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Backgrounder UPDATE

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KINETIC ENERGY TECHNOLOGY GAINS SPEED THE SDI TIMETABLE

(Updating *Backgrounder* No. 557, "Technology Speeds the Strategic Defense Initiative Timetable," January 13, 1987.)

Strategic Defense Initiative technology continues to make gains. Among them are the many promising developments in the area of Kinetic Energy Weapons (KEW). These primarily utilize current technologies to intercept physically and destroy incoming ballistic missiles with space or ground-based non-nuclear devices. Because they depend on already well developed technologies, KEW systems could form the core of any near-term SDI system.

The Strategic Defense Inititive Organization or, as it is widely known, SDIO, conducted two successful "technology validation experiments" in 1986. The Flexible Lightweight Agile-Guided Experiment (FLAGE), demonstrated the feasibility of tracking and destroying missiles at low altitudes as they approach U.S. military or civilian targets. In one FLAGE test, a ground-based interceptor destroyed a simulated nuclear warhead traveling at over 3,000 miles per hour. Another test, called Delta 180, demonstrated the ability of KEW technology to track and destroy a missile warhead in space with a ground-launched guided missile. In the test, a target missile was launched into space and then tracked, intercepted, and destroyed by a second ground-launched missile.

Space-Based Kinetic-Kill Vehicles (SBKKVs) deployed on space-based platforms would be used to target and destroy enemy Intercontinental Ballistic Missiles (ICBMs) immediately after an ICBM is launched and as it leaves the atmosphere and rises into space.

SDIO has made rapid progress in developing methods to produce lighter high-performance missiles, advanced propellants, and more efficient engines. SDIO is preparing for experiments in space in 1990 to test components developed and tested on the ground.

The Endoatmospheric Reentry-Vehicle Interceptor System (ERIS) is one of the most mature and promising KEW systems. A ground-launched guided anti-ballistic-missile rocket, ERIS is designed to destroy ICBMs as they travel through space in

the mid-course of their flights. Currently, the main ERIS research focus is on guidance and targeting systems, miniaturization of the missiles and development of high speed fuels. By the end of this year, a design for an operational ERIS missile should be completed. Then extensive tests will begin to evaluate accuracy and effectiveness. The first full-scale ERIS test flight is scheduled for mid 1990.

The High Endoatmospheric Defense Interceptor (HEDI) is an advanced ground-launched missile designed to intercept enemy warheads as they drop from space to their targets in the terminal phase of their flights. Recent wind-tunnel tests have improved design efficiency. Advanced testing of aerodynamics and guidance systems will continue through this year, leading to flight tests in 1988 and 1989.

Miniature Projectiles Research. Among the research projects being pursued in the miniature projectile field are:

◆◆ The Light-Weight Exoatmospheric Advanced Projectile (LEAP) project, aimed at developing extremely light-weight anti-missile projectiles. The research is emphasizing light-weight, high-speed integrated circuits. Research is progressing quickly and assembly of the miniature projectiles should be complete by 1989. Full-scale tests should commence in late 1989.

◆◆ The Hypervelocity Gun (HVG) is a sophisticated high-powered gun capable of launching small projectiles very rapidly and accurately from either ground or space platforms. Advances recently have been made in increasing the mass and velocity of the HVG projectiles, and improving launcher efficiency. Advances also have been made in designing switches to enable the gun to fire very rapidly, and finding ways to prevent barrel wear.

As strategic defense technology continues to advance and tests continue to succeed, it will become increasingly difficult for SDI opponents to pretend that SDI is a guaranteed technical failure. If they are honest, critics must start to admit grudgingly that American science can devise an effective defense against Soviet missiles. As the present testing and development schedules of the Kinetic Energy Weapon projects indicate, many components of an SDI system could be deployed by the early 1990s. With the technology advancing, Congress and the Reagan Administration must soon answer the strategic questions of how to use strategic defense systems. It is becoming clear that if SDI fails it will be because of politics, not because of American technology.

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