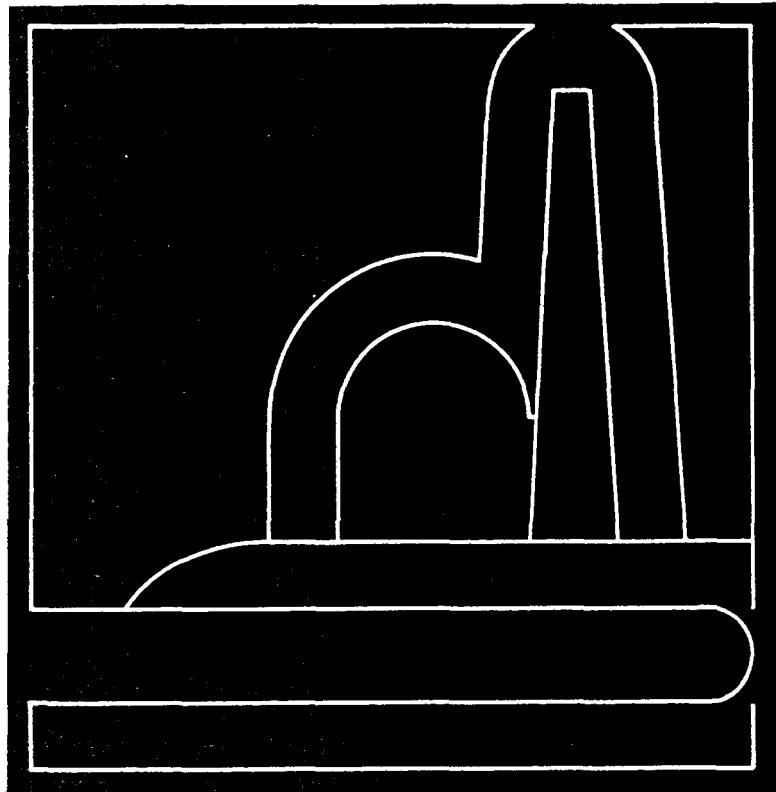


Nuclear Reactors Built, Being Built, or Planned

Lh. 1289



Technical Information Center
U. S. Department of Energy

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Nuclear Reactors Built, Being Built, or Planned contains unclassified information about facilities built, being built, or planned in the United States for domestic use or export as of June 30, 1980, which are capable of sustaining a nuclear chain reaction. The Technical Information Center, U. S. Department of Energy, gathers this information semiannually from Washington headquarters and field offices of DOE; from the U. S. Nuclear Regulatory Commission; from the U. S. reactor manufacturers who are the principal nuclear contractors for foreign reactor locations; and from U. S. embassies of foreign countries.

Information is presented in five parts, each of which is categorized by primary function or purpose: civilian, military, production, export, and critical assembly facilities. Various classes of reactors within these categories are defined as follows:

CENTRAL-STATION NUCLEAR POWER PLANT: A facility designed and constructed for operation on a utility system. (Part I, Sec. 1A)

DUAL-PURPOSE PLANT: A nuclear power facility designed, constructed, and operated for more than one primary purpose; for example, the production of nuclear materials and the generation of electricity or the use of reactor thermal energy for electrical generation and process-heat applications including desalting. (Part I, Sec. 1B)

EXPERIMENTAL POWER REACTOR: A facility designed, engineered, constructed, and operated to test the technical feasibility of a concept or to provide the technical basis for a similar type nuclear power plant in a larger size. Design flexibility permits changes to prove out various aspects of reactor technology including fuel and other components. Power-conversion equipment may or may not be included as part of the facility. (Part I, Sec. 2A)

GENERAL IRRADIATION TEST REACTOR: A reactor having (1) a thermal power level exceeding 10 MW; (2) test loops or experimental facilities within, or in proximity to, the core; and (3) the use of nuclear radiation for testing the life or performance of reactor components as its major function. (Part I, Sec. 3A, and Part IV, Sec. 2A)

HIGH-POWER RESEARCH AND TEST REACTOR: A reactor having a relatively high thermal power level (5 MW or more) but not classed as a general irradiation test reactor. (Part I, Sec. 3B)

SAFETY RESEARCH AND TEST REACTOR: A reactor associated with a nuclear safety research or engineering-scale test program conducted for the purpose of developing basic design information or demonstrating safety characteristics of terrestrial and aerospace nuclear reactor systems. (Part I, Sec. 3C)

RESEARCH REACTOR: A reactor—excluding that located at a university—whose nuclear radiations are used primarily as a research tool for basic or applied research and whose thermal power level is less than 5 MW. It may include facilities for testing reactor materials. (Part I, Sec. 3D; Part III, Sec. 3B; and Part IV, Sec. 2B)

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UNIVERSITY RESEARCH AND TEACHING REACTOR: A reactor located at a university and usually operated for the primary purpose of training in the operation and utilization of reactors and for instruction in reactor theory and performance. (Part I, Sec. 3E, and Part IV, Sec. 2C)

SPECIAL TEST REACTOR: A reactor designed for special testing purposes. (Part III, Sec. 3A)

CRITICAL FACILITY: A reactor capable of sustaining a nuclear chain reaction operating at extremely low power (a few watts) and designed to determine a critical mass, neutron-flux distribution, and other characteristics of a flexible arrangement of nuclear fuel, construction materials, coolant, and other reactor components. Fluid critical facilities are used to explore the critical masses of various concentrations of solutions in differing geometries. Metal critical assemblies are used to investigate the variations in heterogeneous cores. The tabulation of these facilities in Part V (pp. 37-38) excludes those which have been operated and subsequently dismantled.

The abbreviated listings in the principal nuclear contractor column refer to the technical organization assigned primary responsibility for design and/or fabrication of the reactor system. The spelled-out forms for those abbreviations as well as those for designers, shipbuilders, and facility operators, are given in the table on page 11.

Startup dates refer to the year of first criticality. Estimated startup dates based on the best available information are included for projects not yet in service. The dates for non-DOE projects are estimates announced by the sponsoring organizations. Years of initial commercial operation for power reactors are given in the tabulation on pages 6 to 10.

Reactors are listed as being *operable* under the following circumstances:

1. Federal Government reactors [other than those of the Tennessee Valley Authority which are licensed by the Nuclear Regulatory Commission (NRC) and are treated in accordance with item 2]—when criticality is achieved.
2. Non-Federal Government reactors in the United States—an operating license is issued by the NRC.
3. Reactors for foreign locations—when criticality is achieved.

Reactors are listed as *being built* under the following circumstances:

1. Federal Government reactors (other than those of the Tennessee Valley Authority which are licensed by NRC and are treated in accordance with item 2)—when ground is broken, components are ordered, or construction contract is awarded.
2. Non-Federal Government reactors in the United States—when a construction permit or limited work authorization is issued by NRC.
3. Reactors for foreign locations—when an application for an export license is received by NRC or when reliable information is received relating to the fabrication of reactor components.

Reactors are listed as *being planned* under the following circumstances:

1. Federal Government reactors—when publicly announced as a project planned for construction by the agency involved or the project is otherwise appropriately authorized.
2. Non-Federal Government reactors in the United States—when a public announcement that includes the principal vendor supplier is made by the sponsoring organization or an application for a construction permit is received by NRC.
3. Reactors for foreign locations—when public announcement that includes principal contractor and reactor type is made or when NRC receives information that a U. S. reactor manufacturer is proceeding with preconstruction design and development on the basis of a letter of intent.

Reactors are listed as *shut down* or *dismantled* when the owner announces or verifies a decision to permanently shut down a facility and does not intend to restart the reactor. A reactor shut down owing to technical problems, extensive modifications, or refueling continues to be listed as *operable*.

The statistical summary on the following page summarizes the number of reactors in every category except critical facilities. Shutdown and dismantled reactors in these categories are included since such facilities have made significant contributions to reactor technology.

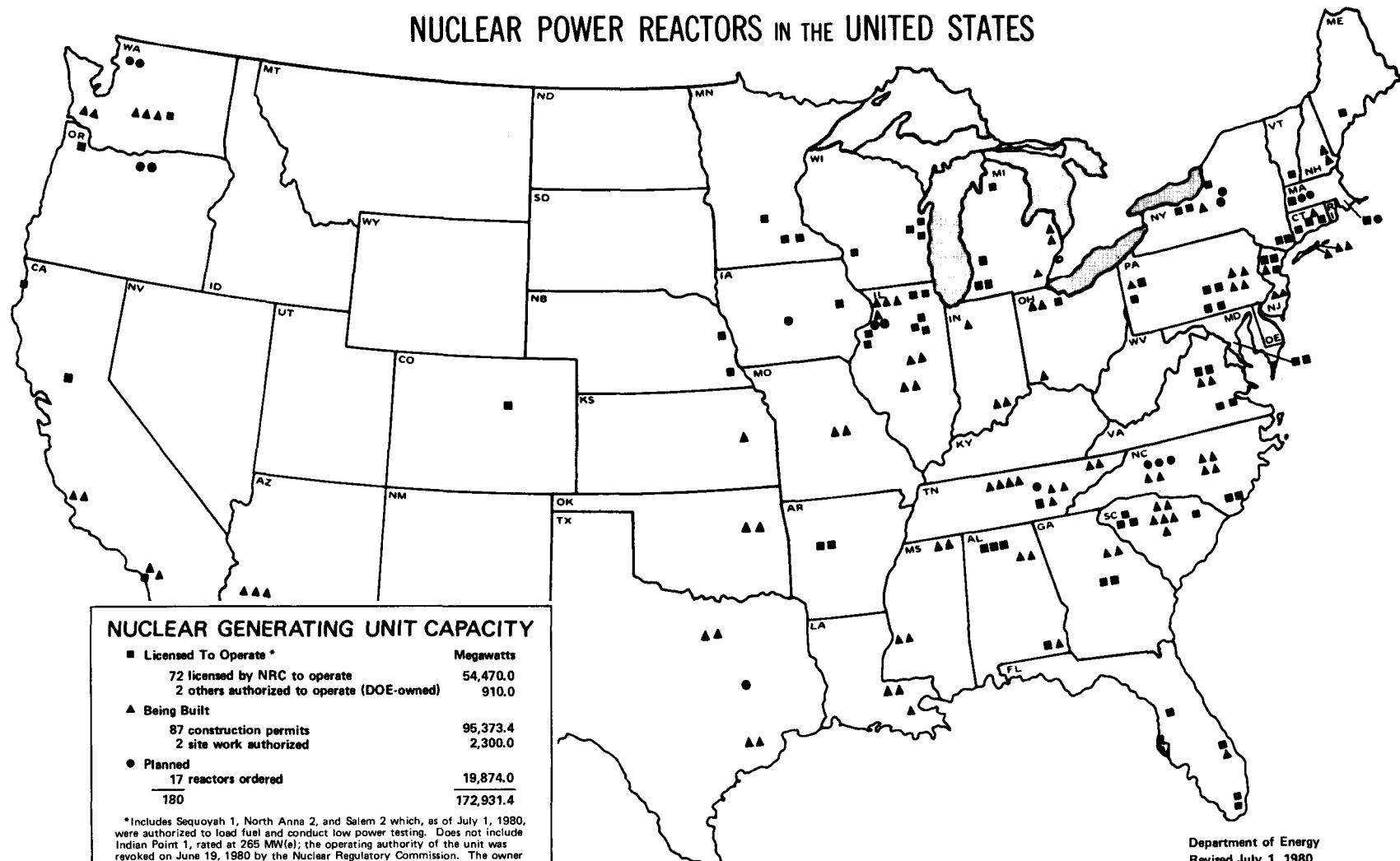
STATISTICAL SUMMARY

	Operable	Being built	Planned	Shut down or dismantled
I. CIVILIAN REACTORS				
1. Power Reactors				
A. Central-Station Electric Power	73	87	17	9
B. Dual-Purpose Plants	1	2		
C. Propulsion (Maritime)				1
2. Experimental Power-Reactor Systems				
A. Electric-Power Systems	1			23
B. Auxiliary Power (SNAP)				9
C. Space Propulsion (Rover)				21
3. Test, Research, and University Reactors				
A. General Irradiation Test	2	1		4
B. High-Power Research and Test	7			6
C. Safety Research and Test	3			9
D. General Research	23			43
E. University Research and Teaching	52	1		12
II. PRODUCTION REACTORS				
1. Materials Production	3			10
2. Process Development	1			4
III. MILITARY REACTORS				
1. Defense Power-Reactor Applications				
A. Remote Installations				6
B. Propulsion (Naval)	126	36		6
2. Developmental Power				
A. Electric-Power Experiments and Prototypes				3
B. Propulsion Experiments and Prototypes	8			7
3. Test and Research				
A. Test				3
B. Research	4			5
IV. REACTORS FOR EXPORT				
1. Power Reactors				
A. Central-Station Electric Power	27	33	13	1
B. Propulsion	1			
2. Test, Research, and Teaching				
A. General Irradiation Test	7			
B. General Research	28	5		5
C. University Research and Teaching	25	1		2

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	CIVILIAN REACTORS (Domestic)	29 Propulsion (Naval)
12	Power Reactors	30 Developmental Power
12	Central-Station Electric Power	30 Electric-Power Experiments and Prototypes
19	Dual-Purpose Plants	30 Propulsion Experiments and Prototypes
19	Propulsion (Maritime)	32 Test and Research
20	Experimental Electric Power	32 Test Reactors
20	Electric-Power Systems	32 Research Reactors
21	Auxiliary Power (SNAP)	
21	Space Propulsion (Rover)	
22	Test, Research, and University Reactors	
22	General Irradiation Test	
23	High-Power Research and Test	
23	Safety Research and Test	
24	General Research	
26	University Research and Teaching	
	PRODUCTION REACTORS	
28	Materials Production	
28	Process Development	
	REACTORS FOR EXPORT	
33	Power Reactors	
33	Central-Station Electric Power	
35	Propulsion	
35	Test, Research, and Teaching	
35	General Irradiation Test	
35	General Research	
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NUCLEAR POWER REACTORS IN THE UNITED STATES



Department of Energy
Revised July 1, 1980

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES

SITE	PLANT NAME	CAPACITY, NET MW(e)	UTILITY	COMMERCIAL OPERATION
ALABAMA				
Decatur	Browns Ferry Nuclear Power Station, Unit 1	1065	Tennessee Valley Authority	1974
Decatur	Browns Ferry Nuclear Power Station, Unit 2	1065	Tennessee Valley Authority	1975
Decatur	Browns Ferry Nuclear Power Station, Unit 3	1065	Tennessee Valley Authority	1977
Dothan	Joseph M. Farley Nuclear Plant, Unit 1	829	Alabama Power Co.	1977
Dothan	Joseph M. Farley Nuclear Plant, Unit 2	820	Alabama Power Co.	1980
Scottsboro	Bellefonte Nuclear Plant, Unit 1	1213	Tennessee Valley Authority	1983
Scottsboro	Bellefonte Nuclear Plant, Unit 2	1213	Tennessee Valley Authority	1984
ARIZONA				
Wintersburg	Palo Verde Nuclear Generating Station, Unit 1	1270	Arizona Public Service Co.	1983
Wintersburg	Palo Verde Nuclear Generating Station, Unit 2	1270	Arizona Public Service Co.	1984
Wintersburg	Palo Verde Nuclear Generating Station, Unit 3	1270	Arizona Public Service Co.	1986
ARKANSAS				
Russellville	Arkansas Nuclear One, Unit 1	850	Arkansas Power & Light Co.	1974
Russellville	Arkansas Nuclear One, Unit 2	912	Arkansas Power & Light Co.	1980
CALIFORNIA				
Eureka	Humboldt Bay Power Plant, Unit 3	65	Pacific Gas & Electric Co.	1963
San Clemente	San Onofre Nuclear Generating Station, Unit 1	436	Southern California Edison Co. and San Diego Gas & Electric Co.	1968
San Clemente	San Onofre Nuclear Generating Station, Unit 2	1100	Southern California Edison Co. and San Diego Gas & Electric Co.	1981
San Clemente	San Onofre Nuclear Generating Station, Unit 3	1100	Southern California Edison Co. and San Diego Gas & Electric Co.	1983
Diablo Canyon	Diablo Canyon Nuclear Power Plant, Unit 1	1084	Pacific Gas & Electric Co.	1981
Diablo Canyon	Diablo Canyon Nuclear Power Plant, Unit 2	1106	Pacific Gas & Electric Co.	1981
Clay Station	Rancho Seco Nuclear Generating Station	918	Sacramento Municipal Utility District	1975
COLORADO				
Platteville	Ft. St. Vrain Nuclear Generating Station	330	Public Service Co. of Colorado	1978
CONNECTICUT				
Haddam Neck	Haddam Neck Plant	575	Connecticut Yankee Atomic Power Co.	1968
Waterford	Millstone Nuclear Power Station, Unit 1	660	Northeast Nuclear Energy Co.	1971
Waterford	Millstone Nuclear Power Station, Unit 2	870	Northeast Nuclear Energy Co.	1975
Waterford	Millstone Nuclear Power Station, Unit 3	1156	Northeast Nuclear Energy Co.	1986
FLORIDA				
Florida City	Turkey Point Plant, Unit 3	693	Florida Power & Light Co.	1972
Florida City	Turkey Point Plant, Unit 4	693	Florida Power & Light Co.	1973
Red Level	Crystal River Nuclear Plant, Unit 3	825	Florida Power Corp.	1977
Ft. Pierce	St. Lucie Plant, Unit 1	802	Florida Power & Light Co.	1976
Ft. Pierce	St. Lucie Plant, Unit 2	810	Florida Power & Light Co.	1983
GEORGIA				
Baxley	Edwin I. Hatch Nuclear Plant, Unit 1	786	Georgia Power Co.	1975
Baxley	Edwin I. Hatch Nuclear Plant, Unit 2	784	Georgia Power Co.	1978
Waynesboro	Alvin W. Vogtle, Jr., Nuclear Plant, Unit 1	1110	Georgia Power Co.	1985
Waynesboro	Alvin W. Vogtle, Jr., Nuclear Plant, Unit 2	1110	Georgia Power Co.	1987
ILLINOIS				
Morris	Dresden Nuclear Power Station, Unit 1	200	Commonwealth Edison Co.	1960
Morris	Dresden Nuclear Power Station, Unit 2	794	Commonwealth Edison Co.	1970
Morris	Dresden Nuclear Power Station, Unit 3	794	Commonwealth Edison Co.	1971
Zion	Zion Nuclear Plant, Unit 1	1040	Commonwealth Edison Co.	1973
Zion	Zion Nuclear Plant, Unit 2	1040	Commonwealth Edison Co.	1974
Cordova	Quad-Cities Station, Unit 1	789	Commonwealth Edison Co. and Iowa-Illinois Gas and Electric Co.	1973
Cordova	Quad-Cities Station, Unit 2	789	Commonwealth Edison Co. and Iowa-Illinois Gas and Electric Co.	1973
Seneca	LaSalle County Station, Unit 1	1078	Commonwealth Edison Co.	1981
Seneca	LaSalle County Station, Unit 2	1078	Commonwealth Edison Co.	1982
Byron	Byron Station, Unit 1	1120	Commonwealth Edison Co.	1983
Byron	Byron Station, Unit 2	1120	Commonwealth Edison Co.	1984
Braidwood	Braidwood Station, Unit 1	1120	Commonwealth Edison Co.	1985
Braidwood	Braidwood Station, Unit 2	1120	Commonwealth Edison Co.	1986
Clinton	Clinton Power Station, Unit 1	933.4	Illinois Power Co.	1982
Clinton	Clinton Power Station, Unit 2	933.4	Illinois Power Co.	1988
Savanna	Carroll County Station, Unit 1	1120	Commonwealth Edison Co.	1992
Savanna	Carroll County Station, Unit 2	1120	Commonwealth Edison Co.	1993

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES (Continued)

SITE	PLANT NAME	CAPACITY, NET MW(e)	UTILITY	COMMERCIAL OPERATION
INDIANA				
Westchester	Bailly Generating Station Nuclear 1	643	Northern Indiana Public Service Co.	1987
Madison	Marble Hill Nuclear Generating Station, Unit 1	1130	Public Service Indiana	1986
Madison	Marble Hill Nuclear Generating Station, Unit 2	1130	Public Service Indiana	1987
IOWA				
Palo	Duane Arnold Energy Center, Unit 1	538	Iowa Electric Light & Power Co.	1975
Vandalia	Vandalia Nuclear Project	1270	Iowa Power and Light Co.	Indef.
KANSAS				
Burlington	Wolf Creek Generating Station, Unit 1	1150	Kansas Gas & Electric Co. and Kansas City Power & Light Co.	1983
LOUISIANA				
Taft	Waterford Generating Station, Unit 3	1113	Louisiana Power & Light Co.	1982
St. Francisville	River Bend Station, Unit 1	934	Gulf States Utilities Co.	1984
St. Francisville	River Bend Station, Unit 2	934	Gulf States Utilities Co.	Indef.
MAINE				
Wiscasset	Maine Yankee Atomic Power Plant	825	Maine Yankee Atomic Power Co.	1972
MARYLAND				
Lusby	Calvert Cliffs Nuclear Power Plant, Unit 1	845	Baltimore Gas and Electric Co.	1975
Lusby	Calvert Cliffs Nuclear Power Plant, Unit 2	845	Baltimore Gas and Electric Co.	1977
MASSACHUSETTS				
Rowe	Yankee Nuclear Power Station	175	Yankee Atomic Electric Co.	1961
Plymouth	Pilgrim Nuclear Power Station, Unit 1	655	Boston Edison Co.	1972
Plymouth	Pilgrim Nuclear Power Station, Unit 2	1150	Boston Edison Co.	1985
Montague	Montague Nuclear Power Station, Unit 1	1150	Northeast Utilities	Indef.
Montague	Montague Nuclear Power Station, Unit 2	1150	Northeast Utilities	Indef.
MICHIGAN				
Big Rock Point	Big Rock Point Nuclear Plant	72	Consumers Power Co.	1963
South Haven	Palisades Nuclear Plant	805	Consumers Power Co.	1971
Newport	Enrico Fermi Atomic Power Plant, Unit 2	1093	Detroit Edison Co.	1982
Bridgman	Donald C. Cook Nuclear Power Plant, Unit 1	1054	Indiana & Michigan Electric Co.	1975
Bridgman	Donald C. Cook Nuclear Power Plant, Unit 2	1100	Indiana & Michigan Electric Co.	1978
Midland	Midland Plant, Unit 1	460	Consumers Power Co.	1985
Midland	Midland Plant, Unit 2	811	Consumers Power Co.	1984
MINNESOTA				
Monticello	Monticello Nuclear Generating Plant	545	Northern States Power Co.	1971
Red Wing	Prairie Island Nuclear Generating Plant, Unit 1	530	Northern States Power Co.	1973
Red Wing	Prairie Island Nuclear Generating Plant, Unit 2	530	Northern States Power Co.	1974
MISSISSIPPI				
Corinth	Yellow Creek Nuclear Plant, Unit 1	1285	Tennessee Valley Authority	1985
Corinth	Yellow Creek Nuclear Plant, Unit 2	1285	Tennessee Valley Authority	1988
Port Gibson	Grand Gulf Nuclear Station, Unit 1	1250	Mississippi Power & Light Co.	1982
Port Gibson	Grand Gulf Nuclear Station, Unit 2	1250	Mississippi Power & Light Co.	1986
MISSOURI				
Fulton	Callaway Plant, Unit 1	1120	Union Electric Co.	1982
Fulton	Callaway Plant, Unit 2	1120	Union Electric Co.	1988
NEBRASKA				
Fort Calhoun	Ft. Calhoun Station, Unit 1	457	Omaha Public Power District	1973
Brownville	Cooper Nuclear Station	778	Nebraska Public Power District and Iowa Power and Light Co.	1974
NEW HAMPSHIRE				
Seabrook	Seabrook Nuclear Station, Unit 1	1200	Public Service Co. of New Hampshire	1983
Seabrook	Seabrook Nuclear Station, Unit 2	1200	Public Service Co. of New Hampshire	1985
NEW JERSEY				
Toms River	Oyster Creek Nuclear Power Plant, Unit 1	650	Jersey Central Power & Light Co.	1969
Forked River	Forked River Nuclear Station, Unit 1	1070	Jersey Central Power & Light Co.	Indef.
Salem	Salem Nuclear Generating Station, Unit 1	1090	Public Service Electric and Gas, N.J.	1977
Salem	Salem Nuclear Generating Station, Unit 2	1115	Public Service Electric and Gas, N.J.	1980

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES (Continued)

SITE	PLANT NAME	CAPACITY, NET MW(e)	UTILITY	COMMERCIAL OPERATION
NEW JERSEY (Continued)				
Salem	Hope Creek Nuclear Generating Station, Unit 1	1067	Public Service Electric and Gas, N.J.	1986
Salem	Hope Creek Nuclear Generating Station, Unit 2	1067	Public Service Electric and Gas, N.J.	1989
NEW YORK				
Buchanan	Indian Point Station, Unit 2	873	Consolidated Edison Co. of New York, Inc.	1973
Buchanan	Indian Point Station, Unit 3	965	Power Authority of the State of New York	1976
Scriba	Nine Mile Point Nuclear Station, Unit 1	620	Niagara Mohawk Power Corp.	1969
Scriba	Nine Mile Point Nuclear Station, Unit 2	1099.8	Niagara Mohawk Power Corp.	1986
Ontario	Robert Emmett Ginna Nuclear Power Plant, Unit 1	470	Rochester Gas & Electric Corp.	1970
Brookhaven	Shoreham Nuclear Power Station	819	Long Island Lighting Co.	1981
Scriba	James A. FitzPatrick Nuclear Power Plant	821	Power Authority of the State of New York	1975
Jamesport	Jamesport Nuclear Power Station, Unit 1	1150	Long Island Lighting Co.	1989
Jamesport	Jamesport Nuclear Power Station, Unit 2	1150	Long Island Lighting Co.	1991
New Haven	New Haven, Unit 1	1250	New York State Electric & Gas Co.	1992
New Haven	New Haven, Unit 2	1250	New York State Electric & Gas Co.	1994
NORTH CAROLINA				
Southport	Brunswick Steam Electric Plant, Unit 1	821	Carolina Power and Light Co.	1977
Southport	Brunswick Steam Electric Plant, Unit 2	821	Carolina Power and Light Co.	1975
Cowans Ford Dam	Wm. B. McGuire Nuclear Station, Unit 1	1180	Duke Power Co.	1980
Cowans Ford Dam	Wm. B. McGuire Nuclear Station, Unit 2	1180	Duke Power Co.	1982
Bonsal	Shearon Harris Nuclear Power Plant, Unit 1	900	Carolina Power and Light Co.	1985
Bonsal	Shearon Harris Nuclear Power Plant, Unit 2	900	Carolina Power and Light Co.	1988
Bonsal	Shearon Harris Nuclear Power Plant, Unit 3	900	Carolina Power and Light Co.	1994
Bonsal	Shearon Harris Nuclear Power Plant, Unit 4	900	Carolina Power and Light Co.	1990
Davie County	Thomas L. Perkins Nuclear Station, Unit 1	1280	Duke Power Co.	1996
Davie County	Thomas L. Perkins Nuclear Station, Unit 2	1280	Duke Power Co.	1998
Davie County	Thomas L. Perkins Nuclear Station, Unit 3	1280	Duke Power Co.	2000
OHIO				
Oak Harbor	Davis-Besse Nuclear Power Station, Unit 1	906	Toledo Edison Co. and Cleveland Illuminating Co.	1977
Perry	Perry Nuclear Power Plant, Unit 1	1205	Cleveland Electric Illuminating Co.	1984
Perry	Perry Nuclear Power Plant, Unit 2	1205	Cleveland Electric Illuminating Co.	1988
Moscow	Wm. H. Zimmer Nuclear Power Station, Unit 1	810	Cincinnati Gas & Electric Co.	1982
OKLAHOMA				
Inola	Black Fox Station, Unit 1	1150	Public Service Co. of Oklahoma	1985
Inola	Black Fox Station, Unit 2	1150	Public Service Co. of Oklahoma	1988
OREGON				
Prescott	Trojan Nuclear Plant, Unit 1	1130	Portland General Electric Co.	1976
Arlington	Pebble Springs Nuclear Plant, Unit 1	1260	Portland General Electric Co.	1988
Arlington	Pebble Springs Nuclear Plant, Unit 2	1260	Portland General Electric Co.	1990
PENNSYLVANIA				
Peach Bottom	Peach Bottom Atomic Power Station, Unit 2	1065	Philadelphia Electric Co.	1974
Peach Bottom	Peach Bottom Atomic Power Station, Unit 3	1065	Philadelphia Electric Co.	1974
Pottstown	Limerick Generating Station, Unit 1	1055	Philadelphia Electric Co.	1983
Pottstown	Limerick Generating Station, Unit 2	1055	Philadelphia Electric Co.	1985
Shippingport	Shippingport Atomic Power Station ²	60	Duquesne Light Co. ²	1957
Shippingport	Beaver Valley Power Station, Unit 1	852	Duquesne Light Co. and Ohio Edison Co.	1976
Shippingport	Beaver Valley Power Station, Unit 2	833	Duquesne Light Co. and Ohio Edison Co.	1986
Middletown	Three Mile Island Nuclear Station, Unit 1	819	Metropolitan Edison Co.	1974
Middletown	Three Mile Island Nuclear Station, Unit 2	906	Jersey Central Power & Light Co.	1979
Berwick	Susquehanna Steam Electric Station, Unit 1	1050	Pennsylvania Power and Light Co.	1982
Berwick	Susquehanna Steam Electric Station, Unit 2	1050	Pennsylvania Power and Light Co.	1982
SOUTH CAROLINA				
Hartsville	H.B. Robinson Plant, Unit 2	700	Carolina Power and Light Co.	1971
Seneca	Oconee Nuclear Plant, Unit 1	887	Duke Power Co.	1973
Seneca	Oconee Nuclear Plant, Unit 2	887	Duke Power Co.	1974

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES (Continued)

SITE	PLANT NAME	CAPACITY, NET MW(e)	UTILITY	COMMERCIAL OPERATION
Seneca Broad River	Oconee Nuclear Plant, Unit 3 Virgil C. Summer Nuclear Station, Unit 1	887 900	Duke Power Co. South Carolina Electric and Gas Co.	1974 1981
Lake Wylie Lake Wylie Cherokee County Cherokee County Cherokee County	Catawba Nuclear Station, Unit 1 Catawba Nuclear Station, Unit 2 Cherokee Nuclear Station, Unit 1 Cherokee Nuclear Station, Unit 2 Cherokee Nuclear Station, Unit 3	1145 1145 1280 1280 1280	Duke Power Co. Duke Power Co. Duke Power Co. Duke Power Co. Duke Power Co.	1984 1985 1990 1992 1994
TENNESSEE				
Daisy Daisy Spring City Spring City Oak Ridge Hartsville Hartsville Hartsville Hartsville Kingsport Kingsport	Sequoia Nuclear Plant, Unit 1 Sequoia Nuclear Plant, Unit 2 Watts Bar Nuclear Plant, Unit 1 Watts Bar Nuclear Plant, Unit 2 Clinch River Breeder Reactor Plant Hartsville Nuclear Plant, Unit 1 Hartsville Nuclear Plant, Unit 2 Hartsville Nuclear Plant, Unit 3 Hartsville Nuclear Plant, Unit 4 Phipps Bend Nuclear Plant, Unit 1 Phipps Bend Nuclear Plant, Unit 2	1148 1148 1177 1177 350 1233 1233 1233 1233 1233 1233	Tennessee Valley Authority Tennessee Valley Authority Tennessee Valley Authority Tennessee Valley Authority Department of Energy Tennessee Valley Authority Tennessee Valley Authority Tennessee Valley Authority Tennessee Valley Authority Tennessee Valley Authority Tennessee Valley Authority	1980 1982 1982 1983 Indef. 1986 1987 1989 1990 1987 1989
TEXAS				
Glen Rose Glen Rose Wallis Matagorda County	Comanche Peak Steam Electric Station, Unit 1 Comanche Peak Steam Electric Station, Unit 2 Allens Creek Nuclear Generating Station, Unit 1 South Texas Project, Unit 1	1111 1111 1150 1250	Texas Utilities Generating Co. Texas Utilities Generating Co. Houston Lighting & Power Co. Central Power & Light Co. and Houston Lighting & Power Co.	1981 1983 1987 1984
Matagorda County	South Texas Project, Unit 2	1250	Central Power & Light Co. and Houston Lighting & Power Co.	1986
VERMONT				
Vernon	Vermont Yankee Nuclear Power Station	514	Vermont Yankee Nuclear Power Corp.	1972
VIRGINIA				
Gravel Neck Gravel Neck Mineral Mineral Mineral	Surry Power Station, Unit 1 Surry Power Station, Unit 2 North Anna Power Station, Unit 1 North Anna Power Station, Unit 2 North Anna Power Station, Unit 3 North Anna Power Station, Unit 4	822 822 907 907 907 907	Virginia Electric & Power Co. Virginia Electric & Power Co.	1972 1973 1979 1980 Indef. Indef.
WASHINGTON				
Richland Richland Richland Satsop Richland Satsop Sedro Woolley Sedro Woolley	N-Reactor/WPPSS Steam WPPSS Nuclear Project No. 1 WPPSS Nuclear Project No. 2 WPPSS Nuclear Project No. 3 WPPSS Nuclear Project No. 4 WPPSS Nuclear Project No. 5 Skagit Nuclear Power Project, Unit 1 Skagit Nuclear Power Project, Unit 2	850 1218 1093 1240 1218 1240 1277 1277	Department of Energy Washington Public Power Supply System Washington Public Power Supply System Washington Public Power Supply System Washington Public Power Supply System Puget Sound Power & Light Co. Puget Sound Power & Light Co.	1966 1985 1983 1986 1986 1987 1987 1989
WISCONSIN				
La Crosse Two Creeks Two Creeks Carlton	La Crosse (Genoa) Nuclear Generating Station Point Beach Nuclear Plant, Unit 1 Point Beach Nuclear Plant, Unit 2 Kewaunee Nuclear Power Plant, Unit 1	50 497 497 535	Dairyland Power Cooperative Wisconsin Michigan Power Co. Wisconsin Michigan Power Co. Wisconsin Public Service Corp.	1969 1970 1972 1974

**LIST OF CONTRACTORS, DESIGNERS, SHIPBUILDERS, AND FACILITY OPERATORS
FOR WHICH ABBREVIATIONS APPEAR IN TABLES**

AC	Allis-Chalmers Mfg. Co.	HEDL	Hanford Engineering Development Laboratory
ACF	ACF Industries, Inc. (reactor activities absorbed by AC)	HKF	H. K. Ferguson Co.
AG	Aerojet-General Corporation	Hughes	Hughes Aircraft Co.
AGN	Aerojet-General Nucleonics, formerly a subsidiary and now a division of Aerojet-General Corporation	IC	Internuclear Co.
AI	Atomics International, a division of Rockwell International	INC	Idaho Nuclear Corporation
Alco	Alco Products, Inc. (reactor activities absorbed by AC)	INEL	Idaho National Engineering Laboratory
AMF	AMF Atomics, Inc., a division of American Machine & Foundry Co.	Ingalls	Ingalls Shipbuilding Corp.
ANL	Argonne National Laboratory, operated by the University of Chicago	Kaman	Kaman Nuclear, a division of Kaman Aircraft Corp.
ANPD	Aircraft Nuclear Propulsion Department, General Electric Company (name changed to Flight Propulsion Laboratory Department)	KAPL	Knolls Atomic Power Laboratory, operated by General Electric Company
AS Inc.	American Standard Inc.	KE	Kaiser Engineers, a division of Henry J. Kaiser Co.
BAC	Bendix Aviation Corp.	LANSL	Los Alamos National Scientific Laboratory, operated by the University of California
Bethlehem	Shipbuilding Division, Bethlehem Steel Co. (now Quincy Division, General Dynamics Corp.)	LLNL	Lawrence Livermore National Laboratory, operated by the University of California
Bettis	Bettis Atomic Power Laboratory, operated by Westinghouse Electric Corporation	Lockheed	Lockheed Aircraft Corp.
Blaw-Knox	Blaw-Knox Co.	Mare Island	Mare Island Naval Shipyard
BNL	Brookhaven National Laboratory, operated by Associated Universities, Inc.	Martin	Martin Marietta Corp.
B&R	Burns & Roe, Inc.	Maxon	Maxon Construction Co.
B&W	Babcock & Wilcox Co.	Met. Lab	Metallurgical Laboratory of the Manhattan Engineer District
CL	Clinton Laboratory of the Manhattan Engineer District	NASA	National Aeronautics and Space Administration
Comb.	Combustion Engineering, Inc.	NBS	National Bureau of Standards
Convair	Convair Division, General Dynamics Corp.	Newport News	Newport News Shipbuilding & Dry Dock Co.
Cook	Nucleidyne Co., a division of Cook Electric Company	NRDS	Nuclear Rocket Development Station
CW	Curtiss-Wright Corporation	NRL	Naval Research Laboratory
Daystrom	Daystrom, Inc.	NSA	Nuclear Systems Associates
DOD	Department of Defense	NTS	Nevada Test Site
du Pont	E. I. du Pont de Nemours & Company, Inc.	NYSC	New York Shipbuilding Corp.
Ebasco	Ebasco Services, Inc.	ORNL	Oak Ridge National Laboratory
EG&G-ID	EG&G Idaho, Inc. (a division of EG&G, Inc.)	PNL	Pacific Northwest Laboratory, operated by Battelle Memorial Institute
Electric Boat	Electric Boat Division, General Dynamics Corp.	Portsmouth	Portsmouth Naval Shipyard
Fluor	The Fluor Corporation, Ltd.	PPC	Phillips Petroleum Co.
FW	Foster Wheeler Corp.	PRDC	Power Reactor Development Company
GA	General Atomic, a Gulf and Royal Dutch/Shell Company	P&W	Pratt & Whitney Aircraft Division, United Aircraft Corp.
GD (Quincy)	Quincy Division, General Dynamics Corp.	RI	Rockwell International
GE	General Electric Company	Sandia	Sandia National Laboratories, operated by Sandia Corp., a subsidiary of Western Electric Co.
GENMPO	General Electric Nuclear Materials and Propulsion Operation	San Francisco Bay	San Francisco Bay Naval Shipyard
GM	General Motors Corp.	TVA	Tennessee Valley Authority
GNEC	General Nuclear Engineering Corp. (became a division of Combustion Engineering, Inc., in 1964)	UNC	United Nuclear Corporation, Development Division
GSA	General Services Administration	UNCNI	UNC Nuclear Industries
HiA	Hittman Associates	West.	Westinghouse Electric Corporation

1. POWER REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

A. Central-Station Electric Power

(Docket numbers for commercial nuclear power plants are listed in brackets in the text.)

Name and/or owner	Location	Principal nuclear contractor	Type	Power ¹		
				Unit size, net MW(e)	Reactor, MW(t)	Start-up
OPERABLE						
Arkansas Nuclear One, Unit 1 (Arkansas Power & Light Co.) [50-313] ³	Russellville, Ark.	B&W	Pressurized water	850	2568	1974
Arkansas Nuclear One, Unit 2 (Arkansas Power & Light Co.) [50-368] ³	Russellville, Ark.	Comb.	Pressurized water	912	2815	1978
Beaver Valley Power Station, Unit 1 (Duquesne Light Co., Ohio Edison Co., and Pennsylvania Power Co.) [50-334] ³	Shippingport, Pa.	West.	Pressurized water	852	2652	1976
Big Rock Point Nuclear Plant (Consumers Power Co.) [50-155] ^{3,4}	Big Rock Point, Mich.	GE	Boiling water	72	240	1962
Browns Ferry Nuclear Power Station, Unit 1 (Tennessee Valley Authority) [50-259] ³	Decatur, Ala.	GE	Boiling water	1065	3293	1973
Browns Ferry Nuclear Power Station, Unit 2 (Tennessee Valley Authority) [50-260] ³	Decatur, Ala.	GE	Boiling water	1065	3293	1974
Browns Ferry Nuclear Power Station, Unit 3 (Tennessee Valley Authority) [50-296] ³	Decatur, Ala.	GE	Boiling water	1065	3293	1976
Brunswick Steam Electric Plant, Unit 1 (Carolina Power & Light Co.) [50-324] ³	Southport, N. C.	GE	Boiling water	821	2436	1976
Brunswick Steam Electric Plant, Unit 2 (Carolina Power & Light Co.) [50-325] ³	Southport, N. C.	GE	Boiling water	821	2436	1975
Calvert Cliffs Nuclear Power Plant, Unit 1 (Baltimore Gas & Electric Co.) [50-317] ³	Lusby, Md.	Comb.	Pressurized water	845	2700	1974
Calvert Cliffs Nuclear Power Plant, Unit 2 (Baltimore Gas & Electric Co.) [50-318] ³	Lusby, Md.	Comb.	Pressurized water	845	2700	1976
Cooper Nuclear Station (Nebraska Public Power District and Iowa Power and Light Co.) [50-298] ³	Brownville, Nebr.	GE	Boiling water	778	2381	1974
Crystal River Nuclear Plant, Unit 3 (Florida Power Corp.) [50-302] ³	Red Level, Fla.	B&W	Pressurized water	825	2452	1977
Davis-Besse Nuclear Power Station, Unit 1 (Toledo Edison Co. and Cleveland Electric Illuminating Co.) [50-346] ³	Oak Harbor, Ohio	B&W	Pressurized water	906	2772	1977
Donald C. Cook Nuclear Power Plant, Unit 1 (Indiana and Michigan Electric Co.) [50-315] ³	Bridgman, Mich.	West.	Pressurized water	1054	3250	1975
Donald C. Cook Nuclear Power Plant, Unit 2 (Indiana and Michigan Electric Co.) [50-316] ³	Bridgman, Mich.	West.	Pressurized water	1100	3391	1978
Dresden Nuclear Power Station, Unit 1 (Commonwealth Edison Co.) [50-010] ³	Morris, Ill.	GE	Boiling water	200	700	1959
Dresden Nuclear Power Station, Unit 2 (Commonwealth Edison Co.) [50-237] ³	Morris, Ill.	GE	Boiling water	794	2527	1970
Dresden Nuclear Power Station, Unit 3 (Commonwealth Edison Co.) [50-249] ³	Morris, Ill.	GE	Boiling water	794	2527	1971
Duane Arnold Energy Center, Unit 1 (Iowa Electric Light & Power Co., Central Iowa Power Cooperative, and Corn Belt Power Cooperative) [50-331] ³	Palo, Iowa	GE	Boiling water	538	1593	1974
Edwin I. Hatch Nuclear Plant, Unit 1 (Georgia Power Co.) [50-321] ³	Baxley, Ga.	GE	Boiling water	786	2436	1974
Edwin I. Hatch Nuclear Plant, Unit 2 (Georgia Power Co.) [50-366] ³	Baxley, Ga.	GE	Boiling water	784	2436	1978
Fort Calhoun Station, Unit 1 (Omaha Public Power District) [50-285] ³	Fort Calhoun, Nebr.	Comb.	Pressurized water	457	1420	1973
Fort St. Vrain Nuclear Generating Station (Public Service Co. of Colorado) [50-267] ^{3,4}	Platteville, Colo.	GA	High temperature	330	842	1974
Haddam Neck Plant (Connecticut Yankee Atomic Power Co.) [50-213] ^{3,4}	Haddam Neck, Conn.	West.	Pressurized water	575	1825	1967

H. B. Robinson Plant, Unit 2 (Carolina Power & Light Co.) [50-261] ³	Hartsville, S. C.	West.	Pressurized water	700	2200	1970
*Humboldt Bay Power Plant, Unit 3 (Pacific Gas & Electric Co.) [50-133] ³	Eureka, Calif.	GE	Boiling water	65	242	1963
Indian Point Station, Unit 2 (Consolidated Edison Co. of New York, Inc.) [50-247] ³	Buchanan, N. Y.	West.	Pressurized water	873	2758	1973
Indian Point Station, Unit 3 (Power Authority of New York) [50-286] ³	Buchanan, N. Y.	West.	Pressurized water	965	2760	1976
James A. FitzPatrick Nuclear Power Plant (Power Authority of the State of New York) [50-333] ³	Scriba, N. Y.	GE	Boiling water	821	2436	1974
Joseph M. Farley Nuclear Plant, Unit 1 (Alabama Power Co.) [50-348] ³	Dothan, Ala.	West.	Pressurized water	829	2652	1977
Kewaunee Nuclear Power Plant (Wisconsin Power & Light Co., Wisconsin Public Service Co., and Madison Gas & Electric Co.) [50-305] ³	Carlton, Wis.	West.	Pressurized water	535	1650	1974
La Crosse (Genoa) Nuclear Generating Station (Dairyland Power Cooperative) [50-409] ^{3,4}	La Crosse, Wis.	AC	Boiling water	50	165	1967
Maine Yankee Atomic Power Plant (Maine Yankee Atomic Power Co.) [50-309] ³	Wiscasset, Maine	Comb.	Pressurized water	825	2500	1972
Millstone Nuclear Power Station, Unit 1 (Northeast Nuclear Energy Co.) [50-245] ³	Waterford, Conn.	GE	Boiling water	660	2011	1970
Millstone Nuclear Power Station, Unit 2 (Northeast Nuclear Energy Co.) [50-336] ³	Waterford, Conn.	Comb.	Pressurized water	870	2560	1975
Monticello Nuclear Generating Plant (Northern States Power Co.) [50-263] ³	Monticello, Minn.	GE	Boiling water	545	1670	1970
Nine Mile Point Nuclear Station, Unit 1 (Niagara Mohawk Power Corp.) [50-220] ³	Scriba, N. Y.	GE	Boiling water	620	1850	1969
North Anna Power Station, Unit 1 (Virginia Electric & Power Co.) [50-338] ³	Mineral, Va.	West.	Pressurized water	907	2775	1978
†North Anna Power Station, Unit 2 (Virginia Electric & Power Co.) [50-339] ³	Mineral, Va.	West.	Pressurized water	907	2775	1980
Oconee Nuclear Station, Unit 1 (Duke Power Co.) [50-269] ³	Seneca, S. C.	B&W	Pressurized water	887	2568	1973
Oconee Nuclear Station, Unit 2 (Duke Power Co.) [50-270] ³	Seneca, S. C.	B&W	Pressurized water	887	2568	1973
Oconee Nuclear Station, Unit 3 (Duke Power Co.) [50-287] ³	Seneca, S. C.	B&W	Pressurized water	887	2568	1974
Oyster Creek Nuclear Power Plant, Unit 1 (Jersey Central Power & Light Co.) [50-219] ³	Toms River, N. J.	GE	Boiling water	650	1930	1969
Palisades Nuclear Plant, Unit 1 (Consumers Power Co. of Michigan) [50-255] ³	South Haven, Mich.	Comb.	Pressurized water	805	2530	1971
Peach Bottom Atomic Power Station, Unit 2 (Philadelphia Electric Co., Public Service Electric & Gas Co., Atlantic City Electric Co., and Delmarva Power & Light Co.) [50-277] ³	Peach Bottom, Pa.	GE	Boiling water	1065	3293	1973
Peach Bottom Atomic Power Station, Unit 3 (Philadelphia Electric Co., Public Service Electric & Gas Co., Atlantic City Electric Co., and Delmarva Power & Light Co.) [50-278] ³	Peach Bottom, Pa.	GE	Boiling water	1065	3293	1974
Pilgrim Nuclear Power Station, Unit 1 (Boston Edison Co.) [50-293] ³	Plymouth, Mass.	GE	Boiling water	655	1998	1972
Point Beach Nuclear Plant, Unit 1 (Wisconsin Electric Power Co. and Wisconsin Michigan Power Co.) [50-266] ³	Two Creeks, Wis.	West.	Pressurized water	497	1518	1970
Point Beach Nuclear Plant, Unit 2 (Wisconsin Electric Power Co. and Wisconsin Michigan Power Co.) [50-301] ³	Two Creeks, Wis.	West.	Pressurized water	497	1518	1972
Prairie Island Nuclear Generating Plant, Unit 1 (Northern States Power Co.) [50-282] ³	Red Wing, Minn.	West.	Pressurized water	530	1650	1973
Prairie Island Nuclear Generating Plant, Unit 2 (Northern States Power Co.) [50-306] ³	Red Wing, Minn.	West.	Pressurized water	530	1650	1974
Quad-Cities Station, Unit 1 (Commonwealth Edison Co. and Iowa-Illinois Gas & Electric Co.) [50-254] ³	Cordova, Ill.	GE	Boiling water	789	2511	1972

*Shut down pending decision on future of operation.

†Authorized to load fuel 4-11-80; full power operating license granted 8-21-80.

1. POWER REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

A. Central-Station Electric Power (Continued)

Name and/or owner	Location	Principal nuclear contractor	Type	Power ¹			
				Unit size, net MW(e)	Reactor, MW(t)	Start-up	Shut-down
OPERABLE (Continued)							
Quad-Cities Station, Unit 2 (Commonwealth Edison Co. and Iowa-Illinois Gas & Electric Co.) [50-265] ³	Cordova, Ill.	GE	Boiling water	789	2511	1972	
Rancho Seco Nuclear Generating Station, Unit 1 (Sacramento Municipal Utility District) [50-312] ³	Clay Station, Calif.	B&W	Pressurized water	918	2772	1974	
Robert Emmett Ginna Nuclear Power Plant, Unit 1 (Rochester Gas & Electric Co.) [50-244] ³	Ontario, N. Y.	West.	Pressurized water	470	1520	1969	
Salem Nuclear Generating Station, Unit 1 (Public Service Electric & Gas Co., Philadelphia Electric Co., Atlantic City Electric Co., and Delmarva Power & Light Co.) [50-272] ³	Salem, N. J.	West.	Pressurized water	1090	3338	1976	
*Salem Nuclear Generating Station, Unit 2 (Public Service Electric & Gas Co., Philadelphia Electric Co., Atlantic City Electric Co., and Delmarva Power & Light Co.) [50-311] ³	Salem, N. J.	West.	Pressurized water	1115	3423	1980	
San Onofre Nuclear Generating Station, Unit 1 (Southern California Edison and San Diego Gas & Electric Co.) [50-206] ^{3,*4}	San Clemente, Calif.	West.	Pressurized water	436	1347	1967	
†Sequoia Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-327] ³	Daisy, Tenn.	West.	Pressurized water	1148	3423	1980	
Shippingport Atomic Power Station (DOE and Duquesne Light Co.) ²	Shippingport, Pa.	West.	Pressurized water	60	236	1957	
St. Lucie Plant, Unit 1 (Florida Power & Light Co.) [50-335] ³	Fort Pierce, Fla.	Comb.	Pressurized water	802	2560	1976	
Surry Power Station, Unit 1 (Virginia Electric & Power Co.) [50-280] ³	Gravel Neck, Va.	West.	Pressurized water	822	2441	1972	
Surry Power Station, Unit 2 (Virginia Electric & Power Co.) [50-281] ³	Gravel Neck, Va.	West.	Pressurized water	822	2441	1973	
Three Mile Island Nuclear Station, Unit 1 (Metropolitan Edison Co.) [50-289] ³	Middletown, Pa.	B&W	Pressurized water	819	2535	1974	
‡Three Mile Island Nuclear Station, Unit 2 (Metropolitan Edison Co.) [50-320] ³	Middletown, Pa.	B&W	Pressurized water	906	2772	1979	
Trojan Nuclear Plant, Unit 1 (Portland General Electric Co., Eugene Water & Electric Board, and Pacific Power & Light Co.) [50-344] ³	Prescott, Oreg.	West.	Pressurized water	1130	3411	1975	
Turkey Point Plant, Unit 3 (Florida Power & Light Co.) [50-250] ³	Florida City, Fla.	West.	Pressurized water	693	2200	1972	
Turkey Point Plant, Unit 4 (Florida Power & Light Co.) [50-251] ³	Florida City, Fla.	West.	Pressurized water	693	2200	1973	
Vermont Yankee Nuclear Power Station (Vermont Yankee Nuclear Power Corp.) [50-271] ³	Vernon, Vt.	GE	Boiling water	514	1593	1972	
Yankee Rowe Nuclear Power Station (Yankee Atomic Electric Co.) [50-29] ^{3,*4}	Rowe, Mass.	West.	Pressurized water	175	600	1960	
Zion Nuclear Plant, Unit 1 (Commonwealth Edison Co.) [50-295] ³	Zion, Ill.	West.	Pressurized water	1040	3250	1973	
Zion Nuclear Plant, Unit 2 (Commonwealth Edison Co.) [50-304] ³	Zion, Ill.	West.	Pressurized water	1040	3250	1973	
BEING BUILT							
Alvin W. Vogtle Nuclear Plant, Unit 1 (Georgia Power Co.) [50-424] ³	Waynesboro, Ga.	West.	Pressurized water	1110	3425	1984	
Alvin W. Vogtle Nuclear Plant, Unit 2 (Georgia Power Co.) [50-425] ³	Waynesboro, Ga.	West.	Pressurized water	1110	3425	1987	
Bailly Generating Station (Northern Indiana Public Service Co.) [50-367] ³	Westchester, Ind.	GE	Boiling water	643.8	1931	Indef.	
Beaver Valley Power Station, Unit 2 (Duquesne Light Co., Ohio Edison Co., and Pennsylvania Power Co.) [50-412] ³	Shippingport, Pa.	West.	Pressurized water	833	2660	1985	
Bellefonte Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-438] ³	Scottsboro, Ala.	B&W	Pressurized water	1213	3621	1982	
Bellefonte Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-439] ³	Scottsboro, Ala.	B&W	Pressurized water	1213	3621	1983	
Black Fox Station, Unit 1 (Public Service of Oklahoma) [STN-50-556] ³	Inola, Okla.	GE	Boiling water	1150	3579	1985	

Black Fox Station, Unit 2 (Public Service of Oklahoma) [STN-50-557] ³	Inola, Okla.	GE	Boiling water	1150	3579	1988
Braidwood Station, Unit 1 (Commonwealth Edison Co.) [50-456] ³	Braidwood, Ill.	West.	Pressurized water	1120	3425	1985
Braidwood Station, Unit 2 (Commonwealth Edison Co.) [50-457] ³	Braidwood, Ill.	West.	Pressurized water	1120	3425	1986
Byron Station, Unit 1 (Commonwealth Edison Co.) [50-454] ³	Byron, Ill.	West.	Pressurized water	1120	3425	1983
Byron Station, Unit 2 (Commonwealth Edison Co.) [50-455] ³	Byron, Ill.	West.	Pressurized water	1120	3425	1984
Callaway Plant, Unit 1 (Union Electric Co.) [STN-50-483] ³	Fulton, Mo.	West.	Pressurized water	1120	3411	1982
Callaway Plant, Unit 2 (Union Electric Co.) [STN-50-486] ³	Fulton, Mo.	West.	Pressurized water	1120	3411	1988
Catawba Nuclear Station, Unit 1 (Duke Power Co.) [50-413] ³	Lake Wylie, S. C.	West.	Pressurized water	1145	3411	1984
Catawba Nuclear Station, Unit 2 (Duke Power Co.) [50-414] ³	Lake Wylie, S. C.	West.	Pressurized water	1145	3411	1985
Cherokee Nuclear Station, Unit 1 (Duke Power Co.) [STN-50-491] ³	Cherokee County, S. C.	Comb.	Pressurized water	1280	3800	1989
Cherokee Nuclear Station, Unit 2 (Duke Power Co.) [STN-50-492] ³	Cherokee County, S. C.	Comb.	Pressurized water	1280	3800	1991
Cherokee Nuclear Station, Unit 3 (Duke Power Co.) [STN-50-493] ³	Cherokee County, S. C.	Comb.	Pressurized water	1280	3800	1993
Clinton Power Station, Unit 1 (Illinois Power Co.) [50-461] ³	Clinton, Ill.	GE	Boiling water	933.4	2894	1982
Clinton Power Station, Unit 2 (Illinois Power Co.) [50-462] ³	Clinton, Ill.	GE	Boiling water	933.4	2894	1987
Comanche Peak Steam Electric Station, Unit 1 (Texas Power & Light Co., Texas Electric Service Co., and Dallas Power and Light Co.) [50-445] ³	Glen Rose, Tex.	West.	Pressurized water	1111	3411	1981
Comanche Peak Steam Electric Station, Unit 2 (Texas Power & Light Co., Texas Electric Service Co., and Dallas Power and Light Co.) [50-446] ³	Glen Rose, Tex.	West.	Pressurized water	1111	3411	1982
Diablo Canyon Nuclear Power Plant, Unit 1 (Pacific Gas & Electric Co.) [50-275] ³	Diablo Canyon, Calif.	West.	Pressurized water	1084	3338	1980
Diablo Canyon Nuclear Power Plant, Unit 2 (Pacific Gas & Electric Co.) [50-323] ³	Diablo Canyon, Calif.	West.	Pressurized water	1106	3411	1981
Enrico Fermi Atomic Power Plant, Unit 2 (Detroit Edison Co.) [50-341] ³	Newport, Mich.	GE	Boiling water	1093	3292	1981
Forked River Nuclear Station, Unit 1 (Jersey Central Power and Light Co.) [50-363] ³	Forked River, N. J.	Comb.	Pressurized water	1070	3390	Indef.
Grand Gulf Nuclear Station, Unit 1 (Mississippi Power & Light Co.) [50-416] ³	Port Gibson, Miss.	GE	Boiling water	1250	3833	1981
Grand Gulf Nuclear Station, Unit 2 (Mississippi Power & Light Co.) [50-417] ³	Port Gibson, Miss.	GE	Boiling water	1250	3833	1985
Hartsville Nuclear Plant, Unit 1 (Tennessee Valley Authority) [STN-50-518] ³	Tennessee	GE	Boiling water	1233	3583	1985
Hartsville Nuclear Plant, Unit 2 (Tennessee Valley Authority) [STN-50-519] ³	Tennessee	GE	Boiling water	1233	3583	1986
Hartsville Nuclear Plant, Unit 3 (Tennessee Valley Authority) [STN-50-520] ³	Tennessee	GE	Boiling water	1233	3583	1988
Hartsville Nuclear Plant, Unit 4 (Tennessee Valley Authority) [STN-50-521] ³	Tennessee	GE	Boiling water	1233	3583	1989
Hope Creek Nuclear Generating Station, Unit 1 (Public Service Electric & Gas Co.) [50-354] ³	Salem, N. J.	GE	Boiling water	1067	3293	1986
Hope Creek Nuclear Generating Station, Unit 2 (Public Service Electric & Gas Co.) [50-355] ³	Salem, N. J.	GE	Boiling water	1067	3293	1989
Jamesport Nuclear Power Station, Unit 1 (Long Island Lighting Co.) [STN-50-516] ³	Jamesport, N. Y.	West.	Pressurized water	1150	3411	1989
Jamesport Nuclear Power Station, Unit 2 (Long Island Lighting Co.) [STN-50-517] ³	Jamesport, N. Y.	West.	Pressurized water	1150	3411	1991
Joseph M. Farley Nuclear Plant, Unit 2 (Alabama Power Co.) [50-364] ³	Dothan, Ala.	West.	Pressurized water	829	2652	1980
La Salle County Station, Unit 1 (Commonwealth Edison Co.) [50-373] ³	Seneca, Ill.	GE	Boiling water	1078	3293	1981
La Salle County Station, Unit 2 (Commonwealth Edison Co.) [50-374] ³	Seneca, Ill.	GE	Boiling water	1078	3293	1982
Limerick Generating Station, Unit 1 (Philadelphia Electric Co.) [50-352] ³	Pottstown, Pa.	GE	Boiling water	1055	3293	1983

A. Central-Station Electric Power (Continued)

Name and/or owner	Location	Principal nuclear contractor	Type	Power ¹		
				Unit size, net MW(e)	Reactor, MW(t)	Start-up
BEING BUILT (Continued)						
Limerick Generating Station, Unit 2 (Philadelphia Electric Co.) [50-353] ³	Pottstown, Pa.	GE	Boiling water	1055	3293	1985
Marble Hill Nuclear Generating Station, Unit 1 (Public Service Indiana) [STN-50-546] ³	Madison, Ind.	West.	Pressurized water	1130	3425	1986
Marble Hill Nuclear Generating Station, Unit 2 (Public Service Indiana) [STN-50-547] ³	Madison, Ind.	West.	Pressurized water	1130	3425	1987
Millstone Nuclear Power Station, Unit 3 (Millstone Point Co.) [50-423] ³	Waterford, Conn.	West.	Pressurized water	1156	3411	1986
Nine Mile Point Nuclear Station, Unit 2 (Niagara Mohawk Power Corp.) [50-410] ³	Scriba, N. Y.	GE	Boiling water	1099.8	3323	1986
North Anna Power Station, Unit 3 (Virginia Electric & Power Co.) [50-404] ³	Mineral, Va.	B&W	Pressurized water	907	2631	Indef.
North Anna Power Station, Unit 4 (Virginia Electric & Power Co.) [50-405] ³	Mineral, Va.	B&W	Pressurized water	907	2631	Indef.
Palo Verde Nuclear Generating Station, Unit 1 (Arizona Public Service Co., Tucson Gas & Electric Co., Salt River Project, Public Service Co. of New Mexico, and El Paso Electric Co.) [STN-50-528] ³	Wintersburg, Ariz.	Comb.	Pressurized water	1270	3817	1982
Palo Verde Nuclear Generating Station, Unit 2 (Arizona Public Service Co., Tucson Gas & Electric Co., Salt River Project, Public Service Co. of New Mexico, and El Paso Electric Co.) [STN-50-529] ³	Wintersburg, Ariz.	Comb.	Pressurized water	1270	3817	1983
Palo Verde Nuclear Generating Station, Unit 3 (Arizona Public Service Co., Tucson Gas & Electric Co., Salt River Project, Public Service Co. of New Mexico, and El Paso Electric Co.) [STN-50-530] ³	Wintersburg, Ariz.	Comb.	Pressurized water	1270	3817	1985
Perry Nuclear Power Plant, Unit 1 (Cleveland Electric Illuminating Co.) [50-440] ³	Perry, Ohio	GE	Boiling water	1205	3579	1983
Perry Nuclear Power Plant, Unit 2 (Cleveland Electric Illuminating Co.) [50-441] ³	Perry, Ohio	GE	Boiling water	1205	3579	1987
Phipps Bend Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-553] ³	Kingsport, Tenn.	GE	Boiling water	1233	3583	1987
Phipps Bend Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-554] ³	Kingsport, Tenn.	GE	Boiling water	1233	3583	1989
River Bend Station, Unit 1 (Gulf States Utilities Co.) [50-458] ³	St. Francisville, La.	GE	Boiling water	934	2894	1984
River Bend Station, Unit 2 (Gulf States Utilities Co.) [50-459] ³	St. Francisville, La.	GE	Boiling water	934	2894	Indef.
San Onofre Nuclear Generating Station, Unit 2 (Southern California Edison Co. and San Diego Gas & Electric Co.) [50-361] ³	San Clemente, Calif.	Comb.	Pressurized water	1100	3410	1981
San Onofre Nuclear Generating Station, Unit 3 (Southern California Edison Co. and San Diego Gas & Electric Co.) [50-362] ³	San Clemente, Calif.	Comb.	Pressurized water	1100	3410	1982
Seabrook Nuclear Station, Unit 1 (Public Service Co. of New Hampshire and United Illuminating Co.) [50-443] ³	Seabrook, N. H.	West.	Pressurized water	1200	3411	1983
Seabrook Nuclear Station, Unit 2 (Public Service Co. of New Hampshire and United Illuminating Co.) [50-444] ³	Seabrook, N. H.	West.	Pressurized water	1200	3411	1984
Sequoiah Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-328] ³	Daisy, Tenn.	West.	Pressurized water	1148	3423	1980
Shearon Harris Nuclear Power Plant, Unit 1 (Carolina Power & Light Co.) [50-400] ³	Bonsal, N. C.	West.	Pressurized water	900	2775	1984

Shearon Harris Nuclear Power Plant, Unit 2 (Carolina Power & Light Co.) [50-401] ³	Bonsal, N. C.	West.	Pressurized water	900	2775	1987
Shearon Harris Nuclear Power Plant, Unit 3 (Carolina Power & Light Co.) [50-402] ³	Bonsal, N. C.	West.	Pressurized water	900	2775	1991
Shearon Harris Nuclear Power Plant, Unit 4 (Carolina Power & Light Co.) [50-403] ³	Bonsal, N. C.	West.	Pressurized water	900	2775	1989
Shoreham Nuclear Power Station (Long Island Lighting Co.) [50-322] ³	Brookhaven, N. Y.	GE	Boiling water	819	2436	1981
South Texas Project, Unit 1 (Houston Lighting & Power Co., Central Power & Light Co., City Public Service Board of San Antonio, and City of Austin) [STN-50-498] ³	Bay City, Tex.	West.	Pressurized water	1250	3817	1983
South Texas Project, Unit 2 (Houston Lighting & Power Co., Central Power & Light Co., City Public Service Board of San Antonio, and City of Austin) [STN-50-499] ³	Bay City, Tex.	West.	Pressurized water	1250	3817	1985
St. Lucie Plant, Unit 2 (Florida Power & Light Co.) [50-389] ³	Fort Pierce, Fla.	Comb.	Pressurized water	810	2570	1982
Susquehanna Steam Electric Station, Unit 1 (Pennsylvania Power & Light Co.) [50-387] ³	Berwick, Pa.	GE	Boiling water	1050	3293	1981
Susquehanna Steam Electric Station, Unit 2 (Pennsylvania Power & Light Co.) [50-388] ³	Berwick, Pa.	GE	Boiling water	1050	3293	1982
Virgil C. Summer Nuclear Station, Unit 1 (South Carolina Electric & Gas Co.) [50-395] ³	Broad River, S. C.	West.	Pressurized water	900	2785	1980
Waterford Generating Station, Unit 3 (Louisiana Power & Light Co.) [50-382] ³	Taft, La.	Comb.	Pressurized water	1113	3410	1981
Watts Bar Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-390] ³	Spring City, Tenn.	West.	Pressurized water	1177	3425	1980
Watts Bar Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-391] ³	Spring City, Tenn.	West.	Pressurized water	1177	3425	1981
William B. McGuire Nuclear Station, Unit 1 (Duke Power Co.) [50-369] ³	Cowans Ford Dam, N. C.	West.	Pressurized water	1180	3411	1980
William B. McGuire Nuclear Station, Unit 2 (Duke Power Co.) [50-370] ³	Cowans Ford Dam, N. C.	West.	Pressurized water	1180	3411	1982
William H. Zimmer Nuclear Power Station, Unit 1 (Cincinnati Gas & Electric Co., Columbus & Southern Ohio Electric Co., and Dayton Power & Light Co.) [50-358] ³	Moscow, Ohio	GE	Boiling water	810	2436	1981
Wolf Creek Generating Station (Kansas Gas & Electric Co. and Kansas City Power & Light Co.) [STN-50-482] ³	Burlington, Kans.	West.	Pressurized water	1150	3411	1982
WPPSS Nuclear Project, Unit 1 (Washington Public Power Supply System) [50-460] ³	Richland, Wash.	B&W	Pressurized water	1218	3619	1984
WPPSS Nuclear Project, Unit 2 (Washington Public Power Supply System) [50-397] ³	Richland, Wash.	GE	Boiling water	1093	3323	1982
WPPSS Nuclear Project, Unit 3 (Washington Public Power Supply System) [STN-50-508] ³	Satsop, Wash.	Comb.	Pressurized water	1240	3817	1985
WPPSS Nuclear Project, Unit 4 (Washington Public Power Supply System) [50-513] ³	Richland, Wash.	B&W	Pressurized water	1218	3619	1985
WPPSS Nuclear Project, Unit 5 (Washington Public Power Supply System) [STN-50-509] ³	Satsop, Wash.	Comb.	Pressurized water	1240	3817	1986
Yellow Creek Nuclear Plant, Unit 1 (Tennessee Valley Authority) [STN-50-566] ³	Corinth, Miss.	Comb.	Pressurized water	1285	3817	1985
Yellow Creek Nuclear Plant, Unit 2 (Tennessee Valley Authority) [STN-50-567] ³	Corinth, Miss.	Comb.	Pressurized water	1285	3817	1987
PLANNED						
Allens Creek Nuclear Generating Plant, Unit 1 (Houston Lighting & Power) [50-466] ³	Wallis, Tex.	GE	Boiling water	1150	3579	1987
Carroll County Station, Unit 1 (Commonwealth Edison Co.)	Savanna, Ill.	West.	Pressurized water	1120		1992
Carroll County Station, Unit 2 (Commonwealth Edison Co.)	Savanna, Ill.	West.	Pressurized water	1120		1993

1. POWER REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

A. Central-Station Electric Power (Continued)

Name and/or owner	Location	Principal nuclear contractor	Type	Power ¹			
				Unit size, net MW(e)	Reactor, MW(t)	Start-up	Shutdown
PLANNED (Continued)							
Clinch River Breeder Reactor Plant (DOE) [50-537] ³	Oak Ridge, Tenn.	West.	Sodium cooled fast breeder	350	975	Indef.	
Montague Nuclear Power Station, Unit 1 (Northeast Utilities) [50-496] ³	Montague Plain, Mass.	GE	Boiling water	1150	3579	Indef.	
Montague Nuclear Power Station, Unit 2 (Northeast Utilities) [50-497] ³	Montague Plain, Mass.	GE	Boiling water	1150	3579	Indef.	
New Haven, Unit 1 [50-596] ³	New Haven, N. Y.	Comb.	Pressurized water	1250		1992	
New Haven, Unit 2 [50-597] ³	New Haven, N. Y.	Comb.	Pressurized water	1250		1994	
Pebble Springs Nuclear Plant, Unit 1 (Portland General Electric Co.) [50-514] ³	Arlington, Oreg.	B&W	Pressurized water	1260	3600	1986	
Pebble Springs Nuclear Plant, Unit 2 (Portland General Electric Co.) [50-515] ³	Arlington, Oreg.	B&W	Pressurized water	1260		1988	
Pilgrim Nuclear Power Station, Unit 2 (Boston Edison Co.) [50-471] ³	Plymouth, Mass.	Comb.	Pressurized water	1150	3456	1985	
Skagit Nuclear Power Project, Unit 1 (Puget Sound Power & Light Co.) [STN-50-522] ³	Sedro Woolley, Wash.	GE	Boiling water	1277	3800	1990	
Skagit Nuclear Power Project, Unit 2 (Puget Sound Power & Light Co.) [STN-50-523] ³	Sedro Woolley, Wash.	GE	Boiling water	1277	3800	Indef.	
Thomas L. Perkins Nuclear Station, Unit 1 (Duke Power Co.) [STN-50-488] ³	Davie County, N. C.	Comb.	Pressurized water	1280	3800	Indef.	
Thomas L. Perkins Nuclear Station, Unit 2 (Duke Power Co.) [STN-50-489] ³	Davie County, N. C.	Comb.	Pressurized water	1280	3800	Indef.	
Thomas L. Perkins Nuclear Station, Unit 3 (Duke Power Co.) [STN-50-490] ³	Davie County, N. C.	Comb.	Pressurized water	1280	3800	Indef.	
Vandalia Nuclear Project (Iowa Power & Light Co., Associated Electric Cooperative, Inc., and Central Iowa Power Cooperative) ³	Iowa	B&W	Pressurized water	1270		Indef.	
SHUT DOWN OR DISMANTLED							
Boiling Nuclear Superheater Power Station (AEC and Puerto Rico Water Resources Authority) ^{3,4}	Punta Higuera, P. R.	Comb.	Boiling water, integral nuclear superheat	16.5	50	1964	1968
Carolinas-Virginia Tube Reactor (Carolinas-Virginia Nuclear Power Associates, Inc.) ^{3,4,7}	Parr, S. C.	West.	Pressure tube, heavy water	17	64	1963	1967
Elk River Reactor (AEC and Rural Cooperative Power Association) ^{3,4,10}	Elk River, Minn.	AC	Boiling water	22	58.2	1962	1968
Enrico Fermi Atomic Power Plant, Unit 1 (Power Reactor Development Co.) [50-16] ^{3,4}	Lagoona Beach, Mich.	PRDC	Sodium cooled, fast	60.9	200	1963	1973
Hallam Nuclear Power Facility, Sheldon Station (AEC and Consumers Public Power District) ^{4,6}	Hallam, Nebr.	AI	Sodium graphite	75	240	1962	1964
*Indian Point Station, Unit 1 (Consolidated Edison Co. of New York, Inc.) [50-3] ^{3,5}	Buchanan, N. Y.	B&W	Pressurized water	265	615	1962	1980
Pathfinder Atomic Plant (Northern States Power Co.) ⁹	Sioux Falls, S. Dak.	AC	Boiling water	58.5	190	1964	1967
Peach Bottom Atomic Power Station, Unit 1 (Philadelphia Electric Co.) [50-171] ^{3,4}	Peach Bottom, Pa.	GA	High temperature gas cooled	40	115	1966	1974
Piqua Nuclear Power Facility (AEC and City of Piqua) ^{3,4,8}	Piqua, Ohio	AI	Organic cooled and moderated	11.4	45.5	1963	1966

B. Dual-Purpose Plants

OPERABLE

N Reactor (DOE and Washington Public Power Supply System)^{1,1} Richland, Wash. UNCNI Graphite 850 4000 1963

BEING BUILT

Midland Nuclear Power Plant, Unit 1 (Consumers Power Co. of Michigan) Midland, Mich. B&W Pressurized water 460 2468 1985

[50-329]^{3,1,2}

Midland Nuclear Power Plant, Unit 2 (Consumers Power Co. of Michigan) Midland, Mich. B&W Pressurized water 811 2468 1983

[50-330]^{3,1,2}

C. Propulsion (Maritime)

Name and/or owner	Nuclear designer	Shipbuilder	Type	Maximum shaft horsepower	Power, ¹ kW(t)	Start-up	Shut-down
SHUT DOWN							
Nuclear Ship SAVANNAH (Maritime Administration) ³	B&W	NYSC	Pressurized water	22,000	80,000	1961	1971

*Operating authority of Indian Point 1 was revoked on 6-19-80 by the Nuclear Regulatory Commission. The owner is to submit a decommissioning plan for Unit 1 within 120 days from said date.

2. EXPERIMENTAL POWER-REACTOR SYSTEMS

PART I CIVILIAN REACTORS (DOMESTIC)

A. Electric-Power Systems

Name (all owned by DOE except as noted)	Designation	Location	Principal nuclear contractor	Type	Power ¹			
					Plant, net kW(e)	Reactor, kW(t)	Start-up	Shutdown
OPERABLE								
Experimental Breeder Reactor No. 2 ⁹	EBR-2	INEL Site, Idaho	ANL	Sodium cooled, fast	20,000	62,500	1963	
SHUT DOWN OR DISMANTLED								
Boiling Reactor Experiment No. 1	BORAX-1	INEL Site, Idaho	ANL	Boiling water	No elec.	1,400	1953	1954
Boiling Reactor Experiment No. 5	BORAX-5	INEL Site, Idaho	ANL	Boiling water, integral nuclear superheat	2,600	20,000	1962	1964
Boiling Reactor Experiments ^{1,3}	BORAX-2, -3, 4	INEL Site, Idaho	ANL	Boiling water	2,400	15,500	1954	1958
ESADA Vallecitos Experimental Superheat Reactor (Empire States Atomic Development Associates and General Electric Company) ³	EVESR	Pleasanton, Calif.	GE	Light-water moderated, superheater	No elec.	17,000	1963	1967
Experimental Beryllium Oxide Reactor ^{1,5}	EBOR	INEL Site, Idaho	GA	Gas cooled, BeO moderated	No elec.	10,000	Terminated	
Experimental Boiling Water Reactor ^{2,0}	EBWR	Argonne, Ill.	ANL	Boiling water	4,000	100,000	1956	1967
Experimental Breeder Reactor No. 1 ^{1,6}	EBR-1	INEL Site, Idaho	ANL	NaK cooled, fast	150	1,400	1951	1964
Experimental Gas Cooled Reactor ^{1,8}	EGCR	Oak Ridge, Tenn.	KE-AC	Gas cooled, graphite moderated	21,900	84,300	Terminated	
Experimental Organic Cooled Reactor ^{1,9}	EOCR	INEL Site, Idaho	Fluor-Al	Organic cooled and moderated	No elec.	40,000	Terminated	
Heavy Water Components Test Reactor	HWCTR	Savannah River Laboratory, Aiken, S. C.	du Pont	Pressurized heavy water	No elec.	61,100	1962	1964
Homogeneous Reactor Experiment No. 1	HRE-1	Oak Ridge, Tenn.	ORNL	Aqueous homogeneous solution (UO ₂ SO ₄)	140	1,000	1952	1954
Homogeneous Reactor Experiment No. 2	HRE-2	Oak Ridge, Tenn.	ORNL	Aqueous homogeneous solution (UO ₂ SO ₄)	300	5,200	1957	1961
Los Alamos Molten Plutonium Reactor Experiment	LAMPRE-1	Los Alamos, N. Mex.	LANSL	Fast molten plutonium fueled, sodium cooled	No elec.	1,000	1961	1963
Los Alamos Power Reactor Experiment No. 1	LAPRE-1	Los Alamos, N. Mex.	LANSL	Aqueous homogeneous (phosphoric acid)	No elec.	2,000	1956	1957
Los Alamos Power Reactor Experiment No. 2	LAPRE-2	Los Alamos, N. Mex.	LANSL	Aqueous homogeneous (phosphoric acid)	No elec.	1,000	1959	1959
Molten Salt Reactor Experiment	MSRE	Oak Ridge, Tenn.	ORNL	Single region, graphite moderated	No elec.	8,000	1965	1969
Organic Moderated Reactor Experiment ^{1,4}	OMRE	INEL Site, Idaho	AI	Organic cooled and moderated	No elec.	12,000	1957	1963
Plutonium Recycle Test Reactor	PRTR	Richland, Wash.	PNL	Pressure tube, heavy-water moderated and cooled	No elec.	70,000	1960	1969

Saxton Nuclear Experimental Reactor Project (Saxton Nuclear Experimental Corp.) ³		Saxton, Pa.	West.	Pressurized water	3,000	23,500	1962	1972
Sodium Reactor Experiment (DOE and Southern California Edison Co.) ^{1 7}	SRE	Santa Susana, Calif.	AI	Sodium graphite	5,700	20,000	1957	1964
Southwest Experimental Fast Oxide Reactor (Southwest Atomic Energy Associates) ³	SEFOR	Strickler, Ark.	GE	Sodium cooled, fast		20,000	1969	1972
Ultra High Temperature Reactor Experiment	UHTREX	Los Alamos, N. Mex.	LANSL	Helium cooled	No elec.	3,000	1968	1970
Vallecitos Boiling Water Reactor (General Electric Company and Pacific Gas & Electric Co.) ³	VBWR	Pleasanton, Calif.	GE	Boiling water	5,000	33,000	1957	1963

B. Auxiliary Power (SNAP)

SHUT DOWN OR DISMANTLED

SNAP-2 Developmental System	S2DS	Santa Susana, Calif.	AI	NaK cooled	No elec.	50	1961	1963
SNAP-2 Experimental Reactor	SER	Santa Susana, Calif.	AI	NaK cooled	No elec.	50	1959	1960
SNAP-2/10A TSF Shielding Experiment	SNAP-TSF	Oak Ridge, Tenn.	AI-ORNL	NaK cooled		10	1967	1973
SNAP-8 Developmental Reactor	S8DR	Santa Susana, Calif.	AI	NaK cooled		600	1968	1969
SNAP-8 Experimental Reactor	S8ER	Santa Susana, Calif.	AI	NaK cooled	No elec.	600	1962	1965
SNAP-10A Flight System Ground Test No. 1	S10FS-1	Los Alamos, N. Mex.	AI	NaK cooled	0.5	39	1964	1964
SNAP-10A Flight System Ground Test No. 3 ^{2 2}	S10FS-3	Santa Susana, Calif.	AI	NaK cooled	0.5	39	1964	1966
SNAP-10A Flight System ^{2 2}	S10FS-4	In orbit	AI	NaK cooled	0.5	39	1965	1965
SNAP-10A Flight System	S10FS-5	Oak Ridge, Tenn.	AI	NaK cooled	0.5	39	(Spare)	

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C. Space Propulsion (Rover)

Name (all owned by DOE except as noted)	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Year of operation	Dismantled
SHUT DOWN OR DISMANTLED							
Fuel Element Test Bed	NF-1	NRDS, Nev.	LANSL	Open cycle, gaseous hydrogen	44,000	1972	1972
Fuel Element Test Reactor	Pewee-1	NRDS, Nev.	LANSL	Open cycle, liquid hydrogen	514,000	1968	1968
Fuel Element Test Reactor	Pewee-2	NRDS, Nev.	LANSL	Open cycle, liquid hydrogen	514,000	Indef.	1973
Ground Experimental Engine Experiment	XE-Prime	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,100,000	1968	1969
Ground Experimental Engine Experiment	XE-Backup	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,100,000	Indef.	1973
Nuclear Rocket Engine Reactor Experiment (NERVA)	NRX-A2	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,096,000	1964	1964
Nuclear Rocket Engine Reactor Experiment (NERVA)	NRX-A3	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,100,000	1965	1965
Nuclear Rocket Engine Reactor Experiment (NERVA)	NRX-A5	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,120,000	1966	1966
Nuclear Rocket Engine Reactor Experiment (NERVA)	NRX-A6	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,199,000	1967	1967
Nuclear Rocket Reactor Engine System Test (NERVA)	NRX-A4/EST	NRDS, Nev.	AG-West.	Open cycle, liquid hydrogen	1,155,000	1966	1966
Nuclear Rocket Reactor Experiment	Kiwi-A	NRDS, Nev.	LANSL	Open cycle, gaseous hydrogen	70,000	1959	1959
Nuclear Rocket Reactor Experiment	Kiwi-A Prime	NRDS, Nev.	LANSL	Open cycle, gaseous hydrogen	85,000	1960	1960

2. EXPERIMENTAL POWER-REACTOR SYSTEMS

PART I CIVILIAN REACTORS (DOMESTIC)

C. Space Propulsion (Rover) (Continued)

Name (all owned by DOE except as noted)	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Year of operation	Dismantled
SHUT DOWN OR DISMANTLED (Continued)							
Nuclear Rocket Reactor Experiment	Kiwi-A3	NRDS, Nev.	LANSL	Open cycle, gaseous hydrogen	100,000	1960	1960
Nuclear Rocket Reactor Experiment	Kiwi-B1A	NRDS, Nev.	LANSL	Open cycle, gaseous hydrogen	300,000	1961	1961
Nuclear Rocket Reactor Experiment	Kiwi-B1B	NRDS, Nev.	LANSL	Open cycle, liquid hydrogen	900,000	1962	1962
Nuclear Rocket Reactor Experiment	Kiwi-B4A	NRDS, Nev.	LANSL	Open cycle, liquid hydrogen	500,000	1962	1962
Nuclear Rocket Reactor Experiment	Kiwi-B4D	NRDS, Nev.	LANSL	Open cycle, liquid hydrogen	1,000,000	1964	1964
Nuclear Rocket Reactor Experiment	Kiwi-B4E	NRDS, Nev.	LANSL	Open cycle, liquid hydrogen	950,000	1964	1964
Nuclear Rocket Reactor Experiment	Phoebus 1A	NRDS, Nev.	LANSL	Open cycle, liquid hydrogen	1,070,000	1965	1965
Nuclear Rocket Reactor Experiment	Phoebus 1B	NRDS, Nev.	LANSL	Open cycle, liquid hydrogen	1,400,000	1967	1967
Nuclear Rocket Reactor Experiment	Phoebus 2A	NRDS, Nev.	LANSL	Open cycle, liquid hydrogen	4,200,000	1968	1968

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3. TEST, RESEARCH, AND UNIVERSITY REACTORS

A. General Irradiation Test

Name and/or owner	Designation	Location	Principal nuclear contractor	Operator	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE								
Advanced Test Reactor (DOE)	ATR	INEL, Idaho	Ebasco-B&W	EG&G-ID	Tank	250,000	1968	
Engineering Test Reactor (DOE) ²³	ETR	INEL, Idaho	KE-GE	EG&G-ID	Tank	175,000	1957	
BEING BUILT								
Fast Flux Test Facility (DOE)	FFTF	Richland, Wash.	HEDL	HEDL	Sodium cooled	400,000	1979	
SHUT DOWN OR DISMANTLED								
General Electric Testing Reactor ³	GETR	Pleasanton, Calif.	Owner	Owner	Tank	50,000	1958	1977
Materials Testing Reactor (DOE) ²⁴	MTR	INEL, Idaho	ORNL-ANL-Blaw-Knox	INC	Tank	40,000	1952	1970
Plum Brook Reactor Facility (NASA) ³	NASA-TR	Sandusky, Ohio	NASA	NASA	Tank	60,000	1961	1974
Westinghouse Testing Reactor ³	WTR	Waltz Mill, Pa.	Owner	Owner	Tank	60,000	1959	1962

B. High-Power Research and Test

Name and/or owner	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE							
Brookhaven High Flux Beam Research Reactor (DOE)	HFBR	Upton, N. Y.	BNL	Heavy water	40,000	1965	
Brookhaven Medical Research Reactor (DOE)	BMRR	Upton, N. Y.	Daystrom	Tank	5,000	1959	
High Flux Isotope Reactor (DOE)	HFIR	Oak Ridge, Tenn.	ORNL	Tank flux trap	100,000	1965	
National Bureau of Standards Reactor ³	NBSR	Gaithersburg, Md.	NBS-B&R	Heavy water	10,000	1967	
Oak Ridge Research Reactor (DOE)	ORR	Oak Ridge, Tenn.	ORNL	Tank	30,000	1958	
Omega West Reactor (DOE)	OWR	Los Alamos, N. Mex.	LANSL	Tank	8,000	1956	
Union Carbide Corporation Reactor ³	UCNR	Sterling Forest, N. Y.	AMF	Pool	5,000	1961	
SHUT DOWN OR DISMANTLED							
Ames Laboratory Research Reactor (DOE)	ALRR	Ames, Iowa	AMF	Heavy water	5,000	1965	1977
Argonne Research Reactor (DOE)	CP-5	Argonne, Ill.	ANL	Heavy water	5,000	1954	1979
Babcock & Wilcox Nuclear Development Center Test Reactor ³	BAWTR	Lynchburg, Va.	Owner	Pool	6,000	1964	1971
Brookhaven Graphite Research Reactor (DOE)	BGRR	Upton, N. Y.	HKF	Graphite	20,000	1950	1969
Industrial Reactor Laboratories, Inc. ³		Plainsboro, N. J.	AMF	Pool	5,000	1958	1975
Sandia Engineering Reactor (DOE)	SER	Kirtland AFB, East, N. Mex.	Sandia	Tank	5,000	1961	1970

C. Safety Research and Test

OPERABLE							
Loss of Fluid Test (DOE)	LOFT	INEL, Idaho	EG&G-ID	Pressurized water	55,000	1978	
Power-Burst Facility (DOE)	PBF	INEL, Idaho	EG&G-ID	Open tank	Transient, 28,000	1973	
Transient Reactor Test (DOE)							
Transient Reactor Test (DOE)	TREAT	INEL Site, Idaho	ANL	Graphite	Transient	1959	
SHUT DOWN OR DISMANTLED							
Intrinsic Subcriticality Experiment (DOE) ^{2,7}	SNAPTRAN-1	Los Alamos, N. Mex.	AI	Be-reflected SNAP-10A	Transient	1968	1971
King Intense Neutron Generator (DOE)	Kinglet	Los Alamos, N. Mex.	LANSL	Homogeneous	Transient	1972	1977
Kiwi-Transient Test Reactor (DOE)	Kiwi-TTR	NRDS, Nev.	LANSL	Kiwi/NERVA	Transient	1965	1965
SNAP-10A Transient Test No. 2 (DOE) ^{2,5}	SNAPTRAN-2	INEL, Idaho	AI-PPC	Be-reflected SNAP-10A	Transient	1965	1966
SNAP-10A Transient Test No. 3 (DOE) ^{2,5}	SNAPTRAN-3	INEL, Idaho	PPC-AI	H ₂ O-reflected SNAP-10A	Transient	1964	1964
Special Power Excursion Reactor Test No. 1 (DOE)	SPERT-1	INEL, Idaho	PPC	Open tank	Transient	1955	1964
Special Power Excursion Reactor Test No. 2 (DOE)	SPERT-2	INEL, Idaho	PPC	Pressurized water	Transient	1960	1965
Special Power Excursion Reactor Test No. 3 (DOE)	SPERT-3	INEL, Idaho	PPC	Pressurized water	Transient	1958	1968
Special Power Excursion Reactor Test No. 4 (DOE)	SPERT-4	INEL, Idaho	INC	Pool	Transient	1962	1970

3. TEST, RESEARCH, AND UNIVERSITY REACTORS (Continued)

PART I CIVILIAN REACTORS (DOMESTIC)

D. General Research

	Name and/or owner	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE								
	Aerotest Operations, Inc. ³	AGNIR	San Ramon, Calif.	GA	Pool-TRIGA core	250	1965	
	Annular Core Research Reactor (DOE)	ACRR	Kirtland AFB, East, N. Mex.	Sandia	UO ₂ , BeO	2000 and transient	1978	
	Argonne Thermal Source Reactor (DOE)	ATSR	Argonne, Ill.	ANL	Thermal	10	1957	
	Babcock & Wilcox Lynchburg Pool Reactor ³	LPR	Lynchburg, Va.	Owner	Pool	1,000	1958	
	Biological Research Reactor (DOE)	JANUS	Argonne, Ill.	ANL	Tank	200	1964	
	Bulk Shielding Reactor (DOE) ^{2,8}	BSR	Oak Ridge, Tenn.	ORNL	Pool	2,000	1950	
	Dow Chemical Co. ³	TRIGA-Mk I	Midland, Mich.	GA	U-Zr hydride	100	1967	
	Fast Source Reactor (DOE)	AFSR	INEL Site, Idaho	ANL	Fast	1	1959	
	General Atomic Company, Advanced TRIGA-Mk F Prototype Reactor ³	TRIGA-Mk F	La Jolla, Calif.	Owner	U-Zr hydride	1,500	1960	
	General Atomic Company, TRIGA-Mk I Prototype Reactor ^{3,9,0}	TRIGA-Mk I	La Jolla, Calif.	Owner	U-Zr hydride	250	1958	
	General Electric Nuclear Test Reactor ³	NTR	Pleasanton, Calif.	GE	Light water	100	1957	
	Health Physics Research Reactor (DOE) ^{3,1}	HPRR	Oak Ridge, Tenn.	ORNL	Fast burst	10	1962	
	Neutron Radiography Facility (DOE)	TRIGA-Mk I	Richland, Wash.	HEDL	U-Zr hydride	250	1977	
	Neutron Radiography Facility (DOE)	NRAD	INEL, Idaho	ANL	Pool-TRIGA core	250	1977	
	Northrop Corporate Laboratories (Space Radiation Laboratory) ^{3,9,0}	TRIGA-Mk F	Hawthorne, Calif.	GA	U-Zr hydride	1,000	1963	
	Nuclear Examination Reactor (Rockwell International) ^{3,2,9}	L-85 (AE-6)	Santa Susana, Calif.	AI	Homogeneous	3	1952	
	Omaha Veterans Administration Hospital ³	TRIGA-Mk I	Omaha, Nebr.	GA	U-Zr hydride	18	1959	
	Rhode Island Nuclear Science Center ³		Fort Kearney, R. I.	GE	Pool	2,000	1964	
	Sandia Pulsed Reactor II (DOE)	SPR-II	Kirtland AFB, East, N. Mex.	Sandia	Prompt burst	Transient	1967	
	Sandia Pulsed Reactor III (DOE)	SPR-III	Kirtland AFB, East, N. Mex.	Sandia	Prompt burst	Transient	1975	
	Tower Shielding Reactor No. 2 (DOE)	TSR-2	Oak Ridge, Tenn.	ORNL	Light water	1,000	1960	
	U. S. Geological Survey Laboratory (Department of the Interior) ^{3,9,0}	TRIGA-Mk I	Denver, Colo.	GA	U-Zr hydride	1,000	1969	
	Westinghouse Nuclear Training Center ³		Zion, Ill.	West.		10	1972	
SHUT DOWN OR DISMANTLED								
	Accelerator Pulsed Fast Critical Assembly ^{3,4,2}	APFA-III	La Jolla, Calif.	GA	Fast	1	1967	1973
	American Standard Inc. ^{3,5}	UTR-1	Mountain View, Calif.	AS Inc.	Graphite/water	Neglig.	1958	1960
	Annular Core Pulsed Reactor (DOE)	ACPR	Kirtland AFB, East, N. Mex.	GA	U-Zr hydride	Transient	1967	1977
	Argonne CP-3, rebuilt as CP-3' (Manhattan Engineer District—DOE)	CP-3'	Palos Park, Ill.	Met. Lab.	Heavy water	300	1944	1963
	Argonne Low Power Research Reactor (DOE) ^{3,9}	Juggernaut	Argonne, Ill.	ANL	Graphite/water	250	1962	1970
	Argonne National Laboratory (DOE)	AGN-201-108	Argonne, Ill.	AGN	Homog. solid	Neglig.	1957	1972

Argonne Nuclear Assembly for University Training (DOE)	Argonaut (CP-11)	Argonne, Ill.	ANL	Graphite/water	10	1957	1972
Atomics International ³	L-47	Canoga Park, Calif.	AI	Homogeneous	Neglig.	1957	1958
Battelle Memorial Institute ³	BRR	West Jefferson, Ohio	AMF	Pool	2,000	1956	1974
Brookhaven Neutron Source Reactor No. 1 (DOE)	SCHIZO	Upton, N. Y.	BNL	Tank	100	1958	1970
Brookhaven Neutron Source Reactor No. 2 (DOE)	PHRENIC	Upton, N. Y.	BNL	Tank	100	1965	1970
Chicago Pile 1, rebuilt as CP-2 (Manhattan Engineer District—DOE) ^{3,4}	CP-2	Chicago, Ill.	Met. Lab.	Graphite	0.2-2	1942	1954
Curtiss-Wright Nuclear Research Laboratory of the Commonwealth of Pennsylvania		Quehanna, Pa.	Owner	Pool	1,000	1958	1966
DOE Demonstration Reactor ^{4,3}	Demo Reac	Oak Ridge, Tenn.	Lockheed	Pool	10	1969	1969
European-Asian Exhibit Program (DOE) ^{3,3}		Oak Ridge, Tenn.	Lockheed	Pool	10	1963	1969
Fast Neutron Source Reactor (DOE)	BNL/FS-1	Upton, N. Y.	BNL	Fast		1967	1970
General Atomic Co. (World Agricultural Fair—U. S. Exhibit Reactor) ^{3,6}	TRIGA-Mk I	San Diego, Calif.	Owner	U-Zr hydride	50	1960	1960
High Temperature Lattice Test Reactor (DOE)	HTLTR	Richland, Wash.	PNL	Graphite	2	1967	1971
Illinois Institute of Technology Research Institute (Armour Research Foundation) ³	ARR(L-54)	Chicago, Ill.	AI	Homogeneous	75	1956	1967
Kinetic Experiment on Water Boilers (Rockwell International) ^{3,3,2}	KEWB	Santa Susana, Calif.	AI	Homogeneous	Transient	1956	1967
Livermore Pool Type Reactor (DOE)	LPTR	Livermore, Calif.	FW	Tank	3,000	1957	1980
Livermore Water Boiler (DOE)	LIWB	Livermore, Calif.	AI	Homogeneous	0.5	1953	1961
Lockheed Aircraft Corp.		Dawsonville, Ga.	Lockheed	Pool	Neglig.	1960	1960
Los Alamos Fast Reactor (DOE)	Clementine	Los Alamos, N. Mex.	LANSL	Fast, plutonium fuel, mercury cooled	25	1946	1953
Los Alamos LOPO Reactor (DOE)	LOPO	Los Alamos, N. Mex.	LANSL	Homogeneous	Neglig.	1944	1944
Los Alamos Water Boiler (DOE)	HYPO	Los Alamos, N. Mex.	LANSL	Homogeneous	5.5	1944	1950
Los Alamos Water Boiler (DOE)	SUPO	Los Alamos, N. Mex.	LANSL	Homogeneous	25	1950	1974
Louisiana State University Nuclear Science Center (Phillips Petroleum Co.) ^{3,7}	SNARE	Baton Rouge, La.	Sandia	Pool	2	1965	1966
Low Intensity Test Reactor (DOE)	LITR	Oak Ridge, Tenn.	ORNL	Tank	3,000	1950	1968
NASA Mock-Up Reactor ³	MUR	Sandusky, Ohio	Lockheed	Light water, pool	100	1963	1973
Nuclear Effects Reactor (DOE) ^{3,8}	FRAN	NTS, Nev.	LLNL/PPC	Prompt burst	Transient	1962	1970
Nuclear Effects Reactor (DOE)	KUKLA	San Diego, Calif.	LLNL	Prompt burst	Transient	1959	1964
Oak Ridge Graphite Reactor (DOE)	X-10	Oak Ridge, Tenn.	CL	Graphite	3,500	1943	1963
Pawling Research Reactor (United Nuclear Corp.) ³	PRR	Pawling, N. Y.	UNC	Light water	Neglig.	1958	1971
Physical Constants Test Reactor (DOE)	PCTR	Richland, Wash.	PNL	Graphite	0.1	1955	1972
Radiation Effects Reactor (Lockheed Aircraft Corp.) ^{3,4,9}	RER	Dawsonville, Ga.	Lockheed	Pool	3,000	1958	1970
Rockwell International ³	L-77	Canoga Park, Calif.	AI	Homogeneous	Neglig.	1958	1974
Sandia Pulsed Reactor (DOE)	SPR	Kirtland AFB, East, N. Mex.	Sandia	Prompt burst	Transient	1961	1967
Shield Test and Irradiation Reactor (DOE) ^{4,1}	STIR	Santa Susana, Calif.	AI	Pool	1,000	1961	1972
Thermal Test Reactor No. 2 (DOE)	TTR-2	Richland, Wash.	PNL	Graphite	0.1	1955	1972
Torrey Pines, TRIGA-Mk III Reactor (General Atomic) ³	TRIGA-Mk III	La Jolla, Calif.	Owner	U-Zr hydride	1,500	1966	1973
Tower Shielding Reactor No. 1	TSR-1	Oak Ridge, Tenn.	ORNL	Tank	500	1954	1958
UTR Test Reactor (American Radiator & Standard Sanitary Corp.) ³		Mountain View, Calif.	Owner	Graphite/water	Neglig.	1961	1963

3. TEST, RESEARCH, AND UNIVERSITY REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

E. University Research and Teaching

(Footnote 3 applies to all reactors in this section except as noted.)

Name and/or owner	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE							
Arizona, University of	TRIGA-Mk I	Tucson, Ariz.	GA	U-Zr hydride	100	1958	
Brigham Young University	L-77	Provo, Utah	AI	Homogeneous	Neglig.	1967	
California, Berkeley, University of ^{3 0}	TRIGA-Mk III	Berkeley, Calif.	GA	U-Zr hydride	1,000	1966	
California, Irving, University of ^{3 0}	TRIGA-Mk I	Irvine, Calif.	GA	U-Zr hydride	250	1969	
California, Los Angeles, University of, School of Engineering and Applied Science	Educator	Los Angeles, Calif.	AMF	Graphite/water	100	1960	
California, Santa Barbara, University of ^{3 0}	L-77	Santa Barbara, Calif.	AI	Homogeneous	Neglig.	1974	
Catholic University of America	AGN-201-101	Washington, D. C.	AGN	Homog. solid	Neglig.	1957	
Columbia University ^{3 0}	TRIGA-Mk II	New York, N. Y.	GA	U-Zr hydride	250	Licensed	
Cornell University ^{3 0}	TRIGA-Mk II	Ithaca, N. Y.	GA	U-Zr hydride	100	1962	
Cornell University Zero Power Reactor	ZPR	Ithaca, N. Y.	Vitro	Tank	Neglig.	1962	
Florida, University of	UFTR	Gainesville, Fla.	GNEC	Graphite/water	100	1959	
Georgia Institute of Technology ^{4 5}	AGN-201-104	Atlanta, Ga.	AGN	Homog. solid	Neglig.	1968	
Georgia Tech. Research Reactor	GTRR	Atlanta, Ga.	GNEC	Heavy water	10,000	1964	
Idaho State University ^{5 2}	AGN-201P-103	Pocatello, Idaho	AGN	Homog. solid	Neglig.	1967	
Illinois, University of	LOPRA	Urbana, Ill.	GA	U-Zr hydride	10	1971	
Illinois, University of	TRIGA-Mk II	Urbana-Champaign, Ill.	GA	U-Zr hydride	1,500	1960	
Iowa State University	UTR-10	Ames, Iowa	AS Inc.	Graphite/water	10	1959	
Kansas State University ^{3 0}	TRIGA-Mk II	Manhattan, Kans.	GA	U-Zr hydride	250	1962	
Kansas, University of	Model 4180	Lawrence, Kans.	BAC	Pool	10	1961	
Lowell, University of		Lowell, Mass.	GE	Pool	1,000	1974	
Manhattan College		New York, N. Y.	AMF	Tank	Neglig.	1964	
Maryland, University of	TRIGA	College Park, Md.	GA	Tank-TRIGA core	250	1974	
Massachusetts Institute of Technology	MITR	Cambridge, Mass.	ACF	Heavy-water reflected	5,000	1958	
Memphis State University	AGN-201-108	Memphis, Tenn.	AGN	Homog. solid	Neglig.	1977	
Michigan State University ^{3 0,5 3}	TRIGA-Mk I	East Lansing, Mich.	GA	U-Zr hydride	250	1969	
Michigan, University of (Ford Nuclear Reactor)		Ann Arbor, Mich.	B&W	Pool	2,000	1957	
Missouri, University of	MURR	Columbia, Mo.	Owner-IC	Tank	10,000	1966	
Missouri at Rolla, University of		Rolla, Mo.	CW	Pool	200	1961	
New Mexico, University of ^{4 6}	AGN-201M-112	Albuquerque, N. Mex.	AGN	Homog. solid	Neglig.	1966	
North Carolina State University	PULSTAR	Raleigh, N. C.	AMF	Pool	1,000	1972	
Ohio State University		Columbus, Ohio	Lockheed	Pool	10	1961	
Oklahoma, University of	AGN-211-102	Norman, Okla.	AGN	Homog. solid, pool	Neglig.	1958	
Oregon State University	AGN-201-114	Corvallis, Oreg.	AGN	Homog. solid	Neglig.	1958	

Oregon State University ^{3,0}	TRIGA-Mk II	Corvallis, Oreg.	GA	U-Zr hydride	1,000	1967	
Penn State TRIGA Reactor (Pennsylvania State University) ^{3,0,5,1}	PSTR	University Park, Pa.	GA	Pool—TRIGA core	1,000	1965	
Purdue University		West Lafayette, Ind.	Lockheed	Pool	1.0	1962	
Reed College	TRIGA-Mk I	Portland, Oreg.	GA	U-Zr hydride	250	1968	
State University of New York (Western New York Nuclear Research Center, Inc.)	PULSTAR	Buffalo, N. Y.	AMF	Pool	2,000	1961	
Texas A&M University (Nuclear Science Center Reactor) ^{3,0,4,9}	NSCR	College Station, Tex.	GA	U-Zr hydride	1,000	1961	
Texas A&M University	AGN-201M-106	College Station, Tex.	AGN	Homog. solid	Neglig.	1957	
Texas at Austin, University of ^{3,0}	TRIGA-Mk I	Austin, Tex.	GA	U-Zr hydride	250	1963	
Tuskegee Institute ^{4,4}	AGN-201-102	Tuskegee, Ala.	AGN	Homog. solid	Neglig.	1974	
Utah, University of	TRIGA-Mk I	Salt Lake City, Utah	GA	U-Zr hydride	250	1975	
Utah, University of	AGN-201-107	Salt Lake City, Utah	AGN	Homog. solid	Neglig.	1957	
Virginia Polytechnic Institute	UTR-10	Blacksburg, Va.	AS Inc.	Graphite/water	100	1959	
Virginia, University of	CAVALIER	Charlottesville, Va.	Owner		Neglig.	1974	
Virginia, University of	UVAR	Charlottesville, Va.	Owner—B&W	Pool	2,000	1960	
Washington State University ^{3,0,5,0}	WSTR	Pullman, Wash.	GA	Pool—TRIGA core	1,000	1967	
Washington, University of	Educator	Seattle, Wash.	AMF	Graphite/water	100	1961	
Wisconsin, University of ^{3,0,4,8}	TRIGA	Madison, Wis.	GA	Pool—TRIGA core	1,000	1967	
Worcester Polytechnic Institute		Worcester, Mass.	GE	Pool	10	1959	
BEING BUILT							
Mississippi State University ^{5,5}	RRR	State College, Miss.	Owner—NSA	Homogeneous		Neglig.	
SHUT DOWN OR DISMANTLED							
California State Polytechnic University ^{5,4}	AGN-201-100	San Luis Obispo, Calif.	AGN	Homog. solid	Neglig.	1973	1980
Colorado State University	AGN-201-109	Fort Collins, Colo.	AGN	Homog. solid	Neglig.	1957	1974
Delaware, University of	AGN-201-113	Newark, Del.	AGN	Homog. solid	Neglig.	1958	1978
Leland Stanford University		Palo Alto, Calif.	GE	Pool	10	1959	1974
Nevada, University of	L-77	Reno, Nev.	AI	Homogeneous	Neglig.	1963	1974
North Carolina State University		Raleigh, N. C.	Cook	Graphite/water	10	1960	1973
Polytechnic Institute of New York ^{5,6}	AGN-201M-105	New York, N. Y.	AGN	Homog. solid	Neglig.	1967	1974
Puerto Rico Nuclear Center (DOE) ^{4,7}	L-77	Mayagüez, P. R.	AI	Homogeneous	Neglig.	1959	1979
Puerto Rico Nuclear Center (DOE) ^{7,8}	TRIGA-FLIP	Mayagüez, P. R.	GA	Pool—TRIGA core	2,000	1972	1976
West Virginia University	AGN-211-103	Morgantown, W. Va.	AGN	Homog. solid, pool	Neglig.	1959	1972
William Marsh Rice University	AGN-211-101	Houston, Tex.	AGN	Homog. solid, pool	Neglig.	1959	1965
Wyoming, University of	L-77	Laramie, Wyo.	AI	Homogeneous	Neglig.	1959	1974

1. MATERIALS PRODUCTION

PART II PRODUCTION REACTORS

(All owned by DOE)

Designation	Nuclear designer	Type	Location	Start-up	Shut-down
OPERABLE*					
C Reactor	du Pont	Heavy water	Savannah River Plant, Aiken, S. C.	1955	
K Reactor	du Pont	Heavy water	Savannah River Plant, Aiken, S. C.	1954	
P Reactor	du Pont	Heavy water	Savannah River Plant, Aiken, S. C.	1954	
SHUT DOWN					
B Reactor	du Pont	Graphite	Richland, Wash.	1944	1968
C Reactor	GE	Graphite	Richland, Wash.	1952	1969
D Reactor	du Pont	Graphite	Richland, Wash.	1944	1967
DR Reactor	GE	Graphite	Richland, Wash.	1950	1964
F Reactor	du Pont	Graphite	Richland, Wash.	1945	1965
H Reactor	GE	Graphite	Richland, Wash.	1949	1965
KE Reactor	GE	Graphite	Richland, Wash.	1955	1971
KW Reactor	GE	Graphite	Richland, Wash.	1955	1970
L Reactor	du Pont	Heavy water	Savannah River Plant, Aiken, S. C.	1954	1968
R Reactor	du Pont	Heavy water	Savannah River Plant, Aiken, S. C.	1953	1964

2. PROCESS DEVELOPMENT

Name (all owned by DOE)	Designation	Location	Nuclear designer	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE							
Savannah River Test Pile 305	SR-305	Savannah River Laboratory, Aiken, S. C.	du Pont	Graphite	1	1953	
SHUT DOWN OR DISMANTLED							
Hanford 305 Test Reactor	HTR	Richland, Wash.	du Pont	Graphite	Neglig.	1944	1976
†Lattice Test Reactor	LTR	Savannah River Laboratory, Aiken, S. C.	du Pont	Heavy water	1	1967	1979
†Process Development Pile	PDP	Savannah River Laboratory, Aiken, S. C.	du Pont	Heavy water	1	1953	1979
†Standard Pile	SP	Savannah River Laboratory, Aiken, S. C.	du Pont	Graphite	2-10	1953	1979

*The N Reactor, Richland, Wash., is listed on page 19; see also footnote 11. †Placed on standby.

1. DEFENSE POWER-REACTOR APPLICATIONS

PART III MILITARY REACTORS

A. Remote Installations

Name (all owned by DOD)	Designation ^{5 7}	Location	Principal nuclear contractor	Type	Power ¹			
					Plant, net kW(e)	Reactor, kW(t)	Start-up	Shut-down
SHUT DOWN OR DISMANTLED								
Portable Medium Power Plant No. 1	PM-1	Sundance, Wyo.	Martin	Pressurized water	1,000	9,370	1962	1968
Portable Medium Power Plant No. 2A ^{5 9}	PM-2A	Camp Century, Greenland	Alco	Pressurized water	1,560	10,000	1960	1963
Portable Medium Power Plant No. 3A	PM-3A	McMurdo Sound, Antarctica	Martin	Pressurized water	1,500	9,510	1962	1973
Stationary Medium Power Plant No. 1	SM-1	Fort Belvoir, Va.	Alco	Pressurized water	1,855	10,000	1957	1973
Stationary Medium Power Plant No. 1A ^{6 0}	SM-1A	Fort Greely, Alaska	Alco	Pressurized water	1,650	20,200	1962	1972
STURGIS Floating Nuclear Power Plant ^{5 8}	MH-1A	Gatun Lake, Canal Zone	Martin	Pressurized water	10,000	45,000	1967	1976

B. Propulsion (Naval)

Name (all owned by U. S. Navy)	Designation ^{6 1}	Shipbuilder	Start-up	Name (all owned by U. S. Navy)	Designation ^{6 1}	Shipbuilder	Start-up	Shut-down
OPERABLE								
USS SEAWOLF ^{6 2}	SSN575	Electric Boat (Groton)	1960	USS STURGEON	SSN637	Electric Boat (Groton)	1966	
USS SKATE	SSN578	Electric Boat (Groton)	1957	USS WHALE	SSN638	GD (Quincy)	1968	
USS SWORDFISH	SSN579	Portsmouth	1958	USS TAUTOG	SSN639	Ingalls	1968	
USS SARGO	SSN583	San Francisco Bay	1958	USS GRAYLING	SSN646	Portsmouth	1969	
USS SEADRAGON	SSN584	Portsmouth	1959	USS POGY	SSN647	NYSC/Ingalls	1970	
USS SKIPJACK	SSN585	Electric Boat (Groton)	1958	USS ASPRO	SSN648	Ingalls	1968	
USS SCAMP	SSN588	San Francisco Bay	1961	USS SUNFISH	SSN649	GD (Quincy)	1968	
USS SCULPIN	SSN590	Ingalls	1961	USS PARGO	SSN650	Electric Boat (Groton)	1967	
USS SHARK	SSN591	Newport News	1960	USS QUEENFISH	SSN651	Newport News	1966	
USS SNOOK	SSN592	Ingalls	1961	USS PUFFER	SSN652	Ingalls	1969	
USS PERMIT	SSN594	San Francisco Bay	1962	USS RAY	SSN653	Newport News	1967	
USS PLUNGER	SSN595	San Francisco Bay	1962	USS SAND LANCE	SSN660	Portsmouth	1971	
USS BARB	SSN596	Ingalls	1963	USS LAPON	SSN661	Newport News	1967	
USS TULLIBEE	SSN597	Electric Boat (Groton)	1960	USS GURNARD	SSN662	San Francisco Bay	1968	
USS POLLACK	SSN603	NYSC	1963	USS HAMMERHEAD	SSN663	Newport News	1967	
USS HADDO	SSN604	NYSC	1964	USS SEA DEVIL	SSN664	Newport News	1968	
USS JACK	SSN605	Portsmouth	1965	USS GUITARRO	SSN665	Mare Island	1972	
USS TINOSA	SSN606	Portsmouth	1963	USS HAWKBILL	SSN666	Mare Island	1970	
USS DACE	SSN607	Ingalls	1963	USS BERGALL	SSN667	Electric Boat (Groton)	1969	
USS GUARDFISH	SSN612	NYSC	1966	USS SPADEFISH	SSN668	Newport News	1969	
USS FLASHER	SSN613	Electric Boat (Groton)	1966	USS SEA HORSE	SSN669	Electric Boat (Groton)	1969	
USS GREENLING	SSN614	GD (Quincy)	1967	USS FINBACK	SSN670	Newport News	1969	
USS GATO	SSN615	GD (Quincy)	1967	USS NARWHAL	SSN671	Electric Boat (Groton)	1969	
USS HADDOCK	SSN621	Ingalls	1967	USS PINTADO	SSN672	Mare Island	1970	
				USS FLYING FISH	SSN673	Electric Boat (Groton)	1969	

1. DEFENSE POWER-REACTOR APPLICATIONS

PART III MILITARY REACTORS

B. Propulsion (Naval) (Continued)

Name (all owned by U. S. Navy)	Designation ^{6,1}	Shipbuilder	Start-up	Name (all owned by U. S. Navy)	Designation ^{6,1}	Shipbuilder	Start-up	Shut-down
OPERABLE (Continued)								
USS TREPANG	SSN674	Newport News	1970	USS FRANCIS SCOTT KEY	SSBN657	Electric Boat (Groton)	1966	
USS BLUEFISH	SSN675	Newport News	1970	USS MARIANO G. VALLEJO	SSBN658	San Francisco Bay	1966	
USS BILLFISH	SSN676	Newport News	1970	USS WILL ROGERS	SSBN659	Electric Boat (Groton)	1967	
USS DRUM	SSN677	Newport News	1971	USS ENTERPRISE (8 reactors)	CVN65	Newport News	1960	
USS ARCHERFISH	SSN678	Electric Boat (Groton)	1971	USS NIMITZ (2 reactors)	CVN68	Newport News	1974	
USS SILVERSIDES	SSN679	Newport News	1971	USS DWIGHT D. EISENHOWER (2 reactors)	CVN69	Newport News	1977	
USS WILLIAM H. BATES	SSN680	Electric Boat (Groton)	1972	USS LONG BEACH (2 reactors)	CGN9	Bethlehem	1961	
USS BATFISH	SSN681	Newport News	1972	USS BAINBRIDGE (2 reactors)	CGN25	Bethlehem	1962	
USS TUNNY	SSN682	Electric Boat (Groton)	1973	USS TRUXTUN (2 reactors)	CGN35	NYSC	1967	
USS PARCHE	SSN683	Electric Boat (Groton)	1974	USS CALIFORNIA (2 reactors)	CGN36	Newport News	1973	
USS CAVALLA	SSN684	Electric Boat (Groton)	1972	USS SOUTH CAROLINA (2 reactors)	CGN37	Newport News	1974	
USS GLENARD P. LIPSCOMB	SSN685	San Francisco Bay	1974	USS VIRGINIA (2 reactors)	CGN38	Newport News	1976	
USS L. MENDELL RIVERS	SSN686	Newport News	1974	USS TEXAS (2 reactors)	CGN39	Newport News	1977	
USS RICHARD B. RUSSELL	SSN687	Portsmouth	1974	USS MISSISSIPPI (2 reactors)	CGN40	Newport News	1978	
USS LOS ANGELES	SSN688	Electric Boat (Groton)	1976	Deep Submergence Research Vehicle	NR-1	Electric Boat (Groton)	1969	
USS BATON ROUGE	SSN689	Newport News	1977	BEING BUILT				
USS PHILADELPHIA	SSN690	Electric Boat (Groton)	1976	INDIANAPOLIS	SSN697	Electric Boat (Groton)		
USS MEMPHIS	SSN691	Newport News	1977	BREMERTON	SSN698	Electric Boat (Groton)		
USS OMAHA	SSN692	Electric Boat (Groton)	1977	JACKSONVILLE	SSN699	Electric Boat (Groton)		
USS CINCINNATI	SSN693	Electric Boat (Groton)	1978	DALLAS	SSN700	Electric Boat (Groton)		
USS GROTON	SSN694	Electric Boat (Groton)	1978	LA JOLLA	SSN701	Electric Boat (Groton)		
USS BIRMINGHAM	SSN695	Newport News	1978	PHOENIX	SSN702	Electric Boat (Groton)		
USS NEW YORK CITY	SSN696	Electric Boat (Groton)	1978	BOSTON	SSN703	Electric Boat (Groton)		
USS GEORGE WASHINGTON	SSBN598	Electric Boat (Groton)	1959	BALTIMORE	SSN704	Electric Boat (Groton)		
USS PATRICK HENRY	SSBN599	Electric Boat (Groton)	1960	Submarine	SSN705	Electric Boat (Groton)		
USS THEODORE ROOSEVELT	SSBN600	Mare Island	1960	Submarine	SSN706	Electric Boat (Groton)		
USS ROBERT E. LEE	SSBN601	Electric Boat (Groton)	1960	Submarine	SSN707	Electric Boat (Groton)		
USS ABRAHAM LINCOLN	SSBN602	Electric Boat (Groton)	1960	Submarine	SSN708	Electric Boat (Groton)		
USS ETHAN ALLEN	SSBN608	Ingalls	1961	Submarine	SSN709	Electric Boat (Groton)		
USS SAM HOUSTON	SSBN609	Electric Boat (Groton)	1961	Submarine	SSN710	Electric Boat (Groton)		
USS THOMAS A. EDISON	SSBN610	Ingalls	1961	SAN FRANCISCO	SSN711	Newport News		
USS JOHN MARSHALL	SSBN611	Ingalls	1962	ATLANTA	SSN712	Newport News		
USS LAFAYETTE	SSBN616	Electric Boat (Groton)	1963	HOUSTON	SSN713	Newport News		
USS ALEXANDER HAMILTON	SSBN617	Electric Boat (Groton)	1963	Submarine	SSN714	Newport News		
USS THOMAS JEFFERSON	SSBN618	Newport News	1962	Submarine	SSN715	Newport News		
USS ANDREW JACKSON	SSBN619	San Francisco Bay	1963	Submarine	SSN716	Newport News		
USS JOHN ADAMS	SSBN620	Portsmouth	1964	Submarine	SSN717	Newport News		
USS JAMES MONROE	SSBN622	Newport News	1963	Submarine	SSN718	Newport News		
USS NATHAN HALE	SSBN623	Electric Boat (Groton)	1963	Submarine	SSN719	Electric Boat (Groton)		
USS WOODROW WILSON	SSBN624	San Francisco Bay	1963	Submarine	SSN720	Electric Boat (Groton)		
USS HENRY CLAY	SSBN625	Newport News	1963					
USS DANIEL WEBSTER	SSBN626	Electric Boat (Groton)	1964					

USS JAMES MADISON	SSBN627	Newport News	1964	Submarine	SSN722	
USS TECUMSEH	SSBN628	Electric Boat (Groton)	1964	OHIO	SSBN726	Electric Boat (Groton)
USS DANIEL BOONE	SSBN629	San Francisco Bay	1963	MICHIGAN	SSBN727	Electric Boat (Groton)
USS JOHN C. CALHOUN	SSBN630	Newport News	1964	Submarine	SSBN728	Electric Boat (Groton)
USS ULYSSES S. GRANT	SSBN631	Electric Boat (Groton)	1964	GEORGIA	SSBN729	Electric Boat (Groton)
USS VON STEUBEN	SSBN632	Newport News	1964	Submarine	SSBN730	Electric Boat (Groton)
USS CASIMIR PULASKI	SSBN633	Electric Boat (Groton)	1964	Submarine	SSBN731	Electric Boat (Groton)
USS STONEWALL JACKSON	SSBN634	San Francisco Bay	1964	Submarine	SSBN732	Electric Boat (Groton)
USS SAM RAYBURN	SSBN635	Newport News	1964	Submarine	SSBN733	
USS NATHANAEL GREENE	SSBN636	Portsmouth	1964	ARKANSAS (2 reactors)	CGN41	Newport News
USS BENJAMIN FRANKLIN	SSBN640	Electric Boat (Groton)	1965	CARL VINSON (2 reactors)	CVN70	Newport News
USS SIMON BOLIVAR	SSBN641	Newport News	1965	CARRIER	CVN71	
USS KAMEHAMEHA	SSBN642	San Francisco Bay	1965			
USS GEORGE BANCROFT	SSBN643	Electric Boat (Groton)	1965			
USS LEWIS AND CLARK	SSBN644	Newport News	1965			
USS JAMES K. POLK	SSBN645	Electric Boat (Groton)	1966			
USS GEORGE C. MARSHALL	SSBN654	Newport News	1966			
USS HENRY L. STIMSON	SSBN655	Electric Boat (Groton)	1966			
USS GEORGE WASHINGTON CARVER	SSBN656	Newport News	1966			
Submarine	SSN721					
SHUT DOWN OR DISMANTLED						
		USS NAUTILUS		SSN571	Electric Boat (Groton)	1954 1980
		SEAWOLF Sodium Reactor ^{6,2}			Electric Boat (Groton)	1957 1959
		USS TRITON (2 reactors)		SSN586	Electric Boat (Groton)	1959 1968
		USS HALIBUT		SSN587	San Francisco Bay	1959 1976
		USS SCORPION ^{6,3}		SSN589	Electric Boat (Groton)	1960 1968
		USS THRESHER ^{6,3}		SSN593	Portsmouth	1961 1963

2. DEVELOPMENTAL POWER

A. Electric-Power Experiments and Prototypes

31

Name (all owned by DOE)	Designation ^{5,7}	Location	Principal nuclear contractor	Type	Power ¹			
					Plant, net kW(e)	Reactor kW(t)	Start-up	Shutdown
SHUT DOWN OR DISMANTLED								
Gas Cooled Reactor Experiment	GCRE	INEL Site, Idaho	AGN	Gas cooled, light water moderated	No elec.	2,200	1960	1962
Mobile Low Power Plant No. 1	ML-1	INEL Site, Idaho	AGN	Gas cooled, light water moderated	300	3,300	1961	1965
Stationary Low Power Plant No. 1	SL-1	INEL Site, Idaho	ANL	Boiling water	300	2,200	1958	1961

B. Propulsion Experiments and Prototypes

Name (all owned by DOE)	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shutdown
OPERABLE							
Destroyer Reactor Prototype	D1G	West Milton, N. Y.	GE	Pressurized water		1962	
Large Ship Reactor Prototype (2 reactors)	A1W	INEL Site, Idaho	West.	Pressurized water		1958	
Modifications and Additions to Reactor Facility	MARF	West Milton, N. Y.	GE	Pressurized water		1976	
Natural Circulation Test Plant	S5G	INEL Site, Idaho	West.	Pressurized water		1965	
Small Submarine Reactor Prototype	S1C	Windsor, Conn.	GE	Pressurized water		1959	
S1W Reactor Facility	S1W	INEL Site, Idaho	West.	Pressurized water		1953	
Submarine Advanced Reactor Prototype	S3G	West Milton, N. Y.	GE	Pressurized water		1958	
Trident Prototype	S8G	West Milton, N. Y.	GE	Pressurized water		1978	

2. DEVELOPMENTAL POWER

PART III MILITARY REACTORS

B. Propulsion Experiments and Prototypes (Continued)

Name (all owned by DOE)	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shutdown
SHUT DOWN OR DISMANTLED							
Aircraft Reactor Experiment	ARE	Oak Ridge, Tenn.	ORNL	Molten salt	1,500	1954	1954
Experimental Propulsion Test Reactor	TORY IIA	NTS, Nev.	LLNL	Air cooled	150,000	1960	1961
Experimental Propulsion Test Reactor ^{6,4}	TORY IIC	NTS, Nev.	LLNL	Air cooled	600,000	1964	1964
Heat Transfer Reactor Experiment No. 1	HTRE-1	INEL Site, Idaho	ANPD	Air cooled	20,000	1956	1957
Heat Transfer Reactor Experiment No. 2	HTRE-2	INEL Site, Idaho	ANPD	Air cooled	14,000	1957	1961
Heat Transfer Reactor Experiment No. 3	HTRE-3	INEL Site, Idaho	ANPD	Air cooled	32,000	1958	1961
Submarine Intermediate Reactor Mark A	S1G	West Milton, N. Y.	GE	Sodium		1955	1957

3. TEST AND RESEARCH

A. Test

Name and/or owner	Designation	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shutdown
SHUT DOWN OR DISMANTLED							
Aerospace Systems Test Reactor (USAF)	ASTR	Fort Worth, Tex.	Convair	Light water	10,000	1954	1971
Ground Test Reactor (USAF)	GTR	Fort Worth, Tex.	Convair	Pool	10,000	1953	1973
Nuclear Engineering Test Reactor (USAF)	NETR	Dayton, Ohio	Maxon-AC	Tank	10,000	1965	1970

B. Research

OPERABLE							
Aberdeen Pulsed Reactor Facility (Ballistic Research Laboratories, USA)	APRF	Aberdeen, Md.	UNC	Bare, fast, prompt burst	10	1968	
Armed Forces Radiobiology Research Institute (DNA, DOD) ^{3,30}	AFRRI	Bethesda, Md.	GA	TRIGA-Mk F	1000	1962	
Fast Burst Reactor Facility (Army Missile Test and Evaluation Directorate, USA)	FBRF	White Sands, N. Mex.	Kaman	Bare, fast, prompt burst	10	1964	
Thermal Test Reactor No. 1 (DOE)	TTR-1	Schenectady, N. Y.	KAPL	Graphite	10	1951	
SHUT DOWN OR DISMANTLED							
Army Materials Research Reactor (Army Materials and Mechanics Research Center, USA) ³	AMRR	Watertown, Mass.	BAC	Pool	5,000	1960	1970
Diamond Ordnance Radiation Facility (Harry Diamond Laboratories, USA) ^{3,30}	DORF	Forest Glen, Md.	GA	TRIGA-Mk F	250	1961	1977
Naval Research Reactor (USN) ³	NRR	Washington, D. C.	NRL	Pool	1,000	1956	1970
Nuclear Effects Reactor (DOE)	Super KUKLA	NTS, Nev.	LLNL	Prompt burst		Transient	1964
Walter Reed Research Reactor (Walter Reed Army Institute of Research, USA) ³	WRRR	Washington, D. C.	AI	Homogeneous	50	1962	1970

1. POWER REACTORS⁶⁵

PART IV REACTORS FOR EXPORT

A. Central-Station Electric Power

Name and/or owner	Location	Principal nuclear contractor	Type	Power ¹			
				Plant, net MW(e)	Reactor, MW(t)	Start-up	Shutdown
OPERABLE							
France, Franco-Belgian Society for Nuclear Energy of Ardennes, SENA	Givet (near Chooz)	West.	Pressurized water	305	1040	1967	
Germany, Kahl Nuclear Power Station (Rhine-Westphalia Power Co., RWE)	Kahl-am-Main	GE	Boiling water	15.6	60	1961	
India, Tarapur Nuclear Power Station, Unit 1	Tarapur (north of Bombay)	GE	Boiling water	200	707	1969	
India, Tarapur Nuclear Power Station, Unit 2	Tarapur (north of Bombay)	GE	Boiling water	200	707	1969	
Italy, Caorso Nuclear Station (ENEL)	Piacenza/Cremona	GE	Boiling water	822	2651	1979	
Italy, Garigliano Nuclear Power Station (Project ENEL of SENN)	Punta Fiume (on Garigliano River)	GE	Boiling water	150	506	1964	
Italy, Project Enrico Fermi of SELNI, Edisonvolta (ENEL)	Trino Vercellese	West.	Pressurized water	260	825	1965	
Japan, Fukushima Station I, Unit 1 (Tokyo Electric Power Co.)	Okuma, Fukushima Pref.	GE	Boiling water	460	1380	1971	
Japan, Fukushima Station I, Unit 2 (Tokyo Electric Power Co.)	Okuma, Fukushima Pref.	GE	Boiling water	784	2381	1974	
Japan, Fukushima Station I, Unit 6 (Tokyo Electric Power Co.)	Futaba, Fukushima Pref.	GE	Boiling water	1100	3293	1979	
Japan, Japan Power Demonstration Reactor (JAERI) ⁶⁶	Tokai-Mura, Ibaraki Pref.	GE	Boiling water	12	90	1962	
Japan, Mihamo Nuclear Power Station, Unit 1 (Kansai Electric Power Co.)	Mihamo, Fuki Pref.	West.	Pressurized water	340	1031	1970	
Japan, Ohi Nuclear Power Plant, Unit 1 (Kansai Electric Power Co.)	Ohi Fukui Pref.	West.	Pressurized water	1175	3423	1979	
Japan, Ohi Nuclear Power Plant, Unit 2 (Kansai Electric Power Co.)	Ohi Fukui Pref.	West.	Pressurized water	1175	3423	1979	
Japan, Takahama, Unit 1 (Kansai Electric Power Co.)	Takahama, Fuki Pref.	West.	Pressurized water	826	2440	1974	
Japan, Tokai, Unit 2 (Japan Atomic Power Co.)	Tokai-Mura, Ibaraki Pref.	GE	Boiling water	1100	3293	1978	
Japan, Tsuruga Nuclear Power Plant (Japan Atomic Power Co.)	Tsuruga, Fuki Pref.	GE	Boiling water	357	1070	1970	
Korea, Unit 1 (Korea Electric Power Co.)	Ko-Ri (near Pusan)	West.	Pressurized water	564	1724	1977	
The Netherlands, Dodewaard (GKN)	Dodewaard, Betuwe	GE	Boiling water	50	1968		
Spain, José Cabrera Nuclear Power Plant, Unit 1	Almonacid de Zorita	West.	Pressurized water	153	510	1969	
Spain, Santa Maria de Garona Nuclear Power Plant (Centrales Nucleares del Norte, SA, Nucleonar)	Near Bilbao	GE	Boiling water	440	1381	1971	
Sweden, Ringhals, Unit 2 (Swedish State Power Board)	Göteborg	West.	Pressurized water	822	2440	1975	
Switzerland, Beznau, Unit 1 (Nordostschweizerische Kraftwerke AG)	Döttingen	West.	Pressurized water	350	1130	1969	
Switzerland, Beznau, Unit 2 (Nordostschweizerische Kraftwerke AG)	Döttingen	West.	Pressurized water	350	1130	1972	
Switzerland, Mühleberg (Bernische Kraftwerke AG)	Mühleberg (near Bern)	GE	Boiling water	320	947	1972	
Taiwan, Chin-shan, Unit 1 (Taiwan Power Co.)	Chin-shan	GE	Boiling water	604	1775	1978	
Taiwan, Chin-shan, Unit 2 (Taiwan Power Co.)	Chin-shan	GE	Boiling water	604	1775	1979	
BEING BUILT							
Belgium, Tihange, Unit 3	Huy, Liege	West.	Pressurized water	3000	1000	1983	
Belgium, Doel, Unit 4	Antwerp	West.	Pressurized water	3000	1000	1983	
Brazil, Central Electricia de Furnas	Angra Dos Reis	West.	Pressurized water	626	1882	1981	
Italy, ALTO LAZIO, Unit 1	Montalto di Castro	GE	Boiling water	982	2894	1985	
Italy, ALTO LAZIO, Unit 2	Montalto di Castro	GE	Boiling water	982	2894	1985	
Korea, Unit 2 (Korea Electric Power Co.)	Ko-Ri (near Pusan)	West.	Pressurized water	605	1882	1983	
Korea, Unit 5 (Korea Electric Power Co.)	Ko-Ri (near Pusan)	West.	Pressurized water	900	2785	1984	
Korea, Unit 6 (Korea Electric Power Co.)	Ko-Ri (near Pusan)	West.	Pressurized water	900	2785	1985	
Korea, Unit 7 (Korea Electric Power Co.)	Gyema (near Kwang Ju)	West.	Pressurized water	900	2785	1986	
Korea, Unit 8 (Korea Electric Power Co.)	Gyema (near Kwang Ju)	West.	Pressurized water	900	2785	1987	
Korea, Unit 9 (Korea Electric Power Co.)	Bu-Gu (near Wul-Jin)	West.	Pressurized water	900	2785	1988	
Korea, Unit 10 (Korea Electric Power Co.)	Bu-Gu (near Wul-Jin)	West.	Pressurized water	900	2785	1989	

1. POWER REACTORS^{6 5}

PART IV REACTORS FOR EXPORT

A. Central-Station Electric Power (Continued)

Name and/or owner	Location	Principal nuclear contractor	Type	Plant, net MW(e)	Reactor, MW(t)	Start-up	Shutdown
BEING BUILT (Continued)							
Korea, Unit 11 (Korea Electric Power Co.)			Pressurized water	900		1990	
Korea, Unit 12 (Korea Electric Power Co.)			Pressurized water	900		1991	
Mexico, Laguna Verde Station, Unit 1	Laguna Verde	GE	Boiling water	654	1931	1982	
Mexico, Laguna Verde Station, Unit 2	Laguna Verde	GE	Boiling water	654	1931	1983	
The Philippines, Republic of, Bagac Nuclear Power Project (National Power Corp.)	Luzon	West.	Pressurized water	626	1886	Indef.	
Spain, Almaraz, Unit 1 (Union Electricas, S. A.)	Almaraz	West.	Pressurized water	902	2696	1980	
Spain, Almaraz, Unit 2 (Union Electricas, S. A.)	Almaraz	West.	Pressurized water	902	2696	1981	
Spain, Cofrentes, Unit 1 (Hidroelectrica Espanola, S. A.)	Cofrentes	GE	Boiling water	930	2894	1982	
Spain, Fesca, Asco, Unit 1	Asco	West.	Pressurized water	902	2696	1982	
Spain, Fesca, Asco, Unit 2	Asco	West.	Pressurized water	902	2696	1983	
Spain, Lemóniz, Unit 1 (Iberduero, S. A.)	Lemóniz	West.	Pressurized water	902	2696	1981	
Spain, Lemóniz, Unit 2 (Iberduero, S. A.)	Lemóniz	West.	Pressurized water	902	2696	1983	
Sweden, Ringhals, Unit 3 (Studsvik Energiteknik AB)	Göteborg	West.	Pressurized water	50	2783	1980	
Sweden, Ringhals, Unit 4 (Studsvik Energiteknik AB)	Göteborg	West.	Pressurized water	50	2783	1981	
Switzerland, Kaiseraugst (Kernkraftwerke Kaiseraugst AG)	Kaiseraugst (near Basel)	GE	Boiling water	925	2894	1987	
Switzerland, Leibstadt (Kernkraftwerk Leibstadt)	Leibstadt	GE	Boiling water	942	3012	1983	
Taiwan, Kuosheng, Unit 1 (Taiwan Power Co.)	Wanli Hsiang	GE	Boiling water	985	2894	1981	
Taiwan, Kuosheng, Unit 2 (Taiwan Power Co.)	Wanli Hsiang	GE	Boiling water	985	2894	1982	
Taiwan, Maanshan, Unit 1 (Taiwan Power Co.)	Heng-chun	West.	Pressurized water	951	2785	1984	
Taiwan, Maanshan, Unit 2 (Taiwan Power Co.)	Heng-chun	West.	Pressurized water	951	2785	1985	
Yugoslavia (Savske Electrane)	Krsko	West.	Pressurized water	615	1882	1980	
PLANNED							
Egypt, EFAPP-1	West of Alexandria	West.	Pressurized water	600		1982	
Italy, ENEL-5 [Ente Nazionale per l'Energia Elettrica (ENEL)]		West.	Pressurized water	952	2775	1984	
Italy, ENEL-7 [Ente Nazionale per l'Energia Elettrica (ENEL)]		West.	Pressurized water	952	2775	1984	
The Philippines, Republic of, Bagac Nuclear Power Project (National Power Corp.) PNPP, Unit 1	Bataan	West.	Pressurized water	636		1983	
Spain, Sayago (Iberduero, S. A.)	Savago Zomora	West.	Pressurized water	1000	2785	1986	
Spain, Valdecaballeros, Unit 1 (HE: Sevillana de Electricidad)	Valdecaballeros, Badajos	GE	Boiling water	975	2894	1986	
Spain, Valdecaballeros, Unit 2 (HE: Sevillana de Electricidad)	Valdecaballeros, Badajos	GE	Boiling water	975	2894	1987	
Spain, Vandellos, Unit 2 (ENHER)	Falset, Tarragona	West.	Pressurized water	920	2785	1984	
Switzerland, Graben (Bernische Kraftwerke AG)	Graben	GE	Boiling water	1140	3579	Indef.	
Taiwan, Unit 7 (Taiwan Power Co.)				900-1200		1988	
Taiwan, Unit 8 (Taiwan Power Co.)				900-1200		1989	
Taiwan, Unit 9 (Taiwan Power Co.)				900-1200		1990	
Taiwan, Unit 10 (Taiwan Power Co.)				900-1200		1991	
SHUT DOWN OR DISMANTLED							
Germany, Kernkraftwerk-RWE-Bayernwerk, KRB1	Gundremmingen (near Gunzburg)	GE	Boiling water	237	801	1967	1980

B. Propulsion

Name	Owner	Designer	Designation	Type	Start-up	Shut-down
OPERABLE						
SSW for HMS DREADNOUGHT	Great Britain	West.	SSW	Pressurized water	1962	

2. TEST, RESEARCH, AND TEACHING

A. General Irradiation Test

Owner	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE						
Japan, Japan Atomic Energy Research Institute	Tokai-Mura, Ibaraki Pref.	AMF	Heavy water, CP-5	10,000	1960	
Japan, Japan Atomic Energy Research Institute ³⁰	Tokai-Mura, Ibaraki Pref.	GA	TRIGA-ACPR	300	1975	
Netherlands, Reactor Center	Petten	AC	Tank (MTR)	45,000	1961	
Romania, Institute for Nuclear Technologies	Bucharest	GA	TRIGA-ACPR	500	1979	
Romania, Institute for Nuclear Technologies	Bucharest	GA	TRIGA	14,000	1979	
South Africa, Atomic Energy Board	Pelindaba (near Pretoria)	AC	Tank	20,000	1965	
Sweden, Atomic Energy Company	Studsvik Energiteknik	AB	Tank (MTR)	50,000	1960	

B. General Research

Australia, Atomic Energy Commission	Lucas Heights, New South Wales	AS Inc.	UTR-10	15	1961
Austria, Seibersdorf Research Center	Seibersdorf	AMF	Pool	5,000	1960
Colombia, Colombian Institute of Nuclear Affairs	Bogotá	Lockheed	Pool	20	1965
Denmark, Risø National Laboratory (DR-1)	Risø	AI	L-55	2.0	1957
England (Imperial Chemical Industries)	Billingham, Teesside	GE	TRIGA-Mk I	250	1971
Germany, Society for the Utilization of Nuclear Energy in Shipbuilding and Navigation, Inc.	Geesthacht	B&W	Pool	5,000	1958
Greece, Atomic Energy Commission	Athens	AMF	Pool	1,000	1961
Indonesia, National Atomic Energy Agency	Bandung	GA	TRIGA-Mk II	1,000	1964
Indonesia, National Atomic Energy Agency	Jogjakarta	GA	TRIGA-Mk II	250	1979
Israel, Atomic Energy Commission	Nahal Soreq	AMF	Pool	5,000	1960
Italy, Center for Military Application of Nuclear Energy	Near Pisa	B&W	Pool	Pulsing	1963
Italy, National Committee for Nuclear Energy	Ispra	AC	Heavy water, tank	5,000	1959
Italy, National Committee for Nuclear Energy	Padua	AMF	Pool	Neglig.	1971
Italy, National Committee for Nuclear Energy	Rome	GA	TRIGA-Mk II	1,000	1960
Italy, SORIN Nuclear Center	Saluggia	AMF	Pool	7,000	1959

2. TEST, RESEARCH, AND TEACHING

PART IV REACTORS FOR EXPORT

B. General Research (Continued)

Owner	Location	Principal nuclear contractor	Type	Power, ¹ kW(t)	Start-up	Shut-down
OPERABLE (Continued)						
Korea, Atomic Energy Research Institute	Seoul	GA	TRIGA-Mk II	250	1962	
Korea, Atomic Energy Research Institute	Seoul	GA	TRIGA-Mk III	2,000	1972	
Mexico, National Commission for Nuclear Energy ³⁰	Salazar	GA	TRIGA-Mk III	1,000	1968	
Pakistan, Atomic Energy Commission	Islamabad	AMF	Pool	5,000	1965	
Philippines, Philippine Atomic Energy Commission	Quezon City	GE	Pool	1,000	1963	
Portugal, National Laboratory of Engineering and Industrial Technology	Sacavém	AMF	Pool	1,000	1961	
Switzerland, Institute for Reactor Research ⁶⁸	Wuerenlingen	ORNL	Pool	5,000	1957	
Thailand, Office of Atomic Energy for Peace ^{30,69}	Bangkok	GA	TRIGA-Mk III	2,000	1977	
Turkey, Atomic Energy Commission	Istanbul	AMF	Pool	1,000	1962	
Turkey, Technical University of Istanbul	Istanbul	GA	TRIGA-Mk II	250	1979	
Venezuela Institute for Scientific Research	Caracas	GE	Pool	3,000	1960	
Yugoslavia, Josef Stefan Nuclear Institute ³⁰	Ljubljana	GA	TRIGA-Mk II	250	1966	
Zaire (Regional Center for Nuclear Studies)	Kinsha	GA	TRIGA-Mk II	1,000	1959	
BEING BUILT						
Bangladesh	Savar	GA	TRIGA	1,000	1983	
Bangladesh, Institute of Nuclear Technology	Dacca	GA	TRIGA-Mk II	3,000		
Malaysia	Selangor	GA	TRIGA	1,000	1982	
Malaysia, Tun Ismail Atomic Research Centre	Kuala Lumpur	GA	TRIGA-Mk II	1,000		
Morocco, Mohammed V University	Rabat	GA	TRIGA-Mk I	100		
SHUT DOWN OR DISMANTLED						
Denmark, Risø National Laboratory (DR-2)	Risø	FW	Tank	5,000	1958	1975
Japan, Japan Atomic Energy Research Institute	Tokai-Mura, Ibaraki Pref.	AI	L-54	50	1957	1969
Spain, Nuclear Energy Board	Moncloa	GE	Pool	3,000	1958	1970
Vietnam, Vietnam Institute of Nuclear Research	Dalat	GA	TRIGA-Mk II	250	1963	1973
West Berlin, City of (Institute for Nuclear Research)	West Berlin	AI	L-54	50	1958	1970

C. University Research and Teaching

OPERABLE						
Austria, Vienna Polytechnic Institute ³⁰	Vienna	GA	TRIGA-Mk II	250	1962	
Brazil, University of Minas Gerais	Belo Horizonte	GA	TRIGA-Mk I	250	1960	
Brazil, University of São Paulo	São Paulo	B&W	Pool	5,000	1957	
Canada, McMaster University	Hamilton, Ont.	AMF	Pool	5,000	1959	
China, Republic of (National Tsing-Hua University)	Hsinchu	GA	TRIGA Conversion	1,000	1977	
Finland, Institute of Technology ³⁰	Helsinki	GA	TRIGA-Mk II	250	1962	
Germany, Association for Radiation Research ^{30,71}	Munich	GA	TRIGA-Mk III	1,000	1972	
Germany, Institute for Nuclear Medicine ⁷¹	Heidelberg	GA	TRIGA-Mk I	250	1966	
Germany, Johannes Gutenberg University of Mainz ³⁰	Mainz	GA	TRIGA-Mk II	100	1965	
Germany, Medical College of Hanover ⁷¹	Hanover	GA	TRIGA-Mk I	250	1972	
Germany, Technical University of Munich	Munich	AMF	Pool	4,000	1957	

Iran, University of Tehran	Tehran	AMF	Pool	5,000	1967
Italy, University of Milan	Milan	AI	L-54	50	1959
Italy, University of Palermo	Palermo	AGN	201-110	Neglig.	1960
Italy, University of Pavia ³⁰	Pavia	GA	TRIGA-Mk II	250	1965
Japan, Kinki University	Higashi-Osaka	AS Inc.	UTR-10	Neglig.	1961
Japan, Musashi College of Technology	Tokyo	GA	TRIGA-Mk II	100	1963
Japan, Rikkyo University	Yokosuka	GA	TRIGA-Mk II	100	1961
Netherlands, Delft Technical University ⁷²	Delft	AMF	Pool	2,000	1963
Switzerland, University of Basel ⁷³	Basel	AGN	211-100	Neglig.	1958
Switzerland, University of Geneva ⁷⁴	Geneva	AGN	201-111	Neglig.	1958
United Kingdom, Queen Mary College, London University	London	AS Inc.	UTR-B	100	1965
United Kingdom, Scottish Research Reactor Center	East Kilbride	AS Inc.	UTR-100	300	1963
Uruguay, University of Montevideo ⁷⁵	Montevideo	Lockheed	Pool	1,000	1973
Zaire, University of Lovanium ⁷⁶	Kinshasa	GA	TRIGA-Mk I	1,000	1959

BEING BUILT

Morocco, Mohammed V University	Rabat	GA	TRIGA-Mk I	100
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SHUT DOWN OR DISMANTLED

Germany, Brown Boveri/Krupp ⁶⁷	Jülich	AI	L-77A	0.01	1964	1977
Germany, Universities of Frankfurt and Darmstadt	Frankfurt	AI	L-54	50	1958	1968

1. IDENTIFICATION OF FACILITIES

PART V CRITICAL ASSEMBLY FACILITIES

Abbreviation	Name and location of facility	Operator	No. of cells	No. of control panels
ANL	Argonne National Laboratory (DOE), Argonne, Ill.	ANL	2	2
ANL-IDAHO	Argonne National Laboratory, Idaho Division (DOE), INEL Site, Idaho	ANL	1	1
ARMF-I	Advanced Reactivity Measurement Facility (DOE), INEL Site, Idaho	EG&G-ID	1	1
ATRC	Advanced Test Reactor Critical Facility (DOE), INEL Site, Idaho	EG&G-ID	1	1
Bettis	Bettis Atomic Power Laboratory (DOE), Pittsburgh, Pa.	West.	3	3
CFRMF	Coupled Fast Reactor Measurement Facility (DOE), INEL Site, Idaho	EG&G-ID	1	1
CX-10	Critical Facility-10, Lynchburg Research Center Lynchburg, Va.	B&W	2	1
ETRC	Engineering Test Reactor Critical Facility (DOE), INEL Site, Idaho	EG&G-ID	1	1
KAPL	Knolls Atomic Power Laboratory (DOE), Schenectady, N. Y.	GE	5	5
LANSL	Los Alamos National Scientific Laboratory (DOE), Los Alamos, N. Mex.	LLNSL	3	3
Lockheed	Lockheed Aircraft Co., Critical Facility for RER, Dawsonville, Ga. ³	Owner	1	1
OR-CEF	Oak Ridge Critical Experiment Facility (DOE), Oak Ridge, Tenn.	UCC-ND	3	3
ORNL-PCA	Pool Critical Assembly, BSF Pool (DOE), Oak Ridge, Tenn.	ORNL	1	1
PNL-CML	Critical Mass Laboratory (DOE), Richland, Wash.	PNL	1	1
Rensselaer	Rensselaer Polytechnic Institute, Troy, N. Y. ³	Owner	1	1
RFP-NSF	Nuclear Safety Facility, Rocky Flats Plant (DOE), Colo.	RI	1	1
UNC	United Nuclear Corporation, Development Division, Pawling, N. Y. ³	Owner	4	3

2. IDENTIFICATION OF EXPERIMENTS AND STUDIES

PART V CRITICAL ASSEMBLY FACILITIES

A. Civilian

Facility	Subject of current experiment or study	Designation	Start-up
OPERABLE			
ANL	Basic fast reactor studies and mock-up for LMFBR	ZPR-6	1963
ANL ⁷⁶	Basic fast reactor studies and mock-up for LMFBR	ZPR-9	1967
ANL-IDAHO	Basic fast reactor studies and mock-up for LMFBR	ZPPR	1969
Bettis	LWB physics ⁷⁹	LWBCC	1963
CML	Plutonium criticals	Solution	1961
CX-10	Close storage of spent reactor fuel	SSRF	1977
INEL, ARMF-I	Reactor-physics constants and reactivity changes caused by test-reactor irradiation	ARMF-I	1960
INEL, ATRC	ATR physics, core-loading and core-design measurements	ATRC	1964
INEL, CFRMF	Studies of differential cross sections to test calculational methods	CFRMF	1968
INEL, ETRC	ETR physics, core-loading and core-design measurements	ETRC	1957
LANSL, Kiva I	Cold critical for gas core reactor studies	Mars	1974
LANSL, Kiva I	Flexible split table assembly	Honeycomb	1956
LANSL, Kiva II	Critical-configuration safety and neutronic tests	Comet	1952
LANSL, Kiva II	Plated bare-plutonium sphere	Jezebel	1954
LANSL, Kiva II	Spherical metal cores in thick metal reflector	Flattop	1957
LANSL, Kiva II	U(10)-metal cylinder in thick metal reflector	Big Ten	1972
LANSL, Kiva III	Cold critical for instrumentation testing	Parka	1963
LANSL, Kiva III	Fast neutron irradiation, pulse capability	Godiva-IV	1967
LANSL, Kiva III	Fast neutron irradiation, pulse capability	SKUA	1978
OR-CEF, Building 9213, Cell W	HFIR core reactivity measurements		1950
ORNL-PCA, Building 3010	Physics research on reactivity effects	PCA	1958
PNL-CML	Plutonium criticals	Horizontal	1961
Rensselaer	Critical experiment assembly		1966
UNC	Proff test facility	PTF	1967

B. Military

OPERABLE			
Bettis	Surface-ship physics ⁷⁷	SS-CF	1957
Bettis	High-temperature physics and mock-up	HTTF	1959
KAPL	Full core physics experiment	FCPE	1970
KAPL	Flexible critical experiments	FPR	1956
KAPL	Cold water experiments	CWA	1958
KAPL	High-temperature high-pressure physics and mock-up	PTR	1958
KAPL	Cold water reactor test assembly	CWTA	1960
Lockheed	RER core configurations	CERF	1958
RFP-NFS	Critical-configuration safety tests	Horizontal	1965
RFP-NFS	Critical-configuration safety tests	Vertical	1965
RFP-NFS	Critical-configuration safety tests	Solution	1965
RFP-NFS	Critical-configuration safety tests	Tank	1965

FOOTNOTES

1. Power-capacity figures are based on the best available information. In all instances thermal capacity of the nuclear reactor is given; the electrical output, when shown, is the net electrical capacity of the power plant. Where a plant has a stretch capacity, the initial capacity is given until the stretch value is approved.
2. The first core for the Shippingport station began power operation in 1957. The second core began power operation in 1965 and operated until shutdown in 1974. The Shippingport station now has a light-water breeder reactor (LWBR) core which went critical on Aug. 26, 1977. The station with the LWBR core installed was released for routine commercial power generation on Dec. 2, 1977. The reactor plant is owned by the Department of Energy.
3. This facility is regulated by the Nuclear Regulatory Commission and has been issued an operating license (or authorization) or a construction permit, or an application for same has been submitted.
4. This project is under the Power Demonstration Program.
5. In the Consolidated Edison Indian Point Station, the 615 MW(t) is increased by an oil-fired superheater to produce 265 MW(e) net.
6. The Hallam Nuclear Power Facility was shut down in September 1964 due to moderator-can failures. Entombment of the reactor was completed in 1968.
7. The last CVTR shutdown occurred Jan. 24, 1967. A license amendment issued June 14, 1967, authorizes CVNPA to possess but not operate the CVTR.
8. The dismantlement program for the Piqua Nuclear Power Facility was completed in February 1969.
9. The Pathfinder Plant has been shut down since November 1967. On Sept. 9, 1968, Northern States Power Company announced plans to install gas-fired boilers for operation the summer of 1969.
10. The Elk River Reactor was shut down due to technical problems in February 1968; in 1974, dismantling and removal of this facility was completed.
11. N Reactor, a DOE-owned reactor for production of special nuclear materials, also produces steam that is supplied to the adjacent electric generating plant, owned and operated by Washington Public Power Supply System (WPPSS). Initial electric-power generation began Apr. 8, 1966. Gross power output of 800 MW(e) utilizing N Reactor steam was achieved on Dec. 9, 1966, and gross generation of 860 MW(e) was achieved in 1972.
12. Midland Unit 1 supplies 3,625,000 pounds per hour of process steam, and Unit 2 supplies 425,000 pounds per hour.
13. This facility was originally built and operated in 1954 as the Boiling Reactor Experiment No. 2 (BORAX-2). With the addition of a turbogenerator, it operated during 1955 as BORAX-3 and on July 17, 1955, produced sufficient electricity to light and power Arco, Idaho—a U. S. first. BORAX-4, a further modification, operated from December 1956 to June 1958 when the experiment was shut down.
14. OMRE demonstrated the technical and economic feasibility of using liquid hydrocarbon terphenyls as coolant and/or moderator.
15. The EBOR reactor experiment was terminated in December 1966 prior to the completion of construction.
16. In a trial run on Dec. 21 and 22, 1951, EBR-1 generated the world's first electric power from nuclear energy and was the first to demonstrate, in July 1953, the feasibility of breeding and the compatibility with breeding economy of sodium-potassium alloy as a liquid-metal coolant. It operated with a plutonium-bearing core (Mark IV) from November 1962 to December 1963. The reactor was decommissioned and dismantled early in 1964. The facility was dedicated as a historic landmark Aug. 26, 1966. It is open to the public June 14 to September 15 annually, beginning in 1975.
17. SRE operated at 20 MW(t) until shut down in February 1964 for modification to permit an increase in power level to 30 MW(t). On Dec. 2, 1966, deactivation of SRE was announced.
18. The EGCR project was terminated in January 1966 prior to the completion of construction.
19. EOCR construction was terminated in December 1962. The facility was mothballed prior to operation.
20. The EBWR achieved 100,000 kW(t) on Nov. 11, 1962. Operation of EBWR in the Boiling Water Program was closed out in December 1962. The reactor was used in support of the Plutonium Recycle Program and attained criticality using plutonium as its principal fuel on Sept. 22, 1965. In support of that program, it operated at power levels as high as 70,000 kW(t). Operation in that program was completed in June 1967.
21. Footnote deleted.
22. S10FS-4 operated in orbit during April–May 1965. Operation terminated unexpectedly after 43 days at power, probably owing to a sequence of failures of electrical components of the spacecraft with resulting spurious commands shutting down the reactor. An identical ground-test unit, S10FS-3, operated successfully for more than a year before being shut down in 1966.
23. Reactor was shut down in 1973 for modifications and insertion of Sodium Loop Safety Facility (SLSF) loop. Operation resumed in 1975.
24. In August 1958 the MTR was operated with an experimental plutonium core at power levels up to 30,000 kW(t). It demonstrated the ability of plutonium fuel elements to perform satisfactorily in a high-flux research or test reactor. Operation as a test reactor was terminated on June 30, 1969, and a ^{240}Pu (Phoenix) core was run in FY 1970. Reactor decommissioned in 1974.
25. The SNAPTRAN series of experiments was designed to develop, in a land-based environment, safety information on space auxiliary power reactors through excursion testing at various temperatures and rates of reactivity insertion. The destructive experiments approach the maximum credible accidents postulated for SNAP reactor systems.
26. Footnote deleted.
27. This reactor is basically the same as the SNAP-10A Transient Test Reactor No. 1 (SNAPTRAN-1) that operated at Idaho National Engineering Laboratory (INEL) from 1963–1965. It was moved from INEL to its present location in the SNAP Environmental Test Facility. It was used there to evaluate the effects of separated ^{155}Gd as a burnable poison and as a shutdown agent in the event of water immersion. It was defueled in 1971 and placed on standby. The reactor was transferred to Los Alamos, N. Mex., in 1973.
28. The BSR-2, which became operable in 1959, is a stainless-steel- UO_2 core that can be used alternately in the same facility with BSR-1 (aluminum-alloy core).
29. Ownership of this reactor was transferred to North American Rockwell in December 1971 and was redesignated the Nuclear Examination Reactor or L-85 rather than AE-6. The AE-6, also designated WBNS, was built and first operated at Downey, Calif. It was moved to Santa Susana in 1956.

FOOTNOTES (Continued)

30. This TRIGA reactor is capable of being pulsed and of steady-state operation.

31. The HPRR was previously operated in the Nevada BREN facility. It is now installed in the Dosimetry Applications Research Facility.

32. The KEWB reactor was operated by AI from 1956 to 1967 as the Kinetic Experiment on Water Boilers.

33. This reactor was operated in the USAEC Atoms for Peace Exhibit in Vienna, Austria, in June 1963; in Belgrade, Yugoslavia, in September 1963; in Madrid, Spain, in April 1964; in Lisbon, Portugal, in April 1965; in Utrecht, Netherlands, in March 1966; in Dublin, Ireland, in September–October 1966; Ankara, Turkey, in April–May 1967; Tehran, Iran, in November–December 1967; Taipei, Taiwan, in April–May 1968; Seoul, Korea, in September–October 1968; Manila, Philippines, in February–March 1969; and Bucharest, Romania, in October 1969. The reactor instrumentation has been shipped to Howard University, Washington, D. C., and the fuel is currently in storage at Oak Ridge pending shipment to Howard University.

34. In 1943 the Manhattan Engineer District disassembled Chicago Pile 1 and rebuilt it at Palos Park, Ill., as Chicago Pile 2. CP-2 had a thermal-power level of 10 kW.

35. This reactor was shipped abroad for exhibition purposes in the USAEC Atoms for Peace Exhibit in the Tokyo International Trade Fair in 1959, and in Cairo, Egypt, and Lahore, Pakistan, in 1960.

36. This TRIGA-Mk II was operated at the New Delhi World Agricultural Fair in 1960. It has been dismantled for storage in California by Gulf Oil Corporation.

37. In 1965 and 1966 this reactor was operated at Sandia, N. Mex., as SNARE. Prior to that time it operated at INEL as the Shield Test Pool Reactor (Susie) in the Aircraft Nuclear Propulsion Program from 1959 to 1962. It was shut down in 1966 and transferred to Louisiana State University in June 1966, where it was never assembled.

38. Until mid-1967 FRAN was operated by LLNL at the Nevada Test Site, and until 1970 it was operated in the former ML-1 reactor area at INEL. In mid-1970 it was transferred back to LLNL.

39. After the assembly and operation of this reactor in the government exhibit at Geneva in September 1958, it was dismantled and returned to ANL, where it was rebuilt as a 250-kW(t) Juggernaut.

40. The RER was previously used in the terminated Aircraft Nuclear Propulsion Program. A license authorizing Lockheed to operate the reactor as a commercial facility was issued in July 1962, and in August 1962 the USAF transferred the facility to the General Services Administration. Lockheed acquired title to the facility in March 1965.

41. This reactor was previously designated STF for SNAP Shield Test Facility.

42. The APFA-III was previously operated as the KUKLA Prompt Critical Assembly at Lawrence Livermore National Laboratory at Livermore, Calif.

43. This reactor was formerly called the Latin American Demonstration Reactor and was operated initially in São Paulo, Brazil, in October 1969. It is currently in storage at Oak Ridge.

44. AGN-201-102 was operated at Oklahoma State University, Stillwater, Okla., from 1957 until transferred to Tuskegee Institute in 1972.

45. AGN-201-104 operated at the University of Akron (Ohio) from 1957 until transferred to the Georgia Institute of Technology in 1967. Operations at that facility began in 1968.

46. AGN-201-112 was operated at the University of California, Berkeley, beginning in 1957. The University of New Mexico filed an application in April 1966 for transfer and reconstruction of the reactor at a site on its campus. The reactor achieved criticality at the University of New Mexico on Oct. 7, 1966.

47. The Center for Environmental and Energy Research (formerly Puerto Rico Nuclear Center).

48. The kW(e) or more. Arabic numerals indicate order in which plants having the same mobility and power characteristics are initiated. If not followed by an additional letter, the designation indicates a prototype or pilot plant. The last capital letter (when present) indicates the alphabetical order in which field plants of a specific type are initiated.

49. The MH-1A was installed in the STURGIS (formerly the Liberty Ship CHARLES H. CUGLE) at Mobile, Ala. Acceptance testing was performed at Fort Belvoir, Va., from April 1967 to June 27, 1967, when the Army accepted the plant from the Contractor. In late July 1968 the plant was deployed to Gatun Lake, Panama Canal Zone, and began producing power to the Panama Canal power grid on Oct. 5, 1968.

50. The PM-2A was shut down on July 9, 1963, and dismantled during April–June 1964. The reactor vessel was then used at INEL for NDT (nil ductility transition temperature) investigations of materials that had been subjected to long-term irradiation. Defects were sequentially introduced into the vessel wall during a series of tests involving pressure and temperature conditions which exceeded the range permitted in operating nuclear power plants. The final test on Nov. 18, 1966, resulted in a brittle fracture under conditions even more severe than those which had been previously predicted to cause failure. The test program confirmed laboratory data on the adequacy of reactor-operating limitations to prevent brittle fracture of a pressure vessel.

51. The Army made the determination to shut down the SM-1A because the plant's demonstration and R&D missions had been successfully completed and because of the ready availability of cheaper conventional power at the site.

52. The abbreviations used here are defined as follows: SSN, Submarine (Nuclear Propulsion); SSBN, Fleet Ballistic Missile Submarine (Nuclear Propulsion); DLGN, Guided Missile Frigate (Nuclear Propulsion) (all DLGNs were redesignated CGN on July 1, 1975); CGN, Guided Missile Cruiser (Nuclear Propulsion); CVAN/CVN, Aircraft Carrier (Nuclear Propulsion).

53. The USS SEAWOLF, originally commissioned with a sodium-cooled reactor in March 1957, was recommissioned with a pressurized-water reactor on Sept. 30, 1960.

54. The USS THRESHER (SSN593) was lost in the Atlantic on Apr. 10, 1963. The USS SCORPION (SSN589) was lost in the Atlantic on May 21, 1968.

55. The TORY IIC was successfully tested at full design power during May 1964. Subsequent to cancellation of the Pluto program on July 1, 1964, the reactor was placed in the Pluto disassembly building at NTS for storage. In 1974 the reactor was transferred to the NERVA disassembly area for disassembly.

56. In addition to the export power reactors listed, Westinghouse provided the design and furnished nuclear components, including fuel elements, control rods, and instrumentation for the 11.5-MW(e) Belgium BR-3 pressurized-water reactor at Mol.

57. JAERI is being rebuilt as a 90-kW(t) boiling-water research reactor (JPDR-II).

58. This L-77 reactor was operated in the commercial exhibit of the 1958 International Conference in Geneva and in the USAEC Atoms for Peace Exhibits in Beirut, Lebanon, in October 1961; in Athens, Greece, in May 1962; and in Bangkok, Thailand, in November 1962.

59. This is the 1955 Geneva Conference reactor rebuilt with increased power and now operating at Wuerenlingen, Switzerland.

60. The Thai research reactor (TRR-1), built by Curtiss-Wright and started up in 1962, originally operated at 1000 kW(t). In June 1975 the TRR-1 was shut down for conversion to TRR-1/M1, a TRIGA-Mark III system adapted for pool installation. The TRR-1/M1, with a power level of 2000 kW(t)/2000 MW pulsing, was commissioned in November 1977.

48. The University of Wisconsin reactor has been modified for 1000-kW steady-state operation with a TRIGA-type core. Power level was 250 kW prior to modification in 1967.

49. The Nuclear Science Center Reactor at Texas A&M University has been modified for 1000-kW steady-state operation with a TRIGA-type core. Power level was 100 kW prior to modification in 1968.

50. In 1967 the original MTR-type core of the Washington State University reactor was replaced by a modified TRIGA-type core and control system, and the steady-state power level was increased from 100 to 1000 kW(t).

51. From 1955 to 1965 the Penn State reactor was operated as a 200-kW(t) pool-type reactor fueled with MTR-type elements.

52. The AGN-201P-103 was operated at San Ramon, Calif., by Aerojet-General Corporation from 1957 to 1966. In April 1967 Idaho State University applied for a license to operate the reactor at Pocatello, Idaho.

53. The core of the Michigan State University reactor operated in the University of Illinois TRIGA facility from 1960 until transferred in 1968.

54. California State Polytechnic College, San Luis Obispo, Calif., in December 1971 received a permit to relocate AGN-201-100 and operate it on CSPC's campus. The unit previously was operated starting in 1956 at the Naval Postgraduate School, Monterey, Calif. In 1980, AGN-201-100 was shut down and decommissioned.

55. This reactor was originally operated by North Carolina State University as the Raleigh Research Reactor (RRR). It was transferred in March 1966 to Mississippi State University for reactivation. The RRR was dismantled by N. C. State in 1963.

56. In 1957-1962, AGN-201M-105 was owned and operated by the National Naval Medical Center, Bethesda, Md. Title to the reactor was transferred to New York University early in 1964. A license to operate was issued in April 1967.

57. Reactors in the Army Power Program are identified by symbolic nomenclature to reflect mobility characteristics, power range, development sequence, and field sequence. The first capital letter indicates mobility characteristics: S (stationary operation), not designed for subsequent relocation; P (portable), semimobile, stationary operation, capable of being dismantled and reassembled for use in successive locations; and M (mobile), capable of being moved intact, or virtually intact, for use in successive locations. The second capital letter indicates the power range as measured by design capacity for continuous operation: L (low), 100 to 1000 kW(e); M (medium), 1000 to 10,000 kW(e); and H (high), 10,000

70. This TRIGA reactor was operated at the 1958 International Conference in Geneva prior to shipment to the University of Lovanium. It began operating at the University of Lovanium in June 1959. It is the first reactor to be operated on the African continent.

71. This reactor was sold through Gulf Oil licensee, Gutehoffnungshuette Sterkrade A.E.

72. The Netherlands research reactor was originally operated at the Amsterdam International Exhibition in June 1957; major portions of the exhibition reactor system were used to fabricate the present reactor.

73. This reactor was operated in the International Science Section of the Brussels International Exhibition, Apr. 15 to Oct. 1, 1958, prior to transfer to the University of Basel.

74. The AGN-201-111 was operated first in the USAEC Atoms for Peace Exhibit in Rome, Italy, in July 1958 and later in the commercial exhibit of the 1958 International Conference in Geneva prior to transfer to the University of Geneva.

75. Prior to its sale to the University of Montevideo in 1966, this reactor was part of the USAEC Exhibit Program. It was in Buenos Aires, Argentina, in the fall of 1960; in Rio de Janeiro, Brazil, in the spring of 1961; in Lima, Peru, in the fall of 1961; in Mexico City in the spring of 1962; in Santiago, Chile, in the fall of 1962; in Bogotá, Colombia, in the spring of 1963; and in Montevideo, Uruguay, in the fall of 1963. The unit became operational in 1972.

76. Zero-power experiments of historical interest previously conducted in ANL facility cells include the NAUTILUS core design (ZPR-1), the Savannah River reactor design (ZPR-2), and a series of fast-neutron studies (ZPR-4) and interactions between two basic systems (ZPR-5). The following experiments have been performed in the ZPR-7 facility: thorium, uranium, deuterium criticals (THUD), and a series of flux-trap criticals for the Argonne High Flux Research Reactor.

77. The cell has one control panel for two pots. Experiments may be operated in either pot but not in both simultaneously.

78. This reactor was operated at the Puerto Rico Nuclear Center from 1960 to October 1976; it was converted to the TRIGA-FLIP in 1972. It has been moved to the Neutron Radiography Facility at the National Engineering Laboratory in Idaho.

79. The EBR-II reactor has recently become a major irradiation facility for the LMFBR program.

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