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Congress of the United States

OFFICE OF TECHNOLOGY ASSESSMENT

WASHINGTON, DC 20510-8025

June 7, 1988

The Honorable William H. Webster
Director
Central Intelligence Agency
Washington, DC 20505

OCA FILE OTA

Dear Mr. Webster:

I am pleased to enclose OTA's Report on SDI: Technology, Survivability, and Software.

Public Law 99-190 (continuing appropriations) called for the Office of Technology Assessment to conduct a "...comprehensive classified study...together with an unclassified version...to determine the technological feasibility and implications, and the ability to survive and function despite a preemptive attack by an aggressor possessing comparable technology, of the Strategic Defense Initiative Program." In addition, the accompanying Conference Report specified that..."This study shall include an analysis of the feasibility of meeting SDI computer software requirements."

This report responds to the above Congressional mandate. It puts SDI technologies in context by reporting the kinds of ballistic missile defense (BMD) system architectures that the SDI organization has been considering for "phased deployment." It reviews the status of the various SDI technologies and system components. It analyzes the feasibility of producing dependable software of the complexity that advanced BMD systems would require. Finally, it summarizes what is now known--and unknown--about the probable survivability of such systems against concerted enemy attacks of various kinds.

The study found that major uncertainties remain about the probable cost, effectiveness, and survivability of the kinds of BMD system--relying on kinetic rather than directed energy weapons--that might be deployable in the mid to late 1990s. In addition, several more years of research would be needed to determine whether it is feasible to construct the kinds of directed energy weapons contemplated by the SDIO as follow-ons to its "phase one" BMD systems. The survivability of both nearer-term and farther-term BMD systems would depend heavily on the outcome of a continuing competition in weapons and countermeasures between the United States and the Soviet Union. Finally, developing dependable software for advanced BMD will be a formidable challenge because of the difficulty of testing that software realistically.

I hope you will find the Report useful and informative.

Sincerely,

John H. Gibbons
John H. Gibbons

Enclosure

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