

# Getting a long headstart

by Jonathan Eberhart

From the moment President Nixon's Space Task Group handed him its report on the country's possible futures in space (SN: 9/20, p. 233), the impression began to grow that Mr. Nixon, by picking one of the report's three options, was about to lock the U.S. onto some inevitable course for Mars.

It could be a short one, with men reaching the planet as early as 1983, or a long one with no definite target date in sight. But somehow, the report has seemed to give the President the status of a magician, with the enviable ability, even for a President, of casting the future over the heads of his successors to a destiny that will have been sealed over a decade in advance.

But nothing so momentous has happened. Even with the option advocated by Vice President Agnew, head of the panel, calling for a manned Mars landing by 1986, the decision could conceivably wait until Mr. Nixon is in his eighth year of office without altering details of the program.

**The Apollo decade** was expensive. From President Kennedy's moon-landing proclamation in 1961, through 1970, the National Aeronautics and Space Administration will have spent about \$43 billion, at least 56 percent of it on getting to the moon.

The next decade will be even more expensive—\$54 billion by 1980 according to the slowest-paced Mars option considered by the report—but it is likely to be well along before it becomes financially committed to Mars.

The only option in the report that would really shoot for Mars on a crash basis is so expensive that it would alienate a Congress even less money-conscious than the present one. By 1980 it would burn up more than \$74 billion, beginning with an unlikely \$4.25 billion in fiscal 1971, escalating through three one-year jumps of almost \$1 billion and finally reaching a towering \$9.4 billion for fiscal 1980—and still going up.

But what really casts the most revealing light on the report's masses of statistics is the fact that the other two

options—one with no set Mars date at all—are identical all the way through the end of fiscal 1977, in programming as well as dollars, and don't diverge by more than \$150 million until 1979.

Some officials, in fact, such as Dr. Russell Drew of the Office of Science and Technology, who helped create the report on behalf of Presidential Science Adviser Lee A. DuBridge, hope that the President does not mention a target date at all, since many of the major decisions are so far away. The choices to be made at present, says Dr. Drew, are so small that if the President's selection showed up only in the FY 1971 budget, without a public announcement, the public could not tell which way he had gone.

**The report**, in other words, is not a binding, step-by-step guide that allows the President to second-guess NASA in a single, gigantic hop. Rather, it is a planning guide, the main value of which is its ability to anticipate the vast number of variables and interdependent factors that must be foreseen to avoid surprises in laying out the evolution of the Space Age.

On the other hand, it may well turn out to be the most accurate such guide that the Government has ever made. "For the first time," says Milton W. Rosen, senior scientist of the NASA Office of Interagency Affairs and a man who worked on the report for space-agency Administrator Thomas Paine, "we have something where the broad outline may hold for a decade or more."

Shaping the broad outline to Mars are several intermediate developments, upon whose timing the manned planetary mission depends. Most important, Dr. Drew says, is a large earth-orbiting space station, necessary for biomedical studies before undertaking the 500-to-600-day mission. This in turn requires an earth-to-orbit shuttle craft, to resupply the station, and finally, a nuclear rocket engine is taken for granted by space planners; without it, the trip would take 100 days longer.

The shuttle is scheduled to be slight-

ly ahead of the station, with both on the job operationally by about 1976, regardless of the Mars landing date. The reason, Dr. Drew points out, is that they are both likely to be part of many other space research programs, particularly due to the resulting ability to retrieve and service equipment in orbit.

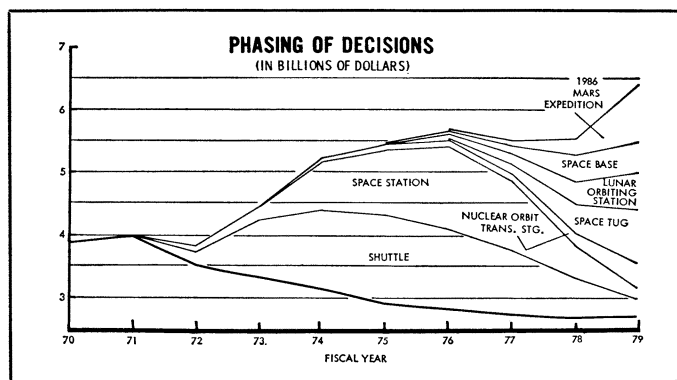
This ability is part of what NASA sees as its new formula for the 1970's: reusability plus commonality equals economy. In recent months, aerospace companies have discovered an apparent shift in the balance that previously existed in NASA researches between low-cost, throw-away launch vehicles and those that could be refurbished and used again. Reusable equipment, after years of fruitless proposals from industry, at last may get the NASA nod.

The nuclear rocket's first big task would be the manned Mars mission, and thus it bears a closer relationship to its timing. However, by the favored (1986) option in the Task Group's report, funding for the actual development of the rocket stage does not have to begin in earnest until fiscal 1974. At present, development is just beginning on a flight version of a nuclear engine.

**Thus, although** a Presidential pronouncement would certainly produce Mars-ward pressure, it is not the unalterable word. By comparison, the fulfillment of President Kennedy's lunar goal, announced just before the start of fiscal 1962, required the space agency's spending to double within a year, and almost double again the year after that. With Mars in the offing, it may double from its present level over the next decade, but a greater increase than that will require a radical shift in national priorities.

The President's decision, however, may nonetheless be forthcoming; Dr. DuBridge reportedly believes it could come as soon as this month.

The 1971 budget is due to Congress in little more than three months, and the budget bureau needs time to mull over the recommendations. □



NASA

*Dollar commitments for Mars plans are years away.*