

# 5034

Diag. Cht. No. 1246

Form 504

U. S. COAST AND GEODETIC SURVEY  
DEPARTMENT OF COMMERCE

## DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. 3 Office No. H-5034

### LOCALITY

State FLORIDA

General locality EAST COAST OF FLORIDA

Locality SOUTH OF CAPE CANAVERAL

19/30

CHIEF OF PARTY

G. D. Cowie

LIBRARY & ARCHIVES

DATE OCTOBER 25, 1930

B-1870-1 (1)

# 5034

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO.  
5034

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

Field No. 3

REGISTER NO. <sup>5034</sup>  
**5034**

State Florida

General locality East Coast

Locality South of Cape Canaveral

Scale 1:40,000 Date of survey Feb. 5-May 8, 1930

Vessel Lydonia

Chief of Party George D. Cowie

Surveyed by Geo. D. Cowie: Wm. M. Scaife: K. G. Crosby: F. E. Okeson  
W. F. Malnate: M. H. Reese: O. B. Hartzog: M. A. Hecht

Protracted by K. G. Crosby

Soundings penciled by K. G. Crosby

Soundings in ~~fathoms~~ feet

Plane of reference Mean Low Water

Subdivision of wire dragged areas by \_\_\_\_\_

Inked by J. H. March 23-1931

Verified by \_\_\_\_\_

Instructions dated December 31, 1930

Remarks: \_\_\_\_\_

DESCRIPTIVE REPORT TO ACCOMPANY

FIELD SHEET #3

EAST COAST OF FLORIDA ----- 1930.

AUTHORITY:

Authority for this survey was given in the Director's instructions to the Commanding Officers of the LYDONIA and RANGER covering Projects #50 and 51 respectively. The date of these instructions was December 31, 1929.

LIMITS:

The area covered by this sheet extends southward from a junction of previously-executed hydrography by G.C. Mattison, Chief of Party during the season of Jan. 10th to June 25th, 1929. This junction, the northern limits of the sheet, extends in a direction of about  $75^{\circ}$  true from the inshore limit at Latitude  $28^{\circ}-20'$ , Longitude  $80^{\circ}-36'$ , to the offshore limit near the 20-fathom curve at Latitude  $28^{\circ}-30'$ , Longitude  $80^{\circ}-12'$ .

The junction between Sheet #3 and #4 forms the southern limit of Sheet #3. It extends from Latitude  $28^{\circ}-06'$ , Longitude  $80^{\circ}-34'$ , in a direction of about  $75^{\circ}$  true, to Latitude  $28^{\circ}-14'$ , Longitude  $80^{\circ}-09'$ .

An area situated between the parallels of  $28^{\circ}-16'$  to  $28^{\circ}-22'$  and between the meridians  $80^{\circ}-08'$  to  $80^{\circ}-22'$  has not been executed.

CONTROL:

The control for the hydrography on this sheet is based on adjusted triangulation spanning the Indian and Banana Rivers, sup-

plemented by a triangulation scheme of third-order accuracy, which gives triangulation control points at distances of about two miles apart along the entire extent of the outside coast within the limits of the sheet.

Tall towers built over the triangulation stations enabled the visual control by sextant angles to be carried to the limit of their visibility, or about ten miles offshore.

Natural objects such as water tanks, etc., were also located by triangulation and used for signals for visual control.

Control for inshore hydrography was given by signals located by topography.

Offshore control for hydrography was carried by a system of buoys which were located by sextant cuts taken from positions determined by angles taken on triangulation stations. All cuts were plotted on an aluminum sheet and the best average position of the buoys then transferred to the smooth sheet.

R.A.R. control was given by floating hydrophone stations. These stations were located by log runs and sextant cuts. As R.A.R. was more or less in the experimental stage in this region the control was not considered entirely successful and the offshore lines were controlled by a combination of visual fixes, bomb distances, log runs and dead reckoning. In many cases the bomb distance would not check the dead reckoning and these conditions were met by giving more weight to log distances, and the line adjusted by means of visual fixes taken at the inshore end of the lines. In the northern section of the offshore work, practically every bomb distance from the "ECHO" was so much in

error that it was apparent that these distances could not be relied upon, therefore bearings were taken upon the "ECHO" and log readings taken. These lines are adjusted by log distances, bearings and visual fixes. The smooth sheet adjustments are made as noted on the dead reckoning abstracts in accordance with recommendations by the Chief of Party.

The southern section of the offshore hydrography was controlled by the same method while the RANGER was anchored at Buoy "SWEL". In this section, bomb distances from the RANGER were more frequently obtained, but this was not completely satisfactory as no determination of distances from the ECHO could be made. The control in this section was obtained by the method previously mentioned and in addition, tied in to marker buoys that were located by log runs and bomb distances from the hydrophone stations.

METHODS:

Soundings were taken by hand lead for a greater part of the area covered by Hydrography. For the most part, this area is situated inshore from the thirteen-fathom curve. Fathometer soundings are confined to the offshore area. Fathometer soundings have been corrected by inter-comparisons with hand lead casts.

Bottom samples were obtained by arming the lead. These samples disclosed a sea-bottom of miscellaneous formations ranging from blue mud to brown sand and broken shells. The smooth sheet in some instances show two different bottom characteristics at nearly the same position. Such a condition would lead one to believe that bottom samples were carelessly examined but many check samples were obtained and proved that the spotty regions of various

bottom characteristics occurred throughout practically the entire area.

Sextant angles were observed and positions were plotted in the conventional manner and do not warrant any detailed explanations. Sextants were always checked for index corrections before and after the days work, and any corrections were noted in the record book.

Before and after plotting the smooth sheet all protractors used were tested on an aluminum test plate and found to be correct.

Lead lines were tested before and after using. As the lead lines were constructed from phosphor-bronze centered rope, there was little or no change in the length of the lead lines.

Log tests were run and the ship swung for compass deviations, these were observed on the working grounds.

A tide guage was in operation the entire field season at Cape Canaveral Harbor.

DISCREPANCIES:

The positions of the buoys on the boat sheet and smooth sheet will not be the same. The buoys on the boat sheet were located at various days and each days work on the boat sheet plotted with the new positions. The smooth sheet positions of the buoys are plotted from the best locations as determined by sextant cuts plotted on an aluminum sheet and transferred to the smooth sheet.

Sounding lines cross with very satisfactory checks. The crossings for the most part are within one or two feet. In a few instances the crossings fail to check by as much as four feet as a maximum. In these few instances the differences may be attributed to a rough, choppy sea or a natural formation. The maximum discrep-

ancy will usually be found at the crossing of fathometer and hand lead soundings. In such cases the lead line sounding should be given preference.

When plotting the smooth sheet many discrepancies were found in the record books. These were corrected in the course of plotting the smooth sheet as they came to the plotter's attention, and a suitable note entered in the record book indicating the changes made.

The recorder giving the greatest trouble was named Smith. His recording was watched as much as possible in the course of the days work by both right and left angle men, but even then discrepancies occurred. The recorder was later discharged. In cases of doubt, where the plotter has not already discovered and noted the change, the reviewer of the sheet should bear in mind that Smith's recording is sometimes doubtful.

DANGERS:

There were no dangers to navigation found within this area which require detailed descriptions. A small shoal at Latitude 28°-22' and Longitude 80°-22' with a depth of 39 feet was found. The surrounding depths range from 50 to 60 feet.

MISCELLANEOUS:

When laying<sup>out</sup> the field sheets to cover the area of this project, the offshore sheets were numbered 1 and 2 respectively, while the inshore sheets were numbered 3 and 4 respectively. The inshore work covered by sheets 3 and 4 were completed while the offshore work remains to be done. Rather than to confuse any

notes or references to the sheets in question, Sheet 3 was not renumbered.

Indialantic Tank and Cape Canaveral lighthouse are the only prominent landmarks within the area covered by this sheet.

Respectfully submitted,

*Kenneth G. Crosby*  
Kenneth G. Crosby,  
H. & G. Eng'r.

Approved:

Oct. 23. 1930.

*George D. Cowie.* The junction with the soundings of 1929 was satisfactory.  
George D. Cowie, Chief of Party. The 20 fathom curve near "Bone" shows a sharp point. A change of depth of 3 feet would straighten out this curve. The fathometer used may have been off three feet. Future work south of Bone may indicate that the curve should be straight here.

There is one area near south side of sheet which needs a split line. This area did not show up on the boat sheet.

The outer lines at the upper end of the sheet are much more regular than those at the lower side. This is because there was buoy control available at the upper end so that the ship could be steadied on the course desired before resort was made to dead reckoning. No buoys were used on the lower part as it was confidently expected that R. A. R. control would be sufficient. This latter control failed.

*George D. Cowie.*  
Commanding, *Sydonia.*



STATISTICS  
FOR  
HYDROGRAPHIC SHEET NO. 3

\*\*\*\*\*

Day	Date	Mileage (Statute)	Soundings		Pos.	Boat	Vol	
			H.L.	Fath.				
a	April 2nd	11.5	410		59	Whaleboat	1	
a	" "	16.0	560		73	launch	1	
b	April 3rd	10.3	349		60	Launch	1	
c	" 4th	26.7	846		122	"	1-2	
d	May 3rd	14.9	343		63	"	2	
e	" 4th	4.0	142		15	"	2	
f	" 5th	7.5	172		17	"	2	
g	" 7th	2.0	68		13	"	2	
A	Feb. 5th	75.8	350		78	Lydonia	1	
B	" 6th	48.2	594		174	"	1	
C	" 8th	48.0	730		179	"	1-2	
D	" 9th	54.3	774		171	"	2	
E	" 10th	49.9	651		167	"	2-3	
F	" 11th	21.3	294		62	"	3	
G	" 12th	47.0	650		151	"	3	
H	" 19th	29.3	401		96	"	4	
J	" 20th	55.1	678		145	"	4	
K	" 21st	37.0	524		115	"	4-5	
L	" 22nd	50.3	605		153	"	5	
M	" 23rd	46.9	630		157	"	5-6	
N	" 24th	28.2	314		74	"	6	
P	" 25th	44.0	522		104	"	6	
Q	" 26th	48	515		105	"	6-7	
R	" 27th	13	197		45	"	7	
S	Mar. 6th	59.5	719		146	"	7	
T	" 7th	51.4	84		19	"	7	
U	" 9th	56.4	751		149	"	7-8	
V	" 10th	48	595		102	"	8	
W	" 12th	35.4	497		98	"	8-9	
X	" 21st	69.7	300	685	153	"	9	
Y	" 22nd	26.6	308	13	66	"	9	
Z	" 26th	5.5	78		14	"	9	
A'	" 27th	8.5	72		22	"	9	
B'	April 2nd	50.3	939		161	"	10	
C'	" 3rd	56	100		19	"	10	
D'	.....	No data.	Day letter not used .....				"	11
E'	" 17th	74.8	92	325	109	"	11	
F'	" 18th	57.1	38	318	71	"	11	
G'	" 23rd	42.0	41	228	46	"	12	
H'	" 24th	36.6	365	28	84	"	12	
J'	May 8th	8.0	69		14	"	12	

Totals                      1475.0      16367      1597      3671

1597  
17974



Tidal Note  
to Accompany  
Descriptive Report of Hydrographic Sheet #3.

Florida - 1930.

A portable automatic tide gauge was in operation at Cape Canaveral Harbor from February 4, 1930 to May 9, 1930, inclusive.

The plane of reference of M.L.W. as determined for 1930 from computation of 1929 data is the 4.13 feet mark on the staff.

The highest tide occurred on April 29, 1930 when high water was 5.47 feet above the plane of reference.

The lowest tide occurred on February 14, 1930 when low water was 0.9 feet below the plane of reference.

1444  
11

February 21, 1931

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in  
15 volumes of sounding records for

HYDROGRAPHIC SHEET 5034

Locality East Coast of Florida, South of Cape Canaveral

Chief of Party: George D. Cowie, in 1930

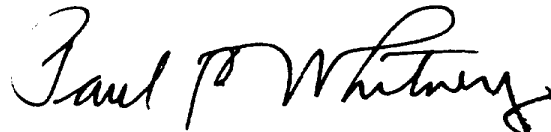
Plane of reference is mean low water, reading

4.1 ft. on tide staff at Cape Canaveral

11.1 ft. below B. M. 1

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.



Chief, Division of Tides and Currents.

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. *5034*

The following statistics will be submitted with the cartographer's report on the sheet:

Number of positions on sheet	<i>3671</i>
Number of positions checked	<i>749</i>
Number of positions revised	<i>36</i>
Number of soundings recorded	<i>17,964</i>
Number of soundings revised	<i>141</i>
Number of signals erroneously plotted or transferred	<i>ONE</i>

Date: *March 23<sup>rd</sup> 1931*

Cartographer: *John Fleming*

# Field Records Section

Report on H. 503x - Surveyed in 1930

Chief of Party G. D. Cowie - Surveyed by G. D. C. & Party

Projected by H. G. Crosby - Soundings by K. G. C.

Verified and Indexed - J. Fleming

- (1) The records conform to the requirements of G. D. except that the 'Bomb Record' is incomplete, a circumstance attributed to the uncertainty regarding the velocity tests.
- (2) The plan, character and extent of the development complies with both the General and specific instructions.
- (3) Sounding line crossings are satisfactory - the few exceptions may be explained as due to a choppy sea.
- (4) All depth curves except the 120ft curve can be completely drawn.
- (5) The field plotting was satisfactory and none of the work had to be gone over.
- (6) Junctions  
Junction with adjoining sheets - H 5039 on the South is satisfactory  
Junction with H 946 - (survey of 1929) on the North is satisfactory

(6) continued

Junction with H. 5120 offshore is satisfactory except a part of the line on H' day <sup>Lat.  $28^{\circ} 16'$</sup>  <sub>Song.  $80-18'$</sub>  in which ~~points~~ between 49-69-H' were omitted owing to doubtful control and the fact that agreement here is not satisfactory - The work around that area on H. 5120 has better control and is therefore considered more reliable.

(7) The work as a whole is considered 'Very Good'.

(8) The careful supervision and thorough examination of the whole work together with numerous explanatory notes by the field, greatly facilitated the verification.

### Remarks on Control

(9) According to the information contained in the records Vol. #11 Page #12  $\square$  Echo is at pos. 35 E'

All bearings on  $\square$  Echo from positions on E' and F' days form a polygon of intersection whose center is Pos. 35 E'

It is considered certain that the offshore hydrography affected by  $\square$  Echo was executed and controlled using  $\square$  Echo as a bearing and its position at 35 E' but  $\square$  Echo as plotted on the sheet was not used.

(9) continued

Location of  $\square$  Echo  $\square$  Swell  $\circ$  Bone  $\circ$  Marker Buoy

- (a)  $\square$  Echo is located 1<sup>st</sup> by cuts from positions based upon 3 Pt. fixes and then by log distance for about 3 miles from last 3 Pt. fix
- (b)  $\square$  Swell was partially located by bomb distance with  $\square$  Echo situated at Sig Bone. (see bomb record April 18) and by log dist. and bearing (see back of dead reckoning abstract 9<sup>th</sup> day) back to the line end at pos 16-G<sup>1</sup> fixed by 3 Pt. control  
The pos. of  $\square$  Swell is considered doubtful
- (c)  $\circ$  Marker Buoy. is located by bearings on  $\square$  Swell and log distance back to line end having 3 Pt. fix.
- d.  $\circ$  Bone is located by sounding line well based upon a series of 3 Pt. fixes after which the incremental values are controlled by single angles. Log dist. and bearings on  $\square$  Echo.

Shoal indications

- (10) There are no pronounced indications of possible shoaling on this sheet and such as occur, are covered by # 5120.



## Comparison with previous surveys

- (11) Comparison with H 1488<sup>a</sup> shows that the area remains practically unchanged.
- (a) All other previous surveys in this area are deep sea surveys, on scales 1:200,000 or smaller and therefore unsuited for the purpose of comparison.
- (b) excellent agreement exists between this sheet and chart 162.

## Bathymeters

- (12) Direct comparison with lead line was possible thus avoiding the necessity for deducing a correction.

## Sound Velocity Tests

- (13) While several bombs from 0 Bone to 17 Swell gave velocities agreeing fairly well with the assumed velocity it is considered likely that the mean distance based upon the assumed velocity that is more nearly correct.

Respectfully submitted  
John Fleming

Verified March 1931

Report rewritten March 1932

app. A. M. Sobieralski