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Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey *Hydrographic*
Field No. *5441a* Office No. *5441b*

LOCALITY

State *S. W. Alaska*
General locality *N. E. Of Kodiak*
Localities *Id. Marmot Bay*

1933

CHIEF OF PARTY

H. B. Campbell

LIBRARY & ARCHIVES

DATE

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Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
R. S. Patton, Director

State: Alaska

DESCRIPTIVE REPORT

~~Topographic~~ } Sheets No. 11, 11 b & o. 51
Hydrographic }

LOCALITY

S. W. Alaska

Saint Paul Harbor

Kodiak Island

1933

CHIEF OF PARTY

H. B. Campbell

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DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO.

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. 11, 11 b & 0.51

REGISTER NO.

State S. W. Alaska

General locality Kodiak Island

Locality Saint Paul Harbor

11&11 b 1:10,000
Scale 0.51 1:5000 Date of survey July 25 - October 18, 19 33

Vessel M.V. Westdahl, Port and Starboard Motor sailers S.S. Discoverer

Chief of Party H. B. Campbell

Surveyed by G.L.Bean, W.M.Scaife, R.J.Sipe, H.J.Healy, G.M.Marchand
E.C.Baum and J.N.Jones

Protracted by C. Weiss

Soundings penciled by C. Weiss

Soundings in fathoms ~~feet~~

Plane of reference M. L. L. W.

Subdivision of wire dragged areas by G.M.Marchand

Inked by WNB

Verified by W.H. Bamford - E.W. Smith

Instructions dated March 25, 19 33

Remarks: Wire drag (sheet 11 b) and soundings off the dock
at Kodiak (sheet No. 0.51) plotted on same Whatman sheet.

DESCRIPTIVE REPORT

to accompany

Hydrographic Field Sheets No's. 11, 11 b and 0.51

Scales 1:10,000 & 1:5000

U.S.C. & G.S.S. DISCOVERER
Season of 1933

H.B. Campbell
Chief of party

AUTHORITY

This survey was accomplished under instructions from the Director, dated March 25, 1933, Project No. HT-139.

METHODS OF SURVEY

This report covers a revision and extension survey of the approaches to Saint Paul Harbor, Kodiak Alaska.

The work is plotted on two smooth sheets ^{one #5441^a} ~~and~~ for the regular hydrographic survey (No. 11) and another for the Wire Drag (No. 11 b.) ^{#5441^b}
On the latter sheet there is included a large scale (1:5000) survey of the waters adjacent to the docks at Kodiak.

Standard survey methods were used for this survey. The primary control consisted of an extension of the 1907 triangulation in this vicinity, supplemented by signals located by topography, (see Topographic sheets "E" and "D" 1933.)

The vessels used in this survey consisted of the M.V. Westdahl, the Port and Starboard motorsailers of the Str. Discoverer, and the motor Whaleboat and motor Dory of the Str. Discoverer.

The M.V. Westdahl sounded deep water sections of this sheet using both Fathometer and Wire methods for obtaining depths.

The motorsailers sounded the inshore areas using the Hand Lead and Wire. The Hand Lead was used in depths under 10 fathoms,

over ten fathoms the wire method was used. The Hand Leads were checked both before and after each days work and at no time did the error exceed the allowable limits. The wire sheaves were tested at the beginning and end of the season and showed no appreciable error. during actual sounding operations the initial and return of the sheave index was noted on every sounding and any variance between them was recorded.

The motor Dory and Motor Whaleboat were used on this survey only for the purpose of feeling out shoals and sunken rocks. Considerable time was spent by these vessels in an attempt to get the least depths over sunken dangers. The general method employed was for the motor-sailers to develop a shoal area as completely as possible then drop a bouy on the shoalest depth obtained. The small boats would then drift sound in all directions from the bouy using one or more lead lines going constantly.

This survey is complete in so far as the area covered is concerned. No attempt was made to resurvey the old (1907) work entirely. Particular attention was devoted to the South and East approaches to Saint Paul Harbor and the areas of the chain of reefs and shoals between Cliff Point and Popof Island.

A wire drag survey of the areas between the reefs to the Southeast of Puffin Island and extending into Saint Paul Harbor was made and is shown on sheet No. 11 b. ^(H 5441b) An attempt was made to drag a passage through the reef Northeast of Puffin Island but it was found impossible to pull the drag through the narrow Kelp-congested passage.

In an effort to locate the "P.D." rock in the passage between Puffin Island and Discoverey Rocks, the area was developed by a system of 30 meter lines, which revealed least depths over the charted position (Chart No. 8570) of $4 \frac{2}{3}$ fathoms (reduced) in Lat. $57^{\circ}-45.20'$, Long. $152^{\circ}-25.78'$ and in Lat. $57^{\circ}-45.25'$, Long. $152^{\circ}-25.65'$. However two

no 87 m. - vol IV

distinct shoals having depths of 1-1/6 fathoms (Lat. 57°-45.48' Long. 152°-25.86') and 2 4/6 fathoms (Lat. 57°-45.51', Long. 152°-25.70') respectively were found in the middle of this passage about 1/4 mile North of the reported position. These shoals were developed very carefully by Hand Lead and considerable time was spent in drift sounding over them in order to secure the least depths. The thick growth of kelp over these submerged rocks made it impractical to use the wire drag. From the results of this survey it appears that the position of the sunken rock in the passage as reported by the master of the S.S. Admiral Evans (Chart letter 440, 1928) is in error. It is recommended that it be removed from the chart and be replaced by the shoals found by this survey.

DISCREPANCIES

In plotting the smooth sheet it was noted that the positions on x-day, Pott motor-sailer, from 10 x to 137 x were at variance with the boat sheet positions. A check up revealed that the topographic signals Gon, Pan, Elk, and Cap were plotted somewhat in error on the boat sheet. The smooth sheet positions should be accepted as correct.

No discrepancies on depths were noted in the work of the motor-sailers and small boats.

The discrepancies existing in the work of the M.V. Westdahl as explained by Lieut. Scaife are as follows.

The following fathometer soundings, made by the Westdahl, after comparison with adjacent soundings which it is believed are correct, appear to be in error, probably due to reading strays or to imperfect functioning of the fathometer. It is therefore recommended that they be rejected.

From 149D to first sounding after 153D, inclusive.

From 135D to first sounding before 138D, inclusive.

From first sounding after 68C to fourth sounding after 71C, inclusive. (40-46 E looks deep)

From first sounding after 163D to 167D, inclusive.

Crossing of 126-127C and 136-137C shows a difference of five fathoms. It is believed that this discrepancy is due to the comparative steepness of the bottom in this locality and possibly to a slight misplacement in positions. — See Venifer's report.

Crossing of 158-159C and 198-199D shows a difference of 10 fathoms. It is believed that this discrepancy is due to the steepness of the bottom at this locality and possibly to a slight misplacement in position.

Print until after wire soundings on E day are in hand. Consult regarding rejection of fathometer soundings. E.E.

DANGERS AND SHOALS

1. In Lat. $57^{\circ}-45.48'$, Long. $152^{\circ}-25.86'$ there is a sunken rock with least depth of $1 \frac{1}{6}$ fathoms reduced to M.L.L.W. least depth obtained at position 87 n (P.M.S.). This shoal is marked by a thick patch of kelp. Spent fifteen minutes in drift sounding over this shoal after developing same with ~~fifty~~²⁵ meter lines. ✓
2. In Lat. $57^{\circ}-45.37'$, Long. $152^{\circ}-26.04'$ there is a sunken rock with least depth of $2 \frac{1}{6}$ fathoms, reduced, this rock was visible to sounding party. Least depths obtained on position 78 n (P.M.S.). This shoal marked by kelp. ✓
3. In Lat. $57^{\circ}-45.51'$, Long. $152^{\circ}-25.70'$ there is a rocky shoal having a least depth of $2 \frac{4}{6}$ fathoms, reduced. The least depth obtained on positions 36 and 38 n (P.M.S.). Fifteen minutes were spent in drift sounding over this area. After completeing the development. This shoal is marked by kelp. ✓
4. Lat. $57^{\circ}-45.65'$, Long. $152^{\circ}-25.59'$ ^{25.50' J.M.M.K}. Rocky shoal with least depth of $4 \frac{4}{6}$ fathoms, reduced. spent twelve minutes drift sounding on shoal following development of same. Least depth secured on positions 16 n (P.M.S.). ✓
5. Lat. $57^{\circ}-45.28'$, Long. $152^{\circ}-25.07'$ Rocky shoal, in kelp, least depth of $3 \frac{5}{6}$ fathoms, reduced. spent ten minutes in drift sounding. Least depth obtained on position 159 n (P.M.S.). ✓
6. Lat. $57^{\circ}-45.01'$, Long. $152^{\circ}-25.50'$. Rocky shoal in kelp, least depth of $4 \frac{1}{6}$ fathoms, reduced. ✓

Spent thirty six minutes drift sounding over this shoal.

least depth obtained on position ^{120ⁿ}~~122~~ (P.M.S.).

7. In Lat. 57°-45.47', Long. 152°-24.93' there is a sunken rock covered with one foot of water at M.L.L.W. the least depth obtained on position 5 dd (S.M.S.). *Vol 15 Plotted as rock awash N.L.L.W*
8. In Lat. 57°-45.08', Long. 152°-24.47' there is a sunken rock covered with 1 5/6 fathoms, reduced to M.L.L.W. the least depth obtained on position 3 dd (S.M.S.) after 55 minutes of drift sounding following a close development over the area with twenty meter lines. There is a rather extensive field of kelp here which practically covers the entire area inside the ten fathom curve.
9. In Lat. 57°-45.1', Long. 152°-24.78' there is a rocky shoal, marked by kelp, having a least depth of 3 1/2 fathoms, reduced. (see position 1 dd S.M.S.) and position 143 a (S.M.S.). This shoal was developed by a system of lines twenty five meters apart and an hour and twenty minutes was spent in feeling it out with two Hand Leads (see remarks pos. 1 dd S.M.S. and 143 a S.M.S.).
10. In Lat. 57°-44.88', Long. 152°-24.80' there is a shoal with a least depth of 3 5/6 fathoms, reduced. a bouy was dropped on this shoal and the area about it carefully sounded out with a Hand Lead. Thirty five minutes were spent in feeling out this shoal. The shoalest sounding was obtained on pos. 106 e (S.M.S.). The shoal is marked with kelp.
11. Lat. 57°-45.32', Long. 152°-24.20'.
Rocky shoal with least depth of 5 5/6 fathoms, reduced.

Dropped bouy on this shoal and drift sounded for forty five minutes using Hand Lead. Least depth obtained on pos. 107 e (S.M.S.).

12. Lat. $57^{\circ}-46.58'$, Long. $152^{\circ}-26.29'$.

Least depth of $4 \frac{2}{6}$ fathoms, mud bottom. Area developed by system of lines 10 to 20 meters apart (see pos's. 65 to 79 e S.M.S.). Bouy dropped on this shoal, area felt out with Whaleboat and Dory using three Hand Leads for thirty five minutes. Least depth obtained on pos. 109 e (S.M.S.).

13. Lat. $57^{\circ}-44.27'$, Long. $152^{\circ}-26.55'$.

A sounding of $2 \frac{5}{6}$ fathoms, rocky, reduced, was obtained between pos. 77 and 78 e (P.M.S.). No time spent in feeling out this shoal therefore sounding of $1 \frac{3}{4}$ fathoms as shown on chart No. 8570 ^{7 8534} should be retained.

14. Sunken rock marked by kelp at Lat. $57^{\circ}-46.50'$, Long. $152^{\circ}-22.70'$. Least depth obtained is one foot reduced to M.L.L.W. Least depth obtained on pos. 21 K (P.M.S.)

15. Sunken rock marked by kelp at Lat. $57^{\circ}-46.47'$, Long. $152^{\circ}-22.89'$. Least depth is one foot, reduced to M.L.L.W. Least depth is obtained on pos. 29 k (P.M.S.).

16. Rocky shoal at Lat. $57^{\circ}-45.56'$, Long. $152^{\circ}-22.54'$. Least depth is $3 \frac{1}{6}$ fathoms at pos. 59 z (P.M.S.). shoal is marked by thin kelp at low water.

This shoal was developed by a system of lines 20 meters apart and later a bouy was dropped on it and the area felt out by Hand Lead for two hours and fifteen minutes. See pos. 6 to 8 dd (S.M.S.) and pos. 56 to 60 z (P.M.S.). On pos. 59 z a sounding of $4 \frac{1}{2}$ fathoms was obtained,

unreduced, ^{on} a visible rock. This sounding when reduced for tide gave the least depth obtained.

17. Lat. 57°-45.54' Long. 152°-22.77'.

Least depth 10 fathoms 2 ft., rocky, area developed by a system of lines 30 meters apart, Drift sounding for 35 min. using Hand Lead, least depth obtained on pos. 17 z (P.M.S.).

18. Lat. 57°-46.17', Long. 152°-22.93'; rocky shoal with least depth

of ~~4 5/6~~ ^{5 1/6} fathoms, kelp. Time spent drift sounding over shoal was 40 min. least depth obtained on pos. ~~41 z~~ ^{61 z} (P.M.S.).

19. Lat. 57°-45.94, Long. 152°-22.86', least depth 12 fathoms

obtained on pos. 9 dd (S.M.S.). Time spent in feeling out this shoal with hand lead was 20 min.

20. Lat. 57°-46.75', Long. 152°-22.40', least depth ^{8 1/4 fms, rocky} obtained

on pos. 55 z (P.M.S.). Fifteen min. spent feeling out shoal with Hand Lead.

21. Lat. 57°-47.02', Long. 152°-22.09', least depth of 3 4/6

fathoms, rocky. This shoal marked by thin kelp at low water. Bouy dropped on this shoal and 58 min. spent in feeling with two Hand Leads for least depth obtained on pos. 30 e (S.M.S.).

22. Lat. 57°-47.20', Long. 152°-22.44'. Sunken rock in kelp

patch covered ^{with} one ft. water, least depth obtained on pos. ~~99 r~~ ^{94 r} (P.M.S.). Time spent in feeling out this shoal was

38 min. ^{There is a} 2 fathom spot 150 meters North by East of this pos.

(see pos. 90 r P.M.S.). Also, 1 1/4 fms. near 2 fms.; 1 fms. on Chart. S.W.H.

23. Lat. 57°-47.43', Long. 152°-22.10'. Least depth 7 1/2 fathoms,

rocky, in kelp patch. Least depth obtained on pos. 31 and

110 e (S.M.S.). Bouy dropped on this shoal, one hour and five min. spent in feeling it out with 3 Hand Leads sounding

continuously.

Two 7 1/2 fms spots, 50 M. apart; charted one as 7 fms in 10 fms. cor. S.W.H.

- 24. Lat. 57°-47.57', Long. 152°-22.00'. Least depth of 4 1/6 fathoms, rocky and kelp. Thirty min. spent on drift sounding around bouy on this shoal. Least depth obtained on pos. 32 e (S.M.S.). *4 7/8 fms 35 M. E.; 4 5/8 fms 120 M. E.; charted 4 6/8 as 4, and 4 7/8 as 4 3/4.* *110 M*
- 25. Lat. 57°-47.56', Long. 152°-21.22'. Least depth of 4 fathoms, rocky, obtained on pos. 7-8 bb (P.M.S.). Bouy was dropped on this shoal and 32 min. spent drift sounding to obtain least depth.
- 26. Lat. 57°-44.8⁸1', Long. 152°-20.07' (Vasilief ~~Shoal~~ ^{Rock}). *Change authorized by S.L.T.* *no 1444 - vol 17*
Least depth 4/6 fathom, rocky. Top of rock visible, shoal marked by kelp.
- 27. Lat. 57°-44.86', Long. 152°-21.51', least depth of 1 1/6 fathoms on pos. 92-94-~~95~~⁹⁸ y (P.M.S.). Time spent drift sounding 12 min. shoal marked by thick kelp. *Three 16 fms. spots, charted as 1 fms.*
- 28. Lat. 57°-44.81', Long. 152°-21.66', least depth 1 4/6 fathoms, rocky. Area covered with thick kelp. Least depth obtained on pos. 82-83 y (P.M.S.). Time spent drift sounding 20 min.

CHANNELS

Three approaches to the harbor at Kodiak are available. The channel most used at the present time is the one on the North side of Woody Island. The entrance to this channel is buoyed and it is used by most commercial steamers entering and leaving Kodiak.

The usual draft of vessels entering Kodiak is less than twenty feet.

From the South two approaches are available. The passage to the West of Woody Island is used most frequently by fishing vessels and other small craft, and occasionally by a commercial steamer

proceeding from Kodiak to the Westward, or vice versa.

The use of this passage is not recommended for deep draft vessels until navigation aids are established as the surveys completed this season revealed the existence of two shoals near mid-channel (see "Dangers", No's. 16 and 21, this report).

The passages through the reef 3/4 mile S.E. of Puffin Island were investigated by wire drag this season, and found to be clear for a depth of 38 feet, reduced to M.L.L.W. Of the three passages dragged the middle one was used most by the SHip Discoverer during the field season and is recommended as the a suitable approach to St. Paul Harbor from the South. Directions for entering the harbor through these passages should be written for the Coast Pilot after the work of this season is verified in the office. Particularly the wire drag.

The Discoverer usually passed in and out between the reefs with Topographic signal "Fin" on range with Pyramid mountain. This range is shown on the sheet as a dashed line (see pos. 1 to 4 inc. A-day, Discoverer).

The passages between Puffin and Popof Islands are not recommended; although they are used frequently by cannery tenders, having local knowledge of the area.

COMPARISON WITH PREVIOUS SURVEYS

Generally speaking, this survey revealed less depths on the shoals areas when compared with the previous survey of 1907. The reason for this is due to the close development and special attention given to these areas in this survey. The old survey shows little if any development on some of the shoals.

The old survey shows 1 3/4 fathoms (see chart No. 8570) 0.9 mile, 188° true from Puffin Island, Light. This sounding should be

retained as no development was made on this shoal by the present survey. Also in Lat. $57^{\circ}-44.5'$, Long. $152^{\circ}-25.6'$ the same chart shows $3\frac{1}{2}$ fathoms. No development was made at this point by the present survey and therefore the old sounding should be retained.

No shoals shown on Chart No. 8570 were disapproved by this survey.

WIRE DRAG GROUNDINGS

1. Lat. $57^{\circ}-45.15'$, Long. $152^{\circ}-25.26'$. Drag set at 40 ft. effective depth, grounded at buoy #2. Sounding of $5\frac{4}{6}$ fms. (M.L.L.W.) obtained on this shoal (see pos. 4 B b, wire drag record). A least depth of 5 fms., reduced to M.L.L.W. was secured on this shoal at pos. 86 aa (P.M.S.).

2. At pos. 16.2 B the drag, set at 42 ft. effective depth, was noted to be touching bottom between buoys N and No. 1. However the buoys did not line up and the dragging was continued until pos. 18.6 where N buoy became fast. A sounding was taken at this buoy which gave $5\frac{4}{6}$ fms., reduced to M.L.L.W. *Soundings slightly under 42 feet obtained by hydrographic party in this area.* The uprights were then shortened to 33 ft., effective depths, and at pos. 19.8 B No. 1 buoy was noted to be touching. However between pos's. No. 23 and 24 it was observed to be free again and progress was continued. No soundings were recorded on the grounding just mentioned because the tender was unable to get a sounding shoaler than the depth of the drag before the grounding terminated of its own accord. It is thought that the drag was caught on submerged kelp rather than on a sunken danger. *Position of supposed grounding very close to 34 ft sounding obtained by drag party. Grounding not plotted. P.S.J.*

The reason for the drag touching at pos. No. 16.2 B is because the drag was set too deep to clear the existing depths as shown in this area by the soundings on sheet No. 11.

3. At pos. No. 56.4 B (Lat. $57^{\circ}-46.57'$, Long. $152^{\circ}-26.36'$) the drag set at 35 ft. effective depth, was observed to touch bottom at No. ~~A~~^B buoy but did not hang up. The reason for this grounding was due to the existence of a shoal in this area with less depth than the drag setting. For complete development of this shoal see sheet No. 11, pos's. 11 to 65 e (S.M.S.)

and pos. 109 e (S.M.S.). Least depth found was $4 \frac{2}{6}$ fms., reduced to M.L.L.W. *It is not clear why the 35 foot drag failed to hang up on the 26 foot shoal. The grounding is not plotted because it is close to the 26 foot sounding on 454412 (733) R.L.G.*

4. Lat. $57^{\circ}-45.67'$, Long. $152^{\circ}-25.54'$.

Drag set at 35 feet effective depth, grounded at N buoy (see pos. 10.2 C). This grounding was probably due to submerged kelp as the N buoy was at this time near the edge of a kelp marked shoal covered with $4 \frac{4}{6}$ fathoms at M.L.L.W. This shoal was developed by the Port motorsailer and is described "Dangers" (see "Dangers" No. 4). In plotting the smooth wire drag work the drag strip beginning at pos. 1 C was terminated at the above grounding because the effective width of the drag from this point onward was of necessity narrowed to ^{such} meet small limits on account of thick kelp growth that ^{it} is of no value. However the drag fetched up at pos. No. 18 C and a depth of $4 \frac{1}{6}$ fathoms was obtained at No. 2 buoy. This area was later developed by the S.M.S. and this shoal sounding was not verified. The least sounding obtained by the motorsailer was 7 fathoms reduced to M.L.L.W. on the sounding proceeding position No. 48 e. No. ~~x~~ three point fix was secured on the $4 \frac{1}{6}$ fathom sounding by the wire drag tender, so its position was plotted

on the pos. of No. 2 buoy where the drag first grounded. This pos. should be considered as approx. as no three point

fix was obtained. *The position of $4 \frac{1}{6}$ fathom sounding is very approx. because the drag strip was so narrow that the position of No. 2 buoy could not be accurately plotted R.L.G.*

This grounding not plotted. Near $4 \frac{4}{6}$ fathom shoal. R.L.G.

5. At pos. 1 D the drag grounded at N buoy with the drag set at 41 feet effective depth. The N buoy was then raised to 31 feet, effective depth, in order to clear the obstruction but the succeeding positions show that the drag did not pass over the obstruction again. However the results of the drag work accomplished from pos. 1 to 4 B-day and from pos. 50 to 55 A-day show this area to be clear to a depth of 40 feet. Hence it is assumed that the depth over the obstruction is between 40 and 41 feet, reduced to M.L.L.W. There is a five fathoms shoal about 100 meters West of this grounding (see sheet No. 11). *This grounding has been plotted.*

6. At position 10.3 D the drag grounded between N and No. 1 buoys. As this grounding was close to a reef already located the drag was reversed and a new start made, avoiding the obstruction. No investigation was made with the Hand Lead.

This grounding not plotted, near a reef.

7. From pos. 20.4 D to pos. 26.6 the drag grounded several times. The reason for this was because the drag was set at a depth exceeding the sounding obtained by the motorsailer in this area. In plotting the smooth sheet this portion of the wire drag strip was omitted.

No groundings plotted in these positions since shoaler soundings were obtained by hydrographic party.

8. At pos. No. 52 D the drag set at 28 feet, effective depth, grounded at No. 2 buoy. Upon raising the upright on this buoy one foot the obstruction was cleared. No pos. angle or sounding was obtained on this grounding. The position of the grounding as shown on the wire drag sheet is that of buoy No. 2 and can only be considered approximate.

This grounding plotted even if its position is approx. The hydrographic party obtained depths of 31 feet

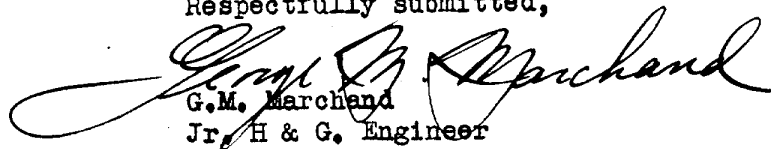
GEOGRAPHICAL NAMES

A list of Geographical Names ^{and Landmarks for Charts} for the area within the limits of this sheet is to be found in the descriptive report of Topographic sheet "E" season of 1933.

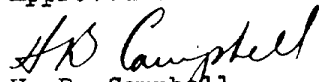
SATISTICS

A table of statistics for this sheet is appended. There is also a tidal note and a table of fathometer corrections for the M.V. Westdahl appended. The fathometer corrections were determined by comparing the fathometer readings with the depth obtained on the vertical casts.

Respectfully submitted,


G.M. Marchand
Jr. H & G. Engineer

Approved and forwarded:


H. B. Campbell
H. & G. Engineer
Chief of party

STATISTICS FOR SHEET, FIELD NO. 11

Vessel	Date 1933	Day Let.	Stat. Mi. Sdg. Lines			No. of Soundings			No. Pos.
			H.L.	Wire	Fath.	H.L.	Wire	Fath.	
WEST.	Aug. 21	BLUE A	----	1.0	16.7	----	29	404	115
"	Aug. 22	B	----	-----	14.6	----	5	341	80
"	Aug. 23	C	----	-----	32.4	----	10	840	180
"	Aug. 26	D	----	1.5	37.3	----	45	802	258
"	Aug. 27	E	----	6.5	-----	----	129	---	82
Totals				9.0	101.0		218	2387	715

P.M.S.	July 25	RED a	15.2	-----	----	480	----	----	128
"	July 26	b	11.2	-----	----	437	----	----	132
"	July 27	c	0.3	-----	----	10	----	----	4
"	July 28	d	4.5	-----	----	175	----	----	51
"	Aug. 14	e	14.7	-----	----	572	----	----	108
"	Sept. 2	f	12.8	-----	----	438	----	----	118
"	Aug. 29	g	4.0	11.1	----	132	209	----	111
"	Sept. 5	h	0.5	-----	----	18	----	----	5
"	Sept. 6	j	14.1	4.1	----	390	103	----	144
"	Sept. 8	k	8.4	14.0	----	264	311	----	180
"	Sept. 9	m	1.5	4.0	----	34	97	----	48
"	Sept. 12	n	10.6	-----	----	544	----	----	192
"	Sept. 15	p	9.8	13.5	----	294	288	----	180
"	Sept. 16	q	-----	9.0	----	3	295	----	123
"	Sept. 18	r	6.9	2.1	----	244	50	----	99
"	Sept. 19	s	6.7	19.0	----	242	446	----	195
"	Sept. 20	t	2.3	12.7	----	84	326	----	148
"	Sept. 21	u	4.9	-----	----	173	----	----	37
"	Sept. 22	v	1.4	5.1	----	219	52	----	76
"	Sept. 23	w	-----	16.7	----	---	340	----	124
"	Sept. 27	x	3.4	14.0	----	132	279	----	144
"	Sept. 28	y	5.3	11.1	----	165	315	----	175
"	Sept. 30	z	0.5	2.2	----	42	90	----	62
"	Oct. 3	aa	8.7	3.4	----	369	155	----	150
"	Oct. 17	bb	-----	-----	----	8	---	----	8
"	Oct. 18	cc	-----	0.3	----	----	13	----	4
Totals			147.7	142.3		5469	3369		2746

STATISTICS FOR SHEET, FIELD NO. 11 (Continued)

Vessel	Date 1933	Day Let.	Stat. Mi. Sdg. Lines			No. of Soundings			No. Pos.
			H.L.	Wire	Fath.	H.L.	Wire	Fath.	
S.M.S.	Sept. 13	a	9.3	----	----	352	----	----	143
"	Sept. 23	b	7.0	3.3	----	219	88	----	90
"	Sept. 27	c	3.4	3.0	----	49	149	----	63
"	Sept. 28	d	----	5.2	----	----	192	----	62
* WHALE.	Sept. 29	dd	----	----	----	9	----	----	9
S.M.S.	Oct. 4	e	3.7	4.4	----	137	180	----	111
Totals			23.4	15.9		768	609		478
<u>GRAND TOTALS</u>			171.1	167.2	101.0	6235	4196	2387	3939

* Included in S.M.S. #2 Whaleboat "dd" Day

No. of sounding volumes S.M.S. ---- 2
 P.M.S. ---- 10
 Westdahl -- 3

No. of Wire Drag records ----- 2

No. of boat sheets (sounding) ---- ~~2~~ 3

No. of boat sheets Wire Drag ----- 2

No. of smooth sheets ----- 2

STATISTICS FOR SHEET, FIELD NO. 0.51

Vessel	Date 1933	Day Let.	Stat. Mi. Sdg. Lines			No. of Soundings			No. Pos.
			H.L.	Wire	Fath.	H.L.	Wire	Fath.	
*****	Oct. 19	RED a	----	----	----	20	----	----	13
*****	Oct. 20	b	1.1	----	----	162	----	----	40
Totals			1.1			182			53

No. of sounding volumes ----- 1

No. of boat sheets ----- 1

No. of smooth sheets ----- 1

STATISTICS FOR WIRE DRAG, SHEET NO. 11 b

Date	Day Let.	Volume	Drag Length	Positions	Miles, Statute	Soundings
September 14	A	1	1200 ft.	68	4.5	-----
September 25	B	1	1200 ft.	64	4.7	3
September 26	C	1	1200 ft.	22	1.1	1
September 29	D	1	1200 ft.	7	6.3	-----
TOTALS				161	16.6	4

BATHYMETER CORRECTIONS USED

DISCOVERER

From 10 fm. to 37 fm. ----- -1 fm.

From 38 fm. to 58 fm. ----- -1/2 fm.

From 59 fm. up ----- 0 fm.

WESTDAHL

<u>Date</u>	<u>Day Letter</u>	<u>From(time)</u>	<u>To(time)</u>	<u>Correction</u>
Sept. 21	A	8:10 A.M.	8:18 A.M.	0 fm.
"	"	8:19 A.M.	9:08 A.M.	-1 fm.
"	"	10:01 A.M.	11:00 A.M.	0 fm.
"	"	11:34 A.M.	11:44 A.M.	0 fm.
"	"	11:45 A.M.	11:52 A.M.	+1/2 fm.
"	"	3:07 P.M.	3:24 P.M.	0 fm.
"	"	3:24 P.M.	3:44 P.M.	-1/2 fm.
Sept. 22	B	8:06 A.M.	8:32 A.M.	0 fm.
"	"	9:10 A.M.	9:20 A.M.	+1/2 fm.
"	"	10:16 A.M.	10:34 A.M.	0 fm.
"	"	10:35 A.M.	12:09 P.M.	+1/2 fm.
Sept. 23	C	7:00 A.M.	7:39 A.M.	0 fm.
"	"	7:50 A.M.	9:03 A.M.	+1/2 fm.
"	"	9:03 A.M.	9:53 A.M.	+1 fm.
"	"	9:55 A.M.	10:29 A.M.	+1 1/2 fm.
"	"	10:55 A.M.	1:25 P.M.	+1 fm.
Sept. 26	D	8:12 A.M.	8:29 A.M.	0 fm.
"	"	8:29 A.M.	9:15 A.M.	-1/2 fm.
"	"	9:15 A.M.	9:30 A.M.	0 fm.

FATHOMETER CORRECTIONS USED (Continued)

WESTDAHL

<u>Date</u>	<u>Day Letter</u>	<u>From (time)</u>	<u>To (time)</u>	<u>Correction</u>
Sept. 26	D	9:31 A.M.	9:37 A.M.	$-\frac{1}{2}$ fm.
"	"	9:46 A.M.	9:56 A.M.	0 fm.
"	"	9:57 A.M.	10:25 A.M.	$+\frac{1}{2}$ fm.
"	"	10:49 A.M.	10:58 A.M.	0 fm.
"	"	11:10 A.M.	11:22 A.M.	$-\frac{1}{2}$ fm.
"	"	11:22 A.M.	12:30 P.M.	0 fm.
"	"	12:30 P.M.	1:15 P.M.	$-\frac{1}{2}$ fm.
"	"	1:17 P.M.	3:34 P.M.	0 fm.
"	"	3:34 P.M.	3:52 P.M.	$+\frac{1}{2}$ fm.
"	"	4:21 P.M.	5:02 P.M.	0 fm.
Sept. 27	E	No corrections		

May 29, 1934

Division of Hydrography and Topography:

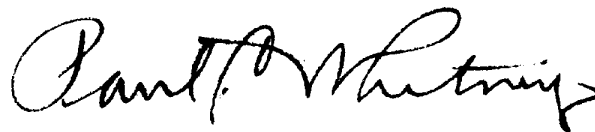
✓ Division of Charts:

Tide Reducers are approved in
15 volumes of sounding records for

HYDROGRAPHIC SHEET 5441 a

Locality **St. Paul Harbor, Kodiak Island, Southwest Alaska**Chief of Party: **H. B. Campbell in 1933**Plane of reference is **mean lower low water, reading****4.0** ft. on tide staff at **Kodiak****19.9** ft. below B. M. **8****Height of mean higher high water above plane of reference is 8.8 feet**

Condition of records satisfactory except as noted below:



Chief, Division of Tides and Currents

May 29, 1934

LUC
82

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in

1 volume/s of sounding records ~~xxx~~ and 2 volumes of Wire Drag Records for

HYDROGRAPHIC SHEET 5441 b

Locality **St. Paul Harbor, Kodiak Island, Southwest Alaska**

Chief of Party: **H. B. Campbell in 1933**

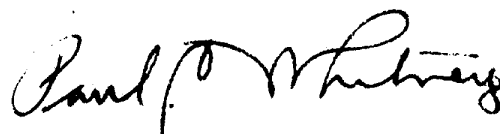
Plane of reference is **mean lower low water, reading**

4.0 ft. on tide staff at **Kodiak**

19.9 ft. below B. M. **8**

Height of mean higher high water above plane of reference is 8.8 feet

Condition of records satisfactory except as noted below:



Chief, Division of Tides and Currents

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. **H-5441-a**

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

	WNB
Number of positions on sheet	3939
Number of positions checked	.138
Number of positions revised	.7 + 20
Number of soundings recorded	12818
Number of soundings revised	.53 (approx)
Number of signals erroneously plotted or transferred	NONE

Date: **JULY 30 - 1934**

Cartographer **W. Warren H. Bamford + E. W. Smith**

Verification of plotting
Verification & laying of rocks & shoals) **W. H. Bamford** Time: **4 DAYS 1 HR**

Verification of laying by **E. W. Smith** Time: **18-days 5 1/2 hours**

Review by **R. J. Christman** Time: **2 1/4 hrs**
R. L. Johnston **33 hrs**

Field Records Section (Charts).

HYDROGRAPHIC SHEET No. **H. 5441-b**

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

Number of positions on sheet	.161
Number of positions checked	9
Number of positions revised	NONE
Number of soundings recorded	4
Number of soundings revised	NONE
Number of signals erroneously plotted or transferred	NONE

Date: **July 30, 1934**

Cartographer: **W.H. Bamford & E.W. Smith**

Verification of pretraoting
Verification & inking ~~of rocks & shoals~~ by **W.H. Bamford**

Time: **3 1/4 HRS**

Verification of inking by **E.W. Smith**

Time: **1 day - 5 1/2 hours**

Review By

R. J. Christman
R. L. Johnston

Time: **7 1/2 hrs**
9 1/2 hrs

SECTION OF FIELD RECORDS

Preliminary report on H-5441b (wire drag)

July 30, 1934.

1. The soundings on this sheet were protracted and checked and appear on the sheet in black ink.
2. The datum note was not placed upon the sheet by the field party.
3. The 4-1/6 fathom sounding referred to in paragraph 4-page 11 of the descriptive report, and found on page 33, Vol 1 of H*5441b sounding volumes--was plotted as being located at buoy number two-which was noted in the records as being in range with "N" buoy and buoy #1. This sounding, not being located by a three point fix, is of course only approximate in location and falls in ~~##~~ depths of 9 1/2 and 10 fathoms ("e" day-Vol. 15- H-5441a). The 1907 survey of this area, i.e. H-2929 is on a 1:20,000 scale and shows a rock awash approximately 80 meters northeast of the questionable location of the 4-1/6 fathom soundings. There is a gap in the sounding lines on H-2929 at the position of the 4-1/6 fathom sounding-the closest being 8 fathoms. It is considered probable that the 4-1/6 fathom sounding is slightly out of position and should be somewhat further northeast.
4. The four soundings shown on this sheet were transferred to H-5441a # and appear in ~~green~~^{blue} on that sheet.
5. The soundings taken close to the docks and plotted on a section of this sheet were verified by visual comparison with the boat sheet and the protracting of a few of the positions.

Respectfully submitted,

Warren H. Bamford.

Note: Copied from original by E.W. Smith

SECTION OF FIELD RECORDS

Verification

Preliminary Report on Hydro.- Sheet No. 5441 a

July 30, 1934.

1. The protracting was checked by visually comparing the smooth sheet with the boat sheets and by protracting some of the positions. The protracting was found to have been very well done. Only 7 of the positions checked were changed. ✓
2. The datum note was omitted from the smooth sheet by the field party. ✓
3. The topography, i.e. islands, reefs, rocks, etc., were found to be very incompletely and inaccurately transferred to the smooth sheet, therefore this was all checked and additions and corrections were made by the verifier. ✓
4. Triangulation station Misty (1933) found on H-5441a was observed to differ in location from station Mist (1933) on Topographic sheet No. T-4845 by approximately 15 meters. Upon investigation it developed that station Misty (1933) was the only station located in 1933 at this point. The erroneous station Mist was removed from the sheet (T*4845) and the position of Station Misty (1933) was plotted and indicated by its proper name. The description of Station Misty 1933 states that it is on the innermost rock of the two bare rocks at this location. As the plotting of station Misty (1933) on the Hydrographic sheet was correct, of course the hydrographic work did not have to be changed. ✓
5. The positions listed on page 3 $\frac{1}{2}$ of the descriptive report with the recommendation to be rejected were investigated and protracted. These soundings are fathometer soundings whereas the soundings which they disagree with are almost entirely wire soundings (~~2~~-day). Of course the wire soundings are more apt to be correct therefore it was considered advisable to omit the fathometer soundings in question until the wire soundings are inked--thus bringing the ## difference between the two into more vivid relief. A number of soundings in this area were omitted by the field party from their belief that "strays" were being read. It is considered probable that this is what caused the apparent discrepancy in the work under present consideration.
6. Crossings of 126-127 C and 136-137 C (listed on page 3 $\frac{1}{2}$ desc. rpt) shows a difference of 5 fathoms i.e. a twenty five fathom sounding plots very close to a thirty fathom sounding. This discrepancy is not general throughout the two lines--but exists only in the case of the two soundings specified above and as the bottom slope is comparatively steep--it is considered advisable to plot both the 25 and the 30 fathom soundings. ✓

Preliminary report on H-5441 a (continued)

7. Crossing of 158-159C and 198-199D shows a difference of 10-fathoms and 8 fathoms. It is considered probable that this caused by reading "strays" (the field party rejected several other soundings in this area, believing that strays had been read). It is therefore recommended that the 48 and 46 fathom soundings before position 199 D be rejected. *Recorded compass courses show that the vessel did not make a straight course between 198-199D. Adjusting for courses and allowing for steep bottom slopes the crossing is fair and the soundings have been retained*
8. The "Dangers & Shoals" listed in the descriptive report on pages 4 to 8 inclusive were all checked, protracted and inked in on the smooth sheet. In most instances a note indicating the least depth of the shoals was also shown on the smooth sheet. ✓ *148*
9. The soundings on the "b" sheet (wire drag) were transferred to this sheet and shown in green. There were only four soundings taken by the wire drag party. ✓

Respectfully submitted,

Warren H. Bamford.

Note: Copied from original by E.W. Smith

SECTION OF FIELD RECORDS

Verification Report on Hydrographic Sheet No. 5441 b

S.W. ALASKA (Kodiak Is.)

Surveyed in : Sept & Oct., 1933.	Instructions dated : March 25, 1933
Chief of Party: H.B. Campbell	Surveyed by: G.L. Bean & R.J. Sipe
Protracted by : C. Weiss	Soundings penciled by: C. Weiss
Topography inked by: Field party	Verified & inked by: W.H. Bamford. & E.W. Smith

The inset portion of Kodiak Harbor on scale 1:5000--the soundings were verified and inked. Upon orders from the Assistant Chief of the Section, the detailed low water line was not inked since the survey is only a dock and wharf detail. Curves could not be completely drawn. ✓

The wire drag portion of the sheet was verified and inked by Mr. Bamford. The detail low water line was not inked by order of the Assist. Chief of the Section. The only drafting done by the office draftsman was adding the geographic names. ✓

Date: Aug. 1, 1934.

Respectfully submitted,

Elbert W. Smith
Elbert W. Smith.

SECTION OF FIELD RECORDS
Verification Report on Hydrographic sheet No. 5441a
S.W. ALASKA (Kodiak Is.)

Surveyed in: July-Oct., 1933.

Instructions dated: March 25, 1933.

Chief of Party: H.B. Campbell

Surveyed by: R.J. Sipe, H.J. Healy,
G.M. Marchand, E.C. Baum,
J.H. Britian, & W.M. Scaife.

Protracted by: C. Weiss.

Soundings penciled: C. Weiss.

Topography inked by: Field Party

Verified & inked by: E.W. Smith,
& W.H. Bamford.

1. The records conform to the general requirements of the Hydrographic Manual with one exception, i.e., none of the hydrography done from the Motor Sailer shows compass bearings, therefore concluding no compass was used. Several instances were encountered when compass headings would have been valuable in verifying cross line soundings. ✓

2. The sounding crossings are adequate. The crossings are good except as listed in the "Preliminary Report". ✓

By order of the Chief of the Section, the discrepancies found in the vicinity of 57-44 and 152-23.5 were handled as follows: All machine ~~lead~~ soundings were inked and all fathometer soundings seemingly in error were left in pencil for further investigation.

The crossing at 158-C to 159-C (blue) and 198-D to 199-D (blue) at 57-44.3 and 152-21.4 was handled as follows by order of the Chief of the Section: Since by checking protracting and by line and time checks no appreciable change of the positions could be made, the fourth sounding after 198-D was displaced slightly to the south and the sounding at 159-C was slightly displaced to the north so both soundings could be plotted. From the slope of the bottom here it seems both soundings could be correct and the ~~discrepancies~~ due to slight displacement of the true location of the positions. ✓

3. The 10 and 20 fathom curves can be completely drawn but the shoaler curves are very incomplete throughout the sheet. The 1, 2, and 3 fathom curves are especially incomplete in the coves and bights. ✓

the vessel did not make a straight line between these two positions as shown by courses steered. The plotting is reasonable, making fair crossings.

4. The field plotting was well done in the open areas and completed to the extent prescribed in the Manual. But, in developed areas, all work was plotted directly to the smooth sheet. Since many of the shoal areas were developed with three different days hydrography, the instructions in the Manual should have been followed and some of the work plotted on an overlay. The net result was that practically every position in developed areas had to be plotted to be located and then soundings re-penciled in order to determine the shoalest depth. This was especially true in cases where lines fell together, and it was found the first line was penciled by the field plotter rather than the shoaler depth. ✓

REPORT ON HYDROGRAPHIC SHEET No. 5441-a

4. (continued)

Special attention is called to a gross error never before encountered by the verifier. In the developed areas where lines crossed often or fell on top of another line, no attention at all was given to time interval spacing in plotting the soundings. That is, if there was 4 soundings between positions, all 4 were crowded into some space clear of any other soundings, regardless of whether it fell near one of the positions or in the middle, and the only respect in which they were plotted according to instructions was that they were on line. Due to the above two facts, verifying and inking of developed areas was extremely difficult and the field plotting a hindrance rather than an aid.

Only When the work was done by fathometer, ~~was~~ the longitude and latitude of the beginning and ending of lines ^{was} given, *but only occasionally in the work of the motor sailors.*

5. The only drafting redrawn in the office was the changing of low water line, reefs, and rocks as indicated in the "Preliminary Report". The curves were penciled contrary to instructions in that the 4 and 6 fathom curves were included and the 1-fathom curve omitted.

6. Junctions with contemporary sheets have not been made because the adjoining sheets are not yet completed.

7. The hydrography is good but the field plotting only fair.

Of the total time spent in verifying and inking the sheet, 15 days, 1½ hours was used in verifying and inking soundings, and 3 days, 4 hours used in checking and inking curves.

Respectfully submitted,

Elbert W. Smith
Elbert W. Smith.

August 28, 1934.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY no. 5441 a & b (1933)

St. Paul and Kodiak Harbors, Kodiak Island, S. W. Alaska.

(April 10, 1931

Instructions dated - (April 21, 1932 - (DISCOVERER)

(March 25, 1933

Surveyed July - October, 1933.

- H. 5441a - Hand Lead, Machine and Fathometer Soundings-3 Point Fixes
on shore signals.
- H. 5441b - Wire drag of entrance channels.

Chief of Party - H. B. Campbell.

Surveyed by - G. L. Bean, W. M. Scaife, R. J. Sipe, H. J. Healey,

G. M. Marchand, E. C. Baum and J. N. Jones.

Protracted and soundings penciled by - C. Weiss.

Verified and inked by - W. H. Bamford and E. W. Smith.

1. Condition of Records.

a. The sounding records conform to the requirements of the Hydrographic Manual, except as follows:

1. In Vol. I of the S. M. Sailer the original entries are too faint.

2. In both motor sailers, the geographic position of beginning and end of day's work or of lines is not recorded.

b. H. 5441a (1933) was completed to the extent prescribed by the Hydrographic Manual, except that -

Islands, reefs, rocks, etc. were found to be very incompletely and inaccurately transferred. They were revised by the verifier.

c. Soundings obtained by the drag party, H. 5441b (1933), were recorded in the wire drag records, instead of a separate sounding volume.

2. Compliance with Instructions for the Project.

The plan and extent of development conform to the instructions for the project except that - the shoal 0.9 mile 188° from Puffin Island light was not resurveyed. (see Descriptive Report, page 9 and 10.)

Detailed statements as to the extent of drift soundings and investigations of individual shoals were made in the Descriptive Report. This practice is commendable, as it furnishes valuable information which cannot be shown on the sheet.

3. Sounding Line Crossings.

Soundings are generally in fair agreement at crossings except in a few places where the slope and irregular bottom may account for the differences.

A discrepancy exists between fathometer and wire soundings in lat. $57^{\circ}44'$, long. $152^{\circ}23'$. The field party recommends that the fathometer soundings be rejected as there was a possibility that strays were being read at the time.

The fathometer soundings are from 1 to 6 fathoms shoaler than the wire soundings in depths of approximately 40 fathoms. There are sufficient wire soundings to cover the area fairly well and the recommendation of field party that the fathometer soundings be omitted has been followed.

4. Depth Curves.

The usual depth curves can be drawn satisfactorily. Inshore curves are necessarily incomplete as heavy kelp and the rocky nature of the coast prevented close development.

5. Junction with Contemporary Surveys.

a. H. 5439 (1933) and H. 5440 (1933) joins the sheet to the east and southeast. The area is adequately covered and the depth agreement is generally as good as may be expected in irregular bottom.

b. H. 2863 (1906).

This survey covers the area from St. Paul Harbor to Spruce Cape. The area east of the northern end of Near Island was covered by the present survey. H. 2863 (1906) is in fair general agreement with the new work, which located several new shoals and obtained shoaler depths ^{over} ~~from~~ the old ones.

Three rocks awash in approximate lat. $57^{\circ}48'.0$, long. $152^{\circ}21'.5$ were located by fixes on H. 2863 (1906). As the present survey does not show them and did not closely cover this area, these rocks were added to H. ^{5331a} ~~5331a~~ (1933).
5441a

c. H. 2863a (1907).

This survey covers only a very small part of the new survey in the area north of Near Island. In this area, H. 2863a (1907) is more complete than the present survey and it should be used in conjunction with H. 5441a (1933) in charting the common area.

d. H. 2929 (1907).

This survey covers the area in St. Paul Harbor surrounding Puffin I. and shows some sounding lines between Kodiak I. and Woody I. Part of this area was resurveyed in 1933 and is generally in fair agreement with the new survey. H. 5441a (1933) is on a larger scale and the development of most of the shoal spots is more intensive, and lesser depths were generally found.

1. A 10 $\frac{1}{2}$ foot sounding from H. 2929 (1907) which was not closely examined in 1933 has been added to H. 5441a (1933) in lat. 57°44'.3, long. 152°26'.5.

2. Another shoal area from H. 2929 (1907) with a least depth of 22 feet (lat. 57°44'.5, long. 152°25'.6) has been carried forward to H. 5441a (1933) because the area was not developed on the latter sheet.

3. The two charted rocks awash in lat. 57°45'.6, long. 152°25'.1 and lat. 57°45'.95, long. 152°25'.05, originate from this survey. These rocks were not shown on contemporary topographic survey, T. 2840 (1907), and no authority could be found for them in the records of H. 2929 (1907), the boat sheet of which has been destroyed. Because there is some doubt as to their existence, these two rocks were not added to the present survey (H. 5441a, 1933) but should be retained on the chart until definitely disproved.

4. Another rock awash shown on H. 2929 (1907) south of the western end of Popof I. (lat. 57°45'.6, long. 152°24'.75) originates from T. 2840 (1907). This rock has been added to H. 5441a (1933).

5. Inshore rocks awash, not shown on the present survey, appear on H. 2929 (1907) in lat. 57°46'.5, long. 152°27'.05 and in lat. 57°45'.8, long. 152°28'.4. These rocks also originate from T. 2840 (1907) and have been added to H. 5441a (1933).

6. A charted rock awash, shown on H. 2929 (1907) in lat. 57°43'.4, long. 152°26'.34, falls in depths over 10 fathoms at the junction of H. 5440 (1933) and H. 5441a (1933). There is no authority in the records of H. 2929 (1907) for this rock which is not shown on the topographic survey of that period, T. 2840 (1907). The rock symbol is apparently erroneous and should be replaced on the chart by the rock awash located on H. 5441a (1933) approximately 270 meters N.N.W. of the old rock.

e. H. 5441b (1933).

This is a contemporary wire drag examination of the channel into St. Paul Harbor. Several groundings occurred without any actual soundings being obtained. Most of these were close to shoaler depths from the hydrographic survey and were not plotted on H. 5441b (1933) for that reason.

1. A marked discrepancy occurs in lat. 57°46'.6, long. 152°26'.3 where a drag strip with an effective depth of 35 feet failed to ground on a 26 foot shoal, mud bottom, developed by the hydrographic party, although the drag was observed to touch bottom. The 26 foot sounding is on a developed shoal 50 meters wide and nearly 200 meters long, on which are seven well distributed soundings of between 26 and 30 feet. The fact that the middle of a drag having a recorded effective depth of 35 feet failed to fetch-up on such an extensive shoal places doubt on the effective depth of the entire drag strip.

Considering the above discrepancy; it is not desirable to chart the limits of the dragged areas.

2. An attempt was made to carry the drag through the passage south of the southern end of Popof I. but the drag grounded in thick kelp. This drag strip (pos. 11c to pos. 22c) was not shown on H. 5441b (1933) because most of the area covered by it had been previously covered by another strip with the same effective depth and on the remaining part the end buoys were drawn so close together that no area was effectively covered. A sounding of $4 \frac{1}{6}$ fathoms was obtained at buoy No. 2 (pos. 21c) but no fix was secured on the sounding. The drag strip was so narrow at this point that the position of No. 2 buoy could not be plotted with any degree of accuracy, however the sounding was plotted in its approximate position. The $4 \frac{1}{6}$ fathom sounding falls in depths of from 8 to 9 fathoms obtained by hydrography but has been added to H. 5441a (1933) because of the irregular character of the area. The position of the $4 \frac{1}{6}$ is considered very approximate and may actually have been taken on the shoal about 100 meters to the northward. The $4 \frac{1}{6}$ should be further investigated.

3. All other soundings and groundings from the wire drag survey, have been added to H. 5441a (1933) in green, but are not of much importance. Drag limits and subdivisions were not verified in detail in the office. The preparation of an Area and Depth Tracing for the drag^{work} on H. 5441b (1933) appears unnecessary as inspection will show the effective depths carried over the areas.

6. Comparison with Prior Surveys.

The surveys of 1906-7 (H. 2863 and H. 2929) are discussed under paragraph 5.

a. T. 2137 (1867).

This topographic survey, scale 1:40,000, also shows some hydrography which is from Russian sources and should be disregarded in charting, since the area is thoroughly covered by surveys by this Bureau.

b. H. 2921 (1907).

This survey covers the area on the eastern side of the Woody Island from the northern to the southern extremity. It is in general good agreement with the present survey except for a few additional rocks shown in the area thickly covered by kelp. (lat. $57^{\circ}47'.5$, long. $152^{\circ}18'.7$). These rocks were located by direction and estimated distances from the ends of sounding lines and were not located on the contemporary topographic survey, T. 2840 (1907). Because of their indefinite locations, these rocks were not transferred to H. 5441a (1933) but a note was placed on that sheet reading "Kelp Bed - Isolated Rocks". Because the present survey shows shoaler depths on the shoals and is more detailed in nature, it is unnecessary to use H. 2921 (1907) for future charting.

c. H. 3016 (1909).

This survey, on a scale of 1:80,000, covers the area southwest from Woody Island. The soundings are in fair general agreement with the present survey but because of the larger scale and more detailed nature of H. 5441a (1933) it is unnecessary to use H. 3016 (1909) for charting.

7. Comparison with Chart No. 8570.

a. The sunken rock P. D., in the channel between Puffin Island and Discovery Reef was charted by authority of Chart Letter No. 440 of 1928. The letter reports that the S. S. Admiral Evans touched bottom lightly but does not give the exact position of the vessel nor its draft. They obtained a four fathom sounding. (state of tide not given). The present survey, H. 5441a (1933), found depths of $4 \frac{2}{6}$ fathoms in about this position and located two shoals about $\frac{1}{4}$ mile northward (least depths $1 \frac{1}{6}$ and $2 \frac{4}{6}$ fathoms). Because of the indefinite location of the grounding, the recommendation of the field party that the P. D. sunken rock be removed from the chart and be replaced by the shoals from H. 5441a (1933) is concurred in. (See Descriptive Report, p. 3).

b. The $3 \frac{1}{2}$ fathom sounding charted in lat. $57^{\circ}47'.5$, long. $152^{\circ}21'.2$ is from a preliminary report by the present field party, (Chart Letter No. 644, 1933). The least depth found on this shoal by a drift sounding examination (pos. 7 and 8bb) was 4 fathoms which should replace the $3 \frac{1}{2}$ on the chart.

c. A sounding of $3 \frac{4}{6}$ fathoms was obtained at the position of the 4 fathom depth reported by the present field party in Chart Letter No. 596 - 1933, in lat. $57^{\circ}47'.0$, long. $152^{\circ}22'.1$. The $3 \frac{4}{6}$ should replace the 4 on the chart.

d. All other preliminary depths reported in Chart Letters Nos. 570 and 598 - 1933, agree well with the final results of the survey.

e. Aids to navigation as located on the present survey are in substantial agreement with their charted positions.

f. In other respects, within the area of the present survey, the chart is based on surveys discussed in the foregoing paragraphs and contains no additional information that needs consideration in this review

8. Field Plotting.

The protracting and penciling of soundings was well done except that there was a tendency to plot soundings in any open space on the lines irrespective of the recorded time. This necessitated office corrections of a large number of penciled soundings before they could be inked. The use of overlays as directed by the Hydrographic Manual would have improved the legibility in the crowded areas.

9. Additional Field Work Recommended.

For future consideration.

a. The shoal indication ---- in lat. $57^{\circ}45'.7$, long. $152^{\circ}22'$ should be developed.

b. The western end of the channel between Near Island and Crooked Island is not fully developed.

c. The correct location for the $4 \frac{1}{6}$ fathom sounding, obtained by the wire drag party in lat. $57^{\circ}45'.6$, long. $152^{\circ}25'.2$, should be determined. Par. 5e, this review. Since no fix was obtained at the sounding, and no cuts recorded from either drag launch, its present position is very approximate.

d. The two charted rocks awash from H. 2929 in lat. $57^{\circ}45'.6$, long. $152^{\circ}25'.1$ and lat. $57^{\circ}45'.95$, long. $152^{\circ}25'.05$, (discussed in paragraph 5d) should be investigated and their existence definitely verified or disproved.

10. Superseding Old Surveys.


Within the area covered, the present survey, with indicated additions from previous surveys, will supersede the following surveys for charting purposes:


T. 2137 (1867)	entirely.
H. 2921 (1907)	in part.
H. 2929 (1907)	in part.
H. 2863 (1906)	in part.

11. Reviewed by - R. J. Christman and R. L. Johnston, November 1934.


Supervised by - A. L. Shalowitz.

Examined and approved:

C. K. Green, 
Chief, Section of Field Records.


Chief, Section of Field Work.


Chief, Division of Charts.


Chief, Division of H. & T.

Applied to Chart No. —

8534 by James W. McGuire (1935).

8535

8545 (1935), 1:10,000 & 1:20,000. J. W. McGuire.

25 Jun 24, 1936

8546 ~~XXXXXXXXXX~~ 1/10,000. Same ^{map} G. 5/21/42.