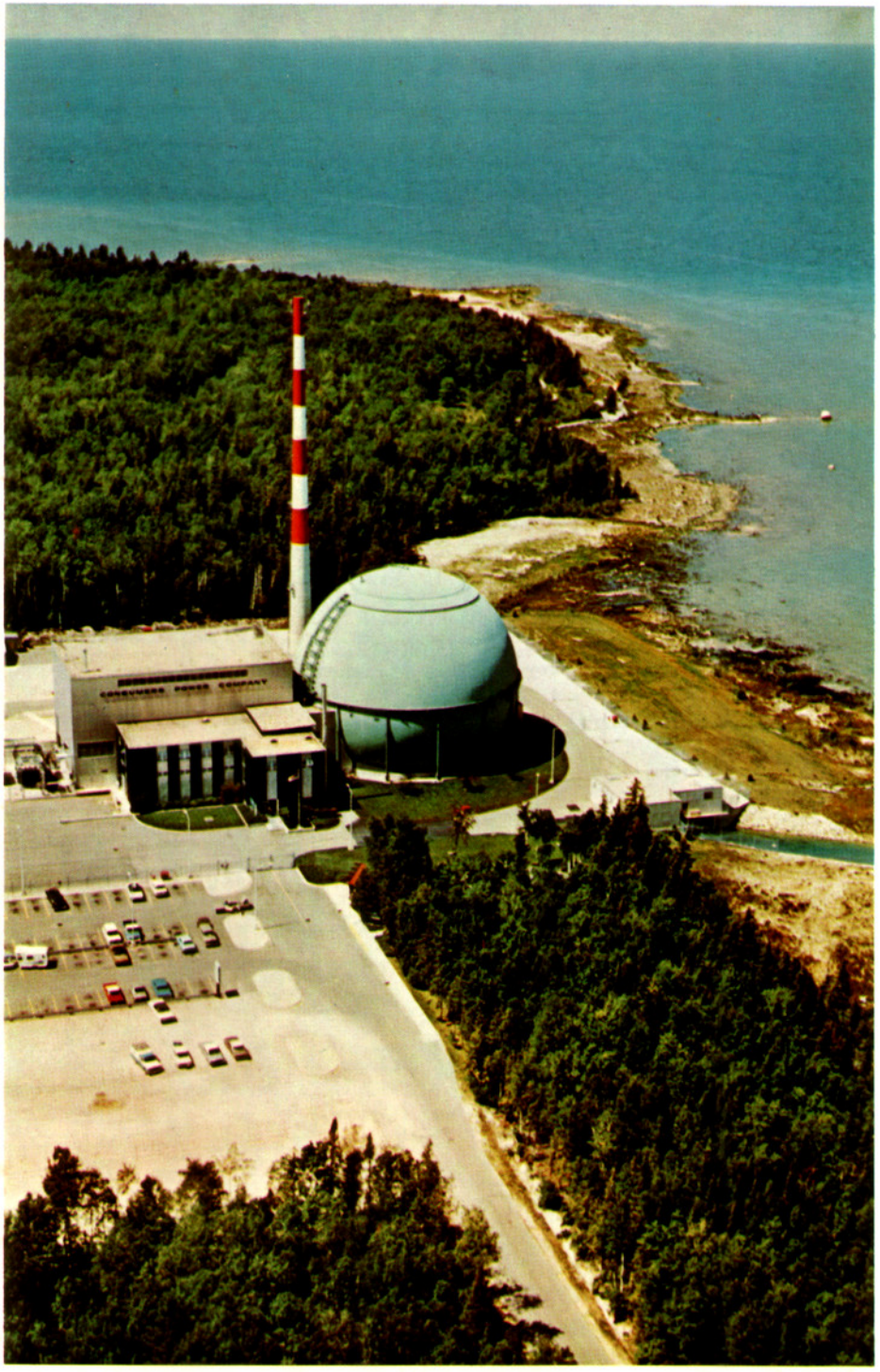


BIG ROCK POINT NUCLEAR POWER PLANT

ON LAKE MICHIGAN NEAR CHARLEVOIX, MICHIGAN

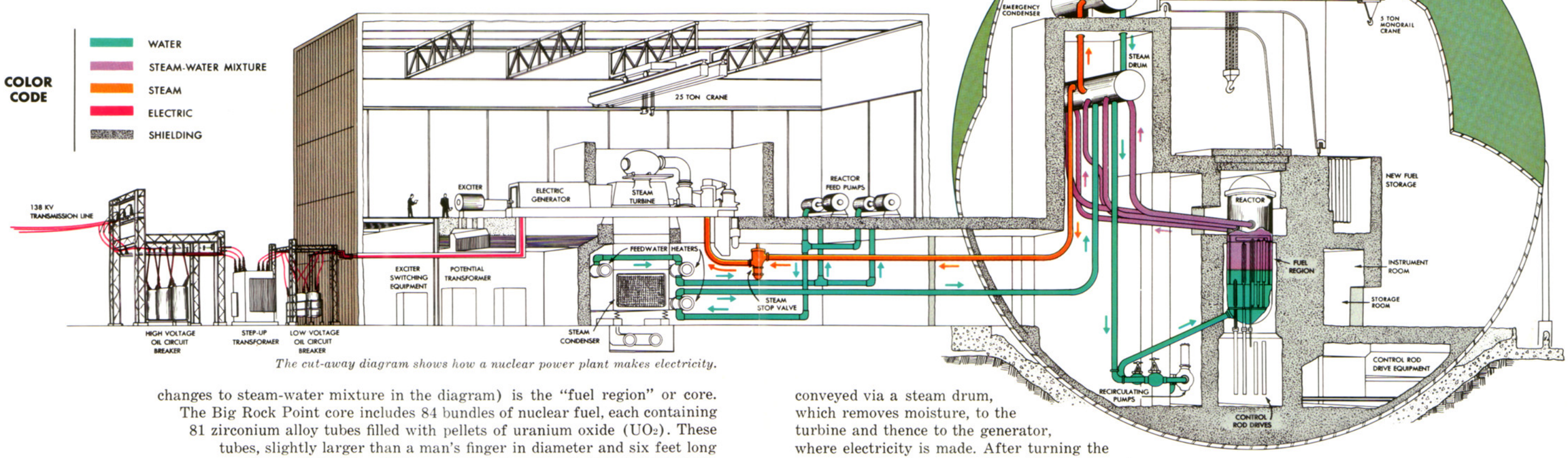
Consumers Power Company

HOW THE BIG ROCK POINT NUCLEAR PLANT MAKES ELECTRICITY

A nuclear plant is very similar to any other steam-powered generating plant. Each must use fuel to make steam. A majority of these plants use coal, oil, or gas (often referred to as "fossil fuels") as a source of heat. The heat brings water to a boil, and the boiling water turns into steam. The steam, in turn, drives a turbine generator, making electricity.

Thus, the only substantial difference between a nuclear plant and any other steam-powered generator is the *source of heat*. This nuclear plant and others that are commercially attractive in competition with steam plants fired with coal, oil, or gas, use slightly enriched uranium oxide as fuel. This fissionable rather than combustible heat source is the cleanest and most concentrated fuel used by man today.

In the diagram, the reactor (which might be called a boiler) can be seen in the center of the containment sphere, at the right of the illustration. It is shaped like an oversize, wide-mouthed jar, or bottle, and is made of steel. Inside the reactor (where water changes to steam-water mixture in the diagram) is the "fuel region" or core. The Big Rock Point core includes 84 bundles of nuclear fuel, each containing 81 zirconium alloy tubes filled with pellets of uranium oxide (UO_2). These tubes, slightly larger than a man's finger in diameter and six feet long after loaded with pellets, are sealed at each end with welded plugs, so the nuclear fuel is tightly contained.

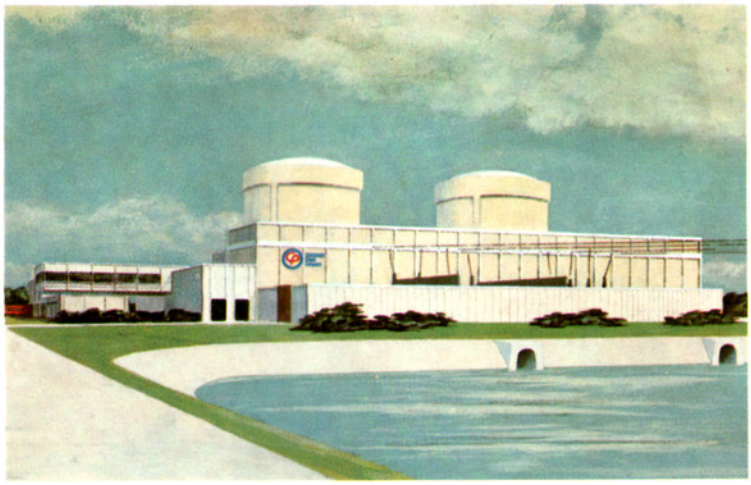


The cut-away diagram shows how a nuclear power plant makes electricity.

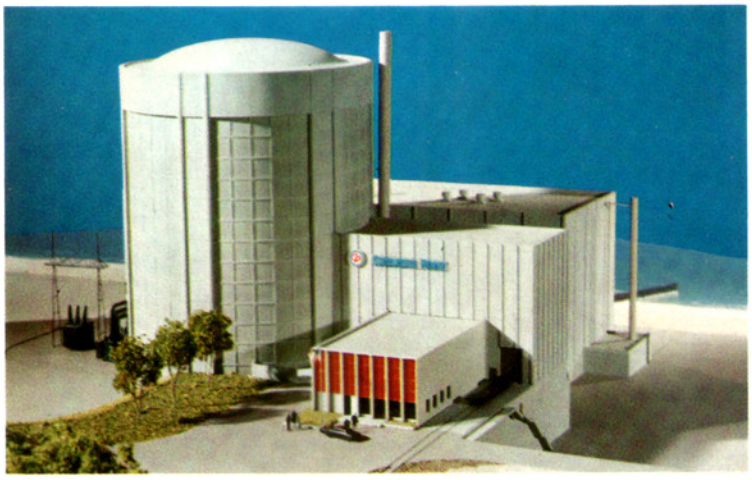
These individual fuel bundles, by themselves, produce no heat at all. However, if the bundles are placed in the reactor in a geometric pattern, at exactly the right distance from each other, atomic particles of uranium from one bundle fly out and strike uranium atoms in nearby bundles. The atoms which are struck by these uranium particles are caused to split, or "fission." The fissioned particles, in turn, fly off and strike other nearby atoms, creating what is known as a "controlled chain reaction."

This atom-splitting, or fissioning, is what causes the water in the reactor to become hot. Water, circulating in the reactor, is turned to steam, and the steam is then conveyed via a steam drum, which removes moisture, to the turbine and thence to the generator, where electricity is made. After turning the generator, the steam is condensed back into water by passing it over condenser tubes through which cold water from Lake Michigan is flowing. The water that has been condensed from the steam is pumped back through the steam drum and eventually goes back into the bottom of the reactor. The lake water meanwhile is returned to Lake Michigan, slightly warmer, but otherwise unchanged. It never comes in contact with the water in the steam system.

The turbine generator produces electricity at 13,800 volts. This is stepped up ten-fold to 138,000 volts in the outdoor substation before being fed into the Consumers Power 138 kv transmission system.



An artists's rendition of Consumers Power Company's Midland Nuclear Power Plant, to be built near Midland, Michigan.



A three dimensional model of Consumers Power Company's Palisades Nuclear Power Plant, as it will look when completed. It is located on Lake Michigan, about five miles south of South Haven, and 35 miles west of Kalamazoo, Michigan.

BIG ROCK POINT HIGHLIGHTS

Big Rock Point, the first nuclear power plant built by Consumers Power, and the fifth investor-owned nuclear power plant in the nation, achieved its first controlled nuclear reaction September 27, 1962.

ELECTRIC POWER PLUS NUCLEAR RESEARCH AND DEVELOPMENT

On December 8, 1962, the plant began producing electricity. By June, 1964, Big Rock Point reached its maximum capacity — 75,000 kilowatts — and began undergoing performance tests to launch an important research and development program.

This program has been carried forward under sponsorship of the Atomic Energy Commission, with engineers and scientists of the General Electric Company and nuclear engineers of Consumers Power Company cooperating in developing and testing new and more efficient fuel elements. The research and development has yielded valuable experience, and has added appreciably to the technology of nuclear power generation.

While Big Rock Point plant is in regular operation, producing up to 71,000 kilowatts for Consumers Power's electric system, it will continue its research and development mission for years to come.

THOUSANDS VISIT INFORMATION CENTER EVERY YEAR

An attractive Information Center at Big Rock Point has received approximately 600,000 visitors since it first opened in 1962. Descriptive literature and exhibits are displayed in the Information Center, and experienced guides give illustrated lectures explaining how electricity is generated with heat from a nuclear reactor.

NUCLEAR FACILITIES ARE EXPANDING

A second Consumers Power nuclear plant is under construction on the shore of Lake Michigan, 35 miles west of Kalamazoo. This is the Palisades plant, scheduled to begin generating electricity in 1970, with initial capacity of 710,000 kilowatts.

A third nuclear power plant is planned near Midland, Michigan. This will be a dual-purpose plant, capable of generating 1,300,000 kilowatts of electricity and providing large quantities of process steam for industrial use by The Dow Chemical Company. The Midland plant will have two reactors, each the size of the reactor at Palisades. The first unit is scheduled for operation in 1974, the second in 1975.

Consumers Power Company

Where "CP" stands for Continuing Progress in Nuclear Power

General Offices:
212 West Michigan Avenue,
Jackson, Michigan 49201

46990M 7200 1 SP