

When the Cold War Cast Its Shadow upon the Great Valley

The Paoli / Valley Forge Nike Missile Base, 1954 - 1964

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Prologue

The Great Valley in Chester County, Pennsylvania, saw unprecedented change during the century between 1850 – 1950 as its agrarian pace and appearance changed in ways unimagined by its original Welsh and English settlers. This was nowhere more apparent than within the 6.2 mile width (east to west) of Tredyffrin Township.

The first of these changes came in 1853 with the construction of a right-of-way for the Chester Valley Railroad. Meant to provide both passenger and freight service between Bridgeport and Downingtown, the railroad required the appropriation of some 60 acres of prime farmland across Tredyffrin. Forty years later, in 1892-1893, the Pennsylvania Railroad constructed a second right-of-way across the township that ran parallel with the Chester Valley tracks. Officially called the Trenton Branch, it was intended as a low-grade bypass around Philadelphia for freight traffic destined for New York City. Connecting Glen Loch, Pa., with Morrisville, N.J., this second rail line consumed an additional 100 acres of agricultural land across Tredyffrin as the bisection of the Valley continued. These two rights-of-way were collectively referred to as the “Railroad Corridor.”

In 1927, the Philadelphia Electric Power Company developed plans to build a network of massive suspension towers intended to connect transmission lines over some 83 miles from Conowingo, Maryland, through Plymouth Meeting, and on into Philadelphia. The land through which these lines would extend was acquired either by obtaining a "perpetual and exclusive right-of-way and easement to locate, relocate, construct, erect, operate and maintain a line or lines for the purpose of transmitting electric or other power," or by outright purchase. This transmission corridor strode through the Great Valley adjacent to the rail lines within Tredyffrin Township, and in so doing an additional 460 acres were consumed.

Then, in September 1948, with the victory of World War II accomplished, the Pennsylvania Turnpike Commission [whose original 160-mile length from Irwin to Carlisle had been completed just prior to the war in 1940] resumed its eastward expansion to connect Carlisle with Valley Forge. Numerous private homes and farms were condemned along the base of the North Valley Hills as this new superhighway further bisected the width of Tredyffrin, and in so doing consumed another 150 acres of private land. The 100-mile-long “Philadelphia Extension,” with its eastern terminus at King of Prussia, was officially opened to public traffic on November 20, 1950.

Add to these dramatic changes in technology the throes of social and economic transformation occurring within portions of the Great Valley through the early decades of the 20th century. The quiet timelessness of farm life within the Valley had given way, in parts of Tredyffrin and East Whiteland Townships, to a gritty, industrial pace as limestone quarries proliferated. By the end of World War II, the pit worker communities created by the Warner Company, the Knickerbocker Lime Company, and the W. E. Johnson and E. J. Lavino quarries, were composed of diverse races and nationalities very different indeed from the traditional ethnic and social backgrounds of the Valley.

But in 1954 an even more unimaginable change was approaching, for which there was neither precedent or comprehension.

The Cold War, and America's Response

The sense of hope, optimism, and well-being felt by most Americans in the years immediately following the Allied victory in World War II had been steadily declining, fed by both the economy and geo-politics. It came to a chilling end on August 29, 1949, when the world learned that the Soviet Union, our former ally, had exploded its first atomic bomb. Detonated years ahead of the predictions of experts, the United States' nuclear weapons monopoly was now ended, and a Cold War, long simmering, began in earnest.

By 1951, the U.S. was engaged in a "hot war" in Korea against China and North Korea. The Soviet Union was an active supporter of our enemies, and American strategists were gravely alarmed that the Soviets now possessed at least 450 of their TU-4 long-range bombers, an almost exact copy of the WWII American B-29 bomber used to carry "the Bomb" to Japan. With such aircraft, America's northern borders were less than a twelve-hour flight from the Soviet Union, and the U.S.S.R. was capable of delivering nuclear weapons on targets within the continental United States. Fear of an aggressive communist nuclear ambition, and the reality that the Soviets could strike with little or no warning, added urgency to strengthen America's air defenses.¹

There was general public agreement that the U.S. had to stay ahead of the Soviets, and a strong national confidence that our military could and would develop the protections needed to defend America from attack. Beginning in 1950, the country was developing with the greatest urgency a four-pronged initiative to defend its most populous areas and strategic locations. This collaborative strategy consisted of:

Radar - To detect incoming bombers, the Air Force embarked upon a massive construction project to build a triple line of 433 fixed radar stations across the United States and Canada, including the D.E.W. (Distant Early Warning) Line, stretching across the Arctic wastes. However, early radar technology was still so primitive at that time that an aircraft flying below five thousand feet could usually approach a radar station undetected.

Ground Observers - All during the construction and technical enhancements of this radar network, the Air Force relied upon the Ground Observer Corps, which operated from 1950 to 1959. At its apex in 1956, the Ground Observer Corps contained 350,000 volunteers, 17,330 observation posts, and 67 filter centers across the United States. Manned around the clock by volunteers in observation posts, the skies were scanned for potentially hostile aircraft which were then reported into regional filter centers.²

Fighter-interceptor aircraft - When an aircraft was detected that could not be identified by filter center volunteers and radar station personnel, the Air Force would alert and send up some of its network of over 1,500 fighter interceptor jets staged at bases across America. Despite improvements in aircraft technology, however, weather and nightfall still presented impediments to successful interception.



The Distant Early Warning (DEW) Line was a system of radar stations in the far northern Arctic regions constructed to detect incoming Soviet bombers during the Cold War. *August 2005 photo courtesy of the Idlewild Expedition.*

1. The Soviet Union successfully detonated its first hydrogen bomb on August 12, 1953.
2. Regrettably, public response to the volunteer Ground Observer initiative within the Tredyffrin-Willistown-Malvern area could best be described as apathetic. Raymond R. Maxton, Superintendent of the Sugartown Ground Observation Post on Providence Road near the Radnor Hunt Club, bitterly complained: "The small group of volunteers already in the post find it very hard when the rest of the people apparently don't want protection ... We can't get help no matter how hard we try." *Daily Local News*, December 17, 1954.

Air defense artillery and missiles – Reinforcing aircraft interception, and designed to replace the increasingly obsolete radar-guided anti-aircraft artillery which in the early 1950s surrounded most large American cities, including Philadelphia, the Army was urgently completing development and implementation of the world's first guided, surface-to-air (SAM) missile defense system, the Nike-Ajax.

Begun in 1945 as *Project Nike* (named for the mythic Greek goddess of victory), this 34-foot long surface-to-air missile had a range of 25 to 30 miles, could engage targets at altitudes up to 70,000 feet, and carried three lethal, conventional warheads. The Nike-Ajax proved far superior to conventional anti-aircraft artillery in hitting high altitude targets, and was the only all-weather, night interception weapon in the American air defense arsenal. The first Ajax battery was activated in April 1954 near Washington, DC, and when fully deployed by 1956, there were 222 Nike-Ajax installations spread across the American landscape in 29 states.

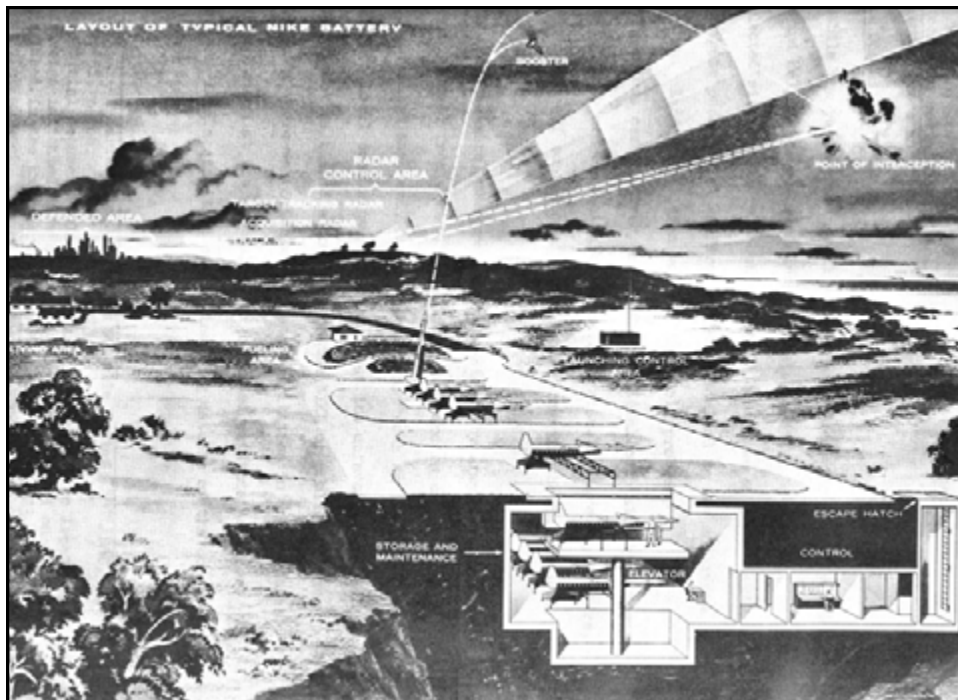


90 mm, radar-controlled *Skysweeper* anti-aircraft artillery like this was what Philadelphians depended upon to defend their skies before the introduction in 1955 of the Nike-Ajax surface-to-air missile. *Photo by Mark Pellegrini at the Aberdeen Proving Grounds, 2007.*



The Army activated the initial Nike-Ajax, the world's first guided, surface-to-air (SAM) missile defense system, in April 1954. That revolutionary system would be in place in the Delaware Valley ten months later. This image was taken in the summer of 1959. *Courtesy of Tredyffrin Easttown Historical Society.*

Under the jurisdiction of the Army's Anti-aircraft Command, Nike missile batteries began to be constructed in 1954 within the continental U.S. in forty-one "Defense Rings" surrounding the largest urban, industrial, and strategic areas. Due to the relatively short range of the Ajax, many bases were located close to the center of the areas they protected. The number of Nike batteries judged sufficient to properly defend each "Defense Ring" varied upon geography and other factors. For example, the New York Defense Area - one of the nation's largest - was defended by nearly twenty individual Nike batteries. The remarkable spread of these missile installations within heavily populated areas made the Nike program the largest dispersion of military weaponry into its communities in American history, and the bases became familiar features across the country.



The Army's acquisition teams sought land for these bases close enough to properly defend the cities they were charged to protect; yet far enough from other sites to economize coverage while still meeting radar tracking requirements. Each Nike base required two inter-dependent locations - a launch area to store and fire the Ajax missiles; and an

This U.S. Army graphic from 1954 entitled *Layout of Typical Nike Battery* was designed to explain and justify the soon-coming presence of surface-to-air missile batteries in communities around America. *Courtesy of Kaylene Hughes, Ph.D., U.S. Army Aviation and Missile Command.*

integrated fire control site, or IFC, to guide the missiles to interception. These two locations needed to be spaced not less than one-half mile, or more than 3½ miles, apart. The number of these defense rings, and the technical requirements for each, created the need for substantial amounts of real estate to allow the integrity of this defense.

Early in 1954, Army officials began meeting with community leaders around the country to inform them of these impending base activations within their communities, and to build public support for these bases. The Army emphasized the inherent safety procedures for these non-nuclear weapons; the potential for financial benefit to businesses within each community; and the assurance that only the Army's best personnel would be manning these bases. It was emphasized, for example, that the intelligence and training required to operate the Nike system was attracting smart, mature, serious men more likely to be married, and normally of a higher rank than the average soldier.

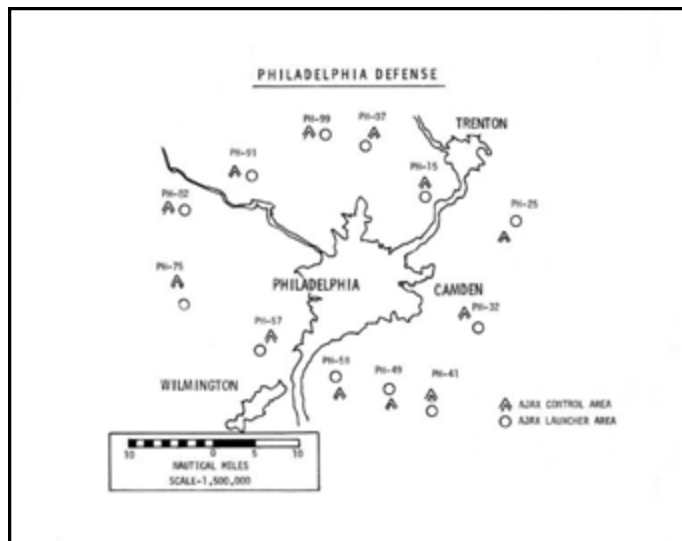
Across America, this sales pitch proved to be a hard sell. It wasn't that Americans objected to their cities being defended. Most citizens, in fact, supported the protection that Nike missiles could bring to their communities. The problem, just as with prisons, half-way houses, or mental-health facilities, was that Americans wanted this protection located in someone else's back yard. And the reasons were usually about economics rather than safety concerns. Americans have always been an independent and often pugnacious people, and on this issue they were united in vigorously stating their opposition to the military's choices for these bases. In fact, the public objected to Nike site placement in virtually every area designated for these batteries, and recourse was sought at every level of government. And it was homeowners, local politicians, civic groups, and governmental bodies, rather than student activists or anti-nuclear protestors, that were initiating this opposition.

"I am sure you are all aware of the delays that can ensue if public relations are not properly handled, the problems with the man of property who does not want a Nike site in his area, the man who will not permit a tree to be removed that interferes with the line of sight, the bird watcher who resents the presence of the man with the blueprint, the municipality that will not give up a portion of a highly prized park."
 - excerpt of an Army Corps of Engineers briefing

The U.S. Army Arrives in Chester County

The Philadelphia Defense Area had been established soon after World War II to protect the Delaware Valley, from Trenton south to Wilmington, with a matrix of anti-aircraft gun emplacements. But as the Nike-Ajax missile approached operational status, plans were set to replace the gun sites with 12 Ajax batteries that would comprise a "ring of supersonic steel" around Philadelphia. Seven installations would be constructed in Pennsylvania, and five in New Jersey. On the western perimeter of the Philadelphia "Ring" would be two sites: Nike base PH-75, located in Edgmont Township, Delaware County (near Ridley Creek State Park); and, eight miles due north, in the Great Valley of Chester County, a Nike-Ajax battery officially referred to as PH-82. This is the story of that base.³

It was in the Pentagon's, and the public's, best interest to limit the amount of land required for these Nike sites. Military planners had initially estimated that each Ajax installation would require 119 acres, but by late 1953 the Army had been able to substantially reduce this requirement. The Army issued guidance that by storing the missiles in underground magazines instead of at



This 1958 chart shows the twelve Nike-Ajax sites which comprised the Philadelphia Defense Area. The configuration would diminish with the introduction of the more capable Nike-Hercules missile, and eventually several bases, including PH-82, would be eliminated.
 Courtesy of Chris Milewski.

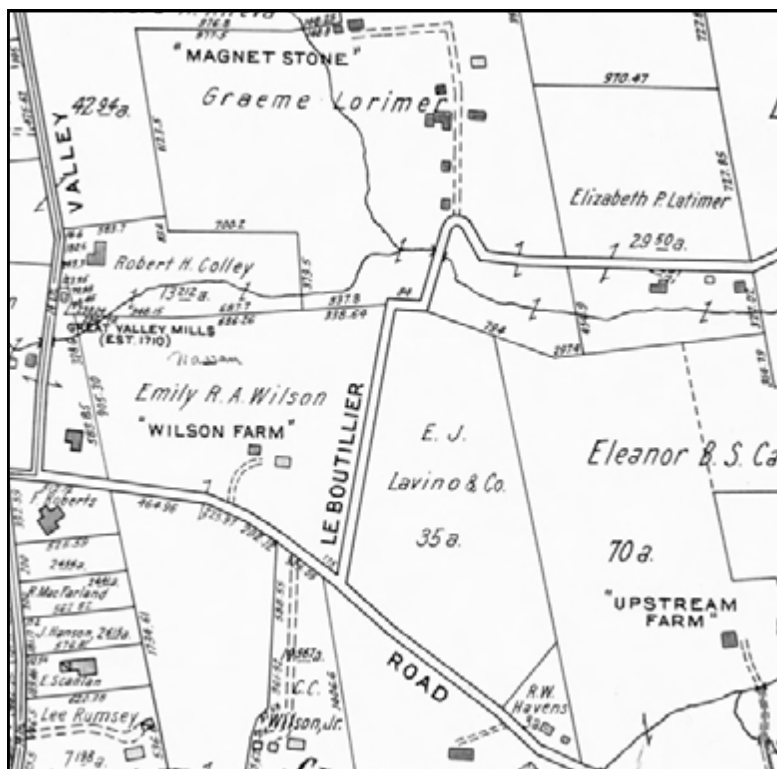
3. A point of explanation: The preface "PH" stands for the Philadelphia Defense Area. The "82" designates the base's location from Philadelphia's City Hall based upon a 100 degree circle where North = 0, and South = 50. Thus, Nike base PH-82 was located 82° northwest of Center City Philadelphia.

ground level, not only would substantial real estate savings be realized, but increased protection for the missiles would result. In this way, land requirements for each Nike battery were reduced to between 43 to 71 acres, depending upon terrain and other conditions.

The Army dictated that land required for Nike bases was to be acquired as inexpensively as possible, and the government would first look at publicly-owned property when considering placement of these sites. In early 1954, the Army began searching for the land required for its air defense base referred to as PH-82, and briefly considered public acreage within Valley Forge State Park. This would have kept acquisition costs low, minimized inconvenience to civilians, and not have increased tax-exempt properties within the local municipalities. However, for reasons still unclear and requiring additional research, the Army abandoned this consideration, and the intent to locate the base on privately-owned land within the Great Valley of Chester County was first announced in March 1954. Not surprisingly, most Valley residents were shocked and outraged by these stated intentions, and made their demands known to their politicians. Army personnel had several meetings with local community groups, especially the Great Valley Association, but local opposition only became more galvanized. The potential impact on private property values led the concerns, although there was a general contention that "an army atmosphere" was unsuitable to this area, and "surely there must be an area better suited for a military base than the Valley."

As with all Ajax bases, the Army required a "line-of-sight" separation of from 1,000 – 6,000 yards between a Nike battery's Integrated Fire Control area and its launcher site. It also specified that an IFC area should, if possible, be constructed on high ground so as to gain superior radar coverage. Clearly, the topography of the Great Valley, with its lightly populated, undulating valley floor opposed on the north by the 600-plus-foot ridgeline of the barrier ridge known as the North Valley Hills, precisely met the Army's requirements for this Nike installation, and opposition to this choice was soon made untenable.

A landowner who rejected the government's efforts to buy his or her property at the offered price, or who refused to provide the required easements as the Army stipulated, would usually find the federal government quick to announce its intention to seize the land through eminent domain proceedings. Because of the Army's urgency to establish these bases, a defending landowner would be provided a mere twenty days to respond to such proceedings with court documents prepared by an attorney.



The E.J. Lavino & Co. acreage at the intersection of Swedesford and LeBoutillier roads, as shown in the Franklin Survey Map of Chester County, PA, Main Line Vol. 2, Tredyffrin Township, 1950, which would soon be developed into the Nike-Ajax launch site of PH-82. *Courtesy of Tredyffrin Easttown Historical Society.*

By early spring 1954, it was evident that the government had made its decision to place its Nike base in the Great Valley, and equally clear that further opposition could not be sustained. A spokesman for the Great Valley Association, recognizing that further obstruction was futile, declared: "Since the Army is convinced this is the site, above all others, which is proper in this very important defense move, then no one should offer further opposition." A court order soon notified affected property owners that the land required by the government would be formally condemned for a military installation, and, as reported in the *Upper Main Line News*, "With the formal condemnation of the site(s), all opposition was withdrawn."

Local lore would suggest that the Army announced its "jack-booted presence" in the Great Valley in 1954 by condemning the land of many private landowners in order to construct its missile base. In fact, that was not the way it happened. The two primary plots of

Chester County land chosen by the government for its Nike installations were owned by commercial land developers. The prime plot selected for the missile launch area was an undeveloped, 35-acre section in Tredyffrin Township, nestled at the 225 foot (above sea) level at the northeast corner of Swedesford and LeBoutillier roads. This property was owned by E.J.



In this vertical image of a small portion of the Great Valley of Chester County, produced by the U.S. Department of Agriculture on August 9, 1958, both sites of PH-82 are clearly visible. At the top center is the Integrated Fire Control site, flanked on the south by the Horse Shoe Trail. The launch site lies in the bottom center of the frame, 1.36 miles south of the IFC. The Pennsylvania Turnpike bisects the image. *Courtesy of Penn Pilot.*

Lavino & Co. of Philadelphia, one of the nation's largest producers of blast furnace ferro-manganese, and also the owner of the Lavino limestone quarry located just east on Swedesford Road in Howellville. This land was transferred to the U.S. Army Corps of Engineers in late April or early May of 1954. The Integrated Fire Control area would be constructed 2,400 yards due north of the launch area at the 610 foot level, upon approximately 20 undeveloped acres of Valley Forge Mountain along the rim of the North Valley Hills in Schuylkill Township, Chester County. The site, to be built immediately north of a former logging road known as the Horse Shoe Trail, was approximately 900 yards east from the Trail's intersection with Country Club Road. This property was transferred from developer Paul H. Lemen to the U.S. Army Corps of Engineers in the spring of 1954.

In addition to acreage purchased for either physical occupancy of the Nike site or improved access to that site, there was much additional real estate required from landowners of surrounding properties in the form of easements. These easements would guarantee a clear line of sight between the IFC and the launch area; create a blast area buffer at the missile site, and create a safe perimeter for physical security. Easements were also required from property owners to enable the underground installation of a coaxial cable to be buried beneath the Pennsylvania Turnpike and the intervening farmland to provide the critical, and secure, communication linkage between the IFC and the launch area.

All buildings and structures constructed at any domestic Nike installation began as standardized drawings designed by the Washington, D.C.-based architecture and engineering firm of Leon Chatelain, Jr. A plan, once approved by the Army Corps of Engineers, was then adapted to best fit an individual location. On June 2, 1954, the *Chester Times* proclaimed that bids for three missile installations for the defense of Philadelphia, including an installation located "half a mile west of Howellville on Route 202 in Chester County," had been "requested today by the Philadelphia dis-

trict office of the Army Corps of Engineers.” The Corps required these construction bids to be received within 30 days, with a contract to be awarded to the “lowest responsible bidder.” In fact, the bids arrived ahead of schedule, by June 23, 1954, in the Corps’ Philadelphia office, and it was reported that “... construction of launching platforms, underground ammunition storage structures, mess halls, ammunition assembly and test building, and other structures in connection with the installation, is expected to begin in July.”

The average construction time for a Nike-Ajax installation was between eight and nine months. But the *Chester Times* reported that the erection of the Paoli and the other sites was expected to be completed “within six months” at “a cost to acquire and build (each) permanent-type site running about one million dollars.” The contractor’s construction estimate for both cost and completion was delivered on schedule.

The Army’s Table of Organization and Equipment (TO&E) for a Nike-Ajax battery in the mid-1950s called for a permanent staffing of 106 officers and enlisted men. By February of 1955, the Paoli base, PH-82, was sufficiently completed to begin receiving the first of its Regular Army complement. The unit chosen to man the base was officially designated Battery “A,” 176th Antiaircraft Artillery Missile Battalion, 24th Air Defense Artillery Group. The Battery’s first commanding officer was Captain Henry Turck. Through the spring and early summer of 1955, scores of young soldiers from around the country began arriving for duty in Chester County.

The Valley’s Response to the Army’s Arrival

The Army’s arrival in the Great Valley certainly had everyone’s attention. Anne Lorimer Sirma recalls:

“The Nike site came as quite a surprise to my parents, who bought Magnet Stone Farm [on LeBoutillier Road near Valley Creek in Tredyffrin Township] for the bucolic landscape, not Nikes. The Nike site was an anxiety to my parents for several reasons: not only did it bring thoughts of war closer, but also brought service men closer to their three daughters.”

For Betsy Latimer Miller, who as a girl had moved to the Valley during WWII, the Valley had been “one big home.”

“We knew all the landowners, and would get on our horses and ride from one place to another up to Horseshoe Trail and down the Trail ... Mother never feared for the whereabouts of her children because everybody knew everyone else’s children, and we all were very welcomed in everyone else’s home.” But now, with the announcement (of the Nike base), “... there was apprehension about the Army coming to town, and about the inter-social reaction.”



This image of the Great Valley, taken by the Victor Dallin Aerial Survey Co. in 1941, looks east toward Valley Forge State Park from near the intersection of Yellow Springs and North Valley roads, and exposes an agrarian atmosphere before turnpikes, sprawl ... and Nike sites. *Courtesy of Hagley Museum and Library.*

Bill Keltz relocated as a boy with his parents to the Great Valley in 1951:

“The initial reaction of my parents (to the Nike base) was ‘not in our neighborhood.’ Put it in Valley Forge Park or anywhere nearby, but not where they were proposing it. One of their concerns was what would happen to the land if the Army ever abandoned the base. Would the land be developed not as residential zoning, but rather to admit commercial zoning, or high density apartments?”

And one can only imagine the initial reaction of the owners of one of Tredyffrin Township’s loveliest and most iconic places, Wilson Farm, with its Victorian mansion house notable for its mansard roof, when the Army announced that a guided missile launch site would be built directly across LeBoutillier Road from their property. Built by John Wilson in the 1870s, the farm had long been the

home of C. Colket Wilson, secretary/treasurer of the Philadelphia, Germantown and Norristown Railroad, and his family. By the 1950s, Wilson Farm was the residence of Wilson's daughter Emily and her husband, William Latta Nassau III.

Description of the Paoli Nike Base

Across America, the Nike installations under construction were the quintessential Cold War locales. PH-82 was no exception.

The Nike-Ajax had originally been designed as a mobile missile system, and the Army initially proposed constructing portable, prefabricated troop housing units. But to better appeal to the public while at the same time reducing maintenance costs, the government instead constructed buildings of corrugated steel or concrete masonry block. Both the IFC site on "the Hill" and the launch area in the Valley assumed a standard, utilitarian appearance in both architecture and equipment. Whether one considered the guard shacks, the barracks, radar towers, mess hall, or the maintenance shops, the structures on PH-82 were virtually identical to any Nike base in Boston, Chicago, or Los Angeles. And while certainly not architectural gems, these buildings did represent a substantial improvement over the tent cities erected for anti-aircraft artillery gun crews around Philadelphia in the early 1950s.

The Launch Site

The extended perimeter of the Valley launch area was surrounded by a single, chain-link fence topped with three strands of barbed wire. A single entrance, facing onto LeBoutillier Road, was protected by a guard shack and a moveable gate.

The ground-level buildings within the launch area were few . . . and spare. They included a single-story enlisted barracks for launch platoon personnel; a non-commissioned officer barracks for launch NCOs; an assembly building in which each missile was connected with its fins and rocket booster [Interstate Commerce Commission regulations prohibited the transport of armed and fueled missiles to Nike sites]; a storage building for spare equipment; a portable trailer from which the launch officer could activate the missiles; and a well house and small water tower.

But the primary feature on this and every Nike-Ajax launch site was below the surface, in three massive underground concrete magazines used to horizontally store the missiles in readiness for use. Each magazine had four above-ground missile launchers, two on each side of the enormous horizontal steel doors covering the opening to each magazine. A hydraulic elevator within each bunker would raise the missiles for attachment by the launch crew to the rails and launchers. If the site came under sudden attack, a missile could be set upon its elevator, raised into firing position and launched. During a launching emergency, no personnel would be required above ground. Each underground magazine had generators for self-sustained electrical power; a reinforced concrete control room to which crews could retreat after readying the missiles for firings; and an emergency exit up to ground level.

Any one of the Nike-Ajax missiles lying in readiness upon its launcher at the Valley site was tiny compared to giant, inter-continental ballistic missiles: only twelve inches in diameter and twenty-one feet long (or thirty-four feet with its booster attached). But upon a launch command, the 2,455 pound Ajax missile would literally explode off its launcher as if shot from a cannon, hitting a speed of almost 1,700 mph in less than four seconds before its booster detached and fell back to



Looking northwest, with Swedesford Road out of sight at the bottom of the image, the snow-covered launch site of PH-82 as seen in February 1960. LeBoutillier Road runs diagonally from the left of the image, with the Wilson Farm across from the launch site, and a largely treeless Great Valley behind. *Courtesy of the National Archives and Records Administration.*



Taken from the parking area of the missile launch site on LeBoutillier Road, this 1959 image looks north beyond the enlisted launch platoon barracks across the Great Valley. Along the ridge-line on the North Valley Hills, in a break in the trees, one can barely discern the white tower of the missile tracking radar at the IFC. *Courtesy of Tredyffrin Easttown Historical Society.*



The Nike-Ajax missile, shown mounted for display upon its mobile launcher at a Phoenixville Memorial Day celebration in 1958, was only twelve inches in diameter and twenty-one feet long (thirty-four feet long with its booster attached). But upon launch the missile would reach a speed of almost 1,700 mph in less than four seconds before its booster fell back to earth. *Courtesy of Tredyffrin Easttown Historical Society.*



Looking north across the three launching pads of PH-82 and the high earthen berm surrounding the fueling and arming station, toward the Valley. This image, taken in 1963, reflects an installation now under the control of the Pennsylvania Army National Guard. *Courtesy of Chris Milewski.*

Looking southeast from the IFC area, the three radar towers are (from L to R): the target-tracking radar (TTR) to lock onto one prioritized target; the acquisition radar (LOPAR) to prioritize many incoming targets; and the missile-tracking radar (MTR) which guided the intercepting missile precisely to its target. *Courtesy of Chris Milewski.*



earth.⁴ At that point the missile's engines kicked in. The Ajax burned a highly volatile mix of JP-4 jet fuel and an explosive starter fluid called Red Fuming Nitric Acid. The missile's engine could only sustain flight for up to seventy seconds, but in this short period the missile could attain 65,000 feet in altitude and a range of up to 30 miles. Its guidance system, controlled from the ground, sent commands to three sets of fins at the fore, middle, and aft of the Ajax to provide steering, sensors, and stability for the missile. Three non-nuclear warheads, placed in the nose, center, and tail of the missile, would explode on command.⁵

Immediately adjacent on the north side of the three Nike magazines was a ten-foot high, earthen revetment constructed to surround the missile when it was being fueled and the warheads attached. The missiles were then hauled from the revetment to the launcher rails, and moved to their underground magazines until required.

Unquestionably the most hazardous duty on any Nike-Ajax site was the fueling of the Ajax missile with the highly volatile chemicals designed to explode on contact. An article entitled "Ring of Fire" in the June / July 2005 issue of *Air & Space* magazine cites an ominous implication for carelessness: "Fueling the Nike-Ajax required crews to don (special) clothing to protect them from an oxidizer called red fuming nitric acid, a chemical that is nasty enough to cause emphysema, pulmonary edema, circulatory collapse, and a miserable death." Each of the component tanks on each missile needed to be filled separately in a very controlled sequence. In the event of an accidental explosion while fueling or arming a missile, the revetment was designed to deflect the force upwards and away from the rest of the launch site and the surrounding countryside.

[A Nike site]...is not dangerous but safe as a gas station; as important to security and as much a part of the local community as the police and fire departments."

Interview excerpt, Brigadier General R.R. Hendrix, commander of the Washington-Baltimore Defense Area on May 18, 1955, as reported in the *Asbury Park Evening Press*, May 23, 1958.

Integrated Fire Control Site

If the launch area in the Valley was the "fist" of the Nike battery, the Integrated Fire Control site on the Hill was its "brain."

Once alerted to a hostile intrusion of airspace, the job of PH-82's IFC was to coordinate the three separate radars placed upon towers on the property: a low-power acquisition radar (LOPAR) designed to follow and prioritize incoming targets throughout an engagement; a target-tracking radar (TTR) that would lock onto one prioritized target; and a missile-tracking radar (MTR) that would guide an intercepting missile precisely to that target. Each of the radars fed target and missile position data into computers located in a control trailer at the IFC, relying upon then state-of-the-art vacuum tubes and transistors. Calculating this data, the computer would determine the predicted point of intercept, and issue steering orders to the missile's fins as the Ajax was homed toward an attacking bomber. At the point of "highest kill probability," a burst order was issued to the missile, and the three warheads in the Nike-Ajax would detonate simultaneously.

The Nike's tremendous launch velocity, and the physical limitation of the hydraulics on the missile tracking radar, made that radar incapable of elevating rapidly enough to guide a missile at launch distances less than one-half mile. It was for that reason that the IFC on the Schuylkill Township ridgeline was constructed in a "line-of-sight" position 1.36 miles (2,400 yards) distant from the Valley launch area.

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4. An inconvenient reality of the Nike-Ajax technology was that, several seconds after a missile's launch, at an altitude of roughly 4,000 feet, the Nike's massive booster would release from the missile and fall uncontrollably back to earth. Engineers specified that a missile not be fired straight up, but rather at an angle of 1 to 5 degrees off of vertical, to ensure that the booster not fall down upon the launch site. The Army ordered that every Nike-Ajax launch area have a designated "safe area" one mile in diameter located at least 1.5 miles from the installation or from any populated area into which the expended booster could safely fall. However, a study of existing Nike missile sites in the U.S. revealed that some 80% of those "safe areas" had structures located on them, including residential housing. The Army nevertheless remained adamant that no effort would be made to purchase land, or secure easements, to keep booster disposal areas clear of population. The government's rationale was that missiles would only be fired from these Nike batteries during a time of war when far worse than boosters would be dropping from the sky. Talk about a Hobbesian choice.
 5. Targets could be identified by radar up to 79 miles distant, and the Ajax could be launched against aircraft up to 47 miles away. Once these targets moved to within 60,000 feet in elevation and 28 miles away from the launcher, the missile system had the capacity to destroy bombers flying up to 1,100 miles per hour by exploding within sixty feet of the target.



A 1963 low-altitude oblique view from the back of the IFC looks south at the two white tracking radar towers, the acquisition radar in the middle, and the small support buildings and portable trailers. What is remarkable about this image is the clear visual connection to the launch site 1.36 miles distant in the Valley below. The road running diagonally on the right connected the Horse Shoe Trail with the Army's waste treatment plant. *Courtesy of Chris Milewski.*

As with the launch site, the entire perimeter of PH-82's IFC site was surrounded by a single chain link fence topped with a triple barbed wire strand. Access for all service personnel and visitors was limited to a single entrance off Horse Shoe Trail, protected by a guard shack and a wire gate. A second gate at the east end of the IFC area, intended only for heavy construction and other equipment, was kept locked except as required.

In addition to its principal radar function, the Hill site also served as "A" Battery's primary administrative and personnel site. The several single-story structures included the Administration Building with the office of the Battery Commander, a Supply Room, Post Exchange, and Day Room ("with a couple of pool and ping-pong tables, a seating area, and a television"); the Mess Hall, which prepared and served meals for all installation personnel, whether from the launch site or the IFC; a small BOQ (Bachelor Officer Quarters) and non-commissioned officer barracks for unmarried members of the fire control platoon and other NCO personnel; an enlisted barracks for the fire control platoon; the Battery motor pool; the three radar towers, and several single-story support buildings and portable trailers. ("The base had no central heating and cooling system. Each building, including the barracks and the mess hall, had its own oil-fired heating unit. We didn't use coal for anything. None of the buildings were air conditioned. The radar and launch trailers had electric heaters, and because their electronics put off a lot of heat, these trailers were air conditioned.") Also, at the rear (extreme north perimeter) of the IFC area was a wastewater treatment facility.



A 1963 oblique view looks southwest upon the buildings at the IFC site, which include (from R to L): the motor pool, guard shack, Administration Building, Mess Hall, NCO barracks and BOQ (Bachelor Officer Quarters), and the elongated enlisted barracks for the radar platoon. *Courtesy of Chris Milewski.*

Looking east toward Valley Forge State Park along the Horse Shoe Trail in June 1959. This once unpaved logging road was improved after the Army arrived in 1955, and finally paved in 1958.
Courtesy of Tredyffrin Easttown Historical Society.



Looking northeast in this 1959 image within the IFC area is the Administration Building on the left and, across the courtyard, the Mess Hall. The white building in the center, behind the car, is a small BOQ and an NCO and enlisted men's barracks for the radar platoon. One of the tracking radars is seen in the distance.
Courtesy of Tredyffrin Easttown Historical Society.

A close-up of a portion of an aerial image of the Great Valley, taken by the U.S. Department of Agriculture on August 9, 1958, shows the IFC site along the Horse Shoe Trail in Schuylkill Township. Note the road within the site leading to the wastewater treatment plant on the north perimeter.
Courtesy of Penn Pilot.



Military Life in the Great Valley

A military installation is, of course, far more than a collection of buildings and equipment. It is a body of soldiers – people – who arrive from all parts of the country to a place most have never seen before ... and will rarely see again after their tour of service is completed. The 106 officers and enlisted men assigned to this Ajax battery were commanded by a captain, and supported by a leadership cadre of two lieutenants, two warrant officers, and several NCOs led by a veteran master sergeant.⁶ But the majority of the base's personnel, approximately 90 men, were young enlisted soldiers, mostly draftees, doing their two- or three-year stint of active service in a country where the military draft was most assuredly alive and well.

Each of the four firing batteries within the battalion was organized to act independently from its headquarters, and had very little day-to-day contact with the battalion. Unlike large military installations that often become small cities unto themselves, these small Nike bases developed a far more symbiotic relationship with the neighboring community,



Looking southwest towards the Horse Shoe Trail and the IFC guard shack in the center, "A" Battery gathers in formation in "dress greens" in the early spring of 1960. Many of the soldiers commuted daily to the base in their own POVs (privately-owned vehicles).
Courtesy of Lt. Col. John Allen (Ret.).



Two young enlisted specialists within the spartan orderly room of Battery "A," located in the Administration Building at PH-82's IFC, 1960. *Courtesy of Lt. Col. John Allen (Ret.).*

depending upon it for most commerce, recreation, housing, and other necessities. And when weather crises would strike the community, or when special needs of manpower or equipment were required, the local Army commander would usually volunteer the services of his soldiers, whether to rescue civilians stranded by a blizzard, participate in a community event, or even help to lead a local Boy Scout troop. As time went on, these Nike units helped solidify their position as members in good standing, if only temporarily, of the community in which they were stationed.

It is regrettable for local historians that the Army did not require Nike batteries or their battalions to write official unit histories. There are today virtually no official details that describe the unique activities and operations at PH-82 or its missile battalion. But it was with the best of fortune, after more than a half-century from their Chester County service, that the author located and interviewed in-depth the

6. During the period from February 1955 through May 1960, when the U.S. Army turned the operation of PH-82 over to the Pennsylvania National Guard, some of the "A" battery officers and warrant officers reporting to either Commanding Officers Capt. Henry Turck or Capt. John Allen included Lt. Ryan Yuille, Fire Control platoon leader and Battery Executive Officer; Lt. Jim Scott, Launcher platoon leader and Battery Executive Officer; Lt. Grady Burlson, Launcher platoon leader; Lt. Bob Orser; Warrant Officer (WO) James Dean, missile technician; WO Ernie James, radar technician; and WO Chandler, missile technician.

former commanding officer of PH-82 from June 1957 to May 1960, then-Captain John Allen;⁷ then-Specialist 4th Class Jon Freudenthal,⁸ who served at PH-82 from September 1956 to June 1959 as Acting Motor Pool Sergeant; and former missileman PFC Robert Kundert, who served at Paoli from 1956 into 1958.⁹ Most of the details of everyday life on this Nike base, from a soldier's perspective, comes from extended conversations with these men.

When Privates Freudenthal and Kundert arrived in Paoli in 1956, their Battery Commander was Captain "Hank" Turck, the original CO. There

Battery commander Capt. John Allen, Battery "A," 2nd Battalion, 59th Artillery Group, the second commanding officer of PH-82, from June 1957 to May 1960. Image taken early in 1960. *Courtesy of Lt. Col. John Allen (Ret.).*



7. John Allen and his wife Winnie both grew up in the small coal-mining community of Williamstown, PA, about 40 miles NE of Harrisburg. He graduated from Albright College in Reading, and had returned to Williamstown to teach high school chemistry, when in 1951 he joined a local Army Reserve transportation company. With the onset of the Korean War, the unit was activated into the Regular Army, and Allen applied for an officer's commission. He went to Korea as a Reserve Officer in the Chemical Corps, and while there was granted a Regular Army commission in the Field Artillery. "I knew nothing about field artillery, but we were in combat in those days, so I learned artillery real fast. I was a battery commander within a year, part of the 936th Field Artillery Battalion. Depending on the changing combat situation within I Corps, our 155 mm heavy artillery battalion would be attached to support the U.S. 7th Infantry Division, the 1st British Commonwealth Division, and the 1st ROK Division." It was while serving as a combat artillery officer in Korea that continuous artillery fire eventually caused the significant hearing loss from which he suffers today. Prior to arriving in Paoli in 1957, then-Captain Allen was stationed at Ft. Sill, Oklahoma – The Home of the Artillery. In mid-1960, after completing his 3-year assignment at PH-82, Capt. Allen was ordered to Hawaii to join the 25th Infantry Division. Allen was later chosen to attend the prestigious Command and General Staff College at Ft. Leavenworth, Kansas. He ended his 21 years of service with a four-year stint on the Army General Staff at the Pentagon, retiring as a Lieutenant Colonel. After working for three years in defense-related consulting with Booz Allen, he returned to education, serving for the next 21 years as a junior high school principal. Mrs. Allen passed away in March 2011, and at the time of this writing, John Allen lives in an Army officer retirement community in central Texas.

8. Jon Freudenthal grew up in a suburb of Milwaukee. "During high school, two friends and I joined the Army Reserve, and shortly after we graduated in 1956 they activated us." After completing basic training, he was sent to New Mexico - north of White Sands Proving Grounds – to join a Nike missile practice firing range outside of Carrizozo, called Red Canyon Range Camp, where troops from bases all over the U.S. would come for about a week to actually fire old missiles. Radio controlled drones would be sent out from White Sands as targets to shoot at ... and hopefully hit. At that time, Red Canyon was the only active practice range in the country.

"While in high school I loved auto mechanics, so after I arrived at Red Canyon Range Camp, I was assigned to their motor pool doing general and light mechanics work, as well as driving jeeps and trucks and other vehicles. But it was a terrible place to be stationed, just sand and rocks, with little to do ... roadrunners crossing the road and wild donkeys roaming free. Fortunately, however, the Army soon assigned me to the Philadelphia Air Defense Command, and that's how I got to Paoli. I was 18 and a private when I arrived in Pennsylvania in the early fall of 1956. I was first ordered to report to a small Army replacement depot in downtown Media, PA, just off Rte. 252, not far from the Towne House Restaurant (Veterans Square & W. State St.). We were located, as I found out later, only about two miles from the campus of Swarthmore College, which served as the headquarters of the artillery group to which I was to be assigned. I was told that Nike bases surrounding Philadelphia had first received troops in the spring of 1955, and now there was much transition as many in those initial personnel were preparing to be reassigned. We were their replacements. So, for the next week, I and others received our orientation at a small barracks before being parceled out to the various batteries."

Upon arriving at the Paoli base in late September of 1956, Jon found the Great Valley "somewhat similar to Central Wisconsin, very inviting, and reminding me a lot of home. I was assigned to the installation's small motor pool where I would later become its acting Motor Pool Sergeant." Except for his initial training, Freudenthal spent his entire service tour in Paoli, and was discharged from there as a Specialist 4th Class in June 1959.

He and his wife moved back to Wisconsin where, with the help of the G.I. Bill, he was able to attend college full time and earn an industrial engineering degree. He went to work for Westinghouse Power Generation where he became Manager of Quality Engineering. He took early retirement in 1994, but continued working for the company as a contractor. Siemens purchased the Westinghouse business in 1997, and in 2012, Freudenthal continues to work for Siemens-Orlando, and lives in South Carolina with his wife Rosemary.

9. When Bob Kundert volunteered for a three-year enlistment in the U.S. Army in November 1955, he was living with his family in Madison, Wisconsin. After completing basic training, and then signal school at Ft. Gordon, Georgia, he was assigned to the 176th Antiaircraft Artillery Missile Battalion in Springfield, PA, "for a 3 day orientation in a small Quonset-type structure." Bob was posted to "A" Battery in Paoli, arriving on May 23, 1956. He arrived at PH-82 with no experience or training in the Nike technology, but was trained on-the-job by Warrant Officer Chandler in "all that I needed to know about the missile assembly process." In 1958, Bob was transferred from Paoli to Battery "D" in Swedesboro, New Jersey, and completed his military service there in November 1958 with the rank of PFC. Bob has had several careers, among them as the owner of a newspaper distributorship, and since 1982, as a Chester County constable. At this writing, he and his wife Patty continue to live in Paoli, the town in which they first met almost 57 years ago.

were four missile batteries within the 176th Antiaircraft Artillery Missile Battalion: “A” battery at Paoli, “B” battery at Edgmont, “C” battery at Village Green (aka Media), and “D” Battery at Swedesboro, NJ. The battalion also had a fifth unit called a Headquarters Battery. The headquarters batteries for each of the three battalions comprising the 24th Group were each located within their battalion, and the 176th Battalion Headquarters Battery was located with Battery “B” at Edgmont. However, the 24th Group headquarters, to which each of the three battalions officially reported, and which served as the overall command center for all 12 Nike sites comprising the “Philadelphia Ring,” occupied two buildings of the former Mary Lyons School on the campus of Swarthmore College.

Captain John Allen, accompanied by his wife Winnie and their four children, arrived in Pennsylvania in June 1957 to replace Captain Turck as CO of the Paoli battery. Turck had been posted to the 176th Battalion Headquarters Battery as the S3 (Operations and Training) officer, and while in that assignment, had married a local woman [one of many marriages and romances between local women and Nike soldiers]. In September 1957, three months after Capt. Allen’s arrival, the Army officially changed the unit designation at PH-82 to Battery “A,” 2nd Battalion, 59th Artillery Group. In 1959 the Group headquarters, previously located at Swarthmore College, was relocated to a larger facility at Pedricktown, NJ, where a new electronic “missile master” firing system had been installed to better coordinate all the batteries within the Philadelphia Air Defense Area.

Of the 90 or so young enlisted soldiers assigned to PH-82, only about 15 to 20 percent were volunteers. Freudenthal recalls back over almost six decades: “I don’t think that we were really “gung-ho” about our assignment, but all in all, the morale of the soldiers was very good. We did feel that we needed to be vigilant and dedicated, though we were all just young guys satisfying our military obligation ... and sometimes we just wanted to enjoy a beer out on the town.”

The intent for this article is to explore the PH-82 story from a unique, local perspective rather than from any technologic or political perspective. Here, then, is a distillation of some of the topics which, after more than half a century, still occupy the active memory of the former soldiers who served in Chester County:

Site Security

“In hindsight, the Ajax sites seem quite vulnerable, especially at night. There was a single chain link fence around the perimeter of each site, but that fence was not electrified, and there were no guard dogs or regular foot patrols to provide surveillance of the perimeter. Someone could have easily cut the fence wire in a dark back corner and penetrated the site. There was only one guard on duty at any given time, and while he might walk out and around the assembly building or the launch pads, for instance, the guard needed to stay within eyesight of the gate because of arrivals or departures.” During the night, after the return of most of those men who had gone “out on the town,” the duty guard would keep the gate



Looking northeast, a well-fed young missileman stands guard at the primary gate to the Integrated Fire Control area of “A” Battery/2nd Missile Battalion/59th Artillery in 1960. The Administration Building is in the background. *Courtesy of Lt. Col. John Allen (Ret.).*



From inside the IFC in 1959, looking south toward the Horse Shoe Trail, the small concrete guard shack, equipped with a single chair and a small space heater, stood beside the primary entrance on “the Hill.” This gate, like its twin in the Valley, was manned 24 hours a day, seven days a week. *Courtesy of Tredyffrin Easttown Historical Society.*

locked until perhaps six a.m.

However, if a straggler returned back to

base in the wee hours (and there were some men who had a tendency to return at all hours), the guard would need to open the gate to let him enter.

Each gate, with its single guard shack, was manned 24 hours a day, seven days a week. Guard duty was a rotational assignment that all enlisted soldiers would share perhaps once a month - or even more often. Then it was four hours on, four off, over 24 hours until you were relieved. The shacks were small, concrete block buildings, with a single chair, and a shelf on which visitors would

sign in. Each shack had a phone connection to the administration building, and a little plug-in resistance heater to take the chill out of the air. But as Freudenthal remembers: "It was really boring duty, especially at two o'clock in the morning when it was cold and snowing. And it got cold as hell in those small, dismal guard shacks on winter nights."

He continues: "Though the guards were armed, we knew that we had very limited firepower in case of emergency. There had been an incident at the launch site where one of our guys from New York had fired off a shot one night while on duty. He said he thought he saw an alien or something. So, in response, we were only issued one or two bullets for our rifles while we were on guard duty. About all we could have done in an emergency was to fire a warning shot, and then run."

Alerts and Honors

Perhaps twice each month, the siren would howl at both the launch area and the IFC, placing the base on "Red Alert." All the missilemen would drop what they were doing and rush to their duty stations, assuming, unless commanded otherwise, that an attack was underway. Bob Kundert remembers switching the launch area from commercial power to generator power, thereby converting from AC to DC current, so that the installation was no longer reliant on the local power grid. Only after much frenzied activity would the missile officer inform the crews to "stand down" ... gratefully this had just been another drill.

But in the desperate eventuality of an actual attack, PH-82 would have certainly been a force to be reckoned with. Kundert, part of the crew that assembled and prepared each missile in the Battery for its combat role, recalls: "At least once a year they flew us down to (the Red Canyon Missile Range in) New Mexico where we'd assemble a missile; they'd sent up a drone; and we'd conduct a live-fire at that drone. We never, ever had a miss. "A" Battery was the best Battery in the battalion. If people think we weren't good at our job, they'd be wrong. We never missed!

The Mess Hall

The Mess Hall was located on the Hill, the only meal provider for the entire battery. There was no food service at the launch site, and food was never brought down from the mess hall to the Valley. The building was also the largest structure on the installation appropriate for meetings, so if there was a birthday party or farewell or other special occasion, that get-together would almost certainly be held in the Mess Hall. Other activities held there focused on community service. For example, Battery "A" hosted a monthly dinner in the Mess Hall for a group of young boys from the Royer-Greaves School for Blind in Paoli.

All non-NCO enlisted men had to share KP (kitchen police) duties sometime during their tour of ser-



Executive Officer Lt. Jim Scott (L); Missile Technician Chief Warrant Officer James Dean, and launcher platoon commander Lt. Grady Burleson (R), gather in the Mess Hall in March 1960 to celebrate "A" Battery's successful missile testing practice at Red Canyon Range Camp in New Mexico. *Courtesy of Lt. Col. John Allen (Ret.).*



"A" Battery had a lot of wives and children. Here, a staff sergeant from the launcher platoon, a combat veteran of the 7th Infantry Division in Korea, helps chaperone a children's party in 1959 in the multi-use Mess Hall. *Courtesy of Lt. Col. John Allen (Ret.).*

vice. KP was just one of many enlisted duties like gate guard, duty driver, etc. For Freudenthal, after about a year of service at PH-82, he was put in charge of the motor pool, given the task of duty driver, and, he recalls fondly, was thus exempted from KP.

The Motor Pool

Because of the interdependence of the two sites, reliable transportation between the launch area and the IFC was fundamental to unit integrity. When Freudenthal first joined Battery "A" in 1956, the motor pool was situated at the Valley launch area on LeBoutillier Road. Because the Battery's only mess hall was located up at the IFC, and the launch area was where people were collected for transport to their meals, it seemed logical to keep the bus and the other vehicles quartered in the Valley. But the following year the motor pool was ordered relocated to the IFC, and remained there until the base closed.



The Mess Hall was the venue for this 1959 re-enlistment ceremony, when battery commander Capt. John Allen (in his dress blue uniform) "swears in" an unidentified sergeant for another enlistment term. The young woman on the left is believed to be the sergeant's wife. *Courtesy of Lt. Col. John Allen (Ret.).*

The motor pool was where the Battery's military vehicles were parked and serviced. Inspections by the Philadelphia Quartermaster Depot or by Battalion headquarters were commonplace, and everything was maintained "spit and polish." Because the sites required uninterrupted electrical power at all times, there were several back-up gas or diesel generators at each site which were run periodically to keep the batteries charged. A large, above-ground gasoline tank, and a vehicle ramp for oil changes and grease jobs, were also found there.

Freudenthal recalls: "During the last two years of my tour, I served as 'duty driver,' as well as being responsible for the motor pool. I drove the 37-passenger Army bus down to the lower base to pick up half of the Valley contingent, drove them back up to the Mess Hall for their meals, and returned them back to the launch site. Then the other driver or myself would repeat the process for the remainder of the guys at the lower base. This was the routine, seven days a week, three meals a day. On weekends, however, many of the men chose not to eat regular meals at the Mess Hall, and those with

their own cars would drive up at their convenience. For the others, we would drive them to meals on weekends in one of our two small Dodge or Plymouth panel trucks. It's fair to say that the residents of the Valley would have regularly seen that OD (olive drab) bus or the other vehicles going up and down, up and down the Hill between the two facilities. That bus really got a workout. It was also the vehicle used for R&R (rest and recreation), especially in the summer when we'd drive the troops down to shore places like Cape May, NJ, for head boat fishing."



This fleet of five olive drab Army vehicles, along with a 1955 Chevrolet four-door sedan not shown, comprised the motor pool of "A" Battery, and would have been seen every day by residents of the Great Valley as they regularly traversed between the two facilities of PH-82. *Courtesy of Tredyffrin Easttown Historical Society.*

Winter Service to the Community

The routine duty of hauling troops and equipment wasn't the only significant contribution of the motor pool. There was also the yeoman's work provided in support of emergencies in the area, especially snow plowing. A considerable percentage of the base personnel lived off-site, including most of the officers and NCOs. The roads leading to the two sites of PH-82 needed to be kept accessible at all times, not only to assure access for these personnel, but to enable the bus to safely conduct the "meal runs" up and down the Hill. To give traction on those steep roads in snowy and icy conditions, the Army would plow and "slag" those public thoroughfares. At the top of Diamond Rock Hill Road, near the intersection of the Horse Shoe Trail with Country Club Road, there was (and still is) a triangular spot where crushed slag from Phoenix Steel Corporation was periodically dumped. The large "tactical truck" had a snowplow attached to its front, and the soldiers would shovel the heavy slag into the truck's bed and then, with a group of men in back with shovels, "slag" the steep Diamond Rock Hill Road coming up from the old eight-sided schoolhouse. "After all the roads between the bases were plowed, we'd plow all the way up Valley Road to Rte. 202 in Paoli [Routes 30 and 202 were joined for a brief portion west until they separated near Matthews Ford, with Rte. 202 called then, as now, the Paoli Pike]. In addition, at the end of a snowy workday, the Army would often plow out the parking lot of the Burroughs company down in the Valley, and help their employees get up the hill toward Paoli so they wouldn't clog the roads for our military people."

Freudenthal especially recalls the 'Blizzard of 1958' (Wednesday, March 19, 1958). "I was living near Malvern, and outside of our mobile home we had 36 inches of snow ... I could bury a yardstick. We had Valley people pleading with us to plow them out of their homes; they couldn't even get out for food. Somebody died near the octagonal schoolhouse, and it was impossible to get a hearse in to remove the body. We plowed in there to assist them. Yeah, the Army really provided a public service for the community."

The Post Exchange

In the Battery's Administration Building on the Hill was a small PX (Post Exchange store) where a soldier could buy cigarettes, necessities, toothpaste, razors, and beer. But for larger purchases and groceries, the Nike soldiers and their families were given privileges to use the large PX and Commissary at the Valley Forge Army Hospital, eight miles distant on Charlestown Road toward Phoenixville. The prices at VFAH were quite reasonable for meager GI budgets.

Formations

If the Commanding Officer wished to make an announcement to the Battery's full troop complement, it would be done outside, in formation, on the asphalt to the right of the Administration Building at the IFC. The same procedure was used for special occasions, or when dignitaries were visiting. For example, in September 1957, when the unit was officially given the new designation as Battery "A," 2nd Battalion of the 59th Artillery Group, Freudenthal recalls: "I remember that re-designation ceremony. It was a day when all battery personnel were instructed to arrive at the base in their dress uniforms, and stand in formation for the transfer of the flags."



With the Horse Shoe Trail behind the photographer, an "A" Battery formation in "dress greens" is shown looking northwest (towards Phoenixville) in the early spring of 1960, just months before PH-82 was transferred to the Pennsylvania National Guard. *Courtesy of Lt. Col. John Allen (Ret.).*

Public Relations

Determined on maintaining a good image in their communities, Nike bases established regular tours, and actually advertised their locations. Battalion commanders encouraged their base C.O.'s to invite the public to visit the installations, hoping these tours would help the community to appreciate the mission and capabilities of the Battery, and the high quality of

the Nike personnel. Signs leading to the installations were erected, and Nike bases were so well visited that one wonders how these batteries could ever have been reputed to be “secret.”

Betsy Latimer Miller, whose family owned nearby Little Magnet Farm, recalls that her step-father “... got us invited to go in and see the Nike site, the missiles, and how it all looked. The missiles were not standing in their firing positions. But we were allowed to see how the [magazine] doors opened, and we went to see the underground locations.”

King of Prussia resident Michael Morrison remembers a very special day as a boy: “... in 1958 or ‘59, my grandmother, a volunteer at the Valley Forge Army Hospital, was able to arrange a tour of the Paoli Nike base. She invited me to accompany her, and of course I agreed. It was a wonderful tour, watching the missiles being raised and lowered. Ironically, however, the thing I remember most about that day was visiting a vending machine on the base and enjoying my first ice cream sandwich.”

Says Jon Freudenthal: “We provided many opportunities for groups to come into the Battery and take a tour. We were very open in that respect, trying to bring neighbors in so they could see that these weren’t nuclear missiles, and weren’t going to blow them apart. We hosted a tour at least once every other month.”

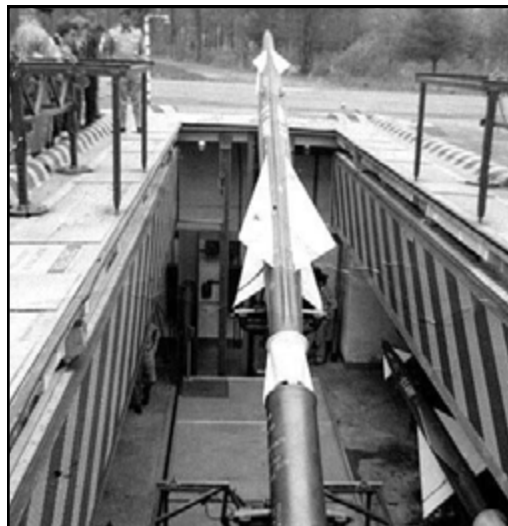
On several national holidays each year, including Memorial Day and Independence Day, “A” Battery would accept invitations from nearby towns to display a Nike-Ajax missile on its trailer during a local parade or event. This was always popular with the public, and this service was offered to the communities on a first come, first served basis.

Recreation

At any military base, including PH-82, the personnel who lived on site could generally be categorized as “stay at home guys” or “party guys”:

1) The “stay at home guys” tended to remain on the base most evenings when off-duty, watching television or “hanging around” the PX or the Day Room.

2) The “party guys” would take any opportunity to leave the base after work to pursue their own recreation. Local resident “Bud” Coleman recalls meeting some of these fellows when he was a teenager: “My family lived in Berwyn in the late 1950s. One evening in 1958 or ‘59, my friends and I got to talking with two or three guys at the Berwyn train station as they were ready to take the ‘Local’ to Philadelphia. They said they were from Chicago or the Midwest, and were stationed over at the Nike base. They asked, ‘What do you guys do for excitement around here ... it sure is dead? We’re going to Philly to see some night life.’ I said there’s always something to do here. The skating rink is open and you could go over there, and every now and then Dick Clark comes out to M.C. a dance. But I guess it was boring for those guys.”



Members of the public inspect a Nike-Ajax missile in its launch bay during a visit to a base in Rhode Island, as part of the Nike program’s community outreach effort. 1960 photo by Dave Leatherman at Nike base PR-79 in Foster, Rhode Island.



This large 2½-ton truck (“deuce and a half”) of Battery “A,” with a missile trailer attached, has just transported a Nike-Ajax missile from PH-82’s launch area on LeBoutillier Road to a park in Phoenixville for 1958 Memorial Day festivities. A second trip will be required to deliver the mobile launcher. *Courtesy of Tredyffrin Easttown Historical Society.*

Many in this second category ended up buying their own cars. Whether they would head for one of the nearby towns like Paoli, Phoenixville, or Cedar Hollow, or into Philadelphia or beyond, having a car was convenient, relatively cheap, and provided much less concern about personal safety in the city.

The comings and goings of young men in uniform certainly made the presence of PH-82 readily apparent to the community. Former missileman Bob Kundert recalls that, as a general rule, soldiers assigned to, and residing at, the launch area in the Great Valley seemed to be drawn to Paoli for their recreation; and those stationed at the IFC on the Hill tended to spend their free time in Phoenixville. These rules, however, became more flexible in the later Nike years as an increasing number of soldiers bought and kept their own automobiles on the base.

Anne Lorimer Sirna, from Magnet Stone Farm, remembers that, especially in the early years of the base, “LeBoutillier Road was dotted with service men walking [up and down North Valley Road] to Paoli and the train station.” Young soldiers without a car, and desiring an “evening on the town” in Philadelphia, could always depend on the Pennsylvania Railroad’s Paoli Local to reliably get them into the city and back to Paoli at all reasonable hours. By contrast, there was Reading Railroad passenger service into Philadelphia from Phoenixville, but it was not nearly as convenient for evening visits because there were very few return trains late at night.



Looking northeast at Paoli in 1950, some of the local places frequented by G.I.’s from the Nike base later in the decade include: The “Sweet Shop” located north of the railroad bridge where Herzog Upholstery is today; the Paoli News Agency (in the same Lancaster Ave. location as in 2012); Earle’s Drug Store at the southeast corner of Lancaster and South Valley Road; Mapes 5 & 10, across Rte. 30 from the News Agency; and the silver Paoli Diner on Rte. 30 next to what was then the Paoli Acme. *Courtesy of the Tredyffrin Easttown Historical Society.*

“There really wasn’t much to do in Paoli at the time,” recalls Freudenthal. “There was a small luncheonette, actually just a counter and some booths, which we referred to as the Sweet Shop.¹⁰ We would order cokes, coffee, burgers and, of course,

10. The “Sweet Shop” (others referred to it as the “Slop Shop”) was located just north of the Paoli railroad bridge on the west side of North Valley Road, where Richard Herzog Upholstery now operates. This luncheonette catered to the neighbors, railroad workers at the Pennsylvania Railroad’s Paoli Car Shop, and the soldiers coming up from the Valley. G.I.’s and “locals” could also be found in Paoli at Mapes 5 & 10, midway along the block on the south side of Rte. 30 between Darby-Paoli Road and South Valley Road; and relaxing at the soda fountains at Earle’s Drug Store at the southeast corner of Lancaster and South Valley Road, and the Paoli News Agency (then as now located in its 2012 location, next to the Starbuck’s). In the mid 1950s, one could get a full dinner at the Paoli Inn (at the southwest corner of Routes 30 and 252 where the Boston Market stands today), or a quick meal at the silver Paoli Diner (on Route 30 one-half block west of North Valley Road and now relocated three miles west as the Frazer Diner on Lancaster Avenue). The latter was reputed to serve “good greasy burgers.”

hoagies. There were a lot of girls about our age living around Central Avenue at that time, and we would often meet and talk to them there. Also, during the winter, when we were plowing North Valley Road, I'd often pull into the large parking lot next to the luncheonette in my big military-looking 2½ ton 6x6 tactical truck ... it was a real beast, with the large snow plow attached. We'd stop in there for a few minutes to get a cup of coffee and talk to the gals and guys at night."

By contrast, Phoenixville was a town with a very busy night life. Bob Kundert remembers that G.I.'s in Phoenixville used to spend time "at a couple of bars whose names I've forgotten, as well as the small Trio Restaurant (near Main & Bridge streets), and of course the Colonial Theater." Another hangout for soldiers from both the Nike base and Valley Forge Army Hospital in the 1950s was the Vale-Rio Diner at Nutt Road and Bridge Street.



A late 1950s view of the 200 block of Bridge Street in Phoenixville, looking toward the Colonial Theater on the right, an area well-frequented by soldiers from both the Nike base and the Valley Forge Army Hospital. *Courtesy of Jack Ertell and the Historical Society of the Phoenixville Area.*

Bridgeport native Jim Brazel recalls that in the 1950s, bars in Pennsylvania had midnight closing laws. But there were many "social clubs"

in Phoenixville, for example, that were not subject to that restriction. For a small membership fee, one could join such a club "where the booze and food were cheap, and they stayed open until 2 a.m."

Then there was another locale where G.I.'s might be found relaxing in their off-duty hours: the gritty, limestone quarrying town of Cedar Hollow, on Yellow Springs Road in far western Tredyffrin Township. There were two bars in Cedar Hollow: Torelli's Bar on the corner of Yellow Springs Road and Howell Road, and Whitey's Bar, three buildings west from Torelli's on Yellow Springs. Millie Capetola Kendig, a former resident who grew up in Cedar Hollow during the 1940s and '50s, recalled that "many from the Nike base came to Cedar Hollow to visit the bars and check out the women."¹¹ G.I.'s returning to the IFC usually took "the shortcut" by way of Howell and Clothier Springs roads.

11. The building that was Whitey's bar in the 1950s is still there, standing just west of the present Cedar Hollow Inn. "Whitey (his real name was Luther Whitehead) and his wife Helen were Cedar Hollow residents who had rented a small apartment beside Melchiorre's Barbershop. Whitey bought an Irish Sweepstakes ticket ... and won. He personally traveled to Ireland to collect his winnings because he didn't trust them sending the money. He always wanted to own a bar, so Whitey returned to Cedar Hollow and bought an existing bar from tavern owner Joe Lucas, who had built the structure with a bar on the first floor, and living quarters over top of his establishment. Whitey must have made Joe a really good offer, because Joe sold his bar and house to Whitey soon after his arrival from Ireland, and Luther and Helen moved into their new place." *Millie Capetola Kendig*

"I was from Milwaukee, so being in a tavern was just something we did. The bar in Cedar Hollow that we used to visit most often was a neighborhood-type place ... I never remember it being too crowded ... owned by a guy named Whitey who had won the Irish sweepstakes. After he won the sweepstakes, Whitey bought his wife a new diamond ring. He then had the diamond from her original ring implanted in his right front tooth so that it was visible when he smiled. He was usually the bar-tender, and it looked so unusual. The first time you'd see the diamond, you just had to ask him about it." *Jon Freudenthal*

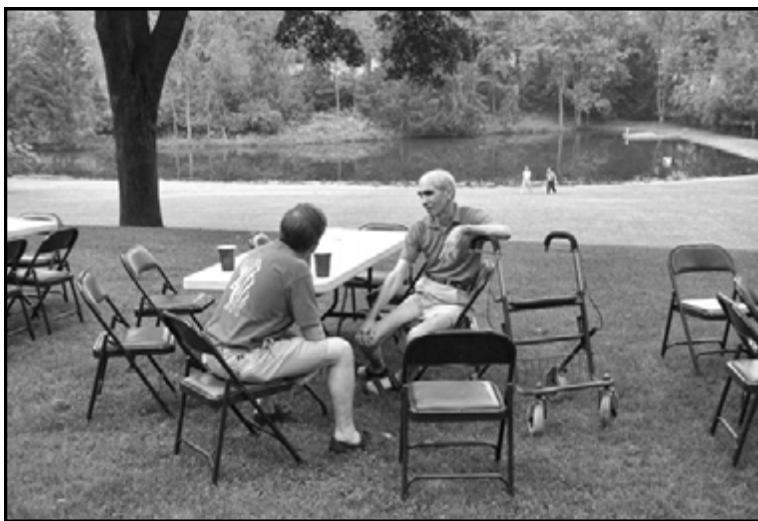
The Community Pitches in to Help

There seemed to be a stark divide within the Upper Main Line community between those who supported and helped the military during this Cold War crisis, and those who either ignored them or were openly hostile to their presence.

Fortunately for the soldiers, there were a large number of residents who had not forgotten the sacrifices made by their own sons, brothers, husbands, and neighbors during World War II, and now wanted to be kind and helpful to the G.I.'s arriving into this community. Some of these included:

- Paul & Dorothy Cook, who lived on Summit Avenue in Paoli, and “who opened up their home, cooking for the soldiers, and inviting the G.I.'s to be a part of a big family.”
- Annamarie Malloy, who lived on North Valley Road, who is remembered as one who “would host get-togethers for us soldiers ... with cake and other good things.”
- Emily Wilson Nassau, who along with her husband William, lived across LeBoutillier Road from the Nike launch area, and was remembered for holding picnics on the lawn of the Wilson Farm for soldiers and their dependents.
- Florence Zaccarelli, who had been very involved with the Red Cross during WWII, and “was very much a community person from her home on West Central Avenue in Paoli.”

But perhaps the name mentioned most often for passionate community involvement on behalf of the military was Connie Braendel. World War II was still to be won when Connie and Helmuth Braendel moved into the Great Valley from Michigan in 1944. Connie immediately began serving as a *Gray Lady* volunteer with the American Red Cross at the nearby Valley Forge Army Hospital. But a decade later, when it was announced that the Army would establish a Nike missile base in the Valley, Connie strongly sensed among some of her local neighbors both an indignation and a prejudice against these Army soldiers, “the saviors of the world” just a decade before, who had now become “villains who would rob the virtue of Valley women.” Connie was always known as an outspoken community leader, and now, angered by what she considered bigotry, she and her husband decided to do something about it.



This image, taken years later during a St. Peter's Church in the Great Valley gathering in September 2003, shows Connie and Helmuth Braendel's spring-fed lake to which the base soldiers were invited to swim during the Nike years. *Courtesy of Roger Thorne.*

Connie and Helmuth had built a home just a half-mile west of the launch site on the north side of Swedesford Road, at that time the first property west of North Valley Road. At the rear of the Braendels' acreage was a scenic, spring-fed lake complete with pier and diving board. Soon after the Army arrived, Connie paid a visit to the base's commanding officer, offering a standing invitation to his soldiers to swim at her lake during the summer months. These swims were always on Tuesday afternoons, and “generally 15-20 young men would walk over” from the missile base on LeBoutillier Road. Decades later, Connie recalled with a smile that the men were so well-behaved, and seemed to enjoy their time-off at her lake. The soldiers, in turn, were appreciative of the Braendels' kindness, and built and presented picnic tables that remained on the property for decades afterwards.

There were those in the community who criticized Connie's alleged “complicity with the Army.” In a strident response, she clarified to one and all that “the Army is welcome to swim in my lake every Tuesday, and if anyone has a problem with that, they can just stay away.”

Former Battery Commander Capt. John Allen recalls with appreciation that on several occasions during his service tour from 1957-60, he and his wife Winnie were invited for dinner at the Braendels'. And the Allens' oldest daughter Susan distinctly remembers attending at least two picnics with her parents at the Braendels' home.

Romance

Decades after the Nike base was abandoned, interviews were held with dozens of local people who, as teenagers or young adults, lived on the Upper Main Line during the time the Army was active. Some of those women remember that, as girls, their parents cautioned them to have nothing to do with these soldiers. But many of those same local women admitted that, contrary to their mothers' wishes, they had met and spoken to some of the G.I.'s in town, and generally found them to be not so bad after all. In fact, "there were some pretty nice guys stationed there."

Freudenthal comments: "The local girls didn't listen to their mothers, I can tell you that. I am familiar with several soldiers from the base who married local girls, including my friend Bob Kundert from Madison, Wisconsin." One of the community women who was so kind to the Nike soldiers was Florence Zaccarelli from Paoli. Her daughter, Patty, takes up the story: "I met Bob in the summer of 1956. My car broke down in Paoli, and Bob, just walking down the street, helped me fix it. We started a friendship, meeting at the 'Slop Shop,' at Mr. & Mrs. Cook's; and at my mom's house. We were married on December 23, 1957." They have remained together in Paoli for over 55 years.

Other G.I.'s who married local girls include:

- The daughter of Paul & Dorothy Cook married JC Wilkins, one of the first soldiers to arrive at the base, and at the time of this writing are living on Jacqueline Drive in Paoli.
- Mr. Richardson, the cook at "A" Battery, married a local girl and lived for years on Summit Ave in Paoli. Patty Zaccarelli Kundert remembers Mr. Richardson, now deceased, as a wonderful and generous pastry chef.
- On Magnet Stone Farm on LeBoutillier Road near the launch site were two or three residences that were rented out as tenant houses. A family residing in one of those tenant houses had a daughter who reportedly met and married a G.I. stationed nearby. Investigation indicates that soldier to be enlisted man Pat Mullins.
- According to Bob Kundert, other Nike missilemen from PH-82 who married local girls included enlisted men Jerry Biggers and William Boduin.

The Married Soldiers

Quite a few of the personnel from "A" Battery were married, perhaps a quarter to a third of the base complement. Over time, many of the social and other distinctions between Army personnel and ordinary members of the community dissipated as the married soldiers moved into residences within the surrounding area and became assimilated.

For small Army installations like PH-82, there was no base housing for either married officers or enlisted personnel. When new Battery Commander Captain John Allen, along with his pregnant wife Winnie and their four children, arrived in Pennsylvania from Oklahoma in June of 1957, the family was first obliged to live for several months in Broomall until the Army finalized its leasing arrangements for several local residences in the Paoli area. Once completed, the Allens then relocated into a new home at 74 Maple Avenue, in a small Paoli housing development just two blocks from what was then called Highway 202 (now 252) near its intersection with the Pennsylvania Railroad underpass and Highway 30.¹² Soon after the Allens' arrival in Paoli, Mrs. Allen gave birth to twins at Valley Forge Army Hospital ... and then there were six Allen kids.¹³

All the married couples, whether an officer or a Private First Class, lived off base and sent their kids to the public schools. Most of these couples lived in Paoli, but, as Freudenthal recollects, "we had guys living close by on the mountain, and

12. Each commissioned and warrant officer assigned to PH-82 was eligible for government housing. In 1957, Paoli developer Joe Alessi had built several houses on or near Maple Avenue in Paoli. Perhaps Alessi was having trouble selling them, but for whatever reason, he was agreeable to enter into a multi-year lease arrangement with the Army Quartermaster Depot in Philadelphia whereby at least one of his unsold homes, at 74 Maple Avenue, become "military quarters." Allen recalls that the house at 74 Maple Avenue "wasn't quite finished when we moved in [in the fall of 1957], but Alessi finished it up pretty fast and it became very comfortable for our family. Part of my pay included a housing allowance, so because I lived in government quarters, they'd reduce my paycheck by that amount. I also remember that the Army arranged for a leased house up on the hill on the north side of Paoli for one of my Warrant Officers, an African-American control area radar expert."

13. John and Winnie Allen's oldest child Susan, aged 11 when the family arrived in Pennsylvania, is now Susan Allen Connelly, a retired editor living in Maryland. Susan most graciously shared much about her almost three years living in Paoli ... from the perspective of an "Army brat" who saw the family's move to Paoli as another in a series of postings experienced by a military family: "My dad was very outgoing, whereas my mom was the exact opposite. But she was highly organized, always doing a good job of arranging all the details of our frequent moves. And my parents always made sure we kids assimilated into the community in which we lived." *continued next page . . .*

some down in [the village of] Valley Forge. And some lived in Phoenixville, close to the Valley Forge Army Hospital. My wife and I lived for a short while in an apartment above the Carousel Tavern at 90 West Central Ave. in Paoli before moving to the Old Orchard Mobile Home Park at 458 Lincoln Highway, west in Frazer. Several of the other Army married families lived at Old Orchard as well.”

The Battle between Wharton Esherick and the Army

There are many fascinating, local stories relating to the PH-82 Nike base, but none more engaging or more protracted than the battle between nationally-known Tredyffrin sculptor Wharton Esherick and the U.S. Army.

When Esherick built his first studio in the Great Valley in the 1920s, there was a dirt logging road, used primarily by local farmers to access timber for fence posts and firewood from their wood lots on “the Mountain,” which ran along the ridge of the North Valley Hills. When Wharton expanded his Valley property atop that ridge, adjacent to that rutted logging road, in 1926, he was then able to use that road as well. But there was little traffic, and solitude prevailed.

Almost 30 years later, in 1954, the Army Corps of Engineers notified Esherick that they intended to acquire, through condemnation, somewhat less than one-quarter of an acre of his land in order to straighten that logging road which, since 1933, had become known as the Horse Shoe Trail. This “improvement,” from Country Club Road to the Army’s new Integrated Fire Control site, was intended to enhance safety for the soon-to-be constant construction and military traffic coming in and out of the base. The straightening would require the Corps to fell many huge oak and poplar trees growing upon this quarter acre. Esherick retained a local attorney, Raymond Shortlidge, to represent him in filing suit against the United States government in an attempt to counter what he saw as the Army’s intrusion on his property and solitude. Shortlidge advised Wharton that trying to stop the Army’s juggernaut was pointless, and that the only logical recourse was to seek “reasonable” damages from the government to compensate for the intrusion on his property. Esherick made an assessment of all that he felt had been lost by the Army’s “invasion,” and a lawsuit was filed soon afterwards.

All during this time, beginning in 1955, Esherick had been designing and beginning construction on his new workshop adjacent to the Horse Shoe Trail. Now,



In a moment of angst, nationally-known Tredyffrin sculptor Wharton Esherick made this sketch sometime in the 1950s to depict the protracted legal struggle between himself and the U.S. Army. *Courtesy of Ruth Esherick Bascom.*

13, *continued.* “Even as an 11 or 12 year old, I knew that Paoli was a very different place to live, whether from the standpoint of the beauty of the surrounding land, or the historic architecture to be found in the area ... so different from what I’d seen before. I’ve lived in Europe and Hawaii, so many places, but Paoli is still my standard for beauty. But I must admit that when we moved into the house on Maple Avenue in 1957, I was so disappointed. The house was tiny, on a very barren piece of property at the time, and I somehow thought we were going to live in one of the really lovely homes that I’d seen in the area.”

Because the family had to live for several months in Broomall before moving to Paoli, “I had to switch from the 6th grade at Marple Elementary School to Paoli Elementary on East Central Avenue in the middle of the 1957-58 term. Switching schools in the middle of a term is always difficult, and this was no exception. We hadn’t done fractions yet at Marple, whereas when I moved to Paoli they had already finished studying them. I just didn’t understand fractions at the time, and was too terrified to speak up.” Nevertheless, the summer vacation of 1958 gave Susan time to get acclimated to the area and to make friends, and by September she was looking forward to attending the 7th grade at General Anthony Wayne Junior High in Malvern.

Susan remembers her father’s arranging for her to celebrate her 13th birthday at the installation, with many of her friends from General Wayne and the Paoli neighborhood. While she remembers her friends as being “ga ga” about holding the party at an Army base, Susan had grown used to it and considered it “kind of ho-hum.” The Army cook/chef made a large cake for the occasion, which was served in the Mess Hall. “Then we went down to see the launch site, where, years later, one of my best friends remarked: ‘Looking down into the dark hole where that missile was is burned into my mind forever.’”

“I loved Gen. Anthony Wayne Junior High. My favorite subject was history, and my favorite American History teacher, Mr. Ted Grassell, awarded me the DAR *Best History Student Award.*” Susan served as Student Council Sergeant-at-Arms, and still has a ribbon declaring her “The Outstanding 7th Grade Student” for 1959.

As a 13-year-old who had just completed 8th grade, Capt. Allen’s reassignment from Paoli to Hawaii in June 1960, while expected, was bittersweet to Susan because she had been so accepted by her friends and the school. “It was hard to leave Pennsylvania. I am grateful that I had been able to make so many wonderful friends in the area.”

this current conflict would determine the structure's architecture. The "Army squabble," and Wharton's disdain for "the noise of the trucks or anyone looking over my shoulder," caused him to modify the building's design by eliminating any windows or doors on the north side of his building facing the Trail. Wharton finished his new workshop in the summer of 1956, and to this day, the only openings to the former workshop (now a residence) look out from the building's south side upon the Valley.

Meanwhile, the government's legal response to Wharton's lawsuit moved with glacial sluggishness. On August 27, 1956, Esherick wrote a frustrated and impassioned letter to attorney Shortlidge:

"I came here thirty years ago to establish a place of quietness and isolation in which to work. The Trail was a single-lane rocky woods road, which would permit only very slow travel, and was therefore used only infrequently ... ten cars passed my door in a day. Now at least ten cars an hour pass my door, and they are heavy, noisy, speeding motors and trucks, and ... they start at 4:30 in the morning. This has practically taken away the chief value of my place — its quietness [which is] essential to my work ... my life.

I had immense trees that I had protected and cared for at my old entrance, and they were uprooted and dragged out--red oaks and white oaks and poplars that are irreplaceable, and the protected quality of my home has been damaged. Since the new Army road was built, Army personnel have come off their road and climbed some of my trees (with spikes) to hang wires on my property without any notice to me or request from them. For me something greater than the value of the land itself has been taken away from me ... I feel that I should be reimbursed financially because the conditions forced upon me have slowed down and hindered my artistic production.

Since the beginning of the Army's entrance on my property I have not started a new piece of sculpture. Instead of using my talents and energy for imagining and creating new works of art, I have been spending my time and energy in the supervision and direction of roadmaking, tree and shrub planting and erecting a building which will block out the new traffic.

... I believe the figure I am asking is not too high: \$30,000 as recompense for estimated loss due to failure to produce new work: for the time and effort spent in combating this Army 'nuisance'."

An itemized summary justifying his financial claim was attached.

Shortlidge responded to his friend and client on October 12, 1956, as one whose patience was fast becoming exhausted:

"In your claim against the United States of America ... you are herein advised that in my opinion practically none of these points can be considered ... the amount I can collect for you in an amicable settlement ... [is] a net of \$710.29. The Government on its side has given as your damages \$625, which is in line with amounts they have set for other people in the vicinity, and to date I have been able to get them up to \$850.

I believe you had better take the very best settlement I can work out for you."

Mr. Shortlidge notified Wharton on November 15th, 1956, that a final settlement of \$1,000 had been agreed upon by the government. Reluctantly willing to accept this reduced settlement rather than the originally demanded \$30,000, Esherick would then impatiently wait another six months to receive the government's payment.

By the following March 1957, the still agitated, and unpaid, Esherick asked lawyer Shortlidge to officially contact Captain Turck, Commanding Officer of PH-82, on his behalf to complain about the potholes, bumps, noise, and dust on and from the graveled Trail, and to demand to know when the road would get its promised asphalt surface. Not until the next fiscal year, Shortlidge was told. However, Captain Turck helpfully provided his assurance that the road would be graded as a temporary measure, and the Captain was good to his word. In a follow-up note from Esherick to Shortlidge, Wharton acknowledged that "they have graded it within the past ten days, filling in the holes," but then goes on to complain that "loose stones are still creating noises under the wheels ... and dust similar to the dust created by the Texas and Kansas windstorms rise after each passing car."

Paving gravel roads near Nike sites was routinely undertaken by the government as budgets allowed, not just to improve aesthetics for neighbors living nearby, but to reduce the dust blown onto complex radar equipment, and to improve the living conditions of the troops. Shortly after this last exchange in March 1957, the Army began oiling the road in an at-

tempt to keep the dust down. But not for another year, after several letters from Mr. Shortlidge to congressmen and senators, and from them to Army administrators, was the long-awaited asphalt surface laid upon the Horse Shoe Trail in early 1958.

Soon after arriving at Paoli in mid-1957 to assume command of Battery "A," Capt. John Allen became acquainted with Wharton Esherick. In a recent interview, 55 years after that first visit, retired Lt. Col. Allen recalls: "I was told upon my arrival to go around and visit the neighbors of the base and get to know them. I had been forewarned that Esherick was a strong, opinionated man who was totally against the Army being up on the Hill. I would always wear my dress uniform on these visits, with all my ribbons and decorations, and so this first visit to Wharton was no different. He opened the door and greeted me with 'You look like a Christmas tree.' Yet it was not said unkindly ... just a direct statement from a direct man. After that first visit, Wharton invited me to his place many times, and we became good friends." Captain Allen's daughter Susan also recalls: "I remember visiting Wharton Esherick's studio when I was 12 or 13 [1959-60], and thought what a strange and unique place he lived in."

The Arrival of the National Guard

In January 1958, the second generation of the Nike missile, the Hercules, was declared operational and ready for service. The "Herc" was a far more powerful weapon than the Ajax, and could be equipped with conventional or nuclear warheads. Command decisions began to be made concerning which active-duty Nike sites would be converted to the new Hercules system, and which of the remaining Ajax sites would be turned over to the National Guard from the state in which the installation resided. The Department of Defense's principal objective in promoting the Guard's on-site control of Nike-Ajax sites was savings, both in dollars and active Army personnel.

By early 1960, the Pentagon's decision had been made: PH-82 would not be upgraded to accommodate nuclear-tipped Nike-Hercules missiles. The installation, complete with its now-outmoded Ajax missiles, would be turned over to the Pennsylvania Army National Guard. During the spring of 1960, as the regular Army and the National Guard prepared to transition command of the Battery, John Allen recalls: "Most of the Guard's senior NCOs worked with my NCOs during the last few weeks before the changeover."

On April 30, 1960, the Pennsylvania Army National Guard officially assumed command of PH-82 (subject to overall authority by the U.S. Army's Air Defense Command). With the Guard taking over, the unit designation of the Paoli base once again changed, this time as Battery "D," 3rd Missile Battalion (NIKE-AJAX), 166th Artillery. Also attached to PH-82 was the 3rd Battalion's Headquarters Battery. Ceremonies marking this change-over were held on the parade ground at Valley Forge State Park on May 14, 1960, with the Adjutant General of Pennsylvania as speaker.



The next generation of the Nike surface-to-air missile, the Hercules, was first introduced in 1958, and would eventually result in the closing of PH-82. *Courtesy of the Nike Historical Society.*

When the Pennsylvania National Guard assumed responsibilities for the Ajax installations within the Philadelphia Defense Area, it staffed those sites with a much reduced combination of full-time technicians and part-time soldiers, all of whom

lived in or around the communities they defended. An article dated July 10, 1961, in the *Delaware County Daily Times* described how 433 National Guardsmen comprising the 3rd Missile Battalion, 166th Artillery, Pennsylvania Army National Guard were training at their annual two-week summer encampment at the Paoli and Village Green (Media) Nike bases. The article explained that of the 97 men assigned to Battery “D” in Paoli, “[only] about 45 of those ... are full-timers, guardsmen whose civilian employment is as full-time technicians ... manning [the base] around the clock.” And of the 77 men assigned to the Battalion’s Headquarters Battery, “only about 6 ... are full-time.”

Compared to the Regular Army, the National Guard manning the missile base used a rather small skeleton staff. Whereas the Regular Army staffed PH-82 with a TO&E strength of 106 full-time personnel assigned to the missile battery alone, by July 1961, the full-time personnel at PH-82 was about 51 men on a 24/7 basis for both Missile Battery “D” and the Headquarters Battery of the 3rd/166th.

“Bud” Coleman, whose father worked as a driver and handyman at Magnet Stone when it was still a working farm, recalls: “Things seemed kind of relaxed [at the missile site]. I remember that at the guardhouse on LeBoutillier Road, there was sometimes a guard at the gate when I rode by, and sometimes there wasn’t. Perhaps the guard was elsewhere in the vicinity, but it certainly was unlike the large Army bases on which I later served where M.P.’s were always stationed when you entered the post.”

Coleman, who, beginning in 1958 when he was 13, often accompanied his father to do chores on the farm, recalls that “you certainly heard a lot more activity up there in the summer than in the winter. On summer mornings in the early 1960s, I would hear soldiers doing PT (physical training) up at the missile site. We’d hear them out there around 7:30 a.m., shouting ‘one, two, three, four.’ I was told that these were soldiers coming in for their periodic training. But even in the winter, as my father and I would drive by the missile base on Saturdays or Sundays, there always seemed to be increased activity [compared to weekdays].”

By the end of 1962, the once state-of-the-art Nike-Ajax missile was no longer up to the defensive requirements expected of it. The Pentagon began deciding which of its installations to permanently upgrade to the Nike-Hercules missile, and which to close completely. On March 25, 1964, in the *Delaware County Daily Times*, under the heading ARMY TO CLOSE NIKE SITE, it stated that “the Nike-Ajax site at Paoli (Battery D) will be phased out and closed by the end of next month (April 1964). Two other batteries, including the Headquarters Battery assigned to Paoli, will be reorganized into a Nike-Hercules battalion to operate at Warrington, PA.”

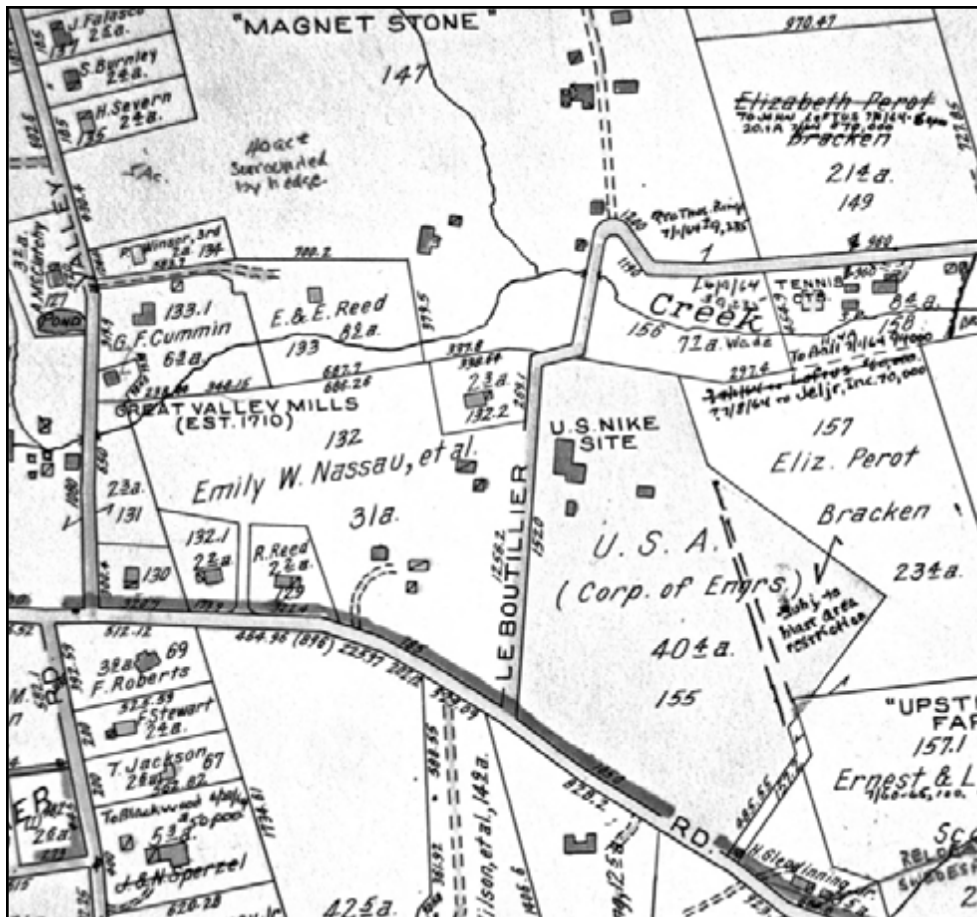
Epilogue

The University of Pennsylvania and Residential Development

The Pennsylvania Army National Guard permanently ceased operations at Nike base PH-82 in May 1964, and responsibility for the properties reverted to the U.S. Army Corps of Engineers. The following year, on April 1, 1965 and July 1, 1965 respectively, the United States government awarded both sites of what was officially referred to as “formerly the U.S. Philadelphia Defense Area Nike Battery PH-82” to the trustees of The Moore School of Electrical Engineering of the University of Pennsylvania. The two properties would then collectively be known as the University’s Valley Forge Research Center. The government, however, placed significant stipulations upon the University regarding the title conveyance, including:

- “The United States of America would have the right during any period of ‘national emergency’ to the full unrestricted possession, control, and use of the premises, including the use of any additions made [by the University] subsequent to the conveyance.”
- “For a period of twenty (20) years from the date of conveyance ... [the properties] would be utilized solely, and continuously, for educational purposes and for no other purpose. Any revisions of this stipulation must be authorized by the U.S. Department of Health, Education, and Welfare [H.E.W].”
- “In the event the United States of America failed to exercise its option to re-enter the premises for any breach of conditions ... within twenty-one (21) years from the date of this conveyance ... the contract would terminate.” In other words, pending no national emergencies, or breaches of contract by the University, full and unrestricted title to both sites would pass to the University in 1986.

The stipulations and conditions first placed upon adjacent property owners during the military possession of these sites could manifest themselves in unexpected ways during the subsequent University occupancy. An example is that sometime during the period in which PH-82 was operational, the Army had demanded from the adjacent property owner of the launch area a five-acre, wedge-shaped “Blast Restriction” easement along the eastern perimeter. More than twenty years later, in the early 1980s, Elizabeth Perot Bracken and John P. Bracken, owners of Little Magnet Farm on LeBoutillier Road in Tredyffrin, decided to sell their 23.4 acre land parcel which ran along the eastern perimeter of the former launch site. They were shocked, however, to discover that the entire parcel was deemed “restricted from free and clear sale” under the “education only” stipulation described above, and that the Brackens were legally unable to sell their land. The Army’s transfer of the Nike installation to the University of Pennsylvania, under the Federal oversight of H.E.W., had somehow blurred the legal distinction between titled and eased property. The entire parcel had become indivisible with that of the University, and the Brackens found themselves unable to sell not just the five-acre easement, but their entire 23.4-acre parcel. Clearly frustrated, and for reasons unclear even to the family today, the Brackens executed a title transfer on May 13, 1983, giving the entire 23.4 acre parcel to the University of Pennsylvania as a charitable donation.



From the 1963 Franklin Survey Map of Chester County, PA, Main Line Vol. 2, Tredyffrin Township, can be seen not only the original 35 acre Lavino parcel used for the PH-82 launch area, but also a 5.4 acre easement cited as “Subj. to blast area restrictions.” *Courtesy of the Tredyffrin Easttown Historical Society.*

Soon after the Army’s transfer of the former Nike installation to the University, the Engineering School began using the former Integrated Fire Control Area, now referred to as the “Upper Site” of the Research Center, as a teaching facility. Valley resident Bill Keltz recalls:

“In 1971, I started attending a University of Pennsylvania course in a University-owned building on the former Nike site at the top of Diamond Rock Hill. There was [supposedly] a video link from the U. of P. - Moore School to this site, but the link proved so unreliable that I completed the course at the main campus.”

Another student at the time, Dave Lowe, recalls that the University’s Electrical Engineering Department conducted research on the Hill under the general heading “Studies Of Clear Air Turbulence.” Another report suggests that studies on receiving messages from outer space were conducted at the former IFC site. The location, with its three thirty-five foot high platform towers where the Nike radar antennas had been, was considered “perfect” as an operating location. The University additionally constructed at least one giant microwave dish, and another unidentified structure covered by an



In March 1983, twenty-four years after serving at PH-82, Jon Freudenthal returned to his former base to see what had changed. Looking east, the former Army Mess Hall on the Hill as it then looked in what was now called the University of Pennsylvania's Valley Forge Research Center. *Courtesy of Jon Freudenthal.*

Facing east, the former Army enlisted barracks on the Hill as it looked in March 1983 in the Valley Forge Research Center. Behind the former barracks can be seen a post-military-era white dome and, to the right, one of the original tracking radar towers. *Courtesy of Jon Freudenthal.*



Looking northeast, the former Army Administration Building as it looked in March 1983, with a large microwave dish built after the Army had departed. *Courtesy of Jon Freudenthal.*

enormous white dome. The University's Amateur Radio Club also regularly held their annual June Field Day at the Upper Site, starting in 1967 into the 1990s, and a tall radio mast was erected for use by the Club.

While the former IFC site received significant use for academic and research purposes, the former launch area never seemed to get the same level of attention by the University. The Valley site was used for storage, and from approximately 1967 into the early 1970s, the former missile platoon barracks was occupied by an Asian Ph.D. candidate

from the University, and his family. This man, remembered by long-time neighbors as a very kind and considerate individual, acted as caretaker for the Lower Site.



Facing northeast, the former Army launch platoon enlisted barracks in the Valley as it looked in March 1983, now a largely unused part of the University of Pennsylvania's Valley Forge Research Center. *Courtesy of Jon Freudenthal.*

After the departure of the caretaker and family in 1974, opinions differ as to whether there were others living on the site. Longtime LeBoutillier Road resident Bill Higgins recalls that "by the mid-1970s, I can tell you that, walking the dog down LeBoutillier Road with my wife, we would often hear music and noise inside the old base that indicated that people were living there. But whether it was organized, or they were simply University students partying on weekends, I never could tell." All agree that it had become increasingly chaotic.

The "Lower Site," once neatly cleared of vegetation by the Army, was now increasingly overgrown with ragged tree and weed growth, partially obscuring the abandoned buildings and missile magazines. "Bud" Coleman recalls that as the site continued to slide into disuse and decline, "kids used to go into the old launch area to smoke pot and drink beer."

"Not a single window pane is unbroken in any of the buildings. Beer cans are everywhere and walls are battered and show signs of being targets for practicing riflemen and pistoleers. A rusty old hulk of a red car sits near the front gate. Obscenities grace not a few of the concrete block structures as honeysuckle crawls on to the concrete pads from the waist high grass and weeds. It's a quiet place, but calls forth no ghosts of times past."

- 1972 newspaper description of an abandoned Baltimore Defense Area Nike missile site

By the mid-1990s, residential development in the Valley was expanding at a frantic pace. Land values were increasing to a point where a developer's cost of required demolition and environmental remediation of the former Nike launch site was now becoming a reasonable investment. With the educational use stipulations and caveats no longer in force, the University of Pennsylvania announced that both sites of its Valley Forge Research Center were for sale. A developer named Thomas Bentley became the equitable owner of the former Tredyffrin launch site under an agreement of sale from the University. By early 1996, Bentley Homes had already tentatively sold several houses in their proposed *Turnbridge* subdivision, although none had as yet been constructed.

After the University of Pennsylvania functionally abandoned the launch area in the late 1980s, Bill Higgins recalls: "I'd walk the dog around the old concrete launch area and look down at these gaping holes. The big steel doors had been removed, and I was looking down into a thirty foot pit."

Resident Penny Wilson Stanger grew up in the Valley, and as a little girl in the mid-1950s remembers going horseback riding with her older sister on LeBoutillier Road. Penny was always a fearless conversationalist, and her sister talked Penny into chatting up the soldiers at the gate of the Nike launch area. But decades later, she recalls: “When [the former launch site] was being developed for residential use, my husband, son, and I were walking around and found an opening into an underground silo. We threw a rock into it and never heard it hit bottom. Creepy!”

At a meeting held on June 3, 1996, Tredyffrin supervisors voted unanimously to approve the development of the 90-acre tract once known as Elda Farm, adjacent to Chesterbrook, into what would become Wilson Farm Park. However, there was another agenda item at that meeting. The Tredyffrin supervisors had proposed that a second property, the former Nike missile launch area at Swedesford and LeBoutillier roads, be condemned for use as open space and recreation. This proposal was far more controversial than the Wilson Farm Park discussion. There was considerable public outcry on both sides of the question of whether to increase the open space in the Great Valley, or increase the tax revenues to the Township. In a tight 4-3 vote by the supervisors, this second proposition was rejected, and in so doing, all legal impediments to the 28-home *Turnbridge* development were removed. What had still been referred to as the “Lower Nike Site” within the Inactive Property Files of the University of Pennsylvania was now transferred off their asset listing for private development in 1996, and residential construction began soon thereafter.¹⁴

The web of Nike bases around the country demonstrated just how far America was prepared to go to win the Cold War. Thankfully the system was never actually tested in combat. But in the opinion of most historians, it is probable that, were it not for the Nike’s contribution to the air defense posture of the United States during that volatile period with the Soviet Union, the Cold War may indeed have become hot. The many young soldiers and their families who served our country at PH-82 certainly played their part in keeping the nation’s peace.

In 2012, the only tangible evidence of “U.S. Philadelphia Defense Area Nike Battery PH-82” is a row of tall evergreen trees spaced along Swedesford Road, planted by the G.I.’s as seedlings along the south perimeter of the launch site in 1956. In October of 2012, pilot Dave Nelson invited the author to accompany him in his vintage Piper J-3 Cub for a low-level “flyover” of the land that once hosted the Army in the Great Valley. Through the ever-popular *Quarterly* motif of *Then and Now* images, we take a final look back, first at the Integrated Fire Control site on pages 123 and 124; and the former PH-82 launch area on page 125. A view of both areas is found on page 126.

After viewing several of the 2012 aerial images of the former launch area, former soldier Jon Freudenthal pondered a question - exactly how did the residential developer decommission the deep missile storage bunkers that were in the middle of the property? “There was deep tunneling in those bunkers to get our people away from the missile storage and into a secure, below-ground control area, and a separate stairway from the ground down into the magazine. In fact, the missile officer could actually launch from down in the bunkers if needed. I can’t imagine that the developer filled all that in when he took over the property.”

I guess we’ll never know.

14. The former IFC site, referred to in the University of Pennsylvania’s Inactive Property Files as the “Upper Nike Site,” was not transferred off the University’s asset listing until 2000, four years after the Lower Nike Site.



Above: Close-up from a USGS image taken April 13, 1999, shows the former PH-82 IFC area with the remaining footings for the Army's radar towers located adjacent to the tennis courts built within a small, former quarry. In 2012 all physical evidence of the radar's locations is gone. *Courtesy of the U.S. Geological Survey and Mike Bertram.*

Below: The land configuration once occupied by the Army's Integrated Fire Control area from 1955-64 now stands as a residential neighborhood in 2012. The juncture where today's Horseshoe Pointe Drive connects with the "Trail" overlays that built by the Army to construct its wastewater treatment plant. *Courtesy of Google Maps.*





Above: The former location of PH-82's IFC area, looking south into the Valley, as seen on October 22, 2012. In the distance can be seen Mill Road, and its new bridge crossing over the Pennsylvania Turnpike. *Courtesy of Roger Thorne.*

Below: The former site of PH-82's IFC area, looking SSW, on October 22, 2012. Note the tennis courts in the lower middle of the image, located on the former site of the Army's radar towers. Also, to the left of the Piper J-3's spar can be discerned the mansion house of the Wilson Farm, across LeBoutillier Road from the former Nike launch area. *Courtesy of Roger Thorne.*





Above: The launch area of PH-82 looking northeast in February 1960. Four Nike-Ajax missiles lie upon their launchers adjacent to the upper left underground missile magazine. The fueling area, with its protective berm, can be seen behind. *Courtesy of the National Archives and Records Administration.*

Below: Construction for the 28-home *Turnbridge* development, which lays directly upon the land occupied by the launch area of PH-82, was begun in 1996 and is shown here in 2012. *Courtesy of Google Maps.*





Looking north across the Great Valley and the *Turnbridge* development, the former site of PH-82's launch area as seen on October 22, 2012. The "Wilson Farm" is on the left-center of the image, with the circular Eaves Spring Road in the foreground, and LeBoutillier Road to the left obscured by trees. The open field to upper right is Great Scott Farm on Yellow Springs Road. The twin towers of the Limerick Generating Station can be seen in the distance. *Courtesy of Roger Thorne.*

Acknowledgements

The story of the Great Valley Nike installation is one that I have wanted to research and tell almost since my wife and I, and our children, moved from the Chicago area to the Great Valley in 1983, and I first saw the abandoned buildings of the former launch site. It has been my great privilege to become acquainted with, and in many cases befriend, those who were willing to share their personal memories of this saga, or to help in other ways to “get this story right.” Each of their contributions has been invaluable, and I wish to thank them publicly:

Lt. Col. (Ret.) John Allen	Jack Ertell and the Historical	Bob and Patty Kundert
Ruth Esherick Bascom	Society of the Phoenixville Area	Chris Milewski
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Susan Allen Connelly	Bill Keltz	
	Millie Capetola Kendig	

Undoubtedly there is someone whom I left off this list, and for that I apologize.

But there is one individual who deserves special commendation, and without whom I would have “thrown in the towel” on this research many months ago. It was through a stroke of good fortune that I began to correspond with former PH-82 soldier Jon Freudenthal, a current resident of South Carolina, and a man who remembers the events of his life very well indeed. In countless email correspondences and telephone interviews, Jon related so many small and verifiable details that helped to flesh out this local story. Further, because Jon had kept in touch over the years with his former commanding officer, and other G.I.’s with whom he had served, I was able to contact those individuals in turn and plumb their memory. Jon, I couldn’t have done this without you. Thanks!

Unlike my last major research undertaking on the transportation of German prisoners of war to America during World War II, this Nike project is purposely less academic in its approach and layout. Footnotes have been used only to provide additional explanatory materials to this mainly local story, rather than as a means to explicitly pinpoint the source of each bit of documentary evidence. However, for those who wish to further pursue the technical and strategic details of the Nike era, I commend the following:

A Ph.D. dissertation submitted in December 2008 to the University of California-Santa Barbara by John Knute Smoley entitled *Seizing Victory from the Jaws of Deterrence: Preservation and Public Memory of America’s Nike Air Defense Missile System*.

A study sponsored by the Department of Defense Legacy Resource Management Program, Cold War Project, entitled *To Defend And Deter: The Legacy Of The United States Cold War Missile Program*, by John C. Lonnquest and David F. Winkler in November 1996. U.S. Army Construction Engineering Research Laboratories Special Report 97/01, published by the Defense Publishing Service, Rock Island, IL.

Assuredly the best general text on America’s Nike program is *Rings of Supersonic Steel: Air Defenses of the United States Army, 1950-1979*, Third Edition, by Mark L. Morgan and Mark A. Berhow, published by Hole in the Head Press, Bodega Bay, CA.

The most comprehensive website on the general subject is Ed Thelen's Nike Missile Web Site, <http://ed-thelen.org>

By far the most inclusive website related to the Philadelphia Defense Area during the Cold War is Chris Milewski’s <http://www.ph15.org>, and its subset on the Paoli Nike base, <http://www.ph15.org/ph82>

The only other article of which I am aware on the local Nike presence is a July 1990 article by Hob Borgson (a pseudonym for former Tredyffrin Easttown History Club president Bob Goshorn) entitled *The Nike Base on Diamond Rock Hill*, in the Tredyffrin Easttown History Club *Quarterly*, Volume 28 Number 3, pages 115–119. It provided me with a good starting point.

Finally, every research project goes to the printer leaving stones unturned. I freely acknowledge that additional patient study by some future researcher at the Chester County Recorder of Deeds Office; and the University of Pennsylvania’s Inactive Property Files of the Office of the Treasurer [University Real Estate Title Papers, 1761-2006, UPH 500 Inventory, Box 12, FF 16-20, #520: Schuylkill Township and #520A: Tredyffrin Township], will assuredly provide further answers to continuing mysteries on applicable title transfers.

Roger D. Thorne