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Monrovia, capital of Liberia, was named for President James Monroe.

# Atomic Plant Expected To Hasten Economical Power About To Be Built

By JOSEPH L. MYLER  
UPI Correspondent

Washington (UPI) - A new kind of atomic plant that is expected to hasten the day of economical nuclear power is about to rise on the east bank of the Miami River in Piqua, Ohio.

It will be the first atomic plant operated by a municipal agency and the first practical power reactor using organic materials to moderate the fission process and translate its heat into steam.

The plant, for which construction and operating contracts were signed in June, is scheduled to be operating at full power in December, 1961. It will generate 11,400 kilowatts of electricity for Piqua's power system. It is expected to serve the city for at least 20 years.

**AEC To Own Plant**

The Piqua plant was born of the Atomic Energy Commission's power reactor demonstration program. The AEC is putting up \$14,100,000 for it and will be the plant's owner. Atomics International, a division of North American Aviation, Inc., is building the reactor under an AEC contract.

The city of Piqua supplied the site and will provide the turbogenerator and other non-nuclear equipment at an estimate cost of about four million dollars. The city has contracted to buy steam from the AEC for five years. Presumably, if the plant succeeds as expected, this contract will be renewed.

According to AEC Chairman John A. McCone, the kind of reactor to be built at Piqua "has promise for the achievement of economic nuclear power." According to Atomics International, it is "one of the most promising" of all power reactor types thus far proposed.

The Piqua project took nearly 3 1/2 years to reach the contract-signing stage. Safety considerations delayed final approval. This was due in

part to the plant's novel design.

Reactors like those in atomic submarines and the big power plant at Shippingport, Pa., are moderated by graphite and cooled by water under pressure. In the Piqua plant a mixture of terphenyls, consisting of hydrogen and carbon in chemical combination, will serve as both moderator and coolant.

Molten terphenyl will slow neutrons in the nuclear reaction to their most efficient speeds and then, flowing from the reactor core, will transfer heat to an exchanger where it will convert water into steam to run the electrical generator.

A big advantage of organic moderated and cooled reactors is that they can produce fairly high steam temperatures at comparatively low pressures. This is because of the high boiling point of the hydrocarbon. Organic material does not become highly radioactive in a reactor. Nor does it present the corrosion problem posed by many other coolants.

**Built-in Safety Factor**

Because it is liquid at operating temperatures, the hydrocarbon is a built-in safety factor. A sudden surge of power would cause it to bubble, thus lowering its moderating efficiency and slowing the reaction.

In addition, the hydrocarbon does not readily absorb neutrons, which are the indispensable agents of atomic fission. This "neutron economy" makes it possible to use uranium enriched only about 1.8 per cent in fissionable U-235.

Piqua proposed the plant early in 1956. The AEC authorized contract negotiations in September of that year. On May 2, 1958, the commission announced agreement with the city and Atomics International on what the proposed contracts should cover.

Then a hitch developed. On Aug. 4, 1958, the commission's advisory committee on reactor safeguards, newly

created by Congress, announced "the tentative view . . . that the site is not a suitable one."

The proposed site was next to the Piqua municipal power plant on the west side of the Miami River. The advisory committee felt that in view of the plant's untried design, this was too close to the center of population.

The city proposed another site, across the river on the east bank and about 700 feet from the power plant. The advisory committee in all held about six meetings on the Piqua project.

Finally, at a session on May 14-15 of this year, the committee okayed the site "as not creating an undue public risk" although it said it did "not look with favor upon the location of power reactors immediately adjacent to populated areas."

The committee conditioned its approval of the site on revision of the design to include a steel containment sphere to prevent spread of radioactivity in the event of an accident.

The AEC announced June 5 that it had signed the contracts with the city and the company. It said, however, that it will permit operation of the plant "only after all . . . safety standards have been fully complied with."

The schedule calls for the plant to be completed in July 1961. The fission reaction is scheduled to start in August, 1961, and build up to full power operation in December, 1961.

Meanwhile, research and development will continue on an experimental organic reactor built in 1957 by Atomics International at the AEC's reactor test station in Idaho.

This reactor operated for several months last year. It resumed test operation this June with a new fuel loading which includes some fuel elements like those to be used at Piqua.

One difficulty with organic coolants is that they tend to break down chemically under the influence of heat. Atomics International plans to overcome this difficulty by diverting the coolant flow through a still which will remove any breakdown products that might clog the machinery.

Atomics International estimates that a reactor of the Piqua type can produce electricity at a cost of 18.5 mills per kilowatt hour. Much larger organic reactors, capable of producing 300,000 kilowatts of electricity, might bring this cost down around 8.13 mills.

Power costs in U.S. coal-fired plants of comparable size have been estimated at 6.9 to 7.4 mills per kilowatt-hour.

**Not Competitive**

The estimates for the Piqua plant make it clear it will not be competitive in this country. But, according to Atomics International, 18.5 mills "is equivalent to power costs from conventional plants in many parts of the world" where fuel costs are high.

Europe, the six-nation European organization which hopes with U.S. help to build nuclear plants with about one million kilowatts of electrical generating capacity by the end of the 1963, has shown interest in the organic reactor concept.

And Atomics International recently signed a contract to provide the British firm, English Electric Co., with technical information on the manufacture and sale of organic nuclear power reactors.

**Baker Democrats Elect Attorney**

Baker - (UPI) - H. B. (Bard) Johnson has been elected by the Baker County Democratic committee as chairman. Johnson, a 37-year-old attorney, succeeds G. Lowell Fuller, who has resigned.

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Couple on Trial For Strangulations

San Diego, Calif. - (UPI) - Plump, plain Wanda Brogdon, 33, and her lover, Kenneth Archie Merriam, 36, go on trial today on charges of strangling her two small sons because they were a "brother."

The bodies of 5-year-old Virgil Jr., and 3-year-old David were found May 5 in the back seat of the couple's car, parked at the Spring Valley, Calif., home of Merriam's sister, Mrs. Margaret Schmitter.

"They were always getting into trouble," said Merriam, a jobless house painter from Rockford, Ill. "They were noisy and out of control."

The couple, described by psychiatrists as persons of border-line intelligence, were indicted by the grand jury and found sane May 26 after a four-day civil sanity hearing.

**ADMIRALTY LAWYER DIES**  
Scarsdale, N. Y. - (UPI) - J. Newton Nash, 60, noted admiralty lawyer, died here Sunday. Nash was counsel and a director of the Belgian Chamber of Commerce in New York City.

**ECONOMIST DIES**  
Washington - (UPI) - Vladimir Kolesnikoff, 73, economist and administrator, died here Sunday. He came to this country from Russia in 1921. Until retiring in 1956, he worked for the Bureau of the Budget.

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