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- SECRETARY OF DEFENSE
- SECRETARY OF THE ARMY
- SECRETARY OF THE NAVY
- SECRETARY OF THE AIR FORCE

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The underground project, VELA UNIFORM, is centered primarily on seismological research, including research in earth physics, the provision of standardized seismic equipment to a worldwide network of cooperating stations, the monitoring of underground nuclear and chemical explosions, and the development and testing of on-site inspection techniques. A seismic information analysis center has been established at the University of Michigan. A pair of nuclear-detection satellites was launched in October 1963 and a second pair in July 1964. Although designed for research and development purposes, these satellites are already providing an interim capability for detecting nuclear explosions in space as well as sending back information on the natural radiation environment in which such sensors must function.

Retaliatory Forces

During fiscal year 1964, the retaliatory forces of the United States continued to grow in numbers, reliability, and effectiveness. The number of operational ICBMs and POLARIS missiles, which almost tripled during fiscal year 1963, more than doubled again during fiscal year 1964. The strategic bomber force remained in a high state of readiness, tested again and again in sudden alert exercises. Intensive research on penetration aids further improved the effectiveness of both missiles and bombers. The programs approved and the studies initiated assure that the overwhelming striking power of these deterrent forces will be maintained in the years ahead.

In the strategic missile field, the 1964 developments reflected to a large extent the 1961 decision to place major reliance in the future on solid-fueled, rather than liquid-fueled, missiles. All the experience gained since that time indicates that this decision was the proper one. As a result, the liquid-fueled ATLAS and TITAN missiles, which had provided a major deterrent in the early sixties, started to be phased out toward the end of fiscal year 1964 as solid-fueled MINUTEMAN and POLARIS missiles became available in substantial numbers. A total of 13 ATLAS squadrons with 126 missiles had become operational during fiscal year 1963, and 12 TITAN squadrons with 108 missiles were fully deployed by December 30, 1963. The phaseout started with the older, relatively vulnerable ATLAS missiles and will be extended to later ATLAS models and TITAN I missiles. The TITAN II will not be affected by current plans.

The solid-fueled MINUTEMAN force, on the other hand, experienced a phenomenal growth during fiscal year 1964. On June 30, 1963, a total of 160 MINUTEMAN missiles were in place and operational. At the close of the fiscal year, the total was 600—all of them in widely dispersed, underground silos, protected against a surprise

attack and ready to retaliate instantly when directed by the Commander-in-Chief. Almost equally significant has been the successful development of the MINUTEMAN II—a missile many times more effective than the MINUTEMAN I as the result of its greatly increased range or payload, its extremely high accuracy, and the flexibility with which it can be used. The marked superiority of the MINUTEMAN II over the MINUTEMAN I, comparable to that of the long-range B-52 over the medium-range B-47, led to a modification of the 5-year MINUTEMAN program, placing greater emphasis on the early retrofit of a substantial number of MINUTEMAN I silos for use by MINUTEMAN II rather than on the rapid numerical expansion of the MINUTEMAN force. Consequently, while fewer MINUTEMAN missiles than originally planned will become operational in the next few years, the capability of the total force to carry out its mission will be substantially increased.

The expansion of the POLARIS force during fiscal year 1964 was as remarkable as that of the MINUTEMAN. On June 30, 1963, the POLARIS force consisted of 9 submarines with the fleet, carrying 144 missiles, and 3 more submarines in commissioned status. On June 30, 1964, the total had risen to 15 submarines—240 missiles—with the fleet and an additional 6 submarines commissioned but not yet deployed. Approved plans call for 29 submarines with 464 missiles delivered to the fleet by the end of fiscal year 1965 and for a total program of 41 submarines with 656 missiles by September 1967. The rapid increase of almost 100 POLARIS missiles in fiscal year 1964 and of over 200 in fiscal year 1965 is attributable to the construction acceleration ordered in early 1964, when the delivery rate for calendar year 1964 was raised from 1 submarine every 2 months to about 1 submarine each month. The establishment of more rigid inspection procedures, as a result of the tragic loss of the U.S.S. *Thresher* on April 30, 1963, slightly delayed the original schedule, but this slippage is expected to be made up during fiscal year 1965. Simultaneously with the quantitative growth of the POLARIS force, substantial qualitative improvement is being achieved. Research and development for the POLARIS A-3 missile, also accelerated in 1961, progressed with such speed that the U.S.S. *Daniel Webster*, the first submarine to be equipped with this more advanced weapon—having a range of 2,500 nautical miles, improved accuracy, and greater effectiveness—could be commissioned on April 9, 1964, with deployment scheduled for late September. Current plans call for a POLARIS fleet of 13 submarines with the 1,500-nautical mile A-2 missile and 28 submarines with the longer range A-3 version.

The dependability of the MINUTEMAN and POLARIS systems to carry out their missions was also submitted to thorough tests and

analyses. Dependability is judged on the basis of readiness, survivability, reliability, and the capability to penetrate enemy defenses, and these weapon systems achieved high scores in all categories. The readiness rate of MINUTEMAN and POLARIS, as determined from operational logs and by surprise inspections, was found to be substantially better than that of any other major weapon system. A high degree of survivability is provided by deployment in dispersed and hardened silos or in submerged submarines cruising in vast ocean areas. To assure maximum reliability, a greatly expanded test program was initiated in 1961, and the results of the test justify the fullest confidence in the launch, flight, and warhead reliability of these missiles. The extensive effort of recent years to develop effective penetration aids has further increased their capability to strike any designated target no matter how well protected.

The retention of this high rate of dependability is assured by a broad program of research and development. Studies for the Advanced ICBM are focused on new operational concepts and techniques for ballistic missiles. Substantial progress is being made in the search for an improved version of POLARIS beyond the A-3. Although the funds for the system development of the Mobile Medium-Range Ballistic Missile (MMRBM) failed to be authorized by the Congress in March 1964, the reduced appropriation will be used for the development of stellar inertial guidance systems and of certain command and control elements of possible use in more advanced missiles. Intensive research on penetration aids has already produced numerous effective techniques and devices to confuse enemy defenses and even better ones are under development; some \$350 million were budgeted for this program in fiscal year 1964 and a similar amount is being set aside for 1965.

As for our strategic bombing force, increased reliance was being placed during the fiscal year on the 14 wings of B-52 heavy bombers (630 aircraft) and the 2 wings of B-58 supersonic medium bombers (80 aircraft) as the gradual phaseout of the B-47's continued with a reduction from 13 to 10 wings. More than 500 bombers were on 15-minute ground alert throughout the year, and spare parts were available to keep, if necessary, one-eighth of the B-52's on airborne alert. In accordance with current plans for maintaining a mixed missile-bomber retaliatory force into the seventies, the B-52's are being structurally strengthened and equipped with new electronic devices to make them more effective in their primary mission of followup attacks against hard missile sites and weapon storage facilities. Through fiscal year 1964, a total of \$1.6 billion has been invested in this modification program, and another \$300 million has been budgeted for fiscal year 1965. The bomber force continued to be supported by a large

number of KC-135 jet tankers and its attack and penetration capabilities enhanced by HOUND DOG air-to-surface missiles and QUAIL decoy missiles.

Various options are open for replacing the B-52's in the seventies, if a replacement requirement exists at that time. In case supersonic speed and high altitude are needed for the future strategic bomber, the experience gained from three different Mach 3 planes, currently in the research and development stage, will be available—the XB-70, the A-11, and the SR-71. The first XB-70, a heavy supersonic aircraft, was rolled out on May 11, 1964, and scheduled for flight tests after the close of the fiscal year. As technical difficulties caused additional delays and increased costs, the XB-70 program was reduced from three to two prototype aircraft. The successful development of the A-11 or YF-12A, an aircraft capable of flying more than 2,000 miles an hour and at altitudes in excess of 70,000 feet, was revealed by the President on February 29, 1964. Less than 5 months later, on July 24, 1964, the President also announced the existence of the SR-71, a long-range strategic reconnaissance plane with speed and altitude characteristics similar to those of the A-11. In case low-level penetration capabilities turn out to be the key to future bomber effectiveness, the lessons being learned from the F-111, for example, will be applicable. Moreover, the fiscal year 1965 budget includes funds for a special study on an Advanced Manned Strategic Aircraft (AMSA), a long-range, low altitude penetrator to serve as an airborne missile platform.

Continental Defense

The overwhelming and indestructible retaliatory power of the United States constitutes the major deterrent to a direct attack on the North American continent. The rapid increase in the size and effectiveness of our retaliatory forces during fiscal year 1964 should have removed any doubt concerning the dire consequences of such an attack. In addition, the defensive capabilities of the North American Air Defense Command (NORAD) presented formidable hurdles for any potential aggressor to overcome. This combination of retaliatory and defensive strength provided effective protection to our country in fiscal year 1964 as in previous years.

The continental defense system, operated as a combined United States-Canadian effort, continued to be adjusted to the changing nature of the threat. Antibomber defenses were given increased protection against missile attacks by the wider dispersal of manned interceptors and of radar warning and control facilities. Antimissile defenses acquired improved detection capabilities, and substantial progress was