

[REDACTED]

4901

C. & G. SURVEY
L. & A
JUN. 12 1929
Acc. No.

Diag. Cht. No. 4000

DECLASSIFIED BY NOAA
PURSUANT TO DOC SYSTEMATIC REVIEW
GUIDELINES AS DESCRIBED IN SECTION
3.3(a), EXECUTIVE ORDER 12356.

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

Hawaiian Is.
State: ~~Territory of Hawaii~~

11-5613

DESCRIPTIVE REPORT.

Hydrog. Sheet No. 8 4901

LOCALITY:

French Frigate Shoals

Hawaiian Islands

Southern Part of Shoal

1928

CHIEF OF PARTY:

K. T. ADAMS

4901

[REDACTED]

DECLASSIFIED BY NOAA
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GUIDELINES AS DESCRIBED IN SECTION
3.3(a), EXECUTIVE ORDER 12356.

DEPARTMENT OF COMMERCE

REG. NO.

[REDACTED]
HYDROGRAPHIC TITLE SHEET

[REDACTED]
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. 1398

REGISTER NO. 4901

4901
DECLASSIFIED BY NOAA
PURSUANT TO DOC SYSTEMATIC REVIEW
GUIDELINES AS DESCRIBED IN SECTION
3.3(a), EXECUTIVE ORDER 12356.

State HAWAIIAN ISLANDS

General locality FRENCH FRIGATE SHOALS

Locality SOUTHERN PART OF SHOAL

Scale 1-20,000 Date of survey July 10 - Sept. 24, 1928

Vessel Steamer GUIDE

Chief of Party K. T. ADAMS

Surveyed by K. T. Adams, Francis L. Gallen, H. C. Warwick

Protracted by Walter H. Bainbridge, George W. Lovesee

Soundings penciled by Francis L. Gallen

Soundings in fathoms ~~xxxx~~

Plane of reference M L L W

Subdivision of wire dragged areas by

Inked by Warren H. Baugh

Verified by WHB

Instructions dated March 25, 1928

Remarks:

DECLASSIFIED BY NOAA
PURSUANT TO DOC SYSTEMATIC REVIEW
GUIDELINES AS DESCRIBED IN SECTION
3.3(a), EXECUTIVE ORDER 12356.

DESCRIPTIVE REPORT
to accompany
HYDROGRAPHIC SHEET NO. 8
French Frigate Shoals, T. H.

1. Hydrographic Sheet No. 8 was executed in compliance with instructions dated March 25, 1928, with especial reference to paragraph 12.

2. The usual methods of sounding and control were used. The entire area is controlled by three-point fixes, although somewhat weak at times. Practically all signals used were located by triangulation. Three floating buoys were used, two of which were located by theodolite cuts and one by topography. In general, hand lead was used to fifteen fathom depths, and the Fathometer in greater depths, although some supplementary lines and cross lines were run by Fathometer to and from other work.

3. Some discrepancies occurred between the depths by hand lead and the Fathometer. These were adjusted on the smooth sheet to give correct results in as far as possible. A great deal of trouble was encountered keeping the Fathometer correct, the differing results seeming to depend on different adjustments of the relay.

4. DANGERS. There were so many shoals and coral heads within the limits of this sheet and the three adjacent inshore launch sheets that it was impossible to develop every one. And it seems that this was not warranted at this time. An effort was made however to develop all shoals and dangers in the vicinity of the recommended anchorages and the logical approaches to these anchorages.

The shoal area at the southern end of the sheet was not developed fully. A few lines were run by the launch on Sheet No. 12 over the shoalest part. This area adjoins much shoaler water.

The fourteen fathom area at the southern ^{wa} eastern limit of the sheet was adequately developed, it being thought that vessels approaching an anchorage would pass over this area. It is apparently all clear, bottom is visible over the entire area.

The shoal area within the twelve fathom curve southeast of La Perouse Pinnacle was closely developed. Vessels must pass over this area to come to an anchorage off East Island. Every indication of a danger was investigated by the ship or whaleboat in conjunction with the ship, and the least sounding of many was recorded. Over this area an officer was always watching for shoal water.

Additional work was sometimes done by the launch on shoals near the inner limits and recorded on adjacent sheets.

Additional lines were run around La Perouse Pinnacle on Sheet No. 7.

The area just west of Shark Island, the northwest horn of the shoals, was closely developed as it was thought that vessels approaching from the north might have a tendency to come too close.

5. The sheet makes a junction on the north with Sheet No. ⁴⁸⁷¹12, on the northeast with Sheet No. ⁴⁸⁷²7, on the southeast with Sheet No. ⁴⁸⁷³13, and on the southwest and west with Sheet No. ⁴⁸⁷⁴11. Sheets Nos. 7, 12 and 13 should be examined in conjunction with this sheet, inasmuch as some of the shoals found on this sheet were developed or investigated by the

**In making this statement, the sunken rocks in vicinity of
S 23-40.5 and Long 166-16.5 were overlooked. This tends
to confirm existence of the sunken rocks. See
note by A. M. S. following review.*

launch and the work plotted on adjacent sheets. 41

*
6. No previous survey exists. Your attention is called to the fact that the breaker shown on the Hydrographic Office chart of this area and mentioned in the Coast Pilot, comes within the limits of this sheet, approximately in Latitude $23^{\circ} 42'$ N and Longitude $166^{\circ} 19'$ W. No breakers exist in this vicinity. The breaker mentioned is no doubt that on Sheet No. 13, approximately in Latitude $23^{\circ} 38'$ N and Longitude $166^{\circ} 12'$ E. This place breaks almost continuously with smoother water between it and the southern horn of the shoals. The shoal area, two miles west-north-west of this breaker, may break in very heavy weather, but I have no doubt the area given above is the one referred to.

7. ANCHORAGES recommended are:

a. The best anchorage is three-quarters of a mile 217° true from the southeastern end of East Island in fourteen and one-half fathoms of water. There is a bare reef one-half mile northeast of East Island which should be kept in range with the southeastern end of East Island. There is a shoal which breaks almost constantly which should bear about east 0.4 mile distant on anchoring. Vessels should take care not to approach the reef to the eastward nor the three and one-half fathom shoal to the northwestward too closely. The holding bottom here is good and this anchorage affords excellent protection from all except southerly and westerly winds.

This anchorage and the adjacent area have been surveyed on Sheet No. 7 but it is described here on account of the approaches.

To approach this anchorage it is necessary to cross the lumpy area of less than twelve fathoms which surrounds La Perouse Pinnacle and extends to the southwestward of it. This area, in contrast to that immediately to the northeast and southwest of it, is of very irregular bottom and has numerous shoal spots in it. This area was closely surveyed and each indication investigated and it is thought to be all clear.

The least water found was three fathoms in Latitude $23^{\circ} 44.54'$ and Longitude $166^{\circ} 12.69'$ This is in reality the southern end of a very irregular shoal area connected with East Island.

4 $\frac{2}{3}$ fathoms in Lat. $23^{\circ} 45.45'$, Long. $166^{\circ} 13.00'$

5 fathoms 2.03 miles 113.5° true from La Perouse Pinnacle.

$6\frac{1}{2}$ " 0.80 " 29° " "

6 " 1.00 " 53° " "

$6\frac{1}{2}$ " 1.50 " 44° " "

$6\frac{3}{4}$ " 0.74 " 57° " "

b. The anchorage noted in the present Coast Pilot one mile north-west of La Perouse Pinnacle, in thirteen and one-half fathoms, is obviously not as well protected as the anchorage at East Island.

c. The third anchorage recommended is three-quarters mile south of La Perouse Pinnacle.

d. A fourth anchorage is recommended on Sheet No. 12, northward, beyond the limits of this sheet.

8. APPROACHES. Vessels can enter the shoals, approaching an anchorage, keeping La Perouse Pinnacle on any easterly heading between 15° and 135° true. This entire area is clear. Entering with La Perouse Pinnacle bearing less than 15° true would pass over quite shallow water, to the southward, which should be avoided. Entering with La Perouse Pinnacle on a bearing greater than 135° true would pass too close to Shark Island, the northwestern horn of the shoals which should be given at least a mile clearance.

To anchor off East Island vessels should pass three-quarters mile south of La Perouse Pinnacle on a course of 67° true until the southeastern end of East Island bears 37° true, then head for it and come to an anchor three-quarters mile off the island.

An entrance northeast of La Perouse Pinnacle is not recommended as it requires closer navigating and the shoal spots near which the course would pass are considerably shallower.

9. All place names in this area were obtained from a blue print of a reconnaissance survey of this area made by the U. S. S. Tanager in 1923.

KTA/h

K.T. Adams

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

STATISTICS FOR HYDROGRAPHIC SHEET, FIELD NO. 8. (Ship)
French Frigate Shoals, T. H.

DATE 1928	DAY LETTER	VOLUME	STATUTE MILES OF SOUNDINGS			NUMBER OF SOUNDINGS		POSITIONS	
			HAND LEAD	FATHOMETER RED LT.	FATH. W. LT.	HAND LEAD	FATHOMETER WHITE LT.		
July 10	A	1	15.0	19.5		165	6	79	
"	11	B	1	26.6	21.5	2.1	299	22	116
"	12	C	1-2	31.6	10.0		361		105
"	13	D	2	6.4	13.5	1.6	76	12	53
"	14	E	2	47.7	3.3		558		161
"	15	F	2-3	41.7			492		177
"	17	G	3	21.4	28.8		218		134
"	18	H	3	25.0	30.1		253		151
"	19	J	4	37.3			434		145
"	20	K	4	29.1			296		106
Aug. 5	L	4	28.4			330		100	
"	6	M	5	7.4			94		35
"	7	N	5	35.0			414		127
"	8	P	5	9.2			127		38
"	9	Q	5	8.8			97		30
"	10	R	5	5.5	7.3		52		33
"	11	S	5-6	31.4			361		121
"	12	T	6	33.0	6.3		270		137
"	13	U	6	1.5	11.1		15		28
"	14	V	6	29.7			358		103
"	15	W	6-7	37.3			456		107
"	16	X	7	36.3			482		111
"	17	Y	7	37.7			537		118
"	18	Z	7-8	25.4			512		105
"	19	A'	8	16.5	7.0		302		103

Statistics for Sheet No. 8, continued.

DATE 1928	DAY LETTER	VOLUME	STATUTE MI. OF SOUNDINGS			NUMBER OF SOUNDINGS		POSITIONS	
			HAND	FATHOMETER	FATH.	HAND	FATHOMETER		
			LEAD	RED LT.	W. LT.	LEAD	WHITE LT.		
Aug. 20	B'	8		8.0				28	
Sept. 10	C'	8	36.2			463		137	
" 11	D'	9	24.7			386		112	
" 23	E'	9				28		15	
" 24	F'	9				10		10	
" 25	G'	9				4		4	
" 24	Whaleboat Vol.					2		2	
" 25	" "					8		8	
" 23	Dinghy Vol.					14		14	
" 24	" "					12		12	
TOTALS			685.8	166.4	3.7	8486	40	2865	
TOTAL MILEAGE 855.9			TOTAL NUMBER OF SOUNDINGS 8526						

Detached Shoal Soundings

TIDAL NOTE

SHEET #8,
French Frigate Shoals, T. H.
1928

A portable-automatic tide gauge was established on the edge of the reef at the south-east end of East Island, lat. 23 - 46.96 N, long. 166 - 12.53 W.

Simultaneous Comparisons were made with Honolulu tides for the periods July 11 - 16, August 5 - 21, September 9 - 15, and September 19 - 25, inclusive.

These gave a value of MLLW = 3.12 on the staff at French Frigate Shoals. An independent determination of MLLW gave a value of 3.04. The value MLLW = 3.1 was used for reduction of soundings.

For days when French Frigate Shoals tides were not available, Honolulu tides were used with time 21 minutes earlier and range 0.73, as determined by the Simultaneous Comparison.

For this sheet tides at French Frigate Shoals were used except on the following days, when Honolulu tides were used.

Date.	Honolulu Tides. Day letter.
July 10	A
" 11	B
" 17	C
" 18	H
" 19	J
" 20	K

APPROVAL SHEET

for

HYDROGRAPHIC SHEET NO. 8.

East Island and Vicinity,
French Frigate Shoals,
Territory of Hawaii.
1928.

The accompanying sheet and records have been inspected and approved by me. The usual amount of supervision was given while the party was working. The sheet and work done each day was examined each evening by me, and discussed with the officer in charge of the subparty. I, myself, carefully examined the sheet at various times during the progress of the work to endeavour to find and develop an entrance to an inside anchorage.

* There is no doubt that sufficient water is available for moderate sized vessels to obtain a sheltered anchorage inside. The trouble is to get to it thru the coral heads. The survey is not sufficient to assure a passage. No leadline survey would ever be. Even, if available, an entrance would be so narrow that it would have to be staked to assure avoiding all coral heads. The party engaged in the work were continually finding new coral heads in the area that had been surveyed. These are extremely small in diameter and are rarely found by the leadline. They were usually seen by eye.

I consider it useless to spend any more work in this area until it becomes of more importance.

Your attention is called to the fact that this area might make an emergency landing for sea planes.

K. T. Adams

K. T. Adams,
H. & G. Engr.,
Chief of Party.

** It is not clear whether this statement covers the sunken rocks in lat 23-40.5 and long 166-16.5, (See note by G. M. S. following review.)*

C. & G. SURVEY
L. & A.
JUN 8 1929
Acc. No.

APPROVAL REPORT
to accompany

SHEET NO. 8. 494901

The accompanying sheet and records have been examined and approved by me.

A great deal of supervision was had over the actual field work. For about three quarters of the work I was actually on the bridge either in charge or watching for shoals. Inasmuch as this area was full of unsuspected shoals, a constant lookout had to be kept.

Inasmuch as the Descriptive Report to this sheet was written by myself, no additional information is necessary here.

K. T. Adams
K. T. Adams, ~~U.S.N.~~
Chief of Party,
Commanding
Steamer GUIDE.

Section of Field Records

can

August 26, 1929.

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in
volumes of sounding records for

HYDROGRAPHIC SHEET 4901

Locality: French Frigate Shoals, T. H.

Chief of Party: K. T. Adams in 1928

Plane of reference is mean lower low water, reading
5.1 ft. on tide staff at East Island, French Frigate Shoals
~~5.1 ft. on tide staff at~~
ft. below B. 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.

J. A. Warner

Chief, Division of Tides and Currents.

SECTION OF FIELD RECORDS

REPORT ON SHEET No. H-4901

MAY-17-1930.

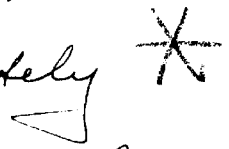
CHIEF OF PARTY — K. T. ADAMS
PROTRACTED BY — WALTER H. BAINBRIDGE, GEORGE W. LOVESEE.
VERIFIED BY — WARREN H. BAMFORD.
SURVEYED IN — JULY - SEPT - 1928
SURVEYED BY — K. T. ADAMS, FRANCIS L. GALLEN, H. C. WARWICK
SOUNDINGS PLOTTED BY — FRANCIS L. GALLEN.

- 1./ The records were found to conform to the requirements of the General Instructions for Field Work except that bottom characteristics were not noted on every page of the sounding volumes.
- 2./ The protracting was found to be fairly good.
- 3./ Frequently, when time interval was irregular, the soundings were found to be poorly spaced. On "Z" day - the soundings were very poorly spaced, no regard being paid to the time interval at all.

- 4./ The sounding line crossings were found to be adequate.
- 5./ The development on shoals was found to be sufficient.
- 6./ It was possible to draw the usual depth curves.
- 7./ The sheet was clean and the work legible although the penciled soundings were very large.
- 8./ The field plotting was completed to the extent prescribed in the General Instructions.
- 9./ The field draftsman did not seem to be familiar with the rules for plotting fractions - frequently $\frac{1}{2}$ fathom was plotted as $\frac{3}{6}$ fathom. It was also found that 13.6 and 13.7 fathoms were plotted as 14.0 fathoms - which is not correct. This was found frequently throughout the sheet.


10./ The junctions with the adjacent sheets were found to be satisfactory - in no case was a difference of ∇ over one fathom noted i.e. (when overlap soundings fell on top of soundings on H-4901)

11./ There are numbers of coral heads in this area, but as noted in the descriptive report for H-4901 - these were all visible - and all located, by soundings being taken over them.

Attention is called to the sunken rock symbol in approximately 

Latitude $23^{\circ}-47'$ - 230 METERS and Longitude $166^{\circ}-14'$ - 1350 METERS

There is no mention of this in the Descriptive Report for H-4901 nor is there a symbol for a sunken rock in this location, on the boat sheet. The symbol is in pencil, and

* This symbol was noted on two sounding lines and has been shown as a sunken ^{rock}  A

there is a seven fathom sounding very close to the sunken rock symbol.

In several instances - a "dotted" ten fathom curve was placed around isolated 11 or 12 fathom soundings when they occurred in areas devoid of any shoaler soundings. This is merely to call the reviewer's and compiler's attention to them.

Respectfully Submitted

Warren H. Bamford

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

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4901

Southern Part of French Frigate Shoals, H. I.

Surveyed in 1928

Instructions dated March 26, 1928 (GUIDE)

Chief of Party, K. T. Adams

Surveyed by Party of Steamer GUIDE

Protracted by W. H. Bainbridge and H. C. Warwick

Soundings plotted by F. L. Gallen

Verified and inked by W. H. Bamford

1. The records and character of the survey conform to the general requirements and specific instructions except that bottom characteristics were not always noted on each page and frequently the time of taking position angles was erroneously noted.
2. The protracting was well done, but time intervals were frequently ignored in spacing soundings.
3. In some unimportant places shoal indications were not developed, but in the important locations the development is sufficient.
4. Three to four miles southwest of La Perouse Pinnacle there are five unconfirmed fathometer soundings of 11 to 13 fathoms, with surrounding depths of 15 to 17 fathoms. Mr. Gallen and the Chief of Field Work Section were consulted and it was decided to retain them, although they are less than can be reliably obtained with the fathometer.
5. Breakers shown on H. O. Chart No. 2, located on this sheet by bearing and distance from La Perouse Pinnacle, plot at $23^{\circ}41'$, $166^{\circ}19'$. The sounding lines over this location are spaced about 250 meters apart with depths of 12 fathoms or more and contain no indications of shoaling. In view of the fact that the bottom was clearly visible and a sharp lookout was kept for shoals Mr. Gallen believes that the breakers shown on H. O. Chart No. 2 were actually tide rips.

The breakers have been omitted from the sheet by order of Chief of Section.

E. V. S. July 26, 1933

6. The junctions with the adjoining sheets are adequate.
7. The character and scope of the survey are excellent, and no additional work is necessary, except in the event that the locality should be frequently used in the future, the anchorages and their approaches should be dragged as there may be some undiscovered coral heads.
8. The Chief of Party states in the descriptive report that this area might make an emergency landing for aircraft. The Navy Department should be advised of this when the chart is completed.
9. Reviewed by E. P. Ellis, June, 1930.

Approved:

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

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

Attention directed to 3 sunken rock symbols in vicinity lat 23-40.5 Long 166-16.5. They are plotted from notes in the sdy. records. The statements by chief of party and the fact that these rocks plot between shoals shown on H.O. Chart No 2, makes it necessary to retain these, although the character of the bottom makes their existence doubtful.

See letter dated May 11, 1931. These rocks expunged
A. M. Sobieralski
April 29, 1931
A. M. S.

POST OFFICE ADDRESS:

TELEGRAPH ADDRESS:

EXPRESS OFFICE:

1931 MAY 20

PA

3:16
DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY
Steamer GUIDE, 202 Burke Building,
Seattle, Wash., May 11th, 1931.

3 Sunken rocks expunged
from sheet and abbrev.
Co retained

EPE

To: DIRECTOR, Coast and Geodetic Survey.
From: Commanding Officer, U.S.C. & G.S.S. GUIDE.
Through: Inspector, Seattle Field Station.
Subject: Hydrographic Sheet No. 4901.
Reference: Your letter 22 LE, dated May 4, 1931.

With respect to the sunken rocks indicated on this sheet, about 5 1/2 miles south of La Perouse Pinnacle, I am of the opinion that these do not exist as shown on the photostat. In this area the water was very clear and bottom was plainly visible, but when the bottom formation was coral it was much more plainly visible than when it was sand. It is my opinion that these were intended as bottom characteristics as seen by the officer in charge rather than as determined by the lead line, and in my opinion the depth of these coral patches is not more than one fathom less than the general surrounding depth.

Throughout the entire survey of this area the officer in charge kept a carefull lookout on account of fear of sudden unexpected shoals and for the safety of the ship more depended on the lookout than the lead line, due to the suddeness with which these coral heads rose from the bottom. However, any coral head in this particular area that could be of danger to navigation would certainly have been sighted and investigated.

In my opinion these remarks should not be shown on the chart as "sunken rocks", but merely as bottom characteristics being of no danger to navigation.

I am returning herewith the photostat recently sent me.

K. T. Adams
K. T. Adams,
Commanding,
Steamer GUIDE.

REFER TO:
12-KTA-h

Forwarded
F. J. Standley
Inspector Seattle Field Station

22-LE

May 4, 1931.

Return to H. & T. Div. for filing

To: Commanding Officer,
Coast and Geodetic Survey,
Ship GUIDE,
202 Burke Building,
Seattle, Washington.

Through: Inspector, Seattle Field Station.

From: The Director,
U. S. Coast and Geodetic Survey.

Subject: Photostat copy of Hydrographic Sheet 4901.

There is being forwarded to you, under separate cover, photostatic copy of a section of hydrographic sheet 4901, covering the area in the vicinity of La Perouse Pinnacle, French Frigate Shoals.

Approximately 5-1/2 miles south of La Perouse Pinnacle, in general depths of 10 fathoms, there are shown on the photostat 3 sunken rocks, applied to the sheet from notes in the sounding record such as "coral head".

Information is desired as to whether these notes are to be interpreted to mean that coral heads dangerous to navigation of that locality, exist and should be charted as sunken rocks, or that they mean small coral heads rising only short distances above the bottom and, consequently, not dangerous to navigation where general depths are as large as shown in that locality.

(Signed) R. L. Paris

Acting Director.

MS 351
S/R

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

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4901

Southern Part of French Frigate Shoals, H. I.

Surveyed in 1928

Instructions dated March 26, 1928 (GUIDE)

Chief of Party, K. T. Adams

Surveyed by Party of Steamer GUIDE

Protracted by W. H. Bainbridge and H. C. Warwick

Soundings plotted by F. L. Gallen

Verified and inked by W. H. Bamford

1. The records and character of the survey conform to the general requirements and specific instructions except that bottom characteristics were not always noted on each page and frequently the time of taking position angles was erroneously noted.
2. The protracting was well done, but time intervals were frequently ignored in spacing soundings.
3. In some unimportant places shoal indications were not developed, but in the important locations the development is sufficient.
4. Three to four miles southwest of La Perouse Pinnacle there are five unconfirmed fathometer soundings of 11 to 13 fathoms, with surrounding depths of 15 to 17 fathoms. Mr. Gallen and the Chief of Field Work Section were consulted and it was decided to retain them, although they are less than can be reliably obtained with the fathometer.
5. Breakers shown on H. O. Chart No. 2, located on this sheet by bearing and distance from La Perouse Pinnacle, plot at $23^{\circ}41'$, $186^{\circ}19'$. The sounding lines over this location are spaced about 250 meters apart with depths of 12 fathoms or more and contain no indications of shoaling. In view of the fact that the bottom was clearly visible and a sharp lookout was kept for shoals Mr. Gallen believes that the breakers shown on H. O. Chart No. 2 were actually tide rips.

6. The junctions with the adjoining sheets are adequate.
7. The character and scope of the survey are excellent, and no additional work is necessary, except in the event that the locality should be frequently used in the future, the anchorages and their approaches should be dragged as there may be some undiscovered coral heads.
8. The Chief of Party states in the descriptive report that this area might make an emergency landing for aircraft. The Navy Department should be advised of this when the chart is completed.
9. Reviewed by E. P. Ellis, June, 1930.

Approved:

Chief, Section of Field Records (Charts)

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

6. The junctions with the adjoining sheets are adequate.
7. The character and scope of the survey are excellent, and no additional work is necessary, except in the event that the locality should be frequently used in the future, the anchorages and their approaches should be dragged as there may be some undiscovered coral heads.
8. The Chief of Party states in the descriptive report that this area might make an emergency landing for aircraft. The Navy Department should be advised of this when the chart is completed.
9. Reviewed by E. P. Ellis, June, 1930.

Approved:

Chief, Section of Field Records (Charts)

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

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 4901

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

Number of positions on sheet .2865.
Number of positions checked .475.
Number of positions revised .37..
Number of soundings recorded .8526
Number of soundings revised 1023.
Number of signals erroneously
plotted or transferred .NONE.....

Date: May 17 - 1930
Cartographer: Warren H. Bamford

The Chief of Party
states in descriptive
report that this area
might make an
emergency landing
for sea planes.

The Navy Dept
should be advised
when the chart
is completed

ERL

Applied to Chart 4182 7/26/40

of

Applied to Chart 4172 Aug 3 1946 *LL*.