Soon after it accepted the space nuclear assignment requested by the Defense Department, the AEC began parallel power plant efforts with two private corporations: odd-numbered SNAP programs using radioisotopes were spearheaded by contractual work at the Martin Company; even-numbered SNAP reactor power systems were developed through contractual work with the Atomics International Division of North American Aviation, Inc. The work by the Nuclear Division of Martin-Baltimore progressed through an early SNAP-1 effort to use the decay heat of cerium 144 to boil liquid mercury and drive a small turbine. In the course of following this development path, the Martin Company also let subcontracts to develop generators that would not require rotating equipment and the introduction of gyroscopic action to space vehicles. In 1958 work began on two thermoelectric demonstration devices at different companies, Westinghouse Electric and Minnesota Mining and Manufacturing (3M), while AEC contracts with other companies explored the development of demonstration thermionic units.*

The program to develop advanced energy conversion techniques that did not require rotating equipment (as in SNAP-1) was given the designation SNAP-3. It yielded results quickly; the 3M Company delivered a workable thermoelectric generator to Martin in December 1958. Using polonium 210 (capsuled by Mound Laboratory), the generator, quickly assembled and tested by Martin, was delivered to the AEC as a proof-of-principle device, producing 2.5 watts with a half charge of polonium 210 fuel. The AEC thus had at hand a capability for producing units that would generate 120 watts of electricity continuously for a year.[30]

Echoes of "Atoms for Peace"

President Eisenhower, shown this breakthrough in the quiet technology in January 1959, was eager to share the success story with the American public and the world at large. There was a sense of calm and composure about the debut of the proof-in-principle RTG. The event around President Eisenhower's desk emphasized "peaceful uses" for this technology. The president's eagerness to display the device openly testified to such purposes and provided an

*Thermionic conversion is the transformation of heat to electricity by the process of boiling electrons off a hot surface and collecting them on a cooler surface.