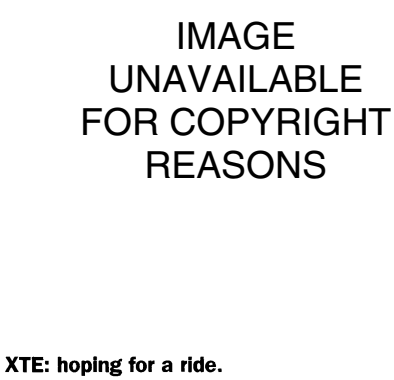
Launch woes ground NASA science spacecraft

Washington. Recent problems with two US launch vehicles have created a backlog of scientific spacecraft waiting to reach orbit.

Managers at the National Aeronautics and Space Administration (NASA) say the situation strains their already tight financial reserves and could jeopardize future flight opportunities.

The string of launch delays and failures has also heightened scientists' concern about NASA's plans to fly future spacecraft on unproven vehicles.

The most recent delay is with McDonnell Douglas's Delta 2 rocket, which should have launched NASA's X-Ray Timing Explorer (XTE) astronomy satellite into orbit this week. McDonnell Douglas told NASA a delay was necessary because upgrades were taking longer than expected: earlier this month, another version of the same rocket sent a Korean communications satellite into the wrong orbit — the first time a Delta 2 rocket had failed in fifty attempts.



XTE: hoping for a ride.

But Delta's woes are minor compared to those of Orbital Sciences Corporation (OSC)'s smaller Pegasus XL vehicle, which has failed completely on its first two outings. As a result, several NASA satellites, including the Fast Aural Snapshot Explorer (FAST), the Submillimeter Wave Astronomy Satellite (SWAS) and a Total Ozone Mapping Spectrometer (TOMS), which will measure ozone in the atmosphere, have missed their launch dates. FAST was first due for launch in August 1994 and will next month lose its third launch window in a row.

NASA now has a whole queue of small science missions "in mothballs", according to Daniel Weedman, head of the agency's astrophysics division. "For the time being all we can do is sit and wait, and it's extremely frustrating," he says. Launch delays add significantly to a mission's cost, because science and engineering teams must be kept together for longer than originally planned.

After the second Pegasus failure in June, NASA's administrator, Daniel Goldin, refused to allow his agency's satellites to be launched on the vehicle until it proves itself on at least one successful flight. NASA also asked the launch industry to propose stopgap alternatives that could help to reduce the backlog while Pegasus is being fixed. But no other vehicle was available except the Russian-built Cosmos, which was ruled out by political and bureaucratic difficulties with using a non-US launcher.

Laura Ayres, a spokeswoman for OSC, says that the Pegasus investigation team expects to conclude its work in early September and to have the XL flying again by November. An Air Force satellite, REX-2, is likely to be the first payload, but a NASA launch is not expected before next year.

The Delta 2 delay, while not as serious, has already caused some reshuffling of the launch queue for larger Explorer-class missions, and has raised concern that the high-priority Near-Earth Asteroid Rendezvous (NEAR) mission could miss its February launch. The XTE, an X-ray astronomy satellite, has already slipped to October, behind the Canadian-US Radarsat mission which will launch next month. If XTE slips past November it could cause additional problems, as sensitive detectors on board the craft may have to be removed and refurbished, says Jean Swank, XTE project scientist at NASA's Goddard Space Flight Center.

The combined delays could start to eat into monetary reserves NASA intends to use to develop future Explorer-class missions.

Another worry is that NASA's small science missions — the only size the agency is currently proposing — now find themselves without a reliable ride into space. Another new launcher, the Lockheed-Martin LLV-1, also failed on its first attempt in mid-August. The LLV is due to launch NASA's low-cost Lunar Prospector in 1997.

Several members of the agency's science advisory group have warned of NASA's increasing reliance on an unproved family of mid-size rockets known as 'Med-Lites' to be derived from current OSC and McDonnell Douglas vehicles, and due to make their debut in 1998. NASA, they say, runs the risk of putting too many eggs in the same basket — a situation the space science community knows only too well from its disastrous dependence on the space shuttle on the 1980s, and is learning once again with Pegasus.

Tony Reichhardt

Superphénix consortium seeks compensation

Paris. **The three European electricity companies that own the Superphénix fast-breeder reactor at Creys-Malville in France are negotiating with the French government for compensation for loss of income following the conversion of Superphénix last year into a research reactor.**

NERSA, the French, German and Italian consortium that owns Superphénix, paid FF27.7 billion (US$5.5 billion)to build the plant in the 1970s. But the reactor has been plagued by technical problems and operated for a total of less than six months. It was finally shut down in 1990 following repeated leaks in its sodium cooling circuits.

Last year the government approved its conversion into a research reactor, to study mechanisms of plutonium incineration. The FF100 million annual costs of the research programme are being shared by the Atomic Energy Commission (CEA) and the French utility EDF, but three new reactor cores, necessary for the reactor's conversion, will be paid for by NERSA.

The Superphénix reactor was started up again in August last year. But technical problems continued and it was closed down again last December when there were leaks of non-radioactive gas. It was last week given permission to restart by the government at 30 per cent of its maximum output.

Despite the change in the reactor's status, the utilities making up the consortium — EDF (51 per cent), ENEL (Italy 33 per cent) and SBK (Germany, The Netherlands, Belgium and the United Kingdom 16 per cent) — decided earlier this year to extend their participation in NERSA, which hopes that power levels may be progressively increased to original levels, until 2001.

But the utilities are now seeking compensation from the French government because the reactor's main aim is no longer to produce electricity. "It is clear that if the research means that energy output is sacrificed, then the partners need compensation of some kind", says Alexandre Autieri, the deputy-permanent secretary of NERSA, who adds that negotiations are at an "advanced stage".

Successful compensation claims would reduce the financial contributions of the partners, several members of which, including Germany and Italy, are rumoured to be unhappy with the reactor's reduced income. But Autieri says these rumours are false. "To my knowledge, and as far as ENEL is concerned, there is no crisis among the partners", he insists.

Declan Butler