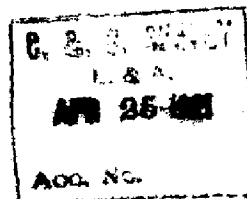


3829



*Topographic
Sheet*

Form 504

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

State: FLORIDA

11-5613

DESCRIPTIVE REPORT.

Topographic Sheet No. 3829

LOCALITY:

Florida Keys, Vicinity of Key

West, Florida.

Pelican Key to
~~Boca Chico Harbor to~~

Stock Island
~~Saddle Bunch Harbor~~

1920

CHIEF OF PARTY:

F. B. T. Siems, H&G. Engr.

3829

DESCRIPTIVE REPORT

To accompany Topographic Sheet No. 3829
Shore line from Stock Island to Saddle Bunch Harbor, Florida.

Signals and Surveying: During April and May 1920, a topographic survey was made of the shoreline of the keys to the eastward of Key West from Stock Island to Saddle Bunch Harbor.

The triangulation points in this area were fairly well distributed, so that a constant check by resection could be employed at nearly all planetable positions, with the exception of the position in Saddle Bunch Harbor. To the westward, in the island of Key West, many triangulation points were available, particularly the Radio Control towers and the East Martello Tower. Proceeding eastward a signal at station Grove located off a point of mangroves in a prominent position on the Southeast shoreline of Boca Chica Key, was visible to the eastward and westward, between other triangulation points. On Rock Point, also on Boca Chica, was placed signal on station Rock Point 2, visible as far as position on Geiger's Key and to and beyond Station Hill. Also on Rock Point, about 24 meters Northwest of Rock Point 2, a tall hydrographic signal, R0, existed, located by triangulation, and visible at points where Rock Point 2 could not be seen. Near former station Saddle Hills 2 a triangulation point and signal, Hill, was visible at nearly all points along the shoreline of Geiger's Key and to its eastward. From Rock Point to the eastward the tall signal at Saddle Hills No. 2 was visible. Resections could be obtained at about all shoreline positions on a hydrographic signal erected by the party on Pelican Shoal, which was cut into the triangulation as the traverse proceeded. Distances of the edges of channels and deep waters were estimated from the shoreline, and sketched in with a dash line. This line is only an approximate location of channels and deep waters, its location being plotted by the colors of the water (quite distinct in the region) whose distances offshore were estimated.

Proceeding from East Martello Tower a signal, House, was located on the south shore of Cow Key, by a three point fix checked by cuts to other visible signals. A signal, Sandy, on the West end of Boca Chica was located in the same manner. From here all visible signals in the Channels Keys were cut in, and the nearer were also rodded. On the viaduct of the Florida East Coast Railroad, to the North, positions were located by resection, with check cuts. These positions determined, they were used to intersect on the signals cut in from Sandy, and the nearer rodded. Positions was then taken at Cen, in about 1/2 foot of water, and location obtained by resection with check cuts. From here all visible signals were cut in, and signals Mud, Dub, Mal and Pan were rodded. The signals on the shore of Stock Island were located by resection, strong fixes being obtainable.

From Sandy, a station traverse was run to the eastward along the shore line, checking each position by resection, so that at Grove no error could be determined. The traverse from Grove to Hit was made in a similar manner, three triangulation points being used to check each station position. A traverse from Rock point joined this at Hit with no possible error, this traverse being controlled in addition by Pelican Shoal triangulation station.

DESCRIPTIVE REPORT

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Proceeding from East Martello Tower a signal, House, was located on the south shore of Cow Key, by a three point fix checked by cuts to other visible signals. A signal, Sandy, on the West end of Boca Chica was located in the same manner. From here all visible signals in the Channels Keys were cut in, and the nearer were also rodded. On the viaduct of the Florida East Coast Railroad, to the North, positions were located by resection, with check cuts. These positions determined, they were used to intersect on the signals cut in from Sandy, and the nearer rodded. Positions was then taken at Cen, in about 1/2 foot of water, and location obtained by resection with check cuts. From here all visible signals were cut in, and signals Mud, Dub, Mal and Pan were rodded. The signals on the shore of Stock Island were located by resection, strong fixes being obtainable.

From Sandy, a station traverse was run to the eastward along the shore line, checking each position by resection, so that at Grove no error could be determined. The traverse from Grove to Hit was made in a similar manner, three triangulation points being used to check each station position. A traverse from Rock point joined this at Hit with no possible error, this traverse being controlled in addition by Pelican Shoal triangulation station.

From Rock Point the traverse was carried eastward along Geiger's Key. Points could be checked as far as signal Man by three triangulation stations, viz. Saddle Hills No. 2, Hills and Pelican Shoal. From Man to Ready, Ro was carried in place of Saddle Hills No. 2. Beyond Ready to the ends of the traverse on Geiger's Key Pelican Shoal and Hill were used.

From Hill a short traverse was run up the Southwest shore of of the key on which it was located, and signal Hot was located by this traverse and by resection. Eastward from Hill the traverse continued, and was checked by resection on Pelican Shoal.

In Saddle Bunch Harbor entrance was made at signal Six, which was located by the stadia traverse with azimuth checked by resection on signal Hill. Pelican Shoal was not visible from this position. Signal Cross on Pelican Key was located by a cut from Hill and by resection, using Pelican Shoal, and Ro, there visible. The table was set in 3 feet of water. From Cross signal Shell was rodded in, and later was checked by resection on Pelican Shoal. Flag was located by intersection from Shell and Six, and also by rod from Six, as was Isle. Ball was located by intersection from Six, Shell and Flag, and checked by resecting, using Isle. Bush was located using Ball, Six and Flag. It was impossible to occupy this station with the table as it was on a point of mangrove, over 4 feet of water and soft bottom, but the position was checked by sextant angle. Slip was located by intersection from Six and Ball, and was checked using all other visible positions. Tide was located by intersection from Slip and Flag, and by intersection using Lat. Other signals were located by intersection and resection.

East Arch was also intervisible with Ro, and a cut was obtained to that signal which checked closely, in error about 5 meters. The angle at East Arch between Ro and American Shoal was measured by the theodolite, and at Ro between American Shoal and East Arch by Sextant. At the time of observation of the latter the best refraction was bad, but observation could be made with sufficient accuracy to determine the position of East Arch for the purpose of checking the sheet. The computed position showed an error in azimuth amounting to about 17 meters to the right and no error in distance. The traverse and plane table triangulation from Hill to East Arch were adjusted in azimuth according to the error indicated.

Character of the region:

The eastern shoreline of Stock Island is fairly regular and is covered by mangroves to the water's edge, although in several places the actual shoreline is visible. The embankment of the Florida East Railroad intersects it about .8 mile from its southern extremity, and runs to the eastward across Boca Chica Channel. The embankment is of a light colored marl which has hardened in the air to the consistency of a poor cement mixture. One mile to the eastward a viaduct of concrete arches extends across the channel, these arches being about 25 feet wide and 16 feet high. The viaduct causes a single track. About two thirds of the way from Stock Island to the viaduct, the remains of a pier extended into the water area for about 1/2 mile. A spur of this parallels the embankment for a quarter of a mile offshore 1/8 mile. This pier is a double row of pilings, spaced about 6 feet apart in both directions. The deck beams and planking have been removed. These piers were used to reach burrow pits and have deeper water on each side.

The small islands known as the Channel Keys are grown over with mangroves to the water's edge, so that the shoreline cannot be distinguished, and these mangroves appear to be extending in all directions, so that details in the topography are subject to change.

On the west end of Boca Chica a small creek extends inland, and cuts off a portion of the island of small extent. From here it extends into the interior of the key in a south easterly direction and terminates in a large shallow lagoon, with one to one-half feet of water. This latter was unsurveyed. Proceeding southward along the west end of the key from the mouth of the creek mentioned above, the mangrove abruptly changes to a steep sand beach of calcareous material and shell residue. This beach rises to a ridge on which are sparse grass clumps and a few cocanut palm trees, and slopes down inland to a mangrove swamp. This sandy beach swings around to the eastward, and continues until a point about 1000 meters west of Grove, where mangroves are again encountered. Here the mangroves extend out into four feet of water with soft bottom and the traverse was carried on in this part a small opening in the shoreline to the eastward of Grove.

Beyond Grove, and to within 150 meters of Rock Point, the shore is of low sandy beach, with occasional mangroves scattered along the high water line. Inland, the shore is covered with coarse grass, with a few cocanut palms, and clumps of deciduous trees which are 15 to 20 feet in height, offshore the beach changes to marl and ooze, a strata of 3 to 4 feet overlaying coral rock.

A short distance to the westward of Rock Point the shore changes to a ragged coral rock formation, covered with loose blocks of coral, and extends up to a low sand ridge, rather steep, on which are a few trees and coarse grass. This gradually changes to a sandy beach, rising to a ridge on which are cocanut palms, which continue down to Pelote Creek, a small channel separating Boca Chica from Geiger's Key. On the west shore of the creek at the entrance is a clearing in which are the foundation of several buildings.

From Pelot's Creek a sand beach extends north eastward to the curve of a bight in Geiger's Key. Inshore are Mangroves and cocanut palms. From the end of the sand beach a thick growth of mangroves covers the shore to the water's edge until a rocky point on which is erected signal Ready is reached, where the characteristic changes to rock of the same description as Rock Point. From Ready to the end of the traverse on Geiger's Key the shoreline is of sandy beach, with occasional patches of mangroves at the water's edge, inland the shore is covered by coarse grass and displays several cocanut palms.

The shoreline on the western end of the key on which is signal Hill is covered by mangrove, and extends out under water in a shallow mud flat. The mangrove appears to be advancing on to this, so that a change in shoreline may be expected. At Hill the shoreline makes an abrupt vend to the northeastward and changes to sandy beach, rising into a low ridge covered by grass, which ridge descends into a mangrove swamp. Midway along the Railway a dense mangrove thicket extends out into the water and is in process of extension of area. After this is passed the sand beach resumes until signal Many is reached, after which the eastern end of the key is of dense mangrove thicket.

From the western end of Pelican Key a growth of mangrove extends eastward along the south shore, until it gradually changes to sand beach rising to a grassy ridge at the small bight on the southern side. At the southernmost point a thicket growth of mangrove to the water's edge begins, which extends around the northern shore of the key to the westward. On the northern side the growth is low, not exceeding six feet in height. A shallow flat of sticky marl runs out to a small islet of mangrove, and within time will be covered by the trees.

Bird Key is a very low lying key, densely covered by mangroves. To the south lies two small islets of the same type, and a number similar to the northward, which latter is cut off by a narrow channel.

To the northward of this latter islet in a low pile of marl about 25 meters in diameter, the head of a former trestle, on which is a bench mark. From this extends northward the remains of a pier or trestle to the embankment of the Florida East Coast Railway. A tide house is located on this about 150 meters from the southern end. A similar trestle parallels this at about 200 meters, but does not extend out so far. These trestles were used to reach marl pits and are of the same type and construction as those in Boca Chica Channel.

The embankment of this railroad crosses the harbor in a northeasterly direction, and is of light-colored marl. In the deepest part of the harbor this changes to a viaduct of concrete arch type, with arches of about 25 feet width and 16 feet height. There is considerable current under these arches.

The eastern shore of Saddle Bunch Harbor is quite irregular. There are three prominent points, the bights in between them being simply mud flats with one half foot or less of water on them, the bottom consisting of soft marl. The northernmost of these points is a low mud covered key with mangroves scrub to a height of 4 to 5 feet between this and the next point are several islets covered with mangroves. The largest of these has a short sand beach on its western side, and on this is a bench mark. The central point has a shoreline of coral, corroded by the water, and inshore is covered by the low mangrove scrub. The southernmost of these points is roughly rectangular in shape, and is covered by mangrove to the water's edge, actual shore line is not visible. Deep water reaches in closer to this point than the others. At its southern extremity, a small channel cuts in, and three small islets are formed. The mangrove growth continues along the shore to the eastward. The general characteristics of the Saddle Bunch Harbor area are that it is a region of low coral keys, with flats of marl connecting, through which channels pass and on which the mangrove has formed small islands.

In both Boca Chica Channel and Saddle Bunch Harbor, small coral heads were observed in the process of formation, indicating that the process of building up is in progress. Branch coral is found as a foundation on top of the marl flats in connection with a growth of coarse gray grass.

The topography is subject to change in detail by growth of the mangrove and to a lesser extent by hurricane, but in general will preserve its general appearance.

Arthur J. Bulger

D. O.

September 17, 1920.

Referring to the 2nd paragraph of this report, attention is called to the fact that there is a slight error in the location of signal HOUSE. East Martello 1920 was occupied by plane table and its position was assumed to be that of East Martello Tower 1905-1909, (See Recovery Note of East Martello Tower furnished by this party) a cut was obtained to House, and its position was obtained by resecting Radio Control N. Pole at House. The corrected position conforming with the correct position of East Martello 1920 is shown on the sheet. The position of signal Sandy is probably correct as there was no error found in the traverse to triangulation station GROV from that point.

F. B. T. Siems

APPROVED:

F. B. T. Siems

F. B. T. SIEMS,
Chief of Party.

Planetable Positions
North American Datum.

Object and Description.	Latitude		D. P. Meters	Longitude		B.M. Meters	Remarks
	0	'		0	'		
House	24	33	1065	81	44	612	
End	24	34	592	81	44	05	
Duck	24	34	279	81	43	1471	
Sek	24	34	903	81	43	803	
Rag	24	34	914	81	43	390	
Rail	24	34	1156	81	43	180	
Doe	24	34	1062	81	43	144	
Mud	24	34	661	81	43	116	
Dub	24	34	336	81	43	373	
Gen	24	34	202	81	43	214	
West Arch	24	34	1105	81	43	426	Boca Chica Viaduct.
East Arch	24	34	1237	81	42	1359	" " "
Pile	24	34	1040	81	42	1634	
Bum	24	33	1595	81	43	321	
Rit	24	33	1448	81	43	440	
Ven	24	33	1310	81	43	386	
Nap	24	33	1298	81	43	240	
Chick	24	33	1368	81	43	138	
Sandy	24	33	913	81	43	255	
Coco	24	33	763	81	43	82	
Mal	24	34	120	81	43	405	
Slat	24	33	1442	81	43	611	
Boo	24	33	1628	81	43	992	
Stock	24	33	1510	81	43	1052	
Kok	24	33	860	81	42	638	
Flat	24	33	929	81	42	159	

Planetable Positions
North American Datum.

Object and Description.	Latitude		D.P.	Longitude		B.M.	Remarks
	0	'	Meters	0	'	Meters	
Hit	24	33	1066	81	41	1028	
Tie	24	33	1238	81	40	1352	
Hog	24	33	1559	81	40	843	
Cre	24	34	144	81	40	381	
Man	24	34	472	81	40	110	
Ready	24	34	700	81	39	895	
Pam	24	34	1007	81	39	748	
Lat	24	34	1293	81	38	525	
- Bel	24	34	1220	81	38	1530	
- New	24	35	170	81	38	1300	
Far	24	35	1173	81	38	1308	
West Arch	24	36	346	81	38	993	
East Arch	24	36	626	81	38	462	Determined approximate ly by triangulation.
Point	24	35	1652	81	38	415	
Slip	24	35	704	81	37	1652	
Tide	24	35	710	81	38	751	
- Isle	24	35	63	81	38	169	
- Flag	24	34	1839	81	38	444	
Mang	24	34	334	81	38	380	
Six	24	34	1492	81	38	162	
Ball	24	34	1574	81	37	1685	
Cross	24	34	1317	81	37	1256	
Shell	24	34	1573	81	37	847	
Bush	24	35	95	81	37	1111	

11-4034

GEOGRAPHIC POSITIONS

Locality	Florida Reef, vicinity of Marquesas Keys.	LATITUDE AND LONGITUDE.		SECONDS IN METERS.	AZIMUTH.	BACK AZIMUTH.	TO STATIONS.	State	DISTANCE. METERS.	Florida
										LOGARITHMS.
Pass		24 32 19.424	82 00 31.121	413.0	97 19 27.6	277 16 46.9		Saw	10973.9	4.04041
				675.9						
Saw		24 32 36.766	82 06 37.937	1608.0						
				1630.6						
Rat	(water signal) destroyed.	24 37 30.16	82 06 47.26	1743.3	27 32 33	207 134 24 42		South	10347.6	4.013307
				1329.7	314 22 03			Pass	14610.7	4.170574
Pole	(water signal) destroyed.	24 31 15.81	82 04 03.34	486.4	123 08 43	303 30 51		Saw	5794.9	3.763047
				153.9	233 37 12	73		Pass	6630.3	3.790670
Blu	(water signal) destroyed	24 27 08.83	82 03 13.32	233.2	145 14 10	325 12 22		South	12366.6	4.110817
				431.1	220 23 16	40 27 14		Pass	12336.6	4.091201
Grav.	(water signal) destroyed.	24 27 28.30	82 11 04.53	671.0	193 53 32	13 54 08		South	10205.0	4.012204
				126.2	273 34 12	93 36 37		Blu	9053.3	3.993670

Tabulated F. S.

AND REFER TO NO. 4-1111

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

SECTION OF FIELD RECORDS.

REPORT ON TOPOGRAPHIC SHEET No. 3829.

Surveyed in 1920.

Chief of Party: F. B. T. Siems.

Surveyed by A. J. Bulger.

Inked by A. J. Bulger.

1. The plan and character of this survey conform to the General Instructions, except that the magnetic meridian was not shown.
2. The plan and extent of the survey satisfies the specific instructions.
3. The methods of surveying as described in the descriptive report were excellent, but this is not indicated by the character of the drawing, which has the following defects:
 1. Shoreline was pale and ragged and had to be re-inked in the office.
 2. Vegetation symbols so crudely drawn that they would have been unintelligible without the descriptive report.
 3. About half the names shown on the chart were omitted on the sheet, although mentioned in the report.
 4. Sheet badly defaced and spotted and showed careless handling.
4. The junctions with adjacent sheets are good.
5. No further surveying is needed for the area covered by the sheet.
6. The descriptive report is a most comprehensive one and may be considered a model report.
7. The character and scope of the surveying are excellent, but the field drafting is poor.
8. Reviewed by E. P. Ellis, July, 1921.
9. Two copies of this report to be sent to the Division of Hydrography and Topography.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

TOPOGRAPHIC TITLE SHEET

The finished Topographic Sheet is to be accompanied by the following title sheet, filled in as completely as possible, when the sheet is forwarded to the Office.

U. S. Coast and Geodetic Survey.

Register No. **3829**

State . . . **Florida**

General locality . . ~~Florida Keys, Vicinity of Key West.~~

Locality . . . ~~Boca Chica Harbor to Saddle Bunch Harbor.~~
Pelican Key to Stock Island

Chief of party . **F. B. T. Siems, H. & G. Engineer.**

Surveyed by . **Arthur J. Bulger, Deck Officer.**

Date of survey . **April - May 1920.**

Scale . **1/15,000**

Heights in feet above . **No elevations.**

Contour interval feet.

Inked by . **A.J.B.** Lettered by . **A.J.B.**

Records accompanying sheet (check those forwarded): Photographs,

Descriptive report, Horizontal angle books, Field computations,

Data from other sources affecting sheet . **Triangulation of** .

Florida Reefs, Vicinity of Key West, 1920.

Remarks: **Low water line to be determined by hydrography in Saddle Bunch Harbor and Boca Chica Harbor.**