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Nuclear Reactors Built, Being Built, or Planned 1993

Prepared for:

U.S. DEPARTMENT OF ENERGY

Director, Office of Nuclear Energy

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Prepared by:

Office of Scientific and Technical Information

Preface

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 December 31, 1993. The Office of Scientific and Technical Information, U.S. Department of Energy, gathers this information annually from Washington headquarters and field offices of DOE; from the U.S. Nuclear Regulatory Commission (NRC); from the U.S. reactor manufacturers who are the principal nuclear contractors for foreign reactor locations; from U.S. and foreign embassies; and from foreign governmental nuclear departments.

The book consists of three divisions, as follows:

- a commercial reactor locator map and tables of the characteristic and statistical data that follow; a table of abbreviations;
- tables of data for reactors operating, being built, or planned; and
- tables of data for reactors that have been shut down permanently or dismantled.

The reactors are subdivided into the following parts: Civilian, Production, Military, Export, and Critical Assembly. *Export reactor* refers to a reactor for which the principal nuclear contractor is a U.S. company—working either independently or in cooperation with a foreign company (Part IV). *Critical assembly* refers to an assembly of fuel and moderator that requires an external source of neutrons to initiate and maintain fission. A critical assembly is used for experimental measurements (Part V).

Various classes of reactors within these parts are defined as follows:

Central-Station Electric Power Plant: A nuclear power facility designed and constructed for operation on a utility system (Part I, Section 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, Section 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 various aspects of reactor technology including fuel, components, and configurations. Power-conversion equipment may or may not be included as part of the facility (Part I, Section 2).

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, Section 3A; Part IV, Section 2A).

High-Power Research and Test Reactor: A reactor having a relatively high thermal power level (5MW or greater) but not classed as a general irradiation test reactor (Part I, Section 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, Section 3C).

General 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 10 MW or less. It may include facilities for testing reactor materials (Part I, Section 3D; Part IV, Section 2B). Also included are Research Reactors (Part III, Section 3B).

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, Section 3E; Part IV, Section 2C).

Reactors are further grouped according to status:

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

1. Reactors regulated by the NRC
   - when an operating license is issued.
   - when a reactor is temporarily shut down because of technical reasons, modifications, or refueling.
2. Federal Government reactors
   - when criticality is achieved.
   - when a reactor is temporarily shut down for safety improvements.
3. Reactors for export
   - when criticality is achieved.

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

1. Reactors regulated by NRC
   - when a construction permit is issued.
   - when limited work authorization is issued.
2. Federal Government reactors
   - when ground is broken.
   - when components are ordered.
   - when a construction contract is awarded.

3. Reactors for export
   - when an application for an export license is received by NRC.
   - when reliable information is received relating to the fabrication of reactor components.

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

1. Reactors regulated by NRC
   - when a public announcement that includes the principal vendor supplier is made by the sponsoring organization.
   - when an application for a construction permit is received by NRC.
2. Federal Government reactors
   - when a public announcement is made by the agency involved.
   - when the project is otherwise appropriately authorized.
3. Reactors for export
   - when a public announcement that includes principal contractor and reactor type is made.
   - 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 considered to be *shutdown or dismantled* under the following circumstances:

1. Reactors regulated by NRC
   - when the licensee has applied to the Commission for authority to surrender a license voluntarily and to dismantle the facility and dispose of its component parts. A reactor shut down because of technical problems, modifications, or refueling, continues to be listed as operable.
2. Federal Government reactors
   - when the facility has ceased operation and the agency has declared officially that the agency does not intend to operate the reactor further. However, within this category, a few reactors are identified as being in *standby* mode, the condition in which documentary authorization exists to maintain the reactor for possible future operation.
3. Reactors for export
   - when the plant is officially declared shut down by the owner and taken out of operation permanently.

Table 2 presents a statistical summary of reactors, other than critical assemblies, in each class and status. Shutdown and dismantled reactors are included since such facilities have made significant contributions to reactor technology.

The reactor tables have the following column headings:

- *Location.* The city and state or country where located originally. For a portable facility or one that has been relocated, the most recent location is given.
- *Principal nuclear contractor, operator, designer, shipbuilder.* The abbreviations used in this column are spelled out in Table 3, which appears just before the reactor tables.
- *Type.* Entries in this column are based on coolant, moderator, and neutron energy.
- *Power.* MD capacity [MW(e)] is the maximum dependable capacity (net electrical output to grid) for plants having an operating history. Otherwise, it is the design capacity. Licensed power and authorized power are given where appropriate.
- *Designation.* The common name, abbreviation or acronym used for the facility. For the naval reactors, it is the hull number.
- *Date* columns. The initial criticality date, year of operation, and year of shutdown are given as appropriate.

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The participation and assistance of many individuals, agencies, and companies in providing data and updating the entries in this revision are gratefully acknowledged. Comments and suggestions about this publication are welcome. To ensure that the wide range of information included in this publication will continue to be timely and accurate, please direct any information related to updating the items to William F. Simpson, Jr., Office of Scientific and Technical Information, Scientific and Technical Publications Branch, P.O. Box 62, Oak Ridge, TN 37831; (615) 576-1228. Questions of a technical nature should be addressed to Lamar Cason at the same address.

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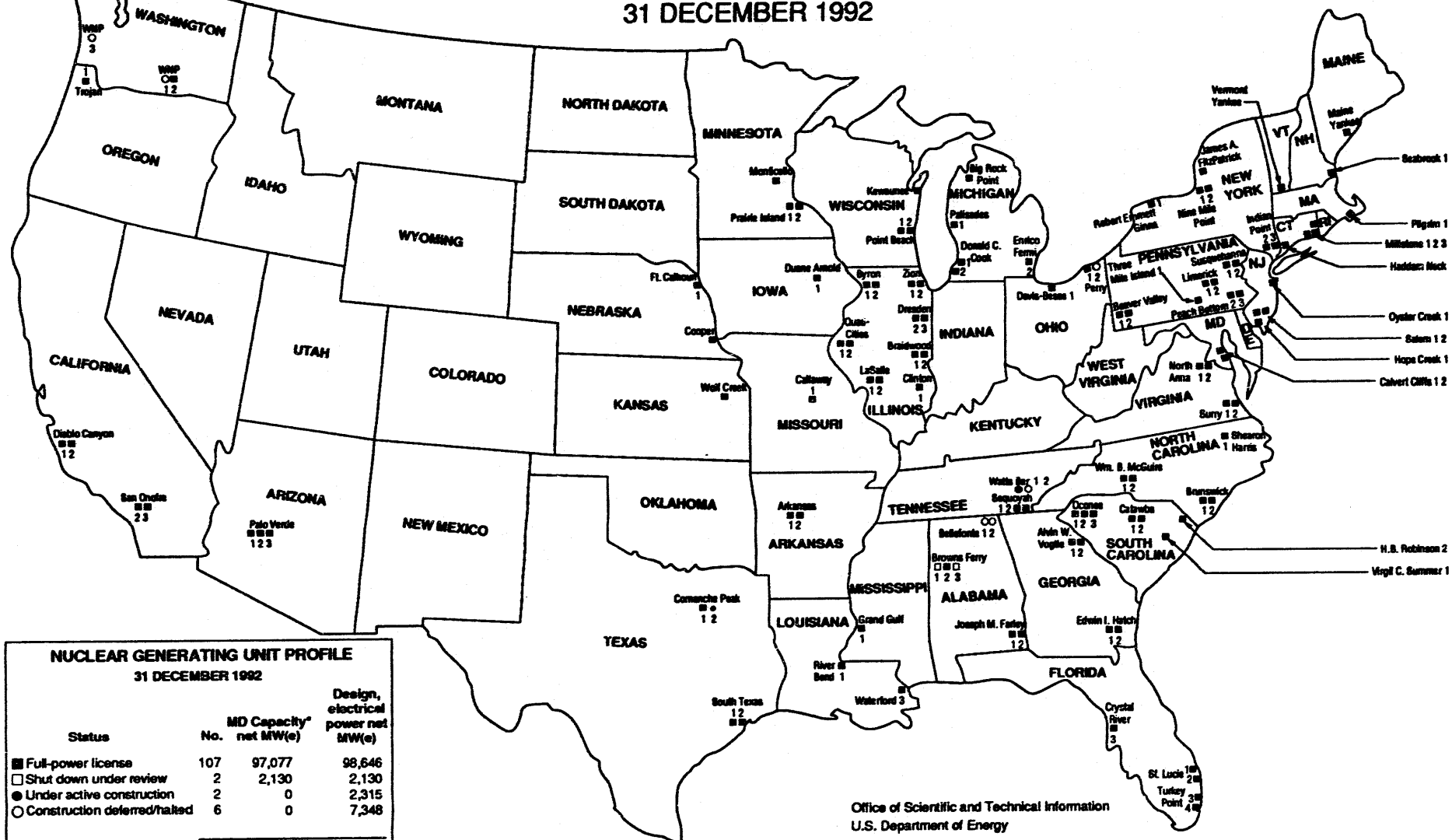
COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES

31 DECEMBER 1992



NUCLEAR GENERATING UNIT PROFILE

31 DECEMBER 1992

Status	No.	MD Capacity* net MW(e)	Design, electrical power net MW(e)
■ Full-power license	107	97,077	98,646
□ Shut down under review	2	2,130	2,130
● Under active construction	2	0	2,315
○ Construction deferred/halted	6	0	7,348
Total	117	99,207.0	110,439.0

*Maximum Dependable Capacity or Design Electrical Rating

Because of space limitations, symbols do not reflect precise locations.

DOE/OSTI-8200-R56 (Suppl.)

Office of Scientific and Technical Information
U.S. Department of Energy

From Nuclear Reactors Built, Being Built, or Planned
(DOE/OSTI-8200-R56)

TABLE 1

COMMERCIAL NUCLEAR POWER REACTORS IN THE UNITED STATES AS OF 31 DEC 1993

SITE	PLANT NAME	STATUS	CAPACITY, NET MW(e)	DESIGN ELECTRICAL RATING, NET MW(e)	LICENSEE	STARTUP
ALABAMA						
Decatur	Browns Ferry Nuclear Power Station, Unit 1	SDUR		1,065	Tennessee Valley Authority	73 08
Decatur	Browns Ferry Nuclear Power Station, Unit 2	FPL	1,065	1,065	Tennessee Valley Authority	74 07
Decatur	Browns Ferry Nuclear Power Station, Unit 3	SDUR		1,065	Tennessee Valley Authority	76 08
Dothan	Joseph M. Farley Nuclear Plant, Unit 1	FPL	812	829	Southern Nuclear Operating Co.	77 08
Dothan	Joseph M. Farley Nuclear Plant, Unit 2	FPL	822	829	Southern Nuclear Operating Co.	81 05
Scottsboro	Bellefonte Nuclear Plant, Unit 1	CDH		1,235	Tennessee Valley Authority	Indef.
Scottsboro	Bellefonte Nuclear Plant, Unit 2	CDH		1,235	Tennessee Valley Authority	Indef.
Total			2,699	7,323		
ARIZONA						
Wintersburg	Palo Verde Nuclear Generating Station, Unit 1	FPL	1,221	1,270	Arizona Public Service Co.	85 05
Wintersburg	Palo Verde Nuclear Generating Station, Unit 2	FPL	1,221	1,270	Arizona Public Service Co.	86 04
Wintersburg	Palo Verde Nuclear Generating Station, Unit 3	FPL	1,304	1,270	Arizona Public Service Co.	87 10
Total			3,746	3,810		
ARKANSAS						
Russellville	Arkansas Nuclear One, Unit 1	FPL	836	850	Entergy Operations Inc.	74 08
Russellville	Arkansas Nuclear One, Unit 2	FPL	858	912	Entergy Operations Inc.	78 12
Total			1,694	1,762		
CALIFORNIA						
Diablo Canyon	Diablo Canyon Nuclear Power Plant, Unit 1	FPL	1,073	1,086	Pacific Gas & Electric Co.	84 04
Diablo Canyon	Diablo Canyon Nuclear Power Plant, Unit 2	FPL	1,087	1,119	Pacific Gas & Electric Co.	85 08
San Clemente	San Onofre Nuclear Generating Station, Unit 2	FPL	1,070	1,070	Southern California Edison	82 07
San Clemente	San Onofre Nuclear Generating Station, Unit 3	FPL	1,080	1,080	Southern California Edison	83 08
Total			4,310	4,355		
CONNECTICUT						
Haddam Neck	Haddam Neck Plant	FPL	560	582	Connecticut Yankee Atomic Power Co.	67 07
Waterford	Millstone Nuclear Power Station, Unit 1	FPL	641	660	Northeast Nuclear Energy Co.	70 10
Waterford	Millstone Nuclear Power Station, Unit 2	FPL	873	870	Northeast Nuclear Energy Co.	75 10
Waterford	Millstone Nuclear Power Station, Unit 3	FPL	1,137	1,154	Northeast Nuclear Energy Co.	86 01
Total			3,211	3,266		

TABLE 1 (Continued)

SITE	PLANT NAME	STATUS	CAPACITY, NET MW(e)	DESIGN ELECTRICAL RATING, NET MW(e)	LICENSEE	STARTUP
FLORIDA						
Florida City	Turkey Point Plant, Unit 3	FPL	666	693	Florida Power & Light Co.	72 10
Florida City	Turkey Point Plant, Unit 4	FPL	666	693	Florida Power & Light Co.	73 06
Fort Pierce	St. Lucie Plant, Unit 1	FPL	839	830	Florida Power & Light Co.	76 04
Fort Pierce	St. Lucie Plant, Unit 2	FPL	839	830	Florida Power & Light Co.	83 06
Red Level	Crystal River Nuclear Plant, Unit 3	FPL	821	825	Florida Power Corp.	77 01
Total			3,831	3,871		
GEORGIA						
Baxley	Edwin I. Hatch Nuclear Plant, Unit 1	FPL	737	776	Georgia Power Co.	74 09
Baxley	Edwin I. Hatch Nuclear Plant, Unit 2	FPL	757	784	Georgia Power Co.	78 07
Waynesboro	Alvin W. Vogtle Nuclear Plant, Unit 1	FPL	1,158	1,101	Georgia Power Co.	87 03
Waynesboro	Alvin W. Vogtle Nuclear Plant, Unit 2	FPL	1,157	1,101	Georgia Power Co.	89 03
Total			3,809	3,762		
ILLINOIS						
Braidwood	Braidwood Station, Unit 1	FPL	1,120	1,120	Commonwealth Edison Co.	87 05
Braidwood	Braidwood Station, Unit 2	FPL	1,120	1,120	Commonwealth Edison Co.	88 03
Byron	Byron Station, Unit 1	FPL	1,105	1,120	Commonwealth Edison Co.	85 02
Byron	Byron Station, Unit 2	FPL	1,105	1,120	Commonwealth Edison Co.	87 01
Clinton	Clinton Power Station, Unit 1	FPL	930	933	Illinois Power Co.	87 02
Cordova	Quad-Cities Station, Unit 1	FPL	769	789	Commonwealth Edison Co.	71 10
Cordova	Quad-Cities Station, Unit 2	FPL	769	789	Commonwealth Edison Co.	72 04
Morris	Dresden Nuclear Power Station, Unit 2	FPL	772	794	Commonwealth Edison Co.	70 01
Morris	Dresden Nuclear Power Station, Unit 3	FPL	773	794	Commonwealth Edison Co.	71 01
Seneca	La Salle County Station, Unit 1	FPL	1,036	1,078	Commonwealth Edison Co.	82 06
Seneca	La Salle County Station, Unit 2	FPL	1,036	1,078	Commonwealth Edison Co.	84 03
Zion	Zion Nuclear Plant, Unit 1	FPL	1,040	1,040	Commonwealth Edison Co.	73 06
Zion	Zion Nuclear Plant, Unit 2	FPL	1,040	1,040	Commonwealth Edison Co.	73 12
Total			12,615	12,815		
IOWA						
Palo	Duane Arnold Energy Center, Unit 1	FPL	515	538	Iowa Electric Light & Power Co.	74 03
Total			515	538		
KANSAS						
Burlington	Wolf Creek Generating Station	FPL	1,134	1,170	Wolf Creek Nuclear Operating Corp.	85 05
Total			1,134	1,170		
LOUISIANA						
St. Francisville	River Bend Station, Unit 1	FPL	936	936	Gulf States Utilities Co.	85 10
Taft	Waterford Generating Station, Unit 3	FPL	1,075	1,104	Entergy Operations Inc.	85 03
Total			2,011	2,040		

TABLE 1 (Continued)

SITE	PLANT NAME	STATUS	CAPACITY, NET MW(e)	DESIGN ELECTRICAL RATING, NET MW(e)	LICENSEE	STARTUP
MAINE						
Wiscasset	Maine Yankee Atomic Power Plant	FPL	860	870	Maine Yankee Atomic Power Co.	72 10
Total			860	870		
MARYLAND						
Lusby	Calvert Cliffs Nuclear Power Plant, Unit 1	FPL	830	845	Baltimore Gas & Electric Co.	74 10
Lusby	Calvert Cliffs Nuclear Power Plant, Unit 2	FPL	830	845	Baltimore Gas & Electric Co.	76 11
Total			1,660	1,690		
MASSACHUSETTS						
Plymouth	Pilgrim Nuclear Power Station, Unit 1	FPL	670	655	Boston Edison Co.	72 06
Total			670	655		
MICHIGAN						
Big Rock Point	Big Rock Point Nuclear Plant	FPL	67	72	Consumers Power Co.	62 09
Bridgman	Donald C. Cook Nuclear Power Plant, Unit 1	FPL	1,000	1,020	Indiana and Michigan Electric Co.	75 01
Bridgman	Donald C. Cook Nuclear Power Plant, Unit 2	FPL	1,060	1,090	Indiana and Michigan Electric Co.	78 03
Newport	Enrico Fermi Atomic Power Plant, Unit 2	FPL	1,085	1,116	Detroit Edison Co.	85 06
South Haven	Palisades Nuclear Plant, Unit 1	FPL	730	805	Consumers Power Co.	71 05
Total			3,942	4,103		
MINNESOTA						
Monticello	Monticello Nuclear Generating Plant	FPL	536	545	Northern States Power Co.	70 12
Red Wing	Prairie Island Nuclear Generating Plant, Unit 1	FPL	513	530	Northern States Power Co.	73 12
Red Wing	Prairie Island Nuclear Generating Plant, Unit 2	FPL	512	530	Northern States Power Co.	74 12
Total			1,561	1,605		
MISSISSIPPI						
Port Gibson	Grand Gulf Nuclear Station, Unit 1	FPL	1,143	1,250	Entergy Operations Inc.	82 08
Total			1,143	1,250		
MISSOURI						
Fulton	Callaway Plant, Unit 1	FPL	1,120	1,171	Union Electric Co.	84 10
Total			1,120	1,171		
NEBRASKA						
Brownville	Cooper Nuclear Station	FPL	764	778	Nebraska Public Power District	74 02
Fort Calhoun	Fort Calhoun Station, Unit 1	FPL	478	478	Omaha Public Power District	73 08
Total			1,242	1,256		

TABLE 1 (Continued)

SITE	PLANT NAME	STATUS	CAPACITY, NET MW(e)	DESIGN ELECTRICAL RATING, NET MW(e)	LICENSEE	STARTUP
NEW HAMPSHIRE						
Seabrook	Seabrook Nuclear Station, Unit 1	FPL	1,150	1,148	North Atlantic Energy Service Corp.	89 06
Total			1,150	1,148		
NEW JERSEY						
Salem	Hope Creek Nuclear Generating Station, Unit 1	FPL	1,031	1,067	Public Service Electric & Gas Co.	86 06
Salem	Salem Nuclear Generating Station, Unit 1	FPL	1,106	1,115	Public Service Electric & Gas Co.	76 12
Salem	Salem Nuclear Generating Station, Unit 2	FPL	1,106	1,115	Public Service Electric & Gas Co.	80 08
Toms River	Oyster Creek Nuclear Power Plant, Unit 1	FPL	610	650	GPU Nuclear Corp.	69 05
Total			3,853	3,947		
NEW YORK						
Buchanan	Indian Point Station, Unit 2	FPL	951	986	Consolidated Edison Co. of New York, Inc.	73 05
Buchanan	Indian Point Station, Unit 3	FPL	965	965	New York Power Authority	76 04
Ontario	Robert Emmett Ginna Nuclear Power Plant, Unit 1	FPL	470	470	Rochester Gas & Electric Corp.	69 11
Scriba	James A. FitzPatrick Nuclear Power Plant	FPL	780	816	New York Power Authority	74 11
Scriba	Nine Mile Point Nuclear Station, Unit 1	FPL	565	625	Niagara Mohawk Power Corp.	69 09
Scriba	Nine Mile Point Nuclear Station, Unit 2	FPL	994	1,062	Niagara Mohawk Power Corp.	87 05
Total			4,725	4,924		
NORTH CAROLINA						
Bonsal	Shearon Harris Nuclear Power Plant, Unit 1	FPL	860	900	Carolina Power & Light Co.	87 01
Cowans Ford Dam	William B. McGuire Nuclear Station, Unit 1	FPL	1,129	1,180	Duke Power Co.	81 08
Cowans Ford Dam	William B. McGuire Nuclear Station, Unit 2	FPL	1,129	1,180	Duke Power Co.	83 05
Southport	Brunswick Steam Electric Plant, Unit 1	FPL	767	821	Carolina Power & Light Co.	76 10
Southport	Brunswick Steam Electric Plant, Unit 2	FPL	754	821	Carolina Power & Light Co.	75 03
Total			4,639	4,902		
OHIO						
Oak Harbor	Davis-Besse Nuclear Power Station, Unit 1	FPL	877	906	Toledo Edison Co.	77 08
Perry	Perry Nuclear Power Plant, Unit 1	FPL	1,166	1,191	Cleveland Electric Illuminating Co.	86 06
Perry	Perry Nuclear Power Plant, Unit 2	CDH		1,205	Cleveland Electric Illuminating Co.	Indef.
Total			2,043	3,302		

TABLE 1 (Continued)

SITE	PLANT NAME	STATUS	CAPACITY, NET MW(e)	DESIGN ELECTRICAL RATING, NET MW(e)	LICENSEE	STARTUP
PENNSYLVANIA						
Berwick	Susquehanna Steam Electric Station, Unit 1	FPL	1,040	1,050	Pennsylvania Power & Light Co.	82 09
Berwick	Susquehanna Steam Electric Station, Unit 2	FPL	1,044	1,050	Pennsylvania Power & Light Co.	84 05
Lancaster	Peach Bottom Atomic Power Station, Unit 2	FPL	1,055	1,065	Philadelphia Electric Co.	73 09
Lancaster	Peach Bottom Atomic Power Station, Unit 3	FPL	1,035	1,065	Philadelphia Electric Co.	74 08
Middletown	Three Mile Island Nuclear Station, Unit 1	FPL	786	819	GPU Nuclear Corp.	74 06
Pottstown	Limerick Generating Station, Unit 1	FPL	1,055	1,055	Philadelphia Electric Co.	84 12
Pottstown	Limerick Generating Station, Unit 2	FPL	1,055	1,055	Philadelphia Electric Co.	89 08
Shippingport	Beaver Valley Power Station, Unit 1	FPL	810	835	Duquesne Light Co.	76 05
Shippingport	Beaver Valley Power Station, Unit 2	FPL	820	836	Duquesne Light Co.	87 08
Total			8,700	8,830		
SOUTH CAROLINA						
Hartsville	H.B. Robinson Plant, Unit 2	FPL	683	700	Carolina Power & Light Co.	70 09
Jenkinsville	Virgil C. Summer Nuclear Station, Unit 1	FPL	885	900	South Carolina Electric & Gas Co.	82 10
Lake Wylie	Catawba Nuclear Station, Unit 1	FPL	1,129	1,145	Duke Power Co.	85 01
Lake Wylie	Catawba Nuclear Station, Unit 2	FPL	1,129	1,145	Duke Power Co.	86 05
Seneca	Oconee Nuclear Station, Unit 1	FPL	846	886	Duke Power Co.	73 04
Seneca	Oconee Nuclear Station, Unit 2	FPL	846	886	Duke Power Co.	73 11
Seneca	Oconee Nuclear Station, Unit 3	FPL	846	886	Duke Power Co.	74 09
Total			6,364	6,548		
TENNESSEE						
Daisy	Sequoyah Nuclear Plant, Unit 1	FPL	1,122	1,148	Tennessee Valley Authority	80 07
Daisy	Sequoyah Nuclear Plant, Unit 2	FPL	1,122	1,148	Tennessee Valley Authority	81 11
Spring City	Watts Bar Nuclear Plant, Unit 1	UC		1,165	Tennessee Valley Authority	
Spring City	Watts Bar Nuclear Plant, Unit 2	CDH		1,165	Tennessee Valley Authority	Indef.
Total			2,244	4,626		
TEXAS						
Bay City	South Texas Project, Unit 1	FPL	1,251	1,251	Houston Lighting & Power Co.	88 03
Bay City	South Texas Project, Unit 2	FPL	1,251	1,251	Houston Lighting & Power Co.	89 02
Glen Rose	Comanche Peak Steam Electric Station, Unit 1	FPL	1,150	1,150	Texas Utilities Generating Co.	90 04
Glen Rose	Comanche Peak Steam Electric Station, Unit 2	FPL	1,150	1,150	Texas Utilities Generating Co.	93 08
Total			4,802	4,802		
VERMONT						
Vernon	Vermont Yankee Nuclear Power Station	FPL	504	514	Vermont Yankee Nuclear Power Corp.	72 03
Total			504	514		

TABLE 1 (Continued)

SITE	PLANT NAME	STATUS	CAPACITY, NET MW(e)	DESIGN ELECTRICAL RATING, NET MW(e)	LICENSEE	STARTUP
VIRGINIA						
Gravel Neck	Surry Power Station, Unit 1	FPL	781	788	Virginia Electric & Power Co.	72 07
Gravel Neck	Surry Power Station, Unit 2	FPL	781	788	Virginia Electric & Power Co.	73 03
Mineral	North Anna Power Station, Unit 1	FPL	900	907	Virginia Electric & Power Co.	78 04
Mineral	North Anna Power Station, Unit 2	FPL	887	907	Virginia Electric & Power Co.	80 06
Total			3,349	3,390		
WASHINGTON						
Richland	Washington Nuclear Project, Unit 1	CDH		1,266	Washington Public Power Supply System	Indef.
Richland	Washington Nuclear Project, Unit 2	FPL	1,086	1,100	Washington Public Power Supply System	84 01
Satsop	Washington Nuclear Project, Unit 3	CDH		1,242	Washington Public Power Supply System	Indef.
Total			1,086	3,608		
WISCONSIN						
Carlton	Kewaunee Nuclear Power Plant	FPL	511	535	Wisconsin Public Service Corp.	74 03
Two Creeks	Point Beach Nuclear Plant, Unit 1	FPL	485	497	Wisconsin Electric Power Co.	70 11
Two Creeks	Point Beach Nuclear Plant, Unit 2	FPL	485	497	Wisconsin Electric Power Co.	72 05
Total			1,481	1,529		
U.S. Total			95,713	109,382		

FPL, Full-Power License
UC, Under Active Construction
CDH, Construction Deferred/Halted
SDUR, Shut Down Under Review

TABLE 2

STATISTICAL SUMMARY OF NUCLEAR REACTORS AS OF 31 DEC 1993

	Operable	Being built	Planned	Shutdown	Totals
U.S. REACTORS					
CIVILIAN REACTORS (DOMESTIC)					
Power Reactors					
Central-Station Electric Power Plants	109	7		20	136
Dual-Purpose Plants				1	1
Propulsion (Maritime)				1	1
Experimental Power-Reactor Systems					
Electric-Power Systems	1			23	24
Space Nuclear Auxiliary Power (SNAP)				9	9
Space Propulsion (Rover)				21	21
Test, Research, and University Reactors					
General Irradiation Test	1		1	6	8
High-Power Research and Test	5			7	12
Safety-Research and Test	1			10	11
General Research	14		1	56	71
University Research and Teaching	34		1	31	66
PRODUCTION REACTORS					
Materials Production	1			12	13
Process Development				5	5
MILITARY REACTORS					
Defense Power-Reactor Applications					
Remote Installations				6	6
Propulsion (Naval)	124	15		72	211
Developmental Power					
Electric-Power Experiments and Prototypes				3	3
Propulsion Experiments and Prototypes	5			10	15
Test and Research					
Test				3	3
Research	4			6	10
EXPORT REACTORS					
POWER REACTORS					
Central-Station Electric Power Plants	50	11	4	5	70
Propulsion				1	1
TEST, RESEARCH, AND TEACHING					
General Irradiation Test	7				7
General Research	27	1	1	10	39
University Research and Teaching	19			6	25
Totals	402	34	8	324	768

TABLE 3

ABBREVIATIONS OF CONTRACTORS, DESIGNERS, SHIPBUILDERS, AND FACILITY OPERATORS

The definitions of the following abbreviations that have been used in this volume contain references to current and historical corporate and government structure.

AC	Allis-Chalmers Mfg. Co.
ACEC	Ateliers de Construction Electriques de Charleroi S.A. (Belgium)
ACF	ACF Industries, Inc. (reactor activities abandoned by AC)
AEC	Atomic Energy Commission, a predecessor of the Department of Energy
AG	Aerojet-General Corporation
AGN	Aerojet-General Nucleonics, formerly a subsidiary and then a division of Aerojet-General Corporation
AI	Atomics International, a division of Rockwell International
Alco	Alco Products, Inc. (reactor activities absorbed by AC)
AMF	AMF Atomics, Inc., a division of American Machine & Foundry Co.
ANL	Argonne National Laboratory
ANPD	Aircraft Nuclear Propulsion Department, General Electric Company (name changed to Flight Propulsion Laboratory Department)
AR	American Radiator
AS Inc.	American Standard Inc.
AU	Associated Universities, Inc. (Brookhaven National Laboratory)
BAC	Bendix Aviation Corp.
Bethlehem	Shipbuilding Division, Bethlehem Steel Co. (now Quincy Division, General Dynamics Corp.)
Bettis	Bettis Atomic Power Laboratory
Blaw-Knox	Blaw-Knox Co.
B&R	Burns & Roe, Inc.
B&W	Babcock & Wilcox Co.
BNL	Brookhaven National Laboratory
CL	Clinton Laboratory of the Manhattan Engineer District
Comb.	Combustion Engineering, Inc.
Convair	Convair Division, General Dynamics Corp.
Cook	Nucledyne Co., a division of Cook Electric Company
CW	Curtiss-Wright Corporation
Daystrom	Daystrom, Inc.
DNA	Defense Nuclear Agency, Department of Defense
DOD	Department of Defense
DOE	Department of Energy
Du Pont	E.I. Du Pont de Nemours & Company, Inc.
EG&G-ID	EG&G Idaho, Inc. (a division of EG&G, Inc.)
Electric Boat	Electric Boat Division, General Dynamics Corp.
Fluor	The Fluor Corporation, Ltd.
Fram.	Framatome
FW	Foster Wheeler Corp.
GA	General Atomics Technologies
GD (Quincy)	Quincy Division, General Dynamics Corp.
GE	General Electric Company
GNEC	General Nuclear Engineering Corp. (became a division of Combustion Engineering, Inc., in 1964)
IC	Internuclear Co.
INC	Idaho Nuclear Corporation
INEL	Idaho National Engineering Laboratory
Ingalls	Ingalls Shipbuilding Corp.
Kaman	Kaman Nuclear, a division of Kaman Aircraft Corp.
KAPL	Knolls Atomic Power Laboratory
KE	Kaiser Engineers, a division of Henry J. Kaiser Co.
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
Lockheed	Lockheed Aircraft Corp.
Mare Island	Mare Island Naval Shipyard
Martin	Martin Marietta Corp.
Maxon	Maxon Construction Co.
Met. Lab	Metallurgical Laboratory of the Manhattan Engineer District
NASA	National Aeronautics and Space Administration
NBS	National Bureau of Standards
Newport News	Newport News Shipbuilding & Dry Dock Co.
NRDS	Nuclear Rocket Development Station
NRL	Naval Research Laboratory
NSA	Nuclear Systems Associates
NTS	Nevada Test Site
NYSC	New York Shipbuilding Corp.
ORNL	Oak Ridge National Laboratory
PNL	Pacific Northwest Laboratory
Portsmouth	Portsmouth Naval Shipyard
PPC	Phillips Petroleum Co.
PRDC	Power Reactor Development Company
RI	Rockwell International
Sandia	Sandia National Laboratories
UNC	United Nuclear Corporation, Development Division
Vitro	Vitro Corporation of America
West.	Westinghouse Electric Corporation
WHC	Westinghouse Hanford Co.

REACTORS AND FACILITIES OPERABLE, BEING BUILT, OR PLANNED

REACTORS AND FACILITIES OPERABLE, BEING BUILT, OR PLANNED

1. POWER REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

A. Central-Station Electric Power Plants

Name (licensee) [docket number]	Location	Principal nuclear contractor	Type	Power MD capacity net MW(e)	Power Licensed MW(t)	Initial criticality (yr mo)	Comment
OPERABLE							
Alvin W. Vogtle Nuclear Plant, Unit 1 (Georgia Power Co.) [50-424]	Waynesboro, GA	West.	Pressurized water	1158.0	3565.0	87 03	
Alvin W. Vogtle Nuclear Plant, Unit 2 (Georgia Power Co.) [50-425]	Waynesboro, GA	West.	Pressurized water	1157.0	3565.0	89 03	
Arkansas Nuclear One, Unit 1 (Entergy Operations Inc.) [50-313]	Russellville, AR	B&W	Pressurized water	836.0	2568.0	74 08	
Arkansas Nuclear One, Unit 2 (Entergy Operations Inc.) [50-368]	Russellville, AR	Comb.	Pressurized water	858.0	2815.0	78 12	
Beaver Valley Power Station, Unit 1 (Duquesne Light Co., Ohio Edison Co.) [50-334]	Shippingport, PA	West.	Pressurized water	810.0	2652.0	76 05	
Beaver Valley Power Station, Unit 2 (Duquesne Light Co.) [50-412]	Shippingport, PA	West.	Pressurized water	820.0	2652.0	87 08	
Big Rock Point Nuclear Plant (Consumers Power Co.) [50-155]	Big Rock Point, MI	GE	Boiling water	67.0	240.0	62 09	
Braidwood Station, Unit 1 (Commonwealth Edison Co.) [50-456]	Braidwood, IL	West.	Pressurized water	1120.0	3411.0	87 05	
Braidwood Station, Unit 2 (Commonwealth Edison Co.) [50-457]	Braidwood, IL	West.	Pressurized water	1120.0	3411.0	88 03	
Browns Ferry Nuclear Power Station, Unit 1 (Tennessee Valley Authority) [50-259]	Decatur, AL	GE	Boiling water	0.0	3293.0	73 08	Maximum dependable capacity is zero. Administrative hold to resolve various TVA and NRC concerns 6/1/85.
Browns Ferry Nuclear Power Station, Unit 2 (Tennessee Valley Authority) [50-260]	Decatur, AL	GE	Boiling water	1065.0	3293.0	74 07	Restarted 5/23/91.
Browns Ferry Nuclear Power Station, Unit 3 (Tennessee Valley Authority) [50-296]	Decatur, AL	GE	Boiling water	0.0	3293.0	76 08	Maximum dependable capacity is zero. Administrative hold to resolve various TVA and NRC concerns 3/3/85.
Brunswick Steam Electric Plant, Unit 1 (Carolina Power & Light Co.) [50-325]	Southport, NC	GE	Boiling water	767.0	2436.0	76 10	
Brunswick Steam Electric Plant, Unit 2 (Carolina Power & Light Co.) [50-324]	Southport, NC	GE	Boiling water	754.0	2436.0	75 03	
Byron Station, Unit 1 (Commonwealth Edison Co.) [50-454]	Byron, IL	West.	Pressurized water	1105.0	3411.0	85 02	
Byron Station, Unit 2 (Commonwealth Edison Co.) [50-455]	Byron, IL	West.	Pressurized water	1105.0	3411.0	87 01	
Callaway Plant, Unit 1 (Union Electric Co.) [50-483]	Fulton, MO	West.	Pressurized water	1120.0	3565.0	84 10	
Calvert Cliffs Nuclear Power Plant, Unit 1 (Baltimore Gas & Electric Co.) [50-317]	Lusby, MD	Comb.	Pressurized water	830.0	2700.0	74 10	
Calvert Cliffs Nuclear Power Plant, Unit 2 (Baltimore Gas & Electric Co.) [50-318]	Lusby, MD	Comb.	Pressurized water	830.0	2700.0	76 11	
Catawba Nuclear Station, Unit 1 (Duke Power Co.) [50-413]	Lake Wylie, SC	West.	Pressurized water	1129.0	3411.0	85 01	

A. Central-Station Electric Power Plants (Continued)

Name (licensee) [docket number]	Location	Principal nuclear contractor	Type	Power MD capacity net MW(e)	Power Licensed MW(t)	Initial criticality (yr mo)	Comment
OPERABLE (Continued)							
Catawba Nuclear Station, Unit 2 (Duke Power Co.) [50-414]	Lake Wylie, SC	West.	Pressurized water	1129.0	3411.0	86 05	
Clinton Power Station, Unit 1 (Illinois Power Co.) [50-461]	Clinton, IL	GE	Boiling water	930.0	2894.0	87 02	
Comanche Peak Steam Electric Station, Unit 1 (Texas Utilities Generating Co.) [50-445]	Glen Rose, TX	West.	Pressurized water	1150.0	3411.0	90 04	
Comanche Peak Steam Electric Station, Unit 2 (Texas Utilities Generating Co.) [50-446]	Glen Rose, TX	West.	Pressurized water	1150.0	3411.0	93 08	Commercial operation, 8/3/93.
Cooper Nuclear Station (Nebraska Public Power District) [50-298]	Brownville, NE	GE	Boiling water	764.0	2381.0	74 02	
Crystal River Nuclear Plant, Unit 3 (Florida Power Corp.) [50-302]	Red Level, FL	B&W	Pressurized water	821.0	2544.0	77 01	
Davis-Besse Nuclear Power Station, Unit 1 (Toledo Edison Co.) [50-346]	Oak Harbor, OH	B&W	Pressurized water	877.0	2772.0	77 08	
Diablo Canyon Nuclear Power Plant, Unit 1 (Pacific Gas & Electric Co.) [50-275]	Diablo Canyon, CA	West.	Pressurized water	1073.0	3338.0	84 04	
Diablo Canyon Nuclear Power Plant, Unit 2 (Pacific Gas & Electric Co.) [50-323]	Diablo Canyon, CA	West.	Pressurized water	1087.0	3411.0	85 08	
Donald C. Cook Nuclear Power Plant, Unit 1 (Indiana and Michigan Electric Co.) [50-315]	Bridgman, MI	West.	Pressurized water	1000.0	3250.0	75 01	
Donald C. Cook Nuclear Power Plant, Unit 2 (Indiana and Michigan Electric Co.) [50-316]	Bridgman, MI	West.	Pressurized water	1060.0	3411.0	78 03	
Dresden Nuclear Power Station, Unit 2 (Commonwealth Edison Co.) [50-237]	Morris, IL	GE	Boiling water	772.0	2527.0	70 01	
Dresden Nuclear Power Station, Unit 3 (Commonwealth Edison Co.) [50-249]	Morris, IL	GE	Boiling water	773.0	2527.0	71 01	
Duane Arnold Energy Center, Unit 1 (Iowa Electric Light & Power Co.) [50-331]	Palo, IA	GE	Boiling water	515.0	1658.0	74 03	
Edwin I. Hatch Nuclear Plant, Unit 1 (Georgia Power Co.) [50-321]	Baxley, GA	GE	Boiling water	737.0	2436.0	74 09	
Edwin I. Hatch Nuclear Plant, Unit 2 (Georgia Power Co.) [50-366]	Baxley, GA	GE	Boiling water	757.0	2436.0	78 07	
Enrico Fermi Atomic Power Plant, Unit 2 (Detroit Edison Co.) [50-341]	Newport, MI	GE	Boiling water	1085.0	3430.0	85 06	
Fort Calhoun Station, Unit 1 (Omaha Public Power District) [50-285]	Fort Calhoun, NE	Comb.	Pressurized water	478.0	1500.0	73 08	
Grand Gulf Nuclear Station, Unit 1 (Entergy Operations Inc.) [50-416]	Port Gibson, MS	GE	Boiling water	1143.0	3833.0	82 08	
H.B. Robinson Plant, Unit 2 (Carolina Power & Light Co.) [50-261]	Hartsville, SC	West.	Pressurized water	683.0	2300.0	70 09	
Haddam Neck Plant (Connecticut Yankee Atomic Power Co.) [50-213]	Haddam Neck, CT	West.	Pressurized water	560.0	1825.0	67 07	
Hope Creek Nuclear Generating Station, Unit 1 (Public Service Electric & Gas Co.) [50-354]	Salem, NJ	GE	Boiling water	1031.0	3293.0	86 06	
Indian Point Station, Unit 2 (Consolidated Edison Co. of New York, Inc.) [50-247]	Buchanan, NY	West.	Pressurized water	951.0	3071.0	73 05	

Indian Point Station, Unit 3 (New York Power Authority) [50-286]	Buchanan, NY	West.	Pressurized water	965.0	3025.0	76 04
James A. FitzPatrick Nuclear Power Plant (New York Power Authority) [50-333]	Scriba, NY	GE	Boiling water	780.0	2436.0	74 11
Joseph M. Farley Nuclear Plant, Unit 1 (Southern Nuclear Operating Co.) [50-348]	Dothan, AL	West.	Pressurized water	812.0	2652.0	77 08
Joseph M. Farley Nuclear Plant, Unit 2 (Southern Nuclear Operating Co.) [50-364]	Dothan, AL	West.	Pressurized water	822.0	2652.0	81 05
Kewaunee Nuclear Power Plant (Wisconsin Public Service Corp.) [50-305]	Carlton, WI	West.	Pressurized water	511.0	1650.0	74 03
La Salle County Station, Unit 1 (Commonwealth Edison Co.) [50-373]	Seneca, IL	GE	Boiling water	1036.0	3323.0	82 06
La Salle County Station, Unit 2 (Commonwealth Edison Co.) [50-374]	Seneca, IL	GE	Boiling water	1036.0	3323.0	84 03
Limerick Generating Station, Unit 1 (Philadelphia Electric Co.) [50-352]	Pottstown, PA	GE	Boiling water	1055.0	3293.0	84 12
Limerick Generating Station, Unit 2 (Philadelphia Electric Co.) [50-353]	Pottstown, PA	GE	Boiling water	1055.0	3293.0	89 08
Maine Yankee Atomic Power Plant (Maine Yankee Atomic Power Co.) [50-309]	Wiscasset, ME	Comb.	Pressurized water	860.0	2700.0	72 10
Millstone Nuclear Power Station, Unit 1 (Northeast Nuclear Energy Co.) [50-245]	Waterford, CT	GE	Boiling water	641.0	2011.0	70 10
Millstone Nuclear Power Station, Unit 2 (Northeast Nuclear Energy Co.) [50-336]	Waterford, CT	Comb.	Pressurized water	873.0	2700.0	75 10
Millstone Nuclear Power Station, Unit 3 (Northeast Nuclear Energy Co.) [50-423]	Waterford, CT	West.	Pressurized water	1137.0	3411.0	86 01
Monticello Nuclear Generating Plant (Northern States Power Co.) [50-263]	Monticello, MN	GE	Boiling water	536.0	1670.0	70 12
Nine Mile Point Nuclear Station, Unit 1 (Niagara Mohawk Power Corp.) [50-220]	Scriba, NY	GE	Boiling water	565.0	1850.0	69 09
Nine Mile Point Nuclear Station, Unit 2 (Niagara Mohawk Power Corp.) [50-410]	Scriba, NY	GE	Boiling water	994.0	3323.0	87 05
North Anna Power Station, Unit 1 (Virginia Electric & Power Co.) [50-338]	Mineral, VA	West.	Pressurized water	900.0	2893.0	78 04
North Anna Power Station, Unit 2 (Virginia Electric & Power Co.) [50-339]	Mineral, VA	West.	Pressurized water	887.0	2893.0	80 06
Oconee Nuclear Station, Unit 1 (Duke Power Co.) [50-269]	Seneca, SC	B&W	Pressurized water	846.0	2568.0	73 04
Oconee Nuclear Station, Unit 2 (Duke Power Co.) [50-270]	Seneca, SC	B&W	Pressurized water	846.0	2568.0	73 11
Oconee Nuclear Station, Unit 3 (Duke Power Co.) [50-287]	Seneca, SC	B&W	Pressurized water	846.0	2568.0	74 09
Oyster Creek Nuclear Power Plant, Unit 1 (GPU Nuclear Corp.) [50-219]	Toms River, NJ	GE	Boiling water	610.0	1930.0	69 05
Palisades Nuclear Plant, Unit 1 (Consumers Power Co.) [50-255]	South Haven, MI	Comb.	Pressurized water	730.0	2530.0	71 05
Palo Verde Nuclear Generating Station, Unit 1 (Arizona Public Service Co.) [50-528]	Wintersburg, AZ	Comb.	Pressurized water	1221.0	3800.0	85 05
Palo Verde Nuclear Generating Station, Unit 2 (Arizona Public Service Co.) [50-529]	Wintersburg, AZ	Comb.	Pressurized water	1221.0	3800.0	86 04
Palo Verde Nuclear Generating Station, Unit 3 (Arizona Public Service Co.) [50-530]	Wintersburg, AZ	Comb.	Pressurized water	1304.0	3817.0	87 10
Peach Bottom Atomic Power Station, Unit 2 (Philadelphia Electric Co.) [50-277]	Lancaster, PA	GE	Boiling water	1055.0	3293.0	73 09
Peach Bottom Atomic Power Station, Unit 3 (Philadelphia Electric Co.) [50-278]	Lancaster, PA	GE	Boiling water	1035.0	3293.0	74 08

1. POWER REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

A. Central-Station Electric Power Plants (Continued)

Name (licensee) [docket number]	Location	Principal nuclear contractor	Type	Power MD capacity net MW(e)	Power Licensed MW(t)	Initial criticality (yr mo)	Comment
OPERABLE (Continued)							
Perry Nuclear Power Plant, Unit 1 (Cleveland Electric Illuminating Co.) [50-440]	Perry, OH	GE	Boiling water	1166.0	3579.0	86 06	
Pilgrim Nuclear Power Station, Unit 1 (Boston Edison Co.) [50-293]	Plymouth, MA	GE	Boiling water	670.0	1998.0	72 06	
Point Beach Nuclear Plant, Unit 1 (Wisconsin Electric Power Co.) [50-266]	Two Creeks, WI	West.	Pressurized water	485.0	1519.0	70 11	
Point Beach Nuclear Plant, Unit 2 (Wisconsin Electric Power Co.) [50-301]	Two Creeks, WI	West.	Pressurized water	485.0	1519.0	72 05	
Prairie Island Nuclear Generating Plant, Unit 1 (Northern States Power Co.) [50-282]	Red Wing, MN	West.	Pressurized water	513.0	1650.0	73 12	
Prairie Island Nuclear Generating Plant, Unit 2 (Northern States Power Co.) [50-306]	Red Wing, MN	West.	Pressurized water	512.0	1650.0	74 12	
Quad-Cities Station, Unit 1 (Commonwealth Edison Co.) [50-254]	Cordova, IL	GE	Boiling water	769.0	2511.0	71 10	
Quad-Cities Station, Unit 2 (Commonwealth Edison Co.) [50-265]	Cordova, IL	GE	Boiling water	769.0	2511.0	72 04	
River Bend Station, Unit 1 (Gulf States Utilities Co.) [50-458]	St. Francisville, LA	GE	Boiling water	936.0	2894.0	85 10	
Robert Emmett Ginna Nuclear Power Plant, Unit 1 (Rochester Gas & Electric Corp.) [50-244]	Ontario, NY	West.	Pressurized water	470.0	1520.0	69 11	
Salem Nuclear Generating Station, Unit 1 (Public Service Electric & Gas Co.) [50-272]	Salem, NJ	West.	Pressurized water	1106.0	3411.0	76 12	
Salem Nuclear Generating Station, Unit 2 (Public Service Electric & Gas Co.) [50-311]	Salem, NJ	West.	Pressurized water	1106.0	3411.0	80 08	
San Onofre Nuclear Generating Station, Unit 2 (Southern California Edison) [50-361]	San Clemente, CA	Comb.	Pressurized water	1070.0	3390.0	82 07	
San Onofre Nuclear Generating Station, Unit 3 (Southern California Edison) [50-362]	San Clemente, CA	Comb.	Pressurized water	1080.0	3390.0	83 08	
Seabrook Nuclear Station, Unit 1 (North Atlantic Energy Service Corp.) [50-443]	Seabrook, NH	West.	Pressurized water	1150.0	3411.0	89 06	
Sequoyah Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-327]	Daisy, TN	West.	Pressurized water	1122.0	3411.0	80 07	
Sequoyah Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-328]	Daisy, TN	West.	Pressurized water	1122.0	3411.0	81 11	
Shearon Harris Nuclear Power Plant, Unit 1 (Carolina Power & Light Co.) [50-400]	Bonsal, NC	West.	Pressurized water	860.0	2775.0	87 01	
South Texas Project, Unit 1 (Houston Lighting & Power Co.) [50-498]	Bay City, TX	West.	Pressurized water	1251.0	3800.0	88 03	
South Texas Project, Unit 2 (Houston Lighting & Power Co.) [50-499]	Bay City, TX	West.	Pressurized water	1251.0	3800.0	89 02	
St. Lucie Plant, Unit 1 (Florida Power & Light Co.) [50-335]	Fort Pierce, FL	Comb.	Pressurized water	839.0	2700.0	76 04	
St. Lucie Plant, Unit 2 (Florida Power & Light Co.) [50-389]	Fort Pierce, FL	Comb.	Pressurized water	839.0	2700.0	83 06	

Surry Power Station, Unit 1 (Virginia Electric & Power Co.) [50-280]	Gravel Neck, VA	West.	Pressurized water	781.0	2441.0	72 07
Surry Power Station, Unit 2 (Virginia Electric & Power Co.) [50-281]	Gravel Neck, VA	West.	Pressurized water	781.0	2441.0	73 03
Susquehanna Steam Electric Station, Unit 1 (Pennsylvania Power & Light Co.) [50-387]	Berwick, PA	GE	Boiling water	1040.0	3293.0	82 09
Susquehanna Steam Electric Station, Unit 2 (Pennsylvania Power & Light Co.) [50-388]	Berwick, PA	GE	Boiling water	1044.0	3293.0	84 05
Three Mile Island Nuclear Station, Unit 1 (GPU Nuclear Corp.) [50-289]	Middletown, PA	B&W	Pressurized water	786.0	2568.0	74 06
Turkey Point Plant, Unit 3 (Florida Power & Light Co.) [50-250]	Florida City, FL	West.	Pressurized water	666.0	2200.0	72 10
Turkey Point Plant, Unit 4 (Florida Power & Light Co.) [50-251]	Florida City, FL	West.	Pressurized water	666.0	2200.0	73 06
Vermont Yankee Nuclear Power Station (Vermont Yankee Nuclear Power Corp.) [50-271]	Vernon, VT	GE	Boiling water	504.0	1593.0	72 03
Virgil C. Summer Nuclear Station, Unit 1 (South Carolina Electric & Gas Co.) [50-395]	Jenkinsville, SC	West.	Pressurized water	885.0	2775.0	82 10
Washington Nuclear Project, Unit 2 (Washington Public Power Supply System) [50-397]	Richland, WA	GE	Boiling water	1086.0	3323.0	84 01
Waterford Generating Station, Unit 3 (Entergy Operations Inc.) [50-382]	Taft, LA	Comb.	Pressurized water	1075.0	3390.0	85 03
William B. McGuire Nuclear Station, Unit 1 (Duke Power Co.) [50-369]	Cowans Ford Dam, NC	West.	Pressurized water	1129.0	3411.0	81 08
William B. McGuire Nuclear Station, Unit 2 (Duke Power Co.) [50-370]	Cowans Ford Dam, NC	West.	Pressurized water	1129.0	3411.0	83 05
Wolf Creek Generating Station (Wolf Creek Nuclear Operating Corp.) [50-482]	Burlington, KS	West.	Pressurized water	1134.0	3565.0	85 05
Zion Nuclear Plant, Unit 1 (Commonwealth Edison Co.) [50-295]	Zion, IL	West.	Pressurized water	1040.0	3250.0	73 06
Zion Nuclear Plant, Unit 2 (Commonwealth Edison Co.) [50-304]	Zion, IL	West.	Pressurized water	1040.0	3250.0	73 12

Name (licensee) [docket number]	Location	Principal nuclear contractor	Type	Design, electrical power net MW(e)	Design, thermal power net MW(t)	Estimated initial criticality (yr mo)	Comment
BEING BUILT							
Bellefonte Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-438]	Scottsboro, AL	B&W	Pressurized water	1235.0	3760.0	Indef.	
Bellefonte Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-439]	Scottsboro, AL	B&W	Pressurized water	1235.0	3760.0	Indef.	
Perry Nuclear Power Plant, Unit 2 (Cleveland Electric Illuminating Co.) [50-441]	Perry, OH	GE	Boiling water	1205.0	3759.0	Indef.	
Washington Nuclear Project, Unit 1 (Washington Public Power Supply System) [50-460]	Richland, WA	B&W	Pressurized water	1266.0	3760.0	Indef.	
Washington Nuclear Project, Unit 3 (Washington Public Power Supply System) [50-508]	Satsop, WA	Comb.	Pressurized water	1242.0	3800.0	Indef.	
Watts Bar Nuclear Plant, Unit 1 (Tennessee Valley Authority) [50-390]	Spring City, TN	West.	Pressurized water	1165.0	3411.0		No official date has been established by the TVA.
Watts Bar Nuclear Plant, Unit 2 (Tennessee Valley Authority) [50-391]	Spring City, TN	West.	Pressurized water	1165.0	3411.0	Indef.	

B. Dual-Purpose Plants

(No reactors currently in this category)

C. Propulsion (Maritime)

(No reactors currently in this category)

2. EXPERIMENTAL POWER-REACTOR SYSTEMS

A. Electric-Power Systems

Name (Regulatory agency) Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(T)	Initial criticality (yr mo)	Desig. Type. Principal nucl. contr.	Comment
OPERABLE								
Experimental Breeder Reactor II (DOE). INEL Site, ID	20,000.0	62,500.0				61 00	EBR-II. Sodium cooled, fast. ANL	The EBR-II reactor is a major irradiation facility for the LMR program; it continues to generate electric power for INEL grid. Tests at EBR-II simulating LOF and LOHS accidents demonstrated that the pool-type design using metallic fuel will safely shut itself down without automatic protection system or operator action. Advanced metal alloy fuel subassemblies have achieved burnups in excess of 180,000 Mwd/T.

B. Space Nuclear Auxiliary Power (SNAP)

(No reactors currently in this category)

C. Space Propulsion

(No reactors currently in this category)

3. TEST, RESEARCH, AND UNIVERSITY REACTORS

A. General Irradiation Test

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(T)	Initial criticality (yr mo)	Desig. Type. Principal nucl. contr.	Comment
OPERABLE								
Advanced Test Reactor (DOE). INEL, ID			250,000.0			68 00	ATR. Tank. EG&G-ID	Operating.
PLANNED								
Los Alamos National Laboratory (DOE). Los Alamos, NM								

B. High-Power Research and Test

OPERABLE								
Brookhaven High Flux Beam Research Reactor (DOE). Upton, NY			35,400.0			65 00	HFBR. Heavy water. BNL	Power derated subject to further safety tests.
Brookhaven Medical Research Reactor (DOE). Upton, NY			3,000.0			59 00	BMRR. Tank. Daystrom	
High Flux Isotope Reactor (DOE). Oak Ridge, TN			85,000.0			65 00	HFIR. Tank flux trap. ORNL	Operating.
National Institute of Standards & Technology (NRC). Gaithersburg, MD			20,000.0			67 00	NIST. Heavy water. NBS-B&R	
Omega West Reactor (DOE). Los Alamos, NM			8,000.0			56 00	OWR. Tank. LANL	Potential candidate for a U.S. Mo-99 production effort.

C. Safety Research and Test

OPERABLE								
Transient Reactor Test (DOE). INEL Site, ID						59 00	TREAT. Graphite. ANL	Authorized power, n.a. Transient RX.

D. General Research

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(T)	Initial criticality (yr mo)	Desig. Type. Principal nucl. contr.	Comment
OPERABLE								
Advanced Reactivity Measurement Facility (DOE). INEL Site, ID			100.0			60 00	ARMF. Pool. EG&G-ID	Fast and thermal neutron irradiations and reactivity measurements. Reactor currently shut down.
Aerotest Operations, Inc. (NRC). San Ramon, CA			250.0			65 00	AGNIR. Pool-TRIGA core. GA	
Coupled Fast Reactivity Measurement Facility (DOE). INEL Site, ID			100.0			68 00	CFRMF. Pool. EG&G-ID	Fast and thermal neutron irradiations, neutron radiography, and thermal and fast fissile assay. Reactor currently shut down.
Dow Chemical Co. (NRC). Midland, MI			300.0			67 00	TRIGA-Mk I. U–Zr hydride. GA	
General Atomics, Advanced TRIGA-Mk F Prototype Reactor (NRC). La Jolla, CA			1,500.0			60 00	TRIGA-Mk F. U-Zr hydride. Owner	
General Atomics, TRIGA-Mk I Prototype Reactor (NRC). La Jolla, CA			250.0			58 00	TRIGA-Mk I. U-ZR hydride. Owner	
General Electric Nuclear Test Reactor (NRC). Pleasanton, CA			100.0			57 00	NTR. LWR. GE	
Neutron Radiography Facility (DOE). INEL, ID			250.0			77 00	NRAD. Pool-TRIGA core. ANL	
Omaha Veterans Administration Hospital (NRC). Omaha, NE			18.0			59 00	TRIGA-Mk I. U–Zr hydride. GA	
Rhode Island Nuclear Science Center (NRC). Narrangansett, RI			2,000.0			64 00	RINSC. Pool. RI	
Sandia Pulsed Reactor II (DOE). Kirtland AFB, East, NM			25.0			67 00	SPR-II. Bare metal fast burst. Sandia	Pulse, steady state.
Sandia Pulsed Reactor III (DOE). Kirtland AFB, East, NM			25.0			75 00	SPR-III. Bare metal fast burst. Sandia	Pulse, steady state.
SNL Annular Core Research Reactor (DOE). Kirtland AFB, East, NM			2,000.0			78 00	ACRR. Pool–UO_2 BeO core. Sandia	Pulse, computer transient steady state.
U.S. Geological Survey Laboratory (Department of the Interior) (NRC). Denver, CO			1,000.0			69 00	TRIGA-Mk I. U–Zr hydride. GA	
PLANNED								
Advanced Neutron Source Reactor (DOE). Oak Ridge, TN			330,000.0				ANS. D_2O flux trap. ORNL	Advanced conceptual design. In preparation for FY 1995 line item start.

E. University Research and Teaching

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(T)	Initial criticality (yr mo)	Desig. Type. Principal nucl. contr.	Comment
OPERABLE								
Arizona, University of (NRC). Tucson, AZ			100.0			58 00	TRIGA-Mk I. U-Zr hydride. GA	
California, Irvine, University of (NRC). Irvine, CA			250.0			69 00	TRIGA-Mk I. U-Zr hydride. GA	
Cornell University (NRC). Ithaca, NY			500.0			62 00	TRIGA-Mk II. U-Zr hydride. GA	
Cornell University Zero Power Reactor (NRC). Ithaca, NY						62 00	ZPR. Tank. Vitro	Authorized power is negligible.
Florida, University of (NRC). Gainesville, FL			100.0			59 00	UFTR. Graphite/water. GNEC	
Georgia Institute of Technology (NRC). Atlanta, GA			5,000.0			64 00	GTRR. Heavy water. GNEC	
Idaho State University (NRC). Pocatello, ID						67 00	AGN-201P-103. Homog. solid. AGN	The AGN-201P-103 was operated at San Ramon, CA, by Aerojet-General Corporation from 1957 to 1966. In 4/67 Idaho State University applied for a license to operate the reactor at Pocatello, ID. Authorized power is negligible.
Illinois, University of (NRC). Urbana, IL			10.0			71 00	LOPRA. U-Zr hydride. GA	
Illinois, University of (NRC). Champaign–Urbana, IL			1,500.0			60 00	TRIGA-Mk II. U-Zr hydride. GA	
Iowa State University (NRC). Ames, IA			10.0			59 00	UTR-10. Graphite/water. AS Inc.	
Kansas State University (NRC). Manhattan, KS			250.0			62 00	TRIGA-Mk II. U-Zr hydride. GA	
Manhattan College (NRC). New York, NY						64 00	MCZPR. Tank. AMF	Authorized power is negligible.
Maryland, University of (NRC). College Park, MD			250.0			74 00	TRIGA. Tank-TRIGA core. GA	
Massachusetts, University of (NRC). Lowell, MA			1,000.0			74 00	ULR. Pool. GE	
Massachusetts Institute of Technology (NRC). Cambridge, MA			5,000.0			58 00	MITR-II. Heavy-water reflected. ACF	
Michigan, University of (Ford Nuclear Reactor) (NRC). Ann Arbor, MI			2,000.0			57 00	FNR. Pool. B&W	
Missouri at Rolla, University of (NRC). Rolla, MO			200.0			61 00	UMR-R. Pool. CW	
Missouri, University of (NRC). Columbia, MO			10,000.0			66 00	MURR. Tank. Owner-IC	

E. University Research and Teaching (Continued)

Name (Regulatory agency) Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(T)	Initial criticality (yr mo)	Desig. Type. Principal nucl. contr.	Comment
OPERABLE (Continued)								
New Mexico, University of (NRC). Albuquerque, NM						66 00	AGN-201M-112. Homog. Solid. AGN	AGN-201M-112 was operated at the University of California, Berkeley, beginning in 1957. The University of New Mexico filed an application in 4/66 for transfer and reconstruction of the reactor at a site on its campus. The reactor achieved criticality at the University of New Mexico on 10/7/66. Authorized power is negligible.
North Carolina State University (NRC). Raleigh, NC			1,000.0			72 00	PULSTAR. Pool. AMF	
Ohio State University (NRC). Columbus, OH			500.0			61 00	OSURR. Pool. Lockheed	
Oregon State University (NRC). Corvallis, OR			1,000.0			67 00	OSTR. U-Zr hydride. GA	
Penn State TRIGA Reactor (NRC). University Park, PA			1,000.0			65 00	PSTR. Pool-TRIGA core. GA	Owner: Pennsylvania State University. From 1955 to 1965, the Penn State reactor was operated as a 200-kW(t) pool-type reactor fueled with MTR-type elements.
Purdue University (NRC). West Lafayette, IN			1.0			62 00	PUR-1. Pool. Lockheed	
Reed College (NRC). Portland, OR			250.0			68 00	TRIGA-Mk I. U-Zr hydride. GA	
State University of New York (NRC). Buffalo, NY			2,000.0			61 00	PULSTAR. Pool. AMF	Owner: Buffalo Materials Research Center.
Texas A&M University (NRC). College Station, TX						57 00	AGN-201M-106. Homog. solid. AGN	Authorized power is negligible.
Texas A&M University (NRC). College Station, TX			1,000.0			61 00	TRIGA. U-Zr hydride. GA	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.
Texas at Austin, University of (NRC). Austin, TX			1,100.0			89 00	TRIGA-Mk II. U-Zr hydride. GA	
Utah, University of (NRC). Salt Lake City, UT			250.0			75 00	TRIGA-Mk I. U-Zr hydride. GA	
Virginia, University of (NRC). Charlottesville, VA			2,000.0			60 00	UVAR. Pool. Owner-B&W	

Washington State University (NRC). Pullman, WA	1,000.0	67 00	WSTR. Pool-TRIGA core. GA	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).
Wisconsin, University of (NRC). Madison, WI	1,000.0	67 00	TRIGA. Pool-TRIGA core. GA	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.
Worcester Polytechnic Institute (NRC). Worcester, MA	10.0	59 00	No Desg. Pool. GE	
PLANNED				
Arkansas Tech University (NRC). Russellville, AR	250.0		TRIGA-Mk I. U-Zr hydride. GA	The Arkansas Tech University reactor contains parts from the TRIGA reactor dismantled at Michigan State University.

PART II PRODUCTION REACTORS

1. MATERIALS PRODUCTION

Name (Owner)	Location	Nuclear designer	Type	Authorized power	Startup		Comment
OPERABLE							
K Reactor (DOE)	Aiken, SC	Du Pont	Heavy water		54 00	Cold standby.	

2. PROCESS DEVELOPMENT

(No reactors currently in this category)

1. DEFENSE POWER-REACTOR APPLICATIONS

A. Remote Installations

(No reactors currently in this category)

B. Propulsion (Naval)

The abbreviations used here are defined as follows:
SSN, Submarine (Nuclear Propulsion)
SSBN, Fleet Ballistic Missile Submarine (Nuclear Propulsion)
CGN, Guided Missile Cruiser (Nuclear Propulsion)
CVN, Aircraft Carrier (Nuclear Propulsion)

Name (all owned by U.S. Navy)	Designation	Shipbuilder	Startup	Comment
OPERABLE				
USS GATO	SSN615	GD (Quincy)	67 00	
DANIEL WEBSTER	ex-SSBN626	Electric Boat (Groton)	64 00	Removed from sea-going service and converted to training platform.
USS STONEWALL JACKSON	SSBN634	Mare Island	64 00	
SAM RAYBURN	ex-SSBN635	Newport News	64 00	Removed from sea-going service and converted to training platform.
USS STURGEON	SSN637	Electric Boat (Groton)	66 00	
USS WHALE	SSN638	GD (Quincy)	68 00	
USS TAUTOG	SSN639	Ingalls	68 00	
USS SIMON BOLIVAR	SSBN641	Newport News	65 00	
USS KAMEHAMEHA	SSN642	Mare Island	65 00	
USS JAMES K. POLK	SSN645	Electric Boat (Groton)	66 00	
USS GRAYLING	SSN646	Portsmouth	69 00	
USS POGY	SSN647	NYSC/Ingalls	70 00	
USS ASPRO	SSN648	Ingalls	68 00	
USS SUNFISH	SSN649	GD (Quincy)	68 00	
USS PARGO	SSN650	Electric Boat (Groton)	67 00	
USS PUFFER	SSN652	Ingalls	69 00	
USS MARIANO G. VALLEJO	SSBN658	Mare Island	66 00	
USS SAND LANCE	SSN660	Portsmouth	71 00	
USS GURNARD	SSN662	Mare Island	68 00	
USS HAMMERHEAD	SSN663	Newport News	67 00	
USS HAWKBILL	SSN666	Mare Island	70 00	
USS BERGALL	SSN667	Electric Boat (Groton)	69 00	
USS SPADEFISH	SSN668	Newport News	69 00	
USS SEA HORSE	SSN669	Electric Boat (Groton)	69 00	
USS FINBACK	SSN670	Newport News	69 00	
USS NARWHAL	SSN671	Electric Boat (Groton)	69 00	
USS PINTADO	SSN672	Mare Island	70 00	
USS FLYING FISH	SSN673	Electric Boat (Groton)	69 00	
USS TREPANG	SSN674	Electric Boat (Groton)	70 00	
USS BLUEFISH	SSN675	Electric Boat (Groton)	70 00	
USS BILLFISH	SSN676	Electric Boat (Groton)	70 00	
USS DRUM	SSN677	Mare Island	71 00	
USS ARCHERFISH	SSN678	Electric Boat (Groton)	71 00	
USS SILVERSIDES	SSN679	Electric Boat (Groton)	71 00	
USS WILLIAM H. BATES	SSN680	Ingalls	72 00	
USS BATFISH	SSN681	Electric Boat (Groton)	72 00	

USS TUNNY	SSN682	Ingalls	73 00
USS PARCHE	SSN683	Ingalls	74 00
USS CAVALLA	SSN684	Electric Boat (Groton)	72 00
USS L. MENDELL RIVERS	SSN686	Newport News	74 00
USS LOS ANGELES	SSN688	Newport News	76 00
USS PHILADELPHIA	SSN690	Electric Boat (Groton)	76 00
USS MEMPHIS	SSN691	Newport News	77 00
USS OMAHA	SSN692	Electric Boat (Groton)	77 00
USS CINCINNATI	SSN693	Newport News	77 00
USS GROTON	SSN694	Electric Boat (Groton)	77 00
USS BIRMINGHAM	SSN695	Newport News	78 00
USS NEW YORK CITY	SSN696	Electric Boat (Groton)	78 00
USS INDIANAPOLIS	SSN697	Electric Boat (Groton)	79 00
USS BREMERTON	SSN698	Electric Boat (Groton)	79 00
USS JACKSONVILLE	SSN699	Electric Boat (Groton)	79 00
USS DALLAS	SSN700	Electric Boat (Groton)	80 00
USS LA JOLLA	SSN701	Electric Boat (Groton)	81 00
USS PHOENIX	SSN702	Electric Boat (Groton)	81 00
USS BOSTON	SSN703	Electric Boat (Groton)	81 00
USS BALTIMORE	SSN704	Electric Boat (Groton)	82 00
USS CITY OF CORPUS CHRISTI	SSN705	Electric Boat (Groton)	82 00
USS ALBUQUERQUE	SSN706	Electric Boat (Groton)	82 00
USS PORTSMOUTH	SSN707	Electric Boat (Groton)	83 00
USS MINNEAPOLIS-SAINT PAUL	SSN708	Electric Boat (Groton)	83 00
USS HYMAN G. RICKOVER	SSN709	Electric Boat (Groton)	84 00
USS AUGUSTA	SSN710	Electric Boat (Groton)	84 00
USS SAN FRANCISCO	SSN711	Newport News	80 00
USS ATLANTA	SSN712	Newport News	81 00
USS HOUSTON	SSN713	Newport News	82 00
USS NORFOLK	SSN714	Newport News	83 00
USS BUFFALO	SSN715	Newport News	83 00
USS SALT LAKE CITY	SSN716	Newport News	83 00
USS OLYMPIA	SSN717	Newport News	84 00
USS HONOLULU	SSN718	Newport News	85 00
USS PROVIDENCE	SSN719	Electric Boat (Groton)	85 00
USS PITTSBURGH	SSN720	Electric Boat (Groton)	85 00
USS CHICAGO	SSN721	Newport News	86 00
USS KEY WEST	SSN722	Newport News	87 00
USS OKLAHOMA CITY	SSN723	Newport News	87 00
USS LOUISVILLE	SSN724	Electric Boat (Groton)	86 00
USS HELENA	SSN725	Electric Boat (Groton)	87 00
USS OHIO	SSBN726	Electric Boat (Groton)	80 00
USS MICHIGAN	SSBN727	Electric Boat (Groton)	82 00
USS FLORIDA	SSBN728	Electric Boat (Groton)	82 00
USS GEORGIA	SSBN729	Electric Boat (Groton)	83 00
USS HENRY M. JACKSON	SSBN730	Electric Boat (Groton)	84 00
USS ALABAMA	SSBN731	Electric Boat (Groton)	84 00
USS ALASKA	SSBN732	Electric Boat (Groton)	85 00
USS NEVADA	SSBN733	Electric Boat (Groton)	86 00
USS TENNESSEE	SSBN734	Electric Boat (Groton)	87 00
USS PENNSYLVANIA	SSBN735	Electric Boat (Groton)	88 00
USS WEST VIRGINIA	SSBN736	Electric Boat (Groton)	90 00
USS KENTUCKY	SSBN737	Electric Boat (Groton)	90 00
USS MARYLAND	SSBN738	Electric Boat (Groton)	91 00
USS NEBRASKA	SSBN739	Electric Boat (Groton)	93 00
USS NEWPORT NEWS	SSN750	Newport News	88 00

B. Propulsion (Naval) (Continued)

Name (all owned by U.S. Navy)	Designation	Shipbuilder	Startup
USS SAN JUAN	SSN751	Electric Boat (Groton)	87 00
USS PASADENA	SSN752	Electric Boat (Groton)	88 00
USS ALBANY	SSN753	Newport News	89 00
USS TOPEKA	SSN754	Electric Boat (Groton)	89 00
USS MIAMI	SSN755	Electric Boat (Groton)	89 00
USS SCRANTON	SSN756	Newport News	90 00
USS ALEXANDRIA	SSN757	Electric Boat (Groton)	91 00
USS ASHEVILLE	SSN758	Newport News	91 00
USS JEFFERSON CITY	SSN759	Newport News	91 00
USS ANNAPOLIS	SSN760	Electric Boat (Groton)	91 00
USS SPRINGFIELD	SSN761	Electric Boat (Groton)	92 00
USS COLUMBUS	SSN762	Electric Boat (Groton)	93 00
USS SANTA FE	SSN763	Electric Boat (Groton)	93 00
USS BOISE	SSN764	Newport News	92 00
USS MONTPELIER	SSN765	Newport News	92 00
USS HAMPTON	SSN767	Newport News	93 00
USS LONG BEACH (2 reactors)	CGN9	Bethlehem	61 00
USS BAINBRIDGE (2 reactors)	CGN25	Bethlehem	62 00
USS TRUXTUN (2 reactors)	CGN35	NYSC	67 00
USS CALIFORNIA (2 reactors)	CGN36	Newport News	73 00
USS SOUTH CAROLINA (2 reactors)	CGN37	Newport News	74 00
USS VIRGINIA (2 reactors)	CGN38	Newport News	76 00
USS MISSISSIPPI (2 reactors)	CGN40	Newport News	78 00
USS ARKANSAS (2 reactors)	CGN41	Newport News	80 00
USS ENTERPRISE (8 reactors)	CVN65	Newport News	60 00
USS NIMITZ (2 reactors)	CVN68	Newport News	74 00
USS DWIGHT D. EISENHOWER (2 reactors)	CVN69	Newport News	77 00
USS CARL VINSON (2 reactors)	CVN70	Newport News	81 00
USS THEODORE ROOSEVELT (2 reactors)	CVN71	Newport News	86 00
USS ABRAHAM LINCOLN (2 reactors)	CVN72	Newport News	89 00
USS GEORGE WASHINGTON (2 reactors)	CVN73	Newport News	92 00
Deep Submergence Research Vehicle	NR-1	Electric Boat (Groton)	69 00

BEING BUILT		
RHODE ISLAND	SSBN740	Electric Boat (Groton)
MAINE	SSBN741	Electric Boat (Groton)
WYOMING	SSBN742	Electric Boat (Groton)
LOUISIANA	SSBN743	Electric Boat (Groton)
CHARLOTTE	SSN766	Newport News
HARTFORD	SSN768	Electric Boat (Groton)
TOLEDO	SSN769	Newport News
TUCSON	SSN770	Newport News
COLUMBIA	SSN771	Electric Boat (Groton)
GREENVILLE	SSN772	Newport News
CHEYENNE	SSN773	Newport News
SEAWOLF	SSN21	Electric Boat (Groton)
CONNECTICUT	SSN22	Electric Boat (Groton)
JOHN C. STENNIS	CVN74	Newport News
UNITED STATES	CVN75	Newport News

2. DEVELOPMENTAL POWER

A. Electric-Power Experiments and Prototypes

(No reactors currently in this category)

B. Propulsion Experiments and Prototypes

Name (Owner). Location	Designation	Power capacity net kW(e)	Authorized power kW(t)	Initial criticality (yr mo)	Reactor type. Principal nuclear contractor	Comment
OPERABLE						
Destroyer Reactor Prototype (DOE). West Milton, NY	D1G			62 00	Pressurized water. GE	
Large Ship Reactor Prototype (2 reactors) (DOE). INEL Site, ID	A1W			58 00	Pressurized water. West.	
Modifications and Additions to Reactor Facility (DOE). West Milton, NY	MARF			76 00	Pressurized water. GE	
Natural Circulation Test Plant (DOE). INEL Site, ID	S5G			65 00	Pressurized water. West.	
Trident Prototype, (DOE) West Milton, NY	S8G			78 00	Pressurized water. GE	

3. TEST AND RESEARCH

A. Test

(No reactors currently in this category)

3. TEST AND RESEARCH

PART III MILITARY REACTORS

B. Research

Name (Owner). Location	Designation	Power capacity net kW(e)	Authorized power kW(t)	Initial criticality (yr mo)	Reactor type. Principal nuclear contractor	Comment
OPERABLE						
Armed Forces Radiobiology Research Institute, DNA (DOD). Regulated by NRC. Bethesda, MD	AFRRI		1,100.0	62 00	TRIGA-Mk F. GA	
Army Pulse Radiation Facility, Test and Evaluation Command (USA). Aberdeen, MD	APRF		10.0	68 07	Bare, fast, prompt burst. UNC	
Fast Burst Reactor Facility, Test and Evaluation Command (USA). White Sands, NM	FBRF		10.0	64 08	Bare, fast, prompt burst. Kaman	
Stationary Neutron Radiography System (USAF). McClellan AFB, CA	SNRS-1		1,300.0	91 01	TRIGA Mod Mark II. GA	

1. POWER REACTORS

PART IV EXPORT REACTORS

A. Central-Station Electric Power Plants

Reactor Name (Owner). Location	NRC export license No. and date	Principal nuclear contractor. Reactor type	Power design net MW(e)	Power MW(t)	Author-ized power kW(t)	Initial criti-cality (yr mo)	Comment
OPERABLE							
Belgium, Doel, Unit 1. Antwerp		West. Pressurized water	392.0	1,192.0		75 00	
Belgium, Doel, Unit 2. Antwerp		West. Pressurized water	392.0	1,192.0		75 00	
Belgium, Doel, Unit 4. Antwerp		West. Pressurized water	1,006.0	3,000.0		85 00	
Belgium, Tihange, Unit 1. Huy, Liege		West./Fram. ACEC Pressurized water	870.0	2,660.0		75 00	
Belgium, Tihange, Unit 3. Huy, Liege		West. Pressurized water	1,006.0	3,000.0		85 00	
Brazil, Angra 1, Central Electricia de Furnas. Angra dos Reis	XR-081 04/13/73	West. Pressurized water	626.0	1,882.0		85 00	
Germany, Mulheim-Kaerlich (Rheinesch-Westfaelisches Elektrizitaetswerk AG).	XR-118 06/28/77	Pressurized water	1,200.0			87 10	

India, Tarapur Nuclear Power Station, Unit 1. Tarapur (near Bombay)	XR-054 07/07/64	GE. Boiling water	200.0	707.0	69 00	
India, Tarapur Nuclear Power Station, Unit 2. Tarapur (near Bombay)	XR-054 07/07/64	GE. Boiling water	200.0	707.0	69 00	
Italy, Caorso Nuclear Station (ENEL). Piacenza/Cremona	XR-077 04/02/71	GE. Boiling water	840.0	2,651.0	79 00	Shut down and monitored since 1/87.
Italy, Trino Vercellese (ENEL). Trino, Piedmont	XR-044 06/14/62	West. Pressurized water	247.0	870.0	65 00	Shut down and monitored since 1/87.
Japan, Fukushima Dai-ichi Power Station, Unit 1 (Tokyo Electric Power Co.). Okuma, Fukushima Pref.	XR-066 08/15/67	GE. Boiling water	439.0	1,380.0	70 10	
Japan, Fukushima Dai-ichi Power Station, Unit 2 (Tokyo Electric Power Co.). Okuma, Fukushima Pref.	XR-072 04/22/70	GE, Toshiba. Boiling water	760.0	2,381.0	73 05	
Japan, Fukushima Dai-ichi Power Station, Unit 6 (Tokyo Electric Power Co.). Futaba, Fukushima Pref.	XR-084 05/25/73	GE, Toshiba. Boiling water	1,067.0	3,293.0	79 03	
Japan, Mihama Power Station, Unit 1 (Kansai Electric Power Co.). Mihama, Fukui Pref.	XR-067 08/15/67	West., Mitsubishi. Pressurized water	320.0	1,031.0	70 07	
Japan, Ohi Power Station, Unit 1 (Kansai Electric Power Co.). Ohi, Fukui Pref.	XR-082 04/17/73	West., Mitsubishi. Pressurized water	1,120.0	3,423.0	77 12	
Japan, Ohi Power Station, Unit 2 (Kansai Electric Power Co.). Ohi, Fukui Pref.	XR-082 04/17/73	West., Mitsubishi. Pressurized water	1,120.0	3,423.0	78 09	
Japan, Takahama Power Station, Unit 1 (Kansai Electric Power Co.). Takahama, Fukui Pref.	XR-079 07/23/71	West., Mitsubishi. Pressurized water	780.0	2,440.0	74 03	
Japan, Tokai No. 2 Power Station (Japan Atomic Power Co.). Tokai-Mura, Ibaraki Pref.	XR-085 05/25/73	GE, Hitachi, Shimizu. Boiling water	1,080.0	3,293.0	78 01	
Japan, Tsuruga Power Station, Unit 1 (Japan Atomic Power Co.). Tsuruga, Fukui Pref.	XR-065 06/22/67	GE. Boiling water	341.0	1,064.0	69 10	
Korea, Kori-1 (Korea Electric Power Co.). Kori (near Pusan)	XR-083 05/04/73	West. Pressurized water	564.0	1,729.0	78 00	Formerly, Korea, Unit 1.
Korea, Kori-2 (Korea Electric Power Co.). Kori (near Pusan)	XR-119 04/08/77	West. Pressurized water	605.0	1,876.0	83 00	Formerly, Korea, Unit 2.
Korea, Kori-3 (Korea Electric Power Co.). Kori (near Pusan)	XR-131 10/04/78	West. Pressurized water	900.0	2,775.0	85 00	Formerly, Korea, Unit 5.
Korea, Kori-4 (Korea Electric Power Co.). Kori (near Pusan)	XR-131 10/04/78	West. Pressurized water	900.0	2,775.0	85 00	Formerly, Korea, Unit 6.
Korea, Yonggwang-1 (Korea Electric Power Co.). Gyema (near Kwang Ju)	XR-133 09/22/80	West. Pressurized water	900.0	2,775.0	86 00	Formerly, Korea, Unit 7.
Korea, Yonggwang-2 (Korea Electric Power Co.). Gyema (near Kwang Ju)	XR-133 09/22/80	West. Pressurized water	900.0	2,777.0	87 00	Formerly, Korea, Unit 8.
Mexico, Laguna Verde Station, Unit 1. Laguna Verde	XR-098 05/17/74	GE. Boiling water	654.0	1,931.0	88 11	Commercial operation, 7/29/90.
Netherlands, Dodewaard (GKN). Dodewaard, Betuwe	XR-058 09/15/65	GE. Boiling water	55.0	183.0	68 06	In 1984 the reactor's nominal power was raised from 163.4 MW(t) to 183 MW(t). The reactor's cooling is by natural circulation only.

1. POWER REACTORS

A. Central-Station Electric Power Plants (Continued)

Reactor Name (Owner). Location	NRC export license No. and date	Principal nuclear contractor. Reactor type	Power design net MW(e)	Power MW(t)	Author-ized power kW(t)	Initial criti-cality (yr mo)	Comment
Slovenia, Krsko (Nuklearna Elektrarna Krsko). Krsko	XR-107 05/20/77	West. Pressurized water	615.0	1,882.0		83 00	
Spain, Almaraz, Unit 1 (Union Electrica, S.A.). Almaraz	XR-088 07/12/73	West. Pressurized water	902.0	2,696.0		81 00	
Spain, Almaraz, Unit 2 (Union Electrica, S.A.). Almaraz	XR-088 07/12/73	West Pressurized water	902.0	2,696.0		83 00	
Spain, Asco, Unit 1 (FECSA). Asco	XR-090 07/12/73	West Pressurized water	902.0	2,696.0		83 00	
Spain, Asco, Unit 2 (FECSA). Asco	XR-099 06/22/76	West. Pressurized water	902.0	2,696.0		85 00	
Spain, Cofrentes, Unit 1 (Hidroelectrica Espanola S.A.). Cofrentes	XR-097 06/10/74	GE Boiling water	975.0	2,900.0		84 00	
Spain, José Cabrera (Union Electrica, S.A.). Zorita de los Canes	XR-059 10/22/65	West. Pressurized water	160.0	510.0		69 00	
Spain, Santa Maria de Garoña (Centrales Nucleares del Norte, S.A., Nuclenor). S.M. Garoña Burgos	XR-064 06/09/67	GE. Boiling water	440.0	1,381.0		70 00	
Spain, Vandellos, Unit 2 (ENHER). Tarragona	XR-122 09/13/87	West. Pressurized water	920.0	2,785.0		88 03	
Sweden, Ringhals, Unit 2 (Vattenfall AB). Väro (near Göteborg)	XR-069 05/09/69	West. Pressurized water	870.0	2,660.0		74 10	
Sweden, Ringhals, Unit 3 (Vattenfall AB). Väro(near Göteborg)	XR-095 02/02/74	West. Pressurized water	915.0	2,783.0		81 00	
Sweden, Ringhals, Unit 4 (Vattenfall AB). Väro (near Göteborg)	XR-103 10/21/75	West. Pressurized water	915.0	2,783.0		83 00	
Switzerland, Beznau, Unit 1 (Nordostschweizerische Kraftwerke AG). Döttingen	XR-063 02/03/67	West. Pressurized water	350.0	1,130.0		69 00	
Switzerland, Beznau, Unit 2 (Nordostschweizerische Kraftwerke AG). Döttingen	XR-070 11/05/69	West Pressurized water	350.0	1,130.0		71 00	
Switzerland, Leibstadt (Kernkraftwerk Leibstadt). Leibstadt	XR-104 12/31/75	GE. Boiling water	990.0	3,138.0		84 00	
Switzerland, Mühleberg (Bernische Kraftwerke AG). Mühleberg (near Bern)	XR-068 10/04/67	GE. Boiling water	320.0	997.0		72 00	
Taiwan, Chinshan, Unit 1 (Taiwan Power Co). Shihmen	XR-080 07/24/72	GE. Boiling water	604.0	1,775.0		77 10	
Taiwan, Chinshan, Unit 2 (Taiwan Power Co.). Shihmen	XR-080 07/24/72	GE. Boiling water	604.0	1,775.0		78 11	

Taiwan, Kuo Sheng, Unit 1 (Taiwan Power Co.). Wanli Hsiang	XR-096 04/17/74	GE. Boiling water	948.0	2,894.0	81 02	
Taiwan, Kuo Sheng, Unit 2 (Taiwan Power Co.). Wanli Hsiang	XR-096 04/17/74	GE. Boiling water	948.0	2,894.0	82 03	
Taiwan, Maanshan, Unit 1 (Taiwan Power Co.). Heng-chun	XR-113 06/08/79	West. Pressurized water	890.0	2,785.0	84 03	
Taiwan, Maanshan, Unit 2 (Taiwan Power Co.). Heng-chun	XR-113 06/08/79	West. Pressurized water	890.0	2,785.0	85 02	
BEING BUILT						
England, Sizewell B (Central Electricity Generating Board). Suffolk	XR-148 07/30/86	West. Pressurized water	1,188.0	3,425.0	94 00	
Japan, Kashiwazaki-Kariwa, Unit 6 (Tokyo Electric Power Co.). Kashiwazaki, Niigata Pref.		GE, Toshiba. Advanced boiling water	1,356.0	3,930.0	96 12	Gross design power. As of 3/31/94, 58.4% completed.
Japan, Kashiwazaki-Kariwa, Unit 7 (Tokyo Electric Power Co.). Kashiwazaki, Niigata Pref.		GE, Hitachi. Advanced boiling water	1,356.0	3,930.0	97 07	Gross design power. As of 3/31/94, 32.2% completed.
Korea, Yonggwang-3 (Korea Electric Power Co.). Gyema (near Kwang Ju)	XR-150 04/16/87	Comb. Pressurized water	900.0		95 00	Also, Korea, Unit 11.
Korea, Yonggwang-4 (Korea Electric Power Co.). Gyema (near Kwang Ju)	XR-150 04/16/87	Comb. Pressurized water	900.0		96 00	Also, Korea, Unit 12.
Mexico, Laguna Verde Station, Unit 2. Laguna Verde	XR-102 10/24/74	GE. Boiling water	654.0	1,931.0	95 12	As of 3/31/94, 98% completed.
Philippines, Republic of the Philippine Nuclear Power Plant, Unit 1 (National Power Corp.). Morong, Bataan Prov., Luzon	XR-120 05/06/80	West. Pressurized water	620.0	1,876.0	Indef.	
Spain, Lemoniz, Unit 1. Lemoniz	XR-089 07/12/73	West. Pressurized water	900.0	2,696.0	Indef.	
Spain, Lemoniz, Unit 2. Lemoniz	XR-089 07/12/73	West. Pressurized water	900.0	2,696.0	Indef.	
Spain, Valdecaballeros, Unit 1 (HE: Sevillana de Electricidad). Valdecaballeros, Badajos	XR-110 05/05/77	GE. Boiling water	975.0	2,894.0	Indef.	
Spain, Valdecaballeros, Unit 2 (HE: Sevillana de Electricidad). Valdecaballeros, Badajos	XR-110 05/05/77	GE. Boiling water	975.0	2,894.0	Indef.	
PLANNED						
Korea, Ulchin 3 (Korea Electric Power Co.). Kuongsangbuk-do	XR-153 04/06/92	Comb. Pressurized water	950.0	2825.0		
Korea, Ulchin 4 (Korea Electric Power Co.). Kuongsangbuk-do	XR-153 04/06/92	Comb. Pressurized water	950.0	2825.0		
Taiwan, Unit 7 (Taiwan Power Co.). Lungmen	02/17/81		1,000.0		99 00	The NRC has issued three licenses to vendors for this reactor: XR-134, -135, and -136. Only the vendor who wins the contract will be allowed to use its license.
Taiwan, Unit 8 (Taiwan Power Co.). Lungmen	02/17/81		1,000.0			The NRC has issued three licenses to vendors for this reactor: XR-134, -135, and -136. Only the vendor who wins the contract will be allowed to use its license.

1. POWER REACTORS (Continued)

B. Propulsion

(No reactors currently in this category)

2. TEST, RESEARCH, AND TEACHING

A. General Irradiation Test

Reactor Name (Owner). Location	NRC export license No. and date	Principal nuclear contractor. Reactor type	Power design net MW(e)	Power MW(t)	Authorized power kW(t)	Initial criticality (yr mo)	Comment
OPERABLE							
Japan, JRR-2 (Japan Atomic Energy Research Institute). Tokai-Mura, Ibaraki Pref.	XR-015 10/11/57	AMF. Heavy water, CP-5			10,000.0	60 10	
Japan, NSRR (Japan Atomic Energy Research Institute). Tokai-Mura, Ibaraki Pref.	XR-101 10/16/74	GA. TRIGA-ACPR			300.0	75 06	
Netherlands (Energy Center). Petten	XR-017 01/17/58	AC. Tank (MTR)			45,000.0	61 09	In 1985 the reactor vessel was replaced. It is now refurbished. Manufacturer of the vessel: Royal Schelde of Flushing (Vlissingen, Holland).
Romania (Institute for Nuclear Research). Bucharest	XR-091 06/29/73	GA TRIGA-ACPR			500.0	79 00	
Romania (Institute for Nuclear Research). Bucharest	XR-091 06/29/73	GA. TRIGA (MPR 16)			14,000.0	79 00	
South Africa, Safari-1 (Atomic Energy Board). Pelindaba (near Pretoria)	XR-042 06/14/61	AC. Tank			20,000.0	65 00	
Sweden (Studsvik Energiteknik). Studsvik	XR-019 05/14/58	AC. Tank (MTR)			50,000.0	60 00	

B. General Research

OPERABLE							
Australia, Moata (Atomic Energy Commission). Lucas Heights, New South Wales	XR-039 09/12/60	AR. UTR-10			15.0	61 00	
Austria, Astra (Seibersdorf Research Center). Seibersdorf	XR-023 09/03/58	AMF. Pool			5,000.0	60 00	
Bangladesh (Institute of Nuclear Technology). Dhaka	XR-126 10/05/82	GA. TRIGA-Mk II			3,000.0	86 00	
Colombia, IAN-R1 (Institute of Nuclear Affairs). Bogotá	XR-053 05/27/64	Lockheed. Pool			20.0	65 00	
Denmark, DR-1 (Risö National Laboratory). Risö	XR-005 04/04/57	AL L-55			2.0	57 00	
England (Imperial Chemical Industries). Billingham, Teeside	XR-074 03/23/71	GA. TRIGA-Mk I			250.0	71 00	

Greece, Democritos (Atomic Energy Commission). Athens	XR-014 09/25/57	AMF. Pool	1,000.0	61 00	
Indonesia (National Atomic Energy Agency). Bandung	XR-048	GA. TRIGA-Mk II	1,000.0	64 00	Additional NRC export license No. and date: XR-078, 5/20/71.
Indonesia (National Atomic Energy Agency). Yogyakarta		GA. TRIGA-Mk II	250.0	79 00	GA: This reactor was designed and built by BATAN (National Atomic Energy Agency of Indonesia). The design was based on the design of TRIGA Mark II reactor, with maximum power level of 250 kW. In 1979 this reactor reached initial criticality at 50 kW. After the upgrading and replacing of some components, it reached a power level of 100 kW in 1984. BATAN: The original Bandung TRIGA-Mark II reactor was commissioned at 250 kW(t) in 1964. It was upgraded and reached a power level of 1000 kW(t) in 1971.
Israel (Atomic Energy Commission). Nahal Soreq	XR-021 06/12/58	AMF. Pool	5,000.0	60 00	
Italy (Italian Agency for New Technology, Energy and the Environment). Rome	XR-026 01/08/59	GA. TRIGA-Mk II	1,000.0	60 00	
Jamaica (Kingston). Kingston	XR-094 06/03/75	Research reactor			Design power: 10W.
Korea (Advanced Energy Research Institute). Seoul	XR-027 05/21/59	GA. TRIGA-Mk II	250.0	62 00	
Korea (Advanced Energy Research Institute). Seoul	XR-073 05/15/70	GA. TRIGA-Mk III	2,000.0	72 00	
Malaysia (Tun Ismail Atomic Research Centre). Kuala Lumpur	XR-125 02/20/81	GA. TRIGA-Mk II	1,000.0	82 00	
Mexico (National Commission for Nuclear Energy). Salazar	XR-057 02/12/65	GA. TRIGA-Mk III	1,000.0	68 00	
Pakistan, PARR (Atomic Energy Commission). Islamabad	XR-046 04/23/62	AMF. Pool	5,000.0	65 00	
Philippines, Republic of the, PRR-1 (Philippine Nuclear Research Institute). Quezon City	XR-034 11/16/59	GA. TRIGA Conversion	3,000.0	88 03	The original Philippine Research Reactor (PRR-1) was designed and built by GE and was commissioned as a 1 MW reactor in 1963. The reactor was shut down in 1/85 for extensive upgrading and has now become a TRIGA Conversion. It has a power level of 3 MW and reached criticality on 3/11/88.
Portugal, RP-1 (National Laboratory of Engineering and Industrial Technology). Sacavém	XR-013 09/13/57	AMF. Pool	1,000.0	61 00	
Slovenia (Josef Stefan Nuclear Institute). Ljubljana	XR-055 01/30/64	GA. TRIGA-Mk II	500.0	66 00	
Spain (Nuclear Energy Board-JEN). Madrid	XR-010 07/29/57	GE. Pool	3,000.0	58 00	
Switzerland (Paul Scherrer Institute). Wuerenlingen		ORNL. Pool Conversion	10,000.0	57 00	This is the 1955 Geneva conference reactor rebuilt with increased power.
Thailand, TRR-1 (Office of Atomic Energy for Peace). Bankok	XR-112 05/05/77	GA. TRIGA-Mk III	2,000.0	77 11	The Thai research reactor, TRR-1, built by Curtiss-Wright and started up in 1962, originally operated at 1000 kW(t). In 6/75 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 11/77.
Turkey (Atomic Energy Commission). Istanbul	XR-030 09/04/59	AMF. Pool	1,000.0	62 00	
Turkey (Technical University of Istanbul). Istanbul	XR-108 03/24/76	GA. TRIGA-Mk II	250.0	79 00	

2. TEST, RESEARCH, AND TEACHING

B. General Research (Continued)

Reactor Name (Owner). Location	NRC export license No. and date	Principal nuclear contractor. Reactor type	Power design net MW(e)	Power MW(t)	Author-ized power kW(t)	Initial criti-cality (yr mo)	Comment
OPERABLE (Continued)							
Venezuela (Institute for Scientific Research). Caracas	XR-018 01/16/58	GE. Pool			3,000.0	60 00	
Zaire (Regional Center for Nuclear Studies). Kinshasa		GA. TRIGA-Mk II			1,000.0	59 00	This TRIGA reactor operated at the 1958 International Conference in Geneva prior to shipment to the University of Lovanium in 6/59. It is the first reactor to be operated on the African continent.
BEING BUILT							
Morocco (C.E.N., Maâmora). Rabat	XR-158 10/25/91	GA. TRIGA-Mk II			3,000.0		Originally planned as TRIGA-Mk I, reactor was upgraded to TRIGA-Mk II. Original export license was not used.
PLANNED							
Albania. Tirana	XR-154 Pending	GA. TRIGA-Mk I			250.0		Export license application dated 10/9/90.

C. University Research and Teaching

OPERABLE							
Austria (Vienna Polytechnic Institute). Vienna	XR-035 11/24/59	GA. TRIGA-Mk II			250.0	62 00	
Brazil (University of Minas Gerais). Belo Horizonte	XR-028 08/03/59	GA. TRIGA-Mk I			100.0	60 00	
Brazil (University of São Paulo). São Paulo	XR-002 01/22/57	B&W. Pool			5,000.0	57 00	
Canada (McMaster University). Hamilton, Ontario	XR-011 08/27/57	AMF. Pool			5,000.0	59 00	
China, Republic of (National Tsing-Hua University). Hsinchu	XR-020 06/05/58	GE. Pool			1,000.0	62 00	
Finland (Institute of Technology). Helsinki	XR-040 04/05/61	GA. TRIGA-Mk II			250.0	62 00	
Germany (Institute for Nuclear Medicine). Heidelberg	XR-060 02/14/66	GA. TRIGA-Mk I			250.0	66 00	This TRIGA-Mk I reactor was installed in 1966. In 1977, the reactor was shut down, dismantled, and moved to another building. After this move, it was started up again in 1978. This operation was referred to as "TRIGA I" and "TRIGA II."
Germany (Johannes Gutenberg University of Mainz). Mainz	XR-050 04/11/64	GA. TRIGA-Mk II			100.0	65 00	
Germany (Medical College of Hanover). Hanover	XR-076 02/26/71	GA. TRIGA-Mk I			250.0	73 00	
Germany, FRM Gersching (Technical University of Munich). Munich	XR-004 03/15/57	AMF. Pool			4,000.0	57 00	

Iran (University of Tehran). Tehran	XR-029 08/05/59	AMF. Pool	5,000.0	67 00	Fuel supplier being sought.
Italy (University of Palermo). Palermo	XR-025 01/07/59	AGN. 201-110		60 00	Negligible power. Shut down for renewal of operating license.
Italy (University of Pavia). Pavia	XR-056 03/12/65	GA. TRIGA-Mk II	250.0	65 00	Shut down for renewal of operating license.
Japan (Kinki University). Higashi-Osaka	XR-041 04/18/61	AR. UTR-10		61 11	Negligible power.
Japan (Musashi College of Technology). Kawasaki	XR-037 07/08/60	GA. TRIGA-Mk II	100.0	63 01	
Japan (Rikkyo University). Yokosuka	XR-038 07/08/60	GA. TRIGA-Mk II	100.0	61 12	
Korea (University of Kyung Hee). Seoul	XR-105 11/18/75	AGN. 201		82 00	Negligible power.
Netherlands (Delft Technical University). Delft	XR-003 02/01/57	AMF. Pool (MTR)	2,000.0	63 04	The Netherlands research reactor was originally operated at the Amsterdam International Exhibition in 6/57; major portions of the exhibition reactor system were used to fabricate the present reactor.
Switzerland (University of Basel). Basel		AGN. 211-100		58 00	This reactor was operated in the International Science Section of the Brussels Information Exhibition, 4/15/58 to 10/1/58, prior to transfer to the University of Basel. Negligible power.

1. CIVILIAN

PART V CRITICAL ASSEMBLIES

Facility (Regulatory Agency)	Designation	Location	Equipment: No. of cells	Equipment: No. of control panels/ room	Abbreviation	Initial criticality (yr mo)	Comment
Advanced Test Reactor Critical Facility (DOE)	ATRC	INEL Site, ID	1	1	ATRC	64 00	ATR physics, core-loading and core-design measurements.
Argonne National Laboratory, Idaho Division (DOE)	ZPPR	INEL Site, ID	1	1	ANL-IDAHO	69 00	To be shut down FY95.
Los Alamos National Laboratory (DOE)	Big Ten	Los Alamos, NM			LANL, Kiva II	72 00	U(10)-metal cylinder in thick metal reflector.
Los Alamos National Laboratory (DOE)	Comet	Los Alamos, NM			LANL, Kiva II	52 00	Critical-configuration safety and neutronic tests.
Los Alamos National Laboratory (DOE)	Flattop	Los Alamos, NM	1	1	LANL, Kiva II	57 00	Spherical metal cores in thick metal reflector.
Los Alamos National Laboratory (DOE)	Godiva-IV	Los Alamos, NM			LANL, Kiva III	67 00	Fast neutron irradiation, pulse capability.
Los Alamos National Laboratory (DOE)	Honeycomb	Los Alamos, NM			LANL, Kiva I	56 00	Flexible split table assembly.
Los Alamos National Laboratory (DOE)	Mars	Los Alamos, NM			LANL, Kiva I	74 00	Vertical table assembly machine.
Los Alamos National Laboratory (DOE)	Planet	Los Alamos, NM			LANL, Kiva II	84 00	Vertical table assembly.
Los Alamos National Laboratory (DOE)	SHEBA	Los Alamos, NM	2	1	LANL, Kiva I	80 00	Solution high energy burst assembly.
Los Alamos National Laboratory (DOE)	SKUA	Los Alamos, NM	1	1	LANL, Kiva III	78 00	Fast neutron irradiation, pulse capability.
Rensselaer Polytechnic Institute (NRC)		Troy, NY	1	1	Rensselaer	66 00	Critical experiment assembly.
SNL Critical Assembly (DOE)	CX	Kirtland AFB East, NM			Sandia	89 09	Space power neutronics.

Facility (Regulatory Agency)	Designation	Location	Equipment: No. of cells	Equipment: No. of control panels/ room	Abbreviation	Initial criticality (yr mo)	Comment
Knolls Atomic Power Laboratory (DOE)	FCPE	Schenectady, NY	2	1	KAPL	70 00	Full core physics experiment.
Nuclear Safety Facility, Rocky Flats Plant (DOE)	Horizontal/ Split Table	Golden, CO			RFP-NSF	65 00	Critical-configuration safety tests.
Nuclear Safety Facility, Rocky Flats Plant (DOE)	Solution Base	Golden, CO	1	1	RFP-NSF	65 00	Critical-configuration safety tests.

REACTORS AND FACILITIES SHUTDOWN OR DISMANTLED

REACTORS AND FACILITIES SHUTDOWN OR DISMANTLED

1. POWER REACTORS

PART I CIVILIAN REACTORS (DOMESTIC)

A. Central-Station Electric Power Plants

Name (licensee) [docket number]	Location	Principal nuclear contractor	Type	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down permanently (yr mo)	Comment
Boiling Nuclear Superheater Power Station (AEC and Puerto Rico Water Resources Authority)	Punta Higuera, PR	Comb.	Boiling water, integral nuclear superheat	16.5	50.0	64 00	68 00	
Carolinas–Virginia Tube Reactor (Carolinas–Virginia Nuclear Power Associates, Inc.)	Parr, SC	West.	Pressure tube, heavy water	17.0	64.0	63 00	67 01	The last CVTR shutdown occurred 1/24/67. A license amendment issued 6/14/67 authorizes CVNPA to possess but not operate the CVTR.
Dresden Nuclear Power Station, Unit 1 (Commonwealth Edison Co.) [50-010]	Morris, IL	GE	Boiling water	200.0	700.0	59 00	78 10	
Elk River Reactor (AEC and Rural Cooperative Power Association)	Elk River, MN	AC	Boiling water	22.0	58.2	62 00	68 02	The Elk River Reactor was shut down due to technical problems in February 1968; in 1974, dismantling and removal of this facility was completed.
Enrico Fermi Atomic Power Plant, Unit 1 (Power Reactor Development Co.) [50-16]	Lagoona Beach, MI	PRDC	Sodium cooled, fast	60.9	200.0	63 00	72 09	
Fort St. Vrain Nuclear Generating Station (Public Service Company of Colorado) [50-267]	Platteville, CO	GA	High temperature, gas cooled	330.0	842.0	74 01	89 08	
Hallam Nuclear Power Facility, Sheldon Station (AEC and Consumers Public Power District)	Hallam, NE	AI	Sodium graphite	75.0	240.0	62 00	64 09	The Hallam Nuclear Power Facility was shut down in September 1964 due to moderator-can failures. Entombment of the reactor was completed in 1968.
Humboldt Bay Power Plant, Unit 3 (Pacific Gas & Electric Co.) [50-133]	Eureka, CA	GE	Boiling water	65.0	242.0	63 00	76 07	
Indian Point Station, Unit 1 (Consolidated Edison Co. of New York, Inc.) [50-3]	Buchanan, NY	B&W	Pressurized water	265.0	615.0	62 00	74 10	In the Consolidated Edison Indian Point Station, the 615 MW(t) was increased by an oil-fired superheater to produce 265 MW(e) net.
La Crosse (Genoa) Nuclear Generating Station (Dairyland Power Cooperative) [50-409]	La Crosse, WI	AC	Boiling water	48.0	165.0	67 07	87 04	
Pathfinder Atomic Plant (Northern States Power Co.)	Sioux Falls, SD	AC	Boiling water	58.5	190.0	64 00	67 09	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.
Peach Bottom Atomic Power Station, Unit 1 (Philadelphia Electric Co.) [50-171]	Peach Bottom, PA	GA	High temperature, gas cooled	40.0	115.0	66 00	74 10	

1. POWER REACTORS

A. Central Station Electric Power Plants (Continued)

Name (licensee) [docket number]	Location	Principal nuclear contractor	Type	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down permanently (yr mo)	Comment
Piqua Nuclear Power Facility (AEC and City of Piqua)	Piqua, OH	AI	Organic cooled and moderated	11.4	45.5	63 00	66 00	The dismantlement program for the Piqua Nuclear Power Facility was completed in February 1969.
Rancho Seco Nuclear Generating Station, Unit 1 (Sacramento Municipal Utility District) [50-312]	Clay Station, CA	B&W	Pressurized water	873.0	2,772.0	74 09	89 06	Possession only license, 3/92.
San Onofre Nuclear Generating Station, Unit 1 (Southern California Edison) [50-206]	San Clemente, CA	West.	Pressurized water	436.0	1,347.0	67 06	92 11	Possession only license is contingent as of 10/92 on the fuel being removed.
Shippingport Atomic Power Station (DOE and Duquesne Light Co.)	Shippingport, PA	West.	Pressurized water	60.0	236.0	57 00	82 10	The first core for the Shippingport station began power operation in 1957 with a capacity rating of 60 MW(e). The second core began power operation in 1965 with a capacity rating of 90 MW(e). The third core, a light water breeder reactor (LWBR), began power operation in 1977, with a capacity rating of 60 MW(e). Owned by the Department of Energy, the reactor plant was shut down on Oct. 1, 1982. Defueling was completed in September 1984. Decommissioning was completed in December 1989, and the site was released for use without any restrictions.
Shoreham Nuclear Power Station (Long Island Lighting Co.) [50-322]	Brookhaven, NY	GE	Boiling water	820.0	2,436.0	85 02	91 07	Possession only license, 7/20/91.
Three Mile Island Nuclear Station, Unit 2 (GPU Nuclear Corp.) [50-320]	Middletown, PA	B&W	Pressurized water	906.0	2,772.0	78 00	79 00	Three Mile Island Nuclear Station, Unit 2, has been shut down since the 3/28/79 accident. Core removal is finished.
Trojan Nuclear Plant, Unit 1 (Portland General Electric Co.) [50-344]	Prescott, OR	West.	Pressurized water	1075.0	3411.0	75 12	93 00	Possession only license, 5/5/93.
Yankee Nuclear Power Station (Yankee Atomic Electric Co.) [50-029]	Rowe, MA	West.	Pressurized water	167.0	600.0	60 08	92 02	Licensee announced permanent shutdown, 2/92. Possession only license, 8/92.

B. Dual-Purpose Plants

Name (Owner)	Location	Principal nuclear contractor	Type	Power capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Comment
N Reactor (DOE)	Hanford Site, WA	WHC	Graphite	860.0	4000.0	63 12	91 00	N Reactor, a DOE-owned reactor for production of special nuclear materials, also produced steam that was supplied to an adjacent electric generating plant, owned and operated by Washington Public Power Supply System. The reactor has been directed to transition from standby to the termination mode in preparation for decommissioning.

C. Propulsion (Maritime)

Name and/or owner	Nuclear designer	Shipbuilder	Type	Maximum shaft horsepower	Licensed power MW(e)	Start-up (yr mo)	Shut down (yr mo)
Nuclear Ship SAVANNAH (Maritime Administration)	B&W	NYSC	Pressurized water	22,000	80.0	61 00	71 00

2. EXPERIMENTAL POWER-REACTOR SYSTEMS

A. Electric-Power Systems

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Desig. Type. Principal nucl. contr.	Comment
Boiling Reactor Experiment No. 1 (DOE). INEL Site, ID		1,400.0				53 00	54 00	BORAX-1 Boiling water. ANL	
Boiling Reactor Experiment No. 5 (DOE). INEL Site, ID	2,600.0	20,000.0				62 00	64 00	BORAX-5 Boiling water, integral nuclear super-heat. ANL	
Boiling Reactor Experiments (DOE). INEL Site, ID	2,400.0	15,500.0				54 00	58 06	BORAX-2,-3,-4. Boiling water. ANL	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 7/17/55 produced sufficient electricity to light and power Arcbo, ID—a U.S. first. BORAX-4, a further modification, operated from 12/56 to 6/58, when the experiment was shut down.
ESADA Vallecitos Experimental Superheat Reactor (NRC). Pleasanton, CA		17,000.0				63 00	67 02	EVESR. Light-water mod-erated, super-heater. GE	Owner: Empire States Atomic Development Associates and General Electric Company.
Experimental Beryllium Oxide Reactor (DOE). INEL Site, ID		10,000.0						EBOR. Gas cooled, BeO moderated. GA	The EBOR reactor experiment was terminated in December 1966 prior to completion of construction.
Experimental Boiling Water Reactor (DOE). Argonne, IL	4,000.0	100,000.0				56 00	67 06	EBWR. Boiling water. ANL	The EBWR achieved 100,000 kW(t) 11/11/62. Operation of EBWR in the Boiling Water Program was closed out 12/62. The reactor was used in support of the Plutonium Recycle Program and attained criticality using plutonium as its principal fuel 9/22/65. In support of that program, it operated at power levels as high as 70,000 kW(t). Operation in that program was completed 6/67.

A. Electric-Power Systems (Continued)

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Desig. Type. Principal nucl. contr.	Comment
Experimental Breeder Reactor No. 1 (DOE). INEL Site, ID	150.0	1,400.0				51 00	64 00	EBR-1. NaK-cooled, fast. ANL	In a trial run 12/21/51 and 12/22/51, EBR-1 generated the world's first electric power from nuclear energy and was first to demonstrate, in 7/53, 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 11/62 to 12/63. The reactor was decommissioned and dismantled early in 1964. The facility was dedicated as a historic landmark 8/26/66. It is open to the public from Memorial Day weekend to Labor Day weekend, annually.
Experimental Gas Cooled Reactor (DOE). Oak Ridge, TN	21,900.0	84,300.0						EGCR. Gas cooled, graphite moderated. KE-AC	The EGCR project was terminated 1/66 prior to the completion of construction.
Experimental Organic Cooled Reactor (DOE). INEL Site, ID		40,000.0						EOCR. Organic cooled and moderated. Flour-AI	EOCR construction was terminated 12/62. The facility was mothballed prior to operation.
Heavy Water Components Test Reactor (DOE). SRL, Aiken, SC		61,100.0				62 00	64 00	HWCTR. Pressurized heavy water. Du Pont	
Homogeneous Reactor Experiment No. 1 (DOE). Oak Ridge, TN	140.0	1,000.0				52 00	54 00	HRE-1. Aqueous homogeneous solution (UO_2SO_4). ORNL	
Homogeneous Reactor Experiment No. 2 (DOE). Oak Ridge, TN	300.0	5,200.0				57 00	61 00	HRE-2. Aqueous homogeneous solution (UO_2SO_4). ORNL	
Los Alamos Molten Plutonium Reactor Experiment (DOE). Los Alamos, NM		1,000.0				61 00	63 00	LAMPRE-1. Fast molten plutonium fueled, sodium cooled. LANL	
Los Alamos Power Reactor Experiment No. 1 (DOE). Los Alamos, NM		2,000.0				56 00	57 00	LAPRE-1. Aqueous homogeneous (phosphoric acid). LANL	
Los Alamos Power Reactor Experiment No. 2 (DOE). Los Alamos, NM		1,000.0				59 00	59 00	LAPRE-2. Aqueous homogeneous (phosphoric acid). LANL	
Molten Salt Reactor Experiment (DOE). Oak Ridge, TN		8,000.0				65 00	69 00	MSRE. Single region, graphite moderated. ORNL	

Organic Moderated Reactor Experiment (DOE). INEL Site, ID		12,000.0				57 00	63 00	OMRE. Organic cooled and moderated. AI	OMRE demonstrated the technical and economic feasibility of using liquid hydrocarbon terphenyls as coolant and/or moderator.
Plutonium Recycle Test Reactor (DOE). Richland, WA		70,000.0				60 00	69 00	PRTR. Pressure tube, heavy water moderated and cooled. WHC	
Saxton Nuclear Experimental Reactor Project (DOE). Saxton, PA	3,000.0	23,500.0				62 00	72 00	No Desg. Pressurized water. West.	Owner: Saxton Nuclear Experimental Corp.
Sodium Reactor Experiment (DOE). Santa Susana, CA	5,700.0	20,000.0				57 00	64 02	SRE. Sodium graphite. AI	SRE operated at 20 MW(t) until shut down 2/64 for modification to permit an increase in power level to 30 MW(t). On 12/2/66, deactivation was announced. Owners: DOE and Southern California Edison Co.
Southwest Experimental Fast Oxide Reactor (NRC). Strickler, AR		20,000.0				69 00	72 00	SEFOR. Sodium cooled, fast. GE	Owner: Southwest Atomic Energy Associates.
Ultra High Temperature Reactor Experiment (DOE). Los Alamos, NM		3,000.0				68 00	70 00	UHTREX. Helium cooled. LANL	
Vallecitos Boiling Water Reactor (NRC). Pleasanton, CA	5,000.0	33,000.0				57 00	63 12	VBWR. Boiling water. GE	Owner: General Electric Company and Pacific Gas & Electric Co.

B. Space Nuclear Auxiliary Power (SNAP)

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Designation. Type. Principal nuclear contractor	Comment
SNAP-02 Developmental System (DOE). Santa Susana, CA					50.0	61 00	63 00	S2DS. NaK-cooled. AI	
SNAP-02 Experimental Reactor (DOE). Santa Susana, CA					50.0	59 00	60 00	SER. NaK-cooled. AI	
SNAP-02/10A TSF Shielding Experiment (DOE). Oak Ridge, TN					10.0	67 00	73 00	SNAP-TSF. NaK-cooled. AI-ORNL	
SNAP-08 Developmental Reactor (DOE). Santa Susana, CA					600.0	68 00	69 00	S8DR. NaK-cooled. AI	
SNAP-08 Experimental Reactor (DOE). Santa Susana, CA					600.0	62 00	65 00	S8ER. NaK-cooled. AI	
SNAP-10A Flight System (DOE). In orbit, US				0.5	39.0	65 00	65 00	S10FS-4. NaK-cooled. AI	S10FS-4 operated in orbit 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.
SNAP-10A Flight System (DOE). Oak Ridge, TN				0.5	39.0	(Spare)		S10FS-5. NaK-cooled. AI	
SNAP-10A Flight System Ground Test No. 1 (DOE).				0.5	39.0	64 00	64 00	S10FS-1. NaK-cooled. AI	
SNAP-10A Flight System Ground Test No. 3 (DOE). Santa Susana, CA				0.5	39.0	64 00	66 00	S10FS-3. NaK-cooled. AI	See comment for SNAP-10 Flight System, S10FS-4.

C. Space Propulsion

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Designation. Type. Principal nuclear contractor	Comment
Fuel Element Test Bed (DOE). NRDS, NV			44,000.0			72 00	72 00	NF-1. Open cycle, gaseous hydrogen. LANL	
Fuel Element Test Reactor (DOE). NRDS, NV			514,000.0			Indef.	68 00	Pewee-1. Open cycle, liquid hydrogen. LANL	
Fuel Element Test Reactor (DOE). NRDS, NV			514,000.0			Indef.	73 00	Pewee-2. Open cycle, liquid hydrogen. LANL	
Ground Experimental Engine Experiment (DOE). NRDS, NV			1,100,000.0			Indef.	73 00	XE-Backup. Open cycle, liquid hydrogen. AG-West.	
Ground Experimental Engine Experiment (DOE). NRDS, NV			1,100,000.0			68 00	69 00	XE-Prime. Open cycle, liquid hydrogen. AG-West.	
Nuclear Rocket Engine Reactor Experiment (NERVA) (DOE). NRDS, NV			109,600.0			64 00	64 00	NRX-A2. Open cycle, liquid hydrogen. AG-West.	
Nuclear Rocket Engine Reactor Experiment (NERVA) (DOE). NRDS, NV			1,100,000.0			65 00	65 00	NRX-A3. Open cycle, liquid hydrogen. AG-West.	
Nuclear Rocket Engine Reactor Experiment (NERVA) (DOE). NRDS, NV			1,120,000.0			66 00	66 00	NRX-A5. Open cycle, liquid hydrogen. AG-West.	
Nuclear Rocket Engine Reactor Experiment (NERVA) (DOE). NRDS, NV			1,199,000.0			67 00	67 00	NRX-A6. Open cycle, liquid hydrogen. AG-West.	
Nuclear Rocket Reactor Engine System Test (NERVA) (DOE). NRDS, NV			1,155,000.0			66 00	66 00	NRX-A4/EST. Open cycle, liquid hydrogen AG-West.	
Nuclear Rocket Reactor Experiment (DOE). NRDS, NV			70,000.0			59 00	59 00	Kiwi-A. Open cycle, gaseous hydrogen. LANL	
Nuclear Rocket Reactor Experiment (DOE). NRDS, NV			85,000.0			60 00	60 00	Kiwi-A Prime. Open cycle, gaseous hydrogen. LANL	
Nuclear Rocket Reactor Experiment (DOE). NRDS, NV			100,000.0			60 00	60 00	Kiwi-A3. Open cycle, gaseous hydrogen. LANL	

Nuclear Rocket Reactor Experiment (DOE). NRDS, NV	300,000.0		61 00	61 00	Kiwi-B1A. Open cycle, gaseous hydrogen. LANL
Nuclear Rocket Reactor Experiment (DOE). NRDS, NV	900,000.0		62 00	62 00	Kiwi-B1B. Open cycle, liquid hydrogen. LANL
Nuclear Rocket Reactor Experiment (DOE). NRDS, NV	500,000.0		62 00	62 00	Kiwi-B4A. Open cycle, liquid hydrogen. LANL
Nuclear Rocket Reactor Experiment (DOE). NRDS, NV	1,000,000.0		64 00	64 00	Kiwi-B4D. Open cycle, liquid hydrogen. LANL
Nuclear Rocket Reactor Experiment (DOE). NRDS, NV	950,000.0		64 00	64 00	Kiwi-B4E. Open cycle, liquid hydrogen. LANL
Nuclear Rocket Reactor Experiment (DOE). NRDS, NV	1,070,000.0		65 00	65 00	Phoebus 1A. Open cycle, liquid hydrogen. LANL
Nuclear Rocket Reactor Experiment (DOE). NRDS, NV	1,400,000.0		67 00	67 00	Phoebus 1B. Open cycle, liquid hydrogen. LANL
Nuclear Rocket Reactor Experiment (DOE). NRDS, NV	4,200,000.0		68 00	68 00	Phoebus 2A. Open cycle, liquid hydrogen. LANL

3. TEST, RESEARCH, AND UNIVERSITY REACTORS

A. General Irradiation Test

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Designation. Type. Principal nuclear contractor	Comment
Engineering Test Reactor (DOE). INEL, ID			175,000.0			57 00	81 00	ETR. Tank KE-GE.	Reactor was shut down in 1973 for modifications and insertion of Sodium Loop Safety Facility (SLSF) loop. Operation resumed in 1975. Deactivated in 1981 and no longer operable.
Fast Flux Test Facility (DOE). Hanford Site, WA			291,000.0			80 02	93 12	FFTF. Sodium cooled, loop. WHC	The Fast Flux Test Facility initiated shutdown activities 12/93.
General Electric Testing Reactor (NRC). Pleasanton, CA			50,000.0			58 00	77 00	GETR. Tank. Owner.	
Materials Testing Reactor (DOE). INEL, ID			40,000.0			52 00	70 00	MTR. Tank. ORNL-ANL-Blaw-Knox	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 6/30/69, and a Plutonium-240 (Phoenix) core was run in FY 1970. Reactor was decommissioned in 1974.
Plum Brook Reactor Facility (NRC). Sandusky, OH			60,000.0			61 00	74 00	NASA-TR. Tank. NASA	
Westinghouse Testing Reactor (NRC). Waltz Mill, PA			60,000.0			59 00	62 00	WTR. Tank. Owner	

B. High-Power Research and Test

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Designation. Type. Principal nuclear contractor	Comment
Ames Laboratory Research Reactor (DOE). Ames, IA			5,000.0			65 00	77 00	ALRR. Heavy water. AMF	
Argonne Research Reactor (DOE). Argonne, IL			5,000.0			54 00	79 00	CP-5. Heavy. water ANL	
Babcock & Wilcox Nuclear Development Center Test Reactor (NRC). Lynchburg, VA			6,000.0			64 00	71 00	BAWTR. Pool. Owner	
Cintichem, Inc. Reactor (NRC). Sterling Forest, NY			5,000.0			61 00	90 00	CINR. Pool. AMF	Being decommissioned.
Industrial Reactor Laboratories, Inc. (NRC). Plainsboro, NJ			5,000.0			58 00	75 00	IRL. Pool. AMF	
Oak Ridge Research Reactor (DOE). Oak Ridge, TN			30,000.0			58 00	87 00	ORR. Tank. ORNL	Shut down—Defueled.
Sandia Engineering Reactor (DOE). Kirtland AFB, NM			5,000.0			61 00	70 00	SER. Tank. Sandia	

C. Safety Research and Test

King Intense Neutron Generator (DOE). Los Alamos, NM						72 00	77 00	Kinglet. Homogeneous. LANL	Transient.
Kiwi-Transient Test Reactor (DOE). NRDS, NV						65 00	65 00	Kiwi-TTR. Kiwi/NERVA. LANL	
Loss of Fluid Test (DOE). INEL, ID			55,000.0			78 00	85 07	LOFT. Pressurized water. EG&G-ID	LOFT covered most of the concerns related to light-water safety. The first tests were done for NRC, and the last eight were done for a consortium of OECD countries and the U.S. The last two fission-product-release tests measured release and transport of fission products. There was an intentional core damage causing a partial meltdown. Facility has been inactivated and placed in cold standby.
Power-Burst Facility (DOE). INEL, ID			28,000.0			73 00	92 00	PBF. Open tank. EG&G-ID	
SNAP-10A Transient Test No. 2 (DOE). INEL, ID						65 00	66 01	SNAPTRAN-2. Be-reflected SNAP-10A. AI-PPC	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. SNAPTRAN-1 was converted to SNAPTRAN-2 for destructive testing 1/66.

SNAP-10A Transient Test No. 3 (DOE). INEL, ID		64 00	64 00	SNAPTRAN-3. H_2O-reflected SNAP-10A. PPC-AI	
Special Power Excursion Reactor Test No. 1 (DOE). INEL, ID		55 00	64 00	SPERT-1. Open tank. PPC	
Special Power Excursion Reactor Test No. 2 (DOE). INEL, ID		60 00	65 00	SPERT-2. Pressurized water. PPC	
Special Power Excursion Reactor Test No. 3 (DOE). INEL, ID		58 00	68 00	SPERT-3. Pressurized water. PPC	
Special Power Excursion Reactor Test No. 4 (DOE). INEL, ID		62 00	70 00	SPERT-4. Pool. INC	

D. General Research

Accelerator Pulsed Fast Critical Assembly (DOE). La Jolla, CA	1.0	67 00	73 00	APFA-III. Fast. GA	The APFA-III was previously operated as the KUKLA Prompt Critical Assembly at Lawrence Livermore National Laboratory at Livermore, CA.
American Standard Inc. (NRC). Mountain View, CA		58 00	60 00	UTR-1. Graphite/water. AS, Inc.	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.
Annular Core Pulsed Reactor (DOE). Kirtland AFB, East, NM		67 00	77 00	ACPR. U-Zr hydride. GA	In 1977 the Annular Core Pulsed Reactor (ACPR) was shut down. After replacement of fuel and other modifications, the unit was renamed the Annular Core Research Reactor.
Argonne CP-3, rebuilt as CP-3′ (DOE). Palos Park, IL	300.0	44 00	63 00	CP-3′. Heavy water. Met. Lab.	
Argonne Low Power Research Reactor (DOE). Argonne, IL	250.0	62 00	70 00	Juggernaut. Graphite/water. ANL	After the assembly and operation of this reactor in the government exhibit at Geneva in 9/58, it was dismantled and returned to ANL, where it was rebuilt as a 250-kW(t) Juggernaut.
Argonne National Laboratory (DOE). Argonne, IL		57 00	72 00	AGN-201-108. Homog. solid. AGN	
Argonne Nuclear Assembly for University Training (DOE). Argonne, IL	10.0	57 00	72 00	Argonaut (CP-11). Graphite/water. ANL	
Argonne Thermal Source Reactor (DOE). Argonne, IL	10.0	57 00	88 00	ATSR. Thermal. ANL	
Atomics International (NRC). Canoga Park, CA		57 00	58 00	L-47. Homogeneous. AI	
Babcock & Wilcox Lynchburg Pool Reactor (NRC). Lynchburg, VA	1,000.0	58 00	81 00	LRP. Pool. Owner	
Battelle Memorial Institute (NRC). West Jefferson, OH	2,000.0	56 00	74 00	BRR. Pool. AMF	
Biological Research Reactor (DOE). Argonne, IL	200.0	64 00	92 00	JANUS. Tank. ANL	
Brookhaven Graphite Research Reactor (DOE). Upton, NY	20,000.0	50 00	69 00	BGRR. Air cooled, graphite moderated. AU, Inc.	

D. General Research (Continued)

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Designation. Type. Principal nuclear contractor	Comment
Brookhaven Neutron Source Reactor No. 1 (DOE). Upton, NY			100.0			58 00	70 00	SCHIZO. Tank. AU, Inc.	
Brookhaven Neutron Source Reactor No. 2 (DOE). Upton, NY			100.0			65 00	70 00	PHRENIC. Tank. AU, Inc.	
Bulk Shielding Reactor (DOE). Oak Ridge, TN			2,000.0			50 00	91 00	BSR. Pool. ORNL	Shut down—to be defueled.
Chicago Pile 1, rebuilt as CP-2 (DOE). Chicago, IL			0.2			42 00	54 00	CP-2. Graphite. Met. Lab.	In 1943 Manhattan Engineer District disassembled Chicago Pile 1 and rebuilt at Palos Park, IL, as Chicago Pile 2. CP-2 had a thermal-power level of 10 kW.
Curtiss-Wright Nuclear Research Laboratory of the Commonwealth of Pennsylvania (NRC). Quehanna, PA			1,000.0			58 00	66 00	CWRR. Pool. Owner	
DOE Demonstration Reactor (DOE). Oak Ridge, TN			10.0			69 00	69 00	Demo Reac. Pool. Lockheed	This reactor was formerly called the Latin American Demonstration Reactor and was operated initially in São Paulo, Brazil, 10/69. It is currently in storage at Oak Ridge.
European-Asian Exhibit Program (DOE). Oak Ridge, TN			10.0			63 00	69 00	EAEP. Pool. Lockheed	This reactor was operated in the USAEC Atoms for Peace Exhibit in Vienna, Austria, 6/63; Belgrade, Yugoslavia, 9/63; Madrid, Spain, 4/64; Libson, Portugal, 4/65; Utrecht, Netherlands, 3/66; Dublin, Ireland, 9/66 to 10/66; Ankara, Turkey, 4/67 to 5/67; Tehran, Iran, 11/67 to 12/67; Taipei, Taiwan, 4/68 to 5/68; Seoul, Korea, 9/68 to 10/68; Manila, Philippines, 2/69 to 3/69; and Bucharest, Romania, 10/69.
Fast Neutron Source Reactor (DOE). Upton, NY						67 00	70 00	BNL/FS-1. Fast. BNL	
Fast Source Reactor (DOE). INEL Site, ID			1.0			59 00	93 00		
General Atomics Technologies (DOE). San Diego, CA			50.0			60 00	60 00	TRIGA-Mk II. U-Zr hydride. Owner	This TRIGA-Mk II was operated at the New Delhi World Agricultural Fair in 1960. It was dismantled for storage in California by Chevron USA Corporation. Owner: World Agricultural Fair–U.S. Exhibit Reactor.
Health Physics Research Reactor (DOE). Oak Ridge, TN			10.0			62 00	91 00	HPRR. Fast burst. ORNL	Shut down—Defueled.
High Temperature Lattice Test Reactor (DOE). Richland, WA			2.0			67 00	71 00	HTLTR. Graphite moderated. PNL	

Illinois Institute of Technology Research Institute (DOE). Chicago, IL	75.0	56 00	67 00	ARR (L-54). Homogeneous. AI	Owner: Armour Research Foundation.
Kinetic Experiment on Water Boilers (NRC). Santa Susana, CA		56 00	67 00	KEWB. Homogeneous. AI	The KEWB reactor was operated by AI from 1956 to 1967 as the Kinetic Experiment on Water Boilers. Owner: Rockwell International. No power listed: transient.
Livermore Pool Type Reactor (DOE). Livermore, CA	3,000.0	57 00	80 00	LPTR. Tank. FW	
Livermore Water Boiler (DOE). Livermore, CA	0.5	53 00	61 00	LIWB. Homogeneous. AI	
Lockheed Aircraft Corp. (NRC). Dawsonville, GA		60 00	60 00	No Desg. Pool. Lockheed	
Los Alamos Fast Reactor (DOE). Los Alamos, NM	25.0	46 00	53 00	Clementine. Fast, plutonium fuel, mercury cooled. LANL	
Los Alamos LOPO Reactor (DOE). Los Alamos, NM		44 00	44 00	LOPO. Homogeneous. LANL	
Los Alamos Water Boiler (DOE). Los Alamos, NM	5.5	44 00	50 00	HYPO. Homogeneous. LANL	
Los Alamos Water Boiler (DOE). Los Alamos, NM	25.0	50 00	74 00	SUPO. Homogeneous. LANL	
Louisiana State University Nuclear Science Center (DOE). Baton Rouge, LA	2.0	65 00	66 00	SNARE. Pool. Sandia	In 1965 and 1966 this reactor operated at Sandia, NM, as SNARE. Prior to that time it was 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 6/66, where it was never assembled. Owner: Phillips Petroleum Co.
Low Intensity Test Reactor (DOE). Oak Ridge, TN	3,000.0	50 00	68 00	LITR. Tank. ORNL	
Low Temperature Neutron Irradiation Facility (DOE). Oak Ridge, TN		86 00	91 00	LTNIF. Pool. ORNL	
NASA Mock-Up Reactor (NRC). Sandusky, OH	100.0	63 00	73 00	MUR. LWR. Lockheed	
Neutron Radiography Facility (DOE). Hanford Site, WA	250.0	77 00	90 00	NRF. U-Zr hydride. WHC	The Neutron Radiography Facility was used to perform neutron radiography of reactor fuel pins. The reactor was shut down in 1989 and has been converted to a fuel storage basin.
Northrop Corporate Laboratories (NRC). Hawthorne, CA	100.0	63 00	86 00	TRIGA-Mk F. U-Zr hydride. GA	Owner: Space Radiation Laboratory. This TRIGA reactor was capable of being pulsed and of steady-state operation.
Nuclear Effects Reactor (DOE). NTS, NV		62 00	70 00	FRAN. Prompt burst. LLNL/PPC	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. Fuel was removed for processing.
Nuclear Effects Reactor (DOE). San Diego, CA		59 00	64 00	KUKLA. Prompt burst. LLNL	

D. General Research (Continued)

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Designation. Type. Principal nuclear contractor	Comment
Nuclear Examination Reactor (NRC). Santa Susana, CA			3.0			52 00	80 00	L-85 (AE-6). Homogeneous. AI	Ownership of this reactor was transferred to North American Rockwell 12/71 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, CA. It was moved to Santa Susana in 1956.
Oak Ridge Graphite Reactor (DOE). Oak Ridge, TN			3,500.0			43 00	63 00	ORG. Graphite. CL	
Pawling Research Reactor (NRC). Pawling, NY						58 00	71 00	PRR. LWR. UNC	Owner: United Nuclear Corp.
Physical Constants Test Reactor (DOE). Richland, VA			0.1			55 00	72 00	PCTR. Graphite. PNL	
Radiation Effects Reactor (NRC). Dawsonville, GA			3,000.0			58 00	70 00	RER. Pool. Lockheed	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 7/62, and 8/62 the USAF transferred the facility to the General Services Administration. Lockheed acquired the title to the facility 3/65.
Rockwell International (NRC). Canoga Park, CA						58 00	74 00	L-77. Homogeneous. AI	
Sandia Pulsed Reactor (DOE). Kirtland AFB, East, NM						61 00	67 00	SPR. Prompt burst. Sandia	
Shield Test and Irradiation Reactor (DOE). Santa Susana, CA			1,000.0			61 00	72 00	STIR. Pool. AI	This reactor was previously designated STF for SNAP Shield Test Facility.
Thermal Test Reactor No. 2 (DOE). Richland, WA			0.1			55 00	72 00	TTR-2. Graphite. PNL	
Torrey Pines, TRIGA-Mk III Reactor (NRC). La Jolla, CA			1,500.0			66 00	73 00	TRIGA-Mk III. U-Zr hydride. Owner	Owner: General Atomic.
Tower Shielding Reactor (DOE). Oak Ridge, TN			500.0			54 00	58 00	TSR. BSR-type in tank. ORNL	
Tower Shielding Reactor No. II (DOE). Oak Ridge, TN			1,000.0			60 00	92 00	TSR-2. Light water. ORNL	Shut down—To be defueled.
UTR Test Reactor (NRC). Mountain View, CA						61 00	63 00	No Desg. Graphite/water. Owner	Owner: American Radiator & Standard Sanitary Corp.
Westinghouse Nuclear Training Center (NRC). Zion, IL			10.0			72 00	87 00	WNTR. Tank. West.	

E. University Research and Teaching

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Designation. Type. Principal nuclear contractor	Comment
Brigham Young University (NRC). Provo, UT						67 00	87 00	L-77. Homogeneous. AI	
California Polytechnic State University (NRC). San Luis Obispo, CA						73 00	80 00	AGN-201-100. Homog. solid. AGN	California Polytechnic State University received a permit in 12/71 to relocate AGN-201-100 and operate it on the university's campus.The unit was previously operated starting in 1956 at the Naval Postgraduate School, Monterey, CA. In 1980, AGN-201-100 was shut down and decommissioned.
California, Berkeley, University of (NRC). Berkeley, CA			1,000.0			66 00	87 12	TRIGA-Mk III. U-Zr hydride. GA	
California, Los Angeles, University of, School of Engineering and Applied Science (NRC). Los Angeles, CA			100.0			60 00	84 00	Educator. Graphite/water. AMF	
California, Santa Barbara, University of (NRC). Santa Barbara, CA						74 00	86 00	L-77. Homogeneous. AI	
Catholic University of America (NRC). Washington, DC						57 00	86 00	AGN-201-101. Homog. solid. AGN	
Colorado State University (NRC). Fort Collins, CO						57 00	74 00	AGN-201-109. Homog. solid. AGN	
Columbia University (NRC). New York, NY			250.0			Licensed	85 00	TRIGA-Mk II. U-Zr hydride. GA	The Columbia University TRIGA-Mk II was licensed to operate by NRC. However, the City of New York has not authorized operation. Therefore Columbia University has not procured fuel. The license was terminated in 1985.
Delaware, University of (NRC). Newark, DE						58 00	78 00	AGN-201-113. Homog. solid. AGN	
Georgia Institute of Technology (NRC). Atlanta, GA						68 00	85 00	AGN-201-104. Homog. solid. AGN	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. Decommissioning of AGN-201-104 was achieved in 1986.

E. University Research and Teaching (Continued)

Name (Regulatory agency). Location	Power capacity net kW(e)	Power licensed kW(t)	Authorized power kW(t)	Power MD capacity net MW(e)	Power licensed MW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Designation. Type. Principal nuclear contractor	Comment
Kansas, University of (NRC). Lawrence, KS			250.0			61 00	87 00	Model 4180. Pool. BAC	License terminated 10/5/93.
Leland Stanford University (NRC). Palo Alto, CA			10.0			59 00	74 00	No Desg. Pool. GE	
Memphis State University (NRC). Memphis, TN						77 00	85 00	AGN-201-108. Homog. solid. AGN	
Michigan State University (NRC). East Lansing, MI			250.0			69 00	89 00	TRIGA-Mk I. U-Zr hydride. GA	The core of the Michigan State University reactor operated in the University of Illinois TRIGA facility from 1960 until transferred in 1968. The reactor has been decommissioned. The license was terminated 4/5/90.
Mississippi State University (NRC). State College, MS								RRR. Homogeneous. Owner: NSA	This reactor was originally operated by North Carolina State University as the Raleigh Research Reactor (RRR). It was transferred 3/66 to Mississippi State University for reactivation. The RRR was dismantled by NC State in 1963. Owing to funding problems this reactor was never activated. Late in 1981 it was shipped to Barnwell, SC, for disposal.
Nevada, University of (NRC). Reno, NV						63 00	74 00	L-77. Homogeneous. AI	
North Carolina State University (NRC). Raleigh, NC			10.0			60 00	73 00	No Desg. Graphite/water. Cook	
Oklahoma, University of (NRC). Norman, OK						58 00	88 00	AGN-211-102. Homog. solid, pool. AGN	
Oregon State University (NRC). Corvallis, OR						58 00	74 00	AGN-201-114. Homog. solid. AGN	
Polytechnic Institute of New York (NRC). New York, NY						67 00	74 00	AGN-201M-105. Homog. solid. AGN	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 4/67.
Puerto Rico Nuclear Center DOE). Mayagüez, PR						59 00	79 00	L-77. Homogeneous. AI	Owner: The Center for Environmental and Energy Research (formerly Puerto Rico Nuclear Center).
Puerto Rico Nuclear Center (DOE). Mayagüez, PR			2,000.0			72 00	76 00	TRIGA-FLIP. Pool-TRIGA core. GA	This reactor was operated at the Puerto Rico Nuclear Center from 1960 to 10/76; it was converted to TRIGA-FLIP in 1972. It has been moved to the Neutron Radiography Facility at the National Engineering Laboratory in Idaho.

Texas at Austin, University of (NRC). Austin, TX	250.0	63 00	91 00	TRIGA-Mk I. U-Zr hydride. GA	License terminated 10/13/93.
Tuskegee Institute (NRC). Tuskegee, AL		74 00	84 12	AGN-201-102. Homog. solid. AGN	AGN-201-102 was operated at Oklahoma State University, Stillwater, OK, from 1957 until transferred to Tuskegee Institute in 1972; there it was licensed to operate but was never started up. Tuskegee Institute returned the fuel to the Department of Energy, and the operating license was terminated 10/12/84.
Utah, University of (NRC). Salt Lake City, UT		57 00	91 00	AGN-201-107. Homog. solid. AGN	Being decommissioned.
Virginia, University of (NRC). Charlottesville, VA		74 00	91 00	CAVALIER. Reactor type not specified. Owner	Being decommissioned.
Virginia Polytechnic Institute (NRC). Blacksburg, VA	100.0	59 00	84 00	UTR-10. Graphite/water. AS Inc.	
Washington, University of (NRC). Seattle, WA	100.0	61 00	90 00	Educator. Graphite/water. AMF	Decommissioning plan has been submitted to NRC.
West Virginia University (NRC). Morgantown, WV		59 00	72 00	AGN-211-103. Homog. solid, pool. AGN	
William Marsh Rice University (NRC). Houston, TX		59 00	65 00	AGN-211-101. Homog. solid, pool. AGN	
Wyoming, University of (NRC). Laramie, WY		59 00	74 00	L-77. Homogeneous. AI	

1. MATERIALS PRODUCTION

PART II PRODUCTION REACTORS

Name (all owned by DOE)	Designation	Location	Nuclear designer	Type	Authorized power kW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Comment
B Reactor	B Reactor	Richland, WA	Du Pont	Graphite		44 00	68 00	
C Reactor	C Reactor	Richland, WA	GE	Graphite		52 00	69 00	
C Reactor	C Reactor	Aiken, SC	Du Pont	Heavy water		55 00	93 00	
D Reactor	D Reactor	Richland, WA	Du Pont	Graphite		44 00	67 00	
DR Reactor	DR Reactor	Richland, WA	GE	Graphite		50 00	64 00	
F Reactor	F Reactor	Richland, WA	Du Pont	Graphite		45 00	65 00	
H Reactor	H Reactor	Richland, WA	GE	Graphite		49 00	65 00	
KE Reactor	KE Reactor	Richland, WA	GE	Graphite		55 00	71 00	
KW Reactor	KW Reactor	Richland, WA	GE	Graphite		55 00	70 00	
L Reactor	L Reactor	Aiken, SC	Du Pont	Heavy water		54 00	93 00	
P Reactor	P Reactor	Aiken, SC	Du Pont	Heavy water		54 00	93 00	
R Reactor	R Reactor	Savannah River Plant, Aiken, SC	Du Pont	Heavy water		53 00	64 00	

2. PROCESS DEVELOPMENT

PART II PRODUCTION REACTORS

Name (all owned by DOE)	Designation	Location	Nuclear designer	Type	Authorized power kW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Comment
Hanford 305 Test Reactor	HTR	Richland, WA	Du Pont	Graphite		44 00	76 00	Negligible power.
Lattice Test Reactor	LTR	Savannah River Plant, Aiken, SC	Du Pont	Heavy water	1.0	67 00	79 00	
Process Development Pile	PDP	Savannah River Plant, Aiken, SC	Du Pont	Heavy water	1.0	53 00	79 00	
SR 305-M Test Pile	Test Pile	Savannah River Plant, Aiken, SC	Du Pont	Graphite	1.0	53 00	83 00	SR 305-M Test Pile was used to measure the reactivity effects of components (fuel tubes, target tubes, control rods, etc.) prior to use in Savannah River (SR) reactors. In addition, the Test Pile was used to measure the neutron absorption of miscellaneous materials used at SR. The Test Pile has been dismantled.
Standard Pile/ Subcritical Experimental Complex	SP/SE	Savannah River Laboratory, Aiken, SC	Du Pont	Graphite	2.0	53 00	79 00	The SP—an enriched uranium-fueled, graphite-moderated, water-cooled reactor—supplied neutrons for reactor-component-reactivity testing in the SE, which was a graphite chamber on top of the SP. Authorized power ranged from 2 to 10 kW(t).

1. DEFENSE POWER-REACTOR APPLICATIONS

PART III MILITARY REACTORS

A. Remote Installations

Reactors in the Army Power Program are designated 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 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.

Name (all owned by DOE). Location	Designation	Power capacity net kW(e)	Authorized power kW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Principal nuclear contractor. Reactor type	Comment
Portable Medium Power Plant, No. 1. Sundance, WY	PM-1	1,000.0	9,370.0	62 00	68 00	Martin. Pressurized water.	
Portable Medium Power Plant, No. 2A. Camp Century, Greenland	PM-2A	1,560.0	10,000.0	60 00	63 00	Alco. Pressurized water.	The PM-2A was shut down 7/9/63 and dismantled during 4/64 to 6/64. The reactor vessel was then used by 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 11/18/66 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.

Portable Medium Power Plant, No. 3A. McMurdo Sound, Antarctica	PM-3A	1,500.0	9,510.0	62 00	73 00	Martin. Pressurized water.	
Stationary Medium Power Plant No. 1. Fort Belvoir, VA	SM-1	1,855.0	10,000.0	57 00	73 00	Alco. Pressurized water.	
Stationary Medium Power Plant No. 1A. Fort Greely, AK	SM-1A	1,650.0	20,200.0	62 00	72 00	Alco. Pressurized water.	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.
STURGIS Floating Nuclear Power Plant	MH-1A	10,000.0	45,000.0	67 00	76 00	Martin. Pressurized water.	The MH-1A was installed in the STURGIS (formerly the Liberty Ship CHARLES H. CUGLE) at Mobile, AL. Acceptance testing was performed at Fort Belvoir, VA, 4/67 to 6/27/67, when the Army accepted the plant from the contractor. In late 7/68 the plant was deployed to Gatun Lake, Panama Canal Zone, and began producing power to the Panama Canal power grid on 10/5/68. The MH-1A is no longer available for service.

B. Propulsion (Naval)

SSN, Submarine (Nuclear Propulsion). SSBN, Fleet Ballistic Missile Submarine (Nuclear Propulsion). CGN, Guided Missile Cruiser (Nuclear Propulsion).

Name (all owned by U.S. Navy)	Designation	Shipbuilder	Start-up	Shut-down	Comment
NAUTILUS	SSN571	Electric Boat (Groton)	54 00	80 00	
SEAWOLF PWR	SSN575	Electric Boat (Groton)	60 00	86 00	
SEAWOLF Sodium Reactor	SSN575	Electric Boat (Groton)	57 00	59 00	The SEAWOLF, originally commissioned with a sodium-cooled reactor in 3/57, was recommissioned with a pressurized-water reactor on 9/30/60.
SKATE	SSN578	Electric Boat (Groton)	57 00	85 00	
SWORDFISH	SSN579	Portsmouth	58 00	87 00	
SARGO	SSN583	Mare Island	58 00	86 00	
SEADRAGON	SSN584	Portsmouth	59 00	83 00	
SKIPJACK*	SSN585	Electric Boat (Groton)	58 00	89 00	
TRITON (2 Reactors)	SSN586	Electric Boat (Groton)	59 00	68 00	
HALIBUT	SSN587	Mare Island	59 00	76 00	
SCAMP*	SSN588	Mare Island	61 00	87 00	
SCORPION	SSN589	Electric Boat (Groton)	60 00	68 00	The SCORPION was lost in the Atlantic 5/21/68.
SCULPIN	SSN590	Ingalls	61 00	89 00	
SHARK*	SSN591	Newport News	60 00	89 00	
SNOOK*	SSN592	Ingalls	61 00	86 00	
THRESHER	SSN593	Portsmouth	61 00	63 00	The THRESHER was lost in the Atlantic 4/10/63.
PERMIT*	SSN594	Mare Island	62 00	90 00	
PLUNGER*	SSN595	Mare Island	62 00	89 00	
BARB*	SSN596	Ingalls	63 00	89 00	
TULLIBEE	SSN597	Electric Boat (Groton)	60 00	87 00	
GEORGE WASHINGTON*	SSN598	Electric Boat (Groton)	59 00	84 00	
PATRICK HENRY*	SSN599	Electric Boat (Groton)	60 00	83 00	
THEODORE ROOSEVELT*	SSBN600	Mare Island	60 00	81 00	
ROBERT E. LEE*	SSN601	Newport News	60 00	83 00	
ABRAHAM LINCOLN*	SSBN602	Electric Boat (Groton)	60 00	81 00	
POLLACK*	SSN603	NYSC	63 00	88 00	
HADDO*	SSN604	NYSC	64 00	90 00	
JACK*	SSN605	Porthsmouth	65 00	89 00	

1. DEFENSE POWER-REACTOR APPLICATIONS

B. Propulsion (Naval) (Continued)

Name (all owned by U.S. Navy)	Designation	Shipbuilder	Start-up	Shut-down	Comment
TINOSA*	SSN606	Portsmouth	63 00	91 00	
DACE*	SSN607	Ingalls	63 00	88 00	
ETHAN ALLEN*	SSN608	Electric Boat (Groton)	61 00	82 00	
SAM HOUSTON*	SSN609	Newport News	61 00	91 00	
THOMAS A. EDISON*	SSN610	Electric Boat (Groton)	61 00	83 00	
JOHN MARSHALL*	SSN611	Newport News	62 00	92 00	
GUARDFISH*	SSN612	NYSC	66 00	91 00	
FLASHER*	SSN613	Electric Boat (Groton)	66 00	91 00	
GREENLING	SSN614	GD (Quincy)	67 00	93 00	
LAFAYETTE*	SSBN616	Electric Boat (Groton)	63 00	91 00	
ALEXANDER HAMILTON*	SSBN617	Electric Boat (Groton)	63 00	92 00	
THOMAS JEFFERSON*	SSN618	Newport News	62 00	84 00	
ANDREW JACKSON	SSBN619	Mare Island	63 00	88 00	
JOHN ADAMS*	SSBN620	Portsmouth	64 00	88 00	
HADDOCK	SSN621	Ingalls	67 00	92 00	
JAMES MONROE*	SSBN622	Newport News	63 00	90 00	
NATHAN HALE*	SSBN623	Electric Boat (Groton)	63 00	86 00	
WOODROW WILSON	SSBN624	Mare Island	63 00	93 00	
HENRY CLAY	SSBN625	Newport News	63 00	90 00	
JAMES MADISON	SSBN627	Newport News	64 00	92 00	
TECUMSEH	SSBN628	Electric Boat (Groton)	64 00	93 00	
DANIEL BOONE	SSBN629	Mare Island	63 00	93 00	
JOHN C. CALHOUN	SSBN630	Newport News	64 00	93 00	
ULYSSES S. GRANT*	SSBN631	Electric Boat (Groton)	64 00	92 00	
VON STEUBEN	SSBN632	Newport News	64 00	93 00	
CASIMIR PULASKI	SSBN633	Electric Boat (Groton)	64 00	93 00	
NATHANAEL GREENE	SSBN636	Portsmouth	64 00	86 00	
BENJAMIN FRANKLIN	SSBN640	Electric Boat (Groton)	65 00	93 00	
GEORGE BANCROFT	SSBN643	Electric Boat (Groton)	65 00	93 00	
LEWIS AND CLARK	SSBN644	Newport News	65 00	91 00	
QUEENFISH*	SSN651	Newport News	66 00	90 00	
RAY	SSN653	Newport News	67 00	92 00	
GEORGE C. MARSHALL*	SSBN654	Newport News	66 00	92 00	
HENRY L. STIMSON	SSBN655	Electric Boat (Groton)	66 00	92 00	
GEORGE WASHINGTON CARVER*	SSBN656	Newport News	66 00	92 00	
FRANCIS SCOTT KEY	SSBN657	Electric Boat (Groton)	66 00	93 00	
WILL ROGERS	SSBN659	Electric Boat (Groton)	67 00	92 00	
LAPON	SSN661	Newport News	67 00	91 00	
SEA DEVIL	SSN664	Newport News	68 00	91 00	
GUITARRO*	SSN665	Mare Island	72 00	91 00	
GLENARD P. LIPSCOMB*	SSN685	Electric Boat (Groton)	74 00	90 00	
RICHARD B. RUSSELL	SSN687	Newport News	74 00	93 00	
BATON ROUGE	SSN689	Newport News	77 00	93 00	
TEXAS (2 reactors)	CGN39	Newport News	77 00	93 00	

*The defueled reactor compartment has been removed and placed in a government burial ground.

2. DEVELOPMENTAL POWER

A. Electric-Power Experiments and Prototypes

Name (owner). Location	Designation	Power capacity net kW(e)	Authorized power kW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Reactor type. Principal nuclear contractor	Comment
Gas Cooled Reactor Experiment (DOE). INEL Site, ID	GCRE		2,200.0	60 00	62 00	Gas cooled, light water moderated. AGN	No electricity was produced.
Mobile Low Power Plant No. 1 (DOE). INEL Site, ID	ML-1	300.0	3,300.0	61 00	65 00	Gas cooled, light water moderated. AGN	
Stationary Low Power Plant No. 1 (DOE). INEL Site, ID	SL-1	300.0	2,200.0	58 00	61 00	Boiling water. ANL	

B. Propulsion Experiments and Prototypes

Aircraft Reactor Experiment (DOE). Oak Ridge, TN	ARE		1,500.0	54 00	54 00	Molten salt. ORNL	
Experimental Propulsion Test Reactor (DOE). NTS, NV	TORY IIA		150,000.0	60 00	61 00	Air cooled. LLNL	
Experimental Propulsion Test Reactor (DOE). NTS, NV	TORY IIC		600,000.0	64 00	64 00	Air cooled. LLNL	The TORY IIC was successfully tested at full design power during 5/64. Subsequent to cancellation of the Pluto program 7/1/64, the reactor was placed in the Pluto disassembly building at NST for storage. In 1974 the reactor was transferred to the NERVA disassembly area for disassembly.
Heat Transfer Reactor Experiment No. 1 (DOE). INEL Site, ID	HTRE-1		20,000.0	56 00	57 00	Air cooled. ANPD	
Heat Transfer Reactor Experiment No. 2 (DOE). INEL Site, ID	HTRE-2		14,000.0	57 00	61 00	Air cooled. ANPD	
Heat Transfer Reactor Experiment No. 3 (DOE). INEL Site, ID	HTRE-3		32,000.0	58 00	61 00	Air cooled. ANPD	
Small Submarine Reactor Prototype (DOE). Windsor, CT	S1C			59 00	93 00	Pressurized water. GE	
Submarine Advanced Reactor Prototype (DOE). West Milton, NY	S3G			58 00	91 00	Pressurized water. GE	
Submarine Intermediate Reactor Mark A (DOE). West Milton, NY	S1G			55 00	57 00	Sodium. GE	
Submarine Thermal Reactor Facility (DOE). INEL Site, ID	S1W			53 00	89 10	Pressurized water. West.	

3. TEST AND RESEARCH

A. Test

Aerospace Systems Test Reactor (USAF). Fort Worth, TX	ASTR		10,000.0	54 00	71 00	LWR. Convair	Defueled in 1971; decommissioning began in 1973 and was completed in 1974.
Ground Test Reactor (USAF). Fort Worth, TX	GTR		10,000.0	53 00	73 00	Pool. Convair	Decommissioning began in 1973 and was completed in 1974.
Nuclear Engineering Test Reactor (USAF). Dayton, OH	NETR		10,000.0	65 00	70 00	Tank. Maxon–AC	

3. TEST AND RESEARCH

B. Research

Name (owner). Location	Designation	Power capacity net kW(e)	Authorized power kW(t)	Initial criticality (yr mo)	Shut down (yr mo)	Reactor type. Principal nuclear contractor	Comment
Army Materials Research Reactor (USA). Regulated by NRC. Watertown, MA	AMRR		5,000.0	60 00	70 00	Pool. BAC	Army Materials and Mechanics Research Center. License terminated 10/5/93.
Diamond Ordnance Radiation Facility (USA). Forest Glen, MD	DORF		250.0	61 00	77 00	TRIGA-Mk F. GA	Harry Diamond Laboratories.
Naval Research Reactor (USN). Regulated by NRC. Washington, DC	NRR		1,000.0	56 00	70 00	Pool. NRL	
Nuclear Effects Reactor (DOE). NTS, NV	Super KUKLA			64 00	79 00	Prompt burst. LLNL	Standby fuel in storage at ORNL.
Thermal Test Reactor No. 1 (DOE). Schenectady, NY	TTR-1		10.0	51 00	83 00	Graphite. KAPL	
Walter Reed Research Reactor (USA). Regulated by NRC. Washington, DC	WRRR		50.0	62 00	70 00	Homogeneous. AI	Walter Reed Army Institute of Research.

PART III MILITARY REACTORS

1. POWER REACTORS

A. Central-Station Electric Power Plants

Reactor Name (Owner). Location	NRC export license No. and date	Principal nuclear contractor. Reactor type	Power design net MW(e)	Power MW(t)	Author-ized power kW(t)	Initial criti-cality (yr mo)	Shut-down (yr mo)	Comment
France (Franco-Belgian Society for Nuclear Energy of Ardennes, SENA). Chooz		West./Fram., ACEC. Pressurized water	305.0	1,040.0		67 00	91 10	Decommissioning in process.
Germany, Kahl Nuclear Power Station (Rhine-Westphalia Power Co., RWE). Kahl-am-Main	XR-031 09/30/59	GE. Boiling water	15.6	60.0		61 00	85 00	
Germany (Kernkraftwerk-RWE-Bayernwerk, KRB1). Gundremmingen (near Gunzburg)	XR-052 05/28/64	GE. Boiling water	237.0	801.0		67 00	80 00	
Italy, Garigliano Nuclear Power Station (Project ENEL of SENN). Punta Fiume (on Garigliano River)	XR-043 08/16/61	GE. Boiling water	150.0	506.0		64 00	78 00	
Japan, Japan Power Demonstration Reactor (JAERI). Tokai-Mura, Ibaraki Pref.	XR-045 03/16/62	GE. Boiling water	12.0	90.0		63 00	83 00	

B. Propulsion

Great Britain, SSW for HMS DREADNOUGHT.		West. Pressurized water				62 00		Westinghouse was the designer of the reactor. Designation: SSW. No power levels available. As of 2/90 the reactor has been defueled and is not in operational condition.

PART IV EXPORT REACTORS

2. TEST, RESEARCH, AND TEACHING

A. General Irradiation Test

(No reactors currently in this category)

B. General Research

Belgium, BR-3, Mol (AMITAS). Mol	XR-024 11/06/58	Pressurized water	10.5				The reactor contains some fuel and is still under IAEA jurisdiction.
Denmark, DR-2 (Risö National Laboratory). Risö	XR-006 04/04/57	FW. Tank		5,000.0	58 00	75 00	
Germany, FRG-1 (GKSS-Forschungszentrum Geesthacht G.m.b.H.). Geesthacht	XR-008 06/10/57	B&W. Research Reactor		5,000.0	58 10	n.d.	
Italy (Center for Military Application of Nuclear Energy). Near Pisa	XR-036 12/17/59	B&W. Pool			63 00	80 00	Power: Pulsing.
Italy (European Community Commission). Ispra	XR-007 05/17/57	AC. Heavy water, tank		5,000.0	59 00	89 00	
Italy (Fiat TTG). Saluggia	XR-016 12/06/57	AMF. Pool		7,000.0	59 00	73 00	
Italy (Italian Agency for New Technology, Energy and the Environment). Casaccia	XR-051 04/20/64	AMF. Pool			71 00	79 00	Negligible power.
Japan (Japan Atomic Energy Research Institute). Tokai-Mura, Ibaraki Pref.	XR-001 11/02/56	AL L-54		50.0	57 00	69 00	
Vietnam (Vietnam Institute of Nuclear Research). Dalat	XR-032 10/10/59	GA. TRIGA-Mk II		250.0	63 00	73 00	
West Berlin, City of (Institute for Nuclear Research). West Berlin	XR-012 09/07/57	AL L-54		50.0	58 00	70 00	

C. University Research and Teaching

Germany (Association for Radiation Research). Munich	XR-075 01/14/71	GA. TRIGA-Mk III		1,000.0	72 00	82 00	This reactor was sold through Gulf Oil licensee, Gutehoffnungshutte Sterkrade A.E.
Germany (Brown Boveri/Krupp). Jülich	XR-062 07/28/66	AL L-77A			64 00	77 00	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, 10/61; in Athens, Greece, 5/62, and in Bangkok, Thailand, 11/62.
Germany (Universities of Frankfurt and Darmstadt). Frankfurt	XR-009 05/01/57	AL L-54		50.0	58 00	68 00	
Italy (University of Milan). Milan	XR-022 08/13/58	AL L-54		50.0	59 00	86 00	
Switzerland (University of Geneva). Geneva		AGN. AGN-201-111			58 00	87 00	Negligible power. The AGN-201-111 was operated first in the USAEC Atoms for Peace Exhibit in Rome, Italy, 7/58, and later in the commercial exhibit of the 1958 International Conference in Geneva prior to transfer to the University of Geneva.
United Kingdom (Queen Mary College, London University). London	XR-049 02/13/64	AS Inc. UTR-B		100.0	65 00	82 00	

PART V CRITICAL ASSEMBLIES

1. CIVILIAN

Facility (Regulatory Agency)	Designation	Location	Equipment: No. of cells	Equipment: No. control panels/ room	Abbreviation	Initial criticality (yr mo)	Shut-down (yr mo)	Comment
Argonne National Laboratory (DOE)	ZPR-6	Argonne, IL	2	2	ANL	63 00	82 00	Basic fast reactor studies and mock-up for LMFBR.
Argonne National Laboratory (DOE)	ZPR-9	Argonne, IL	2	2	ANL	67 00	82 00	Basic fast reactor studies and mock-up for LMFBR. 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 were 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.
Bettis Atomic Power Laboratory (DOE)	LWBCC	Pittsburgh, PA	3	3	Bettis	63 00	80 00	LWB physics.
Critical Facility-10, Lynchburg Research Center (NRC)	SSRF	Lynchburg, VA	2	1	CX-10	77 00	88 02	Close storage of spent reactor fuel. License terminated 2/88.
Los Alamos National Laboratory (DOE)	Panca	Los Alamos, NM	3	3	LANL, Kiva III	63 00	85 00	Cold critical for instrumentation testing. Defueled.
Los Alamos National Laboratory (DOE)	Venus	Los Alamos, NM	1	1	LANL, Kiva I	76 00	88 00	Vertical table assembly machine.
Oak Ridge Critical Experiments Facility (DOE)	CEF	Oak Ridge, TN	1	1	OR-CEF	50 00	92 00	Shut down—Defueled.
ORNL Pool Critical Assembly, BSF Pool (DOE)	PCA	Oak Ridge, TN	1	1	ORNL-PCA	58 00	92 00	Shut down—To be defueled.
PNL Critical Mass Laboratory (DOE)	FEAS	Hanford Site, WA	1	1	PNL-CML	76 00	90 00	The Critical Mass Laboratory was used to experiment with liquid plutonium solutions. It was shut down in 1990 and transferred to the surplus facilities program for decontamination and decommissioning.
PNL Critical Mass Laboratory (DOE)	Horizontal	Hanford Site, WA	1	1	PNL-CML	61 00	90 00	See FEAS reactor.
PNL Critical Mass Laboratory (DOE)	RSTM	Hanford Site, WA	1	1	PNL-CML	63 00	90 00	See FEAS reactor.
United Nuclear Corporation, Development Division (NRC)	PTF	Pawling, NY	4	3	UNC	67 00	72 00	Proff test facility. Material license (SNM-871) terminated 7/14/75.

2. MILITARY

Bettis Atomic Power Laboratory (DOE)	HTTF	Pittsburgh, PA			Bettis	59 00	84 00	Surface-ship physics.
Bettis Atomic Power Laboratory (DOE)	SS-CF	Pittsburgh, PA			Bettis	57 00	76 00	Surface-ship physics.
Knolls Atomic Power Laboratory (DOE)	FPR	Schenectady, NY			KAPL	56 00	75 00	Flexible critical experiments.
Knolls Atomic Power Laboratory (DOE)	PTR	Schenectady, NY			KAPL	58 00	76 00	High-temperature high-pressure physics and mock-up.
Lockheed Aircraft Co., Critical Facility for RER (NRC)	CERF	Dawsonville, GA	1	1	Lockheed	58 00	60 09	
Nuclear Safety Facility, Rocky Flats Plant (DOE)	Vertical/ Split Table	Golden, CO			RFP-NSF	65 00	92 00	Critical-configuration safety tests.
Nuclear Safety Facility, Rocky Flats Plant (DOE)	Water Reflector Tank	Golden, CO			RFP-NSF	65 00	92 00	Critical-configuration safety tests.

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