

Supercomputers

US seeks restrictions on foreign access

Washington

THE United States is pressing allied governments to restrict access to supercomputers by Soviet bloc nationals. Defense Department officials fear that access to the latest generation of machines could allow the Soviet Union to make significant advances in supercomputer technology and programming, or even to run programmes with military applications.

The new generation of supercomputers, exemplified by the Cray 2 or the Cyber 205 models, works at speeds in the gigaflop range, of the order of 10^9 floating point operations per second. The Soviet Union has no machines capable of this speed, which are made exclusively in the United States and Japan. Some employ innovative "vectorizing" software that allows limited parallel processing, and they can be used to test experimental parallel processing software that will lead to yet further advances in computing speeds.

Restrictions on access are likely to be no more popular with foreign than with US academics however. An acrimonious public dispute erupted last month because the National Science Foundation (NSF) asked several universities hosting NSF-financed "supercomputer centers" to ensure that citizens of COCOM-proscribed countries are denied access.

Only the centre at the University of California at San Diego agreed and, even there, officials say the matter has not been laid to rest. (The contract was actually signed by an industrial representative, and officials hint that things might have been different if the university had known more in time.) The centre at Princeton University made a curious compromise by volunteering to impose restrictions but only if required to do so by law, and two of the centres, at Cornell and Illinois, refused. NSF backed down, and officials now acknowledge that to impose restrictions without a national policy on access was "a mistake".

An attempt is being made to resolve the issue by an interagency group under the National Security Council; officials say that the academics will be heard, but at least one, Don Goldstein of the Department of Defense, contends that controls of some type will be necessary and that they should be in place within weeks. If no agreement is reached with universities, control might be achieved by denying entry visas to nationals of some countries planning to work on US supercomputers.

The Soviet Union is seen as the main threat, but there is also some concern about China, according to Goldstein. And he points out that it would be pointless to

impose controls on access in the United States while allowing unrestricted access to similar machines overseas.

Although supercomputers, running up to one hundred times faster than previous top-of-the-line models, can make otherwise daunting problems feasible, officials

Space cooperation

Summit speeds US/Soviet goals

Washington

No firm evidence has yet emerged of a decision by the US administration to pursue formal cooperation in space with the Soviets, despite a flurry of recent interest and the efforts of several US Senators who want President Reagan to make new proposals at his November summit with Soviet leader Mikhail Gorbachev. At recent hearings in Congress, a State Department official spoke of the desirability of renewed cooperation "down the road" but avoided making a commitment to renewing the agreement on cooperation in space that was allowed to lapse following the imposition of martial law in Poland.

At present there are a number of low-level contacts and exchanges between US and Soviet space scientists. Some US instruments are being flown on the Soviet Vega missions to comet Halley, for example, as they were on some of the Soviet Cosmos series of biosatellites. But there are no formal collaborations between the two countries directly, despite last year's Joint Resolution of Congress, signed by the President, committing the administration to work towards increased cooperation. A proposal last year by President Reagan for a joint simulated space rescue has remained unanswered.

Many believe there will be no significant upswing in cooperation with the Soviets until there is a new agreement; Soviet scientists do not have the same degree of latitude to "freelance" on joint projects as their counterparts in the United States. The earlier space cooperation agreement arose at the Nixon/Brezhnev summit in Moscow in 1972, which may thus be a precedent for next November.

The case for a joint Mars project is being pushed most notably by the Planetary Society, which together with the American Institute of Aeronautics and Astronautics held a meeting here last month to celebrate the tenth anniversary of the Apollo-Soyuz test project. The meeting was attended by Soviet cosmonauts who participated in the project, as well as by officials of the US National Aeronautics and Space Administration

admit it is unlikely that long-running programmes for submarine tracking or weapons design could be run clandestinely at a supercomputer centre.

Nevertheless, they say, the damage would be high should anyone succeed. And to be consistent, there will have to be restrictions on access to private supercomputers similar to those being talked about for academic institutions. Most of the world's 140-odd supercomputers are in the United States, and at present there seem to be no regulations limiting access to those owned by, for example, computer services companies.

Tim Beardsley

(NASA). Significantly, NASA's administrator, James Beggs, gave his blessing to the idea of a manned Mars mission as a long-term goal.

The technical obstacles facing a manned Mars mission are indeed formidable, and NASA officials are quick to point out that there are no immediate plans for such an ambitious undertaking. More modest cooperation with the Soviets is thought more likely. NASA officials note approvingly that visiting Soviet scientists have recently been much more open about future Soviet space missions, and Dr Frank McDonald, NASA's chief scientist, expects attempts to coordinate with the Soviets over unmanned Mars missions planned for the end of the 1980s.

The Soviets have volunteered many details of their planned 1988 mission to the Mars moon Phobos, for example, and McDonald thinks there would be clear advantages to both sides in designing complementary instrumentation and if data were shared with a US Mars observer mission planned for 1990. A group of senators led by Spark Matsunaga has urged President Reagan, in legislation now pending, to raise the question of cooperation on Mars exploration with Gorbachev in November.

Congressional supporters of increased cooperation have recently been given some new ammunition in the form of a technical memorandum from the Office of Technology Assessment*. The memorandum notes several areas where cooperation with the Soviets has yielded technical benefits in the past, particularly the effects of long-duration space flight on astronauts and data about the surface of Venus. Despite American concerns about technology transfer, the memorandum concludes that there is potential for future cooperation on "global habitability", exobiology, Antarctic meteorites and some areas of astrophysics, as well as planetary exploration.

Tim Beardsley

*US-Soviet Cooperation in Space: a technical memorandum Office of Technology Assessment, July 1985.