

and watched LES activities at Cape Kennedy, according to Waldron. Waldron also believes that the dollar cost per watt for RTGs, including about \$10 million for safety, was a factor that inhibited Air Force uses.³⁷

Before he left the RTG program, Carpenter played a very active role in pursuing RTG uses on DOD missions. He was a member of the DOD/ERDA Space Nuclear Applications Steering Group. The September 1976 issue of *Aviation Week* discussed the problem created by cuts in the budget and the need to pinpoint requirements before initiating development. Reporting that a joint DOD/ERDA committee hoped to select several types of future military satellite missions that could use high-power non-solar-cell energy sources in the 10 to 100 kw. range, the journal quoted Carpenter that "we cannot afford anymore false starts." It concluded:

Carpenter is hopeful that, after the joint Defense Dept./ERDA committee has selected several space military missions that are potential candidates for nuclear power sources, funds will be made available for design studies by experienced spacecraft contractors.³⁸

In the following six years, however, this hope was not fulfilled.

Voyager to the Outer Planets

The Voyager program began as a plan for a \$2 billion program to send exploratory craft to Mars. This plan was cancelled and the NASA outer-planet mission received the recycled name "Voyager." NASA's planetary mission plans of the 1960s recognized that by the late 1970s Jupiter, Saturn, Uranus, Neptune and Pluto would all be lined up on the same side as the sun—an event that occurs once in a hundred years—and a multiplanet mission could be designed to visit all of the outer planets. NASA initially planned separate Grand Tours—each with twin launches—to visit, respectively, Jupiter-Saturn-Pluto in 1976 and 1977 and Jupiter-Uranus-Neptune in 1977. Because of budget cuts, NASA's planners dropped Uranus, Neptune, and Pluto from immediate plans.³⁹

Plans for missions to the outer planets included consideration of RTGs. During the planning stage, Vincent Truscello came to JPL from Martin-Nuclear in Baltimore; he and Gerhard Stapfer of JPL recalled that in the earliest planning for the Grand Tours, there was recognition of the need