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3.3(a), EXECUTIVE ORDER 12356.

Form 504

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

State: Territory of Hawaii

11-5613

DESCRIPTIVE REPORT.

5211

5212

Hydrographic Sheet No. s. 11 and 43.

LOCALITY:

Laysan Island

1930

XXXX

CHIEF OF PARTY:

C. W. Swainson

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SHEETS NOS. 11 AND 43 - PROJECT 55.

AUTHORITY FOR SURVEY

Hydrographic sheets Nos. 11 and 43 were executed in accordance with orders dated February 10, 1930, for project number 55, *Ship Pioneer.*

AREA AND SCALE OF SHEETS

One report is written for the two sheets because they both embrace the area around Laysan Island. No. 11 is the inshore hydrography executed by launches, and No. 43 carries the hydrography from the junction with No. 11 out to deep water, joining sheet No. 251 on all surrounding sides.

Sheet No. 11 was done on a scale of 1:10,000 and No. 43 on 1:40,000. A sub-plan of the west landing was executed on a 1:5,000 scale.

CONTROL

A first order longitude and latitude station was established on Laysan Island. A base line was measured and expanded to a triangulation station on the north and south ends of the island. Various other signals on the island were then cut in by the topographic party. (See report to accompany topographic sheet of Laysan Island.)

Several two-barrel buoy signals were anchored two to four miles off the island as required. These were cut in by theodolite from the triangulation stations ashore. Some trouble was encountered due to the swinging of the buoys between the time when cut in from one station and that at the next. Consequently, for some of the buoys angles were reobserved on them simultaneously from two triangulation stations. The distances between buoys 1, 2, 3, and 4 were checked by R.A.R. and found to be in close agreement. When fixes used a combination of shore and floating signals, the lines sometimes jumped. This was due to the swinging of the buoys while the shore station remained stationary. *The computations and positions were forwarded previously.*

SURVEY METHODS

The inshore lines were spaced from 100 to 200 meters apart; the offshore ones 400 meters. Split and developing lines were run where required. At intervals lines were run out on No. 43 to 500 fathoms.

The launch soundings were all taken with the hand lead, the speed of the launch being regulated according to the depth. The ship used the fathometer almost entirely. Very often under 12 fathoms hand lead soundings were obtained simultaneously with the fathometer. Occasionally the vessel was stopped and the fathometer compared with a vertical cast.

TIDES

A tide station was established on the west side of Laysan and a portable tide gauge operated during the hydrography.

MAGNETICS

A complete series of first order magnetic observations were made with

See H5211 for location of tide station.

the magnetometer and dip circle at the astronomic station on Laysan Island.

OCEANOGRAPHY

Serial temperatures and salinities were obtained together with samples of the water and bottom. The water samples were forwarded to the Scripps Institute at La Jolla for analysis. *no bottom char. noted*

FATHOMETER CORRECTIONS

The data for and the description of the method of computing the corrections for the fathometer soundings are contained in the seasons report, project 55, 1930. The list of corrections is pasted on the inside cover of volume No. 1 of the sounding records. The fathometer corrections for soundings under ten fathoms was changed after the smooth sheets were plotted. Consequently, these soundings had to be changed after they were plotted.

No slope corrections have been made.

DISCREPANCIES

Between positions 34 and 35 F buoy No. 1A plotted on the port beam of ship instead of the starboard beam where it actually was. This was perhaps due to 2' being slightly out of position on account of change of current and also to an incorrectly plotted position of No. 1A. Buoy No. 1A could not be made to fit in all cases although much time was spent on it, trying to determine its best position. The best position was finally plotted from the fix given on page 53 of "F" day and omitting the angle to buoy No. 6. See positions 63 and 67 D for checks of the final position of No. 1A. Although buoys Nos. 1A and 2' do cause discrepancies in plotting, they will not cause any discrepancy on the chart because of the even character of the bottom in the area in which they are involved.

*Pos. 35 repl. final
adjusting this discrepancy
R.H.H.*

The hand lead soundings tended to be deeper than the fathometer. This is due mainly to the extremely irregular nature of the bottom. The fathometer would indicate the least depths over coral heads passed over, while the lead line often would not. Some of the fathometer readers had a tendency to give more weight to the lower flashes than the higher ones, and consequently read the fathometer slightly under the mean of the jumping flashes.

DANGERS

There are no particular dangers to navigation. Coral heads covered with five to seven fathoms are numerous over the area out to one and one half miles from the island. The bottom can usually be seen in depths under eight fathoms and often up to twelve. As a constant close lookout was kept from the bridge and crow's nest, it is thought that no dangerous shoals were missed, notwithstanding the irregular bottom.

ANCHORAGES AND LANDINGS

Vessels can anchor from one to one and one half miles off the island, eight to fifteen fathoms, on all sides, depending upon which side affords the best protection. Although the bottom is coral and sand, no trouble was experienced by dragging or fouling the anchor. However, the anchorage was not tested in any weather over a wind velocity of eight. Small boats drawing

not over twelve feet can lie at anchor inside the reef on the west side during easterly weather. The best landing is on the west side during southeast to northeasterly weather, where there is a small sandy bottom basin inside the reef with a narrow entrance through the reef, and a sand beach. It is not safe in westerly weather.

A very poor landing can be made near the northeast end of the island during light westerly weather.

CURRENT

No very strong currents were observed. Perhaps the maximum was about one knot. It had a tendency to be rotary in a clockwise direction around the island. It was influenced by the wind and tide.//

COAST PILOT

The Coast Pilot for the Hawaiian Islands is being written at the present time by Lt. Green, the executive officer of the PIONEER, and hence no notes are necessary here.

JUNCTION OF SHEETS

The soundings on sheet No. 43 in the overlapping area with sheet No. 11 were transferred to a tracing on the same scale as sheet No. 11 (1:10,000) This tracing was placed over sheet No. 11 and thus the overlapping soundings compared. A check mark was made on the tracing where the soundings checked. In many cases the corresponding soundings differed from one-half to one fathom, the fathometer soundings of sheet 43 being the shoaler. In a few instances this denotes an error on one of the sheets. However, in the majority of cases it is due to the very uneven bottom, and the fact that the launch used shore signals and the ship a combination of floating and shore signals, which would give a slight difference in the position of the sounding. The rough bottom caused the fathometer to jump so badly over a range of one to two fathoms that two readers watching the fathometer could very easily call the reading one fathom different from each other and still both be right.

As there is nothing by which a navigator can exactly locate himself, a slight displacement in a sounding could not be noticed, nor would it cause any confusion or danger.

The sounding lines on sheet 251 were adjusted to the curves on number 43.

STATISTICS

SHEET NO. 43

Total number of positions.	1997
Total number of soundings.	12976
Total number of statute miles of sounding lines.	1304
Total number of comparisons of fathometer with hand lead or wire.	14

SHEET NO. 11

Total number of positions.	1957
Total number of soundings.	5968
Total number of statute miles of sounding lines.	236

O. W. Swanson
Chief of Party

COMPARISON OF FATHOMETER WITH VERTICAL CASTS

SHEET 43

Date	V.C.	Small oscillator				Large oscillator			
		No. 2	Fath. Corr.	No. 3	Fath. Corr.	No. 2	Fath. Corr.	No. 3	Fath. Corr.
Aug. 5	8.5	9	+1	6.5	+2			8.0	- 0.5
5	7.0			5.0	+2			7.5	- 0.5
6	18.9	16.8	+2	17.5	+2	18.5	+0.5	17.7	+1.0
7	17.6					16.5	+0.5	17.5	+1.0
7	18.2					19.0	+0.5	19.0	+1.5
7	18.1	17.2	+2	18.0	+2				
8	19.2					18.5	+0.5	18.5	+1.0
8	18.8	17.0	+2	17.0	+2				
9	45.3			43.3	+2.5	43.5	+1.5	43.5	+3
9	45.9			44	+2.5				
11	17.3			15.5	+1.5	17.5	+0.5	16.5	+1.0
11	17.7	16.5	+2	16.0	+1.5	17.7	+0.5	16.7	+1.0
12	14.0			12.0	+1.5	14.0	+0	13.0	+0.5
12	11.5			8.5	+2				
16	19.3	18.0	+2	17.5	+2	19.0	+0.5	17.7	+1.5
Sept.15	14.3	12.5	+2	12.5	+1.5	14.3	+0.5	13.5	+0.5

Numerous simultaneous hand lead and fathometer soundings September 16.

CHIEF OF PARTY'S INSPECTION OF RECORDS AND SHEETS

I closely inspected the plotted soundings on the sheet and examined the crossings of lines and junction of sheets.

The plotting of positions and soundings was not checked, *except Vol. 1, 2, 3 No 43.*

The sounding records were examined for discrepancies and doubtful soundings.

O. W. Swainson

O. W. Swainson,
H. & G. Engineer,
Commanding PIONEER.

December 7, 1932.

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in
6 volumes of sounding records for

HYDROGRAPHIC SHEET 5211

Locality Laysan Island, Hawaiian Islands

Chief of Party: O. W. Swainson in 1930

Plane of reference is mean lower low water reading

2.4 ft. on tide staff at No. 1 at Laysan I.

24.7 ft. below B. M. 1

4.9 ft. on tide staff No. 2 at Laysan I.

24.7 ft. below B. M. 1

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.



Acting Chief, Division of Tides and Currents.

December 8, 1932

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in
8 volumes of sounding records for

HYDROGRAPHIC SHEET 5212

Locality **Laysan Island, Hawaiian Islands**

Chief of Party: **O. W. Swainson** in 1930

Plane of reference is **mean lower low water reading**

2.4 ft. on tide staff at No. 1 at Laysan I.

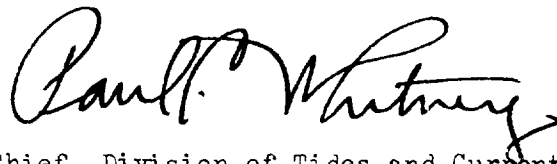
24.7 ft. below B. M. 1

4.9 ft. on tide staff No. 2 at Laysan I.

24.7 ft. below B.M. 1

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.



Chief, Division of Tides and Currents.

SECTION OF FIELD RECORDS

REPORT ON SHEET No. H-5211

JAN. 23, 1933.

SURVEYED IN - Aug - Sept. 1930
CHIEF OF PARTY - O. W. Swainson
SURVEYED BY - P. L. Bernstein
PROTRACTED BY - V. M. Gibbens
SOUNDINGS PLOTTED BY - R. A. Gilmore
VERIFIED & INDEXED BY - W. H. Bamford.

1./ The sounding records were found to be neat, legible complete and to conform to the requirements of the Hydrographic Manual.

2./ The protracting was found to be well done - about one percent of the total number of positions had to be replotted - and seven percent of those checked, were replotted.

3./ The soundings were fairly well spaced - and the proper fractions used. The soundings were neatly penciled and the correct size.

- 4./ The sounding line crossings were found to be adequate and in very ✓ good agreement.
- 5./ The development of the channel leading into the small bight on the west side of the island was found to ✓ be sufficiently developed. The development on shoals was found to be sufficient.
- 6./ It was possible to draw the ten fathom depth curve and portions of those ✓ more shallow.
- 7./ The sheet was reasonably clean and the work legible, although it ✓ was considerably creased and rumpled on the lower part.
- 8./ The 5,000 scale Sub. Plan - now shows all the work done in this area - (area outlined by dashed ✓ blue line on 10,000 scale part of sheet) When the smooth sheet was received in the office - part of this work was plotted on the sub-plan - and part on the main body of the sheet.

9/ The junction with the adjacent sheet H-5212 was not studied as it had not been verified at this time. There are no other surveys of this area.

10/ It was noted that the positions of the boat were not connected by pencil lines (ref #144 Hydro. Manual) this made it very difficult to follow the path of the boat and necessitated unnecessary work by the verifier.

Throughout the sheet - soundings taken simultaneously with the boat position were plotted to the left of the position instead of so that the center of the depth figures would indicate the position of the sounding (ref #147 Hydro. Manual)

Reduced soundings were plotted on the smooth sheet as the next whole fathom - whenever the sounding figure was found to be seven tenths, such as 10.7, 11.7, 12.7 etc. This is contrary to office practice and the seven tenths were dropped.

11./ Page 42 vol. 6. of this sheet gives a list of positions found in the sounding volumes of H-5212 - that were plotted on this sheet.

12./ The abbreviation "RK" was used by the verifier to designate coral heads over which soundings were taken. The field party marked a number of these as "CORAL HEAD" - the designation was not changed if it had been inked in by the field party.

13./ The symbol for the coral reef surrounding the island was inked by the verifier as it was left in pencil by the field party -

Respectfully Submitted.

Warren H Bamford

SECTION OF FIELD RECORDS

Review of Hydrographic Sheet No. 5211.
Laysan Island, West of Gardner Pinnacles, Hawaiian Islands.
Surveyed August - September 1930.
Instructions dated Feb. 10, 1930, (Pioneer).

Chief of Party - O. W. Swainson.
Surveyed by - P. L. Bernstein, O. W. Swainson.
Protracted by - V. M. Gibbens.
Soundings plotted by - R. A. Gilmore.
Verified and inked by - W. H. Bamford.

1. The records conform to the requirements of the Hydrographic Manual except that the information at the beginning of the day's work was omitted on "A" day, Pioneer.
2. The plan and extent of development satisfy the specific instructions.
3. Soundings at crossings of lines are in good agreement considering the character of bottom. Notes in the sounding records show "uneven bottom. Fathometer jumps 2 to 3 fathoms." Also see Descriptive Report under discrepancies. The records show that unrecorded work was done to determine the least water over the more important shoal spots or coral heads.
4. Depth curves.- The development is sufficient to draw the usual depth curves. The 10 fathom curve is very irregular; parts of the lesser curves are shown.
5. Junction with contemporary survey. Sheet H. 5212 joins on all sides with a considerable overlap. A part of the soundings in blue were transferred from a photostat enlargement of the 1/40,000 scale sheet, the others were carefully transferred with proportional dividers. The overlapping work could not be plotted directly on H. 5211 on account of some of the signals falling off the sheet.
6. Comparison with previous surveys.- This sheet (H. 5211) is the basic hydrographic survey in this vicinity; previous surveys were mostly in the nature of a sketch. Chart 4000 is too small scale to afford valuable comparison.
7. The field work and the field drafting were good. The verifier reports that the pencil plotting of soundings carried the 7/10 fathom as the next higher fathom instead of as prescribed in the Hydrographic Manual, also that the penciled sounding was placed to the left instead of on the angle position. The necessary corrections were made in inking the sheet.
8. Recommendations:- This sheet (H. 5211) should supersede all previous information for charting purposes of the area represented by it.

No further surveys are deemed necessary at this time.
9. Reviewed by - R. J. Christman, March 10, 1933.

H. 5211.

Memorandum by A. L. Shalowitz.

The area included in this survey is of so irregular a nature that it is very unlikely that all the coral heads have been located. More ^{shoals} surely exist and of those that were found, most of them doubtless have less water than is indicated by this survey. However, on account of the exposed locality, no additional work is recommended.

Sheet Inspected by - A. L. Shalowitz.

Approved: *L. O. Colbert*
L. O. Colbert, Chief, Section of Field Records.

W. P. ...
Ch. Insp. ...

Stude
Chief, Div. of H + O.

Section of Field Records

Sheet No #5212

Surveyed in 1930

Chief of Party - S.W. Swinson

Surveyed by - Party of Ship
Pioneer

Protected by - V.M. Sibbers

Soundings plotted by - Linton L.
Wagner

Verified and Indexed by -

J.C. McShosson

1. The records conform to the requirements of the general instructions except, that very few bottom samples were recorded in the sounding records. This was probably due to the fact that water samples were forwarded to the Scripps Institute at La Jolla for Analysis.
2. The plan and character of

NO. 5212
SECTION OF FIELD RECORDS
PIONEER

development fulfill the requirements of the general instructions. except as to bottom of a/c.

3. There were no series of cross lines run on this sheet. However when crossings occurred they were found to be satisfactory.

4. The usual depth curve can be completely drawn within the limits of the sheet.

5. The field plotting was completed to the extent prescribed in general instructions.

6. The office draftsman did not have to do over any part of drafting done by field party except as noted on statistic sheet.

7. The junctions with adjacent sheets are satisfactory.
8. Discrepancies:

Positions on "F" day were plotted by the field party using $\Delta 2$ instead of $\Delta 2'$. Although the error in some cases amounted to as much as 100 meters, no change was made in the field plotting because of the flatness of the bottom and the small displacement of the depth curves.

On the statistical sheet a great number of soundings were recorded as being revised. This number is partly due to the fact that the penciled soundings under 10 fathoms were plotted in whole fathoms in place of whole fathoms.

and fractions.

9. Some of the work recorded
in the sounding records
of H 5212 was plotted on
H 5211.

The following work was
plotted as such.

Por. 1-4 "J" inclusive

Por. 1-5 "K" ..

Por. 190-194 "K" ..

Por. 158-162 "M" ..

Por. 17" "P" - 16" "P" ..

Por. 161-164 "P" ..

Not in records
of H 5211

Respectfully submitted,
E. C. McCloskey

SECTION OF FIELD RECORDS

Review of Hydrographic Sheet No. 5212.
Vicinity of Laysan Island, West of Gardner Pinnacles,
Hawaiian Islands.

Surveyed August - September 1930.
Instructions dated Feb. 10, 1930 (Pioneer).

Chief of Party - O. W. Swainson.
Surveyed by - O. W. Swainson.
Protracted by - V. M. Gilmore.
Soundings plotted by - C. J. Wagner.
Verified and inked by - G. C. McGlosson.

Fathometer soundings.

1. The records conform to the requirements of the Hydrographic Manual except that few bottom characteristics are recorded. Though some 16 regular fathometer comparisons were made besides the hand lead work to check the shoaler areas, none of the comparisons are located in the deeper parts of the area surveyed. (See par. 50, Hydrographic Manual).

2. The plan and extent of development satisfy the specific instructions.

3. Soundings are in good agreement at crossings of lines. In the shoaler areas hand lead depth and simultaneous fathometer readings (corrected) are in fair agreement considering the nature of the bottom. The Descriptive Report says "The rough bottom caused the fathometer to jump so badly over a range of one to two fathoms that two readers watching the fathometer could easily call the reading one fathom different from each other and still be right."

The particular discrepancy in the vicinity of Buoy No. 1A noted in the Descriptive Report was adjusted on the sheet. No attempt was made to adjust other discrepancies in plotting, as the value of the sheet for charting purposes is not impaired by them.

4. Depth curves can be drawn satisfactorily. In the overlapping area the curves on H. 5211 should control.

5. Junction with H. 5211, the inshore sheet at Laysan Island, is satisfactory; the overlapping area should be taken from the latter sheet. The offshore, small scale sheet has not yet been received in the office.

6. Comparison.- No previous surveys are available for comparison with this survey. Chart 4000 is small scale and the representation is in general conformity with this survey.

7. Field drafting.- The verifier notes that the pencil soundings under 10 fathoms were plotted as whole fathoms instead of whole fathoms and fractions as directed by the Hydrographic Manual. (see par. 152).

8. Recommendation.- This sheet (H. 5212) is believed adequate for charting the area represented. The Descriptive Report states that the bottom at the anchorage is sand and coral.

No further surveys are deemed necessary at this time.

9. Reviewed by R. J. Christman, March 14, 1933.

H. 5212.

Memorandum by A. L. Shalowitz.

Attention is called to the fact that the line 29G to 35G (lat. 25-44, long. 171-39 to 171-42) does not appear probable in relation to the lines on either side, being from 1½ to 2 fathoms shoaler than would be expected. An examination of the sounding record disclosed the fact that the shoaler depths begin just where the change from "No. 3 Hyd. Small Oscillator" to "No. 3 Hyd. Big Oscillator" was made, the correction for the two oscillators being + 15 fathoms and 0 fathom, respectively for the depths involved. The two adjacent lines used "No. 3 Hyd. Small Oscillator". If a ridge exists here it is certainly a remarkable coincidence that it would have just been encountered at the instant when the change from small to big oscillator took place. It is very doubtful whether such condition exists. Two explanations might be advanced for the apparent discrepancy. First, that the recorder erred in noting the change from small to big oscillator. This seems the most probable. Second, that the difference in the corrections for the two oscillators is not valid. This matter has not been pursued further.

On advice of the Chief, Section of Field Records, no change was made in the sounding records and the line is plotted as recorded.

Sheet inspected by A. L. Shalowitz.

I believe an error was made by the recorder, however there is no basis for changing the record as it stands.

Approved: *L. O. Colbert*
 L. O. Colbert,
 Chief, Section of Field Records.

K. Borden
 Chief, Section of Field Records.
G. W. de
 Chief, Div. of It & D.

DEPARTMENT OF COMMERCE

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The hydrographic sheet should be accompanied by this
as completely as possible, when the sheet is

Field No. 11

REGISTER NO. **5211**

Station Library of Hawaiian Is.

General locality ~~Westward Islands~~ West of Gardner Pinnacles

Locality Laysan Island

Sub-plan 1:5,000

Scale 1:10,000 Date of survey August - September, 19 30

Vessel PIONEER

Chief of Party O. W. Swainson

Surveyed by Percy L. Bernstein, Lt. (j.g.)

Protracted by V. M. Gibbens, Lt. (j.g.)

Soundings penciled by Ross A. Gilmore, Lt. (j.g.)

Soundings in fathoms ~~1000~~

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by

Inked by Warren H. Bowford

Verified by WHB

Instructions dated February 10, 19 30

Remarks:

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

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HYDROGRAPHIC SHEET
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3.3(a), EXECUTIVE ORDER 12356.

This hydrographic sheet is to be declassified by this Office in as completely as possible, when the sheet is returned to the Office.

Field No. 43

REGISTER NO. 5212

Territory of Hawaiian Is.

General locality ~~Westward islands~~ West of Gardner Pinnacles

Locality Vicinity of Laysan Island

Scale 1:40,000 Date of survey August-September, 1930

Vessel PIONEER

Chief of Party O. W. Swainson

Surveyed by Various officers

Protracted by V. M. Gibbens, Lt. (j.g.)

Soundings penciled by Clifton J. Wagner, Lt. (j.g.)

Soundings in fathoms ~~feet~~

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by

Inked by *S.C. McGlosson*

Verified by *S.C.M.*

Instructions dated February 10, 1930

Remarks:

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 5211

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

Number of positions on sheet	2007
Number of positions checked	352
Number of positions revised	22
Number of soundings recorded	5968 + 200 (approx)
Number of soundings revised	417
Number of signals erroneously plotted or transferred	NONE

Date: Jan. 23 - 1933

Cartographer: Warren H. Bradford

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 5212

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

Number of positions on sheet	<u>1997</u>
Number of positions checked	<u>329</u>
Number of positions revised	<u>6</u>
Number of soundings recorded	<u>12976</u>
Number of soundings revised	<u>486</u> (4% of total soundings)
Number of signals erroneously plotted or transferred	<u>None</u>

Date: 24 Feb. 1933

Jr. Cartographer: S. M. Glendon

5211 Applied to New Comp of Chart 4182 7/24/40 C.R.B.A.
5212 " " " " " 8/7/40 C.R.B.A.

All the work on this sheet
has been transferred to H-5213
which should be used for all

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GUIDELINES AS DESCRIBED IN SECTION
1.5(a), EXECUTIVE ORDER 12958

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GUIDELINES AS DESCRIBED IN SECTION
3.3(a), EXECUTIVE ORDER 12958

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GUIDELINES AS DESCRIBED IN SECTION
3.3(a), EXECUTIVE ORDER 12958

DEPARTMENT OF COMMERCE
HYDROGRAPHIC AND GEODETIC SURVEY

R. S. Patton, Director

APR 26 1930
A. M. W.

Territory of Hawaii
State: Hawaiian Is.

DESCRIPTIVE REPORT

Topographic } Sheet No. 4 ~~5012~~
Hydrographic }

LOCALITY

Territory of Hawaiian Is.

Westward

Between Gardner Pinnacles & French
Tritate Shoals

1929

CHIEF OF PARTY

K. T. Adams

5012

All the work of H. 5012 has been transferred and adjusted to H. 5213 and the latter sheet should be used for all purposes by order of the Chief of Field Records Section.

DESCRIPTIVE REPORT

*E. P. Ellis
May 23, 1933*

to accompany

HYDROGRAPHIC SHEET NO. 4. (5012)
Hawaiian Islands

DATE OF INSTRUCTIONS:

The hydrography on this sheet was executed in compliance with your instructions dated March 26, 1928 for project 22 and your instructions dated April 12, 1929 for project 33.

SURVEY METHODS:

All soundings on this sheet were taken by the Fathometer, the vessel underway full speed. The control consists of astronomical control tied in to islands by bearings, when within sight of the islands. A more complete description of method of control and adjustment is given below.

DISCREPANCIES:

Where the hydrography on this sheet ran over an area which had also been sounded on a larger scale sheet, the soundings on this sheet were fitted to the soundings on the larger scale sheet and this fit was used to control the lines in such places.

Your attention is called to the shallow area near the center of the surveyed area. These shoals are called St. Rogatien and Brooks Shoals on the chart. The detailed survey of these shoals has not yet been made but will be made this year, 1930, by the Steamer PIONEER. It is suggested that, to make this work conform to our requirements, after the detailed survey of these shoals, this part of the hydrography on this sheet be replotted, fitting it to the detailed work done on a larger scale.

DANGERS:

This being an offshore survey, detailed surveys have been separately made of any dangerous area, such as French Frigate Shoals and Gardner Pinnacle. Of course, as yet, nothing can be said concerning Brooks and St. Rogatien Shoal, other than what has been obtained on our widely spaced lines.

BOAT SHEET:

In accordance with your permission, the boat sheet of this area was transferred to Lieut. O. W. Swainson, Steamer PIONEER, for use in the same locality.

METHODS OF CONTROL:

Lines of hydrography were continuous standard speed runs. No stops were made, nor was the ship ever slowed down, making the dead reckoning as accurate as possible. All Dead Reckoning data was recorded in a separate book called the D. R. book. All astronomical sights were recorded in four separate volumes. In the sounding volumes, were recorded merely the soundings, the ship's time and the position number, in order to correlate this data with the Dead Reckoning Book.

Star sights were taken at the same period by three individual officers. These sights were separately computed and each officer determined a position of the ship from his own sights. These positions were then compared. Certain sights were thrown out or weighted and the three final ship's

positions were used to get a mean ship's position. This mean ship's position was used as a fixed position and the line of hydrography was adjusted to that.

The star sights were all recorded in and computed in the same volumes. The sights were plotted on cross section paper and the ship's position determined on the cross section paper relative to the dead reckoning position with which the sights were computed.

Sun sights were taken by the three officers mentioned above and recorded and computed in their books. Sun sights were also taken at intermediate times by the officer of the deck and were recorded in a fourth volume.

Two logs were streamed and the mean logged distance used. These logs were rated each two or three months or oftener if deemed necessary.

Bearings were taken by a four inch theodolite mounted on the bridge and oriented while the ship was in port. As a rule "Series Bearings" were taken, i.e., as many as eight or ten bearings were taken as rapidly as possible, the ship's head by standard compass being read at each mark, and the mean compass bearing computed. These were started at a predetermined time before the position and continued for the same length of time after a position.

*A fine
idea.
Borden*

METHOD OF PLOTTING:

Dead Reckoning Sheets were made up which included all data for plotting the line.

Star fixes were plotted by Latitude and Longitude and were marked by a red ink triangle.

The dead reckoning was then plotted and adjusted from star fix to star fix.

The sun sights were then plotted and run up or back a short distance to the nearest position. These sun sights were then used as single lines of position and the line was adjusted to fit these sun sights as reasonably as possible.

Where the hydrographic line changed from Sheet No. 6 to this sheet, an attempt was always made to get a star fix at the junction which would appear on both sheets. However this was sometimes impossible and in these cases, this part of the line was adjusted on both sheets at once.

It will be noted that where the shift in sheets was made at a star fix, the records for this fix can accompany only one sheet and reference will have to be made to the other sheet.

Where the hydrography crosses work done on a larger scale, the line on this sheet was expanded to scale and adjusted to the soundings on the other sheets. In this connection please note that soundings on this sheet should not be used on the completed chart in areas which were surveyed on larger scales. The larger scale surveys were much better controlled.

The following symbols have been used:

A red triangle indicates a fixed position.

A red line indicates a sun sight taken by the officer whose initials appear on the line and run up to the position indicated on the line.

A green line indicates a moon sight treated as above.

A blue circle indicates a hydrographic buoy, the location of which is taken from the larger scale sheets.

Green ink position numbers are work done by the DISCOVERER in 1927.

REFERENCES:

For the location of buoys used on this sheet, refer to Sheets Nos. 3 and 8; 1:60,000 scales sheets of the area around Gardner Pinnacles.

These buoys were located and plotted on the above mentioned smooth sheets and transferred to other sheets, including this one, by DMs and DPs.

For the location of positions 1A and 1E, please refer to positions 474B' and 375aG' on sheet No. 6. The star sights for these positions accompany sheet No. 6.

EXPLANATIONS:

First line: Position 1A was transferred from Sheet No. 6, and is position 474B' on that sheet. The star sights accompany Sheet No. 6. The end of the line, position 78A, is fixed on Gardner Pinnacle. Line is adjusted to intermediate sun sights and to soundings near Gardner Pinnacle.

Second line: Line begins, 2B, fixed at Gardner Pinnacle, Position 66B is a star fix. Line is adjusted to soundings near Gardner Pinnacle, to intermediate sun sights. From 66B the line runs to a star fix on Sheet No. 6 and was adjusted on both sheets at once.

Third line: 1C is a continuation of line E' on Sheet No. 6 and was adjusted on both sheets at once. 37C is a star fix. Line ends on a fixed position on Gardner Pinnacle. Between 37C and Gardner Pinnacle, line is adjusted to sun sights and to soundings near Gardner Pinnacle.

Fourth line: 1D is from a position at buoy Able, the line is adjusted to soundings near Gardner Pinnacle and is then a straight adjustment to the star fix on 71D.

Fifth line: 1E is a star fix, transferred from Sheet No. 6 and is position 375aG' on that sheet. Line ends on a position near Buoy Egg. Line is adjusted to soundings near Gardner Pinnacle and to sun sights between 1E and 72E.

Sixth line: 1F is at Buoy Key. 64F is a star fix. Line is adjusted to soundings near Gardner Pinnacles, then a straight adjustment to 64F. Near French Frigate Shoals line is again adjusted to soundings. Your attention is called to the fact that the first part of F line also fills in an area on Sheet No. 8. ^(MS 837) The necessary work has been transferred to Sheet No. 8 and the soundings copied in the sounding volume for Sheet No. 8 with appropriate notes.

Seventh line: The line starting at Gardner Pinnacle and running E S E is a line done by the Steamer DISCOVERER in 1927. It was plotted on this sheet from the original data. There were no sights on this line. This line was adjusted to soundings near Gardner Pinnacle and again to soundings on a shoal area on Sheet No. 6 just east of the limits of this sheet. This position on the shoal on Sheet No. 6 is held fixed and will be used to continue this line on Sheet No. 6.

Eighth line: The line starting at French Frigate Shoal and running W x N is a line run by the DISCOVERER in 1927 and was adjusted to soundings near French Frigate Shoals and to sun and star sights plotted from the original data.

HYDROGRAPHY BY STEAMER DISCOVERER:

This hydrography is indicated by green ink position numbers. The work was replotted from the original data but the soundings were taken from the DISCOVERER'S smooth sheet inasmuch as the original sounding volumes were not on board.

UNUSED STAR SIGHTS:

In the star sight books will be found some sights taken at bouy Key. These were not used. They were taken to check the position of bouy Key, which had been located by a continuation of bouy to bouy location runs from Gardner Pinnacles. These sights were unsatisfactory and were not considered good enough to be used as a check.

FATHOMETER SOUNDINGS:

All Fathometer soundings were corrected for slope where possible. Soundings which were in an area covered by larger scale sheets were first plotted on those larger scale sheets and the slope correction taken from those. Your attention is called to the fact that it is very difficult to get slope correction from a 1:500,000 scale sheet. All red light soundings are corrected by a constant error which has been taken from the data worked up for Sheets Nos. 3, 7 and 8, Gardner Pinnacles. All red light soundings were reduced for temperature. White light soundings were not reduced for temperature, in accordance with authority from the Director dated December 12, 1929, which was based on the following data copied from my letter dated December 5, 1929.

"I give herewith a resume' of the reductions necessary on one sheet which has already been reduced.

From zero to 200 fathoms the reductions are plus and gradually increase from zero to three fathoms.

From 200 fathoms to 450 fathoms the reductions gradually decrease from plus three fathoms to zero.

From 450 fathoms to 1500 fathoms the reductions are negative and gradually increase from zero to seven fathoms.

From 1500 fathoms to 2250 fathoms the reductions are negative and gradually decrease from seven fathoms to zero.

From 2250 fathoms to 2635 fathoms the reductions are again positive and gradually increase from zero to eleven fathoms.

It is therefore to be seen that this reduction is always less than one half of one percent and is generally very much less than that. Also this reduction is always less than half of the probable error of observation of a white light sounding."

RECORDS:

The following records accompany and form a part of the data for this sheet.

- 2 sounding volumes.
- 1 Dead Reckoning volume.
- 4 Star and Sun sight volumes.
- 6 smooth sheets Dead Reckoning data for plotting.
- 6 rough sheets of above.
- 13 single sheets of plotted star sights.
- 1 copy of original serial Temperature Observations.
- 1 copy Velocity correction table.
- 1 List of Signals in volume No. 1.
- 1 Tidal Note.
- 1 copy of Standard and Steering Compass Deviation Curves.
- 1 copy of log rates used during this period.

K. T. Adams

VERIFICATION REPORT

This will certify that I have examined the completed smooth sheet and records and hereby approve same. The field work was done entirely under my supervision.

K. T. Adams

K. T. Adams,
Chief of Party,
Steamer GUIDE.

STATISTICS - SHEET NO. 4

Date	Day	No. of Positions	No. of W.L. Sdgs.	Stat. Miles W.L. Sdgs.	Statute Mi. R. L. Sdgs.	Stat Mi. Total
1929						
July 16	A	79	145	116.0	13.0	129.0
July 27	B	85	116	84.5	51.5	136.0
Aug. 17	C	88	101	68.3	70.0	138.3
Aug. 29	D	71	143	105.7	9.7	115.4
Sept. 13	E	72	98	73.1	59.4	132.5
Sept. 28	F	75	188	112.0	1.1	113.1
TOTALS		470	791	559.6	204.7	764.3

Also two lines done by Discoverer in 1927.

20

LIST OF SIGNALS

to accompany

HYDROGRAPHIC SHEET NO. 4, Westward
Scale 1:500,000

<u>Gardner Pinnacle</u>	Astro nomical,	1929
<u>La Perouse Pinnacle Triang.</u>		1928
NAVY	"	"
ABLE	Hydrographic	Location
EGG	"	"
KEY	"	"

COMPARATIVE SOUNDINGS

Used to determine

CONSTANT REDUCTION TO RED LIGHT SOUNDINGS.

Gardner Pinnacles, T.H.

July - Sept., 1929.

DATE	FATHOMETER READING	VELOCITY REDUCTIONS	CORRECTED FATHOMETER	HANDLEAD SOUNDINGS	HANDLEAD minus FATHOMETER
July					
17	19.8	+0.5	20.3	20.8	0.5
18	19.4	0.5	19.9	19.7	0.2
	20.0	0.5	20.5	20.4	0.1
19	19.8	0.5	20.3	20.0	0.3
	19.5	0.5	20.0	19.5	0.5
20	19.5	0.5	20.0	19.2	0.8
	11.0	0.3	11.3	10.8	0.5
	17.5	0.5	18.0	18.0	0.0
21	18.2	0.5	18.7	17.8	0.9
	19.4	0.5	19.9	20.0	0.1
22	19.5	0.5	20.0	20.0	0.0
	19.8	0.5	20.3	19.8	0.5
					+0.6
					-3.8
					+0.6
					-3.2
					Sum(12)
					Mean
					-0.267
23	20.0	+0.5	20.5	19.7	-0.8
	21.5	0.6	22.1	21.5	0.6
24	21.0	0.6	21.6	21.0	0.6
	21.4	0.6	22.0	21.3	0.7
25	21.3	0.6	21.9	21.5	0.4
	21.9	0.6	22.5	21.8	0.7
26	21.5	0.6	22.1	21.5	0.6
	22.0	0.6	22.6	21.8	0.8
	21.5	0.6	22.1	21.0	1.1
Aug.					
18	20.0	0.5	20.5	19.0	1.5
	21.0	0.6	21.6	21.5	0.1
19	20.6	0.6	21.2	21.8	+0.6
	19.0	0.5	19.5	18.0	1.5
20	19.0	0.5	19.5	18.2	1.3
					+0.6
					-10.7
					+0.6
					Sum (14)
					Mean
					-0.72
21	19.0	+0.5	19.5	18.8	-0.7
	18.5	0.4	18.9	17.4	+0.5
22	17.0	0.5	17.5	18.0	0.5
	19.5	0.5	20.0	20.0	0.0
23	20.7	0.6	21.3	21.0	0.3
	18.0	0.5	18.5	18.5	0.0

COMPARATIVE SOUNDINGS (Continued)					HANDLEAD
DATE	FATHOMETER READINGS	VELOCITY REDUCTIONS	CORRECTED FATHOMETER	HANDLEAD SOUNDINGS	minus FATHOMETER
Aug.					↓
24	18.2	+0.5	18.7	18.0	0.7
	18.0	0.5	18.5	18.2	0.3
	18.5	0.5	19.0	18.5	0.5
25	19.3	0.5	19.8	19.0	0.8
	19.0	0.5	19.5	19.8	0.3
26	19.0	0.5	19.5	19.5	0.0
	17.0	0.5	17.5	17.0	0.5
	17.0	0.5	17.5	17.0	0.5
	20.4	0.5	20.9	20.7	0.2
27	1060.			1022.	
	21.0	0.6	21.6	21.0	0.6
	16.0	0.4	16.4	16.7	0.3
					+1.6
					- 5.1
					+ 1.6
					Sum (17) - 3.5
					Mean - 0.204
Aug.					
28	17.0	+0.5	17.5	16.2	1.3
	11.6	0.3	11.9	10.8	1.1
	17.0	0.5	17.5	16.8	0.7
					Sum (3) +0.0
					Mean - 1.03
Sept.					
14	19.0	+0.5	19.5	19.0	0.5
	21.5	0.6	22.1	22.5	0.4
15	21.3	0.6	21.9	21.8	0.1
	19.0	0.5	19.5	19.8	0.3
16	19.3	0.5	19.8	19.8	0.0
	21.0	0.6	21.6	21.5	0.1
17	21.3	0.6	21.9	22.0	0.1
	19.8	0.5	20.3	19.3	1.0
18	19.0	0.5	19.5	19.5	0.0
	21.0	0.6	21.6	22.0	0.4
19	22.5	0.6	23.1	22.7	0.4
	21.3	0.6	21.9	22.0	0.1
20	21.2	0.6	21.8	22.5	0.7
	21.9	0.6	22.5	22.3	0.2
	21.0	0.6	21.6	21.3	0.3
21	19.0	0.5	19.5	18.0	(1.5) Reject
	21.5	0.6	22.1	21.7	0.4
22	23.4	0.6	24.0	24.0	0.0
23	23.6	0.6	24.2	23.7	0.5
	17.5	0.5	18.0	17.7	0.3
					+ 2.0
					- 3.8
					+ 2.0
					Sum (19) - 1.8
					Mean - 0.1

COMPARATIVE SOUNDINGS. (Continued)

DATE	FATHOMETER READING	VELOCITY REDUCTIONS	CORRECTED FATHOMETER	HANDLEAD SOUNDINGS	HANDLEAD minus FATHOMETER
Sept.					+
24	16.5	+0.4	16.9	16.0	0.9
	21.5	0.6	22.1	20.2	1.9
	19.0	0.5	19.5	18.5	1.0
25	19.0	0.5	19.5	18.5	1.0
	21.0	0.6	21.6	20.0	1.6
26	21.2	0.6	21.8	20.3	1.5
	19.4	0.5	19.9	19.8	0.1
27	18.5	0.5	19.0	18.0	1.0
	19.0	0.5	19.5	18.0	1.5
28	19.0	0.5	19.5	18.2	1.3
	18.5	0.5	19.0	17.0	2.0
				Sum (11)	+0.0 - 13.8
				Mean	- 1.255

SUMMARY

<u>FROM</u>	<u>TO</u>	<u>USE CONSTANT REDUCER</u>
July 17	July 22	- 0.3
July 23	Aug. 20	- 0.7
Aug. 21	Aug. 27	- 0.2
Aug. 28	- - - -	- 1.0
Aug. 29	Sept. 23	- 0.1
Sept. 24	Sept. 28	- 1.3

Tabulated by KTA
 ✓ JBC

TIDAL NOTE

HYDROGRAPHIC SHEET NO. 8

Gardner Pinnacles, T. H.
1939

No tides were observed at Gardner Pinnacles, there being no place at which either a gauge or staff could be established. Honolulu tides were used, corrected to 75% of range and made 20 minutes later. These corrections were obtained by taking simultaneous comparisons of French Frigate Shoals tides with Honolulu tides and correcting them to Gardner Pinnacles by proportional distances to Midway Island.

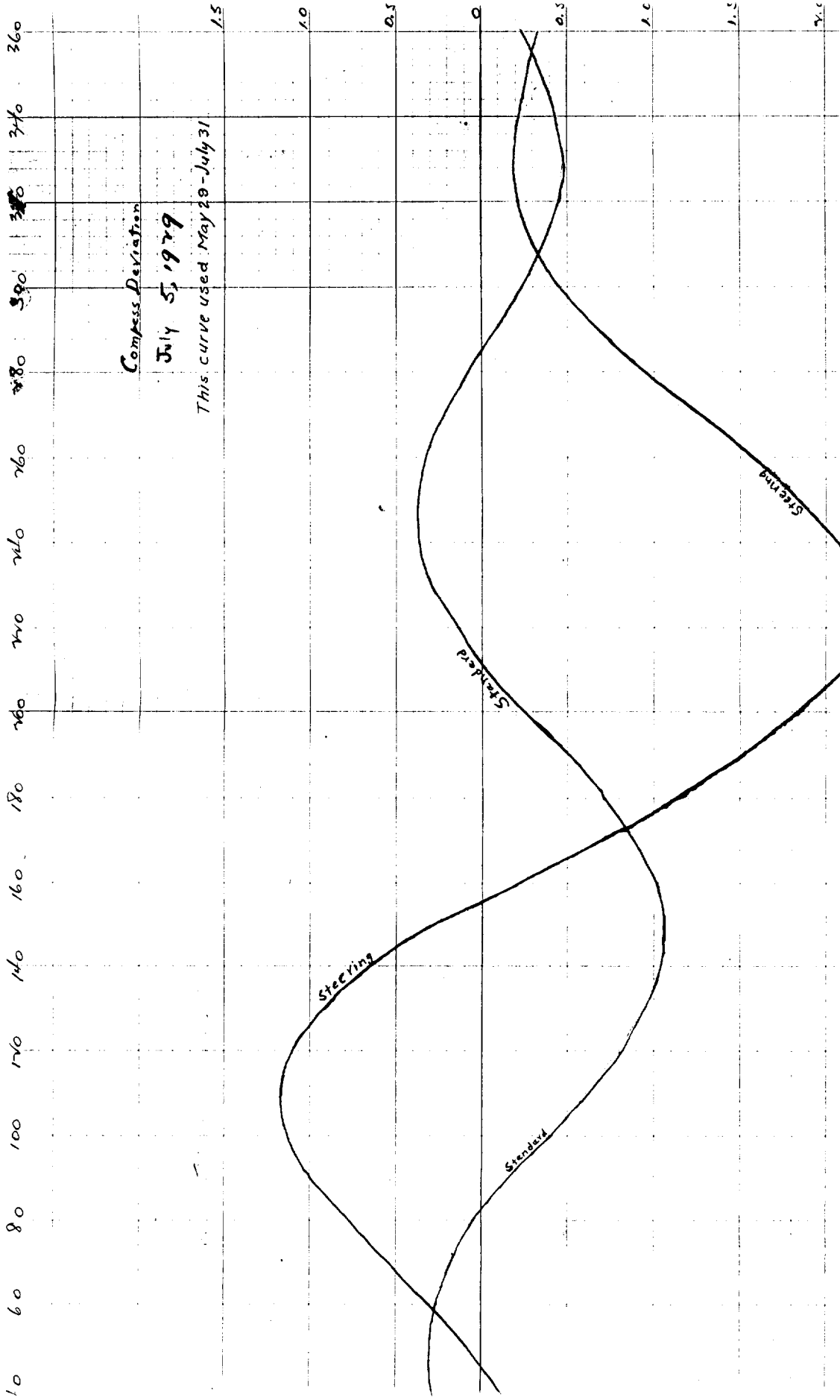
LOG DATA

		Factors to be used		
Period	Log No.	Factor	Log No.	Factor
5:30 AM AM May 31-July 27	194	0.9645	195	1.035
AM 9:50 AM July 27-Sep.29	194	1.0074	195	1.034

VELOCITY CORRECTIONS FOR RED LIGHT SOUNDINGS
 Sheet No. 4, French Frigate Shoal to Gardner Pinnacle, T.H.
 (Observations taken 14 $\frac{1}{2}$ miles SE of Gardner Pinnacles)

Depth	Temp. °C	Sum °C	Mean °C	Factor	Corr. fms.	Summary	
						Depth	Correction
13-1/3	26.2	- - -	- - -	+ 0.0236	+ 0.38	13	fms +0.4
26-2/3	25.7	51.9	25.95	+ 0.0279	+ 0.75		
40	23.9	75.8	25.27	+ 0.0269	+ 1.08	16.8	
53-1/3	22.3	98.1	24.52	+ 0.0258	+ 1.38		+ 0.5
66-2/3	21.3	119.4	23.88	+ 0.0248	+ 1.65	20.4	
80	20.4	139.8	23.30	+ 0.0236	+ 1.89		+ 0.6
93-1/3	19.5	159.3	22.76	+ 0.0225	+ 2.10	24.0	
106-2/3	18.4	177.7	22.21	+ 0.0214	+ 2.29		+ 0.7
120	17.5	195.2	21.69	+ 0.0204	+ 2.45	27.9	
133-1/3	16.7	211.9	21.19	+ 0.0194	+ 2.58		+ 0.8
146-2/3	15.7	227.6	20.69	+ 0.0184	+ 2.70	31.9	
160	15.0	242.6	20.22	+ 0.0174	+ 2.78		+ 0.9
173-1/3	14.3	256.9	19.76			35.9	
186-2/3	13.4	270.3	19.31				+ 1.0
200	12.7	283.0	18.87	+ 0.0150	+ 3.00	40.0	
213-1/3	12.2	295.2	18.45				+ 1.1
226-2/3	11.6	306.8	18.05	+ 0.0136	+ 3.09	44.4	
240	11.0	317.8	17.66	+ 0.0128	+ 3.07		+ 1.2
253-1/3	10.5	328.3	18.12	+ 0.0117	+ 2.96	48.8	
266-2/3	10.0	338.3	16.92				+ 1.3
280	9.3	347.6	16.55	+ 0.0106	+ 2.97	53.3	
293-1/3	8.8	356.4	16.20	+ 0.0099	+ 2.90		+ 1.4
306-2/3	8.3	364.7	15.84	+ 0.0091	+ 2.79	58.2	
320	7.9	372.6	15.52	+ 0.0083	+ 2.65		+ 1.5
333-1/3	7.5	380.1	15.20	+ 0.0075	+ 2.50	63.0	
346-2/3	7.1	387.2					+ 1.6
360	6.7	393.9				68.1	
373-1/3	6.2	400.1	14.29	+ 0.0052	+ 1.94		+ 1.7
386-2/3	5.8	405.9	14.00	+ 0.0045	+ 1.74	73.6	
400	5.5	411.4	13.71	+ 0.0039	+ 1.56		+ 1.8
	5.3	416.7				79.2	
	5.1	421.8					+ 1.9
440	4.9	426.7				85.4	
	4.8	431.5					+ 2.0
	4.7	436.2				155	
480	4.5	440.7					+ 3.0
	4.4	445.1				311	
	4.3	449.4					+ 2.0
520	4.2	453.6				386	1
	4.2	457.8					+ 1.0
	4.0	461.8				End	
560	3.9	465.7					
	3.9	469.6					
	3.8	473.4					
600	3.7	477.1					

No red light soundings
 taken below depth of
 400 fathoms.



Compass Deviation

July 5, 1979

This curve used May 29 - July 31

1.5

1.0

0.5

0

0.5

1.0

1.5

1.5

10

60

80

100

140

160

180

240

260

300

340

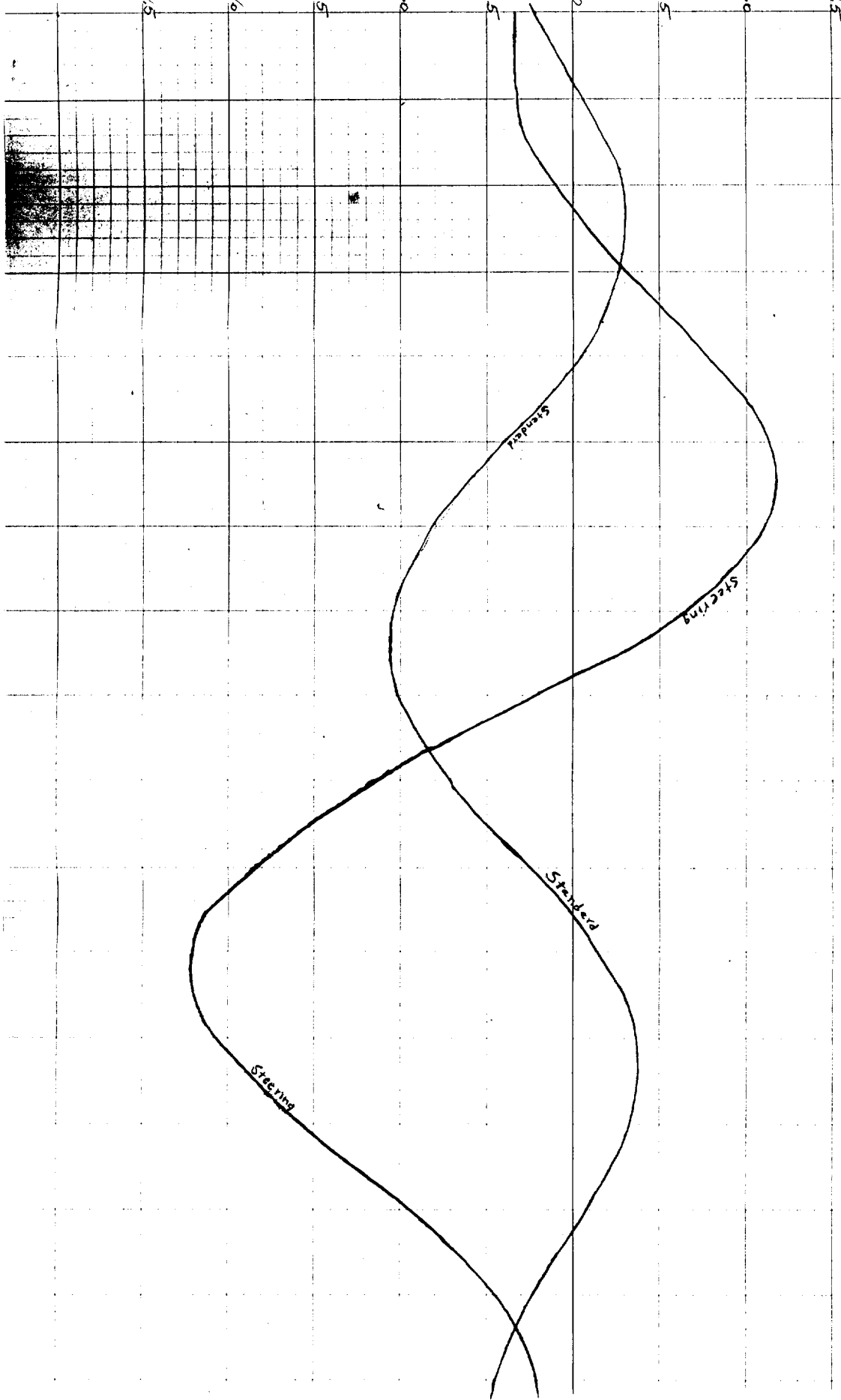
360

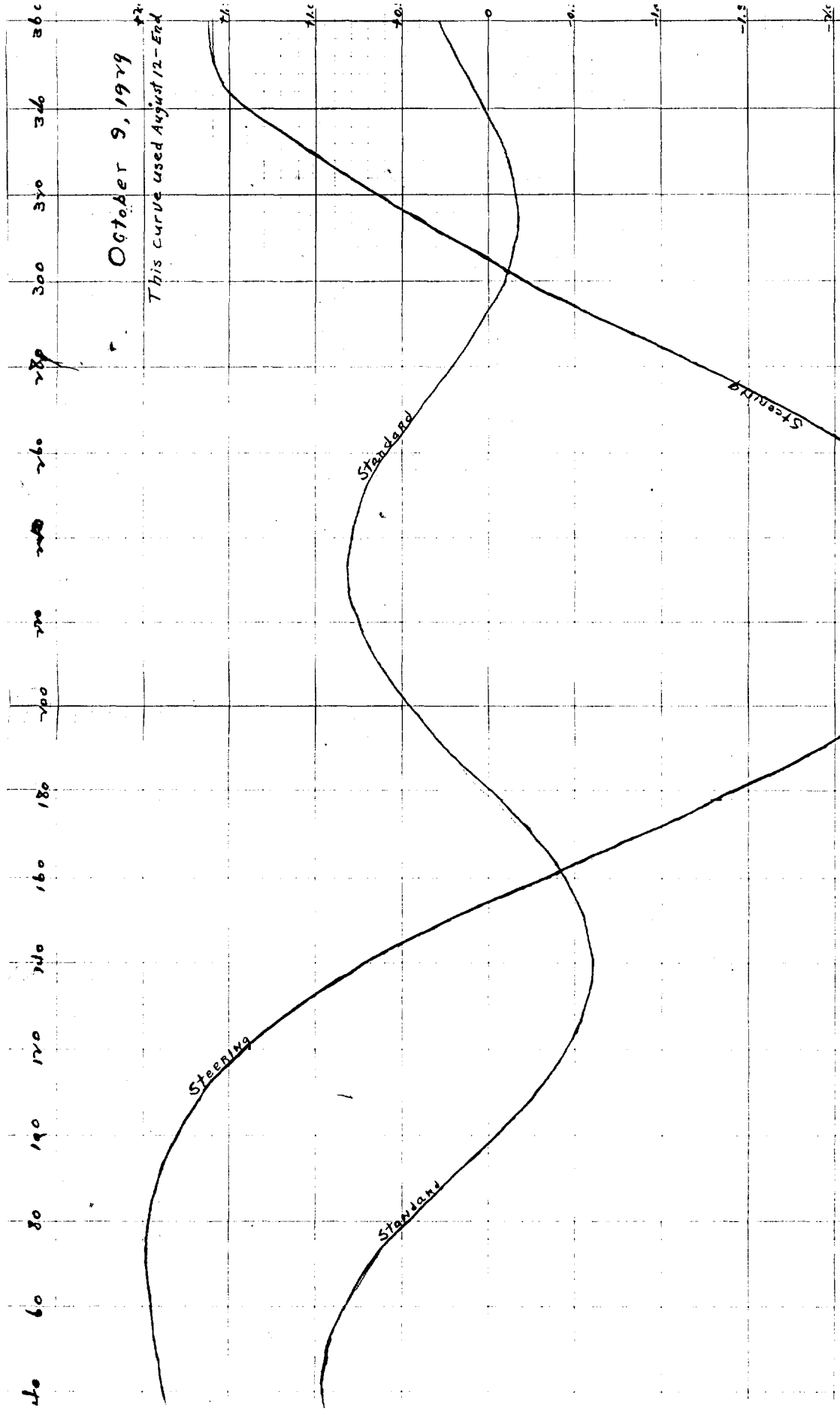
Steering

Standard

Steering

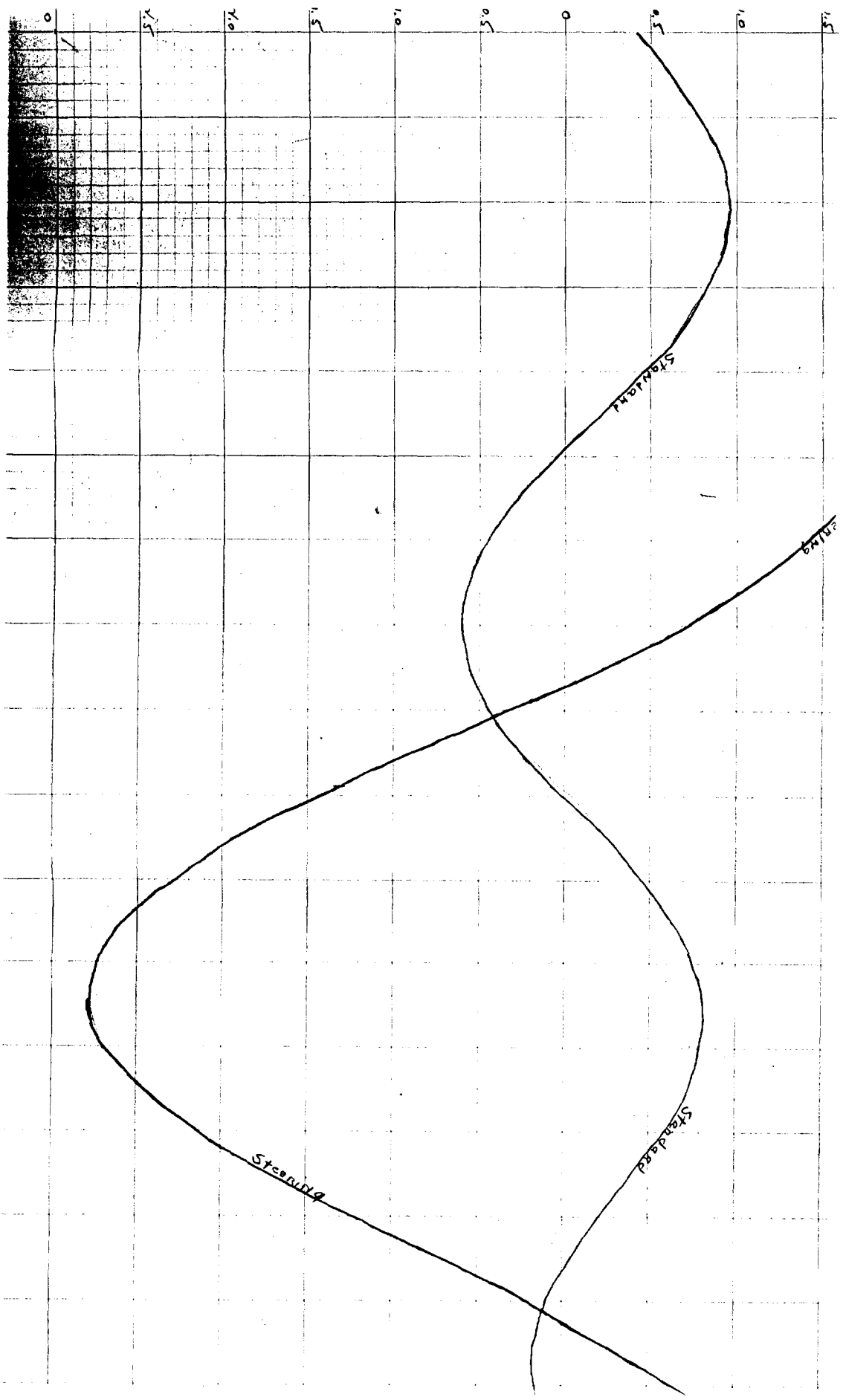
Standard

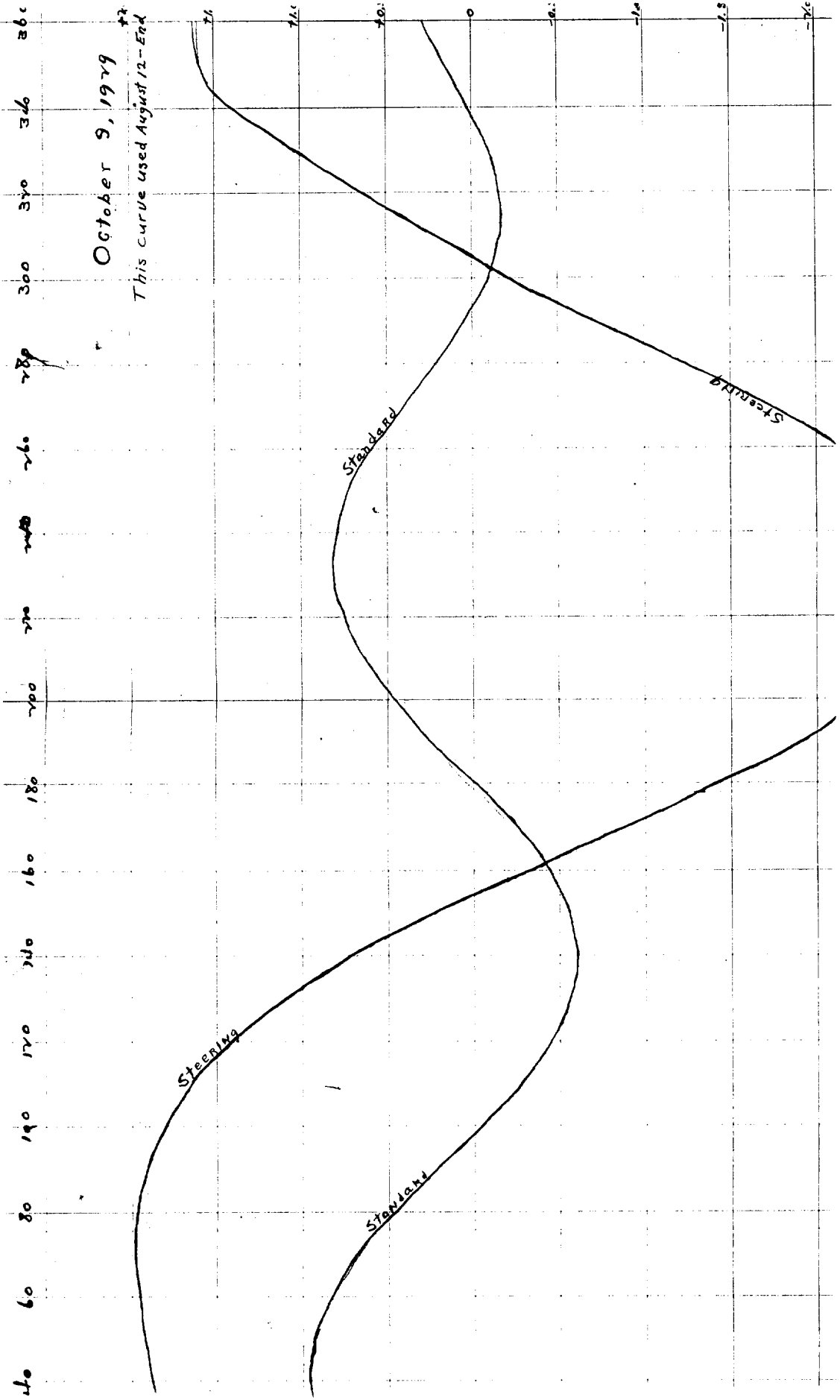




October 9, 1979

This curve used August 12 - End





October 9, 1979

This curve used August 12-End

40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360

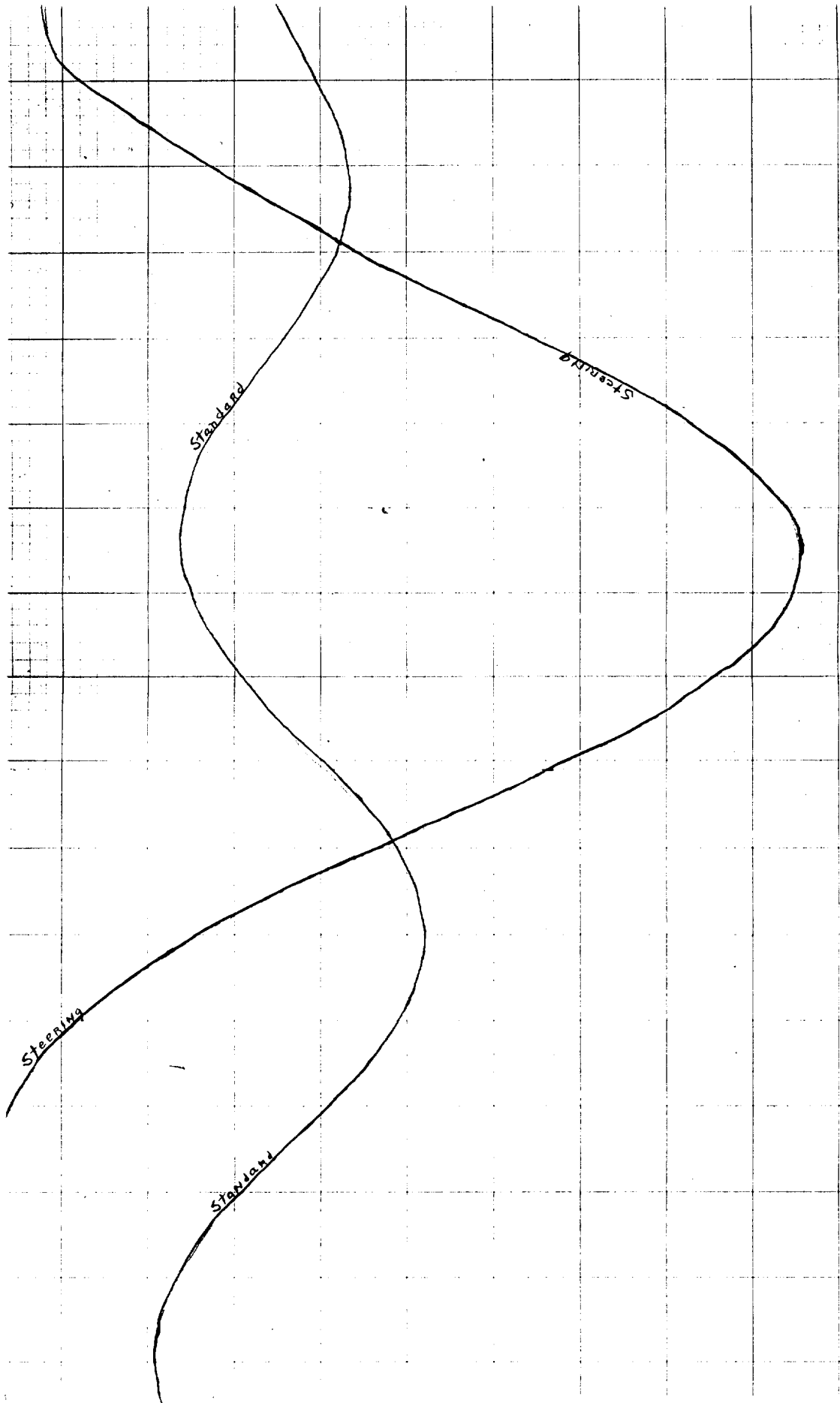
20
10
0
-10
-20

Steering

Standard

Standard

Steering



COAST AND GEODETIC SURVEY STEAMER "GUIDE"

COAST AND GEODETIC SURVEY

Locality, 14 $\frac{3}{4}$ mi. SE of Gardner Pinnacle, Date, August 27, 1929

Locality, 14 $\frac{3}{4}$ mi.

Sounding No. _____ Line _____
Lat. 24° - 49', Long. 167° - 49.5'

Sounding No. _____ Lat. 2

DEPTHS. IN FATHOMS.	TEMPERATURES.						REMARKS.	DEPTHS. IN FATHOMS.	TEMPERATURES.					
	Reading.		Correction.		Corrected.				No. of the Thermometer.	Kind of Thermometer used.	Reading.		Correction.	
	M.	F.	M.	F.	Min.	Max.					M.	F.	M.	F.
Surface.	#4102		#14996						Surface.	#4102		#14996		
AM							Deep Sea							
9:25	1022	2	40	-	-	-	Bottom - Water sample	Locker	1:17	55 $\frac{1}{8}$	21	65		
9:54	750	3	00	3	20				1:23	45	22	90		
10:12	552 $\frac{1}{2}$	4	00	3	20				1:34	35 $\frac{3}{4}$	24	20		
10:31	401	5	20	5	60				1:38	25 $\frac{1}{4}$	25	90		
10:45	326	7	65	7	80				1:43	17 $\frac{1}{2}$	26	10		
10:57	281	8	85	9	65				1:47	7 $\frac{1}{2}$	26	20		
11:09	256	10	50	11	20				1:50	Surface	26	2		
11:17	209 $\frac{1}{2}$	12	10	13	00									
11:26	190 $\frac{1}{2}$	12	90	13	50				1:57	121	17	00		
11:34 $\frac{1}{2}$	176	14	30						2:04	215	11	30		
11:43	160 $\frac{1}{2}$	13	90	16	20									
11:52	151 $\frac{1}{2}$	14	50	17	00									
12:01	136	17	60	17	75									
12:09	124 $\frac{3}{4}$	17	30	17	30									
12:24	110 $\frac{1}{2}$	18	15	19	70									
12:30	100 $\frac{1}{2}$	18	25	18	45									
1:02	100 $\frac{1}{2}$	18	25											
1:08	85	19	70											
1:13	65 $\frac{1}{2}$	21	25											

Signature of the Officer of the Deck: W. H. Bainbridge & F. B. Quinn

Signature of the Officer

Signature of the Recorder: _____

Signature of the Recorder

COAST AND GEODETIC SURVEY STEAMER "GUIDE"

Locality, 14 1/4 mi. SE of Gardner Pinnaclet, August 27, 1929

Sounding No. Line
Lat. 24° - 49', Long. 167° - 49.5'

TEMPERATURES.		REMARKS.	DEPTHS, IN FATHOMS.	TEMPERATURES.			REMARKS.
Corrected.	No. of the Thermometer.			Kind of Thermometer used.	Reading.	Correction.	
Mm.	Max.		Mm.	Mm.	Max.		
		Temperature of Air Temperature of Thermometer, Locker	Surface	#4102	#14996		Temperature of Air Temperature of Thermometer, Locker
		Bottom - Water sample	1:17	21	65		Deep Sea
			1:23	22	90		
			1:34	24	20		
			1:38	25	90		
		Between the bottom and the	1:43	26	10		
		first 100 fm. depth at	1:47	26	20		
		12:30 the thermometers were	1:50	Surface	26		
		in wooden blocks which, it					
		is suspected, would not	1:57	121	17	00	
		float properly. Then ther-	2:04	215	11	30	
		момeter No. 4102 was placed					
		in a metal reversing case					
		and the remainder of the					
		temperatures were taken.					

Signature of the Deck: W. H. Bainbridge & F. B. Quinn

Signature of the Officer of the Deck: W. H. Bainbridge

Signature of the Recorder:

DATA SHEET FOR OCEAN OBSERVATIONS

Station Hawaiian Islands

Observer Various Officers - GUIDE

Sample No.	Date	Time	Salinity
182	7/16/29	9:00 AM	Surface 35.16
183	7/16/29	1:30 PM	Surface 35.49
184	7/16/29	7:00 PM	Surface 35.43
187	8/27/29	9:25 AM	Serial Temperature 24.72
194	9/13/29	6:50 PM	35.37
195	9/25/29	7:30 PM	35.37
197	9/28/29	11:00 PM	35.36
201	9/29/29	9:00 AM	35.49

NOTE: Refer to copy of Salinity Observations made by GUIDE, sent to the Director by the Scripps Institute of Oceanography of the University of California under date of January 25, 1930.

lum
RAE

FOR FILES OF FIELD RECORDS SECTION

May 22, 1930

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in
2 volumes of sounding records for

HYDROGRAPHIC SHEET 5012

Locality: Territory of Hawaii (East of Gardner Pinnacles)

Chief of Party: K. T. Adams in 1929

Plane of reference is mean lower low water, reading

3.5 ft. on ~~tide staff at~~ tabulations at Honolulu
17.3 ft. below B. M. 2

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.

H. V. Sumner
Chief, Division of Tides and Currents.

DEPARTMENT OF COMMERCE

AND REFER TO No. 82-DRM

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

SECTION OF FIELD RECORDS

Review of Hydrographic Sheet No. 5012
Gardner Pinnacles to French Frigate Shoals, H.I.

Instructions dated March 26, 1928, April 12, 1929 (GUIDE)

Chief of Party, K. T. Adams
Surveyed by K.T.A.
Protracted by V. M. Gibbens
Soundings plotted by J. C. Mathisson
Verified and inked by G. Risegari

1. The records conform to the requirements of the General Instructions. The descriptive report is unusually comprehensive.
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. There are no sounding line crossings on this sheet.
5. The depth curves can be completely drawn within the scope of the survey.

The 1000 fm. curve near Brooks Shoal was purposely omitted due to the fact that a detailed survey of this area on a larger scale will be submitted to the Office in the future (see descriptive report, page 1). This later work will assist in locating more accurately the 1000 fm. curve in this section of the sheet.

6. The field plotting was completed to the extent prescribed in the General Instructions.
7. The following sheets make good junctions with H. 5012 as far as the inked figures shown on H. 5012, although the pencilled figures on H. 5012 in general are in good agreement. It was decided by the Chief of Field Work not ~~ink~~ to ink the latter as the work is well covered by larger scale sheets, explained later in this report.
 - H. 5037 (west), satisfactory juncture
 - 5021 (west), satisfactory juncture
 - 5010a (west), satisfactory juncture
 - Field No. 8 (east), sheet has not yet been received in the Office. There are no junctions on the north and south.
8. On the recommendation of Capt. Borden, soundings were left in pencil to the south and east of Gardner Pinnacle and are located in an area covered by sheets H. 5021, 5010a and 5037. These sheets show the

area to be completely developed and the work better controlled.

Final disposition of the penciled soundings will be considered when the sheets covering St. Rogatien Bank and Brooks Shoal are verified.

The 18, 28, 14, 24 fathom soundings shown at St. Rogatien and Brooks Shoal on chart 4000 plot in approximately the position where the shoal spots exist on H. 5012. These soundings plot, however, in the open area and do not conflict with work on this sheet, though the 18 and 28 fathom soundings may appear questionable on this sheet. The sources of information for these soundings appear to have come through unofficial records. No work was ever done by the Coast and Geodetic Survey in this area.

It is suggested to ignore these soundings on this sheet and to give them the proper consideration on the larger scale sheet which will comprise the development of these shoals.

The slope corrections were applied by the field party in accordance with Capt. Parker's method. Mention should be made here of the care and the attention given by Chief of Party to the various overlapping sheets, before their release, in this area in regard to the slope corrections, which sheets are of different scales, and also the manner of handling the adjustment of the sounding lines with adjoining sheets.

To obviate any trouble which might occur in the Office, soundings which were in an area covered by larger scale sheets were first plotted on those sheets in the field and the slope corrections were taken from them; thus, there were avoided inconsistencies due to the use of different slope corrections for the same soundings.

Another precaution not overlooked by Chief of Party was, when the hydrography crossed work done on a larger scale, the lines of soundings on H. 5012 were enlarged to the scale of the adjoining sheet and adjustment of the soundings on H. 5012 were made to fit them.

In this connection it is recommended by the Chief of Party to give preference to all soundings of the larger scale sheets where they can be used for charting.

9. Attention is called to the hydrography indicated by green ink position numbers. This work was replotted from the original data of H. 4650a. The line, pos. 107 to 110 (green), was adjusted and fitted to the work on adjacent sheets affected and agrees satisfactorily with work on H. 5012. In view of the fact that these soundings were incorporated with work on this sheet it was decided by the Chief of Field Work to accept this line of soundings as part of the surveyed area for H. 5012.

Another line of soundings from H. 4650b was replotted on this sheet by Chief of Party which runs by "Two Brothers Reef." It was decided by Chief of Field Work to let this line be considered as tentative only, as it will be shown by another survey in the future.

10. No additional surveying is required within the area of this survey.

11. Character and scope of surveying, good.
Field drafting, good.

12. Reviewed by G. Risegari, February 12, 1931.

Inspected by E. P. Ellis

Approved:

A. M. Sobieralski
Chief, Section of Field Records

Chief, Section of Field Work

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 5012

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. 4

REGISTER NO. 5012

State ~~TERRITORY OF HAWAIIAN IS.~~

General locality ~~WESTWARD~~ Western Hawaiian Is.

Locality ~~BETWEEN GARDNER PINNACLES~~ ^{To} FRENCH FRIGATE SHOALS

Scale 1:500,000 Date of survey July 15-Sept. 28, 1929

Vessel U.S.C. & G.S.S. GUIDE

Chief of Party K. T. Adams

Surveyed by K. T. Adams

Protracted by V. M. Gibbens

Soundings penciled by J. C. Mathisson

Soundings in fathoms ~~fathoms~~

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated March 26, 1928 & April 12, 1929

Remarks:

GPO

960 B.S.
1 Res. B.S.
(Statistical Vel. Cont.)
2 Sdg. Vols.
5 Vols. B.P.

Applied to chart 4153 -
with of long. 167° by G. H. S.
East " " " " E. R. B. J.

Sept. 24, 1940

Applied to chart 4172 Aug 2 1946 *DD*
4173 10/16/46 *DD*

C