

5535

5535

Form 504  
U. S. COAST AND GEODETIC SURVEY  
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey *Hydrographic*  
Field No. .... Office No. *5535*

LOCALITY  
State *Florida*  
General locality *Lower Biscayne*  
Locality *Bay*

1934  
CHIEF OF PARTY  
*Harold A. Cotton*

LIBRARY & ARCHIVES

DATE .....

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

U. S. COAST & GEODETIC SURVEY  
LIBRARY AND ARCHIVES  
OCT 13 1934  
Acc. No. \_\_\_\_\_

REG. NO. 5535

HYDROGRAPHIC TITLE SHEET

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. 1

REGISTER NO. 5535

State Florida

General locality Florida Keys

Locality Lower Biscayne Bay and Card Sound

Scale 1:20,000 Date of survey Jan - Apr, 1934

Vessel Chartered powerboat and Launch Dorothy

Chief of Party Harold A. Cotton

Surveyed by W. O. Hinkley - Surveyor

Protracted by A. Black

Soundings penciled by A. Black

Soundings in ~~fathoms~~ feet - In half feet at critical points

Plane of reference

Subdivision of wire dragged areas by

Inked by W. A. Bruder

Verified by C. STANLEY LIGHTBOWN

Instructions dated, 19

Remarks: Additional hydrography September 8th and 9th.

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

U. S. COAST & GEODETIC SURVEY  
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OCT 18 1934  
REG. NO.  
Acc. No. \_\_\_\_\_

~~XXXXXXXXXX~~ TITLE SHEET

CONTROL SHEET FOR HYDROGRAPHIC SHEET NO. 1

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. \_\_\_\_\_

REGISTER NO. 5536

State Florida

General locality Florida Keys @ Inside waters

Locality Lower Biscayne Bay - Card Sound

Scale 1:20,000 Date of survey Jan. - Apr. , 1934

Vessel Chartered powerboat and Launch Dorothy

Chief of Party Harold A. Cotton

Surveyed by W. O. Hinkley

Inked by W. O. Hinkley

Heights in feet above \_\_\_\_\_ to ground to tops of trees

Contour, Approximate contour, Form line interval \_\_\_\_\_ feet

Instructions dated November 17, 1934<sup>3</sup>, 192

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

Note: Coco Lobo Club and Key Largo Anglers Club and surrounding buildings located by Mr. J. E. Ash.

*Applied to C&G 1249 - June 1935: J.H. Campbell*

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
R. S. PATTON, DIRECTOR.

DESCRIPTIVE  
REPORT  
TO ACCOMPANY  
HYDROGRAPHIC SHEET NO. 1

FLORIDA KEYS.  
PROJECT H. T. 158

SHORE PARTY NO. 3

HAROLD A. COTTON,  
Lieutenant Commander,  
CHIEF OF PARTY.

1934.

## DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET # 1

5535

### INSTRUCTIONS:

This survey was executed in compliance with Directors Instructions dated November 17, 1933 - Project H. T. 158.

### LIMITS:

The northern boundary of this sheet is the southern limit of Hydrographic sheet No. 5058 surveyed by Lieut. Chas. Shaw in 1930 (Lat. 25° 27') and the southern limit is the Card Sound Bridge. The entire area of Biscayne Bay and Card Sound between these limits is done up to the one foot curve; also Caesar Creek to a line connecting the two capes at the entrance, and Broad Creek and Angelfish Creek to the outside of the bar which obstructs their outer entrances.

### CONTROL:

The main control of this area is a system of triangulation made in 1930 by Lieut. Chas. Shaw.

Secondary control was established largely though not exclusively by hydrographic methods. About three quarters of the secondary signals were located by anchoring a boat with two or three anchors to preserve a perfectly stationary place of observation, locating the boat with three point fixes on the known triangulation stations and cutting in the secondary hydrographic stations. No station was accepted with less than three cuts and most of them had several.

Other secondary stations were located by three point fixes directly at the station, and still others by a combination of cuts and angles at the station.

On the West side of Card Sound a few stations were located by the planetable which was also used to locate the signals needed in Broad, Caesar and Rhodes Creeks.

Volume I of the Sounding Records contains an abstract giving the location of all signals on this sheet.

In some cases, where the signal was not to be used for any distance it was placed on a well defined point and located directly from Aerial compilation Sheets Nos. 4600 and 4577. Such locations are noted as "taken from boatsheet" in the abstract in No. I Sounding Volume and are shown in brown ink on the smooth sheet.

In the narrow creeks south of Broad and Angelfish Creeks where the time of getting control in from the main scheme would have been excessive, soundings were spotted directly on the boat sheet in accordance with it's relation to the immediately adjacent shoreline without the use of signals or instruments. This method probably saved several

weeks over getting a complete control through the creeks and resulted in the hydrography having better relation to the shoreline than would be the case if topographic work had been done through the creeks unless the shoreline had also been done by planetable at the same time which would have taken additional time.

NATURE OF THE AREA SURVEYED:

The water in this area is comparatively shallow, twelve feet being deep water, and not exceeded anywhere except in the creek channels. The floor is very regular, and is in general coral overlaid with irregular patches of thin sand. This sand is usually only a few inches thick but is noted as sand in the sounding records.

On the east shore of Biscayne Bay south to Adams Key and in Card Sound south from Angelfish Creek the coral reaches in to shore. On the west shore, however there is considerable mud, especially in lower Card Sound.

Banks extend entirely across the bay at two points on this sheet, viz., Cutter Bank at the Arsenicker Keys, and Card Bank about a mile north of the Card Sound bridge. The southern boundary of the sheet stops at the North edge of another of these banks just at the Card Sound Bridge.

Each of these banks has been cut through by a hundred foot channel down to the coral rock, giving a low water effective depth of about four and a half feet. They are marked by post markers but are not lighted (April.1934) and are practically impossible to find after dark. Very little travelling is done in this area after sunset.

*Post markers*

The depth of water, except on these bars, is very regular and nowhere, except in the channels through the bars, is there any abrupt change of depth. There are no living coral heads or boulders, or pinnacles of any type.

South of Angelfish Creeks the deep water runs close to the shore down to Card Bank which starts just south of Steamboat Creek and runs across the bay; the only passage through Card Bank is a dredged channel carrying about four and a half feet at low water.

South of this bank is another small area of comparatively deep water extending down to the Card Sound Bridge where there is another bank. This is used as the south boundary of the work on this sheet.

DEVELOPMENT:

In general the entire area was developed by a system of 200 meter lines run east and west crossed by north and south lines spaced half a mile apart.

*arranged*

The dredged channels through Cutter and Card Banks, as well as the principal creek channels were developed with three longitudinal lines; through the small creeks but one line was run.

CUTTER AND CARD BANKS:

The cuts through these banks were developed by three longitudinal lines, a center line with a line on either side. Several additional lines were also run opposite each approach.

Through each cut the shoalest depth found along the center was four and a half feet. At Card Bank this depth was found about 225 meters south of Beacon "21". Through Cutter Bank numerous four and a half foot spots were found for a half mile north of Beacon "9". There are shoal depths of two and a half feet along the west side of Cutter Bank just north of Beacon "8".

The development of both these banks as shown on the sheet was done considerably after the rest of the sheet was completed. The first development work appeared unsatisfactory when smooth plotted and was discarded in favor of the more satisfactory later work. The work thus discarded was the following:

75 ff	to	80 ff	center line, Card Bank cut
105 ff	to	111 ff	center line, Cutter Bank cut
55 rr	to	64 rr	east line, Cutter Bank, cut
79 zz	to	94 zz	east and west side Card Bank cut
1 ab	to	6 ab	Beacons, Card Bank
68 ab	to	78 ab	west line, Cutter Bank cut
79 ab	to	85 ab	Beacons, Cutter Bank

CONNECTING CREEKS TO HAWKS CHANNEL:

Between Elliot Key and <sup>K</sup>Ley Largo there are several creeks connecting the inside waters with Hawk Channel and the outside. All of these were developed on this hydrographic sheet. All of these creeks have a bar across either entrance; inside the bars the water is quite deep, deeper than anywhere else on the sheet.

Controlling depths at these entrances were found to be as follows:

CAESAR CREEK

East entrance - three miles offshore - Hydrographic Sheet No. 2.  
West entrance - north of Adams Key - four feet.  
West entrance - There is also a shallow channel to the westward of Adams Key with about two feet.

BROAD CREEK

East entrance - five feet  
West entrance - four feet.  
Both these entrances are difficult to locate and are not used to much extent.

ANGELFISH CREEK

East entrance - four feet  
West entrance - five feet.  
At the west end, the creek can be entered at two points with five feet and at two other points with four feet.

All of the above shoalest soundings are indicated on the hydrographic sheet.

Both Caesar and Angelfish Creeks are much used and the entrance channels at both ends are generally well marked either with bush stakes or small beacons with pointers. Broad Creek is ~~not~~ used but little; both entrance channels are difficult to locate.

At Caesar Creek the bar extends about two hundred or three hundred meters outside of the line between the outside of Rubicon Island and the small islets off of Adams Key, on the northern of which the Adams Key tide gage is situated. There is a narrow channel directly through this bar carrying about two feet or a little less at mean low water. The main channel turns north and goes inside of these two little islets but will carry only about four feet. It is a winding channel, but is marked by markers maintained by the Cocolobo Club which has a club house in Angelfish Creek. South of Rubicon Key there is a very narrow tortuous channel through the bank which carries possibly a foot at low water through an otherwise dry bank.

From Broad Creek there are two tortuous channels which carry about four to five feet out into the bay, but there are several other channels which start from deep water of the creek and die out on the bank. None of these Broad Creek channels are marked in a manner to do any good except to a few local fishermen who have a private stake stuck up in the mud here and there.

Immediately south of Broad Creek and connecting to it are the several branches of Angelfish Creek, which also carry four to five feet out into the bay. The main channel directly west from the Angelfish Creek is marked by brush markers maintained by the Key Largo Anglers club. Hydrographic signal CON is a small private beacon marking one of the northern entrances to Broad Creek and Angelfish Creek; a small blinker is sometimes (generally in the winter season) maintained by one of the local residents of Broad Creek. Cm

The water in this country is very clear and the bottom is readily visible up to six or eight feet and sometimes up to twelve or fourteen feet in the creeks. The channels through the bars, with the right conditions of light are visible for a considerable distance ahead, and after a little experience one can readily gage their course and depth--with the right light conditions. Under other conditions, i. e. looking against a low sun, with a light ripple on the water it is about impossible to follow the channel.

On the outside coast there is one channel going out to deep water from Old Rhodes Creek, as there is scarcely any connection to <sup>the</sup> deep water of the bay inside, this creek is very little used. The channel from Broad Creek to the outside splits into three parts and that from Angelfish Creek into two. The two small creeks through to the outside south of Angelfish have no channel through to deep water. This sheet included channel lines and cross lines over the bar at Broad and Angelfish and Rhodes Creeks.

In navigating any of these creeks it should be noted that they are all difficult to follow westward toward sunset or eastward shortly after sunrise. When thus running toward a low sun it is almost impossible to follow the channel.

NATURE OF THE ADJACENT SHORELINE AND COUNTRY:

On the west side of the bay, the shore is mangrove covered and un-inhabited, with no signs of civilization between a point at signal CAN to the northward of Turkey Point where a drainage canal and road come down to the Bay, and the Card Sound Bridge. A large part of this western shore line is low and mucky, especially in the southern part of the sheet. The mud is not as soft, however as the mud on the banks. The entire inland country is low lying and marshy back to the railroad which is about eight or ten miles inland. Between Arsenickers Keys and Card Point the shoreline is a little more solid than at the two ends of the sheet, but here also the mangroves grow down to the waters edge.

Between Card Sound and the bridge, the shore line is simply the edge of the mangroves with the water continuing back inland in creeks and swamps overgrown with dwarf mangrove. There is considerable bird life in this region -- because they are the only things that can get around in it.

On the Key side, of the shore line is hard, usually coral that cuts like so much broken glass. The mangroves grow to the shore line, here also. On the entire stretch of shore line there is no sand beach, and hardly a break in the mangrove. The entire horizon line is low and monotonous with no distinctive hills or trees to make a land mark at any point, except at signal PALM which is a coconut palm on the skyline, and is visible both from inside the bay and from the outside coast for several miles; and at Caesar Creek where there is a growth of Australian pines which gives this area quite a distinctive appearance, readily distinguishable even at night. This growth is on the west side of Adams Key and is a good mark for picking up the entrance to Caesar Creek.

The Keys boast a few more inhabitants than the mainland side. On the outside of Elliot Key about the middle of its length there is a collection of three or four families. In Caesar Creek is the Coccolob Club, which is very exclusive, permitting no one to land. In Caesar Creek, also is a lime and grapefruit plantation operated by a wealthy negro family.

In Broad Creek is one large mansion which shows from all over Card Sound and out beyond the mouth of Broad Creek - signal MM. This is permanent residence. There is also a lime grove and a few temporary shacks.

In Angelfish Key region there are some abandoned lime groves as is also the cane on the north end of Key Largo.

On Key Largo about a mile south of Pumpkin Key is the Key Largo Angler's Club. This is maintained by the Miami-Biltmore Hotel as part of their plant.

At the Card Sound Bridge lives the bridge tender and a few others. There is a small store and picnic stand.

A highway runs the length of Key Largo, connecting to the main highway system across the Card Sound Bridge.

There is no fresh water in all of this region except what is caught in cisterns or hauled in by truck or boat. The Key Largo Club carries it's supply from Homestead a matter of about fifteen miles, while the other inhabitants catch theirs in cisterns. For the most part this water is barely sufficient for their needs, and is not available to outsiders.

There are a few fish in the waters of the bay and in the creeks especially in certain holes in the creeks, but the fishing is getting poorer every year. There is still good fishing on the banks outside of the creeks and out onto the reef.

There is little game on the Keys except birds, and few edible birds. There are a few turtles and crawfish, but the waters are rapidly becoming depleted with the increased popularity of this region as a winter resort.

#### EQUIPMENT USED FOR THIS WORK:

The work on this sheet was done by a party of six or seven men with one fifty foot launch, a twenty foot powerboat and a skiff with an outboard motor.

The party had a planetable and ordinary hydrographic equipment. Practically all of the sounding except in the creeks was done with a sounding pole. In the creeks the water ran up as high as twenty feet deep; a lead line was used in such cases. *Lead line used*

#### METHOD OF PROCEDURE:

The triangulation of this region was done when this party came on the ground. The triangulation signals averaged about two or three miles apart.

Signals were built over the old triangulation stations which were recoverable and intermediate signals built for hydrographic use. These signals were largely cloth banners and flags altho in some cases existing signals of the army engineers were used. There were practically no natural or artificial objects which could be used to advantage for hydrographic signals for, as has been said, the country is un-inhabited and is all very similar.

Signals were located as explained previously. In some cases in the wider north portion of the work the large boat was anchored with three anchors to prevent swinging and used for a signal in an emergency.

Most of the actual hydrography was done with the powerboat which could get practically to the shore line in the majority of the instances, altho it was found advantageous to use the larger boat for some

of the north and south lines. But where this was done, the lines were usually extended with the powerboat to the one foot curve.

In some of the extremely shallow water, lines were run with the skiff, or detached soundings were taken with the skiff.

At Pelican Bank and around the banks at the end of Caesar Creek, some of the one foot curve was run with the plane table. At Pelican Bank the low water line was also run with the plane table.

In running the hydrography in the creeks, the channel lines were run through the creeks and out over the banks. The fact that there are lines through these banks should not be taken to indicate that these depths are representative. The notes in the books indicate that there is shoal water, usually to each side and an estimated distance away.

In any place where the sounding lines are random lines it is a good indication that they are run in sloughs and that a short distance on each side the water is too shallow to run the launch (which will run with a full hydrographic crew in two feet of water). In a good many of these places the channel soundings are as deep as twenty feet with a foot or less ten meters to either side.

In running these lines through the banks, regular three point fixes were used but in running through the creeks channels where the work of getting control in would have been excessive, the method adopted was simply to spot the positions with reference to the shoreline as plotted on the boat sheet. These positions were given reference letters in the book and the position plotted on the boat sheet with it's reference letter,

*3 pt. Control  
Sketch of plan,*

Through the main channels of Caesar Creek, Broad Creek and Angelfish Creek three lines were run. In the other creeks the line of the deepest water was run. This is usually fairly, well in the center of the channel altho at times it is close to one bank. In most of the creeks however, the deep water continues right up to the mangroves.

#### TIDES:

Portable automatic gages were established at Adams Key, Pumpkin Key and at Barnes Point near the east end of Card Sound Bridge. The Adams Key gage was used for the area north of Cutter Bank; the Pumpkin Key gage for the area between Cutter Bank and Card Bank; and the Barnes Point gage for the area south of Card Bank. The Pumpkin Key gage was used for all development work through both Cutter Bank and Card Bank.

For work through Caesars Creek, reducers were determined by a proportional interpolation between the Adams Key and at Soldiers Key gages, depending upon the position of the particular soundings. Similarly for work through and about the vicinity of Broad Creek and Angelfish Creek, reducers were determined by interpolating between the Pumpkin Key and Soldier Key gages. The Angelfish gage was not estab-

lished until after the work on this sheet was completed; this gage was established in connection with work along the outside coast.

The gage at Adams Key was set up in the entrance to Caesar Creek, on the northernmost of two small mangrove islets, in about eight feet of water, supported by a scaffolding driven into the mud and braced to the mangrove. Three new bench marks were established and connection made to three previous marks, one of which was found to have been moved. The tide here has an extreme range of a little over two feet with a maximum range between adjacent high and low waters of about a foot and a half, the mean range being about fourteen inches.

At Pumpkin Key the tidal range was about eight inches and at Barnes Point only a few inches. At both the latter points, three bench marks were set.

Currents were latter observed in Caesar Creek.

#### ANCHORAGES:

Anchorage is available under the lee of most of the shoreline depending upon the direction of the wind. Generally the holding ground is excellent, except that in the creeks, an anchor buoy should be used for the bottom is very rocky at different points. South of Pumpkin Key and throughout most of Little Card Sound, the holding ground is not so good, the bottom consisting of a very soft mud through which an anchor readily drags.

The Arsenickers Keys as well as Pumpkin Key furnish good protection from northerly winds, but not much protection from southerly winds.

The creeks furnish the only really protected anchorages but generally there are strong tidal currents.

Practically any point inside Caesar Creek furnishes good anchorages the preferable location being near the outer end of the creek where the bottom is softer and there are fewer insect pests. There is also good anchorage in the creek leading southwest from Caesar Creek behind the Rubicon Keys. In Hurricane Creek (opposite Christmas Point) and Little Hurricane Creek (Head of Hurricane Creek) it is possible to tie up to the mangroves to ride out a hurricane altho the tidal currents are very strong. About four and a half feet of water can be carried into Hurricane Creek.

The outer end of Broad Creek forms an excellent anchorage with good holding bottom and the main body of the creek is also good holding ground. But as noted elsewhere the entrances to Broad Creek are difficult.

The outer end of Angelfish Creek affords good protection but the bottom is rock ledge and the anchor should always be buoyed.

The numerous small creeks about Broad Creek and Angel-fish Creek offer opportunity to tie up to the mangrove during hurricane weather but the mangrove in this area is rather low.

Steamboat Creek furnished an excellent hurricane anchorage with good depth, good width and heavy mangrove growth.

In the summertime however, none of these creeks should be used for an anchorage unless there is a strong wind blowing or threatened on account of the mosquitos and sand flies. During the spring and summer, one should remain as far from the mangrove as possible. Under some conditions mosquitos even swarm in the middle of the bay.

COMPARISON WITH OLD WORK:

(14 50 58)

The overlap of this sheet with the sheet done in 1930 shows almost perfect correspondence.

The most noticeable change between the present survey and the chart is at Pelican Bank, here the chart shows a minimum of three feet over an area which goes bare at low water for a length of almost half mile. The bank was run with the plane table.

Off of the bay to the north of Adams Key and south of the point on which signal "STORM" is located and outside of a line joining "STORM" and "TIDE" the chart shows several two and three foot spots in sections where the present survey found nothing less than five or six feet. Since this is an area where there is considerable traffic, the worst of these spots was developed quite fully without finding any trace of the alledged shoal. In the other places in this area where there was a variation of as much as three feet some development work was done but in no case was there any trace of the rock or shoal.

Generally speaking the present survey seems to indicate a slightly greater depth (about a foot) over many portions of the sheet.

Review

The greater differences between the old and new survey are in the creek channels, particularly Broad Creek. The chart shows Broad Creek as a good channel, fairly straight and deep from the bay inside to Hawk Channel. The present survey shows the entrances to Broad Creek from either direction to consist of several tortuous sloughs very difficult to follow. As already mentioned, Broad Creek is not used much at the present time.

SHOAL AREAS:

The area behind Totten Key goes dry on the minus tides as indicated on the boat sheet. The bars all go dry on the minus tides.

The large area shown as water on the chart behind Card Point and Little Card Point is in this same category, except that here the tides depend upon the direction of the wind rather than on astronomical conditions. A south wind will blow all of the water out of this end of the bay, leaving these areas dry.

BOAT SHEET:

When the soundings were put on the boat sheet a great many of the soundings were left off since the floor of the bay was so regular. It is to be understood that where there is a blank space on a sounding line that the soundings in this blank space are the same as those at the two ends of the blank space.

On the boatsheet, also, are the locations of the positions given in the book which were spotted on the boat sheet with reference to the shoreline in the immediate vicinity without the aid of angles, in accordance with the best judgement of the hydrographer. These positions are capital letters as A, B, AB, BG, etc.

This method of locating points was used only around the creeks where the point could be spotted very closely with reference to the adjacent shoreline and the cost of getting actual control into the place would have been excessive.

CONTROL SHEET:

Accompanying the boat sheet is a control sheet used in the field for the location of signals.

This sheet was used to plot the cuts taken to locate the hydro-<sup>graphic</sup> signals, as well as being also used on the plane table as an actual topographic sheet in the locating of other signals. All data for the location of hydrographic signals on this sheet are ~~indexed~~ in Sounding Vol. I.

Some topography was done on the boat sheet in the mouth of Broad Creek when it became evident that the use of the control sheet on the plane table was going to spoil it for the purpose for which it was intended. This, also, was not particularly satisfactory since the unavoidable distortion of the boat sheet prevented using the distant signals for a good three point fix or for orientation of the table.

Finally, auxilliary sheets were used for the location of signals through the creeks, one for Caesar Creek and another for Broad Creek and Angelfish Creek. A small complete survey was made on each of these sheets and sufficient cuts etc taken to main scheme stations to definitely fix the detached survey on the main sheet. These auxilliary sheets accompany the smooth sheet and control sheet.

At the time of doing this work triangulation station Old Rhodes was not yet located. A traverse was run to this station and the traverse later adjusted when the position of the triangulation station was determined. This adjustment was small.

When transferring data from the Broad Creek-Angelfish Creek auxilliary sheet to the control sheet, Station Broad was used as the main point for corodination, as a check on this position was furnished by the U. S. Engineers. Station Broad is a U. S. Engineers station located by the engineers from the 1930 C. & G. Survey triangulation. Its position as determined by the engineers is Lat. 25° 21' 04.850 Long. 80° 15' 36.510

PROMINENT OBJECTS:

There is only one really prominent object that shows on the sheet. This is signal (Hydro) MIN on a small key in Broad Creek. It is a white house with a red roof and shows conspicuously from up and down the coast both inside the bays and along the outside coast.

The bridge house on the Barnes Sound Bridge also shows prominently from most of the southern portion of the sheet.

For want of other detail, both the Cocolobo Club and Key Largo Anglers Club should also be shown on the sheet; *also o Palm*

MEMORANDUM RE SMOOTH PLOTTING:

The following discrepancies were noted at line crossings after completion of the smooth plotting.

(a) The east and west line 74 e 76 e does not check the channel lines through the west entrance to Caesar Creek. The deep water just west of position 75e should no doubt come on the channel lines.

(b) Just inside of Broad Creek soundings on line 26ee 27ee did not well check the soundings on the channel lines. As the soundings on the three channel lines checked well, it is believed these should be accepted.

MISCELLANEOUS:

Among the incidents which broke the monotony of continual sounding lines were the killing of a shark with a pike pole, the catching of a couple of ten foot sharks on a hook and line, the taking of fish and crawfish for the mess.

Also throughout the creek district the marine life and bottom structure is visible through ten or twelve feet of water, and is much more varied than that seen from the glass bottom boats which carry considerable passengers out of Miami.

However, there is the other side of the wild life in this country, in the mosquitos and gnats which on one occasion completely knocked one of the party out, and rendered life miserable many times.

The insect period is during the Spring tapering off to nothing in the late fall and winter. In the spring one should stay as far from the creeks and mangrove lined shores as possible, and even in the winter on warm still days there are plenty insects around the shores.

STATISTICS - HYDROGRAPHIC

SHEET NO. 1  
FLORIDA KEYS.

TOTAL SOUNDING MILES - STAT.	693.6
TOTAL POSITIONS	4420
TOTAL SOUNDINGS	40741
AREA-SQ. STAT. MILES	70.5

This report compiled by the undersigned with liberal use of notes prepared by Mr. W. O. Hinkley, Surveyor, who executed all the hydrography, built all hydrographic signals and located all secondary control signals.

Respectfully submitted

*Harold A. Cotton*

Harold A. Cotton,  
Lieutenant Commander, C. & G. Survey,  
Chief of Party No. 3.



REPORT ON H. 5535-1934

CHIEF OF PARTY HAROLD A. COTTON

PROTRACTED BY A. BLACK

SURVEYED BY W. O. HINKLEY

SOUNDINGS BY A. BLACK

SURVEYED BY JAN - APR. - 1934

VERIFIED & LINKED BY C. STANLEY LIGHTBOWN

W. A. Brauder.

1. ~~The records conform to the general instructions, except that "S" was used at top of page instead of signal names.~~

2. The usual depth curves were completely drawn except at southern end of sheet, ~~where~~ these were purposely omitted until overlap is made with H 5542 (1934). Also several 15 ft curves were omitted in "tight" areas in creeks.

3. The field plotting was completed as prescribed in Hydrographic Manual

4. The office drafts man did over a part of field drafts mans work, namely

a. The eastern end of the bridge shown on sheet was 25 meters off.

b. A number of small islands were omitted from sheet

c. Shore line had to be changed in a number of places

due to erroneous transfers  
d. 20 positions were erroneously plotted.

5. The junction with H 5058 (1930) was satisfactory. Junction was not made with H 5578 (1934) since it had not been verified.

Junction with H-5542 (1934) was ~~not made because there is some question as to its accuracy due to faulty~~

~~since a number of soundings~~

plot on shore, satisfactory except for a 3' sounding which plotted on a 7'. The 7 ft sounding from H 5542 was removed and the 3' sounding from H 5542 (1934) was shown. <sup>CSL</sup>

6. Locations of all beacons shown on sheet were verified from sounding records. (CSL.)

Positions 33-35 b do not plot off sheet. <sup>Copy</sup> A. H. H. H.

Several signals shown in water area are evidently docks or wharves, as indicated by their names but no description could be found for these.

all topo + Hydro signals were verified by  
W A Bruder.

Control sheets # 1, 1a, 1b were used as authority  
for all topo signals symbolized with a red circle,  
sights <sup>angles</sup> taken from sounding vol # 20 also gave additional  
authority for many signals.

Boat sheet # 1 was used as authority for topo  
signals symbolized with a brown circle (see bottom page  
D.R.)

Two or more cuts from vol. 20, were checked  
on all Hydro signals.

Only one cut could be found to  $\odot$  Rox ( $\phi$  25 19.9'  $\searrow$  80° 15.4')  
but as positions plotted from this station appear to  
agree with surrounding positions,  $\odot$  Rox was accepted  
as correct.

The buildings shown at Coco Lobo Club + Key Largo  
Anglers Club were transferred ~~by~~ from Smooth Sheet  
as recommended by survey party.

An error was found in APC T 4577 and a tracing showing  
correction to be made, was furnished Mr Jones.

Reviewer please see note page 4 D.R. in reference  
to lighted beacon, which verifier has shown with +  
symbol

"Notes not initialed at bottom of sheet

Topo signals transferred by"

"Hydro " plotted by"

Form 567 "Land marks for Charts" was furnished  
with D.R.

Respectfully submitted.

C. Stanley Lightbourn

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. **5535**

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

Number of positions on sheet	<b>44.20</b>
Number of positions checked	<b>..29.4</b>
Number of positions revised	<b>..20.</b>
Number of soundings recorded	<b>40.741</b>
Number of soundings revised	<b>..135</b>
Number of signals erroneously plotted or transferred	<b>...0..</b>

Date: **APR. 12. 1935** .....

Cartographer: .....

**Verification of plotting**  
**Verification & taking of notes and sheets** by

**Verification of taking by** **W A Butler**  
**C STANLEY LIGHTBOWN**

**Review by** *B. Ricegar*

} 27 hrs ~~time~~  
168 hrs ~~time~~ } 195 hrs  
3.4<sup>3</sup>/<sub>4</sub> ~~time~~

20  
16

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

ERRATA

Hydrographic Sheet No. H. 5535  
(Field No. 1 -, H. A. Cotton - 1934)

Title label (Locality) Lower Biscayne Bay-Card Sound

Page 4 line 15 - Coco Lobo Club - Caesar Creek

Page 7- Tides - Only staffs were established at  
Pumpkin Key and Barnes Point.

1934 OCT -20- AM 9:02

2

To: Mr. Bacon  
 From L. S. S.

GEOGRAPHIC NAMES  
 Florida

Date: November 6, 1934

Survey No. H 5535

Chart No. 1249

Diagram No. 1249

*Names underlined in red approved Nov. 6, 1934*

*L. S. Bacon*

*Verified from Chart 1249*

\* Approved by the Division of Geographic Names, Department of Interior.

† Not Approved by the Division of Geographic Names, Department of Interior.

R, Referred to the Division of Geographic Names, Department of Interior.

Status	Name on Survey	Name on Chart	New Names in local use	Names assigned by Field	Location
✓	✓ <u>Little Card Pt.</u>	Same	-----	-----	25°17.8' 80°22.5'
✓	✓ <u>Mud Pt.</u>	"	-----	-----	25°18.7' 80°22.5'
✓	✓ <u>Cormorant Pt.</u>	"	-----	-----	25°17.2' 80°20.4'
✓	✓ <u>Steambot Creek</u>	"	-----	-----	25°16.6' 80°19.7'
✓	✓ <u>Barnes Pt.</u>	"	-----	-----	25°17.0' 80°21.8'
✓	✓ <u>Key Largo</u>	"	-----	-----	25°18.4' 80°17.5'
✓	✓ <u>Card Pt.</u>	"	-----	-----	25°19.5' 80°20.7'
✓	✓ <u>Angelfish Key</u>	"	-----	-----	25°19.7' 80°15.8'
	✓ <u>Angelfish Creek</u> ✓	"	-----	-----	25°19.5' 80°14.7'
✓	✓ <u>Palo Alto Key</u> ✓	"	-----	-----	25°20.5' 80°15.5'
✓	✓ <u>Old Rhodes Key</u> ✓	"	-----	-----	25°22.0' 80°14.2'

To: Mr. Bacon  
 From L. S. S.

GEOGRAPHIC NAMES  
 FLORIDA

Date November 6, 1934

Survey No. H 5535

Chart No. 1249

Diagram No. 1249

*Names underlined in red approved Nov. 6, 1934*

*Names verified from Chart 1249 which is practically the only authority for this region  
 H.B.*

- \* Approved by the Division of Geographic Names, Department of Interior.
  - ⊘ Not Approved by the Division of Geographic Names, Department of Interior.
- Referred to the Division of Geographic Names, Department of Interior.

Status	Name on Survey	Name on Chart	New Names in local use	Names assigned by Field	Location
✓	<u>Totten Key</u>	Same	-----	-----	25°22.8' 80°15.0'
✓	<u>Caesar Creek</u>	"	-----	-----	25°23.0' 80°13.2'
✓	<u>Christmas Pt.</u>	"	-----	-----	25°23.5' 80°13.5'
✓	<u>Long Arsenicker Key</u>	"	-----	-----	25°22.8' 80°17.8'
✓	<u>Rubicon Keys</u>	"	-----	-----	25°23.8' 80°14.6'
✓	<u>Elliott Key</u>	"	-----	-----	25°24.3' 80°13.0'
✓	<u>Adams Key</u>	"	-----	-----	25°24.0' 80°14.0'
✓	<u>Turkey Pt.</u>	"	-----	-----	25°26.2' 80°19.5'
	<u>Biscayne Bay</u>	USGB "			
	<u>Card Sound</u>	"			
	<u>Broad Creek</u>	"			

Mr. Ellis

LAC

November 23, 1934

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in  
21 volumes of sounding records for

HYDROGRAPHIC SHEET 5535

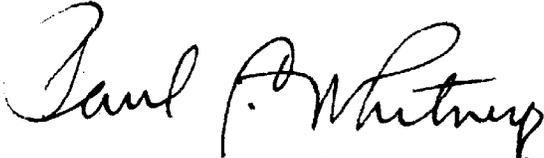
Locality Lower Biscayne Bay and Card Sound, Florida Keys

Chief of Party: H. A. Cotton in 1934  
Plane of reference is mean low water, reading  
2.5 ft. on tide staff at Adams Key  
1.9 ft. below B.M. 1  
2.0 ft. on tide staff at Soldier Key  
1.8 ft. below B. M. 1  
4.0 ft. on tide staff at Pumpkin Key  
No leveling record available  
2.1 ft. on tide staff at Card Bank  
No leveling record available

Allowance made for time and range of tide at place of sounding.

Height of mean high water above plane of reference is 1.3 feet at  
Adams Key; 1.8 ft. at Soldier Key; 0.8 ft. at Pumpkin Key and 0.5 ft.  
at Card Bank.

Condition of records satisfactory except as noted below:

  
Chief, Division of Tides and Currents.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5535 (1934)

Lower Biscayne Bay and Card Sound, Florida Keys, Fla.

Surveyed in January-April, 1934

Instructions dated November 17, 1933 (H. A. Cotton)

Hand Lead and Pole Soundings - 3 Point Control on Shore Signals Soundings Spotted  
on Boat Sheet in Minor Creeks.

Chief of Party - H. A. Cotton.

Surveyed by - W. O. Hinkley.

Protracted and plotted by - A. Black.

Verified and inked by - W. A. Bruder and C. S. Lightbown.

1. Condition of Records.

The records conform to the requirements of the Hydrographic Manual with the following exceptions:

a. Evidence that the transfer of topographic signals and plotting of hydrographic signals was checked in the field was lacking since the initials of the checker were not shown on the sheet. This was accomplished in the office.

b. A number of hydrographic and topographic signals, on which no topographic features are shown, fall in water areas in depths of from 2 to 6 feet. No descriptive matter apparently was submitted but information was obtained from a member of the field party that these signals were all of a temporary nature.

2. Compliance with Instructions for the Project.

The character and extent of the survey comply with the instructions for the project. The various inlets to Biscayne Bay and Card Sound could have been shown to better advantage on a larger scale.

3. Sounding Line Crossings.

Agreement in depths at crossings is very good.

4. Depth Curves.

Within the limits of the survey the usual depth curves may be satisfactorily drawn.

5. Junctions with Contemporary Surveys.

a. H. 5058 (1930).

The junction on the north with this survey is satisfactory and the agreement in the depth is very good. A single line of soundings extends well beyond the junction of the two surveys into the area of H 5058 (1930). It was not considered necessary to add these soundings to H. 5058 (1930) since the agreement in the depth is good, the bottom very flat and the area is adequately covered on that sheet.

b. H. 5578 (1934).

The junction on the east with this survey will be considered in the review of that sheet.

c. H. 5542 (1934).

The junction on the south with this survey is satisfactory.

6. Comparison with Prior Surveys.

a. H. 369 (1853).

This survey covers the northern portion of the present survey with widely spaced lines. The agreement in depths of the two surveys is somewhat variable, some parts agreeing very well, while in other areas changes have occurred.

The area north of Adams Key, Lat.  $25^{\circ} 25'$ , Long.  $80^{\circ} 13.5'$  shows a general deepening of from one to two feet. The 2 foot sounding (charted) in Lat.  $25^{\circ} 23.5'$ , Long.  $80^{\circ} 16.4'$  is actually  $2\frac{1}{2}$  feet. It falls in general depths of 4 feet on the present survey which indicates a general deepening in the area. For this reason the 2 foot sounding should be disregarded in future charting.

The old survey shows nothing more of value for consideration from the standpoint of information to be carried forward.

b. H. 444 (1854).

This survey covers almost the entire area of the present survey with widely spaced lines.

The agreement in depth is not consistent and shows that general shoalings and deepenings have occurred in various areas.

A 5 foot sounding, (charted) at Lat.  $25^{\circ} 19.7'$ , Long.  $80^{\circ} 20.27'$  is a shoal sounding between a  $7\frac{1}{2}$  and a 7, and when transferred to the present survey falls between similar depths. This sounding was verified and carried forward.

The 4 foot sounding (charted) at Lat.  $25^{\circ} 21.61'$ , Long.  $80^{\circ} 16.58'$  was found to have been erroneously plotted. Its correct position falls close to a similar depth on the present survey. The 4 foot sounding should be discontinued on the chart.

The 1 foot spot (charted) in Lat.  $25^{\circ} 21.0'$ , Long.  $80^{\circ} 16.7'$  falls in depths of about 4 feet on the present survey. Changes in the general depths as well as in the channels and shoreline are indicated in this vicinity and for this reason the 1 foot sounding should be disregarded in future charting.

c. H. 2007 (1890).

This survey covers the southern portion of Card Sound, Angelfish and Broad Creeks. It is in fair agreement in the deeper part of Card Sound but the shoaler areas and channels appear to have changed considerably. The area in the vicinity of Angelfish and Broad Creeks is regarded as changeable.

There appear to have been changes in the general depths, channels and also in the shoreline. The 3 sanded spots (charted) in approximate Lat.  $25^{\circ} 21.38'$ , Long.  $80^{\circ} 15.77'$  originate with zero soundings on a single line of soundings shown on an insert on H. 2007 (1890). They fall in blank area between sounding lines on the present survey. While it is doubtful if these spots still exist, these soundings have been carried forward because they were not disproved. These are the only soundings retained from this survey which should now be superseded by the present survey because of its greater detail and because the area has evidently changed somewhat.

7. Comparison with Chart No. 1249.

a. Hydrography.

Within the area of the present survey the chart is based on surveys discussed in the foregoing paragraphs and contains no additional information that needs consideration in this review.

b. Aids to Navigation.

1. The charted positions of the beacons between Long Arsenicker and Totten Key are in fair agreement with the present survey's location of them.

2. The charted positions of the beacons between Card Point and Cormorant Point however, do not check the new locations by hydrography and do not properly mark the cut as shown on the present survey. These beacons were charted from a section of the chart on which the beacons were spotted by the Lighthouse Bureau.

3. The light charted at Lat.  $25^{\circ} 20.6'$ , Long.  $80^{\circ} 16.45'$ , by authority of N to M No. 14, 1930 was located by a number of sextant cuts approximately 150 meters west of its charted position. (See descriptive report page 4, par. 5 for description of this beacon).

c. See Addenda attached to this review.

8. Field Plotting.

The field plotting was satisfactory with the following exceptions:

a. The eastern end of bridge near the southern limit of sheet was incorrectly transferred.

b. A number of small islands were omitted.

c. The shoreline in several places was incorrectly transferred.

d. A number of positions were erroneously protracted.

ADDENDA TO REVIEW OF H-5535 (1935)

7. Comparison with Chart No. 1249.

c. Charted Islet (lat. 25°23.8', long. 80°17.2')

This islet originates with T-746 (1859) and is not shown on the present survey. This islet was indicated on the graphic control sheet, T-4562 (1930) by two topographic signals, one located at each end but no shoreline was sketched although positions of other nearby islands were sketched. Air photo surveys made in this locality do not cover this particular islet. An inspection by Lt. Mathisson in 1936 (verbal statement of H. R. Edmonston) showed that the islet is still in existence. It has therefore been transferred to the present hydrographic survey in red and should be retained in the charts.

Reviewed by Harold W. Murray, Oct. 20, 1936.

Inspected by A. L. Shalowitz.

9. Additional Field Work Recommended.

No additional work is required.

10. Note to Compiler.

Information relative to Card Sound Bridge at southern limit of sheet may be found in the Descriptive Report of H. 5542 (1934). See also Addenda.

11. Superseding Old Surveys.

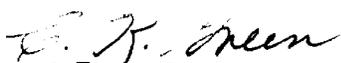
Within the area covered the present survey, with the indicated additions from previous surveys, supersedes the following surveys for charting purposes:

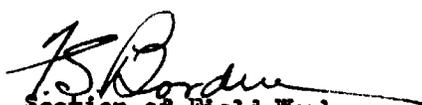
- H. 369 (1853) - in part
- H. 444 (1854) - in part
- H. 2007(1890) - in part.

12. Reviewed by - G. Risehari and R. L. Johnston, April 24, 1935.

Inspected by - A. L. Shalowitz.

Examined and Approved:

C. K. Green,   
Chief, Section of Field Records.

  
Chief, Section of Field Work

  
Chief, Division of Charts.

  
Chief, Division of H. & T.

25 Jan. 13, 1935  
S.A.S.

Applied to chart 848 Dec 9, 1936 H.H.R.  
New additional corrections applied to 1249 Aug. 1952 ~~H.H.R.~~

11463 5-23-91 Pearce Hunt Full after verification #31