

4267

Diag. Ch. No. 5101-2

Form 504 DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY
State: California
11-5612
DESCRIPTIVE REPORT.
Hyd. Sheet No. 4267
LOCALITY:
San Diego - Offshore
Cortez Bank
1923
CHIEF OF PARTY:
H. A. Seran, R. R. Lukens

4267

Read - 1/13

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET NO. 3.

CALIFORNIA

CORTES BANK.

surveyed by the parties of

U.S.S. Discoverer, H. A. Seran, Commanding

and

U.S.S. Pioneer, R. R. Lukens, Commanding.

1923.

The hydrographic work done in the survey of Cortes Bank was in accordance with instructions dated October 18th, 1922. These instructions also called for a wire drag survey inside the 50-fathom curve but weather conditions made it impossible to do any wire drag work altho both the DISCOVERER and PIONEER were standing by on the Bank from the 1st of January until the close of the season, February 10th.

In general the soundings were taken with hand lead up to 20 fathoms depth and with the Coast Survey Sounding Tubes beyond that depth.

A number of survey buoys were planted and their positions determined as described later. All the hydrographic work was controlled by fixed positions on these buoys.

The method of determining the positions of the buoys was described in my season's report and is repeated here. After the first six buoys had been planted, the DISCOVERER was anchored close to buoy "A". Triangulation stations REST and PEAK on San Clemente Island were recovered and observers from the party of the PIONEER stationed at each. Station SLOPE was recovered and used as an azimuth mark for station REST and station LEDGE was recovered and used as an azimuth mark for station PEAK. (The two occupied stations were not intervisible) Lights were posted at each of the azimuth marks and each observer measured the angle between the ship's searchlight and his azimuth mark. An inverse computation gave the distance and azimuth between the occupied stations and thus the base of the triangle PEAK, REST, DISCOVERER. From this triangle the position of the ship was computed. The distance between the ship and buoy "A" was determined by observing the angle between the water line at buoy "A" and the horizon from the bridge of the ship which was 32 feet above the water. The direction of the buoy was taken from the standard compass. This trigonometric position of Cortes Bank buoy and Cortes Bank differs from the position shown on the chart by about  $2\frac{1}{2}$  miles and was reported to the office by the acting Commanding Officer under date of January 27th, 1923.

The first six buoys were planted on two ranges. Buoys A, B. & C on one range and buoys D, E & F on another. The distance between buoy C and buoy F along the line of the buoys was determined by log runs. Using this distance as a base the buoys were located with reference to each other by sextant triangulation with the ship and launch. The launch occupied each buoy in turn and the ship took position about one mile outside the line of the buoys. The entire system was then oriented by observing celestial azimuths. The DISCOVERER anchored near buoy A and the PIONEER near buoy E. The DISCOVERER measured the angle between the PIONEER and the Moon at low altitude and for a check the PIONEER measured the angle between the DISCOVERER and a star at low altitude. Knowing the exact position of the DISCOVERER and to all intents the exact position of the PIONEER the azimuths of the Moon and Star were computed and from this the azimuth between the DISCOVERER and PIONEER or from buoy A to buoy E. The later buoys beyond F were located in a similar manner.

In verifying the plotting on this sheet it is necessary to keep in mind that the buoys are anchored in from 12 to 50 fathoms of water with length of cable about 150 percent of the depth, thus permitting them to move - change position with the current and wind. On the days when work was done the current was fairly constant in direction and no large amount of difficulty was experienced from that cause.

All the time the ships were in the vicinity of the Bank there were breakers over Bishop Rock and it was impossible to verify the charted depth over this rock or to ascertain the least depth.

*H. A. Seran.*

H. A. SERAN  
H. & G. E., Chief of Party.

Work of both discoverer & Pioneer  
plotted on this sheet. Discoverer's work in  
~~blue~~ Pioneer's in red.

*H.A.S.*

*Seran*

STATISTICS TABLE--SMOOTH SHEET (# 3) 4267

<u>Date</u>	<u>Vol.</u>	<u>Letter</u>	<u>Soundings</u>	<u>Positions</u>	<u>Stat.Miles</u>	<u>Vessel</u>
1/18/23	1	A	108	35	24.8	Pioneer
19	"	B	89	32	17.0	"
23	"	C	61	60	13.0	"
24	"	D	61	61	24.5	"
31	"	E	21	21	7.5	"
2/1/23	"	F	11	11	2.9	"
6	"	G	49	49	11.5	"
"	2	"	6	6	1.5	"
7	"	H	43	42	14.5	"
8	"	J	42	32	22.0	"
			491	349	139.2	

DATE 1923		Letter	Volume	Positions	Soundings	Stat.Miles	Vessel
Jan.	16	A	1	10	42	10.4	Discoverer
"	17	B	2	38	89	20.8	"
"	18	C	2	72	185	27.0	"
"	19	D	2	73	268	19.1	"
"	23	E	1	13	28	4.9	"
"	24	F	2	20	45	9.8	"
"	"	"	3	19	46	9.7	"
"	25	G	3	18	40	5.7	"
"	31	H	1	12	25	6.6	"
Feb.	1	J	1	42	62	34.6	"
"	6	K	1	49	108	31.4	"
"	7	L	3	48	104	25.3	"
"	8	M	1	36	57	25.3	"
"	"	"	3	19	29	17.2	"
Totals				469	1128	247.8	

C. C.

COPY TO FIELD RECORDS.

May 16, 1923.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in  
volumes of sounding records for

HYDROGRAPHIC SHEET

Locality:

4267

Chief of Party: ~~San Diego~~ San Diego, So. California.

Plane of reference is

ft. on tide gage at ~~San Diego~~ San Diego and R. R. Loomis in 1923

mean lower low water, reading

Quarantine Station, San Diego.

3.6

auto-gauge

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.

*Harnamer*

Acting Chief, Division of Tides and Currents.

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

WASHINGTON

May 31, 1923.

VERIFICATION REPORT H.-4267

(Cortez Banks)

In the verifying and inking of this sheet the greatest care and caution had to be exercised. It was found at the outset that the plotting of the soundings was not too carefully executed and that the protracting in critical places was not up to standard. The result was a lack of confidence in the plotting of the entire sheet, so that any position that appeared a little doubtful, which under ordinary conditions might have been accepted, was retracted. The spacing of the soundings was poor. There seemed to be a flagrant disregard for time interval. The plotter seemed to have adopted a uniform practice of spacing all soundings equally, regardless of time. Even the equally spaced soundings appeared to have been plotted by eye rather than with spacing dividers.

I mention a few of the more pronounced errors in plotting and protracting. The soundings between 11 and 14A (Pioneer) were so poorly plotted that the correct plotting smoothed out a 400 meter high in the 20 fathom curve. The soundings between 1 and 3F (Discoverer) were poorly plotted. Between 1 and 3H (Discoverer); between 20 and 23C (Discoverer); between 16 and 18F (Discoverer). Position 39K (Discoverer) was plotted 400 meters off position. 33M (Discoverer) was 500 meters off position. Positions between 33<sup>K</sup> and 37M (Discoverer) were so weak that the original plotting was rejected and the line plotted and adjusted by dead reckoning. On J day (Discoverer) the entire line from 16J to 43J had to be readjusted. This was occasioned by the fact that in plotting the position of 16J, the point from which departure was taken to run in the dead reckoning line, signal H was used instead of H<sup>1</sup> as recorded. This shifted the position by fully 400 meters. Position 4L (Discoverer) was protracted 500 meters off, making a very poor crossing. The correct plotting eliminated this apparent error.

The position numbers and letters were much too large. All shoal soundings were plotted in even fathoms which is contrary to paragraph 336 of the General Instructions, which requires soundings up to 8 $\frac{1}{2}$  fathoms to be plotted in fathoms and fractions thereof.



Verification Report, H. 4267 - 2.

Attention is called to the fact that the instructions for use of tubes in surveying call for rejection of the sounding in case of a disagreement in the uncorrected depths of two tubes in excess of 3% of the depth from 20 to 40 fathoms, 4% for 41 to 70 fathoms and so on. This rule was not adhered to in the records of the Discoverer.

The 33-fathom spot 3A (Discoverer) was questioned on the boat sheet. The Pioneer found nothing less than 45 fathoms around the spot. However, the 33-fathom spot was retained, as the Pioneer may not have sounded over the exact spot.

The Discoverer should have taken more bottom characteristics.

In the descriptive report of the sheet, the Chief of Party states that during the whole time the work was in progress there were breakers over Bishop Rock. Only one reference to breakers is made in the records. This is at 5A (Pioneer) where an estimated distance to breakers is given. No cuts were taken to the breakers.

The development of the 10 fathom curve is inadequate.

A. L. Shalowitz

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
WASHINGTON

July 18, 1923.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4267

Cortes Bank, California

Surveyed in 1923

Instructions dated Oct. 18, 1922

Chief of Parties, H. A. Seran and R. R. Lukens.

Surveyed by J. H. Peters and R. R. Lukens.

Protracted by R. W. Woodworth, O. S. Reading and A. H. Wagner.

Soundings plotted by R. W. Woodworth.

Verified and inked by A. L. Shalowitz.

1. The records of the Pioneer conform to the requirements of the General Instructions.

The records of the Discoverer are not so satisfactory. The explanatory notes were carelessly written. Abbreviations were not always understandable.

More bottom characteristics should have been given.

The correction factors for tube soundings could have been clearer. The instructions to reject tube soundings, where the differences between two tubes exceeded certain percentages, were not always adhered to. On D day the reduced hand lead soundings were entered in fathoms and tenths, which necessitated a second reduction of all soundings of less than 9 fathoms. The curve on which sounding tube corrections are based was not furnished.

Although Bishop Rock is the most important feature on Cortes Bank, neither record contains a cut on the breakers on the rock. Only one reference to breakers was made in the records.

2. The plan and character of development fulfill the requirements of the General Instructions.

3. The plan and extent of development satisfy the specific instructions except that no wire drag work was done and there are two areas not completely developed.
4. The sounding line crossings are adequate.
5. The information is sufficient for drawing the usual depth curves.
6. The field plotting was completed to the extent prescribed in the General Instructions. That done by O. S. Reading and A. H. Wagner is excellent, but the work of R. W. Woodworth, who did the bulk of it, has serious defects. The most important of the errors and shortcomings (all by Mr. Woodworth) are noted in the report by A. L. Shalowitz, Cartographer, who inked and verified the sheet.
7. It will be noted that Bishop Rock and the 10-fathom shoal five miles to the northwestward have both been located two to three miles north of their charted positions. The excellent control of the new survey makes it certain that the new locations should be accepted in place of the old ones.
8. The wire drag survey called for in the instructions remains to be done. The shoal areas in the vicinity of Bishop Rock have not been sufficiently developed. Bishop Rock itself has not been<sup>exactly</sup> located nor developed. Further sounding to the southeastward and northwestward would be desirable in order to completely define the bank.
9. The character and scope of the surveying are excellent, but the field drafting is poor.
10. Reviewed by E. P. Ellis, July, 1923.

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

Sheet No. 3.

HYDROGRAPHIC TITLE SHEET

The finished Hydrographic 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. (3) 4267

State . . . . . CALIFORNIA

San Diego - Offshore

General locality . . . . . SOUTHERN COAST

Locality . . . . . CORTES BANK

Chief of party . H. A. SERAN . . . . . R. R. LUKENS.

Surveyed by . . J. H. PETERS . . . . . R. R. LUKENS.

Date of survey . JANUARY\* FEBRUARY . . . . . 1923.

Scale . . . . . 1: 40,000.

Soundings in . . . . . Fathoms.

Plane of reference 3.6 on staff, La Playa, San Diego Bay.

R. W. Woodworth

R. W. Woodworth.

Protracted by O. S. Reading Soundings in pencil by . . . . .

A. H. Wagner.

Inked by . . . . . Verified by . . . . .

Records accompanying sheet (check those forwarded):

Des. report, \_\_\_\_\_ Tide books, \_\_\_\_\_ Marigrams, 2 Boat sheets, Disc.

2 " " Pion.

2 Sounding books, Pion. Wire-drag books, \_\_\_\_\_ Photographs.

3 " " Disc.

Data from other sources affecting sheet . . . . .

Remarks:

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
WASHINGTON

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4267 (Additional Work)

Additional Work in 1928

Instructions dated December 16, 1927.

Chief of Party, F. G. Engle.

Surveyed by F. G. Engle.

Protracted and soundings plotted by T. B. Reed.

Verified and inked by J. C. MacNab.

1. The records conform to the requirements of the General Instructions.

(a) The area marked "Breakers" and surrounded by a dashed black line has apparently been added to the sheet by the party who executed the additional work and with relation to this work it is accurately located.

2. The plan and character of development fulfill the requirements of the General Instructions.
3. The plan and extent of development satisfy the specific instructions.

Floating signals were specified in the instructions and two such signals were used. They were not properly located and the positions obtained by taking angles on them had to be disregarded in several instances. More buoys carefully located would have given more adequate control. No log tests were submitted.

4. The sounding line crossings are adequate.
5. The information, including the overlap of additional work from Hydrographic Sheet 4549a, is sufficient for drawing the usual depth curves.

6. No further surveying is required to fully develop the important areas within the limits of this sheet.

7. Remarks:

(a) When verifying the additional work on H. 4267 it was discovered that J day, pos. 17 to 42, were in error and J day was replotted from position 17 to the end of the line. In order to make bearing on position 34 and 39 plot correctly, the line was plotted backwards from position 43 to position 29 by course and distance, making no allowance for current. This throws all the error of closure (3.7 miles) into the line between positions 17 and 29 but renders a more probable result.

(b) The additional work, H. 4267 (Red) was verified and inked in the usual manner, no office adjustment being necessary.

(c) Sheet H. 4549b is a detail sheet covering the southeastern portion of Cortez Bank. Its junction with H. 4267 had never been investigated. When attempting to verify the additional work of H. 4549a (days A and C) to give us the depth curves 20, 50 and 100 fathoms, sheet H. 4549b was the logical basis but it was found that the additional work of H. 4549a and that of H. 4267 falling in the same area and the original work of H. 4549b and that of H. 4267 were irreconcilable. It was decided after a rather detailed investigation to use H. 4267 as a basis for the additional work of H. 4549a because the control of H. 4267 was far superior to that of H. 4549b.

8. Reviewed by J. C. MacNab, January 9, 1929.

Approved:

  
Chief, Section of Field Records (Charts)

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

The verification and review of the additional work on this sheet were made under the direct supervision of the Chief of Section of Field Records. While some of the adjustments made were arbitrary, no other method could be devised to make the surveys agree. The method used by the field party for determining the positions of the buoys was not accurate enough to control the survey. In addition, log tests were not submitted. For these reasons, the arbitrary adjustments made were justified.

Chief, Section of Field Records.

4267 Add'l Work

4267 Add'l Wk

Form 504	
<b>DEPARTMENT OF COMMERCE</b>	
U. S. COAST AND GEODETIC SURVEY	
E. Lester Jones, Director	
	C. & G. SURV. L 2 APR 27 1928 Acc. No.
State: California	
<b>DESCRIPTIVE REPORT</b>	
<del>Hydrographic</del> Hydrographic	Sheet No. 4267 Add'l Wk.
LOCALITY	
SOUTHERN CALIFORNIA	
CORTES BANK.	
1928	
CHIEF OF PARTY	
F. G. Engle, H. & G. E.	



DESCRIPTIVE REPORT

T O A C C O M P A N Y

HYDROGRAPHIC SHEET NO. 4267, - - - SCALE 1:40,000 - - - CORTES BANK.

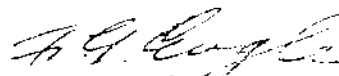
This work was done in accordance with Par. 6 and 7 and Par. 5(c) of Director's Instructions of Dec., 16, 1927.

Two floating signals were anchored A in 9 fathoms with 17 fathoms scope and B in 20 fathoms with 37 fathoms scope. They were located with reference to whistle buoy 20B by log distance run in each direction and by bearings of the lines formed by the buoys.

The work in the vicinity of the breaker was done by launch using hand leadline and stopping for each cast. The work on the Southeast end of the bank was done by the ship using fathometer. For corrections to fathometer soundings see graph and tables accompanying Sheet No. 4560.

The work of the ship is controlled by angles between the buoys together with bearings on the buoys, log distance and compass courses. Although the two angles between the buoys were taken, only the sum angle should be used in conjunction with the bearings and log distances for fixing the positions as the fix using both sextant angles alone is too weak.

Respectfully submitted,



F. G. Engle  
H. & G. Engineer,  
Chief of Party.

TABLE OF STATISTICS.

HYD. SHEET NO. 4267, ----- CORTES BANK.

<u>Date</u>	<u>1928</u>	<u>:</u>	<u>Letter</u>	<u>:</u>	<u>Volume</u>	<u>:</u>	<u>Positions</u>	<u>:</u>	<u>Soundings</u>	<u>:</u>	<u>Miles (st.)</u>	<u>:</u>	<u>Vessel</u>
Mar.	1	:	A	:	1	:	36	:	216	:	25.8	:	Ship
"	1	:	a	:	1	:	78	:	80	:	13.4	:	Stbd. Launch
				:			:			:			:
				:	Totals	-----	114	:	296	:	39.2	:	

Copy for Section of Field Records files.

11

May 26, 1928.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in  
volumes of sounding records for

1

HYDROGRAPHIC SHEET

4267 add'l.

Locality:

**SOUTHERN CALIFORNIA.**

Chief of Party:

Plane of reference is **W. G. Mangle, 1928.**

ft. on tide staff **at L. L. W.**

**5.5**

**Los Angeles Harbor.**

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.

*E. H. Wade*

Chief, Division of Tides and Currents.

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
WASHINGTON

AND REFER TO No. 11-DRM

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4267 (Additional Work)

Additional Work in 1928

Instructions dated December 16, 1927.

Chief of Party, F. G. Engle.

Surveyed by F. G. Engle.

Protracted and soundings plotted by T. B. Reed.

Verified and inked by J. C. MacNab.

1. The records conform to the requirements of the General Instructions.
  - (a) The area marked "Breakers" and surrounded by a dashed black line has apparently been added to the sheet by the party who executed the additional work and with relation to this work it is accurately located.
2. The plan and character of development fulfill the requirements of the General Instructions.
3. The plan and extent of development satisfy the specific instructions.

Floating signals were specified in the instructions and two such signals were used. They were not properly located and the positions obtained by taking angles on them had to be disregarded in several instances. More buoys carefully located would have given more adequate control. No log tests were submitted.

4. The sounding line crossings are adequate.
5. The information, including the overlap of additional work from Hydrographic Sheet 4549a, is sufficient for drawing the usual depth curves.

6. No further surveying is required to fully develop the important areas within the limits of this sheet.

7. Remarks:

(a) When verifying the additional work on H. 4267 it was discovered that J day, pos. 17 to 42, were in error and J day was replotted from position 17 to the end of the line. In order to make bearing on position 34 and 39 plot correctly, the line was plotted backwards from position 43 to position 29 by course and distance, making no allowance for current. This throws all the error of closure (3.7 miles) into the line between positions 17 and 29 but renders a more probable result.

(b) The additional work, H. 4267 (Red) was verified and inked in the usual manner, no office adjustment being necessary.

(c) Sheet H. 4549b is a detail sheet covering the southeastern portion of Cortez Bank. Its junction with H. 4267 had never been investigated. When attempting to verify the additional work of H. 4549a (days A and C) to give us the depth curves 20, 50 and 100 fathoms, sheet H. 4549b was the logical basis but it was found that the additional work of H. 4549a and that of H. 4267 falling in the same area and the original work of H. 4549b and that of H. 4267 were irreconcilable. It was decided after a rather detailed investigation to use H. 4267 as a basis for the additional work of H. 4549a because the control of H. 4267 was far superior to that of H. 4549b.

8. Reviewed by J. C. MacNab, January 9, 1929.

Approved:

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Chief, Section of Field Records (Charts)

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

The verification and review of the additional work on this sheet were made under the direct supervision of the Chief of Section of Field Records. While some of the adjustments made were arbitrary, no other method could be devised to make the surveys agree. The method used by the field party for determining the positions of the buoys was not accurate enough to control the survey. In addition, log tests were not submitted. For these reasons, the arbitrary adjustments made were justified.

Chief, Section of Field Records.

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4267 Add'l. WK.

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. \_\_\_\_\_

REGISTER NO. 4267 Add'l Work

State California

General locality Off Southern Coast San Diego-Offshore

Locality Cortes Bank

Scale 1:40,000 Date of survey March 1, 1928

Vessel DISCOVERER & Stbd. Launch

Chief of Party F. G. Engle

Surveyed by F. G. Engle & L. S. Hubbard

Protracted by T. B. Reed

Soundings penciled by T. B. R.

Soundings in fathoms ~~1000~~

Plane of reference MLLW

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

Inked by J. C. MacNeil

Verified by J. C. M.

Instructions dated December 16, 1927

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