

NATIONAL HISTORIC LANDMARK NOMINATION

NPS Form 10-900

USDI/NPS NRHP Registration Form (Rev. 8-86)

OMB No. 1024-0018

CAPE HATTERAS LIGHT STATION

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United States Department of the Interior, National Park Service

National Register of Historic Places Registration Form

1. NAME OF PROPERTY

Historic Name: CAPE HATTERAS LIGHT STATION

Other Name/Site Number:

2. LOCATION

Street & Number:

Not for publication: \_\_\_

City: Buxton

Vicinity X

State: North Carolina

County: Dare

Code: 055

Zip code: N/A

3. CLASSIFICATION

Ownership of Property

Private: \_\_\_
Public-Local: \_\_\_
Public-State: \_\_\_
Public-Federal: X

Category of Property

Building(s): \_\_\_
District: X
Site: \_\_\_
Structure: \_\_\_
Object: \_\_\_

Number of Resources within Property

Contributing

2

2

4

Noncontributing

buildings

sites

2 structures

objects

2 Total

Number of Contributing Resources Previously Listed in the National Register : 4^1

Name of Related Multiple Property Listing: N/A

^1 The 1977 National Register nomination included the 1803 tower foundation as a contributing resource, but it eroded into the sea during a storm in 1980. The Cape Hatteras Light Station district was listed in the NR on March 29, 1978.

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**4. STATE/FEDERAL AGENCY CERTIFICATION**

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this \_\_\_\_ nomination \_\_\_\_ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property \_\_\_\_ meets \_\_\_\_ does not meet the National Register Criteria.

\_\_\_\_\_  
Signature of Certifying Official

\_\_\_\_\_  
Date

\_\_\_\_\_  
State or Federal Agency and Bureau

In my opinion, the property \_\_\_\_ meets \_\_\_\_ does not meet the National Register criteria.

\_\_\_\_\_  
Signature of Commenting or Other Official

\_\_\_\_\_  
Date

\_\_\_\_\_  
State or Federal Agency and Bureau

**5. NATIONAL PARK SERVICE CERTIFICATION**

I hereby certify that this property is:

\_\_\_\_ Entered in the National Register

\_\_\_\_ Determined eligible for the  
National Register

\_\_\_\_ Determined not eligible for the  
National Register

\_\_\_\_ Removed from the National Register

\_\_\_\_ Other (explain): Additional documentation accepted/new boundary

\_\_\_\_\_  
Signature of Keeper

\_\_\_\_\_  
Date of Action

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**6. FUNCTION OR USE**

Historic: Transportation

Sub: Water-related

Current: Transportation  
Recreation and Culture

Sub: Water-related  
Outdoor recreation

**7. DESCRIPTION**

ARCHITECTURAL CLASSIFICATION: No Style

MATERIALS:

Tower

Foundation: pine timber and granite  
Walls: brick  
Roof: iron and copper  
Other:

Principal Keeper's Dwelling

Foundation: brick  
Walls: brick and wood  
Roof: wood shingle  
Other:

Oil House

Foundation: brick  
Walls: brick  
Roof: asphalt shingle  
Other:

Assistant Keeper's Dwelling

Foundation: brick piers  
Walls: wood  
Roof: wood shingle  
Other:

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**Describe Present and Historic Physical Appearance.****Description Summary:**

The Cape Hatteras Light Station, consisting of a lighthouse tower, principal keeper's dwelling, duplex assistant keeper's dwelling, and oil house, survives as a relatively complete station with its major support buildings intact. The tallest lighthouse in the U.S. and the second tallest brick light tower in the world, it is a 198-foot-tall structure from ground level to the peak of the lantern roof. Located on land just north of the tip of Cape Hatteras, on the Outer Banks of Dare County, North Carolina, the property is owned and operated as a historic site by the National Park Service. Access to the property is through Cape Hatteras National Seashore.

**General Description<sup>2</sup>:***Existing Structures:***Light Tower**

The light tower, completed in 1870, is constructed of 1,250,000 bricks manufactured at a kiln on the James River near Richmond, Virginia. The granite for the foundation, trim, and entrance was quarried in Vermont.<sup>3</sup> The foundation, located below the surface, consists of two levels of yellow pine timber on which large blocks of rubble granite were laid in cement mortar with any interstices filled with smaller stones of granite.<sup>4</sup> The height of the tower from ground level (1989) to the top of the pinnacle is 198 feet, 2½ inches. The total height of the structure from the base of the foundation to the top of the pinnacle is 206 feet.<sup>5</sup> The tower's shape resembles the "frustum of a right cone;" the conical brick section measures 150 feet in perpendicular height and the octagonal granite base measures 24 feet in height and 45½ feet in diameter at the lower plinth course. The octagonal plinth is made of four courses of cut granite blocks and above it ten cut granite quoins are located one on top of another at each external corner of the plinth with brick paneling between the quoins. Each face of the plinth measures 18 feet, 10½ inches wide. The brick portion of the tower above the plinth was covered with a cement wash to protect it from the effects of the weather. In 1871 the "upper part (projected against the sky) was colored red, the lower part (projected against the foliage in the rear) colored white." In 1873, the tower was painted in spiral bands of alternating black and white; a total of four bands, two white, two

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<sup>2</sup> Part of this description is taken from Ronald G. Warfield, "Cape Hatteras Light Station," National Register of Historic Places Inventory—Nomination Form (September 6, 1977), copy at National Maritime Initiative Office, National Park Service, Washington, D.C. The original detailed construction drawings survive in the National Archives; copies are available in the Cape Hatteras Lighthouse Comprehensive Structural Analysis Report by Hasbrouck Hunderman Architects, Inc., March 1986. The description is also based on Holland, F. Ross, Jr., "A History of the Cape Hatteras Light Station," National Park Service, Division of History, Office of Archeology and Historic Preservation, September 30, 1968.

<sup>3</sup> "Cape Hatteras," *The Ships' Bulletin*, volume 35, number 1 (January-February 1955), p. 10.

<sup>4</sup> Lighthouse Board *Annual Report*, 1869.

<sup>5</sup> "Cape Hatteras Lighthouse," Historic American Buildings Survey NC-357 (1989), National Park Service, Washington, D.C.; and Thomas Yocum, "Standing (not so) Tall, *Sentinel*, no date, no page.

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black, each one making 1½ revolutions about the tower; “the object being to render it more distinct at a distance, and consequently a better daymark on this low, sandy coast.”<sup>6</sup>

The tower is fenestrated by seven windows and two door openings. There are three windows directly over the tower entrance door and four on the opposite side. Each window opening originally had a granite pedimented hood but all of these were removed sometime after 1969. There are three smaller windows at the service room level. Stone stairs lead from a walkway to the tower entrance door. The entrance opening has double doors made of bronze. A second set of doors once was located inside the first doors as late as 1936 and is evidenced by a second cast-iron door frame. The granite pedimented hood over the door remains.

The tower is constructed of interior and exterior brick walls with interstitial walls resembling the spokes of a wheel. The stairway to the lantern consists of 268 cast-iron steps, interrupted by seven semi-circular landings. The stairs are attached to the tower wall with a wrought-iron handrail on the interior side of the stairs and no handrail on the wall side of the stairs. The stairs turn clockwise ascending up the tower. The first floor at the base of the tower and all subsequent landings are laid with alternating white-and-black square marble pavers. A window is located at each landing, set in an arched alcove which becomes shallower as one ascends the tower. The windows may originally have been four-over-four pane double hung sash windows; presently they are single sash 8 pane windows. Metal gudgeons located on the inside surface of the window openings suggest a second window closure once existed as well. Each landing is on the opposite side of the one above and below it. In the middle of the first level is a round rail which protects the weight well. A marble plaque inside the entrance foyer is inscribed “Cape Hatteras Light House Erected A.D. 1870, Latitude 35°-15'-14" Longitude 75°-30'-56".”

At the first level, three arched alcoves run off at right angles from the north entrance door. The east and west alcoves have a brick bench with a metal strip top on each side of the alcove wall, which at one time supported some sort of oil storage tank and/or platform. The south alcove retains a rectangular metal oil storage tank set on brick benches. The interior of the tower is presently painted white but has in previous years been painted red, grey, brown, salmon, pink, maroon, and by 1937, white. The stairway and railings have been successively painted red, green, and maroon. Presently they are painted black.<sup>7</sup>

The service room is 150 feet, 9 inches above the first level. The room consists of a ½ landing floor made of cast iron with a metal rail. The service room door is made of iron with a riveted frame set on three hinges. The door enabled the keeper to keep air drafts from below from affecting the lamps above. A 14-step stairwell leads from inside the door up to the watch room. The watch room is 159 feet, 10¾ inches above the first level. It is made of cast iron and is surrounded by a cast-iron gallery with balustrades. The gallery is supported below by 16 cast-iron brackets attached to the upper portion of the brick tower at the service room level. There are three windows in cast-iron frames set between the gallery brackets on the northeast, east, and southeast sides of the service room.

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<sup>6</sup> Lighthouse Board *Annual Report, 1869 and 1873*.

<sup>7</sup> “A Field Investigation at Cape Hatteras Lighthouse, North Carolina, by Charles W. Porter, Assistant Historian, March 15-18, 1937,” copy at Cape Hatteras National Seashore Headquarters, and National Maritime Initiative, National Park Service, Washington, D.C.

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The lantern, made of cast iron, is surrounded by a smaller two-foot-wide iron balustrated gallery. The lantern is constructed of vertical metal framing members forming 16 sides, each containing three glass panes one above the other. The door to the gallery is made so it acts as one of the lantern sides and is attached to the lantern frame by three metal hinges. The roof is cone-shaped and made of wrought iron frames with copper sheeting. The roof is surmounted by a copper ventilator ball with platinum point. The roof is lined on the inside with zinc sheeting. The deck of the lantern room is cast iron. There is a ventilator at the base of every other side of the lantern making a total of eight ventilators. The lantern is painted black.

The original first-order revolving lens was made by Henry Lepaute, Paris, France. The central drum of the lens was 6 feet, 1½ inches in diameter. It had 24 panels making up the lens apparatus, with 24 flash panels, 27 elements in the central drum, 11 prisms in each panel above the drum, and four prisms in each panel below the drum. The lens assembly revolved on nine ball-thrust-bearing chariot wheels. Three of the wheels are missing. Most of the lens turning mechanism and platform is extant. The lens turning mechanism consisted of a weight-driven clock with a wire rope ¼ inch in diameter and 160 feet in length attached to 150 pounds of double lead weight. The mechanism would work for 15 hours upon one winding.<sup>8</sup> The lens was illuminated by oil lamps. The lamps were changed to incandescent oil vapor lamps in 1913. In 1925 the light characteristic was a flash lasting 1.4 seconds with an eclipse of 4.6 seconds. The light was electrified in 1934. In 1937 the lens was covered with a linen cloth during the day.<sup>9</sup> The light was replaced with a new light on a nearby skeletal tower in 1936 and subsequently the first-order lens left in the Cape lighthouse was vandalized. The remains of the classical lens were removed by the U.S. Coast Guard in 1949.<sup>10</sup> A new lighting device was installed in 1950 when the light was returned to the old tower. In 1972 a DCB 224 (double 24-inch-diameter aerobeacons) rotating beacon with two 1000-watt lamps was installed. The DCB is a Carlisle & Finch model, number 38766, made in Cincinnati, Ohio. A black painted plywood blind has been attached to the DCB between each beacon. The focal plane is 191 feet above mean high water.

In 1990, a contract was awarded to International Chimney Corporation for \$946,380 to perform structural integrity restoration of the lighthouse. Completion of this project improved the lighthouse's ability to withstand the rigors of relocation. In 1991 International Chimney Corporation began restoration of the light tower. Work, completed in 1992, included rebuilding the ladder to the lantern room, replacing the glass and some brass window handles in the lantern room, replacing much of the watch room balcony, repairing and replacing the gallery deck brackets, sandblasting and repainting interior stairs, replacing 17 stairs treads, replacing all stair landing rails, repointing and repainting some bricks, replacing and repairing stone tile at stair landings,

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<sup>8</sup> "Description of Cape Hatteras Light Station, June 9, 1927," Department of Commerce, Lighthouse Service (1927), original at National Archives lighthouse site files, copy at National Maritime Initiative, National Park Service, Washington, D.C.

<sup>9</sup> *Buoy List*, 1925, p. 127; and "A Field Investigation at Cape Hatteras Lighthouse, North Carolina, by Charles W. Porter, Assistant Historian, March 15-18, 1937," copy at Cape Hatteras National Seashore Headquarters, and National Maritime Initiative, National Park Service, Washington, D.C.

<sup>10</sup>The brass framework and some of the prisms are part of the museum collection at Cape Hatteras National Seashore, catalog #135.

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returning seven windows to working order, and replacing some parts of the bronze front door.<sup>11</sup> The Save Cape Hatteras Lighthouse Committee donated \$10,000 to fund ICC repairs to the lighthouse roof.

**Principal Keeper's Dwelling**

In 1871 a brick dwelling for the principal keeper was completed and enclosed in a "neat picket-fence." At least one account states the dwelling was originally to be built of wood but since there was brick left over from building the tower, it was built of brick.<sup>12</sup> It was built from the design of the Leading Point Light Station keeper's dwelling (entrance to Baltimore Harbor) and cost \$3,600. The upper courses of the south and north gable ends are corbeled out in a pattern which gives a gingerbread-like appearance. The principal keeper's dwelling is located just east of the assistant keeper's dwelling and north of the tower. It originally was a half brick structure with 1½-story kitchen ell on the east side off the living room at the south end. The bedroom was located on the north side separated by a central stair hall running east and west. Two bedrooms were located on the second floor. There is a porch at the south entrance door and one was located off the east side of the stair hall entrance. A cistern connected to the roof gutter system is located at the north end of the structure. This structure was altered and enlarged as a guest house in 1927, with a one-story frame extension added to the east end of the kitchen. A two-story frame addition was built in the ell of the old portion of the structure which provided a larger living room and larger bedroom on the second floor. To the east of this addition a 1-story porch was built in line with the kitchen addition. The dwelling measures approximately 35 feet by 32 feet.

All the window fenestration consists of six-over-six pane double-hung wood-sash windows. Two windows are located on the upper and lower level of the north elevation. A fifth window is located in the center of the lower floor of the wood frame section of the north elevation. There is a double set of windows on the upper level of the south gable end of the brick elevation. On the lower floor is a central door with a window on each side. There is a window on the lower floor of both the south and north elevation of the frame east wing. Another window is located on the lower level of the northwest corner of the west elevation. The east elevation has a wood door in the brick portion and two windows on the frame portion of the east wing elevation. The door is a five panel door with four light panes along each side.

During the Civilian Conservation Corps (CCC) renovation, an exterior stairway was added. This was later removed to better reflect the original configuration of the structure. The roof is wood shingle. There is a brick chimney located near the southwest corner and north end of the original brick structure. A third chimney rises from the center of the roof of the east wing. A skylight to light the interior stairwell landing is located about midway across the west side of the roof. The exterior is painted white. A brick walk ran from the dwelling to the light tower. In 1927 the brick walks were apparently replaced with concrete, and the dwelling was reported to have 7

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<sup>11</sup> Diane Suchetka, "Cape Hatteras Lighthouse Spruced Up: Workers Stabilize Landmark That's Blinking for 121 Years," *Observer* (February 17, 1991); and "Cape Hatteras," Notice to Keeper's, *The Keeper's Log* (Spring 1991), p. 36-37.

<sup>12</sup>Holland (1968a) does not confirm this account.

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rooms, and the exterior painted white with lead trim.<sup>13</sup> All the floors, interior walls, and ceilings have been replaced. Most of the interior wood trim around the doors and windows and the stair banister may be original. In 1986 the Park Service restored both keepers quarters. The most recent renovation completed in 1997, the principal keeper's dwelling is being used for the book shop and for interpretative purposes. After the anticipated move of the station inland, the structure is slated for interpretation purposes only.

**Assistant Keepers' Dwelling (Double or Duplex Dwelling)**

In 1854 a frame duplex keepers dwelling was constructed on brick piers and whitewashed. A one-story porch faces the south elevation. Two brick chimneys pierce the wood-shingled gable roof. In 1892 one of the kitchens forming the wings of the assistant keeper's house was moved to the rear (north elevation), and changes were made to adapt it for use by two families. This wing has green shutters; in 1893 all the windows had shutters. The main section of the dwelling was extended on its front and back lines about 16 feet; the enclosure constituted an additional 16 feet by 20 feet, 3 inches, in plan and two stories in height. This provided quarters for the third assistant keeper which had first been requested in 1887. In 1927 the structure was reported to have 12 rooms, and the exterior was painted white with lead trim. The structure measures approximately 86 by 42 feet. Brick cisterns are located at the east and west ends of the dwelling.<sup>14</sup>

The fenestration for the assistant keeper's dwellings consists of four-over-four, double-hung wood-sash windows which are tongue-and-grooved and doweled at each end. There are eight windows along the upper level of both the south and north elevation. There are six windows and two doors along the lower level of the south elevation. The north elevation has four windows and a door along the lower level. Three original windows were covered when the north wing was added. The west and east elevation has no fenestration. The north wing has two windows on the south elevation. The east wing has one window on the south elevation. The original pine floors are extant on the upper level and presumed to be covered with new hardwood flooring on the lower level. Cedar vertical wall paneling was installed by the CCC in the 1930s. It was later painted, the siding removed, sanded down to its original unpainted appearance, and reinstalled so that about three out of every four walls are covered with 1930s paneling and the rest with more modern 1980s cedar paneling. The 1930s paneling was not necessarily returned to its original location. In 1954 the interior of the structure was converted for use as the Museum of the Sea Visitor Center and park offices, with modern restrooms placed in the former rear kitchen. The structure is now covered with German siding and includes lexan storm windows. Both stairwells and banisters appear to be original though the stair treads appear to be replacement. All the fireplaces and chimneys are redone. All the hardware appears to be replacement except possibly the hardware on the doors located on the north and south elevation of northeast and southeast corner of the structure. This structure continued to be used as office and museum space in 1997. After the anticipated move of the station, the structure is slated for interpretation purposes only.

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<sup>13</sup> Lighthouse Board *Annual Report, 1871*; Warfield, p. 7.2; Holland, p. 95; and "Description of Cape Hatteras Light Station, June 9, 1927," Department of Commerce, Lighthouse Service (1927), original at National Archives lighthouse site files, copy at National Maritime Initiative, National Park Service, Washington, D.C.

<sup>14</sup> Lighthouse Board *Annual Report, 1892*.



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**Oil House**

In 1892, plans called for a brick oil house, 15 feet, 6 inches by 13 feet, 6 inches, with walls 8 feet, 6 inches high and 9 inches thick, and a gable roof 4 feet high. The upper four brick courses on the side walls are corbeled out to receive the roof overhang. The metal ceiling ventilator hood is still intact. A pipe runs from the hood to a hole in each gable end of the structure. The pipe running out of the west elevation may be an exhaust pipe from when the oil house was used as a generator building by the Coast Guard. There is one window on the north, south and east elevations; these were probably added at a later date. The door opening is located on the west elevation. It has a brick arched lintel. The present door is wood painted white. The original door was probably iron. Two metal door pintles are set in sandstone blocks built into the brick wall. Presently the windows are boarded over. By 1927 the oil house had been fitted with a 1200 gallon tank for bulk oil. The roof was covered with tin metal sheathing by at least 1906; now it is covered with asphalt singles. Designed to house oil drums, the structure later housed an auxiliary generator for the beacon when the Coast Guard took over operation. Today the oil house is vacant. The floor is made of brick laid in a herring bone pattern. The oil house is located 65 feet north of the light tower.<sup>15</sup>

Non-contributing structures include sidewalks and a parking lot.

*Previously Existing Structures:***1803 Tower**

The tower was built between 1799 and 1803 by Henry Dearborn. It was made of dressed "brown" stone and brick, octagonal in shape, tapering toward the top and surmounted with a bird cage type lantern. The tower was 26 feet, 6 inches in diameter at the base, 90 feet high with a 12 foot tall lantern. The foundation stones were 10 inches thick and from 1 to 4 feet long. It was described in 1852 as a "tower built of dark sandstone; natural color of materials." The light was 112 feet above sea level and "about one mile N. of high water mark." The tower was "refitted" in 1854 by a brick addition raising the tower to 150 feet above sea level; a flashing first-order Fresnel lens was installed; and the first 70 feet of the tower whitewashed and the remainder painted red. The tower was fitted with wooden steps to access the lantern. After the new tower was completed, the old tower was "blown up" in February 1871. The ruins of the tower were located 600 feet south of the present tower on a sand hill in 1968 and consisted of a semi-circular masonry wall about four feet high. The foundation washed away in a storm in 1980 and has been removed as a contributing feature of the National Register district.<sup>16</sup>

**Keeper's Dwelling**

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<sup>15</sup> Lighthouse Board *Annual Report, 1892*; and Warfield, p. 7.1.

<sup>16</sup> List of Light-houses, Beacons, &c., 1853 and 1857; Lighthouse *Board Annual Reports, 1864 and 1871*; Warfield, p. 7.2; F. Ross Holland, Jr., *A History of the Cape Hatteras Light Station* (National Park Service, Division of History, Office of Archeology and Historic Preservation, 1968), pp. 10-11; and oral communication from Steve Harrison, NPS museum curator to Ralph Eshelman, May 1, 1997.

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The first original keeper's dwelling built in 1803 was replaced in 1828. The 1828 dwelling was apparently replaced by the 1854 frame assistant keeper's dwelling which is still extant. Little is known as to physical appearance of the 1808 or 1828 structures.

**Storehouses**

In 1888 two new 10- by 20-foot in plan storehouses were built for the assistant keepers as well as a small storage building erected near the tower for storage of empty oil cans. One of the storehouses was moved from near the tower to the vicinity of the principal keeper's dwelling. All were frame construction on wood foundations; two of the warehouses had canvas roofs and the third a shingle roof. At least five warehouses are shown in a 1906 layout of the station.<sup>17</sup>

**LORAN Station**

In 1949 a 1-story concrete building was constructed to house the LORAN (long-range aids to navigation) station moved from Bodie Island. It and a tall metal tower were located south of the light station.

**Other Structures**

A summer kitchen, smokehouse, well, and at least two privies also once existed. These were frame construction on wood foundations with shingle roofs.<sup>18</sup> A cast-iron fence once stood above the granite base around the tower. Today a four-rail wooden fence installed by the National Park Service surrounds the tower just outside the original fence line. A large naval facility was located to the north of the station but has been replaced by a U.S. Coast Guard base.

In 1868 suitable workmen's quarters, a "mess-room," a blacksmith shop, a warehouse for cement and other perishables, two derricks, a wharf (built on the north side of the island about 1¼ miles from the station), and a tram road from the wharf to the lighthouse for transporting materials were temporarily built.<sup>19</sup>

**Conclusion**

The primary structures forming the Cape Hatteras Light Station are extant; however, they have been altered and/or renovated over time, but such changes are part of the natural progression of enlargement and alteration of any light station and do not detract from their overall historic integrity. Most of the structures which have been demolished date from the period of the first tower or from WWII and later. Their absence does not significantly detract from the historic integrity of the present light station.

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<sup>17</sup> Lighthouse Board *Annual Reports, 1888 and 1892*; and Warfield, p. 7.2; see Holland illustration 13 and 14.

<sup>18</sup> Warfield, p. 7.2; a layout of the light station buildings including numerous smaller out buildings is found in a 1906 plat and in 1893 photos reproduced in Holland (1968a).

<sup>19</sup>For the location of many of these temporary structures see Holland (1968), illustration 10.

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**1999 Cape Hatteras Light Station Relocation**

Threats of destruction from shoreline erosion (see appendix for erosion summary) led to the successful relocation of the light station during the summer of 1999. The configuration of the structures to one another as well as their orientation to the shoreline was maintained by surveying the horizontal and vertical relationship of the four structures at their historic location and carefully positioning them at the new site to match.<sup>20</sup>

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<sup>20</sup>Correspondence from Francis A. Peltier, Superintendent, Outer Banks Group, August 10, 2000.

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**8. STATEMENT OF SIGNIFICANCE**

Certifying official has considered the significance of this property in relation to other properties:

Nationally: X Statewide: \_\_\_ Locally: \_\_\_

Applicable National  
Register Criteria:

A X B \_\_\_ C X D \_\_\_

Criteria Considerations  
(Exceptions):

A \_\_\_ B \_\_\_ C \_\_\_ D \_\_\_ E \_\_\_ F \_\_\_ G \_\_\_

NHL Criteria:

1, 4

NHL Theme(s):

V. Developing the American Economy  
3. Transportation and Communication

III. Expressing Cultural Values

5. Architecture, Landscape Architecture and Urban Design

Areas of Significance:

Maritime History  
Transportation  
Architecture

Period(s) of Significance:

1870-1936<sup>21</sup>

Significant Dates:

1870

Significant Person(s):

Cultural Affiliation:

Architect/Builder:

Dexter Stetson, District Engineer, U.S. Light-House Board, served as foreman.

Historic Context:

XIV. Transportation

B. Ships, Boats, Lighthouse, and Other Structures

<sup>21</sup>The year 1936 is chosen for the end of the period of significance in that it is the year the U.S. Coast Guard established an aid on a nearby skeletal tower to replace the light in the 1870 tower. The NPS acquired the deactivated station from the USCG that same year. The light was later returned to the tower in 1950.

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**State Significance of Property, and Justify Criteria, Criteria Considerations, and Areas and Periods of Significance Noted Above.**

The Atlantic coast of the United States served as a major transportation corridor for commercial traffic from the late 18th through the 20th centuries. The construction of the Cape Hatteras Light Station is directly associated with federal government efforts to provide an integrated system of navigational aids and to provide for safe maritime transportation. The present light tower completed in 1870 is the second tallest brick lighthouse tower in the world and tallest in the United States.<sup>1</sup> Located near the middle of the Outer Banks, Cape Hatteras Lighthouse is among the most popular lighthouses in America. Its majestic setting at the bend of the Outer Banks provides a striking presence, attracting close to a million visitors per year.

*The preceding statement of significance is based on the more detailed statements that follow.*<sup>2</sup>

**Service as an Aid to Navigation and Importance to Maritime Trade**

After the Spanish settled in the New World they soon found that their ships could return to Europe from the Caribbean more quickly by sailing north with the Gulf Stream to the general area of Cape Hatteras and then veering to the northeast for home, often saving weeks. Later, mariners used the same route to reach the mid-Atlantic coast of the U.S. The Gulf Stream moved at over four knots in places and was safely offshore. To travel south mariners could follow the Labrador Current but it narrowed and took ships considerably close to Cape Hatteras and the dangerous "diamond shoals" located just offshore. Because the shoreline along the Outer Banks is generally flat, there were no landmarks visible to mariners unless they steered too close to the dangerous shore. Known as the Graveyard of the Atlantic, it is estimated "that more than 2,200 craft of various sizes and types have met disaster in the vicinity of Cape Hatteras."<sup>3</sup>

With the exception of Nantucket shoals, it is supposed there is no part of the American coast where vessels are more exposed to shipwreck, than they are in passing along the shores of North Carolina, in the neighborhood of these shoals. The Gulf Stream certainly approaches very near the American coast in this quarter; indeed, experienced navigators assert, that it touches Cape Hatteras shoals in its progress to the northeast, out of the Mexican gulf, and, as it turns with great rapidity hereabouts, they can place very little dependence on the ship's reckoning. Their estimated distance from land, therefore, is often found to be very erroneous, and as no soundings are to be procured within a short distance from the outer part of the shoals, it too frequently happens that shipwrecks take place; and hardly a season passes that does not afford the melancholy spectacle of

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<sup>1</sup> Patrick Barnes, "The Development of Lighthouse Structures," unpublished manuscript, USCG, Cleveland, Ohio, no date, p. 9., copy at National Maritime Initiative Office, National Park Service, Washington, D.C. Barnes states the tallest masonry tower in the world is reputed to be the brick *lanterna* built at Genoa, Italy, in 1543. Though modernized internally, its overall height is 74.7 meters or 245 feet.

<sup>2</sup>For more information, please refer to the "Summary Context Statement for NHL Lighthouse Nominations."

<sup>3</sup> "Cape Hatteras," *The Ships' Bulletin*, volume 35, number 1 (January-February 1955), p. 5.

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stranded ships, and a great destruction of property is sure to follow: and it is fortunate, indeed, if the friendless mariner escapes with his life. Report from Congress 1806.

There were 27 lighthouses in the United States in 1800. These early light stations marked entrances to harbors and estuaries; but only three were located south of Cape Henry, Virginia. Seen as a crucial coastal aid to navigation and given a high priority, the light station at Cape Hatteras was conceived in 1794 and completed in 1803.

The Atlantic coast was and still is the principal sea lane for the shipping of goods between ports along the East coast of the United States. Before the completion of the Inland Waterway by 1940, which runs from just north of Boston, Massachusetts, to Key West, Florida, the Atlantic coast was the only means of such travel and still is for larger ships. During this course, there are several key changes in direction. As the primary navigation aid for mariners rounding the treacherous Diamond Shoals until the offshore Diamond Shoals Texas Tower was built in 1967, Cape Hatteras was perhaps the most significant in the chain of lights marking the Atlantic coastal shipping lane. "There is perhaps no light on the entire coast of the United States of greater value to the commerce and navigation of the country than this."<sup>4</sup>

### **Significance as a Masonry Tower**

The present light station embodies a distinctive design and method of construction that typified first-order coastal lighthouse construction on the East coast of the United States during the second half of the 19th century. Coastal lights, as opposed to harbor lights, were generally taller and used more powerful optics. Early lighthouses in this country were built on land to warn mariners of offshore shoals; it was not until the mid-nineteenth century that advances in building technology allowed offshore lighthouse construction. The earliest materials used for lighthouse construction were wood and/or rubblestone. Later cut stone and brick were used, allowing towers increased height for better visibility. The design of the tall brick towers consisted of a double wall with a hollow space between the walls, thereby lightening the load, creating an insulation "member," and reducing the overall cost by using less bricks.<sup>5</sup>

Brick is the most popular construction material of the surviving 640 lighthouse towers in the United States—approximately 200 are constructed of brick. Of those constructed of brick, approximately half are attached to another structure, generally a keepers dwelling. Two-thirds of those remaining are unattached structures and a third are integral to another structure. Most brick towers are conical in shape, although some are octagonal with a few square, cylindrical, or pyramidal. Less than 12 of the surviving brick towers are over 150 feet, with 25 over 100 feet, 43 over 75 feet, and 97 over 50 feet. Of the surviving towers of every construction type, 16 are

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<sup>4</sup> 32nd Congress, 1st Session, House Executive Document No. 55 (serial #642), p. 138.

<sup>5</sup> Personal communication, Wayne Wheeler, President, U.S. Lighthouse Society, February 28, 1998.

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more than 150 feet and at least 66 are over 100 feet.<sup>6</sup> The Cape Hatteras Lighthouse tower is the tallest brick light tower in the United States and second tallest in the world.<sup>7</sup>

**Brief History of the Light Station<sup>8</sup>**

Early mariners had no landmarks visible to guide them along the low-lying Outer Banks unless they came dangerously close to land. Numerous ships have foundered near Cape Hatteras as they attempted to round these Diamond Shoals, earning it the reputation of the “Graveyard of the Atlantic.” The federal government sought to address this situation in the waning years of the 18th century with the construction of Cape Hatteras lighthouse. An offshore lighthouse at the end of Diamond Shoals would have been preferable, but technology for such a structure in the open ocean with a sifting sandy bottom did not exist at that time. The later use of buoys and lightships to supplement the lighthouse did not prove reliable. Diamond Shoals was not satisfactorily lit until a Texas tower-type lighthouse, made possible by offshore oil drilling technology, was built in 1967. Until that time, a lighthouse at Cape Hatteras was deemed the best method of marking one of the most dangerous areas of shoals in the United States.<sup>9</sup>

In 1794 the Senate instructed the Treasury Department to look into the feasibility of a lighthouse at Ocracoke Inlet, Ocracoke Island, Outer Banks, North Carolina. The Department used the opportunity to survey the North Carolina coast as a whole to determine by priority the need for aids to navigation on this section of the coast. Tench Coxe, Commissioner of Revenue, then responsible for aids to navigation, reported that most mariners wanted a light at Cape Hatteras above all other needs. Such a coastal light would benefit coastal shipping while a light at Ocracoke Inlet would benefit only those using the inlet. Thus Coxe recommended a lighthouse at the cape and only a small wooden beacon at Ocracoke. His recommendation was adopted by Secretary of Treasury Alexander Hamilton, and in April 1794, Congress authorized both the beacon and the lighthouse.<sup>10</sup>

Congress authorized \$44,000 for constructing the lighthouse at Cape Hatteras on July 10, 1797 and \$35,698 on May 7, 1800. The 90-foot octagonal masonry tower was completed in 1803. By presidential appointment, Adam Gaskin was appointed first keeper at Cape Hatteras on

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<sup>6</sup> All of these statistics are derived from the National Park Service's National Maritime Initiative Inventory of Historic Light Stations in November 1997.

<sup>7</sup> The tallest masonry tower in the world is reputed to be the brick *lanterna* built at Genoa, Italy, in 1543. Though modernized internally, its overall height is 74.7 meters or 245 feet.

<sup>8</sup> Much of this section is derived from F. Ross Holland, Jr., *A History of the Cape Hatteras Light Station* (National Park Service, Division of History, Office of Archeology and Historic Preservation, 1968); a detailed chronology of the history of Cape Hatteras Light Station, may be found in an earlier reference draft located in the National Historic Landmark file for Cape Hatteras Light Station at the National Register, History, and Education offices in Washington, D.C.

<sup>9</sup> Holland, pp. iv-vii.

<sup>10</sup> American State Papers, Class IV, v. I, *Commerce and Navigation, 1st-13th Congress, 1789-1815* (Washington: 1832), pp. 265-267, 299; and Holland p. 4.

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December 29, 1802, and received a yearly salary of \$333.<sup>11</sup> The lantern had 18 lamps with 14-inch reflectors. Fuel for the lamps was sperm oil.<sup>12</sup> In 1815 the lighting system was changed to a Winslow Lewis Argand lamp system consisting of 18 lamps with parabolic reflectors hung from a chandelier in the lantern.<sup>13</sup> An additional parcel of approximately 40 acres, adjacent to and immediately north of the original plot was purchased in 1828. (This property would later serve as the location of the 1870 tower.) The first keeper's house, built by Henry Dearborn, was replaced by a new dwelling in 1854.<sup>14</sup>

The lighthouse was described by a naval officer in 1851 as follows:

Hatteras light, the most important on our coast, and, without doubt, the worst light in the world. Cape Hatteras is the point made by all vessels going to the south, and also coming from that direction; the current of the Gulf steam runs so close to the outer point of the shoals that vessels double as close round the breakers as possible, to avoid its influence. The only guide they have is the light, to tell them when up with shoals; but I have always had so little confidence in it that I have been guided by the lead, without the use of which, in fact, no vessel should pass Hatteras. The first nine trips I made I never saw Hatteras light at all, though frequently passing in sight of the breakers; and when I did see it, I could not tell it from a steamer's light excepting that the steamer's lights are much brighter. It has improved much latterly, but is still a wretched light. It is all important that Hatteras should be provided with a revolving light of great intensity, and the light to be raised fifteen feet higher than at present.<sup>15</sup>

In 1824 a 300-ton lightship with two lights was stationed 13 miles east-southeast off Cape Hatteras.<sup>16</sup> The lightship was driven off its station in 1825, 1826, and 1827; it was scrapped in 1827. A bell boat was stationed at Diamond Shoals in 1852 but vanished after four months.<sup>17</sup> Congress authorized \$15,000 on March 3, 1853, for elevating the tower, installing a first-order lens, and erecting a new dwelling. It is believed the present assistant keeper's dwelling is a modified version of this structure.<sup>18</sup> The work was completed in 1854.

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<sup>11</sup> For a list of keepers assigned to the Cape Hatteras station, see NHL file for Cape Hatteras Light Station at NRHE offices in Washington, D.C.

<sup>12</sup> Warfield, p. 8.1; and Holland, pp. 14 and 17.

<sup>13</sup> Holland, p. 22

<sup>14</sup> Holland, "Keeper's Dwelling: Cape Hatteras Light Station, Historic Structure Report, Part 1, Division of History, Office of Archeology and Historic Preservation, National Park Service, 1968a, pp. 4-5; Warfield, p. 8.2; and Holland, 1968, p. 37.

<sup>15</sup> Letter from Lieutenant David D. Porter, U.S.N., commanding the U.S. mail-steamer *Georgia*, July 1851 (National Archives, Documents relative to lighthouses), p. 735.

<sup>16</sup> Holland, p. 34.

<sup>17</sup> List of Light-houses, Beacons, &c., 1852; and Holland, 1968, p. 111.

<sup>18</sup> Holland, 1968, p. 57; and Holland, 1968a, p. 5.



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Despite an earlier warning from the Lighthouse Board, the Cape Hatteras lighthouse lens and lantern was “destroyed,” by Confederates in 1861 (other sources say the Confederates took the lens with them). Union forces were able to save the tower.<sup>19</sup> A temporary second-order lens, was “re-exhibited” on about June 1, 1862. In 1863, a new first-order revolving lens, “combining the latest and highest improvements,” was installed replacing the temporary lens.

Congress authorized \$75,000 on March 2, 1867, for rebuilding the lighthouse, calling for a 150-foot tower. In 1868, it was determined that in the best interest of commerce, a tower of 180 feet was necessary and Congress authorized an additional \$80,000. Work commenced on November 4, 1868. The project included construction of a suitable workmen’s quarters and “mess-room,” a blacksmith shop, a warehouse for cement and other perishables, two derricks, a wharf (built on the north side of the island about 1¼ miles from the station, the nearest point accessible to scow lighters), two decked scows and one open scow built to serve as lighters, a small boat and crane on the wharf for unloading heavy stone, and a tram road from the wharf to the lighthouse for transporting materials. The foundation was built 600 feet northeast of the “old tower.”<sup>20</sup>

Congress authorized another \$40,000 for the light station on March 3, 1869.<sup>21</sup> By September 25, 1869, the ninth course and part of the tenth course of granite was completed. In November “extensive” repairs were made to the “old dwelling” and a “large quantity” of sand and soil was “made in a slough surrounding the house.” By January 30, 1870, the brick work of the tower reached 32 feet above the main floor; by April 30 it reached 97 feet; by May 28, 141 feet; and by June 16, 153½ feet above the ground. The first four flights of cast iron stairway and wrought iron oil tanks were placed in position. Congress authorized an additional \$52,500 on July 15. The new lens was received in December and placed into operation on the 16th. The illuminant for the lens was oil lamps. The old lens was sent to the lighthouse depot at Staten Island, New York.<sup>22</sup>

In February 1871 the old tower, being of no use and in danger of falling during some heavy storm, was “blown up.” That same year, a brick dwelling for the principal keeper was completed and enclosed in a “neat picket-fence.”<sup>23</sup> In 1873, the tower was painted in spiral bands of alternating black and white; a total of four bands, two white, two black, each one making 1½ revolutions about the tower, “the object being to render it more distinct at a distance, and consequently a better daymark on this low, sandy coast.”<sup>24</sup> In 1875 Cape Hatteras was among several light stations to experiment with the use of English wicks to determine if they used less oil.

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<sup>19</sup> Lighthouse Board *Annual Report, 1862*; and Warfield, p. 8.2.

<sup>20</sup> Lighthouse Board *Annual Report, 1868*; and Warfield, p. 8.2.

<sup>21</sup> Lighthouse Board *Annual Report, 1869*.

<sup>22</sup> Lighthouse Board *Annual Reports, 1870 and 1871*; and Warfield, p. 7.1.

<sup>23</sup> Lighthouse Board *Annual Report, 1871*.

<sup>24</sup> Lighthouse Board *Annual Report, 1873*.

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A gas buoy was placed at Diamond Shoals in 1884, but it vanished within two months.<sup>25</sup> In 1889 Congress authorized \$500,000 for the construction of a lighthouse on Diamond Shoals. Plans called for a 45 foot high by 54 foot diameter caisson. The lighthouse caisson was towed to Diamond Shoals in 1891 and lowered into 22 to 25 feet of water on July 1. By July 8 a storm had destroyed the construction machinery on top of the caisson and shifting sands and strong currents eroded the foundation tilting the caisson out of level. The contractor subsequently gave up and the project was abandoned.<sup>26</sup> In 1894, a second attempt at erecting a lighthouse on Diamond Shoals was made, but this time the design called for a skeletal metal tower. But this project too was a failure.<sup>27</sup> A new lightship was placed on station at Diamond Shoals on September 30, 1897.<sup>28</sup> It too was unsuccessful.

The "first wireless messages" were sent and received between ship and shore on the East coast in 1889. The advent of the telegraph ushered in a new type of navigational aid which would improve needed communication between ship and lighthouse stations. A wireless radio station was established by the U.S. Navy at the Cape Hatteras Light Station in 1905.<sup>29</sup> The illuminant for the light was changed to incandescent oil vapor in 1913, increasing the candlepower from 27,000 to 80,000; making it the brightest navigation aid on the eastern seaboard.<sup>30</sup>

An automated electrical system was installed in 1934 to rotate the lens and illuminate it.<sup>31</sup> By 1936, erosion had encroached on the tower so that during storms water surrounded the station. The tower was abandoned and a new light established in an iron skeletal tower built about one mile to the northwest. The National Park Service acquired the abandoned light tower in 1936 and found that vandals had badly damaged the lens.<sup>32</sup>

During World War II and postwar periods, the Coast Guard continued to develop new lighthouse technologies but the effectiveness of radio technology and an increased dependence on it, decreased the role of lighthouse stations. SHORAN (short-range navigation aids) or LORAN (long-range navigation aids) were installed at stations and stationary towers; a LORAN station was established at Cape Hatteras Light Station in 1949.

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<sup>25</sup> Holland, 1968, pp. 98-99 and 112-113.

<sup>26</sup> Holland, 1968, p. 113.

<sup>27</sup> Lighthouse Board *Annual Report, 1894*; and Holland, 1968, p. 114.

<sup>28</sup> Holland, 1968, p. 114.

<sup>29</sup> Holland, 1968, pp. 120.

<sup>30</sup> Warfield, p. 7.1; and Holland, 1968, p. 125.

<sup>31</sup> Warfield, p. 7.1.

<sup>32</sup> "Synopsis: Cape Hatteras Lighthouse, August 1996."

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The light was returned to the 1870 tower on January 23, 1950, when, partially because of beach erosion control measures, the beach had accreted.<sup>33</sup> The duplex keeper's dwelling was "rehabilitated" for a visitor center in 1954. The light tower was opened to the public in 1970. An aviation-type rotating beacon with two 1000 watt lamps providing 250,000 candlepower was installed in 1972. The principal keeper's dwelling was used as park ranger offices in 1974 and discontinued as "VIP House." In 1976 the watch room gallery was closed to visitors because of safety concerns. That same year the principal keeper's house was reestablished as VIP House and offices moved to the second floor of the assistant keeper's dwelling. Remodeling was necessary for this office accommodation. New exhibits were installed in the lower level of the duplex in 1979.<sup>34</sup>

The light tower was closed to the public in May 1984 because of safety concerns.<sup>35</sup> After repairs (described in Section 7) were completed from 1990-1992, in 1993 the light tower was reopened to the public.

Because of continuing threats of erosion (see appendix for erosion summary), the National Park Service made a decision to relocate the station 2900 feet southwest from its present site, bringing it 1600 feet from the current coastline. Plans indicated that all the light station buildings would be relocated and placed in their original configuration with the same orientation to the ocean as they had in 1870. The relocation was successfully completed according to this plan during the summer of 1999. The station will be interpreted to its 1890s period.

### **Cape Hatteras Lighthouse as America's Lighthouse**

Cape Hatteras Lighthouse has become a national icon for American lighthouses. Its unique spiral banding on the tower is distinct and easy to recognize; most people have been exposed to its image or a rendering of that image at one time or another. Although there are many lighthouse construction types, most think of a tower similar to the one at Cape Hatteras when imagining a lighthouse. Cape Hatteras is the most frequently depicted lighthouse on calendars, postcards, souvenir mugs, hats, etc., and is included in logos created by various businesses, companies, etc, all over the United States. In 1972 Cape Hatteras Lighthouse was featured on a U.S. Postal Stamp as part of a National Park Service series. In the minds of many Americans, Cape Hatteras Lighthouse is the Nation's lighthouse.

An extremely popular tourist destination and recreation facility, Cape Hatteras Light Station attracted 800,000 to 1 million visitors to its grounds during the fiscal year 1997. This figure includes tour buses as well as anglers and surfers using the beach in front of the lighthouse. The number of visitors entering the Cape Hatteras Visitor Center in the assistant keepers quarters is

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<sup>33</sup> "Service Resumes Use of Old Hatteras Light," U.S. Coast Guard *Bulletin*, volume 5, number 9 (March 1950), p. 260; and "Briefing - Cape Hatteras Light Station Historic District, Ira Whitlock Visit, February 18, 1983, Inspection and Evaluations," copy at Cape Hatters National Seashore Headquarters and copy at National Maritime Initiative, National Park Service, Washington, D.C.

<sup>34</sup> "Briefing - Cape Hatteras Light Station Historic District, Ira Whitlock Visit, February 18, 1983, Inspection and Evaluations."

<sup>35</sup> Diane Suchetka, "Cape Hatteras Lighthouse Spruced Up: Workers Stabilize Landmark That's Blinkered for 121 Years," *Observer* (February 17, 1991).

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reported as 344,580 and the number entering the tower as 224,259. The Cape Hatteras Lighthouse may be considered by many as the highlight or most memorable experience of a trip to the Outer Banks.

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- Preliminary Determination of Individual Listing (36 CFR 67) has been requested.
- Previously Listed in the National Register.
- Previously Determined Eligible by the National Register.
- Designated a National Historic Landmark.
- Recorded by Historic American Buildings Survey: # NC-357
- Recorded by Historic American Engineering Record: # \_\_\_\_\_

Primary Location of Additional Data:

- State Historic Preservation Office
- Other State Agency
- Federal Agency
- Local Government
- University
- Other (Specify Repository): Cape Hatteras National Seashore Headquarters, Manteo, North Carolina; National Archives; Library of Congress; National Maritime Initiative, National Park Service; U.S. Coast Guard Headquarter, Historian's Office, Washington, D.C.



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**10. GEOGRAPHICAL DATA**

Acreage of Property: 5.912 acres

USGS quadrangle: Buxton, North Carolina

UTM References:	Zone	Easting	Northing	
	A 18	564228	3036110	(references the historic tower)

**Boundary Description:**

**Old:** The property boundary was L-shaped, bounded on the east by barrier dunes and the Atlantic Ocean; on the north by the former Cape Hatteras Naval Facility; on the west by Buxton Woods; and on the south by dunes and open beach. The property was one mile southeast of the junction of the park access road with North Carolina State Route 12, Buxton, North Carolina.

**New:** The boundary of the new district is delineated by a rectangle whose corners are marked by the following UTM reference points: A 18 564443 3035607, B 18 564748 3035857 C 18 564328 3036353 D 18 564020 3036105. The 650-foot-long sides of the district's boundary run northwest to southeast and the 400-foot-long sides run northeast to southwest. The four sides of the boundary are each about 100 feet from the nearest historic structure in the district. The eastings and northings of each of the four historic structures are given on the attached site plan.

**Boundary Justification:**

The boundary includes the lighthouse, duplex keepers dwelling, principal keepers dwelling, oil house, and approximately 6 acres of land, completely encompassing the light station. As part of the 1999 relocation, the configuration of the structures to one another as well as their orientation to the shoreline was maintained by surveying the horizontal and vertical relationship of the four structures at their historic location and carefully positioning them at the new site to match.

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**11. FORM PREPARED BY**

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Organization: National Park Service, National Maritime Initiative (NRHE 2280)

Address: 1849 C Street, NW

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Date: July 26, 1997

**PROPERTY OWNER**

Name: National Park Service, Cape Hatteras National Seashore

Address: Route 1, Box 675

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NATIONAL HISTORIC LANDMARKS SURVEY

October 22, 1998

Modified December 18, 2000

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**APPENDIX: Erosion Summary**

In 1852 the lighthouse was described as being “about one mile N. of the high water mark.” By 1892 the lighthouse was described as being “about 2 miles N. of southern extremity of point of cape.”<sup>36</sup> The 1870 tower was built at a site “above the highest level of the sea, and so far removed from the water line as to render it safe from encroachments of the sea.”<sup>37</sup> The new light tower stood about 1500 feet from the ocean in 1870. By 1919 the shore line had eroded to within 300 feet of the tower. Beginning in 1924 and for the following five years the Bureau of Lighthouses requested funds to combat the erosion. In 1930, largely as a result of recent hurricane damage, 900 feet of “interlocking sheetpile groins” were installed. The groins were inadequate as erosion continued to within 100 feet of the tower. In 1933 additional steel sheet pile groins were installed. The Bureau of Lighthouses now believed the control of erosion was impossible and began to search for a new site for the lighthouse. A 150-foot tall skeletal tower located one mile to the northwest of the current tower was completed on September 18, 1935. By this time erosion had progressed to the point that waves washed around the base of the older tower. By the late 1930s the erosion had ceased and the beach began to accrete, in part because of erosion control efforts by the Civilian Conservation Corps and National Park Service. The light was returned to the 1870 tower on January 23, 1950.<sup>38</sup>

The light station was nearly surrounded by water after hurricane Ione passed on September 20, 1955. The next year, top soil was placed on lighthouse grounds and museum grounds built up with sand.<sup>39</sup> In 1966, 312,000 cubic yards of sand was pumped from Pamlico Sound onto the beach in front of lighthouse area, but because the sand from the Sound is much finer than beach sand it soon eroded away. A year later, large nylon sand-filled bags were placed in front of lighthouse to slow erosion—a few remain today.<sup>40</sup> In 1969, three reinforced concrete groins were constructed by the Navy north of the tower to prevent erosion of the shoreline.<sup>41</sup> A beach nourishment (sand replenishment) project moved 200,000 cubic yards of sand from Cape Hatteras Point to the beach in the lighthouse area in 1971.<sup>42</sup> Another beach nourishment project moved an additional 1,300,000 cubic yards of sand from Cape Hatteras Point to the beach in the lighthouse area in 1973. At this time, the ocean was approximately 175 feet from the old lighthouse ruins which were located 600 feet south of the lighthouse. A few years later, high tides began to erode the ruins and a severe blizzard in March 1980 destroyed any remaining traces. The same storm flanked the beach anchor point of the southern groin (the one nearest the

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<sup>36</sup> List of light-houses, Beacons, &c., 1852 and List of Lights, &c., 1892.

<sup>37</sup> Lighthouse Board *Annual Report, 1869*.

<sup>38</sup> Warfield, p. 7.1.

<sup>39</sup> “Briefing - Cape Hatteras Light Station Historic District, Ira Whitlock Visit, February 18, 1983, Inspection and Evaluations.”

<sup>40</sup> “Synopsis: Cape Hatteras Lighthouse, August 1996.”

<sup>41</sup> “Synopsis: Cape Hatteras Lighthouse, August 1996;” and “Briefing - Cape Hatteras Light Station Historic District, Ira Whitlock Visit, February 18, 1983, Inspection and Evaluations.”

<sup>42</sup> “Synopsis: Cape Hatteras Lighthouse, August 1996.”

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lighthouse). This flanking allowed storm-driven or high tide waves to flow between the steel and concrete jetty and the softer sand dunes, eroding more sand with each wave. Emergency protective measures were initiated in October 1980 as the result of a northeaster. Erosion was cutting within 50 feet of the light tower; 1,600 tons of rubble and sand including portions of asphalt from an old road were dumped in front of the lighthouse in an attempt to stop erosion; \$59,584 was later spent expanding the existing groin 150 feet, placing additional nylon sand bags, and tying it into a new dune line. Unfortunately, the ocean washed completely around the groin extension in December and forced a second emergency protection project as the tide came to a point approximately 50 feet from the lighthouse. The December project pushed the sea back to about 100 feet from the structure.<sup>43</sup>

In 1981, U.S. Senator Jesse Helms and Governor Jim Hunt united to sponsor a statewide "Save Cape Hatteras Lighthouse Committee" which raised \$500,000 in private funds, half of which was spent on installing artificial seaweed, building sand fences and installing sandbags around the lighthouse. National Park Service reviewed six options for protecting the lighthouse; they ranged from doing nothing to moving the lighthouse inland.<sup>44</sup>

Beginning in May 1981, William Garrett installed the first of some 250 units of artificial seaweed called "Seascape." Designed by Garrett, these polypropylene devices consisted of hollow gravel-filled tubes with connecting fronds. Dropped offshore in about 10 feet of water, the fronds were designed to catch suspended sand particles, linking them into an underwater sandbar, thereby helping build up the beach. In November, a severe northeaster necessitated a third emergency protection project using additional rubble. Although ocean overwash was common, no erosion was noted in the immediate vicinity of the lighthouse. The groin nearest the lighthouse was extended landward another 150 feet in December 1981.<sup>45</sup>

In April 1982, a public workshop outlined goals and alternatives for interim and long range protection for the lighthouse. In July, an environmental assessment was circulated listing protection alternatives developed by the U.S. Army Corps of Engineers. The preferred alternative for long term protection was a seawall (revetment) encircling the lighthouse. Other alternatives under consideration included moving the lighthouse, creating offshore breakwaters, and building additional groins. In September, for interim protection, approximately 700 sandbags were placed in front of the lighthouse. The National Park Service considered building a 23-foot-high seawall around the lighthouse. An additional 5,000 units of artificial sea grass was installed and the groin nearest the lighthouse extended landward 150 feet in an attempt to

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<sup>43</sup> Seth S. King, "Just One More Storm Could Finish the Hatteras Light," *Wilmington Morning Star* (November 28, 1980), p. 12B; and "Synopsis: Cape Hatteras Lighthouse, August 1996."

<sup>44</sup> Bill Ruehlmann, "Cape Hatteras Lighthouse is at the center of a storm of controversy over whether the landmark should be moved," *The Virginia-Pilot* (August 7, 1989), p. B1; Gwen White, "Lighthouse options all costly," *The Daily Advance* (January 20, 1981), p. 13; Wilford Kale, "'Island' Called Only Solution for Lighthouse," *Richmond Times-Dispatch* (January 4, 1981), C4; and Dough Gardner, "U.S. to Sandbag Lighthouse," *The Virginia-Pilot* (October 24, 1980).

<sup>45</sup> "Synopsis: Cape Hatteras Lighthouse, August 1996."

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stop erosion.<sup>46</sup> In 1983, the Corps of Engineers developed specifications for a scour protection mat, or riprap sleeve, for the south groin to ensure its integrity and prevent its flanking by overwash. The Corps began planning and testing for the revetment.<sup>47</sup>

The scour protection mat for the south groin was installed in January and February 1984. The planning for the revetment continued with wave tank modeling at the Corps of Engineers, Experiment Station, Vicksburg, Mississippi, resulting in refined specification for a seawall/revetment to encircle the lighthouse.<sup>48</sup>

The Save Cape Hatteras Lighthouse Committee placed 2,700 additional units of artificial seaweed in front of the lighthouse in August 1986.<sup>49</sup>

In 1987, funding was secured for seawall/revetment alternative. A private organization, "Move The Lighthouse Committee," presented documentation of relocation technologies not available in earlier protection planning. The National Park Service contracted with the National Academy of Sciences for an independent review of all relevant information as to the best long term protection, considering risks, environmental impacts, visitor impacts and costs.<sup>50</sup>

In April 1988, the National Academy of Sciences presented its final report, *Saving Cape Hatteras Lighthouse from the Sea*, recommending that the lighthouse be relocated. A committee formed by the National Park Service established that the lighthouse should be relocated. The National Park Service also began work on an Environmental Assessment of Alternatives.<sup>51</sup>

In early 1989, a topographical map of the relocation area was developed, including soil testing, to assist in final site planning. The Environmental Assessment was distributed for public review in June 1989. The Southeast Regional Director announced in December that the National Academy of Sciences' recommended alternative of relocating the lighthouse had been selected by the National Park Service in that the seawall alternative would eventually create an island and

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<sup>46</sup> "Synopsis: Cape Hatteras Lighthouse, August 1996;" "Cape Hatteras Lighthouse to be repainted," *The Virginia Pilot* (August 25, 1994); "Briefing - Cape Hatteras Light Station Historic District, Ira Whitlock Visit, February 18, 1983, Inspection and Evaluations;" and Eddie Nickens, "Hatteras Light to be Moved," *Preservation News* (February 1990), p. 1.

<sup>47</sup> "Synopsis: Cape Hatteras Lighthouse, August 1996;" and "Briefing - Cape Hatteras Light Station Historic District, Ira Whitlock Visit, February 18, 1983, Inspection and Evaluations."

<sup>48</sup> "Synopsis: Cape Hatteras Lighthouse, August 1996."

<sup>49</sup> "Synopsis: Cape Hatteras Lighthouse, August 1996."

<sup>50</sup> "Options for Preserving the Cape Hatteras Lighthouse: Interim Report," and "Relocation is Suggested to Save Hatteras Lighthouse," National Research Council, *Newsreport*, volume 37, number 10 (November 1987), pp. 7-10.

<sup>51</sup> "Synopsis: Cape Hatteras Lighthouse, August 1996."

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expose the lighthouse to dangerous storms. Local citizens expressed opposition to the relocation plan.<sup>52</sup>

In 1990, National Park Service funding of \$59,000 and a \$16,000 donation from the Save Cape Hatteras Lighthouse Committee were applied to refurbishment of the sandbag revetment. The project was completed during the summer. Other interim protection measures, such as repair of the groin field, were under study.<sup>53</sup>

In 1991, the NPS Southeast Regional Office was in the final stages of completing the environmental requirements for moving the lighthouse. The NPS Denver Service Center established a team to prepare a Request for Proposals relative to a move. NPS contracted to restore the sandbag revetment damaged by the Halloween Storm of 1991. Denver Service Center (DSC) awarded a contract to Howard, Needles, Tammen, and Bergendoff of Alexandria, Virginia, for site development relative to lighthouse relocation. Contract negotiations by DSC were underway with a prospective contractor for development of relocation specifications. In November, a committee appointed by the Regional Chief Scientist assessed beach erosion and risk level at the lighthouse and provided recommendations for interim protection.<sup>54</sup>

In 1993, the Southeast Regional Director requested that the Denver Service Center place the contract for relocation specifications on hold so that the funds could be used for emergency interim protection measures. In 1994, the southern most groin, damaged over the years by constant battering from the ocean, was repaired in an effort to improve in-place interim protection. Hurricane Gordon passed within 100 miles of the area resulting in extensive erosion and dune breaching to the south and north of the lighthouse. There was also significant damage to the sandbag revetment, the repair of which resulted in the placement of 380 three-thousand-pound sandbags to rebuild and strengthen the protection. The National Park Service estimated an \$8.8 million cost to move the light station 2500 feet southwest.<sup>55</sup>

In 1995, the National Park Service spent \$500,000 to have 400 sandbags, weighing two to three tons each, form a seawall eight feet high, and for repair to the sheet-steel groin. That year the National Park Service supported two studies to aid in interim protection management for the lighthouse. The U.S. Army Corps of Engineers prepared specifications and impact analysis associated with installation of a new fourth groin to be added south of the existing groin field. Their study included an estimate of the erosion control effectiveness of the structure and the expected longevity of the installation. A committee of noted coastal engineers and geologists prepared a report which synthesized the current knowledge of coastal erosion, inshore ocean climate including bottom conditions, and storm history in the vicinity of the lighthouse. This data

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<sup>52</sup> Eddie Nickens, "Hatteras Light to be Moved," *Preservation News* (February 1990), p. 1; and Bill Ruehlmann, "Cape Hatteras Lighthouse is at the center of a storm of controversy over whether the landmark should be moved," *The Virginia Pilot* (August 7, 1989), p. B1.

<sup>53</sup> Bill McAllister, "U.S. Decides Not to Move Endangered Lighthouse," *Washington Post* (April 10, 1990), A14.

<sup>54</sup> "Synopsis: Cape Hatteras Lighthouse, August 1996."

<sup>55</sup> "Cape Hatteras Lighthouse to be repainted," *The Virginia Pilot* (August 25, 1994); and "Will Cape Hatteras Survive Another Winter," *Lighthouse Digest*, volume 3, number 2, 1994), p. 2.

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was used to produce a multi-risk analysis for the lighthouse which aided the Park Service in making interim protection measure decisions. The landward end of the south groin was rehabilitated with 184 feet of steel sheet piling.<sup>56</sup> U.S. Army Corps of Engineers issued their *Design Report and Environmental Assessment* for the fourth groin alternative in 1996.<sup>57</sup>

NPS rejected the fourth groin alternative in favor of relocating the light station because of long-term preservation considerations and environmental concerns. Building the fourth groin would be a short-term, stop-gap measure. In 1997, the National Park Service began plans to move the lighthouse. Archeological testing of the area affected by move was begun. Funding of \$12 million for carrying out the project was requested. Two million dollars for beginning the process was appropriated in FY 98. The addition 9.8 million is appropriated in FY 99.

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<sup>56</sup> "Synopsis: Cape Hatteras Lighthouse, August 1996."

<sup>57</sup> "Synopsis: Cape Hatteras Lighthouse, August 1996."