

## **2<sup>nd</sup> GENERATION AIR FORCE BALLISTIC MISSILES**

### **Titan II and Minuteman**

In the late 1950's, the Ballistic Missile Division began developing two second-generation missiles, the Titan II and the Minuteman. Like the original Titan I, Titan II was a two-stage, liquid fuel missile. Unlike its predecessor, however, it used storable propellants and an all-inertial guidance system, and it could be launched from hardened underground silos. These improvements gave the Titan II quicker reaction time, greater survivability, and improved performance. The first Titan II unit achieved operational status in June 1963 and the last in December of the same year.

The Minuteman was the first American intercontinental ballistic missile to use solid rather than liquid fuel. It possessed all the virtues of the Titan II, and its use of solid fuel gave it two additional advantages: greater simplicity and economy. The first Minuteman flight test missile was launched on 1 February 1961, and the first two flights of Minuteman missiles was turned over to the Strategic Air Command on 11 December 1962. By the end of 1965, Minuteman missiles had been deployed at four bases in the north central United States, and the older, less efficient, and less economical Atlas and Titan I missiles had been retired from the active inventory. The Minuteman, along with the Titan II, became the mainstay of the nation's strategic missile force. Together with SAC's manned bombers and the Navy's Polaris/Poseidon missile-launching submarines, these missiles formed the triad of strategic deterrent forces that were maintained on day-to-day alert to counter any nuclear attack on the United States or its allies.

Just as the Atlas and the Titan I had been replaced by the Titan II and the Minuteman, the original Minuteman was itself replaced by the more advanced Minuteman II and Minuteman III. The Minuteman II incorporated a new, larger second stage, improved guidance, greater range and payload capacity, and greater resistance to the effects of nuclear blasts. The Minuteman III, for its part, possessed an improved third stage, employed more penetration aids to counter anti-ballistic missile defense systems, and was equipped with up to three independently targetable warheads. By the end of 1975, 450 Minuteman IIs and 550 Minuteman IIIs were in place and ready for operation at six bases in the north central United States.

Other portions of the ballistic missile force were becoming obsolete. The Air Force issued direction to deactivate Titan II missiles on 30 April 1982. The 55 operational missiles were removed from their silos during 1982-1987 and placed into storage for possible conversion to space launch vehicles.

### **Peacekeeper and Small ICBM**

Under the terms of the 1972 Strategic Arms Limitation Agreement with the Soviet Union, this country was barred from increasing the number of strategic missiles in its operational inventory. If it wished to maintain its strategic position *vis a vis* the Soviet Union, therefore, it had to do so by improving the quality of its missiles rather than by increasing the quantity. With this objective in view, an advanced development program was started in late 1973 to define the technology and design concepts for a new strategic missile called Missile X. A great deal of effort was devoted to studying alternate basing concepts for this missile, including air-mobile and ground mobile concepts.

Missile X was renamed the Peacekeeper by President Reagan on 22 November 1982. It was a four-stage ICBM capable of precisely delivering 10 reentry vehicles to

different targets more than 6,000 miles away. It successfully carried out its first flight test on 17 June 1983, when a Peacekeeper that had been cold-launched from a canister at Vandenberg AFB reached its target in the Kwajalein Missile Range. In April 1983, the President accepted the recommendation of the Scowcroft Commission that the Peacekeeper be temporarily based in existing Minuteman silos. The first ten missiles went on alert between 17 October and 22 December 1986, and the basing program achieved full operational capability when the fiftieth missile entered its silo on 20 December 1988. DOD accepted a concept for a permanent basing mode in 1986. It involved placing 50 Peacekeeper missiles on 25 trains, which would be kept in protected shelters scattered throughout the country. When war threatened, the trains would be released to travel over the commercial rail network until their missiles had to be launched. The program entered full-scale development in May 1988. By the early 1990s, however, the Cold War was winding down, and the Soviet threat was diminishing. In a dramatic speech delivered in 27 September 1991, President Bush announced a wideranging plan to unilaterally reduce the American nuclear arsenal and eliminate several categories of weapons. As part of the plan, he announced the cancellation of the Peacekeeper Rail Garrison program.

The Scowcroft Commission had also recommended the development of a new, lightweight missile carrying only one reentry vehicle. President Reagan authorized fullscale development of the Small ICBM (SICBM) in December 1986. SICBMs would be housed in mobile launchers based at widespread locations. When hostilities threatened, the launchers would drive out onto the roadways and scatter across the country. The program narrowly escaped termination in 1988 because of reduced funding. It achieved its first totally successful flight test on 18 April 1991, when a SICBM that had been coldlaunched

from a canister at Vandenberg AFB reached its target in the Kwajalein Test Range. Nevertheless, President Bush canceled the SICBM program in January 1992 because strategic tensions seemed to have decreased after the end of the Cold War.