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Form 504

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

....., Director

C. & G. SURVEY L 2 A AUG 19 1927 No. No.

State: California.....

DESCRIPTIVE REPORT

<i>Topographic</i> <i>Hydrographic</i>	} Sheet No.	4551a 4551b
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LOCALITY

San Clemente Island.....

Tanner Bank.....

1926

CHIEF OF PARTY

T.J. Maher.....

GUTHRIE PHOTO OFFICE

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DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Col. E. Lester Jones, Director

DESCRIPTIVE REPORT OF HYDROGRAPHIC SURVEY
of
TANNER BANK, CALIFORNIA

Str. GUIDE
1926

Thos. J. Maher,
Commanding.

DESCRIPTIVE REPORT TO ACCOMPANY HYDROGRAPHIC SHEET "A"

COVERING TANNER BANK, CALIFORNIA

Authority:

Orders dated January 12, 1926.

Limits:

Detailed development of Tanner Bank to approximately the 300 fathom curve, in approximate latitude $32^{\circ} 40' N$, and longitude $119^{\circ} 10' W$. (See hydrographic sheet of area west of San Clemente Island, 1925.)

Methods of Survey:

Survey was made by radio acoustic sound ranging control, supplemented by semi-fixed position work on three standard survey buoys anchored and located in position by the R.A.R. method. In addition, the distance between buoys Nos. 1 and 2, station "Black" and station "Can", was determined by several standard speed runs between them, which are recorded in the sounding records. Moreover, bearings were taken along the range of these buoys.

Soundings in depths above eighty fathoms were made by the sonic sounding method; depths below this by Rude-Fischer tube sounding.

Sounding Volume No. 1, Motorsailer, covers one day's work, by the ship's launch, of vertical casts made by hand lead. Control for this work was furnished by running compass courses and obtaining distances

away from buoy "Black" by means of vertical angles from top of target of buoy to water line, which distance was 14.9 feet. A table of distances using the vertical angle as argument was made up for this. The compass deviation for this launch, which is of great magnitude, was obtained off the Oregon coast by taking reciprocal bearings from the ship. The work has some value in giving a check on the ship's work. The ship obtained a sounding of 81 feet (Pos.#78, E day), 75 feet (Pos.#12-13, G day), and 72 feet (Pos.#3, J day), which is less than the shoalest found by the launch, namely 92 feet. The sentry struck at 10 fathoms about 150 meters west of the buoy. This was witnessed by the Commanding Officer, who was on the quarterdeck at the time.

B day of the ship was done by taking bearings on buoy "Can" and taking vertical angles as above. This day was not plotted on the smooth sheet because the area was covered subsequently with work of more rigid control.

The submarine sentry was left set, first at 14 fathoms, at which depth it tripped several times, and then was set at 10 fathoms.

Reliability of Work:

In general the crossings obtained, and depth curves revealed, check well amongst themselves.

It appears that the soundings from positions 113-117, M day, should be rejected. Positions 117-123 were rejected during the course of the work in the field; however, it appears evident that the agreement between the tube readings between positions 113-117 is coincidental, but very evidently both tubes gave erroneous results.

Much difficulty was experienced in getting results from the R.A.R. stations in this locality. Part of the erratic results are apparently due to faulty operation of the metronomes and partly to the irregular bottom. It was necessary to reject very many of the R.A.R. distances obtained, from failure of them to give consistent results. Copious notes are made in the various sounding records, showing method adopted to plot the work concerned.

In general, from fixed positions, the work was plotted by dead reckoning and then adjusted to agree with such other positions as seemed to be consistent. None of the closing errors were excessively much. Q day gave the greatest difficulty, but was adjusted consistently throughout; this day was the least rigidly controlled.

Hydrophone Positions:

Stations were established in West Cove on San Clemente Island, and on the southwest shore of San Nicholas Island. The position of the hydrophone at San Clemente Island was obtained by sextant fixes, on topographic signals, located the previous season in the vicinity, and on triangulation stations.

Two topographic parties located signals in the vicinity of the San Nicholas Island station. The positions of both hydrophones, i.e. at San Clemente and San Nicholas Islands, were plotted on the topographic sheets and then transferred to hydrographic sheet "A".

Currents:

In general a southwesterly set was experienced. The chip log was used by the Chief of Party on several occasions, as noted in the sounding records. This of course gave no information regarding the current, but did furnish information regarding the movement of the

ship relative to the water.

Buoy "Can" went adrift sometime on March 24th. On April 15th this buoy was found washed ashore on the beach in Pyramid Cove on San Clemente Island, by the launch hydrographic party working in the Cove.

Currents were observed every night that the ship was anchored on Tanner Bank. These current records accompany the sheet.

Velocity of Sound in Sea Water:

A velocity of ⁷⁴1497 meters per second was used in determining distances from the R.A.R. stations. This value was obtained by firing bombs from positions determined by visual fixes. The Steamer PIONEER was able to obtain very good comparisons over long distances by this means. (See PIONEER'S records, Santa Barbara Channel.)

Compass Deviations:

Compass courses were regularly checked by comparisons between the steering and standard compasses. Several sun azimuths were taken. The deviation table is entered in the various sounding volumes.

Tides:

Results from automatic tide gauge records at La Jolla and Long Beach, Cal., were used. Due to non-receipt of part of the record from La Jolla, tides recorded at Long Beach were used for days when other record was missing. A correction of plus 20 minutes in time over the La Jolla station was used in reduction of soundings.

Sub-plan plotted by W. F. Malnate, Jr. H. & G. Engineer.

Main sheet plotted by E. H. Bernstein, H. & G. Engineer.

Respectfully submitted,

E. H. Bernstein
E. H. Bernstein,
H. & G. Eng.

Approved and forwarded:

Thos. J. Maher
Thos. J. Maher,
Commanding Officer

STATISTICS

Hydrographic Sheet "A"

Date 1926	Letter	Vol. No.	Pos. No.	Soundings			Stat. Miles	Vessel. V
				Tube	Sonic	Wire		
Feb.25	a	1	59	-	-	111	10.0	Motorsailer
Feb.24	A	1	51	-	118	6	66.0	GUIDE
" 25	B	1	69	109	-	3	22.4	"
" 26	C	1	100	161	-	6	40.5	"
Mar. 3	D	1	40	64	-	-	21.1	"
" 3	D	2	42	43	14	1	33.7	"
" 4	E	2	192	223	-	4	64.0	"
" 5	F	2	120	90	88	2	93.1	"
" 9	G	3	93	140	-	-	48.0	"
" 10	H	3	84	63	71	9	54.0	"
" 11	J	3	111	142	31	3	70.1	"
" 11	J	4	2	17	-	1	8.7	"
" 12	K	4	139	155	56	6	89.2	"
" 16	L	4	88	32	114	2	70.7	"
" 17	M	4	62	80	17	1	30.5	"
" 17	M	5	63	82	12	-	24.5	"
" 18	N	5	126	78	118	1	94.4	"
" 19	P	5	132	102	99	-	90.3	"
" 19	P	6	3	5	-	-	1.7	"
" 23	Q	6	86	18	127	8	78.5	"
" 24	R	6	111	101	70	26	60.6	"
" 25	S	6	42	-	47	-	31.3	"
" 25	S	7	64	22	70	5	45.6	"
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TOTALS:	-	7	1879	1727	1052	195	1148.9	-
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Hydrographic Sheets Nos. 4551 a + b.

Tanner Bank. California.

These two sheets cover a survey of Tanner Bank and vicinity including two lines running to San Clemente Island. The method of survey includes Hydrophone, 3 ft fixes, angle and bearing and dead reckoning positions and tides, Sonic and lead soundings.

The area is fairly well covered and while many open areas appear and numerous apparent discrepancies exist yet the work appears sufficient for an approximate development.

John D. Torrey
11/5/26.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

WASHINGTON

November 3, 1927.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4551 a and b

Tanner Bank and Vicinity, California.

Surveyed in 1926

Instructions dated January 12, 1924 and November 21, 1924 (GUIDE)

Chief of Party, T. J. Maher.

Surveyed by Field Party.

Protracted by E. H. Bernstein, W. F. Malnate.

Soundings plotted by E. H. Bernstein.

Verified and inked by J. D. Torrey, A. L. Shalowitz.

1. The records conform to the requirements of the General Instructions except that bearings on buoys did not always mention the name of the buoy.
2. The plan and extent of development satisfy the specific instructions with the exception that split lines should have been run in the vicinity of \odot Red and to the westward to make the spacings of lines conform to paragraph 9 of the specific instructions.
3. The sounding line crossings are only fair. Doubtless this is due to the erroneous location of some of the lines. A careful study was made of all the crossings and those lines or portions of lines were rejected that appeared clearly in error. In doing this due regard was paid to the irregular character of the bottom in portions of the area. With this somewhat arbitrary rejection of soundings, most of the flagrant differences have been eliminated. However, there still remain discrepancies which did not permit of such arbitrary treatment. To clear these up would have meant possibly the replotting and readjusting of miles and miles of sounding lines, a procedure hardly justifiable in view of the uncertainty of obtaining any better results. It was the outer ends of lines that usually appeared in error, showing that with more precise information for adjusting the lines these discrepancies might have been eliminated. In this connection it should be mentioned that the control was based upon dead reckoning and R.A.R. distances. As a general rule the R.A.R. locations were assumed correct and the intermediate line adjusted to these locations. This in itself may have introduced errors in some cases since

one of the distances may have been in error, there being no check from a third hydrophone station.

4. The usual depth curves could be drawn.
5. The usual field plotting was done by the field party except that lines 109 F to 120 F and 1 Q to 13 Q were omitted from the smooth sheet. This was doubtless due to the use of tangents to San Nicholas Island, the topography of which was not plotted on the smooth sheet. The reviewer plotted both of these lines on H. 4447 (where they are now shown in red) since this sheet already contained the shoreline and contours of San Nicholas Island. Angles and R.A.R. distances were used wherever available. When tangents were used due regard was paid to curvature of the earth. The lines were adjusted for closure. Without being influenced in the adjustment, by the work already plotted on H. 4447, the work on these days agreed remarkably well with the soundings on H. 4447. The lines as finally accepted were then transferred to H. 4551^a. In the case of the F day line positions 100 to 120 F were plotted on H. 4447 on account of 100 F being the last position where 2 R.A.R. distances were obtained. In the office adjustment of the line, 109 F differs somewhat from the field plotting, but since 100 to 109 F had already been plotted and the soundings verified and inked, the change was not considered of sufficient importance to warrant the replotting of all the soundings between these two positions. The field plotting of 109 F was therefore accepted on H. 4551^a and this point joined by a straight line with position 114 F, the next change in course. This will account for the slight difference in position of 109-114 F on sheets H. 4447 and H. 4551^a. These two lines are inked in red on H. 4447.

The plotting and adjustment of lines by the field party were accepted except in the following two instances:

- a. 63 L to 86 L was replotted assuming an error of 1 knot in log reading at 67 L in accordance with a note in the sounding record. This made all subsequent bearings to buoys and R.A.R. distances check with the log distances. Furthermore, the adjacent soundings agreed well.
 - b. The line from 116 to 124 N was replotted. This new plotting agrees with a note in the record at 120 N that the ship was "Heading for can buoy", which would have been impossible with the field plotting. Furthermore, the replotting checks well with the ship's head by compass.
6. The junction with H. 4549^a and b will be taken up in the review for those sheets.

As these sheets fall practically entirely within H. 4549^a it is unnecessary to consider them in conjunction with H. 4447 as that will be taken care of in the review for H. 4549^a.

7. No additional work is necessary immediately in this vicinity, but whenever work is again resumed in these waters the following should be investigated.

a. The line from 114 to 117 M in latitude 32° 45', longitude 119° 13'. Soundings ranging from 26 to 35 fathoms were obtained on this line in depths of 50 and 60 fathoms. Close to the 26 fathom sounding a bomb fix was obtained, so that it is reasonably certain that the location is correct. The depth, however, seems doubtful. It would seem that either bottom was not obtained or else the tubes were not functioning properly. In this connection it is significant that just after these shoal soundings were obtained, the tubes became very erratic and such differences in paired tubes as 27-36; 24-42; 38-28; 23-36 were obtained. These, of course, were rejected by the field party. It was not considered advisable to reject the above mentioned line, since it contains the shoalest sounding in the immediate vicinity, but its existence is highly doubtful.

b. In latitude 32° 44', longitude 119° 07 1/2', a 30 fathom tube sounding (H. 4551^b) was obtained in depths of 80 to 100 fathoms. Both tubes were in agreement, but the field party marked the sounding "doubtful". It would seem that the tubes did not reach bottom. This should be verified in the future. However, for the present the sounding will be retained and should be charted the same as any other sounding.

8. Attention is called to the fact that all sonic soundings of 100 fathoms and less were omitted from the smooth sheet.
9. Character and scope of field operations, good.
Field drafting, good.
10. Reviewed by A. L. Shalowitz, October, 1927.

Approved:

Chief, Section of Field Records (Charts)

R. O. Roberts

Chief, Section of Field Work (H. & T.)

September 14, 1926.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
volumes of sounding records for

HYDROGRAPHIC SHEET NO. **4551A and B.**

Locality:

SOUTHERN CALIFORNIA

Chief of Party:

T. J. Maher in 1926.

Plane of reference is **M. L. L. W.**

4.0 ft. on tide staff at **Long Beach**

3.7 ft. ----- do ----- **Los Angeles**

3.8 ft. ----- do ----- **La Jolla**

For reduction of soundings, 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 each 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.

G. H. Hulse

Chief, Division of Tides and Currents.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4551a

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. A 4551

REGISTER NO. 4551a

State California

General locality ~~Coast of California~~ S. Coast

Locality ~~Tanner Bank~~ San Clemente I. to Tanner Bank

Scale 1:100,000 Date of survey Feb. 24 - Mch. 25, 1926.

Vessel Ship "GUIDE"

Chief of Party Thos. J. Maher

Surveyed by Thos. J. Maher and Field Party

Protracted by E. H. Bernstein and Wm. F. Malnate

Soundings penciled by E. H. Bernstein

Soundings in fathoms ~~feet~~

Plane of reference MLLW

Subdivision of wire dragged areas by _____

Inked by _____

Verified by _____

Instructions dated JANUARY 12th., 1926

Remarks: Detailed development of shoal area in vicinity of buoys on separate sub-plan, scale 1:20,000.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4551b

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. A' 4551b

REGISTER NO.

State California

General locality ~~Coast of California~~ S. Coast

Locality Tanner Bank

Scale 1:20,000 Date of survey Feb. 24-March 25, 1926.

Vessel Ship "GUIDE"

Chief of Party Thos. J. Maher

Surveyed by Thos. J. Maher and Field Party

Protracted by Wm. F. Malnate

Soundings penciled by E. H. Bernstein

Soundings in fathoms ~~XXXX~~

Plane of reference MLLW

Subdivision of wire dragged areas by _____

Inked by _____

Verified by _____

Instructions dated January 12, 1926.

Remarks: Subplan of Sheet "A"

This survey is on two sheets.