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Systems

The Ballistic Missile Defense (BMD) program made significant progress in several areas. Limited operations began on 1 April 1975 at the nation's only BMD site near Grand Forks, North Dakota. The site, designated on 1 October 1974 as the Stanley R. Mickelson SAFEGUARD Complex, is expected to be fully operational in October 1975.

The SAFEGUARD System Test Program, which began at Kwajalein Missile Range in 1970, was completed in August 1974 with the successful tracking of an inter-continental ballistic missile (ICBM) target nose cone by the missile site radar. Of the fifty-four tests conducted, forty-seven achieved test objectives, two were partially successful, and five failed. The test program at Kwajalein validated critical functions performed within the range of conditions in which the tactical system is designed to operate.

At congressional direction, emphasis on the Site Defense Program was reoriented from prototype demonstration to the technological development of subsystems and components such as sensors, missiles, and software. Major changes resulting from the reorientation were: cancellation of the program's equipment readiness date; elimination of all effort on tactical deployment and production planning; cancellation of interceptor flight tests; and elimination of software programs that do not contribute to solutions of key technical issues. Work on the site defense radar and data processor, which will form the core of a BMD systems technology test bed at Kwajalein Missile Range, continued on schedule. Construction of a single facility to house the radar, data processing, and essential support equipment began in December 1974 on Meck Island at the Kwajalein Missile Range and is scheduled to be completed in the spring of 1976.

A number of advances marked the BMD Advanced Technology Program in fiscal year 1975. In data processing, the development of the first version of an automated system for producing engagement software was completed; this may reduce software costs and development time. The design of a parallel element processing ensemble that can perform computations was also completed.

The last test flight of the Fly-Along Infra-Red (FAIR) series was conducted in October 1974. FAIR was a joint Army and Air Force program to obtain exoatmospheric optical signatures of various types of reentry vehicles and other objects from a typical ICBM complex. The experiments included gathering data on the earth background and moon and star shine that the optical sensor would record in a space environment and on the effects of missile exhaust plumes on optical sensors. In the Special Targets Program, Athena rockets fired from Wake Island boosted reentry vehicles and decoys to altitudes and velocities associated with sea-launched ballistic missiles. Data obtained by radars at

Kwajalein has helped to fill an important gap in the knowledge of signatures of bodies reentering the atmosphere at typical SLBM velocities. A program to gather radar and optical data on booster tanks purposely fragmented in the exoatmosphere was completed in January 1975. Real time experiments to identify the reentry vehicle among the tank fragments were conducted, but results of the tests had not been analyzed fully by the end of the fiscal year. In March 1975 representatives from the Ballistic Missile Defense Program Office met with Department of Defense officials to discuss joint Army and Air Force support of the Cobra Judy phased array radar system for collecting highly accurate endoatmospheric data on Soviet reentry systems. Procedures for this joint effort should be completed early in fiscal year 1976.

Designs were completed for a new digital signal processor. If it can be economically produced, this device will be a valuable contribution in solving the bulk filter problem.

Tests on the dome antenna model proved the feasibility of providing hemispherical coverage with a single planar array. A dome antenna requires only about one-third as many components as a conventional four-faced radar, and is therefore more reliable and less costly.

Also completed were tests of several small advanced propellant motors (interceptor). The goal is to determine the feasibility of high burn rates for extremely high performance interceptors. Preparations continued for full scale ground tests of the miniature homing interceptor. Design of the test facility was completed, and construction will begin in fiscal year 1976.

Although the Force Development Management Information System supports the force development process at the Army staff level, no automated system in the field encompasses all aspects of force development. Virtually no automated support exists below major command level. This gap in automated support has allowed the generation of misinformation which has adversely affected force-related statements used for personnel and logistic management and development of budgets and materiel acquisition programs. A study to identify and correct specific problems has led to a new management information system concept, the Vertical Force Development Management Information System. This system would be developed around a centralized and integrated data base available to all users through a telecommunications network linking Washington, major commands and their installations, or major subordinate commands. All levels are therefore given the information and tools needed to perform their tasks in the force development process. At the close of the period, the general functional system requirement and the economic analysis for the Vertical Force Development Management Information System were being staffed.