**SUMMARY DATA
for
U.S. COMMERCIAL NUCLEAR POWER PLANTS
in the
UNITED STATES**

Fred A. Heddleson

Prepared for the U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Under Interagency Agreements DOE 40 551 75 and 40 552 75

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**Fred A. Heddleson
Engineering Technology Division**

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* The four page numbers given refer to Tables 1, 2, 3, and 4, respectively.

FOREWORD

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SUMMARY DATA FOR U.S. COMMERCIAL NUCLEAR POWER PLANTS

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ABSTRACT

A compilation of data is presented for all United States commercial nuclear power plants for which a construction permit application was made through the Nuclear Regulatory Commission. The data are compiled in four separate tables with cross-referencing indexes: Table 1 - General Data; Table 2 - Reactor Data; Table 3 - Site Data, and Table 4 - Circulating-Water System Data. The power plants are listed in numerical order by docket number in all four tables.

1. INTRODUCTION

This report is a compilation of data for all United States commercial nuclear power plants for which construction permit applications were made through the Nuclear Regulatory Commission (NRC). The data are taken from licensing applications and are listed herein in four tables:

Table 1. General Data: This table gives the docket number, plant name, type [e.g., pressurized-water reactor (PWR) or boiling-water reactor (BWR)], size in MW(e), the nuclear steam supply system (NSSS) manufacturer, the architect-engineer (A-E), the containment type, and the status of the plant as of December 1977.

Table 2. Reactor Data: This table presents data on reactor performance related mostly to system pressure, number of circulating coolant loops, heat output, fuel enrichment, fuel burnup, and the weight of uranium or UO_2 in the core.

Table 3. Site Data: Included in this table are the plant name, location, size of site, nearest metropolis together with distance and direction from the plant site, the exclusion distance, low-populations-zone distance, safe-shutdown-earthquake (SSE) design value, and the population within 2 miles of the plant together with the year of the population data.

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Table 4. Circulating-Water System Data: Listed in this table are the type of cooling system used, the nearby water makeup, condenser flow, temperature rise in the condenser, $\text{gpm/MW(e)} \times ^\circ\text{F}$ (an index number that is discussed later), and the number and type of cooling towers where they are used.

The same spacing is used in all four tables; thus, if a specific plant is found near the middle of the third page of one table, it will be found in the same relative position in the other three tables. For example, Prairie Island 1 appears near the bottom of page 1 of Table 1, and it is also listed in the same position on page 1 of Tables 2, 3, and 4.

Abbreviations have been used to conserve space and permit more data to be presented on each table. These abbreviations are defined in the footnotes on the last page of each table.

Table 1. General data^a

Docket number	Name	Type	Size (MW(e) net)	RSSS mfr.	A-E	Cont. type ^b	Status
50-3	Indian Point 1	PWR	265	B&W	Owner	1a	Op-62
50-10	Dresden 1	BWR	200	GE	Bech	1	Op-59
50-29	Yankee-Rowe	PWR	175	West.	S&W	1	Op-60
50-133	Humboldt Bay	BWR	65	GE	Bech	c	Op-63
50-155	Big Rock Point	BWR	72	GE	Bech	1	Op-62
50-171	Peach Bottom 1	HTGR	40	GA	Bech	2	Op-66 ^d
50-266	San Onofre 1	PWR	450	West.	Bech	1	Op-67
50-213	Conn. Yankee	PWR	575	West.	S&W	3	Op-67
50-219	Oyster Creek 1	BWR	650	GE	B&R	4a	Op-69
50-220	Nine Mile Point 1	BWR	610	GE	Owner	4a	Op-69
50-237	Dresden 2	BWR	809	GE	S&L	4a	Op-70
50-244	Ginna 1	PWR	490	West.	Gil	3	Op-69
50-245	Millstone 1	BWR	690	GE	Ebasco	4a	Op-70
50-247	Indian Point 2	PWR	873	West.	UE&C	3	Op-73
50-249	Dresden 3	BWR	809	GE	S&L	4a	Op-71
50-250	Turkey Point 3	PWR	745	West.	Bech	3	Op-72
50-251	Turkey Point 4	PWR	745	West.	Bech	3	Op-73
50-254	Quad-Cities 1	BWR	809	GE	S&L	4a	Op-71
50-255	Palisades	PWR	821	Comb.	Bech	3	Op-71
50-259	Browns Ferry 1	BWR	1065	GE	TVA	4a	Op-73
50-260	Browns Ferry 2	BWR	1065	GE	TVA	4a	Op-74
50-261	Robinson 2	PWR	700	West.	Ebasco	3	Op-76
50-263	Monticello	BWR	545	GE	Bech	4a	Op-70
50-265	Quad-Cities 2	BWR	809	GE	S&L	4a	Op-72
50-266	Point Beach 1	PWR	497	West.	Bech	3	Op-70
50-267	Fort St. Vrain	HTGR	330	GA	S&L		Op-77
50-269	Oconee 1	PWR	886	B&W	Owner	3	Op-73
50-270	Oconee 2	PWR	886	B&W	Owner	3	Op-73
50-271	Vermont Yankee	BWR	515	GE	Ebasco	4a	Op-72
50-272	Salem 1	PWR	1090	West.	Owner	3	Op-76
50-275	Diablo Canyon 1	PWR	1084	West.	Owner	3	Const-78
50-277	Beach Bottom 2	BWR	1065	GE	Bech	4a	Op-73
50-278	Peach Bottom 3	BWR	1065	GE	Bech	4a	Op-74
50-280	Surry 1	PWR	822	West.	S&W	3d	Op-72
50-281	Surry 2	PWR	822	West.	S&W	3d	Op-73
50-282	Prairie Island 1	PWR	530	West.	Pion	2a	Op-73
50-285	Fort Calhoun 1	PWR	458	Comb.	G&H	3	Op-73
50-286	Indian Point 3	PWR	965	West.	UE&C	3	Op-76

Table 1.^a (p. 2)

Bocket number	Name	Type	Size [MW(e) net]	SSSS mfr.	A-E	Const. type ^b	Status
50-287	Oconee 3	PWR	886	B&W	Owner	3	Op-74
50-289	Three Mile Island 1	PWR	792	B&W	Gil	3	Op-74
50-293	Pilgrim 1	BWR	687	GE	Bech	4a	Op-72
50-295	Zion 1	PWR	1050	West	S&L	3	Op-73
50-296	Browns Ferry 3	BWR	1065	GE	TVA	4a	Op-76
50-298	Cooper Station	BWR	778	GE	B&R	4a	Op-74
50-301	Point Beach 2	PWR	497	West.	Bech	3	Op-72
50-302	Crystal River 3	PWR	855	B&W	Gil	3	Op-77
50-303	Crystal River 4	PWR	855	B&W	Gil	3	Withdrawn
50-304	Zion 2	PWR	1050	West	S&L	3	Op-73
50-305	Kewaunee	PWR	560	West	Pion	2a	Op-74
50-306	Prairie Island 2	PWR	530	West.	Pion	2a	Op-74
50-309	Maine Yankee	PWR	790	Comb.	S&W	3	Op-72
50-311	Salem 2	PWR	1115	West.	Owner	3	Const-79
50-312	Sancho Seco	PWR	913	B&W	Bech	3	Op-74
50-313	Arkansas Nuclear 1	PWR	850	B&W	Bech	3	Op-74
50-315	Cook 1	PWR	1090	West.	Owner	3c	Op-75
50-316	Cook 2	PWR	1090	West.	Owner	3c	Const-78
50-317	Calvert Cliffs 1	PWR	845	Comb.	Bech	3	Op-75
50-318	Calvert Cliffs 2	PWR	845	Comb.	Bech	3	Op-76
50-319	Bell	BWR	866	GE	UE&C	5a	Withdrawn
50-320	Three Mile Island 2	PWR	906	B&W	B&R	3	Const-78
50-321	Hatch 1	BWR	786	GE	SSI	4a	Op-74
50-322	Shoreham	BWR	819	GE	S&W	5a	Const-79
50-323	Diablo Canyon 2	PWR	1106	West.	Owner	3	Const-78
50-325	Brunswick 2	BWR	821	GE	UE&C	5a	Op-75
50-324	Brunswick 1	BWR	821	GE	UE&C	5a	Op-77
50-327	Sequoyah 1	PWR	1148	West.	TVA	2ac	Const-78
50-328	Sequoyah 2	PWR	1148	West.	TVA	2ac	Const-78
50-329	Midland 1	PWR	460	B&W	Bech	3	Const-82
50-330	Midland 2	PWR	808	B&W	Bech	3	Const-81
50-331	Deane Arnold	BWR	538	GE	Bech	4a	Op-74
50-333	Fitzpatrick	BWR	821	GE	S&W	4a	Op-74
50-334	Beaver Valley 1	PWR	852	West	S&W	3	Op-76
50-335	St. Lucie 1	PWR	810	Comb.	Ebasco	2a	Op-76
50-336	Millstone 2	PWR	828	Comb.	Bech	3b	Op-75
50-338	North Anna 1	PWR	898	West.	S&W	3d	Op-77
50-339	North Anna 2	PWR	898	West.	S&W	3d	Const-78

Table 1.^a (p. 3)

Docket number	Name	Type	Size [MW(e) net]	MSSS mfr.	A-E	Cont. type ^b	Status
50-340	Seabrook	PWR	920	West.	Ebasco	2a	Withdrwn
50-341	Ferri 2	BWR	1093	GE	S&L	4a	Const-80
50-342	Indian Point 4	BWR	1115	GE	Owner	4a	Withdrwn
50-343	Indian Point 5	BWR	1115	GE	Owner	4a	Withdrwn
50-344	Trojan	PWR	1130	West.	Bech	3	Op-75
50-346	Davis-Besse 1	PWR	906	B&W	Bech	2a	Op-77
50-348	Farley 1	PWR	829	West.	Bech	3	Op-77
50-352	Limerick 1	BWR	1065	GE	Bech	5a	Const-83
50-353	Limerick 2	BWR	1065	GE	Bech	5a	Const-85
50-354	Hope Creek 1	BWR	1067	GE	Bech	4a	Const-84
50-355	Hope Creek 2	BWR	1067	GE	Bech	4a	Const-86
50-358	Zimmer 1	BWR	810	GE	S&L	5	Const-78
50-359	Zimmer 2	BWR	1170	GE	S&L	5	Cancelled
50-361	San Onofre 2	PWR	1100	Comb.	Bech	3	Const-80
50-362	San Onofre 3	PWR	1100	Comb.	Bech	3	Const-81
50-363	Forked River 1	PWR	1070	Comb.	B&R	3	Const-83
50-364	Farley 2	PWR	829	West.	Bech	3	Const-79
50-366	Hatch 2	BWR	795	GE	SSI	4a	Const-78
50-367	Sailly	BWR	645	GE	S&L	5a	Indefinite
50-368	Arkansas 2	PWR	950	Comb.	Bech	3	Const-78
50-369	McGuire 1	PWR	1180	West.	Owner	5a	Const-79
50-370	McGuire 2	PWR	1180	West.	Owner	5a	Const-80
50-373	La Salle 1	BWR	1078	GE	S&L	5a	Const-79
50-374	La Salle 2	BWR	1078	GE	S&L	5a	Const-80
50-376	North Coast	PWR	583	West.	G&H	3b	Cancelled
50-382	Waterford 3	PWR	1113	Comb.	Ebasco	2a	Const-81
50-383	Waterford 4	PWR	1113	Comb.	Ebasco	2a	Withdrwn
50-387	Susquehanna 1	BWR	1050	GE	Bech	5a	Const-80
50-388	Susquehanna 2	BWR	1050	GE	Bech	5a	Const-81
50-389	St. Lucie 2	PWR	810	Comb.	Ebasco	2a	Const-83
50-390	Watts Bar 1	PWR	1177	West.	TVA	2ac	Const-79
50-391	Watts Bar 2	PWR	1177	West.	TVA	2ac	Const-80
50-395	Summer 1	PWR	900	West.	Gil	3	Const-80
50-397	WPPSS-2 (Hanford 2)	BWR	1103	GE	B&R	4a	Const-80
50-398	Mendocino 1	BWR	1168	GE	Bech	4a	Withdrwn
50-399	Mendocino 2	BWR	1168	GE	Bech	4a	Withdrwn

Table 1.^a (p. 4)

Docket number	Name	Type	Size [MW(e) net]	MSSS mfr.	A-E	Const type ^b	Status
50-400	Harris 1	PWR	900	West.	Ebasco	3	Const-83
50-401	Harris 2	PWR	900	West.	Ebasco	3	Const-85
50-402	Harris 3	PWR	900	West.	Ebasco	3	Const-89
50-403	Harris 4	PWR	900	West.	Ebasco	3	Const-87
50-404	North Anna 3	PWR	907	B&W	S&W	3d	Const-82
50-405	North Anna 4	PWR	907	B&W	S&W	3d	Const-83
50-409	LaCrosse	BWR	50	AC	S&L	2	Op-67
50-410	Nine Mile Point 2	BWR	1100	GE	S&W	5a	Const-82
50-412	Beaver Valley 2	PWR	852	West.	S&W	3	Const-82
50-413	Catawba 1	PWR	1150	West.	Owner	3c	Const-81
50-414	Catawba 2	PWR	1150	West.	Owner	3c	Const-83
50-416	Grand Gulf 1	BWR	1250	GE	Bech	5a ^e	Const-81
50-417	Grand Gulf 2	BWR	1250	GE	Bech	5a ^e	Const-83
50-423	Hillstone 3	PWR	1156	West.	S&W	3b	Const-86
50-424	Vogtle 1	PWR	1113	West.	SSI & Bech	3b	Const-85
50-425	Vogtle 2	PWR	1113	West.	SSI & Bech	3b	Const-86
50-426	Vogtle 3	PWR	1113	West.	Bech	3b	Cancelled
50-427	Vogtle 4	PWR	1113	West.	Bech	3b	Cancelled
50-434	Surry 3	PWR	859	B&W	Bech	3d	Cancelled
50-435	Surry 4	PWR	859	B&W	Bech	3d	Cancelled
50-438	Bellefonte 1	PWR	1213	B&W	TVA	3b	Const-80
50-439	Bellefonte 2	PWR	1213	B&W	TVA	3b	Const-81
50-440	Perry 1	BWR	1205	GE	Gil	5a ^e	Const-81
50-441	Perry 2	BWR	1205	GE	Gil	5a ^e	Const-83
50-443	Seabrook 1	PWR	1200	West.	UE&C	3a	Const-82
50-444	Seabrook 2	PWR	1200	West.	UE&C	3a	Const-84
50-445	Comanche Peak 1	PWR	1150	West.	G&H	3	Const-80
50-446	Comanche Peak 2	PWR	1150	West.	G&H	3	Const-82
50-448	Douglas Point 1	BWR	1178	GE	Ebasco	5a ^e	Deferred
50-449	Douglas Point 2	BWR	1178	GE	Ebasco	5a ^e	Deferred
50-450	Summit 1	HTGR	766	GA	UE&C	3	Cancelled
50-451	Summit 2	HTGR	766	GA	UE&C	3	Cancelled
50-452	Greenwood 2	PWR	1200	B&W	Bech	3	Plan-83
50-453	Greenwood 3	PWR	1200	B&W	Bech	3	Plan-85
50-454	Byron 1	PWR	1120	West.	S&L	3	Const-81
50-455	Byron 2	PWR	1120	West.	S&L	3	Const-82
50-456	Braidwood 1	PWR	1120	West.	S&L	3	Const-81
50-457	Braidwood 2	PWR	1120	West.	S&L	3	Const-82

Table 1. (p. 5)

Docket number	Name	Type	Size [MW(e) net]	NSSS mfr.	A-E	Cont. type ^b	Status
50-458	River Bend 1	BWR	934	GE	S&W	5a ^e	Const-81
50-459	River Bend 2	BWR	934	GE	S&W	5a ^e	Const-83
50-460	WPPSS 1	PWR	1218	B&W	UE&C	3	Const-81
50-461	Clinton 1	BWR	933	GE	S&L	5a ^e	Const-81
50-462	Clinton 2	BWR	933	GE	S&L	5a ^e	Const-88
50-463	Fulton 1	HTGR	1160	GA	S&W	3	Cancelled
50-464	Fulton 2	HTGR	1160	GA	S&W	3	Cancelled
50-466	Allens Creek 1	BWR	1150	GE	Ebasco	5a ^e	Indefnte
50-467	Allens Creek 2	BWR	1150	GE	Ebasco	5a ^e	Cancelled
50-471	Pilgrim 2	PWR	1180	Comb.	Bech	3	Plan-82
50-472	Pilgrim 3	PWR	1180	Comb.	Bech	3	Plan-82
50-475	Quanicassee 1	PWR	1200	West.	Bech	3	Withdrwn
50-476	Quanicassee 2	PWR	1200	West.	Bech	3	Withdrwn
50-477	Atlantic Floating 1	PWR	1150	West.	Owner	2ac	Plan-84
40-478	Atlantic Floating 2	PWR	1150	West.	Owner	2ac	Plan-86
50-482	Wolf Creek	PWR	1150	West.	Bech	3	Const-83
50-483	Callaway 1	PWR	1120	West.	Bech	3	Const-82
50-484	Tyrone 1	PWR	1150	West.	Bech	3	Plan-85
50-485	Sterling 1	PWR	1150	West.	Bech	3	Const-?
50-486	Callaway 2	PWR	1120	West.	Bech	3	Indefnte
50-487	Tyrone 2	PWR	1150	West.	Bech	3	Indefnte
50-488	Perkins 1	PWR	1280	Comb.	Owner	1a	Plan-85
50-489	Perkins 2	PWR	1280	Comb.	Owner	1a	Plan-87
50-490	Perkins 3	PWR	1280	Comb.	Owner	1a	Plan-89
50-491	Cherokee 1	PWR	1280	Comb.	Owner	1a	Const-83
50-492	Cherokee 2	PWR	1280	Comb.	Owner	1a	Const-85
50-493	Cherokee 3	PWR	1280	Comb.	Owner	1a	Const-38
50-496	Montague 1	BWR	1150	GE	S&W	5a ^e	Plan-86
50-497	Montague 2	BWR	1150	GE	S&W	5a ^e	Plan-88
50-498	South Texas 1	PWR	1250	West.	B/R	3	Const-80
50-499	South Texas 2	PWR	1250	West.	B/R	3	Const-82
50-500	Davis-Besse 2	PWR	906	B&W	Bech	2a	Const-85
50-501	Davis-Besse 3	PWR	906	B&W	Bech	2a	Const-87
50-502	Koshkonong 1 (Haven)	PWR	900	West.	S&W	3	Plan-87 ^f
50-503	Koshkonong 2 (Haven)	PWR	900	West.	S&W	3	Plan-89 ^f
50-508	WPPSS 3	PWR	1242	Comb.	Ebasco	2a	Const-83
50-509	WPPSS 5	PWR	1242	Comb.	Ebasco	2a	Const-85

Table 1.1 (p. 6)

Docket number	Name	Type	Size [MW(e) net]	NSSS mfr.	A-E	Cmnt. type ^b	Status
50-510	Blue Hills 1	PWR	918	Comb.	Bech	3	Plan-89
50-511	Blue Hills 2	PWR	918	Comb.	Bech	3	Plan-89
50-513	WPPSS 4	PWR	1218	B&W	UE&C	3	Const-83
50-514	Pebble Springs 1	PWR	1260	B&W	Bech	3	Plan-85
50-515	Pebble Springs 2	PWR	1260	B&W	Bech	3	Plan-88
50-516	Jamesport 1	PWR	1150	West.	S&W	3d	Plan-84
50-517	Jamesport 2	PWR	1150	West.	S&W	3d	Plan-86
50-518	Hartsville 1	BWR	1280	GE	TVA	5a ^e	Const-82
50-519	Hartsville 2	BWR	1280	GE	TVA	5a ^e	Const-83
50-520	Hartsville 3	BWR	1280	GE	TVA	5a ^e	Const-82
50-521	Hartsville 4	BWR	1280	GE	TVA	5a ^e	Const-83
50-522	Skagit 1	BWR	1277	GE	Bech	5a ^e	Plan-84
50-523	Skagit 2	BWR	1277	GE	Bech	5a ^e	Plan-86
50-524	Barton 1	BWR	1159	GE	SSI	5a ^e	Indefnte
50-525	Barton 2	BWR	1159	GE	SSI	5a ^e	Indefnte
50-526	Barton 3	BWR	1159	GE	SSI	5a ^e	Cancelld
50-527	Barton 4	BWR	1159	GE	SSI	5a ^e	Cancelld
50-528	Palo Verde 1	PWR	1237	Comb.	Bech	3	Const-83
50-529	Palo Verde 2	PWR	1237	Comb.	Bech	3	Const-84
50-530	Palo Verde 3	PWR	1237	Comb.	Bech	3	Const-86
50-537	Clinch River	LMFBR	350	West.	B&R	2	Plan-?
50-538	San Joaquin		1300				Uncertr
50-546	Marble Hill 1	PWR	1130	West.	S&L	3	Const-82
50-547	Marble Hill 2	PWR	1130	West.	S&L	3	Const-84
50-548	Ft. Calhoun 2	PWR	1136	West.	G&H	3	Cancelld
50-549	Greene County	PWR	1191	B&W	S&W	3b	Plan-84
50-553	Phipps Bend 1	BWR	1233	GE	TVA	5a ^e	Const-84
50-554	Phipps Bend 2	BWR	1233	GE	TVA	5a ^e	Const-84
50-556	Black Fox 1	BWR	1150	GE	B&V	5a ^e	Plan-83
50-557	Black Fox 2	BWR	1150	GE	B&V	5a ^e	Plan-85
50-566	Yellow Creek 1	PWR	1285	Comb.	TVA	1a	Plan-84
50-567	Yellow Creek 2	PWR	1285	Comb.	TVA	1a	Plan-85
50-568	NEP 1	PWR	1150	West.	UE&C	3	Plan-84
50-569	NEP 2	PWR	1150	West.	UE&C	3	Plan-85
50-580	Erie 1	PWR	1260	B&W	G11	3	Plan-88
50-581	Erie 2	PWR	1260	B&W	G11	3	Plan-88
50-582	Sundesert 1	PWR	960	West.	S&W	3	Plan-85
50-583	Sundesert 2	PWR	960	West.	S&W	3	Plan-87

Table 1.^a (p. 7,^a Abbreviations used:

A-E	=	architect-engineer
B/R	=	Brown & Root
B&R	=	Burns & Roe
B&V	=	Black & Veatch
B&W	=	Babcock & Wilcox
Bech	=	Bechtel Corp.
BWR	=	boiling-water reactor
Cmnt	=	containment
Comb.	=	Combustion Engineering
Const-78	=	Plant is under construction; scheduled startup date is 1978.
Ebasco	=	Ebasco Services, Inc.
G&H	=	Gibbs & Hill
GA	=	General Atomic Co.
GE	=	General Electric Co.
GII	=	Gilbert Associates
HTGR	=	high-temperature gas-cooled reactor
LMFBR	=	liquid-metal fast-breeder reactor
NSSS	=	nuclear steam-supply system
Op-71	=	Plant is in operation; startup date was 1971.
Pion	=	Pioneer Service
Plan-85	=	Plant is being planned or is in the initial licensing state; estimated startup is 1985.
PWR	=	pressurized-water reactor
S&L	=	Sargent & Lundy
S&W	=	Stone & Webster
SSI	=	Southern Service, Inc.
TVA	=	Tennessee Valley Authority
UE&C	=	United Engineers & Contractors
West.	=	Westinghouse Electric Corp.

Table 1.^a (p. 8)^b Nomenclature for containment design:

Dry containment

Type 1 - steel sphere

Type 2 - steel cylinder

Type 3 - reinforced concrete cylinder with steel liner

Pressure-suppression containment

Type 4 - steel dry well and wet well

Type 5 - reinforced concrete dry well and wet well with steel liner

Mark III - General Electric Co. containment design

Features

a - secondary containment, reinforced concrete shield building, for types 1 and 2

b - secondary containment, steel enclosure building, for type 3

c - ice condenser

d - subatmospheric

^c Steel dry well, reinforced concrete wet well with steel liner^d Shut down in 1974.^e Mark III^f Koshkonong site is being moved to Haven, 5 miles north of Sheboygan, and will be on Lake Michigan. The name has been changed to Haven.

Table 2. Reactor data

Name	Reactor system pressure (psia) ^a	Number of coolant loops	Average heat flux (Btu/hr-ft ²)	Maximum thermal output (kW/ft)	Enrichment ^c	Burnup ^b	Wt. of uranium in core (lb)
Indian Point 1	1550	4	133,600	12.5	2.86	10,650	53,460
Dresden 1	1000	4	91,820	15.0	1.50	10,000	120,806
Yankee-Rowe	2015	4	141,000	9.4	4.00	7,800	45,936
Humboldt Bay	1150		129,600	15.0	2.50	18,000	35,640UO ₂
Big Rock Point	1335		146,000	18.0	2.50	11,700	19,250UO ₂
Peach Bottom 1	350	2	69,000	23	Avg. burnup	77,000 U + Th	787 U 4,370 Th
San Onofre 1	2100	3	143,350	15.0	3.15	14,500	126,060
Conn. Yankee	2000	4	136,400	14.3	3.02	16,952	165,660UO ₂
Oyster Creek 1	1020	5	129,632	17.2	2.10	15,000	242,645
Nine Mile Point 1	1030	2	130,500	17.5	2.10	15,000	231,000
Dresden 2	1015	2	131,860	17.5	2.12	19,000	200,640UO ₂
Ginna 1	2250	2	150,500	16.5	2.44	21,800	117,527UO ₂
Millstone 1	1035	2	130,000	17.5	2.07	15,000	249,480
Indian Point 2	2250	4	175,600	18.4	2.20	14,200	189,420
Dresden 3	1015	2	131,860	17.5	2.12	19,000	200,640UO ₂
Turkey Point 3	2250	3	171,600	17.9	1.85	13,000	341,660UO ₂
Turkey Point 4							
Quad-Cities 1	1000	2	131,200	17.5	1.85	13,000	270,600
Palisades	2100	2	142,400	17.60	1.65	10,180	196,240
Browns Ferry 1	1020	2	163,234	18.35	2.19	19,000	327,571
Browns Ferry 2							
Robinson 2	2250	3	171,600	17.90	1.85	14,500	154,220
Monticello	1025	2	131,350	17.50	2.25	19,000	209,660
Quad-Cities 2	1000	2	131,200	17.50	2.12	19,000	270,600
Point Beach 1	2250	2	175,800	16.00	2.27	15,100	118,729UO ₂
Fort St. Vrain	~700	2	45,000		Avg. burnup	100,000 U + Th	2,409 U 42,240 Th
Oconee 1	2200	2	171,470	17.63	2.25	9,600	182,600
Oconee 2							
Vermont Yankee	1020	4	163,296	18.37	2.40	19,085	157,740
Salem 1	2250	4	207,000	18.90	2.20	12,000	415,360
Diablo Canyon 1	2250	4	207,000	18.90	2.20	12,000	427,020UO ₂
Peach Bottom 2	1020	2	163,230	18.35	2.19	19,000	326,700
Peach Bottom 3							
Surry 1	2250	3	191,100	17.30	1.85	12,600	155,320
Surry 2							
Prairie Island 1	2250	2	191,000	17.30	2.27	15,200	231,000
Fort Calhoun 1	2100	2	167,400	17.60	1.39	9,300	107,791
Indian Point 3	2250	4	193,000	17.50	2.25	14,700	215,358UO ₂

Table 2. (p. 2)

Name	Reactor system pressure (psia)	Number of coolant loops	Average heat flux (Btu/hr-ft ²)	Maximum thermal output (kW/ft)	Enrichment ^a	Burnup ^b	Wt. of uranium in core (lb)
Oconee 3	2200	2	171,400	17.63	2.25	14,250	182,600UO ₂
Three Mile Island 1	2200	2	171,470	17.63	2.62 Avg.	14,250	182,600UO ₂
Pilgrim 1	1020	2	145,490	17.50	2.19	19,000	247,102
Zion 1	2250	4	207,900	18.80	2.25	14,040	417,780UO ₂
Browns Ferry 3	1020	2	163,234	18.35	2.19	19,000	327,571
Cooper Station	1020	2	164,500	18.50	2.17	19,000	266,200UO ₂
Point Beach 2	2250	2	175,800	16.00	2.27	15,100	118,729UO ₂
Crystal River 3	2200	2	163,725	16.83	1.93	12,850	204,820UO ₂
Crystal River 4							
Zion 2	2250	4	207,900	18.80	2.25	14,040	417,700UO ₂
Kewaunee	2250	2	191,000	17.30	2.27	15,200	231,378UO ₂
Prairie Island 2	2250	2	191,000	17.30	2.27	15,200	182,600UO ₂
Maine Yankee	2235	3	171,400	16.90	2.01	12,895	179,388UO ₂
Salem 2	2250	4	207,000	18.90	2.20	12,000	415,360
Rancho Seco	2185	2	185,090	19.00	2.57 Avg.	14,250	204,600UO ₂
Arkansas Nuclear 1	2200	2	171,470	17.63	2.62 Avg.	14,400	204,820
Cook 1	2250	4	207,900	18.80	2.25	14,000	417,780UO ₂
Cook 2							
Calvert Cliffs 1	2200	3	176,000	17.80	2.09	13,775	192,279UO ₂
Calvert Cliffs 2							
Bell	1005	2	164,734	18.30	2.23	19,000	240,610
Three Mile Island 2	2200	2	171,470	17.63	2.62 Avg.	14,250	182,600UO ₂
Hatch 1	1020	2	154,740	18.50	2.23	19,000	228,173
Shoreham	1005	2	164,734	18.37	2.29	16,680	260,568UO ₂
Diablo Canyon 2	2250	4	207,000	18.90	2.20	12,000	427,020UO ₂
Brunswick 2	1005	2	164,740	18.50	2.25	19,000	
Brunswick 1							
Sequoyah 1	2250	4	217,200	18.80	2.20	13,780	417,780UO ₂
Sequoyah 2							
Midland 1	2200	2	163,725	16.83	2.30	13,540	200,640UO ₂
Midland 2							
Duane Arnold	1020	2	163,933	18.50	2.25	18,350	155,650UO ₂
Fitzpatrick	1020	2	164,734	18.50	2.23	19,000	269,720UO ₂
Beaver Valley 1	2250	3	207,600	17.90	2.00	14,500	341,600UO ₂
St. Lucie 1	2250	2	162,000	17.40	1.80	11,900	182,270
Millstone 2	2250	2	169,600	18.20	1.80	11,900	182,279UO ₂
North Anna 1	2250	3	207,600	17.90	2.00	14,500	345,180UO ₂
North Anna 2							

Table 2. (n. 3)

Name	Reactor system pressure (psia)	Number of coolant loops	Average heat flux (Btu/hr-ft ²)	Maximum thermal output (kW/ft)	Enrichment ^a	Burnup ^b	Wt. of uranium in core (lb)
Seabrook	2250	3	207,600	17.90	2.00	13,500	176,200UO ₂
Fermi 2	1020	2	163,229	18.40	2.25	19,250	372,112UO ₂
Indian Point 4	1020	2	163,229	18.40	2.20	19,250	372,110UO ₂
Indian Point 5							
Trojan	2250	4	217,200	18.80	2.04	14,800	218,367UO ₂
Davis-Besse 1	2200	2	175,810	17.80	2.32	13,686	204,820
Farley 1	2250	3	207,600	18.80	2.0	13,100	178,000UO ₂
Limerick 1	1020	2	163,230	18.35	2.19	19,000	~371,304UO ₂
Limerick 2							
Hope Creek 1	1020	2	163,230	18.35	2.25	19,000	372,112
Hope Creek 2							
Zimmer 1	1020	2	164,734	18.56	1.80	19,000	280,484UO ₂
Zimmer 2							
San Onofre 2	2250	2	205,100	18.00	1.90	13,138	235,110UO ₂
San Onofre 3							
Forked River 1	2250	2	205,100	18.50	1.90	13,138	235,110UO ₂
Farley 2	2250	3	207,600	18.80	2.00	13,100	178,000UO ₂
Hatch 2	1020	2	164,740	18.50	2.23	19,000	228,173
Bailly 1	1020	2	164,707	18.50	1.80	19,000	217,560UO ₂
Arkansas 2	2250	2	204,800	18.50	2.00	12,000	183,640UO ₂
McGuire 1	2250	4	217,200	18.80	2.25	14,000	222,739UO ₂
McGuire 2							
La Salle 1	1020	2	126,910	18.50	1.80	19,000	~371,304UO ₂
La Salle 2							
North Coast	2250	2	206,100	18.80	2.27	15,200	124,267UO ₂
Waterford 3	2250	2	205,100	18.50	1.90	13,138	235,110UO ₂
Waterford 4							
Susquehanna 1	1020	2	163,230	18.35	2.19	19,000	371,304UO ₂
Susquehanna 2							
St. Lucie 2	2250	2	162,000	17.40	1.80	11,900	182,270
Watts Bar 1	2250	4	217,200	18.80	2.03	14,000	222,739UO ₂
Watts Bar 2							
Summer 1	2250	3	217,300	18.80	2.00	13,700	181,205UO ₂
WPPSS-2(Hanford 2)	1020	2	163,234	18.50		20,870	370,988UO ₂
Mendocino 1	1020	2	164,718	18.50	1.85	18,512	370,988UO ₂
Mendocino 2							

Table 2. (p. 4)

Name	Reactor system pressure (psia)	Number of coolant loops	Average heat flux (Btu/hr-ft ²)	Maximum thermal output (kW/ft)	Enrichment ^a	Burnup ^b	Wt. of uranium in core (lb)
Harris 1							
Harris 2	2250	3	217,300	18.80	1.90	11,900	177,400UO ₂
Harris 3							
Harris 4							
North Anna 3	2250	2	214,000	19.20	2.53 Avg.	13,810	177,000UO ₂
North Anna 4							
Lacrosse	1300	2	109,100		3.63	12,700	17,300
Nine Mile Point 2	1020	2	164,380	18.50		19,000	
Beaver Valley 2	2250	3	207,600	18.80	2.00	13,700	176,200UO ₂
Catawba 1	2235	4	217,200	16.90	2.25	14,000	~217,000UO ₂
Catawba 2							
Grand Gulf 1	1040	2	159,732	13.40		27,500	326,301
Grand Gulf 2							
Millstone 3	2250	4	217,200	16.70	2.25	14,000	~217,000UO ₂
Vogtle 1							
Vogtle 2	2235	4	217,200	16.90	2.25	14,000	~217,000UO ₂
Vogtle 3							
Vogtle 4							
Surry 3	2250	2	214,000	19.20	2.80 Avg.	14,204	165,052UO ₂
Surry 4							
Bellefonte 1	2250	2	197,000	17.61	2.42	16,790	233,350UO ₂
Bellefonte 2							
Perry 1	1040	2	159,570	13.40	2.07	12,800	304,600
Perry 2							
Seabrook 1	2250	4	217,200	16.90	2.25	14,000	~217,000UO ₂
Seabrook 2							
Comanche Peak 1	2250	4	217,200	16.90	2.25	14,000	~217,000UO ₂
Comanche Peak 2							
Douglas Point 1	1040	2	159,570	13.40	2.07	13,000	304,600
Douglas Point 2							
Summit 1	695	4	66,000	6.80		19,400	2,720 U 57,376 Th
Summit 2							
Greenwood 2	2250	2	197,000	17.60	2.79 Avg.	16,790	233,120UO ₂
Greenwood 3							
Byron 1	2250	4	217,200	16.90	2.25	14,000	~217,000UO ₂
Byron 2							
Braidwood 1	2250	4	217,200	16.90	2.25	14,000	~217,000UO ₂
Braidwood 2							

Table 2. (p. 5)

Name	Reactor system pressure (psia)	Number of coolant loops	Average heat flux (Btu/hr-ft ²)	Maximum thermal output (kW/ft)	Enrichment ^a	Burnup ^b	Wt. of uranium in core (lb)
River Bend 1	1040	2	159,550	13.40	1.70	~13,000	246,390
River Bend 2							
WPPSS 1	2250	2	186,822	14.74	2.77 Avg.	16,056	233,884
Clinton 1	1040	2	159,550	13.40	1.70	~13,000	246,390
Clinton 2							
Fulton 1	720	6	65,030	7.0	93.15 Uranium	22,300	3,795 U 82,470 Th
Fulton 2							
Allens Creek 1	1040	2	159,580	13.40	2.07	13,000	304,600
Allens Creek 2							
Pilgrim 2	2250	2	184,000	12.60	2.40	12,600	223,900
Pilgrim 3							
Quanticassee 1	2250	4	217,200	18.80	2.03	14,000	217,000UO ₂
Quanticassee 2							
Atlantic Floating 1	2250	4	189,800	12.60	2.10	14,600	222,739
Atlantic Floating 2							
Wolf Creek	2250	4	217,200	18.80	2.03	14,000	253,675
Callaway 1	2250	4	217,200	18.80	2.03	14,000	253,675
Tyrone 1	2250	4	217,200	18.80	2.03	14,000	253,675
Sterling 1	2250	4	217,200	18.80	2.03	14,000	253,675
Callaway 2	2250	4	217,200	18.80	2.03	14,000	253,675
Tyrone 2	2250	4	217,200	18.80	2.03	14,000	253,675
Perkins 1							
Perkins 2	2250	2	182,200	12.5	1.90	13,740	317,131
Perkins 3							
Cherokee 1							
Cherokee 2	2250	2	182,200	12.50	1.90	13,740	317,131
Cherokee 3							
Montague 1	1040	2	159,550	13.40	2.07	~13,000	304,600
Montague 2							
South Texas 1	2250	4	185,200	13.30	2.10		253,675
South Texas 2							
Davis-Besse 2	2200	2	166,613	12.85	2.54 Avg.	14,866	201,520
Davis-Besse 3							
Koshkonong 1 (Haven)	2250	3	189,800	13.90	2.10	11,000	181,205
Koshkonong 2 (Haven)							
WPPSS 3	2250	2	182,200	12.5	1.90	13,740	260,520
WPPSS 5							

Table 2. (> 6)

Name	Reactor system pressure (psia)	Number of coolant loops	Average heat flux (Btu/hr-ft ²)	Maximum thermal output (kW/ft)	Enrichment ^a	Burnup ^b	Wt. of uranium in core (lb)
Blue Hills 1	2250	2	182,200	12.5	1.90	12,500	183,640
Blue Hills 2							
WPPSS 4	2250	2	186,822	14.74	2.77 Avg.	16,056	233,884
Pebble Springs 1	2250	2	186,800	14.74	2.95 Avg.	17,700	233,884
Pebble Springs 2							
Jamesport 1	2250	4	217,200	16.90	2.25	11,500	218,000
Jamesport 2							
Hartsville 1							
Hartsville 2	1040	2	159,570	13.4	2.07	~13,000	304,200
Hartsville 3							
Hartsville 4							
Skagit 1	1055	2	146,260	12.30	1.80	~13,000	351,912
Skagit 2							
Barton 1							
Barton 2	1040	2	159,570	13.40	2.07	~13,000	304,600
Barton 3							
Barton 4							
Palo Verde 1							
Palo Verde 2	2250	2	182,200	12.50	1.90	13,740	226,116
Palo Verde 3							
Clinch River	136	3		11.00		50,000	
San Joaquin							
Marble Hill 1	2250	4	189,800	12.60	2.10	14,000	222,739
Marble Hill 2							
Ft. Calhoun 2	2250	4	189,800	12.60	2.10	14,000	222,739
Greene County	2250	2	186,820	14.41	2.83 Avg.	19,631	233,884
Phipps Bend 1	1040	2	159,570	13.40	2.07	~13,000	304,200
Phipps Bend 2							
Black Fox 1	1040	2	159,570	13.40	2.07	~13,000	304,200
Black Fox 2							
Yellow Creek 1	2250	2	182,260	12.5	1.90	13,740	226,116
Yellow Creek 2							
NEP 1	2250	4	189,400	13.0	2.10	14,200	222,739
NEP 2							
Erie 1	2235	2	197,151	15.2	2.67 Avg.	15,281	233,677
Erie 2							
Sundesert 1	2250	3	189,800	12.6	2.10	11,000	181,205
Sundesert 2							

Table 2. (p. 7)

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- ^a P_{R1} - Region 1 enrichment (Z).
 R_{R1} - Initial enrichment (Z).
^b P_{R1} - average 1st cycle burnup (MMB/MTU).
 R_{R1} - average discharge exposure (MWD/ton).

Table 3. Site data^a

Name	Location	Site size (acres)	Nearest metropolis, dist.-dir.	Population within 2 miles	Exclusion distance (miles)	LPZ (miles)	SSE (g)
Indian Point 1	SE-NY	739	New York-25 mi S	9,300-1972	0.27	0.7	
Dresden 1	NE-IL	953	Chicago-47 mi NE	50-1968	0.50		
Yankee-Rout	NY-MA	2,000	Pittsfield-25 mi SSW	229-1970	0.59	5	
Humboldt Bay	NU-CA	143	San Francisco-230 mi SSE	1,700-1960	0.13		0.25
Big Rock Point	SC-MI	600	Saginaw-160 mi SSE	70-1960	0.51	4	0.25
Peach Bottom 1	SE-PA	620	Lancaster-19 mi N	685-1970	0.57	18	0.05
San Onofre 1	S-CA	84	San Diego-50 mi SE	500-1980			0.50
Conn. Yankee	SC-CT	525	Meridian-16 mi NW	1,937-1970	0.32		0.17
Oyster Creek 1	EC-NJ	1,425	Atlantic City-35 mi SSW	2,514-1970		2	0.22
Wine Mile Point 1	WC-NY	900	Syracuse-35 mi SSE	279-1970	0.76	4	0.11
Dresden 2	NE-IL	953	Chicago-47 mi NE	50-1968	0.50		0.20
Gino 1	NU-NY	338	Rochester-20 mi SW	860-1970	0.29	3	0.20
Millstone 1	SE-CT	500	Hartford-38 mi NW	4,776-1970	0.40	3	0.17
Indian Point 2	SE-NY	239	New York-25 mi S	21,700-1975	0.20	0.6	0.15
Dresden 3	NE-IL	953	Chicago-47 mi NE	50-1968	0.50		0.20
Turkey Point 3	SE-FL	3,300	Miami-25 mi NNE	0-1976	0.79	5	0.05
Turkey Point 4							
Quad-Cities 1	NU-IL	404	Davenport-18 mi SW	280-1970	0.50	3	0.12
Palisades	SW-MI	487	Kalamazoo-34 mi ESE	313-1970	0.44		0.20
Browns Ferry 1	NC-AL	840	Huntsville-30 mi E	208-1970	0.75	7	0.20
Browns Ferry 2							
Robinson 2	NE-SC	5,000	Columbia-56 mi SW	1,375-1976	0.27	4.5	0.20
Monticello	SC-MN	1,325	Minn.-St. Paul-33 mi SE	150-1970	0.40	1	0.12
Quad-Cities 2	NU-IL	404	Davenport-18 mi SW	280-1970	0.50	3	0.12
Point Beach 1	EC-WI	1,260	Green Bay-27 mi NW	270-1975	0.74	5.6	0.12
Fort St. Vrain	NC-CO	2,238	Denver-35 mi S	150-1970	1	1	0.10
Oconee 1	WC-SC	500	Greenville-26 mi E	886-1910	1	6	0.10
Oconee 2							
Vermont Yankee	SC-VT	125	Holyoke-40 mi S	2,060-1970	0.17	5	0.14
Salem 1	SW-NJ	700	Wilmington-20 mi N	0-1980	0.18	5	0.15
Diablo Canyon 1	SW-CA	750	Santa Barbara-100 mi SE	4-1970	0.50	6	0.20
Peach Bottom 2	SE-PA	620	Lancaster-19 mi N	685-1970	0.51		0.12
Peach Bottom 3							
Serby 1	SE-VA	840	Newport News-17 mi ESE	7-1970	0.31	3	0.15
Serby 2							
Prairie Island 1	SE-MN	560	Minn.-St. Paul-30 mi NW	347-1970	0.43	1.5	0.12
Fort Calhoun 1	EC-NE	380	Omaha-19 mi SSE	820-1970	0.23	5	0.17
Indian Point 3	SE-NY	239	New York-25 mi S	21,700-1975	0.20	0.6	0.15

Table 3.^a (p. 2)

Name	Location	Site size (acres)	Nearest metropolis, dist.-dir.	Population within 2 miles	Exclusion distance (miles)	LPZ (miles)	SSE (g)
Oconee 3	WC-SC	500	Greenville-26 mi E	886-1910	1	6	0.10
Three Mile Island 1	SE-PA	625	Harrisburg-10 mi NW	2,700-1969	0.38	2	0.12
Pilgrim 1	SE-MA	517	Brockton-22 mi NW	1,524-1972	0.33	1.5	0.15
Zion 1	NE-IL	250	Kenosha-8 mi N	25,600-1985	0.25		0.17
Browns Ferry 3	NC-AL	840	Huntsville-30 mi E	208-1970	0.75	7	0.12
Cooper Station	SE-NE	1,090	Lincoln-60 mi NW	41-1970			0.10
Point Beach 2	EC-WI	1,260	Green Bay-27 mi NW	270-1970	0.74	5.6	0.12
Crystal River 3	WC-FL	4,738	Tampa-75 mi S	0-1967	0.83	5	0.10
Crystal River 4							
Zion 2	NE-IL	250	Kenosha-8 mi N	25,600-1985	0.25		0.17
Kewaunee	EC-WI	957	Green Bay-26 mi NW	193-1985			0.12
Prairie Island 2	SE-MN	560	Minn.-St. Paul-30 mi NW	374-1970	0.43	1.5	0.12
Maine Yankee	SC-NE	740	Portland-34 mi SW	379-1970	0.83		0.10
Salem 2	SW-NJ	700	Wilmington-20 mi N	0-1980	0.18	5	0.15
Rancho Seco	C-CA	2,480	Sacramento-26 mi NW	93-1970	0.40	4.7	0.25
Arkansas Nuclear 1	NW-AR	1,100	Little Rock-57 mi SE	678-1967	0.65	4	0.20
Cook 1	SW-MI	650	South Bend-25 mi SE	1,086-1980	0.38	2	0.20
Cook 2							
Calvert Cliffs 1	SE-MD	1,135	Wash. DC-45 mi NW	1,465-1965	0.67		0.15
Calvert Cliffs 2							
Bell	C-NY	900	Syracuse-40 mi NE	432-1960	0.53	5.5	0.10
Three Mile Island 2	SE-PA	625	Harrisburg-10 mi NW	2,700-1969	0.38	2	0.12
Hatch 1	SE-GA	2,100	Savannah-65 mi E	107-1972	0.81		0.15
Shoreham	SE-NY	450	New Haven-22 mi N	3,300-1960	0.17	5	0.15
Diablo Canyon 2	SW-CA	750	Santa Barbara-100 mi SE	4-1970	0.50	6	0.20
Brunswick 2	SE-NC	1,200	Wilmington-20 mi N	621-1966	0.57	2	0.16
Brunswick 1							
Sequoyah 1	SE-TN	525	Chattanooga-12 mi SW	1,440-1980	0.36	7	0.14
Sequoyah 2							
Midland 1	C-MI	370	Saginaw-18 mi SE	4,577-1968	0.28	1	0.10
Midland 2							
Duane Arnold	EC-IA	480	Cedar Rapids-10 mi SE	275-1970	0.19	6	0.12
Fitzpatrick	NC-NY		Syracuse-3 mi SSE	297-1960	0.57		0.15
Beaver Valley 1	WC-PA	420	Pittsburgh-25 mi ESE	6,346-1970	0.23	3.6	0.12
St. Lucie 1	SE-FL	1,132	W. Palm Beach-45 mi SSE	140-1978	0.97	5	0.05
Millstone 2	SE-CT	500	Hartford-38 mi NW	4,776-1970	0.40	3	0.17
North Anna 1	EC-VA	1,075	Richmond-40 mi SSE	225-2000	0.83	1.3	0.15
North Anna 2							

Table 3.^a (p. 3)

Name	Location	Site size (acres)	Nearest metropolis, dist.-dir.	Population within 2 miles	Exclusion distance (miles)	LPZ (miles)	SSE (g)
Seabrook	SE-NH	650	Lawrence-25 mi SW	2,828-1968	0.57	1.5	0.17
Fermi 2	SE-MI	925	Detroit-27 mi NNE	4,967-1980	0.41	0.5	0.10
Indian Point 4	SE-NY	130	New York-25 mi S	21,700-1975	0.20	0.5	0.15
Indian Point 5							
Trojan	NW-OR	623	Portland-31 mi SSE	541-1980	0.41	2.5	0.25
Davis-Besse 1	NW-OH	954	Toledo-20 mi W	460-1980	0.45	2	0.15
Farley 1	SE-AL	800	Albany, Ga.-60 mi ENE	486-1975	0.78	2	0.10
Limerick 1	SE-PA	587	Reading-20 mi WNW	5,258-1968	0.47		0.12
Limerick 2							
Hope Creek 1	SW-NJ	700	Wilmington-20 mi W	0-1980	0.50	5	0.20
Hope Creek 2							
Zimmer 1	SW-OH	491	Cincinnati-25 mi NW	1,496-1970	0.13	4	0.10
Zimmer 2							
San Onofre 2	S-CA	84	San Diego-50 mi SE	500-1980	0.10	2	0.50
San Onofre 3							
Forked River 1	EC-NJ	1,425	Atlantic City-35 mi SSW	2,514-1970	0.38	2	0.22
Farley 2	SE-AL	800	Albany, Ga.-60 mi ENE	486-1975	0.78	2	0.10
Hatch 2	SE-GA	2,100	Savannah-65 mi E	107-1972	0.91		0.15
Bailly	NW-IN	350	Gary-10 mi W	995-1970	0.13	1.5	0.15
Arkansas 2	NW-AR	1,100	Little Rock-57 mi SE	678-1970	0.65	4	0.20
McGuire 1	C-WC	30,000	Charlotte-17 mi SSE	342-1970	0.47	5.5	0.12
McGuire 2							
La Salle 1	NE-IL	5,000	Chicago-60 mi ENE	120-1975	0.34	3.7	0.15
La Salle 2							
North Coast	Puerto Rico		Arecibo-8 mi W				0.20
Waterford 3	SC-LA	3,600	New Orleans-22 mi E	1,685-1970	0.57	2	0.10
Waterford 4							
Susquehanna 1	EC-PA	1,522	Wilkes-Barre-16 mi NE	1,126-1970	0.28	3	0.10
Susquehanna 2							
St. Lucie 2	SE-FL	1,132	W. Palm Beach-45 mi SSE	140-1978	0.97	5	0.05
Watts Bar 1	SE-TN	1,770	Chattanooga-45 mi SW	210-1970	0.50	3	0.18
Watts Bar 2							
Summer 1	SW-SC	11,000	Columbia-26 mi SE	144-1970	1.00	3	0.12
WPPSS-2 (Hanford 2)	SE-WA	NA	Spokane-125 mi NE	0-1970	0.57	9	0.25
Mendocino 1	NW-CA	409	San Francisco-130 mi SE	573-1970	0.70		0.50
Mendocino 2							

Table 3.2 (p. 4)

Name	Location	Site size (acres)	Nearest metropolis, dist.-dir.	Population within 2 miles	Exclusion distance (miles)	LP2 (miles)	SSE (g)
Harris 1							
Harris 2	NC-NC	18,000	Raleigh-20 mi NE	119-1970	1.32	3	0.12
Harris 3							
Harris 4							
North Anna 3	EC-VA	1,075	Richmond-40 mi SSE	225-2000	0.95	6	0.12
North Anna 4							
LaCrosse	SW-WI		LaCrosse-20 mi N		0.21	3	
Nine Mile Point 2	NC-NY	900	Syracuse-35 mi SSE	279-1970	1.00	4	0.10
Beaver Valley 2	WC-PA	449	Pittsburgh-25 mi ESE	6,346-1970	0.28	3.6	0.10
Catauba 1	NC-SC	23,600	Charlotte-20 mi NE	495-1970	0.47	3.8	0.15
Catauba 2							
Grand Gulf 1	WC-MS	2,200	Jackson-55 mi ENE	190-1970	0.48	2	0.15
Grand Gulf 2							
Millstone 3	SE-CT	500	Hartford-38 mi NW	4,776-1970	0.34	2.4	0.17
Vogtle 1							
Vogtle 2	EC-GA	3,177	Columbia-75 mi NE	15-1977	0.68	2	
Vogtle 3							
Vogtle 4							
Surry 3	SE-VA	840	Newport News-17 mi ESE	7-1970	0.31	3	0.15
Surry 4							
Bellefonte 1	NE-AL	1,500	Huntsville-38 mi W	115-1970	0.57	2	0.18
Bellefonte 2							
Perry 1	NW-OH	1,065	Cleveland-33 mi SW	1,190-1970	0.57	5	0.15
Perry 2							
Seabrook 1	SE-NH	715	Lawrence-25 mi SW	3,183-1970	0.61	1.5	0.20
Seabrook 2							
Comanche Peak 1	NE-TX	5,000	Ft. Worth-42 mi NNE	41-1970	0.88	4	0.12
Comanche Peak 2							
Douglas Point 1	SC-MD	1,440	Wash. DC-35 mi NNE	159-1970	0.57	3	0.07
Douglas Point 2							
Summit 1	N-DE	1,800	Wilmington-17 mi NNE	1,925-1970	0.28	2	0.15
Summit 2							
Greenwood 2	SE-MI	3,620	Detroit-55 mi SSW	270-1970	0.88	0.9	0.06
Greenwood 3							
Byron 1	NC-IL	1,430	Rockford-17 mi NE		0.28	3	0.12
Byron 2							
Braidwood 1	NE-IL	4,320	Chicago-45 mi NE	1,879-1970	0.30	1.1	0.12
Braidwood 2							

Table 3.^a (p. 5)

Name	Location	Site size (acres)	Nearest metropolis, dist.-dir.	Population within 2 miles	Exclusion distance (miles)	LPZ (miles)	SSE (g)
River Bend 1	SE-LA	2,680	Baton Rouge-24 mi SSE	404-1970	0.38	2	0.10
River Bend 2							
WPPSS 1	SE-WA	972	Spokane-125 mi NE	0-1980	1.20	4	0.25
Clinton 1	IL-IL	15,000	Decatur-20 mi SSW	141-1972	0.60	2.5	0.15
Clinton 2							
Fulton 1	SE-PA	360	Lancaster-18 mi N	1,286-1980	0.48	1.5	0.12
Fulton 2							
Allens Creek 1	SE-TX	11,000	Houston-40 mi E	72-1970	0.90	3.5	0.10
Allens Creek 2							
Pilgrim 2	SE-MA	517	Brockton-22 mi NW	1,524-1972	0.27	4	0.15
Pilgrim 3							
Quanicassee 1	EC-MI	1,065	Saginaw-19 mi SW	504-1970	0.50	1.8	0.12
Quanicassee 2							
Atlantic Floating 1	SE-NJ	186	Atlantic City-11 mi SW	0-1980	1	2	0.30
Atlantic Floating 2							
Wolf Creek	EC-KS	1,100	Topeka-55 mi N	38-1970	0.70	2.5	0.20
Callaway 1	EC-MO	3,177	Columbia-35 mi WNW	87-1970	0.75	2.5	0.20
Tyrone 1	WC-WI	4,700	Minn.-St. Paul-65 mi WNW	99-1970	0.86		0.20
Sterling 1	NC-NY	2,800	Syracuse-35 mi SE	197-1970	0.70	2.5	0.20
Callaway 2	EC-MO	3,177	Columbia-35 mi WNW	87-1970	0.75	2.5	0.20
Tyrone 2	WC-WI	4,700	Minn.-St. Paul-65 mi WNW	99-1970	0.86		0.20
Perkins 1							
Perkins 2	NC-NC		Winston-Salem-20 mi NNE	544-1970	0.47	5	0.15
Perkins 3							
Cherokee 1							
Cherokee 2	NW-SC		Charlotte-38 mi ENE	566-1970	0.47	5	0.15
Cherokee 3							
Montague 1	WC-MA	1,900	Holyoke-30 mi S	2,590-1970	0.48	2.5	0.20
Montague 2							
South Texas 1	SE-TX	12,250	Houston-90 mi NE	9-1970	1	3	0.10
South Texas 2							
Davis-Besse 2	NW-OH	954	Toledo-20 mi W	460-1980	0.4	2	0.15
Davis-Besse 3							
Koshkonong 1 (Haven)	EC-WI	625	Sheboygan-5 mi S ^b	378-1980	0.6	3	0.20
Koshkonong 2 (Haven)							
WPPSS 3	WC-WA	2,450	Tacoma-50 mi ENE	83-1980	0.8	3	0.32
WPPSS 5							

Name	Location	Site size	Nearest metropolis, direction	Population within 2 miles	Exclusion distance (miles)	LPZ (miles)	SSE (g)
Blue Hills 1	EC-TX	1,016	Beaumont-75 mi SSW	5-1970	0.82	3	0.13
Blue Hills 2							
WPPSS 4	SE-WA	972	Spokane-125 mi NE	0-1980	1.20	4	0.25
Pebble Springs 1	NC-OR	8,450	Portland-120 mi W	9-1970	0.50	2	0.25
Pebble Springs 2							
Jamesport 1	SE-NY	525	New Haven-25 mi NW	632-1970	0.42	2	0.20
Jamesport 2							
Hartsville 1							
Hartsville 2	NC-TN	1,940	Nashville-40 mi WSW	260-1970	0.63	3	0.18
Hartsville 3							
Hartsville 4							
Skagit 1	NW-WA	1,500	Seattle-65 mi S	306-1970	0.35	4	0.25
Skagit 2							
Barton 1							
Barton 2	C-AL	2,800	Montgomery-27 mi SSE	89-1970	0.50	2	0.13
Barton 3							
Barton 4							
Palo Verde 1							
Palo Verde 2	SW-AZ	3,800	Phoenix-45 mi E	2-1970	0.57	3.5	0.20
Palo Verde 3							
Clinch River	EC-TN	1,354	Knoxville-25 mi FNE	335-1980	0.42	5	0.18
San Joaquin	S-CA		Bakersfield-33 mi SE				
Marble Hill 1	SE-IN	987	Louisville-30 mi SW	288-1974	0.42	2	0.12
Marble Hill 2							
Ft. Calhoun 2	EC-NE	1,159	Omaha-19 mi SSE	161-1970	0.65	3	0.20
Greene County	EC-NY	282	Albany-35 mi SNE	1,378-1970	0.46	2.5	0.20
Phipps Bend 1	NE-TN	1,270	Knoxville-72 mi WSW	585-1970	0.47	3	0.20
Phipps Bend 2							
Black Fox 1	NE-OK	2,206	Tulsa-20 mi W	92-1970	0.50	2.5	0.12
Black Fox 2							
Yellow Creek 1	NE-MS	1,160	Huntsville-93 mi ESE	245-1970	0.42	3	0.30
Yellow Creek 2							
NEP 1	SW-RI	549	Providence-30 mi NNE	1,182-1975	0.40	1.5	0.25
NEP 2							
Erie 1	NC-OH	1,740	Lorain-12 mi FNE	1,512-1980	0.50	2.0	0.20
Erie 2							
Sundesert 1	SE-CA	7,040	Riverside-155 mi W	0-1985	0.61	3.3	0.35
Sundesert 2							

Table 3.^a (p. 7)^a Abbreviations used:

LPZ = low-population zone.

SSE = safe-shutdown-earthquake design value in amount of acceleration.

Standard abbreviations are used to indicate the area of a state where the plant is located [N(north), S(south), E(east), W(west), and C(central)]. Official U.S. Post Office Department abbreviations are used for the states:

Alaska	AK	Kansas	KS	North Carolina	NC
Alabama	AL	Kentucky	KY	North Dakota	ND
Arizona	AZ	Louisiana	LA	Ohio	OH
Arkansas	AR	Maine	ME	Oklahoma	OK
California	CA	Maryland	MD	Oregon	OR
Canal Zone	CZ	Massachusetts	MA	Pennsylvania	PA
Colorado	CO	Michigan	MI	Rhode Island	RI
Connecticut	CT	Minnesota	MN	South Carolina	SC
Delaware	DE	Mississippi	MS	South Dakota	SD
District of Columbia	DC	Missouri	MO	Tennessee	TN
Florida	FL	Montana	MT	Texas	TX
Georgia	GA	Nebraska	NE	Utah	UT
Hawaii	HI	Nevada	NV	Vermont	VT
Idaho	ID	New Hampshire	NH	Virginia	VA
Illinois	IL	New Jersey	NJ	Washington	WA
Indiana	IN	New Mexico	NM	West Virginia	WV
Iowa	IA	New York	NY	Wisconsin	WI
				Wyoming	WY

^b The Koshkonong plant is now located in Sheboygan County in east central Wisconsin on Lake Michigan. The new plant name is Haven.

Table 4. Circulating-Water System Data^a

Name	Type of cooling	Nearby water makeup	Condenser flow (gpm)	Temp. rise ^b (°F)	gpm ^c		Cooling towers
					Min	Max	
Indian Point 1	Once through	Hudson R.	280,000	12.6	83.8		
Dresden 1	Once through	Kankakee R.	171,200				
Yankee-Rove	Once through	Deerfield R.	140,000	24	33.3		
Humboldt Bay	Once through	Pacific O.	49,600	20	38.2		
Big Rock Point	Once through	L. Mich.	49,000	20	34.0		
Peach Bottom 1	Once through	Susque. R.	50,000	12	104.2		
San Onofre 1	Once through	Pacific O.	350,000	18	43.2		
Conn. Yankee	Once through	Conn. R.	372,000	22.4	28.9		
Oyster Creek 1	Once through	Barnegat B.	460,000	14	50.5		
Nine Mile Point 1	Once through	L. Ontario	250,000	32	12.8		
Dresden 2	Spray canal & cooling lake	Kankakee R.	473,000	23	25.4		
Ginna 1	Once through	L. Ontario	356,000	19.6	37.1		
Millstone 1	Once through	Long Is. S.	420,000	21	29.0		
Indian Point 2	Once through	Hudson R.	840,000	16.6	58.0		
Dresden 3	Spray canal & cooling lake	Kankakee R.	473,000	23	25.4		
Turkey Point 3	Cooling canal	Biscayne B.	624,000	16	52.3		
Turkey Point 4							
Quad-Cities 1	Spray canal	Miss. R.	471,000	24	24.3		
Palisades	Towers	L. Mich.	390,000	24	18.3		2 mech. draft
Browns Ferry 1	Variable	Tenn. R.	550,000	26	19.9		6 mech. draft for 3 units
Browns Ferry 2			Towers				
Robinson 2	Cooling lake	Robinson Res.	482,100	18	38.3		
Monticello	Variable	Miss. R.	280,000	27	19.0		2 mech. draft
Quad-Cities 2	Spray canal	Miss. R.	471,000	24	24.3		
Point Beach 1	Once through	L. Mich.	350,000	19.3	36.5		
Fort St. Vrain	Towers	S. Platte R.	156,000	21.5	22.0		1 mech. draft
Oconee 1	Once through	Keowee L.	680,000	17.2	44.6		
Oconee 2							
Vermont Yankee	Variable	Conn. R.	366,000	20	35.5		2 mech. draft
Salem 1	Once through	Del. R.	1,100,000	13.6	74.2		
Diablo Canyon 1	Once through	Pacific O.	863,000	18	44.2		
Peach Bottom 2	Once through	Susque. R.	750,000	20.8	33.9		3 mech. draft for both units
Peach Bottom 3	+ towers ^d						
Surry 1	Once through	James R.	840,000	14	73.0		
Surry 2							
Prairie Island 1	Variable	Miss. R.	308,000	27	21.5		2 mech. draft
Fort Calhoun 1	Once through	Missouri R.	365,000	18	44.3		
Indian Point 3	Once through	Hudson R.	840,000	16.6	52.4		

Table 4.² (p. 2)

Name	Type of cooling	Nearby water makeup	Condenser flow (gpm)	Temp. rise ^b (°F)	$\frac{\text{gpm}^2}{\text{MW(e)} \text{ } ^\circ\text{F}}$	Cooling towers
Oconee 3	Once through	Keowee L.	680,000	17.2	44.6	
Three Mile Island 1	Towers	Susque. R.	430,000	28	19.4	2 hyperbolic
Pilgrim 1	Once through	Cape Cod B.	311,000	29	15.6	
Zion 1	Once through	L. Michigan	735,000	20	35.0	
Browns Ferry 3	Variable	Tenn. R.				6 mech. draft for 3 units
Cooper Station	Once through	Missouri R.	631,000	18	45.1	
Point Beach 2	Once through	L. Michigan	350,000	19.3	36.5	
Crystal River 3	Once through	G. Mexico	600,000	18	39.0	
Crystal River 4						
Zion 2	Once through	L. Michigan	735,000	20	35.0	
Kewaunee	Once through	L. Michigan	420,000	19	39.5	
Prairie Island 2	Variable	Miss. R.	308,000	27	21.5	2 mech. draft
Maine Yankee	Once through	Back R. to Atlantic O.	426,000	25.6	21.1	
Salem 2	Once through	Delaware R.	1,100,000	13.6	72.5	
Rancho Seco	Towers	Folsom Canal	446,000	28	17.4	2 hyperbolic
Arkansas Nuclear 1	Once through	Dard Res.	765,000	15	60	
Cook 1	Once through	L. Michigan	800,000	21	34.9	
Cook 2						
Calvert Cliffs 1	Once through	Ches. B.	1,200,000	10	142.0	
Calvert Cliffs 2						
Bell	Once through	L. Cayuga	550,000	20	31.8	
Three Mile Island 2	Towers	Susque. R.	444,000	28	20.0	2 hyperbolic
Hatch 1	Towers	Altamaha R.	555,000	20	35.3	3 mech. draft
Shoreham	Once through	Long Is. S.	600,000	19.5	37.6	
Diablo Canyon 2	Once through	Pacific O.	863,000	18	43.3	
Brunswick 2						Towers after 3 years operation
Brunswick 1	Once through	Cape Fear R. Atlantic O.	675,000	17	48.4	
Sequoyah 1	Variable	Chick. L.	535,000	29	16.1	1 hyperbolic each unit
Sequoyah 2						
Midland 1						
Midland 2	Once through	Cooling lake				
Duane Arnold	Towers	Ced. Rap. R.	290,000	25	21.6	2 mech. draft
Fitzpatrick	Once through	L. Ontario	353,000	32	13.4	
Beaver Valley 1	Variable	Ohio R.	480,000	26	21.7	1 hyperbolic
St. Lucie 1	Once through	Atlantic O.	530,000	21	31.2	
Millstone 2	Once through ^e	Long Is. S.	540,000	22.5	29.0	
North Anna 1	Once through	Cooling lake	900,000	14	71.6	
North Anna 2						

Table 4.² (p. 3)

Name	Type of cooling	Nearby water makeup	Condenser flow (gpm)	Temp. rise ¹ (°F)	$\frac{\text{gpm}^2}{\text{MW(e)} \cdot \text{°F}}$	Cooling towers
Seabrook	Once through	Atlantic O.	420,000	30	15.2	
Fermi 2	Towers & pond	L. Erie	900,000	18	45.7	2 hyperbolic
Indian Point 4	Once through ²	Hudson R.	858,000	16.8	45.8	
Indian Point 5						
Trojan	Tower	Columbia R.	350,000	45	6.9	1 hyperbolic
Davis-Besse 1	Tower	L. Erie	480,000	26	20.4	1 hyperbolic
Farley 1	Towers	Woodruff Res.	635,000	20	38.3	3 mech. draft
Limerick 1	Tower	Schuykell R.	450,000	30	14.1	1 hyperbolic each unit
Limerick 2						
Hope Creek 1	Towers	Delaware R.	552,000	28	18.5	1 hyperbolic each unit
Hope Creek 2						
Zimmer 1	Towers	Ohio R.	450,000	20	27.8	1 hyperbolic each unit
Zimmer 2						
San Onofre 2	Once through	Pacific O.	800,000	20	36.4	
San Onofre 3						
Forked River 1	Tower	Barnegat B.	570,000	28	19.0	1 hyperbolic
Farley 2	Towers	Woodruff Res.	635,000	20	38.3	3 mech. draft
Hatch 2	Towers	Altamaha R.	555,000	20	34.9	3 mech. draft
Bailly 1	Tower	L. Michigan	607,100	14	67.2	1 hyperbolic
Arkansas 2	Tower	Dard. Res.	422,000	30.7	14.7	1 hyperbolic
McGuire 1	Once through	L. Norman	675,000	22.1	25.9	
McGuire 2						
La Salle 1	Cooling lake	Illinois R.	645,000	24	24.9	
La Salle 2						
North Coast	Once through	Atlantic O.				
Waterford 3	Once through	Miss. R.	975,000	16	54.8	
Waterford 4						
Susquehanna 1	Towers	Susque. R.	450,000	35	12.2	1 hyperbolic each unit
Susquehanna 2						
St. Lucie 2	Once through	Atlantic O.	530,000	21	31.2	
Watts Bar 1	Towers	Chick. L.	410,000	18	9.2	1 hyperbolic each unit
Watts Bar 2						
Summer 1	Once through	L. Mont.	485,000	25	21.6	
WPPSS-2(Hanford 2)	Towers	Columbia R.	550,000	28.7	19.5	2 mech. draft
Mendocino 1	Once through	Pacific O.	864,000	18	41.1	
Mendocino 2						

Table 4.² (p. 4)

Name	Type of cooling	Nearby water makeup	Condenser flow (gpm)	Temp. rise (°F)	$\frac{\text{gpm}^2}{\text{MW(e)} \cdot \text{F}}$	Cooling towers
Harris 1						
Harris 2	Towers	Res. and Cape Fear R.	423,750	28	19.2	1 hyperbolic each unit
Harris 3						
Harris 4						
North Anna 3	Once through	N. Anna Res.	912,000	14	71.8	
North Anna 4						
Lacrosse	Once through	Miss. R.	64,000	15	85	
Nine Mile Point 2	Once through	L. Ontario	500,000	32	14.2	
Beaver Valley 2	Tower	Ohio R.	480,400	26	21.7	1 hyperbolic each unit
Catawba 1	Towers	L. Wylie	660,000	24	24.0	4 mech. draft each unit
Catawba 2						
Grand Gulf 1	Towers	Miss. R.	548,000	31	14.1	1 hyperbolic each unit
Grand Gulf 2						
Millstone 3	Once through	Long Is. S.	900,000	18	43.3	
Vogtle 1						
Vogtle 2	Towers	Savan. R.	460,800	34.4	12.0	1 hyperbolic each unit
Vogtle 3						
Vogtle 4						
Surry 3	Spray canal	James R.	1,033,000	24.4	49.3	
Surry 4						
Bellefonte 1	Towers	Gunt. Res. Tenn. R.	466,000	36	10.7	1 hyperbolic each unit
Bellefonte 2						
Perry 1	Towers	L. Erie	549,000	32	14.2	1 hyperbolic each unit
Perry 2						
Seabrook 1	Once through	Atlantic O.	347,000	44	6.6	
Seabrook 2						
Comanche Peak 1	Once through	Squaw Creek Res.	1,100,000	15	63.8	
Comanche Peak 2						
Douglas Point 1	Towers	Potomac R.	619,000	25.9	20.3	1 hyperbolic each unit
Douglas Point 2						
Summit 1	Towers	Ches. & Del. Canal	330,000	26	16.6	2 mech. draft each unit
Summit 2						
Greenwood 2	Spray canal	L. Huron	520,000	30	14.4	
Greenwood 3						
Byron 1	Towers	Rock R.	632,000	24	23.5	2 hyperbolic each unit
Byron 2						
Braidwood 1	Cooling lake	Kankakee R.	731,000	20	32.6	
Braidwood 2						

Table 4. (p. 5)

Name	Type of cooling	Nearby water makeup	Condenser flow (gpm)	Temp. rise ^b (°F)	$\frac{\text{gpm}}{\text{MW(e)}}$ °F	Cooling towers
River Bend 1	Towers	Miss. R.	508,500	27	20.2	3 mech. draft each unit
River Bend 2						
WPPSS 1	Towers	Columbia R.	593,000	28		2 mech. draft
Clinton 1	Once through	Salt Cr. Res.	565,800	23	26.4	
Clinton 2						
Fulton 1	Towers		463,000	28	14.3	1 hyperbolic each unit
Fulton 2						
Allens Creek 1	Cooling lake	Brazos R.	810,000	19.5	36.1	
Allens Creek 2						
Pilgrim 2	Once through	Cape Cod B.	765,000	20	32.4	
Pilgrim 3						
Quanicassee 1	Towers	Weadock Canal	458,000	33	11.6	1 hyperbolic each unit
Quanicassee 2						
Atlantic Floating 1	Once through	Atlantic O.	900,000	17.2	45.5	
Atlantic Floating 2						
Wolf Creek	Cooling lake	Wolf Cr.	551,250	30.4	15.8	
Callaway 1	Tower	Missouri R.	550,000	30	16.4	1 hyperbolic
Tyrone 1	Tower	Chippewa R.	550,000	30.4	15.8	3 mech. draft
Sterling 1	Once through	L. Ontario	834,000	20	36.3	
Callaway 2	Tower	Missouri R.	550,000	30	16.4	1 hyperbolic
Tyrone 2	Tower	Chippewa R.	550,000	30.4	15.8	3 mech. draft
Perkins 1						
Perkins 2	Towers	Yadkin R.	758,000	24	24.8	4 mech. draft each unit
Perkins 3						
Cherokee 1						
Cherokee 2	Towers	Broad R.	758,000	24	24.8	4 mech. draft each unit
Cherokee 3						
Montague 1	Towers	Conn. R.	600,000	28	18.6	1 hyperbolic each unit
Montague 2						
South Texas 1	Cooling lake	Colo. R.	907,400	19	38.2	
South Texas 2						
Davis-Besse 2	Towers	L. Erie	480,000	26	20.4	1 hyperbolic each unit
Davis-Besse 3						
Koshkonong 1 (Haven)	Towers	L. Michigan	450,000	30	16.7	1 hyperbolic each unit
Koshkonong 2 (Haven)						
WPPSS 3	Towers	Chehalis R. Ranney Wells	530,000	31.3	13.6	1 hyperbolic each unit
WPPSS 5						

Table 4. (p. 6)

[illegible]

Table 4.1 (p. 7)

^a Abbreviations used:

Ced. Rap. - Cedar Rapids	B. - Bay
Ches. - Chesapeake	Cr. - Creek
Chick. - Chickamauga	Dr. - Drain
Colo. - Colorado	G. - Gulf
Conn. - Connecticut	L. - Lake
Dard. - Dardenelle	Res. - Reservoir
Del. - Delaware	R. - River
Gunt. - Gunterville	O. - Ocean
Long Is. - Long Island	S. - Sound
mech. - mechanical	
Miss. - Mississippi	
Mont. - Monticello	
Savan. - Savannah	
Susque. - Susquehanna	
Tenn. - Tennessee	

^b Temperature rise across the main condenser.^c gpm

- an index number based on circulating-water system performance.

MI(e) °F

^d Once through + towers to partly cool before discharge.^e Discharge through quarry.

2. DISCUSSION OF DATA

The data in the preceding four tables were reviewed to see if trends could be discerned. Some of the analyses yielded nothing, while in others some interesting trends showed up. As the data were reviewed, an effort was made to select maximum and minimum values which were evident. In all these analyses all plants that have applied for a construction license are reviewed, even though some of these are now deferred or cancelled. The rationale for this is that it is assumed that eventually the plants will be built. This assumption does not cover cases like Newbold Island, Bell, or Aguirre, for which plant applications no longer exist.

The analyses presented here relate to plant electrical generating capacity and time of startup, populations surrounding the plants, size of the plant sites, fuel performance, circulating-water systems, safe-shutdown-earthquake design values, and generating capacity concentrations.

2.1 General Data

2.1.1 Plant capacity and startup

The year of plant startup or the estimated date of startup was plotted against the plant capacity in MW(e). In Fig. 1, where this data is plotted, a small dot refers to one reactor generating unit. In most cases, a two-unit plant would have startup dates 1 or 2 years apart and consequently two data points. Where two plants of equal size have startup dates in the same year, a larger dot is used for the data point to represent two reactor generating units. See Table 1 for the data.

In Fig. 1, the upper and lower dotted lines represent maximum and minimum generating capacities. This figure shows the trends in increased plant size and also the concentration of plant startups, which will be heaviest from 1981 to 1984.

The larger plants are now running over 1250 MW(e) per reactor generating unit. In seven cases, more than two units have been proposed, namely:

Harris - 4 units at 900 MW(e) each, total 3600 MW(e)

Vogtle - 4 units at 1113 MW(e) each, total 4452 MW(e)

Fig. 1. Nuclear plant generating capacity vs year of startup.

Perkins - 3 units at 1280 MW(e) each, total 3840 MW(e)

Cherokee - 3 units at 1280 MW(e) each, total 3840 MW(e)

Hartsville - 4 units at 1280 MW(e) each, total 5120 MW(e)

Barton - 4 units at 1159 MW(e) each, total 4636 MW(e)

Palo Verde - 3 units at 1237 MW(e) each, total 3711 MW(e)

Seventeen plants have been proposed with reactor units exceeding 1200 MW(e) capacity.

2.1.2 Multiple units (nuclear energy centers)

Many studies have been made to investigate the siting of up to 20 1000-MW(e) plants at one location. A feasibility study by Cope and Bauman, *Expansion Potential for Existing Nuclear Power Station Sites*,¹ looked into capacity possibilities for the sites reviewed in this report and found that 44 sites could be expanded to accommodate 9 to 16 nuclear plants [>10 GW(e)], and 10 sites could be expanded to handle more than 16 units [>20 GW(e)]. These 10 sites and their limiting factors are shown below.

<u>Plant Name</u>	<u>Limiting Factors</u>
Browns Ferry	Population and demand
Bellefonte	Population and demand
Vogtle	Demand
River Bend	Demand
Yellow Creek	Demand
Oyster Creek-Forked River	Population and environment
Pebble Springs	Demand
Sequoyah	Population and public acceptance
Hanford	Demand
Watts Bar	Demand

2.1.3 Reactor vendors and architect-engineers

There are four principal suppliers of the nuclear steam supply system (NSSS): Combustion Engineering, Inc., Westinghouse Electric Corp., and Babcock and Wilcox Company for the pressurized-water system and

General Electric Company for the boiling-water system. General Atomic Company built Peach Bottom 1 and Fort St. Vrain and designed two gas-cooled reactors which were never built (Summit and Fulton). Allis Chalmers Corp. was the NSSS supplier for LaCrosse.

Many A-E firms have participated in balance-of-plant design and/or construction. The firms and the number of times they have been involved in nuclear plant design are:

Brown & Root, Inc. (2)	Pioneer Service and Engineering Company (3)
Burns & Roe, Inc. (6)	Sargent & Lundy Engineers (22)
Black & Veatch (2)	Stone & Webster Engineering Corp. (28)
Bechtel Corp. (67)	Southern Services, Inc. (8)
Ebasco Services, Inc. (18)	United Engineers & Constructors (14)
Gibbs and Hill, Inc. (5)	
Gilbert Associates, Inc. (9)	

2.2 Reactor Data

2.2.1 Fuel performance

The average heat flux and maximum thermal output per foot of fuel pin (from Table 2) have been plotted in Figs. 2 and 3. These data are plotted as a function of docket number, which provides a relative time scale.

The most significant observation about the curves is the reduction in values that occur near docket numbers 50-380 and 50-390 in Fig. 3 (maximum thermal output) and near docket number 50-425 in Fig. 2 (average heat flux). This reducing trend starts with docket number 50-387 and ends with 50-450 and 50-475 for the PWR plants and 50-414 for the BWR plants. The dates of application for these docket numbers are: 50-387 - March 1971; 50-460 - July 1973; 50-475 - October 1973; 50-414 - September 1971. This period of time in the evolution of the design of the light-water reactor corresponds to the period of especial concern in the Nuclear Regulatory Commission [then a part of the Atomic Energy Commission (AEC)] with the adequacy and design of the emergency core-cooling system (ECCS) for light-water reactors (LWRs). In June 1971, the AEC first issued interim criteria for ECCS designs² which had the effect of limiting the

Fig. 2. Average heat flux vs docket number.

heat flux (and thermal output) of vendor designs. This limit was further reduced in the "new acceptance criteria"³ promulgated in December 1974 after almost 2 years of intermittent Rule-Making Hearings.⁴ The "new criteria" set better standards for calculation of fuel centerline temperatures for increased conservatism and for new design efforts to

Fig. 3. Maximum thermal output vs docket number.

optimize core thermal-hydraulics and fuel pin parameters. It is clear that the observed changes in the fuel and core performance, as shown in Figs. 2 and 3, reflect the effect of the new ECCS criteria.

The relative position of the various NSSS manufacturers' curves is dependent upon the different core designs and especially the pin diameters used by the different manufacturers. As would be expected, the General Electric Co. (GE) data is the lowest in Fig. 2, since the heat flux in BWRs is lower than in PWRs.

A thorough study of all factors to adequately explain all the ramifications of these curves is beyond the scope of this report; however, the curves do present interesting aspects of power reactor evaluation.

2.3 Site Data

2.3.1 Populations around plants

Table 3 gives the number of people living within a 2-mile radius of each plant. This population size varies from 0 for Salem, Crystal River, Hope Creek, WPPSS 1 and 4, and Sundesert to 25,600 for Zion.

Plants with populations from 1 to 50 in the 2-mile radius are:

Dresden - 50	Wolf Creek - 38
Diablo Canyon - 4	South Texas - 9
Surry - 7	Blue Hills - 5
Cooper - 41	Pebble Springs - 9
Vogtle - 15	Palo Verde - 2
Comanche Peak - 41	

Plants with large populations in the 2-mile radius are:

Zion - 25,600	Fermi - 4967
Indian Point - 21,700	Millstone - 4776
Beaver Valley - 6346	Midland - 4577
Limerick - 5258	

2.3.2 Size of plant sites

About half of the plants are located on sites of 1000 acres or less, and about half are located on sites larger than 1000 acres.

The smaller sites are 250 acres or less, and most of these are the older plants, such as:

- San Onofre 1, 2, 3 - 83 acres
- Vermont Yankee - 125 acres
- Indian Point 1, 2, 3 - 130 acres
- Humboldt Bay - 143 acres

The larger sites in excess of 10,000 acres are:

Sumner - 11,000 acres	Harris - 18,000 acres
Allens Creek - 11,000 acres	Catawba - 23,600 acres
South Texas - 12,250 acres	McGuire - 30,000 acres
Clinton - 15,000 acres	

2.3.3 Safe-shutdown earthquake

Safe-shutdown-earthquake (SSE) design values are shown graphically on a map of the United States (see Fig. 4). At the location of each plant site there is a small dot, and the plant name and SSE value are recorded nearby. With this method of presentation, one can scan an entire region and review the SSE design values therein. For instance, SSE design values in North Carolina and South Carolina vary from 0.10 for Oconee to 0.20 for Robinson, and all other values are either 0.12, 0.15, or 0.16. These figures also help the reader to locate the general vicinity of the various plants.

2.4 Circulating-Water Systems

The circulating-water systems of each plant have been categorized and listed in Tables 7 through 17, and the high and low temperature rise across the main condensers are shown in Tables 5 and 6.

Tables 7 through 17 list all the plants and indicate the type of cooling system employed, such as once-through systems or cooling towers. The various classifications are:

- Table 7 - Once-through (rivers)
- Table 8 - Once-through (the Great Lakes)
- Table 9 - Once-through (oceans and bays)
- Table 10 - Once-through (estuaries)
- Table 11 - Once-through (lakes and reservoirs)
- Table 12 - Spray canals and cooling ponds
- Table 13 - Closed-cycle towers (mechanical draft)
- Table 14 - Closed-cycle towers (natural draft)
- Table 15 - Variable- or helper-cycle towers (mechanical draft)
- Table 16 - Variable- or helper-cycle towers (natural draft)
- Table 17 - Special situations

Fig. 4. Nuclear plant locations in the United States and safe-shutdown-earthquake design values.

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**nuclear plant locations in the United States and safe-
make design values.**

Table 5. Circulating-water system

Name	High temperature rise ($\Delta/^{\circ}\text{F}$) across condenser		
	Once through	Towers, mechanical - natural	Cooling lake or spray canal
Nine Mile Point	32		
Fitzpatrick	32		
Seabrook	44	30.4	
Tyrone		37	
NEP			
Watts Bar			38
Bellefonte			36
Hartsville			36
Skagit			39
Quanicassee			30
Wolf Creek			30.4

Table 6. Circulating-water system

Name	Low temperature rise ($\Delta/^{\circ}\text{F}$) across condenser		
	Once through	Towers, mechanical - natural	Cooling lake or spray canal
Indian Point	12.6		
Oyster Creek	14		
Salem	13.6		
Surry	14		
Calvert Cliffs	10		
Vermont Yankee		20	
Hatch		20	
Farley		20	
Three Mile Island			20
Fermi			18
Zimmer			20
Ba'llly			14
Turkey Point			16
Robinson			18
Allens Creek			19.5
South Texas			19

Table 7. Once-through circulating-water system (rivers)

Plant	River
Dresden 1	Kankakee River
Yankee Rowe	Deerfield River
Connecticut Yankee	Connecticut River
Quad Cities 1	Mississippi River
Fort Calhoun 1 and 2	Missouri River
Cooper	Missouri River
Waterford	Mississippi River
LaCrosse	Mississippi River

Table 8. Once-through circulating-water system (Great Lakes)

Plant	Lake
Big Rock Point	Lake Michigan
Nine Mile Point	Lake Ontario
Ginna	Lake Ontario
Point Beach	Lake Michigan
Zion	Lake Michigan
Kewannee	Lake Michigan
Cook	Lake Michigan
Fitzpatrick	Lake Ontario
Bailly	Lake Michigan
Sterling	Lake Ontario

Table 9. Once-through circulating-water system (oceans, bays, etc.)

Plant	Body of water
Humbolt Bay	Pacific Ocean
San Onofre	Pacific Ocean
Millstone ^a	Long Island Sound
Diablo Canyon	Pacific Ocean
Crystal River	Gulf of Mexico
Calvert Cliffs	Chesapeake Bay
Shoreham	Long Island Sound
St. Lucie	Atlantic Ocean
Seabrook	Atlantic Ocean
North Coast	Atlantic Ocean
Mendocino	Pacific Ocean
Pilgram	Cape Cod Bay
Atlantic	Atlantic Ocean
Jamesport	Long Island Sound
NEP	Atlantic Ocean

^aSee Table 17 - Special situations.

Table 10. Once-through circulating-water system (estuaries)

Plant	Estuary
Indian Point	Hudson River
Oyster Creek	Barnegat Bay
Salem	Delaware River
Surry	James River
Maine Yankee	Back River
Brunswick	Cape Fear River
Hope Creek	Delaware River

Table 11. Once-through circulating-water system
(lakes and reservoirs)

Plant	Body of water
Peach Bottom 1	Conowingo Pond of the Susquehanna River
Robinson ^a	Lake Robinson
Oconee	Lake Keowee
Arkansas	Dardanelle Reservoir of the Arkansas River
Bell	Lake Cayuga
North Anna	North Anna Reservoir on North Anna River
McGuire	Lake Norman of the Catawba River
Summer ^a	Lake Monticello
Harris	Special Reservoir
Comanche Peak	Squaw Creek Reservoir
Clinton	Salt Creek Reservoir

^aSee Table 17 - Special situations.

Table 12. Once-through circulating-water system
(spray canals and cooling ponds)

Plant	Makeup water
Dresden 2 and 3	Kankakee River
Turkey Point	Biscayne Bay
Quad Cities	Mississippi River
Midland	Tittabawassee River
LaSalle	Illinois River
Surry 3 and 4	James River
Greenwood	Lake Huron
Braidwood	Kankakee River
Allens Creek	Brazos River
Wolf Creek	Wolf Creek
South Texas	Colorado River
Pebble Springs	Columbia River

**Table 13. Closed-loop circulating-water
system with mechanical draft
cooling towers**

Plant	Makeup water
Palisades	Lake Michigan
Ft. St. Vrain	South Platte River
Hatch	Altamaha River
Arnold	Cedar Rapids River
Farley	Woodruff Reservoir of the Chattahoochie River
WPPSS 2	Columbia River
Catawba	Lake Wylie
River Bend	Mississippi River
WPPSS 1 and 4	Columbia River
Tyrone	Chippewa River
Perkins	Yadkin River
Cherokee	Broad River
Blue Hills	Toledo Bend Reservoir of the Sabine River
Palo Verde ^a	City of Phoenix sewage system
Clinch River	Clinch River
Marble Hill	Ohio River
Black Fox	Verdigris River
Yellow Creek	Pickwick Reservoir of the Tennessee River
Sundesert	Palo Verde Drain and Colorado River

^aSee Table 17 - Special Situations.

Table 14. Closed-loop circulating-water system with natural draft cooling towers

Plant	Makeup water
Three Mile Island	Susquehanna River
Rancho Seco	Folsom Canal
Fermi ^a (with pond)	Lake Erie
Trojan	Columbia River
Davis-Besse	Lake Erie
Limerick	Schuykill River
Zimmer	Ohio River
Forked River	Barnegat Bay
Arkansas 2	Dardanelle Reservoir of the Arkansas River
Susquehanna	Susquehanna River
Watts Bar	Chickamauga Reservoir of the Tennessee River
Beaver Valley 2	Ohio River
Grand Gulf	Mississippi River
Vogtle	Savannah River
Bellefonte	Gunterville Reservoir of the Tennessee River
Perry	Lake Erie
Douglas Point	Potomac River
Summit ^a	Chesapeake and Delaware Canal
Byron	Rock River
Fulton	Conowingo Pond of the Susquehanna River
Quanicassee	Wadock Canal
Callaway	Missouri River
Montague	Connecticut River
Davis-Besse	Lake Erie
Koshkonong (Haven)	Lake Michigan
WPPSS 3 and 5	Ranney Wells along the Chehalis River
Hartsville	Old Hickory Reservoir of the Cumberland River
Skagit	Ranney Wells along the Skagit River
Barton	Coosa River
Greene County	Hudson River
Phipps Bend	Holston River
Erie	Lake Erie

^aSee Table 17 - Special Situations.

Table 15. Variable-cycle or helper-cycle circulating-water system with mechanical draft cooling towers

Plant	Makeup water
Browns Ferry	Wheeler Lake of the Tennessee River
Monticello	Mississippi River
Vermont Yankee	Connecticut River
Peach Bottom 2 and 3	Conowingo Pond of the Susquehanna River
Prairie Island	Mississippi River

Table 16. Variable-cycle or helper-cycle circulating-water system with natural draft cooling towers

Plant	Makeup water
Sequoyah	Chickamauga Reservoir of the Tennessee River
Beaver Valley	Ohio River

Table 17. Special situations in circulating-water systems

Plant	Circulating-water system
Millstone	Once-through system discharging through a quarry.
Robinson	2250-acre reservoir used as a cooling lake.
Fermi	Natural draft towers discharging to a 50-acre cooling pond in a closed cycle.
Summer	The 7000-acre Lake Monticello will be used for once-through cooling. Also Lake Monticello is a pumped storage lake off Parr Reservoir yielding 480 MW(e) of generating capacity.
Palo Verde	Makeup water for mechanical draft towers to be sewage water from the City of Phoenix, Arizona.
Summit	Fan-assisted natural draft towers will be used. Makeup water will have high salinity.

There are only two plants where natural draft towers will be cooling high-saline water: Forked River and Summit.

The term $\text{gpm}/[\text{MW(e)} \times \Delta^\circ\text{F}]$ is an index number that expresses in a nondimensional manner how the circulating-water system is designed. The gpm and the Δt values across the condenser, as taken from the Preliminary Safety Analysis Report (PSAR), are hopefully average values, but it is possible that the two values as given might not both be under the same conditions. If the value shown for this term varies greatly from the values for similar plants, it is possible that the gpm and Δt values taken from the PSAR are not under the same conditions. For once-through systems, $\text{gpm}/\text{MW(e)} \times \Delta^\circ\text{F}$ averages about 40, with spray ponds and cooling ponds averaging 32. Closed-loop systems with mechanical draft towers average 22.3, and closed-loop systems with natural draft towers average 15.4.

It is evident that the newer plants generally have lower values for the term, which is probably due to designing for lower flows and higher Δt across the condenser.

The value can also be used to compare for different plants the steam-electrical systems and the heat-removal systems as well as the different types of circulating-water systems.

2.5 Generating Capacity Concentrations

There are some areas in the United States where nuclear power plants are located near each other, say within 50 miles of each other. Where such situations occur, there will be a concentration of nuclear generating capacity. Several areas of the United States have been reviewed, and maps have been drawn to show the power plant locations with respect to each other, to rivers, lakes, etc., and to cities (see Figs. 5 through 19). These maps are all drawn to the same scale so that different areas can be related to each other.

Fig. 5. North Carolina-South Carolina area.

ORNL-DWG 77-21566

Fig. 7. Raleigh-Durham area in North Carolina.

ORNL-DWG 77-21567

Fig. 8. Baltimore-Philadelphia area.

ORNL DWG 77 21562

Fig. 9. Knoxville-Chattanooga area in Tennessee.

ORNL DWG 77 21569

Fig. 10. Nashville, Tennessee, area.

ORNL DWG 77 21570

Fig. 11. Huntsville and northeast Alabama.

Fig. 12. Coastal area - New York City to Boston.

ORNL DWG 77 21572

Fig. 13. Three-plant area - Vermont, New Hampshire, and Massachusetts.

ORNL DWG 77-21573

Fig. 14. Rochester-Syracuse-Lake Ontario area.

ORNL DWG 77 21574

Fig. 15. Detroit and southeast Michigan.

Fig. 16. Chicago and Lake Michigan area.

ORNL DWG 7, 21577

Fig. 18. Southeast Wisconsin area.

Fig. 19. Minneapolis-St. Paul area.

REFERENCES

1. D. F. Cope and H. F. Bauman, *Expansion Potential for Existing Nuclear Power Station Sites*, ORNL/TM-5927, Oak Ridge National Laboratory (November 1977).
2. AEC Regulatory Staff, "Interim Acceptance Criteria for Emergency Core-Cooling Systems for Light-Water Power Reactors," *Fed. Regist.* 36(125): 12247-12250 (June 29, 1971).
3. "New Acceptance Criteria for Emergency Core-Cooling Systems of Light-Water-Cooled Nuclear Power Plants," *Nucl. Safety* 15(2): 173-184 (March-April 1974).
4. W. B. Cottrell, "The ECCS Rule-Making Hearing," *Nucl. Safety* 15(1): 30-55 (January-February 1974).

BIBLIOGRAPHY

1. Atomic Industrial Forum, Inc., "Nuclear Power Plants in the U.S.," in *Info*, newsletter of the AIF, June 30, 1976.
2. Energy Research and Development Administration, *Nuclear Reactors Built, Being Built, or Planned in the United States as of June 30, 1976*, TID-8200-R34 (September 1976).
3. F. A. Heddleson, *Design Data and Safety Features of Commercial Nuclear Power Plants*, Vols. I-IV, ORNL/NSIC-55, Oak Ridge National Laboratory, Nuclear Safety Information Center (Vol. I - December 1973; Vol. II - January 1972; Vol. III - April 1974; Vol. IV - March 1975).
4. F. A. Heddleson, *Design Data and Safety Features of Commercial Nuclear Power Plants*, Vol. V, ORNL/NSIC-96, Oak Ridge National Laboratory, Nuclear Safety Information Center (June 1976).
5. F. A. Heddleson, *Design Data and Safety Features of Commercial Nuclear Power Plants*, Vol. VI, ORNL/NUREG/NSIC-136, Oak Ridge National Laboratory, Nuclear Safety Information Center (June 1977).
6. International Atomic Energy Agency, *Directory of Nuclear Reactors*, Vol. 1: *Power Reactors*, IAEA, Vienna, 1959.
7. International Atomic Energy Agency, *Directory of Nuclear Reactors*, Vol. IV: *Power Reactors*, IAEA, Vienna, 1962.
8. International Atomic Energy Agency, *Directory of Nuclear Reactors*, Vol. VII: *Power Reactors*, IAEA, Vienna, 1968.
9. International Atomic Energy Agency, *Directory of Nuclear Reactors*, Vol. IX: *Power Reactors*, IAEA, Vienna, 1971.
10. International Atomic Energy Agency, *Directory of Nuclear Reactors*, Vol. X: *Power and Research Reactors*, IAEA, Vienna, 1976.
11. *Nucl. Industry*, 1977, various issues.
12. Nuclear Regulatory Commission, *Construction Status Report: Nuclear Power Plants - Data for Decisions*, NUREG-0030-77 (Yellow Book Series), 1977, various monthly issues.
13. Nuclear Regulatory Commission, *Operating Units Status Report: Licensed Operating Reactors - Data for Decisions*, NUREG-0020 (Gray Book I Series), 1977, various monthly issues.
14. *Nucl. Safety*, 1977, various issues.
15. NUS Corporation, *Commercial Nuclear Power Plants*, 8th edition, January 1976.