NASA Sets Shuttle Launch Dates, Investigates Main Engine Trouble

Putting on a bold face, the National Aeronautics and Space Administration (NASA) published a new schedule for the shuttle and unmanned rockets on 22 October. NASA made no adjustment for a leak discovered in one of the shuttle main engines on 11 October, a problem that may delay the next launch.

The new schedule calls for three shuttle flights in the first year (1988), reflecting NASA's lower expectations. Because its reserves space in the early flights for science, researchers were pleased. The schedule "holds the line on science missions in 1989," says Robert Brown of the Space Telescope Science Institute at Johns Hopkins University. NASA brought forward the launch date for the Space Telescope from August 1989 to June 1989. But Brown also is concerned that NASA's jump to nine flights in 1989 may be "too aggressive."

According to the cargo manifest, the shuttle will fly on 2 June 1988, heading for a 4-day trip at 160 miles above the earth. It will carry a large tracking and data relay satellite (TDRS), 11 small research payloads, and crew of five led by Navy Captain F. H. Hauck. The next two launches, both in 1988, will carry military craft. NASA plans nine more shuttle launches in 1989 and nine in 1990.

Getting a TDRS satellite running is critical, for NASA hopes it will permit the retirement of five expensive ground stations. In addition, TDRS will increase the radio connection time between spacecraft and ground controllers from around 20% per orbit to at least 85%. It is essential for the next generation of satellites, which will shower the earth with data at a high rate of transmission.

NASA says it needs two copies of TDRS in orbit for redundancy. The first TDRS, launched in 1983, never worked properly and is considered unreliable. An improved version was lost in the cargo bay of the Challenger in January 1986. A third is scheduled to go up in June 1988 aboard the next shuttle flight, and a fourth is scheduled for Feburary 1989.

According to NASA's cargo manifest, at least 75 other big payloads merit a place on the shuttle between now and the end of 1990 but cannot be accommodated. It is possible, according to one NASA official, that the Department of Defense will remove some of its payloads early next year, making room for these orphans. But many, including hundreds of small research projects, face indefinite delays.

Meanwhile, officials at the Marshall Space Flight Center in Huntsville, Alabama, report a "totally unexpected" problem. In early October the first in a line of ten new shuttle engines passed its final ground test. When technicians made a post-test examination, however, they discovered a small leak in the heat exchanger, a 28-foot-long piece of tubing inside the oxygen turbopump. This is a critical piece of machinery, for if high-pressure oxygen escapes on launch, the engine and perhaps the spacecraft could be destroyed. There was hope at first that the leak indication was an error, but repeated analysis with a mass spectrometer has shown that the leak is real. It will take another 2 to 6 weeks to isolate it and determine the cause. The difficult point will be deciding whether the flaw is unique to this particular engine or generic.

NASA's schedule calls for three shuttle engines to be delivered to the Kennedy Space Center in Florida by 1 January for attachment to the orbiter Discovery. To meet this deadline, officials have drafted into service a fourth engine meant to be kept as a spare, and they will put it through an accelerated testing program. Because there are only two test stands, certain other ground tests that had been planned for the fall will be postponed.

An official at the Marshall Space Flight Center says this represents "an all-success schedule," allowing for no significant setbacks. But, he says, "It's doable." ■

ELIOT MARSHALL

Merck Donates Drug for River Blindness

An antiparasitic drug, Mectizan, effective against the devastating tropical disease onchocerciasis, or river blindness, will be offered free in developing countries where the disease is endemic by its manufacturer, Merck & Co., Inc.

The disease is present in parts of Africa, the Middle East, and Central and South America. An estimated 18 million people are affected by the disease and some 85 million are threatened.

A company spokesman said that the decision was made because Merck recognized a "unique situation in which the drug was needed only by people who couldn't afford it." To a question of what development of the drug had cost the company, he said that "obviously many millions had been spent on research on human use," but that no specific cost figures had been worked out. The company view is that "if there are tax advantages, Merck will take advantage of them, but the company does not expect them to be significant."

In announcing Merck's policy on the drug, the company's chairman, P. Roy Vagelos, said Mectizan has just been approved by the French Directorate of Pharmacy and Drugs, which is expected to lead to its certification for use by developing countries.

Merck's terms for free distribution of the drug require that it be used in a public health program that can assure "appropriate usage, monitoring, and record keeping." In consultation with the World Health Organization (WHO), the company will form a review committee composed of biomedical scientists knowledgeable about parasitic diseases to certify plans from countries who apply for free supplies of the drug. WHO will help such countries establish distribution and reporting systems.

Mectizan, developed from a veterinary drug called ivermectin, kills the threadlike microfilariae produced by the parasite after it enters the skin of the victim through the bite of a female blackfly. The microfilariae migrate through the skin and cause blindness in humans by collecting in the eye. The flies breed in fast running rivers and streams and people living near them are at risk.

In the decade since the drug became a candidate for human use, Merck has carried out research and clinical studies both in this country and abroad. One or two doses a year are said to provide protection. The research indicates that the drug not only kills microfilariae in the body but affects the parasite so that it does not produce new microfilariae. Side effects were found to be mild and transient in most of those who used the drug, making it suitable for mass use.

Until now, treatment of onchocerciasis depended on drugs that produced serious side effects and could be administered only under close medical supervision. Efforts to combat the disease, therefore, focused on the fly, as does the massive, internationally backed Onchocerciasis Control Program in West Africa based on spraying of pesticides (*Science*, 23 May 1986, p. 922). Since transmission of the disease requires a human reservoir of microfilariae, observers see the new drug as greatly increasing the possibility of eradication. ■

JOHN WALSH