British Researchers Seek SDI Funds

Contracts worth at least $3 million have been signed with university research groups; many more are awaiting a response to their grant applications

London

"We tried to get funding from SERC [Science and Engineering Research Council] for this work, but were not successful," says Ian Chalmers, a senior researcher in the Department of Electronics and Electrical Engineering at the University of Strathclyde in Glasgow, Scotland. "Then SDI came along, and we were delighted."

Chalmers is an expert on the insulating properties of high vacuums, a topic of considerable importance to any space-based weapons system requiring the use of large power sources. He is also one of a relatively small number of British research workers who have been successful in obtaining funding from the Strategic Defense Initiative Office in Washington.

As in the United States, the SDI program has been highly controversial on university campuses in Britain, receiving vociferous criticism both on technical and political grounds. Last summer, for example, 545 university scientists, mainly physicists and computer scientists, including three Nobel prizewinners, signed a pledge that they would refuse any SDI funds, even in basic science.

Other scientists have had fewer qualms about accepting—or at least applying for—such funds. They point out that the research is unclassified, and many claim that the current difficulty of obtaining government support for even top-rate projects in Britain makes them keen to pursue all potential sources of funding.

According to officials from the Ministry of Defense in London, more than 100 university-based research groups have indicated an interest in applying for SDI funding, and more than 50 grant applications have been forwarded to the SDI's Innovative Science and Technology (IST) Office in Washington.

As in the United States, SDI has proved no pot of gold for the university community, however. Most of the grants so far awarded are for less than $200,000, although a few are said to be considerably larger. Overall, contracts have been signed with British universities for a total of $3 million over a period of 3 years—a small proportion of the $100-million budget that has been promised the IST program.

However, given the recent funding problems of the SDI program as a whole, British officials say they do not feel let down. "There have been half a dozen awards to British research groups," says Callum Alexander, director of policy at the SDI Participation Office (SDIPO) that has been established by the Ministry of Defense. "We reckon that is a pretty good success rate, even though it leaves a number of people disappointed."

The Ministry of Defense says participation in SDI "opens the way for research possibilities that we could not afford on our own, in technologies that will be at the forefront of tomorrow's world."

Britain was the first Western country to accept President Ronald Reagan's invitation to participate in SDI research. Prime Minister Margaret Thatcher's support for the program, which she declared after a meeting at Camp David in December 1984, was followed by the signing of a memorandum of understanding on 6 December 1985 between U.S. Secretary of Defense Caspar Weinberger and then British Defense Minister Michael Heseltine, setting out the conditions under which collaboration would take place.

Many British officials remain uncommitted on the question of eventual technical feasibility. The chief scientist in the Ministry of Defense, Richard Norman, told a House of Commons committee last summer that "I am firmly in favor of this research program, while having doubts about the sort of system that might eventually emerge from it." Furthermore, the government remains highly sensitive to the political implications of SDI. In a hard-hitting speech delivered last year at the Royal United Services Institute in London, Foreign Secretary Geoffrey Howe warned that any challenge to the Antiballistic Missile Treaty threatened to undermine the "keystone in the still shaky arch of security."

Nevertheless, a recent White Paper from the Ministry of Defense claims that collaboration "opens the way for research possibilities that we could not afford on our own, in technologies that will be at the forefront of tomorrow's world." Equally important from Britain's point of view is the argument that involvement in SDI research is needed to ensure harmony among North Atlantic Treaty Organization (NATO) allies if SDI technologies are eventually deployed.

The strong sales pitch that SDI director General James Abrahamson originally delivered along these lines 2 years ago when seeking participation from European nations in the research phase of SDI encouraged the idea that those who signed up could expect to see a substantial proportion of the SDI funding coming their way.

Britain is reported to have sought guarantees of contracts worth at least $1.5 billion. The total value of contracts signed up to the end of 1986 had only reached $34 million, however. British officials argue that the $1.5 billion was never an official target and have warned applicants not to be too optimistic that they will be funded.

Critics of SDI claim that the small amount of money so far committed to British research groups reinforces their argument that the main thrust of the agreement between the United States and Britain is political. They argue that although the United States may be interested in obtaining some highly specialized research in a relatively few esoteric areas, its chief objective is to secure endorsement of SDI's goals.

"Those who have signed research contracts are being used, since any involvement of overseas research workers is taken as a form of international approval of the whole program," says Richard Ennals, a leading anti-SDI campaigner and former research

manager in the department of computer science at Imperial College, London.

Government-run laboratories have received the lion's share of SDI contracts. Last summer, for example, a 3-year, $4.3-million agreement was signed for research into the potential weapons applications of neutral beams at the Culham Laboratory of the U.K. Atomic Energy Authority.

The two largest contracts have been for $10 million each, and both were announced at the end of December as direct government-to-government agreements. One is for a set of studies of the "architecture" of a European missile defense system, and the second covers five research programs managed by different government research establishments into areas ranging from electromagnetic rail guns to pilot work on a test-bed for the architecture studies.

So far, the main involvement of university scientists has been through relatively small grants issued by the IST office. This was the case, for example, with the first SDI grant to be signed with British research workers covering research in the Department of Physics at Heriot-Watt University in Scotland into the use of optical signals for data processing.

News of the grant, which was awarded to the team's director Desmond Smith for work being carried out jointly with the company Marconi and the University of Dayton in Ohio, generated a storm of controversy not only in Britain but also in Brussels, since earlier work into the possible construction of "optical computers" had been financed in part by the Commission of the European Economic Community.

Smith himself is unperturbed. He points out that the work involved is basic research, and that the total amount of money initially involved—$150,000 for a 1-year contract—is relatively small compared to the support he has received elsewhere. Department member Andrew Walker says, however, that the group is currently discussing with the SDI office in Washington a larger contract that would cover the development of an operational system.

Five other contracts have been signed with other university research groups in Britain as part of a larger contract agreed on by a consortium of primarily U.S. universities, headed by Auburn University in Alabama. They cover a range of research projects into different aspects of nonnuclear power systems in space.

Two of the contracts have been awarded to separate departments at the University of Strathclyde in Scotland. The other three have gone to the Department of Electrical Engineering at the University of Newcastle, the University of Aston in Birmingham, and a research group working at the Royal Holloway and Bedford New College of the University of London. In each case, the research involves problems related to the insulation of highly charged components in a space environment.

Transatlantic accord.

Britain signed up to work on SDI after a meeting between President Reagan and Prime Minister Thatcher in 1984. Britain has expressed unease about potential threats from SDI to the ABM Treaty, however.

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Such knowledge would have relevance to a range of space-based weapons systems, for example, a laser system requiring a large amount of power to be made available rapidly. However, Chalmers at Strathclyde argues that the British teams are not working on weapons systems as such. "We are more involved in the enabling technology which will allow the long-term use of spacecraft at very high power levels," says Chalmers. "It is fundamental science, and we enjoy doing fundamental science."

In both the Heriot-Watt case and the group of universities involved in insulation studies, research contracts have been the result of invitations from the United States to submit bids after a tour of British universities was made by the head of the IST Office, James Ionson. Those submitting unsolicited proposals based on the list of research topics in which the office has expressed interest have so far been less fortunate.

Contract officers at Imperial College in London, for example, say that six separate applications for research funding have been submitted to Washington, but no money has yet been forthcoming. Similarly, physicists at Queen's University of Belfast are still waiting to hear whether the SDI program is prepared to support their research into the optical characteristics of atmospheric discharges, research that originated in atmospheric physics but could, they argue, have potential applications to the detection of missile tracks.

Three particular topics have been of concern to all those debating whether or not to apply for funds. The first is the danger that, although in principle all research sponsored by the IST program is unclassified, publication of any results considered to have military significance could be blocked.

According to George Gallagher-Daggitt, the university liaison officer of the SDIPO in London, if there is a likelihood of a research project disclosing "operational capabilities and performance characteristics of developing military systems," then the contract would stipulate clearly that "responsibility for the release of information lies with the sponsoring office"—the U.S. Department of Defense.

Other concerns have been generated by the fact that the U.S. Department of Defense is said to be demanding exclusive rights on any useful results to emerge from the research it finances. The exact terms of the agreement reached between Weinberger and Heseltine on this have not been published, but an agreement with the West German government, which was leaked to the press, gives the United States exclusive use of any "foreground research" developed under SDI contracts.

The third factor influencing decisions has been the controversy surrounding the SDI research program on university campuses, where opponents have used arguments ranging from those familiar in the United States on arms control implications to the claim that the United States is attempting to siphon off scarce scientific talent, for example, in advanced computing. Ennals says that as a result of the widespread criticism of the program in the computer press, "the mood in the computer research community is fairly solid" in opposing SDI contracts.

In such a climate, those who are prepared to accept contracts have been keeping their heads down. Apart from the Heriot-Watt research, none of the other five university contracts has been announced to the British press, and four of them were not even known to the information officers of the universities involved when contacted recently. ■ **DAVID DICKSON**