

Europe in space

Ministers to drive hard bargain

EUROPEAN science ministers agreed in principle at Rome last week to participate in the US project to place a permanent manned space station in space by 1992.

But any excitement that officials at the US National Aeronautics and Space Administration (NASA) may feel should be tempered with caution. For Europe is promising to drive a hard bargain, with what French sources describe as "the bitter experience of Spacelab" clearly in mind.

According to members of the European space technology centre, ESTEC, in the Netherlands, from which the Spacelab project was managed, Europe in negotiating was "not clever enough" in striking the deal that gave NASA two Spacelabs (pressurized microgravity and astronomical research modules) to fly on the Space Shuttle, in return for just one week of joint experiments.

The European investment in Spacelab is estimated at \$600-700 million, but the return has been small. Some European experiments continue "but we are at the mercy of what NASA committees decide". According to one British Spacelab user, US researchers are "screwing everything they can get" out of Spacelab, but rarely indicate its European origins. Hence the "bitterness" felt in France and a determination to do better with the space station.

Thus over the next two years the European Space Agency (ESA) will be negotiating terms of participation with NASA which will require:

- Participation in scientific planning.
- Guaranteed use of the space station even if Europe develops its own deep space communications system and manned access systems, and so does not need the whole US infrastructure.
- No "discrimination" against European users.
- Patents rights in results discovered.
- Fair costing.

These and other points must be "guaranteed" before Europe will make a final commitment to the space station, it is said at ESA.

Meanwhile, though, European ministers have agreed to enter "phase B" (detailed planning and costing) studies of a British Aerospace free-flying unmanned platform to which modular satellites may be locked, and which may fly in polar orbit or in an orbit somewhat above the space station; a German-Italian manned experiment module called Columbus (developed from Spacelab) to dock with the US space station; and the development of a large cryogenic engine (HM 60) to power a fifth series of Ariane conventional space launchers.

The ministers also agreed that further attention should be paid to means of pro-

viding independent European manned access to the space station. But there was no specific commitment to Hermès, a French mini-shuttle, or to HOTOL, a British concept of an air-breathing horizontal-take-off launcher, which the French science minister M. Hubert Curien jokingly described as "typical British right-angled thinking". Britain had developed the vertical take-off aircraft; inevitably, it was now talking of the horizontal take-off rocket.

Other than preliminary participation in the space station, ministers at Rome also agreed to an increased ESA space science programme, paid for by members' compulsory subscriptions to the agency. These will

British space agency

Centre seeking definition

BRITAIN has decided to establish a space agency, the British National Space Centre (BNSC), but it is not yet at all clear what the centre will do, what powers it will have, or how much it will have to spend. Britain may also spend more on HOTOL, the British Aerospace concept of a horizontal take-off spacecraft, which seems for the moment to be little more than a few notes on the back of an envelope and is, according to British Aerospace, "turn-of-the-century stuff".

As for BNSC, details will emerge "in a couple of months", says the Department of Trade and Industry, which shares with the Ministry of Defence the Royal Aircraft Establishment, Farnborough, where BNSC will "probably" be based.

Even this ghost has, however, been well-received by British industry, which has been pressing for better coordination of space policy, and the name alone no doubt impressed European partners in last week's ministerial space meeting in Rome. French and German ministers both commented favourably on Britain's apparently greater commitment to space.

Space scientists in Britain, however, will not be much impressed until it is decided whether BNSC will pick up the tab for membership of the European Space Agency (ESA). This is now £11.2 million a year and is paid by the Science and Engineering Research Council (SERC). British technology minister Geoffrey Pattie agreed in Rome to increase the sum by five per cent this year, and five per cent compound (and in real terms) for four years thereafter, so as to pay for an increased and more coherent ESA research programme ("Horizon 2000"). If SERC continued to pay this subscription, it would thus have to be finding another £4 million for space science in five years' time, which it can ill afford. But if Mr Pattie's BNSC paid the sum all would be well.

now rise by 5 per cent a year in real terms for five years, thus providing the basis for the "Horizon 2000" research programme worked out by ESA's science branch over the past year. Britain objected to agreeing the increase for ten years, however, as requested by ESA, and has limited agreement until 1989, when the sums must be renegotiated.

Nevertheless, according to ESA's scientific director, Roger Bonnet, the result was as good as could have been hoped (Britain had been talking of three per cent which, says ESA, would have killed the programme), and a start will now be made on "the first cornerstone" of Horizon 2000, the solar-terrestrial programme. This includes an observatory stabilized in the L₁ Lagrangian point between Earth and Sun, and a multi-craft space plasma physics mission.

Robert Walgate

This, however, raises the question of where BNSC will get its money from. Departments are already fighting their corners, the final question being how much power and influence they will be willing to cede to the new agency.

SERC, however, has a lot to offer: its Rutherford Appleton Laboratory has expertise in managing space projects, as do a number of university laboratories (such as Leicester and the Mullard Space Laboratory of the University of London), and there is some hope that these benefits could be recognized and used within BNSC in return for supporting the ESA subscription.

HOTOL seems even less cut and dried than the agency. Mr Pattie caused raised eyebrows in Rome with the concept of raising payloads by using air-breathing jets as far as the stratosphere and then firing the engines as rockets, using on-board oxidants thereafter.

There was some uncertainty this week as to how far the project was really developed. According to a spokesman for Rolls-Royce, whose experimental engine is reported as performing the air-breathing-to-oxidant switch, "I've no details. . . it has been built up so dramatically by British Aerospace and then by Mr Pattie. . . . We've only been asked to do some very minor research, which is really theory."

British Aerospace, on the other hand, claims that the propulsion system is "classified". Nevertheless the company admits that so far HOTOL is only a paper study combined with some model tests in a wind tunnel, "very much pre-proposal work — turn-of-the-century stuff".

The next stage is to secure funds for further development of the concept, which should eventually prove a cheaper launch system than either Ariane or the Space Shuttle, it is claimed.

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