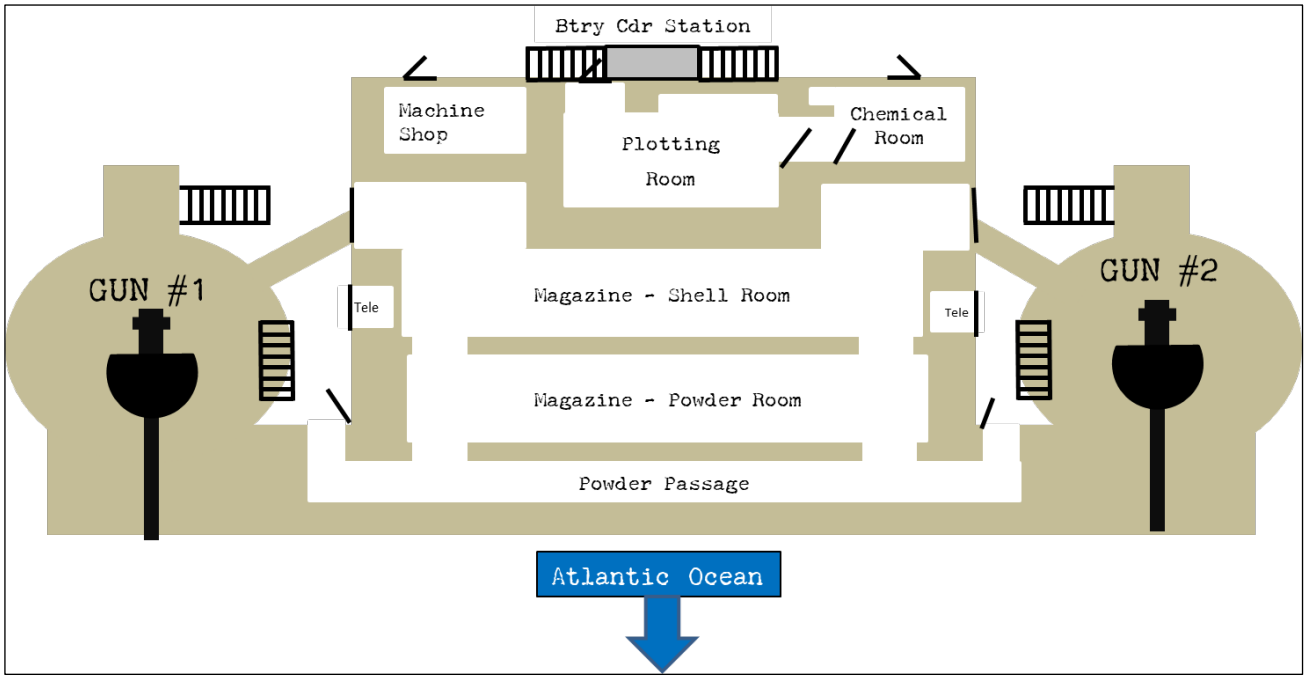
The Restoration of New Battery Peck

Originally constructed in 1904 as Battery Gunnison, the fortification was equipped with two M1903 6-inch guns mounted on M1903 disappearing carriages. In November 1942, the Army analyzed the fortifications within the Harbor Defenses of New York and decided to modernize the existing structure into a more effective barbette gun battery. The original Battery Peck is north of the 9-gun Battery and was in a poor location for a 6-inch gun battery. In February 1943 the Army issued orders to convert Battery Gunnison into Battery Peck by removing the M1903 disappearing guns, raising the gun platforms and installing the M1900 barbette guns, installing the ammunition shell hoists and removing the wall between two rooms and creating a much larger space for a modern plotting room. Gun #1 was moved and re-installed on 8 April 1943 and Gun #2 was moved and re-installed on 21 May 1943. The full transition to New Battery Peck was complete in May 1943.

Army Ground Forces Association (AGFA) began work on New Battery Peck in 2002. The photos that follow are keyed to the sections identified in the drawing below of the Battery. The Battery is substantially restored as documented in this report.



As you review these photos, please note that when work started in 2002, there was (1) no electricity; (2) several of the doors were broken or missing; (3) the guns were inoperable (no traverse, elevation, breach blocks, sights, etc); (4) Hoist #1 was in NPS off-site storage; (5) the ammunition bridges were missing; (6) there were no stairs or platform for the Battery Commander's station; (7) the front facing the ocean and the battery parade were covered in vegetation, trees and shrubbery. None of this addresses the additional "personal property" such as telephones, munitions; chemical warfare and fire control that have been installed since. The changes in 20 years have been significant.

All work shown in this document was performed by AGFA **except** (1) the 2004 installation of magazine roll-down doors and general door repair; (2) construction of concrete ammunition bridges and (3) installation of the Battery Commander's Station steel stairs. The last two were completed in 2018. This work was done by the National Park Service (NPS) personnel or by NPS contracting.

The National Park Service has been a fantastic partner is this restoration work. Additional information is available at www.armygroundforces.org.

New Battery Peck

Exterior Overview

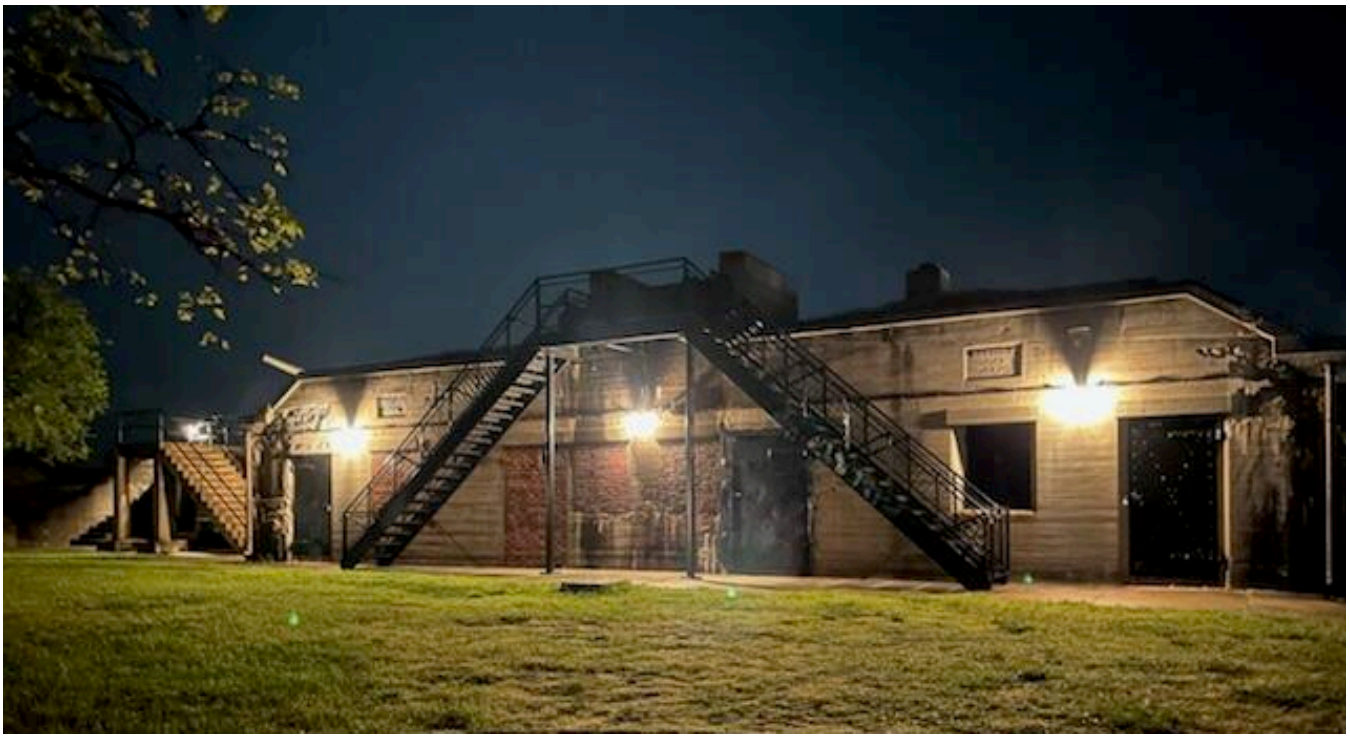
The following six photos show the exterior of the Battery in 2023-24.

The photo below shows Gun #2 (north side) in the early evening with the exterior lights illuminated.

Below is the north end of the traverse of the Battery Parade side of the Battery. The corner door leads to the Chemical Warfare and Mechanical room.

Below is the service area of Gun #1 (south side) with the magazine door open and exterior lighting illuminated.

The photo below shows the travers on the Battery Parade with (L-R) chemical warfare, plotting room and machine shop/tool room doors and Machine Shop/Tool room windows exposed and illuminated. The barrel of Gun #2 is at the left.



The photo below shows Gun #1 (south side) and the window and door for the Machine shop/tool room.

New Battery Peck

The M1900 6-inch Barbette Seacoast Rifles

New Battery Peck has two M1900 6-inch guns. The photo shows them in order - with the nearest being Gun #2 (serial number 22, Watervliet Arsenal 1903). Both guns appear to have been Midvale Steel stock and finished at Watervliet Arsenal. The original guns were expended during WWII and were replaced by guns from Battery Livingston, Fort Hamilton NYC in 1948.

Below is Gun #1 (serial number 23, Watervliet Arsenal 1903).

The photo below shows both guns traversed seaward and elevated. This is the first time since about 1949 that both guns have been operated together and traversed seaward. There are films (video) available on the AGFA website of the guns moving together (http://armygroundforces.org/Gun%20Drill%20Videos.html).

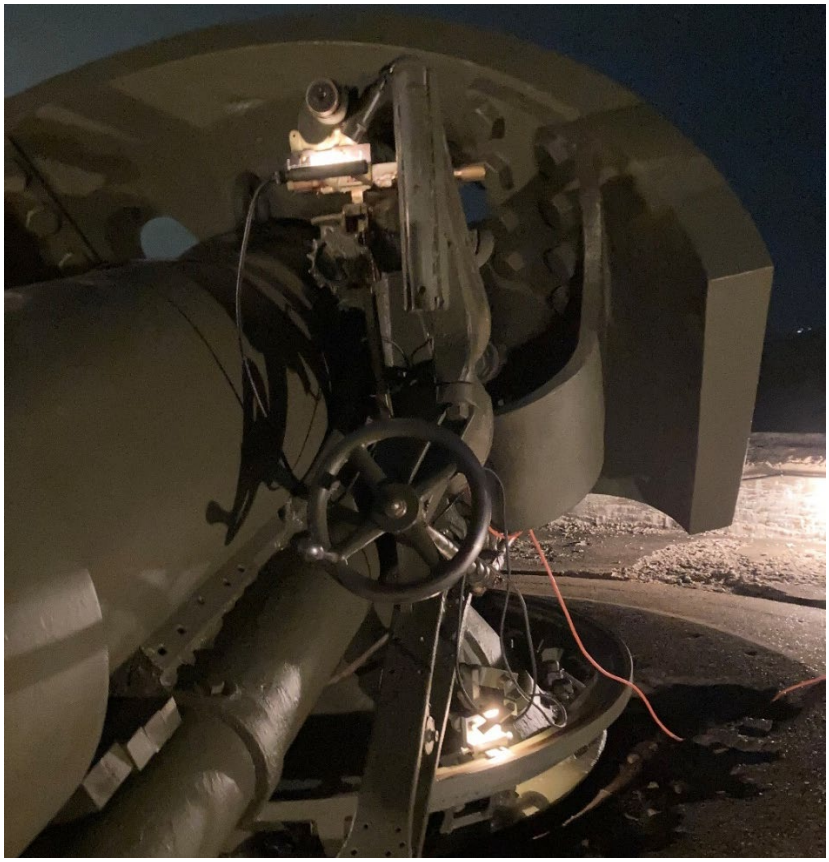
Gun #1 below is being prepared for a public "loading drill" in May 2024.

Below is another view of a gun drill. In this photo, AGFA members are putting on Gas Masks to simulate a gun drill in the midst of a Chemical attack.

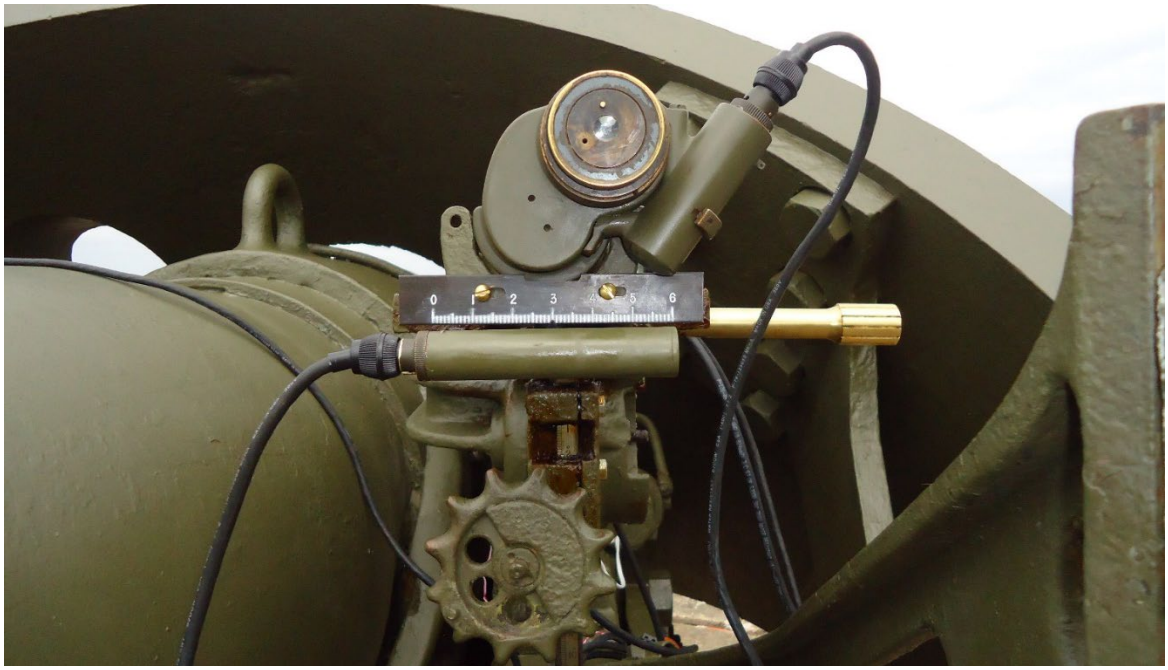
Below is the elevation drum, the indicator (pointer) and vintage lighting system to read the numbers and scale. New York City is in the background on the horizon.

Below is a closer look at the elevation indicator and the elevation drum. The setting is on 185 mils - which is about 10.9 degrees for 12,400 yards range.

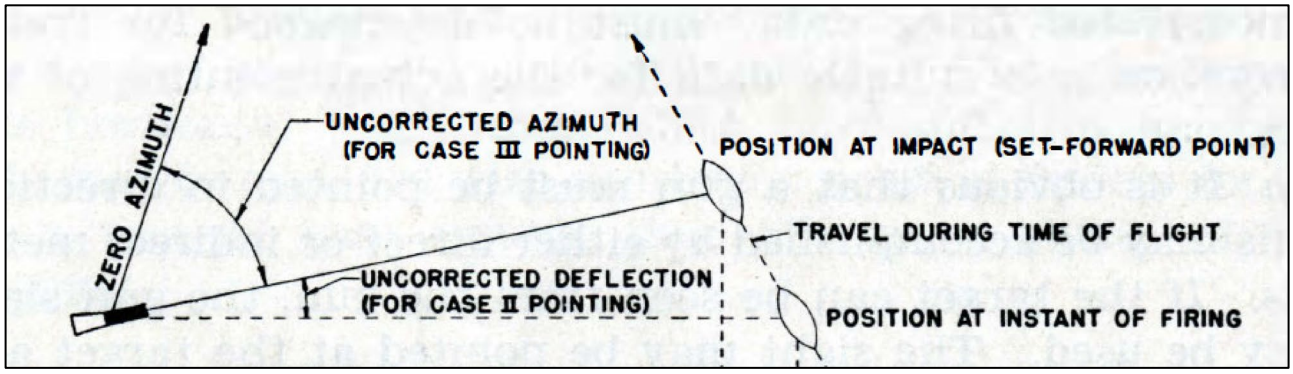
The photo below shows Gun #1's M1904 sight cradle (top) and azimuth indicator (bottom) illuminated at night.



The assembled M1904 telescopic sight and cradle, with night lighting, represents the full completion of Gun #1's restoration and its first use at night with lighting (May 2024). The Sight Cradle was completely restored - it was disassembled, all components straightened and brought into tolerance with missing components (deflection knob, deflection scale, light and pointer assembly) fabricated and installed. The deflection scale is brass and was blackened and whitened similar to the plotting board station arms.



Below is an extract from an Army training manual from 1942. It shows graphically how the M1904 sight is used to apply "Deflection" or the offset of the line of sight from the telescope to the target as it relates to the axis of the bore of the gun. The line of sight is shown below as the hashed line and the axis of the bore is the solid line. Time of flight of a 6-inch shell to maximum range is about 25 seconds (16,000 yards or 9.5 miles). Therefore, the aiming point is ahead of the target as it is being tracked. The point of impact is called the "set-forward point" - the point at which the shell and the ship "meet."



The rear of the sight cradle has a "deflection scale" and that is shown in the photo below. The yellow arrow identifies the black "pointer" which is set to "3" on the deflection scale (see yellow/red pointer). This is equivalent to "0" degrees or alignment parallel to the axis of the gun tube. The deflection adjusting knob is the large brass knob and shaft to the right.

Below shows the deflection scale more closely and shows the yellow/red arrow pointing to "5" on the deflection scale. This setting from the M1905 deflection board is for a target moving from left to right. The maximum deflection is 6 or "3 degrees". A setting of "5" is two degrees to the right of "3" or "zero" deflection.

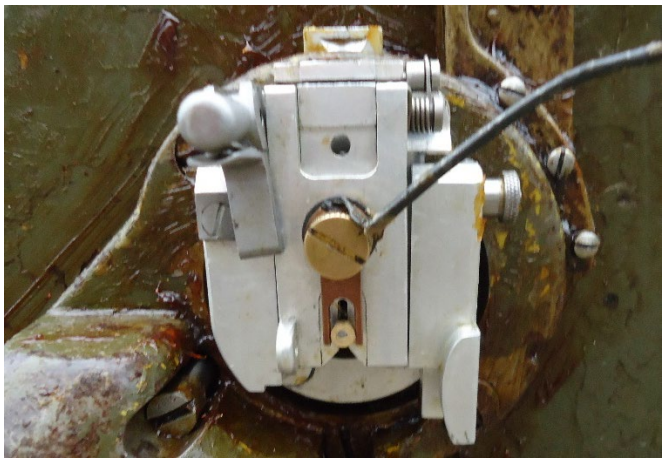
The photo below shows the pointer and its associated light from the side. The red/yellow arrow indicates the location of the pointer. The light is "on".

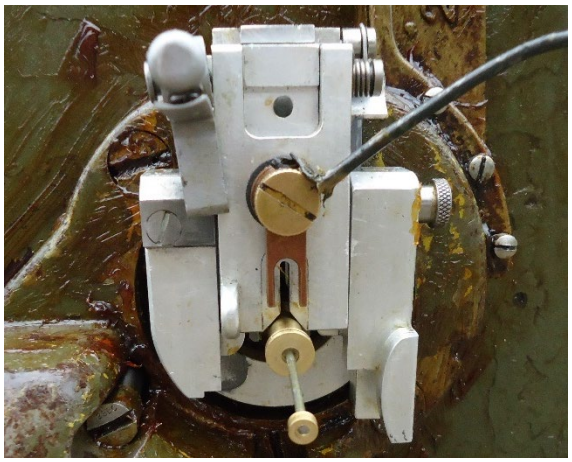
Below TSG Weaver is adjusting the M1904 sight cradle with the large deflection knob.

The image below is what TSG Weaver sees through the M1904 telescopic sight - the Maritime Bridge in Brooklyn and a tug boat with barge. The vertical line in the center is the "sight" indiator.

Below is a photo of the breach of 6-inch Gun #23, made in Watervliet Arsenal in 1903 (see markings at top) and the reproduction M1900 firing device installed.

Below is the reproduction M1900 firing device. On the left is the device closed with the reproduction (fake) primer inserted. On the right the device is open with the primer partially removed. This was copied from an original in the NPS collection and was made from aluminum instead of steel. It is a non-firing reproduction.





The photo below shows PVT LeBlanc having just opened the breach block of Gun #1.

The breach blocks weigh about 100 pounds. They are large enough to be impressive, but small enough that volunteers with general skills can maintain and preserve. Each year the AGFA team disassembles, cleans, and reassembles the blocks. The are well preserved using "cosmoline grease" in the original WWII formula. This is a critical requirement as the ocean spray is very corrosive.

The photo below shows Gun #1 at night to include the elevation drum indicator illuminated.

Below is Gun #1 showing the reconstructed traversing system and the silver azimuth indicator which was fabricated in 2015. As second indicator is in fabrication for Gun #2.

New Battery Peck

Plotting Room

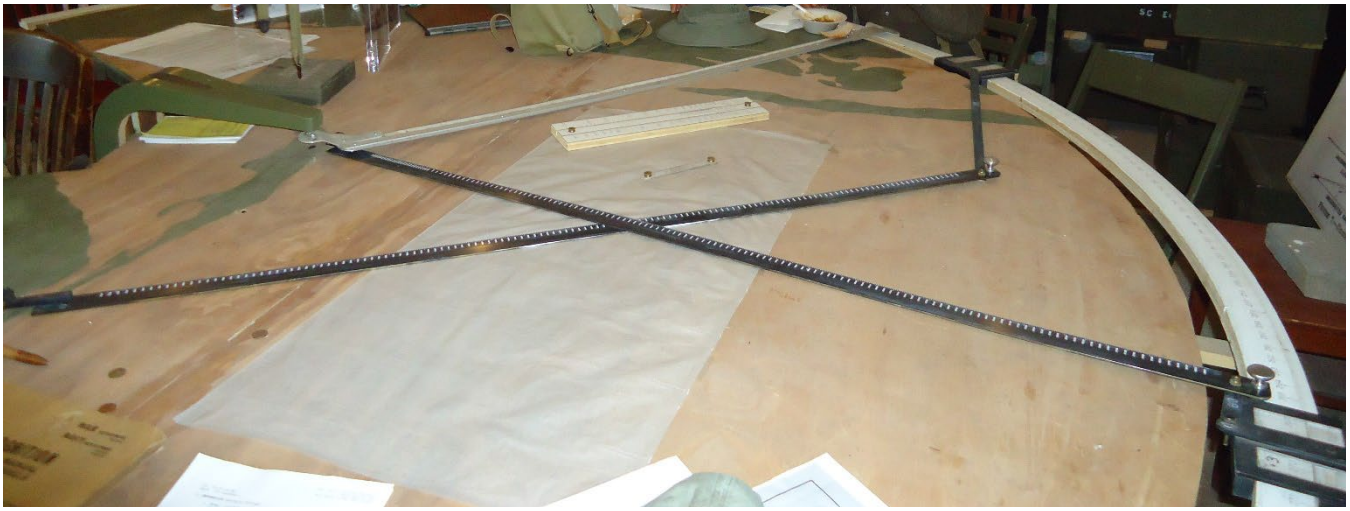
The plotting room is where target (ship) location data is received and used to calculate the future position where the target and bullet will meet. The three telephones on the wall are EE-91 telephone boxes.

Below is another view of the plotting room. The M3 reproduction plotting board is clearly visible. The black arms are the station arms, the silver arm is the "gun arm" and in the future it will be replaced by a properly marked blackened brass arm.

Below is another look at the plotting room from the entrance door area. The head sets for the station arms are hanging from a hook above the board. The time interval bell and head set connections are on a grey board on the ceiling above the chemical overpressure black pipe.

The photo of the plotting room below shows (left-right in yellow circles) a M1 Range Percentage Corrector, meteorological board (above rifle rack), image of a Range Correction Board (left of clock), wind component indicator and a portion of the M3 Plotting Board on the far right.

Below is the reproduction M3 plotting board. The two black arms are the station arms and receive azimuth (direction) information from their respective fire control stations. The Battery had four fire control stations and used two stations at one time. The board's scale is 1-inch = 50 yards. The board is able to range to 29,000 yards (about 16.5 miles)

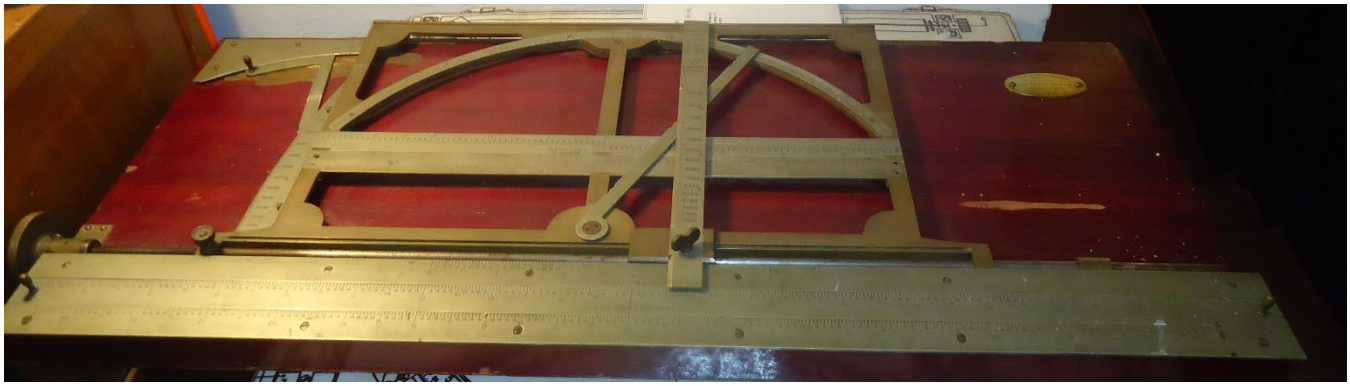


The photo below gives a better view of the blackening, engraving, and whitening of the lettering and scale on a station arm and the "coupler" that connects the station arm to the azimuth data box on the plotting board azimuth ring. This converts the azimuth from the station arm azimuth to an azimuth aligned with the gun arm (gun directing point).

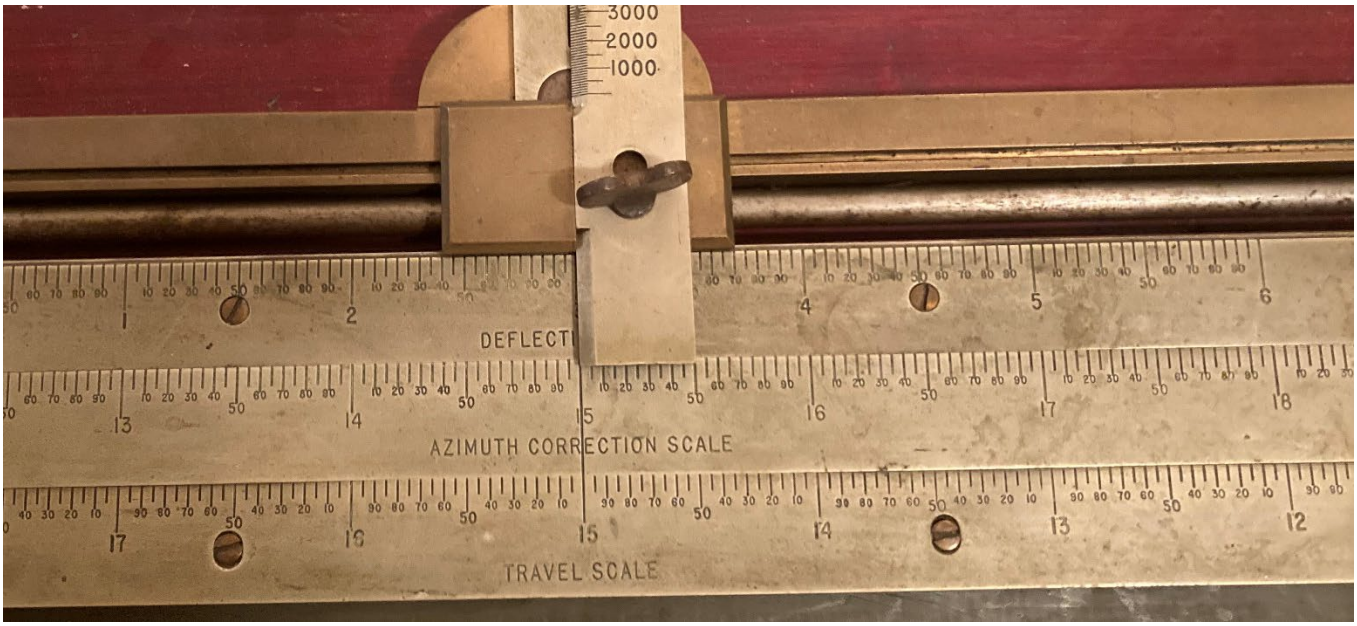
The photo below shows the M1905 deflection board and an EE-91 telephone that connects the board operator to the gun pointer. The telephone has both a TS-9 handset and a HS-17 head/chest set so that two people can use it at one time.

The photo below shows PVT Filippelli rehearsing operations of the M1905 Deflection Board and communicating the data to the Gun #2 Pointer..

Below is an M1905 Deflection Board manufactured at Frankford Arsenal in Philadelphia around 1910 specifically for 6-inch guns. The M1904 sight cradle receives its deflection settings from this board. The deflection scale on th esigt cradle matches this Deflection Board's scale.



The photo below shows the three scales on the M1905 Deflection Board - from the bottom up they are "travel scale", "Azimuth Correction Scale" and "Deflection Scale". The "Range Time Scale Arm" which is shown below set to "3" or the "Normal" of the board (which equals "0"). The Range Time Scale Arm is set to the correct Deflection as firing data is calculated in the plotting room. That data will be telephoned to the Gun Pointer to set the deflection scale on the M1904 sight cradle.



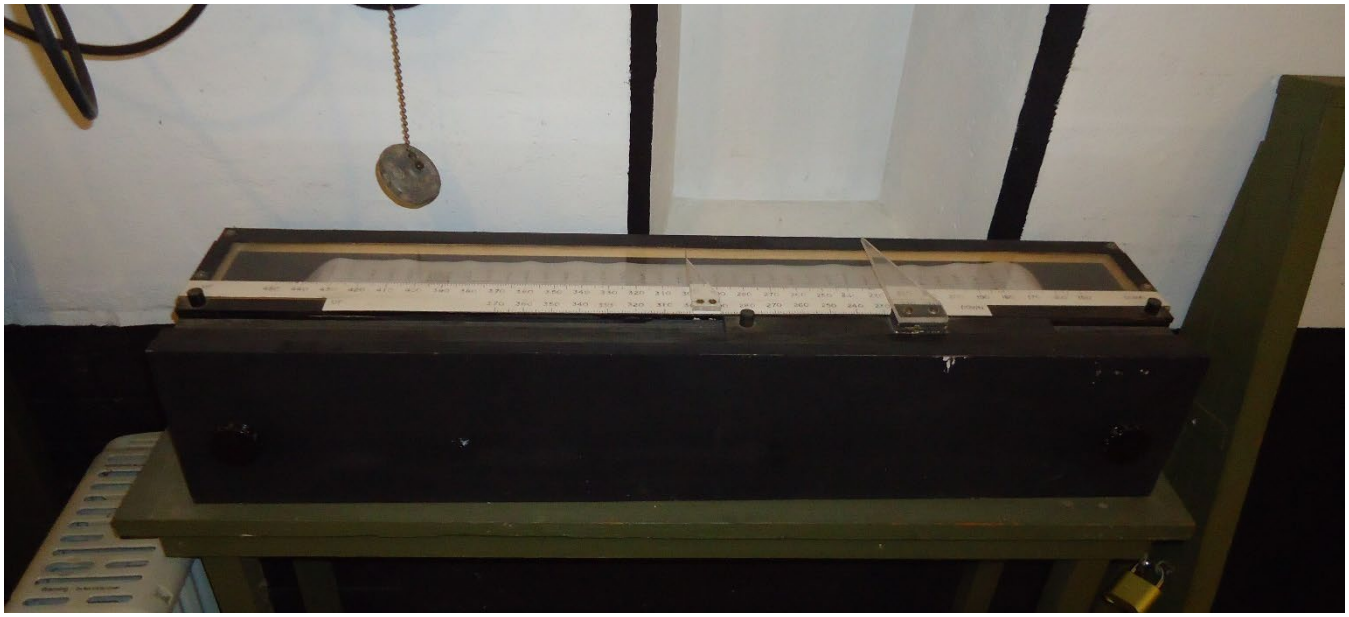
"Normal" numbers are used to remove negative numbers from the calculations. The normal for the M1905 Deflection board and the M1904 sight cradle deflection scale are set at "3" which is "0" for firing data calculation purposes. The M1905 Deflection Board would have been used until 1943 when Battery Gunnison was converted to Battery Peck and the fire control instruments in the plotting room were upgraded.

The M1905 deflection board was limited to a maximum range of 15,000 yards (about 9 miles). The M1900 6-inch guns at Battery Peck had a range of 16,500 yards - which slightly exceeded the range of the M1905 Deflection board. The deflection scale covers 6 degrees - 3 in each direction. By the 1930s this was barely sufficient.

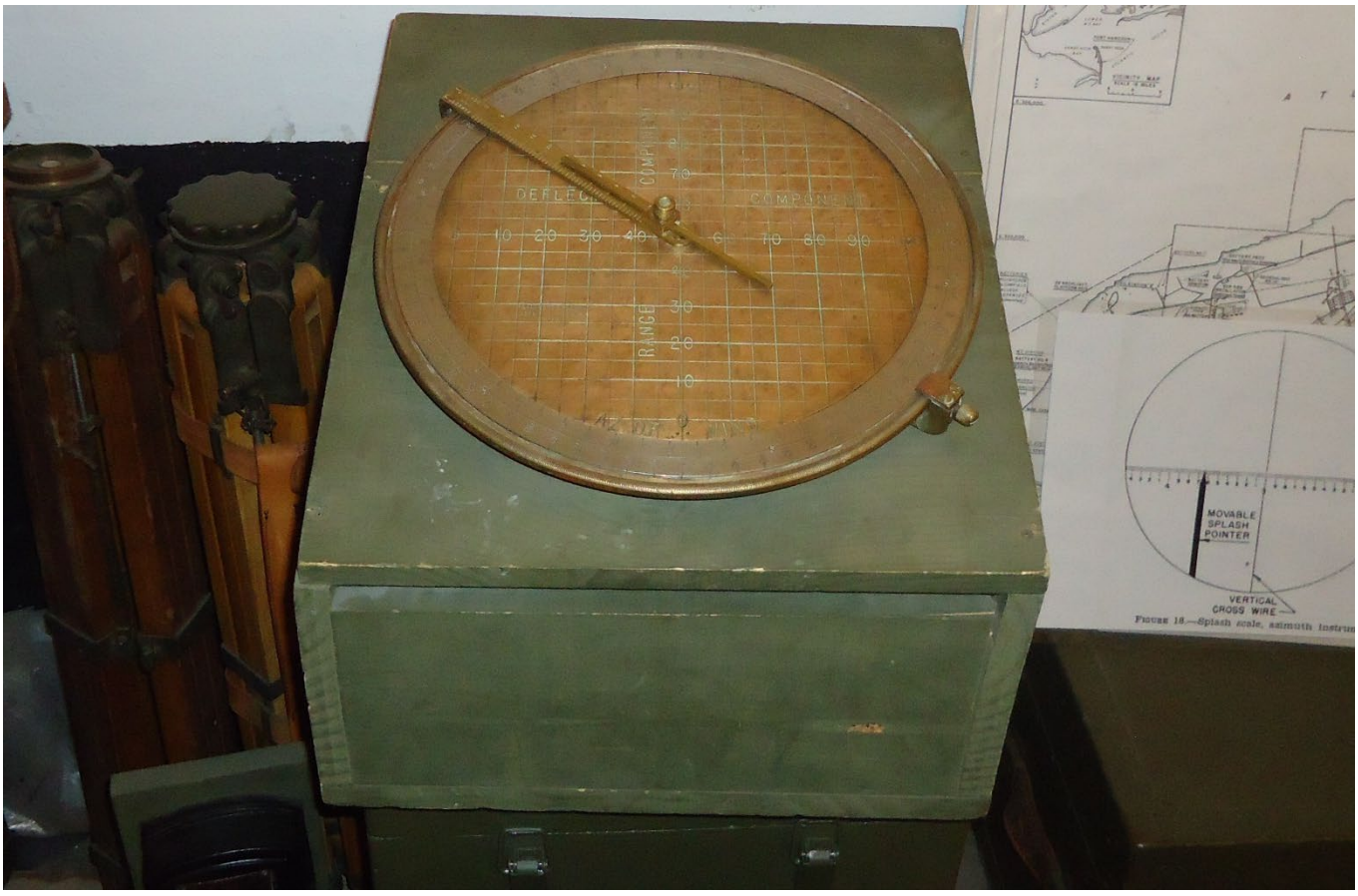
The M1905 Deflection Board was replaced by mid-1943 with an M1 Deflection Board which could adjust to a longer range (26,000 yards) and had a deflection "normal" of "6" which created a scale of 12 degrees vs 6 degrees. The M1 board was identified in the 1946 updated Battery Emplacement Book that AGFA copied at the National Archives.

AGFA was able to obtain an M1905 Deflection Board - the only such board we know to exist. It was used with many batteries equipped with M1900 6-inch guns during WWII. We are unaware of any existing M1 deflection boards.

Below is a closer look at the M1 Range Percentage Corrector. CPT Prostak made this device in 2006 and it matches the gun elevation (in Mils - 6,400 mils to a circle) and the range is from the range table from the Coast Artillery Board in 1925 that was in the Battery Emplacement book we copied from the National Archives in Manhattan.



Below is the "wind component indicator" which resolves the effect of wind into two numbers - one for range (push or pull against the shell in flight) and one for deflection (side impacts to shell).



Below is a Time Interval Apparatus EE-85 (right) made in 1943 which times and rings the Time Interval Bells. The box to the left of the EE-85 is a modern solid-state reproduction. The difference is size - the solid state is a few inches in size and about 50 pounds less weight. This EE-85 runs on 30 volts DC current supplied by an old HP Printer power supply!

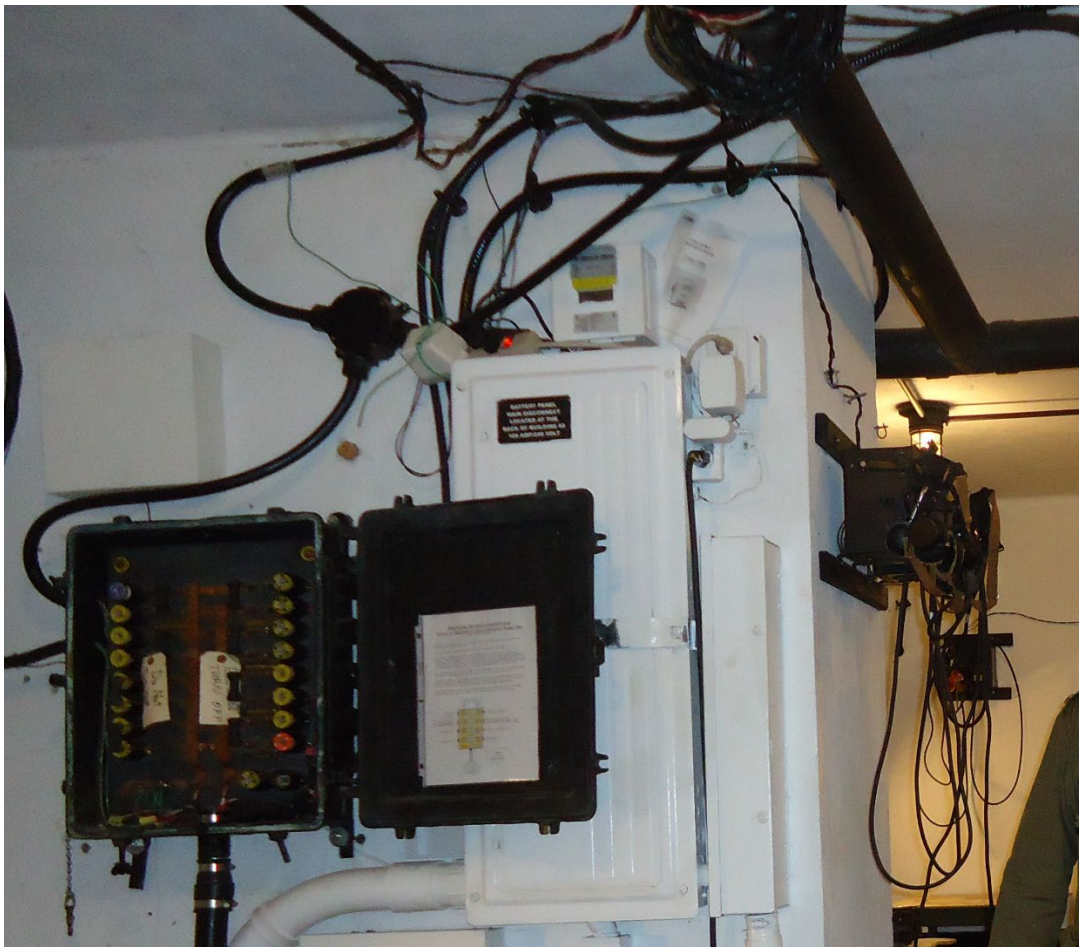
Below is both Time Interval Apparatus and to the right is a BD-95 switchboard and its EE-91 operator's telephone. Under the table is a 20 coil power supply that receives power from a commercial telephone power system in a light green box on the side of the table under the reproduction Time Interval Apparatus.

Below is one of the two plotting board Station Arm telephones - a EE-91 made sometime between 1939 and 1940. Notice that it was designed at nearby Fort Monmouth, NJ. This is the last generation of Fire Control telephone used by the Coast Artillery. It was standardized in 1936 and used until the Coast Artillery was disbanded in 1950. These telephones are very reliable - we have not had a single one fail. AGFA owns about 50 of these Telephone Boxes.

These telephones operate off a common source of 22 volts DC from a commercial telephone power supply that is on the side of the BD-95 Switchboard table. The power is connected to each separate line as it enters the switchboard. The coils under the switchboard table separate the power supply from the switchboard by blocking the transmissions from being sent to the power supply and therefor all telephones. Without the coils, all the phones would be on a single line regardless of the connections made in the BD-95 switchboard.

Below is the grey board on the ceiling of the plotting room with a TM-170 terminal connected to an HS-17 head/chest set and a EE-91 Telephone Box and a MC-153 Time Interval Bell. The board is an original from WWII.

Below is Battery Peck's power management station. The white box is a modern 100 amp power panel box. To the right of the large white box is a smaller, narrower box with eight "relay" switches. The black panel box to the left is powered by 12 volt DC current and the knife switches are what switches the relays "on" and "off". A historic power board manages the power and is within modern electric code compliance.



The photo below shows the Gun #2 telephone booth with wire connections going out to the gun telephones. The MC-153 Time Interval Bell is in the right of the photo.

The photo below shows a view of the Gun #1 service area. The magazine roll-down door is open and the inner bar door is visible. The telephone booth with wire connections going out to the gun telephones is also visible. SGT Cusano stands to the right of the MC-153 Time Interval Bell.

Each telephone both has its original telephone terminal box present. AGFA installed a commercial telephone cable into the box. It is the left side cable coming into the box.

Gun #2 telephone booth is below showing the three cables for Gun Commander, Elevation setter, and Gun Pointer telephones coiled and stored for future use. The wooden board on the wall is original to at least the 1940s.

New Battery Peck

Chemical Warfare

When rebuilt in 1943, New Battery Peck had an M1A1 Collective Protector installed to provide decontaminated air over-pressured into the plotting room. The two blower motors are 3,500 rpm and original to Fort Hancock. A report on this system is on the AGFA restoration projects page (http://armygroundforces.org/restoration.html).

The photo below shows part of the system and the entrance into the Decontamination Air Lock room. The black pipe in that room is for high pressure air to blow away a non-persistent chemical agent.

Below is a clearer view of the Decontamination Air Lock room with ceiling switches (from 1940s), pullies and chain.

To stand on the treadle and actuate the blower is an experience that would have been felt by a WWII Coast Artillery Soldier.

New Battery Peck

Battery Commander's (BC) Station

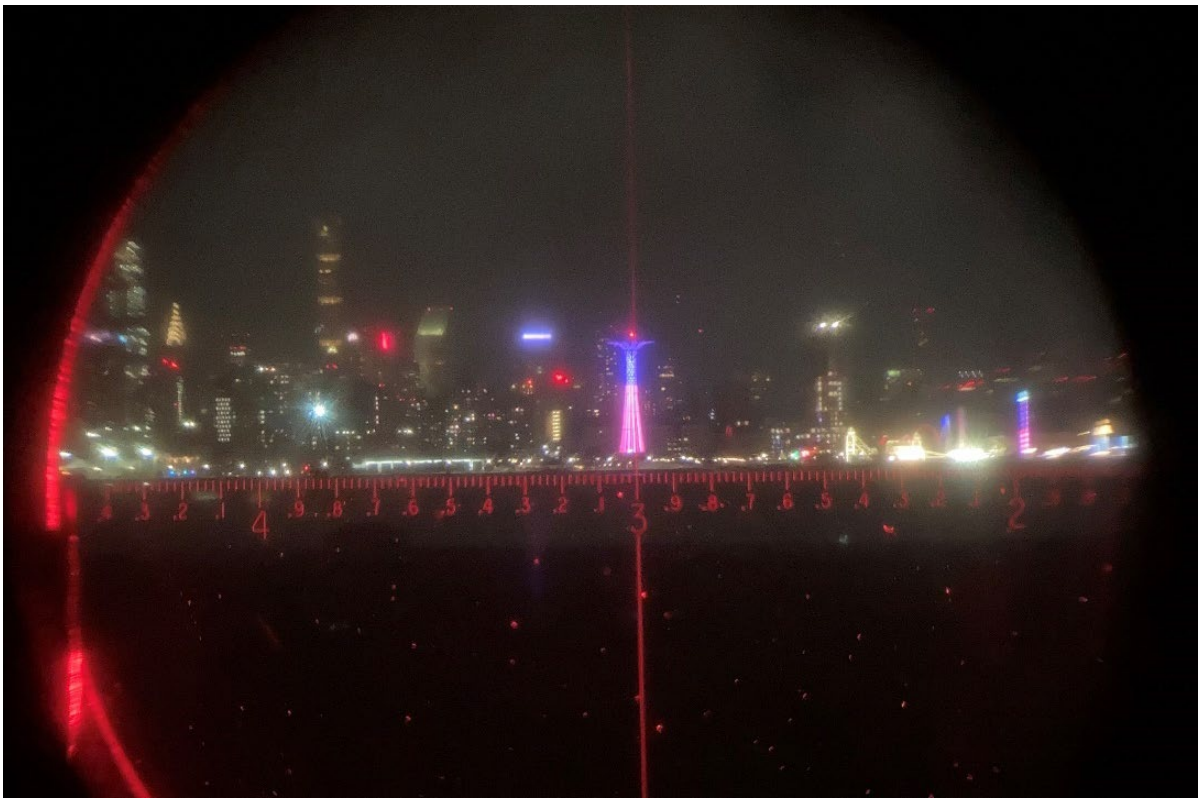
The BC Station is only setup when AGFA members are conducting an event or are otherwise present. In the photo are two EE-91 telephones, a MC-153 Time Interval Bell and an M1910A1 Azimuth instrument (Base and Telescope). This unit is owned by AGFA.

Below is another view of an assembled BC station in daylight.

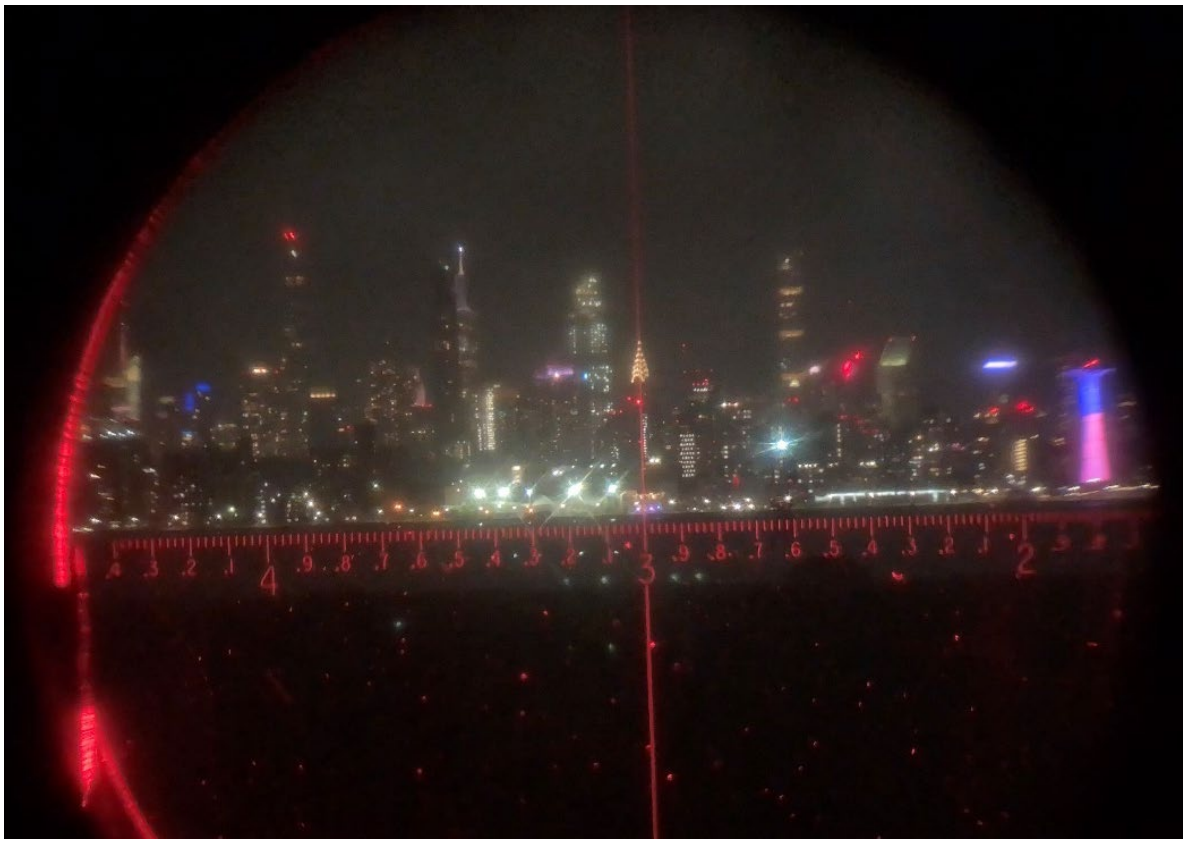
The photo below is a closeup of the BC station during a public event.

Another closer photo from a slightly different angle. From the 1910 time period through WWII the station was enclosed with a timber and steel framed unit. At some point in the future AGFA will reinstall this characteristic of the station.

Below is a view of the Coney Island, New York City Parachute tower sighted on the vertical line of the M1910A1 Azimuth Instrument's telescope. The red deflection scale with "3" as normal (zero) is illuminated by a 6 volt GE 64 bulb.



Below, the Chrysler building sighted on the vertical line looking through the M1910A1 Azimuth Instrument Telescope.



New Battery Peck

Magazine

The magazine is the largest space in the Battery and consists of the shell room (below), powder room, powder passages and the hoist areas for each gun. The shell room has about 170 Mk-35 High Explosive (inert) shells. This is a major work area for AGFA when we are not conducting living history events.

Below TSG King is seated at his work table and T-5 Morrison takes a visitor along the shell line to a munitions display on the right past the cast iron pipe threading machine.

Below is the powder room and the seaward wall powder can rack. There are about 230 cans in the rack.

Below is another view in the powder room that has two can racks and in between them are storage boxes for materials to support AGFA's work.

Below is Hoist #1 being operated by PVT LeBlanc. Notice the drill shell being lifted into the shaft.

Below CPL Bujdos is receiving the shell coming up the hoist. Notice the upper receiving table is wood. This will ultimately be rebuilt with concrete and steel as it was originally constructed.

A report on the hoist restorations can be found at http://armygroundforces.org/restoration.html .

Hoist #2 is lifting a drill shell up to the metal receiving table.

Below TSG King explains the platform light project. To the left is the hoist for Gun #2. This hoist was restored in 2005. The handle is turned inward when not in use to avoid people hitting it as they pass by.

New Battery Peck

Machine Shop/Tool Room

The machine shop is situated in what would have been a tool room. In 2013 we determined we needed the capability to machine items for restoration projects. T-3 Komorowski designed the shop and placed all but one machine into the shop. The first machine on the left is an 1941 Atlas Model 7B and then a Delta Drill Press from 1951 that was originally used at Fort Hancock by the Air Force.

Another view of the machine shop from the tool board end. From left to right is a 1938 "Champion" grinder made for Sears, Roebuck & Co; a 1941 Atlas Lathe Model 10F; and a 1943 Atlas Model MFB end mill machine.

Below T-3 Komorowski uses the Atlas Shaping Machine to cut steel.

T-3 Komorowski continues his work as CPL Bujdos gets a tool from the tool board.