



EDWIN E. KINTNER

1920–2010

Elected in 1990

“For significant contributions to the development of nuclear submarine propulsion, nuclear power operation, and management of magnetic fusion programs.”

BY PHILIP CLARK

EDWIN E. KINTNER, former executive vice president, GPU Nuclear, Inc., passed away on May 7, 2010, in Exeter, New Hampshire, at the age of 90.

He was born May 1, 1920, in Paris, Ohio, and he graduated from the United States Naval Academy in Annapolis, Maryland, in December 1941, a member of the class of 1942 that was accelerated due to the attack on Pearl Harbor. After serving aboard a cruiser in the Pacific for 18 months, he earned a master’s degree in naval construction and engineering at the Massachusetts Institute of Technology (MIT). During that period, he also married Alice Shoemaker of Louisville, Ohio, on July 29, 1944, at Fort Benning, Georgia, where her father, a lawyer and colonel in the U.S. Army Reserve, was on duty as inspector general of the infantry school.

He then served for two years at the naval shipyard in Portsmouth, New Hampshire, working on modernizing and upgrading snorkel-equipped, diesel-powered submarines. From there he was recruited by Captain Hyman G. Rickover to the new naval reactors program, which became an agency of both the U.S. Navy and the Atomic Energy Commission (AEC) and its successors—the Energy Research and Development

Agency and finally the U.S. Department of Energy. Before assuming his duties in the naval reactors program, Captain Rickover sent him to MIT for a new program in nuclear engineering started at Rickover's suggestion. This program earned Kintner a second master's degree, this one in nuclear engineering.

Arriving at naval reactors headquarters in Washington, D.C., Kintner initially headed an engineering group but was then made project manager for the first nuclear-powered submarine, *Nautilus*, and its full-scale, land-based prototype built on an AEC site in Arco, Idaho.

The *Nautilus* project involved designing and building the first nuclear plant to produce a large amount of usable power and the associated steam plant to convert that power into the useful mechanical power and electricity needed to propel and operate a submarine without external support. That all had to be done so as to fit into the confined space of a submarine hull. It required breakthroughs in several areas, including physics, metallurgy, electronics, and environmental medicine.

A major decision in the program was to reject advice to pursue an extensive research and development program and instead to proceed directly to the design and construction of the full-scale submarine and its prototype. This decision was described by Kintner in a featured cover article in the *Atlantic Monthly* for January 1959 titled "Admiral Rickover's Gamble." The decision also influenced Ed's subsequent career.

Kintner managed and coordinated the diverse activities that resulted in successful completion and operation of the prototype and then the *Nautilus* power plant. *Nautilus* was completed and launched on January 21, 1954—a little less than three and a half years after the ship was authorized by President Truman in August 1950.

Following the successful initial operation of the *Nautilus*, a number of additional nuclear submarines were to be built. Kintner was appointed nuclear power superintendent at the Mare Island Naval Shipyard in California, to develop in that yard the capability to build them and to oversee construction of the *USS Sargo*, the fifth nuclear-powered submarine and the first built on the West Coast, and others.

In 1959 he was designated as the naval reactors' representative at the Bettis Laboratory near Pittsburgh, Pennsylvania, which was run by Westinghouse Corporation, as a contractor for naval reactors. It had developed nuclear propulsion plants for *Nautilus*, *Sargo*, and other naval vessels and for the first civilian nuclear power plant built in Shippingport, Pennsylvania, which began operation in 1957. In 1959 he received the Secretary of the Navy's Commendation Medal.

In 1963 he retired from the U.S. Navy as a captain and went to work for John J. McMullen, a businessman and Naval Academy graduate, as manager of a small shipyard in Portland, Maine. In 1965 he returned to naval reactors at Rickover's request (one, if not the only, senior person to leave and return to naval reactors). Soon after that he accepted a request to join the AEC's Civilian Nuclear Power Program, with a major focus on the Liquid Metal Fast Breeder Reactor (LMFBR). In that position he brought greater technical and management discipline to the work and directed the successful effort to design and build the Fast Flux Test Reactor, a liquid metal-cooled reactor of sufficient size to test materials and components in liquid metal and at temperatures and radiation levels of interest for the LMFBR. This test reactor was in use for almost 40 years.

In 1973 Ed was hired as a deputy by Bob Hirsch, who was running the AEC's Fusion Energy Program, to provide added leadership and discipline. Then in 1976 when the AEC's development work was transferred to the new Energy Research and Development Agency (ERDA), Hirsch was made assistant administrator and Kintner became the director of the Fusion Energy Program. He proceeded to aggressively pursue the 1976 Fusion Development Program, which called for building a series of large-scale test facilities. The Tokamak Fusion Test Reactor at Princeton University and the Alcator II Test Facility at MIT were completed and began operation. He participated actively in international efforts to develop fusion power, including a trip to the Soviet Union with AEC Chairman Glenn Seaborg.

In 1978, ERDA became part of the new U.S. Department of Energy, and Kintner continued to head the Fusion Energy Program. He was a leader in efforts to provide additional focus on engineering in addition to physics in the fusion program and testified before Congress in support of the Magnetic Fusion Energy Engineering Act of 1980, signed into law in October 1980 by President Carter. In 1981 he received a Leadership Award from Fusion Power Associates.

After the election of President Reagan the next month, Kintner continued his efforts to implement the plan, but the Reagan administration opposed having government build large facilities or demonstration plants, preferring to allow the private sector to do it. After a year Kintner resigned in 1982, calling the revised policy "a national error . . . There is little I can do except to make clear by my leaving that I am not party to that decision."

After a brief stay at an engineering consulting firm near Washington, D.C., Kintner was asked in mid-1982 to join GPU Nuclear, Inc., a subsidiary of General Public Utilities in Parsippany, New Jersey. GPU Nuclear was responsible for cleaning up the Three Mile Island Unit 2 nuclear plant near Harrisburg, Pennsylvania (which had been damaged in the 1979 accident), for restarting and operating the adjacent undamaged Three Mile Island Unit 1, for operating the Oyster Creek nuclear plant in southern New Jersey, and for decommissioning the Saxton experimental nuclear power plant in western Pennsylvania.

Initially, he was the director of administration, where he successfully professionalized and upgraded the security force to meet increasing security needs for nuclear plants and focused the finance and human resources groups on supporting the basic mission of the company. In the fall of 1983 he became executive vice president of GPU Nuclear. While involved in leadership and direction of the whole company, his focus was on cleanup of the damaged TMI 2 plant. There he reoriented the entire program to determine the extent of the damage to the reactor, develop a plan to remove the reactor fuel and ship it to the U.S. Department of Energy site in Idaho,

and create and implement a strategy to place the plant in a stable condition to allow for long-term monitored storage. The program was successful. The total cost was under budget, and the total radiation dose to workers was less than half of the forecast. Many consider this successful effort to have been an essential element in ensuring a continuing commercial nuclear power industry in the United States.

Kintner also was a leader in a utility industry effort to prepare for future improved nuclear power plants. This multiyear effort was based on having the utilities that would own the plants working with the Electric Power Research Institute and potential suppliers to develop advanced designs based on major simplification of the design, reliance on passive mechanisms for protection, and improved operability. Three such designs were developed and ultimately certified by the U.S. Nuclear Regulatory Commission. In addition, comprehensive guidelines were developed and published on ensuring the standardization of plant designs throughout the life of the plant. This work has been and is being used (as of this writing, in 2010) as one basis for current U.S. plans for new nuclear power plants.

Kintner retired from GPU Nuclear in 1992 to Norwich, Vermont, and then moved in 2005 to Exeter, New Hampshire, where he died. Throughout his long career, Ed was influenced by four major things:

First was his deep religious conviction that there was a God and that his duty was to use his talents and energy to the fullest to benefit mankind.

Second was his belief in the value of education and in recognizing and facing the scientific and engineering facts separate from any other considerations. He served for many years on the Visiting Committee for MIT's nuclear engineering department and was recognized as a distinguished alumnus in 1982. After retiring and moving to Vermont he was involved in the Institute for Lifelong Education at Dartmouth both as a student and for several years as teacher of a popular course on science and religion.

Third was his wife of 65 years. Alice accepted and supported

his commitment to his professional activities and provided a strong, intelligent force for ensuring his equally strong commitment to her and their family.

Fourth was his longtime commitment as an environmentalist, starting before it was common. He viewed nuclear power as a major environmental benefit, but also championed conservation and solar heating.

In all his activities, Ed showed great intelligence, vision, energy, and initiative. He had a great ability to recognize when there was a problem, determine what it was, and effectively address it. He was also devoted to helping people develop to their full potential, and he influenced hundreds of people of all ages.

His accomplishments were recognized by election to the National Academy of Engineering in 1990. The citation read: "For significant contributions to the development of nuclear submarine propulsion, nuclear power operation, and management of magnetic fusion programs." He was an active member of the academy and served as a member of four study committees, as chair of committees on environmental technology and on transmutation, and as vice chair of the peer committee for selection of new members for the electric power/energy systems section of the Academy.

Ed brought his energy and desire to excel to his personal life. He was an avid outdoorsman. He took camping, hiking, and skiing trips with the family. He blew up tied sheets to use as surfing floats at a vacation home in Delaware. He was an excellent sailor, serving as captain of 50-foot chartered sailboats crewed by family and friends in the Caribbean and Aegean, and he was a lifelong and excellent tennis player. He was also a voracious reader and enjoyed good conversation.

He is survived by his wife, Alice, and their four children: Eric C. Kintner of Westford, Massachusetts; John J. Kintner of Fort Lauderdale, Florida; Mary H. Kintner of Underhill, Vermont; and Peter F. Kintner of Park City, Utah; and four grandchildren.

