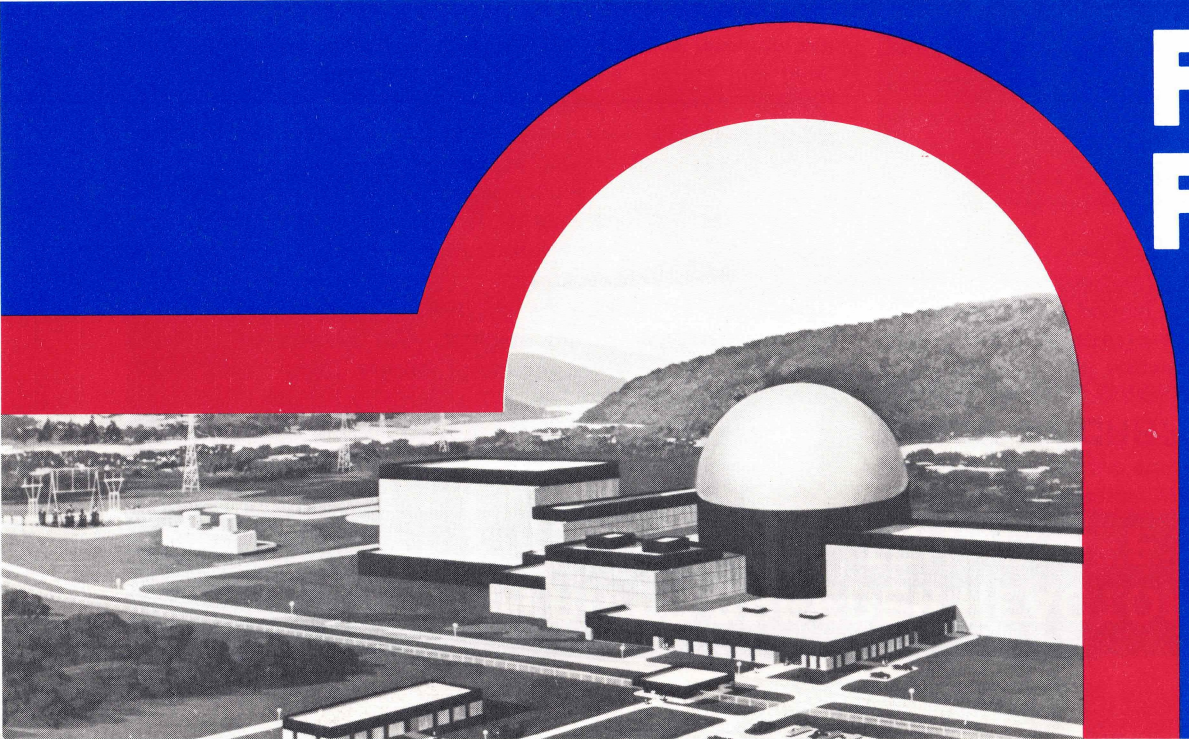


FACTS & FIGURES

ABOUT THE CLINCH RIVER BREEDER REACTOR PLANT PROJECT

CLINCH RIVER BREEDER REACTOR PLANT
OAK RIDGE, TENNESSEE

What is the purpose of the CRBRP?

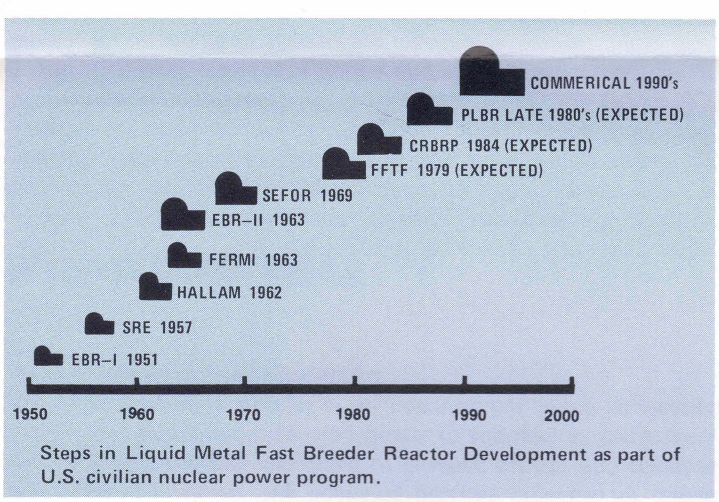
The Clinch River Breeder Reactor Plant (CRBRP) Project is the joint Government and industry effort to build the Nation's first large-scale (350-400 megawatt electrical) demonstration breeder nuclear power plant. CRBRP is designed to demonstrate the commercial potential and environmental advantages of a large-scale Liquid Metal Fast Breeder Reactor (LMFBR) as a source of electrical generation in a utility environment.

The Clinch River Project will be a major step in the successful transition from the Government's 25-year development of LMFBR technology to large-scale demonstration of the fast breeder concept. The Project will serve as a focal point where, for the first time, individual plant components developed in previous research will be assembled and operated as an integrated unit on a large scale.

In the Clinch River Project, knowledge gained from operation of earlier LMFBR facilities will be incorporated into the CRBRP design; and assumptions regarding economy, reliability, safety, and environmental impact will be tested through on-line operations within a utility system. The resulting information will be available to both Government and industry for further LMFBR development and use.

Are breeder reactors new?

No. Breeder reactors have been under development in this country since the early days of the atomic energy program, more than 25 years ago. The first electricity from a nuclear reactor was produced by an experimental breeder reactor (EBR-I) on December 20, 1951. EBR-I was followed by EBR-II which tested fuels and materials while demonstrating on-line reliability and power generation. Other breeder projects included the Enrico Fermi Atomic Power Plant No. 1, which provided insight into developments needed for larger breeder plants, and Southwest Experimental Fast Oxide Reactor (SEFOR), which proved out some inherent safety characteristics of the LMFBR. Important testing of fuels and components for liquid metal fast breeder reactors will be accomplished at the Fast Flux Test Facility (FFTF) under construction at Hanford, Washington.



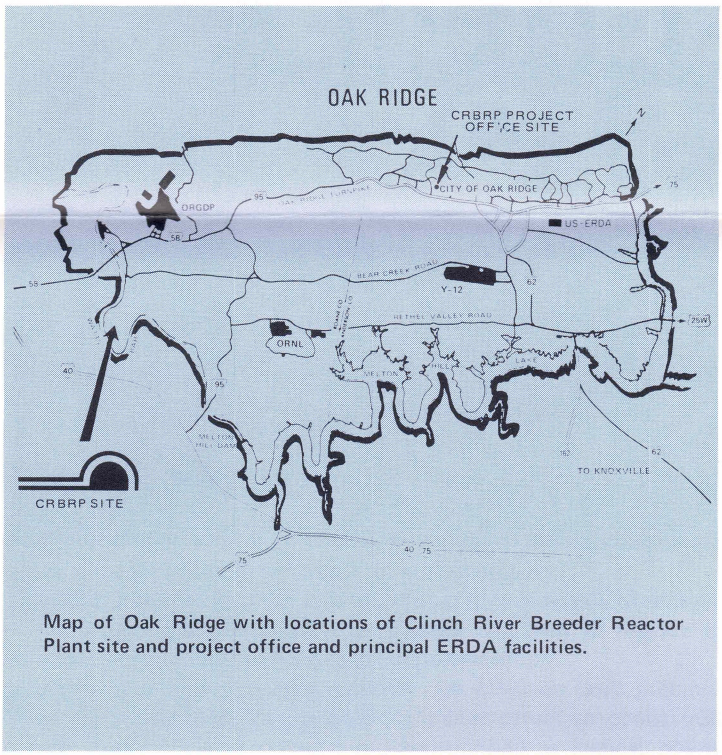
Steps in Liquid Metal Fast Breeder Reactor Development as part of U.S. civilian nuclear power program.

How does a breeder "breed" fuel?

A breeder reactor is a nuclear power plant which like other power facilities, produces heat for generating electricity. Unlike any other power plant, however, the breeder also produces new fuel — more than it uses — as it operates. In a breeder reactor, uranium-238, the non-fissionable but more abundant part of natural uranium, is converted into plutonium-239, a man-made fissionable element which can be used as a reactor fuel. By utilizing the breeder

Where will CRBRP be built?

The Nation's first large-scale breeder demonstration plant will be built on a 1,364-acre Government-owned site on the Clinch River in the Roane County portion of Oak Ridge, Tennessee. The electricity produced by the demonstration plant will be fed into the Tennessee Valley Authority power grid.



Map of Oak Ridge with locations of Clinch River Breeder Reactor Plant site and project office and principal ERDA facilities.

How is the Project organized?

The U.S. Energy Research and Development Administration (ERDA) has lead responsibility for managing the Clinch River Breeder Reactor Plant Project. Management is carried out by a single integrated organization composed of both Government and industry personnel, including representatives of the major Project partners — ERDA, the Tennessee Valley Authority, and Commonwealth Edison Company of Chicago.

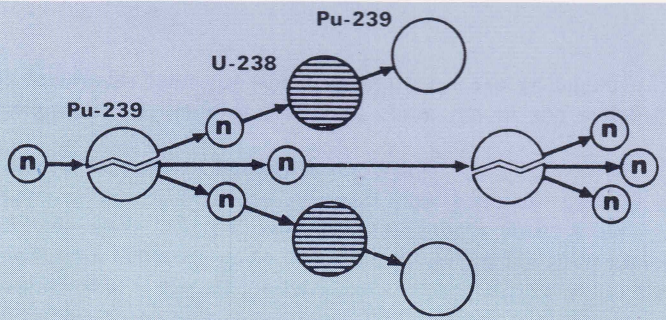
Project Management Corporation (PMC), a non-profit organization formed especially for the Clinch River Project, represents the utility industry. PMC is responsible for Project monitoring, utility fund management, preparation of information, and arranging participation by utility personnel in the program.

A second non-profit group, the Breeder Reactor Corporation (BRC), provides senior counsel on behalf of the utility industry and disseminates information to both the electric power industry and the public. BRC is composed of more than 750 electric systems from the public, private, municipal, and cooperative sectors of the electric power industry.

Westinghouse Electric Corporation is the lead reactor manufacturer, responsible for designing and furnishing the nuclear steam supply system for the Clinch River plant. Westinghouse is supported by the General Electric Company and the Atomics International Division of Rockwell International as subcontractors.

Burns and Roe, Inc. is the architect-engineer. Stone & Webster Engineering Corporation is the general contractor for constructing the Clinch River plant.

concept, present uranium resources can be extended from decades to centuries, perhaps up to a thousand years.



This illustration symbolizes the fast breeder nuclear reaction. A "fast neutron" hits plutonium, simultaneously releasing energy to generate electricity and a number of free neutrons(n). Some neutrons split additional plutonium atoms, sustaining the chain reaction, while others are absorbed by "fertile" uranium-238, thus being converted into new plutonium-239.

What will the Clinch River Project cost?

Based on the approved reference design, with initial plant operation in 1984, total CRBRP Project cost is estimated at $1.95 billion, which includes funds for construction, research and development, as well as operation during the five-year post-construction demonstration period. Sponsoring utilities are furnishing more than $257 million — the largest industry commitment ever made for a single energy research and development project. The Federal Government is to provide the remainder of the funds.

What is the overall schedule?

A limited work authorization to permit initial clearing, grading, and excavation of the site has been requested from the Nuclear Regulatory Commission. Major construction is expected to start in 1978 with a target date for initial startup in 1984. This will be followed by a five-year period of "demonstration" operation.

How many people will be employed?

Plant Design and Research & Development — Some 1800 scientists, engineers, and administrative personnel from participating Government and industry-contractor organizations are engaged in the plant design and supporting research and development at facilities across the Nation. More than 400 employees of the Project Office and its contractors are at work in Oak Ridge, Tennessee.

Construction — During the peak construction period, some 2,400 workers are expected to be employed on the Clinch River Project. Most of these will be hired from the local area. Some $300 million in payroll will flow into the local economy through the Project's demonstration phase (about 1990).

Operation — A permanent staff of some 160 to 200 employees will operate the plant. The annual payroll will be over $2 million.

Will CRBRP be licensed like other nuclear plants?

Yes. A chief goal of the Clinch River Breeder Reactor Plant Project is to demonstrate the licensability of LMFBRs in a utility environment. The Clinch River plant will be licensed under the same Federal regulations that apply to all commercial nuclear power facilities.

This includes preparation of a comprehensive Environmental Report and Preliminary Safety Analysis Report which serve as the basis for extensive reviews of the safety and environmental aspects of the plant by the Nuclear Regulatory Commission and other state and Federal agencies. The licensing process provides for public participation in hearings conducted by qualified experts who compose the Atomic Safety and Licensing Board. In addition, all documents and other material in support of the construction permit application are available for review by the public.

Is the breeder safe?

Yes. The Clinch River plant is being designed and built in accordance with the U.S. nuclear industry's three-level "defense-in-depth" safety concept which provides multiple and redundant systems to minimize the possibility and consequences of all types of abnormal occurrences.

The first level provides a sound and reliable functional design based on proven technology. The second level recognizes that some minor malfunctions will occur and protects against these anticipated faults with a comprehensive and reliable protection system. The third level takes into account extremely unlikely accidents which are never expected to occur during the lifetime of the plant and takes measures to prevent or mitigate the consequences of these unlikely events.

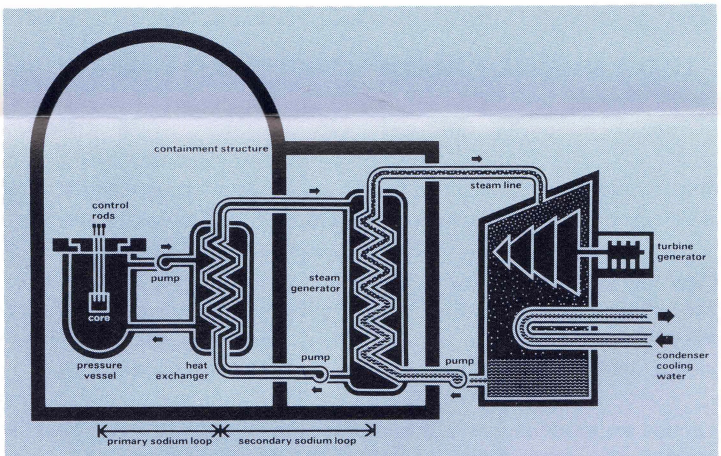
A breeder reactor (or any other type of nuclear reactor) cannot explode like an atomic bomb since the reactor does not contain the proper ingredients or configuration for such an explosion. A nuclear reactor uses very stable dilute fuel in the form of an unburnable oxide, whereas a nuclear bomb requires almost 100 percent fissionable material. Power reactors also have control and safety rods that provide close control of the fission process.

In addition, the Clinch River plant, like other reactors, will be designed to withstand all conceivable accidents that might occur whether they result from equipment malfunction, operator error, or such natural phenomena as floods, earthquakes, or tornadoes. All these events are carefully examined and factored into the design to assure that nuclear power plants do not represent any undue risk to the public.

What about sodium and plutonium?

Sodium, which serves as the LMFBR coolant and heat transfer agent, and plutonium, the fast breeder reactor fuel, are two factors which distinguish the LMFBR from other nuclear reactor systems. Both are well understood from a technical viewpoint and full consideration is given in the plant design to utilizing the unique advantages of each while fully recognizing and reflecting appropriate requirements for safety and environmental protection.

It is important to note that working with these materials is not a new experience. Atomic workers have been handling plutonium safely for about 30 years and during that time very effective precautions including facility designs and handling techniques have been developed to minimize the health hazards associated with plutonium. In fact, much more is known about the toxicology of plutonium than is known about most other hazardous elements. There has never been a known death attributable to the toxicological properties of plutonium.



Schematic outline of CRBRP systems.

How will the breeder affect the environment?

The breeder reactor is one of the most environmentally attractive technologies available today. The LMFBR's higher operating temperatures and steam pressures will result in higher efficiencies than other nuclear power plants. Like other nuclear power plants, the breeder will not add combustion products to the atmosphere. The breeder will have less land use and transportation requirements than other energy options. A major portion of radioactive fission products, now released under controlled conditions by conventional light water reactors, will normally be retained within the breeder system. These fission products can thus be collected and disposed of off site.

Will there be any economic benefits?

Yes. The LMFBR will extend the contribution of nuclear power as an electrical energy source from decades to centuries, conserving valuable uranium while also reducing the drain on both uranium and fossil-fuel resources used to generate electricity.

Successful development of the LMFBR will lead to billions of dollars of savings reflected throughout the U.S. economy by holding down the cost of electrical energy for the consumer.

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March 1977