Assistant Secretary of Defense Richard Perle, who fielded questions about the report, denied that its release was related to the November summit between President Reagan and Mikhail Gorbachev. Asked about the fact that virtually all of the information obtained by the Soviets was unclassified, Perle said that "far too much" scientific data are publicly available. But he acknowledged that a balance should be struck between the competing goals of restricting Soviet access and ensuring a free exchange within the U.S. scientific community. "We have moved in the direction of trying to persuade the scientific and technical community to exercise self-restraint," he said, "and only through an awareness of the fact that they are targets of hostile intelligence organizations can we expect them to take that self-responsibility seriously."

— R. JEFFREY SMITH

OTA Study Highlights Star Wars Difficulties

Ensuring the survival of most U.S. cities in the face of a concerted Soviet nuclear attack is infeasible, according to a new report by the Office of Technology Assessment (OTA). The 325-page report, released on 25 September after a 16-month investigation of President Reagan's "Star Wars" proposal, states that the difficulties of mounting such a city defense "can be overcome only if the attack is limited by restraints on the quantity and quality of the attacking forces." Fortunately, it suggests, the Reagan Administration recognizes this problem and has abandoned a perfect defense of cities as the program's primary goal.

Instead, the 5-year multibillion dollar research effort is now aimed merely at reducing the threat posed by Soviet ballistic missiles to both cities and military assets. The difficulty is that an appreciable dent is unlikely to be made in this threat without "negotiated deep reductions in offensive forces," the report states. In short, Soviet cooperation is needed, not only to make a comprehensive missile defense feasible but also to ensure that the strategic balance remains stable.

"Without such an agreement, as the United States and the Soviet Union begin to deploy [ballistic missile defense], each might easily suspect the other of attempting to gain military advantage by seeking the ability to destroy most of the opponent's land-based missiles and then use defenses to keep retaliatory damage to a very low level"—a perfect recipe for a first-strike capability, the report states. "It is important to note, however, that no one has yet specified just how such an arms control agreement could be formulated."

A companion study, which focuses on antisatellite weapons, concludes that the existing Soviet ASAT poses only "a limited threat to U.S. military capabilities, but future space systems could pose a much greater threat." A ban on tests of space weapons would inhibit development of such systems, as well as "reduce the cost and complexity of ensuring a reasonable level of satellite survivability," but it would not eliminate all ASAT threats.

If the reaction of OTA's overseers is any indication, even these mild conclusions are likely to be controversial. Five of the 12 members who sit on the OTA congressional board voted not to release the "Star Wars" report, while 7 voted in favor of publication.

—R. JEFFREY SMITH

Magnets Chosen for Supercollider

Particle physicists have selected a high-field design for the magnets of the proposed superconducting supercollider, thereby fixing the size of the huge machine at a relatively modest 100 kilometers circumference and setting the stage for an eventual commitment of federal funds to its construction. Maury Tigner, director of the supercollider's Central Design Group at the Lawrence Berkeley Laboratory, announced the decision on 19 September.

If approved, the $4 billion supercollider will accelerate beams of protons to 20-trillion electron volts and will smash them together head on, allowing physicists to study how elementary particles are built and how the fundamental forces are unified. The machine will also be the largest and most expensive scientific project in history, with a main ring that could comfortably encircle a major city such as Washington, D.C., or New York.

The newly selected high-field magnets, known technically as the conductor-dominated type, represent an upgraded version of the design used at the first superconducting accelerator, the Tevatron at Fermilab. That base of operational experience weighed heavily in the choice: the high energy physics community still has vivid memories of the ISABELLE project at Brookhaven National Laboratory, in which magnet problems resulted in delays that ultimately proved fatal (*Science*, 20 May 1983, p. 809).

The only other serious contender was an innovative low-field design known as the superferric magnet, which did offer some cost advantages. However, the advantages were not as great as its developers had originally hoped. Moreover, the low field values would have required a main ring some 160 kilometers in circumference, thereby increasing the construction costs of the accelerator itself.

With the magnet selection completed, the Central Design Group is now moving towards its next major milestone: a detailed design proposal for the machine based on the high-field magnets, together with a more precise estimate of the project's cost. That proposal will be submitted to the Department of Energy in April 1986. After that the schedule calls for the selection of a site for the supercollider in December 1986—at least 20 states are preparing bids, so the competition promises to be hot—and the beginning of actual construction in October 1987.

However, the latter part of this schedule is hanging in a state of limbo at the moment. The supercollider has come under attack by scientists in other disciplines who are concerned that huge expenditures on the machine will cut into their own funding. Moreover, a construction start in October 1987 means that the Energy Department has to make an official commitment to the supercollider some time next year, before the fiscal year 1988 budget is prepared. Given the deficit situation, it is not at all clear that the department will be willing or able to take that step. In fact, some physicists in the project have begun to resign themselves to a delay of several years.—M. MITCHELL WALDROP