

with most tests except for the largest taking place at the Nevada Test Site. In contrast to the radical innovations of the 1950s, the Los Alamos and Livermore laboratories concentrated primarily on incremental improvements in nuclear weaponry.²⁶

NUCLEAR PROPULSION

In an open hearing before the Special Senate Committee on Atomic Energy on December 13, 1945, Ross Gunn, a physicist at the Naval Research Laboratory, declared that the main function of atomic energy should be “turning the world’s wheels and driving its ships.”²⁷ During the Second World War all efforts had been directed toward building the atomic bomb, but in its aftermath a concerted program to build a nuclear powered submarine arose under the leadership of U.S. Navy Captain Hyman G. Rickover. In a unique arrangement, Rickover essentially wore two hats. As an officer in the U.S. Navy, he headed the Navy’s nuclear power branch. As an Atomic Energy Commission official, he oversaw the Commission’s naval reactor branch. Calling on the resources of both organizations—and often playing one against the other—Rickover with his hard-driving-managerial style successfully developed the first nuclear-powered submarine, the *Nautilus*, launched in 1954. An entire fleet of nuclear submarines and surface vessels followed.²⁸

Other nuclear propulsion programs were less successful. The first nuclear powered merchant ship, the *NS Savannah*, performed satisfactorily from a technical standpoint but could not compete economically and was decommissioned in 1971. The Commission’s Pluto program sought to develop a nuclear ramjet propulsion system for a supersonic low altitude missile, but the Department of Defense in 1964 decided against pursuing a flight test. The joint Commission and National Aeronautics and Space Administration Rover program sought to develop a nuclear powered rocket, but lack of a clear mission resulted in the cancellation of the program in 1972. More successful was the space isotope power program designed to produce electrical power for space applications.²⁹

ATOMS FOR PEACE

On December 8, 1953, President Dwight D. Eisenhower, in his famous Atoms-for-Peace speech before the United Nations, proposed establishing an international pool of fissionable nuclear material to be used for the development of peaceful uses of the atom and especially for nuclear power reactors. From this genesis emerged not only the International Atomic Energy Agency and other bilateral and multilateral agreements but also a nascent domestic nuclear power industry that the Eisenhower administration hoped would be closely tied to the growth of nuclear power in Europe and other areas. The Atomic Energy Commission’s monopoly of nuclear sciences including reactor technology, however, required amendment of the Atomic Energy Act to include private industry. Following often bitter partisan debate, with Republicans advocating broad provisions for private ownership and initiative and Democrats fearing a “give away” to private interests of nuclear technology developed at public expense, Congress passed the Atomic Energy Act of 1954. The act would allow the Federal Government and private industry to promote nuclear power in partnership.

Even with the legal obstacles removed, the Atomic Energy Commission faced the fundamental problem of how to transfer a new technology from government control to the marketplace. The Commission did not believe that private industry would invest sufficiently in the long-term research necessary to achieve civilian nuclear power. The Commission, therefore, decided to develop and build the first full-scale nuclear power plant. Located on the Ohio River at Shippingport, Pennsylvania, and placed under the control of Admiral Rickover and the naval reactors staff, the reactor was designed by Westinghouse and owned by the government. The Duquesne Light Company provided the turbogenerator plant and operated and maintained the facility. To further spur private industry’s participation in nuclear power development, the Commission initiated the Power Demonstration Reactor Program. Under the program, industry, with overall responsibility, owned, designed,