



Delta-09 and the Minuteman II Missile



During the Cuban Missile Crisis in 1962, President John F. Kennedy called the Minuteman missile his “Ace in the Hole.”

The successful Soviet test of a hydrogen bomb in 1955 quickly eroded the United States’ sense of nuclear superiority. Only two years later, the Soviet Union successfully launched the world’s first satellite, Sputnik, into orbit. American military strategists feared that this could mean the possibility of a Soviet intercontinental ballistic missile (ICBM), capable of reaching the U.S. with a nuclear payload. In response, the Air Force developed three missile programs, the Atlas, Titan, and Minuteman. At the height of the Cold War, launch facility Delta-09 was one of 1,000 Minuteman missile silo sites across the Great Plains region, constructed in an effort to close the perceived “missile gap,” and deter nuclear war.

Atlas and Titan, America’s First ICBMs

The first two generations of American ICBMs, the Atlas and the Titan, were fueled by a combination of liquid oxygen and kerosene or nitrogen tetroxide. These liquid propellants were problematic because they weighed down missiles, which reduced their

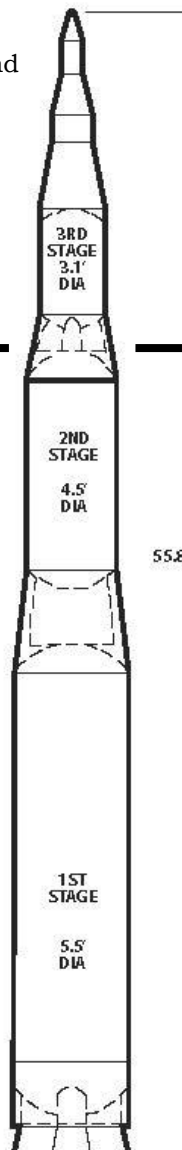
range. Liquid fuels were also highly volatile and therefore dangerous to work with. For this reason, fuel was stored outside the missile and loaded just prior to launch, which prolonged response time and required a large on-site crew. Despite their limitations, these systems offered significant advantages over earlier manned strategic weapons systems.

The Minuteman Missile



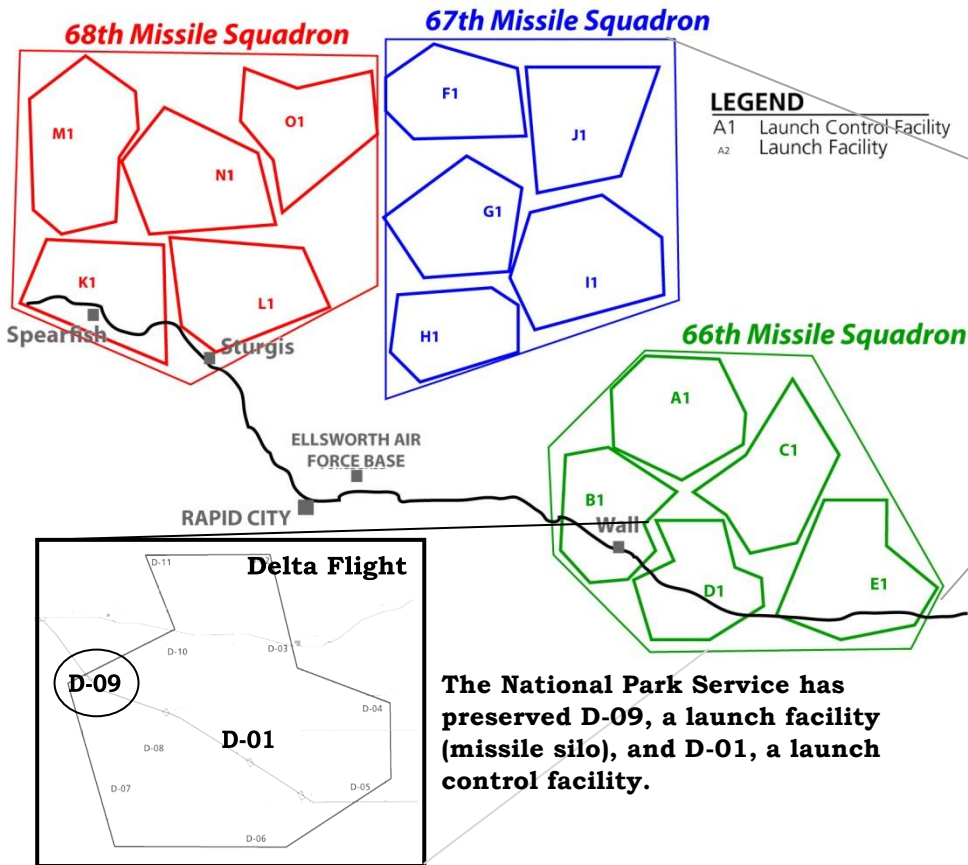
Left, a Minuteman II test launch.

Right, cutaway of a Minuteman II. The Minuteman was a three-stage solid-fuel missile. The first stage launched the missile out of the silo and into the air with 167,000 lbs. of thrust, the second and third stages added an additional 68,100 lbs. of thrust, launching it to a speed of over 15,000 miles/hour.



In 1956 work began on a solid-fuel system to rectify these problems. A design was approved in 1958, and by 1967, an arsenal of 1,000 Minuteman missiles became operational across the Great Plains region. The Minuteman missile was designed to be more efficient and reliable than its predecessors, and able to be mass-produced. The new design also allowed it to stand unattended for long periods of time in an underground silo, with only a small, off-site crew to maintain and operate it. Reminiscent of their Revolutionary War-era namesake, these missiles were built to be combat-ready the moment they were needed. The Minuteman II went on alert in 1966 with a larger warhead than its predecessor; at 1.2 megatons one Minuteman II warhead held 80 times the power of Little Boy, the atomic bomb used at Hiroshima, Japan by the United States in 1945.

South Dakota and the Cold War



During the height of the Cold War, 1,000 Minuteman missiles were operational in six missile wings across North and South Dakota, Wyoming, Montana, Colorado, Nebraska, and Missouri.



Above, map of South Dakota and 44th Strategic Missile Wing. All personnel were based out of Ellsworth Air Force Base, located about 70 miles west of launch control facility D-01. The 44th Strategic Missile Wing of South Dakota held 150 missiles, and was divided into three squadrons, each with five groups of ten missiles called “flights.” Each flight had its own launch control facility, which held a support crew and two missileers who could initiate a launch from their remote location.

Top Secret?

The launch control facilities and missile silos of the Cold War, and even those that exist today, were never a secret. Many community members even participated in the construction. The locations of these sites were never kept secret from the Soviet Union, either. By making them visible,

especially from the air, the Soviet Union could count how many intercontinental ballistic missiles the United States possessed. By having 1,000, the U.S. hoped to financially outrun the Soviet Union in the nuclear arms build-up to discourage an attack, and hopefully prevent nuclear war.

Launch Facility D-09

This facility was one of ten associated with Delta Flight. An eight-foot barbed-wire security fence protected a silo housing a Minuteman ICBM. Today 450 sites just like this, containing Minuteman III missiles, are still operational across the Great Plains.

A The **Improved Minuteman Physical Security System (or IMPSS)** was used to detect motion in and outside the perimeter fence. If security was breached, missileers at the nearest launch control facility would receive an alert and dispatch Security Police to investigate. Security Police would arrive in minutes, armed with M-16 assault rifles to detain intruders. Although no records exist of saboteurs, sites were breached occasionally by peace protestors, exercising their first amendment rights.

B The **Support Building** extends about 11 feet below ground. This facility contains an emergency diesel-fueled generator in the case electricity from the grid failed. This ensured that the silo could remain operational at all times. The facility

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C The **Ultra High Frequency (or UHF)** antenna is protected by a layer of cement and steel, making it “hardened,” or resistant to damage by a nearby nuclear blast. The UHF allowed for air-to-ground communication, especially with Airborne Launch Command during Operation Looking Glass from 1961 and 1990. This mobile command center could take command of and launch Minuteman missiles from the air in the event that any launch control centers were destroyed by a Soviet nuclear attack.

D The **Personnel Access Hatch** allowed maintenance crews and security police access to the missile silo itself. The reinforced steel and concrete door weighs five tons, and could be opened through a series of combination locks to activate hydraulic pumps. The door took 45 minutes to an hour to open, to allow security police from the nearest launch control facility to respond to any security breach or sabotage.

E The **Missile Silo** stretches 80 ft. below ground, is about 12 ft. in diameter, and made of 14-inch-thick reinforced cement walls. The silo is capped by a 90-ton blast door, which would be blown off during a launch with an explosive charge. The door was retracted only during the installation of new missiles, which were brought by transport erector trucks. Around the perimeter is a two-level, underground equipment room, the lower level containing a motor generator and batteries.

