Baltimore Light Station's National Register of Historic Places Nomination

United States Department of the Interior, National Park Service National Register of Historic Places Registration Form

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[Historians' Office][USCG Home Page]
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Narrative Description (Describe the historic and current condition of the property.)1

1.Description Summary2

The Baltimore Light Station consists of a wooden caisson, which supports a round 30-foot-diameter cement-filled cast-iron cylinder painted red upon which rests a brick 2 1/2-story 38-foot-tall, octagonal-shaped, brick quarters painted white, with a mansard roof surmounted by a one-story black iron lantern. As is the case with caisson-type lighthouses, it is an integral station, i.e., the keeper's quarters, fuel storage areas, and lantern room are part of the same structure. The first two stories are masonry, and the upper 1/2-story is a wooden mansard roofed watch room. The combination dwelling and lantern have elements of the Second Empire architectural style.3 The Baltimore Lighthouse is located in 24 to 29 feet of water on the western edge of the main ship channel at the mouth of the Magothy River marking the south entrance to Craighill Channel, northern Chesapeake Bay, near Gibson Island, Anne Arundel County, Maryland. Owned and managed by the U.S. Coast Guard in District 5, access to the lighthouse is via boat.

General Description

Foundation

The foundation consists of a 48-foot-square wooden caisson resting on sand 82 feet below the surface of the water. On it, a cast-iron-plate cylinder 30 feet in diameter, rises to a height of 18 feet above the surface of the water. The top tier of plates flares out to form the lower gallery deck, which is covered by a cement slab. The caisson is filled with sand and the cylinder filled with rock and concrete. The plates are prefabricated; each plate containing Arabic and Roman numerals inscribed into an upper corner, which indicate plate and tier position. There are a total of 13 tiers.

A 42-inch-high rail surrounds the gallery deck; the top rail is 2 inches wide and 1 inch thick; the intermediate and bottom rails are 1 3/4 by 1/2-inch flat iron stock. The round balustrades are 2 inches in diameter with round 3/4-inch balusters and a central round baluster on each 90-inch section with a diameter of 1 inch. The balustrade finials are 3-inch-diameter balls, only two of which survive.

Tower, Exterior

The brick tower is a 24 by 24 feet square with truncated corners making it octagonal in shape, with a mansard roof originally covered with a patterned color slate. The dwelling doors were originally painted brown with green shutters and window frames. The outside privy hangs over the gallery on the southwest side. It is made of cast-iron sections, which are bolted together. The shape is that of an octagon cut in half with a pyramid roof capped by a metal finial. The door and

toilet seat are missing. A pair of boat davits once hung from both the east and west sides, but the east side pair has been removed. Landing ladders with platforms are located on the east and west side, accessed to the gallery deck via a metal grill hatch. There are also the footings for what appears to be a fog signal stand on the east side of the gallery deck. The davits and privy are painted black. At the top of the first level is a single corbeled brick belt, followed by two normal belts, and then two additional corbelled belts. At the top of the second level and just below the mansard roof are three corbelled belts. The brick is pressed brick with butter joints painted white.

Fenestration consists of an entrance door on the east and west side with a single window above on the second level. The door on the west side is made of 3-inch sheet iron. The door on the east side is cinder blocked over. There are double windows on the first and second levels of the north and south sides. All the windowsills and window and door lintels are made of cut granite. All the windows were originally six-over-six double-hung wooden sash windows, but these have been removed and replaced with louvered acrylic sheets. There is a dormer window on the north, south, east and west sides. The dormers were removed, probably in 1988, and rebuilt in 1992.

Tower, Lower Level

The cellar has four rooms originally used for the storage of coal, oil, wood, and other provisions. This level is accessed by a wooden ship's ladder. The floor plan is identical to that of Point No Point Lighthouse. Portholes provided light and ventilation, but these are now sealed. Beneath this level is a cement-plastered 3,500-gallon cistern for water storage. There are two manhole covers, which provided access to the cistern. Piping from the gutter system supplied water. A hand pump in the kitchen was hooked up to the cistern. The oil room retains its original metal door. The doorframes to each room are made of cast iron. The roof is vaulted. A coal shoot from the gallery deck is located on the east side. A hollow metal central support column has a cut out door near the bottom where weights for the fog signal striking mechanism could be accessed.

Tower, First Level, Interior

This floor is divided into two main rooms, consisting of a kitchen in the northwest sector and a sitting room employing the north half of this level. The entrance hall on the west has a stairway straight ahead, which leads up to the second level and down to the cellar. A larger storage room is located to the south of the west entrance hall. In the foyer of the east entrance is a wooden trap door for access to the cellar. A large metal hook hangs from the ceiling of the foyer to accommodate a pulley. The walls, ceiling, and stairwell are covered with beaded wood paneling, but this paneling on the exterior walls is water damaged and most of it removed. The windows and doors all have bulls-eye molding and matching trim. The molding and paneling is varnished. The central metal cylinder column is wood "grained" to match the wood interior. The kitchen retains its original porcelain sink sunk into a one-piece solid wood counter top with grooved drain board. The base of the hand pump is located to the right of the sink and is mounted on the counter top. The wooden floors are tongue-and-grove.

Tower, Second Level, Interior

This floor is divided into two bedrooms, each with a closet, and a shared large double closet on the east side. Off the hall on the west side is a smaller room, probably used for storage. The central support column is wood "grained." The entire exterior wall paneling has been removed, while the interior walls, ceilings, and trim are identical to the first floor. All the doors are intact but the hardware is missing. The stairwell continues to the third floor.

Tower, Third Level, Interior

The watch room is located on this half level. The original dormer windows, located on the north, east, south, and west sides, were removed sometime after automation. These were replaced following the original plans by the Coast Guard, Baltimore Group, during the summer of 1992. The walls and ceiling are covered with the same varnished beaded paneling as on the first and second levels. A 5-inch-diameter wooden column, also varnished, supports each corner. The metal central support column is also wood "grained." The fog bell was located outside the east dormer window. The counterclockwise stairwell continues to the lantern room but turns clockwise about two-thirds of the way up. The stairwell is varnished from top to bottom.4

Lantern

The original proposed design for the lantern as indicated by drawings, dated December 1895, from the National Archives (see copy with photographs) called for a lantern set on a half-story brick tower offset to one side from the roof of the second story of the keeper's quarters. This design was changed to the present design where the lantern is centered above the half-story third level. The lantern is octagonal in shape. A lightning spindle surmounts it with a ground wire running down to the "underside pinnacle on water closet," which is made of cast iron. The parapet walls are wooden covered with sheet metal on the outside and vertical beaded paneling on the inside. The lantern is painted black on the outside and the paneling white on the inside. The glass panes are set in cast-iron frames painted black. There are three ventilators set in the parapet walls but the regulators are missing. The ceiling of the lantern is covered with sheet metal; there is no smoke funnel. The lens is a 250mm acrylic lens, serial number 90521, with a red sector. It is powered by a single solar panel mounted on the upper gallery rail on the south side. The original lens pedestal is still being used.

The upper gallery deck is made of flat seam sheet metal, painted black. The gallery rail is made from 2-inch-diameter posts capped with 3-inch-diameter finial balls. The upper, intermediate, and bottom rail are made of 2-inch-wide, 1/2-inch-thick flat iron bar stock with no pickets. Access to the gallery is via a wooden half door, which is covered with sheet metal. The original hardware is intact except for the inside handle.

Conclusion

The dormers in the mansard roof were taken off when a new roof was installed and then later replaced by the Coast Guard. Deck fittings, such as boat davits around the lower gallery, have largely been removed. Much of the interior paneling on the exterior walls has been removed due to water damage. Original sash windows and exterior doors have been removed. Otherwise, the station maintains a high degree of historic integrity.

History

1.The construction of the Baltimore Lighthouse represented the final component in the system of aids to assist the mariner in navigating the channels reaching Baltimore's Harbor. The Lighthouse Board first requested a light for this locality in 1890. The annual report states:

The principal difficulty in the navigation of the New Cut-off Channel occurs at its junctions with the Craighill and Brewerton Channels. At these places the channel has been widened, and intention is to still further increase the width. For vessels of small draught there is no difficulty in entering or leaving Baltimore Harbor. It is only in the day-time, when it is difficult to distinguish the buoys which mark the turning-points, and for large steamers, that additional aids to

navigation are needed. A lighthouse is most wanted at the mouth of the New Cut-off Channel, i.e., where this channel joins the Craighill. On account of the impressible character of the shoal, and the liability to destruction or damage by fields of moving ice, no lighthouse, other than an expensive one, can be made permanent. The estimated cost of a suitable structure is $60,000, and an appropriation of this amount is recommended therefor.6

In 1895, borings made at the selected site found a layer of soft mud 55 feet thick below the surface. This discovery along with a contemplated change in the entrance to the Craighill Channel in 1896 necessitated a reevaluation of cost and deliberation on a better site for the light station. When Congress appropriated only $60,000 on August 18, 1894, it was decided to use a screw pile type foundation lighthouse, but a "disk pile" test conducted in 1898 proved discouraging. The Lighthouse Board Annual Report for 1899 reports, "It is now evident that the expense of building a light-station in the 55 feet of semi-fluid mud which overlaps the sandy bottom will be great." Congress was requested to appropriate another $60,000 in 1900 for a more expensive caisson type lighthouse, which would have to resist winds of 100 miles per hour, ice pressure of 30,000 pounds per square foot, and a current of three miles per hour. The Lighthouse Board felt the lighthouse should be built by the pneumatic system of construction. This request and a new caisson design for the lighthouse was accepted on June 10, 1902, but only one bid was submitted, and it was $80,000 over the allocated $120,000. The bid was rejected and the contract re-advertised. Congress appropriated another $60,000 to complete the project on April 28, 1904.7

In early 1904, William H. Flaherty and Frederick Martin Lande of Brooklyn, New York, were the sole bidders. They had experience building other caisson lighthouses having built Romers Shoal (1898), New York Harbor, New York; Rockland Lake (1894), Hudson River, New York; Plum Beach (1899), Rhode Island; Solomons Lump (1895), Maryland, and Smith Point (1897), Virginia.8 Through negotiation, Flaherty and Lande were able to get their contract price lowered to within the budget. They were allowed to use large stones in the concrete, finish the cellar without brickwork, and reduce the number of bolts and use different timbers in the caisson. Atlanta Machine Works of Atlanta, Georgia, won the contract to supply the metal work. By August 9, 1904, twelve courses of the caisson were assembled and launched at the Lazaretto Lighthouse Depot, Baltimore. Then eight more timber courses were added. Two tiers of iron plate for the cylinder were attached and the assembly towed to the site. A Baltimore newspaper stated the following prophetic words:

The erecting of this big lighthouse will be one of the most difficult tasks ever undertaken by lighthouse builders. Not only that the site is in an exposed place, where the seas have a long sweep and the ice in winter rushes down the Bay with terrific force, but from the surface of the water the engineers will have to go down nearly 86 feet before they will reach a firm resting-place for the foundation. The water at the site is 23 feet deep. Then comes a stratum of 55 feet of mud, soft and fluid on top, but increasing in firmness as the depth increases, and underlaid by a stratum of coarse sand four feet thick, below which is a layer of fine sand. In this fine sand the bottom of the lighthouse will be planted.

In order to reach this depth, which is the greatest ever attempted in lighthouse construction, it is necessary to use a caisson and working chamber in which men can go down and prepare the foundation. To withstand the awful pressure of the water, the caisson or working chamber, of wood, is a remarkable structure.

It is 48 feet square and 23 feet high, the first seven feet of height forming the frustrum of a square pyramid. This structure is built of gigantic timbers, the smallest of which are 12 feet long

and 12 inches by 12 inches, while the largest are 48 feet long and 24 inches by 12 inches. In order to get these later timbers, it was necessary to search the Georgia woods for suitable trees, and the cost of them delivered was way out of proportion to the smaller sticks.

Million Feet of Lumber

The timbers are laid lengthwise and across in alternate layers, and each course, as the layers are called, is securely bolted and spiked, caulked and pitched, In the walls more than 600,000 feet of lumber are used, while in the roof are 500,000 feet, making a total of 1,100,000 feet of lumber used in the working chamber alone.

To keep this mass of timber together 26,000 spikes and bolts ranging in length from 21 inches to 90 inches, have been used...9

The estimated weight of the working chamber was 972 tons. Flaherty and Lande said that "if they get but two calm days they will not worry." They planned to use about 60 men, called "sand hogs," to work one to three hour shifts depending on depth, night and day, to remove the debris from the caisson bottom so the foundation would sink to the desired depth. Flaherty and Lande also said they anticipated no great difficulty in placing the caisson on the bottom.10

The assembly was sunk on September 19, 1904, on top of 91 wooden piles previously driven into the muddy bottom. Within two days the assembly had sunk into the mud eight feet when on September 21, "heavy seas filled the cylinder" and the caisson settled to one side about seven feet out of level. On October 12, during a "severe storm," the caisson completely turned "flat on its side" despite attempts to level it by placing concrete on the inside of the high side. Flaherty ceased operation implying he would return in the spring. It was reported in the Baltimore newspapers that, "the erecting of this lighthouse is conceded to be one of the most difficult undertakings that lighthouse builders have attempted."11

By spring, Flaherty had defaulted on his contract, and was sued by the U.S. Government. The insurance company, which had bonded the contractor, United States Fidelity and Guaranty Company, spent the next three years trying to right the caisson using counterbalancing methods in an attempt to recover some of its monies. They began by removing 62 of the 120 iron plates and erected a U-shaped pier around the assembly to support a steam engine, hoisting machine, ten A-frames, and temporary housing. On June 30, 1907, they succeeded in righting the caisson using 80 tons of large stones placed on the high side, and heavy weights suspended from wire cable secured to the caisson and passed over the A-frames, all while pumping mud from underneath one side. By November 20, 1906, the assembly was within 17 degrees of vertical. Work commenced again the following spring by replacing the third and fourth tiers of iron plates and placing 80 tons of stone on the high side of the caisson and pumping mud from under the low side. Then the fifth and sixth tiers were added and approximately another 100 tons of stone placed on the caisson. This method was continued until the assembly was vertical and the cylinder filled with stone and concrete. Upon completion, the caisson was sunk 82 feet below the water level. The brick dwelling and lantern were then built, and the lighthouse was commissioned with the lighting of a fourth-order lens on October 1, 1908. Baltimore Lighthouse was the last lighthouse built in the Chesapeake Bay, completed 28 years after it was first requested. It was the largest wooden lighthouse caisson built in the United States and perhaps in the world up to that time.12

Baltimore Lighthouse was outfitted with a fog bell signal when first built, but it was replaced with a foghorn sometime before 1923. In preparation for automation, the illuminant was changed

from oil to acetylene and the clock-operated fog signal discontinued and was replaced by a fog bell Buoy 6C on May 1, 1923. The operational and maintenance duties were turned over to the keepers at nearby Sandy Point Shoal Lighthouse.13 The keeper at Baltimore Lighthouse was transferred to Point No Point Lighthouse where its old keeper was transferred to be the new second assistant keeper at Sandy Point; the assistant keeper at Baltimore Lighthouse transferred to Seven Foot Knoll Lighthouse. Interestingly, the keeper who transferred to Sandy Point Shoal Lighthouse had the same last name, Midgett, as a keeper already stationed there.14

In May of 1964, the Coast Guard experimented with lighting lighthouses using nuclear power. The chosen test site was Baltimore Lighthouse. A 4,600-pound SNAP-7B Strontium-90 powered 60-watt isotopic fuel cell generator was installed by crane from a Coast Guard buoy tender and passed through the east doorway on a trolley platform. The atomic powered generator, smaller than a 55-gallon drum, was housed in an especially constructed heavy steel box. The test ran for a year and upon completion, the nuclear equipment was removed and nuclear power has not been attempted since. A Geiger counter test detected no nuclear contamination.15

About 1983, the windows were bricked over, and a steel door and frame were installed to keep out vandals. The glass panes were replaced by acrylic panels, which had yellowed. These were replaced by safety glass in 1990. The blocked-up windows were opened, the gallery "restored," and the roof flashing repaired by USCGC Red Birch in 1990 to improve air circulation and bring the lighthouse closer to its original physical appearance. The 300mm acrylic lens was replaced with a 250mm acrylic lens.16