

Shuttle problems delay next planetary mission

David Dickson reports from Washington on why Jupiter must wait

The US National Aeronautics and Space Administration announced last week that it intends to delay the launch of Project Galileo — a two-vehicle mission to the planet Jupiter — from 1982 to 1984 because of problems in the development of the space shuttle.

The two-year delay will also mean separate launches for the two vehicles, one of which will orbit the planet, and the other descend into its atmosphere; initially plans were to use a single launch, but the delay means that the spacecraft will no longer be able to make use of extra push given by the planet Mars.

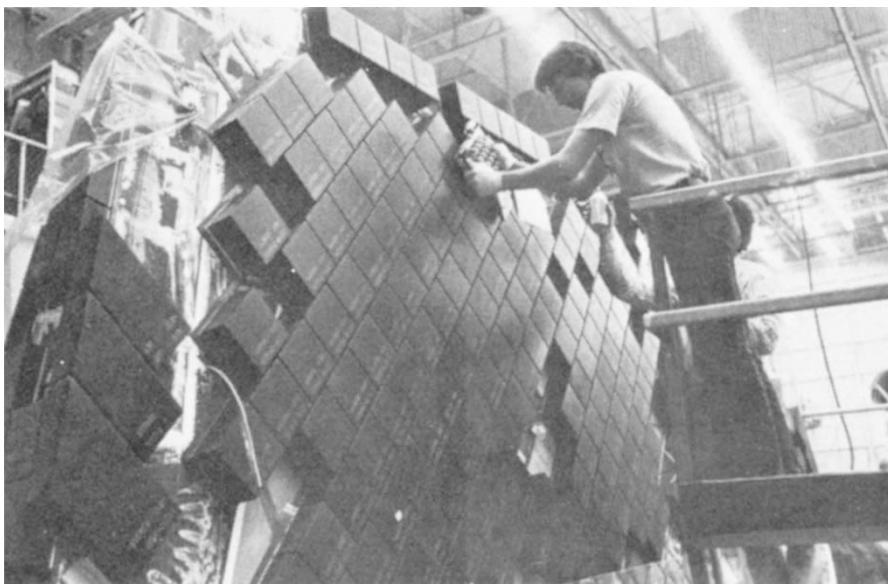
Dr Thomas Mutch, associate administrator for space science, told a House subcommittee in Washington last week that the agency had studied the implications of delays in developing the shuttle engines and decided that the risks involved in meeting the necessary schedules for both the shuttle and the inertial upper stage from which Galileo will be launched were "unacceptable". "The most cost-effective and least-risk approach to retain the Galileo scientific objectives is to delay the launch until 1984, and launch the orbiter and the probe separately", Dr Mutch said.

The delay, and the need for a double launch, will mean a considerable increase in the cost of the project. Originally, with a 1982 launch, this was estimated at about \$450 million; the new estimate, including in particular the extra hardware which the double launch will require, is \$675 million.

Dr Mutch told *Nature* that the new plans, which will involve launching the orbiter several weeks ahead of the probe, will not effect the scientific programmes, and could indeed increase the quality of the results. "Since there will be a separate carrier devoted to the probe, we can now optimise its trajectory to get the maximum coordination with the orbiter," Dr Mutch said.

However the delay could mean further problems for the Galileo programme from Congress, which will have to give its approval to the new schedule and the increased cost. Two years ago, a bid to kill the project by Representative Edward Boland, chairman of NASA's appropriations subcommittee, was defeated on the floor of the House, only after a massive letter-writing campaign by the academic community.

This year, given the delays with the launch, the House accepted an amendment to NASA's appropriations bill proposed by Mr Boland which would give the subcommittee power to veto any move to split the mission. This has been rejected by the Senate, however, and negotiations are now taking place to find an adequate wording to



Sticky problem for the space shuttle: some of these protective tiles came off in flight

meet the House's concern for a review of the new plans, but without giving either legislative body veto powers.

NASA scientists are worried that Congress may try to reduce the costs by splitting the launch, and sending one half of the mission — possibly the orbiter — at a later date. They emphasise that NASA has no plans to split the mission in this way.

Meanwhile Dr Robert Frosch, administrator of NASA, told the House subcommittee that NASA calculated a 50-50 chance that the space shuttle would have its first flight by next summer. The flight was to have taken place this spring, but has been postponed after a series of technical problems. The most recent was replacing some of the thermal tiles, used to protect the re-usable shuttle when it re-enters the earth's orbit, which came

unstuck during testing.

Admitting that this was a problem which "should have been clear sooner, but was not," Dr Frosch told the subcommittee that about 7% of the tiles so far tested had had to be replaced, implying a total of 2,400 out of the shuttle's 34,000 tiles.

Dr Frosch said that technical delays, in particular with the testing of engine performance, meant that the total cost of the shuttle development programme was now likely to be about 20% more than the initial estimate of \$5.15 billion at 1971 prices. He told the subcommittee that NASA had made a number of management changes after investigations to discover why the shuttle programme had run into problems at this stage. But he emphasised that a major factor had been serious underfunding of the programme early on. □

IQ tests 'unconstitutional'

In what promises to be a landmark decision after a seven-year court battle, San Francisco's chief district court judge, Robert Peckham, has ruled that the use of standardised IQ tests to categorise children as mentally retarded discriminates against minorities and is thus unconstitutional.

The immediate effect will be to make permanent a state-wide injunction against these tests and to force state officials to re-evaluate black children previously identified as "educable mentally retarded".

The judge struck out at what he called the "grossly disproportionate enrolments of black children in the so-called 'educable mentally retarded' classes". Although black children make up only 9% of the state school population, some 23% of the children enrolled in these classes are black. Not only is this unconstitutional, Judge Peckham ruled, but it violates federal civil

rights laws and statutes dealing with education for the handicapped as well. He ordered state officials to "monitor and eliminate" the disproportionate placements. The complex case was launched in 1971 by civil rights groups acting on behalf of six black children in San Francisco — known only as Larry *et al*. The children had been placed in special classes because they had scored lower than 75 on IQ tests. When they were tested later by a group of black psychologists, their scores ranged from 17 to 38 points higher. State officials argued that the testing protocols and procedures used by the black psychologists violated accepted practice.

However, the case apparently was decided more on the basis of the general limitations of IQ tests rather than on the specific problems of these particular children. In testimony that ran for more than 10,000 pages, Peckham heard a wide