

# 4245

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Form 504	
DEPARTMENT OF COMMERCE	
U. S. COAST AND GEODETIC SURVEY	
E. Lester Jones <i>Director</i>	
<div>C. &amp; G. SURVEY L &amp; A MAR 21 1927 Acc. No.</div>	
State: <u>New Jersey</u>	
DESCRIPTIVE REPORT	
<i>Topographic</i> <del><i>Hydrographic</i></del>	Sheet No. A 4245
LOCALITY	
Sandy Hook Bay	
<del>North East Coast of New Jersey.</del>	
<del>Monmouth County, Sandy Hook to</del>	
Beach	
<del>Atlantic Highlands.</del>	
1926.	
CHIEF OF PARTY	
R. F. A. Studds	

GOVERNMENT PRINTING OFFICE

## TOPOGRAPHIC SHEET A

### GENERAL

The survey extends from Highland Beach, New Jersey, around Sandy Hook and thence west to point "A", the junction of A and B sheets, at the Borough Line between Atlantic Highlands and Leonardo, N. J.

The Plane Table and Stadia method, supplemented by Sextant location of minor details, was used for this survey.

Topography was begun on June 25, the topographer and party having quarters at Atlantic Highlands and using motor busses and the Central Railroad of New Jersey trains as means of transportation.

Adverse weather conditions caused considerable delay at the beginning of the work. This time was utilized as far as possible in obtaining and checking blueprints of Highlands and Atlantic Highlands.

### Surveying Methods.

Control for the survey was furnished by triangulation of New Jersey previously completed and by the triangulation of the party during the season. When topography was begun at the southern end of Sandy Hook, no triangulation had been completed by the party. In this vicinity the only signals available were: C Tower, Navesink North Light, Navesink South Light, and Navesink Postal Tower.

Traverse was run from "See" north along the west side of Sandy Hook to the lighted beacons at Spermacetti Cove and the work was later verified by a 3-point fix on "See", "Cup", and "Old". A traverse was next run from "See" south along Sandy Hook and thence to "Nor" with an error of closure of about two meters. Island Beach and the water front at Highlands from Highland Bridge to "Tall" were rodded in from this line. "Tall" was located by intersections from successive traverse points.

A position was next obtained on the northeast corner of the breakwater at the foot of Sea Drift Avenue, Highlands, by a 3-point fix on "Nor", "Tall", and "See". It was not possible to traverse along the water front at Highlands and impracticable to traverse through the streets because of the number of short turns that would have been necessary. From this point on the breakwater, a traverse was run west along the water front and the railroad to "Sink". Resections on "See"

showed an error of three meters at the second traverse point, this error gradually increasing to about six meters in azimuth at "Sink". Adjustment was later made by swinging the line from the starting point onto the resections from "See" and onto the correct position of "Sink".

At this time topography was discontinued for several days. Position of "Sink" was not determined nor were there sufficient signals to obtain a position by 3-point fix. The time was used in building a signal at "Sink" and in checking blueprints.

Topography was taken up with signals "See", "Stac", and "Old" available. The position of "Sink" was determined by plane table 3-point fix and topography was carried west to the foot of First Avenue at Atlantic Highlands by 3-point fix positions on "See", "Stac", and "Old". From this position a traverse line was run to point "A". At point "A" a resection was obtained on "Stac" and from the preceding traverse point, a resection was obtained on "Old". The triangulation position of "Spire" at Atlantic Highlands was not known at this time.

On Sheet "B", a traverse was run to point "A" from Conover Beacon and then back to Conover Beacon with no error of closure. On the return line a resection was obtained on Horsford Tank. However, there was a difference of about 30 meters in the positions of point "A" on the two sheets. Inspection showed no material change in Sheet "B" while there was considerable distortion in Sheet "A", the corner near "See" being warped. On sheet "A", no error was found in the short traverse line from First Avenue at Atlantic Highlands to point "A". "A" was not considered in error as determined on Sheet "B". When the triangulation position of "Sink" was plotted it showed the planetable position of that point to be in error about 17 meters. This error and the error at "A" were considered as caused by displacement of the signals due to distortion of the sheet. Since the planetable positions were determined by 3-point fix at considerable distance from the signals, it seemed that the small error in signals due to distortion would cause the larger error in these positions. The line "Sink" to "A" was adjusted as follows: Point "A" was plotted from B Sheet and "Sink" was plotted from the triangulation data. The original line from "Sink" to "A" was traced and swung onto the correct positions of "Sink" and "A". An error of twelve meters in distance was distributed over this line, this error being considered as increasing from "Sink" towards "A".

Topography was next carried from "See" north along the east side of Sandy Hook to a point east of B Tower from 3-point fix positions. From this position a traverse was run to a point east of "Black" where a check was obtained by a 3-point fix. The remainder of the work up to "Hay" was carried by 3-point fix positions. Traverse was next run from South Beacon north, thence east around Sandy Hook to a position about 600 meters east of "Pos" where a check was obtained by 3-point fix. From this point, topography was

continued by 3-point fix positions around the northeast end of Sandy Hook to connect with the work already complete up to "Hay".

From South Beacon, a traverse was run south to a point near the pier at the Horse Shoe where a check was obtained by a 3-point fix. From this point, traverse was continued south to the northwest end of Spermacetti Cove where a 3-point fix was obtained on "See", "Cup", and "Old". This fix showed an error of five meters in distance which was not adjusted as it was considered too small to materially affect the position of the shore line. From this point, topography was carried by 3-point fix positions to the entrance of Spermacetti Cove where a junction was made with the work brought north from "See". The table was later set up at "Sink" and the topographic locations of "Big" and the beacons of Spermacetti Cove checked by intersections.

#### Use of the Sextant.

The low water line and the wrecks along the east side of Sandy Hook were located by sextant angles and plotted with the protractor. Sandy Hook Fog Bell was located by planetable, but was later moved about 50 meters west and the new position was obtained by a sextant. The shoals bare at low water, the wreck, and the channel stakes at the entrance to the Shrewsbury River were also located by means of the sextant.

#### Changes in the Shore Line.

From Highlands Bridge west to point "A", the only important changes in the shore line are those caused by construction of piers and buildings along the water front at Highlands and Atlantic Highlands. The tracks of the Central Railroad of New Jersey between Highlands and Atlantic Highlands follow very nearly along the shore line as shown by the original survey. Considerable change has occurred around Sandy Hook. From the breakwater on the east north to signal "Hous", the beach has been worn back as much as 50 meters in places. From "Hous" north to a point east of B Tower, it has been built out for from 50 to 100 meters, and from B Tower to a point east of Sandy Hook Light House, it has been worn away for from 40 to 100 meters. The greatest change has occurred around the north end of the Hook. A tracing is submitted with this report showing a comparison of the surveys of 1885, 1915 and 1926. On the west side from the Quartermaster's Wharf south, the change has not been so great. Some erosion has occurred all along this shore, except for the south point at the Horse Shoe and the north side of the entrance to Spermacetti Cove, both of which have been built out.

### Supplemental Blueprints and Maps.

The roads on Sandy Hook are as shown on Chart 369 and were not resurveyed.

Blueprint A of Highlands shows all of the streets and roads (Bp. 21123) - in the Borough Limits. Those streets marked off in red pencil are not yet laid out or are not sufficiently developed to warrant their being placed on the chart. The more thickly settled section of Highlands lies north and east of the yellow pencil line shown on the blueprint. That area enclosed by yellow pencil lines is sparsely settled and for the greater part is wooded. The water front at Highlands from Highland Bridge to Marine Place is almost an unbroken line of summer cottages, small hotels, and buildings peculiar to a resort.

On blueprint B of Atlantic Highlands, roads and streets not (Bp. 21122) existing are marked off with red pencil. The area marked by a yellow pencil line is wooded and is not thickly settled.

A copy of chart 369 is submitted on which all roads and other features not existing have been marked off with red pencil.

A copy of Atlas Sheet No. 29, Department of Conservation and (Bp. 21124) Development of the State of New Jersey, is submitted with this report. The roads in the area between Keyport and Highlands and north of the green pencil line have been checked in the field. Any roads not existing have been marked off with black ink. Those roads along the red dotted lines are the main paved highways. Those areas shown on blueprints A, B, C, and D are marked off with black dotted lines. Roads in these areas are checked on the blueprints.

### Landmarks.

On the northern end of Sandy Hook the most prominent landmarks are the observation towers of the Postal and Western Union Telegraph Companies and a large, black steel water tank, all of which should be shown on the chart. Sandy Hook Light House a little farther to the south is also a good landmark. Black Stack is a good landmark and should be shown on the chart. The Coast Guard Cupola is only a fair landmark but should remain on the chart.

C Tower is a good landmark but is not listed as it is an observation tower for fire control from Fort Hancock. A letter from the Inspector of the New York Field Station concerning this tower is submitted with this report.

Navesink North and South Light Houses and Navesink Postal Tower are only fair landmarks because of the background of the Highlands of Navesink.

The wreck shown at "Hous" on the east side of Sandy Hook is not covered at high water and shows up well. The other wrecks along the east side of Sandy Hook are covered at high water and are a danger to fishing boats running close inshore. The wreck at the entrance to Spermacetti Cove is sometimes covered at high water, in which case it is a menace to small boats.

From Highlands to Atlantic Highlands, a white house on the crest of the hill at the position of triangulation point "Flag Pole on Ridge" is the most prominent landmark and should be shown on the chart.

The tank at Atlantic Highlands at present shown on Chart 369 should not appear on the chart. View of the tank is obstructed by trees and it is of no value as a landmark. The Gas Tank at Atlantic Highlands listed on form 567 with this report should be shown on the chart. It is a large red tank and shows up well from Sandy Hook Bay.

Respectfully submitted,

*Bennett G. Jones*

Bennett G. Jones,  
Aid, U.S. C. & G.S.  
Topographer.

APPROVED:

*R. F. A. Studds*

R. F. A. Studds,  
Lieut. (j.g.) U.S. C. & G.S.,  
Chief of Party.

# PLANETABLE POSITIONS

Object	Lat.	D. H. meters	Long.	D. P. meters	Height feet	Remarks
"North"- center of roof of a small steel observation tower.	40-27	309 1542	73-59	781 633	approx. 30	A square steel tower covered throughout and painted a khaki color It is not of value as a landmark.
"South"- center of roof of a small steel observation tower.	40-27	250 1601	73-59	778 636	approx. 30	Same as for "North"
"Big" center ventilator on roof of a large black frame building	40-27	60 1791	73-59	1040 374		The building was apparently built for use as an airplane hangar and is the largest structure in the vicinity.
"Tall" a tall flag pole on the water front at Highlands New Jersey.	40-24	469 1382	73-59	410 1005		

# PLANETABLE POSITIONS

Object	Lat.	D. M. meters	Long.	D. P. meters	Height	Remarks
Vertex of the top of a large steel water tank	40-28	286 1565	74-00	660 754		"Tank" is a large, black, steel, water tank.



POST-OFFICE ADDRESS: Room 312, 78 Broad St., New York.

TELEGRAPH ADDRESS:

EXPRESS OFFICE:

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

June 18, 1926.

To: Lieut. R.F.Studds,  
Launch "ELSIE",  
c/o Postmaster,  
Keyport, N.J.

From: Inspector, N.Y.Field Station.

Subject: U. S. Engineers Survey, Sandy Hook.

There is forwarded herewith a tracing of a confidential map by the U. S. Engineers of Sandy Hook, north of the Highlands. The survey was made in 1922 and changes are known to have occurred at and near the hook since that time.

I do not know if a copy of this survey has ever been forwarded to Washington, but the chart appears to coincide well with it. I would suggest that you inquire of the office about it.

I note that the chart shows the railroad and highway although the assistant engineer expressed the opinion that it might be well not to show it. The "A", "B" and "C" towers should not appear on the chart, although they are Coast Survey triangulation points.

The survey was based on a traverse between Sandy Hook Light and Navesink Light. The U. S. Engineers have no important triangulations in this vicinity.

  
F. G. Engle, Inspector,  
N.Y.Field Station.

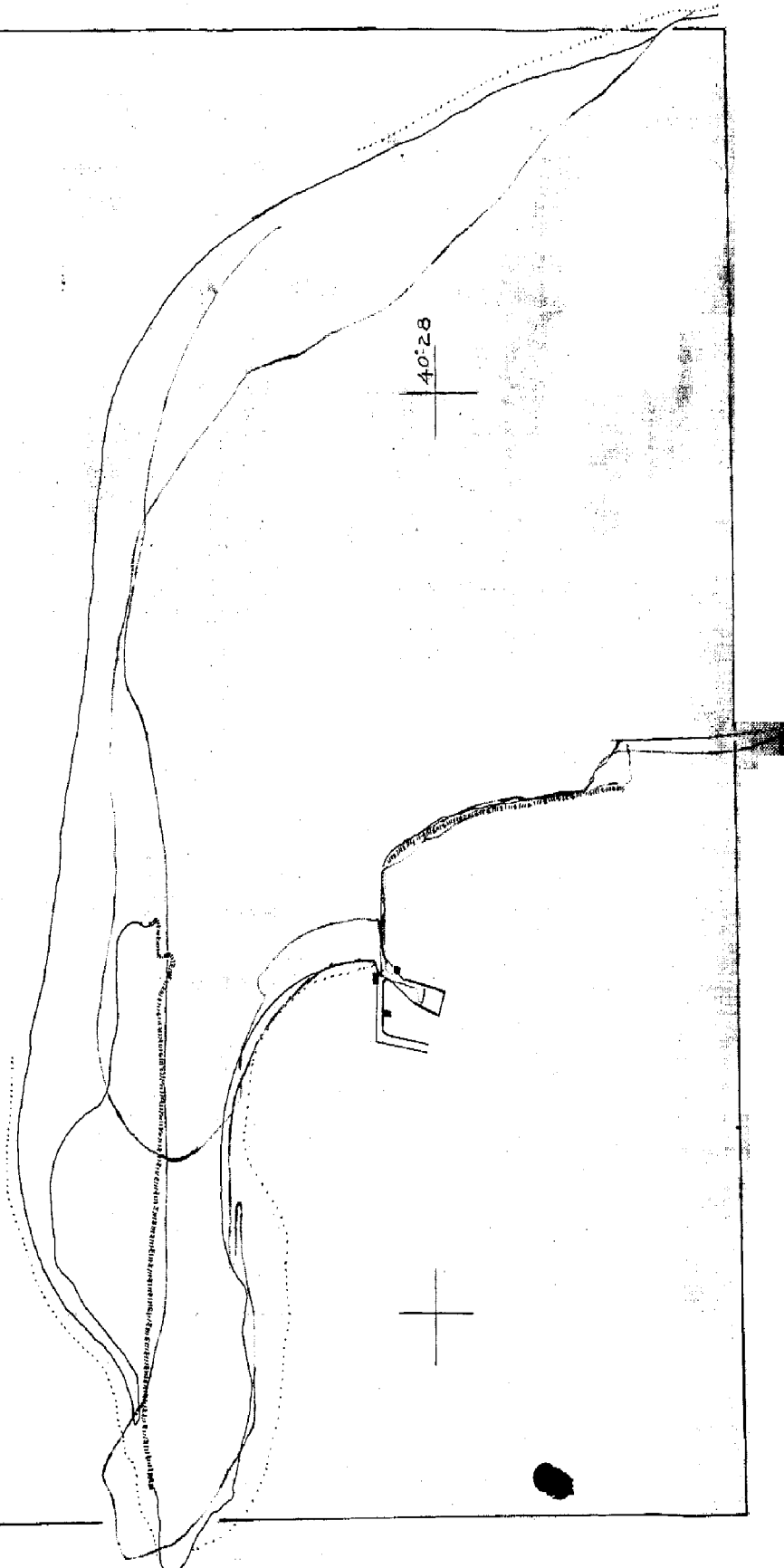
# PLANETABLE POSITIONS

Object	Lat.	D. M. meters	Long.	D. P. meters	Height feet	Remarks
Vertex of the roof of the observation tower of the Western Union Telegraph Co.	40-28	473 1378	74-00	1174 240		This is a frame tower covered thruout its length and is one of the best landmarks in the vicinity.
"Black" the center of the roof of a small square wooden building.	40-27	874 977	73-59	909 505	Approx. 20	The building is not over about 20 feet square and sits on a small knoll.
"Red" the center of the roof of a small round wooden water tank.	40-28	36 1815	74-00	341 1073		A small round water tank with a red top. It does not stand out sufficiently from the surrounding buildings to make a good landmark.
"Gas" Gas Tank Atlantic Highlands	40-24	1205 646	74-02	757		A large steel red tank

74 00

Changes in Shore Line  
Sandy Hook  
Black - Survey of 1926  
Red - Survey of 1915  
Green - Survey of 1885  
Scale - 1:10,000

40°28



DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO.

4245

TOPOGRAPHIC TITLE SHEET

The Topographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. A

REGISTER NO. **4245**

State New Jersey

General locality Sandy Hook Bay  
~~North East Coast of New Jersey~~

Locality Monmouth County, Sandy Hook to Atlantic Beach  
~~Highlands~~

Scale 1:10 000 Date of survey July, 1926

Vessel Launch Elsie

Chief of Party R.F. Studds

Surveyed by B.G. Jones

Inked by B.G. Jones

Heights in feet above - to ground to tops of trees

Contour, Approximate contour, Form line interval - feet

Instructions dated May 8, 11, 1926.

Remarks: A tracing of the survey of Sandy Hook  
by the U.S. Eng. Dept. in 1922 is submitted with  
this report.

GPO

*Above tracing, also Print "A" Borough of Highlands, Index Map-Borough of Highlands and Atlas Sheet No. 29 (N.J. Dept. of Conservation and Development) - all turned over to Mr. Storm*

