5 April 1965

From the desk of

JOHN BARNARD

Mr. Harold Price
U.S.A.E.C.

For your information!

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Dr Mann

GENERAL ELECTRIC COMPANY
777 FOURTEENTH STREET, N. W.
WASHINGTON, D. C. 20005

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NUCLEAR POWER NEWSLETTER

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COMMONWEALTH EDISON CHOOSES GE/BWR FOR DRESDEN II

50-237

Unit No. 2, Dresden Nuclear Power Station (Commonwealth Edison Company), Morris, Illinois—Mr. J. Harris Ward, Chairman of Commonwealth Edison Company, announced February 7 that his firm has awarded a contract to the General Electric Company's Atomic Power Equipment Department for the design and construction of a second atomic power plant at its Dresden station, near Chicago.

General Electric will build the plant and supply the boiling water reactor, turbine generator and other major components, including the first two fuel cores. General Electric will also furnish technical direction for plant startup and initial operation.

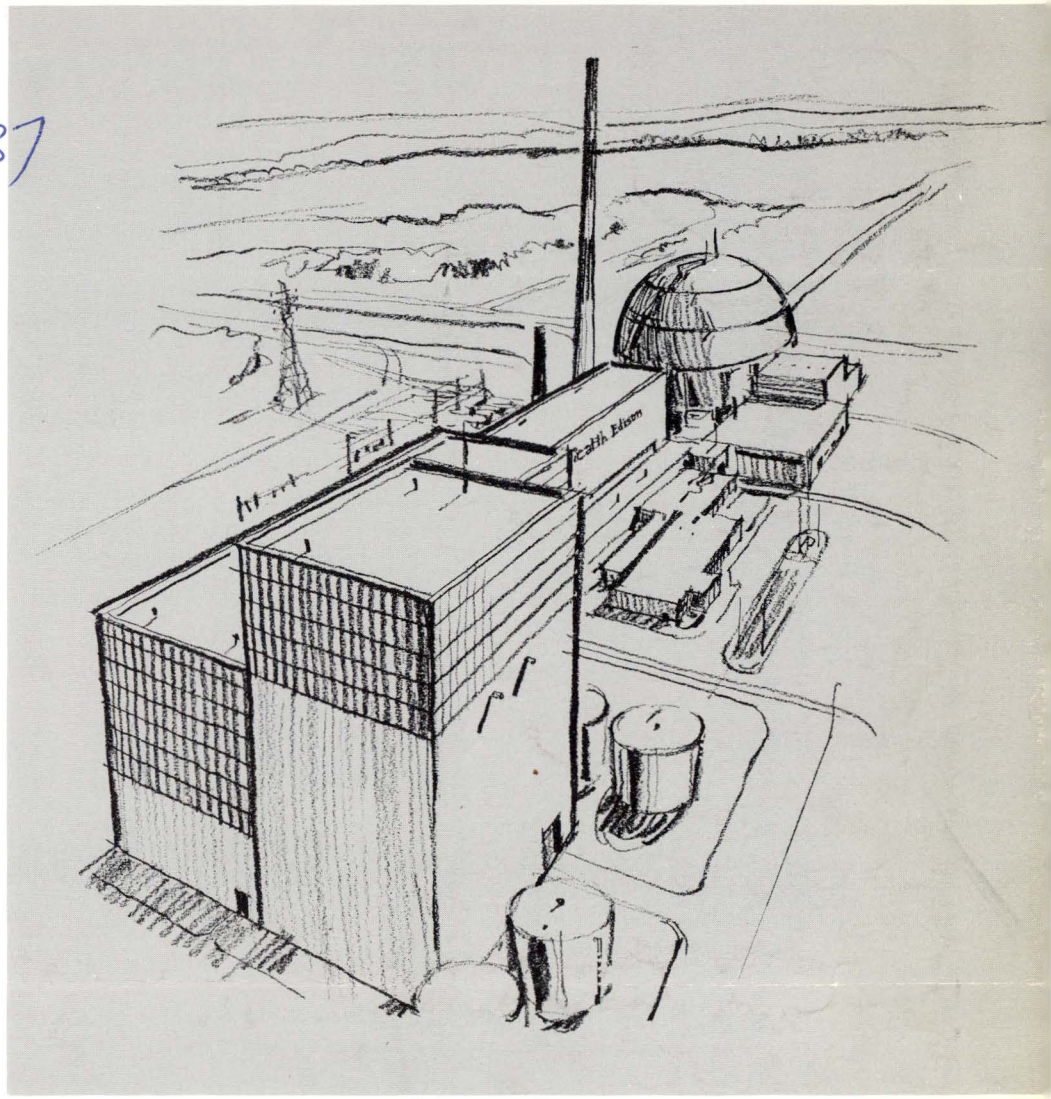
Mr. Ward said Commonwealth Edison will initially apply for a permit from the Atomic Energy Commission to construct a 714,000 KWe unit. A permit to operate at 755,000 KWe will be requested at a later date, and the capacity of the unit eventually should reach 793,000 KWe.

Mr. Ward said Commonwealth Edison's decision to build a nuclear unit resulted from careful consideration of alternate methods of producing power.

"Sound system planning and attractive cost favor expansion of our Dresden Nuclear Operation at this time," he said. "Since we already have a 200,000 KWe nuclear unit at the station, another nuclear unit has both economic and technical advantages over a conventional unit.

"At Dresden we have the advantages of personnel experience in nuclear generation and ideal access to our growing extra high voltage system.

"A year ago, although cost comparisons were close between nuclear and coal-fired units, we decided to build a new mine-mouth station near Taylorville, Ill. Factors affecting our decision then were the availability of a site at the mouth of an efficient mine and our need for extra high voltage interconnections with other systems."



New Dresden atomic power plant scheduled for service in early 1969 will initially operate at 714,000 KWe, should eventually reach 793,000 KWe.

Mr. Ward said that power from the new Dresden unit will be generated and delivered to the Chicago area at a cost slightly lower than that of power from the company's newest conventional steam plants.

When completed in 1969, the new Dresden unit will increase Commonwealth Edison's net generating capabilities to approximately 9.7 million KWe. The nuclear unit will raise the station's capability to almost one million KWe, or about 10% of the company total.

The new Dresden unit is scheduled for service in early 1969. It will have a single-cycle boiling water reactor fueled with slightly enriched uranium. The new plant will incorporate a number of advanced technological improvements based on experience obtained from the existing Dresden plant and other boiling water reactors. Among the innovations will be an improved and simplified reactor system, and an advanced instrumentation system to monitor all important phases of plant operating conditions.

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Site Work to Start for SEFOR Project

Southwest Nuclear Research Center (Southwest Atomic Energy Associates) Fayetteville, Arkansas—The initial $220,000 contract for site preparation for the Southwest Experimental Fast Oxide Reactor (SEFOR) has been awarded to Tune Construction Company of Fayetteville.

The site work, already underway, is being done in anticipation of an early completion of reactor licensing procedures by the U.S. Atomic Energy Commission, which is currently reviewing the G.E. preliminary safeguards report.

The SEFOR reactor is part of an internationally-sponsored $25,000,000 research project intended to develop a family of fast breeder ceramic fueled reactors. G.E. studies indicate that these reactors will produce electricity under 3.5 mills per kwhr, making atomic power competitive virtually throughout the U.S. and in most foreign countries.

The Atomic Power Equipment Department will design, construct and operate the SEFOR reactor for a group of 17 southwestern investor-owned electric utilities in seven states. These 17 utilities, the U.S. Atomic Energy Commission, the West German government Atomic Laboratories at Karlsruhe, Euratom (The European Atomic Energy Community, embracing Belgium, France, Italy, Luxemburg, The Netherlands and West Germany) and G.E. are jointly financing the project.

The SEFOR reactor, to be built on a 620-acre site, is scheduled to be in operation by May 1967. It will be housed in a cylindrical steel shell approximately 50 feet in diameter and 105 feet high. Chicago Bridge and Iron has been selected to erect the outer vessel. The reactor will operate at a power level of 20,000 KW of heat, but will not be used to produce electricity.

Adjacent to the reactor building will be a 12,000 square foot operations building containing offices, control room and auxiliary equipment areas. Sargent and Lundy of Chicago is providing engineering and construction services under a separate contract with General Electric.

Research and development work on the SEFOR project is currently being done at the G.E. atomic facilities at San Jose, California, where new $500,000 test facilities were formally dedicated last November. Additional preoperational tests will be conducted in 1965 by the Argonne National Laboratory at the Atomic Energy Commission Reactor Testing Station in Idaho.

JPDR in Operation

Japan Power Demonstration Reactor (Japan Atomic Energy Research Institute), Tokai Mura, Japan—Following successful labor negotiations, the 12,500 KWe (gross) Japan Power Demonstration Reactor started fuel reloading on October 24. The reactor sustained a chain reaction with 15 fuel assemblies on October 27.

Testing continued at increasing power levels, and on November 12 a full core load of 72 elements was in place. The station was operated at power levels up to 10,000 KWe until December 23, when it was shut down for the holidays. The plant was started up again on January 7. Total generation through the end of 1964 was 4,402,000 KWh.

NINE MILE POINT MAJOR CONSTRUCTION SET FOR SPRING

Nine Mile Point Nuclear Power Station (Niagara Mohawk Power Corporation), Oswego, N. Y.—The Advisory Committee on Reactor Safeguards reviewed the safety aspects of the plant design in October 1964 and issued a favorable letter to the AEC. The public hearing for a construction permit was held on January 19, 1965.

Engineering and fabrication work on the nuclear boiler equipment and electrical equipment being supplied by General Electric is progressing on schedule. Fabrication of the reactor pressure vessel is proceeding satisfactorily towards the scheduled delivery by October 1, 1966.

Site preparation, including foundation excavations, has been started and major construction activities are to commence in the Spring of 1965 following receipt of the construction permit. The plant is scheduled to sustain its first chain reaction on August 1, 1967, with a target turnover date in early 1968.

SENN Accepts Garigliano Nuclear Power Station

Garigliano Nuclear Power Station (Societa Elettronucleare Nazionale), Scauri, Italy—Following completion of turbine modification work in early November, this 160,000 KWe (gross) plant satisfactorily completed its 100-hour demonstration run, leading to formal acceptance of the station on November 18 by SENN.

Through the end of February, 1965, Garigliano had generated 961,996,000 KWh.

Humboldt Plant Operated at 230 MWt During November Uprating Tests

Humboldt Bay Power Plant, Nuclear Unit (Pacific Gas and Electric Company), Eureka, Calif.—During November of 1964, the Humboldt Nuclear Unit was operated at power levels up to 230,000 kwt, and reactor pressure to 1130 psia during uprating tests.

The unit returned to service on Sept. 13 following a 28-day shutdown for removal of initial core temporary poison sheets and addition of 14 new fuel assemblies. Except for the seven day test period, the unit was base loaded at 165,000 KWt and 50,200 KWe. Pacific Gas and Electric Company has applied for AEC approval of plans to uprate the unit to 240,000 KWt, 70,000 KWe.

Gross electrical generation through the end of February, 1965 was 624,148,000 KWh.

Oyster Creek Containment System Construction to Start in Spring

Oyster Creek Nuclear Power Station (Jersey Central Power and Light Co.), Ocean County, New Jersey—Chicago Bridge and Iron Company has received a $1½ million order for the construction of an advanced safety containment system for Jersey Central Power and Light Company's 540,000 KW (gross) Oyster Creek Nuclear Power Station being built on the New Jersey coast about 40 miles north of Atlantic City.

Site preparation is underway (photo below), and under authority of a provisional construction permit, general excavation for the reactor building has essentially been completed. Concrete placement is underway.

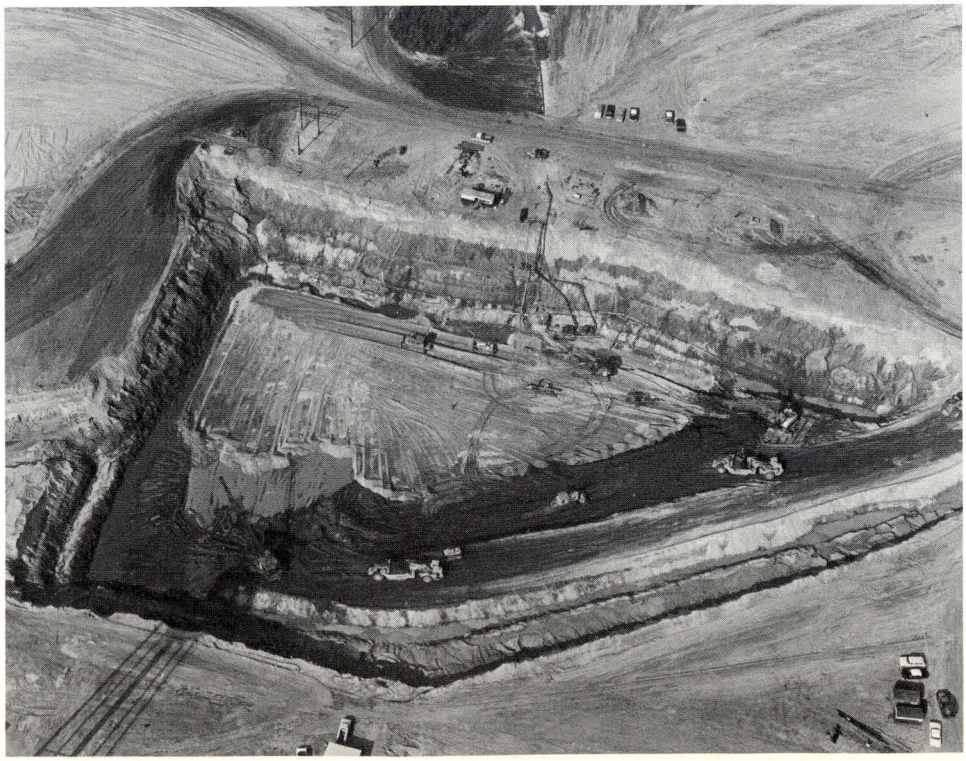
The nuclear power plant is expected to have an ultimate capacity of as much as 640,000 KWe, based on the potential for greater output from the reactor. General Electric is prime contractor to Jersey Central for the nuclear station, and Burns and Roe, Inc. is architect engineer. APED engineering on the nuclear boiler is about 28% complete, and Burns and Roe balance of plant engineering is 24% complete.

The construction schedule calls for the design and shop fabrication of the containment system to be completed by the first of February, 1965. The system will be erected and tested at the site from March to September 1965. The Oyster Creek Nuclear Power Station is scheduled for first power production in 1967.

The containment system is technically described as a "dry well and absorption chamber." The dry well measures 121 feet high and 70 feet in diameter at its widest portion. The neck, or upper section of the dry well, is 33 feet wide. The nuclear reactor is supported inside the dry well.

The absorption chamber is a torus-shaped metal tube which is located slightly below the dry well and encircles it. The chamber's minor diameter—or its width at any section of the tube—is 30 feet. The over-all diameter of the torus is approximately 130 feet. Ten cylindrical vents 6½ feet in diameter lead from the dry well into the suppression chamber.

The containment system is one of many engineered safeguards provided for nuclear power plants powered by GE boiling water reactors. During plant operation, the absorption chamber is partially filled with water and is designed to condense any steam that might be released because of a system malfunction.



Site for advanced safety containment system, Oyster Creek Nuclear Power Station. Plant is expected to have ultimate capacity of 640,000 KWe.

Turbine-Generator Connected To ESADA Superheat Unit

ESADA Vallecitos Experimental Superheat Reactor (Empire State Atomic Development Associates) Vallecitos Atomic Laboratory—The EVESR was shut down November 9 for installation of new superheat fuel of a conventional rod type, replacing annular fuel utilized for the initial loading of this 12,500 KWt (gross) pioneering reactor. During the planned outage, the Pacific Gas and Electric Company's turbine in the Vallecitos Power Plant was connected to the ESADA steam supply, to allow its operation on superheat steam for the first time. From 1957 to 1963 the plant had received power from the Vallecitos Boiling Water Reactor. VBWR was retired from service in December 1963.

Following post-outage nuclear calibrations and systems checks, 5,000 KWe power operation with the turbine generating electricity with nuclear superheat steam will be started in early 1965. The EVESR, built for the Empire State Atomic Development Associates, is a key test project for development of nuclear superheat technology. Addition of the turbine-generator plant will extend the parameters of the installation.

KRB Construction Proceeds Rapidly

Kernkraftwerk RWE-Bayernwerk GM. B.H. (RWE-Bayernwerk), Gundremmingen, West Germany—Construction work is proceeding rapidly on this 250,000 KWe (gross) plant. The operations building has been completed and accepted. Concrete pouring within the reactor containment building is on an accelerated schedule to assure an early completion date.

First shipments of equipment fabricated in San Jose were made during the fall of 1964 on schedule. The majority of equipment is scheduled for shipment this year.

Preparations for a training school for KRB operators are completed with classroom presentations scheduled for January in Germany.

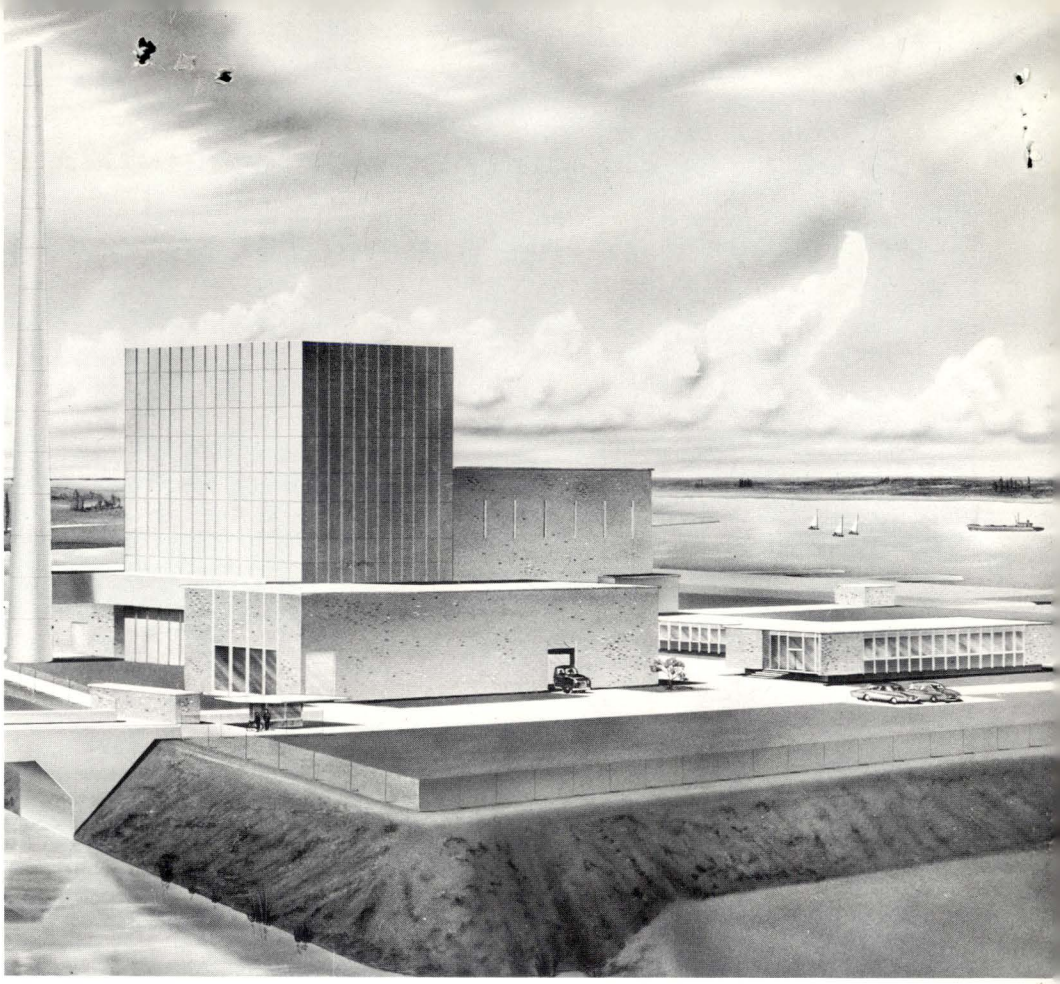
Major equipment procured in Europe, such as the reactor vessel, secondary steam generators, recirculating pumps and piping, is being expedited for delivery in the first quarter in accordance with installation schedules. Fuel loading is scheduled for spring of 1966.

DRESDEN RELIABILITY PRAISED

Unit No. 1, Dresden Nuclear Power Station (Commonwealth Edison Company), Morris, Illinois—J. Harris Ward, Chairman of Commonwealth Edison Company, was quoted in a *Chicago Tribune* article as stating that the 200,000 KWe generating unit at Dresden Nuclear Power Station . . . "is one of our more reliable machines. It is achieving everything we hoped for, first in developing the art of atomic power production, second in safety, third in reliability, and fourth, from the standpoint of flexibility."

Dresden, which was at the time of its completion the largest operating nuclear power station in the world, is still the largest unit in operation in the United States, although larger units are under construction. It has been in operation since April 15, 1960.

Through February, Dresden has generated over 4,298,480,000 KWh of electricity—more than any nuclear plant in the United States—for use on the Commonwealth Edison system. High plant factors have been recorded. In November the Dresden reactor was in operation 100% of the time, and the plant generated 99,028,400 kilowatt hours of electricity.



SEP Nuclear Power Station, Dodewaarde, The Netherlands—a 50,000 KWe Boiling Water Reactor plant. Construction is to begin later in 1965.

Kahl Nears 300 Millionth KWh

Kahl Nuclear Power Station (RWE-Bayernwerk), Kahl, West Germany—As planned power generation at this 16,000 KWe (gross) station was suspended on September 27, and the plant was shut down. During the planned outage, stainless steel channels were replaced with zirconium channels, and enclosure leak testing was conducted. Control rod and fuel bundle inspection was also completed.

The plant was operated satisfactorily after startup, but was shut down on December 4 for additional control rod inspection. The plant was returned to service in late December.

Gross electrical generation through January, 1965 was 296,497,000 KWh.

Euratom Commission Makes SEP Safeguards Review

SEP Nuclear Power Station (N. V. Samewerkende Electriciteits-Productiebedrijven) Dodewaarde, The Netherlands—Site preparation for this 50,000 KWe Boiling Water Reactor plant (photo above) has been underway since September, 1964. All engineering work on the nuclear boiler in preparation for fabrication has been completed, and review of the balance of plant design, which is being completed by SEP staff members, is continuing.

Safeguards presentation has been made by SEP personnel, assisted by General Electric Company, to the Euratom Commission. Procurement and construction phases of the project are expected to get underway later in 1965.

Tarapur Excavation Started

Tarapur Atomic Power Plant (Government of India), Bombay, India—Construction at the Tarapur site is proceeding on schedule. Heavy construction equipment is in use on the excavation for this 400,000 KWe (gross) twin boiling water reactor plant.

The construction power sub-station has been energized, and temporary offices and warehouse have been completed and are in use.

A team of ten representatives from the Indian Atomic Energy Commission headed by Mr. M. H. P. Rao are in residence at the Atomic Power Equipment Department in San Jose, Calif. to observe fabrication of the reactor hardware and assist in detailed plant design.

ATOMIC POWER EQUIPMENT DEPARTMENT

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