

7977

Diag. Cht. Nos. 8863-3 & 9000-1

25-218

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. EX-10152 Office No. H-7977

LOCALITY

State ALASKA

General locality ALEUTIAN ISLANDS

Locality *Off the* DELAROF ISLANDS

1952

CHIEF OF PARTY

LIBRARY & ARCHIVES

DATE MAR 24 1953

B-187C-1 (1)

Shoal up edge. consider final application

11167

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.

REGISTER No. H-7977

Field No. EX-10152

State Alaska

General locality Aleutian Islands

Locality Off the Delarof Islands

Scale 1:100,000 Date of survey 19 May 1952 - 13 Sept. 1952

Instructions dated 19 March 1952

Vessel EXPLORER

Chief of party G. L. Anderson

Surveyed by F. R. Gossett, J. C. Tison, E. F. Hicks, C. A. Schoene, D. M. Whipp

Soundings taken by fathometer, ~~graphic recorder, hand lead, wire~~ 808 No. 60 808 No. 113S
NMC No. 54 NMC-2 No. 60

Protracted by J. E. Guth, R. F. Lanier, H. A. Garcia

Soundings penciled by R. C. Munson

Soundings in fathoms ~~feet~~ at ~~XXXX~~ MLLW

REMARKS:

772

Descriptive Report

To accompany

Hydrographic Sheet H-7977

Field No. EX-10152

Delarof Islands, Alaska

1952

Scale 1:100,000

USC&GSS EXPLORER, G. L. Anderson, Comdg.

Surveyed by: F. R. Gossett, J. C. Tison, E. F. Hicks,
C. A. Schoene, D. M. Whipp.

A. PROJECT:

The field work on Sheet EX-10152 was executed in accordance with instructions for Project No. CS-218 dated 19 March 1952.

B. SURVEY LIMITS AND DATES:

This survey covers the general area between Amchitka Pass on the west and Tanaga Island on the east.

The outside perimeter of work on Sheet EX-10152 is joined by the following sheets:

On the east, H-7023 (1944)
On the north, H-7978 (EX-30152), H-7806 (1950)
On the west, H-7804 (1950), H-7891 (1950), H-7805 (1950)
On the south, H-7978 (EX-30152)

Areas inside the survey have been executed on the following sheets:

H-7051 (1944)
H-7974 (EX-2152) Amatignak Island (inshore hydrography)
H-7926 (EX-2352) Gareloi Island (inshore hydrography)

7976
E.S.D.

- H-7053 (1945) Ulak Island (inshore hydrography), Tanadak Island (inshore hydrography).
H-7038 (1944)
H-7039 (1944) Skagul Island (inshore hydrography), Ogliuga Island (inshore hydrography), eastern half of Kavalga Island (inshore hydrography).
H-7052 (1945) Western half Kavalga Island (inshore hydrography)
H-7975 (EX-2252) Ilak Island (inshore hydrography).

Hydrographic work was started on 19 May 1952 and ended 13 September 1952.

Specific Items 2, 3, 4, 5, 9, 10, 13, and 16, Preliminary Review Project CS-218, Chart 8863, were investigated in this survey.

C. VESSEL AND EQUIPMENT:

All hydrography on this sheet was accomplished with the Ship EXPLORER and the following graphic recorders were used:

808 No. 60
808 No. 113 S
NMC No. 54
NMC2 No. 60

The turning radius of the EXPLORER at standard speed is 275 meters full left about and 360 meters full right about (from old descriptive report).

D. TIDES AND CURRENT STATIONS:

The reductions for tides were based on Lash Bay without correction, (see letter on Tidal Data, 1952 Season, 15 October 1952). MLLW on staff was 1.8 feet. Tide corrections were omitted for soundings greater than 200 fathoms.

Portable tide gages were installed at Tanaga Island (Lash Bay), Ogliuga Island and Ulak Island. A graph of tide reducers used accompanies the field records for this sheet.

Current observations were made with the Roberts Radio Current Meter at the following locations:

- Station No. 19, SW of Ilak Island (Lat. $51^{\circ}-24.0$ Long. $178^{\circ}-32.8$) - 28 hours .
Station No. 21, SE of Gareloi Island (Lat. $51^{\circ}-44.5'$ Long. $178^{\circ}-44.5'$ W) 123 hours.
Station No. 26, between Ulak and Amatignak Islands (Lat. $51^{\circ}-18.7'$ Long. $179^{\circ}-02.1'$) - 80 hours.

A radio current buoy was planted at Station No. 25, west of Unalga Island. This buoy was lost (apparently sunk, see letter on

subject) after only a few hours of observations.

A radio current buoy was planted at Station No. 13, west of Tanaga Island (Lat. $51^{\circ}-39.8'$ Long. $178^{\circ}-13.0'$). This buoy went adrift after 8 hours of observation; however, the buoy and current meter were recovered before the radio stopped sending returns.

F. SMOOTH SHEET:

The smooth sheet projection was made by the Seattle Processing office. They also plotted all Shoran and EPI arcs.

There were no Topographic details transferred to this sheet other than the shoreline.

Transfer of shoreline was mostly taken from old hydrographic charts and bromoil prints. It was transferred in pencil by the processing office.

F. CONTROL STATIONS:

Shoran stations NAL (Unalga Island), UGA (Ogliuga Island), TAN (Tanaga Island), LAN (Floating station - Launch #3 - just north of Tanadak Island), and EPI stations AM (Amchitka Island), AT (Attu Island), and TA (Tanaga Island) were used for control of hydrography.

EPI station AT was located by the USC&GSS PIONEER and the EPI station AM was located by the USC&GSS PATHFINDER.

The method used by the EXPLORER in locating the Shoran stations NAL, UGA, and TAN, and the EPI station TA are discussed in the triangulation report. Triangulation stations were located in 1943, 1944, 1945, and 1950 by L. C. Wilder, C. D. Meaney, C. Pierce, G. C. Mattison, chiefs of party.

Shoran station LAN was located by sextant angles and positions computed. An abstract of angles and computations are attached to this report.

G. SHORE LINE AND TOPOGRAPHY:

The only shoreline and topography on this sheet was drafted in pencil and reduced from old hydrographic charts and bromoil prints. There was no attempt to maintain complete accuracy or define a high water line.

H. SOUNDINGS:

All depths were measured by standard echo-sounding instruments. Corrections are discussed in a separate fathometer report. No corrections other than index, initial, phase, draft, and squat and settlement were applied, in accordance with the instructions of project CS-218. An abstract of corrections is appended to this report.

I. CONTROL OF HYDROGRAPHY:

Hydrography was controlled, up to mid-season, mostly by distances from two EPI stations (TA, AT, or AM). Most of the deep sounding was done with EPI control.

Shoran distances from two Shoran stations ~~Shoran stations~~ (NAL, UGA, TAN, or LAN) was used extensively after mid-season to control the hydrography on this sheet.

At advantageous times, distances from one EPI station and one Shoran station were combined to control the hydrography.

J. ADEQUACY OF SURVEY:

This is a complete and comprehensive survey and is adequate to supersede prior surveys for charting.

Junctions with adjoining surveys were compared on the boat sheet and are satisfactory. Slight differences can be noted, but it may be accounted for by the rough irregular bottom where small horizontal displacement can cause considerable difference in depth. Taking this into consideration, depth curves can be adequately drawn.

K. CROSSLINES:

About six per cent of crosslines were run on this survey.

The depths at crossings are in general agreement throughout the survey.

L. COMPARISON WITH PRIOR SURVEYS:

This is a complete comprehensive survey and should supersede all prior surveys.

Junctions with prior surveys were compared and found to be satisfactory. (See B for list of adjacent surveys.)

M. COMPARISON WITH CHART:

Specific Items 2, 3, 4, 5, 9, 10, 13, and 16 noted in PRELIMINARY REVIEW Project CS-218 (Chart 8863) were completed.

Specific item No. 2 was surveyed and a least depth of 21.3 fathoms was found. (Lat. $51^{\circ}-35.6'$ Long. $178^{\circ}-06.8'$)

Specific item No. 3 was surveyed and least depth of 53.2 fathoms was found. (Lat. $51^{\circ}-31.8'$ Long. $178-19.6'$)

Specific item No. 4 - The shoal areas referred to were surveyed and not found. These areas were probably misplaced and could be in the shoal area a mile eastward. This is in agreement with the depths of surveys H-7049 and H-7051.

Specific item No. 5 was surveyed and found to agree satisfactorily with H-7049.

Specific item No. 9 was surveyed and found to be in agreement with the Navy trackline on BP 36269 and not with chart 8863.

The Navy track line (Lat. $51^{\circ}-12.0'$ Long. $179^{\circ}-00.0'$ to Lat. $51^{\circ}-24.0'$ Long. $178-00.0'$) in the PRELIMINARY REVIEW, in comparison with this survey, is set approximately one mile too far south. The Navy track line two or three miles to the north of the previous one, is approximately in the correct position.

Specific item No. 10 was surveyed as recommended. The depths agree satisfactorily with the prior survey, H-7805 (1950).

Specific item No. 13 was surveyed as recommended. The depths agree satisfactorily with the prior survey, H-7038 (1945).

The large shoal area under Specific item No. 16 was developed. The depths agree satisfactorily with the prior survey H-7051 (1945). The least depth obtained was 43.3 fathoms.

N. DANGERS AND SHOALS:

This survey is all offshore hydrography. Inshore surveys on other sheets are discussed in separate descriptive reports.

There were no charted dangers in this survey and none were found.

Principal shoals surveyed are noted under M.

O. COAST PILOT INFORMATION:

Because this is an offshore survey there are no desirable anchorages.

Tanaga Pass is a natural channel with no dangers. The pass is easily navigated by using mid-channel courses. Tide rips are quite pronounced especially with the current setting in a southerly direction.

Normal weather conditions prevail.

There was a radio current buoy at Station No. 19, SW of Ilak Island (Lat. $51^{\circ}-24.0'$ Long. $178-32.8'$).

See season's Coast Pilot Report for additional information.

P. AIDS TO NAVIGATION:

No floating or fixed aids to navigation exist within the limits of this survey.

Q. LANDMARKS FOR CHARTS:

No landmarks are recommended for charting. The individual island landmarks are discussed in separate descriptive reports. See Form 567 submitted for 1952 season.

R. GEOGRAPHIC NAMES:

Geographic names on this survey are covered in the descriptive reports of inshore surveys.

S - Y Not applicable.

Z. TABULATION OF APPLICABLE DATA:

W 44 H 1977
Fathometer Report, Ship EXPLORER, 1952 forwarded to office.
Triangulation Report, Ship EXPLORER, 1952 forwarded to office. in library
Shoran Reports, 1952 forwarded to office.
EPI Report, 1952 forwarded to office 26 Nov. 1952.
Coast Pilot Notes, 1952 forwarded to office 17 Nov. 1952.
Tidal Marigrams and level records forwarded to office 14 Oct. 1952.

Jack E. Guth
Jack E. Guth
Ensign, C&GS

STATISTICS
Hydrographic Survey H-7977
Field No. EX-10152

<u>DATE</u>	<u>DAY LETTER</u>	<u>VOL. NO.</u>	<u>STATUTE MILES</u>	<u>NO. OF POSITIONS</u>	<u>EXTRA MILES (NAUT)</u>	<u>TOTAL MILES (NAUT)</u>
19 May	A	1	19.8	7	1.3	18.6
24	B	1	19.5	5	16.3	33.3
28	C	1	14.2	4	38.0	50.3
29	D	1	75.0	16	6.0	71.2
4 June	E	1	20.0	5	5.0	22.3
5	F	1	13.8	4	6.7	18.7
12	G	1	189.0	80	0.0	164.4
13	H	1	42.4	19	7.0	43.9
15	J	1 & 2	110.0	34	33.6	129.3
24	K	2	8.0	8	48.0	55.0
25	L	2	194.8	163	49.8	207.2
27	M	2	201.5	149	12.0	177.7
28	N	2 & 3	188.8	118	11.0	175.2
29	P	3	75.6	45	35.7	104.2
30	Q	3	64.5	72	27.9	84.0
1 July	R	3 & 4	128.9	111	4.0	116.1
7	S	4	23.5	8	0.6	21.0
8	T	4	51.7	48	41.0	86.2
9	U	4	16.8	18	24.6	39.3
10	V	4 & 5	130.0	120	12.5	125.5
11	W	5	29.9	34	17.5	43.5
12	X	5	103.5	87	5.0	95.0
13	Y	5	117.2	102	0.0	101.0
7 Aug.	Z	6	56.2	52	31.0	79.8
10	AA	6	20.6	13	0.0	18.0
15	AB	6	22.6	22	23.6	43.3
17	AC	6	55.7	47	20.5	69.2
21	AD	6	71.3	66	20.5	82.5
7 Sept.	AE	7	186.5	148	50.0	213.0
8	AF	7	119.1	109	49.4	153.0
9	AG	7 & 8	125.4	118	13.0	122.9
10	AH	8	148.7	133	9.5	138.8
11	AJ	8 & 9	80.5	71	15.0	85.0
12	AK	9	165.4	135	18.0	161.8
13	AL	9	26.9	36	23.0	50.0
TOTAL		9	2917.3	2207	677.0	3200.2

<u>DATE</u>	<u>DAY LETTER</u>	<u>VOL. NO.</u>	<u>STAT. MI.</u>	<u>POSITIONS</u>	<u>NO. POSITIONS</u>
22 May	D	1	19.0	68-72	5 *
23 May	E	1	4.1	15-16	2 *
24 May	F	2	27.7	8-14	7 *
12 June	Q	3	20.7	19-23	5 *
12 June	Q	3	9.8	30-32	3 *
13 June	R	3	24.2	3-8	6 *
12 July	AA	4	46.7	34-59	26 *
12 July	AA	4	16.7	63-70	8 *
TOTAL			168.9		62

* NOTE: Positions indicated plotted from Survey EX-30152, H-7978 and are recorded in sounding volumes for that sheet. Also plotted on that sheet.

TIDE NOTE

A portable tide gage at Lash Bay Pier, Tanaga Island, was used for the reduction of all soundings without correction (see letter on Tidal Data, 1952 season 15 October 1952). Position of station (Lat. $51^{\circ} - 40.3'$ N Long. $178^{\circ} - 02.6'$ W).

Tide corrections were omitted for soundings greater than 200 fathoms.

MLLW on staff was 1.8 feet.

Approval Sheet

Hydrographic Survey No. H-7977 (EX-10152)

The boat sheet, sounding volumes, fathograms, and the descriptive report have been examined and are approved.

The smooth sheet was prepared and the Shoran-EPI arcs drawn by the Seattle Processing Office. The correction to soundings and arcs have been entered and checked and the reductions made and checked.

The protracting of positions on the smooth sheet will be continued as time permits.

George L. Anderson

George L. Anderson
Captain, C&GS
Commanding Ship EXPLORER

Abstract of Angles at SHORAN STATION LAN and \triangle TAN. Pages
 12 - 14, Vol. 1, Horizontal Angles.

At LAN

	<u>GAB-TAN</u>	<u>TAN-BLACK</u>	<u>TAN-BEE</u>
	103 - 45 - 30	97 - 30 - 00	109 - 50 - 00
	104 - 17 - 00	97 - 19 - 00	109 - 43 - 00
	104 - 28 - 00	97 - 55 - 00	109 - 56 - 00
	104 - 32 - 00	97 - 59 - 00	110 - 00 - 00
	104 - 04 - 00	97 - 17 - 00	109 - 37 - 00
	<u>104 - 13 - 00</u>	<u>97 - 27 - 00</u>	<u>109 - 23 - 00</u>
MEAN	104 - 13 - 15	97 - 34 - 30	109 - 44 - 50

At \triangle TAN

	<u>BLACK-LAN</u>
	56 - 30 - 00
	57 - 03 - 00
	<u>57 - 04 - 00</u>
MEAN	56 - 52 - 00

AZIMUTHS - GEOGRAPHIC POSITIONS V-207 & V-208

TAN-BLACK	126 - 34 - 16
TAN-BEE	249 - 29 - 43
TAN-GAB	254 - 22 - 15

Addenda To Descriptive Report
Register No. H-7977
Field No. EX-10152

The information under K. CROSSLINES was based on Boat Sheet data.

The following discrepancies in crosslines were found on the Smooth Sheet:

<u>Position No.</u>	<u>Lat.</u>	<u>Long.</u>	<u>Diff. in Fms.</u>	<u>Reason</u>
82 M to 83 M 12 J to 13 J	51° 21.1'	178° 25.8'	40	Poor control on long line 12 J to 13 J.
110 M to 111M 12 J to 13 J	51° 21.1'	178° 25.8'	40	Poor control on long line 12 J to 13 J.
6 N to 7 N 6 A to 7 A	51° 22.1'	178° 10.0'	30	Poor reading of EPI TA.
69 AG to 70 AG	51° 47.1'	178° 23.3'	20 to 30	Time and Course uncer- tain.

COMPUTATION OF TRIANGLES

State: Alaska, Aleutian Islands

11-9121

NO.	STATION	OBSERVED ANGLE	CORR'N	SPHER'L ANGLE	SPHER'L EXCESS	PLANE ANGLE AND DISTANCE	LOGARITHM
	2-3						2.788 230
1	LAN	97 - 34 - 30					0.003 807
2	TAN	56 - 52 - 20					9.922 961
3	BLACK	(25 - 33 - 10)					9.634 822
1-3							2.714 998
1-2						267.2	2.426 859
	2-3						3.525 937
1	LAN	109 - 44 - 50					0.026 322
2	BEE	(04 - 12 - 03)					8.864 824
3	TAN	66 - 03 - 07					9.960 905
1-3						261.3	2.417 083
1-2							3.513 164
	2-3						3.480 570
1	LAN	104 - 13 - 15					0.013 517
2	GAB	(04 - 51 - 06)					8.927 249
3	TAN	70 - 55 - 39					9.975 480
1-3						263.8	2.421 336
1-2							3.469 567
	2-3						
1							
2							
3							
1-3							
1-2							

Do not write in this margin

POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

α	2	to 3	126	34	16	α	3	to 2	306	33	56
α	2	to 1	+ 56	52	20	α	3	to 1	- 25	33	10
$\Delta\alpha$			183	26	36	$\Delta\alpha$			281	00	46
α'	1	to 2	180	00	00.0	α'	1	to 3	180	00	00.0

FIRST ANGLE OF TRIANGLE

97 ° 34 ' 30 "

° ' "

° ' "

ϕ	51	21	23.26	2 TAN	λ	179	00	53.75	ϕ	51	21	35.10	8 BLACK	λ	179	01	19.24
$\Delta\phi$			8.63		$\Delta\lambda$			0.83	$\Delta\phi$			3.21		$\Delta\lambda$			26.32
ϕ'	51	21	31.89	1 TAN	λ'	179	00	52.92	ϕ'	51	21	31.89	1 TAN	λ'	179	00	52.92

s	2426 859	Logarithms	985.5	Values in seconds	$\frac{1}{2}(\phi+\phi')$	Logarithms	2.714 998	Values in seconds	$\frac{1}{2}(\phi+\phi')$	Logarithms	2.714 998	Values in seconds
$\cos \alpha$	9.999 215		(868.7)		s	2.426 859	1024.0		s	2.714 998		
B	8.509 981				$\cos \alpha$	9.281 097			B	8.509 980		
h	0.936 055	1st term	8.63	"	h	0.506 075	3.21	"	h	0.506 075	3.21	"
s^2	4.853 7				s^2	5.430 0			s^2	5.430 0		
$\sin^2 \alpha$	7.557 2				$\sin \alpha$	8.778 595	(137.0)		$\sin \alpha$	9.991 928		
C	1.500 4				A'	8.508 829			A'	8.508 829		
	3.911 3	2d term	+		$\sec \phi'$	0.204 509			$\sec \phi'$	0.204 509		
h^2					$\Delta\lambda$	9.918 792	0.83		$\Delta\lambda$	1.420 264	26.32	
D	2.382	3d term	+		$\sin \frac{1}{2}(\phi+\phi')$				$\sin \frac{1}{2}(\phi+\phi')$			
					$-\Delta\alpha$				$-\Delta\alpha$			

GEOGRAPHIC NAMES

Survey No. H-7977

Name on Survey	Source of Name											
	A	B	C	D	E	F	G	H	K			
<u>Alaska</u>												1
<u>Alutian Islands</u>												2
<u>Deloret Islands</u>												3
<u>Tanaga Island</u>											BGN	4
<u>Tanaga Pass</u>												5
<u>Skagul Island</u>												6
<u>Oglinga Island</u>											BGN	7
<u>Kavaga Island</u>												8
<u>Unalga Island</u>												9
<u>Ulak Island</u>												10
<u>Amatignuk Island</u>											BGN	11
												12
												13
												14
												15
												16
<u>Lash Bay,</u>												17
<u>Tanaga Island</u>											BGN	18
												19
												20
												21
												22
												23
												24
												25
												26
												27

Names underlined in red are approved.
4-6-53. L. Heck

(location of tide gage)

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7977..

Records accompanying survey:

Boat sheets ..1...; sounding vols. .9...; wire drag vols.;

bomb vols.; graphic recorder rolls 6 Env.;

special reports, etc. 1 Smooth Sheet; 1 Descriptive Report; 1 Special Report
 Calibrations E.P.I. & Sheran; 1 Cahier on E.P.I.; 1 Book Sheran Calibrations 1952;
 1 Cahier Plotting Abstracts; 1 Fathometer Report; 1 Special Report on E.P.I.

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

Number of positions on sheet

Number of positions checked

Number of positions revised

Number of soundings revised
 (refers to depth only)

Number of soundings erroneously spaced

Number of signals erroneously plotted
 or transferred

Topographic details Time

Junctions Time

Verification of soundings from
 graphic record Time

Verification by.....Total time Date

Reviewed by..... Time Date

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H-7977

The verifier should deal with the present hydrographic survey only, as the reviewer considers its relation to previous surveys and published charts. He should be thoroughly familiar with Chapters 3, 7 and 9 of the Hydrographic Manual.

1. The descriptive report was consulted and appropriate notes were made in soft pencil regarding action taken.
2. Soundings originating with the survey and mentioned in the descriptive report have been verified, including latitude and longitude.
3. All reference to survey sheets mentioned in the descriptive report include the registry number and year.
4. Geographic names of hydrographic features if on sheet are in slanting lettering and of topographic features in vertical lettering.
5. All items affecting the plotting of the survey which are **entered in** the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken.
6. All positions verified instrumentally were check marked in the sounding records.
7. All critical soundings are clear and legible and are a little larger than the adjacent soundings.
8. The metal protractor has been checked within the last three months.
9. The protracting and plotting of all bad crossings were verified.
10. All detached positions locating critical soundings, rocks or buoys were verified.
11. The boat sheet was compared with the smooth sheet.

12. The spacing of soundings as recorded in the records was closely followed.
13. The bottom characteristics were shown on outstanding shoals.
14. The reduction and plotting of doubtful soundings were checked.
15. The transfer of contemporary topographic information was carefully examined.
16. All junctions were transferred and overlapping curves made identical.
17. The notation "JOINS H- (1922)" was added in ink for all contemporary adjoining or overlapping sheets now registered. Those not verified are shown in pencil.
18. The depth curves have been inspected before inking.
19. All triangulation stations and transfer of topographic and hydrographic signals were checked.
20. Heights of rocks were checked against range of tide.
21. Rocks transferred from topographic surveys have a dotted curve where shown thereon. Rocks located accurately by hydrographer are encircled by dotted red curve.
22. Unnecessary pencil notes have been removed.
23. Objects on which signals are located and which fall outside of the low water line have been described on the sheet.
24. The low water line and delineation of shoal areas have been properly shown.
25. Degree and minutes values and symbols have been checked.
26. Questionable soundings have been checked on the fathograms.

27. Source of shoreline and signals (when not given in report).
28. All notes on sheet are in accordance with figure 171 in the Hydrographic Manual.
29. All aids located, with those on contemporary topographic sheets, have been shown on survey.
30. Depth curves were satisfactory except as follows:
31. Sounding line crossings were satisfactory except as follows:
32. Junctions with contemporary surveys were satisfactory except as follows:
33. Condition of sounding records was satisfactory except as follows:
34. The protracting was satisfactory except as follows:
35. The field plotting of soundings was satisfactory except as follows:
36. Notes to reviewer:

Verified by

Date

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Coastal Surveys~~

8 April 1953

Division of Charts: R. H. Carstens

Plane of reference approved in 9
volumes of sounding records for

HYDROGRAPHIC SHEET 7977

Locality Aleutian Island, Alaska

Chief of Party: G. L. Anderson in 1952
Plane of reference is mean lower low water, reading
1.8 ft. on tide staff at Lash Bay, Tanaga Island
7.7 ft. below B. M. 2 (1944)

Height of mean high water above plane of reference is 4.2 feet.

Condition of records satisfactory except as noted below:

E. C. McKay
Section of

Chief, Division of Tides and Currents.

