Department of Commerce and Labor

COAST AND GEODETIC SURVEY

O H Tittmann

Superintendent.

State: Florida

DESCRIPTIVE REPORT.

Hydr. *Sheet No.* 2932

LOCALITY:

Vicinity of
Key West

190 8

CHIEF OF PARTY:

N. H. Heck

DESCRIPTIVE REPORT.

Hyd. Sheet #9

The area covered on sheet #9 extends from the Souteast Channel entering Key West, Fla. to a line joining Red Buoy No. 8 and West Crawfish Key, and from Lat. 24°28' to Whitehead Spit Buoy.

2. An important feature of this work is the dragging of the Main Ship Channel and the channel proposed by Commodore W.H. Beehler, Commandant of the Key West Naval Staion, in 1907. Both channels were dragged with extreme care. The drag was grounded on each shoal from both sidesand in this way all the area was covered.

The proposed Beehler Channel was dragged to the depth of 30 feet. A considerable number of obstructions were found, but not enough to put this out of consideration as a possible channel.

The Main Ship Channel was dragged to a depth of 30 feet nrth of the Eastern Triangle Beacon, and 35 feet between this and the outer reef. Six uncharted shoals were found all of which have been reported and published in the Notice to Mariners. Two shoals which are shown on the chart one a 4 3/4 fm. shoal about 1250 meters NxE from the Reef buoy, and a 29 ft. shoal 2300 meters Sx E from the Eastern Triangle Beacon, were proved to be non existent as a 35 foot drag passed over the spot indicated. This is absoluet proof that there are no such shoals at these points. I recommend that they be removed from the charts.

The outer entrance to these channels was very carefully examined. A statement signed by me appeared on sheet 2873 in regards to a 27 foot shoal which appeared on this sheet adn was marked as removed by the U.S. Engineers. My letter to the Superintendant dated May 5, 1908 made it plain that25 that the effective depth on this shoal is 29

feet. but that the 25 foot shoal 140 meters to the westward of this shoal exists. An examination made in this vicinity for a shoal on which the Mallory Line S.S. Denver struck on NOv. 9, 1907 resulted only in finding a shoal about 550 meters west of the buoy. No shoal or other obstruction was found at the point indicated. by the report of the captain of the vessel.

A line was carried with a depth of 35 ft. or over through the outer reef with an effective width of 50 -80 meters.

Two shoals were found in the Southeast channel with depths of 18-19 feet as shown on sheet. This renders the statement appearing in several publications that vessels of more than 15 feet draft should not use this channel at low tide correct.

It is unnecessary to describe in detail all the shoals found as the number is larger than 100.

All of the drag lines were plotted with the Buoy plotting attachment and therefore represent the position of the ends of the drag and not the position of the boats. Except where shown on the sheet the entire area was covered. An especial effort was made to do this in order that it might be possible to place on the chart the limits of the area covered if desired.

The records of the guiding launches of each drag are so marked and each contains as usual the effective depth of the drag and all the shoals found.

In order to avoid loss of time by the draftsman a tracing is furnished which shows the limits of the area dragged to 35 feet in the vicinity of the principal channels.

It should be noted that where the effective depth is

less than 30 feet that this is done in order to find the least depth on known shoals,

In all areas on the sheet which are cross hatched this marking should not be erased from the sheet if it is desired to cover the area later. Whereever it is considered that sufficient work has been done this can be erased. When these lines have been erased it is very difficult to replace them.

DESCRIPTIVE REPORT

SHEET 2932

About 1 square mile was covered on this sheet, including new work on the north side of Hawk channel and some splits in the Main Ship channel north of the Inner Reef.

An attempt was made to cross the Inner Reef about 1 mile ENE of Eastern Triangle Beacon and two shoals were discovered at depths of 14' and 21' which practically cut off what was previously an apparent break in the Reef at this point.

The area missed during the preceeding season, due to the 17' shoal in the Main Ship channel, about 1/2 mile directly north of Eastern Triangle Beacon, which shoal was discovered during the preceeding season and has since been removed by the Army Engineers, was dragged over to a depth of 27 1/2'.

A 23' shoal shown on chart No. 584 about 3/4 mile NWxN of Eastern Triangle Beacon and about 1/5 mile NxW of a 24' shoal discovered during the preceeding season, was proved not to exist, the area being covered to a depth of 30'

The drag depths used in reducing the records for this sheet were taken from table No. 2 for days a to c and from table No. 3 for the remainder of the days except as noted in the records. These tables are included with sheet No. 2875.

For all this region the tide reducers used in reducing the records were obtained from the readings taken at the Key West L. E. wharf

Sydsheet No 2932 July 7 08

It would save time in verifying the work if all of the lines were made clear and distinct and the numbers placed so as to leave no doubt as to the position to which they refer. The lines shown in green are very faint and difficult to follow without reflecting.

When the angle is recorded to give the position of the buoy, the signals used should be indicated by "Right", "Left" or "Center", as the case may be, and not by the first letter of the name of the signal.

The soundings were plotted correctly and the records well kept.

H L Simons

June 2 1909

The work of 1909 was plotted correctly

H.L.S.

2932 WD.

Diag. Cht. No. 1251-2 & 1252-2

Department of Commerce and Labor
COAST AND GEODETIC SURVEY

O. H. Tittman
Superintendent.

State: FLORIDA.

DESCRIPTIVE REPORT.

Hyd. Sheet No. 2932.

LOCALITY:

Approaches to Key West.

Main Ship Channel and Vicinity.

Wire Drag Survey Continued from 1913

1914.

CHIEF OF PARTY:
N. H. Heck,
Assistant.

11—4645

2932 WD.

Sheet No. 2932.

F L O R I D A .

Approaches to Key West.

Main Ship Channel and Vicinity .

Wire Drag Survey Continued From 1913.

------- 1914. -------

January 26,---------- March 31.

N. H. Heck, Assistant,	Chief of Party.
J. A. Daniels,	A I D .
Geo. Olsen,	Watch Officer .
Harry Leypoldt,	A I D .
E. W. Eickelberg,	" .
W. H. Clark,	" .
Maurice E. Levy,	" .
Carl E. Risvold,	Deck Officer .

Scale:- 1/15000

Tide Gauge,- Key West Automatic.

E. M.

Florida Reefs,
Key West, Florida.

STATISTICS.

Sheet No. 2932- 1914.

Date.	Day	Vol	Angles.	Miles.	Drag Length	Soundings. Number	Soundings. Angles.	Remarks.
Jan. 26	A	1	36	0.5	2650	7	15	
27	B	1	24	0.2	300	13	35	
31	C	1	96	1.0	300	12	24	
Feb. 3	D	1	216	3.0	2100	2	8	
7	E	1	108	1.0	3000	3	7	
Mar. 3	F	1	84	2.75	3000	0	0	
7	G	1	186	3.8	3000	6	18	
12	H	1	60	1.3	3000	0	0	
17	J	1	150	3.0	3000	5	16	
18	K	2	228	3.5	900 300	14	48	
31	L	2	120	0.5	2100	5	13	
			1308	20.4		67	184	

Summary.

Total No. Angles, ---------- 1492
" No. Miles, ---------- 20.4
" No. Soundings, ---------- 67
" No. Square miles, ------- 6

E. M.

Descriptive Report. Hydrographic Sheet No. 2932.

Key West, Fla. 1914.

The work on this sheet included the examination of the main ship channel improvement; the finishing of certain areas not completed last year, and some dragging outside the outer reef.

The former work was done at the request of U.S.Engineers, and a large portion of the work was of use only in giving them the necessary information to complete the work of deepening the channel. Buoy C 3 was moved to position given by 4 K, and now marks the most easterly portion of the shoal. The following soundings on K day should be placed on the charts, 8, 11, 12(represented by one sounding), 6, and 9. The remainder of the soundings taken on K day and those in the same vicinity on B and C days were not taken for the chart, as further work is to be done in the near future in deepening the channel. Note however that 10 C and 14 K give less depth than charted 24 instead of 25, and are outside of proposed improvement. Note that 8, 11, 12 K, a ridge 80 m. long in NE - SW direction and 10 meters wide is the remainder of the charted 24 ft. shoal in the vicinity. Further work with the view to removal of this shoal was not anticipated at this time. The 22 ft. shoal N.E. of Western Head has been entirely removed.

The principal area covered that was previously missed was in the vicinity of the Main Ship Channel shoal and the Southwest Channel entrance, and west of the Main Ship Channel. A few unimportant changes were found.

Outside of the outer reef nothing was found with less than 39 ft. from Main Ship Channel to a ridge south of the 10 ft. shoal near S.E. Channel entrance. Depths of 37 to 39 ft. were found on four different shoals which had previously been dragged to 34 1/2 ft., 110°, 1 1/4 miles from station Ship 2.

Sheet 2932

2032

Object	Distance	Direction
Stump	From west Crawfish Key	At west Crawfish Key
	Meas. one way 406.30M.	from Sand Key L.H.
	Meas. Other way, 406.34	+ 69° 21'
	Mean 406.32	

Tides Automatic Tide Gauge
Key West, Fla.
R. H. Sands. Observer
See records at Office.

Continuation of Dragging
of area of
Hyd. Sheet No. 2932

STATISTICS HYD. SHEET 2932 Approaches to Key West, Fla.

Date 1913	Day 6	Vol	Angles	Miles	Drag Length	Soundings Number	Soundings Angles	Remarks
1-20	A	1	160	4	2100	1	2	
21	B	1	45	3/4	2100	5	10	
25	C	1	150	4 1/2	2100	5	10	
29	D	1	60	1 1/4	2100	4	8	
2-1	E	1	150	3	2400	8	16	
4	F	1	115	2 1/4	2700	7	14	
5	G	1	125	4	3000	9	118	
6	H	2	150	2 1/2	2100	10	20	
12	J	2	204	3 1/4	2400	5	10	
18						7	14	
20						4	8	
21	K	2	90	1 1/2	2100	1	2	
25	L	2	90	1 1/2	2100	2	4	
26	M	2				2	4	
3-1	M	2	66	1 1/4	2100	4	8	
4	N	2	270	5 1/4	2700	5	10	
6	O	3	96	1 1/2	2700	14	28	
7	P	3	84	2	2700	5	10	
11	Q	3	258	4 1/2	2700	9	18	
4-7	R	3	215	3 1/2	2400	3	6	
16	S	3	240	4	2400	8	16	
17	T	3	342	5 1/2	2700	5	10	
19	U	4	180	2 1/2	2700	1	2	
21	V	4	144	3	2700	2	4	
26	W	4	396	7 1/4	2700	1	2	
			Total 3631	68 1/4		127	254	

Total angles 3884
miles 68 1/4
Soundings 127
sq. miles. 13

2932

Hyd. Sheet # 2932

Work of 1914.

The purpose, for which the wire drag examination on this sheet was made is given in the Descr. Report of the Chief of the Party.

Plotting was done in the field, verified in the office, and finally a tracing made, which shows by means of a colored scheme the max. eff. depths, to which the partial areas have been dragged. Areas missed by the drag are indicated by means of arrows.

A number of soundings were taken during days B & C to give the U.S. Eng. at Key West the results of their operations in deepening the channel. These soundings were not plotted on the sheet, but will be found on tracing No. 3a

Day "L" (drag work) was not plotted for the reason given in the sounding record at the end of the day.

Hyd. 2249a, which has some work in this locality could not be consulted, as the sheet has not been plotted and no sounding records received from the field.

Soundings and max. eff. depths plotted in feet.

J.B. McKean

July 13 – 14.

2932

Department of Commerce and Labor
COAST AND GEODETIC SURVEY

O. H. Tittmann
Superintendent.

State: Fla.

DESCRIPTIVE REPORT.

Hyd. *Sheet No.* 2932

LOCALITY:

Florida Reefs

Approaches to Key West

191 3

CHIEF OF PARTY:

E. H. Heck

11—4645

2932

Descriptive Report for Hyd. Sheet no. 2932

Season of 1913

The wire drag examinations on this sheet during this season were made for two purposes- one tocomplete all of the work on the sheet , especially that not finished in previous seasons- the other, to develop the least depth in all the channels. Owing to unfavorable weather the first object could not be completed duringtthis season, but the second was completed. In addition to this several shoals in the Main Ship Channel were located for removal by the U. S. Engineers and one that they had removed was dragged over at their request to prove that the desired depth had been obtained.

In discussing the shoals located the region will be dividedinto sections.

1 Channels crossing outer reeef 2. Area between inner and outer reef.

3. Channels crossing inner reef and intermediate portions of the reef.

4. Hawk and West Channels.

1. Outer reef.

The southeast channel was found to have a least depth of 23 feet on the usual sailing line, but several heads with 21 ft were found on the eastern side and 22 on the western side of the channel. A vessel to keep in the best water should pass about 400 yds. from the buoy N2 and head directly for Key West Light House. This course should be held for 1 1/8 miles, and then a west course should be followed to a point 1/4 mile south of the western head in the Main Ship Channel which should then be followed to Key West. No depths less than 23 ft. will be found on this course.

An excellent channel nearly1/4 mile wide with al least depth of 26 ft was examined, lying between Main Ship Channel Shoal Bn. no. 5 and a large 10 ft. shoal on the western side of the southeast channel, though at least one buoy would be required to make it available for this depth. The beacon should be left one half mile to port and the course for the Key West Lighthous e should be held. It is desirable to pass the northern ridge of the outer reef (see chart) a little east of this course. One mile after the beacon is abeam the course should be

aletered for the Western Head Buoy in the Main Ship Channel which should then be followed to Key West. No less than 26 ft. will be found on this course, if carefully followed. The channel is wide and a buoy to mark the point of crossing the the northern edge of the reef and which could be also used to head for in entering would make it available. It should be noted that this channel has the greatest depth over its entire width of any channel entering Key West.

The Point of reef channel was examined. While it is probable that a draft of 20 ft. could be taken through this channel, the 15 ft. coral head on its western side and the possible uncertainty of the position of the buoy makes it undesirable to use it for more than 14 ft. Between this channel and the Main Ship Channel, the southern ridge of the outer reef was found to have a number of coral heads and shoal patches with depths of 16 tO 18 ft.

The work in the Main Ship Channel was confined to placing buoys on the shoals to be removed by the U. S. Engineers, also to examining the 29 ft. shoal near the P. S. entering buoy which was removed by them. The least depth found after a most careful examination with drag and leadline was 30.8 ft. Such extreme care was used that this depth can be guaranteed to within 1/10 of a foot exclusive of the correctness of the tidal data used.

The areabetween the Main Ship Channel and Eastern Dry Rocks was not completed as there is no safe channel and all the avilable time was spent in the channels. a number of 18 to 20 ft. shoals were found during the one day that was spent int, this vicinity.

2. Area between inner and outer reef.

All of the deep area (35 feet or more) was dragged in previous seasons. This season's work consisted in dragging over the shoals previously found. Nothing was found with less depth than charted between the Southeast and Main Ship Channels, except that south of Buoy N4 in the Southeast Channel 23 feet was found where 25 was charted and 18 where 19 was charted.

A 17 ft. co. head was found ½ Mile SE from E. Triangles Bn.

West of the Main Ship Channel a few 18 to 20 ft. coral heads were found but the work was not completed.

3. Channels crossing inner reef and area between them.

Where the Southeast channel crosses the reef, no sailing line can be selected on which the least depth is greater than 15 ft. and care is necessary to avoid some 14 ft. Heads and there is a 13 1/2 ft head on the western side also 14 ft on eastern side which must be avoided to get this depth. There is a possible channel from the point of reef buoy on the outer reef to Key West Light house with a least depth of 16 ft. but this must be followed carefully to clear the charted 14 ft. shoal on the east side and the 14 1/2 ft. coral head on the west side found this season. There is a 15 ft. head between this channel and the Main Ship Channel.

In the Main Ship Channel several shoals were located for removal by the U. S. Engineers.

Between the M.S. Channel and the western edge of the sheet, few changes were found except tha 14 ft. was found on a head about 1 1/4 miles from the Eastern Triangles Beacon where 16 ft. was charted. The probable reason that so few changes were found in this area which is filled with heads is that when the examination for the proposed BEEhler Channel made in 1908, the shoals were examined with extreme care and the least depth was found with the leadline.

4. Hawk and West Channels. The principal finds in this area, most of which had been previously dragged were a 13 ft. coral head east and a 14 ft. head south east of the PS channel buoy. Also a 21 ft patch and a 16 ft. head between this buoy and the southwest end of Key West Island.

In view of the character of the work the following recommendation is made for Coast Pilot purposes. In selecting the drafts to be carried through the vari

ious channels it is recommended that the selected draft be at least ~~two~~ one feet less than the least depth found unless the examination has been special and made with unusual care. My reasons for making this recommendation are: 1. Uncertainty in the tide 2. The fact that a drag with varying depths was necessarily used in order to cover the area with a possibility of slipping over a shoal on account of the slope of the wire. 3. The necessity of using cedar floats that lifted the bottom wire when not under strain. These are an absolute necessity in such a region as Key West as without them all the time would be spent in removing the drag from the shoals, which is now accomplished in a few minutes. They however introduce a slight uncertainty as when the tension on the drag is lessened for any reason as a momentary stopping of one of the towing launches , or too close convergence, their lifting power may be exerted.

It seems however that certainty within the limits named is all that can reasonably be expected in such an area as that at Key West.

For the benefit of the draftsman who examines this work it may be stated that the method of designating depths obtained is more or less conventional as with varying depths it is difficult to indicate on a sheet the exact limits of each depth as this varies with the shape of the drag when being towed. Also it is difficult to indicate the exact part of the sheet affected by each change on account of the necessary methods of making the changes. The object of all of the work is to keep the drag as near bottom as practicable , to find all of the uncharted shoals within the effective depth of the drag and yet to avoid catching the drag on the uncharted shoals. This has been accomplished as well as it can be done under the conditions and it is believed that the complications introduced into the plotting and the difficulties of giving an absolutely exact statement of the results accomplished are outweighed by the importance of covering the area. within a reasonable time

Corrections or ommissions

1. Outer reef. It should have been mentioned that a rocky patch with a least depth of 26 feet was found just eastward of the northermost shoal of the Main Ship Channel. This can easily be avoided and will not affect the improvement of the chhhanl except that it restricts the width of the deep water portion of the channel.

2. Outside of Ship Channel. An appearent shoal where drag struck with an effective depth of 34 1/2 Ft. was later dragged over with the same effective depth and found not to exist. First indication was probably due to a defective float. letting the wire sink.

3. a narrow ridge outside of entrance to SE channel parallel to the reef ½ mile long, depths 25 to 29 ft.

Towline Base Table

Length of Upright Large Buoy	Base Meters
12 – 17	62
18 – 23	61
24 – 27	60
28 – 30	59
31 – 33	58
34 – 37	57

VEC
May 16,1913

HYDROGRAPHIC SHEET 2932.

Approaches to Key West, Florida, by Assistant N.H.Heck in 1913.

TIDES.

	Key West ft.
Mean low water, or plane of reference on staff	4.1
Lowest tide observed " "	2.8
Highest " " " "	7.5
Mean range of tide	1.2