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Ballistic Missile Defense System

As a component of President Reagan's Strategic Defense Initiative (SDI), the Army Ballistic Missile Defense Organization (BMDO) received increased attention in FY 84. The organization's research and development mission contributed significantly to the SDI program. Furthermore, the Army BMDO supplied vital assistance to the initial SDI Organization (SDIO). All BMD programs complied with the Strategic Arms Limitation Treaty. Funding for Research, Development, Testing and Experimentation (RDT&E) for FY 84 was as follows:

1. Advanced Technology Program-\$153,372,000.
2. Systems Technology Program-\$319,246,000.
3. Kwajalein Missile Range-\$142,341,000.
4. Small Business Innovative Research-\$695,000.

The Army BMDO comprised the BMD Advanced Technology Center (BMDATC) in Huntsville, Alabama, which performed long-term research and development; the BMD Systems Command (BMDSCOM), also in Huntsville, which executed potential systems design research and development; and the BMD Program Office (BMDPO) in Arlington, Virginia, which provided a centralized point of contact for DOD, Congress, and other agencies. BMDSCOM continued to operate the Kwajalein Missile Range (KMR) in the Marshall Islands for various BMD experiments and demonstrations. KMR also provided assistance for other services, the National Aeronautics and Space Administration's (NASA) shuttle program, and data collection on targets for DOD.

The most important internal organizational change with BMDSCOM occurred as a result of the termination of the SENTRY program in FY 83. The SENTRY design used nuclear armed interceptors to destroy enemy Intercontinental Ballistic Missile (ICBM) launched nuclear warheads. In FY 84, BMDSCOM created the Systems Projects Directorate (SPD) and the Systems Development Directorate (SDD) to redirect the SENTRY program toward soft-target ballistic missile defense concepts and technologies as well as aligning operations with the SDI effort.

On 10 June 1984, the Army BMDO successfully completed the fourth and final flight of the Homing Overlay Experiment (HOE) program, the first demonstrated destruction of a ballistic reentry vehicle by non-nuclear means. The event made international news. Launched from KMR, the HOE non-nuclear, infrared homing and-kill device intercepted and destroyed by direct impact an unarmed reentry vehicle that had been launched atop an ICBM in California. The destruction occurred more than 100 nautical miles above the Pacific Ocean.

Four firms received contracts totaling \$18 million for the concept definition phase of the High Endoatmospheric Defense System (HEDS) program. The engineering studies for this phase will define interceptor kill vehicle and critical components, viable propulsion/control design, and warhead/fuse requirements. In late FY 84, BMDSCOM redesignated the program as the High Exoatmospheric Defense Interceptor (HEDI) project office. The command awarded another four contracts, worth approximately \$500,000 each, for the concept definition phase of the Exoatmospheric Reentry vehicle Interceptor Subsystem (ERIS) to develop interceptor technology that will use external precommit sensor capabilities in a non-nuclear kill design.

BMDSCOM awarded a five-year \$289.4 million contract for the Airborne Optical Adjunct (AOA), which will use a modified commercial jet aircraft with two long-wave infrared sensors to acquire, discriminate, and accurately track reentry vehicles (warheads) to augment data being processed by ground-based radars such as the Terminal Imaging Radar (TIR). The TIR project will develop and demonstrate a radar to receive and combine AOA data with its own tracking data and then furnish target data to HEDI. In July 1984, the Department of the Army selected and assigned project managers to the AOA and TIR projects.

The BMDSCOM Systems Development Directorate (SDD) redirected the Command, Control, and Communications/ Battle Management (C3/BM) study from the defense of hard targets such as missile sites to the terminal defense phase of the Defense-in-Depth (DID) concept. In June 1984, the directorate published the DID study and in the following month awarded a \$1.1 million technical analysis contract to assess state-of-the-art and emerging technologies. Other SDD projects included the Airborne Optical Sensor, the Active/Passive Defense study, the Threat Specific program, and the Antitactical Missile Analysis. The Advanced Technology Center made progress in the Optical Aircraft Measurements Program (OAMP), with construction of the OAMP hangar/operations complex proceeding ahead of schedule, the sensor platform modification advancing on schedule, and the sensor-system contractor completing a final sensor design. The first flight of the Small Radar Homing Intercept Technology (SRHIT) program successfully demonstrated the performance of the vehicle's main propulsion system and launch equipment. The system's maneuverability could not be tested on the second flight because of a malfunction, and BMDATC postponed this demonstration until the third flight scheduled for FY 85. The center also changed the Endoatmospheric Non-nuclear Kill (ENNK) program to support the HEDI project, primarily by switching from radar to optical sensor technology.

Another major project of BMDATC included the completion of four feasible guided projectile designs and definition of gun and projectile characteristics in the Electromagnetic Accelerator program. The Homing Intercept Technology Concepts Technology Assessment program analyzed miniature interceptor approaches and identified several for SDI application. The BMDATC also expanded the Neutral Particle

Beam Technology program from the Los Alamos Laboratory to the Oak Ridge, Lawrence Berkeley, and Brookhaven National Laboratories.

KMR supported 25 missions during FY 84 for the Army, Navy, Air Force, and the National Air and Space Administration's (NASA's) space shuttle program. The latter received assistance with five shuttle missions, and KMR anticipated more missions in the future as NASA accelerates the shuttle program. KMR faced a second year of emergency water shortage and employed reverse osmosis water purification units that furnished 21 million gallons of fresh water during the last six months of FY 84. The Compact of Free Association, negotiated in 1982 between the United States and the Republic of the Marshall Islands through a plebiscite in 1983, still awaited ratification by the U.S. Congress at the end of FY 84. The House Interior and Insular Affairs Committee held hearings during the year to clarify the issues involved, but did not issue a report.