

MISSILES ON OXBOW ROAD



Presented: Wayland Historical Society
March 2018

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This is a “welcoming” sign to a Nike base. Not Wayland but from one of the almost 300 similar sites around the country and the world. My name is Bob Farrington but I am more easily recognized in Wayland as Mr. Molly Faulkner. Molly and I live on Bennett Road.

I am a retired commercial real estate, finance and business lawyer. I grew up in Wayland on Dean Road in Damon Farms. I have no credentials other than a lifelong interest in world and military history and weaponry. I am, yes, a geek.

Early last fall my wife, your esteemed President Molly Faulkner, “suggested” that to keep me from driving her crazy after my retirement, I should take a look at Wayland’s very own missile base. She surmised that when I moved to Wayland in 1959 as an 8 year old, I was appointed as the Loker School liaison with the Joint Chiefs of Staff and the Strategic Air Command. Alas, the highest rank I have ever held was Second Class Scout in Troop 1 Cochrane. And I was a Second Class Boy Scout in every sense of the word.

Our good friend and neighbor Beth Butler sensed my need for support and stepped in early on to help. What I really needed was another lawyer on the team.

Molly’s “suggestion” was prompted in part by my telling her years ago that early in the ‘60s we the Fifth Graders of Loker School built a full size papier-mâché replica of a missile in the cafeteria/lunchroom of the school. I read an article recently that stated the entire east coast of the United States was an assembly line for all sorts of missiles in the ‘50s and ‘60s and so, reflecting the pro military mind set of the country, our teachers and school officials no doubt wanted to render some small tribute to the Army in our little burg.

In the interest of full disclosure, I admit that Molly, Beth Butler and I could not find any archival evidence of this model missile. One Loker school classmate had no recollection of this model but distinctly remembered pulling an arrow out of the back of my leg in an unrelated incident. I will, however, swear to the day I die that there was a missile in Loker School.



Bob Farrington and Beth Butler visit the Nike site in Bedford



Is this "The red button"?



Hey, let's see if it is "The red button!"

The Nike (Greek goddess of victory) missiles that were in Wayland were strictly for the defense of Boston and America at large. Offensive missiles such as the Titan, Atlas, Peacekeeper, etc., were not present on Oxbow Road. Those are the much larger missiles in vertical silos in the mid-west

There were actually three different models of Nike missiles. The Ajax, the Hercules and the Zeus were each developed by Douglas Aircraft, Bell Telephone and its subsidiary, Western Electric. Ma Bell certainly was versatile in those days.

This report will focus on why this site was built and what it was meant to do. I won't relate the many attempts to utilize this site for housing and other uses other than to note that green, attractive and affordable housing was eventually built.

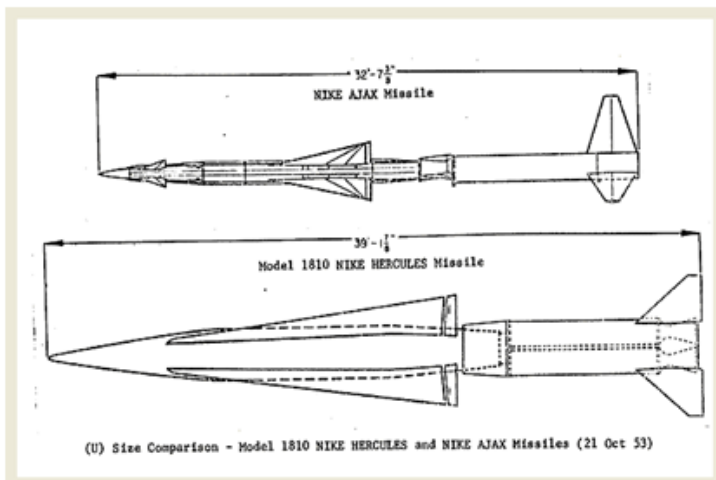
If anyone has any questions or comments please feel free to let me know. In keeping with the current national trend, alternate facts are welcome.



Nike unit patch



Happy family photo of Nikes and cousins



Size comparison of Nike Ajax and Nike Hercules

SO WHY DID THE USA NEED TO PUT A MISSILE BASE IN WAYLAND

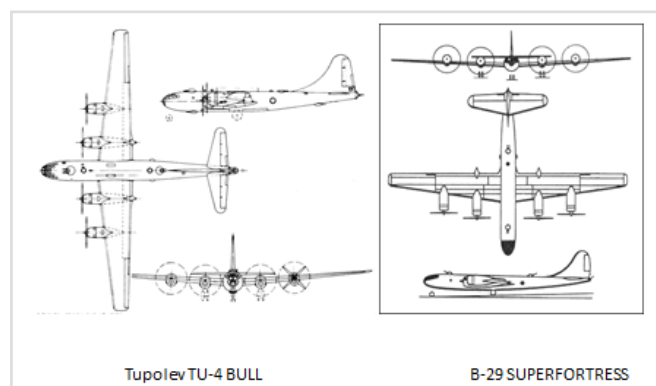
One needs to go back to World War II to answer that.

The US had entered WWII severely lacking in every military necessity. Anti-aircraft protection of the US was essentially non-existent. After Pearl Harbor plans were drafted to build an Anti-Aircraft Artillery (AAA) system that would protect cities and military targets from attack by the Japanese, Germans or Italians. However, by the time the military had come up with these plans the practical realization set in that our WWII East Coast enemies, the Germans and Italians, had no aircraft that could make it to the US. Further, they had no operational aircraft carriers to launch raids as the Japanese did at Pearl Harbor. The Japanese had no aircraft that could reach the US although there was a threat that Japan could launch further carrier air raids on the West coast. By 1942 after the Battle of Midway, however, the Japanese carrier threat had been severely reduced and would continue to shrink as time went on.

The US ended WW II in sole possession of first place in the military and political world. We alone had atomic weapons not to mention having by far the +largest navy and air force. No one could even think about messing with us. We lived confident that given our distance from our only adversary, kindly Uncle Joe Stalin, we were safe from threat. We knew Russia did not have a major force of long range bombers to strike the US. At this time there were no missiles that could reach the US from Russia.

Exploding that safe and smug feeling, in 1947 the US learned that Russia had developed a long range bomber very much like the four engine American B-29 Super Fortress which had bombed Japan with conventional and atomic weapons. In fact it WAS the B-29. Four of these long range American B-29s, too shot up to make it back to their bases in the Marianas Islands after raids on Japan, landed in the Russian Far East. At that time Russia was not at war with Japan. The B-29 and their crews were interned by the Soviet Union, as per international treaties. After the war the Russians sent the crews back in one of the B-29s but kept the other three aircraft. Finders' keepers.

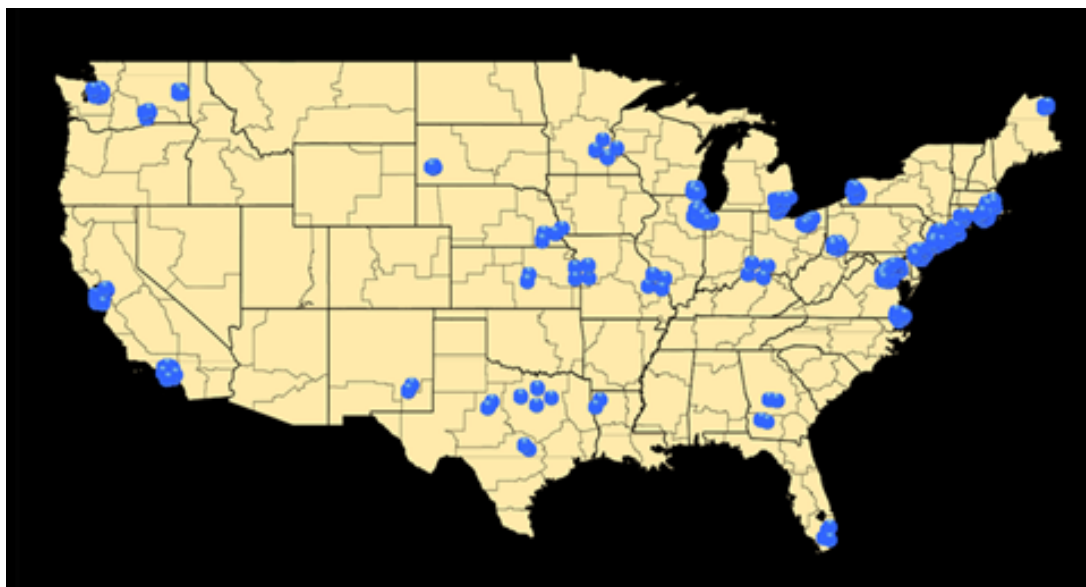
The name "Tupolev" comes from the aircraft designer A.N. Tupolev, the head of the Soviet Design Bureau which he led. Since capitalism and the concept of profit had been banned in the Soviet Union, different units producing goods such as aircraft were produced for the "good of the Motherland." Aircraft designer's names were applied to the



working group led by the designer. In point of fact, competition was based on the desire to avoid execution or a trip to the Gulag. Tupolev had already spent 4 years in a Gulag camp and no doubt wished to avoid giving it repeat business.

The existence of this aircraft really shook up the American military. The Russians “reversed engineered” the B-29 and named their aircraft the Tupelov - 4 which was designated “Bull” by the US. Reverse engineering involves taking the relevant target product apart down to its tiniest part, replicating those parts and assembling an exact copy of the original product. This plane could reach some of the US on a one way trip. Our oceanic moats were not impenetrable as in the past. But thankfully Russia had no nukes at that time. The way the US discovered Russia had this fake B-29 was when they saw formations of the plane fly over a parade attended by Western officials. Partially to counter this new bomber threat, the US ringed major American cities with radar controlled AAA in the late 1940s. Boston had 13 of such sites but Wayland was not a gun site.

As an aside, the US had many fighters based in many bases around the world that also served as a deterrent/defense. I remember the best part of picking my father up at Logan Airport was seeing the F-86 Sabre fighters lined up right next to the road, probably for Air National Guard use as Logan was not an active Air Force Base.

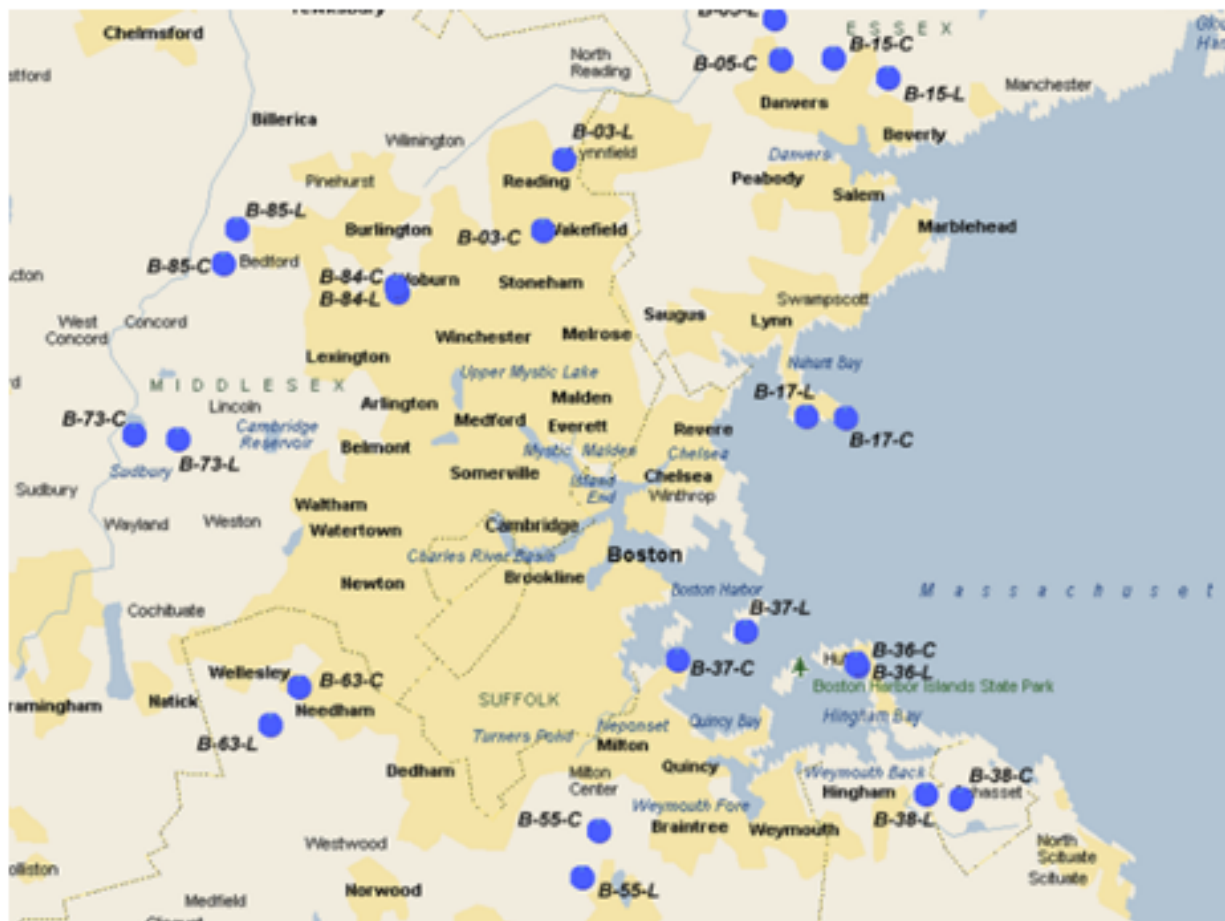


Defended cities with multiple Ajax sites

The game radically changed in 1949 when Russia exploded its first atomic bomb. America’s atomic monopoly was ended. Russia’s possession of nuclear weapons plus a bomber to deliver them to the US, coupled with North Korea’s invasion of South Korea in June of 1950, caused President Truman to order a top to bottom study of American military capabilities. This 1952 study

concluded that by 1954 the Russians would have enough bombers with enough range to launch a “devastating attack” on the US. The report recommended a new defense budget of \$40 Billion, a 300% increase from the 1950 budget. It was concluded that the US had to establish a robust anti-aircraft system and PDQ. The decision was made to develop an extremely costly air-interception capability involving ground radar installations and radio controlled missiles rather than the customary AAA. Faster propeller and jet powered bombers required more protection than AAA could deliver.

So, in the mid-50s, the US Army built a dozen “paired” missile bases around Boston. I say paired as there were two physical and usually separate locations for each installation--- one was the location from which the missile was launched (Launch Site) and other was the Integrated Fire Control radar site or “IFC”. In 1955, the army built the Launch Site at 133 Oxbow Road, Wayland and the IFC site in Lincoln. The two sites required line of sight between them and were usually situated on hills. Apparently many trees were cleared to provide this line of sight for Wayland/Lincoln. There was an underground cable linking the two sites as backup.



Nike Ajax sites defending Boston

Why were there two sites? A fundamental problem with missiles in the Nike family was that the missile takes off so fast that radar cannot “tilt” to follow the track of the missile if the missile launch is too close to the control site.

Separate sets of radar equipment in Lincoln would track both the missile and the Russian target and detonate the missile when it was as close as the missile could be directed. The missile was steered by movement of the fins by radio control.

Each Nike Ajax site had 2 or 3 underground magazines with 10 Ajax each. Wayland had two such magazines for a total of 20 missiles. When the site converted to Nike Hercules there were fewer of the larger Hercules on site. The crews were sent to White Sands New Mexico for 2 weeks every year for training with actual missiles.

The Site

The Wayland Launch Site was built on approximately 29 acres of undeveloped woodland in Wayland taken by eminent domain. The radar control piece of 5 acres, the IFC, was built on a hill in Lincoln about a mile from the Wayland site and purchased from private sellers. It is not clear from the records why the Wayland site was taken by the Federal government and the Lincoln property was bought from the owner. The likelihood is the government offer for the Lincoln land was acceptable to the owner but the offer on the Wayland land was not sufficient to satisfy the owner.

The locations of the Wayland missile site were by no means a secret – nor were the locations of the other Nike sites around the country and the world. One could make the case, however, that if you wanted to hide a missile base, 133 Oxbow Road in Wayland was a pretty good place. In fact the current historian of the Massachusetts Army National Guard (MANG) Brig. Gen. Leonid Krondatiuk, was quoted in 2003 as saying missile sites were “hidden” in residential areas to keep them disguised from Soviet agents. I guess we understood the value of hiding military assets in residential areas that ISIS, North Vietnam and Hezbollah picked up on later.

In 1954 I found a Town Crier article that stated the mystery project in North Wayland was to be a missile base. I saw no subsequent articles or letters about the Town’s reaction, good or bad. The only memory I have is driving past the front gate in a late school bus and seeing a guard and a guard shack. I could not really see into the base. I remember thinking huh an army base in Wayland. I never thought to enquire further. I think that the general reaction in Town was we needed to fend off the Russian bear and these missiles had to be somewhere.



Wayland Site



Lincoln Site



Mascot for Wayland site



Diagrams of typical launch site and integrated fire control site



This picture is from the Town Crier in the late '50s with the tag identifying the missiles depicted as Nike missiles. However, the caption in the photo clearly states these are Hawk missiles, which is correct. As the event shown was an open house it is likely the highly mobile Hawk array was brought in to showcase other Army weapons. The open house drew 550 Wayland residents to the Launch Site and 600 Lincoln residents to the IFC site. Not much to do in Lincoln even back then.

[Note the name "Hawk" refers not to a bird of prey but is an acronym for "Homing All the Way Killer". This missile was partially developed at the Wayland Raytheon plant. The Hawk, a mid '50s design, is still in used in some countries, including Sweden, very much a first world country with highly developed military technology.]

The site contained nine buildings, two launcher "magazines" and parking areas enclosed by multiple barbed wire and chain link fences. Among other structures there was a barracks, a mess hall, water pump house, backup generator, warhead assembly building, missile assembly building, armory and flammable storage building. In its later stages it was protected by guard dogs with a kennel on site. Maybe this was to increase security for the nuclear warheads. It appears the site design was basically the same for many Nike

sites, cutting back on design and construction costs. The base had its own septic system. It used commercial electricity but had its own generator fueled by a 3000 gallon oil tank for back-up. It used municipal water but had its own well at one point.

The base started with 130 personnel: two commissioned officers, four or five non-commissioned officers and the rest enlisted men. As the war in Viet Nam got hotter, the garrison decreased in size, and eventually dwindled down to 80 officers and men. The MANG took over from the Regular Army in 1965.

The enlisted men were housed in barracks located here. Twelve ,1600 sf houses with near identical floor plans were built on a new street across from the base to be named Launcher Way. These were to be housing for non-commissioned officers and warrant officers and their families. These houses are still owned by the Federal government and personnel based at Natick labs live there. The commissioned officers could live where they wanted.



*Nike Hercules misses on launching rail at
Wayland site*

The first type of missile to be installed, the Nike Ajax, had a range of 25-30 miles and had to be near the cities and military bases it defended. It was a 25 foot long one ton two stage missile meaning the first stage got the missile off the launch pad and the second powered it to at or near its target. The Ajax had three conventional (non-nuclear) warheads, in the front, middle and rear sections of the second stage. The second stage was exploded as near its target as radar could get it, spewing thousands of fragments of metal, hopefully enough to bring down a Russian raider. The warhead burst on command from the IFC, in our case located in Lincoln. When the first stage dropped after a mile, it fell where it fell. There was no explosion but it would leave a mark if it hit you. The Nike Ajax was generally viewed as the last line of defense against Russian bombers.

Both the Nike Ajax and the Nike Hercules were raised to a near vertical position for launching. The missile was tilted slightly in the direction of an area the Army roughly calculated the burnt out first stage would land, hopefully without hitting anyone or anything. Tilting it slightly also made it less likely it would fall straight back down on the launch site. In any event the launch personnel were in a protected bunker underground in the magazine.

HERCULES

Even as the Ajax was being deployed the Army became concerned about its ability to stop an attack by a massed fleet of bombers, a la World War II waves of hundreds of American and British planes attacking Germany and Japan. Apparently there was a concern that a Nike Ajax could not focus on individual targets in a mass formation and would just miss everything. I guess it's like the old saying put a mule between two piles of hay and it will starve to death trying to decide which to eat. Seems late in the game to find this flaw but as time went on the US's perception of the size of the Russian bomber fleets grew and grew. At about the same time the concern arose about the deficiencies of the conventional Ajax missile, the US learned that Russia had developed a new bigger and better long range bomber, the Tupelov Tu-95 Bear. The US began to fear that a "bomber gap" had developed and that we were way behind Russia on the quality and quantity of bombers.



Tupolev-95 Bear

The solution was to nuke 'em. It was thought that with a nuclear warhead a missile could knock down a whole formation of bombers but the Ajax was not large enough to carry a nuclear warhead using '50s technology. In 1953 the Army authorized development of the Nike Hercules, again by Bell Telephone Laboratories, Western Electric and Douglas Aircraft.

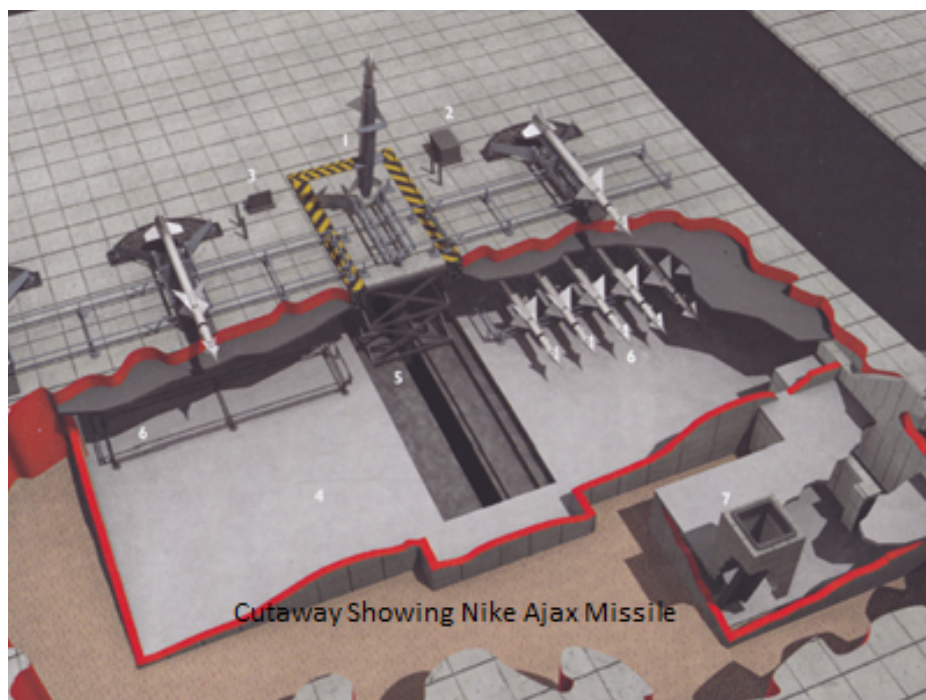
This decision by the Army to get in the nuclear weapon business incensed the United States Air Force which was about to deploy its own nuclear capable anti-aircraft missile, the BOMARC. Eventually both were deployed but far more Hercules were actually installed. In 1958 the Hercules stood ready to be deployed. Eventually there were 264 Hercules sites around the world. As an aside I remember all sorts of rocket base type toys on TV with BOMARCs and received a Christmas present of a toy Project Mercury base complete with nuclear BOMARC missiles. I do not recollect any toy Nikes of any model.

The Hercules was powered by four Ajax rockets. It weighed 5 tons and could carry nuclear or conventional warheads. It had a range of up to 100 miles and a speed up to 2200 miles per hour. The military felt that with a range of 100 miles they could explode a nuclear weapon without damage to the assets the Hercules was designed to protect.



Nike Hercules

The military has always maintained a policy of not disclosing which sites, if any, had nuclear tipped missiles. It should be noted that when the Hercules began to replace the Ajax around the country, many Ajax sites were decommissioned, the thought being nuclear warheads packed a bigger pinch



Cross section showing underground magazine (these happen to be Ajax)

and you didn't need as many. 9 out of the 12 Ajax sites around Boston were shut down. The remaining three were modified to accommodate the much bigger Hercules. Wayland was one of the three Boston sites that became nuclear capable.

Nike Ajax sites were modified to fit the new Hercules missile, albeit with fewer missiles per magazine. These Hercules sites were in operation from 1958 to 1979 --Wayland's was dismantled in 1974.

The possibility that the Wayland base was equipped with nuclear tipped missiles is to me the most interesting intriguing aspect of the Nike program. The official policy of the military is they will not comment on whether or not any base had nuclear warheads. But the whole purpose of building Hercules missiles was to arm them with nukes. And at least in the Boston defense area the number of missile sites had been reduced from 12 to 3, the 3 including Wayland. How could they not have nuclear war heads at 133 Oxbow Road. I thinking adding the dogs was a dead giveaway.

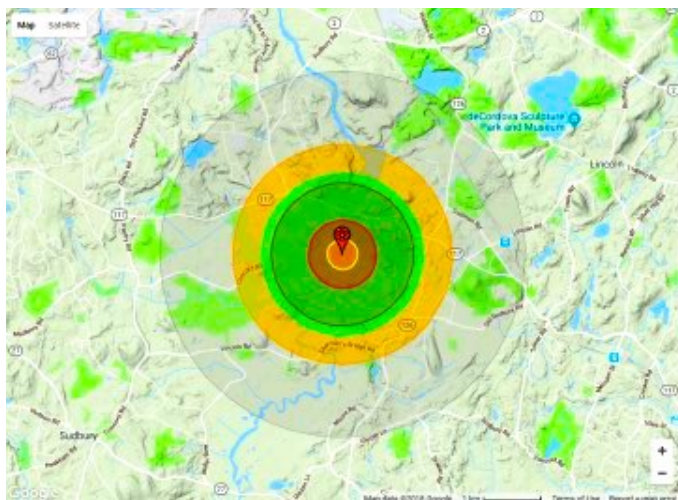
I was at a presentation by a local historian in the Raytheon Room at the library on an unrelated topic and the question of the presence of nuclear war heads in Wayland came up. A gentleman in the audience vociferously asserted that there never had been such weapons in Wayland. He seemed pretty damned sure. My thought is they would not build a new replacement defensive weapon and throw out an old one unless they planned to rely on the new nuclear one. I ran that theory by a retired general of the MANG. He smiled and said; well looks like you have an answer to the question.

The Ajax and Hercules magazines were 25 feet or so underground with thick concrete walls and ceilings. That structure was not to protect the missiles from bomber attack. No self-respecting pilot fights his way to the target and aims at the AAA defenses. The concrete structure was to protect life and property around the missile site. Because the sites were often in densely populated areas --missiles being mere hundreds of feet from homes in some cases-- the concrete was to protect the neighbors from the missiles warheads and fuel.

That might have been effective for conventional explosives. However, I asked the guru of Nike history, Ed Thelen, if these bunkers would have protected the surrounding areas. He said sure. Provided they were built 900 feet underground—and not the 25 feet as built.

What would have happened if there had been accident triggering a nuclear warhead explosion at the Wayland Launch site? That would seem to have been extremely unlikely. It has, to most people's knowledge, never happened before despite there being tens of thousands of nuclear weapons floating out there. But one cannot account for every contingency in life. The nuclear warheads in Hercules missiles yielded either 20 or 40 kilotons. The Hiroshima bomb was 15 kilotons.

A rough back of the computer calculation would show the following blast area for a 40 kiloton warhead exploding at the Wayland Launch Site. There is no provision in the calculation for any containment by the concrete bunkers nor does it show any accumulative blast of all the warheads on the missiles in a magazine.



40 KT blast

Circled in Yellow: Maximum size of the nuclear fireball. If it touches the ground, the amount of radioactive fallout is significantly increased.

Circled in Red: Air blast radius (20 psi): At 20 psi overpressure, heavily built concrete buildings are severely damaged or demolished; fatalities approach 100%. Often used as a standard benchmark for heavy damage in cities.

Circled in Green: Radiation radius (500 rem): 500 rem radiation dose; without medical treatment, there can be expected between 50% and 90% mortality from acute effects alone. Dying takes between several hours and several weeks.

Circled in Purple: Air blast radius (5 psi): At 5 psi overpressure, most residential buildings collapse, injuries are universal, and fatalities are widespread. Often used as a standard benchmark for medium damage in cities.

Circled in Orange: Thermal radiation radius (3rd degree burns): Third degree burns extend throughout the layers of skin, and are often painless because they destroy the pain nerves. They can cause severe scarring or disablement, and can require amputation. 100% probability for 3rd degree burns at this yield is 10.8 cal/cm².

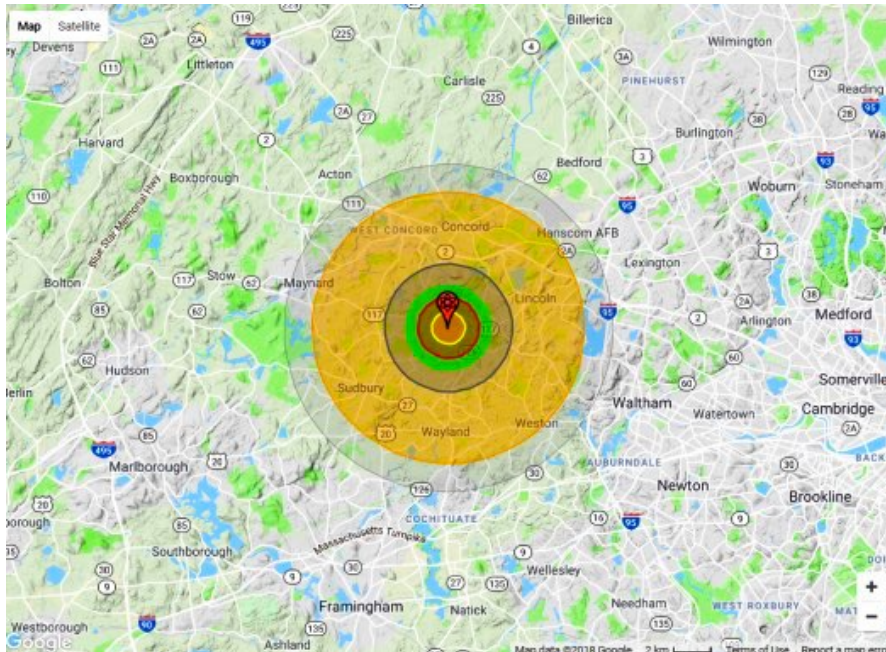
Last one: Air blast radius (1 psi): At around 1 psi overpressure, glass windows can be expected to break. This can cause many injuries in a surrounding population who comes to a window after seeing the flash of a nuclear explosion (which travels faster than the pressure wave). Often used as a standard benchmark for light damage in cities.

Remember the happy family of Nike missiles – first Ajax, then Hercules and lastly Zeus. Zeus would have been an anti-ballistic missile, the previous two being anti-aircraft systems. The Zeus would be 63 feet long, a speed of over 3,000 miles per hour and a range of 250 miles. President Kennedy cancelled the Zeus program in 1963.



Nike Zeus

The Zeus would need a standoff range of 250 miles as it was to have had a 400 KT nuclear warhead. Again, on a back of the envelope, if Zeus was ever based in Wayland, and there was a highly unlikely event causing a nuclear detonation of the warhead, the blast area is noted above. Again, not taking containment or multiple warheads exploding into consideration. Dos vedanye Concord.



400 KT blast

As events would later show, the Russians never had many of the B-29 lookalike Bull or the Tu-95 Bear to pose any threat. There was never a bomber gap – the Russians had fooled us completely. This ruse was repeated again when the Russians tricked us into thinking there was a “missile gap”. Untold billions were spent to defend the US against threats that were gigantically over estimated. Fool me once and, well, I guess you can fool me again.

1974 - MISSILES REMOVED

In 1974, the base was shut down. Most other Nike bases had already been shut down. Personnel were sent elsewhere and the missiles were disassembled, placed in crates and lifted out by large two rotor Chinook copters. In a series of terse news items in the Town Crier reference was matter of factly made to the existence of nuclear warheads on the site. One article stated the missiles will have their “nuclear warheads” removed before being airlifted. That was no doubt comforting to those on the ground.

After 1974 a MANG medical unit occupied what came to be known as the "Wayland Armory". As late as the early 90's the site had four full time staff during the week and approximately 90 MANG members on weekends. The last occupants were a medical support unit which would dispense medical equipment, trucks and tents when activated.

1982 - PROPOSED GSA SALE

In 1982 the GSA advised Wayland that 15 acres of the original 29 acres of the site were available for purchase. In 1983 the Wayland Housing Authority proposed that the Town purchase this property for 24 homes. Requests for more land than the 15 acres available were rejected by the MANG as giving the Town authority over more land would cause a "significant adverse effect on the mission requirements of the armory site." Whatever that meant. The local population convinced the Town to not try to purchase the property.

1985-MANG HEADQUARTERS PROPOSAL

In 1985 came a series of events which exemplifies how seemingly unrelated matters can ripple with unintended and unforeseeable consequences to unrelated parties. It also serves as a fine example of cronyism at its worst.

In 1985 the MANG sold its five building armory complex on Commonwealth Avenue to Boston University. On the site BU built what came to be known as BU's John Hancock Village, which included the Agannis Arena, and dormitories. Bear with me, there is a connection. This was generally known as part of a deal where:

1. Former Boston Mayor Kevin White got a funded chair at BU in the communications department;
2. John Hancock was released from its obligation to tear down a 10 story building between the Hancock Tower with the weather forecast lights and the iconic 60 story Hancock Building under the development plan for the iconic "Plywood Palace"; and
3. Hancock fronted the bill for the John Hancock Village.

What does this have to do with the Wayland Nike site? Well, once the missiles had been removed in 1974, the Wayland property became known as the "Wayland National Guard Armory". And in 1985 it was deemed to be a super place to relocate the old National Guard Armory sold to BU, albeit without the huge meeting space in the old headquarters. Although some of the Comm Ave HQ functions would be also be relocated to Dorchester, Reading and Natick, the Wayland site would be improved by a two story Office Building and parking lot for 65 employees. Plus a helipad. Plus whatever parts of the camel followed the nose into the tent.

As one would expect the Town of Wayland became quite perturbed. The prospect of more cars zipping back and forth on Oxbow Road created a large backlash. This did not initially move the Guard's position. In fact a spokesman at the time said: "At this time we have no alternatives. This land was established for military use. I understand [the Town's] concerns. But the issue has to be seen in a larger context. What we have is a technically feasible, economically feasible solution that may not be politically acceptable."

Both Lincoln and Wayland were concerned that drinking water wells for each towns was near the proposed new HQ. Local opponents noted the one MANG spokesman said the helipad would only be used in emergency situations and another said once a month. Maybe they meant emergencies only happened once a month.

Wayland and to a lesser extent Lincoln and other Towns rose up in protest, citing the traffic, safety, noise and other negative effects. As many as 80 Waylanders crowded into hearings protesting the MANG's plans. I see villagers with torches and pitchforks at the meeting. Shortly thereafter the MANG announced it would cease consideration of the Wayland site for the new HQ. I noted that the HQ was last in Hanscom Field, having been moved there from Reading. Prior to that the HQ was in Milford. And if you want to know what the body behind the camel's nose under the Oxbow Road tent turned out to be, the current HQ has 400 employees. Up from the 1986 plan of 65.

1993

A Preliminary Assessment Report for the Wayland Armory, Nike Battery B-73, and Installation 23295 was performed by the Argonne National Laboratory in 1993 to determine if the site posed any threat to human health and the environment. Without going into detail the report concluded that there was a low level of risk.

1997

The Wayland armory was used as storage until 1997.

CONCLUSION

The thing I just cannot shake in my mind is the totally mundane and banal manner in which all references to the Nike base were made in the Town Crier and other newspapers. I did not run across one mention of protest for the 20 years the base was active as a missile site.

I like to think how happy Army draftees were in the early 60s to learn they were not going to Saigon, Da Nang or elsewhere in the Republic of Viet Nam but to Wayland, in the middle of gentle New England. 'Course there was not much in the way entertainment within quite a few miles. They probably did not have a drink or a date while here but at least they were here - not there.

