New Starts and Tough Choices at NASA

By JONATHAN EBERHART

Now being worked over behind locked doors at the Office of Management and Budget (OMB) is the Reagan administration's budget plan for fiscal 1987, not to be made public for congressional scrutiny until early in 1986. Waiting in the wings for funding, however, have been plans for three major scientific programs at the National Aeronautics and Space Administration, and interest in all of them has been high enough that they are already atypically prominent topics of discussion.

Only two of the three hoped-for "new starts" are actually in the budget plan as received by OMB, according to several sources, but concerns about the large federal deficit have raised fears in some quarters that one or even both of those could also fail to make the final cut.

Missing from the plan, the sources say (as does an article in the Sept. 16 AVIATION WEEK), is the one candidate program that would be sent beyond earth-orbit. Called the Comet Rendezvous/Asteroid Flyby (CRAF) mission, it would be sent to match speeds with a comet and fly beside it for months or years as the comet changed in the course of nearing and receding from the sun. But more than that, CRAF is the next item in the plan proposed by the NASA-chartered Solar System Exploration Committee (SSEC). "This plan," says Laurel Wilkening, chair of the American Astronomical Society's Division for Planetary Sciences, "was devised at a time, several years ago, when it appeared that the United States was going to drop out of planetary exploration completely." Accordingly, the SSEC proposed a series of missions designed to provide continued exploration of the solar system at reduced cost through the use of standardized spacecraft designs and other approaches.

But the essence of the plan, a radical departure from NASA's previous planetary programs, was its requirement of a *series*. The absence of CRAF is "more than the loss of an individual mission right now," says SSEC chair David Morrison of the University of Hawaii (temporarily at the University of Arizona in Tucson). "It is the apparent abandonment of a plan that previously NASA has praised and adopted."

That is not to say, however, that it was officially adopted in the language of NASA's budget. In fiscal 1985, the budget included the initiation of a Mars-orbiting mission to be built around a newly designed spacecraft called a "Planetary Observer," first of the SSEC's proposed multi-purpose craft. Conspicuously absent from that budget, however, was a budgetary "line item" for development of the Observer itself. "The acceptance of the [Mars mission] by itself and the failure to include a [Planetary Observer] line item is a bad development," said Clark Chapman of the Planetary Science Institute in Tucson at the time. "It seems to me that NASA has not accepted the SSEC plan."

Yet the mission itself stayed in the budget, as has its predecessor on the SSEC list, a spacecraft to make improved radar maps of the surface of Venus. "In every step so far," says Morrison, "with the exception of phrasing that as a long-term commitment, [NASA] has in fact given us what was asked for in the timetable laid out in the SSEC's report. And they have repeatedly praised that report, and even held it up to other science groups as 'this is the model of the thing to do'—you know, discipline and modest requests and so forth. So this year, because of [NASA's] actions over the last three years, the planetary budget for fiscal 1986 is actually up to the level called for in the core program of the SSEC. Therefore, all it needs to do is continue at a level funding rate, and we're okay. To *not* start CRAF this year is the first departure from the SSEC plan."

CRAF was originally to be sent to a comet named Kopff, which was then changed to Comet Wild 2 to accommodate a later launching. Delaying the mission's budgetary start-up until fiscal 1988, says Wilkening, would require choosing still a different target comet such as Tempel 2. A visit to Tempel 2, she says, would also be a more expensive mission, because it would take more time and more propulsion for the spacecraft to get there. In addition, the spacecraft is to be not another Planetary Observer, but the SSEC's second proposed design, called Mariner Mark II (MkII). Delaying the start of the MkII, says Wilkening, would also have the "ripple effect" of delaying several SSEC missions to follow. Furthermore, adds Morrison, there would be "a real problem" at Jet Propulsion Laboratory in Pasadena, Calif., where the MkII is to be developed and which would be the mission's control center. The Mars mission has been timed in the SSEC's planning to save money by employing the teams already assembled for the Galileo Jupiter mission (to be launched next year). "And if you can't pick them up on Mariner Mark II," Morrison says, "you run the real risk in today's market of losing them to 'Star Wars' or something. And then where would you be?"

The two new NASA programs that *are* said to be in the FY '87 NASA budget sent to OMB, however, also stand to affect more than their own, individual spacecraft.

The Ocean Topographic Experiment (TOPEX) includes a radar-equipped, earth-orbiting satellite designed to provide what William Townsend of NASA calls "the first-ever global determination of the ocean's general circulation." TOPEX is also to include a French radar-altimeter named Poseidon as well as serving as what NASA's William Patzert calls a "centerpiece" of the ongoing World Climate Research Program. Says Patzert, "I guess the grim reality is that if TOPEX slips one more time, other initiatives within NASA will have higher priority — for instance, the multi-instrument polar-orbiting platforms that might be part of the space station activity. ... Perhaps some of these other, larger, more elaborate initiatives in terms of earth and ocean remote sensing will start to have more priority, rather than single dedicated missions."

The other program so far included for fiscal 1987 is even more elaborate, involving three spacecraft from the United States (NASA's), two from the European Space Agency and one from Japan. Called the International Solar-Terrestrial Physics (ISTP) program, it will in essence surround the earth with satellites, studying the sun's outpourings and their effects on the earth. It, too, has been through the budget wars, but last month, the National Research Council's Committee on Solar and Space Physics identified ISTP as the highest-priority item already planned but yet unfunded in a report on envisioned solar-system physics programs through the year 2000.

International cooperation is seen by some researchers as particularly important in the sort of physics arena that includes ISTP, because NASA three years ago dropped what would have been the U.S. half of a joint mission with the European Space Agency to send a pair of spacecraft over the sun's poles. (The surviving European entry, called Ulysses, is to be launched by the space shuttle next May.)

"The problem that we have right now is that, relative to the Europeans and the Soviets, NASA is to some degree marking time," said Morrison two weeks ago. He was speaking at the time in the context of interplanetary missions such as CRAF, but his words were not dissimilar to sentiments that have been echoed by scientists in other fields of space science as well. "We are moving," he said, "from a situation in which the United States had the clear international leadership in this area to a situation where we may not be perceived by our potential partners as a reliable partner for such exploration." □