A $30-Billion Space Station?

While backing NASA's design, an independent panel says the project may cost more than anyone has estimated; it is likely to provide the station's congressional critics new ammunition

A report released on 14 September by the National Academy of Sciences and the National Academy of Engineering says that the shuttle is barely adequate for the task of launching the proposed U.S. space station into orbit. Its rocket motors should be upgraded, the panel says, but it would cause too long a delay to hold the station up pending the development of a heavy lift launch vehicle.

The report also estimates that the total cost of building a space station could be $29.9 billion in 1988 dollars—an impressive sum and 30% more than the same group of experts said it would cost in an interim report 2 months ago.

This study was commissioned by the White House as an independent check on plans for the space station announced earlier this year by the National Aeronautics and Space Administration (NASA). President Reagan gave his endorsement of the project in January, but at the same time, his top advisers asked the National Academies to perform a review. The panel was chaired by Robert C. Seamans, Jr., senior lecturer at MIT.

The result is mixed. While the reviewers say the Administration should go forward with the space station, they also warn that it will cost far more than anyone realized, and that it would be quite risky to continue without first making extensive changes in the nation's space transport system.

Nevertheless, the report backs the current design for the first step in the program, known as Block I, calling it a "satisfactory starting point" and a good compromise among competing interests. The Block II design, which was meant to go into orbit in the late 1990s and was supposed to house observational equipment, is judged "premature." The report says that the United States must clarify its long-term goals in space before designing Block II. The thought is that Block II, if it is ever built, might be better used as a biological research center and staging area for space travel.

The Academy panel also makes a plea for liberating the earth observation scientists and astronomers from their bondage to the station. "It is important that space sciences not be confined, made hostage if you will, to the space station and the shuttle," the report says. The report urges NASA to increase the use of expendable launch vehicles for research of this kind.

NASA responded to the critique on the same day with a statement that it "agrees with most of the findings and recommendations" and reads them as "clear evidence . . . that the space station NASA is developing is of sound design." However, NASA took issue with the cost estimates and with the comment that it will be "difficult and risky" to rely on the shuttle to get the station up.

It is clear that the report will have an impact on the funding debate in Congress this fall. Space committees on both sides of the Hill have already endorsed the Administration's request for $767 million to begin work on Block I. But Congress has not yet provided any cash. The President would like it to take the plunge in the 1988 budget. However, skeptics like Senator William Proxmire (D–WI) argue that the project is too poorly defined and too expensive to deserve federal support at this time. He may find fresh ammunition here.

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Certainly the debate on costs will be fueled by this report. It rejects all earlier estimates of the program's cost as too low, noting that there are still large gaps in information that make it hard to pin down the figures.

Because the review committee had to publish the report before NASA answered all its queries, the authors concluded that as much as $3.9 billion worth of equipment was not covered in NASA's estimate. NASA claims that this figure is "much too high" and that the extra cost for spare hardware is no more than $200 million. NASA says its contingency budget is already padded well enough to cover "flight-type test hardware."

According to Archie Wood, staff chief on the study, confusion arises from the fact that the space station is "in a state of evolution—it is still being defined." For this reason, the committee recommends that NASA make another full cost assessment in March, as Wood says, "after the program settles down." The committee would like the new study to include backup hardware costs and a discussion of the space station's impact on other parts of NASA's budget.

The Academy reviewers raise many technical questions about the strength of the program. For example, they find the shuttle "marginally adequate" for the task of carrying components of the station into orbit. They suggest that the thrust of the rocket motors should be increased so that cargo liftoff capacity may be raised from 40,000 pounds to 48,000 pounds. This would enable NASA to do more of the assembly work on the ground and require fewer hours of dangerous extravehicular work by astronauts in space. It would also permit assembly to take place at a more distant orbit, thereby reducing the rate of "orbital decay"—the process in which objects in space fall to earth. The study points out that in the early stages of assembly, if the station's "reboost" mechanism should fail, NASA would have only 20 to 22 days to launch a rescue mission.

The review panel concludes that despite its problems, the space station should go forward as long as everyone understands the magnitude of the task. It is particularly important that Congress be ready to give support over the long haul. As the authors of the report say, this is more than a "one administration" project. They conclude that an attempt to build the space station "on the cheap" would be disastrous. This usage gives new meaning to the word "cheap," for even the cheapest version would cost more than the endowment of Harvard, Princeton, Stanford, Yale, and the University of Texas combined.

Finally, the report praises NASA for reorganizing the management of the program to provide stronger, more centralized control. But it urges the agency to go further. The reviewers would like to see a czar within NASA given authority over personnel and finances at all offices involved in the project. ■ **ELIOT MARSHALL**