the nuclear propulsion appropriation for 1958 to finance a low-key, low-cost effort in isotopic power development "to provide an extremely light, an extremely small source of power...."[2]

Only four months before the televised display on Eisenhower's desk, the Martin Company of Baltimore, Maryland received a contract for producing an isotopic generator. The Minnesota Mining and Manufacturing Company developed the conversion system by which heat from radioisotopic decay of polonium 210 was transformed into electricity. The five-pound experimental unit which developed five watts of power had been developed soon after the Martin contract was signed. Armstrong was reported as saying that "the cost of the model was $15,000 exclusive of atomic material." He estimated the cost of fueling with 3,000 curies of polonium at $30,000.[3]

The men from the AEC meeting with President Eisenhower hailed their small generator, which had no moving parts, as a "significant breakthrough" for its efficiency in producing electric energy from the heat of decaying radioactive isotopes through a method called "thermocoupling." According to Armstrong, until the breakthrough in conversion methods, American scientists exploring isotope technology used rotating machinery driven by radioactive power sources to produce electricity. The new generator achieved its efficiency, stated to be 8 to 10 percent of electrical energy output from heat energy input,* through a radiating system of metal spokes, with each spoke in contact with a container that shielded the radioactive polonium and heat from the decaying polonium radiating up the outside ends of the spokes as electrical energy. The new RTG technology was not intended as propulsion for nuclear powered airplanes; Armstrong said that immediate uses were for NASA to decide, adding, "We can tailor the product to fit the customer."[4]

Although NASA soon became the major user of RTGs in space, it was the Department of Defense that first capitalized on isotopic power technology for space—in satellites. Defense uses dominated nuclear energy developments throughout the 1940s and 1950s, with developments in the "big" nuclear technologies coming to public attention with the "world-shaking events at Hiroshima and Nagasaki. While opportunities for uses of isotopic power in the 1950s were linked to the "big" nuclear technologies and the new atomic age, the

*Later accounts reduced estimates of this efficiency to about 5 percent.