WHY THE PHYSICISTS' SDI STUDY IS FLAWED

A study released last week by some members of the American Physical Society seems to cast doubt on the technical feasibility of the Strategic Defense Initiative (SDI). In reality, the study casts doubt on itself. It contains a number of serious flaws. For one thing, it makes unsubstantiated assertions about how a space-based strategic defense system would not be survivable. For another, it draws misleading conclusions about the SDI program as a whole even though the study deals only with directed energy weapons. Most serious, perhaps, is the study's failure to substantiate its claims about how long it will take to develop missile defense technologies.

This 18-month study was completed by 17 members of the American Physical Society, a U.S. organization of physicists. Entitled "Science and Technology of Directed Energy Weapons," the study concludes that "significant gaps" remain in the "scientific and engineering understanding of many issues associated with the development" of directed energy weapons for use in a strategic defense system. The panel then asserts that "a decade or more" of research is required before a decision can be taken regarding the effectiveness and survivability of laser, particle beam, and microwave weapons. As a result, these conclusions predictably cheer SDI's critics.

Venturing Beyond Science. The panel did a respectable job in outlining the scientific nature of problems associated with developing directed energy weapons and even made some good suggestions on how to go about resolving them. Then, curiously, the panel ventured far beyond its scientific findings to draw general conclusions about strategic defense. These conclusions understandably are seriously flawed. Examples:

◆◆ The study covers only directed energy technologies. As a result, the physicists overlook the most promising of all near-term defense technologies--kinetic energy weapons. These not only could constitute the first phase of SDI deployment in the 1990s but very likely would carry much of the strategic defense burden even after lasers were deployed. Thus the physicists' study in no way weakens the case for deploying effective strategic defenses based on kinetic energy weapons in the 1990s.

◆◆ The study says very little that is new about the timetable of directed energy research. Scientists working on SDI long have known and said that it would take at least ten years to develop some directed energy weapons for a strategic defense system.

◆◆ The panel fails to substantiate its non-physics conclusions. This study contains no serious analysis of the nature of the Soviet threat, Soviet strategic defense countermeasures, weapon systems engineering, nor military tactics for a space-based defense. Despite this, the panel manages to conclude that the survivability of a space-based defense is "highly questionable." Such a conclusion requires analyzing problems far beyond the realm of physics.

◆◆ The panel paints the progress of directed energy research with too broad a brush. The work to be done on a neutral particle beam accelerator, for example, is much different than that required for a free electron laser. Yet these scientists talk about "orders of magnitude" improvements being needed across the board, as if all lasers are the same. They are not.

◆◆ The panel's judgments on how far directed energy research programs have to go apparently are not based on any clear understanding of the rapid progress U.S. strategic defense research has been making. The performance of the neutral particle beam accelerator, for instance, has been much greater than expected. Other directed energy technologies are no different. It thus is highly possible that the U.S. can reach research goals on some technologies faster than the ten years envisioned by the physicists' panel.

The study by some American Physical Society members is basically good physics--as far as it goes. But that does not mean that the study can say much, if anything, about such essential issues as whether a space-based defense will be survivable or whether an SDI system can be deployed in the 1990s. This requires a study of near-term strategic defense technologies such as kinetic energy weapons. It also requires an in-depth analysis of military systems engineering problems, military tactics, and the nature of the Soviet threat. The physicists' study chose not to deal with these problems in a serious way. As such, the physicists' conclusions cannot bear seriously on the debate about strategic defense deployment.

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of Defense Studies

For further information:

Report of the Technical Panel on Missile Defense in the 1990s, George C. Marshall Institute, 1987.

Kim R. Holmes, "Technology Speeds the Strategic Defense Initiative Timetable," Heritage Foundation Backgrounder No. 557.

Kim R. Holmes, "The Case for Deploying SDI in the 1990s," Heritage Foundation Backgrounder No. 570.