

MAKING BALLISTIC MISSILE DEFENSE A REALITY

The Ballistic Missile Defense Organization (BMDO) is working to provide active defenses against ballistic missile attacks and a technical base that will allow the Department of Defense to protect against increasingly sophisticated missiles around the world. These efforts are carried out through three broad program areas: theater missile defense, national missile defense, and technology readiness.

THEATER MISSILE DEFENSE

BMDO's theater missile defense (TMD) aims to protect U.S. forces, allies, and other countries from theater missile attacks. Three core TMD programs represent the bulk of BMDO's research, development, testing, and evaluation budget for fiscal year (FY) 1996.

- **PATRIOT¹ Advanced Capability-3.** The PATRIOT Advanced Capability-3 (PAC-3)—a hit-to-kill, single-stage interceptor—is designed to provide a missile defense for our troops and fixed assets as quickly as possible. It will help destroy short- and medium-range ballistic missiles and other threats in the atmosphere.

All PAC systems have four basic components; a radar set, an engagement control station, a launching station, and interceptors. Three increasingly sophisticated versions of PAC-3 will be built, with the final configuration projected to reach the field in 1999.

- **Navy Area Defense.** The U.S. Navy and BMDO have been working in partnership to develop a sea-based area defense capability that builds on the existing AEGIS²/Standard Missile air defense system. This system is based on AEGIS-class cruisers and destroyers, which already form the backbone of the U.S. fleet. AEGIS ships provide all elements of short- to medium-range missile defense and are particularly suited to protect forces moving inland from the sea.

A user operational evaluation system (UOES) will be developed in several phases. The UOES computer program will be completed in FY 1998. The UOES missile is projected to be available in FY 2000. Actual deployment may begin as early as 2002.

- **Theater High-Altitude Area Defense System.** BMDO's Theater High-Altitude Area Defense (THAAD) system will form the largest umbrella of missile protection in a theater, arching over all other missile defense systems. To accomplish this mission, THAAD will have long-range and high-altitude intercept capabilities to engage the entire spectrum of theater ballistic missiles. These capabilities will give U.S. forces the earliest opportunity to shoot down incoming missiles and the best chance to destroy them far enough away that falling debris will not endanger friendly forces.

The THAAD system consists of four major parts: truck-mounted launchers, interceptors, the THAAD radar systems, and the THAAD battle management (command, control, communications, and intelligence) system. Initial flight tests are under way. Beginning in late 1998, a prototype THAAD system will be available so that soldiers can comment on system design and conduct early operational assessments.



Courtesy of Raytheon Electronic Systems

- BMDO is upgrading the PATRIOT, which will help destroy short- and medium-range ballistic missiles and other threats in the atmosphere.

¹PATRIOT is an acronym for Phased Array Tracking Radar Intercept on Target.

²In Greek mythology, AEGIS is the name of the shield owned by Athena, goddess of wisdom and war, who loaned the shield to Perseus to block the gaze of Medusa.

NATIONAL MISSILE DEFENSE

BMDO's national missile defense (NMD) is concerned with the possibility of a limited ballistic missile strike against the U.S. homeland. The current NMD program works toward building, if necessary, a ground-based antiballistic missile system to effectively defend all 50 states against a small number of threatening warheads from rogue nations.

NMD's key components under development include a ground-based interceptor, ground-based radar, upgraded early-warning radar, a battle management system, and sensor technology. Over the next few years, flight tests are planned at the national test range in the Pacific to demonstrate these elements, individually and together as a system. If successful, these tests will indicate that an effective and affordable NMD system can be built if needed.

TECHNOLOGY READINESS

BMDO depends on advanced technology of all kinds to invigorate its ability to defend against increasingly sophisticated ballistic missile threats. Therefore, the continued availability of such technology has become a vital part of the BMDO mission. The BMDO Deputy of Technology Readiness is responsible for fostering advanced research and development of new BMDO technology.

The Science and Technology Directorate is a part of BMDO's technology readiness effort. This group manages four BMDO programs:

- **Innovative Science and Technology (IS&T).** The IS&T program pursues speculative, high-risk technologies that could spur a revolutionary leap in capability. Specific goals include quickening the pace of technology development and decreasing the time required to transform scientific breakthroughs into actual applications.
- **Small Business Innovation Research (SBIR).** The SBIR program funds small businesses to develop far-reaching technology innovations. Projects are funded in two competitive phases. In Phase I, the researcher demonstrates feasibility and develops a design concept; in Phase II, a prototype is built.
- **Small Business Technology Transfer (STTR).** The STTR encourages cooperative joint research between businesses and nonprofit research institutions. It is structured like the SBIR program and operated by the same BMDO personnel.
- **Technology Applications Program.** Recognizing the potential economic value of its leading-edge research and development, BMDO created a Technology Applications program. Guided by BMDO's Office of Technology Applications, this program seeks to promote the commercialization and interagency sharing of BMDO-funded technologies. It sponsors this report and manages all technology transfer efforts involving BMDO-funded technology.



TECHNOLOGY APPLICATIONS PROGRAM

- As the logo for the Technology Applications program, the linked chain signifies our ongoing commitment to link BMDO technology developers with other organizations that promote the technology's commercialization.