

# 'Faster, cheaper, better' under fire at NASA

**Washington.** The new Discovery line of low-budget planetary missions being developed by the US National Aeronautics and Space Administration (NASA) is more concerned with economy than with scientific quality. That at least was the verdict of scientists at a recent workshop convened by the agency to review the four-year-old programme.

William Boynton of the University of Arizona, who chaired one of the workshop sessions, said that NASA's only criteria in this year's selection of Discovery missions appear to have been "cost, cost, and cost".

Proposers who designed more complex missions, thinking that they would qualify for funding if they stayed within the \$150-million limit for Discovery projects, were therefore at a disadvantage. So even though hopes were originally high for such projects, "much of the science community is now soured on the programme", said Boynton.

Christopher Russell, for example, of the University of California at Los Angeles, who like Boynton lost out in a recent round of project selections, says that many planetary scientists are now dissatisfied with the Discovery selection process. "The feeling perhaps runs a little deeper than just

## Chile offers cash for ESO telescope site

**Munich.** The government of Chile last week agreed to pay up to \$12 million to the Latorre family, which claims to own the land on which the European Southern Observatory (ESO) is planning to build its Very Large Telescope (VLT), to settle a lawsuit that has been threatening the continued construction of the telescope.

Two independent assessors have been given a month to place a value on the 825-square-kilometre site, including the top of Mount Paranal, which is in the middle of a desert in northern Chile.

The family has in turn agreed to suspend a lawsuit over the land — and thus its demand for \$33 million in compensation — until the evaluation has been completed. The family is said to be prepared to accept \$12 million, and the government says it is prepared to pay up to this figure, depending on the outcome of the valuers' reports.

The agreement represents the first formal indication by the Chilean government that it is prepared to accept responsibility for settling the two-year-old dispute, which has led to injunctions being issued against ESO to stop building work on the VLT (see *Nature* 370, 494; 1994). It also takes some of the immediate pressure off ESO, which had been considering other sites for the telescope, despite the considerable investment it has already made in Chile. **Alison Abbott**

having lost a good race," says Russell.

NASA officials deny that the winning missions were chosen on the basis of cost alone. But they concede that many scientists appear to have been confused by the ground rules. "The game needs to be a little clearer," admits Mark Saunders, the Discovery programme manager.

The only concept chosen last March for full funding from among 28 proposals was a \$59-million lunar orbiter mission (see *Nature* 374, 107; 1995). This was also the cheapest proposal. Three more proposals — for a cometary dust sample return, a solar wind sample return and a spacecraft that would send multiple probes into the atmosphere of Venus — were selected for further study; all three came in well under the \$150-million price cap.

Those attending the workshop applauded NASA for holding the two-day event. But they were not shy about pointing out problems with the programme. One common complaint was that preparing Discovery proposals is too expensive.

By requiring extensive details on factors such as mission cost, NASA is leading scientists to spend an average of half a million dollars on each proposal. "The community cannot afford the expense required to prepare Discovery proposals at this level on a continuing basis," said Russell.

NASA officials agreed that some kind of two-step process — with less detail in the preliminary round — could probably be introduced for the next round of proposals, scheduled for late this year or early 1996.

Scientists at the workshop also complained that the weighting factors used for selecting missions were unclear. NASA had explicitly asked proposers to include educational components, community out-

reach, technology transfer and innovative technology in their mission designs. But many believe that these factors were either not considered, or became disadvantages.

According to Russell, reliance on untried new technology, for example, appeared to be a 'net negative' as it increased a mission's risk of failure. Despite the agency's stated desire to encourage innovation, "the use of old technology was rewarded," he said.

The critics charge that NASA misled the community about how much money would be allocated for any one mission. Many planetary scientists were dismayed last year when the agency appeared to lower the unofficial Discovery cost cap to \$100 million, while keeping the official cap at \$150 million (see *Nature*, 369, 594; 1994).

Several formulae were proposed at the workshop for quantifying 'science per dollar'. But there was no consensus as to how small, simple missions could compete on an equal footing with complex, expensive ones. As a result, one suggestion was that Discovery missions should be divided into small, medium and large categories, with each competing separately.

Daniel Goldin, NASA's administrator, appears to be responsible for some of the uncertainty over pricing. He is said to favour a management approach that encourages cost-cutting by not giving mission designers a specific dollar amount to design to.

As a result, even though many scientists would prefer NASA simply to impose a single cost ceiling and stick to it, the agency is unlikely to do so. That leaves the research community — and NASA managers — with a dilemma: how to obey Goldin's 'cheaper, faster, better' dictum, when 'cheaper' and 'faster' are relatively easy to quantify, but 'better' is not. **Tony Reichhardt**

## Japan 'will raise its LHC support'

**Munich.** Japan may pay up to half of the costs needed to bring forward the construction of the Large Hadron Collider (LHC) at CERN, the European Laboratory for Particle Physics, to CERN's initial completion date of 2005.

Kaoru Yosano, Japan's minister of education, science and culture, told a meeting of the CERN council in Geneva on 23 June that his government was prepared to add significantly to the ¥5 billion (SFr68 million) it has already committed towards the construction of the LHC, the laboratory's next particle accelerator (see *Nature* 375, 169; 1995).

Yosano, who was attending the council meeting as an official observer for the first time following an agreement reached in Tokyo earlier this year, said later at a press conference that Japan is prepared in

principle to contribute "three to four times the amount [it] has already given to support the LHC as it develops".

The statement has provided a boost to CERN's director general, Christopher Llewellyn Smith, who was able to obtain approval for the LHC from CERN's member states only by extending the original timetable for construction and experiments, and agreeing that these should take place in two stages to keep costs down.

A return to the original timetable for construction, under which top energy (14 TeV) would be achieved by 2005, would require a further SFr500 million (US\$575 million) in contributions from non-member countries. It now looks as though half of this could come from Japan.

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