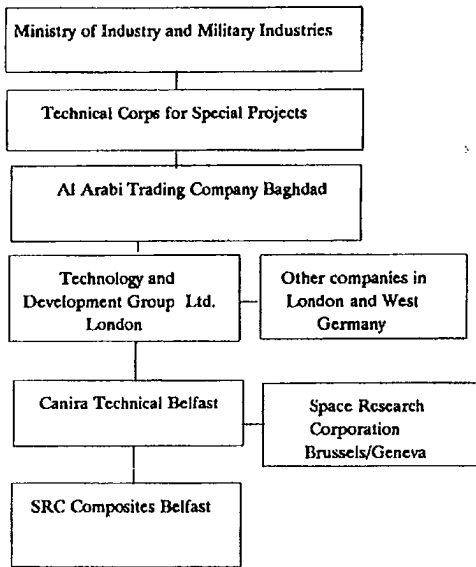


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Ties Between Iraq and the Space Research Corporation



officials to track goods and to ascertain culpability or prove intent to violate export laws. Additional layers of companies probably make it easier for the Iraqi Government to disassociate itself from the network.

Even if the network refrains from exporting controlled material to Iraq, Baghdad may benefit from technological know-how and skills developed through business ventures such as those with Space Research Corporation. Another possible characteristic of the network may be, as in the Lear Fan factory case, the purchase of entire manufacturing entities rather than equipment. Although the number of present and former Iraqi nationals involved in the network is undetermined, Baghdad could use some of the network's components with production elements to train managers and skilled technicians

Success in developing experimental weapons such as a long-range artillery piece probably will encourage further Iraqi efforts with complex or advanced systems. We believe Iraq takes great pride in its weapons programs and uses them to tout Iraqi power and prestige. More important, the transfer of knowledge and skills from foreign companies during these development efforts almost certainly provides benefits to other areas of Iraq's arms industry

misrepresentation, false end users, and smuggling. Additional companies also will provide multiple layers of businesses handling a single deal, increasing the paperwork and making it harder for enforcement

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~~Secret~~**Project Babylon Continued**

Bull's death, the dissolution of the Space Research Corporation, and criminal investigations in the United Kingdom almost certainly have derailed—at least temporarily—Project Babylon. Iraq, however, received some of the necessary gun components from the United Kingdom, and we speculate that some design and technical information has been passed from the Space Research Corporation to Baghdad. Iraq is likely to continue with the project, but, unless it receives additional assistance—particularly with the projectiles — Baghdad may not develop a cannon with strategic potential.



The 16.7-inch L86 HARP gun. [redacted]

The Company One Keeps

We believe Iraq works with foreign companies on many levels, beginning with services usually identified with the firm, but moving into areas such as the procurement of raw materials, components, or even production equipment. In the case of the Space Research Corporation, the company admits to having close contacts and defense-related contracts with Baghdad. In addition to supporting Iraqi efforts to produce artillery, the company's involvement apparently has grown from providing consulting services to a significant role in Iraq's covert arms procurement network. [redacted]

The Space Research Corporation is linked to Iraq's arms procurement network by its association with the Technology and Development Group Ltd. of London, according to press reports [redacted]

[redacted] The Technology and Development Group is a subsidiary of the Baghdad-based Al Arabi Trading Company, which has provided much of the financing for the group's acquisition of shares in British-based companies and subsidiaries. Al Arabi, in turn, is a front for the Technical Corps for Special Projects office of Iraq's Ministry of Industry and Military Industries. The Space Research Corporation is tied to the Technology and Development Group through their joint ownership of Canira Technical Corporation of Belfast. After its purchase by the two firms, Canira

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Dangerous Dealings: Iraq, Gerald Bull, and the Space Research Corporation [redacted]

Iraq relies on its own government organizations and a relatively large network of companies to procure the materials and technology it needs for developing strategic weapon systems. This effort has continued unabated despite an increasing number of disclosures in the past year. Although some of these disclosures have resulted in intercepted shipments of materials and arrests, in at least one case the outcome was more deadly. Gerald Bull, an internationally renowned weapons engineer and arms dealer, was murdered in Brussels in late March shortly after publication of reports on cooperation between his company and Iraq on missiles and an artillery piece with strategic potential.1 [redacted]

[redacted] the ties between Iraq and Bull's company, the Space Research Corporation, that have been highlighted by Bull's murder demonstrate some of the characteristics of Baghdad's arms procurement and development efforts. These characteristics include a willingness to experiment with weapons development, determination to circumvent Western export controls, and involvement with foreign firms at levels ranging from services usually identified with the company into often unrelated areas of procurement. [redacted]

A Big Gun for Baghdad?

Iraq's long-held interest in weapon systems capable of striking Tehran and Tel Aviv lends credence to press and other reports that Bull was developing a long-range gun for Iraq before his death. According to press reports, Iraq is reviving a joint US-Canadian project from the mid-1960s—called the High-Altitude Research Project (HARP)—that developed extremely long-range artillery and in which Bull played an instrumental role. In the past the Iraqis have demonstrated a willingness to experiment by trying to develop various types of weapons—such as the Al Faw antitactical ballistic missile or the Nasr 9,000-kilogram bomb—that are either technically complex or of questionable utility. [redacted]

The Belgian-based Space Research Corporation's connections to Iraq probably were used by Gerald Bull to approach Baghdad in the past two to three years with a proposal to revive the HARP "super-gun." [redacted]

Iraq's Ministry of Industry and Military Industries apparently was acquiring material for the program, [redacted]

In April, British Customs detained a shipment to Iraq of components for long-range artillery—ordered for Baghdad by the Space Research Corporation—that were suitable for use in constructing a gun barrel of approximately 60 meters. Greece and Turkey also intercepted possible components for the large gun in April. [redacted]

The Cannon Caterers

The Space Research Corporation has admitted to being involved in some of Iraq's many artillery production projects. The company probably is helping Baghdad develop its own 155-mm howitzer, called the Saddam 155. [redacted]

[redacted] a Saddam 155 displayed during the Baghdad arms exhibition in April 1989 appeared to be based on the Austrian GHN-45, which was based in turn on the Space Research Corporation's GC-45 howitzer.2 [redacted]

2 The firm has helped develop the Austrian GHN-45, the Chinese WAC-21, the Spanish FGH-155, the Yugoslavian M46, and the South African G-5 and G-6 155-mm Howitzers. Tel Aviv recently claimed that Bull had also helped increase the range of Israeli artillery pieces. [redacted]

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4 May 1990

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~~Secret~~**A Strange Eulogy for Gerald Bull**

"This Canadian... what's his name?... Whatever. This naturalized American. Is he not entitled to human rights? When he came to Iraq, they killed him. They killed him with a silencer-equipped pistol. As far as they are concerned, he was not entitled to human rights... because he was not fit to be used to promote a presidential candidate in the United States."

Saddam Husayn

2 April 1990

Although Saddam's somewhat warped remarks fell short of a proper eulogy, it was not the first time Gerald Bull's name had been used by others to make a political point. Bull's career lent itself to use by others, and his death points up another troubling aspect of covert arms procurement involving Iraq.

Gerald Bull—born in Canada but granted US citizenship in the early 1970s by an act of Congress—was regarded as an engineering genius for his work with artillery and aeronautics, but he was also considered a mysterious, if not shady, businessman for his dealings with countries such as South Africa, China, and Iraq. Bull graduated from the University of Toronto's aeronautical engineering department in 1951 and was—at age 23—its youngest Ph.D. In addition to the HARP project, Bull worked on armament research and development—including antiballistic missiles—but his most notable inventions were an extended-range artillery shell and the GC-45 155-mm howitzer. In 1980, Bull pleaded guilty and was sentenced to six months in a US prison for illegally exporting two 155-mm gun barrels, 30,000 artillery shell casings, and one radar tracking system to South Africa in violation of US export controls. Embittered by the experience, Bull left his home in Canada and lived and worked overseas following his release. He reestablished in Brussels the Space Research Corporation—the original firm in Canada had gone bankrupt while Bull was in prison—turning it into a profitable defense engineering consulting firm.

Before Saddam's attempt to use Bull's name in a rhetorical exchange with the West, the Soviets had found it a useful element for disinformation. In early 1988, a Novosti-written or -inspired story appeared in a Nigerian

newspaper that used the Space Research Corporation's export of artillery systems and Bull's help in developing the South African G-5 howitzer as evidence of US "military aid" to South Africa. In 1980, Bull's lawyers tried to suggest that the firm's sales to South Africa involved the CIA. Following Bull's death, some writers were quick to accuse Britain's MI-6 and the CIA of killing the engineer to prevent him from ruining the US-British sting operation involving nuclear weapon trigger components for Iraq that occurred a week later.

Bull's death is not the only example of violence directed at recent Iraqi procurement efforts. In May 1988 the car of Ekkehardt Schrotz, an executive of an Austrian firm involved in Iraq's Condor II missile program, was blown up. According to press reports, Space Research Corporation officials claim that since Bull's death every engineer at the company has received death threats. Earlier examples of violence directed at Iraqi programs include the murder of a key Egyptian-born scientist working on Iraq's nuclear program in Paris in 1980, which culminated a series of incidents of sabotage and intimidation between 1979 and 1980 that were intended to stop or slow Iraq's progress.

The advent of Iraq's ballistic missile inventory, its growing retaliatory capability, and the dispersion of critical strategic weapon production facilities make it unlikely that a direct attack such as Israel's strike in June 1981 against Iraq's Osirak reactor will be repeated. As a result, we believe covert actions aimed at slowing or stopping Iraq's progress may increase. Attempts to kill or frighten people involved in Iraq's strategic weapons programs by Iraq's enemies are likely to be a major part of such covert activities. We believe Baghdad's perceptions that its strategic weapons programs are vulnerable to continued covert activity and its increasing confidence in its own military prowess may prompt retaliatory covert efforts—making a new era of personal insecurity for arms dealers a possible legacy of Gerald Bull.

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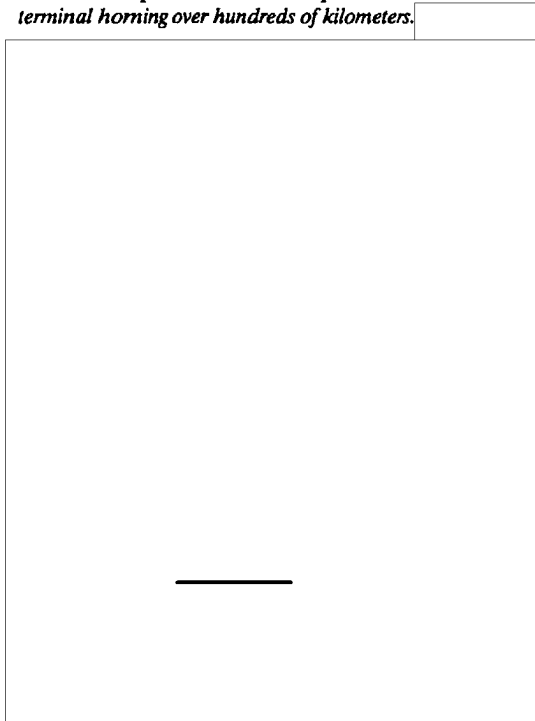
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Project Babylon

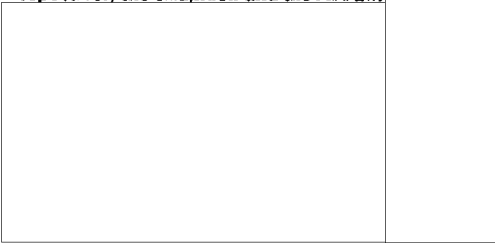
Baghdad probably is trying to develop long-range artillery as a backup to its ballistic missiles and as a weapon that cannot be intercepted by future Israeli missile defenses. The construction of a long-range artillery piece similar to the HARP guns is feasible, and Bull and the Space Research Corporation had access to the necessary technologies for the gun and its projectiles. Such a weapon would have logistic problems involving its handling and positioning and technical problems involving barrel wear, rate of fire, and the types of projectile payloads it employed. Moreover, a large, fixed firing site — unless constructed in a costly manner either underground or in difficult terrain — would be a relatively easy target for Iraq's enemies. Baghdad, however, has indicated in its pursuit of this project that it believes the potential advantages of such a system outweigh its drawbacks.

with even simple electronics could provide accurate terminal homing over hundreds of kilometers.

Project Babylon almost certainly is based on the concepts and technology developed from Bull's work on the HARP project and his continued interest in long-range artillery. The HARP project was directed toward the use of guns rather than rockets for putting scientific payloads into the upper atmosphere. It was eventually abandoned by the US and Canadian Governments after both decided to focus on conventional rockets. The guns developed for the program were capable of firing shells over distances of hundreds — and theoretically thousands — of kilometers. Moreover, according to the former chief of US Army Research and Development responsible for the inception of the project, the HARP tests demonstrated that shells



We believe the company may be involved in Iraq's project to produce self-propelled howitzers and advanced ordnance. Iraq and a consortium of European companies are developing 155-mm and 210-mm versions of a self-propelled howitzer, called respectively the Mainoon and the Al Faw.



Press reports linked Bull to the development of Iraq's Tammuz ballistic missile — probably the missile version of Iraq's space launch vehicle, the Al Abid. Michael Bull, Gerald Bull's son, has publicly stated that the Space Research Corporation provided basic engineering assistance that "may or may not have been of use" in Iraq's missile program. We cannot confirm that Bull or the company are involved with the Tammuz missile, but we believe the firm is involved in several of Iraq's missile and rocket projects.



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was used to form a new company, SRC Composites Ltd., to purchase a former Lear Fan aircraft factory to manufacture advanced composite materials with missile applications. Public disclosure of the links between the Technology and Development Group, the Space Research Corporation, and Iraq and financial problems eventually forced the network to sell the factory. [redacted]

Another possible link between the Space Research Corporation and Iraqi procurement efforts was the company's inquiries in 1989 about purchasing filament winding machines. Its inquiries occurred at approximately the same time that Iraq was placing requests for filament winding machines with other European companies. These machines have many applications but can be used to fabricate missile motor cases and nose cones. The machines also can be used to wrap gun barrels with high chamber pressures—such as might be expected for the Project Babylon gun. Exports of sophisticated filament winding machines are covered under the Missile Technology Control Regime. [redacted]

The Space Research Corporation apparently has operated within the law in the majority of its dealings with Baghdad—another characteristic of most companies in the Iraqi network. Canira, for example, was eligible to apply to London for government development grants for the Lear Fan factory, although the application was rejected following objections by the Foreign Office. The Space Research

Space Research Corporation

In the aftermath of the British Customs seizures, the family of Gerald Bull announced in mid-April that the Space Research Corporation and its subsidiaries were being dissolved, citing Bull's death and "security reasons." Before this action, the Space Research Corporation listed itself as an engineering, architectural, and surveying firm. It was best known for consulting on artillery development. The company's GC-45 155-mm howitzer is widely recognized as one of the best long-range artillery pieces in the world. Gerald Bull's expertise on extended-range ammunition also was used by the company in developing its business. [redacted]

Gerald Bull's sons headed the firm, [redacted]

[redacted] It was headquartered in Brussels and had branch offices in Geneva and Madrid and possibly in Greece [redacted]

Corporation's involvement with Iraq on more conventional artillery systems has also been legal. [redacted]

In its determination to acquire controlled material, Iraq and its procurement network appear more than willing to circumvent export controls. The Space Research Corporation apparently prepared the designs for the artillery components seized by British Customs with the intent to conceal their true use. The designs for this material passed inspection by several British regulatory bodies because they appeared consistent with standard-oil processing pipe. We believe many of the companies in Iraq's procurement network operate at the limits of legality and constantly look for opportunities to acquire and export controlled materials. The Iraqis also use the network to obscure the final destination of materials, sometimes using false end users as well. [redacted]

Implications

The increased scrutiny of the Space Research Corporation, the Technology and Development Group, and their associates is unlikely to deter Baghdad from adding new businesses to its web of companies. Although costly, new companies should provide Baghdad's procurement officers with more opportunities to acquire controlled materials through

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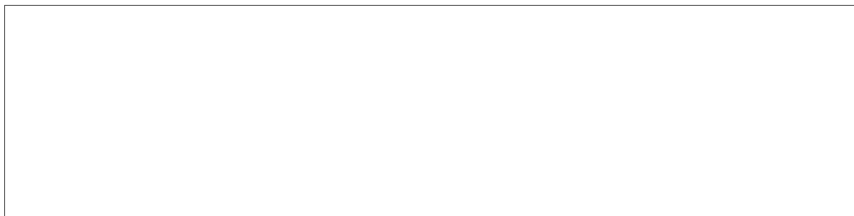
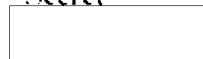
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