NPS Form 10-900-a
(8-86)

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number _____ Page _____

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 93001373 Date Listed: 12/09/93

St. George Reef Light Station | Del Norte | CA
Property Name | County | State

Light Stations of California MPS
Multiple Name

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

for Signature of the Keeper — Date of Action: 12/9/93

==========

Amended Items in Nomination:

Period of Significance:
The period of significance should not predate the resource being nominated. Since the St. George Reef Light was constructed between 1883 and 1891, the period of significance is revised to read **1883-1940.** [The period 1883-1991 given under significant dates is acceptable since it encompasses the unique construction and engineering achievements necessary for the completion of the reef light.]

U.T.M.:
The correct UTM coordinates are: **10 385800 4632400.** [This is done to clarify slightly different values provided with the original nomination documentation.]

This information was confirmed with the California SHPO.

DISTRIBUTION:
National Register property file
Nominating Authority (without nomination attachment)

NPS Form 10-900
(Rev. 8-86)

OMB No. 1024-0018

ENCLOSURE(3)

137

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

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NATIONAL REGISTER

This form is for use in nominating or requesting determinations of eligibility for individual properties or districts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "X" in the appropriate box or by entering the requested information. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, styles, materials, and areas of significance, enter only the categories and subcategories listed in the instructions. For additional space use continuation sheets (Form 10-900a). Type all entries.

1. Name of Property

historic name St. George Reef Light Station
other names/site number n/a

2. Location

street & number Northwest Seal Rock, approx. six n. miles off coast from ☐ not for publication
city, town (Crescent City) Point St. George ☐ vicinity
state California code CA county Del Norte code 015 zip code n/a

3. Classification

Ownership of Property	Category of Property	Number of Resources within Property	
		Contributing	Noncontributing
☐ private	☐ building(s)		buildings
☐ public-local	☐ district		sites
☐ public-State	☐ site	1	structures
☒ public-Federal	☒ structure		objects
	☐ object	1	0 Total

Name of related multiple property listing:
Light Stations of California

Number of contributing resources previously listed in the National Register 0

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. ☐ See continuation sheet.

Signature of certifying official — Date 10/8/93

Director, Ofc of Transportation Regulatory Affairs, U.S. Dept of Transportation/OST
State or Federal agency and bureau

In my opinion, the property ☒ meets ☐ does not meet the National Register criteria. ☐ See continuation sheet.

Signature of commenting or other official — Date April 21, 1993

California Office of Historic Preservation
State or Federal agency and bureau

5. National Park Service Certification

I, hereby, certify that this property is:

☑ entered in the National Register. ☐ See continuation sheet. — 12/9/93
☐ determined eligible for the National Register. ☐ See continuation sheet.
☐ determined not eligible for the National Register.
☐ removed from the National Register.
☐ other, (explain:) _____

for Signature of the Keeper — Date of Action

6. Function or Use

Historic Functions (enter categories from instructions)	Current Functions (enter categories from instructions)
Transportation: water related	Vacant/not in use
Domestic: institutional housing	
Defense: Coast Guard facility	

7. Description

Architectural Classification (enter categories from instructions)

Other: lighthouse/utilitarian
Other: Wave-swept tower

Materials (enter categories from instructions)

foundation Granite and concrete
walls Granite, concrete, brick
roof Metal/copper
other Wood: pine, Port Orford cedar, redwood; glass

Describe present and historic physical appearance.

The St. George Reef Light Station is located on Northwest Seal Rock, six miles off Point St. George. The reef is a cluster of barren rocky islets and sunken rocks about six-and-one-half nautical miles long and from one to one-and-one-half nautical miles wide; it projects in a westerly direction from Point St. George, which is located midway between Cape Mendocino and Cape Blanco. The light station has one structure, a seven-story masonry lighthouse tower, which rises to a height of 146 feet above MHW (mean high water) from an oval masonry pier, 86 feet long and 70 feet above MHW. The tower is square with a slight taper toward the top and a spiral stair encased in a round tower, half of which projects on the NE elevation. A metal hoist derrick with a boom is affixed to the stair tower. Extending from the base of the pier on the SE side is a masonry boat landing; a metal stairway descends to the landing from a door in the pier. Until 1975 a First Order Fresnel lens occupied the space above the lantern room; in that year the station was disestablished, and the lens was removed to the Del Norte County Museum in Crescent City. The fog signal was also removed from its metal mount, which remains on the pier. Although the functions of the various floors of the tower are more or less as they originally were, the interiors were remodeled in 1955, and much of the original equipment was removed, resulting in a loss of integrity. The exterior of the tower and pier retains a high degree of integrity as does its rocky setting.

The lighthouse tower and pier are essentially one structure. The oval pier of stone and concrete is 86 feet in diameter with an outer base ring 10 feet wide. The outside courses of the pier are 2 feet 6 inches high. All the horizontal beds were connected by a dowel of gun metal 2 inches in diameter in each block that projects half its length into the block below except for the upper course in which dowels were omitted; all the vertical joints of outside stones were dovetailed or joggled into each other. The top of the pier was laid with stone flagging 12 inches thick. A drop of three inches from the center to gutters cut in the stone of the outer rim acted as a water-shed from which rainwater was carried through a 4-inch pipe to the cisterns in the base of the pier. The tower is clad with rusticated stone laid in courses of graduated sizes. The base has seven courses of large stones capped with a water table. The mid-section of the tower extends from the third through the fifth floors and is terminated by a belt cornice. The sixth floor is capped with a projecting cornice supported on stone corbels that is surmounted by a metal railing surrounding an observation deck outside the lantern room on the seventh floor. The First Order Fresnel lens was housed in a cylindrical glass and metal cage with a conical metal roof and ball vent, which rises above the lantern room; the perimeter of the lantern room extends beyond that of the cage providing a narrow walkway protected by a metal railing.

[X] See continuation sheet

The interior walls of the pier are constructed of square rubble-stone; the roof arches in the pier and the arches supporting the tower floors are of concrete. The pier contains storage for 77,000 gallons of water below the first floor, which contains the engine room, storage, and a stair to the second floor, atop the pier, where the laundry and boiler are located. The third floor contains the galley; the fourth and fifth floors, living quarters; the sixth floor, a radio room; and the seventh floor, the lantern room. The tower was lined with brick laid in cement mortar. The floors of the keeper's quarters were made of seasoned Humboldt pine and the walls were finished with three coats of sand-finished plaster. The inside doors and wainscoting are of Port Orford cedar with redwood panels; all other trim is redwood. The outside doors and windows are of oak. The tower is fenestrated with a single window in the base, double windows for the third, fourth, and on the north and south sides of the tower; single windows light the floors of the stair tower.[1]

1. A. Ballantyne, "Description of the Work," in *Report of the Light-House Board*, 1892: 276-278.

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:
☐ nationally ☐ statewide ☒ locally

Applicable National Register Criteria ☒ A ☐ B ☒ C ☐ D

Criteria Considerations (Exceptions) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

Areas of Significance (enter categories from instructions)	Period of Significance	Significant Dates
Maritime History	1867-1940	1883-1891
Transportation		
Engineering		
Commerce		

Cultural Affiliation

n/a

Significant Person
n/a

Architect/Builder
Office of the Light-House Engineer, Twelfth District

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

The St. George Reef Light Station meets the requirements for registration as defined in the multiple property submission "Light Stations in California." The station's significance is evaluated with respect to the historic context, Maritime Transportation in California: 1840-1940. The station is significant under Criteria A and C. In respect to Criterion A, the light station reflects California's critical reliance on maritime transportation and the aids that made navigation possible. In respect to Criterion C, the St. George Light is one of two examples of the wave-swept tower (a structure on a rocky islet that was built to withstand the full force of the sea) constructed on the Pacific Coast and one of the relatively few examples of this type in the United States. Thus, it exemplifies the culmination of a branch of marine engineering technology that began with the Eddystone towers in England. The square stone tower is also an unusual design.

The importance of a lighthouse at Point St. George off the California coast was revealed dramatically in 1865 by the wreck of the schooner, Brother Jonathan, on the shoals of the St. George Reef with the loss of 166 lives. In response to a request by the Light-House Board drafted in May 1866, President Andrew Johnson reserved land for a lighthouse on Point St. George on June 8, 1866. In January 1867, following another request from the Light-House Board, President Johnson reserved the rocky islets off Point St. George that had been indicated in a U.S. Coast Survey sketch. The State of California ceded jurisdiction to the land on March 12, 1872. In a letter of January 20, 1875 to the Light-House Board, an engineer from the Office of the Light-House Engineer, Twelfth District, compared the two reservations with respect to selecting the best location for the construction of a lighthouse that would be an aid to navigation at this dangerous point on the Pacific Coast. The board replied to the appraisal with the suggestion that, despite a higher cost, it might be more effective to locate the lighthouse on one of the outlying rocky islets. When this suggestion was relayed to the U.S. Coast Survey in Los Angeles, the reply was that although a light on Northwest Seal Rock, the outermost rock of the reef, would benefit the general sea-born commerce, the exposure of the rock to the full force of the sea would make establishing a foundation on it very difficult.[1] While various sites were being considered, the board continued to recommend the construction of a lighthouse at or

☒ See continuation sheet

near Point St. George to the Congress. In 1882, Northwest Seal Rock was selected as the site, and $50,000 was appropriated to begin construction. The Annual Report for this year estimated that construction of the lighthouse would cost $333,000. During the remainder of the year, several attempts were made to survey the rock with the result that a plan and a model of the site was made on a scale of 25 feet to the inch. In 1883 Congress appropriated an additional $50,00, which was used to hire skilled and experienced workmen to do the preliminary work of preparing the site, a task which involved great risk, labor, and exposure. Since there was no shelter near the rock, the 137-ton schooner La Ninfa was fitted to accommodate 25 or 30 men and towed from San Francisco by the wrecking steamer, Whitelaw, which succeeded after several attempts in laying the 12,000-pound mooring, and anchoring the schooner near the reef.[2] The workmen traveled between the schooner and the rock by means of a rig 4 feet in diameter that was connected to an overhead traveler line and formed of an iron ring from which a round platform was suspended by three lines of ropes. The platform carried four to six men at a time out to the rock where they jumped to safety; one trip took three minutes. Also during this season plans for improvements were made to Humboldt Bay's North Spit for a depot and landing equipped with a 120-foot stone cutters shed, bunk house, mess hall, wharf and two large cranes, one at the wharf and one in the stoneyard. A short, narrow-gauge railway ran between the cranes.[3]

From 1884 through 1886, congressional appropriations fell so far short of meeting the costs of the work that little progress was made. Funds were spent largely on quarrying granite in a site on Mad River about five miles north of Humboldt Bay and preparing the site; many of these preparations had to be repeated because of deterioration from exposure, disuse, and damage from heavy seas. In a report on the construction of the light-station prepared after he left his position as superintendent in 1886, Captain A. H. Payson observed that the construction process had been needlessly prolonged by the unpredictability of Congressional appropriation of funds for public work. In 1887, A. Ballantyne, who had supervised the construction of the Tillamook Rock Light-Station (a square, stone, wave-swept lighthouse off the Oregon coast completed in 1881) became the superintendent for the St. George Reef Station. In March 1887, Congress approved the appropriation of $120,000, which made possible the purchase of equipment and hiring of labor to lay stone transported from Humboldt Bay to the rock. Unforeseen difficulties in landing the stones, which ranged in weight from two-and-one-half to seventeen tons, caused numerous delays; over 14,000 tons of stone were used in the structure. Moreover, increases in costs shrank the appropriation money so that less work was accomplished than had been projected. However, by October 1887 the oval pier was finished and paved, and in 1888 Congress again appropriated $150,000, which enabled a

new work force to be organized and two new steam vessels to be chartered to transport the stone. Because living quarters for the workers had been built on the rock, crews did not have to be transported there and the stone could be laid in courses as fast as it arrived. Yet because of the many delays - in four years only one complete season of work had been accomplished - the total cost for the structure was revised to be $700,000.

Congress appropriated the $200,000 requested for fiscal year 1889-90. By the end of fiscal year 1889 the 17th course of masonry had been laid under severe weather conditions during which high waves washed the workers' quarters away several times; fortunately, no one was injured. Although the walls of the completed pier structure were 16 feet above sea level, spray often washed over the top making it difficult to lay the stone for the tower because the spray washed the mortar off the beds before the stones could be set. Nevertheless progress continued and by the end of fiscal year 1891, the base of the tower was completed, and the tower with its brick lining was built and backed up for 30 feet above the base, nearly to the window sills of the third story. The finish work on the tower was done between August 23 and October 29; in November 1891 the completed light station was left in charge of three keepers. However, the station could not operate until August 1892, when the First Order Fresnel lens was installed in the tower 146 feet above the water. The light was 6 feet in diameter and stood 16 feet high; it flashed alternately red and white with 12.5-second intervals between flashes, which were visible for 18 miles. To increase the intensity of light an oil vapor lamp was substituted for the wick lamp in 1911. In 1913 the steam-powered fog signal, a 12" whistle, was changed to air sirens powered by a compressed air plant. The sirens were replaced by an air-powered diaphone horn in 1936. Because of the shoaling up of the harbor after construction of a breakwater at Crescent City in the 1930s, the original lighthouse launch landing had to be abandoned in favor of a wharf in the harbor, which was leased for a landing in 1938.

The 1892 Annual Report of the Light-House Board stated that the lighthouse had been constructed under the overall supervision of Major W.H. Heuer, Corps of Engineers, U.S. Army; Light-House Engineer, Twelfth District. The work began in 1883 under the direction of Captain A.H. Payson of the Corps of Army Engineers; in 1887 A. Ballantyne succeeded Payson as Superintendent of Construction and remained in charge until the completion of the work in 1891. The total cost of the structure was $704,633.78: 42.91 percent was for labor, 21.90 percent for transportation, 9.45 percent for buildings and plant, 8.09 percent for moorings, 6 percent for superintendence, 2.19 percent for the lens, 2.39 percent for cement, 1.74 percent for plate glass ands metal work, and 1.52 percent for vessels for quarters. The balance of 3.97 percent was distributed over a wide variety of items. Other expenses, including

$5,000 for the First Order Fresnel Lens, raised the total amount of funds expended over a period of eight years to $726,000.

Within the Light-House Service, the St. George Reef station was associated with extreme hardship. On October 17, 1893, hardly a year after the station began operation, the first assistant keeper lost his life while attempting to land on the rock in a standard station boat. The station was authorized to maintain a staff of five keepers who served on the rock on a rotating basis, with three keepers on duty and two ashore; their families lived eight miles to the southeast in Crescent City. However, the routine of three months on the rock and two months off was difficult to maintain because of the frequency of dangerous sea conditions, which made departure from the rock at the end of the tour of duty impossible. Moreover, the listing of keepers reveals that many keepers resigned from the service after one or two months at the lighthouse. A memorandum of 17 April 1918 from the office of the Lighthouse Inspector in San Francisco to the Lighthouse Bureau stressed the need for five keepers for the station, emphasizing that the hazardous trip by launch from the landing to the rock required two men on board and adding that because the launch was often detained on shore for weeks at a time by unfavorable weather, it was important to have three keepers at the station to maintain a double watch on foggy weather. The report went on to say that frequent vacancies and leaves of absence had meant that there were seldom more than three keepers on the station at any one time. After a serious accident in 1901, the boom of the hoisting derrick was replaced with a new boom 90 feet long that extended far enough from the side of the rock to reach a point beyond a bad eddy and swell that had made landing dangerous. On December 7, 1923, during the worst storm recorded during the lighthouse's history, heavy seas rolled over the platform 70 feet above mean tide level breaking the moorings of the donkey engine and destroying the mechanical hoist.

In 1910 the U.S. Light-House Board was reorganized as the U.S. Lighthouse Bureau. When the bureau became part of the Coast Guard in 1939 enlisted personnel took over the lighthouses from the keepers. On 13 May 1975 the St. George Reef Light Station was disestablished as a manned unit and ceased to function as an aid to navigation; the first order Fresnel lens was removed and taken to the Del Norte County Historical Society Museum in Crescent City.

Wave-swept towers: This class of lighthouse tower is located on rocks, shoals, and other situations exposed to the full force of the sea. Masonry towers were preferred for wave-swept rocks, which provided a good foundation. Several factors marked the design of wave-swept towers: a low center of gravity with the mass of the structure at any horizontal section sufficient to prevent is displacement by the combined forces of wind and waves without dependence on the adhesion at

horizontal joint faces or on the dovetailing of stones that was employed as an additional safeguard. The lower portion of the tower exposed to the direct horizontal stroke of the waves was given a vertical face, and the upper walls were either battered or continuously curved. The tower had to be high enough to avoid having the light obscured by broken water or dense spray. The foundation of the tower had to be well embedded in the solid rock, and the stones had to be dovetailed or joggled to each other to prevent their being dislodged by the sea during construction and to give additional stability to the whole.

The 18th century Eddystone towers off the coast of Plymouth, England, were the first towers constructed to withstand the full force of the open sea. A succession of towers on the same site tested different materials and techniques until a successful method of dove-tailing or interlocking granite blocks was developed. The 1759 tower designed by engineer John Smeaton was the first to use dove-tailed joints. The first wave-swept tower in the United States was built on Minots Ledge, Mass., in 1860. Four others, constructed in various locations in the 1870s and 1880s, preceded the St. George Reed light station, 1883-1891, which is along the world's most famous wave-swept towers.[4]

1. Eldridge, M. "History of St. George Reef Northwest Seal Rock Light Station," typewritten manuscript dated 10/51, p.2. included in papers from Guy Towers, The Light House House Information Service, Crescent City, CA

2. Ballantyne, A. "Construction of Northwest Seal Rock (St. George Reef) Light-house, Seacoast of California," *Report of the Light-House Board*, 1892, pp. 271-278. Information about the history of the construction in this section is largely taken from this report.

3. Wheeler, Wayne "St. George Reef, America's Most Expensive Lighthouse." *The Keeper's Log*, Fall 1985, p. 3.

4. Towers, Guy, letter written in response to a request for information on wave-swept towers, April 23, 1992.

9. Major Bibliographical References

A. Ballantyne, "Description of the Work," in Report of the Light-House Board, 1892: 276-278.

Bookwalter, Jack. "Light Stations of California," National Register of Historic Places Multiple Property Documentation Form, 1989.

Department of Transportation, U.S. Coast Guard, Proceedings of a Board of Survey, Survey no. 12-074-79, 6 June 1979. Property Identification for St. George Reef Light Station, Crescent City, California.

Eldridge, M. "History of St. George Reef Northwest Seal Rock Light Station," no source, 1951.

"Lighthouses:Lighthouse Structures and Wave-swept Towers." Encyclopedia Britannica: Chicago London, Toronto, 1952, Vol 14 pp 86-90.

[X] See continuation sheet

Previous documentation on file (NPS):

- [ ] 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 # _____
- [ ] 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: _____

10. Geographical Data

Acreage of property 1.6 acres

UTM References

	Zone	Easting	Northing
A	C,B	3,8,5,9,0,0	4,6,3,2,3,0,0
B			
C			
D			

[ ] See continuation sheet

Verbal Boundary Description

The St. George Reef Light Station occupies Northwest Seal Rock, the outermost rock of St. George Reef, located at 41 degrees, 50.2' N; 124 degrees 32.5' W: the rocky islet is bounded by water on all sides.

[ ] See continuation sheet

Boundary Justification

Northwest Seal Rock was reserved along with all the rocky islets off Point St. George by President Andrew Johnson on 9 January 1867 for light house purposes; it is thus all the property that is historically associated with the St. George Reef Light Station.

[ ] See continuation sheet

11. Form Prepared By

name/title Sally B. Woodbridge
organization none date 5/14/92
street & number 2273 Vine Street telephone (510) 848-4356
city or town Berkeley, state CA zip code 94709

National Archives, Washington, D.C. Numerous excerpts from reports ad other documents ranging in date from the 1880s to 1938 pertaining to the St. George Reef Light Station photocopied and sent to the author by Guy Towers, The Light House Information Service, Crescent City, California.

Payson, Captain A.H. and Ballantyne, A. Reports dated 1887 and 1892 respectively, from the Office of the Light-House Engineer, Twelfth District, San Francisco, California to the Light-House Board on the construction of the St. George Reef Light Station, Seacoast of California.

Shanks, Ralph and Janette, *Lighthouses and Lifeboats of the Redwood Coast*. San Anselmo, Costano Books, 1978.

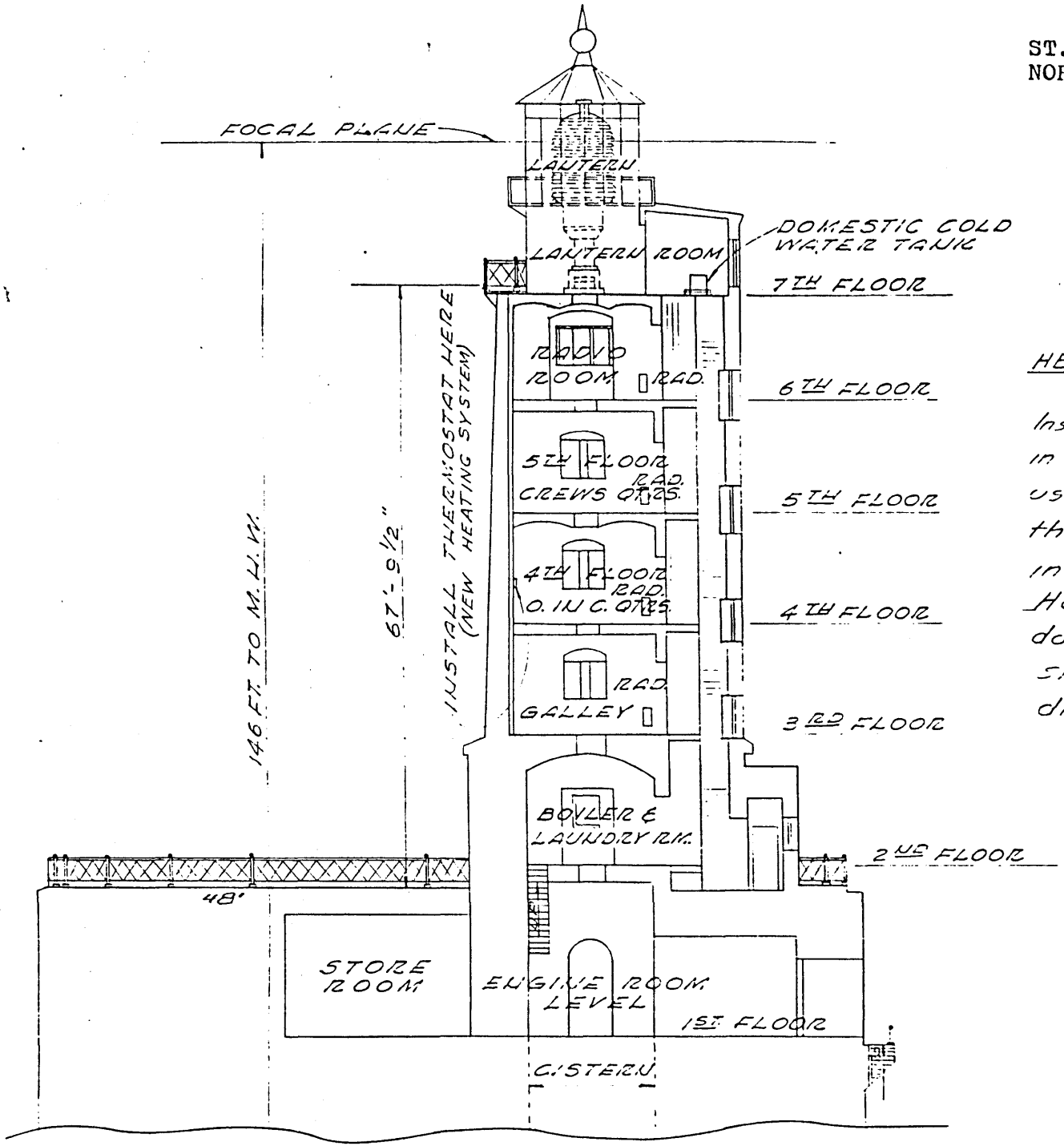
U.S. Coast Guard, Twelfth District, Coast Guard Island, Alameda, CA. Real Estate and Engineering Records pertaining to the St. George Reef Light Station.

U.S. Light-House Board, Annual Report, various dates, Washington, D.C., GPO.

U.S. Lighthouse Society in San Francisco, California. Files on the St. George Reef Light Station.

Wheeler, Wayne. "St. George Reef, America's Most Expensive Lighthouse." *The Keeper's Log*. Fall 1985: 2-8.

ST. GEORGE REEF LIGHT STATION,
NORTHWEST SEAL ROCK

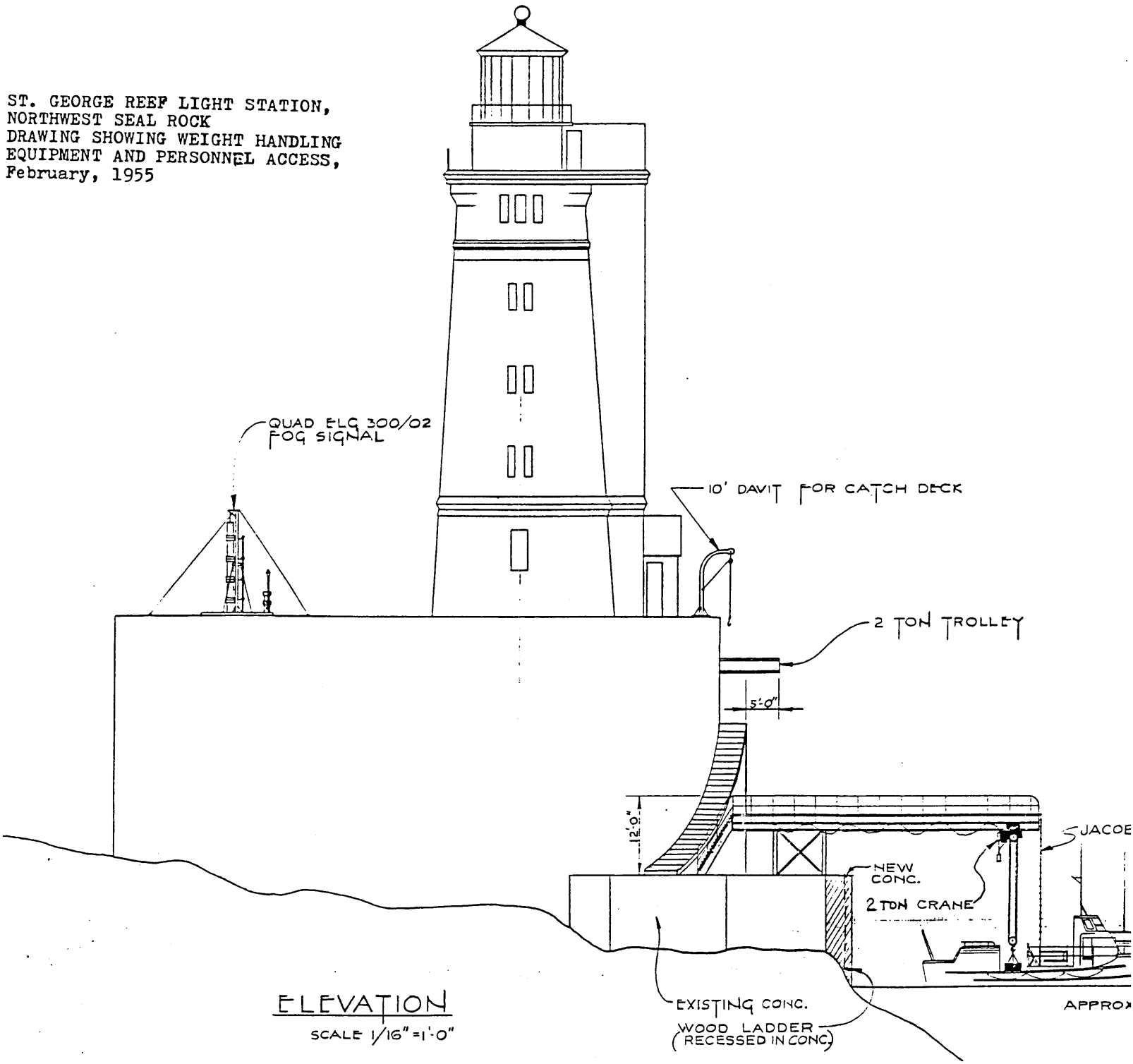


HEATING SYSTEM NOTES

Install Radiators (Convectors) in Galley, the two Rooms used for Quarters and the Radio Room. Thermostat in O. in C. Quarters. Heating Boiler will supply domestic hot water. Galley stove water back will be disconnected.

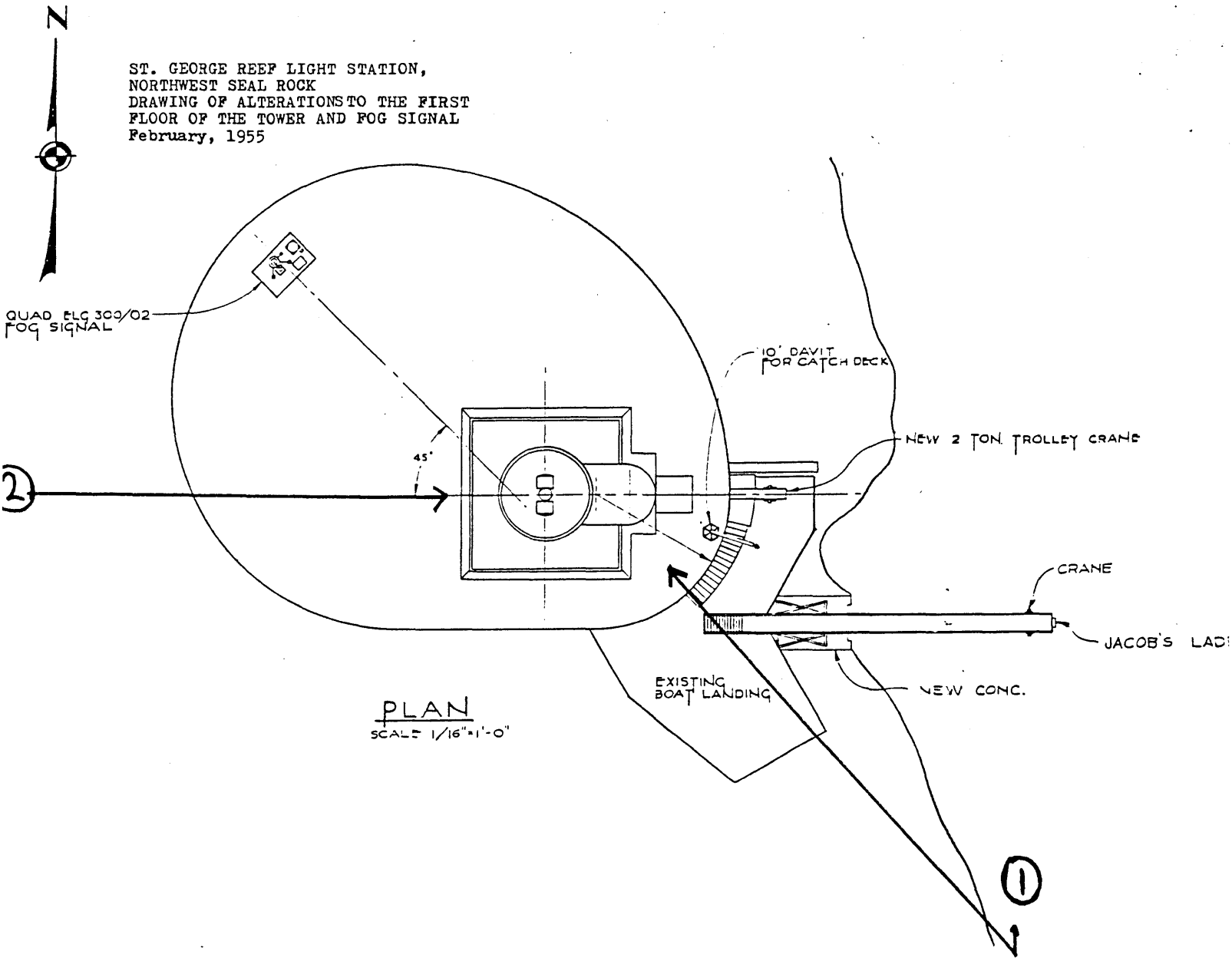
SECTION AT TOWER "B-B"

ST. GEORGE REEF LIGHT STATION,
NORTHWEST SEAL ROCK
DRAWING SHOWING WEIGHT HANDLING
EQUIPMENT AND PERSONNEL ACCESS,
February, 1955

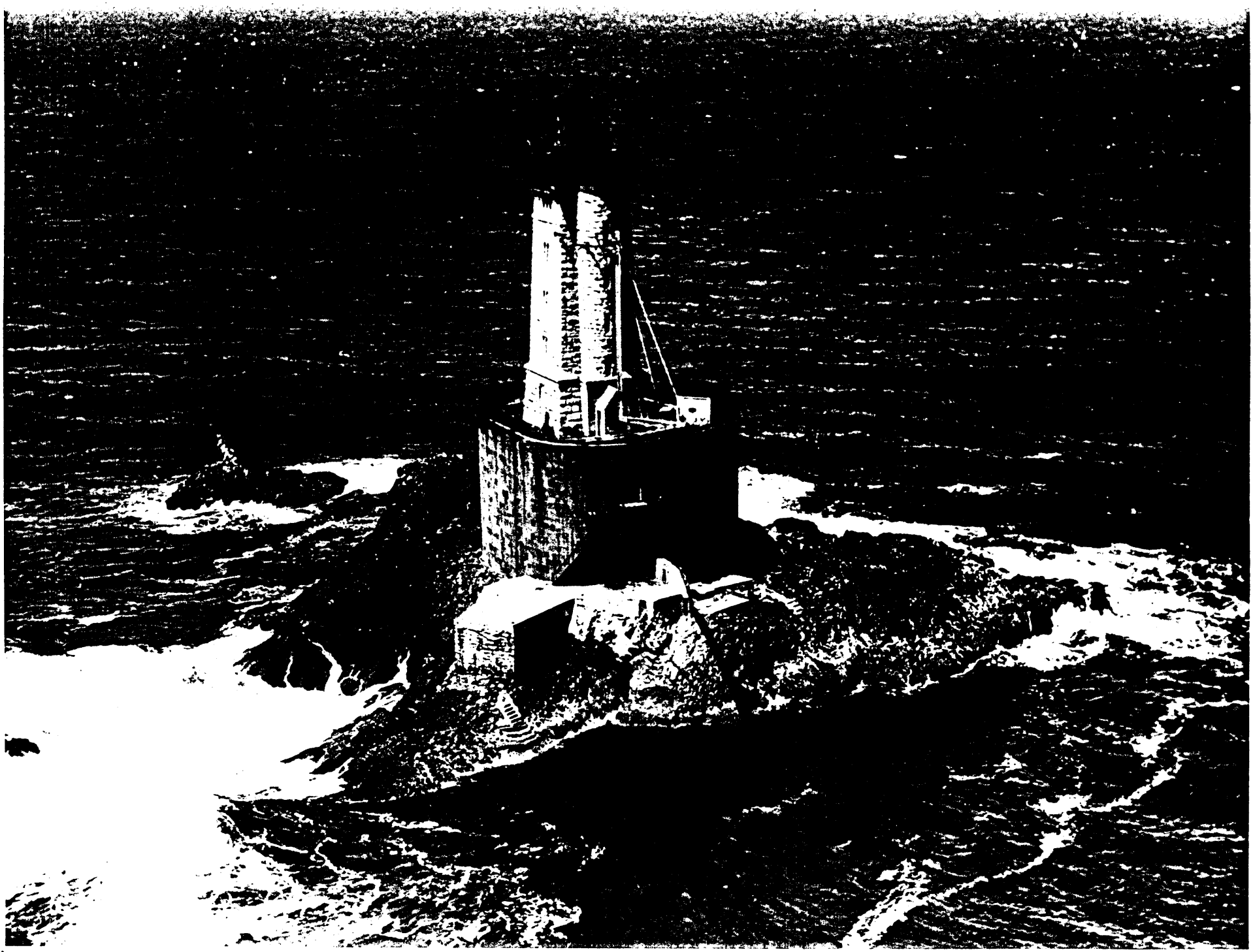


ELEVATION
SCALE 1/16" = 1'-0"

ST. GEORGE REEF LIGHT STATION,
NORTHWEST SEAL ROCK
DRAWING OF ALTERATIONS TO THE FIRST
FLOOR OF THE TOWER AND FOG SIGNAL
February, 1955

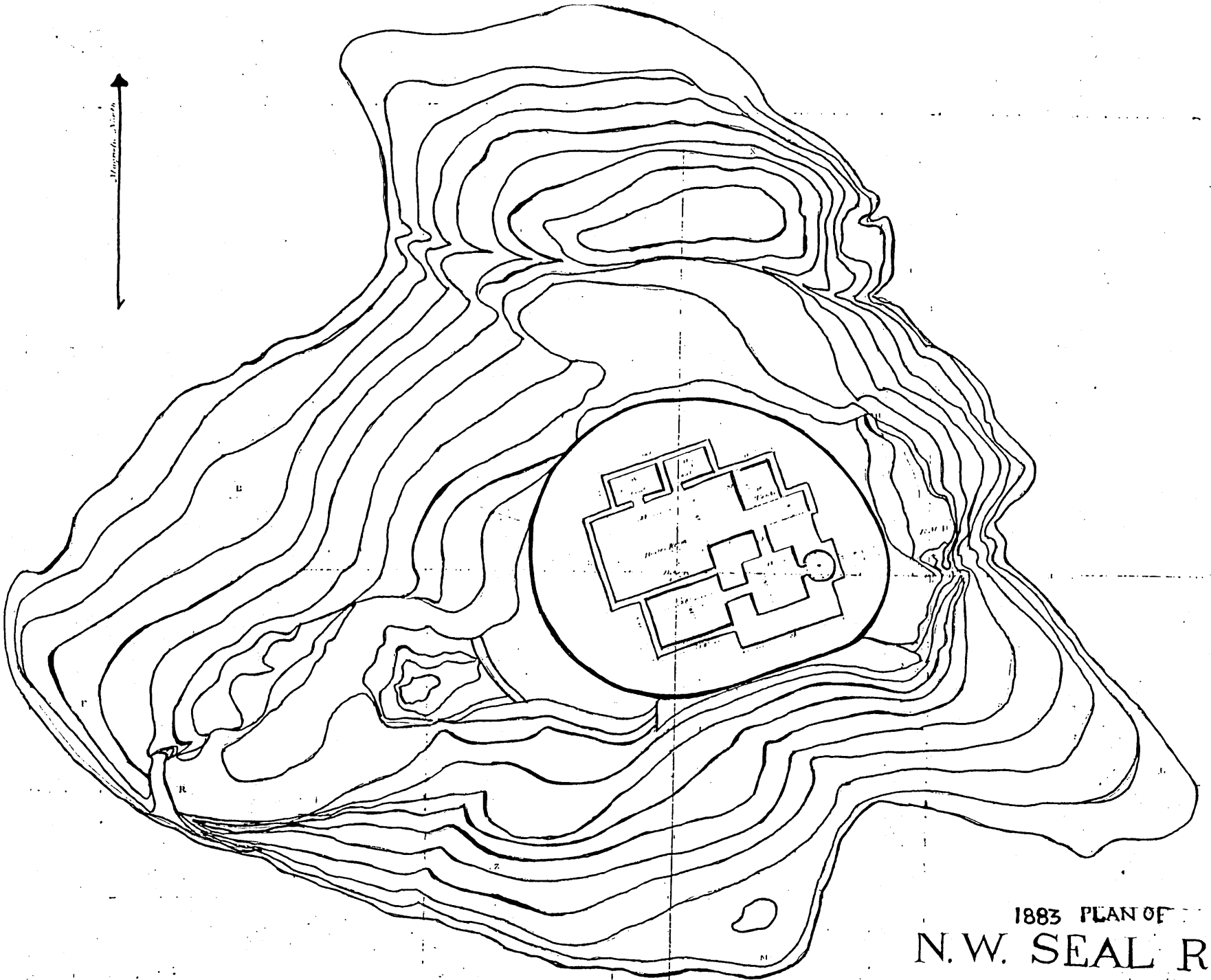


PLAN
SCALE 1/16"=1'-0"



1. St. George Reef Light Station / Northwest side view
2. California Coast near Crescent City
3. U.S. Coast Guard archives, Alameda, CA.
4. Ca. 1960
5. U.S. Coast Guard Island, Alameda, CA
6. View from SE
7. #1

1. St. George Reef Light Station/Northwest Seal Rock
2. Calif. Coast off Crescent City
3. U.S. Coast Guard archives, Alameda, CA
4. Ca. 1960
5. U.S. Coast Guard, Coast Guard Island, Alameda, CA
6. View from W
7. 1 of 2



1883 PLAN OF

N.W. SEAL ROCI

SHOWING PROPOSED POSITION

PIER AND TOWER

Accompanied with Letter to the Light House Board
5th day of March 1883

A. H. Mayson

Capt. Corps of Engrs. Engr. 12th Light Ho. Dist.

St. George Reef Light Station

Northwest Seal Rock

NK 1

TOPOGRAPHIC – BATHYM