NASA Announces a New Schedule for the Shuttle

A decision on booster redesign will allow flights to resume in early 1988; some payloads will be delayed 3 years

On 3 October, after months of internal debate and interagency negotiation, officials of the National Aeronautics and Space Administration (NASA) announced their plan for the resumption of shuttle operations after the Challenger disaster of 28 January.

The first post-Challenger flight is now scheduled for 18 February 1988, when Discovery will take aloft a Tracking and Data Relay Satellite (TDRS) identical to the one lost in the accident. The schedule continues with two classified Department of Defense missions, another TDRS, and finally, in November 1988, the launch of the Hubble Space Telescope aboard Atlantis. From 5 flights in 1988, the rate will then increase to 10 launches in 1989. Among them will be the Astro-1 astrophysics package, the Magellan radar mapper mission to Venus, and a spacelab mission dedicated to life sciences. The 11 launches in 1990 will include the Gamma Ray Observatory and the International Microgravity Laboratory. After a replacement orbiter enters the fleet in 1991, the agency anticipates that the flight rate will reach a plateau of about 16 launches per year. The complete manifest lists payloads through 1994, although the flights are only scheduled by quarter after April 1991.

The flight rate is a sensitive point. At the time of the Challenger accident NASA was attempting to achieve a rate of 24 launches per year by 1988. According to many observers, including the members of the investigatory commission headed by former Secretary of State William P. Rogers, the pressure to meet this goal led the agency to cut corners and thus contributed significantly to the accident. Agency officials are thus quick to insist that the mistake will not be repeated. "There will be *no* attempt to meet an arbitrary flight rate." says Admiral Richard Truly, who has taken leave from the astronaut corps to head NASA's office of space flight. "This new manifest does represent a slow build up. But we will increase the rate only as fast as is consistent with safety." Indeed, he says, the first launch may well slip by several weeks; the specific date of 18 February 1988 is primarily intended to help the agency focus its own internal planning.

"The manifest is one of the most complex and difficult things we've had to deal with since I've come to headquarters," adds Truly. The nominal priorities started with national security payloads, followed closely by major science missions such as the Hubble Space Telescope, and by key operational payloads such as the TDRS satellites. However, the choices were complicated by such factors as time-critical launch windows for planetary missions; the cancellation of the Centaur upper stage, which was to have carried the Galileo and Ulysses spacecraft to Jupiter; the agency's post-accident reassessment of shuttle launch capabilities; the decision to mothball the Vandenberg shuttle launch complex until 1992; and President Reagan's recent decision that NASA should no longer provide launch services for commercial or foreign payloads that can fly on expendable rockets.

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The result of these considerations is a sharply reduced schedule of commercial and foreign payloads, amounting to only 12% of the total, and a heavy emphasis on flying off the backlog of national security payloads, especially in the early years. In later years the Pentagon's share of the flights will decline and NASA's share will pick up, particularly after construction begins on the space station in 1993. Overall, national security payloads will comprise 41% of the total, while NASA's science and applications payloads will account for 47%.

So far, say NASA officials, the manifest only refers to major payloads. The smaller, secondary payloads, which are designed to fit into leftover space in the payload bay, and which include a number of scientific instruments, will be scheduled later.

In any case, the combination of a 2-year downtime and a reduced flight rate means that some payloads will be delayed from their original launch dates by 3 years or more. This is particularly apparent with the major planetary missions. The Magellan radar mission to Venus will depart as planned in early 1989. As for the Galileo, Ulysses, and Mars Observer missions, however, the manifest only mentions "planetary opportunities" in November 1989, October 1990, and the fourth quarter of 1992. The specific assignment of missions to these launches will not be made until next year, pending a decision on what kind of upper stages will be used for Galileo and Ulysses.

The new shuttle launch schedule is predicated on another crucial decision: on 2 October, the day before the manifest was released, NASA announced that it would continue testing the redesigned solid rocket boosters in the same horizontal position it had used before the Challenger explosion, instead of testing them in the vertical position. This decision is likely to be controversial. The Rogers Commission had recommended that NASA give serious consideration to constructing a vertical stand for the 46 meter tall rockets so as to test them in "the exact flight configuration." The commission did not insist that NASA conduct vertical tests. But by not doing so, the agency lays itself open to charges that it is once again cutting corners to save time and money. Vertical tests would cost some $30 million for the new stand, and would delay resumption of shuttle flights by at least another year beyond 1988.

However, NASA officials argue that horizontal tests will actually give the redesigned booster joints *more* of a workout than vertical tests would, simply because gravity will bend the boosters slightly and thus put stress on the joints before the firing even begins. "The decision was not based on either cost or schedule considerations," Truly maintains. "When you go through the loads analysis on the joints, it turns out that you can test the motor better in the horizontal position."

It is true that the Air Force plans a vertical test of the solid rocket motors used on the Titan rocket, says Truly. One such booster caused a Titan launch failure earlier this year. But the Titan problem was quite different from the joint failure that caused the Challenger explosion, he says. NASA engineers consulted closely with Air Force experts in reaching their decision. The agency has also provided full information to the National Research Council's oversight committee, which was set up at the behest of the Rogers Commission to monitor NASA's efforts to redesign the boosters.

That committee has declined to comment, pending completion of its own review of the horizontal/vertical question. ■

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