

4873

C. SURVEY  
APR 22 1929  
Acc. No.

ORIGINAL

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

State: CALIFORNIA  
11-5813

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DESCRIPTIVE REPORT.

Field Sheet No. 15 4873

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LOCALITY:

OFFSHORE

Cape Mendocino  
~~NORTHERN CALIFORNIA~~

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TIBBET SHOAL

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1928

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CHIEF OF PARTY:

F. G. Engle, H. S. G. Engr

4873

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DESCRIPTIVE REPORT

To Accompany Hydrographic Sheet No.15  
Scale 1:240,000

Tibbett Shoal, Offshore, - Northern California

U.S.C. & G.S.S. DISCOVERER

F. G. Engle,  
H. & G. Engineer,  
Commanding.

November 23 - 26, 1928.

Instructions dated March 13, 1928; supplemental instructions  
dated ~~October 12~~, 1928.

*November*

*Name Tibbett Shoal does not appear on C.G.S. map  
on H.O. Chart near Great Point E. (P)*

Limits:

The hydrographic work on this sheet covers an area known as Tibbett Shoal, lying about 150 miles off the coast of California between latitudes  $41^{\circ} 10'$  and  $42^{\circ} 60'$ , longitudes  $126^{\circ} 30'$  &  $127^{\circ} 23'$ .

Control:

With the exception of the first and last few positions, at Humbolt Bay sea buoy and near Crescent City, respectively, all control was by astronomical observations. The southeaster of November 5th. and 6th. carried away the cables of the R.A.R. stations at both Cushing Creek and Big Lagoon, and the high surf subsequent to ~~and~~ characteristic of the coast at that season of the year prevented their repair or replacement.

The first observation was a meridian altitude obtained November 24, log 266.47 and between positions 118 and 119. In the afternoon two Sumner lines, logs 283.30 and 284.12, were laid down, and these were combined with the afore mentioned noon sight to obtain a fix at noon. The position as determined by this intersection was 2.3 miles north-north-east of the RD position, and this difference was distributed throughout the run from the sea buoy at the changes in course in proportion to the elapsed time to those changes.

The second fix, log 424.34, was obtained about 5:00 AM on the 25th. Observations were made on five stars, but one, Aldebran at log 424.34, was disregarded in determining the position. This position was 4.25 miles east one-half south of the DR position. Adjustment was made as before.

The position of the third fix, log 492.45, at noon, November 25th was arrived at by combining three morning sights and two afternoon sights with a meridian altitude. This position was 0.8 miles north-west by west of the DR position, which difference was adjusted throughout the run from the second fix in the manner described above.

At log 542.97 a fourth fix was obtained, this time by four observations on stars and planets by each of two officers. Although the maximum distance between Sumner lines was 6 miles in one case and 3.4 in the other, the shape of both quadrilaterals formed by the intersection of their respective Sumner lines was fairly good and the mean positions were nearly equidistant from the lines of position and lay in the same direction from all the stars. A position was chosen favoring the smaller of the quadrilaterals that was 2.9 miles southeast one-half south of the DR position. Distribution of this difference was made as before.

Cloudy weather made further observations impossible until about noon on November 26th when two solar observations were obtained at logs 714.14 and 714.55. At about 1:30 a landfall was made and visual fixes obtained until 2:55, when the line was ended. The fifth fixed position was made by intersecting the above mentioned lines of position with the log distance from these sights to position 334, the final visual fix. This position was 4.8 miles east-southeast from dead reckoning position. Adjustment was made as before.

Method:

Soundings were obtained by fathometer red light to as great a depth as possible, and by white light from then on. The disc speed was kept constant by the adjusting rheostat to keep the middle reed of the tachometer vibrating. It was seldom such adjustment was necessary. The white light readings were checked by the recorder, the junior officer of the watch. The Commanding Officer frequently read the soundings at the same time as the watch officer as a check, especially when the character of the bottom made the echo faint or uncertain.

The fathometer was read at ten minute intervals, except at critical or marked changes in depth when the interval was reduced to five minutes and in a few cases, one minute.

In some few cases no echo was heard from varying periods of time, and in these localities a continuous watch was kept for the echo. The longest period of no echo was twenty-nine minutes, position 296, and at an approximate depth of 1675 fathoms.

Several attempts were made to secure bearings from the naval radio compass stations along the coast. A variation of one degree in successive readings was common. The distance from the stations was such that a variation of the magnitude of one degree made the bearings of less accuracy than the dead reckoning between astronomical positions. R.C. bearings were not used in plotting the sheet.

Reducers:

The reducers entered under the heading of temperature corrections were obtained as follows: Bottom temperatures obtained during the season were plotted against depth and a smooth curve drawn. As no temperatures were obtained at depths greater than nine hundred fathoms, the curve was projected to approximately one thousand nine hundred fathoms. Temperatures were taken off at increments of fifty fathoms, and the mean temperature for each two-hundred fathom layer. Using these mean values the layer velocities were obtained from Special Publication No. 108. The mean velocities for depths in increments of two hundred fathoms were then computed by arithmetical averages. Factors were obtained by dividing the mean velocities by 800, the speed at which the fathometer was calibrated. From these factors the depth at which there was an increase of one fathom in the correction was obtained. These corrections are entered in the sounding volume.

Adjustments:

When the soundings were plotted and the depth curves drawn, it was found that certain arbitrary shifts were necessary to make the lines cross properly and reconcile the curves. The following shifts were made:

A point midway between soundings 1470 and 1368 fathoms, position 236 and 237, was moved 1.4 miles southeast so as to cross the north-south line at 1388 fathoms, position 212. The movement was proportioned according to elapsed time from the noon position at log 492.45

Position 245 was moved 1.3 miles southeast by east so that the sounding of 1327 fathoms would cross the north-south line near position 199, and between soundings 1397 and 1240. The difference was distributed as before.

Position 258 was moved 3.2 miles north-northeast so that the line of soundings between positions 258 and 259 would cross the north-south line between positions 183 and 184.

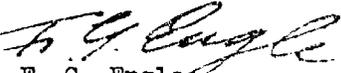
Position 269 was moved 4.0 miles north by west so that the sounding of 1016 fathoms, midway between positions 269 and 270, would fall between the soundings of 1011 and 1021 which are between positions 137 and 138 on the north-south line.

Position 282 was moved 3.0 miles north by east one half east as this appears to be the logical place that the line of soundings from positions 280 to 282 will properly cross the north-south lines. As before, this movement was distributed proportionally to the elapsed time from the foregoing crossing adjustment.

The remainder of the work from position 282 to log 714.55 was adjusted by keeping the later point fixed and proportioning the difference obtained in the last adjustment throughout the run.

A discrepancy occurs in that the sounding of 1082 fathoms on position 277 falls between the soundings of 960 and 884, on and near position 270. No crossing adjustment was attempted here because of the short run since the previous adjustment and because a further crossing adjustment would be necessary within a short time and in an opposite direction.

Respectfully submitted,

  
F. G. Engle,  
H. & G. Engineer,  
Commanding.

TIDAL NOTE SHEET NO. 15

The auto-portable tide gauge at Crescent City, California, latitude  $41^{\circ} 45'$  north, longitude  $124^{\circ} 12'$  west was used in reducing the soundings on this sheet.

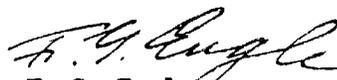
The plane of mean lower low water was used. The reading of mean lower low water on the staff was 3.00 feet.

The tabulations for highest and lowest tides observed have not been made.

Approval Of Chief Of Party

Sheet No. 15 and accompanying records have been inspected and approved by me. The field and office work was done under my immediate supervision at all times.

No additional work is considered necessary.

  
F. G. Engle,  
H. & G. Engineer,  
Commanding.

May 24, 1929.

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in  
1 volume of sounding records for

HYDROGRAPHIC SHEET 4873

Locality: Tibbett Shoal, off Northern California.

Chief of Party: F. G. Engle in 1928

Plane of reference is mean lower low water

~~ft. on tide staff at~~  
~~ft. below H. M.~~

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 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.

ERIC W. WILSON

Chief, Division of Tides and Currents.

- \* Tide reducers generally omitted on account of depths being over 70 fathoms. The soundings generally are greater than 1000 fathoms. Where necessary, tide reducers have been entered by field party (see note 8 above) and have been checked from Humboldt Bay predictions.

copy

May 24, 1929.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in  
1 volume\* of sounding records for

HYDROGRAPHIC SHEET NO. 4873

○ Locality: Tibbett Shoal, off Northern California

Chief of Party: F. G. Engle in 1928

\*Plane of reference is mean lower low water  
~~ftxxxxtidexstafxxst~~

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.
- xx 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.

\* Tide reducers generally omitted on account of depths being over  
70 fathoms. The soundings generally are greater than 1000 fathoms.  
Where necessary, tide reducers have been entered by field party  
(see note 8 above) and have been checked from Humboldt Bay predictions.  
Chief, Division of Tides and Currents.

Paul C. Whitney,

IN REPLY ADDRESS THE DIRECTOR  
U. S. COAST AND GEODETIC SURVEY  
AND NOT THE SIGNER OF THIS LETTER

AND REFER TO No. 11-DRM

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

WASHINGTON

December 6, 1929.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4873

Surveyed in 1928

Instructions dated March 13, 1928 and November 12, 1928  
(DISCOVERER)

• Chief of Party, F. G. Engle.

Surveyed by F. G. E.

Protracted and plotted by R. W. Knox.

Verified and inked by J. C. MacNab. •

1. The records conform to the requirements of the General Instructions.
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.
4. The sounding line crossings are adequate. ✓
5. The 1000 fathom curve, the only curve involved in this locality, could be completely drawn.
6. The field plotting was completed to the extent prescribed in the General Instructions.
7. The usual check as given to precise dead reckoning work was applied by the office draftsman. This usual check amounted to a verifying of the soundings as to time interval, log distance between positions, and courses, but the astronomic fixes and adjustments were not investigated.
8. The junctions with adjacent sheets were satisfactory. (See paragraph 11 below.)
9. No further surveying is required to develop the important areas within the limits of the work on the sheet.

*From Tuscarora (1874)*

10. The 996 fathom sounding from chart 5052 was substantiated. The shoalest depth in that area was found to be 854 fathoms.

An additional shoal, 884 fathoms, was found about 10 miles to the north and east of the above shoal.

11. For the Cartographic Section:

(a) The two lines of soundings running inshore on this sheet, H. 4873, were checked against the inshore sheets below and no serious discrepancies were found and no new information developed. The two lines of soundings running inshore on H. 4873 are not to be considered for charting within the limits of Positions 1 to 19 and Positions 331 to 334.

H. 4860 -	H. 4873,	Positions	331 to 334
H. 4185 -	"	"	1 to 19
H. 4095 -	"	"	1 to 7

(b) Some of the soundings from H. 4187 have been plotted in blue on the overlapping portion of this sheet. Several discredited soundings on H. 4187 have been omitted and should not be charted.

(c) The approximate location of discolored water reported in 1919 (see letter 245 of 1919) is shown in pencil. This report is very vague and the existence of a shoal in the area covered by this sheet is extremely doubtful and it should not be charted.

This paragraph was suggested by the Chief of Field Records.

12. Rating of the work: (a) Very good.  
(b) Good.

13. Reviewed by J. C. MacNab, November, 1929.

Approved:

A. M. Sahieralski  
Chief, Section of Field Records (Charts)

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

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4873

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. 15

REGISTER NO. 4873

State CALIFORNIA

General locality Cape Mendocino  
~~OFFSHORE, NORTHERN CALIFORNIA~~

Locality TIBBET SHOAL (Reported)

Scale 1:240,000 Date of survey November 23 - 26, 1928

Vessel U.S.C. & G.S.S. DISCOVERER

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

Surveyed by F. G. Engle

Protracted by R. W. Knox

Soundings penciled by R. W. Knox

Soundings in fathoms ~~feet~~

Plane of reference Mean Lower Low Water

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated March 13, 1928.

Remarks:

Partially applied to Chart 5021

S.R. Mac. 7, 1947