

The Nike Missile Program

By Doug Crompton

While Ginny's excellent story about our local Nike base described local interest, I thought you might like some of the technical facts regarding the Nike program. For those interested in more information on this subject there is a vast amount of historical and technical knowledge available on the internet regarding our early missile programs.

The initial thought of providing a defense against ballistic missiles started in World War II with the German V2 Rocket. Early efforts by the US were focused on anti-aircraft rather than anti-missile defense. In 1945, Bell Labs was contracted by the Army to develop an anti-aircraft missile. It was named Project Nike and it was from this project that the Nike Ajax was developed.

On November 27, 1951, a Nike Ajax became the first guided missile to intercept and destroy an airplane in flight. Under the threat of Soviet developments, the Army rushed the Nike Ajax into production and, between 1954 and 1958, deployed the missile system around key urban, military, and industrial locations. It was the world's first operational surface-to-air missile system. In April 1958, production of the Nike Ajax system ended and the last missile was delivered to the Army. The Ajax was replaced by the Nike Hercules and finally the Nike Zeus.

In total, AT&T Western Electric, Bell Telephone Laboratories and numerous subcontractors produced 350 Nike batteries for domestic and overseas deployment, to be manned by regular and National Guard troops. Douglas Aircraft manufactured 13,714 missiles in its Santa Monica, CA plant and at the Charlotte, NC Army Ordnance Missile Plant.

According to Army records the Richboro Nike base (PH07) started operations in 1956 under Army unit C/506th. In September 1958, it changed to unit C/3/60th until it was decommissioned in September 1961. The launch site had two type B magazines, 20 Ajax missiles and 8 A type launchers. In about 1960, selected Ajax bases were being converted to the new Hercules missile. This was a larger missile that could carry a nuclear warhead. Because of its longer range and more advanced payload, fewer sites were required to protect a given area. The Richboro site as well as six others in the original Philadelphia ring of 12 were not upgraded. Had the Richboro base been upgraded to a Hercules site it would have been in service until at least the late 1960's and would most probably have housed nuclear weapons. One can only speculate why the Richboro base was not upgraded. Development was at the backdoor of the radar

site on Twiningford Road and the sleepy town of Richboro was really starting to wake up in the 1960's. Perhaps this was a factor. We will never know.

Individual Nike bases were built with two locations typically ½ to 1 mile apart. The IFC or Integrated Fire Control site housed the radar and computers used to detect the incoming aircraft and calculate the trajectories used to guide the missile. These sites were typically at a high location. The IFC site in Richboro, located on Twiningford Road, was at one of the highest locations in Northampton Township. The second site on Richboro-Newtown Road was where the missiles were launched, stored and serviced. Administrative areas were collocated within the IFC or launch areas. The administrative areas included a barracks, mess hall, and a recreation/administration supply building. These buildings were typically one-story cinder block structures with flat roofs. The number of personnel at the bases was typically about 100, and included administrative, security, cooks, general maintenance, missile technicians and the commanding officers. The majority of the buildings were usually at the IFC site and this is true in Richboro. There is a discrepancy on the location of the "mess hall" at the Richboro base. Some residents recall it as being at the launch site on route 332 while a newspaper article lists it as being at the IFC site on Twiningford Road.



Nike Ajax missile ready for launch.

The Nike-Ajax missile stood 34 feet tall with its booster, had a 4 feet wingspan, and could reach speeds up to 1,600 MPH, at a 70,000 feet altitude, and a range of 25 miles. It weighed over 2,455 pounds with booster and contained three high-explosive fragmentation warheads

mounted in the nose, center, and aft sections. The Ajax used a very dangerous liquid fuel combination of JP4 jet fuel and starter fluid consisting initially of aniline/furfuryl alcohol, later dimethyl-hydrazine, and finally, red fuming nitric acid (IRFNA). Personnel had to use special protective clothing while fueling the rockets. Because of the dangerous chemicals used at the sites, the Richboro base was designated a federal cleanup area, as were many of the Nike bases. Records show that about \$70,000 was spent on cleanup and that it has been completed.

The radars used at the IFC sites sent high power signals out at several hundred times per second. This was referred to as the repetition rate of the radar. These signals would bounce off a radio reflective object, such as an aircraft in the sky and return to be viewed on screens by the radar operator. The repetition rate was in the human audible range and it often could be heard on electronic devices such as stereos, radios, and hearing aids, as the antenna swung in their direction.

Another problem in early Nike development was the amount of real estate required for a Nike battery site. In October 1952, just three months before equipment started rolling off the production line, those responsible for the acquisition of land suddenly realized that it would be difficult to secure. Almost overnight, the reduction in real estate requirements for a Nike site became an urgent task. There was no shortage of ideas on how the area could be reduced. The only trouble was that most of the ideas also reduced the effectiveness of the battery to a point where it would be hard to Justify use of the NIKE System.

As originally designed, the equipment of the Nike battery was located above ground in two separate areas: the battery control area and the launching area. Based on Ordnance safety regulations governing the surface storage of explosives, it was determined that a Nike site would require about 119 acres. Such a large amount of real estate would be both costly and scarce, particularly if the site should be located in metropolitan areas such as Philadelphia.

The solution to the real estate reduction problem was the use of an underground launcher installation. This would reduce the real estate requirement for individual installations to about 40 acres, since the battery would become a a magazine.

The 1972 signing of the SALT I treaty in Moscow limited the number of missiles with ABM (Anti-Ballistic Missile) capabilities which included the Nike Missile. By 1974, all Nike Missiles were deactivated. Many of the missiles were later deployed to other nations. Today Nike missiles still protect the airspace of South Korea.

The approximate monetary values of the contracts executed from the inception of the Nike Ajax project through its termination in December 1957 amounted to \$1.16 billion.

“Suddenly the missile blew with a roar and a sky-searing pillow of orange flame from burning kerosene and nitric acid fuels... Explosion and flame touched off seven more Nikes squatting on adjacent pads, blew or burned ten men to death, showered a three-mile radius with fragments.”

No missile was ever fired from any of these Nike bases over the two decades of operation in the US but there was a serious accident at a Northern New Jersey site on May 22, 1958. The Battery B, 526th AAA Missile Battalion, near the small towns of Middletown and Leonardo, New Jersey erupted in an enormous explosion killing six soldiers and four civilians and seriously injuring three others. Windows were blown out of houses for miles around and the sound of the blast was heard for fifteen miles. The Army rushed experts to the scene from New York and Washington, D.C. The mayor of Middletown called a special town meeting, to which top-ranking officers of the New York Defense Area were invited to explain what happened. Newspaper and magazine editors were on hand to say, “I told you so” and twenty-two Army lawyers began to settle damage claims.

While Richboro and Northampton had a much smaller population in the 1950’s it is still scary to think what could have happened. I think our current “terror threat” pales in comparison to the cold war period of the 1950’s and 60’s. At about the time the Ajax missiles were deployed I was an elementary school student in nearby Glenside, Montgomery County. I had no knowledge of their existence at the time but I did know how scared I was when we had to huddle in the school hallways when the nearby air aid siren went off. At first no one knew if it was a real attack or a test and until this was determined we sat there thinking this might be our last hour. Fortunately, the deterrence of missiles, like the Nike, prevented this from ever happening Thank god, we never had to use them.



I have put together a Nike PH07 website which includes additional pictures and links to further reading on the Nike program. Visit the link section at the NTHS website and click on PH07 or browse:



Snow plows from the nearby Johnsville Navy Base helped clear the way to the Richboro Nike sites.



Elevator doors and entranceway to magazine below at abandoned Nike launch site, Northamptonrecreation center, Richboro.



Concrete radar base remains as evidence at ridge above the old Nike buildings on Twiningford Road.