656	4	2656	4	2656
FRANCE	8	1696	10	2914	22	14556	43	38173	56	55998	56	58573	59	63363	59	63363	59	63363
GERMANY	8	992	12	4232	19	10487	24	18575	21	21976	19	21319	19	21319	18	20679	18	20679
HUNGARY							2	878	4	1755	4	1755	4	1755	4	1755	4	1755
INDIA	2	300	3	390	4	577	6	934	7	1136	10	1742	14	2550	14	2550	15	3040
ITALY	3	563	3	563	4	1423	3	1273										
JAPAN	5	1272	13	6305	23	14980	33	23636	41	30897	51	39897	53	43495	54	45468	55	46535
KAZAKHS.			1	52	1	52	1	52	1	52	1	52						
KOREA RP					1	556	5	3580	9	7220	11	9120	16	12990	19	15850	20	16810
LITHNIA							1	1185	2	2370	2	2370	2	2370	1	1185	1	1185
MEXICO									1	655	2	1310	2	1310	2	1310	2	1310
NETHLNDS	1	55	2	504	2	504	2	504	2	504	2	504	1	449	1	449	1	449

TABLE 8. REACTOR UNITS AND NET ELECTRICAL POWER, 1970 TO 2005 — continued

Country	Number of Units and Net Capacity (MW(e)) Connected to the Grid at 31st Dec. of Each Year																	
	1970		1975		1980		1985		1990		1995		2000		2004		(2005)	
	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)	No.	MW(e)
PAKISTAN			1	125	1	125	1	125	1	125	1	125	2	425	2	425	2	425
ROMANIA			13	4256	19	8552	27	15797	28	18893	29	19843	1	655	1	655	1	655
RUSSIA	4	781					2	1800	2	1800	2	1800	29	19843	31	21743	31	21743
SAFRICA													2	1800	2	1800	2	1800
SLOVAKIA			1	110	2	816	4	1632	4	1632	4	1632	6	2442	6	2442	6	2442
SLOVENIA			3	1068	3	1068	8	6017	9	7585	9	7585	1	656	1	656	1	656
SPAIN	1	142	5	3374	8	5857	12	10051	12	10051	12	10051	9	7585	9	7585	9	7585
SWEDEN	1	10											11	9451	11	9451	11	9451
SWITZRLD	1	365	3	1085	4	2055	5	3220	5	3220	5	3220	5	3220	5	3220	5	3220
UK	27	3524	30	4738	33	7134	38	10572	37	12404	35	12968	33	12498	23	11852	23	11852
UKRAINE					3	2031	10	8057	15	12832	15	12857	13	11207	15	13107	15	13107
USA	17	6351	53	37660	68	52826	93	80231	111	102871	109	102297	104	99210	104	99210	104	99210
WORLD	81	16290	167	72863	243	136978	365	254255	419	327577	435	346743	439	355571	440	366293	444	369810

Note: The world total includes the following data in Taiwan, China:

— 1990: 6 units, 4884 MW(e); 1995: 6 units, 4884 MW(e); 2000: 6 units, 4884 MW(e); 2004: 6 units, 4884 MW(e).

Estimates for 2005 based on current expected grid connection dates for reactors under construction as of 31 December 2004.

TABLE 9. SCHEDULED CONSTRUCTION STARTS DURING 2005

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation
	Code	Name		Net	Gross						
JAPAN	JP -65	SHIMANE-3	ABWR		1373	CHUGOKU		2005-9	—	—	2011-12

During 2005, 1 reactor is expected to start construction.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
ARGENTINA	AR -1	ATUCHA-1	PHWR	335	357	NASA	SIEMENS	1968-6	1974-3	1974-6	66.0	72.0	N/A
	AR -2	EMBASE	PHWR	600	648	NASA	AECL	1974-4	1983-4	1984-1	84.0	87.0	N/A
ARMENIA	AM -19	ARMENIA-2	WWER	376	408	JSC	FAEA	1975-7	1980-1	1980-5	55.0	65.0	N/A
BELGIUM	BE -2	DOEL-1	PWR	392	412	ELECTRAB	ACECOWEN	1969-7	1974-8	1975-2	85.0	89.0	N/A
	BE -4	DOEL-2	PWR	433	454	ELECTRAB	ACECOWEN	1971-9	1975-8	1975-12	80.0	86.0	N/A
	BE -5	DOEL-3	PWR	1006	1056	ELECTRAB	FRAMACEC	1975-1	1982-6	1982-10	85.0	88.0	N/A
	BE -7	DOEL-4	PWR	985	1041	ELECTRAB	ACECOWEN	1978-12	1985-4	1985-7	82.0	84.0	N/A
	BE -3	TIHANGE-1	PWR	962	1009	ELECTRAB	ACLF	1970-6	1975-3	1975-10	82.0	89.0	N/A
BE -6	TIHANGE-2	PWR	1008	1055	ELECTRAB	FRAMACEC	1976-4	1982-10	1983-7	86.0	88.0	N/A	
BE -8	TIHANGE-3	PWR	1015	1065	ELECTRAB	ACECOWEN	1978-11	1985-6	1985-9	87.0	89.0	N/A	
BRAZIL	BR -1	ANGRA-1	PWR	626	657	ELETRONU	WEST	1971-5	1982-4	1985-1	38.0	57.0	N/A
	BR -2	ANGRA-2	PWR	1275	1350	ELETRONU	KWU	1976-1	2000-7	2001-2	84.0	91.0	N/A
BULGARIA	BG -3	KOZLODUY-3	WWER	408	440	KOZNP	AEI	1973-10	1980-12	1981-1	65.0	79.0	N/A
	BG -4	KOZLODUY-4	WWER	408	440	KOZNP	AEI	1973-10	1982-5	1982-6	67.0	77.0	N/A
	BG -5	KOZLODUY-5	WWER	953	1000	KOZNP	AEI	1980-7	1987-11	1988-12	47.0	63.0	N/A
	BG -6	KOZLODUY-6	WWER	953	1000	KOZNP	AEI	1982-4	1991-8	1993-12	55.0	70.0	N/A
	CA -10	BRUCE-3	PHWR	790	825	BRUCEPOW	NEIP	1972-7	1977-12	1978-2	69.0	73.0	N/A
CA -11	BRUCE-4	PHWR	790	825	BRUCEPOW	NEIP	1972-9	1978-12	1979-1	67.0	68.0	N/A	
CA -18	BRUCE-5	PHWR	790	840	BRUCEPOW	OH/AECL	1978-6	1984-12	1985-3	83.0	84.0	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
CANADA	CA-19	BRUCE-6	PHWR	790	840	BRUCEPOW	OHI/AECL	1978-1	1984-6	1984-9	78.0	80.0	N/A
	CA-20	BRUCE-7	PHWR	790	840	BRUCEPOW	OHI/AECL	1979-5	1986-2	1986-4	80.0	83.0	N/A
	CA-21	BRUCE-8	PHWR	790	840	BRUCEPOW	OHI/AECL	1979-8	1987-3	1987-5	79.0	81.0	N/A
	CA-22	DARLINGTON-1	PHWR	881	935	OPG	OHI/AECL	1982-4	1990-12	1992-11	81.0	82.0	N/A
	CA-23	DARLINGTON-2	PHWR	881	935	OPG	OHI/AECL	1981-9	1990-1	1990-10	72.0	74.0	N/A
	CA-24	DARLINGTON-3	PHWR	881	935	OPG	OHI/AECL	1984-9	1992-12	1993-2	83.0	84.0	N/A
	CA-25	DARLINGTON-4	PHWR	881	935	OPG	OHI/AECL	1985-7	1993-4	1993-6	83.0	84.0	N/A
	CA-12	GENTILLY-2	PHWR	635	675	HQ	BBC	1974-4	1982-12	1983-10	77.0	83.0	N/A
	CA-7	PICKERING-4	PHWR	515	542	OPG	OHI/AECL	1968-5	1973-5	1973-6	66.0	67.0	N/A
	CA-13	PICKERING-5	PHWR	516	540	OPG	OHI/AECL	1974-11	1982-12	1983-5	73.0	74.0	N/A
	CA-14	PICKERING-6	PHWR	516	540	OPG	OHI/AECL	1975-10	1983-11	1984-2	76.0	77.0	N/A
	CA-15	PICKERING-7	PHWR	516	540	OPG	OHI/AECL	1976-3	1984-11	1985-1	78.0	79.0	N/A
CA-16	PICKERING-8	PHWR	516	540	OPG	OHI/AECL	1976-9	1986-1	1986-2	75.0	75.0	N/A	
CA-17	POINT LEPREAU	PHWR	635	680	NBEPIC	AECL	1975-5	1982-9	1983-2	82.0	83.0	N/A	
CHINA	CN-2	GUANGDONG-1	PWR	944	984	GNPJVC	GEC	1987-8	1993-8	1994-2	77.0	84.0	N/A
	CN-3	GUANGDONG-2	PWR	944	984	GNPJVC	GEC	1988-4	1994-2	1994-5	78.0	82.0	N/A
	CN-6	LINGAO 1	PWR	938	990	LANPC	FRAM	1997-5	2002-2	2002-5	83.0	87.0	N/A
	CN-7	LINGAO 2	PWR	938	990	LANPC	FRAM	1997-11	2002-12	2003-1	86.0	89.0	N/A
	CN-1	QINSHAN 1	PWR	288	310	QNPFC	CNNC	1985-3	1991-12	1994-4	71.0	72.0	N/A
	CN-4	QINSHAN 2-1	PWR	610	650	NPOJVC	CNNC	1986-6	2002-2	2002-4	78.0	80.0	N/A
	CN-5	QINSHAN 2-2	PWR	610	650	NPOJVC	CNNC	1987-4	2004-3	2004-5	(1)	(1)	N/A

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004, 440 reactors (566293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
CHINA	CN -8	QINSHAN 3 - 1	PHWR	665	728	TQNPC	AECL	1986-6	2002-11	2002-12	90.0	89.0	N/A
	CN -9	QINSHAN 3 - 2	PHWR	665	728	TQNPC	AECL	1986-9	2003-6	2003-7	(2)	(2)	N/A
CZECH R.	CZ -4	DUKOVANY-1	WWER	412	440	CEZ	SKODA	1979-1	1985-2	1985-5	82.0	82.0	N/A
	CZ -5	DUKOVANY-2	WWER	412	440	CEZ	SKODA	1979-1	1986-1	1986-3	83.0	83.0	N/A
	CZ -8	DUKOVANY-3	WWER	412	440	CEZ	SKODA	1979-3	1986-11	1986-12	82.0	83.0	N/A
	CZ -9	DUKOVANY-4	WWER	412	440	CEZ	SKODA	1979-3	1987-6	1987-7	84.0	83.0	N/A
	CZ -23	TEMLIN-1	WWER	950	1000	CEZ	SKODA	1987-2	2000-12	2002-6	68.0	65.0	DH
	CZ -24	TEMLIN-2	WWER	950	1000	CEZ	SKODA	1987-2	2002-12	2003-4	(2)	(2)	DH
FINLAND	FI -1	LOVISA-1	WWER	488	510	FORTUMPH	AEE	1971-5	1977-2	1977-5	85.0	86.0	N/A
	FI -2	LOVISA-2	WWER	488	510	FORTUMPH	AEE	1972-8	1980-11	1981-1	87.0	88.0	N/A
	FI -3	OLKILUOTO-1	BWR	840	870	TVO	ASEASTAL	1974-2	1978-9	1979-10	91.0	92.0	N/A
	FI -4	OLKILUOTO-2	BWR	840	870	TVO	ASEASTAL	1975-8	1980-2	1982-7	92.0	93.0	N/A
FRANCE	FR -54	BELLEVILLE-1	PWR	1310	1363	EDF	FRAM	1980-5	1987-10	1988-6	68.0	76.0	N/A
	FR -55	BELLEVILLE-2	PWR	1310	1363	EDF	FRAM	1980-8	1988-7	1989-1	69.0	78.0	N/A
	FR -32	BLAYAIS-1	PWR	910	951	EDF	FRAM	1977-1	1981-6	1981-12	70.0	78.0	N/A
	FR -33	BLAYAIS-2	PWR	910	951	EDF	FRAM	1977-1	1982-7	1983-2	74.0	82.0	N/A
	FR -34	BLAYAIS-3	PWR	910	951	EDF	FRAM	1978-4	1983-8	1983-11	75.0	82.0	N/A
	FR -35	BLAYAIS-4	PWR	910	945	EDF	FRAM	1978-4	1983-5	1983-10	74.0	82.0	N/A
	FR -13	BUGEY-2	PWR	910	945	EDF	FRAM	1972-11	1978-5	1979-3	65.0	74.0	N/A
	FR -14	BUGEY-3	PWR	910	945	EDF	FRAM	1973-9	1978-9	1979-3	65.0	76.0	N/A
	FR -15	BUGEY-4	PWR	880	917	EDF	FRAM	1974-6	1979-3	1979-7	66.0	75.0	N/A

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: D5 desalination, DH district heating, PH process heating, N/A not applicable. Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.



TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
FRANCE	FR-16	BUGEY-5	PWR	880	917	EDF	FRAM	1974-7	1979-7	1980-1	67.0	77.0	N/A
	FR-50	CATTENOM-1	PWR	1300	1362	EDF	FRAM	1979-10	1986-11	1987-4	66.0	72.0	N/A
	FR-53	CATTENOM-2	PWR	1300	1362	EDF	FRAM	1980-7	1987-9	1988-2	70.0	78.0	N/A
	FR-60	CATTENOM-3	PWR	1300	1362	EDF	FRAM	1982-6	1990-7	1991-2	73.0	81.0	N/A
	FR-65	CATTENOM-4	PWR	1300	1362	EDF	FRAM	1983-9	1991-5	1992-1	77.0	84.0	N/A
	FR-40	CHINON-B-1	PWR	905	954	EDF	FRAM	1977-3	1982-11	1984-2	73.0	79.0	N/A
	FR-41	CHINON-B-2	PWR	905	954	EDF	FRAM	1977-3	1985-11	1984-8	73.0	80.0	N/A
	FR-56	CHINON-B-3	PWR	905	954	EDF	FRAM	1980-10	1986-10	1987-3	72.0	80.0	N/A
	FR-57	CHINON-B-4	PWR	905	954	EDF	FRAM	1981-2	1987-11	1988-4	74.0	82.0	N/A
	FR-62	CHOOZ-B-1	PWR	1500	1560	EDF	FRAM	1984-1	1996-8	2000-5	79.0	85.0	N/A
	FR-70	CHOOZ-B-2	PWR	1500	1560	EDF	FRAM	1985-12	1997-4	2000-9	79.0	85.0	N/A
	FR-72	CIVAUX-1	PWR	1495	1561	EDF	FRAM	1988-10	1997-12	2002-1	82.0	85.0	N/A
	FR-73	CIVAUX-2	PWR	1495	1561	EDF	FRAM	1991-4	1998-12	2002-4	77.0	83.0	N/A
	FR-42	CRUAS-1	PWR	915	956	EDF	FRAM	1978-8	1983-4	1984-4	71.0	83.0	N/A
	FR-43	CRUAS-2	PWR	915	956	EDF	FRAM	1978-11	1984-9	1985-4	72.0	81.0	N/A
	FR-44	CRUAS-3	PWR	915	956	EDF	FRAM	1979-4	1984-5	1984-9	71.0	83.0	N/A
	FR-45	CRUAS-4	PWR	915	956	EDF	FRAM	1979-10	1984-10	1985-2	72.0	82.0	N/A
	FR-22	DAMPIERRE-1	PWR	890	937	EDF	FRAM	1975-2	1980-3	1980-9	70.0	76.0	N/A
	FR-29	DAMPIERRE-2	PWR	890	937	EDF	FRAM	1975-4	1980-12	1981-2	67.0	78.0	N/A
	FR-30	DAMPIERRE-3	PWR	890	937	EDF	FRAM	1975-9	1981-1	1981-5	71.0	78.0	N/A
	FR-31	DAMPIERRE-4	PWR	890	937	EDF	FRAM	1975-12	1981-8	1981-11	69.0	77.0	N/A

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
FRANCE	FR-11	FESSENHEIM-1	PWR	880	920	EDF	FRAM	1971-9	1977-4	1978-1	66.0	73.0	N/A
	FR-12	FESSENHEIM-2	PWR	880	920	EDF	FRAM	1972-2	1977-10	1978-4	70.0	78.0	N/A
	FR-46	FLAMANVILLE-1	PWR	1330	1382	EDF	FRAM	1979-12	1985-12	1986-12	68.0	76.0	N/A
	FR-47	FLAMANVILLE-2	PWR	1330	1382	EDF	FRAM	1980-5	1986-7	1987-3	68.0	76.0	N/A
	FR-61	GOLFECH-1	PWR	1310	1363	EDF	FRAM	1982-11	1990-6	1991-2	74.0	84.0	N/A
	FR-68	GOLFECH-2	PWR	1310	1363	EDF	FRAM	1984-10	1993-6	1994-3	73.0	84.0	N/A
	FR-20	GRAVELINES-1	PWR	910	951	EDF	FRAM	1975-2	1980-3	1980-11	69.0	76.0	N/A
	FR-21	GRAVELINES-2	PWR	910	951	EDF	FRAM	1975-3	1980-8	1980-12	72.0	80.0	N/A
	FR-27	GRAVELINES-3	PWR	910	951	EDF	FRAM	1975-12	1980-12	1981-6	73.0	81.0	N/A
	FR-28	GRAVELINES-4	PWR	910	951	EDF	FRAM	1976-4	1981-6	1981-10	73.0	79.0	N/A
	FR-51	GRAVELINES-5	PWR	910	951	EDF	FRAM	1979-10	1984-8	1985-1	74.0	82.0	N/A
	FR-52	GRAVELINES-6	PWR	910	951	EDF	FRAM	1979-10	1985-8	1985-10	75.0	81.0	N/A
	FR-58	NOGENT-1	PWR	1310	1363	EDF	FRAM	1981-5	1987-10	1988-2	68.0	77.0	N/A
	FR-59	NOGENT-2	PWR	1310	1363	EDF	FRAM	1982-1	1988-12	1989-5	73.0	83.0	N/A
	FR-36	PALUEL-1	PWR	1330	1382	EDF	FRAM	1977-8	1984-6	1985-12	68.0	77.0	N/A
	FR-37	PALUEL-2	PWR	1330	1382	EDF	FRAM	1978-1	1984-9	1985-12	68.0	76.0	N/A
	FR-38	PALUEL-3	PWR	1330	1382	EDF	FRAM	1979-2	1985-9	1986-2	68.0	75.0	N/A
	FR-39	PALUEL-4	PWR	1330	1382	EDF	FRAM	1980-2	1986-6	1986-6	69.0	77.0	N/A
	FR-63	PENLY-1	PWR	1330	1382	EDF	FRAM	1982-9	1990-5	1990-12	74.0	82.0	N/A
	FR-64	PENLY-2	PWR	1330	1382	EDF	FRAM	1984-8	1992-2	1992-11	75.0	83.0	N/A
FR-10	PHENIX *	FBR	233	250	CEA/EDF	CNCLINEY	1968-11	1973-12	1974-2	45.0	63.0	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

\* Long time shutdown

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
FRANCE	FR -48	ST. ALBAN-1	PWR	1335	1381	EDF	FRAM	1979-1	1985-8	1986-5	65.0	76.0	N/A
	FR -49	ST. ALBAN-2	PWR	1335	1381	EDF	FRAM	1979-7	1986-7	1987-3	64.0	76.0	N/A
	FR -17	ST. LAURENT-B-1	PWR	915	956	EDF	FRAM	1976-5	1981-1	1983-8	71.0	76.0	N/A
	FR -23	ST. LAURENT-B-2	PWR	915	956	EDF	FRAM	1976-7	1981-6	1983-8	69.0	77.0	N/A
	FR -18	TRICASTIN-1	PWR	915	955	EDF	FRAM	1974-11	1980-5	1980-12	71.0	79.0	N/A
	FR -19	TRICASTIN-2	PWR	915	955	EDF	FRAM	1974-12	1980-8	1980-12	71.0	79.0	N/A
	FR -25	TRICASTIN-3	PWR	915	955	EDF	FRAM	1975-4	1981-2	1981-5	74.0	81.0	N/A
	FR -26	TRICASTIN-4	PWR	915	955	EDF	FRAM	1975-5	1981-6	1981-11	72.0	81.0	N/A
GERMANY	DE -12	BIBLIS-A (KWB A)	PWR	1167	1225	RWE	KWU	1970-1	1974-8	1975-2	66.0	74.0	N/A
	DE -18	BIBLIS-B (KWB B)	PWR	1240	1300	RWE	KWU	1972-2	1976-4	1977-1	68.0	81.0	N/A
	DE -32	BROKDORF (KBR)	PWR	1370	1440	EON	KWU	1976-1	1986-10	1986-12	86.0	89.0	N/A
	DE -13	BRUNSBUEITEL (KKB)	BWR	771	806	HEW	KWU	1970-4	1976-7	1977-2	54.0	68.0	N/A
	DE -33	EMSLAND (KKE)	PWR	1329	1400	RWE	SIEM, KWU	1982-8	1988-4	1988-6	93.0	93.0	N/A
	DE -23	GRAFENRHEINFELD (KKG)	PWR	1275	1345	EON	KWU	1975-1	1981-12	1982-6	85.0	87.0	N/A
	DE -27	GROHNDE (KWG)	PWR	1360	1430	EON	KWU	1976-6	1984-9	1985-2	90.0	92.0	N/A
	DE -26	GUNDREMMINGEN-B (GUN-B)	BWR	1284	1344	RWE	KWU	1976-7	1984-3	1984-7	80.0	88.0	N/A
	DE -28	GUNDREMMINGEN-C (GUN-C)	BWR	1288	1344	EON	KWU	1976-7	1984-11	1985-1	78.0	87.0	N/A
	DE -16	ISAR-1 (KKI 1)	PWR	878	912	EON	KWU	1972-5	1977-12	1979-3	76.0	83.0	N/A
	DE -31	ISAR-2 (KKI 2)	PWR	1400	1475	EON	KWU	1982-9	1988-1	1988-4	87.0	91.0	N/A
	DE -20	KRUEMMEL (KKK)	BWR	1260	1316	HEW	KWU	1974-4	1983-9	1984-3	75.0	79.0	N/A
	DE -15	NECKARWESTHEIM-1 (GKN 1)	PWR	785	840	EnBW	KWU	1972-2	1978-6	1978-12	79.0	87.0	N/A

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
GERMANY	DE-44	NECKARWESTHEIM-2 (GKN 2)	PWR	1305	1395	EnBW	SIEM/KWU	1982-11	1989-1	1989-4	92.0	93.0	N/A
	DE-5	OBRIGHEIM (KWO)	PWR	340	357	EnBW	SIEM/KWU	1965-3	1968-10	1969-3	79.0	88.0	N/A
	DE-14	PHILIPPSBURG-1 (KKP 1)	BWR	890	926	EnBW	KWU	1970-10	1979-5	1980-3	76.0	82.0	N/A
	DE-24	PHILIPPSBURG-2 (KKP 2)	PWR	1392	1458	EnBW	KWU	1977-7	1984-12	1985-4	88.0	90.0	N/A
	DE-17	UNTERWESER (KKU)	PWR	1345	1410	EON	KWU	1972-7	1978-9	1979-9	79.0	84.0	
HUNGARY	HU-1	PAKS-1	WWER	437	467	PAKS RT.	AEE	1974-8	1982-12	1983-8	86.0	85.0	
	HU-2	PAKS-2	WWER	441	468	PAKS RT.	AEE	1974-8	1984-9	1984-11	83.0	82.0	DH
	HU-3	PAKS-3	WWER	433	460	PAKS RT.	AEE	1979-10	1986-9	1986-12	87.0	86.0	DH
	HU-4	PAKS-4	WWER	444	471	PAKS RT.	AEE	1979-10	1987-8	1987-11	89.0	87.0	DH
INDIA	IN-13	KAIGA-1	PHWR	202	220	NPCIL	NPCIL	1989-9	2000-10	2000-11	80.0	86.0	N/A
	IN-14	KAIGA-2	PHWR	202	220	NPCIL	NPCIL	1989-12	1999-12	2000-3	79.0	85.0	N/A
	IN-9	KAKRAPAR-1	PHWR	202	220	NPCIL	NPCIL	1984-12	1992-11	1993-5	70.0	74.0	N/A
	IN-10	KAKRAPAR-2	PHWR	202	220	NPCIL	NPCIL	1985-4	1995-3	1995-9	84.0	87.0	N/A
	IN-5	MADRAS-1	PHWR	155	170	NPCIL	NPCIL	1971-1	1983-7	1984-1	52.0	61.0	N/A
	IN-6	MADRAS-2	PHWR	202	220	NPCIL	NPCIL	1972-10	1985-9	1986-3	51.0	59.0	N/A
	IN-7	NARORA-1	PHWR	202	220	NPCIL	NPCIL	1976-12	1989-7	1991-1	60.0	67.0	N/A
	IN-8	NARORA-2	PHWR	202	220	NPCIL	NPCIL	1977-11	1992-1	1992-7	67.0	72.0	N/A
	IN-3	RAJASTHAN-1	PHWR	90	100	NPCIL	AECI	1965-8	1972-11	1973-12	22.0	29.0	PH
	IN-4	RAJASTHAN-2	PHWR	187	200	NPCIL	AECI/DAE	1968-4	1980-11	1981-4	52.0	58.0	PH
IN-11	RAJASTHAN-3	PHWR	202	220	NPCIL	NPCIL	1990-2	2000-3	2000-6	78.0	85.0		
IN-12	RAJASTHAN-4	PHWR	202	220	NPCIL	NPCIL	1990-10	2000-11	2000-12	79.0	88.0		

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable. Status as of 31 December 2004. 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
INDIA	IN-1	TARAPUR-1	BWR	150	160	NPCIL	GE	1964-10	1969-4	1969-10	53.0	76.0	N/A
	IN-2	TARAPUR-2	BWR	150	160	NPCIL	GE	1964-10	1969-5	1969-10	53.0	74.0	N/A
JAPAN	JP-5	FUKUSHIMA-DAICHI-1	BWR	439	460	TEPCO	GE	1967-7	1970-11	1971-3	54.0	57.0	N/A
	JP-9	FUKUSHIMA-DAICHI-2	BWR	760	784	TEPCO	TOSHI/GE	1969-6	1973-12	1974-7	59.0	60.0	N/A
	JP-10	FUKUSHIMA-DAICHI-3	BWR	760	784	TEPCO	TOSHIBA	1970-12	1974-10	1976-3	64.0	64.0	N/A
	JP-16	FUKUSHIMA-DAICHI-4	BWR	760	784	TEPCO	HITACHI	1973-2	1978-2	1978-10	71.0	71.0	N/A
	JP-17	FUKUSHIMA-DAICHI-5	BWR	760	784	TEPCO	TOSHIBA	1972-5	1977-9	1978-4	71.0	71.0	N/A
	JP-18	FUKUSHIMA-DAICHI-6	BWR	1067	1100	TEPCO	TOSHI/GE	1973-10	1979-5	1979-10	71.0	72.0	N/A
	JP-25	FUKUSHIMA-DAINI-1	BWR	1067	1100	TEPCO	TOSHIBA	1976-3	1981-7	1982-4	75.0	76.0	N/A
	JP-26	FUKUSHIMA-DAINI-2	BWR	1067	1100	TEPCO	HITACHI	1979-5	1983-6	1984-2	74.0	75.0	N/A
	JP-35	FUKUSHIMA-DAINI-3	BWR	1067	1100	TEPCO	TOSHIBA	1981-3	1984-12	1985-6	65.0	66.0	N/A
	JP-38	FUKUSHIMA-DAINI-4	BWR	1067	1100	TEPCO	HITACHI	1981-5	1986-12	1987-8	76.0	77.0	N/A
	JP-12	GENKAI-1	PWR	529	559	KYUSHU	M	1971-9	1975-2	1975-10	71.0	71.0	N/A
	JP-27	GENKAI-2	PWR	529	559	KYUSHU	M	1977-2	1980-6	1981-3	81.0	81.0	N/A
	JP-45	GENKAI-3	PWR	1127	1180	KYUSHU	M	1988-6	1993-6	1994-3	85.0	85.0	DS
	JP-46	GENKAI-4	PWR	1127	1180	KYUSHU	M	1992-7	1996-11	1997-7	87.0	87.0	DS
	JP-11	HAMAOKA-1	BWR	515	540	CHUBU	TOSHIBA	1971-6	1974-8	1976-3	56.0	57.0	N/A
	JP-24	HAMAOKA-2	BWR	806	840	CHUBU	TOSHIBA	1974-6	1978-5	1978-11	71.0	71.0	N/A
JP-36	HAMAOKA-3	BWR	1056	1100	CHUBU	TOSHIBA	1983-4	1987-1	1987-8	76.0	77.0	N/A	
JP-49	HAMAOKA-4	BWR	1092	1137	CHUBU	TOSHIBA	1989-10	1993-1	1993-9	80.0	80.0	N/A	
JP-60	HAMAOKA-5	ABWR	1325	1380	CHUBU	TOSHIBA	2000-7	2004-4	2005-1	(1)	(1)	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
JAPAN	JP -23	IKATA-1	PWR	538	566	SHIKOKU	M	1973-6	1977-2	1979-9	77.0	78.0	DS
	JP -32	IKATA-2	PWR	538	566	SHIKOKU	M	1978-2	1981-8	1982-3	83.0	83.0	DS
	JP -47	IKATA-3	PWR	846	890	SHIKOKU	M	1986-11	1994-3	1994-12	85.0	84.0	DS
	JP -33	KASHWAZAKI KARIWA-1	BWR	1067	1100	TEPCO	TOSHIBA	1980-6	1985-2	1985-9	74.0	75.0	N/A
	JP -39	KASHWAZAKI KARIWA-2	BWR	1067	1100	TEPCO	TOSHIBA	1985-11	1990-2	1990-9	76.0	77.0	N/A
	JP -52	KASHWAZAKI KARIWA-3	BWR	1067	1100	TEPCO	TOSHIBA	1989-3	1992-12	1993-8	74.0	75.0	N/A
	JP -53	KASHWAZAKI KARIWA-4	BWR	1067	1100	TEPCO	HITACHI	1990-3	1993-12	1994-8	78.0	79.0	N/A
	JP -40	KASHWAZAKI KARIWA-5	BWR	1067	1100	TEPCO	HITACHI	1985-6	1989-9	1990-4	79.0	80.0	N/A
	JP -55	KASHWAZAKI KARIWA-6	ABWR	1315	1356	TEPCO	TOSHI/GE	1992-11	1996-1	1996-11	85.0	86.0	N/A
	JP -56	KASHWAZAKI KARIWA-7	ABWR	1315	1356	TEPCO	HITA/GE	1993-7	1996-12	1997-7	78.0	78.0	N/A
	JP -4	MIHAMA-1	PWR	320	340	KEPCO	WEST	1970-8	1970-8	1970-11	50.0	55.0	N/A
	JP -6	MIHAMA-2	PWR	470	500	KEPCO	WEST	1968-5	1972-4	1972-7	60.0	61.0	N/A
	JP -14	MIHAMA-3	PWR	780	826	KEPCO	M	1972-8	1976-2	1976-12	74.0	74.0	N/A
	JP -31	MONJU *	FBR	246	280	JNC	M	1986-5	1995-8	—	(2)	(2)	N/A
	JP -15	OHI-1	PWR	1120	1175	KEPCO	WEST	1972-10	1977-12	1979-3	64.0	64.0	DS
	JP -19	OHI-2	PWR	1120	1175	KEPCO	WEST	1972-12	1978-10	1979-12	71.0	71.0	DS
	JP -50	OHI-3	PWR	1127	1180	KEPCO	M	1987-10	1991-6	1991-12	89.0	88.0	N/A
JP -51	OHI-4	PWR	1127	1180	KEPCO	M	1988-6	1992-6	1993-2	85.0	85.0	N/A	
JP -22	ONAGAWA-1	BWR	498	524	TOHOKU	TOSHIBA	1980-7	1983-11	1984-6	75.0	75.0	N/A	
JP -54	ONAGAWA-2	BWR	796	825	TOHOKU	TOSHIBA	1991-4	1994-12	1995-7	80.0	80.0	N/A	
JP -57	ONAGAWA-3	BWR	796	825	TOHOKU	TOSHIBA	1998-1	2001-5	2002-1	94.0	92.0	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column 'Non Electrical Applications' indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004. 440 reactors (366/293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

\* Long time shutdown

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
JAPAN	JP -28	SENDAI-1	PWR	846	890	KYUSHU	M	1979-12	1983-9	1984-7	82.0	81.0	N/A
	JP -37	SENDAI-2	PWR	846	890	KYUSHU	M	1981-10	1985-4	1985-11	83.0	82.0	N/A
	JP -48	SHIKA-1	BWR	505	540	HOKURIKU	HITACHI	1989-7	1993-1	1993-7	79.0	79.0	N/A
	JP -7	SHIMANE-1	BWR	439	460	CHUGOKU	HITACHI	1970-7	1973-12	1974-3	72.0	73.0	N/A
	JP -41	SHIMANE-2	BWR	789	820	CHUGOKU	HITACHI	1985-2	1988-7	1989-2	84.0	85.0	N/A
	JP -8	TAKAHAMA-1	PWR	780	826	KEPCO	WEST	1970-4	1974-3	1974-11	66.0	65.0	N/A
	JP -13	TAKAHAMA-2	PWR	780	826	KEPCO	M	1971-3	1975-1	1975-11	66.0	66.0	N/A
	JP -29	TAKAHAMA-3	PWR	830	870	KEPCO	M	1980-12	1984-5	1985-1	86.0	84.0	DS
	JP -30	TAKAHAMA-4	PWR	830	870	KEPCO	M	1981-3	1984-11	1985-6	85.0	84.0	DS
	JP -21	TOKAI-2	BWR	1080	1100	JAPCO	GE	1973-10	1978-3	1978-11	73.0	73.0	N/A
	JP -43	TOMARI-1	PWR	550	579	HEPCO	M	1985-7	1988-12	1989-6	85.0	85.0	N/A
	JP -44	TOMARI-2	PWR	550	579	HEPCO	M	1986-5	1990-8	1991-4	84.0	83.0	N/A
	JP -3	TSURUGA-1	BWR	341	357	JAPCO	GE	1966-11	1969-11	1970-3	66.0	71.0	N/A
	JP -34	TSURUGA-2	PWR	1115	1160	JAPCO	M	1982-11	1986-6	1987-2	82.0	82.0	N/A
KOREA RP	KR -1	KORI-1	PWR	556	587	KHNP	WEST	1972-8	1977-6	1978-4	73.0	77.0	N/A
	KR -2	KORI-2	PWR	605	650	KHNP	WEST	1977-12	1983-4	1983-7	86.0	84.0	N/A
	KR -5	KORI-3	PWR	895	950	KHNP	WEST	1979-10	1985-1	1985-9	87.0	84.0	N/A
	KR -6	KORI-4	PWR	895	950	KHNP	WEST	1980-4	1985-11	1986-4	89.0	85.0	N/A
	KR -9	ULCHIN-1	PWR	920	950	KHNP	FRAM	1983-1	1988-4	1988-9	84.0	84.0	N/A
	KR -10	ULCHIN-2	PWR	920	950	KHNP	FRAM	1983-7	1989-4	1989-9	87.0	86.0	N/A
KR -13	ULCHIN-3	PWR	960	1000	KHNP	DHICKOPC	1993-7	1998-1	1998-8	89.0	90.0	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
KOREA RP	KR -14	ULCHIN-4	PWR	960	1000	KHNP	DHICKOPC	1993-11	1998-12	1999-12	89.0	86.0	N/A
	KR -19	ULCHIN-5	PWR	960	1000	KHNP	DHICKOPC	1999-10	2003-12	2004-7	(1)	(1)	N/A
	KR -3	WOLSONG-1	PHWR	629	679	KHNP	AECL	1977-10	1982-12	1983-4	86.0	86.0	N/A
	KR -4	WOLSONG-2	PHWR	650	700	KHNP	AECL/DHI	1992-9	1997-4	1997-7	93.0	89.0	N/A
	KR -15	WOLSONG-3	PHWR	650	700	KHNP	AECL/DHI	1994-3	1998-3	1998-7	92.0	90.0	N/A
	KR -16	WOLSONG-4	PHWR	650	700	KHNP	AECL/DHI	1994-7	1999-5	1999-10	96.0	92.0	N/A
	KR -7	YONGGANG-1	PWR	900	950	KHNP	WEST	1981-6	1986-3	1986-8	88.0	86.0	N/A
	KR -8	YONGGANG-2	PWR	900	950	KHNP	WEST	1981-12	1986-11	1987-6	86.0	84.0	N/A
LITHNIA	KR -11	YONGGANG-3	PWR	950	1000	KHNP	DHICKAEC	1989-12	1994-10	1995-3	90.0	87.0	N/A
	KR -12	YONGGANG-4	PWR	950	1000	KHNP	DHICKAEC	1990-5	1995-7	1996-1	91.0	88.0	N/A
	KR -17	YONGGANG-5	PWR	950	1000	KHNP	DHICKOPC	1997-6	2001-12	2002-5	88.0	85.0	N/A
	KR -18	YONGGANG-6	PWR	950	1000	KHNP	DHICKOPC	1997-11	2002-9	2002-12	91.0	88.0	N/A
	LT -47	IGNALINA-2	LWGR	1185	1300	INPP	MAEP	1978-1	1987-8	1987-8	58.0	73.0	N/A
	MEXICO	MX -1	LAGUNA VERDE-1	BWR	655	682	CFE	GE	1976-10	1989-4	1990-7	76.0	81.0
MX -2		LAGUNA VERDE-2	BWR	655	682	CFE	GE	1977-6	1994-11	1995-4	77.0	81.0	N/A
NETHLNDS	NL -2	BORSSELE	PWR	449	481	EPZ	KWU/STOR	1969-7	1973-7	1973-10	81.0	87.0	N/A
	PK -2	CHASNUPP 1	PWR	300	325	PAEC	CNNC	1993-8	2000-6	2000-9	60.0	62.0	N/A
PAKISTAN	PK -1	KANUPP	PHWR	125	137	PAEC	CGE	1966-8	1971-10	1972-12	27.0	45.0	N/A
	RO -1	CERNAVODA-1	PHWR	655	706	SNN	AECL	1982-7	1996-7	1996-12	85.0	87.0	N/A

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: D5 desalination, DH district heating, PH process heating, N/A not applicable. Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.



TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
RUSSIA	RU -96	BALAKOVO-1	WWER	950	1000	REA	FAEA	1980-12	1985-12	1986-5	58.0	65.0	DH
	RU -97	BALAKOVO-2	WWER	950	1000	REA	FAEA	1981-8	1987-10	1988-1	57.0	63.0	DH
	RU -98	BALAKOVO-3	WWER	950	1000	REA	FAEA	1982-11	1988-12	1989-4	62.0	70.0	DH
	RU -99	BALAKOVO-4	WWER	950	1000	REA	FAEA	1984-4	1993-4	1993-12	67.0	76.0	DH
	RU -21	BELOYARSKY-3(BN-600)	FBR	560	600	REA	FAEA	1969-1	1980-4	1981-11	73.0	74.0	DH
	RU -141	BILIBINO UNIT A	LWGR	11	12	REA	FAEA	1970-1	1974-1	1974-4	61.0	79.0	DH
	RU -142	BILIBINO UNIT B	LWGR	11	12	REA	FAEA	1970-1	1974-12	1975-2	61.0	81.0	DH
	RU -143	BILIBINO UNIT C	LWGR	11	12	REA	FAEA	1970-1	1975-12	1976-2	63.0	81.0	DH
	RU -144	BILIBINO UNIT D	LWGR	11	12	REA	FAEA	1970-1	1976-12	1977-1	62.0	78.0	DH
	RU -30	KALININ-1	WWER	950	1000	REA	FAEA	1972-2	1984-5	1985-6	69.0	70.0	DH,PH
	RU -31	KALININ-2	WWER	950	1000	REA	FAEA	1982-2	1986-12	1987-3	70.0	72.0	DH,PH
	RU -36	KALININ-3	WWER	950	1000	REA	FAEA	1985-10	2004-12	—	(2)	(2)	
	RU -12	KOLA-1	WWER	411	440	REA	FAEA	1970-5	1973-6	1973-12	65.0	74.0	DH,PH
	RU -13	KOLA-2	WWER	411	440	REA	FAEA	1973-1	1974-12	1975-2	65.0	75.0	DH,PH
	RU -32	KOLA-3	WWER	411	440	REA	FAEA	1977-4	1981-3	1982-12	73.0	81.0	DH,PH
RU -33	KOLA-4	WWER	411	440	REA	FAEA	1976-8	1984-10	1984-12	71.0	80.0	DH,PH	
RU -17	KURSK-1	LWGR	925	1000	REA	FAEA	1972-6	1976-12	1977-10	55.0	57.0	DH,PH	
RU -22	KURSK-2	LWGR	925	1000	REA	FAEA	1973-1	1979-1	1979-8	59.0	62.0	DH,PH	
RU -38	KURSK-3	LWGR	925	1000	REA	FAEA	1978-4	1983-10	1984-3	70.0	72.0	DH,PH	
RU -39	KURSK-4	LWGR	925	1000	REA	FAEA	1981-5	1985-12	1986-2	76.0	77.0	DH,PH	
RU -15	LENINGRAD-1	LWGR	925	1000	REA	FAEA	1970-3	1973-12	1974-11	68.0	69.0	DH	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
RUSSIA	RU -16	LENINGRAD-2	LWGR	925	1000	REA	FAEA	1970-6	1975-7	1976-2	70.0	71.0	DH
	RU -34	LENINGRAD-3	LWGR	925	1000	REA	FAEA	1973-12	1979-12	1980-6	68.0	70.0	DH
	RU -35	LENINGRAD-4	LWGR	925	1000	REA	FAEA	1975-2	1981-2	1981-8	69.0	71.0	DH
	RU -9	NOVOORONEZH-3	WWER	385	417	REA	FAEA	1967-7	1971-12	1972-6	71.0	72.0	N/A
	RU -11	NOVOORONEZH-4	WWER	385	417	REA	FAEA	1967-7	1972-12	1973-3	77.0	79.0	DH,PH
	RU -20	NOVOORONEZH-5	WWER	950	1000	REA	FAEA	1974-3	1980-5	1981-2	62.0	63.0	DH,PH
	RU -23	SMOLENSK-1	LWGR	925	1000	REA	FAEA	1975-10	1982-12	1983-9	71.0	74.0	DH,PH
	RU -24	SMOLENSK-2	LWGR	925	1000	REA	FAEA	1976-6	1985-5	1985-7	73.0	76.0	DH,PH
	RU -67	SMOLENSK-3	LWGR	925	1000	REA	FAEA	1984-5	1990-1	1990-10	77.0	81.0	DH,PH
RU -59	VOLGODONSK-1	WWER	950	1000	REA	FAEA	1981-9	2001-3	2001-12	85.0	84.0		
S.AFRICA	ZA -1	KOEBERG-1	PWR	900	944	ESKOM	FRAM	1976-7	1984-4	1984-7	66.0	75.0	
	ZA -2	KOEBERG-2	PWR	900	944	ESKOM	AA	1976-7	1985-7	1985-11	65.0	74.0	
SLOVAKIA	SK -2	BOHUNICE-1	WWER	408	440	EBO	AEE	1972-4	1978-12	1980-4	71.0	75.0	N/A
	SK -3	BOHUNICE-2	WWER	408	440	EBO	AEE	1972-4	1980-3	1981-1	73.0	75.0	N/A
	SK -13	BOHUNICE-3	WWER	408	440	EBO	SKODA	1976-12	1984-8	1985-2	76.0	80.0	DH
	SK -14	BOHUNICE-4	WWER	408	440	EBO	SKODA	1976-12	1985-8	1985-12	78.0	82.0	DH
	SK -6	MOCHOVCE-1	WWER	405	440	EMO	SKODA	1983-10	1998-7	1998-10	75.0	81.0	N/A
	SK -7	MOCHOVCE-2	WWER	405	440	EMO	SKODA	1983-10	1999-12	2000-4	76.0	82.0	N/A
SLOVENIA	SI -1	KRSKO	PWR	656	707	NEK	WEST	1975-3	1981-10	1983-1	79.0	82.0	N/A
SPAIN	ES -6	ALMARAZ-1	PWR	947	977	CNAT	WEST	1973-7	1981-5	1983-9	83.0	84.0	N/A

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable. Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
SPAIN	ES -7	ALMARAZ-2	PWR	950	980	CNAT	WEST	1973-7	1983-10	1984-7	86.0	87.0	N/A
	ES -8	ASCO-1	PWR	996	1033	ANAV	WEST	1974-5	1983-8	1984-12	83.0	85.0	N/A
	ES -9	ASCO-2	PWR	992	1027	ANAV	WEST	1975-3	1985-10	1986-3	86.0	88.0	N/A
	ES -10	COFRENTES	BWR	1064	1092	ID	GE	1975-9	1984-10	1985-3	87.0	88.0	N/A
	ES -1	JOSE CABRERA-1(ZORITA)	PWR	142	150	UFG	WEST	1964-6	1968-7	1969-8	67.0	74.0	N/A
	ES -2	SANTA MARIA DE GARONA	BWR	446	466	NUCLEONOR	GE	1966-5	1971-3	1971-5	74.0	77.0	N/A
	ES -11	TRILLO-1	PWR	1003	1066	CNAT	KWU	1979-8	1988-5	1988-8	81.0	87.0	N/A
	ES -16	VANDELLOS-2	PWR	1045	1087	ANAV	WEST	1980-12	1987-12	1988-3	86.0	86.0	N/A
	SE -8	BARSEBACK-2	BWR	600	615	BKAB	ABBATOM	1973-1	1977-3	1977-7	76.0	82.0	N/A
	SE -9	FORSMARK-1	BWR	988	1006	FKA	ABBATOM	1973-6	1980-6	1980-12	80.0	86.0	N/A
SE -11	FORSMARK-2	BWR	964	1001	FKA	ABBATOM	1975-1	1981-1	1981-7	79.0	86.0	N/A	
SE -14	FORSMARK-3	BWR	1155	1197	FKA	ABBATOM	1979-1	1985-3	1985-8	84.0	89.0	N/A	
SE -2	OSKARSHAMN-1	BWR	467	487	OKG	ASEASTAL	1966-8	1971-8	1972-2	60.0	63.0	N/A	
SE -3	OSKARSHAMN-2	BWR	602	627	OKG	ABBATOM	1969-9	1974-10	1975-1	74.0	78.0	N/A	
SE -12	OSKARSHAMN-3	BWR	1160	1194	OKG	ASEASTAL	1980-5	1985-3	1985-8	82.0	87.0	N/A	
SE -4	RINGHALS-1	BWR	830	860	RAB	ABBATOM	1969-2	1974-10	1976-1	65.0	71.0	N/A	
SE -5	RINGHALS-2	PWR	875	917	RAB	WEST	1970-10	1974-8	1975-5	65.0	72.0	N/A	
SE -7	RINGHALS-3	PWR	915	960	RAB	WEST	1972-9	1980-9	1981-9	70.0	78.0	N/A	
SE -10	RINGHALS-4	PWR	915	960	RAB	WEST	1973-11	1982-6	1983-11	75.0	86.0	N/A	
SWITZRLD	CH -1	BEZNAU-1	PWR	365	380	NOK	WEST	1965-9	1969-7	1969-9	81.0	86.0	DH
	CH -3	BEZNAU-2	PWR	365	380	NOK	WEST	1968-1	1971-10	1971-12	86.0	86.0	DH

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS: desalination, DH: district heating, PH: process heating, N/A: not applicable.

Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
SWITZERLAND	CH-4	GOESGEN	PWR	970	1020	KKG	KWU	1973-12	1979-2	1979-11	87.0	88.0	PH
	CH-5	LEIBSTADT	BWR	1165	1200	KKL	GETSCO	1974-1	1984-5	1984-12	85.0	87.0	N/A
	CH-2	MUEHLEBERG	BWR	355	372	BKW	GETSCO	1967-3	1971-7	1972-11	85.0	86.0	N/A
UK	GB-9	DUNGENESS-A	GCR	225	230	BNFL	TNPG	1960-7	1965-9	1965-10	66.0	84.0	N/A
	GB-9	DUNGENESS-A	GCR	225	230	BNFL	TNPG	1960-7	1965-11	1965-12	(3)	(3)	N/A
	GB-18A	DUNGENESS-B1 UNIT A	AGR	555	615	BE	APC	1965-10	1985-12	1989-4	42.0	42.0	N/A
	GB-18B	DUNGENESS-B2 UNIT B	AGR	555	615	BE	APC	1965-10	1983-4	1985-4	42.0	45.0	N/A
	GB-19A	HARTLEPOOL-A1 UNIT A	AGR	605	655	BE	NPC	1968-10	1983-8	1989-4	74.0	77.0	N/A
	GB-19B	HARTLEPOOL-A2 UNIT B	AGR	605	655	BE	NPC	1968-10	1984-10	1989-4	76.0	79.0	N/A
	GB-20A	HEYSHAM-1 UNIT A	AGR	575	625	BE	NPC	1970-12	1983-7	1989-4	75.0	77.0	N/A
	GB-20B	HEYSHAM-1 UNIT B	AGR	575	625	BE	NPC	1970-12	1984-10	1989-4	76.0	79.0	N/A
	GB-22A	HEYSHAM-2 UNIT A	AGR	625	680	BE	NPC	1980-8	1988-7	1989-4	71.0	74.0	N/A
	GB-22B	HEYSHAM-2 UNIT B	AGR	625	680	BE	NPC	1980-8	1988-11	1989-4	68.0	72.0	N/A
GB-16A	HINKLEY POINT-B UNIT A	AGR	610	655	BE	TNPG	1976-9	1976-10	1978-10	76.0	76.0	N/A	
GB-16B	HINKLEY POINT-B UNIT B	AGR	610	655	BE	TNPG	1967-9	1976-2	1976-9	72.0	75.0	N/A	
GB-17A	HUNTERSTON-B1 UNIT A	AGR	595	644	BE	TNPG	1967-11	1976-2	1976-2	68.0	78.0	N/A	
GB-17B	HUNTERSTON-B2 UNIT B	AGR	595	644	BE	TNPG	1967-11	1977-3	1977-3	66.0	81.0	N/A	
GB-11	OLDBURY-A	GCR	217	230	BNFL	TNPG	1962-5	1967-11	1967-12	79.0	90.0	N/A	
GB-11	OLDBURY-A	GCR	217	230	BNFL	TNPG	1962-5	1968-4	1968-9	(3)	(3)	N/A	
GB-10	SIZEWELL-A	GCR	210	245	BNFL	EEB&W/T	1961-4	1966-1	1966-3	70.0	84.0	N/A	
GB-10	SIZEWELL-A	GCR	210	245	BNFL	EEB&W/T	1961-4	1966-4	1966-9	(3)	(3)	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable. Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
UK	GB-24	SIZEWELL-B	PWR	1188	1250	BE	PPC	1988-7	1995-2	1995-9	80.0	83.0	DH
	GB-23A	TORNNESS UNIT A	AGR	625	682	BE	NNC	1980-8	1988-5	1988-5	65.0	74.0	DH
	GB-23B	TORNNESS UNIT B	AGR	625	682	BE	NNC	1980-8	1989-2	1989-2	67.0	75.0	DH
	GB-13	WYLFA	GCR	490	540	BNFL	EE/B&WT	1963-9	1971-1	1971-11	71.0	88.0	DH
	GB-13	WYLFA	GCR	490	540	BNFL	EE/B&WT	1963-9	1971-7	1972-1	(3)	(3)	N/A
UKRAINE	UA-40	KHIMELNITSKI-1	WWER	950	1000	NNEGC	PAIP	1981-11	1987-12	1988-8	70.0	70.0	DH
	UA-41	KHIMELNITSKI-2	WWER	950	1000	NNEGC	PAIP	1985-2	2004-8	—	(2)	(2)	N/A
	UA-27	ROVNO-1	WWER	381	420	NNEGC	PAIP	1973-8	1980-12	1981-9	80.0	80.0	DH
	UA-28	ROVNO-2	WWER	376	415	NNEGC	PAIP	1973-10	1981-12	1982-7	79.0	81.0	DH
	UA-29	ROVNO-3	WWER	950	1000	NNEGC	PAIP	1980-2	1986-12	1987-5	69.0	72.0	DH
	UA-69	ROVNO-4	WWER	950	1000	NNEGC	PAIP	1986-8	2004-10	—	(2)	(2)	N/A
	UA-44	SOUTH UKRAINE-1	WWER	950	1000	NNEGC	PAA	1977-3	1982-12	1983-10	65.0	64.0	DH
	UA-45	SOUTH UKRAINE-2	WWER	950	1000	NNEGC	PAA	1979-10	1985-1	1985-4	59.0	59.0	DH
	UA-48	SOUTH UKRAINE-3	WWER	950	1000	NNEGC	PAA	1985-2	1989-9	1989-12	70.0	72.0	DH
	UA-54	ZAPOROZHE-1	WWER	950	1000	NNEGC	PAIP	1980-4	1984-12	1985-12	58.0	61.0	DH
UA-56	ZAPOROZHE-2	WWER	950	1000	NNEGC	PAIP	1981-1	1985-7	1986-2	62.0	65.0	DH	
UA-78	ZAPOROZHE-3	WWER	950	1000	NNEGC	PAIP	1982-4	1986-12	1987-3	65.0	69.0	DH	
UA-79	ZAPOROZHE-4	WWER	950	1000	NNEGC	PAIP	1983-4	1987-12	1988-4	70.0	73.0	DH	
UA-126	ZAPOROZHE-5	WWER	950	1000	NNEGC	PAIP	1985-11	1989-8	1989-10	70.0	72.0	DH	
UA-127	ZAPOROZHE-6	WWER	950	1000	NNEGC	PAIP	1986-6	1995-10	1996-9	76.0	78.0	DH	
USA	US-313	ARKANSAS ONE-1	PWR	840	903	ENTERGY	B&W	1968-10	1974-8	1974-12	72.0	77.0	N/A

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non-Electrical Applications indicates the use of the facility to provide: DS desalination; DH district heating; PH process heating; N/A not applicable. Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
USA	US-368	ARKANSAS ONE-2	PWR	1000	1013	ENERGY	CE	1971-7	1978-12	1980-3	81.0	81.0	N/A
	US-334	BEAVER VALLEY-1	PWR	821	923	FENOC	WEST	1970-6	1976-6	1976-10	65.0	69.0	N/A
	US-412	BEAVER VALLEY-2	PWR	831	923	FENOC	WEST	1974-5	1987-8	1987-11	80.0	84.0	N/A
	US-456	BRADWOOD-1	PWR	1185	1242	EXELON	WEST	1975-8	1987-7	1988-7	82.0	85.0	N/A
	US-457	BRADWOOD-2	PWR	1177	1210	EXELON	WEST	1975-8	1988-5	1988-10	86.0	89.0	N/A
	US-259	BROWNS FERRY-1 *	BWR	1065	1152	TVA	GE	1967-5	1973-10	1974-8	18.0	19.0	N/A
	US-260	BROWNS FERRY-2	BWR	1118	1152	TVA	GE	1967-5	1974-8	1975-3	58.0	61.0	N/A
	US-296	BROWNS FERRY-3	BWR	1114	1190	TVA	GE	1968-7	1976-9	1977-3	47.0	48.0	N/A
	US-325	BRUNSWICK-1	BWR	872	895	PROGRESS	GE	1969-9	1976-12	1977-3	67.0	71.0	N/A
	US-324	BRUNSWICK-2	BWR	811	895	PROGRESS	GE	1969-9	1975-4	1975-11	65.0	69.0	N/A
	US-454	BYRON-1	PWR	1194	1242	EXELON	WEST	1975-4	1985-3	1985-9	81.0	85.0	N/A
	US-455	BYRON-2	PWR	1162	1210	EXELON	WEST	1975-4	1987-2	1987-8	86.0	90.0	N/A
	US-483	CALLAWAY-1	PWR	1137	1236	AMEREN	WEST	1975-9	1984-10	1984-12	86.0	88.0	N/A
	US-317	CALVERT CLIFFS-1	PWR	845	918	CONST	CE	1968-6	1975-1	1975-5	75.0	75.0	N/A
	US-318	CALVERT CLIFFS-2	PWR	858	911	CONST	CE	1968-6	1976-12	1977-4	78.0	78.0	N/A
	US-413	CATAWBA-1	PWR	1129	1205	DUKE	WEST	1974-5	1985-1	1985-6	81.0	82.0	N/A
	US-414	CATAWBA-2	PWR	1129	1205	DUKE	WEST	1974-5	1986-5	1986-5	81.0	83.0	N/A
	US-461	CLINTON-1	BWR	1026	1077	EXELON	GE	1975-10	1987-4	1987-11	65.0	69.0	N/A
	US-397	COLUMBIA	BWR	1108	1200	ENERGYNW	GE	1972-8	1984-5	1984-12	68.0	75.0	N/A
US-445	COMANCHE PEAK-1	PWR	1084	1215	TXU	WEST	1974-10	1990-4	1990-8	81.0	87.0	N/A	
US-446	COMANCHE PEAK-2	PWR	1124	1215	TXU	WEST	1974-10	1993-4	1993-8	84.0	89.0	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non-Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

\* Long time shutdown

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
USA	US -288	COOPER	BWR	757	801	NPPD	GE	1968-6	1974-5	1974-7	68.0	73.0	N/A
	US -302	CRYSTAL RIVER-3	PWR	838	890	PROGRESS	B&W	1967-6	1977-1	1977-3	67.0	70.0	N/A
	US -346	DAVIS BESSE-1	PWR	873	925	FENOC	B&W	1970-9	1977-8	1978-7	61.0	64.0	N/A
	US -275	DIABLO CANYON-1	PWR	1087	1136	PGE	WEST	1968-8	1984-11	1985-5	83.0	84.0	N/A
	US -323	DIABLO CANYON-2	PWR	1087	1164	PGE	WEST	1970-12	1985-10	1986-3	85.0	87.0	N/A
	US -315	DONALD COOK-1	PWR	1016	1152	IMPCO	WEST	1969-3	1975-2	1975-8	63.0	67.0	N/A
	US -316	DONALD COOK-2	PWR	1077	1133	IMPCO	WEST	1969-3	1978-3	1978-7	60.0	64.0	N/A
	US -237	DRESDEN-2	BWR	850	912	EXELON	GE	1966-1	1970-4	1970-6	63.0	75.0	N/A
	US -249	DRESDEN-3	BWR	850	912	EXELON	GE	1966-10	1971-7	1971-11	63.0	70.0	N/A
	US -331	DUANE ARNOLD-1	BWR	562	597	NUCMAN	GE	1970-6	1974-5	1975-2	71.0	76.0	N/A
	US -341	ENRICO FERMI-2	BWR	1111	1154	DETEC	GE	1969-5	1986-9	1988-1	71.0	75.0	N/A
	US -348	FARLEY-1	PWR	833	888	SOUTH	WEST	1970-10	1977-8	1977-12	79.0	81.0	N/A
	US -364	FARLEY-2	PWR	842	888	SOUTH	WEST	1970-10	1981-5	1981-7	83.0	86.0	N/A
	US -333	FITZPATRICK	BWR	825	882	ENTERGY	GE	1968-9	1975-2	1975-7	70.0	74.0	N/A
	US -285	FORT CALHOUN-1	PWR	476	562	OPPD	CE	1968-6	1973-8	1974-6	75.0	79.0	N/A
	US -416	GRAND GULF-1	BWR	1263	1373	ENTERGY	GE	1974-5	1984-10	1985-7	85.0	85.0	N/A
	US -261	H.B. ROBINSON-2	PWR	710	769	PROGRESS	WEST	1967-4	1970-9	1971-3	73.0	77.0	N/A
	US -321	HATCH-1	BWR	856	865	SOUTH	GE	1968-9	1974-11	1975-12	75.0	78.0	N/A
	US -366	HATCH-2	BWR	883	957	SOUTH	GE	1972-2	1978-9	1979-9	76.0	80.0	N/A
	US -354	HOPE CREEK-1	BWR	1049	1170	PSEG	GE	1976-3	1986-8	1986-12	81.0	84.0	N/A
US -247	INDIAN POINT-2	PWR	965	1012	ENTERGY	WEST	1966-10	1973-6	1974-8	66.0	68.0	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PMS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: D5 desalination, DH district heating, PH process heating, N/A not applicable. Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
USA	US -286	INDIAN POINT-3	PWR	985	1012	ENTERGY	WEST	1988-11	1976-4	1976-8	60.0	64.0	N/A
	US -305	KEWAUNEE	PWR	539	581	NUCMAN	WEST	1968-8	1974-4	1974-6	82.0	83.0	N/A
	US -373	LASALLE-1	BWR	1146	1170	EXELON	GE	1973-9	1982-9	1984-1	68.0	70.0	N/A
	US -374	LASALLE-2	BWR	1147	1170	EXELON	GE	1973-10	1984-4	1984-10	68.0	69.0	N/A
	US -352	LIMERICK-1	BWR	1134	1138	EXELON	GE	1970-4	1985-4	1986-2	83.0	87.0	N/A
	US -353	LIMERICK-2	BWR	1134	1138	EXELON	GE	1970-4	1989-9	1990-1	90.0	92.0	N/A
	US -369	MCGUIRE-1	PWR	1100	1220	DUKE	WEST	1971-4	1981-9	1981-12	74.0	78.0	N/A
	US -370	MCGUIRE-2	PWR	1100	1220	DUKE	WEST	1971-4	1983-5	1984-3	81.0	82.0	N/A
	US -336	MILLSTONE-2	PWR	866	910	DOMIN	CE	1969-11	1975-11	1975-12	60.0	63.0	N/A
	US -423	MILLSTONE-3	PWR	1131	1253	DOMIN	WEST	1974-5	1986-2	1986-4	68.0	71.0	N/A
	US -263	MONTECELLO	BWR	569	600	NUCMAN	GE	1967-6	1971-3	1971-6	78.0	83.0	N/A
	US -220	NINE MILE POINT-1	BWR	621	642	CONST	GE	1965-4	1969-11	1969-12	66.0	71.0	N/A
	US -410	NINE MILE POINT-2	BWR	1135	1259	CONST	GE	1975-8	1987-8	1988-3	76.0	79.0	N/A
	US -338	NORTH ANNA-1	PWR	925	980	DOMIN	WEST	1971-2	1978-4	1978-6	77.0	79.0	N/A
	US -339	NORTH ANNA-2	PWR	917	980	DOMIN	WEST	1970-11	1980-8	1980-12	81.0	84.0	N/A
	US -269	OCONEE-1	PWR	846	887	DUKE	B&W	1967-11	1973-5	1973-7	74.0	78.0	N/A
	US -270	OCONEE-2	PWR	846	887	DUKE	B&W	1967-11	1973-12	1974-9	76.0	79.0	N/A
	US -287	OCONEE-3	PWR	846	893	DUKE	B&W	1967-11	1974-9	1974-12	76.0	78.0	N/A
	US -219	OYSTER CREEK	BWR	619	641	EXELON	GE	1964-1	1969-9	1969-12	67.0	72.0	N/A
	US -255	PALISADES	PWR	767	912	NUCMAN	CE	1967-2	1971-12	1971-12	61.0	66.0	N/A
US -528	PALO VERDE-1	PWR	1243	1403	ANPP	CE	1976-5	1985-6	1986-1	76.0	77.0	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination, DH district heating, PH process heating, N/A not applicable. Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.



TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
USA	US -529	PALO VERDE-2	PWR	1335	1403	ANPP	CE	1976-6	1986-5	1986-9	78.0	79.0	N/A
	US -530	PALO VERDE-3	PWR	1247	1403	ANPP	CE	1976-6	1987-11	1988-1	82.0	82.0	N/A
	US -277	PEACH BOTTOM-2	BWR	1112	1152	EXELON	GE	1968-1	1974-2	1974-7	67.0	70.0	N/A
	US -278	PEACH BOTTOM-3	BWR	1112	1152	EXELON	GE	1968-1	1974-9	1974-12	69.0	71.0	N/A
	US -440	PERRY-1	BWR	1235	1253	FENOC	GE	1974-10	1986-12	1987-11	76.0	78.0	N/A
	US -293	PILGRIM-1	BWR	685	691	ENTERGY	GE	1968-8	1972-7	1972-12	62.0	67.0	N/A
	US -266	POINT BEACH-1	PWR	512	524	NUCMAN	WEST	1967-7	1970-11	1970-12	77.0	82.0	N/A
	US -301	POINT BEACH-2	PWR	514	524	NUCMAN	WEST	1968-7	1972-8	1972-10	81.0	84.0	N/A
	US -282	PRAIRIE ISLAND-1	PWR	522	593	NUCMAN	WEST	1968-5	1973-12	1973-12	84.0	85.0	N/A
	US -306	PRAIRIE ISLAND-2	PWR	522	544	NUCMAN	WEST	1969-5	1974-12	1974-12	87.0	87.0	N/A
	US -254	QUAD CITIES-1	BWR	864	912	EXELON	GE	1967-2	1972-4	1973-2	69.0	74.0	N/A
	US -265	QUAD CITIES-2	BWR	864	912	EXELON	GE	1967-2	1972-5	1973-3	67.0	73.0	N/A
	US -244	R.E. GINNA	PWR	498	517	CONST	WEST	1966-4	1969-12	1970-7	80.0	83.0	N/A
	US -458	RIVER BEND-1	BWR	978	1036	ENTERGY	GE	1977-3	1985-12	1986-6	77.0	80.0	N/A
	US -272	SALEM-1	PWR	1111	1170	PSEG	WEST	1968-1	1976-12	1977-6	59.0	62.0	N/A
	US -311	SALEM-2	PWR	1129	1170	PSEG	WEST	1968-1	1981-6	1981-10	60.0	65.0	N/A
	US -361	SAN ONOFRE-2	PWR	1070	1127	SCE	CE	1974-3	1982-9	1983-8	80.0	80.0	N/A
	US -362	SAN ONOFRE-3	PWR	1080	1127	SCE	CE	1974-3	1983-9	1984-4	79.0	81.0	N/A
	US -443	SEABROOK-1	PWR	1159	1242	FPL	WEST	1976-7	1990-5	1990-8	83.0	85.0	N/A
US -327	SEQUOYAH-1	PWR	1150	1221	TVA	WEST	1970-5	1980-7	1981-7	64.0	67.0	N/A	
US -328	SEQUOYAH-2	PWR	1127	1221	TVA	WEST	1970-5	1981-12	1982-6	68.0	72.0	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PRIS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: DS desalination; DH district heating; PH process heating; N/A not applicable.

Status as of 31 December 2004, 440 reactors (566293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 10. REACTORS IN OPERATION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	Grid Connection	Commercial Operation	LF % to 2003	UCF % to 2003	Non Electrical Apps
	Code	Name		Net	Gross								
USA	US -400	SHEARON HARRIS-1	PWR	900	951	PROGRESS	WEST	1974-1	1987-1	1987-5	84.0	86.0	N/A
	US -488	SOUTH TEXAS-1	PWR	1280	1354	STP	WEST	1975-9	1988-3	1988-8	76.0	77.0	N/A
	US -489	SOUTH TEXAS-2	PWR	1280	1354	STP	WEST	1975-9	1989-4	1989-6	77.0	78.0	N/A
	US -335	ST. LUCIE-1	PWR	839	850	FPL	CE	1970-7	1976-5	1976-12	80.0	80.0	N/A
	US -389	ST. LUCIE-2	PWR	839	850	FPL	CE	1976-6	1983-6	1983-8	85.0	86.0	N/A
	US -280	SURRY-1	PWR	810	848	DOMIN	WEST	1968-6	1972-7	1972-12	70.0	72.0	N/A
	US -281	SURRY-2	PWR	815	848	DOMIN	WEST	1968-6	1973-3	1973-5	71.0	73.0	N/A
	US -387	SUSQUEHANNA-1	BWR	1105	1298	PP&L	GE	1973-11	1982-11	1983-6	80.0	82.0	N/A
	US -388	SUSQUEHANNA-2	BWR	1140	1298	PP&L	GE	1973-11	1984-7	1985-2	84.0	86.0	N/A
	US -289	THREE MILE ISLAND-1	PWR	786	837	EXELON	B&W	1968-5	1974-6	1974-9	68.0	85.0	N/A
	US -250	TURKEY POINT-3	PWR	693	760	FPL	WEST	1967-4	1972-11	1972-12	70.0	75.0	N/A
	US -251	TURKEY POINT-4	PWR	693	760	FPL	WEST	1967-4	1973-6	1973-9	72.0	75.0	N/A
	US -271	VERMONT YANKEE	BWR	506	563	ENTERGY	GE	1967-12	1972-9	1972-11	80.0	82.0	N/A
	US -395	VIRGIL C. SUMMER-1	PWR	966	1003	SCEG	WEST	1973-3	1982-11	1984-1	80.0	83.0	N/A
	US -424	VOGTLE-1	PWR	1152	1160	SOUTH	WEST	1967-8	1987-3	1987-6	89.0	89.0	N/A
	US -425	VOGTLE-2	PWR	1149	1160	SOUTH	WEST	1976-8	1989-4	1989-5	89.0	90.0	N/A
US -382	WATERFORD-3	PWR	1089	1200	ENTERGY	CE	1974-11	1985-3	1985-9	85.0	86.0	N/A	
US -390	WATTS BAR-1	PWR	1121	1270	TVA	WEST	1972-12	1986-2	1986-5	91.0	91.0	N/A	
US -482	WOLF CREEK	PWR	1165	1236	WOLF	WEST	1977-1	1985-6	1985-9	84.0	85.0	N/A	

Note 1: Performance factors calculated only for period of full commercial operation, and only to 2003.

Note 2: No operating experience data is available in IAEA PMS for this reactor.

Note 3: Cumulative performance factors for multiple unit stations are calculated for the whole station.

Note 4: The column Non Electrical Applications indicates the use of the facility to provide: D5 desalination, DH district heating, PH process heating, N/A not applicable.

Status as of 31 December 2004, 440 reactors (366293 MW(e)) were in operation, including 6 units (4884 MW(e)) in Taiwan, China.

TABLE 11. REACTORS UNDER CONSTRUCTION, 31 DEC. 2004

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation	
	Code	Name		Net	Gross							
ARGENTINA	AR-3	ATUCHA-2	PHWR	692	745	NASA	SIEMENS	1981-7	—	—	—	
CHINA	CN-10	TIANWAN 1	WWER	1000	1060	JNPC	AE&ZAES	1998-10	—	—	—	
	CN-11	TIANWAN 2	WWER	1000	1060	JNPC	AE&ZAES	2000-10	2005-4	2005-4	2005-12	
INDIA	IN-15	KAIGA-3	PHWR	202	220	NPCL	NPCL	2002-3	2006-12	2007-1	2007-3	
	IN-16	KAIGA-4	PHWR	202	220	NPCL	NPCL	2002-5	2007-6	2007-7	2007-9	
	IN-25	KUDANKULAM-1	WWER	917	1000	NPCL	ASEA	2002-3	2007-9	2007-10	2007-12	
	IN-26	KUDANKULAM-2	WWER	917	1000	NPCL	ASEA	2002-7	2008-9	2008-10	2008-12	
	IN-29	PFBR	FBR	470	500	BHAVINI	—	2004-10	—	—	—	—
	IN-19	RAJASTHAN-5	PHWR	202	220	NPCL	NPCL	2002-9	2007-5	2007-6	2007-8	
IN-20	RAJASTHAN-6	PHWR	202	220	NPCL	NPCL	2003-1	2007-11	2007-12	2008-2		
IN-23	TARAPUR-3	PHWR	490	540	NPCL	NPCL	2000-5	2006-7	2006-9	2007-1		
IN-24	TARAPUR-4	PHWR	490	540	NPCL	NPCL	2000-3	2005-3	2005-12	2006-4		
IRAN	IR-1	BUSHEHR-1	WWER	915	1000	AEOI	ASE	1975-5	2006-6	2006-10	2006-12	
JAPAN	JP-58	HIGASHI DORI 1	BWR	1067	1100	TOHOKU	TOSHIBA	2000-11	2005-1	—	2005-10	
	JP-59	SHIKA-2	ABWR	1304	1358	HOKURIKU	HITACHI	2001-8	—	—	2006-3	
	JP-64	TOMARI-3	PWR	866	912	HEPCO	M	2004-11	—	—	2009-12	
KOREA RP	KR-20	ULCHIN-6	PWR	960	1000	KHNP	DHICKOPC	2000-9	2004-12	2005-1	2005-6	
ROMANIA	RO-2	CERNAVODA-2	PHWR	655	706	SNN	AECL	1983-7	2006-11	2007-1	2007-3	
RUSSIA	RU-114	BALAKOVO-5	WWER	950	1000	REA	—	1987-4	—	—	—	

Status as of 31 December 2004, 26 reactors (20826 MW(e)) are under construction, including 2 units (2600 MW(e)) in Taiwan, China.

TABLE 11. REACTORS UNDER CONSTRUCTION, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation
	Code	Name		Net	Gross						
RUSSIA	RU -37	KALININ-4	WWER	950	1000	REA		1986-8	—	—	—
	RU -120	KURSK-5	LWGR	925	1000	REA	FAEA	1985-12	—	—	—
	RU -62	VOLGODONSK-2	WWER	950	1000	REA	FAEA	1983-5	—	—	—
UKRAINE	UA -51	KHMELNITSKI-3	WWER	950	1000	NNEG		1986-3	—	—	—
	UA -52	KHMELNITSKI-4	WWER	950	1000	NNEG		1987-2	—	—	—

Status as of 31 December 2004, 26 reactors (2082.6 MW(e)) are under construction, including 2 units (2600 MW(e)) in Taiwan, China.

TABLE 12. REACTORS SHUT DOWN, 31 DEC. 2004

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation	Shut Down
	Code	Name		Net	Gross							
ARMENIA	AM-18	ARMENIA-1	WWER	376	408	JSC	FAEA	1973-1	1976-12	1976-12	1979-10	1989-2
BELGIUM	BE-1	BR-3	PWR	11	12	CEN/SCK	WEST	1957-11	1962-8	1962-10	1962-10	1987-6
BULGARIA	BG-1	KOZLODUY-1	WWER	408	440	KOZNPP	AEE	1970-4	1974-6	1974-7	1974-10	2002-12
	BG-2	KOZLODUY-2	WWER	408	440	KOZNPP	AEE	1970-4	1975-8	1975-8	1975-11	2002-12
CANADA	CA-8	BRUCE-1	PHWR	769	825	BRUCEPOW	OHI/AECL	1971-6	1976-12	1977-1	1977-9	1997-10
	CA-9	BRUCE-2	PHWR	769	825	BRUCEPOW	OHI/AECL	1970-12	1976-7	1976-9	1977-9	1995-10
	CA-2	DOUGLAS POINT	PHWR	206	218	OPG	AECL	1960-2	1966-11	1967-1	1968-9	1984-5
	CA-3	GENTILLY-1	HWLWR	250	266	HQ	AECL	1966-9	1970-11	1971-4	1972-5	1977-6
	CA-1	NPD	PHWR	22	25	OH	CGE	1958-1	1962-4	1962-6	1962-10	1987-8
	CA-4	PICKERING-1	PHWR	515	542	OPG	OHI/AECL	1966-6	1971-2	1971-4	1971-7	1997-12
	CA-5	PICKERING-2	PHWR	515	542	OPG	OHI/AECL	1966-9	1971-9	1971-10	1971-12	1997-12
	CA-6	PICKERING-3	PHWR	515	542	OPG	OHI/AECL	1967-12	1972-4	1972-5	1972-6	1997-12
FRANCE	FR-9	BUGEY-1	GCR	540	555	EDF	VARIOUS	1965-12	1972-3	1972-4	1972-7	1994-5
	FR-2	CHINON-A1	GCR	70	80	EDF	LEVNIER	1957-2	1962-9	1963-6	1964-2	1973-4
	FR-3	CHINON-A2	GCR	210	230	EDF	LEVNIER	1959-8	1964-8	1965-2	1965-2	1985-6
	FR-4	CHINON-A3	GCR	480	480	EDF	GTM	1961-3	1966-3	1966-8	1966-8	1990-6
	FR-5	CHOOZ-A (ARDENNES)	PWR	310	320	SENA	A/F/W	1962-1	1966-10	1967-4	1967-4	1991-10
	FR-24	CREYS-MALVILLE	FBR	1200	1242	NERSA	ASPALDO	1976-12	1985-9	1986-1	—	1998-12
	FR-6	EL-4 (MONTS D'ARREE)	HWGCR	70	75	EDF	GAAA	1962-7	1966-12	1967-7	1968-6	1985-7
	FR-1B	G-2 (MARCOULE)	GCR	38	43	COGEMA	SACM	1955-3	1958-7	1959-4	1959-4	1980-2
	FR-1	G-3 (MARCOULE)	GCR	38	43	COGEMA	SACM	1956-3	1959-6	1960-4	1960-4	1984-6

Status as of 31 December 2004. 108 reactors (34883 MW(e)) are permanently shut down.  
 One reactor in Canada, Bruce-3 was reconnected to the grid in 2003 and hence has been removed from this table.  
 In Canada Bruce 1,2 and Pickering 1,2,3 might restart in the future.

TABLE 12. REACTORS SHUT DOWN, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation	Shut Down
	Code	Name		Net	Gross							
FRANCE	FR-7	ST. LAURENT-A1	GCR	480	500	EDF	VARIOUS	1963-10	1969-1	1969-3	1969-6	1990-4
	FR-8	ST. LAURENT-A2	GCR	515	530	EDF	VARIOUS	1966-1	1971-7	1971-8	1971-11	1992-5
GERMANY	DE-4	AVR JUELICH (AVR)	HTGR	13	15	AVR	BBK	1961-8	1966-8	1967-12	1969-5	1988-12
	DE-502	GREIFSWALD-1(KGR 1)	WWER	408	440	EWN	EEE,KAB	1970-3	1973-12	1973-12	1974-7	1990-2
	DE-503	GREIFSWALD-2 (KGR 2)	WWER	408	440	EWN	EEE,KAB	1970-3	1974-12	1974-12	1975-4	1990-2
	DE-504	GREIFSWALD-3 (KGR 3)	WWER	408	440	EWN	EEE,KAB	1972-4	1977-10	1977-10	1978-5	1990-2
	DE-505	GREIFSWALD-4 (KGR 4)	WWER	408	440	EWN	EEE,KAB	1972-4	1979-7	1979-9	1979-11	1990-7
	DE-506	GREIFSWALD-5 (KGR 5)	WWER	408	440	EWN	EEE,KAB	1976-12	1989-3	1989-4	1989-11	1989-11
	DE-3	GUNDEMMINGEN-A (KRB A)	BWR	237	250	KBG	AEG,GE	1962-12	1966-8	1966-12	1967-4	1977-1
	DE-7	HDR GROSSWELZHEIM	BWR	23	25	HDR	AEG,KWU	1965-1	1969-10	1969-10	1970-8	1971-4
	DE-8	KNK II	FBR	17	21	KBG	IA	1974-9	1977-10	1978-4	1979-3	1991-8
	DE-6	LINGEN (KWL)	BWR	250	268	KWL	AEG	1964-10	1968-1	1968-7	1968-10	1979-1
DE-22	MUELHEIM-KAERLICH (KMK)	PWR	1219	1302	RWE	BBR	1975-1	1986-3	1986-3	1987-8	1988-9	
DE-2	MZFR	PHWR	52	57	KBG	SIEMENS	1961-12	1965-9	1966-3	1966-12	1984-5	
DE-11	NIEDERAICHBACH (KKN)	HWGCR	100	106	KKN	SIEM,KWU	1966-6	1972-12	1973-1	1973-1	1974-7	
DE-501	RHEINBERG (KKR)	PWR	62	70	EWN	EEE,KAB	1960-1	1966-3	1966-5	1966-10	1990-6	
DE-10	STADE (KKS)	PWR	640	672	EON	KWU	1967-12	1972-1	1972-1	1972-5	2003-11	
DE-19	THTR-300	HTGR	296	308	HKG	HRB	1971-5	1983-9	1985-11	1987-6	1988-4	
DE-1	VAK KAHL	BWR	15	16	VAK	GE,AEG	1958-7	1960-11	1961-6	1962-2	1985-11	
DE-9	WUERGASSEN (KMW)	BWR	640	670	PE	AEG,KWU	1968-1	1971-10	1971-12	1975-11	1994-8	
ITALY	IT-4	CAORSO	BWR	860	882	SOGIN	AMN/GETS	1970-1	1977-12	1978-5	1981-12	1990-7
	IT-3	ENRICO FERMI (TRINO)	PWR	260	270	SOGIN	WEST	1961-7	1964-6	1964-10	1965-1	1990-7

Status as of 31 December 2004, 108 reactors (34883 MW(e)) are permanently shut down.

TABLE 12. REACTORS SHUT DOWN, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation	Shut Down
	Code	Name		Net	Gross							
ITALY	IT -2	GARIGLIANO	BWR	150	160	SOGIN	GE	1959-11	1963-6	1964-1	1964-6	1982-3
	IT -1	LATINA	GCR	153	160	SOGIN	TNPG	1958-11	1962-12	1963-5	1964-1	1987-12
JAPAN	JP -20	FUGEN ATR	HMLWR	148	165	JNC	HITACHI	1972-5	1978-3	1978-7	1979-3	2003-3
	JP -1	JDDR	BWR	13	13	JAERI	GE	1960-12	1963-8	1963-10	1965-3	1976-3
	JP -2	TOKAI-1	GCR	159	166	JAPCO	GEC	1961-3	1965-5	1965-11	1966-7	1998-3
	KZ -10	BN-350	FBR	52	90	KATEII	MPP	1964-10	1972-11	1973-7	1973-7	1999-4
LITHNIA	LT -46	IGNALINA-1	LWGR	1185	1300	INPP	MAEP	1977-5	1983-10	1983-12	1984-5	2004-12
NETHLNDS	NL -1	DODEWAARD	BWR	55	58	GKN(NL)	STORK/H	1965-5	1968-6	1968-10	1969-1	1997-3
RUSSIA	RU -3	BELOYARSKY-1	LWGR	102	108	REA	FAEA	1958-6	1963-9	1964-4	1964-4	1983-1
	RU -6	BELOYARSKY-2	LWGR	146	160	REA	FAEA	1962-1	1967-10	1967-12	1969-12	1990-1
	RU -4	NOVOVORONEZH-1	WWER	197	210	REA	FAEA	1957-7	1963-12	1964-9	1964-12	1988-2
	RU -8	NOVOVORONEZH-2	WWER	336	365	REA	FAEA	1964-6	1969-12	1969-12	1970-4	1990-8
	SK -1	A-1 BOHUNICE	HWGCR	110	144	EBO	SKODA	1958-8	1972-10	1972-12	1972-12	1977-1
SPAIN	ES -3	VANDELLOS-1	GCR	480	500	HIFRENSA	CEA	1968-6	1972-2	1972-5	1972-8	1990-7
SWEDEN	SE -1	AGESTA	PHWR	10	12	VAB	ABBATOM	1957-12	1963-7	1964-5	1964-5	1974-6
	SE -6	BARSEBACK-1	BWR	600	615	BKAB	ASEASTAL	1971-2	1975-1	1975-5	1975-7	1999-11
UK	GB -3	BERKELEY	GCR	138	166	BNFL	TNPG	1957-1	1961-8	1962-6	1962-6	1989-3
	GB -3	BERKELEY	GCR	138	166	BNFL	TNPG	1957-1	1962-3	1962-6	1962-10	1988-10
	GB -4	BRADWELL	GCR	123	146	BNFL	TNPG	1957-1	1961-8	1962-7	1962-7	2002-3

Status as of 31 December 2004, 108 reactors (34883 MW(e)) are permanently shut down.

TABLE 12. REACTORS SHUT DOWN, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation	Shut Down
	Code	Name		Net	Gross							
UK	GB-4	BRADWELL	GCR	123	146	BNFL	TNPG	1957-1	1962-4	1962-7	1962-11	2002-3
	GB-1	CALDER HALL	GCR	50	60	BNFL	UKAEA	1953-8	1956-5	1956-8	1956-10	2003-3
	GB-1	CALDER HALL	GCR	50	60	BNFL	UKAEA	1953-8	1956-12	1957-2	1957-2	2003-3
	GB-1	CALDER HALL	GCR	50	60	BNFL	UKAEA	1953-8	1958-3	1958-3	1958-5	2003-3
	GB-1	CALDER HALL	GCR	50	60	BNFL	UKAEA	1955-8	1958-12	1959-4	1959-4	2003-3
	GB-2	CHAPELCROSS	GCR	50	60	BNFL	UKAEA	1955-10	1958-11	1959-2	1959-3	2004-6
	GB-2	CHAPELCROSS	GCR	50	60	BNFL	UKAEA	1955-10	1959-5	1959-7	1959-8	2004-6
	GB-2	CHAPELCROSS	GCR	50	60	BNFL	UKAEA	1955-10	1959-8	1959-11	1959-12	2004-6
	GB-2	CHAPELCROSS	GCR	50	60	BNFL	UKAEA	1955-10	1959-12	1960-1	1960-3	2004-6
	GB-14	DOUNREAY FR	FBR	14	15	UKAEA	UKAEA	1955-3	1959-11	1962-10	1962-10	1977-3
	GB-7	HINKLEY POINT-A	GCR	235	267	BNFL	EE/B&W/T	1957-11	1964-5	1965-2	1965-3	2000-5
	GB-7	HINKLEY POINT-A	GCR	235	267	BNFL	EE/B&W/T	1957-11	1964-10	1965-3	1965-5	2000-5
	GB-6	HUNTERSTON-A1	GCR	150	173	BNFL	GEC	1957-10	1963-8	1964-2	1964-2	1990-3
	GB-6	HUNTERSTON-A2	GCR	150	173	BNFL	GEC	1957-10	1964-3	1964-6	1964-7	1989-12
	GB-15	PFR DOUNREAY	FBR	234	250	UKAEA	TNPG	1966-1	1974-3	1975-1	1976-7	1994-3
GB-8	TRAFSFYNYDD	GCR	195	235	BNFL	APC	1959-7	1964-9	1965-1	1965-3	1991-2	
UKRAINE	GB-8	TRAFSFYNYDD	GCR	195	235	BNFL	APC	1959-7	1964-12	1965-2	1965-3	1991-2
	GB-5	WINDSCALE AGR	AGR	32	41	UKAEA	VARIOUS	1958-11	1962-8	1963-2	1963-3	1981-4
	GB-12	WINFRITH SGHWR	SGHWR	92	100	UKAEA	ICLIFE	1963-5	1967-9	1967-12	1968-1	1990-9
	UA-25	CHERNOBYL-1	LWGR	725	800	MTE	FAEA	1970-3	1977-8	1977-9	1978-5	1986-11
	UA-26	CHERNOBYL-2	LWGR	925	1000	MTE	FAEA	1973-2	1978-11	1978-12	1979-5	1991-10
	UA-42	CHERNOBYL-3	LWGR	925	1000	MTE	FAEA	1976-3	1981-6	1981-12	1982-6	2000-12
	UA-43	CHERNOBYL-4	LWGR	925	1000	MTE	FAEA	1979-4	1983-11	1983-12	1984-3	1986-4

Status as of 31 December 2004, 108 reactors (34883 MW(e)) are permanently shut down.



TABLE 12. REACTORS SHUT DOWN, 31 DEC. 2004 — continued

Country	Reactor		Type	Capacity MW(e)		Operator	NSSS Supplier	Construction Start	First Criticality	Grid Connection	Commercial Operation	Shut Down	
	Code	Name		Net	Gross								
USA	US-155	BIG ROCK POINT	BWR	67	71	CPC	GE	1960-5	1962-9	1962-12	1963-3	1997-8	
	US-4	BONUS	BWR	17	18	DOE/PRWR	GNEPRWRA	1960-1	1964-1	1964-8	—	1968-6	
	US-144	CVTR	PHWR	17	19	CVPA	WEST	1960-1	1963-3	1963-12	—	1967-1	
	US-10	DRESDEN-1	BWR	197	207	EXELON	GE	1956-5	1959-10	1960-4	1960-7	1960-7	1978-10
	US-1	ELK RIVER	BWR	22	24	RCPA	AC	1959-1	1962-11	1963-8	1964-7	1968-2	1982-2
	US-16	ENRICO FERMI-1	FBR	61	65	DETED	UEC	1956-8	1963-8	1966-8	—	—	1972-11
	US-267	FORT ST. VRAIN	HTGR	330	342	PSCC	GA	1966-9	1974-1	1976-12	1979-7	1979-7	1989-8
	US-213	HADDAM/NECK	PWR	560	587	CYAPC	WEST	1964-5	1967-7	1967-8	1968-1	1968-1	1986-12
	US-133	HUMBOLDT BAY	BWR	63	65	PGE	GE	1960-11	1963-2	1963-4	1963-8	1963-8	1976-7
	US-3	INDIAN POINT-1	PWR	257	277	ENERGY	B&W	1956-5	1962-8	1962-9	1962-10	1962-10	1974-10
	US-409	LACROSSE	BWR	48	55	DPC	AC	1963-3	1967-7	1968-4	1969-11	1969-11	1987-4
	US-309	MAINE YANKEE	PWR	860	900	MYAPC	CE	1966-10	1972-10	1972-11	1972-12	1972-12	1997-8
	US-245	MILLSTONE-1	BWR	641	684	DOMIN	GE	1966-5	1970-10	1970-11	1971-3	1971-3	1998-7
	US-130	PATHFINDER	BWR	59	63	NUCMAN	AC	1959-1	1964-1	1966-7	—	—	1967-10
	US-171	PEACH BOTTOM-1	HTGR	40	42	EXELON	GA	1962-2	1966-3	1967-1	1967-6	1967-6	1974-11
	US-312	RANCHO SECO-1	PWR	873	917	SMUD	B&W	1969-4	1974-9	1974-10	1975-4	1975-4	1989-6
	US-206	SAN ONOFRE-1	PWR	436	456	SCE	WEST	1964-5	1967-6	1967-7	1968-1	1968-1	1992-11
	US-322	SHOREHAM	BWR	820	849	LILCO	GE	1972-11	—	—	—	—	1989-5
	US-320	THREE MILE ISLAND-2	PWR	880	959	GPU	B&W	1969-11	1978-3	1978-4	1978-12	1978-12	1993-3
	US-344	TROJAN	PWR	1095	1155	PORTGE	WEST	1970-2	1975-12	1975-12	1976-5	1976-5	1992-11
	US-29	YANKEE NPS	PWR	167	180	YAEC	WEST	1957-11	1960-8	1960-11	1961-7	1961-7	1991-10
	US-295	ZION-1	PWR	1040	1085	EXELON	WEST	1968-12	1973-6	1973-6	1973-12	1973-12	1998-1
	US-304	ZION-2	PWR	1040	1085	EXELON	WEST	1968-12	1973-12	1973-12	1974-9	1974-9	1998-1

Status as of 31 December 2004, 108 reactors (34883 MW(e)) are permanently shut down.

TABLE 13. ANNUAL CONSTRUCTION STARTS, CONNECTIONS TO THE GRID AND OPERATIONAL UNITS, 1955 TO 2004

Year	Construction Starts		Connections to the Grid		Reactors in Operation	
	Units	MW(e)	Units	MW(e)	Units	MW(e)
1955	8	352				
1956	4	557	1	50		
1957	13	1747	1	50		
1958	6	434	1	50		
1959	6	831	5	238		
1960	9	895	4	452		
1961	7	1384	1	15		
1962	7	1237	9	893		
1963	5	1600	7	370		
1964	9	2695	8	1036		
1965	9	3144	8	1679		
1966	15	7312	8	1375		
1967	26	17186	10	2090		
1968	35	25483	6	1052		
1969	15	11621	10	3583		
1970	37	26499	6	3472	81	16.290
1971	15	10196	16	7744	96	24.011
1972	27	20800	16	9026	111	32.972
1973	26	20928	20	12600	130	45.502
1974	28	25318	26	17428	152	62.523
1975	33	31952	15	10340	167	72.863
1976	32	29887	19	14402	184	87.189
1977	17	14611	18	13135	198	99.713
1978	13	12098	20	16268	217	115.784
1979	25	22116	8	6945	223	121.599
1980	20	19283	21	15417	243	136.978
1981	15	14123	23	20490	265	157.436
1982	14	15738	19	15740	283	173.026
1983	9	7561	23	18922	305	191.846
1984	7	7098	33	31703	335	223.253
1985	13	11069	33	31297	365	254.255
1986	7	5442	26	26374	390	279.704
1987	6	5871	22	22198	408	301.668
1988	5	5881	14	13893	417	313.698
1989	6	4018	12	10645	423	322.068
1990	4	2421	10	10487	419	327.577
1991	2	2291	4	3668	417	329.436
1992	3	3092	6	4809	420	332.199
1993	4	3535	9	9000	429	341.199
1994	2	1300	5	4191	431	343.996
1995			5	3536	435	346.733
1996	1	610	6	7033	439	352.491
1997	5	4386	3	3645	435	352.840
1998	3	2126	4	2975	434	351.735
1999	4	4560	4	2752	436	353.835
2000	6	5332	6	3131	439	355.571
2001	1	1304	3	2696	442	358.267
2002	5	2440	6	5051	444	362.256
2003	1	202	2	1625	440	362.893
2004	2	1336	5	4785	440	366.293

TABLE 14. AVERAGE CONSTRUCTION TIME SPAN

Country	Operating and Shut Down Reactors (Year of Grid Connection)/Average Construction Time															
	1965 to 1970		1971 to 1976		1977 to 1982		1983 to 1988		1989 to 1994		1995 to 2000		2003		2004	
	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months
ARGENTINA	1	70					1	109								
ARMENIA	1	48	1	55			2	78			1	295				
BELGIUM	3	56	2	84			2	78								
BRAZIL			1	132												
BULGARIA	2	58	2	95			1	89	1	113						
CANADA	6	60	6	83			7	92	4	100						
CHINA	1	84					4	88	3	75			1	58	1	84
CZECH R.																
FINLAND			4	70												
FRANCE	5	64	3	69	23	64	26	77	6	95	4	126				
GERMANY	7	57	9	76	7	76	10	107	2	112						
HUNGARY			1	101			3	100								
INDIA	2	55	1	88	1	152	2	153	3	139	5	123				
ITALY					1	101										
JAPAN	4	44	9	45	12	58	13	47	12	51	4	61			1	46
KAZAKHS.			1	106												
KOREA RP			2	61			6	63	2	64	6	57	1	51		
LITHNIA							2	98								
MEXICO									2	180						

Note: Construction time is measured from the first pouring of concrete to the connection of the unit to the grid.

TABLE 14. AVERAGE CONSTRUCTION TIME SPAN — continued

Country	Operating and Shut Down Reactors (Year of Grid Connection)/Average Construction Time															
	1965 to 1970		1971 to 1976		1977 to 1982		1983 to 1988		1989 to 1994		1995 to 2000		2003		2004	
	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months	No.	Months
NETHERLANDS	1	42	1	49												
PAKISTAN			1	63												
ROMANIA																
RUSSIA	2	69	11	55	7	80	9	76	2	89				1	231	
S.AFRICA			1	173			2	101								
SLOVAKIA					2	88	2	99								
SLOVENIA					1	80										
SPAIN	1	50	2	53	1	95	6	110			2	186				
SWEDEN			5	58	5	82	2	67								
SWITZERLAND	1	47	2	49	1	63	1	125								
UK	11	68	6	100	1	113	9	159	1	103	1	80				
UKRAINE					6	81	8	63	2	51	1	113			2	227
USA	13	59	47	71	18	110	33	138	6	188	1	279				
TOTAL	48	60	112	66	109	80	151	98	46	99	28	116	2	54	5	163

Note: Construction time is measured from the first pouring of concrete to the connection of the unit to the grid.

The totals include the following data in Taiwan, China:

— 1977 to 1982: 4 units, 67 months  
 — 1983 to 1988: 2 units, 71 months

TABLE 15. CUMULATIVE PERFORMANCE FACTORS FOR NON-PROTOTYPE REACTORS UP TO 2003

Reactor Type	Reactors in the World			Reactors reporting to IAEA PRIS (see note)				
	Number of Units	Net Capacity MW(e)	Years of Commercial Experience	Number of Units	Net Capacity MW(e)	Cumulative Load Factor %	Cumulative Availability Factor %	Years of Commercial Operation
PHWR 100-599 MWE	19	5289	315.0	19	5289	66.0	67.1	308.5
PHWR >= 600 MWE	19	14033	273.7	18	13368	80.0	80.3	250.2
AGR	14	8380	258.9	14	8380	68.2	70.2	229.8
GCR 100-599 MWE	8	2284	286.5	8	2284	72.1	75.4	214.5
PWR 100-599 MWE	24	10937	663.1	24	10937	78.5	79.2	661.1
PWR >= 600 MWE	187	191628	3524.9	187	191628	75.5	78.5	3506.8
WWER 100-599 MWE	27	11184	556.9	27	11184	76.9	78.0	544.2
WWER >=600 MWE	23	21856	319.1	22	20906	64.3	65.7	318.8
BWR 100-599 MWE	14	5942	410.2	14	5942	69.6	71.6	409.2
BWR >= 600 MWE	78	75297	1665.4	78	75297	72.2	74.7	1623.1
LWGR >= 600 MWE	13	12545	278.7	13	12545	66.4	67.3	276.7
TOTAL	426	359375	8552.4	424	357760	73.8	76.2	8342.9

Note: 2003 is the latest year for which operating experience data is currently available to the IAEA.

— Reactors permanently shut down during or before 2003 are not considered.

TABLE 16. AVERAGE FULL OUTAGE STATISTICS FOR NON-PROTOTYPE REACTORS DURING 2003

Reactor Type	Number of Units		Full Outage Hours per Operating Experience Year	% Planned Outages	% Unplanned Outages
	In the World	Reporting Outage to IAEA PRIS			
PHWR 100-599 MWE	19	19	2507	72.9	27.1
PHWR >= 600 MWE	19	12	1203	72.3	27.7
AGR	14				
GCR 100-599 MWE	8				
PWR 100-599 MWE	24	23	1036	85.4	14.6
PWR >= 600 MWE	187	177	1253	75.4	24.6
WWER 100-599 MWE	27	27	1655	78.1	21.9
WWER >=600 MWE	23	22	1623	94.5	5.5
BWR 100-599 MWE	14	14	2829	56.7	43.3
BWR >= 600 MWE	78	77	2388	54.3	45.7
LWGR >= 600 MWE	13	13	1895	97.3	2.7
ALL REACTORS	426	384			

Note: 2003 is the latest year for which outage information is currently available to the IAEA.

— Reactors shut down during 2003 are not considered.

TABLE 17. CAUSES OF OUTAGES DURING 2003 FOR NON-PROTOTYPE REACTORS

Outage Cause	Planned Full Outages				Unplanned Full Outages			
	Energy Lost		Time Lost		Energy Lost		Time Lost	
	GW(e).h	%	Hours	%	GW(e).h	%	Hours	%
Plant equipment failure	370	0.1	339	0.1	131199	79.9	149149	79.1
Refuelling without a maintenance	4030	1.1	4101	0.9	91	0.1	103	0.1
Inspection, maintenance or repair combined with refuelling	305009	82.9	346220	79.8				
Inspection, maintenance or repair without refuelling	37095	10.1	50314	11.6	27	0.0	23	0.0
Testing of plant systems or components	2283	0.6	2080	0.5	81	0.0	116	0.1
TMajor back-fitting, refurbishment or upgrading activities with refuelling	7324	2.0	9402	2.2	197	0.1	335	0.2
Nuclear regulatory requirements	10994	3.0	20688	4.8	2423	1.5	2246	1.2
Grid failure or grid unavailability					3024	1.8	5497	2.9
Load-following (frequency control, reserve shutdown due to reduced energy demand)					3266	2.0	3068	1.6
Human factor related	181	0.0	176	0.0	786	0.5	903	0.5
Governmental requirements or court decisions					184	0.1	220	0.1
Environmental conditions (flood, storm, lightning, lack of cooling water, cooling water temperature limits etc.)					4794	2.9	4719	2.5
Fire					756	0.5	797	0.4

Note: 2003 is the latest year for which outage information is currently available to the IAEA.

— Only reactors which have achieved full commercial operation in or before 2003 are considered.

TABLE 17. CAUSES OF OUTAGES DURING 2003 FOR NON-PROTOTYPE REACTORS — continued

Outage Cause	Planned Full Outages			Unplanned Full Outages		
	Energy Lost		Time Lost	Energy Lost		Time Lost
	GW(e).h	%	Hours	GW(e).h	%	Hours
External restrictions on supply and services .				475	0.3	731
Fuel management limitation (including high flux tilt, stretch out or coast-down operation)	545	0.1	598	115	0.1	88
Others	131	100.0	141	16796	10.2	20469
TOTAL	367962	100.0	434059	164214	100.0	188464

Note: 2003 is the latest year for which outage information is currently available to the IAEA.

— Only reactors which have achieved full commercial operation in or before 2003 are considered.



TABLE 18. CAUSES OF OUTAGES, 1971 TO 2003, FOR NON-PROTOTYPE REACTORS

Outage Cause	Planned Full Outages				Unplanned Full Outages			
	Energy Lost		Time Lost		Energy Lost		Time Lost	
	GW(e).h	%	Hours	%	GW(e).h	%	Hours	%
	GW(e).h	%	Hours	%	GW(e).h	%	Hours	%
Plant equipment failure	14666	0.2	21029	0.2	2889242	71.1	3907350	73.6
Refuelling without a maintenance	7740	0.1	11213	0.1	84800	2.1	114279	2.2
Inspection, maintenance or repair combined with refuelling	7673051	80.2	9540155	75.6	65968	1.6	80893	1.5
Inspection, maintenance or repair without refuelling	1526582	16.0	2559605	20.3	19264	0.5	21061	0.4
Testing of plant systems or components	71557	0.7	89478	0.7	27679	0.7	40939	0.8
Major back-fitting, refurbishment or upgrading activities with refuelling	27600	0.3	40252	0.3	394	0.0	567	0.0
Nuclear regulatory requirements	72405	0.8	159138	1.3	293740	7.2	346157	6.5
Grid failure or grid unavailability	26	0.0	41	0.0	38011	0.9	79595	1.5
Load-following (frequency control, reserve shutdown due to reduced energy demand)	171967	1.8	189695	1.5	598166	14.7	663460	12.5
Human factor related	181	0.0	176	0.0	12669	0.3	15885	0.3
Governmental requirements or court decisions					207	0.0	275	0.0
Environmental conditions (flood, storm, lightning, lack of cooling water, cooling water temperature limits etc.)					4859	0.1	4782	0.1
Fire					1480	0.0	1702	0.0

Note: 2003 is the latest year for which outage information is currently available to the IAEA.

— Only reactors which have achieved full commercial operation in or before 2003 are considered.

TABLE 18. CAUSES OF OUTAGES, 1971 TO 2003, FOR NON-PROTOTYPE REACTORS — continued

Outage Cause	Planned Full Outages				Unplanned Full Outages			
	Energy Lost		Time Lost		Energy Lost		Time Lost	
	GW(e).h	%	Hours	%	GW(e).h	%	Hours	%
External restrictions on supply and services	545	0.0	598	0.0	475	0.0	731	0.0
Fuel management limitation (including high flux tilt, stretch out or coast-down operation)	131	0.0	141	0.0	136	0.0	107	0.0
Others					26813	0.7	32411	0.6
TOTAL	9566451	100.0	12611521	100.0	4063903	100.0	5310194	100.0

Note: 2003 is the latest year for which outage information is currently available to the IAEA.

— Only reactors which have achieved full commercial operation in or before 2003 are considered.

TABLE 19. COUNTRIES - Abbreviations and Summary

Country Code	Full Name	Number of Reactors, as of 31 Dec. 2004				
		Operational	Construction	Shut Down	Suspended	Cancelled
AM	ARMENIA	1				
AR	ARGENTINA	2	1	1		1
AT	AUSTRIA	7		1		
BE	BELGIUM					
BG	BULGARIA	4		2		
BR	BRAZIL	2				1
CA	CANADA	17		8		
CH	SWITZERLAND	5				
CN	CHINA	9	2			
CU	CUBA	6			2	
CZ	CZECH REPUBLIC	18		18	2	6
DE	GERMANY					
ES	SPAIN	9		1		
FI	FINLAND	4				
FR	FRANCE	59		11		
GB	UNITED KINGDOM	23		22		5
HU	HUNGARY	4				
IN	INDIA	14	9			
IR	IRAN, ISLAMIC REPUBLIC OF		1			
IT	ITALY			4		3
JP	JAPAN	54	3	3		
KP	DEM. P.R. KOREA					1

TABLE 19. COUNTRIES - Abbreviations and Summary — continued

Country Code	Full Name	Number of Reactors, as of 31 Dec. 2004				
		Operational	Construction	Shut Down	Suspended	Cancelled
KR	KOREA, REPUBLIC OF	19	1			
KZ	KAZAKHSTAN	1		1		
LT	LITHUANIA, REPUBLIC OF	2		1		1
MX	MEXICO					
NL	NETHERLANDS	1		1		
PH	PHILIPPINES				1	
PK	PAKISTAN	2				
PL	POLAND				1	1
RO	ROMANIA	1	1			
RU	RUSSIAN FEDERATION	31	4	4	3	9
SE	SWEDEN	11		2	5	
SI	SLOVENIA	1				
SK	SLOVAK REPUBLIC	6		1	2	
UA	UKRAINE	15	2	4	1	3
US	UNITED STATES OF AMERICA	104		23	4	37
ZA	SOUTH AFRICA	2				
TOTAL		440	26	108	25	64

Note: The total includes the following data in Taiwan, China:

— 6 units in operation; 2 units in operation;

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 20. REACTOR TYPES - Abbreviations and Summary

Type Code	Full Name	Number of Reactors, as of 31 Dec. 2004				
		Operational	Construction	Shut Down	Suspended	Cancelled
ABWR	Advanced Boiling Light-Water-Cooled and Moderated Reactor	3	3	1		
AGR	Advanced Gas-Cooled, Graphite-Moderated Reactor	14		19	2	18
BWR	Boiling Light-Water-Cooled and Moderated Reactor	90	1	6	2	1
FBR	Fast Breeder Reactor	3	1			
GCR	Gas-Cooled, Graphite-Moderated Reactor	8		29		
HTGR	High-Temperature Gas-Cooled, Graphite-Moderated Reactor			4		
HWGCR	Heavy-Water-Moderated, Gas-Cooled Reactor			3		
HWWLWR	Heavy-Water-Moderated, Boiling Light-Water-Cooled Reactor			2	1	
LWGR	Light-Water-Cooled, Graphite-Moderated Reactor	16	1	7		5
PHWR	Pressurized Heavy-Water-Moderated and Cooled Reactor	39	8	10	3	
PWR	Pressurized Light-Water-Moderated and Cooled Reactor	214	2	16	6	27
SGHWR	Steam-Generating Heavy-Water Reactor			1		
WWER	Water Cooled Water Moderated Power Reactor	53	10	10	11	13
TOTAL		440	26	108	25	64

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 21. OPERATORS - Abbreviations and Summary

Operator Code	Full Name	Number of Reactors, as of 31 Dec. 2004			
		Operational	Construction	Shut Down	Suspended
AEOI	ATOMIC ENERGY ORGANIZATION OF IRAN				
AMEREN	AMEREN	1			
ANAV	ASOCIACION NUCLEAR ASCO-VANDELLOS A.I.E. (ENDESA/ID)	3			
ANPP	ARIZONA NUCLEAR POWER PROJECT	3			
AVR	ARBEITSGEMEINSCHAFT VERSUCHSREAKTOR GMBH		1		
BE	BRITISH ENERGY	15			
BHAVINI	BHARATIYA NABHIKIYA VIDYUT NIGAM LIMITED		1		
BKAB	BARSEBECK KRAFT AB	1			
BKW	BKW ENERGIE AG	1			
BNFL	BRITISH NUCLEAR FUELS PLC	8		18	
BRUCEPOW	BRUCE POWER	6		2	
CEA/EDF	COMMISSARIAT A L'ENERGIE ATOMIQUE / ELECTRICITE DE FRANCE	1			
CEI	CLEVELAND ELECTRIC ILLUMINATING CO.				1
CEN/SCK	CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE / STUDIECENTRUM VOOR KERNENERGIE			1	
CFZ	CZECH POWER COMPANY, CEZ A.S.	6			2
CFE	COMISION FEDERAL DE ELECTRICIDAD	2			
CG&E	CINCINNATI GAS & ELECTRIC CO.				1
CHUBU	CHUBU ELECTRIC POWER CO.	5			
CHUGOKU	CHUGOKU ELECTRIC POWER CO.	2			
CNAT	CENTRALES NUCLEARES ALMARAZ-TRILLO(ID/UG/ENDESA/H/C/NUCLEONOR )	3			
COGEMA	COMPAGNIE GENERALE DES MATIERES NUCLEAIRES			2	
CONST	CONSTELLATION NUCLEAR GROUP	5			

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 21. OPERATORS - Abbreviations and Summary — continued

Operator Code	Full Name	Number of Reactors, as of 31 Dec. 2004			
		Operational	Construction	Shut Down	Suspended
CPC	CONSUMERS POWER CO.			1	
CPL	CAROLINA POWER & LIGHT CO.			1	
CVPA	CAROLINA-VIRGINIA NUCLEAR POWER ASSOC.			1	
CYAPC	CONNECTICUT YANKEE ATOMIC POWER CO.			1	
DETE	DETROIT EDISON CO.	1			
DOE/PRWR	DOE & PUERTO RICO WATER RESOURCES			1	
DOMIN	DOMINION VIRGINIA POWER	6			
DPC	DAIRYLAND POWER COOPERATIVE			1	
DPRK	DPRK - TONGHAIE NPP			7	
DUKE	DUKE POWER CO.	4		1	
EBO	ELECTROSTATION BOHUNICE	58		7	
EDF	ELECTRICITE DE FRANCE				1
EJZ	NUCLEAR POWER PLANT ZARNOWIEC	7			
ELECTRAB	ELECTRABEL M. V. NUCLEAIRE PRODUKTIE	2			
ELETRONU	ELETRONBRAS TERMONUCLEAR SA - ELETRONUCLEAR	2			
EMO	ELECTROSTATION MOCHOVCE			1	
ENBW	ENBW KRAFTWERK AG	5			
ENEL	ENEL - SOCIETA PER AZIONI				2
ENELENEA	ENEL SOCIETA PER AZIONI/ENTE PER LE NUOVE TECNOLOGIE, L'ENERGIA E L'AMBIENTE				1
ENERGY/NW	ENERGY NORTHWEST	1			
ENTERGY	ENTERGY NUCLEAR	10		1	
EON	EON KERNKRAFT GES.M.B.H	7		1	
EPZ	N.V. ELEKTRICITEITS-PRODUKTIE/MAATSCHAPPIJ ZUID-NEDERLAND	1			

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 21. OPERATORS - Abbreviations and Summary — continued

Operator Code	Full Name	Number of Reactors, as of 31 Dec. 2004				
		Operational	Construction	Shut Down	Suspended	Cancelled
ESKOM	ENERGIEWERKE NORD GMBH	2				
EWN	EXELON NUCLEAR CO.	17		6		5
EXELON	FIRST ENERGY NUCLEAR OPERATING CO.	4		4		
FENOC						
FKA	FORSMARK KRAFTGRUPP AB	3				
FORTUMPH	FORTUM POWER AND HEAT OY (FORMER IVO)	2				
FPL	FLORIDA POWER & LIGHT CO.	5				1
GKN(NL)	GEMEENSCHAPPELIJKE KERNENERGIECENTRALE NEDERLAND (GKN)			1		
GKT	GEMEINSCHAFTSKERNKRAFTWERK TULLNERFELD					
GNP/JVC	GUANDONG NUCLEAR POWER JOINT VENTURE COMPANY LIMITED(GNP/JVC)	2		1		1
GPU	GENERAL PUBLIC UTILITIES					
GSU	GULF STATES UTILITIES CO.					1
HDR	HEISSDAMPREAKTOR-BETRIEBSGESELLSCHAFT MBH.			1		
HEPCO	HOKKAIDO ELECTRIC POWER CO.	2	1			
HEW	HAMBURGISCHE ELEKTRIZITAETSWERKE	2				
HIFRENSA	HISPANO-FRANCESA DE ENERGIA NUCLEAR, S.A.			1		
HKG	HOCHTEMPERATUR-KERNKRAFTWERK GMBH	1		1		
HOKURIKU	HOKURIKI ELECTRIC POWER CO.	1	1			
HQ	HYDRO QUEBEC	1		1		
ID	IBERDROLA, S.A.	1				3
ID/ICSE	IBERDROLA, S.A./COMPANIA SEVILLANA DE ELECTRICIDAD, S.A.					
IMPCC	INDIANA MICHIGAN POWER CO.	2				2
INPP	IGNALINA NUCLEAR POWER PLANT	1		1		1

Only reactors for which construction had commenced are counted for cancellations and suspensions.



TABLE 21. OPERATORS - Abbreviations and Summary — continued

Operator Code	Full Name	Number of Reactors, as of 31 Dec. 2004				
		Operational	Construction	Shut Down	Suspended	Cancelled
IPC	ILLINOIS POWER CO.					
JAERI	JAPAN ATOMIC ENERGY RESEARCH INSTITUTE			1		1
JAPCO	JAPAN ATOMIC POWER CO.	3		1		
JCPL	JERSEY CENTRAL POWER & LIGHT CO.					1
JNC	JAPAN NUCLEAR CYCLE DEVELOPEMENT INSTITUTE	1		1		
JNPC	JIANGSU NUCLEAR POWER CORPORATION	1	2			
JSC	JOINT STOCK COMPANY ARMENIA NPP	1		1		
KATEII	NATIONAL CORPORATION FOR ATOMIC ENERGY AND INDUSTRY	1		1		
KBG	KERNKRAFTWERK-BETRIEBSGESELLSCHAFT MBH			2		
KEPCO	KANSAI ELECTRIC POWER CO.	11				
KGB	KERNKRAFTWERKE GUNDRÉMNINGEN BETRIEBSGESELLSCHAFT MBH	19	1	1		
KHNP	KOREA HYDRO AND NUCLEAR POWER CO.					
KKG	KERNKRAFTWERK GOESGEN-DAENIKEN AG	1				
KKL	KERNKRAFTWERK LEIBSTADT	1				
KKN	KERNKRAFTWERK NIEDERAICHBACH GMBH	4		1		1
KOZNP	KOZLODUY NPP-PLC			2		
KWL	KERNKRAFTWERK LINGEN GMBH			1		
KYUSHU	KYUSHU ELECTRIC POWER CO.	6				
LANPC	LINGAO NUCLEAR POWER COMPANY LTD.	2				
LILCO	LONG ISLAND LIGHTING CO.			1		
MINBAS	MINISTERIO DE LA INDUSTRIA BASICA				2	
MINENERG	MINENERGO SSSR - THE USSR MINISTRY OF POWER AND ELECTRIFICATION				1	
MP&L	MISSISSIPPI POWER & LIGHT CO.					1

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 21. OPERATORS - Abbreviations and Summary — continued

Operator Code	Full Name	Number of Reactors, as of 31 Dec. 2004			
		Operational	Construction	Shut Down	Suspended
MTE	MINTENERGO OF UKRAINE - MINISTRY OF FUEL AND ENERGY OF UKRAINE				
MYAPC	MAINE YANKEE ATOMIC POWER CO.			4	
NASA	NUCLEOELECTRICA ARGENTINA S.A.	2	1	1	
NBEPCC	NEW BRUNSWICK ELECTRIC POWER COMMISSION	1			
NEK	NUKLEARNA ELEKTRARNA KRSKO	1			
NERSA	CENTRALE NUCLEAIRE EUROPEENE A NEUTRONS RAPIDES S.A.			1	
NIPS	NORTH INDIANA PUBLIC SERVICES CO.				1
NNEGC	NATIONAL NUCLEAR ENERGY GENERATING COMPANY <ENERGOATOM>	15	2		
NOK	NORDOSTSCHWEIZERISCHE KRAFTWERKE	2			
NPCIL	NUCLEAR POWER CORPORATION OF INDIA LTD.	14	8		
NPPD	NEBRASKA PUBLIC POWER DISTRICT	1			
NPQJVC	NUCLEAR POWER PLANT QINSHAN JOINT VENTURE COMPANY LTD.	2			
NUCLENOR	NUCLENOR, S.A.	1			
NUCMAN	NUCLEAR MANAGEMENT CO.	8		1	
OH	ONTARIO HYDRO			1	
OKG	OKG AKTIEBOLAG	3			
OPG	ONTARIO POWER GENERATION	9		4	
OPPD	OMAHA PUBLIC POWER DISTRICT	1			
PAEC	PAKISTAN ATOMIC ENERGY COMMISSION	2			
PAKS RT.	PAKS NUCLEAR POWER PLANT LTD	4			
PE	PREUSSENELEKTRA KERNKRAFT GMBH&CO KG	2		1	
PGE	PACIFIC GAS & ELECTRIC CO.			1	
PORTGE	PORTLAND GENERAL ELECTRIC CO.			1	

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 21. OPERATORS - Abbreviations and Summary — continued

Operator Code	Full Name	Number of Reactors, as of 31 Dec. 2004				
		Operational	Construction	Shut Down	Suspended	Cancelled
PP&L	PENNSYLVANIA POWER & LIGHT CO.	2				
PROGRESS	PROGRESS ENERGY CORPORATION	5				
PSCC	PUBLIC SERVICE CO. OF COLORADO			1		2
PSCO	PUBLIC SERVICES CO. OF OKLAHOMA					
PSEG	PUBLIC SERVICE ELECTRIC & GAS CO.	3				1
PSI	PUBLIC SERVICE OF INDIANA	1				2
QINPC	QINSHAN NUCLEAR POWER COMPANY	4				
RAB	RINGHALS AB					
RCPA	RURAL COOPERATIVE POWER ASSOC.			1		
REA	ROSENERGOATOM, CONSORTIUM	31	4	4	4	9
RPNPC	PHILIPPINE NATIONAL POWER CORPORATION	1				1
RWE	RWE ENERGIE AG	4		1		
SBK	SCHNELL-BRUETER-KERNKRAFTWERKSGESELLSCHAFT MBH					1
SCE	SOUTHERN CALIFORNIA EDISON	2		1		
SCEG	SOUTH CAROLINA ELECTRIC & GAS CO.	1				
SENA	SOCIETE D'ENERGIE NUCLEAIRE FRANCO-BELGE DES ARDENNES			1		
SHIKOKU	SHIKOKU ELECTRIC POWER CO.	3				
SMUD	SACRAMENTO MUNICIPAL UTILITY DISTRICT			1		
SNN	SOCIETA TEA NATIONALE NUCLEARELECTRICA S.A.	1	1			3
SOGIN	SOCIETA GESTIONE IMPANTI NUCLEARI			4		
SOUTH	SOUTHERN NUCLEAR OPERATING CO.	6				
STP	STP NUCLEAR OPERATING CO.	2				
TEPCO	TOKYO ELECTRIC POWER CO.	17				

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 21. OPERATORS - Abbreviations and Summary — continued

Operator Code	Full Name	Number of Reactors, as of 31 Dec. 2004				
		Operational	Construction	Shut Down	Suspended	Cancelled
TOHOKU	TOHOKU ELECTRIC POWER CO.	3	1			
TPC	TAI POWER CO.	6	2			
TONPC	THE THIRD QINSHAN JOINTED VENTURE COMPANY LTDA.	2				
TVA	TENNESSEE VALLEY AUTHORITY	6			3	8
TVO	TEOLLISUUDEN VOIMA OY	2				
TXU	TXU ELECTRIC CO.	2				
UFG	UNION FENOSA GENERATION S.A.	1				
UKAEA	UNITED KINGDOM ATOMIC ENERGY AUTHORITY			4		
UNION	UNION ELECTRIC CO.					1
VAB	VATTENFALL AB (FORMER SSPB)			1		
VAK	VERSUCHSATOMKRAFTWERK KAHL GMBH			1		
VEPCO	VIRGINIA ELECTRIC POWER CO.					4
WOLF	WOLF CREEK NUCLEAR OPERATION CORP.	1				
WPPSS	WASHINGTON PUBLIC POWER SUPPLY SYSTEM					3
YAEC	YANKEE ATOMIC ELECTRIC CO.			1		
TOTAL		440	26	108	25	64

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 22. NSSS SUPPLIERS - Abbreviations and Summary

NSSS Supplier Code	Full Name	Number of Reactors, as of 31 Dec. 2004			
		Operational	Construction	Shut Down	Suspended
A/F/W	ASSOCIATION ACEC:FRAMATOME ET WESTINGHOUSE.			1	
AA	ALSTHOM ATLANTIQUE			1	
ABBATOM	ABBATOM (FORMERLY ASEA-ATOM)			3	
AC	ALLIS CHALMERS				
ACECOWEN	ACECOWEN ( ACEC-COCKERILL-WESTINGHOUSE )				
ACLF	(ACECOWEN - CREUSOT LOIRE - FRAMATOME)				
AECL	ATOMIC ENERGY OF CANADA LTD.		1	2	
AECL/DAE	ATOMIC ENERGY OF CANADA LTDA AND DEPARTMENT OF ATOMIC ENERGY(INDIA)				
AECL/DHI	ATOMIC ENERGY OF CANADA LTD./DOOSAN HEAVY INDUSTRY & CONSTRUCTION			2	2
AEE	ATOMENERGOEXPORT				
AEE&ZAES	FOREIGN ECONOMIC PUBLIC LIMITED CO. ATOMENERGOEXPORT, RUSSIA&RUSSIA PRODUCTION ASSOCIATION ZARUBEZHATOMENERGOSTROY		2		1
AEE,KAB	ATOMENERGOEXPORT, KRAFTWERKSANLAGENBAU AG			6	5
AEG	ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT			1	
AEG.GE	ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT, GENERAL ELECTRIC COMPANY (US)			1	
AEG,KWU	ALLGEMEINE ELEKTRICITAETS GESELLSCHAFT, KRAFTWERK UNION AG			2	
AMN/GETS	ANSALDO MECCANICO NUCLEARE SPA / GENERAL ELECTRIC TECHNICAL SERVICES CO			1	2
ANSALDO	ANSALDO SPA				1
APC	ATOMIC POWER CONSTRUCTION LTD.		1	2	
ASE	ATOMSTROY EXPORT		2		
ASEA	ASEA-ATOM				
ASEASTAL	ASEA-ATOM / STAL-LAVAL			1	

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 22. NSSS SUPPLIERS - Abbreviations and Summary — continued

NSSS Supplier Code	Full Name	Number of Reactors, as of 31 Dec. 2004				
		Operational	Construction	Shut Down	Suspended	Cancelled
ASPALDO	ASPALDO					
B&W	BABCOCK & WILCOX CO.	7		1		5
BBC	BROWN BOVERI ET CIE	1		3		
BBK	BROWN BOVERI-KRUPP REAKTORBAU GMBH			1		
BBR	BROWN BOVERI REAKTOR GMBH			1		
CE	COMBUSTION ENGINEERING CO.	14		1		8
CEA	COMMISSARIAT A L'ENERGIE ATOMIQUE			1		
CGE	CANADIAN GENERAL ELECTRIC	1		1		
CNCLNEY	CNIM-CONSTRUCTIONS NAVALES ET INDUSTRIELLES DE MEDITERRANEE CL - CREUSOT LOIRE , NEY - NEYRPIIC					
CNNC	CHINA NATIONAL NUCLEAR CORPORATION	4				
DHICKAEC	DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.LTD./KOREA ATOMICENERGY RESEARCH INSTITUTE/COMBUSTIONENGINEERING	2				
DHICKOPC	DOOSAN HEAVY INDUSTRIES & CONSTRUCTION CO.LTD./KOREA POWER ENGINEERING COMPANY/COMBUSTIONENGINEERING	5	1			
DOOSAN	THE ENGLISH ELECTRIC CO. LTD / BABCOCK & WILCOX CO. / TAYLOR WOODROW CONSTRUCTION LTD.	4		2		1
EE/B&W/IT	FEDERAL ATOMIC ENERGY AGENCY	32	2	9		
FAEA	FABRICA ECHIPAMENT CENTRALE NUCLEAROELECTRICE BUCURESTI					3
FEGNE						
FRAM	FRAMATOME	63				
FRAMACEC	FRAMACECO ( FRAMATOME-ACEC-COCKERILL )	2		2		
GA	GENERAL ATOMIC CORP.					
GAAA	GROUPEMENT ATOMIQUE ALSACIENNE ATLANTIQUE			1		

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 22. NSSS SUPPLIERS - Abbreviations and Summary — continued

NSSS Supplier Code	Full Name	Number of Reactors, as of 31 Dec. 2004				
		Operational	Construction	Shut Down	Suspended	Cancelled
GE	GENERAL ELECTRIC COMPANY (US)	48	2	7		17
GE/AEG	GENERAL ELECTRIC COMPANY (US), ALLGEMEINE ELEKTRICITAETS- GESELLSCHAFT			1		
GEC	GENERAL ELECTRIC COMPANY (UK)	2		3		
GETSCO	GENERAL ELECTRIC TECHNICAL SERVICES CO.	2				
GNEPRWPA	GENERAL NUCLEAR ENGINEERING & PUERTO RICO WATER RESOURCES AUTHORITY (US)			1		
GTM	GRANDS TRAVAUX DE MARSEILLE	1		1		
HITA/GE	HITACHI LTD./GENERAL ELECTRIC CO.	8	1	1		
HITACHI	HITACHI LTD.					
HRB	HOCHTEMPERATUR-REAKTORBAU GMBH			1		
IA	INTERATOM INTERNATIONALE ATOMREAKTORBAU GMBH			1		
ICL/FE	INTERNATIONAL COMBUSTION LTD. / FAIREY ENGINEERING LTD.			1		
INB	INTERNATIONALE NATRIUM-BRUTREAKTOR-BAU GMBH					1
KWU	SIEMENS KRAFTWERK UNION AG	18		1		1
KWU/STOR	KRAFTWERK UNION AG / STORK	1				
LEVIVIER	LEVIVIER			2		
M	MITSUBISHI HEAVY INDUSTRY LTD	19	1			
MAEP	MINATOMENERGOPROM, MINISTRY OF NUCLEAR POWER AND INDUSTRY	1		1		1
MEGADEX	ELECTRICAL ENGINEERING COMPANY FOR POWER GENERATION, DISTRIBUTION AND TRANSMISSION				1	
MPP	MANGISHLAK POWER PLANT			1		
NEI/P	NEI PARSONS	2				
NNC	NATIONAL NUCLEAR CORPORATION	2				
NPC	NUCLEAR POWER CO. LTD.	6				
NPCIL	NUCLEAR POWER CORPORATION OF INDIA LTD.	10	6			

Only reactors for which construction had commenced are counted for cancellations and suspensions.

TABLE 22. NSSS SUPPLIERS - Abbreviations and Summary — continued

NSSS Supplier Code	Full Name	Number of Reactors, as of 31 Dec. 2004				
		Operational	Construction	Shut Down	Suspended	Cancelled
OH/AECL	ONTARIO HYDRO / ATOMIC ENERGY OF CANADA LTD.	13		5		
FAA	PRODUCTION AMALGAMATION 'ATOMMASH', VOLGODONSK	3				
PAIP	PRODUCTION AMALGAMATION IZHORSKY PLANT ATOMMASH, VOLGODONSK, RUSSIA	10				
PPC	PWR POWER PROJECTS	1				
SACM	SOCIETE ALSACIENNE DE CONSTRUCTIONS MECANIKUES	3		2		
SIEM.KWU	SIEMENS AG, KRAFTWERK UNION AG	1		1		
SIEMENS	SIEMENS AG	1	1			
SKODA	SKODA CONCERN NUCLEAR POWER PLANT WORKS	10		1	4	
STORK/H	STORK - HOLEC			1		
TNPG	THE NUCLEAR POWER GROUP LTD.	8		6		
TOSH/GE	TOSHIBA CORPORATION/GENERAL ELECTRIC CO.	3				
TOSHIBA	TOSHIBA CORPORATION	15	1			
UEC	UNITED ENGINEERS AND CONTRACTORS			1		
UKAEA	UNITED KINGDOM ATOMIC ENERGY AUTHORITY			9		
VARIOUS	VARIOUS	74		4		
WEST	WESTINGHOUSE ELECTRIC CORPORATION			9	2	12
OTHER		2	5		6	12
TOTAL		440	26	108	25	64

Only reactors for which construction had commenced are counted for cancellations and suspensions.



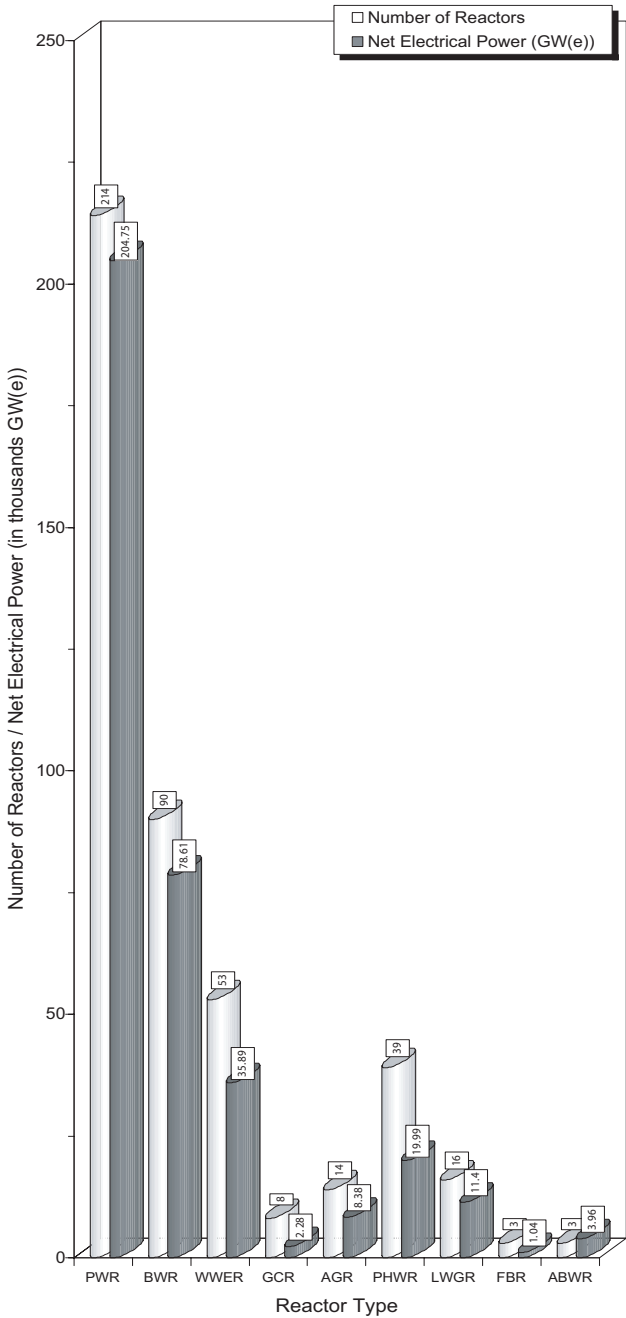


Figure 1. Reactors in Operation and Net Electrical Power (as of 31 Dec. 2004)

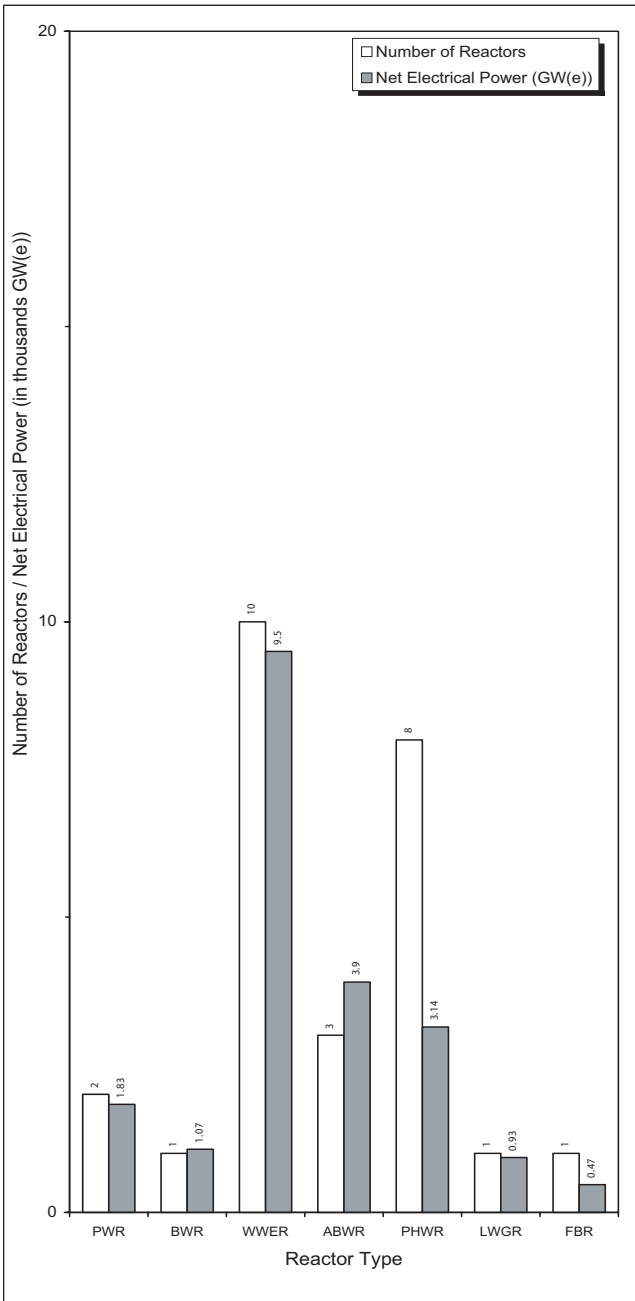


Figure 2. Reactors Under Construction and Net Electrical Power (as of 31 Dec. 2004)

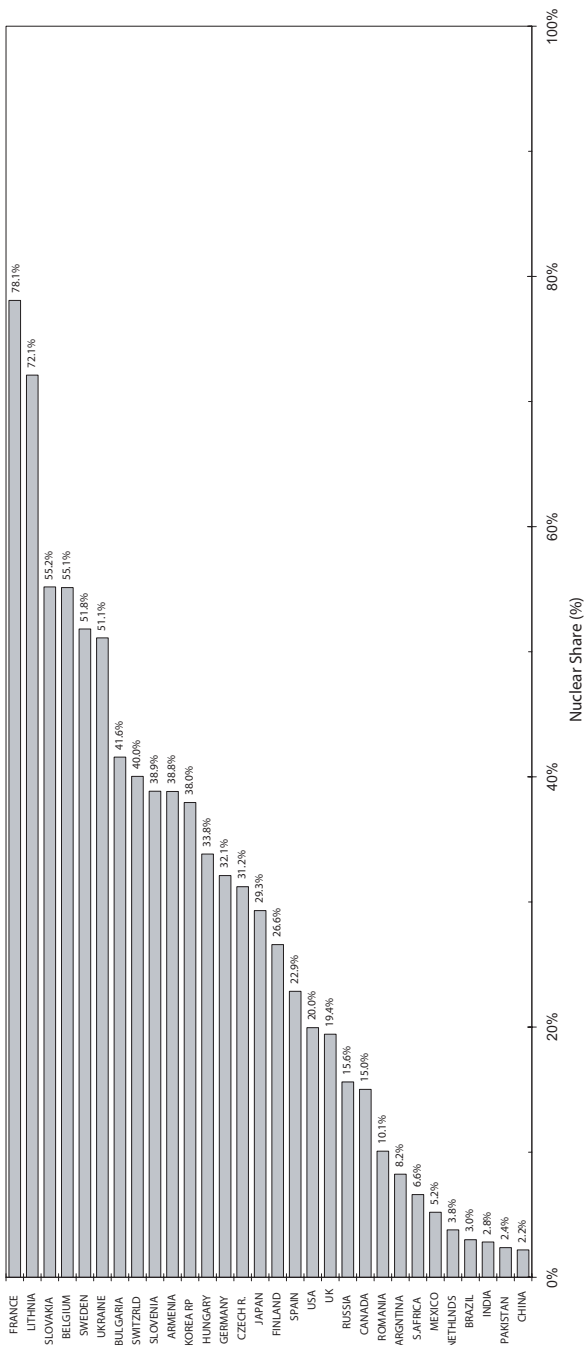


Figure 3. Nuclear Share of Electricity Generation (as of 31 Dec. 2004)

Note: The nuclear share of electricity supplied in Taiwan, China was 20.9% of the total.

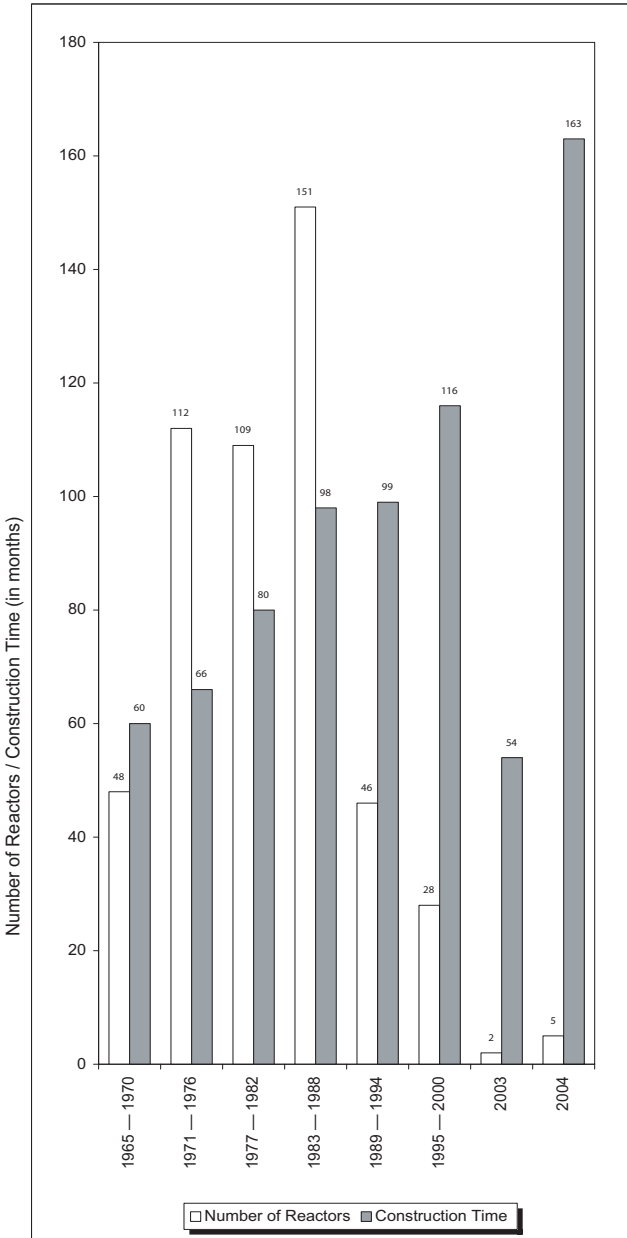


Figure 4. Average Construction Time Span

(as of 31 Dec. 2004)

Note: The construction time reported for year 2004 is affected by delay of 3 from 5 unit due to political decisions.

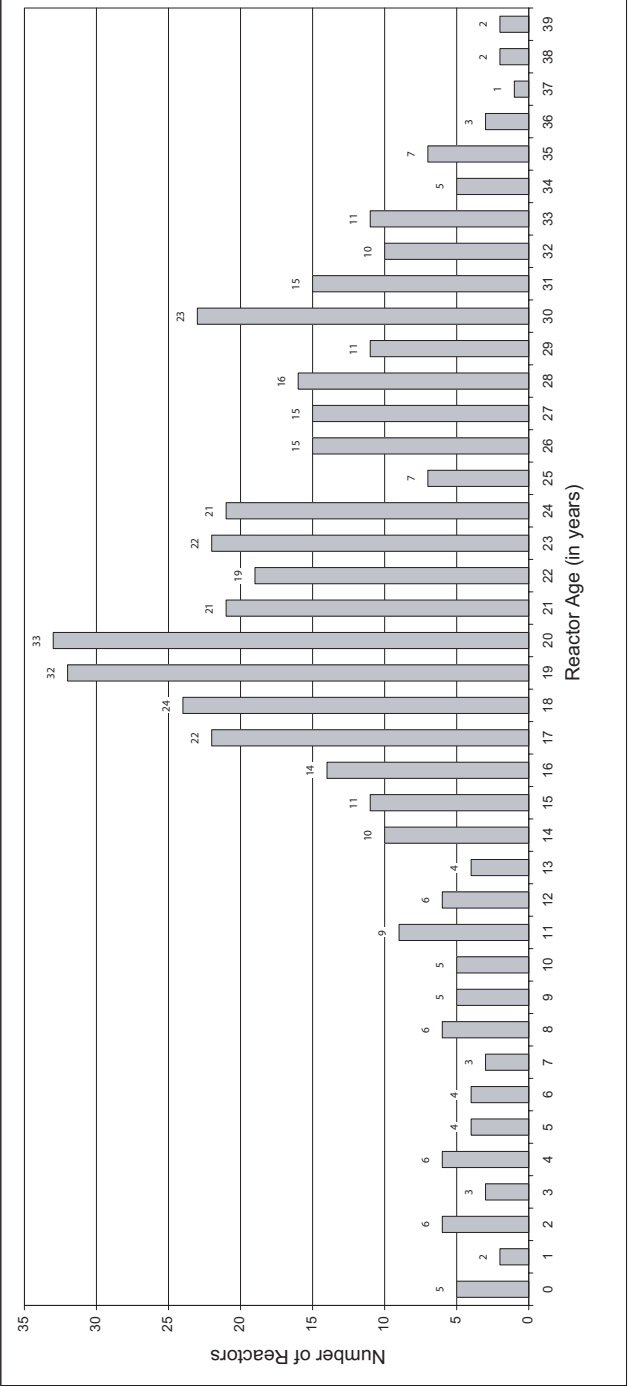


Figure 5. Number of Reactors in Operation By Age (as of 31 Dec. 2004)

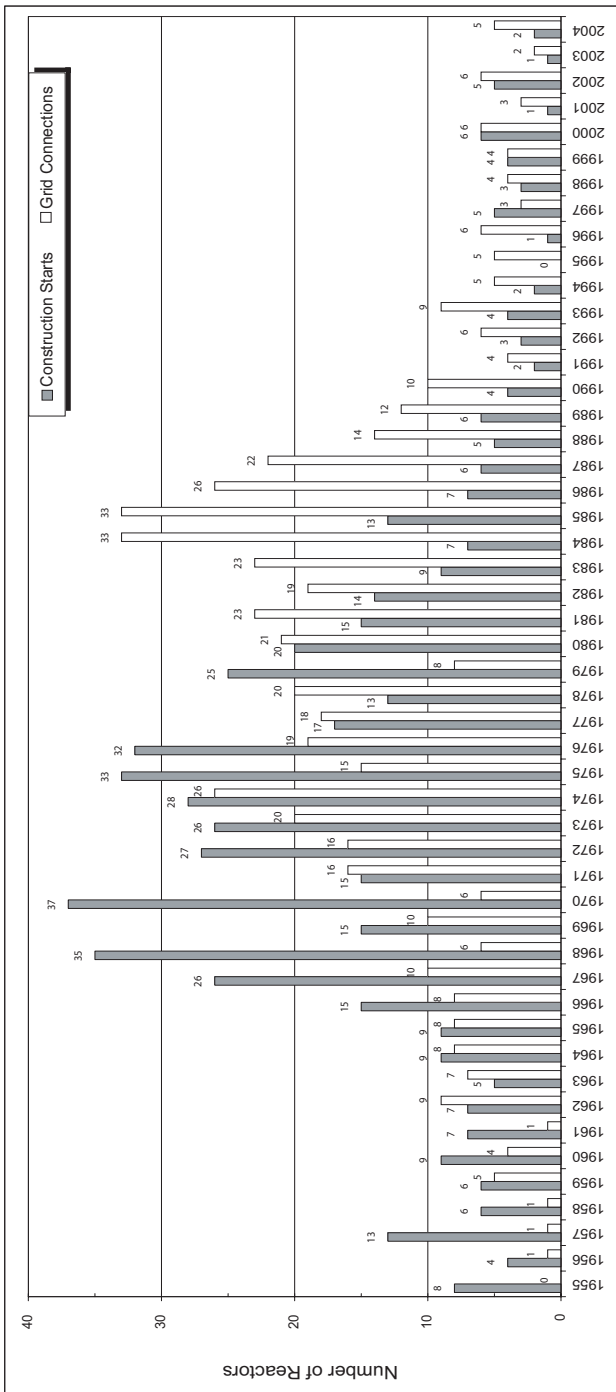


Figure 6. Annual Construction Starts and Connections to the Grid (1955—2004)