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NEW LONDON LEDGE LIGHTHOUSE HAER No. CT-172
Long Island Sound, East of main harbor channel
New London
New London County
Connecticut

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, P.A. 19106

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HISTORIC AMERICAN ENGINEERING RECORD

NEW LONDON LEDGE LIGHTHOUSE

HAER No. CT-172

Location: Long Island Sound, East of main harbor channel, New London, New London County, Connecticut

USGS New London CT Quadrangle
Universal Transverse Mercator Coordinates: 18.74465.4576600

Engineer/Architect: U.S. Lighthouse Board

Fabricator: Hamilton R. Douglass Company, New Jersey Foundry and Machine Company

Date of Construction: 1906–1909

Present Owner: United States Coast Guard
Aid to Navigation Team
120 Woodward Avenue
New Haven, CT 06512

Present Use: Active navigational aid

Significance: New London Ledge Lighthouse, built 1906–1909, is a rare example of a turn-of-the-century, water-bound lighthouse with a masonry, domestic design. While most contemporary lighthouses were constructed with pre-fabricated cast-iron, New London Ledge Lighthouse reflects an earlier period of construction with use of a heavy, more difficult to construct masonry structural system. Elements of newer building materials and methods are exhibited in the lighthouse's steel and concrete floor construction. The lighthouse has additional significance as an important navigational aid, marking a major hazard at the entrance to New London Harbor.

Project Information: The United States Coast Guard (USCG) proposes to install a solar power array on its New London Ledge Lighthouse. The proposed project will impact the historic and engineering integrity of this property. The lighthouse is listed in the National Register of Historic Places as part of a thematic nomination of Operating Lighthouses in the State of Connecticut. In accordance with an agreement between the United States Coast Guard and the Connecticut State Historic Preservation Office, Historic American Engineering Record documentation is to be prepared for the lighthouse prior to installation of the solar array.

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PART I DESCRIPTIVE INFORMATION

The 1985 *National Register of Historic Places Inventory—Nomination form for the New London Ledge Lighthouse* describes the structure as follows:

New London Ledge Lighthouse, built between 1906 and 1909, rises from Long Island Sound on the east side of the entrance to New London Harbor. It marks two hazards to shipping: a 200 foot long shoal and Southwest Ledge, the sharp rock ledge on which the lighthouse was built. The structure consists of a square brick dwelling with mansard roof and cylindrical lantern on a massive, square concrete base.

Standing in twenty-eight feet of water, the foundation consists of riprap-filled timber crib that measures fifty-two feet square and thirty-one feet high and is capped with a three foot layer of concrete. In 1938, the outer timber crib frame was removed and a new steel-pile perimeter boarding ledge created. A submerged riprap bulwark, eighty-two feet square and ten feet deep, forms a bulwark around the foundation. Resting on the foundation is a fifty-feet-square concrete base that rises eighteen feet above the low water line and contains a cellar space and two water cisterns. A fog siren is mounted on top of the base on the west corner.

The brick dwelling superstructure is two and one-half stories in height and measures thirty-two feet square. The half-story is contained within the mansard roof and is lighted by three pedimented dormers on each elevation. Rising from the center of the mansard roof is the upper half of the octagonal brick watch room topped by a cast iron lantern. Symmetry, altered only on the northeast elevation, where the height of the galley window sills is raised, governs the design of each elevation. All the window openings now contain four-over-four light aluminum sash, and have flat, flush granite lintels and sills, which extend beyond the jambs. Six of the windows are located on the northwest and southeast elevations. On the southwest and northeast elevations, paired windows flank both the doorways on the first story and the axial windows on the second story. The largest of the two doorways is located on the southwest elevation, facing the sound. The entrance has double-leaf, paneled wood doors with the date "1909" carved into the lintel above. On the northeast elevation is a single-leaf paneled wood door.

Blocks of smooth-faced granite are used for quoins, sills and lintels, front and rear steps, cornice, frieze, water table, and the wall facing below the water table. Some original exterior detail has been altered, including wooden dentil molding that has been removed from the cornice and the application of galvanized sheet metal on the frieze.

Walls of the octagonal watch room, contain alternating porthole windows and ventilators. A cast iron lantern gallery, surmounting the watch room and extending beyond its walls, is edged with a single pipe rail carried by plain cylindrical stanchions. Curved glass panes measuring twenty-four inches on each side are fitted in the top half of the lantern walls. The panes are separated by diagonal astragals and are set above curved cast iron plates containing ventilators of two styles. Capping the lantern is a conical roof, which is composed of eight cast iron sections and supports a spherical cast iron ventilator and lightning rod.

A center hall plan provides four rooms on the first story, four on the second, and three on the third, where an imposing double-leafed doorway leads to an unaltered room intended for equipment and supplies. The basement and first floor contain electrical equipment associated with the operation of the navigational aids. The rooms on the first floor include the galley, day room, shop, and communication room, all of which have

been extensively remodeled. Alterations to the interior, documented in plans on file at the lighthouse, have included kitchen remodeling, the installation and relocation of plumbing facilities, and the renewal of heating and lighting systems.

The second floor contains three separate spaces for living quarters, and a toilet. This floor has also been remodeled. The third floor rooms include two separate living quarters and a recreation room. These rooms are empty, but retain much of their original appearance, including wood floors and molded wood door and window trim with corner block rosettes. Cast iron stairs rise in the center hallway from the first to the third story. The stairway has cast iron balusters and cast iron newels that support a wooden handrail. The ribbed steel beam and plate construction is exposed in the ceilings. Iron ship's ladders connect the third story, watch room, and lantern. The basement stairs are also cast iron.

The structural system includes a relatively early example of slab concrete flooring. Drawings from the New Jersey Foundry and Machine Co. labeled "Second Floor Steel Plan" show that the floors are supported by steel I-beams, which are connected by tie rods between the bottom flanges. An eight-inch layer of cinder concrete fills the space between the steel beams, while a three-and-a-half-inch top layer of cinder concrete anchors wood sleepers to which the wood flooring is nailed. The basement contains the base of a central cast iron column which rises to the lantern. Unlike those in earlier lighthouses, this column has no structural function, but serves only as a channel for the clockwork mechanism weight drops. It is horizontally braced by metal beams radiating from the column out to the cellar walls.

The original fourth-order Henry LePaute Fresnel lens, operated by clockwork and rotating on ball bearings, was furnished with a 35 millimeter double-tank incandescent oil vapor lamp. The present light, installed in 1984 when the Fresnel lens was removed, is a smaller automated rotating light, flashing three white flashes and one red flash every 30 seconds. The focal plane of the light is fifty-eight feet above mean high water.

PART II HISTORICAL INFORMATION

The 1985 *National Register of Historic Places Inventory—Nomination form for the New London Ledge Lighthouse* recounts the history of the structure as follows:

New London Ledge Lighthouse, built between 1906 and 1909, is a significant landmark in the history of navigation aids in New London Harbor. It marks a major hazard at the harbor entrance and replaced the New London Harbor Lighthouse, which was constructed in 1801. In the context of the history of lighthouse architecture, New London Ledge Lighthouse represents a rare example of a turn-of-the-century water-bound, masonry structure. This type of lighthouse design flourished in the United States during the 1860s and 1870s, but was largely supplanted by cheaper and more easily erected pre-fabricated cast-iron structures. Perhaps because the Congressional appropriation for this lighthouse followed the initiation of the design process by 14 years, the design of the superstructure combines nineteenth century ideas and styles with those of the twentieth century in an unusual way. Original working drawings of the lighthouses, dated 1906, show the use of steel beams and cinder slab floor construction, an early use of this technology in the United States.

Temporary lighted navigational aids were constructed in the American Colonies as early as the first half of the seventeenth century. The first permanent lighthouse was built on Little Brewster Island in Boston Harbor

in 1716. The New London Harbor Light, established in 1760, was the first permanent lighthouse erected on Long Island Sound. A series of other lights were constructed along the northeastern coast to improve navigation on the busy shipping lanes between New York and Boston during the late eighteenth and early nineteenth centuries.

In the history of aids to navigation in the Thames River area, the site of New London Ledge was early marked as a dangerous hazard. The state of Connecticut ceded rocks and ledges off the harbor of New London to the federal government in 1790, as well as the old New London Harbor Light on the west shore. In 1794, Congress acted to establish a buoy on Southwest Ledge and other rocks to be funded by import duties and tonnage fees. In 1801 the original New London Harbor Light was replaced with a second lighthouse on the site. Lobbying for a new lighthouse in the area began in 1890, when the fog-signal and light at the old lighthouse in the harbor were felt to be inadequate in rough weather, and the light was difficult to discern against the illumination of lights on the shore. The first site chosen for the new lighthouse, Black Ledge, was later abandoned for Southwest Ledge. Since a Southwest Ledge Lighthouse already existed in Connecticut near New Haven, the name was changed to New London Ledge Lighthouse.

During the early 1870s, with the development at Hunting Island, S.C. of a pre-fabricated cast-iron lighthouse with a truncated conical shape, the combination house and light tower lost its domestic emphasis. The new breed of lighthouses with cylindrical cast-iron foundations were developed for marking difficult sites, such as reefs, shoals, and ledges, in northern waters where ice floes were a hazard. These foundations could be fabricated in sections and assembled on the site, making construction cheaper and faster. The development of superstructures which were also circular in section and constructed in the same economical way followed naturally. For water-bound sites such as that at Southwest Ledge, upon which New London Ledge Lighthouses rests, a cylindrical, cast-iron foundation would have been the common choice from the late 1870s until the 1920s.

The construction of the New London Ledge Lighthouse was delayed for more than a decade after initial consideration by Congress. The delay probably had an effect on the ultimate design of the lighthouse, which instead of following the more recent trend toward cast-iron construction, was executed with a masonry structural system. The contracts for the construction of the lighthouse were awarded in 1908. The T.A. Scott Company, which was located on the Thames River bank in Groton, was awarded the contract to build the lighthouse foundation. According to the Connecticut Historic Resources Inventory, this company was also involved in the construction of Race Rock Lighthouse. The timber foundation was towed into position, sunk in 28 feet of water over Southwest Ledge, and filled with riprap and concrete. On the concrete top layer of the foundation, which extended three feet above the water, the Hamilton R. Douglas Company of New London cast the concrete base and erected the lighthouse.

New London Ledge Lighthouse is a rare example of the combined keeper's-house-with-attached-tower type lighthouse built during the twentieth century. These lighthouses were usually designed in a revival style and in a domestic mode. Stylistically, New London Ledge Lighthouse reflects the influence of the early Colonial Revival in a variety of its features, such as red brick and white trim, small-paned rectangular windows, prominent quoins, pedimented dormers, and a shallow hipped roof with a dentiled cornice. The flooring system consists of cinder concrete and steel I-beams, innovative materials and building techniques when the lighthouse working drawings were drafted in 1906. The proportions and the scale of details, however, reflect the taste of the late nineteenth century and the period's enthusiasm for and appreciation of early American

architecture.

The lighthouse type with attached rooftop cupola lantern first appeared in the United States in the 1830s with structures of wood-frame construction. The idea of combining living space and lighthouse functions in one structure, with architectural emphasis on the dwelling, was a design practice that flourished under the U.S. Lighthouse Board. After mid-century, in the Hudson River and Long Island Sound, the country's enthusiasm for revival styles was reflected in such lighthouses as Penfield Reef and Stratford Shoal. The practice continued into the period of prefabricated cast-iron construction and included metal houses-with-towers, such as the Fourteen Foot Bank Lighthouse in Delaware.

Upon completion of the structure in 1909, the fourth-order Fresnel lens, manufactured in Paris by Henri LePante, was illuminated for the first time. Its 22,000 candlepower beam supplemented the weaker beam of New London Harbor Lighthouse, and in 1911 the fog-signal apparatus at New London Ledge Lighthouse replaced that at the older lighthouse. The Fresnel lens was replaced in 1984 with a smaller modern lighting apparatus.

PART III SOURCES OF INFORMATION

A. Plans and Drawings

United States Coast Guard Civil Engineering Unit, Metro Center Boulevard, Warwick, RI

B. Historic Views

None located

C. Bibliography

Smith, Edward, Dorothy B. Templeton and Richard Meyer
1986 *Historic Sites Survey, Inventory and Analysis of Aids to Navigation in the State of Connecticut.* John Milner Associates, Inc., West Chester, PA

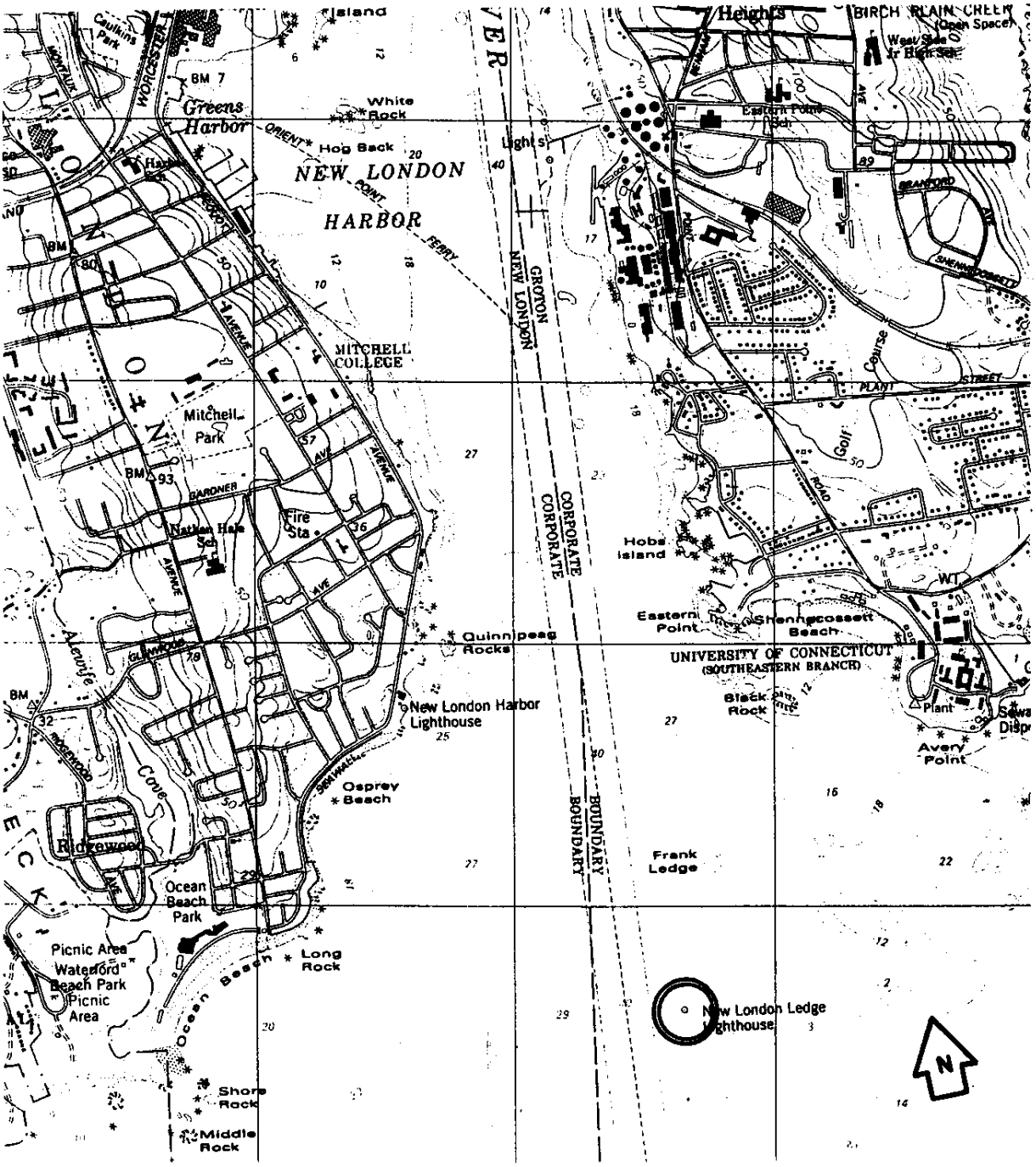
———.
1986 *Historic Sites Survey, Inventory and Analysis of Aids to Navigation in the State of Connecticut: Appendix C—Condition Reports: New London Ledge.* John Milner Associates, Inc., West Chester, PA

Templeton, Dorothy B.
1985 *National Register of Historic Places Inventory—Nomination Form for the New London Ledge Lighthouse.* Connecticut Historical Commission, Hartford, CT

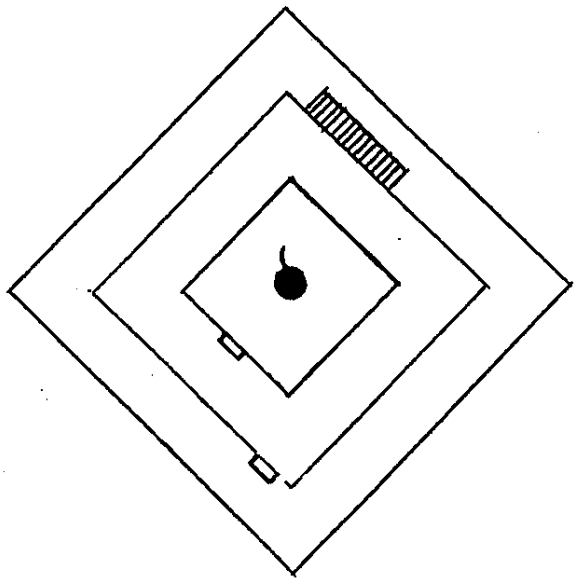
D. Interviews

None conducted

Location Map

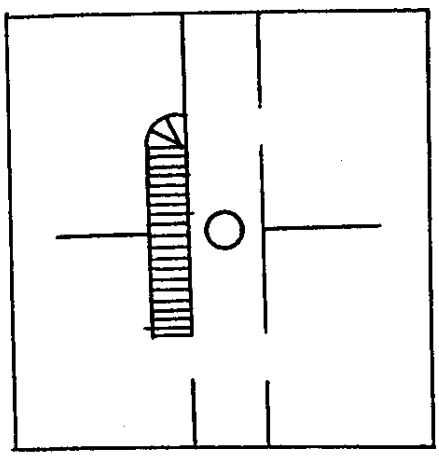


SITE PLAN

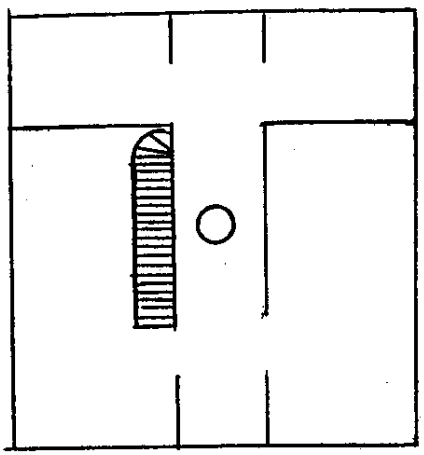




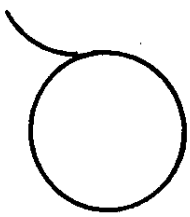
FLOOR PLANS



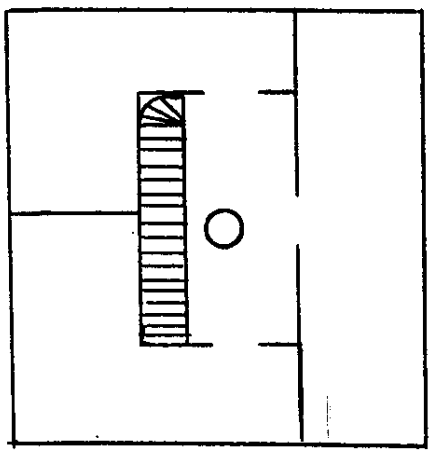
FIRST FLOOR



SECOND FLOOR

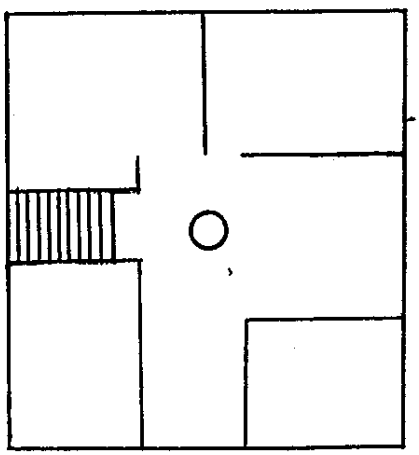


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THIRD FLOOR





BASEMENT