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a&b

Diag'd. on Diag. Ch. No. 1219

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey TOPOGRAPHIC

Field No. A & B COWIE Office No. T-6995 a & b

LOCALITY

State DELAWARE

General locality DELAWARE RIVER

Locality CAPE HENLOPEN

194 5

CHIEF OF PARTY

T. B. Reed

LIBRARY & ARCHIVES

DATE Oct. 16, 1945

B-1870-1(1)

6995  
a&b

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO.  
**16995**

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 & B

REGISTER NO.

State DELAWARE

General locality MOUTH OF DELAWARE RIVER BAY

Locality CAPE HENLOPEN

Scale 1:10,000 Date of survey July, 19 45

Vessel Ship COWIE

Chief of party Thos. B. Reed

Surveyed by Walter H. Bainbridge

Inked by Walter H. Bainbridge

Heights in feet above        to ground to tops of trees

Contour, Approximate contour, Form line interval        feet

Instructions dated 30 April, 1945

Remarks: Shoreline and topographic signals

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DESCRIPTIVE REPORT TO ACCOMPANY TOPOGRAPHIC SHEETS,  
FIELD Nos. A & B, COWIE 1945

Instructions: C.S. 321, 30 April 1945

Limits:

Sheet A-shoreline from Lat.  $38^{\circ} - 44.3'$ , Long.  $75^{\circ} - 04.75'$  northward, around Cape Henlopen into the Delaware River and westward to Long.  $75^{\circ} - 08.45'$ .

Sheet B-a continuation from sheet A at Long.  $75^{\circ} - 08.0'$  thence northward to Lat.  $38^{\circ} - 49.7'$ , Long.  $75^{\circ} - 12.7'$

Sheet A

Control: In addition to the triangulation stations of this bureau, positions of observation towers Nos. 5, 6, 7, 8, 9, 12 and 13, which were located by the U. S. Engineers in 1941, were furnished by the Army authorities at Fort Miles. These positions are confidential material and are being submitted on Form 28B. These towers were given a hydrographic name and the position symbols were left in pencil for action by the office as to whether they shall be removed or inked.

*Topo signal  
symbol and  
name inked*

*Form 28B not filed in Washington office.*

Closures: Triangulation control was so plentiful that station Gal at the southeast corner of the sheet was the only station not in a closed traverse. The distance from it to station Far was double chained with a 100 Meter tape and a resection check made at the station itself. The westerly edge of the sheet was controlled by resection, and carried to sheet B.

Surveying Methods: Because of the intense heat waves above the beach sand nearly all distances were obtained with a 100 meter tape, made with galvanized telephone wire. Excellent results were obtained.

Junctions: Satisfactory junctions were made with air photo maps T-8498, T-8499 and T-8502. *of 1943*

General: The line of piling on the east coast at Lat.  $38^{\circ} - 45.75'$  is the southern boundary of the Fort Miles Military Reservation.

Cont.



The pencilled parallel lines with cross hatching between, beginning at the above mentioned piling and paralleling the coast to Lat. 38° - 47.85 is a sand fence made of two wooden fences placed 3 to 4 meters apart. This was left pencilled in because of its temporary nature. It will be either covered up, washed out or rotted away within a few years. *fence deleted* ✓

The approximate semi-circle at Lat. 38° - 45.85 is a steel piling bulkhead ✓

The steel piling 20 meters off shore at Lat. 38 - 46.45 bares at all stages of the tide except possibly an abnormal high water.

Attention is called to the small pile of rocks 20 meters offshore at Lat. 38 - 46.92 which bares 1½ feet, estimated, at low tide. ✓

The area between the high water line and the *inked* pencil line beginning at Lat. 38 - 47.62 thence northward and around Cape Henlopen and southward to Lat. 38 - 47.7 is low ground subject to flooding at extreme high and storm tides. The area extends about 250 meters further southward but the delineation was overlooked at the next set up. As the limits were rather indefinite and drifting sand is changing the elevation of the entire area it was not considered necessary to revisit the area. *dashed*

The most easterly pier shown on the sheet is the Coast Artillery Mine Pier. ✓

Proceeding to the westward from the Mine Pier the water structures are:

Ruins of the old Government Iron Pier. The flooring was rotted away but the iron piling and some of the bracing is still in place. ✓

The next two are piers belonging to the Consolidated Fisheries. A fish elevator and conveyor system are located on the first; a net loft and net drying racks are on the second. Adjacent to the second are the ruins of the pier destroyed in the September 1944 hurricane. ✓

Next is the very delapidated ruins of an old pier, scattered piling mark the outlines. ✓

*next is pier of Fish Products Co.*

Next is the Lewes Coast Guard Station pier and boat house where the tide gage was located.



(3)

The boat house and marine railway ~~was~~ <sup>were</sup> damaged in the September 1944 hurricane. No boats are kept there now. They were moved to the small boat haven just inside Roosevelt Inlet. Whether or not the railway is repaired depends on the extent of the under-water damage, which has not yet been ascertained. ✓

All that remains of the old Maryland and Virginia Railroad Pier are the few scattered piling shown northward from station TBM-~~835~~35. Broken piling are reported underwater between the outer piling shown and the shore. ✓

The Coast Guard Radio Compass Station on Cape Henlopen was discontinued in 1943, and the last of the equipment was removed in June 1945. There are no radio masts there suitable for land-marks. ✓

Magnetics: Magnetic observations were made with a compass declinometer at a temporary station about 100 meters northeast of station Pit and at triangulation station RADIO, where a magnetic meridian was determined with a declinatore also. ✓

The position of this temporary station was left in ~~deleted~~ pencil. ✓

Recommendations: It is recommended that the buildings as shown on air photo map T-8499 be placed on charts 379 and 1218. ✓

The building shown at Lat. 38 - 46.9; Long. 75 - 06.8 has burned down and the wording "Fish Oil Works" shown 200 meters north of the above position has no meaning unless applied to the entire area between Longitudes 75 - 06.4 and 75 - 07.0. ✓

Note "Fish Oil Works" was deleted from T-8499 & chart 379

Submitted by: Walter H. Bainbridge  
Walter H. Bainbridge  
Lieut. Commander C&GS

Approved and Forwarded:

Thos. B. Reed

Thos. B. Reed  
Lieut. Commander C&GS  
Commanding Ship COWIE



SHEET B

Control: Triangulation ✓

Closures: The shore line eastward of station Coo was adjusted about the width of a line northward to agree with the same section of shore line on sheet A. Sheet A was given preference because set ups were controlled by resection on adequate triangulation control. ✓

Junction: Satisfactory junctions were made with air photo map T-8498. ✓

General: The disintegrating hull of a wooden ship, the stem of which is station Tem, is above ordinary high water. The outer end is submerged by spring tides. ✓

The northern and outer end of the grounded wreck of the railroad car ferry barge at station Bar is awash at high water. The wreck is disintegrating. ✓

The jetty at Broadkill Inlet is not being maintained and is in ruins. ✓

A magnetic azimuth was observed with a <sup>compass-</sup>declinometer at a temporary station 170 meters southeast of station Quo. The station was left in pencil. *station deleted*

Submitted by: Walter H. Bainbridge  
Walter H. Bainbridge  
Lieut. Commander C&GS

Approved and Forwarded:

Thos B Reed

Thos. B. Reed  
Lieut. Commander C&GS  
Commanding Ship COWIE



CONFIDENTIAL

Information regarding observation towers on the military reservation is confidential. The following signals are observation towers located by triangulation of the U. S. Engineers of 1941 and are shown on the planetable sheet by the signal circle and topographic name.

Topographic  
Name

Triangulation  
Name

FAR  
SAX  
SET  
BALL  
HEP  
DUZ  
LUX  
TAX

Tower No. 5 (U.S.E.D.) 1941  
Tower No. 6 (U.S.E.D.) 1941  
Tower No. 7 (U.S.E.D.) 1941  
Tower No. 8 (U.S.E.D.) 1941  
Tower No. 9 (U.S.E.D.) 1941  
Tower No. 12 (U.S.E.D.) 1941  
Tower No. 13 (U.S.E.D.) 1941  
Tower No. 14 (U.S.E.D.) 1941

L-730 (1951)  
(Recorded as signal OBB  
in letter 730 (1951))



## SHEET A

## TOPOGRAPHIC STATIONS

OBJECT	DESCRIPTION	LAT.	D.M. Meters	LONG.	D.P.	REMARKS
Gal, wooden obs. tower		38 - 44	849 ✓	75 - 04	1158 ✓	Temporary y
Pit, searchlight tower		38 - 45	1044 ✓	75 - 04	1328 ✓	Removed since survey
Hag, small shack		38 - 46	114 ✓	75 - 04	1290 ✓	Temporary
Box, large box on skids		38 - 46	1068 ✓	75 - 05	115 ✓	"
Wat, tall signal.		38 - 47	297 ✓	75 - 05	694 ✓	
Look,		38 - 47	230 ✓	75 - 05	348 ✓	
Cup, seaward eave of cupola on bldg. T-232		38 - 47	166 ✓	75 - 05	360 ✓	Recoverable description sub.
Fin, stack, brick, 120 ft.		38 - 47	31 ✓	75 - 06	647 ✓	"
Try, tank, elev. (80 ft.)		38 - 47	82 ✓	75 - 06	656 ✓	"
Ann, " " (85 ft.)		38 - 46	1792 ✓	75 - 06	957 ✓	"
Sky, stack, brick, 175 ft.		38 - 46	1650 ✓	75 - 07	0000 ✓	"
Tidal Bench Marks (Not used for hydrography)						
T.B.M.-7		38 - 47	186 ✓	75 - 06	395 ✓	Des. submitted
T.B.M.-27		38 - 47	<del>158</del> 186 ✓	75 - 06	<del>401</del> 395 ✓	" "
T.B.M. - 18		38 - 46	1609 ✓	75 - 07	345 ✓	" "
T.B.M. - 33		38 - 46	1622 ✓	75 - 07	1218 ✓	" "
T.B.M. - 35		38 - 46	1638 ✓	75 - 07	1224 ✓	" "
Magnetic Station		38 - 45	1122 ✓	75 - 04	1272 ✓	Temporary

Scaled by: W.H.B.Checked by: 7030*Descriptive cards filed under T-8499*



Sheet B

Topographic Stations

OBJECT	DESCRIPTION	LAT.	D.M.	LONG.	D.P.	REMARKS
Coo,	Chimney of house	38 - 46	1801 ✓	75 - 08	700 ✓	Des. submitted
Hut,	middle of 5 green shutters	38 - 47	178 ✓	75 - 08	1239 ✓	" "
Vex,	chimney of house	38 - 47	459 ✓	75 - 09	382 ✓	" "
Yak,	chimney, Yacht club	38 - 47	611 ✓	75 - 09	757 ✓	" "
Sow,	Roosevelt Inlet	38 - 47	1143 ✓	75 - 09	571 ✓	" "
Joy,	South Jetty light	38 - 47	1228 ✓	75 - 09	696 ✓	" "
Bag,	Roosevelt Inlet	38 - 47	459 ✓	75 - 09	1109 ✓	" "
Fro,	Rear range light	38 - 47	599 ✓	75 - 09	1017 ✓	" "
Gus,	Front range light	38 - 47	830 ✓	75 - 09	1439 ✓	Located by triangulation later
Tem,	Measured mile upper	38 - 47	1179 ✓	75 - 09	1440 ✓	
Kin,	Range rear, light	38 - 47	1420 ✓	75 - 10	444 ✓	Temporary
Quo,	stem of wreck	38 - 47	1780 ✓	75 - 10	852 ✓	"
Bar,	signal in tree	38 - 48	305 ✓	75 - 10	739 ✓	"
Cap,	banner on S.W. corner	38 - 48	238 ✓	75 - 10	1337 ✓	"
Zoo,	of wreck	38 - 48	539 ✓	75 - 11	327 ✓	"
Xit,	Cap, cloth signal	38 - 48	892 ✓	75 - 11	848 <sup>0</sup> ✓	"
Kil,	" "	38 - 48	1426 ✓	75 - 11	1015 ✓	Des. Submitted
Tax,	" "	38 - 49	1009 ✓	75 - 12	898 ✓	

Base of Broadkill light (removed) on ruins of jetty at Broadkill Inlet, located, Description submitted, not used for a hydrographic signal.

38 - 48 1410 ✓ 75 - 11 981 ✓

Magnetic station 38 - 47 1660 ✓ 75 - 10 730 ✓ Temporary

Scaled by: W H B

Checked by: JOZOR

*Descriptive cards filed under T-8498*



DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF TOPOGRAPHIC SURVEY

REGISTRY NO. T-6995 a & b

FIELD NO. A & B

Delaware, Delaware Bay, Cape Henlopen  
Surveyed in July 1945 Scale 1:10,000  
Project No. CS-321

Plane Table Survey

Aluminum Mounted

Chief of Party - T. B. Reed  
Surveyed by - W. H. Bainbridge  
Inked by - W. H. Bainbridge  
Reviewed by - R. H. Carstens, July 10, 1947  
Inspected by - H. W. Murray

1. Adjoining Surveys

An adequate junction was effected with the high-water line on T-8498 (1943) on the west. On the south, there is a difference of about 20 meters between the present high-water line and the high-water line on T-8502 (1943).

2. Comparison with Prior Surveys

A. T-151 (1842) 1:20,000  
T-226 (1845) 1:20,000  
T-1503 (1882) 1:20,000  
T-2633 (1903) 1:10,000  
T-4468 (1929) 1:20,000  
T-4668 (1931) 1:10,000  
T-5661 (1939) 1:20,000

These prior surveys have been considered in the reviews of T-8498, T-8499, and T-8502, all of 1943. Further consideration in the present review is deemed unnecessary. (See paragraph B, below for shoreline changes)



B. T-8498 (1943) 1:20,000  
T-8499 (1943) 1:20,000  
T-8502 (1943) 1:20,000

These air photographic surveys taken together cover the entire area of the present survey.

Agreement with the present survey is generally good. However, the sand beach at the point of Cape Henlopen has extended northward about 50 meters subsequent to these surveys. A few harbor improvements have also been made.

With respect to the shoreline changes at Cape Henlopen, a comparison with T-226 (1845 survey, see previous paragraph) and the present survey reveals that the Cape has advanced one-half mile northward in 102 years. This procession is at the rate of about 9 meters per year. The shoreline on the east side has also receded about 400 meters westward in the same period.

Within the common area, the present survey supersedes these prior surveys for shoreline delineation.

3. Comparison with Chart 379 (Latest print date 7/13/46)  
Chart 1218 (Latest print date 2/10/47)

A. Topography

The present survey has been applied to these charts before verification and review. No further comments is necessary.

B. Magnetic Meridian

The present survey determination of the magnetic meridian by means of a compass declinometer is in close agreement with the charted value.

4. Condition of Survey

The survey was neatly inked and conforms to the requirements of the Topographic Manual.

Military installations used as signals are confidential and are shown only by the topographic signal symbol, and the signal name. An appropriate memorandum regarding this matter has been inserted in the Descriptive Report.

5. Compliance with Project Instructions


The present survey adequately complies with the Project Instructions.


6. Additional Field Work Recommended


This is an excellent survey and no additional work is required.

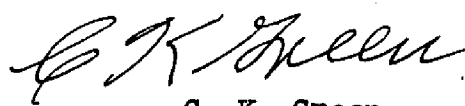


Examined and approved:

  
H. R. Edmonston  
Chief, Nautical Chart Branch

  
K. G. Crosby  
Chief, Section of Hydrography

  
Casper M. Durgin  
Chief, Division of Charts

  
C. K. Green  
Chief, Division of Coastal Surveys



# GEOGRAPHIC NAMES

Survey No.

**T6995**

Name on Survey

	On Chart No.	On previous survey No.	On U. S. quadrangle Maps	From local information	On local Maps	P. O. Guide or Map	Rand McNally Atlas	U. S. Light List	
A	B	C	D	E	F	G	H	K	
<u>Delaware</u>								USFB	1
<u>Delaware Bay</u>									2
<u>Cape Henlopen</u>									3
<u>Lewes</u>									4
<u>Roosevelt Inlet</u>									5
<u>Broadkill Inlet</u>									6
									7
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Names underlined in red approved  
by L. Heck on 7/11/45



## NAUTICAL CHARTS BRANCH

SURVEY NO. T-6995a+b

### Record of Application to Charts

[illegible]

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.