7949

[redacted]

PURSUANT TO [redacted]
GUIDELINES AS DESCRIBED IN SECTION
3.3(a), EXECUTIVE ORDER 12[redacted]6.

Diag. Cht. No. 8802-3

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. EX-40151 Office No. H-7949

LOCALITY

State ALASKA

General locality BERING SEA

Locality DUTCH HARBOR TO ST. PAUL ISLAND

194 51

CHIEF OF PARTY

G. L. Anderson

LIBRARY & ARCHIVES

DATE

8-1870-1 (1)

7949

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. EX-40151 *Office No.* H-7949

LOCALITY

State ALASKA

General locality BERING SEA

Locality Dutch Harbor to St. Paul I.

19 51

CHIEF OF PARTY

George L. Anderson

LIBRARY & ARCHIVES

DATE

B-1870-1 (1)

Form 537
(Ed. Nov. 1941)

CONFIDENTIAL

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO.

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-7949

Field No. EX-40151

State ALASKA

General locality BERING SEA

Locality Dutch Harbor to St. Paul I.

Scale 1:500,000 Date of survey 12 May to 9 Sept. 1951

Instructions dated 6 March 1951, supplemental instr. through 31 May 1951

Vessel EXPLORER

Chief of party George L. Anderson

Surveyed by Ship's Officers

Soundings taken by fathometer, graphic recorder, ~~[illegible]~~

Protracted by D. L. Campbell, B. E. Greene

Soundings penciled by B. E. Greene, W. D. Barbee, J. E. Guth

Soundings in fathoms ~~feet~~ at ~~[illegible]~~ MLLW

REMARKS:

U. S. GOVERNMENT PRINTING OFFICE 428975

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SURVEY H-7949
(Field No. EX-40151)

BERING SEA
Scale 1:500,000
1951

U.S.C.&G.S. Ship EXPLORER George L. Anderson, Comdg.

Surveyed by: Ship's Officers

A PROJECT:

Instructions:

Project CS-343 Instructions,	22/MEK	Dated 6 March 1951
Supplemental Instructions,	22/MEK	Dated 11 May 1951
" "	22/MEK	Dated 1 June 1951
Amended "	22/sro	Dated 6 April 1951
Instructions, Coast Pilot,	82-DD	Dated 28 May 1951
Letter 22-JR		Dated 9 March 1951
Letter 22/MEK		Dated 18 April 1951
Letter 22/MEK		Dated 14 May 1951
Letter 22-RS		Dated 31 May 1951

B SURVEY LIMITS AND DATES:

The survey includes offshore hydrography in the southeastern part of the Bering Sea within the limits of this sheet whose corners are:

φ 55° 58' N	λ 172° 40' W
φ 60° 50' N	λ 163° 30' W
φ 53° 08' N	λ 167° 29' W
φ 57° 37' N	λ 158° 24' W

It joins contemporary survey H-7950 (EX-40251) scale 1:500,000 to the north. It also joins existing surveys north of Amak Island and surveys H-6736, H-5740, H-5967, and H-6413 to the south. Field work on this survey extended through the period of 12 May to 9 Sept. inclusive. Hydrography was also accomplished on sheet H-7950 during this period.

C VESSEL AND EQUIPMENT:

The EXPLORER was used exclusively on this survey. The ship was equipped with E.P.I. for horizontal control. Shoran was used for calibrating E.P.I. equipment, but was not used for control of hydrography. (See heading I.)

The ship was operated at standard speed except in heavy weather. All changes of speed are noted in the plotting abstracts. The turning radius of the ship at standard speed ahead is 275 meters when full left about and 360 meters when full right about.

Time & Range Zone Page no. filed with the Fathograms.

Submarine Signal Co. type 808 depth recorders No. 60 and No. 113S were used to a depth of 150 fathoms. The NMC-2 fathometer was used from 150 to 800 fathoms, and the NMC fathometer was used in depths greater than 800 fathoms.

D TIDE AND CURRENT STATIONS:

Data for tide reducers was obtained from the standard automatic tide gage at Dutch Harbor. Time and range corrections were applied. (See Tide Note and diagram, this report.)

One current station in Kuskokwim Bay off Goodnews Bay, (Lat. 59° 01.7' N., Long. 161° 55.2' W.), was occupied. (See letter to Director, 8 Nov. 1951.)

E SMOOTH SHEET:

The projection with E.P.I. stations and distance arcs was made by hand in the Seattle Processing Office. No shoreline is shown.

F CONTROL STATIONS:

The survey was controlled by E.P.I. stations A, B, C, D, E, & F, which were established and located in 1951 by third order triangulation as follows:

EPI-A, Dutch Harbor; Capt. George L. Anderson, Chief of Party
EPI-B, St. Paul I.; Capt. Charles Pierce, " " "
EPI-C, Goodnews Bay; Capt. George L. Anderson, " " "
EPI-D, Nunivak Island; Capt. Charles Pierce, " " "
EPI-E, St. Matthew I.; " " " " " "
EPI-F, Hooper Bay; estab., Capt. George L. Anderson, Chief of Party
located, Lt. Miller J. Tonkel, " " "

G SHORELINE AND TOPOGRAPHY:

No shoreline is shown on this sheet.

H SOUNDINGS:

All soundings were taken in fathoms by depth recorders. 808 fathometers Nos. 60 and 113S were used to a depth of 150 fathoms. The NMC-2 was used from 150 to 800 fathoms, and the NMC was used over 800 fathoms.

The NMC and NMC-2 fathometers were calibrated for a velocity of 800 fms/second during the entire season. The 808 fathometers were calibrated for a velocity of 820 fms/second until 16 July at which time 800 fms/second reeds were installed for use during the remainder of the season.

Corrections to soundings taken with the 808's were determined for tide, phasing error, draft, settlement and squat, and fathometer error. The fathometer correction was determined from lead-line comparisons to be -0.1 fm. for both the 808's, and the correction for settlement and squat was found to be +0.1 fm. Since

these two corrections are equal and opposite and are assumed constant, they were not tabulated in the abstract of corrections. Draft corrections were based on an initial setting of 2.0 fathoms.

Corrections to NMC and NMC-2 soundings were determined for tide, draft, and settlement and squat. Corrections for fathometer error were determined by comparison with the 808 fathometers and were found to be negligible. Corrections for range and phasing error were also found to be negligible. Draft corrections were based on an initial setting of 0. Since the difference in the draft correction between the 808's and the NMC -- NMC-2 is constant at 2.0 fathoms (the difference between the initial settings), and the correction for settlement and squat is constant at +0.1 fm, draft corrections were all tabulated for an initial setting of 2.0 fathoms and a constant correction of +2.1 was applied whenever the NMC or the NMC-2 were being used.

All the above corrections were compiled, summed, and tabulated showing the change points. The combined corrections were entered directly on the fathograms. An initial correction was also applied for any deviation of the initial from 2.0 fathoms on the 808 fathograms or 0 on the NMC and NMC-2 fathograms.

Soundings penciled on the smooth sheet were taken directly from the fathograms. At this time a constant percentage velocity correction was applied mechanically by means of templates to all soundings taken before 16 July on the 808's in order to reduce them to 800 fms/second.

Note: See Corrections to Soundings, this report, and Fathometer Report, USC & GS EXPLORER, 1951.

I CONTROL OF HYDROGRAPHY:

E.P.I. control was used entirely on this survey. Results of plotting indicate that the control was reliable. Occasionally static and interference prevented a reading on one or both stations from being used. In this case the position was plotted on time and course between two good fixes. Usually at least one E.P.I. arc was also available for plotting. This condition was most noticeable around midnight, especially when using distant stations.

On two occasions loran was used in conjunction with one E.P.I. arc for control. Failure to receive EPI-C signal between pos. 6U and Pos. 4V necessitated the use of a loran line of position from station 1L6. One good fix was obtained on position 11U, and the line was plotted on dead reckoning, holding positions 6U, 11U, and 4V. On SA day EPI-B was used in conjunction with loran 1L6 for control since no other E.P.I. station satisfactory for use in this area was available at that time. The loran line of position was nearly perpendicular to the E.P.I. arc resulting in a strong fix. The loran appears to have been quite reliable and very few of the positions needed to be adjusted on course. Toward the end of this day and on the beginning of TA day several simultaneous readings on EPI-B, EPI-E, and loran 1L6 check with very

good results indicating that the loran was quite accurate. All of the hydrography on SA day which was controlled partially by loran was in deep water, over 700 fathoms.

Methods of calibrating E.P.I. stations have been discussed fully in the following (q.v.).:

Descriptive Report, H-7950 (EX-40251), 1951
Descriptive Report: Line Measurement by E.P.I., Project CS-343 Ship EXPLORER, G. L. Anderson, Comdg.
E.P.I. and Shoran Calibration, Ship EXPLORER, Field Season May---Sept. 1951, G. L. Anderson, Comdg.

Pacific Library "

Preliminary initial corrections were applied to E.P.I. readings in the field from data available at the time. Final values applied to the readings for smooth sheet plotting were derived from data compiled throughout the season, and were entered in the plotting abstracts in red.

J ADEQUACY OF SURVEY:

This survey was not completed due to lack of time. Hydrography was of secondary importance to the E.P.I. line measurements; therefore, the sounding lines are chiefly incidental with many of th them run while enroute to E.P.I. line crossing points and to various E.P.I. shore stations.

The preliminary line spacing of 5 miles in depths less than 1000 fathoms and 15 miles in depths greater than 1000 fathoms as prescribed in the project instructions was complied with as nearly as possible.

No statement can be made regarding junctions with adjacent surveys at this time.

K CROSSLINES:

About 3 percent of the hydrography was run as crosslines. Crossings are generally satisfactory.

L COMPARISON WITH PRIOR SURVEYS:

There are no prior surveys with which this sheet can be compared.

M COMPARISON WITH CHART:

A comparison was made with C & GS charts 9302 (July 1945, 16th edition) and 8802 (Aug. 1944, 17th edition). Considering the difference in scale and the lack of prior surveys in offshore Bering Sea areas the general agreement is fairly good.

On the charts a spur in the 1000 fathom curve is shown at 55° 20' N, 168° 45' W. No evidence of this was found in the survey. Other than this the general configuration of the 1000 fathom curve on the charts seems to agree with the survey. The general configuration of the 100 fathom curve also agrees fairly well except in the area about 40 miles southeast of St. George

Island (centered about 56° 05' N, 168° 40' W) where the curve is quite irregular.

Charted soundings to the east and north of the 100 fathom curve agree quite well in general although the survey shows the bottom to be more even than is indicated by the charts.

Since this is not a completed survey no recommendations are made regarding differences with the charts at this time.

N DANGERS AND SHOALS:

There are no important newly found dangers or shoals on this survey.

O COAST PILOT INFORMATION:

This report has been submitted to the Director. 4 Aug. 1951

P AIDS TO NAVIGATION:

The locations and characteristics of the following lights on Amaknak Island which were located by third order triangulation during the 1951 field season were reported in a letter to the director dated 6 November 1951: L-770 (1951)

Spithead Light, 1951	53° 53' 53756'' 166° 30' 48.405''
Ulakta Head Light, 1951	53° 55' 30.51" 166° 30' 24.53"

The current Light List indicates that Ulakta Head light was built in 1934 and that Spithead Light was built in 1937. Both lights have been rebuilt since that time (probably about 1942).

T BY PRODUCT INFORMATION:

The following records have been submitted to the Director:

Beach Intelligence Information---Kuskokwim Bay (Goodnews Bay) and Security Cove 9 Sept. 1951

Bathythermograph Records 17 Oct. 1951

Magnetic Observations, Goodnews Bay, Alaska 4 Aug. 1951

MISCELLANEOUS ITEMS:

U TANDEM RUNNING:

On C day, D day, and thru position 29 on E day the EXPLORER ran tandem with the PATHFINDER at a distance of about 5 naut. miles. The PATHFINDER'S position was fixed by E.P.I. using stations A and B. The EXPLORER'S position was fixed by radar distance and visual or radar bearing to the PATHFINDER. Fixes were taken simultaneously on both ships and comparison of the sounding clocks by radio indicated the time difference to be negligible.

Corrections to visual bearings and to radar bearings and distances were computed and applied for smooth plotting. The positions were plotted after the PATHFINDER'S work had been smooth plotted.

Note: For methods of computing corrections see Corrections for Tandem Running, this report.

V POSITIONS NOT PLOTTED:

The following positions were rejected because of insufficient control and adverse weather conditions:

All of A and B days
Positions 28 thru 32 S day and positions 1 thru 9 T day
Positions 13 QA day thru 17 RA day

Positions 1 thru 3 Z day fell off the limits of this sheet and were plotted on sheet H-7951 (PF-40351).

Positions 18 thru 42 X day were run as reconnaissance only and were plotted on chart 9103.

Respectfully submitted,

Bruce E. Greene

Bruce E. Greene
Ens., USC&GS

Approved and forwarded,

George L. Anderson
Captain, USC&GS
Commanding Officer, Ship EXPLORER

STATISTICS FOR HYDROGRAPHIC SURVEY H-7949

Field No. EX-40151

USC&GSS EXPLORER — CS-343

DATE	DAY LETTER	NO OF POSITIONS	STATUTE MILES	
5-12	A	42	66.7	
5-13	B	51	114.3	
5-20	C	26	121.1	Vol I
5-23	D	35	165.9	
5-24	E	59	344.5	
5-25	F	15	105.8	
5-27	G	8	48.0	Vol. II
5-28	H	50 Vol II	349.1	
5-29	J	7	18.6	
6-2	K	11	69.5	
6-3	L	30	227.6	
6-4	M	42	284.9	
6-10	N	10	48.0	Vol. I
6-11	P	40	256.8	
6-12	Q	40	283.3	
6-13	R	32	194.6	
6-14	S	32	208.2	
6-15	T	9	61.0	
6-18	U	12	64.6	Vol. II
6-19	V	52	326.9	
6-20	W	41	238.0	
6-21	X	42	176.5	
6-22	Y	25	154.7	Vol. III
6-25	Z	15	98.9	
6-26	AA	26	168.6	
6-27	BA	15	92.6	Vol. III
6-30	CA	43	281.5	
7-2	DA	20	138.8	
7-13	EA	21	136.2	
7-14	FA	15	86.5	Vol II
7-19	GA	48	316.2	
7-20	HA	41	253.2	
7-21	JA	40 (4)	250.9	
7-22	KA	30 (25-40)	192.8	
7-23	LA	14	88.0	
8-3	MA	37	245.0	
8-7	NA	34	237.5	Vol III
8-8	PA	32	172.5	
8-19	QA	32	200.0	
8-20	RA	17	99.6	
8-27	SA	29	182.4	
8-28	TA	11	73.7	
9-4	UA	60	283.2	
9-8	VA	26	132.5	Vol 4
9-9	WA	24	158.8	

MONTHLY & SEASON TOTALS

	Pos.	St. Mi.
May	293	1334.0
June	517	3232.9
July	229	1461.6
August & Sept.	297	1785.2
Season	1336	7813.7

Area equals 31,500 square statute miles.

TIDE NOTE

Soundings for this survey were reduced from tide data obtained from the standard automatic tide gage at Dutch Harbor, Alaska. Latitude 53° 53.6' N., Longitude 166° 32.1' W.

The plane of reference is MLLW which is 3.3 feet on the tide staff. All soundings and tidal observations are based on 165th meridian (west) time. Time corrections and range multipliers were applied by zones as shown on the accompanying diagram. Data for these corrections was furnished by the Washington Office.

CORRECTIONS TO BEARINGS AND DISTANCES FOR TANDEM RUNNING WITH PATHFINDER---C D & E DAYS

Corrections to visual bearings---compass comparison:

DATE & TIME	MASTER GYRO	STBD RPTR	RPTR TO MASTER	PORT RPTR	RPTR TO MASTER	DEVIATION OF MASTER GYRO
19 May						+1.5
20 May						
0215	064.8	065.0	-0.2			
0530	090.5	091.5	-1.0			
1247	235.5	235.5	0.0	235.8	-0.3	
23 May						
0809	022.5	022.5	0.0	023.0	-0.5	
1355	043.5			044.0	-0.5	
1450	050.5			051.0	-0.5	
1750	339.5	339.5	0.0			
1830	343.5			343.5	0.0	+0.5
2125	338.2	338.5	-0.3			
2250	338.4	338.5	-0.1			
24 May						
0130	161.0			161.5	-0.5	
0315	340.5	340.5	0.0	341.0	-0.5	
0500	342.5	342.0	+0.5	343.0	-0.5	
0640	342.5			343.0	-0.5	
25 May						+0.6
MEAN			-0.1		-0.4	+0.9

Mean Correction to Brngs.:
Stbd. Repeater +0.8 degrees
Port Repeater +0.5 degrees

Corrections to Radar bearings---comparison with visual bearings:

	BEARING BY STBD RPTR	BEARING BY PORT RPTR	CORR'N	TRUE BRNG	RADAR BRNG	RADAR CORR'N
23 May		332.0	+0.5	332.5	329.0	+3.5
		335.0	+0.5	335.5	331.0	+4.5
		346.0	+0.5	346.5	343.0	+3.5
	052.5		+0.8	053.3	050.0	+3.3
	050.5		+0.8	051.3	048.0	+3.3
	048.8		+0.8	049.6	046.5	+3.1
24 May	048.0		+0.8	048.8	046.0	+2.8
	052.0		+0.8	052.8	049.5	+3.3
		053.5	+0.5	054.0	051.5	+2.5
		056.0	+0.5	056.5	053.0	+3.5
				MEAN		+3.3

Comp. JJM
✓ WDB
Copy ✓ BEG.

(CORRECTIONS FOR TANDEM RUNNING CONT.)

Radar Distance Calibration:

FIX	LT. ∠	RT. ∠	OBJECT	RADAR DIST. yds.	SCALED DIST. yds.	CORR'N yds.
N. Base 2 Spithead Lt. Little Priest Rk.	33-42	02-49	Little Priest Rk.	4730	4580	-150
Same	33-48	02-33	N. Shore Summer Bay	7550	7460	-090
Same	33-42	03-03	Princess Head	14000	13850	-150
			MEAN CORRECTION TO RADAR DISTANCE			-130 yds.

Comp. JSM
✓ WDB
Copy✓ BEG

ABSTRACT OF INITIAL CORRECTIONS APPLIED TO E.P.I. READINGS

STA.	EQUIP.	DATES	SIDE OF SHIP SET	CORR'N	REMARKS
A	1 & 3	5/12-5/13	A	-4.6	mean of all, range -4.59 to -4.71
	1 & 6	5/24-7/2	A	-6.1	mean of all, range -5.25 to -6.81
B	3 & 5	5/24-5/29	B	-5.4	mean for period 6/3-6/25 range -5.16 to -5.52
	"	6/2-6/4	B	-5.4	
	"	6/10-7/2	B	-5.4	
	3 & 5	7/11-8/13	B	-6.4	mean for period 7/13-8/8 range -6.08 to -6.64
	3 & 5	8/16-9/10	B	-5.0	mn. of calibrations on 8/19 & 8/28, range -4.85 to -5.15
	3 & 5	All season	A	-5.9	only calibration
C	6 & 7	All season	A	-5.5	mean of all calibrations range -5.44 to -5.54
	6 & 7	" "	B	-5.7	mean of all calibrations range - 4.61 to -6.36
D	7 & 8	All season	A	-5.1	mean of all calibrations range -4.80 to -5.33
	7 & 8	" "	B	-5.5	mean of all calibrations range -5.30 to -5.83
E	2 & 3	All season	A	-6.0	mean of all calibrations range -5.34 to -6.70
	2 & 3	" "	B	-6.9	mean of all calibrations range -6.84 to -7.06
F	1 & 6	8/18-8/20	A	-5.7	mean for period 8/1-8/16 range -5.40 to -5.78
	1 & 6	8/28	A	-4.5	8/29 calibration
	1 & 6	8/11-8/15	B	-6.0	mean for period 8/1-8/16 range -5.76 to -6.19

Comp. JSM
✓ GLA
Copy ✓ BEG

APPROVAL SHEET

The smooth sheet and records have been inspected by me and are approved.

In addition to the required plotting abstract and fathograms, sounding volumes and graphs for tide reducers are also forwarded to the office. The supplemental material may be destroyed if desired after the sheet is reviewed.

There is a possibility that some crossings on this sheet may be improved by readjustment of the tide time and range zones used in reducing soundings.

George L. Anderson
Capt. USC&GS
Commanding Ship EXPLORER

GEOGRAPHIC NAMES

Survey No. H-7949

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Alaska		(for title)								1
Bering Sea		(" ")							BSEA	2
Dutch Harbor		(" ")		(location of tide gage)					"	3
Amaknak Island									"	4
Goodnews Bay									"	5
St Paul Island										6
										7
										8
				Names underlined in red are approved 8-7-52 L. Heck						9
										10
										11
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										27

M 234

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7949...

Records accompanying survey:

Boat sheets ...1...; sounding vols. ...11...; wire drag vols. .....;

bomb vols. .....; graphic recorder rolls ...22 Env.;

special reports, etc. 1 Smooth Sheet; 1 Descriptive Report; 1 Folder each of;

Report on Temperature & Salinity Observations,1951; Loran Line of Position Computation & EPI Plotting Abstracts; Fathometer Report; EPI Plotting Abstracts.
{1-Graphs Serial Temperatures & Salinities; 1 Record Serial Temperature & Salinities;
1 Fathometer Corrections; filed with 4948

The following statistics will be submitted with the cartographer's report on the sheet: {1 Env. Fathograms, 1 vol.; 1 descriptive Report; 1 cahier EPI Abstract} 13 sh

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- 7949

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- (19--)" 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

R4C

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Hydrography and Topography~~ 7 May 1952

Division of Charts: R. H. Carstens

Plane of reference approved in 11
volumes of sounding records for

HYDROGRAPHIC SHEET 7949

Locality Bering Sea, Alaska

Chief of Party: C. Pierce in 1951
Plane of reference is mean lower low water, reading
3.3 ft. on tide staff at Dutch Harbor
15.3 ft. below B. M. 2 (1934)

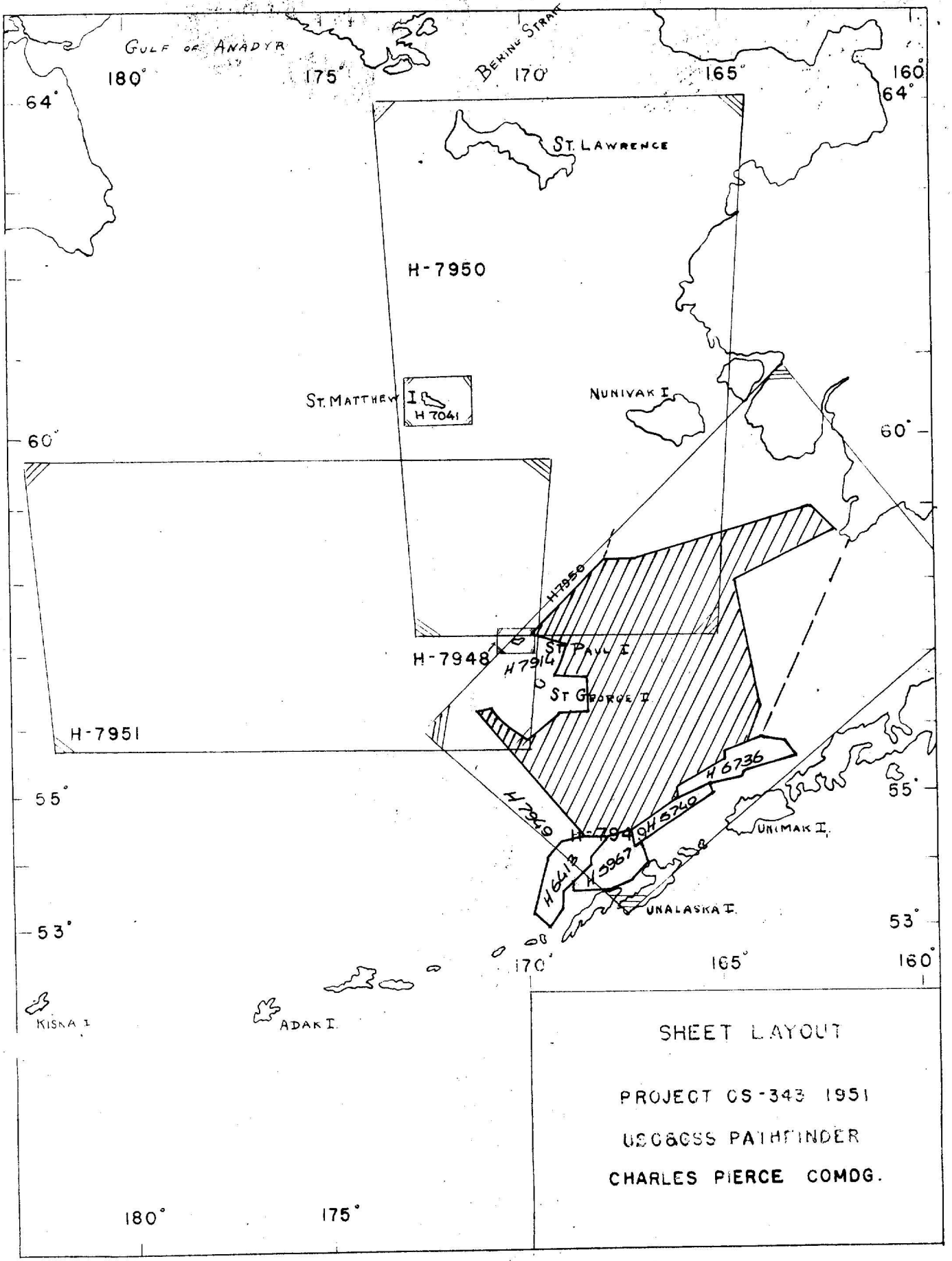
NOTE: Time and height corrections in accordance with tide zones as indicated on sketch enclosed in letter of 21 November 1951 to Commanding Officer of U.S.C.&G.S. Ship PATHFINDER.

Condition of records satisfactory except as noted below:

E. C. McKay

Chief, ~~Division~~ Section of Tides ~~and Currents.~~

U. S. GOVERNMENT PRINTING OFFICE 154327

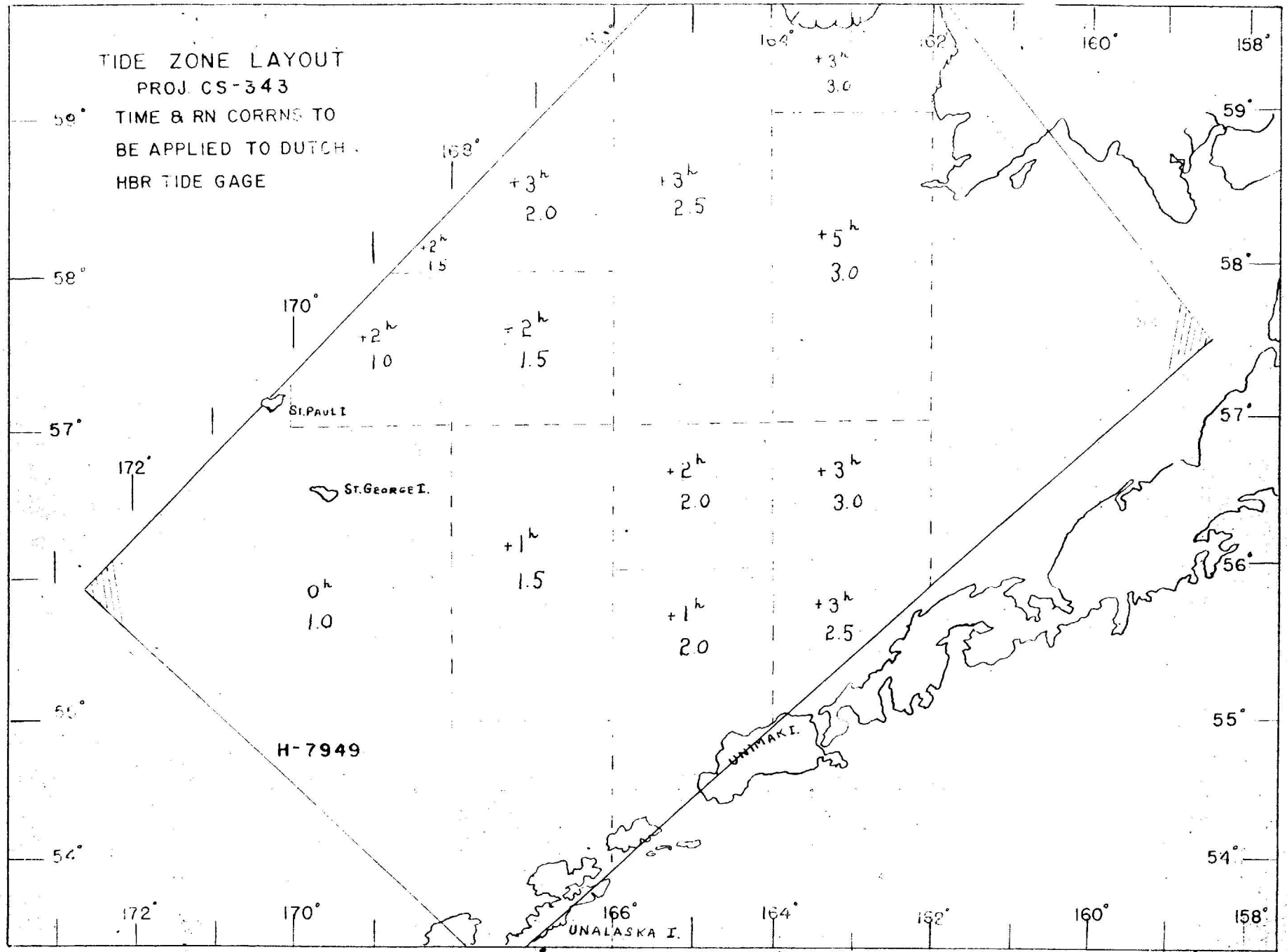


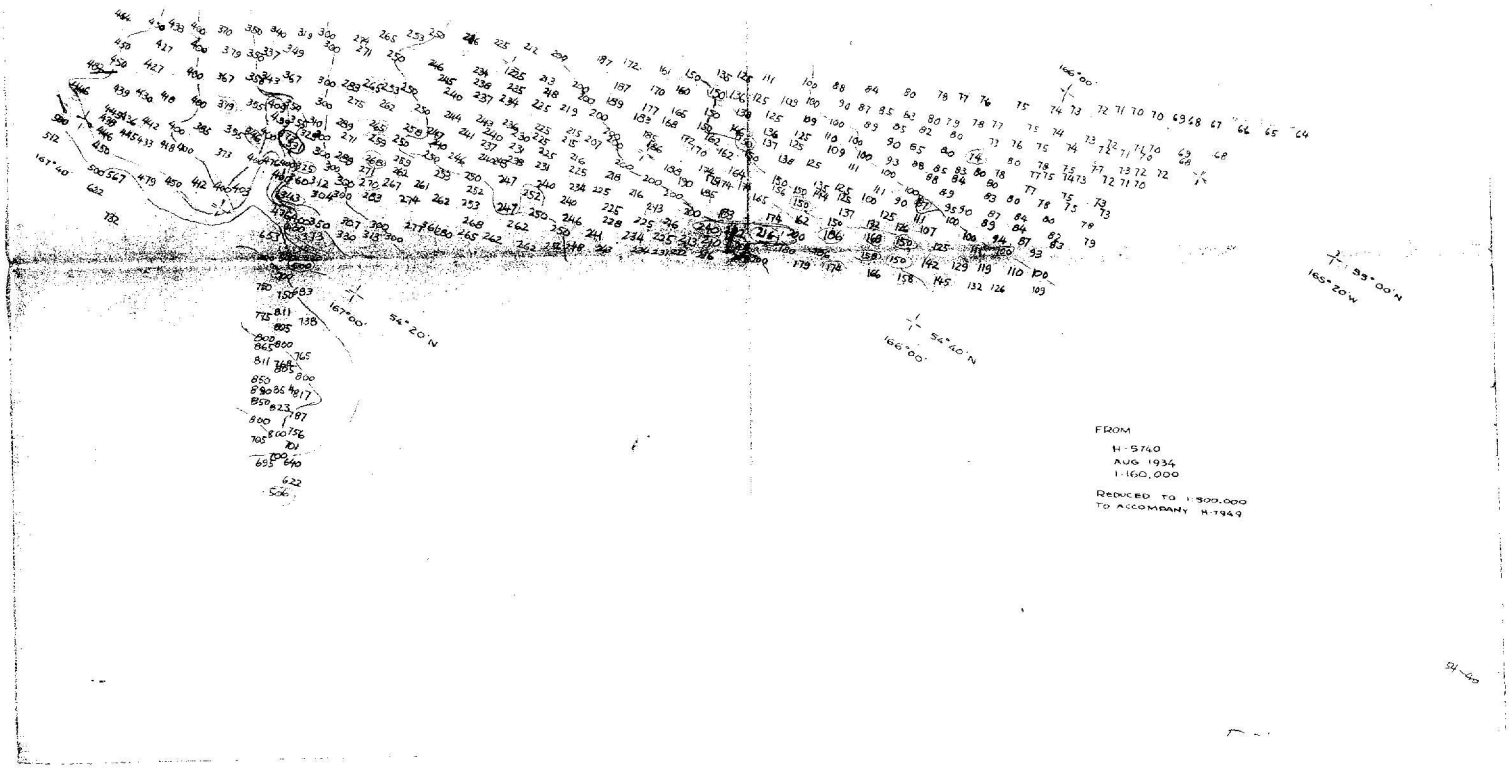
SHEET LAYOUT

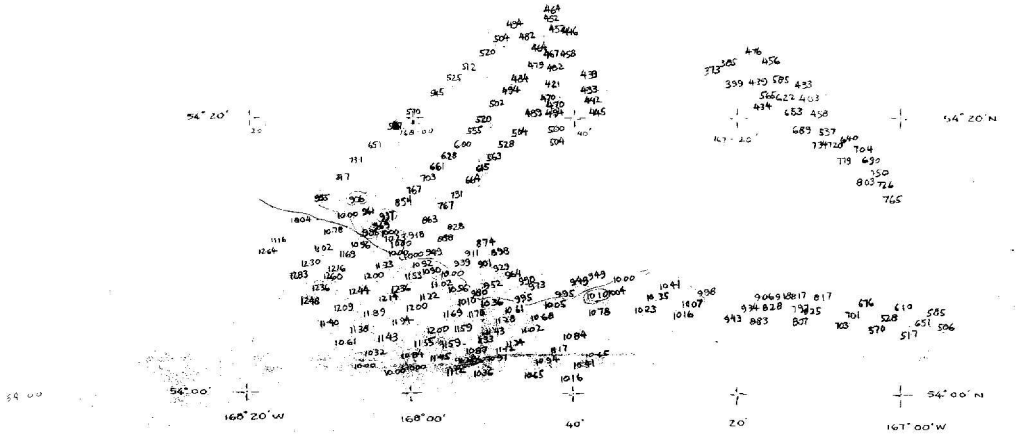
PROJECT OS-343 1951

USC&GSS PATHFINDER

CHARLES PIERCE COMDG.

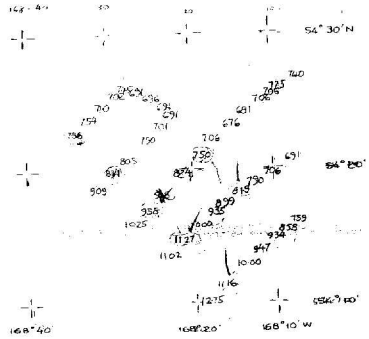

TIDE ZONE LAYOUT
PROJ. CS-343
TIME & RN CORRNS TO
BE APPLIED TO DUTCH
HBR TIDE GAGE
+3h
3.0
+3h
2.0
+3h
2.5
+5h
3.0
+2h
1.5
+2h
1.0
+2h
1.5
+2h
2.0
+3h
3.0
+1h
1.5
0h
1.0
+1h
2.0
+3h
2.5
ST. PAUL I.
ST. GEORGE I.
UNIMAK I.
UNALASKA I.
H-7949
59°
58°
57°
56°
55°
54°
172°
170°
168°
166°
164°
162°
160°
158°


167°20'
54°40'
167°00'
54°20'N
166°00'
54°40'N
165°20'W
59°00'N
FROM
H-5740
AUG 1934
1-160,000
REDUCED TO 1:300,000
TO ACCOMPANY H-7949



FROM
H. 5967
SEPT 1935
1:160,000

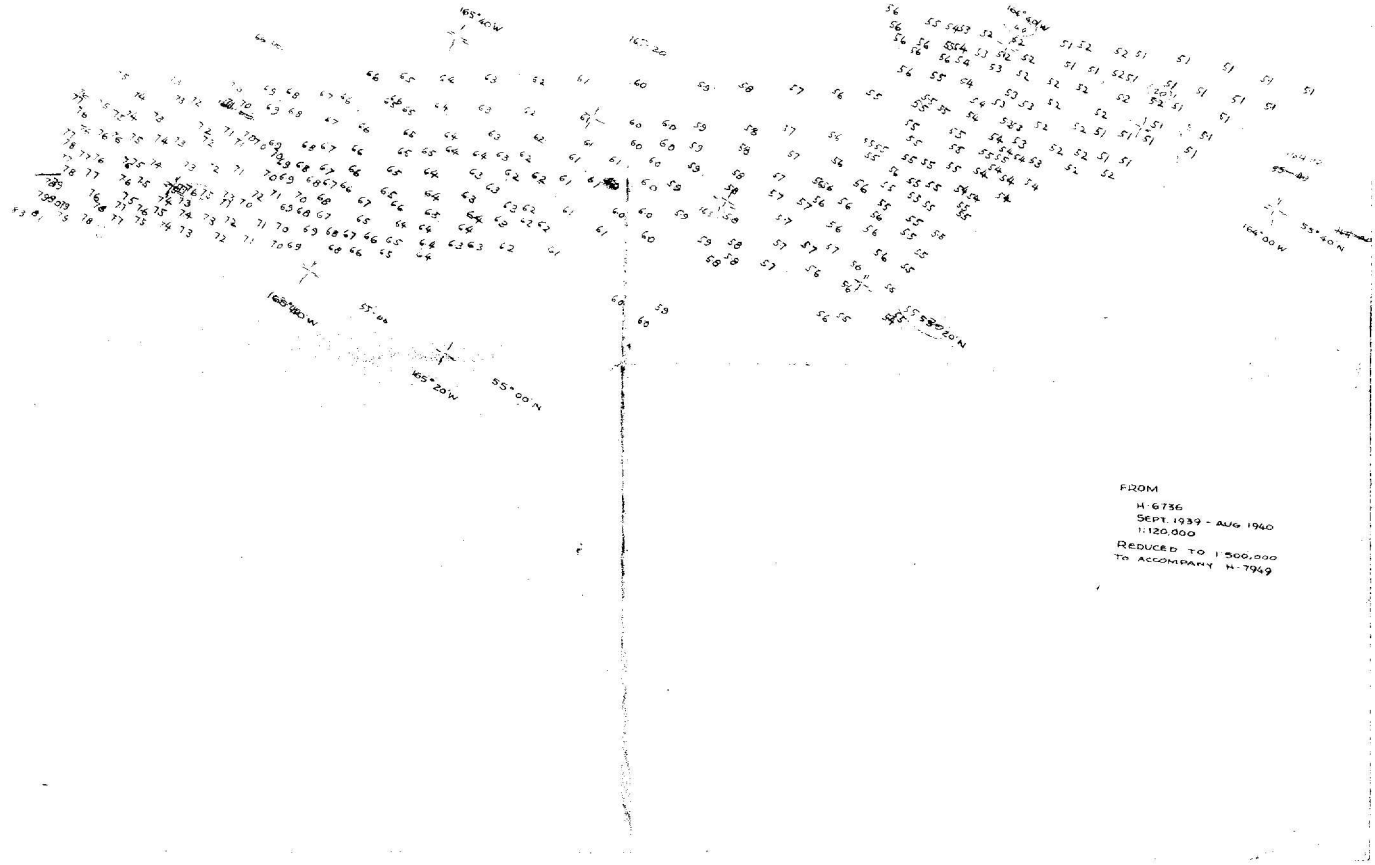
REDUCED TO 1:500,000
TO ACCOMPANY H-7949



FROM
H-6413
AUG. 1938
1:120,000

REDUCED TO 1:500,000
TO ACCOMPANY H-7949

6413



FROM
H-6736
SEPT. 1939 - AUG 1940
1:120,000
REDUCED TO 1:500,000
TO ACCOMPANY H-7949

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. PF 40151 *Office No.* H-7949

LOCALITY

State ALASKA

General locality BERING SEA

Locality Southeast Bering Sea

1951

CHIEF OF PARTY

CHARLES PIERCE

LIBRARY & ARCHIVES

DATE MAR 2 1953

B 870 1 (1)

Form 537
(Ed. June 1946)

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-7949

Field No. PF 40151

State ALASKA

General locality BERING SEA

Locality Southeast Bering Sea

Scale 1: 500 000 Date of survey 20 May 1951 - 10 Sep 51

Instructions dated 6 March 1951

Vessel PATHFINDER

Chief of party CHARLES PIERCE

Surveyed by J.C. TRIBBLE, K.S. ULM, W.C. RUSSELL, F.J. BRYANT

Soundings taken by fathometer, graphic recorder, ~~hand lead or wire~~

Fathograms scaled by LIPPOLD, WATKINS, HODGES

Fathograms checked by LIPPOLD, HODGES, WATKINS, ELLIS

Protracted by EEE

Soundings penciled by EEE

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW

REMARKS:

U. S. GOVERNMENT PRINTING OFFICE 777032

DESCRIPTIVE REPORT

To Accompany

HYDROGRAPHIC SURVEY H-7949 (Field No. PF40151)
SOUTHEAST BERING SEA, ALASKA
SCALE 1: 500 000

1951

USC&GSS PATHFINDER — CHARLES PIERCE, Comdg.

J.C. TRIBBLE

K.S. ULM

W.C. RUSSELL

F.J. BRYANT

- - - - - - HYDROGRAPHERS

A PROJECT

Project CS-343, Bering Sea, Alaska

Instructions 22/MEK, 6 March 1951
Supplemental Instructions 22/MEK, 11 May 1951 and 1 June 1951

B SURVEY LIMITS AND DATES

Survey H-7949 covers the southeast part of the Bering Sea from westward of the line Unalaska Island - Pribilof Islands northeast to the Alaska mainland.

Field work was done between 20 May and 10 September 1951. Hydrography was largely incidental to completion of the Bering Sea Electronic Position Indicator trilateration scheme and no regular and systematic extension of hydrographic coverage was possible.

Along the southern part of the project area junctions were made with the following prior surveys:

SURVEY	SCALE	YEAR
H-5740	1: 160 000	1934
H-5967	1: 160 000	1935
H-6413	1: 120 000	1938
H-6736	1: 120 000	1939 - 40

Junctions with contemporary surveys are shown on the index of sheets included in this report.

Hydrography was accomplished jointly with USC&GSS EXPLORER.

Sounding lines of the two vessels are distinguished by colors for position numbers and day letters as follows:

PATHFINDER	Green
EXPLORER	Blue

C VESSEL AND EQUIPMENT

Vessel was USC&GSS PATHFINDER. Standard speed while sounding was 115 RPM. The turning radius of the vessel at this speed is estimated as 300 meters.

The following echo-sounding equipment was used for depth measurement:

808 Fathometer	No. 130-S	to 160 fathoms
NJ-3 Fathometer	No. 22	160 to 400 fathoms
NMB Fathometer	No. 106	over 400 fathoms

D TIDES AND CURRENTS

The Standard Automatic Tide Gage at Dutch Harbor was the controlling station for reduction of soundings. Hourly heights from this gage were furnished by the Washington Office.

Time and range corrections were applied in various regions of the survey area in accordance with the zoning system devised in the Washington Office. (Reference: Director's letter 36-kh, Subject "Tide Reducers, Bering Sea, 1951", 15 October 1951). A copy of the applicable Tide Zone Diagram is included in this report.

A Portable Automatic Tide Gage was maintained at Village Cove, St. Paul Island during the period of this survey.

E SMOOTH SHEET

The Smooth Sheet was constructed at the Seattle Processing Office by conventional methods. The scale of the Boat Sheet was 1: 400 000; however, Boat and Smooth Sheets cover approximately the same area and include all of the project area.

The EPI distance circles are curves drawn through computed geographic positions of selected points on the arcs. After completion of the Smooth Sheet additional geographic positions of points on the distance circles were computed and checked against the plotted arcs. No appreciable error was discovered.

F CONTROL STATIONS

Electronic Position Indicator control was exclusively used for this survey and all control stations were the sites of EPI shore stations.

The stations used and sources of control are as follows:

EPIA, Amaknak Island, and EPIC, Goodnews Bay, were established by personnel of USC&GSS EXPLORER, using conventional methods of third order accuracy for a connection to existing triangulation on the 1927 North American Datum.

Geographic positions were furnished by the Washington Office and are those used for control in the office adjustment of the EPI trilateration.

EPIB, St. Paul Island, and EPIE, St. Matthew Island, were established by personnel of USC&GSS PATHFINDER and located by trilateration using Electronic Position Indicator line measurements accomplished jointly by USC&GSS PATHFINDER and EXPLORER in 1951. Positions of these stations are from the computation and adjustment of the EPI trilateration scheme in the Bering Sea made by the Washington Office but are based on incompletely adjusted positions of the control triangulation; final adjustment of the control triangulation was not complete at the time the Smooth Sheet was constructed. The geographic positions used were furnished by the Washington Office. (Reference: Director's letter 22/MEK, S-1-PF, Subject "Report on Adjustment of EPI Observations", 7 November 1951.

EPID, Nunivak Island, and EPIF, Hooper Bay, were established at points located by the party of Lieutenant Miller J. Tonkel in 1951 by triangulation based on the 1927 North American Datum. The positions used are from incompletely adjusted values furnished by the Washington Office. EPIF was not used for control of sounding lines by the PATHFINDER on this survey. The geographic positions plotted are those used for control in the adjustment of the EPI trilateration.

G SHORELINE AND TOPOGRAPHY

Shoreline and topographic details have been omitted from the Smooth Sheet in accordance with Section 751 (c) of the Hydrographic Manual.

H SOUNDINGS

Depths were measured with the echo-sounding equipment listed in "C". Complete and legible Fathograms exist for all periods of sounding when using 808 Fathometer No. 130-S and NMB Fathometer No. 106. Soundings from NJ-3 Fathometer No. 22 were obtained by "red light" only and no Fathograms exist.

Velocity corrections, as such, have not been applied. (Reference: Director's letter 22/MEK, S-1-PF, Subject "Fathometer Corrections Alaska", 21 June 1951). 808 Fathometer No. 130-S used on this survey, previously operated at a calibration velocity of 820 fms/sec, was converted to a calibration velocity of 800 fms/sec on 16 July 1951. Soundings recorded prior to that time have been corrected for the change in calibration velocity from 820 to 800 fms/sec. These corrections for change in calibration velocity of 808 Fathometer No. 130-S have been designated "CVC" in the Sounding Records and apply to D to V days, both inclusive. NJ-3 Fathometer No. 22 and NMB Fathometer No. 106 were initially controlled to a calibration velocity of 800 fms/sec and no velocity corrections have been applied.

Instrumental corrections for 808 Fathometer No. 130-S have been derived from numerous simultaneous comparisons and phase comparisons made throughout the season.

Instrumental corrections for NJ-3 Fathometer No. 22 present a different problem since the major part of the error appears to result from variation in frequency of the alternating current from the uncontrolled ship supply from the designed frequency of 60 cycles per second. Use of this Fathometer without controlled frequency current was recognized as an expedient but it was considered that resulting depth measurements would be superior in accuracy to those from the "Deep Scale" of NMB Fathometer No. 106. Subsequent to 23 May frequent checks were made of the transmitted signal cycle by timing the interval required for emission of 60 signals and the variation in the signal cycle was found to range from 59.2 seconds to 59.9 seconds. Soundings recorded previous to the institution of these timing checks have been corrected by values based on a mean cycle of 59.6 seconds, resulting in corrections of -0.67% of the depth. Over the range in variation noted, use of the mean cycle interval for computation of corrections results in a maximum error amounting to 1% of the depth.

After timing checks were begun, corrections have been computed using mean values between successive timing checks. Possible errors in this method may approach a maximum of 1% of the depth but probably are much less and do not often exceed 0.5% of the depth.

On 4 August ~~26 June~~, a frequency meter was installed in the power circuit and an attempt made to regulate the line frequency within comparatively narrow limits. The attempt was partially successful; variations in line frequency were reduced to the extent that variations in timing of the emitted signal cycle from the designed frequency of one per second were held to a maximum of -1.33% and an average of -0.86%.

These divergences in the timing of the emitted signal cycle correspond to errors of +1.35% and +0.90% of the registered depths, respectively. Frequent timing checks of the transmitted signal cycle were recorded and corrections computed and applied to the soundings. The indicated accuracy of these corrections is within 0.33% of the observed depth.

No instrumental corrections have been applied to sounding taken by NMB Fathometer No. 106. The indicated instrumental correction for this Fathometer is approximately 1 fathom, which is less than the uncertainty in scaling soundings from the graph.

All instrumental corrections applied have been entered in the Sounding Volumes in the correction column headed "Echo Correction".

Draft corrections have been applied to the recorded soundings. Since the vessel was sounding continuously, the Fathometer initials were maintained at a standard setting of 2.0 fathoms and the change in midship draft plotted as a graph from draft readings taken at intervals. The algebraic differences between 2.0 fathoms and the instantaneous draft have been entered as corrections in the correction column headed "Draft".

Initial corrections, that is the difference in the actual value on the Fathogram and the adopted value of 2.0 fathoms, were applied at the time the Fathograms were scanned and have not been separately entered in the Sounding Record.

Settlement and Squat corrections have not been applied since no value has been determined for USC&GSS PATHFINDER. However, the combined effect of settlement and squat is estimated to be not greatly in excess of 0.1 fathom.

For detailed information concerning derivation of the corrections discussed, reference should be made to the report "Fathometer Corrections 1951", submitted separately.

Field Sheet H-7908

I CONTROL OF HYDROGRAPHY

Hydrography was controlled by EPI distance measurements from two shore stations for each fix.

The observed EPI distances have been adjusted by applying corrections derived from simultaneous EPI and Shoran measurements observed at intervals during the season. For information concerning the derivation of these corrections reference should be made to letter of Commanding Officer PATHFINDER 426/CP/gaa, Subject "EPI and Shoran Corrections", 24 October 1951, a copy of which is attached to this report.

J ADEQUACY OF SURVEY

The survey is incomplete. Coverage of the survey area at the preliminary line spacing of 5 nautical miles has not been completed and holidays exist.

The 100 fathom curve is well defined East of Longitude 169° W but elsewhere it is not adequately delineated.

Junctions with contemporary survey are Shown on the sheet layout sketch included in this report. Agreement at junctions is satisfactory.

Junctions with prior surveys along the southern limit of the survey area are discussed under "L".

The 100 and 1000 fathom depth curves only have been drawn. Other depth curves have been omitted because of the incomplete nature of the survey.

K CROSSLINES

No systematic coverage of the area by crosslines has been attained and additional crosslines are required.

Crossings are satisfactory with the following exception:

At Latitude 57° 24' N., Longitude 169° 28' W, a crossing between positions 35 and 36FA, PATHFINDER, and positions 46 and 47V, EXPLORER, common depths fail to agree by 7% in general depths of 40 fathoms and regular bottom. It has not been possible to reconcile this discrepancy but it is possibly due to accumulation of errors in tide reducers and Fathometer corrections.

L COMPARISON WITH PRIOR SURVEYS

Junctions with consideral overlap were made with the following prior surveys along the southern limit of the project area.

SURVEY	SCALE	YEAR
H-5740	1: 160 000	1934
H-5967	1: 160 000	1935
H-6413	1: 120 000	1938
H-6736	1: 120 000	1939-40

Overlays of junction soundings for each of these surveys, reduced to a scale of 1: 500 000, have been compared with the Smooth Sheet and are forwarded with this report.

1. H 5740: The junction with this survey is complete and the agreement of soundings at the junction and in the overlap area is generally satisfactory. Slight displacements in the 100, 200 and 500 fathom depth curves at the junction are caused by discrepancies amounting to less than 2% of the common depths. Discrepancies in depth amount to less than 2% except as follows:

a. The 400 fathom sounding at Latitude 54° 29' N., Longitude 167° 34' W, falls in depths of 412 to 422 fathoms on the present survey.

b. The 87 fathom sounding at Latitude 54° 48' N,. Longitude 166° 07' W, falls in depths of 93 to 103 fathoms on the present survey and the resultant displacement of the 100 fathom curve on H 5740 is not verified.

c. Soundings of 216 to 240 fathoms in the vicinity of Latitude 54° 39', Longitude 166° 25' W, fall in depths of 170 to 198 fathoms on the present survey. The resulting indentation and apparent displacement of the 200 fathom curve on H 5740 is not verified by the present survey.

d. The 90 fathom sounding at Latitude 54° 47' N, Longitude 166° 09' W, falls in depths of 103 to 109 fathoms on present survey.

e. Soundings of 150 to 168 fathoms in the vicinity of Latitude 54° 44' N., Longitude 166° 08' W., fall in depths of 123 - 149 fathoms on the present survey.

f. Soundings of 331 to 373 fathoms in the vicinity of Latitude 54° 27' N., Longitude 168° 17' W., fall in depths of 432 to 452 fathoms on the present survey.

g. The 150 fathom sounding at Latitude 54° 47' N., Longitude 166° 37' W., falls in depths of 138 to 142 fathoms on the present survey.

h. Agreement of depth curves in the overlap area is good except as noted in b. and c. above.

The discrepancies noted are probably partly due to poor control in parts of H 5740 and partly to the wide spacing of lines on the present survey. In general, control for the present survey should be superior to that for the northern part of H 5740. In particular, the 100 and 200 fathom depth curves from the present survey appear more reliable than those from H 5740.

2. H-5967: The junction with this survey is complete; however, the agreement of soundings in common depths is poor although there are areas of close agreement. In general, where discrepancies exist, soundings from H-5967 are deeper.

The 1000 fathom curve is in close agreement where the surveys join. Divergencies in the overlap area are partially due to the wide spacing of sounding lines on the present survey.

The closer spacing of sounding lines on H-5967 undoubtably gives at better coverage of the junction area than is afforded by the present survey. Some displacement in position probably results from the different types of control used; in general, control of sounding lines on the present survey should be superior to that of H-5967. Discrepancies in depths amounting to between 0.5 and 1% are attributable to omission of velocity corrections to soundings of the present survey. (Reference: Director's letter 21/MEK, S-1-PF, Subject "Fathometer Corrections, Alaska" 21 June 1951).

3. H 6413: Junction with this survey is incomplete; only three sounding lines from the present survey join the area and common depths are few. In three instances, discrepancies amount to between 3 and 10% of the depth; the remainder agree within 2%. A part of this discrepancy in depth may be attributed to omission of velocity corrections to soundings of the present survey.

4. H-6736: Junction with this survey is complete in so far as the preliminary line spacing of the present survey is concerned except for the extensive holiday in the southeast part of H-7949 which adjoins the northeast limit of H-6736.

Agreement of common depths with the present survey is satisfactory; discrepancies amount to less than 2% except in the vicinity of Latitude 55° 00' N., Longitude 165° 58' W., where soundings from H-6736 are generally 2 fathoms deeper than those from H-7949 in depths of 73 to 75 fathoms.

M COMPARISON WITH CHART

The Smooth Sheet has been compared with Chart 8802, 17th Edition, 1944, print date 49-11/7. Though not in close agreement, charted depths and bottom features to a large extent are similar to those of the present survey. Charted offshore depths are generally shoaler by 1 to 15 fathoms than corresponding depths from the present survey. The general configuration of the charted 1000 and 100 fathom curves is similar to the corresponding depth curves from the present survey.

Many improbable irregularities of the charted 100 fathom curve are not verified by the present survey.

The charted 19 fathom sounding at Latitude 56° 35' N., Longitude 170° 07' W., falls in general depths of 55 fathoms in regular bottom on the present survey.

The vicinity of the following charted shoal soundings was not covered by the present survey.

CHART POSITION	CHART DEPTH
56° 42' N 169° 07' W	5 fms Rep
56° 41' N 169° 07' W	8 fms P.D.
56° 33' N 169° 08' W	3½ fms P.D.

An 18 fathom sounding, between positions 7 and 8CA (green) of the present survey, at Latitude 56° 38'.0 N., Longitude 169° 14'.0 W., indicates the probable existence of a shoal of undetermined extent and depth in the general vicinity of these charted soundings. The Fathogram shows a very jagged bottom profile.

Depths from the present survey should supersede the charted informantion in common areas.

N DANGERS AND SHOALS

No new dangers or shoals were found in the surveyed area except as noted in the third paragraph of section "M" above.

O COAST PILOT INFORMATION

Coast Pilot notes for the general area have been submitted separately.

P AID TO NAVIGATION

No aids to navigation are regularly maintained in the surveyed area.

Z TABULATION OF APPLICABLE DATA

Forwarded with this report:

Overlays to scale of 1: 500 000 of junction areas of the following surveys:

SURVEY	YEAR
H-5740	1934
H-5967	1935
H-6413	1938
H-6736	1939-40

Submitted separately:

Fathometer Corrections 1951

Tidal Data, Portable Automatic Tide Gage at Village Cove, St. Paul Island.

FAIR J. BRYANT
Lieutenant Commander, USC&GS

EARL E. ELLIS
Ensign, USC&GS

STATISTICS FOR HYDROGRAPHIC SURVEY

H-7949 (1951)

USC&GSS PATHFINDER Project CS-343

VOL NO	DAY LTR	1951 DATE	H.L.WIRE SNDGS	NO OF POSIT	STAT. MILES HYDRO	
I	A	3 May	0	16	119.0	Loran & D.R. not plotted
I	B	4 May	0	13	81.0	
I	C	19 May	2	2	Detached Positions	
I	D	20 May	0	26	117.0	
I	E	23 May	1	35	163.5	
I	F	24 May	1	62	342.7	
I	G	25 May	0	49	353.0	
I & II	H	26 May	0	52	346.1	
II	J	27 May	0	49	347.2	
II	K	28 May	0	40	281.6	
II	L	29 May	0	31	146.0	
II	M	30 May	0	17	80.0	
II	N	2 Jun	0	7	46.0	
III	P	3 Jun	0	36	270.3	
III	Q	4 Jun	0	9	66.7	
III	R	21 Jun	0	21	143.2	
III	S	22 Jun	0	21	161.6	
III	T	28 Jun	0	28	205.4	
III	U	11 Jul	0	25	192.9	
III	V	12 Jul	0	32	227.4	
IV	W	18 Jul	0	12	59.1	
IV	X	19 Jul	0	72	345.0	
IV	Y	20 Jul	0	70	339.0	

STATISTICS FOR HYDROGRAPHIC SURVEY

H-7949 (1951)

USC&GSS PATHFINDER Project CS-343

VOL NO	DAY LTR	1951 DATE	H.L. WIRE SNDGS	NO OF POSIT	STAT. MILES HYDRO
IV	Z	21 Jul	0	24	125.4
IV & V	AA	22 Jul	0	28	215.7
V	BA	23 Jul	0	11	72.2
V	CA	2 Aug	0	18	117.2
V	DA	3 Aug	0	27	189.6
V	EA	7 Aug	0	8	52.3
V	FA	8 Aug	0	36	249.2
VI	GA	27 Aug	0	14	90.8
VI	HA	3 Sep	0	5	25.4
VI	JA	4 Sep	0	52	251.1
VI	KA	7 Sep	0	28	127.0
VI	LA	8 Sep	0	38	198.3
VI	MA	9 Sep	1	40	267.3
VI & VII	NA	10 Sep	0	23	148.7
		TOTAL- - -	5	989*	4787.2*

Total Area = 34,276 Square Statute Miles

* A and B days not included in these totals.

TIDE NOTE

HYDROGRAPHIC SURVEY H*7949 (1951)

The Standard Automatic Tide Gage at Dutch Harbor, Alaska at Latitude 53° 53'.6 N., Longitude 166° 32'.1 W., was used for reduction of soundings for tide. Three point three (3.3) feet on the staff corresponded to MLLW.

Tide curves were plotted from hourly heights furnished by the Washington Office. Corrections for time and height differences were applied in accordance with the Zoning System devised in the Washington Office. (Reference: Director's letter 36 kh, Subject "Tide Reducers, Bering Sea, 1951", 15 October 1951). A copy of the applicable Tide Zone Diagram is included in this report.

CALIBRATION VELOCITY CORRECTIONS

FROM 820 TO 800 FATHOMS PER SECOND

1951 FIELD SEASON

CORRECTION IN FATHOMS	TO DEPTH IN FATHOMS	CORRECTION IN FATHOMS	TO DEPTH IN FATHOMS
0.0	2	-1.7	71
-0.1	6	-1.8	76
-0.2	10	-1.9	80
-0.3	14	-2.0	84
-0.4	18	-2.1	88
-0.5	22	-2.2	92
-0.6	27	-2.3	96
-0.7	31	-2.4	100
-0.8	35	-2.5	101
-0.9	39	-2.6	108
-1.0	43	-2.8	117
-1.1	47	-3.0	125
-1.2	51	-3.2	133
-1.3	55	-3.4	141
-1.4	59	-3.6	150
-1.5	63	-3.8	158
-1.6	67	-4.0	160

Corrections to be applied to 808 Fathometer readings recorded prior to 16 July 1951

ABSTRACT OF EPI CORRECTIONS

SHEET 40151 PATHFINDER

DAY LTR	DATE 1951	TIME		"A" side of Rcvr STATION	EQUIP	CORR	"B" side of Rcvr STATION	EQUIP	CORR	SHIP SET
D	20 May	0340	1200	A	1 & 3	-3.0	B	3 & 5	-4.2	2
E	23 May	1240	2400	A	1 & 3	-3.0	B	3 & 5	-4.2	2
F	24 May	0000	0520	A	1 & 3	-3.0	B	3 & 5	-4.2	2
F	24 May	0520	0540	A	2 & 3	-4.7	B	3 & 5	-4.2	2
F	24 May	0540	0600	A	2 & 6	-3.7	B	3 & 5	-4.2	2
F	24 May	1600	2400	A	1 & 6	-4.2	B	3 & 5	-4.2	2
G	25 May	0000	2330	A	1 & 6	-4.2	B	3 & 5	-4.2	2
H	26 May	0000	2400	A	1 & 6	-4.2	B	3 & 5	-4.2	2
J	27 May	0000	2330	A	1 & 6	-4.2	B	3 & 5	-4.2	2
K	28 May	0000	1900	A	1 & 6	-4.2	B	3 & 5	-4.2	2
L	29 May	1340	2340	A	1 & 6	-4.2	B	3 & 5	-4.2	2
M	30 May	0000	0520	A	1 & 6	-4.2	B	3 & 5	-4.2	2
N	2 Jun	2055	2330	A	1 & 6	-4.2	B	3 & 5	-4.2	2
P	3 Jun	0000	2330	A	1 & 6	-4.2	B	3 & 5	-4.2	2
Q	4 Jun	0000	0430	A	1 & 6	-4.2	B	3 & 5	-4.2	2
R	21 Jun	0310	2330	A	1 & 6	-4.2	B	3 & 5	-4.2	2
S	22 Jun	0000	1030	A	1 & 6	-4.2	B	3 & 5	-4.2	2
*T	28 Jun	0900	2230	A	1 & 6	-4.2	C	6 & 7	-3.8	2
U	11 Jul	1700	1000	A	1 & 6	-3.1	B	3 & 5	-2.8	3
	11 Jul	1030	1231	A	1 & 6	-4.2	B	3 & 5	-4.2	2
U	11 Jul	1330	1600	A	1 & 6	-3.1	B	3 & 5	-2.8	3
U	11 Jul	1630	2330	A	1 & 6	-4.2	B	3 & 5	-4.2	2
V	12 Jul	0000	1525	A	1 & 6	-4.2	B	3 & 5	-4.2	2
W	18 Jul	2000	2340	D	7 & 8	-4.6	B	3 & 5	-4.2	2

ABSTRACT OF EPI CORRECTIONS

SHEET 40151 PATHFINDER

DAY LTR	DATE 1951	TIME		"A" side of Rcvr STATION	EQUIP	CORRN	"B" side of Rcvr STATION	EQUIP	CORRN	SHIP SET
X	19 Jul	0000	2340	D	7&8	-4.6	B	3&5	-4.2	2
Y	20 Jul	0000	2340	D	7&8	-4.6	B	3&5	-4.2	2
Z	21 Jul	0000	0820	D	7&8	-4.6	B	3&5	-4.2	2
AA	22 Jul	1000	2330	D	7&8	-4.6	B	3&5	-4.2	2
BA	23 Jul	0000	0500	D	7&8	-4.6	B	3&5	-4.2	2
CA	2 Aug	1130	1230	D	7&8	-4.6	E	2&3	-5.1	2
CA	2 Aug	1300	2325	D	7&8	-4.6	B	3&5	-5.1	2
DA	3 Aug	0000	1330	D	7&8	-4.6	B	3&5	-5.1	2
EA	7 Aug	2000	2330	D	7&8	-4.6	B	3&5	-5.1	2
FA	8 Aug	0000	1830	D	7&8	-4.6	B	3&5	-5.1	2
FA	8 Aug	1900	1930	D	7&8	-4.6	E	2&3	-5.1	2
GA	27 Aug	1709	2330	E	2&3	-4.7	B	3&5	-5.1	2
HA	3 Sep	2220	2340	E	2&3	-4.7	B	3&5	-5.1	2
JA	4 Sep	0000	0040	E	2&3	-4.7	B	3&5	-5.1	2
JA	4 Sep	0100	0240	E	2&3	-4.7	D	7&8	-4.6	2
JA	4 Sep	0300	1700	B	3&5	-5.1	D	7&8	-4.6	2
KA	7 Sep	0840	1820	D	7&8	-4.6	B	3&5	-5.1	2
LA	8 Sep	1000	2020	D	7&8	-4.6	B	3&5	-5.1	2
LA	8 Sep	2040	2330	D	7&8	-4.6	E	2&3	-5.1	2
MA	9 Sep	0000	2330	D	7&8	-4.6	E	2&3	-5.1	2
NA	10 Sep	0000	1100	D	7&8	-4.6	E	2&3	-5.1	2

*The Ship PATHFINDER did not calibrate at EPI "C". With the same ground sets used by the Ship EXPLORER and Ship PATHFINDER, it is assumed that the difference in the EPI corrections at the various stations involved the ship sets. Thus station EPI "A", with more consistent results from both ships, was used as the standard to apply correction differences to EPI "C".

At EPI "A"

Means of corrections for "A" and "B" sides of receiver for season.

EXPLORER	-6.1
PATHFINDER	-4.2
	-1.9

At EPI "C"

EXPLORER EPI "C" correction for "B" side of receiver for season.

-5.7
-1.9

PATHFINDER EPI "C"
Correction -3.8

APPROVAL SHEET

HYDROGRAPHIC SURVEY H-7949 (PF40151)

The field work of this survey was done under my immediate supervision and the Boat Sheet was frequently inspected during the progress of the work.

The survey is incomplete; extensive areas are either not covered by hydrography or are inadequately covered. The additional work necessary for completion of the survey is recommended.

The completed Smooth Sheet Plot of the work so far accomplished and the accompanying records have been examined by me and are approved.

Charles Pierce

CHARLES PIERCE
Chief of Party

Refer to File
426/CP/gaa

24 October 1951

To: TO: The Director
U. S. Coast and Geodetic Survey
Dept. of Commerce Bldg.

Subject: EPI and shoran corrections

Reference: My letters dated 17 July 1951 (426/CP/gaa) and 3 August 1951

There are forwarded abstracts of shoran and EPI corrections by the PATHFINDER subsequent to 1 August 1951. An abstract of all corrections obtained prior to 1 August 1951 were forwarded with my letters described under reference. There is also forwarded an abstract of a few line measurments made from the ship at anchor.

It is noted that the final shoran corrections at EPI BAKER and EPI EASY increase the "Zero Set" by 0.009 and 0.012 statute miles from the values obtained early in the season. The final shoran corrections have not been meaned with the earlier corrections for deriving EPI corrections to apply to positions on the hydrography because the change in microseconds would be too small to affect the plotting of any position on a scale of 1/400,000.

No final shoran correction was obtained on the equipment at EPI DOG. (Nunivak) Island) because weather conditions prevented doing so. A preliminary value of the shoran correction for the shore equipment used at Nunivak Island and the ship equipment as calibrated in Seattle in October furnished a value within 0.006 statute miles of the shoran correction submitted with my letter of 17 July 1951 and which was used in computing the length measurments in the Bering Sea.

Shoran calibration observations taken on equipment at EPI DOG on 10 June and 8 July show considerable range in individual values when finally plotted on an aluminum mounted sheet and using geodetic positions furnished in September by Norman Sylar. However, the value submitted to Washington on the 17th of July, 1950 agree within 0.01 statute miles which variation will have no sensible effect on the computations of lengths involving EPI DOG.

The EPI corrections derived from shoran comparisons for the several shore stations appear to be reasonably consistent throughout the season. The exception to this occured at EPI BAKER on 2 August when EPI corrections increased about 1.6 microseconds from the mean of values derived prior to this date. This has been attributed to changes in the modulator and transmitter at the shore station but it is noted that on the 19th of August the correction decreased again in agreement with to the early season values.

The method followed aboard the PATHFINDER for determining the EPI corrections by comparison with shoran readings was as follows: Place the ship on a bearing

normal to the line between the EPI and shoran transmitters by EPI control and at a distance close to the maximum range of the shoran equipment. Run this normal line at 1/3 speed taking simultaneous readings of the shoran and EPI distances at regular intervals. Twenty such readings are usually taken. After completion of this set, shift from the "A" to the "B" side of the ships "Scope" and taken 20 additional readings. The mean of each set of readings is used for computing the EPI correction. The individual shoran and EPI distance readings can be plotted and any wild values rejected. It is considered worth the time on EPI calibration tests to make the comparisons on both the A and B sides of the scope if for no other reason than to serve as a check on the particular observation. ZERO checks on the ship EPI equipment during the season showed the "B" side of the scope to be 0.3 microseconds bigger then the A side.

Reference has frequently been made in the abstract of shoran and EPI calibration forwarded to Washington to the "Calibration volume". This work book has been retained aboard and contains all the observational data for shoran and EPI corrections calibrations. All data has been checked.

Information is requested whether this calibration volume is desired in Washington. If not it will be retained aboard for reference purposes next season.

All line crossing observations, length determinations at anchor and metrological data for line crossings are entered in sounding volumes which have been forwarded to Washington.

CHARLES PIERCE
Captain, USC&GS
Comdg. Ship PATHFINDER

cc: Cabin
Field works officer

7949

Diag. Cht. No. 8802-3

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. PF-EX40151 Office No. H-7949

LOCALITY

State ALASKA

General locality Bering Sea

Locality Southeast Bering Sea

19452

CHIEF OF PARTY

CHARLES PIERCE

LIBRARY & ARCHIVES

DATE MAR 2 1953

B-1870-1 (1)

Form 537
(Ed. June 1946)

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-7949

Field No. PF-EX 40151

State Alaska

General locality Bearing Sea

Locality Southeast Bering Sea

Scale 1:500 000 Date of survey 23 Aug - 11 Sept 1952

Instructions dated 6 March 1951; 21 March 1952

Vessel U.S.C. & G.S.S. PATHFINDER

Chief of party CHARLES PIERCE

Surveyed by H.J. HEALY; K.S. ULM; E.J. BRYANT

Soundings taken by fathometer, ~~xxxxxxxxxxxxxxxxxxxxxxxxxx~~ Graphic Recorder

Fathograms scaled by REW; JJC, DCH.

Fathograms checked by REW, VE.

Protracted by E.E. ELLIS

Soundings penciled by E.E. ELLIS

Soundings in fathoms ~~feet~~ at ~~MEAN~~ MLLW

REMARKS: Continuation in 1952 of Survey begun in 1951.

[redacted]

U. S. GOVERNMENT PRINTING OFFICE 777032

DESCRIPTIVE REPORT

To Accompany

HYDROGRAPHIC SURVEY H-7949 (Field No. Ex-PF 4015l)
Southeast Bering Sea, Alaska
Scale: 1: 500,000
1952

USC&GSS PATHFINDER — CHARLES PIERCE, Comdg.

H.J. HEALY

K.S. ULM — HYDROGRAPHERS

F.J. BRYANT

A. PROJECT

1. Project CS-343, Bering Sea, Alaska
2. Instructions 22/MEK dated 6 March 1951 and Supplemental Instructions 22/MEK dated 21 March 1952.

B. SURVEY LIMITS AND DATES

1. The survey as a whole includes the southeastern part of the Bering Sea, generally northeast from the line Unalaska Island - Pribilof Islands to the Alaska mainland. The survey was begun in 1951 jointly with USC&GSS-EXPLORER.

2. This covers additional work accomplished by USC&GSS PATHFINDER during 1952, generally in the southwest portion of the area and principally along the 100 fathom curve. Except for J and K days, 10 and 11 September 1952, hydrography during 1952 was incidental to fueling runs to Dutch Harbor.

3. Hydrography is distinguished between ships and seasons by colors for position numbers and day letters as follows:

EXPLORER 1951	BLUE
PATHFINDER 1951	GREEN
PATHFINDER 1952	BROWN

4. Work on this survey in 1952 was done between the inclusive dates 23 August - 11 September.

5. Junctions with prior surveys are those listed in the Descriptive Report of 1951. Junctions with contemporary surveys are shown on the index sheets included in this report.

C. VESSEL AND EQUIPMENT

1. Vessel was USC&GSS PATHFINDER. Standard speed while sounding varied from 115 to 102 RPM. as noted in the Sounding Volumes. The turning radius of the vessel over this range of speed is estimated to be 300 meters.

2. The following echo-sounding equipment was used for depth measurements:

808 Fathometer No. 130-S to 160 fathoms

NMB Fathometer No. 106 over 160 fathoms.

D. TIDE AND CURRENT STATIONS

1. The Standard Automatic Tide Gage at Dutch Harbor was the controlling station for reduction of soundings for tide. Hourly heights from this station were furnished by the Washington Office.

2. Time and range corrections were applied to the tidal data in accordance with the zoning system devised in the Washington Office in 1951. (Reference: Director's Ltr. 36-kh, Subject "Tide Reducers, Bering Sea, 1951", 15 October 1951) A copy of the applicable Tide Zone Diagram is included in this report. The major part of the 1952 hydrography falls within the zone having the same tidal characteristics as the Dutch Harbor Tide Station. A small part ofthe 1952 work falls within the zone having a time correction of + 1 hour and a range factor of 1.5, based on Dutch Harbor tidal data.

3. No current stations were occupied within the area of the survey.

E. SMOOTH SHEET

1. The smooth plot of 1952 work was made on the 1951 smooth sheet.

2. Distance arcs from stations EPISE, Sequam Island and SHOCAN, St George Island, not previously used for control were constructed on the 1951 smooth sheet. These arcs are curves drawn through computed geographic positions of selected points on the distance circles. Distance circles are laid off in microseconds; those from EPISE are indicated by broken lines in purple and those from SHOCAN by solid lines in brick red.

3. There is no appreciable distortion in the 1951 smooth sheet.

F. CONTROL STATIONS

1. Electronic control stations only were used on this survey, a total of three stations being used for the 1952 work. The positions of each of these stations were computed on the 1927 North American Datum.

2. The stations used and source of control are as follows:

EPIB 1951, St Paul Island. This station is identical with that used on 1951. Its position originates with the Electronic Position Indicator trilateration accomplished in 1951: an account of this determination appears in the Descriptive Report accompanying the 1951 smooth plot.

SHOCAN 1952, St George Island. Located in 1952 by personnel of USC&GSS-PATHFINDER using conventional methods of third order accuracy for a connection to existing triangulation of 1897 and 1944. Published values for the existing triangulation are on the 1944 St Paul -St George. Datum and geographic positions were corrected to the 1927 North American Datum by applying factors, furnished by Washington Office, resulting from a connection to the Bering Sea Electronic Position Indicator trilateration scheme at St. Paul Island by observed reciprocal azimuths and electronic distance measurements accomplished jointly by USC&GSS-PIONEER and PATHFINDER in 1951. The correction factors furnished and used are Latitude - 6".67; Longitude - 30".15, Azimuth + 27".4. The resulting position of SHOCAN 1952 is from the field computations.

EPISE 1952, Sequam Island. Located in 1952 by personnel of the USC&GSS-PIONEER using conventional methods of third order accurcy for a connection to existing triangulation on the 1927 North American Datum. The geographic position of this station was furnished by USC&GSS-PIONEER and is from the field computations.

G. SHORELINE AND TOPOGRAPHY

Shoreline and topographic details have been omitted in accordance with Section 751 (c) of the Hydrographic Manual.

H. SOUNDINGS

1. Depths were measured with the echo-sounding equipment listed in "C". Complete and legible fathograms exist for all periods of sounding.

2. Velocity corrections have not been applied. (Reference: Director's letter 21/MEK, S-1-PF, Subject "Fathometer Corrections, Alaska", 21 June 1951)

3. At approximately 0951 26 August, following Position 8C, while sounding in depths of 190 fathoms, the belt drive of the NMB visual signal was thrown. The fathometer continued in operation, the trace on the fathogram continuing to record, but soundings read from the graph were notably shoaler then adjacent depths. At 1046, following Position 10C, in depths of 160 fathoms, sounding was shifted to the 808 fathometer and at 1053 a comparison was made between the NMB and 808 fathometers giving a correction of +19.5 fathoms to be applied to soundings read from the NMB fathogram. All soundings between 0955 and 1045 C-day have been corrected by +19.5 fathoms. Computation of this correction is shown on pages 23 and 24, Volume 1, of the Sounding Record.

4. Instrumental corrections for the fathometers used have been based on simultaneous comparisons of 808 fathometer No.130-s with wire and handlead soundings and from phase comparisons between the various scales taken throughout the season. Instrumental corrections for NMB fathometer No.106 were obtained by simultaneous comparisons with 808 Fathometer No. 130-S. For details concering the computation of these correction reference should be made to the report "Fathometer Corrections 1952", submitted separately.

5. Fathometer initals were maintained at a standard setting of 2.0 fathoms. Initial corrections, that is the difference between 2.0 fathoms and the actual initial as shown on the fathograms, were applied when the fathograms were scanned and have not been entered in the Sounding Volumes.

6. A continous record was kept of the midship draft and plotted as a graph. Draft corrections have been obtained by reference to these graphs and the values of this corection entered in the sounding Volumes represent the difference between the standard initial setting of 2.0 fathoms and the instantaneous draft.

7. Correction for the effect of settlement and squat, from observations in Iliuliuk Bay, Alaska, on June 26 1952, have been combined with the instrumental corrections discussed in Paragraph 4, above. Mean values of +0.15 fm for speeds of 102 RPM and over and +0.10 fm for speeds between 75 and 101 RPM have been used.

8. All corrections have been onitted for soundings in depths greater than 500 fathoms.

I. CONTROL OF HYDROGRAPHY

1. All hydrography was controlled by electronic means using either Electronic Position Indicator distances or a combination of Electronic Position Indicator and Shoran distances.

2. For EPI fixes, the stations EPIB, St Paul Island and EPOSE, Sequam Island were used. For combined EPI and Shoran fixes, Shoran distances from station SHOCAN, St George Island, were used with EPI readings on either EPIB or EPISE, the ship being conned along the Shoran arc.

3. All plotting has been done in microseconds, observed Shoran distances being converted to microseconds by a table computed from the factor 1 statute Mile = 10.740100 Microseconds.

4. Observed electronic distances were corrected by values derived from calibrations of the equipment used at various times during the progress at the hydrography For detailed information concerning the computation of these corrections, reference should be made to the report "EPI and Shoran Corrections 1952", submitted separately.

5. During the time the ship was conned along Shoran arcs on J and K days, 10 and 11 September, EPI readings from both EPIB and EPISE were recorded as well as the Shoran distance from SHOCAN. Since the area sounded was on or adjacent to the baseline between EPISE and SHOCAN, the positions were plotted using EPIB and SHOCAN The agreement between EPI distances from EPIB and EPISE have been studied following completion of the smooth plot. The values in microsecomds of distances from EPISE were scaled from the smooth sheet and compared with the corrected observed values in the Sounding Volumes. Analysis of these comparisons indicated that, disregarding the occasional erratic readings to be expected in EPI returns, the calibration correction applied to EPISE returns is too small by an average of approximately one microsecond so far as the shore station equipment used (set No.6) is concerned. Similar data from adjoining contemporary surveys indicates that this may also be the case for the alternative Sequam shore station equipment (set No.3) used for control of hydrography on this survey. Calibration corrections for each of these shore station equipment sets depend on a single group of observations. [illegible]

~~used for control of hydrography on this survey. Calibration corrections for each of these shore station equipment sets depend on a single group of observations~~. Past experience indicates that calibration corrections derived from a single series of observations may differ by one to two microseconds from values, usually more reliable, resulting from several series of obervations over a period of two to six weeks. The possible errors in position while not serious are detectable at the scale of the smooth plot.

J. ADEQUACY OF SURVEY

1. This survey is incomplete; the project area within the limits of the survey is not adequately covered. North east of a line joining points in Latitude 56°-10'N, Longitude 168°-35'W and Latitude 54°-20'N, Longitude 166°-20'W, the elimination of holidays and some reduction of the existing line spacing of 4 to 6 nautical miles is required. No final line spacing for this extensive area of regular and featureless bottom has been specified.

2.The apparent holidays north of Latitude 56°-10'N, between Longitude 168°-35 and 170°-00'W and north of Latitude 56°-13'N, between Longitudes, 170°-00' and 171°-25' are covered at larger scale by the incomplete contemporary surveys H-8001 (PF 10152) and H-8002 (PF 10252). In particular, the 100 fathom curve between Longitudes 168°-35' and 170°-00'W is adequately delineated on H-8001 (PF 10152).

3. The area southwest of a line joining the points in Latitude 56°-10'N, Longitude 168°-35'W and Latitude 54°-20'N, Longitude 166°-20'W, seems adequately covered except as follows:

(a) Additional developement of the 100 fathom curves is required in the vicinities of Latitude 56°-02'N, Longitude 170°-10'W, 55°-54'N,168°-50'W; 55°-46'N, 168°-48'W; 55°-40'N, 168°-37'W; 55°-42'N, 168°-40'W.

(b) Reduction of line spacing is desirable between points in Latitude 56°-00N, Longitude 170°-20'W and Latitude 54°-50'N, Longitude 168°-10'W.

(c) Some extension of hydrography to the west and southwest may be necessary to effect a junction with the incomplete comtemporary surveys H-7951 (PF 40151, PI 50352) and H-7973 (PF - PI 50252)

(d) Additional crosslines affording a systematic coverage of the surveyed area are required.

4. Junctions with contemporary surveys H-7950(1:500,000 1951) and H-7951 (1:500,000 1951) are incomplete and holidays exist. Both of these surveys are incomplete Junctions with the incomplete contemporary surveys H-8001 (1:100,000 1952) and H-8002 (1:100,000 1952) are not complete and holidays exist. Where the completed work of these surveys join the agreement is excellent. Junction with prior surveys in the southern part of the survey area is discussed under "L" following.

5. Standard depth curves have been drawn as follows:

100 Fathoms	Complete
200 Fathoms	Where significant
500 Fathoms	Complete
1000 Fathoms	Complete

These depth curves are adequately defined except as noted in 3 above. Other depth curves have been omitted because of the incomplete nature of the survey in these areas.

K. CROSSLINES

1. No regular system of crosslines has been run. Such crossings as exist are incidental; the agreement is good with comparable sounding of both the 1951 and 1952 work.

L. COMPARISON WITH PRIOR SURVEYS

1. The area covered by hydrography was previously unsurveyed except for adjoining surveys along the southeast limit of the present survey.

2. Junctions, with considerable overlap, were made with the following surveys in 1951;

Survey	Scale	Year
H-5740	1:160,000	1934
H-5967	1:160,000	1935
H-6413	1:120,000	1938
H-6736	1:120,000	1939-40

The agreement at junctions with these surveys is discussed in the Descriptive Report accompanying the smooth plot of the 1951 work. Additional sounding lines in 1952 join the area of H-5740 and agree with the 1951 Hydrography. The additional hydrography does not effect any

change in the discussion of junction agreement contained in the previous report.

M. COMPARISON WITH CHART

1. The present survey has been compared with Chart 8802, 17th Edition, August 1944, print date 49-11/7. Comparison in areas covered in 1951 was made in the Descriptive Report accompanying the smooth plot for that year.

2. In the additional area covered in 1952 there is no indication at the 26 fathom sounding charted at Latitude 56°-05'N, Longitude 170°-30'W. This charted sounding falls in depths of 500-600 fathoms on the present survey. The least depth from the present survey within a radius at 2 nautical miles from the charted position is 131 fathoms and no depth within a radius of 5 nautical miles is less than 69 fathoms. The general line spacing in the area is 1.75 nautical miles and the existence of a 26 fathom depth in the charted position is improbable.

3. Charted soundings in the area covered by Chart 8995 have been onitted from this comparison and are considered in the Descriptive Reports for the larger scale contemporary surveys H-8001 (PF 10152) and H-8002 (PF 10252)

N. DANGERS AND SHOALS

1. There are no dangers to navigation or notable shoals within the area considered as covered by the present survey.

2. Dangers and shoals within the area covered by Chart 8995 are considered in the Descriptive Reports accompanying the larger scale contemporary surveys H-7948 (PF 4151) and H-8003 (PF 4152).

O. COAST PILOT INFORMATION

Coast Pilot information in the general area has been submitted separately.

P. AIDS TO NAVIGATIONS

No aids to navigation are regularly maintained in the area considered as covered by the present survey.

Z. TABULATION OF APPRICABLE DATA.

In addition to the material contained in or forwarded with this report reference should be made to the following reports and records which will be submitted separately.

(a) EPI and SHORAN Corrections 1952

(b) Fathometer Corrections 1952

(c) Bathy Thermograph Observations 1952

(d) Observations of Serial Temperatures and Salinities 1952

Fair J. Bryant

FAIR J. BRYANT
Lieutenant Commander, USC&GS

Earl E. Ellis

EARL E. ELLIS
Ensign, USC&GS

STATISTICS FOR HYDROGRAPHIC SURVEY

H - 7949 (1952)

USC&GSS PATHFINDER PROJECT CS-343

Vol No.	Day Ltr	Date 1952	H.L. Wire Sndgs	No. of Positions	Stat. Miles
I	A	23 Aug	0	16	75.6
I	B	24 Aug	0	22	101.8
I	C	26 Aug	0	40	57.5
I	D	4 Sept	0	10	46.0
I	E	5 Sept	0	1	1.15
I	F	7 Sept	0	28	117.2
I	G	8 Sept	0	24	96.4
I	H	9 Sept	0	29	105.3
II	J	10 Sept	0	72	301.2
II	K	11 Sept	0	33	136.4
TOTAL			0	275	1161.9

Total Area = 3105.0 Square Statute Miles

TIDE NOTE

HYDROGRAPHIC SURVEY H7949 (1952)

1. The Standard Automatic Tide Gage at Dutch Harbor, Amaknak Island, Alaska, Latitude 53° 53'.6 N, Longitude 166° 32'.1 W., was used in reducing soundings.

2. 3.3 feet on the staff corresponds to MLLW.

3. Hourly heights were furnished by the Washington Office.

4. Time and range corrections were applied in accordance with the zoning system devised in the Washington Office in 1951. (Reference: Director's letter 36-kw, Subject "Tide Reducers, Bering Sea, 1951", 15 October 1951). A copy of the applicable Tide Zone Diagram is included in this report. The time correction for the zone North of Latitude 57° N and West of Longitude 168° W has been changed from +2 hours as used in 1951 to +1 hours. (Reference: Director's letter 36-rcb, Subject "Tide Zones and Reducers, Pribilof Islands area, Alaska, 18 September 1952). The time correction of +2 hours used in 1951 for this zone appears to have been an error incorporated in the original zoning diagram furnished by the Washington Office.

FATHOMETER CORRECTIONS

HYDROGRAPHIC SURVEY H-7949 (1952)

808 FATHOMETER NO. 130-S

A Scale Corrections — Full Speed (102 RPM and over)

To Depth	Correction
30.9 Fms	+0.1 Fm
55 Fms	0.0 Fm

A Scale Correction — Reduced Speed (75 - 101 RPM)

To Depth	Correction
55 Fms	0.0 Fm

B Scale Correction — All Speeds

To Depth	Correction
90 Fms	0.0 Fm

C Scale Correction — All Speeds

To Depth	Correction
125 Fms	+1.0 Fm

D Scale Correction — All Speeds

To Depth	Correction
160 Fms	+2.5 Fms

NMB FATHOMETER NO. 106

For All Speeds

To Depth	Correction
500 Fms	+1.5 Fms

ABSTRACT OF EPI CORRECTIONS

HYDROGRAPHIC SURVEY H-7949 (1952)

DATE	DAY LETTER	PERIOD FROM	PERIOD TO	A CHANNEL STATION	A CHANNEL SET NO	A CHANNEL CORRN	B CHANNEL STATION	B CHANNEL SET NO	B CHANNEL CORRN
23 Aug	A	1845	2345	EPIB	7	-5.0	EPISE	3	-5.6
24 Aug	B	0005	0645	EPIB	7	-5.0	EPISE	3	-5.6
26 Aug	C	0730	1950	EPIB	7	-5.0	EPISE	3	-5.6
4 Sept	D	2045	2345	EPIB	1	-6.1	EPISE	6	-5.0
5 Sept	E	0000	0005	EPIB	1	-6.1	EPISE	6	-5.0
7 Sept	F	1505	2345	EPIB	1	-6.1	EPISE	6	-5.0
8 Sept	G	0005	0745	EPIB	1	-6.1	EPISE	6	-5.0
9 Sept	H	2257	2355	EPIB	7	-5.0	EPISE	6	-5.0
10 Sept	J	0005	1610	EPIB	7	-5.0	EPISE	6	-5.0
10 Sept	J	1615	2355	EPIB	1	-6.1	EPISE	6	-5.0
11 Sept	K	0005	1055	EPIB	1	-6.1	EPISE	6	-5.0

ABSTRACT OF SHORAN CORRECTIONS

HYDROGRAPHIC SURVEY H7949 (1952)

DATE	DAY LETTER	PERIOD FROM	PERIOD TO	STATION	CHANNEL	CORRN
9 Sept	H	2257	2400	SHOCAN	Drift	-0.007
10 Sept	J	0000	2400	SHOCAN	Drift	-0.007
11 Sept	K	0000	0735	SHOCAN	Drift	-0.007

APPROVAL SHEET

HYDROGRAPHIC SURVEY H-7949 (1952)

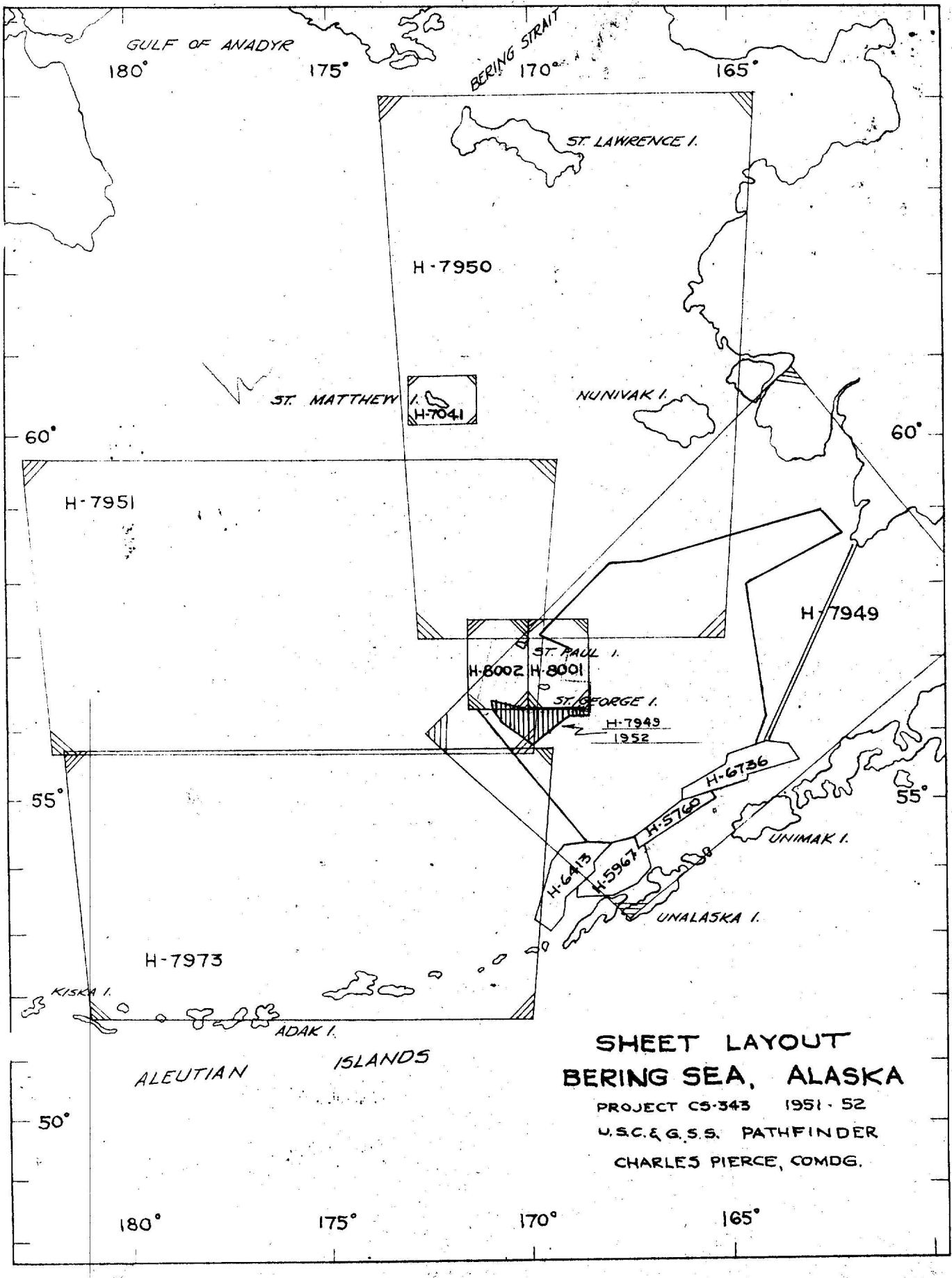
The field work on this survey during 1952 was done under my immediate supervision and the Boat Sheet was frequently inspected during the progress of the work.

The survey is incomplete except in the vicinity of the 100 fathom curve; other areas are either not covered by hydrography or are inadequately covered. The additional work necessary for completion of the survey is recommended.

The completed smooth plot of the additional work in 1952 and accompanying records have been examined by me and are approved.

Charles Pierce

CHARLES PIERCE
Chief of Party

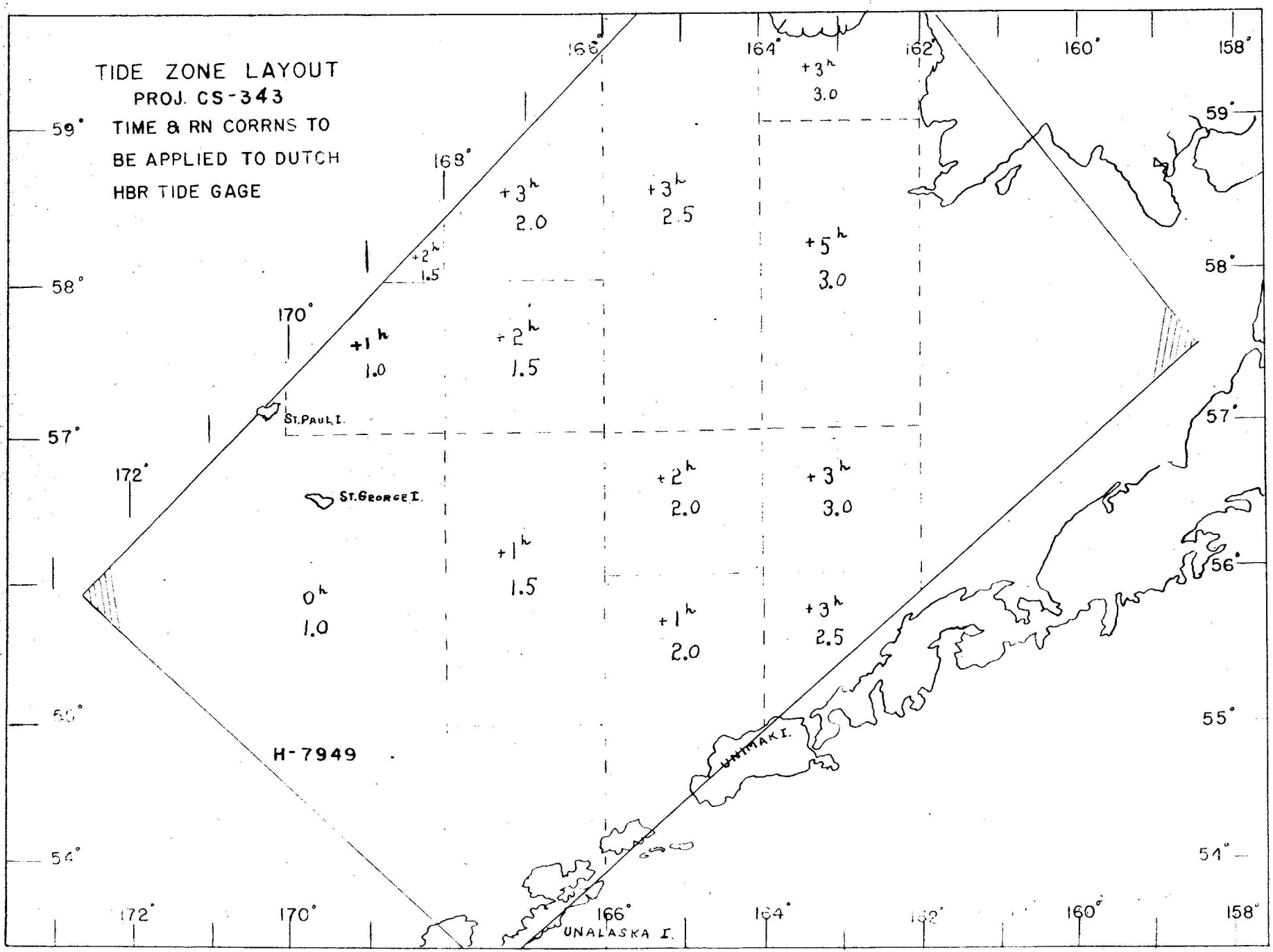


SHEET LAYOUT
BERING SEA, ALASKA

PROJECT CS-343 1951 - 52

U.S.C.&G.S.S. PATHFINDER

CHARLES PIERCE, COMDG.


TIDE ZONE LAYOUT
PROJ. CS-343
TIME & RN CORRNS TO
BE APPLIED TO DUTCH
HBR TIDE GAGE
+3h
3.0
+3h
2.5
+3h
2.0
+2h
1.5
+5h
3.0
+1h
1.0
+2h
1.5
+2h
2.0
+3h
3.0
+1h
1.5
0h
1.0
+1h
2.0
+3h
2.5
ST. PAUL I.
ST. GEORGE I.
UNIMAK I.
UNALASKA I.
H-7949
168°
164°
162°
160°
158°
59°
58°
57°
56°
55°
54°
172°
170°
166°

RHC

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. Apr. 1950

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Coastal Surveys~~ 16 March 1953

Division of Charts: R. H. Carstens

Plane of reference approved in 2 volumes of sounding records for

HYDROGRAPHIC SHEET 7949

Locality Bering Sea, Alaska

Chief of Party: C. Pierce in 1952
Plane of reference is mean lower low water, reading
3.3 ft. on tide staff at Dutch Harbor
15.3 ft. below B. M. 2 (1934)

Height of mean high water above plane of reference is 3.4 feet.

Condition of records satisfactory except as noted below:

E. C. McKay
Section of Tides
Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 877933

7949

[redacted] TO DOC SYSTEMATIC REVIEW

Disp Cht. No. 8802-3

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. EX-PF 40151 Office No. H-7949

LOCALITY

State Alaska

General locality Bering Sea

Locality Southeast Bering Sea

19 53

CHIEF OF PARTY

K. G. Crosby

LIBRARY & ARCHIVES

DATE ~~March 13~~ - 1954

8-1870-1 (1)

CS-343

PURSUANT TO DOC SYSTEMATIC REVIEW GUIDELINES AS DESCRIBED IN SECTION 3.3(b), EXECUTIVE ORDER 12958.

7949

7

Form 537
(Ed. June 1946)

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-7949

Field No. EX-PF 40151

State Alaska

General locality Bering Sea

Locality Southeast Bering Sea

Scale 1:500,000 Date of survey 14 Aug - 1 Sep 1953

Instructions dated 6 Mar 1951, 21 Mar 1952, 2 Mar 1953, 7 Apr 1953

Vessel USC&GSS PATHFINDER

Chief of party K. G. Crosby

Surveyed by William F. Deane and Hal P. Demuth

Soundings taken by fathometer, ~~graphic recorder, hand lead~~ Graphic recorder

Fathograms scaled by L.L.G. and J.T.S.

Fathograms checked by W.F.D. and F.J.T.

Protracted by W. F. Deane

Soundings penciled by W. F. Deane

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

REMARKS: Continuation in 1953 of survey begun in 1951. All work was done while on trips to take on fuel oil in Dutch Harbor.

K.W.W. 6/17/91

U. S. GOVERNMENT PRINTING OFFICE 777032

DESCRIPTIVE REPORT

To Accompany

HYDROGRAPHIC SURVEY H-7949 (FIELD NO. EX-PF 40151)

SOUTHEAST BERING SEA, ALASKA

SCALE - 1:500,000

1953

USC&GSS PATHFINDER — K. G. CROSBY, COMDG.

WILLIAM F. DEANE AND HAL P. DEMUTH — HYDROGRAPHERS

A. PROJECT

1. Project CS-343, Bering Sea, Alaska

2. Instructions 22/MEK dated 6 March 1951 and Supplemental Instructions 22/MEK dated 21 March 1952, 2 March 1953, and 7 April 1953.

B. SURVEY LIMITS AND DATES

1. This 1953 survey is included in the southeastern portion of the Bering Sea in a narrow strip between St. George Island and the east end of Unalaska Island.

2. The 1953 field work is distinguished by the use of red day letters.

3. 1953 work was done between 14 August 1953 and 1 September 1953.

C. VESSEL AND EQUIPMENT

1. The vessel used was the USC&GSS PATHFINDER.

2. Two echo sounding instruments were used.

   (a) 808 Fathometer No. 130-S to 160 fathoms.

   (b) Edo Fathometer, AN/UQN-1B, over 160 fathoms.

D. TIDE AND CURRENT STATIONS

1. The standard automatic tide gage at Dutch Harbor was used for reducing the soundings for tide.

2. No current stations were occupied in the area of this sheet.

E. SMOOTH SHEET

1. The smooth plot for the 1953 survey was made on the 1951 smooth sheet.

2. Distance circles were drawn from EPI station PAUL.

F. CONTROL STATIONS

1. Electronic control using EPI methods was employed throughout.

2. The stations used and source of control are as follows:

EPI-PAUL - located by triangulation in 1953 by the PATHFINDER.

EPI-NUNI - located in 1951 and re-established by the PIONEER in 1953.

G. SHORELINE AND SOUNDINGS

Shoreline and topographic details have been omitted in accordance with Section 751 (c) of the Hydrographic Manual.

H. SOUNDINGS

1. Fathograms exist for all plotted depths.

2. Draft, squat, index and phase (808), and speed (Edo) corrections are contained in a separate report.

I. CONTROL OF HYDROGRAPHY

Only EPI fixes were used in controlling the survey.

J. ADEQUACY OF SURVEY

The survey is incomplete. An inspection of the smooth sheet shows the additional work necessary for a thorough survey.

K. CROSSLINES

No regular system of crosslines was run on this sheet in 1953.

L. COMPARISON WITH PREVIOUS SURVEYS

A running comparison by position numbers and day letters show the following:

1A to 3A - 1953 soundings are generally shoaler, sloping bottom. 10 fms shoaler in 80 fms or more of water

3A to 19B - In good to excellent agreement.

4-9-70 HR

1C to 13C - In good to excellent agreement.

13C to 14C - 1953 soundings are slightly deeper, sloping bottom.

14C to 17C - In good to excellent agreement.

1D to 6D - In fair to good agreement, irregular bottom.

6D to 8D - In good agreement.

8D to 11D - 1953 soundings are shoaler by about one fathom. ✓ in depths of 74 fms to 76 fms 4-9-70 HR

11D to 3E - In good agreement.

3E to 9E - 1953 soundings are deeper but bottom is irregular.

9E to 15E - In fair to good agreement.

1F to 3F - In fair agreement considering irregular bottom.

3F to 5G - In good agreement.

5G to 7G - 1953 soundings are slightly shoaler. ✓ 2 fms shoaler in depths of 80 fms 4-9-70 HR

7G to 12G - In good agreement considering bottom.

12G to 23G - In good agreement.

23G to 24G - In poor agreement but bottom is irregular. ✓ depths greater than 300 fms 4-9-70 HR

24G to 25G - In very poor agreement, 1953 soundings much deeper, bottom irregular.

25G to 26G - In good agreement.

M. COMPARISON WITH CHART

Nothing can be added to preceding report for 1952 since 1953 lines of soundings were in near proximity to existing lines.

N. DANGERS AND SHOALS

There are no dangers and no shoals notable of report.

O. COAST PILOT INFORMATION

This information in the general area was submitted separately.

P. AIDS TO NAVIGATION

No aids to navigation are regularly maintained in this area.

Z. TABULATION OF APPLICABLE DATA

Reference should be made to the following reports submitted separately:

EPI Corrections, 1953 See H 8073

Fathometer Corrections, 1953 " "

Bathythermograph Observations, 1953.

William F. Deane
WILLIAM F. DEANE
Commander, USC&GS

Approved and Forwarded:

K. G. Crosby
K. G. CROSBY
Captain, USC&GS
Comdg. Ship PATHFINDER

839

RHC

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. Apr. 1950

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Coast Survey~~ 2 March 1954

Division of Charts: R. H. Carstens

Plane of reference approved in
1 volumes of sounding records for

HYDROGRAPHIC SHEET 7949 (Add. Wk.)

Locality Bering Sea, Alaska

Chief of Party: K. G. Crosby in 1953
Plane of reference is mean lower low water, reading
3.3 ft. on tide staff at Dutch Harbor
15.3 ft. below B. M. 2 (1934)

Height of mean high water above plane of reference is 3.4 feet.

Condition of records satisfactory except as noted below:

E. C. McKay
Section of Tides

Chief, Division of Tides and Currents.

U. S. GOVERNMENT PRINTING OFFICE 877033

NAUTICAL CHARTS BRANCH

SURVEY NO. H-7949

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
1952	9302	Benson	Before ~~After~~ Verification and Review Partially
11/6/52	8993	Burgoyne	Before ~~After~~ Verification and Review
11/6/52	8994	Burgoyne	Before ~~After~~ Verification and Review
3/17/55	8802	[illegible]	Partially Before ~~After~~ Verification and Review
2/13/58	9103	[illegible]	Partially applied Before ~~After~~ Verification and Review
12-8-58	8861	Eaton	Exam - No Crit Corr. Before ~~After~~ Verification and Review
4/13/62	8860	William H. Ware	Fully ~~App~~ to CJ. extention before ~~Before~~ ~~After~~ Verification and Review
12-28-62	9000	[illegible]	Partly ~~Applied~~ thru Dr # 9302 & 8802 Before ~~After~~ Verification and Review No Revision
4-9-70	8995	H. Ladd	Before ~~After~~ Verification and Review Exam. 1952 & 1953 work only No Corr
			Full app Before ~~After~~ Verification ~~and Review~~
A-12-78	8993	C.S. Forbes	Consider application as Final. No additional Correction
5/30/89	530	R.A. Lillis	Consider fully applied Drg. #34
4/4/90	16381	D M MCALLISTER	CONSIDER ADEQUATELY APPLIED CAT I
4/18/90	16006	D M MCALLISTER	CONSIDER ADEQUATELY APPLIED CAT I
4/13/90	16500	P. Pidi	CAT. I Considered Adequately Appld.
5/21/90	16382	L. ARKENAU	CAT. I considered Adequately Applied.
12/18/90	16011	J. Liebestein	CAT I considered adequately applied

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.