Naval Unit 1D
East Point, Nahant, Massachusetts, in World War Two 1942-1945

Gerald W. Butler

In 1940, before the United States entered World War II, modern, fixed underwater defenses were planned for Boston Harbor, under the code name "Plan 04 - Rainbow." The only active underwater-detection device then readily available was the magnetic indicator loop.

In July 1941, the chief of naval operations recommended loops be established in strategic New England harbors. Boston Harbor was to receive four magnetic loops, 14 sono-radio buoys, and 10 army hydrophones. The loops and sono-radio buoys were to be equally divided between two shore installations on either side of the harbor entrance - Nahant or Marblehead for the northern station and Point Allerton, Hull, or North Scituate for the southern station. By October, East Point, Nahant; and Strawberry Point in North Scituate had been selected.

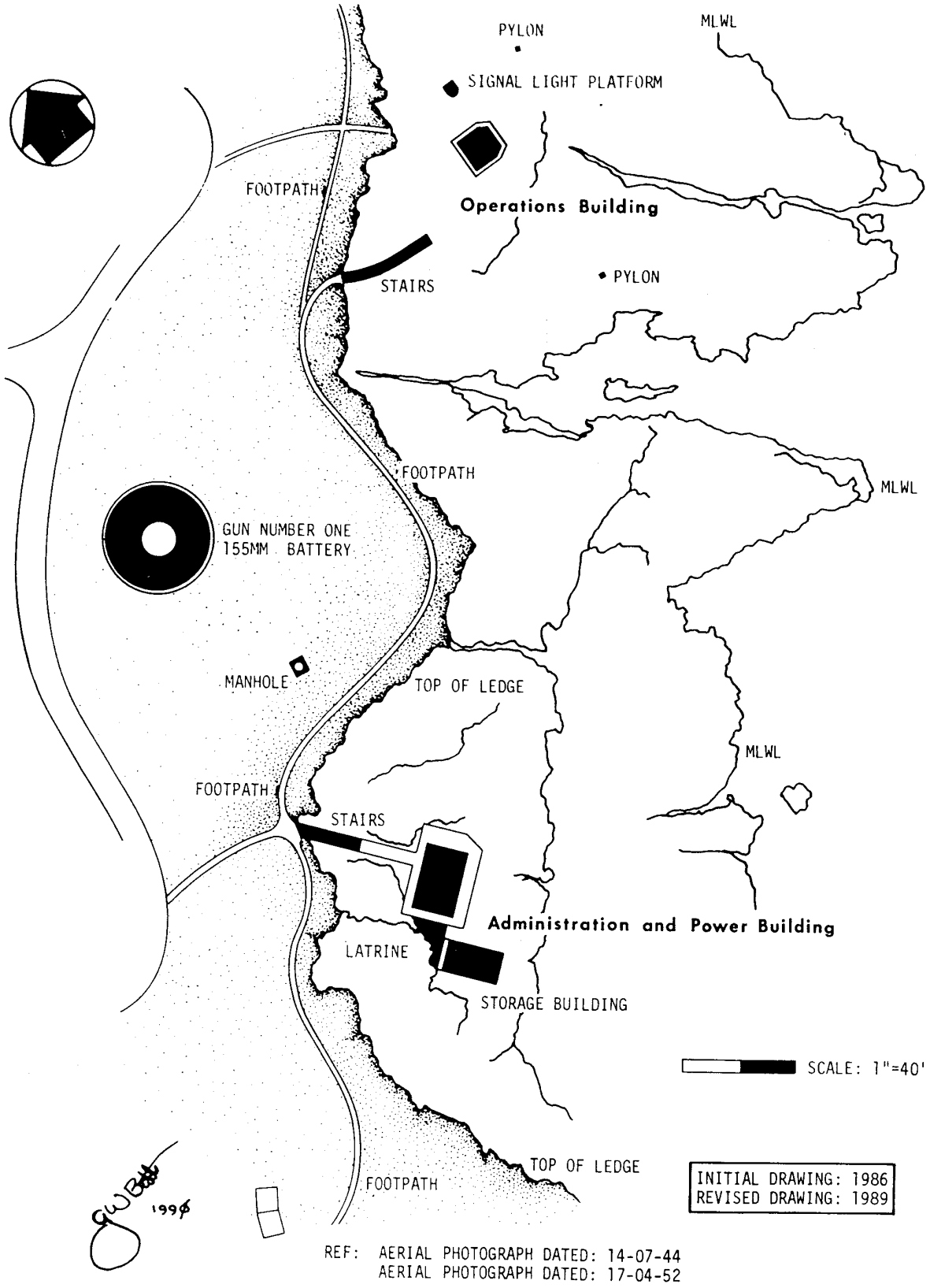
Professor Alexander Crichton Mitchell, a physicist and director of the Eskdalemuir Magnetical Observatory in Scotland, initially researched magnetic indicator loops in 1914. The magnetic indicator loop consisted of armored cables forming a large loop on the seabed, connected to a shore station equipped with precise electronic recording devices. The loop detected any distortions in the earth's magnetic field caused by a metal body passing over it. Chart paper at the shore station recorded the signature of a passing vessel, making a visual record while sounding an audible alarm. The first wartime use of the indicator loop, on October 28, 1918, at Scapa Flow, resulted in the sinking of German submarine *UB-116* after she crossed a seabed loop into a remotely controlled mine field. The first American experimentation with loops took place during World War I at Fort Story, Cape Henry, VA, under direction of the Coast Artillery and Signal Corps of the U.S. Army.

Sono-radio buoys operated on a different, but complementary, principle. The JM-4 sono-radio buoy was a battery operated transmitter anchored offshore. It picked up and transmitted underwater sounds, using an FM radio transmitter in the 70-90 mHz range, with a power output of 6-8 Watts, sufficient to provide a range up to 15 miles. Power was supplied by two batteries, 7.5 Volts and 300 Volts, in a steel drum, which was in an anchored battery raft. The hydrophone was suspended below the battery at a depth of approximately 60 feet, while the transmitter was connected to the battery raft. A weight kept the transmitter buoy upright, and the antenna was clamped to its top.

Ashore, two models of sono-radio receivers were used. RBF-1 contained up to 10 rack-mounted radio receiver units, each tuned to a different frequency, corresponding to the frequency of a different offshore sono-radio buoy. An automatic switching unit scanned the buoys in a predetermined sequence, connecting the antenna and audio amplifier to each receiver unit in turn, for two to ten seconds. Any one of the receiver/buoy combinations could also be selected manually. The RBF-3 was an improved version of the RBF-1, using a receiver and a tuner mounted side-by-side in a cabinet. Like the RBF-1, the RBF-3 could scan all the buoys automatically, or it could be tuned to any specific buoy.(*CEE*)

A classified letter, October 1, 1941, fully described the Nahant station, including the loops and the support equipment required to operate, test, and maintain the system for East Point. The station was to consist of one building to house an emergency generating plant, another to house the sound-detection and operating equipment, a 25-foot radio mast, and a barracks for navy personnel.

Authorization to establish the naval shore station at Nahant was requested December 24, 1941, and on January 3, 1942, Maj. Gen. Thomas A. Terry (known to his subordinates as "Terrible Tommy



The magnetic loop system operated from the Nahant magnetic loop station. *Author*

Terry"), U.S. Army, approved the project. The naval shore stations in Boston Harbor were to operate in conjunction with the proposed harbor entrance control post (HECP) to be established at Fort Dawes in Winthrop, one of the first joint service operations of World War II.

Construction

Hardly a week after construction was authorized, Richard White & Sons of West Newton, MA, (now Richard White Sons, Auburndale) was approved as prime contractor for the Nahant and Scituate naval stations. On February 26, the contractor received permission to operate on the army reservation, and soon began construction.

Edmond White, in 1942 the 15-year-old son of Richard White, distinctly remembers wooden concrete forms fabricated in the company garage next to his home in West Newton. During inclement weather, workers used the garage to expedite construction. The wooden form sections were transported to the East Point construction site, fastened together, and the new navy building began to take form quickly.

The navy urged speed, as enemy submarines were an immediate threat. On March 5, 1942, a German U-boat was sighted 20 miles east of Boston, and on March 30 one was sighted 10 miles southeast of Minot's Ledge Lighthouse. In both cases, navy and coast guard patrol craft dropped depth charges with unknown results.

Enemy submarines were not the navy's only problem, especially at the Nahant Naval Station: at 5:00 in the afternoon on April 22, 1942, an army superintendent (presumably for the Corps of Engineers) at Nahant sternly informed the contractor that "he could not return to do any future work on the Lodge estate project."*(RGP)*

Top vew of the second-series operations building at East Point, Nahant. *Author*

Second-series administration and power building at East Point, Nahant. *Author*

The workers and supervisors were understandably shocked. After notifying Boston Naval District Headquarters, the contractor could do no more than await further orders. A naval officer queried army personnel at East Point about who might be responsible for the decision. The quick reply was that work had been stopped "because the Navy had built structures without the approval of the Army."*(RGP)*

Three days later, the U.S. Army District Engineer in Boston held an emergency conference concerning the Nahant naval station. Modifications and allowances were made, resulting in the demolition and removal of the 10-foot emergency power station from the bluff and cancellation of construction of the proposed six-man wooden barracks. Naval personnel would be quartered at Fort Ruckman and transported to the East Point station as required. The new operations building would be reduced from a spacious 20 by 24-foot type-A building to a mere 14-foot-square structure. The administration and power building would be enlarged from 10 by 12 feet to 12 by 22 feet, to provide a standby rest area for two men.

New plans were issued to the contractor and construction resumed immediately. While the East Point naval facilities were being repositioned, the magnetic indicator loop cables were being surveyed and planned.

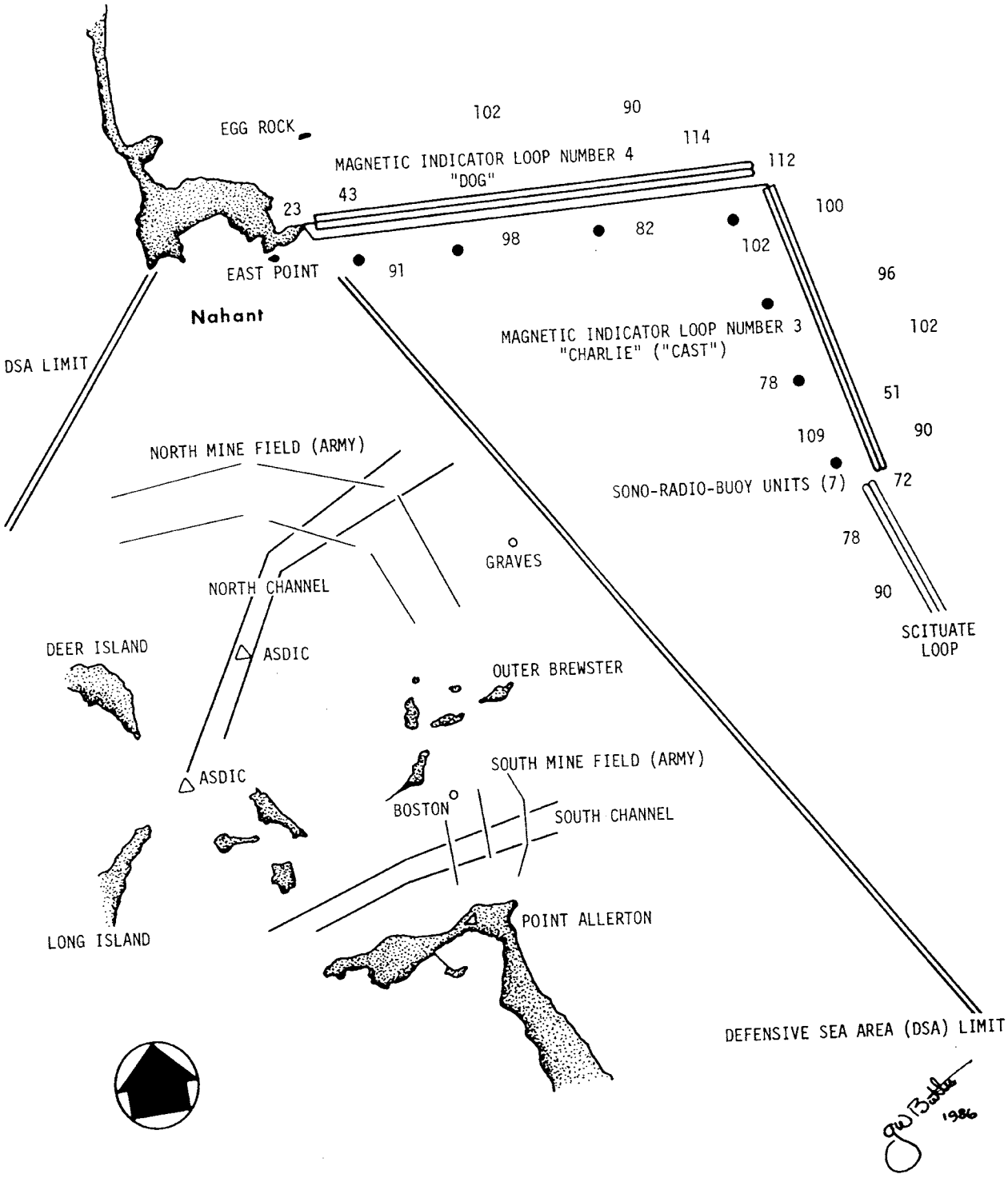
The Magnetic Indicator Loop

In early 1942, before the loops from Nahant and Scituate could be placed, the navy had to find a suitable seabed location. A naval vessel equipped with sounding gear was dispatched to chart contours on the ocean floor, painstakingly plotting locations and depths for the three long legs in each loop. Before the sea cables were planted the landline or tail end of the cable had to be laid.

At East Point, the navy chose Lodge Beach, near Bennett's Head, with its sides protected by ledge and rocks. The tail-loop cables were brought from Lodge Beach up the earthen bluff and securely anchored in the field. This project not only involved navy personnel on site but army enlisted men and an army bulldozer to dig a large trench to anchor the tail-loop cables.

At that point, two separate cables traversed the field up and down the rocky hillock, around the army's No. 2 155 mm Panama mount gun position and down the cliff area to the operations building, a most circuitous but necessary route. Navy personnel buried the cable as deeply as possible, but solid ledge interfered with the cable routing and depth. At the cliff and bare rock area overlooking the operations building, the cables were gently nestled into existing rock fissures and covered with concrete and mortar for protection. Final connection into the operations building was not completed until the sea cables of the magnetic loops for the Nahant station were planted and tested.

The U.S. Coast Guard cable ship *Pequot* (WARC-58) laid the cable, assisted by both army and navy personnel at East Point. *Pequot* was originally the U.S. Army mine planter *General Samuel M. Mills*, laid down in 1908 and launched February 13, 1909. In 1922, she was transferred to the U.S.

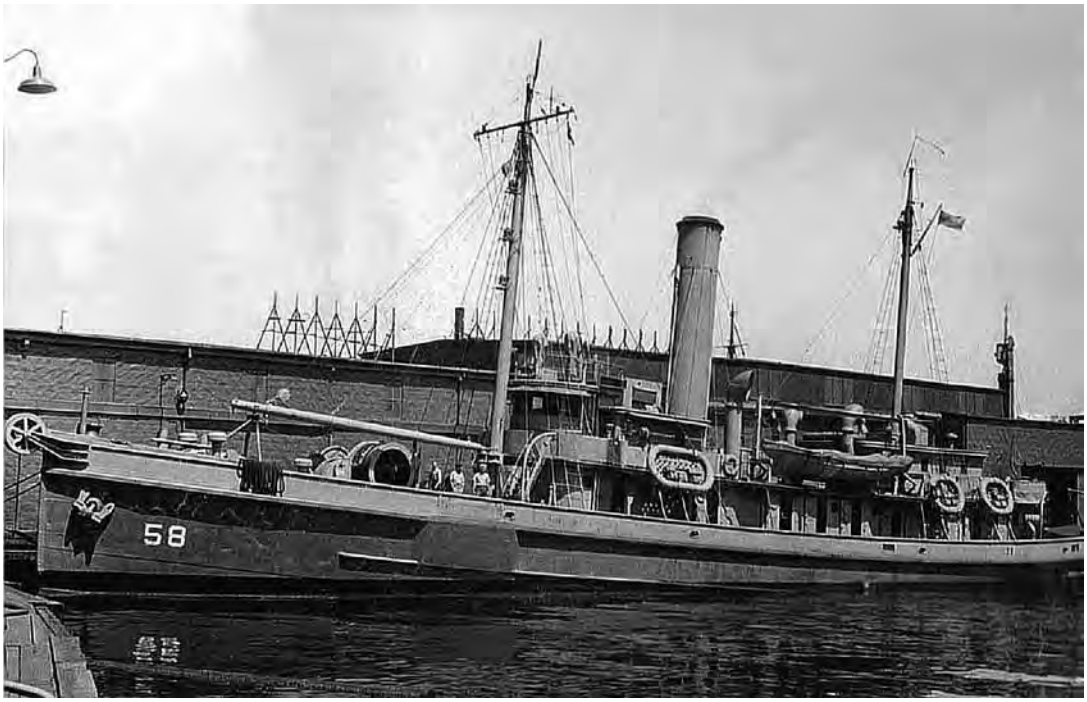


Plan of the navy magnetic loop station at East Point, Nahant. *Author*

Aerial view of *USCG Cable Ship Pequot (WARC-58),* circa 1940. *Chip Calamaio*

Coast Guard and modified to be a cable laying and repair craft. Named for a Connecticut Indian tribe, *Pequot* was 166 feet long with a beam of 32 feet.

The highly maneuverable twin-screw craft maintained a wartime crew of six officers and 63 enlisted men. By Executive Order 8929, November 1, 1941, the U.S. Coast Guard was placed under the secretary of the navy, to operate as a part of the navy. Accordingly, *Pequot* was assigned permanent cable duty out of New London, CT, taking station at Boston Naval Base for the duration. On January 1, 1946, the US Coast Guard was returned to the Department of the Treasury, under Executive Order 9666. *Pequot* was decommissioned on December 8, 1946, and sold for scrap on September 5, 1947. During World War II, *Pequot* was under the able command of Capt. Lars Anton Sande.



Pequot at East Boston, following hull modifications, May 1944. *Chip Calamaio*

Coast guard personnel erected a temporary shore station to the rear of the operations building, consisting of a powerful telescope, communications radio, and a tent to cover the personnel and equipment. In conjunction with the survey vessel, the shore station began to chart the proposed seabed loop area. On the survey vessel, a recording fathometer, or depth finder, measured the "hills and valleys" of the seabed while the temporary station at Nahant insured accurate locations.

When the survey data had been compiled, and charts were drawn up reflecting the seabed configuration, naval officers planned the final loop location. The identical procedure was then repeated for the southern segment of the magnetic loops at Strawberry Point, in North Scituate.

After approval, the *Pequot* was readied. The loop cable, after being removed from massive wooden spools, was stored in a circular configuration in the forward hold with much manual labor and effort. Loading the heavy cable into the hold by an overhead block and pulley system required every sailor, including the cook and galley crew on *Pequot*. At varying intervals, wooden beams were placed between layers so the cable rested properly without shifting during transport or twisting when paid-out.

Pequot crew members preparing cable in the forward cable hold. *Michael Luongo*

The submarine cable used for the Nahant magnetic loops was type 101 - a single copper wire protected by layers of rubber insulation, rubber tape, a rubber jacket, more rubber tape, and an wound-steel armored jacket, all covered with two layers of treated jute. During manufacture the cable was also coated with asphalt and tar to resist salt-water corrosion.(NSR)

The center leg of the first loop cable, plotted by *Pequot*, was preceded by the survey vessel and carefully observed by the Nahant shore station. The launch from *Pequot*, containing the range markers for the center leg of the loop, was lowered and began placing the markers. This was exacting, physically demanding work as the buoys were large and cumbersome.

A tall, secondary static range marker, mounted on wooden poles, was placed at Lodge Beach to indicate where the cable would arrive from seawards. Once the range markers were in place and anchored by chain and concrete anchors, known as "clumps" to the sailors, the exterior legs of the loop cable were marked.

Two sailors pushing off launch from *Pequot* preparing to pay out loop marker buoys. *Michael Luongo*

Pequot then began to lay the cable. A large winch, provided with a six-foot drum and a brake, was used to pay-out and take-in cable as required. Running the heavy cable was an orchestration of teamwork requiring endless drills for the navy personnel. It was exhausting and exacting labor by the crew, while splicing and planting the cables took considerable time. To splice and waterproof a magnetic loop cable could take hours.

Pequot edged in dangerously close to Lodge Beach at high tide while the ship's launch was used to position and drag the cables from the cable ship to shore. Quartermaster Lou Carhart, later stated, "Sometimes I'd be at the wheel and we'd put the ship's bow in so close to the shore that there was land all around us and I could hardly see the ocean at all, especially behind me. We'd bring the bow in so close it was almost stuck in the sand."

Under the direct and strict supervision of Captain Sande, the cable was paid-out from the hold via an overhead block and through a large roller assembly mounted in the bow. Once ashore, army personnel with an army bulldozer dug a trench and the cable was coiled, anchored, and buried above Lodge Beach. This anchor cable loop remains in place today, albeit stripped and rusted.

Seaman 1st Class Mike Luongo, left, and Gunner's Mate Roger "Guns" Calamaio, ca. 1943. *Chip Calamaio*

Simultaneously, *Pequot* backed out and began laying the first loop cable. As the heavy magnetic loop cable paid-out from *Pequot*, great care was exercised to maintain proper tension, with the perfect balance of slack. *Pequot* slowly paid out cable along the plotted loop positions to allow slackness, which allowed the cable to conform to the contour of the seabed.

This extremely sensitive operation required intense concentration of all personnel aboard the cable-laying vessel. If the cables were paid out too quickly with too much tension, they could be suspended between high spots of the harbor bottom or seabed. This would cause unsupported "catenaries" that would create perturbations when the magnetic loops began operating, and so were to be avoided.

During the entire surveying and planting operation, and subsequent repairs, an armed USCG patrol boat circled *Pequot* and the survey vessel to insure that German submarines would not be tempted to sink the craft. Additional USCG electricians were brought aboard during the cable-laying operations for immediate cable repair work and splicing if required.

Once the cables were laid and re-plotted by the naval shore station, the sea cables were connected to the tail loops at Lodge Beach and to the operations building. Personnel from the Naval Radio Material Office (NRMO) performed conductivity and fault tests, and immediately pronounced the cables ready to be connected to the shore installation's instrumentation, much to the delight of both the entire *Pequot* crew and the shore personnel. Loops 3 and 4, Boston Harbor, were assigned to the Nahant Loop Receiving Station and designated "C" and "D," respectively. Loop 3 ("C") had a 4.5-mile tail loop but the loop proper was 3 miles long. Loop 4 ("D") had a tail loop less than 0.3 mile long and the loop proper was 4.5 miles long. The loop configuration was that of an elongated rectangle with the tail loop centered within.

Shore equipment at the terminus of the cables consisted of a flux meter, an input-balance circuit, and a variable-frequency-effect amplifier for each of the two loop units. All appliances were contained within the operations building at the Nahant station.

A *Pequot* officer, two mascots, and a portion of crew, in a rare moment of relaxation. *Michael Luongo*

Operations Building

The new structure, now more seaward than originally planned, was to lie near Roaring Cavern, facing the rock and ledge area on East Point proper. Loose ledge was removed by blasting and foundation footings were set. A raised foundation shoulder held the structure while the sensitive fluxmeters sat on a separate vibration-free reinforced-concrete block, mounted into bedrock.

The station that emerged consisted of a low-level, reinforced-concrete building, roughly 14-foot square and 10 feet, 3 inches high, with one angular, three-sided face, strategically set into rock outcrops. A wooden door on the southern side of the building provided the only access.

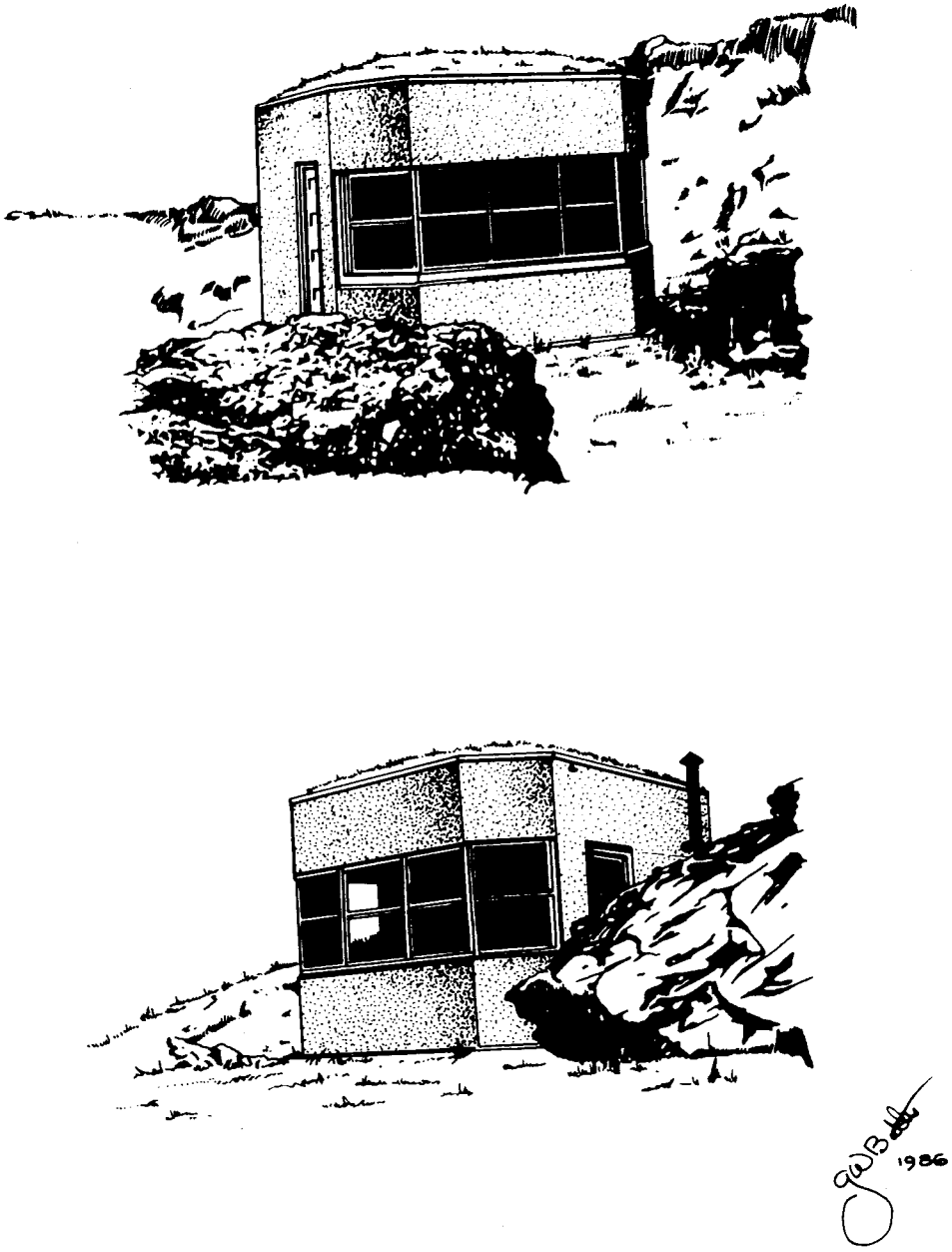
Both ends of the loop entered the station's foundation and connected to their respective instruments. Inside, equipment included a "radiotelephone transmitter, radio receivers, shortwave transmitter and receiver," converter, test equipment, heater, water cooler, tables, and chairs. Between the fluxmeters was a powerful tracking telescope.

Manned by army and navy personnel, the HECP was the joint-service command post for the Boston Harbor Defense Command. Boston's surveillance, illumination, detection, and all weaponry were directed from this reinforced-concrete structure. Located at the highest point at Fort Dawes on Deer Island, Winthrop, the facility was in constant communication with all army and navy elements in the harbor defense. Although it may have seemed strange to the army, the navy's primary means of communications with the HECP was by semaphore signal flags or a 12-inch signal searchlight. The signal light was a standard naval blinker, mounted on a semicircular concrete platform next to and above the roofline of the operations building. Messages could thus be sent to warships in the harbor and other nearby naval locations. Short-wave radios with a 25-foot folding radio mast provided a secondary means of communication.

Construction of the Nahant Operations Building was approved on May 16, 1941, but formal completion and transfer to the navy did not occur until June 20, 1942. After final testing and calibration, tactical operation began at 7:00 p.m. on June 22.

In addition to being a magnetic indicator loop station, the building also served as a sono-radio-buoy receiving station working in conjunction with Naval Unit 1-C at Strawberry Point in North Scituate. Designated Naval Unit 1-D, Nahant's naval unit's primary responsibility "was to detect the approach and give the location of enemy sea craft, surface or submerged."(RGP)

Interior of typical navy magnetic loop operations building showing instrumentation and devices. *Author*

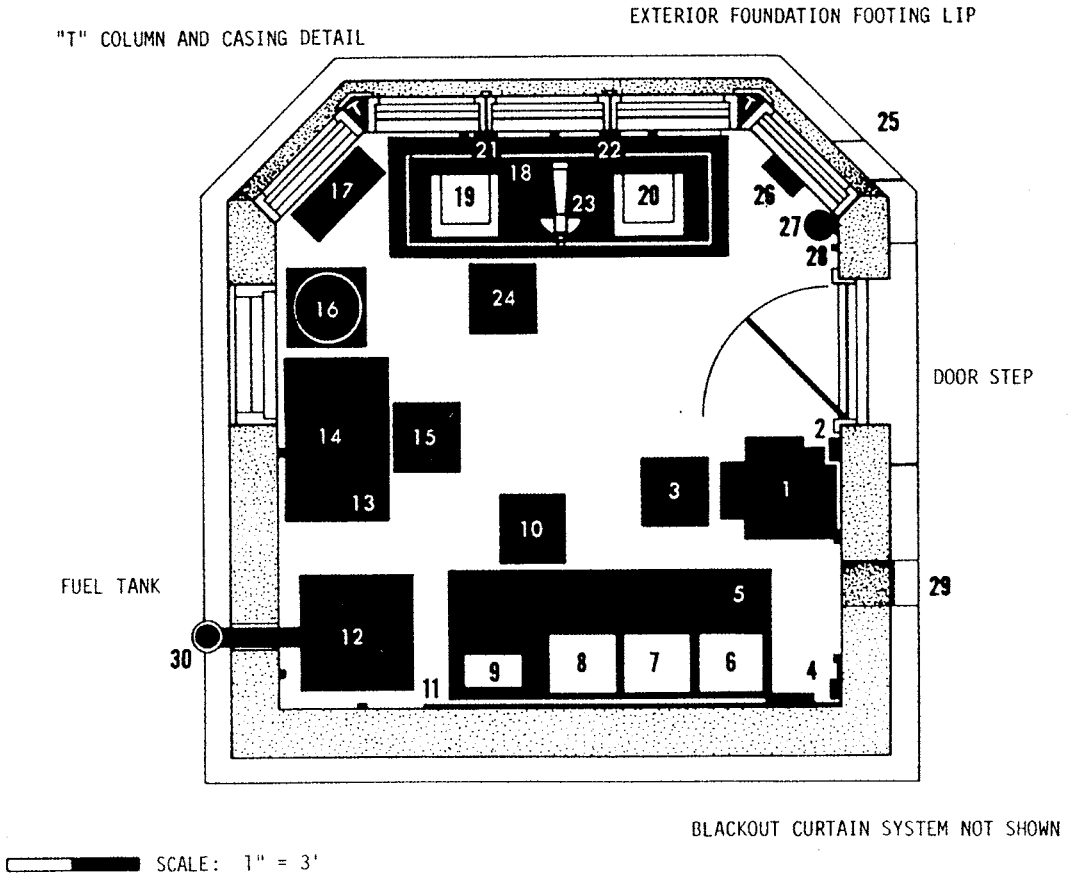


Front views of Nahant operations building in 1943. *Author*

The Sono-Radio Buoy System

With the operations building completed, the navy staff worked quickly to adapt the crowded structure to house highly restricted equipment for the sono-radio-buoy system. The modifications required were minor but consumed space. The initial equipment scheduled to be installed at the station was the Model RBF-1. With wartime scarcity, however, the equipment originally installed at the Nahant station was a Hallicrafters S-27 radio receiver, though that was soon replaced by the correct equipment.

The first JM-4 sono-radio buoy controlled from the Nahant station began operating July 3, 1942. This unit and subsequent buoys placed inboard of the magnetic indicator loop sent information identifying areas of the loop that had been crossed, as well as direction, speed, and type of vessel that had



OPERATIONS BUILDING EQUIPMENT LISTING

1. SONO-RADIO-BUOY SET (RBF-1)
2. FUSE AND SWITCH PANEL BOX
3. CHAIR, STRAIGHTBACK
4. MAIN SWITCH AND FUSE PANEL BOX
5. TABLE
6. COMMUNICATIONS SYSTEM
7. SONO-RADIO-BUOY RECEIVER
8. RADIO RECEIVER
9. TRANS CONTROL BOX
10. CHAIR, STRAIGHTBACK
11. BOARD
12. HEATER
13. TABLE
14. RADIO TRANSMITTER
15. CHAIR, STRAIGHTBACK
16. WATER COOLER
17. ARMS RACK
18. CABINET (BLOCK BELOW)
19. FLUXMETER (RECORDER BELOW)
20. FLUXMETER (RECORDER BELOW)
21. RESISTANCE BALANCE BOX
22. RESISTANCE BALANCE BOX
23. TELESCOPE
24. CHAIR, STRAIGHTBACK
25. CABLE ENTRANCE APERTURES
26. BINOCULAR SHELF
27. FIRE EXTINGUISHER
28. LIGHT SWITCH
29. INLET APERTURE
30. FLUE AND CHIMNEY STACK

Interior of Nahant Operations Building in 1943. *Author*

been detected. From early spring until the system was closed down, seven of these buoys were operated from Nahant.(RGP)

The operator, termed a "watchstander," had headphones, but speakers were also installed in the building so he could move about freely while on duty. Plans provided for nearly any known or anticipated situation. Two naval watchstanders were on duty in the operations building at all times. Per naval regulations, one man constantly monitored the visual recorder chart and the other monitored the sono-radio-buoy receiver. The period of duty was one hour, after which the log entries were made and the watchstanders changed positions.

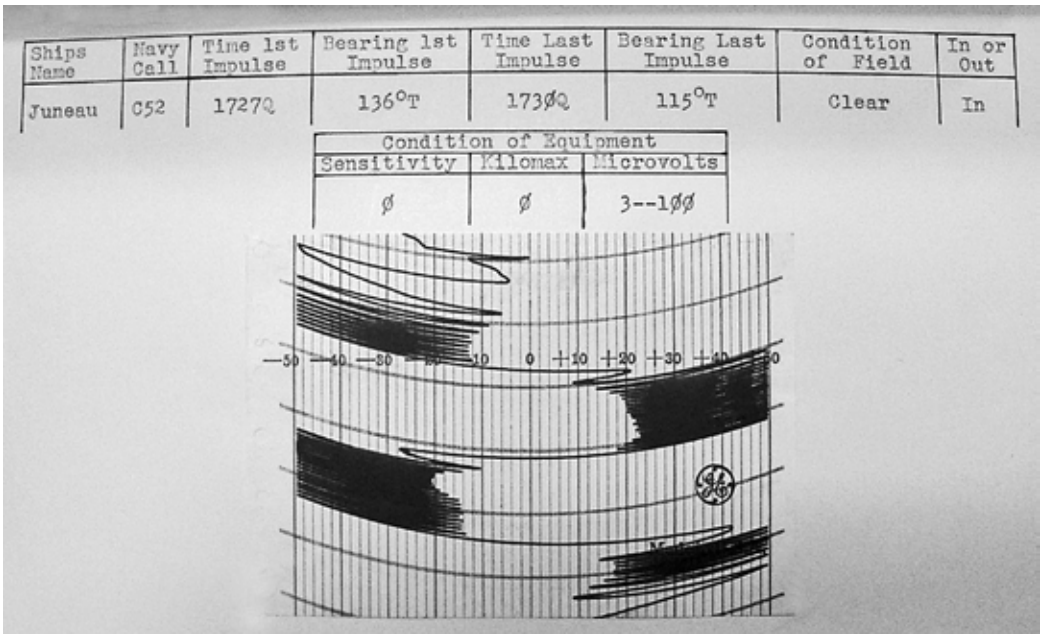
The duty officer in the operations building evaluated all information gathered by instruments and operators. All loop crossings or sono-radio-buoy contacts were immediately reported to the HECP.

Administration and Power Building

Having finished the operations building, the civilian contractor used all means available to complete the second, larger, administration and power building. Sited a short distance to the rear of the operations building, this reinforced-concrete structure was set into the ledge near Cauldron Cliff.

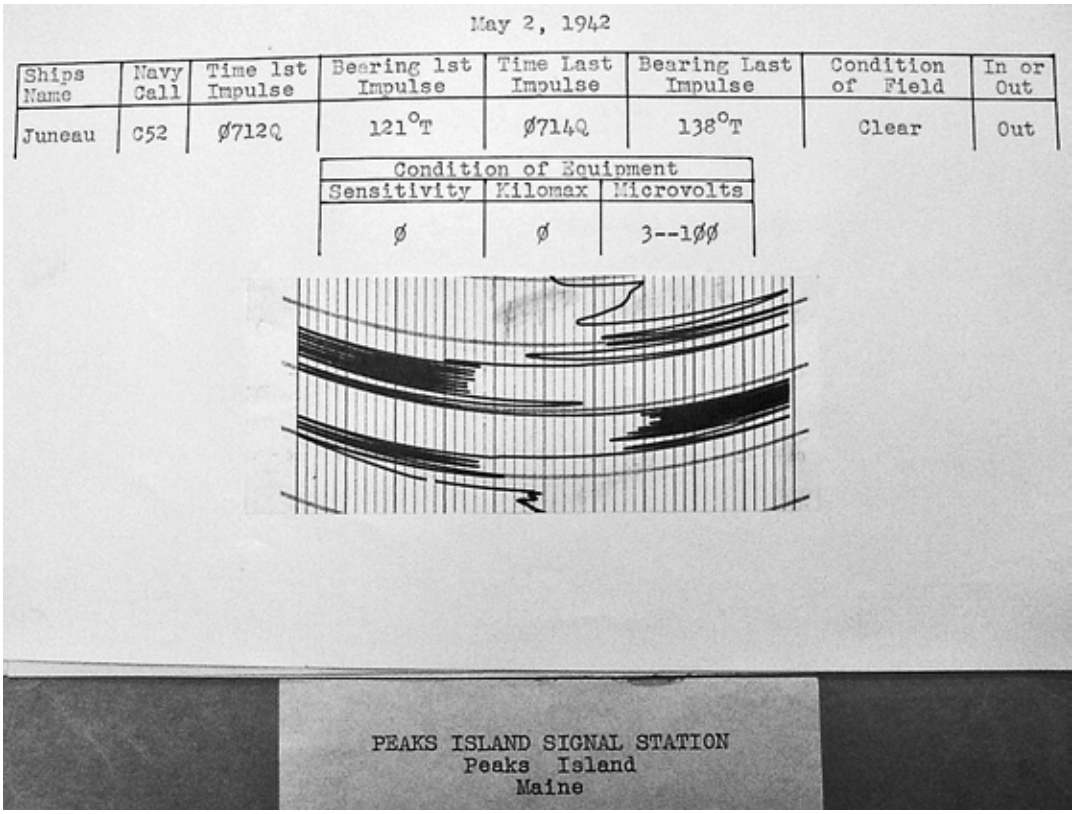
Concrete steps, platforms, and steel safety rails led from the bluff to a walkway that completely surrounded the station. A wooden door opened in the northerly face of the administration building, and wooden double doors in the southern face led into the power room. The building was 22 feet long

Interior of operations building showing fluxmeter block and floor ridge, circa 2011. *Carole McCauley*



Ships Name	Navy Call	Time 1st Impulse	Bearing 1st Impulse	Time Last Impulse	Bearing Last Impulse	Condition of Field	In or Out
Juneau	C52	1727Q	136°T	173ØQ	115°T	Clear	In

Condition of Equipment		
Sensitivity	Kilomax	Microvolts
Ø	Ø	3--1ØØ



May 2, 1942

Ships Name	Navy Call	Time 1st Impulse	Bearing 1st Impulse	Time Last Impulse	Bearing Last Impulse	Condition of Field	In or Out
Juneau	C52	Ø712Q	121°T	Ø714Q	138°T	Clear	Out

Condition of Equipment		
Sensitivity	Kilomax	Microvolts
Ø	Ø	3--1ØØ

PEAKS ISLAND SIGNAL STATION
Peaks Island
Maine

Magnetic indicator fluxmeter loop charts dated May 2, 1942, showing "signature" of USS *Juneau, CL-52,* an Atlanta-class cruiser, as she passed over the loop at the U.S. Navy Peaks Island Magnetic Loop Station, Portland, ME, similar to the Nahant facility. The top chart shows the cruiser entering port while the bottom shows departure. *Loop chart from Waltham, MA, NARA, researched by Martin Dwyer; enhanced by Chip Calamaio, December 2011*

Operations building, circa 2011. *Alanna May Butler*

by 14 feet wide by 9 feet, 7 inches high. The design and materials matched those of the operations building.

The administration room was 12 feet square, with two windows. It contained all the equipment and appliances the naval unit at Nahant required, including chairs, tables, cabinets, desks, telephone, typewriter, small electric range, refrigerator, coffee urn, electric toaster, and double-bunk arrangement fitted with privacy curtains.

The power room was 12 feet long, 7 feet, 8 inches wide, and unlike the operations building or administration room, it had a solid concrete floor. A double door allowed entry, a louvered window ventilated the engine and generator, and one window was set into the eastern wall.

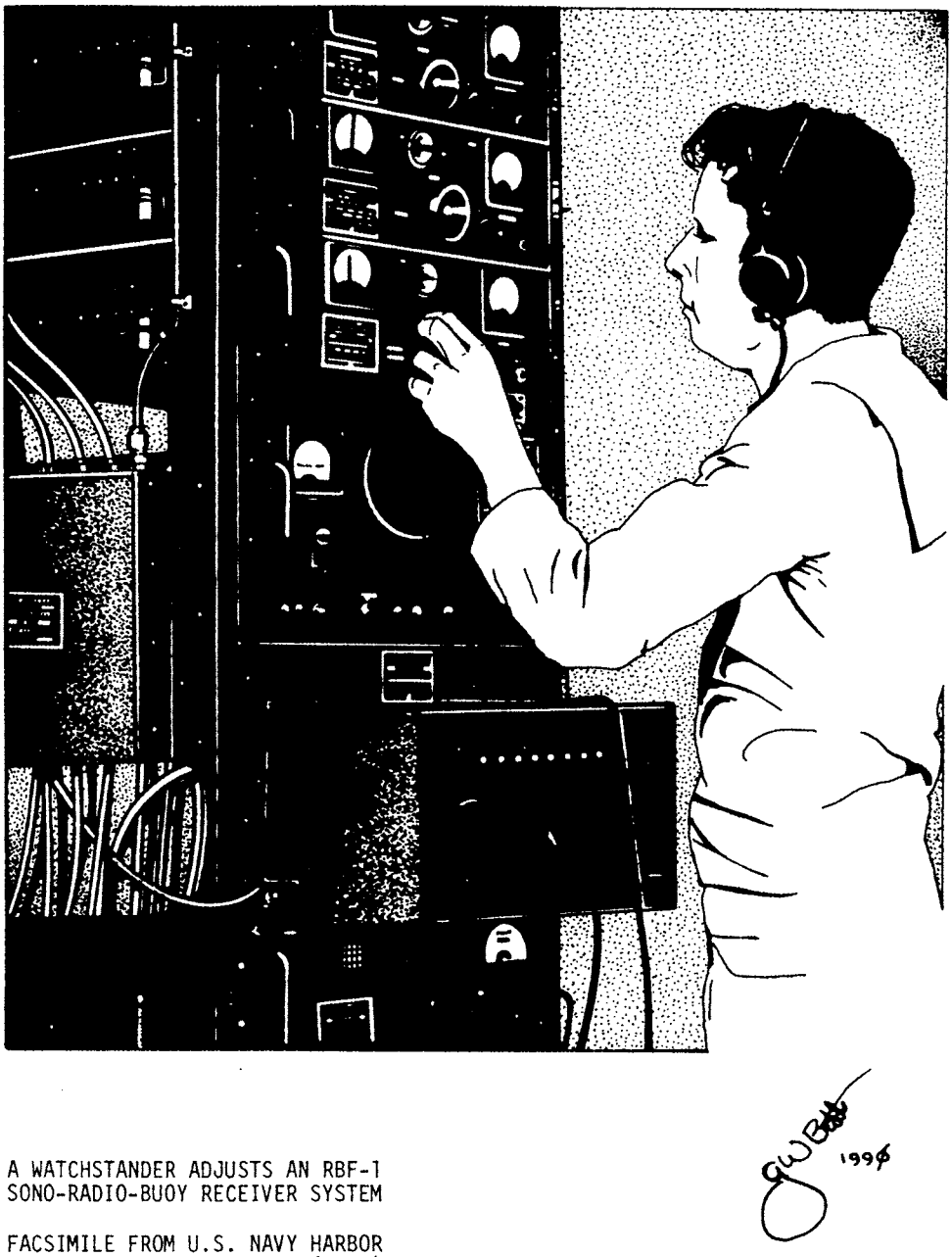
The power plant consisted of a gasoline-powered engine and alternator rated at 110 volts with a 12.5 to 15 KVA capacity. All switching, controlling, and cable systems were incorporated into the power plant, including an automatic transfer switch to shift from commercial power to emergency power. A small oil-burning furnace in the power room heated the main building. Four cast radiators were secured to the floor, three in the administration room and one in the power room. The administrative and power building was completed and transferred July 17, 1942.

Manning

Ensign Perry, USNR, and six enlisted naval personnel reported to the Nahant Naval Station June 9, 1942. One of the original crew manning the Nahant station was Seaman 1C Alfred Joseph LeBlanc, who provided information about selection and training of personnel for loop-station duty.(RGP)

Like many others, Seaman LeBlanc volunteered for the "special radio training" that the First Naval District in Boston offered to qualified and selected personnel. Upon acceptance, candidates were subjected to rigorous security investigation, followed by a four-week special harbor defense training school at the Boston Naval Shipyard. After completing the required classes all successful personnel were transferred to the U.S. Navy Training School at Fort H.G. Wright, on Fishers Island, NY, in Long Island Sound. Following a 12-week intensive course on theory, operation, and maintenance of the magnetic-indicator loop and sono-radio-buoy systems, the personnel returned to Boston for reassignment.

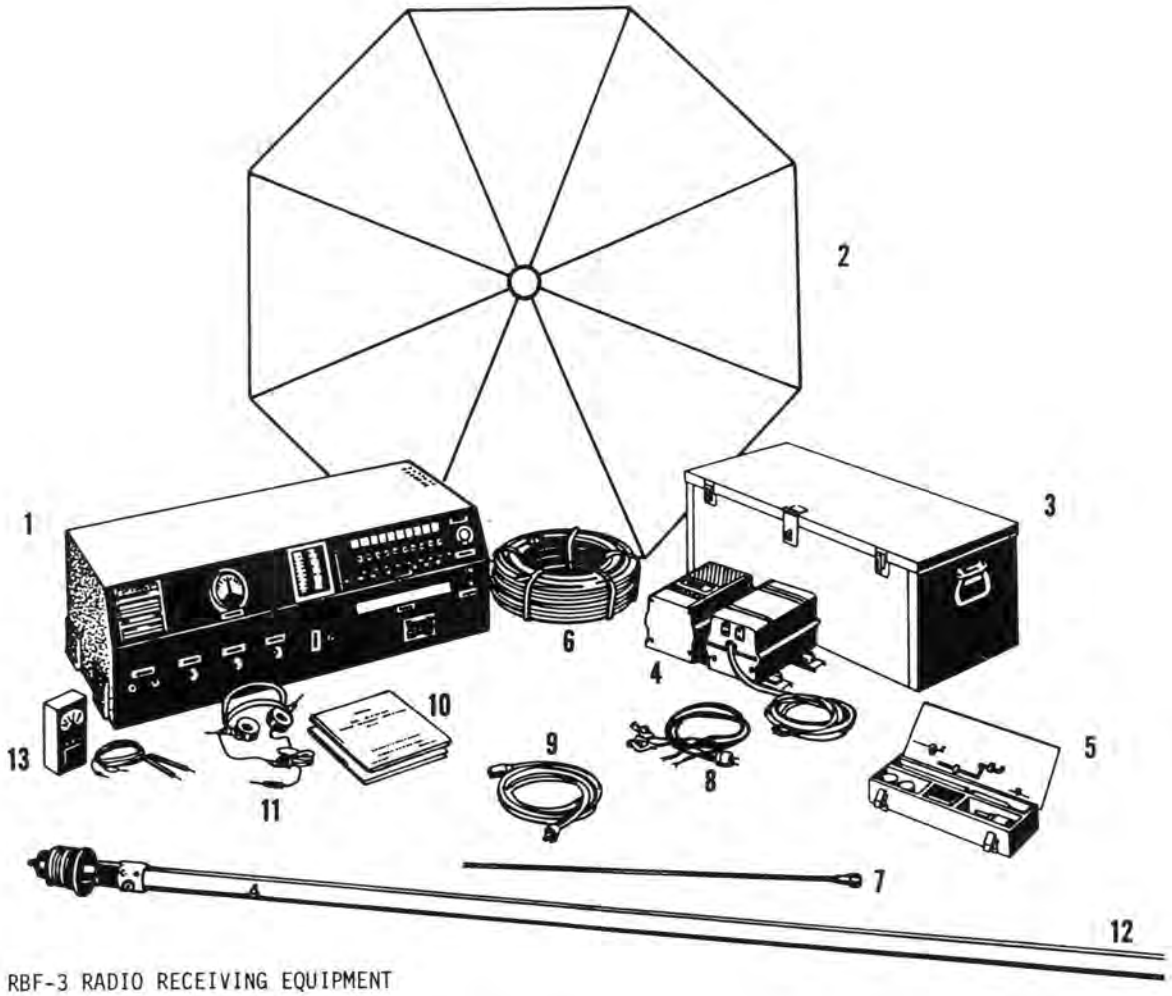
Most of the personnel assigned to the Nahant station resided in Boston, South Boston, Chelsea, and Lynn. Beyond normal duty hours and drills, most elected to live at home when transportation



A WATCHSTANDER ADJUSTS AN RBF-1
SONO-RADIO-BUOY RECEIVER SYSTEM

FACSIMILE FROM U.S. NAVY HARBOR
DEFENSE OPERATION MANUAL (OP-1)
DATED: 01011946 P49 R (DECLASS)

Naval watchstander adjusting RBF-1 radio-sono-buoy receiver panel board. *Author*



Components of RBF-3 sono-radio receiver installed at the Nahant site in 1943. *Author*

Storage building foundation viewed from side of administration and power building. *Tara Maureen Butler*

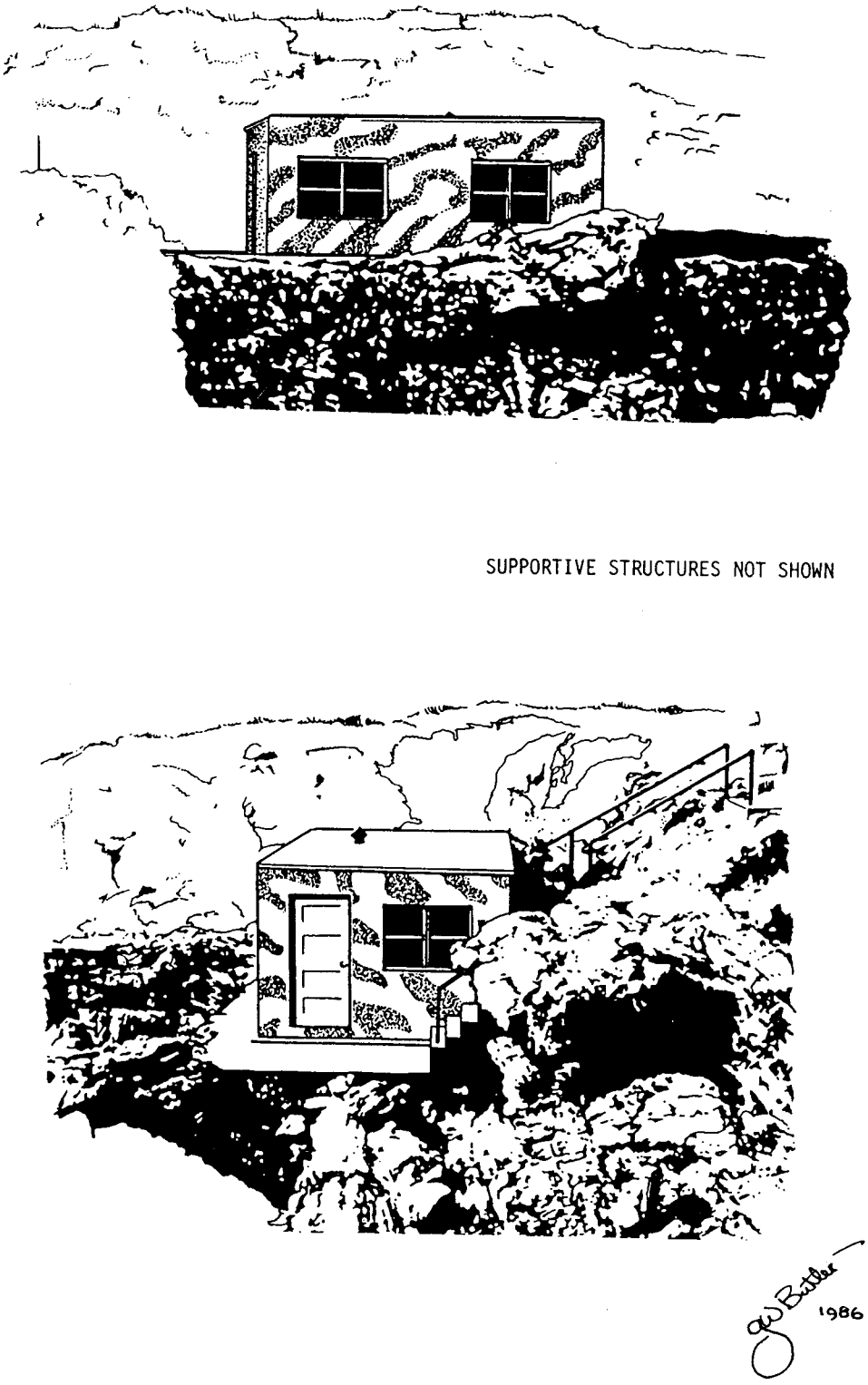
could be arranged. Quarters were provided for the naval personnel at the Lynn YMCA, at that time on Market Street, in nearby Lynn.

Upon arrival at the Nahant station, the new naval personnel assisted the civilian labor force to finish the operations building and establish the magnetic indicator loop. Much of the work that the small garrison performed involved trenching the landline end of the loop cable. After completion, an armed guard patrolled the landline and building areas day and night. In a very short time the naval station was operating smoothly, but the detection apparatus had not yet been completely installed or tested.

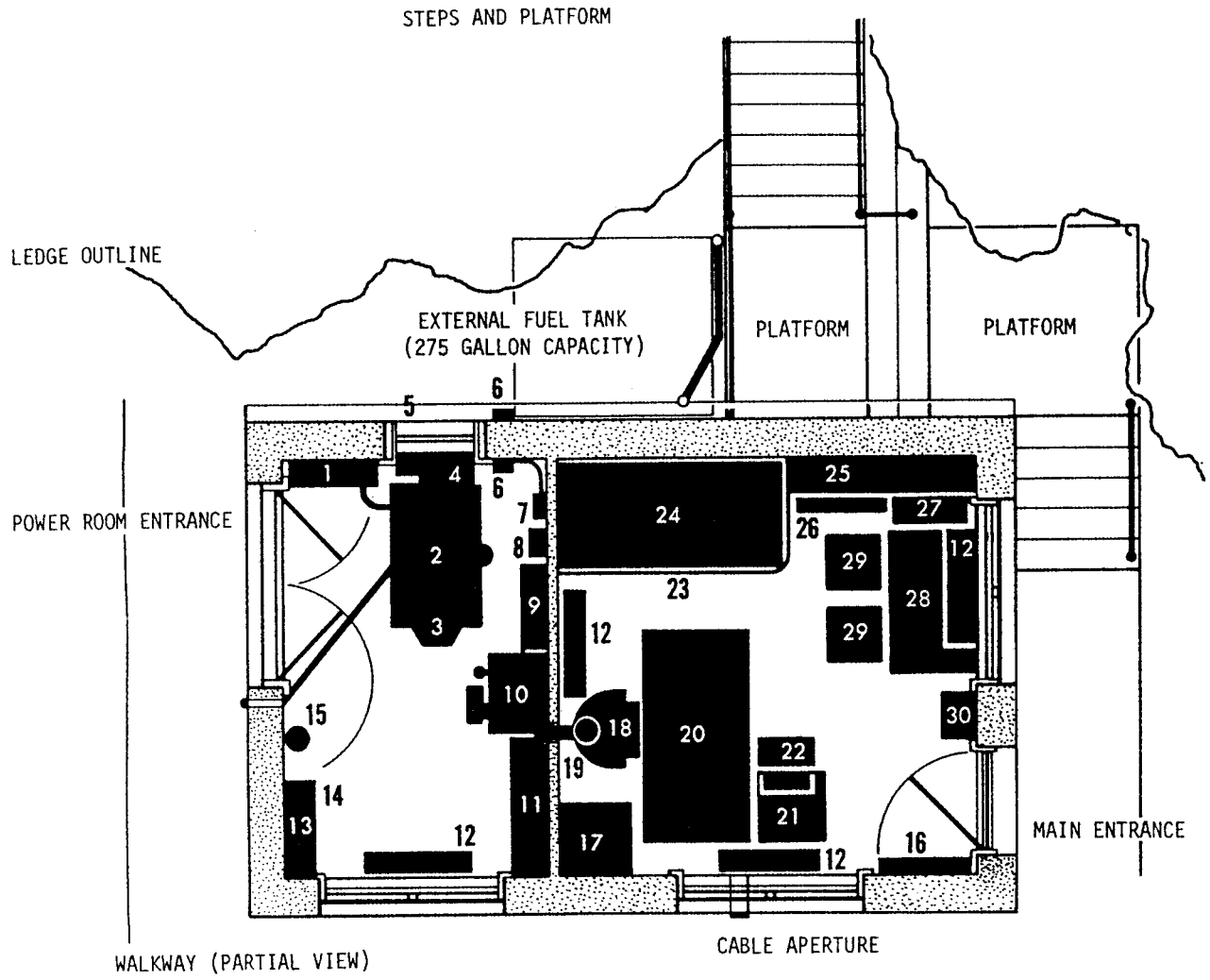
Passive-defense measures, including camouflage, were now added. The operations building was spray-painted with sand tones and rock colors; the administration and power building was camouflaged with color and the rear segment was blended into the adjacent rock strata. The forward, exposed segment was disguised with a cleverly constructed imitation rock and ledge stratum made of concrete and mortar, which still survives.

On the seaward side of the buildings, holes were drilled in ledges and fissures for metal rods to string barbed wire. Today only the rusted bases of the rods remain. Provisions were made to include eyelets drilled and fastened into adjacent ledge to stretch netting to cover both building areas. The netting was not installed, however, as the camouflage measures in place were deemed adequate.

Drills and unannounced inspections were common at the naval site. Coast guard and navy warships, both surface and submarine, constantly tested the cables and loops. Constant practice enabled the watchstanders to identify specific warships or commercial vessels around the Port of Boston, including fishing craft, by their electronic signatures. Watches at the Nahant Naval Station were divided into four six-hour segments within a 24-hour period, with one enlisted seaman in control of each watch.



Exterior views of the administration and power building, circa 1943. *Author*



ADMINISTRATION AND POWER BUILDING EQUIPMENT LISTING

POWER ROOM	ADMINISTRATION ROOM
1. STORAGE BATTERY	16. ARMS RACK
2. GASOLINE ENGINE	17. FILE AND SAFE
3. ALTERNATOR	18. CHAIR, SWIVEL
4. RADIATOR	19. FLUE AND CHIMNEY (ABOVE)
5. LOUVERED WINDOW	20. DESK
6. JUNCTION BOX	21. TABLE, TYPEWRITER
7. MAIN SWITCH BOX	22. CHAIR, STRAIGHTBACK
8. MAIN FUSE BOX	23. CURTAIN ENCLOSURE (BUNK)
9. TOOL AND EQUIPMENT STORAGE	24. BUNK BED
10. OIL BURNING FURNACE	25. SHELVING
11. SHELVING	26. ELECTRIC RANGE
12. RADIATOR (HEAT)	27. ELECTRIC REFRIGERATOR
13. SHELVING	28. TABLE
14. COAT AND EQUIPMENT RACK	29. CHAIR, STRAIGHTBACK
15. FIRE EXTINGUISHER	30. SHELVING (TABLE BELOW)

Plan of administration and power building, circa 1943. *Author*

Re-creation of cartoon sign for the naval station at Nahant, circa 1942-1945. *Author*

For the eastern seaboard, June was an exceptionally tense month. Numerous sightings of enemy submarines and saboteur landings were reported, and a submarine crossed over a loop cable in Casco Bay, ME. Unfortunately, it escaped as the cable failed to register it on the way out.

On June 11, 1942, German mines were sown off Boston by *U-87.* The U-boat was carrying TMC mines, an acoustic/magnetic type that rested on the seabed and contained over 2,000 lbs. of high explosive. Each mine was 11 feet long and 21 inches in diameter, resembling an elongated pill. Originally scheduled to carry ten mines to sow off New York, due to diplomatic shipping in process, the submarine's objective was changed to Boston Harbor.

According to the war diary (KTB) of *U-87*, six TMC mines, set for 60 days, were sown off the northern approach to Boston Harbor in 20-30 meters of water. From 8:00 PM on June 11 through 8:00 AM on June 12, *U-87* was only six nautical miles off Nahant. Kapitanleutnant Joachim Berger noted in his log that at 2:15 AM, "the city of Boston is hardly darkened. The beacons burn as in peace-

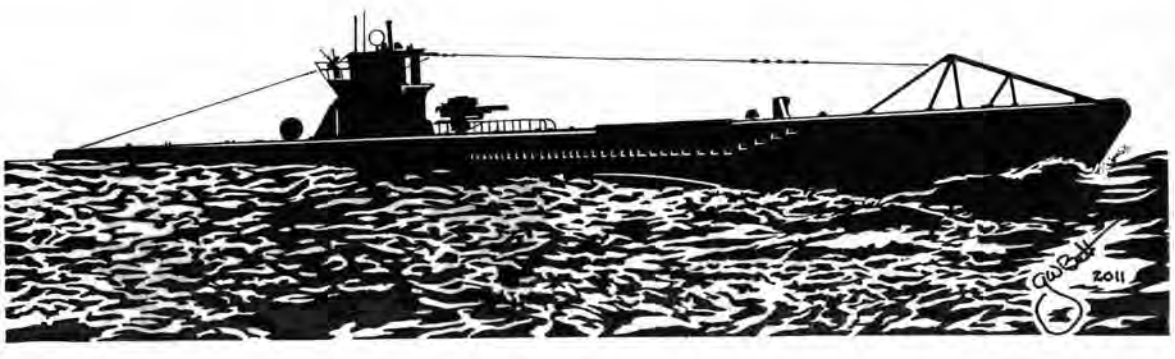
time." Additionally, "I intend to lay 4 mines off the north part of the northeast entrance, 2 mines off the east part."(KTB)

On June 13, four enemy agents from *U-202* landed at Amagansett, Long Island, NY, and four days later, four saboteurs were landed by *U-584* at Ponte Vedra Beach, FL. On June 16, two ships in Convoy XB-25 were sunk northeast of Cape Cod by *U-87*, including the *Port Nicholson,* purportedly carrying 71 tons of platinum ingots, gold, and industrial grade diamonds from Russia.

Despite the new submarine detection systems in place at Nahant and Scituate, an incident took place within the Port of Boston on June 25, 1942, involving the Nahant and Strawberry Point Magnetic Loop Stations and the HECP. Col. Gilroy F. Linehan, former commanding officer of Nahant and Boston's tactical north shore defenses, described the following incident:(GFL)

> A signal was reported by the loop station. The watch officer alerted the Coast Guard inshore patrol, which soon reported no surface vessels in the area. It was late at night and searchlights swept the area. Nothing could be seen. Shortly afterward, the mine hydrophones from the Fort Warren Mine Casemate on George's Island picked up a strange signal. The watch officers on duty quickly checked with the Eastern Sea Frontier to see if any of our submarines were operating in the area.
>
> The answer was negative. The mine casemate at Fort Warren then reported the arming of a mine. The cautious watch officers delayed firing the mine, not wishing to blow some friendly fishing vessel to Kingdom Come. A short time later, a signal appeared on the mine casemate panel indicating that the mine which had armed had grounded.
>
> By that I mean that sea water had entered the case and electrically grounded out the firing circuit. A tense alert condition continued throughout the night, but no further signals were noted. In the early morning, a mine battery L boat raised the mine and replaced it with another. When it was examined on shore by our people and Army Intelligence, the spherical case was found to have two curved gashes in it. Adhering to the cuts were particles of brass, and all concerned believed that an underwater craft had struck it and caused the grounding. We missed what was probably our only chance during the war to take action against the enemy. This incident was never made public. Except for the HECP personnel and very few others no one knew the full story of that alert.

The incident locked down Boston Harbor for three days and nights. In a 1968 telephone conversation, Col. Albert Crawford, the army officer on duty at the HECP, verified the incident, including placing the mines on "Set 1," which registered on the mine panel board but did not activate the mine. In a 1979 letter to the author, the U.S. Navy Historical Office denied the incident, asserting that no enemy craft ever gained access to the Port of Boston.



German submarine *U-87,* Type VII-B, circa 1942. *Author*

Nonetheless, one navy war diary recorded:

25 June 1942: "PC-487 investigated loop signatures, Nahant, Deer Island and Strawberry Point. Submarine was believed to have gone down N. Channel and out Nantasket Roads. No contact of any kind was made. The port was closed when the signatures were reported."(WDI)

PC-487 was a 173-foot, steel-hulled patrol craft built by Consolidated Shipbuilding Corporation in New York, designed for anti-submarine warfare, and for coastal and convoy patrol duty. Armed with two 3-inch guns, two 20 mm antiaircraft guns, and two stern-mounted depth charge racks, she was assigned to Boston for shakedown and training until July 5, 1942.

In aggregate, June was perhaps the most notable month at the Nahant station, the Harbor Defenses of Boston, and the eastern seaboard. Naval intelligence informed local commanders that enemy agents or sympathizers had been helping U-boats in this area by radioing ship departures from Boston, and that boat-owners had rendezvoused with U-boats at sea providing fuel, oil, and provisions. Naval watchstanders and patrols were to note suspicious civilian boats and individuals and keep a log to be reported to naval intelligence in Boston.

The German Navy planned to mine various harbors on the eastern seaboard including Boston and Chesapeake Bay. German forces planted two types of mines: torpedo-tube launched types TMB and TMC, and type SMA, laid by especially designed mine-laying submarines.

On July 3, 1942, while en route to sow mines off Boston harbor, the German mine-laying submarine *U-215* attacked and sank the U.S. liberty ship *Alexander Macomb*. HMS *Le Tigre*, escorting *Macomb's* convoy, attacked with depth charges and sank *U-215* approximately 200 miles east of Boston in Canadian waters.

On August 1 the Nahant naval complement was increased to 12 men. This staffing remained in effect for the next two years. One of the new sailors was Seaman John Peter Lovenbury, who remained at the station through 1944. A partial list of other known naval personnel at the Nahant site at that time included Andrew F. Coffey, James F. Donovan, Irving Katz, and Alfred J. LeBlanc. All the new personnel assigned to the Nahant station went through the same training that Seaman LeBlanc underwent previously. In the following month, five sono-radio buoys were operating from the Nahant operations building.

During the remainder of the summer, navy personnel constructed a metal fence with standard railings and a concrete walkway between the operations building and the administration and power building. Despite a strict military environment, morale was high and a relaxed atmosphere prevailed.

In response to complaints from army personnel and to attend for the sailors' personal needs, a small concrete "head," or latrine, was constructed outside and to the rear of the administration and power building. It was completed and transferred to the navy on September 29.

To supplement the shore station installations in the harbor, an open, gasoline-powered buoy boat or launch similar to that of the *Pequot*, or an army "M" boat, was docked at Tudor Wharf and used to perform repairs, general maintenance, and replacement of sono-radio buoys that failed.

On February 1, 1943, Ensign Perry relinquished command of the Nahant station to Lt. J.C. Gamble, USNR, but Lieutenant Gamble was transferred on May 26 and Ensign Perry once again assumed command.

During duty hours, naval personnel performed a number of maintenance and housekeeping duties. Maintenance on the electronic systems was constant, including taking their small boat from the Nahant wharf and inspecting the sono-radio buoys in the water. "Housekeeping," also called fatigue duty, included cutting grass along the path between the two naval buildings, cleaning windows, spot-painting, insuring the camouflage paint was not fading, sweeping the stairs, cleaning the buildings,

Army "M boat" launch similar to one operated by Nahant's naval unit, circa 1943. *Author*

and maintaining the conductivity of the buried loop cables.

Between September 1943 and March 1944, no fewer than three submarine mine alerts were sounded by the HECP at Fort Dawes. All alerts activated every shore, sea, and air arm around Boston Harbor. Upon investigation, the navy found that the sensitive mines had grounded during exceptionally stormy seas, or strong tides, activating a warning alarm at both the mine casemate and HECP. During the three mine alerts, the loop station at Nahant received no signature or unknown disturbance over or near the loops.

In 1943, a new, compact RBF-3 receiver for the sono-radio-buoy system was installed at the Nahant station. Simultaneously, the need for storage at East Point became acute. A building or an annex for the operations building was requested on October 20, 1943, because new equipment was soon to be installed and no room was available. Nevertheless, the proposal was withdrawn when it was found that the interior heating unit could be installed in an exterior, protected shelter, freeing floor space for the new detection equipment.

However, storage remained a problem. Late in 1943, the navy requested a storage building, "to house additional underwater detection equipment." This request was approved and with assistance from the Boston Naval Shipyard, a new wooden one-story building, 20 feet long and 10 feet wide, was built ingeniously between the ledge and the power room, next to the latrine. Only its foundation remains.

One frigid night before the storage building was completed, an alarm was called by the operations building. The sono-radio buoys were mysteriously being silenced, one after another. The magnetic indicator loops, though, registered no disturbance. Despite deplorable cold and icing, the HECP alerted

the Harbor Defenses of Boston. Patrol vessels sped to the area in question, only to find that the sono-radio transmitter buoys had iced up so thoroughly that they were top heavy, and were lying on their sides, their antennas grounded in seawater. In the morning, the Nahant sailors removed the ice and the buoys operated normally once again.(RGP)

The cables required maintenance and repair at varying intervals. *Pequot* would retrieve the cable from the seabed assisted by the motor launch. The damaged cable area was brought into the launch, spliced, repaired, and tested.

Later, one crewmember mentioned, "How tense it was when they were setting dead in the water while the crew, often in a small launch, completed the tedious job of splicing and water sealing those cables."

In February 1944, all naval stations on the eastern seaboard were placed on high alert. A naval intelligence letter warned, "A robot attack against the Eastern Seaboard is imminent and an emergency exists." The concern centered on the German V-1 "buzz bomb," and possible attempts to launch them at American cities from submarines, surface ships, or even airplanes. This threat, which did not directly involve the Nahant station, never materialized, but Boston Harbor maintained high alert for the remainder of the war, in consideration of intelligence transmitted by agents in occupied Europe.

On March 21, 1944, now-Lieutenant Perry relinquished command of the Nahant station to Lt. M. Preston, USNR, who remained in charge until the site closed.

During this period, the threat of full-scale, unlimited submarine warfare against the American coastline had lessened, but another sinister form of undersea warfare renewed the menace. Full-sized German submarines ferried "sneak-craft," or midget submarines, across the Atlantic Ocean and released them outside the limits of detection near a vital harbor.

A late-winter 1944 incident, known as the "attack on Portsmouth Harbor," awakened navy and army observers to utmost vigilance. Underwater hydrophones detected strange noises from somewhere near the antisubmarine nets guarding the Portsmouth, NH, harbor. Divers discovered a miniature German submarine lying on its side, slowly drifting with the tide. Defective ventilation had asphyxiated the submarine's operator, and the machine continued on course toward Portsmouth Harbor. Held at bay by the steel antisubmarine netting, its batteries drained, and when the tide ebbed, the craft slid and rolled on the seabed, causing the weird scraping noises heard by the hydrophone operators.

The German Molch (Salamander)-class midget submarine was 35 feet long with a beam of 6 feet

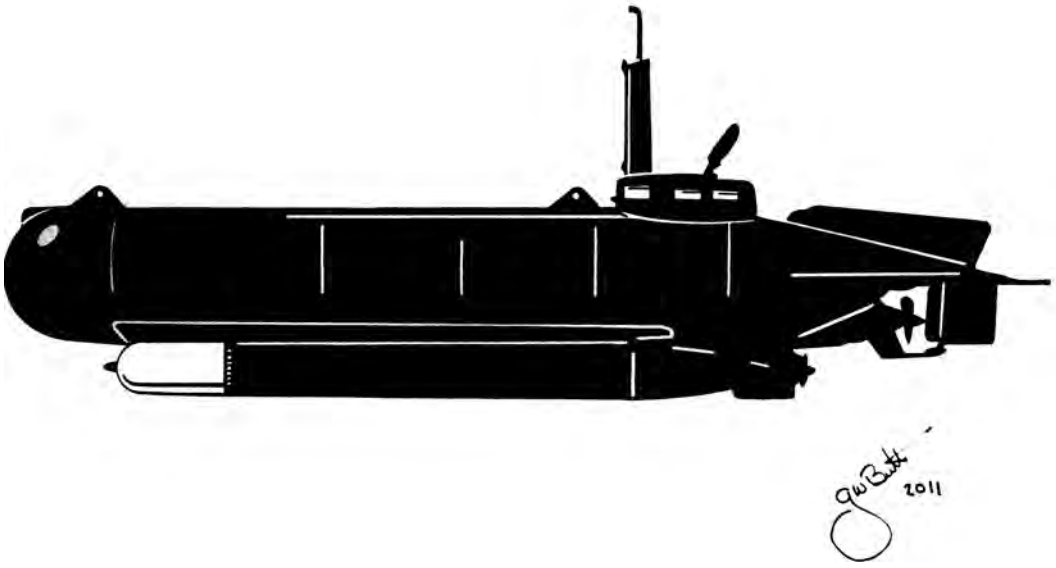
Operations building to left. At time of publishing, this is the only known image of this structure.
Bolling Smith Collection

Enlisted sailors relaxing at the Nahant administration and power building, circa 1944. *Author*

and carried a solitary crewman with elementary controls. A plexiglass cupola incorporated a periscope that could be rotated 30 degrees on either side. It was armed with two underslung G7e full-sized torpedoes, and could cruise up to 50 NM at a submerged speed of five knots. A total of 393 Molch midget submarines were built; the first was delivered in June 1944. The Nahant underwater detection station suddenly became more valuable.

Six officers were assigned to the Nahant station in April 1944, but by June only two remained. The officer complement fluctuated between one and three in June through the end of the war. In May, additional personnel expanded the complement to 21 enlisted men for training purposes. One month later, though, the enlisted strength had been reduced to seven.

April 1944 marked the solitary instance of action at the Nahant Naval Station. On the morning of April 26, a fire broke out in an army structure near the naval station, but by 10:20 it had been extinguished. It was noted in the station log and in a note to the former naval watch commander, Seaman John Lovenbury. The note, entitled, "Valiant sailors risk their lives for the Army," stated, in part, "We



A side view of a German Molch *(*Salamander*)*-class midget submarine. *Author*

handled the situation with such quickness and finesse that the army stood back in astonishment as we placed the fire under our control with our equipment."(SCJ)

In May, Seaman Lovenbury, watch commander for Watch 4, married Hilma Virginia Bragdon in a candlelight ceremony in nearby Swampscott. Attending were all the off-duty personnel from the Nahant Naval Station. The wedding and group photograph represent the sole image of a major segment of personnel assigned to Nahant Naval Station during World War II.

Meanwhile, Germany developed even more secret weapons. The Luftwaffe devised a long-range aircraft that could fly to the United States, drop its bomb load and safely return. Although the Nazi scheme now seems somewhat far-fetched, the "America Bomber" was credible enough to keep observers alert and awake days and nights. It became the first priority of both military and civilian observers on duty throughout the eastern seaboard, especially New York, Philadelphia, and Boston.

The last alert for the Nahant Naval Unit took place on Christmas day, 1944, when naval intelligence warned that all New England naval stations were "to be in readiness for any emergencies that might arise due to definite enemy action off the coast of Newfoundland." Personnel remained at battle stations most of Christmas day and evening, the alert not terminating until shortly after midnight. Seaman LeBlanc later commented, "It was the longest and perhaps the most boring Christmas any of the navy crew had to endure. Most of us just wanted to be home with our families."

Seaman John P. Lovenbury, right, with his new bride, Hilma Virginia Lovenbury, nee Bragdon, in Swampscott, MA, on their wedding day, May 14, 1944. The bride's sister, Barbara Ann Bragdon, is in the company of Seaman Robert Soles, left, another of the Nahant Naval Station personnel. *Susan C. Johnson*

A severe storm struck the New England coast on February 2, 1945. Very high seas pounded East Point, extensively damaging installations and effectively destroying the wooden storage building. Despite the wind and sea both above and below the surface, the loop cables survived the storm. During the ferocious storm, the naval facilities were boarded up with wood and the naval staff sought haven in the army headquarters building.

Repairs were necessary after the storm abated, but the naval station was soon operational. This was not the only storm to batter the naval station during its operation.

On September 9, 1944, and September 12, 1945, hurricanes smashed powerful waves against the station and its facilities, causing minor damage. Following the September 1945 storm, repairs were not made, as the site was scheduled for closure.

Closure

Operations at the East Point Naval Station ended at 8:00 AM, May 29, 1945. The station remained partially active but with wartime urgency removed, operations consisted mostly of training and caretaking.(RGP)

On October 29, 1945, a confidential letter from the commander, Northern Group, informed the commandant, First Naval District, that the Nahant station was to be decommissioned. Equipment and appliances were dismantled and removed from the station and on November 1, U.S. Naval Unit 1-D at Nahant was officially decommissioned.

By November 14, all equipment had been removed. A large navy mobile crane removed the heavy engine and generator from the station and took leave of the army garrison at East Point by accidentally pulling down the overhead power lines on Nahant Road leading into the reservation. Seaman LeBlanc remembered the incident vividly and always smiles when recalling it.

The last item removed from the navy site was the wooden frame that displayed the cartoon likeness of Popeye as a watchstander at Nahant Naval Unit 1-D. The frame, painted black on the seaward side for camouflage, brandished a full color depiction of Popeye affixed to the railing above the administration and power building.

The wooden sign was carefully removed from the rails and put into the back seat of the navy station wagon. Its location is presently unknown; the illustration of the sign in this work is based on discussions with Seaman LeBlanc. Windows at both buildings were covered with wooden boards and painted grey while the openings for the cable and wiring were treated with heavy cosmoline for protection against the elements and animal life.

When the navy concluded it no longer required the two buildings, it notified the army that they were available. In mid-December 1945, the commanding officer, Harbor Defenses of Boston, informed the commandant, First Naval District, that the army could not use the structures and that they should be removed from East Point. The wartime inter-service cooperation may have faded with peacetime. In any rate, the naval structures were not removed and were allowed to deteriorate for years.

Acknowledgements

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Dr. Richard R. Walding, Queensland, Australia, is one of the foremost historians of American, British, and Australian magnetic loop systems. (For more information on magnetic indicator loops and photographs please refer to his website: http://indcatorloops.com)

Photographic assistance was rendered by the author's daughters - Heather Ann Butler-Cook, Tara Maureen Butler, Alanna May Butler - and granddaughters, Emily and Sarah Cook.

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Susan C. Johnson, daughter of Seaman John P. Lovenbury who was stationed at the Nahant Naval Station from 1942 to 1944, shared personal papers and photographs for this document.

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