6573

Form 504
Rev. Dec. 1933

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

~~Topographic~~
Hydrographic } *Sheet No.* 6573

State Aleutians Islands

LOCALITY

North of Islands of Four Mountains, Bering Sea

~~193~~
1940

CHIEF OF PARTY

R.D.Horne

U.S. GOVERNMENT PRINTING OFFICE: 1934

6573

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

Form 537
Ed. Dec. 1930

REG. NO. H6573

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

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. 161 - 40

REGISTER NO. H-6573 [redacted]

State ~~Alaska~~ Aleutian Islands

General locality ~~Aleutian Islands~~ Bering Sea

Locality North of Islands Of Four Mountains

Scale 1:160,000 Date of survey July 29 to Sept. 13, 1940

Vessel PIONEER

Chief of Party Roland D. Horne

Surveyed by Ship PIONEER

PLOTTED
~~Protracted~~ by S. B. Grenell

Soundings penciled by S. B. Grenell

Soundings in fathoms ~~feet~~ fathoms

Plane of reference no tide reducers entered

Subdivision of wire dragged areas by

Inked by Harold W. Murray

Verified by do

Instructions dated HT-218, February 3, 1938

Remarks: Smooth sheet plotted in the Oakland Processing Office

U. S. GOVERNMENT PRINTING OFFICE

DESCRIPTIVE REPORT
To accompany

HYDROGRAPHIC SHEET H-6573

Ship PIONEER, 1940, Roland D. Horne, Commdg.

LOCALITY: Bering Sea, north of the Islands of the Four Mountains and Yunaska Island.

INSTRUCTIONS: HT-218, dated February 3, 1938.

SURVEY METHODS:

All hydrography on this sheet was executed by the Ship PIONEER using a Dorsey III indicator for soundings. This indicator was keyed to 324 type oscillators and readings were made on the 100 and 1000 fathom dials in combination. For further information relative to fathometer operation, calibration and reducers, see special report on Fathometer Corrections, Ship PIONEER, 1940, previously submitted.

Although a few visual fixes were obtained on the inner ends of some lines, these were generally weak and were plotted as supplementary control with bomb positions. Primarily the control of sounding lines was by standard RAR procedure in accordance with the Hydrographic Manual and additional INSTRUCTIONS.

Three sono buoys were maintained simultaneously throughout the season but were shifted from time to time to new locations and renamed or renumbered. The following is a list of sono buoy names, locations and dates established and discontinued.

NAME	Lat. and Long.		FROM	TO
East	53°-17′	1284 m	7/18	(lost at end of season)
	168-38	832 m		
Mid	53-05	164 m	7/18	8/1
	169-47	567 m		
Carl	53-01	634 m		
	169-56	136 m	8/4	8/14
Carl 2	53-01	357 m	8/15	End of season
	169-56	572 m		
West	52-41	327 m	7/12	9/08
	170-44	590 m		
West 2	52-41	437 m	9/09	End of season
	170-44	623 m		

Buoy EAST was located by checked sextant fix on a photostat of a 1:20,000 scale hydro sheet. This buoy, established at the beginning of the season, gave scattered returns on A and D days near the east edge of the sheet but failed to give returns after D day, although it was serviced and adjusted and remained in position until near the end of the season.

Buoy MID was located by checked sextant fix on a 1:20,000 scale sheet. This buoy gave good returns while in operation but excessive currents - estimated at 4 to 5 knots - at this location wrecked two buoys so the buoy was finally removed and replanted as CARL.

During servicing operations buoy CARL was moved a short distance and redesignated as CARL 2. Considerable difficulty was experienced with this buoy in determining the sensitivity adjustment due to strong currents and loud water noises. This buoy gave fairly consistent returnd when the current was at a minimum. The maximum current at this location was probably in excess of four knots.

Buoy WEST was established at the beginning of the season and remained in operation until the sheet was completed. This buoy was moved slightly and redesignated as WEST 2 but the change in position was less than the combined scope so a mean position was used to construct the time arcs for plotting the smooth sheet. This buoy was located by checked sextant fixes on a 1:60,000 scale triangulation control sheet. The returns from WEST and WEST 2 were the most consistent and reliable of all the buoys, although, for most of the area surveyed, it was at a greater distance than MID or CARL. The longest bomb return received was 139 seconds fron buoy WEST.

Probably one difficulty in securing good bomb returns is due to the very broken bottom along the south half of the sheet. It was noted that certain buoys never gave returns in certain areas. This was particularily true for all buoys when the ship was operating over the deep valley extending eastward from the west edge of the sheet in Latitude 53° - 30'.

PROCESSING NOTES:

In smooth plotting the sheet, the bomb control was rather inadequate, especially in the off-shore sections, but the dead reckoning data combined with the bomb returns gave adequate control for all lines. This was indicated by the general excellence of all crossings and particularily so in those areas of broken bottom, where line displacement would have disrupted the pattern of ridges and valleys brought out by the system of depth curves.

In determining the final velocity to be used on the smooth sheet, several factors were taken into consideration. All sextant fixes, on which bomb returns were secured, were plotted on the smooth sheet and the distances to sono buoys carefully scaled. The resultant velocities are shown in a separate table at the end of this report. The theoretical velocities, taken from the fathometer report, were carefully considered but these ranged from 1470 mps, for the layer from 0 to 200 fathoms, to 1501 mps, for the layer from 1400 to 1600 fathoms. Since the sound wave traveled over very broken bottom with depths varying from 30 fathoms at the buoys to 1600 fathoms in the deep valleys, it was difficult to determine the value or combination of values to use. The preliminary velocity used on the boat sheet was 1472 mps but a careful study of all 3-bomb returns indicated that this value was too high.

Returning again to the velocity-test values, we find the mean to be 1466.9 mps. (refer to table for system of rejections etc.) A final velocity of 1467 mps was approved by the Chief of Party and adopted for all buoys and all areas of the smooth sheet. It is probable that different velocities should be used for some buoys and for certain sections of the sheet, but the data obtained are so incomplete that no differentiation for area could be made. The final velocity of 1467 mps gave much better intersections than the boat sheet velocity of 1472 mps.

No tide reducers were entered in the sounding volumes. The combined fathometer reducer for index and velocity is taken from the table on page 12 of the special report on "Fathometer Corrections, Ship PIONEER, 1940". All soundings taken at 2 minute intervals or longer are plotted on the sheet. When soundings were taken at one minute interval, alternate soundings only are plotted or carefully selected soundings at odd interval. All soundings plotted when space permitted

On the surveyed area of this sheet, bottom characteristics were obtained only where serial temperatures were taken. A list of the dates and locations of these serials follows: Plotted on sheet

DATE	LAT. & LONG.	DEPTH	BOTTOM
7/13	53° - 09'.4 169 - 47.5	312.8	bk. S & P
8/18	54 - 21.0 170 - 10.0	1033	gn. M
9/3	53 - 58.0 170 - 29.5	1043	gn. M
9/12	52 - 58.5 170 - 42.3	728	M

DISCREPANCIES:

In general the crossings are excellent. Apparent discrepancies of 10 to 30 fathoms are of very little importance where the depths are 1000 fathoms or over, or in the shoaler areas where the bottom is changing rapidly or is very broken.

The only actual crossing disagreement, which does not reconcile the depth curve system, is in Lat. 53° - 30'; Long. 170° - 30'. It is my belief that the soundings between 4S and 5S are too deep by about 30 fathoms (in 1300 fathoms). This may have been caused by a temporary failure of the fathometer. Apparently the echo was not returning satisfactorily at this point as there are several misses before and after position 4-5S Soundings omitted.

DANGERS:

There are no dangers to navigation on this sheet.

CHANNELS:

There are no channels on this sheet.

COMPARISON WITH PREVIOUS SURVEYS:

There are no previous surveys of the area covered by this sheet.

COMPARISON WITH CONTEMPORARY SURVEYS:

This sheet makes a junction with two contemporary surveys. On the east a junction is made with excellent agreement between soundings with a sheet, H-4413, scale 1:120,000, RAR control, executed by the Ship PIONEER in 1938. A copy of the smooth sheet of this survey is not available in the processing office for inspection of depth curve agreement. On the south there is a junction with a 1:80,000 scale survey executed simultaneously by the Ship EXPLORER. The latter sheet is now being processed in this office. The registry number of the survey is H-6568. The junction is roughly along the 500 fathom curve but the depths vary from 265 to 700 fathoms over very rough bottom broken into an intricate pattern of ridges and deep valleys.

On H-6568 the lines are more closely spaced and the depth curve system on the boat sheet is quite complete. These depth curves have been transferred by pantograph to this smooth sheet and are shown as dotted lines to carry out the ridge and valley pattern beyond the limits of the soundings plotted. These dotted curves were of considerable assistance in determining the depth curve trends on this sheet. It is suggested that a careful comparison of depth curves be made in the Washington Office when the smooth sheet of H-6568 is forwarded.

GEOGRAPHIC NAMES:

Geographic names of land areas appearing on this sheet are shown on previous surveys of the Ship PIONEER and contemporary surveys of the Ship EXPLORER, 1940.

Respectfully submitted, June 18, 1941,

S. B. Grenell, H. & G. Engr.,
Officer in Charge,
Oakland Processing Office.

H6573

STATISTICS HYDROGRAPHIC SHEET H-6573

DATE 1940	DAY	POSITIONS BOMB	POSITIONS D. R.	SOUNDINGS FATHOMS	STATUTE MILES
July 29	A	47	12	368	160.6
" 30	B	17	2	116	49.9
Aug. 1	C	40	10	333	163.1
" 4	D	29	9	223	113.0
" 5	E	20	6	151	67.9
" 15	F	19	4	34	55.0
" 18	G	24	4	204	91.1
" 20	H	26	2	203	83.7
" 21	J	26	5	221	83.2
" 22	K	30	1	231	96.0
Sept. 2	L	8	1	52	15.0
" 3	M	20	1	152	72.2
" 4	N	37	4	255	138.0
" 5	P	31	10	202	90.1
" 9	Q	10	1	96	44.2
" 10	R	36	8	240	134.6
" 11	S	29	6	186	100.5
" 13	T	8	1	38	14.9
TOTALS		457	87	3305	1573.0

TOTAL AREA, Sq. Stat. Mi. 4500

Four vertical casts only were taken and are shown separately with the list of serial temperatures.

Visual fixes are listed separately under Velocity Tests and are shown on the smooth sheet as short-dash lines in black. The arc of each sextant angle is plotted separately. There were several cases where one angle only was obtained and this is plotted in conjunction with the bomb returns.

6573

VELOCITY DETERMINATIONS:

POSITION NUMBER	VELOCITY BUOY CARL 2	VELOCITY BUOY WEST	MEAN VELOCITY CARL 2 & WEST	
8J	1455.4 mps	1467.9 mps	1461.6 mps	
14J	1472.6	1463.2	1467.9	
19J	1471.2			
28J	1466.1	1459.4	1462.8	1465.7 is mean of four simultaneous C2 & W.
8M		1471.7		
9M	1456.5			
6Q	1461.2	1469.9	1470.6	
1S		1466.5		
8S		1472.3		
Vel. Test *	1472.5			
	330 fms	530 fms		
MEAN EACH BUOY	1465.1	1468.7		

Mean dist: 310' = 39 ∞

MEAN BOTH BUOYS 1466.9 mps

ACCEPTED VALUE 1470.0 mps

* This value is a mean of 9 bomb returns from CARL2 fired from the vicinity of buoy WEST. This value was not weighted because the bomb wave path was over shallow, broken bottom and not within the area sounded. See Vel. Test, Volume 2, pages 49 & 50.

The above table are the retained values only after all values above 1490 mps and below 1450 mps were rejected. The values seem quite ragged but this is probably due to the fact that the fixes were taken on very distant mountain peaks in hazy weather and the angles are very small. Several of the fixes retained were close to "swingers" which would give uncertain results.

LIST OF SIGNALS SHEET H-6573

ALL TRIANGULATION:

King	1939		
End	"		
Snow	"		
Prom	"		
Calf	"		
Dove	"		
Elk	"		
Herbert Peak	1938		
Tit	"		
Knee	"		
Carlisle Peak	"		
Lisle	"		
Tip	"		
Mt. Cleveland	"		
West Peak	"		
Jet	"		
Kagamil Peak	"		
Max	"		
Keg	"		
Ross	"		
Uliaga Peak	"		
Joe	date unknown		1940
Vesevidof Peak	"	"	1938
Niggerhead	"	"	1937-38

PROCESSING OFFICE STATEMENT:

The boat sheet and all records, with the fathometer reducers entered and checked in the sounding volumes, were received at the processing office on October 16, 1940. The sounding volumes were reduces and checked and the smooth sheet prepared by the personnel of the Processing Office. The smooth sheet was plotted, soundings pencilled, depth curves drawn and descriptive report written by the undersigned.

The accepted velocity and method of plotting the sheet was approved by the Chief of Party, Roland D. Horne. A copy of this Descriptive Report is being forwarded to the Chief of Party at Los Angeles, for his information.

Respectfully submitted,

S. B. Grenell, H. & G. Engr.,
Officer in Charge,
Oakland Processing Office.

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. June 1937

TIDE NOTE FOR HYDROGRAPHIC SHEET

July 5, 1941

Division of Hydrography and Topography: Coastal Surveys

Division of Charts: Attention: Mr. H. R. Edmonston.

Plane of reference approved in
3 volumes of sounding records for

HYDROGRAPHIC SHEET 6573

Locality North of Islands of Four Mountains, Aleutian Islands

Chief of Party: Roland D. Horne in 1940
Plane of reference is
ft. on tide staff at
ft. below B. M.

Since all soundings are greater than 100 fathoms, no tide reducers are necessary.

Condition of records satisfactory except as noted below:

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 154337

GEOGRAPHIC NAMES

Survey No. H6573

[redacted]

Name on Survey	On Chart No. A,	On previous survey No. B,	On U. S. quadrangle Maps C,	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Islands of Four Mts.										1
Bering Sea										2
Yunaska I.										3
										4
										5
										6
										7
										8
										9
										10
										11
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										24
										25
										26
										27
										M 234

Names underlined in red on this sheet by L. Heck on 8-7-41

	Remarks	Decisions
1		525695
2		U.S.G.B
3		525705 "
4		
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27		

M 234

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. ..H6573 [redacted]

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

Number of positions on sheet	544
Number of positions checked	11.
Number of positions revised	✓
Number of soundings recorded	3305
Number of soundings revised	18
Number of soundings erroneously spaced	27
Number of signals erroneously plotted or transferred	✓

Date: July 24, 1941

Verification by Harold W. Murray Time: 25 hrs.

Review by Harold W. Murray Time: 4 "

2629

HYDROGRAPHIC SURVEY NO. H6573 [redacted]

Smooth Sheet One

Boat Sheet One

Records; Sounding 3 Vols., Wire Drag ___ Vols., Bomb 1 Vols.

Descriptive Report Yes

Title Sheet Yes

List of Signals Yes

Landmarks for Charts (Form 567) No

Statistics Yes

Approved by Chief of Party Yes

Recoverable Station Cards (Form 524) None

Special Chart for Lighthouse Service -----
(Circular Nov.30, 1933)

Hydrography: Total Days 18 ; Last Date Sept. 13, 1940

Remarks (1) cahier containing Fathometer Corr. and folder of R.A.R. Abstracts. Included with sounding volumes is one volume of Buoy locations.

2776

FORM M-238

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
DESCRIPTIVE REPORT
~~PHOTOSTAT COPY~~

No. H H6573
~~No. T~~
([redacted])

received June 25, 1941
registered June 26, 1941
verified
reviewed
approved

This is forwarded in order that your attention may be directed to the matters as indicated below. Please initial in column 3 as an acknowledgement that your attention has been thus directed. The complete original records are available if desired. If you cannot give this your immediate attention, please initial, note, and forward to the next section marked, calling for the records at your convenience.

ROUTE		Initial	Attention called to
20			
22			
24			
25			
26			
30			
40			
62			
63			
82			
83			
88			
90			

RETURN TO

82	T. B. Reed

✓ JBOR

DIVISION OF CHARTS

SURVEYS SECTION

REVIEW OF HYDROGRAPHIC SURVEY No. 6573 (1940) FIELD NO. 161-40

Alaska, Aleutian Islands, North of Islands of Four Mountains
Surveyed July 29 - September 13, 1940, Scale 1:160,000
Instructions dated February 3, 1938 (PIONEER)

Soundings: Dorsey Fathometer No. III

Control: RAR - Sono Buoys - Visual Fixes on Shore Signals

Chief of Party - Roland D. Horne
Surveyed by - Roland D. Horne
Protracted by - S. B. Grenell
Soundings plotted by - S. B. Grenell
Verified and inked by - Harold W. Murray
Reviewed by - Harold W. Murray, July 25, 1941
Inspected by - H. R. Edmonston

1. Shoreline and Signals

Such shoreline as is shown originates with 1940 plane table surveys T-6743 to T-6748 and T-6750 to T-6752, inclusive.

Horizontal control is furnished principally by RAR with sono-radio buoys and supplemented by a few visual fixes on shore triangulation stations. Although three sono buoys were established, triple arc intersections were rare due to broad irregularities in bottom and excessive currents (5 knots) which introduced loud water noises.

2. Sounding Line Crossings

Agreement of sounding line crossings is satisfactory. A portion of the soundings on 4 - 5 "S" day (Lat. 53° 30', Long. 170° 30') which was discussed in the Descriptive Report has been omitted. These soundings were preceded by a fathometer miss and were alternately either too deep or too shoal.

3. Junctions with Contemporary Surveys

a. The junction with H-6413 (1938) on the east is satisfactory. Agreement of depths on both surveys in the vicinity of Lat. 54° 10', Long. 169° 30' could be improved if the weaker controlled line on the present survey were shifted slightly westward.

This shift was not accomplished since the differences are unimportant for charting purposes.

b. Junctions with other surveys will be considered when that work is received from the field.

4. Depth Curves

The usual depth curves of 100-fathom intervals may be satisfactorily drawn.

5. Comparison with Prior Surveys

No prior surveys have been made in this area by this Bureau.

6. Comparison with Chart 8802 (New Print date 5-7-1941)

Hydrography on this small scale chart is very sparse and limited to a few track dead reckoning soundings. Some of these originate with Bp. 25934 and were obtained by the Coast Guard vessels TAHOE and HAIDA in 1932. Many of these soundings are in good agreement with respect to their weak control but others are several hundred fathoms too shoal and are obviously displaced in position. Inaccuracies in positions of the charted soundings are partly due to the fact that the topographic features in this region are several miles out in both latitude and longitude. The present survey supersedes this information.

7. Compliance with Instructions for the Project

The survey satisfactorily complies with the instructions for the project.

8. Condition of Survey

a. The sounding records are neat and legible.

b. The plotting of positions and soundings was satisfactory.

c. The Descriptive Report was clear and comprehensive and adequately considered all items of importance.

9. Additional Field Work Recommended

This is an excellent survey and no additional field work is necessary.

10. Superseded Surveys

No prior surveys have been made by this Bureau in this area.

Examined and approved:

Thos. O. Reed
Chief, Surveys Section

J. S. Borden
Chief, Division of Charts

C. T. Green
Chief, Section of Hydrography

G. G. Rude
Chief, Division of Coastal Surveys

Applied to Cht.	9302	9-26-41	K.F.
" " "	8802	11-17-41	J.F.W.
" " "	8861	2/25/42	J.F.W.
" " "	9030	4/20/42	G.H.S.