8233

Diag. Cht. No. 8863-3

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. EX-4155 Office No. 14-8233

LOCALITY

State Alaska

General loçality Aleutian Iolands, Andreanof Islands

LocalityNorth Coast - Adak to Great Sitkin I

194/55

CHIEF OF PARTY

S. B. Grenell

LIBRARY & ARCHIVES

October 27, 1955

B-1870-1 (1)

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. **K-8233**Field No. **FX-4155**

Locality	Adak to Great Sitkin 40.000 16 December 19 ed Ship EXPLORER S. B. Grenell	Andreanof Group Islands Date of survey 28 May to 9 Sept. 195 24 and 20 January 1955
Locality	Adak to Great Sitkin 40,000 16 December 19 ed	Date of survey 28 May to 9 Sept. 195
Scale	16 December 19 ed EXPLORER	Date of survey 28 May to 9 Sept. 195
Instructions dat Vessel Chief of party	ed	
Vessel Chief of party	Ship EXPLORER	
Chief of party	S. B. Grenell	
Surveyed by	S. B. Grenell, John	Bowie, K. B. Jeffers, and E. F. Hicks
Soundings taker	by fathometer, graphic	recorder, hand lead, wire
Fathograms sca	ed by	readers
		G.E. Haraden, and H.A. Garcia
Protracted by	S. B. Grenell. J. B	owie, K. B. Jeffers, and E. F. Hicks
Soundings penci	led by K. B. Jeffe	Ps
•		MIXX MLLW Sound of 800 fms. / sec.
		boat and smooth sheet plotted on a
DINOPLEX		

Jus.

Descriptive Report

to accompany

Hydrographic Survey No. H-8233

(Field No. EX-4155)

Adak to Great Sitkin, North Coast

Aleutiana Islands, Alaska

Project - 1218, Season 1955

Scale 1:40,000

Surveyed by: S. B. Grenell, J. Bowie, K. B. Jeffers, and E. F. Hicks.

A. PROJECT

This survey was accomplished in accordance with instructions for Project - 1218 (CS-218) as follows:

1. Revised Instructions - Project CS-218, dated 16 December 1954.

2. Letter 22/MEK, S-1-EX dated 20 January 1955. Subject, "Revision of Instructions Dated 16 December 1954, Project CS-218".

B. SURVEY LIMITS and DATES

This survey includes the offshore area north of Adak Island off Cape Moffett eastward to longitude 1760 001, see A-2 for revision of limits of area to be surveyed north of Adak.

Junctions were made with previous surveys as follows:

H-8145 off Cape Moffett. * WW W C. 6-14-56 Prog.

(1946)H-7605 between Adak and Great Sitkin Islands. *

(1952)H-7973 EPI controlled survey in the Bering Sea. on W& WW.

The surveys cover part of H-6881, Navy Survey north of Adak Island, and H-6898, Navy Survey north of Great Sitkin.

Junctions were made with contemporary surveys as follows:
H-8236 (EX-2155) inshore survey from Cape Moffett to Cape
Adagdak. (/1167)
H-8237 (EX-2355) insore survey of west and north coast of Great
Sigkin Island.

C. VESSEL AND EQUIPMENT

All hydrography on this survey was accomplished by the Ship EXPLORER.

The turning radius of the ship is: Full right rudder - 360 meters Full left rudder - 275 meters

Soundings were scaled from continuous profiles recorded by 808 or Edo fathometers. In general the Edo fathometer was used in depths greater than 100 fathoms and the 808 fathometer in depths less than 100 fathoms. The Edo was used on fast speed to 1800 fathoms by attaching 2 extra needles. See special report on fathometer corrections.

D. TIDE AND CURRENT STATIONS.

A standard tide station was in operation at Sweeper Cove, Adak Island, throughout the season. A portable automatic tide gage was installed at Cape Kiugilak, Sand Bay, Great Sitkin Island on 11 June and was removed on 29 June. See tidal note attached to this report for notes on tide reducers.

Current Station No. 21 was occupied by a Roberts Radio Current Buoy in Sitkin Sound on the southern limit of this survey.

E. SMOOTH SHEET

This survey was plotted as a combination boat and smooth sheet. The projection was made in the Washington Office on a Dinoplex Sheet. See special report on the use of Dinoplex sheets which will be submitted at a later date. This is the first time a Dinoplex sheet has been used in this manner by this vessel. The projection held and there was little evidence of distortion in any part of the sheet.

Shoran arcs were drawn as soon as the shoran station masts were located. Topographic signals were transferred from final manuscripts of T-11537 and T-11538 on Great Sitkin Island.

1953-1955

A tracing cloth overlay was used as a working boat sheet on which uncorrected soundings were plotted. The positions were pricked thru to the smooth sheet as they were plotted. The position numbers were inked after all work was completed in the area surveyed.

Shoran calibrations were made by comparison of simultaneous visual fix and shoran positions. Calibration fixes were plotted on 20,000 scale boat sheets EX-2155 or EX-2255. The shoran corrections thus obtained were applied to shoran distances on the shoran abstracts which are submitted with the records for this survey.

In the area north of Great Sitkin Island (G-day) the hydrography is controlled by one shoran arc and a sextant angle. The shoran distance was corrected in each case and the sextant angle arc plotted by steel protracter. The inshore part of the work (H-day) on the north and east side of Great Sitkin is controlled by sextant angles on shore signals.

Soundings were corrected for draft. initial setting error, phase corrections, and tide where applicable.

F. CONTROL STATIONS

TANK Shoran Station located by theodolite cuts.

AXIM Shoran Station located by theodolite cuts.

SAND Shoran Station located by traverse and cuts from Great Sitkin (USN) 1934.

Akuyan 1953. Picture Point 1953. Pinnacle off Swallow Head 1953. Teapot Rock 1953.

Topographic signals on Great Sitkin were located by photogrammetric methods and compiled on manuscripts T-11537 and T-11538.

Stations Tank, Balsa, Drew, Acorn and Al-29 were used for calibration fixes and plotted on EX-2155(H-8236).

Stations War, RF-2, Hid, Little-Tanaga and Ice were used for Shoran calibrations and plotted on EX-2255.

Stations Saver RM 1, Akuyan, and Great Sitkin were used for shoran calibrations and plotted on EX-2355. H-8237

G. SHORELINE AND TOPOGRAPHY

from T-11637 and T-11538 of 1955.

We shoreline or topography is shown on this sheet. Air photos of the area were field inspected and forwarded to the Washington Office for compilation of shoreline mamuscripts. The shoreline detail will be shown on the inshore 1:20,000 scale hydrographic surveys.

H. SOUNDINGS

Soundings were scaled from continuous profiles recorded on Edo fathometer No. 4 in deep water and from 808 type recorders Nos. 113-S, 50, and 136-SP. Tide reducers were not used in depths greater than 150 fathoms. Edo soundings were corrected for draft and variation of the initial from the zero setting. 808 soundings were corrected for draft, phase, and variation from the initial setting of two (2) fathoms. A number of simultaneous soundings were recorded from 808 and Edo graphs as a check on the corrections applied. Bottom samples were obtained by snapper type samplers and a wire sounding machine.

I. CONTROL OF HYDROGRAPHY

Most of the hydrography on this sheet is controlled by shoran distances from TANK and SAND or AXLE and SAND. Along the north coast of Great Sitkin Island lines were run on arcs from shoran station AXLE supplemented by one sextant angle on shore stations, see "G" day. Mydrography on "H" day is controlled by three point fixes on shore signals. See paragraph "E - SMOOTH SHEET" for further discussion of plotting control.

Zero checks on shoran stations were recorded at regular intervals to guard against drift of the sets. Corrections for variation of the zero check were not applied as they were comparatively negligible.

J. ADEQUACY OF SURVEY

The survey is complete and is adequate to supersede prior surveys. The survey complies with project instructions. The underwater slope from 100 to 1000 fathoms is indented by gullies or canyons which, in some cases, are not completely developed. Complete development of these features would require extensive expenditure of time and money, and no additional hydrography is recommended.

The junction with survey H-7073 is satisfactory except for two lines in longitude 176° 24'.0 and 176° 28'.2. The soundings on these two lines should be moved about one mile north to agree with soundings on this survey.

(1946) The junction with H-7605 in Sitkin Sound is good on the east and on H-7605 Repletting west side of the sound. There are several crossings of two fathoms as some points near the center with the 1955 soundings less than those on H-7605 in all cases.

Junctions with this seasons inshore 1:20,000 scale surveys will be considered after those smooth sheets have been plotted.

K. CROSSLINES

Crosslines constitute approximately 11 per cent of the survey lines. All crossings are good except in a few cases on steep slopes where slight displacement of a line will make perfect agreement. The crossing discrepancies range from 1 to 3 per cent of the depth.

L. COMPARISON WITH PRIOR SURVEYS

There are no prior surveys of most of the area covered by this survey. A portion of a U. S. Navy survey, H-6881, Scale 1:40,000 was resurveyed in the area north of Cape Adagdak, Adak Island, Agreement between the surveys is fair and the new work should supersede the old where the two do not agree. The new survey is probably much better controlled than the old one.

(1934) A portion of U. S. Navy survey H-6898, scale 1:60,000, was resurveyed in area off the north side of Great Sitkin Island. Agreement between the two surveys is fair. The new survey should supersede the prior work.

H. COMPARISON WITH CHART

Chart No. 9193, print date 54-7/5 is the largest scale chart covering the area of this survey. The new survey indicates minor changes in the 100 and 1000 fathom depth curves. The 90 fathom and 175 fathom soundings approximately 2 miles north of Cape Adagdak, Adak Island are disproved.

TP6 of Review

N. DANGERS AND SHOALS

There are no shoals or other dangers to navigation in the area surveyed.

O. COAST PILOT INFORMATION

There are no anchorages or restricted channels in the area surveyed. The north coasts of Great Sitkin and Adak are very rugged with steep slopes from the mountain tops continuing almost unbroken in grade to several hundred fathoms in depth. The coastal shelf is very narrow and ships of any draft can safely pass within one-half mile of the shore.

Tidal currents setting east or west with a maximum estimated velocity of 1.5 to 2.0 knots were encountered close inshere at Cape Adagdak. A northeasterly set of 1 to 2 knots was observed close under Saddle Point and Swallow Head. A northwest and southeast current was observed near Teapot Rock on the northeast side of Great Sitkin with an estimated velocity of one knot or less. In all cases the velocity of the current decreased with increasing depth and at a distance of 1.5 to 2.0 miles offshore the set was very slight.

See Coast Pilot Notes, U. S. Coast Pilot No. 9, Cape Spencer to Arctic Ocean, 1955, Field Season.

P. AIDS TO NAVIGATION

There is an unwatched light on Swallow Head whose position was determined on the photogrammetric compilation of manuscript T-11538.

There are no other visual aids to navigation in the area except natural objects such as Teapot Rock northeast of Great Sitkin and Acorn Rocks north of Adak Island.

The Coast Guard maintains a Loran Station at the foot of the western slope of Mt. Adagdak. Adak Island. The Station services loran rates 116 and 117. The loran tower shown on chart No. 9193 is no longer in existence and the symbol should be removed from the chart.

There are no ferry routes, bridges, overhead or submarine cables in the area surveyed.

Q. LANDMARKS FOR CHARTS

See Form 567 submitted separately.

A new radio mast on Adak Island should be charted. The loran tower symbol on Cape Adagdak should be removed from the charts. No other changes are required.

GEOGRAPHIC NAMES

See special report on Geographic Names, Adak, Kagalaska, Little Tanaga, and Great Sitkin Islands, 1955.

S. SILTED AREAS

No silted areas were noted.

T. BY-PRODUCT INFORMATION

Two oceanographic stations, Nos. 2 and 3, were observed in this area. Water samples were titrated for chlorinity and oxygen content for station No. 2. The samples for all stations will be titrated for chlorinity at the University of Washington Oceanographic Laboratory. Copies of all temperature observations were furnished the University.

At the request of the Oceanographic Department, U. of W. several plankton samples were taken for them. The university furnished nets, sample bottles and all other necessary supplies for this work.

Bathythermograph observations were made at irregular intervals and the slides were forwarded to Washington with other records for transfer to the Hydrographic Office.

Z. TABULATION OF APPLICABLE DATA

- 1. Submitted with report.
 - (a) 1 smooth sheet.
 - (b) 1 tracing cloth overlay.
 - (c) 4 volumes sounding records.
 - (d) 1 envelope of fathograms.
 - l cahier of shoran abstracts.
 - l cahier computations for location of shoran stations TANK, AXLE, and SAND attached to this report.
- 2. Submitted separately.
 - (a) Special Report on Fathometer Corrections.
 - Special Report on Geographic Names Adak, Kagalaska, Little Tanaga, and Great Sitkin Island, 1955.
 - (c) Report on Landmarks for Charts.
 - (d) Coast Pilot Revision Notes. Coast Pilot No. 9.
 - (e) Photogrammetric Mamuscripts T-11537 and T-11538 compiled by Washington Office.
 - Tide Observations at Sweeper Cove and Sand Bay. (f)
 - (g) Current Observations at Station No. 21.

Respectfully submitted

Karl B. Jeffers

CDR. USC&US

STATISTICS

Hydrographic Survey H-8233

Field No. EX-4155

Ship EXPLORER

Project 1218

Vol. No.	Day Ltr.	Date	No. Pos.	Wire Sdg	s. Sta. Mi.
1	· A	5-28-55	159	0	138.6
2	В	6-6-55	51	0	27.4
2	C	6-15-55	52	0	36.1
2 & 3	D	6-16-55	122	0	91.5
3	E	6-17-55	72	o	50.2
3	J.	6-21-55	46	4	26.1
3 & 4	G	6-23-55	47	0	40.4
4	H	9-9-55	151	0	90.6
	TOTALS		700	4	500•9

Area: 373.1 Sq. Sta. Miles.

TIDE NOTE

Hydrographic Survey H-8233

Field No. EX-4155

Hydrography on A, B, C, and H days was referred to the standard tide station at Sweeper Cove, Adak. All other soundings were corrected for tide as recorded by the portable automatic gage at Cape Kiugilak, Sand Bay. No time or range factor was applied for distance from the tide station in either case.

Position of Sweeper Cove tide gage

Latitude 50 51.7N Longitude 176 38.4W

Staff reading of MLLW 3.30 ft.

Position of Sand Bay tide gage

Latitude 52 00.1N

Longitude 176 10.5W

Staff reading of MLLW 3.6 Ft. - 6/11 thru 6/17/55. Staff reading of MLLW 2.4 ft. - 6/18 thru 6/29/55.

APPROVAL SHEET

H-8233 (EX-4155)

All hydrography on this survey was accomplished under my direct supervision. This work was done in accordance with paragraph 4.14 of hydrographic instruction No. 2 dated 30 November 1954.

The survey is complete and adequate. No additional field work is required. The records and smooth sheet have been examined and are approved.

Captain, U.S.C.&G.S. Comdg. Ship EXPLORER

List of Signals for H-8233 (EX-4155)

Hame

Source Axle* (Shoran) Theodolite cuts Bav 7-11538 Die T-11537 Gar T-11537 Hag T-11538 Head (Swallow Heat Lt.) T-11538 Lam T-11538 Pin Pinnacle off Swallow Head 1953 P.P. Picture Point 1953 Ras 7-11537 Rock Teapot Rock 1953 Sand* (Shoran Sta.) Theodolite cuts She 1-11537 Tank* Theodolite cuts Use T-11538 Yan Amyan 1953

^{*} HOTE: Computations are attached to the descriptive report for H-8233.

DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY Form 24A Rev. Oct., 1932

LIST OF DIRECTIONS

Station HEV (USN) 1933 Chief of party S. B. Grenell Observer G.E.H.		Date	e Adak e 26 M	ay 195	5		-	by G.E.H. F.X.P.
OBSERVED STATION	Ob	served d	irection	Eccentric tion	reduc-	Sea level reduction*	Corrected direction zero initial	n with Adjusted direction*
SOUTH(USN)(CL-3) 1934 AXLE FLAGPOLE ZETO(USN) 1934	0 31 31 48		25.5 00.2 23.7	,	P		0 00 00.0	, ,

All observations made from instrument tripod. No eccentricity of targets or instrument.

^{*} These columns are for office use and should be left blank in the field.

Station: Ken

Chief of party: C. V. H.

Observer: C. V. H.

State: Maryland

Date: 1917

Instrument: No. 168

Computed by: O. P. S.

Checked by: W. F. R.

OBSERVED STATION	Observe	d dire	etion	Ec	centric uction	Sea level reduction	Corre		irection with initial		isted etion
Chevy	0 29 176 313 326 352 357 358 9 eccent	00 03 42 24 31 17 28 31	53.0 30.21 20.8 48.63 20	, -1 +3 + +	7.31 09.8 01.2 31.93 5.7 1.16	"	° 0 29 313 326 352 357	, 00 02 28 32 17 28	00.00 34.5 01.5 09.45 33.8 54.78	,	#

This form, with the first three and fifth columns properly filled out and checked, must be furnished by field parties. To be acceptable it must contain every direction observed at the station.

It should be used for observations with both repeating and direction theodolites.

The directions at only one station should be placed on a page.

If a repeating theodolite is used, do not abstract the angles in tertiary triangulation. The local adjustment corrections (to close horizon only) are to be written in the Horizontal Angle Record, and the List of Directions is to be made from that record directly.

Choose as an initial for Form 24A some station involved in the local adjustment, and preferably one which has been used as an initial for a round of directions on objects not in the main scheme. Use but one initial at a station. Call the direction of the initial 0° 00′ 00.″ 00, and by applying the corrected angles to this, fill in opposite each station its direction reckoned *clockwise* around the whole circumference regardless of the direction of graduation of the instrument. The clockwise reckoning is necessary for uniformity and to make the directions comparable with azimuths.

If a station has been occupied eccentrically, reduce to the center and enter in this form, in ink, the resulting corrections to the observed directions in the column provided for them. If an eccentric reduction is necessary, but not made in the field, leave the column blank. If the station was occupied centrally, and no eccentric reduction is required, put dashes in the column to show that no corrections are necessary.

Directions in the main scheme should be entered to hundredths of seconds in first-order triangulation; otherwise to tenths only. Points observed upon but once, direct and reverse, should be carried to tenths in first-order and second-order triangulation, and to even seconds only in third-order triangulation. In general, but two uncertain figures should be given.

It is recommended that the following simple plan of observing be used with a repeating instrument: Measure each single angle in the scheme at each station and the outside angle necessary to close the horizon. Measure no sum angles. Follow each measurement of every angle immediately by a measurement of its explement. Six repetitions are to constitute a measurement. The local adjustment will consist simply of the distribution of the error of closure of the horizon.

LIST OF DIRECTIONS

Chief of party S. B. Gren				and the second						_
Observer F.X.P.		Instr	ument	30657		(_hecke	d by	<i></i>	X.V.
OBSERVED STATION	Obse	rved dir	ection	Eccentric reduc-	Sea level reduction *	Cor		rection with	Ī	Adjusted direction*
entre de la companya	The region of th	<i>,</i>	a, in the man second special s	, 10 mm 1	B. C.		0 /	"	***	1 #
REV(USN), 1933	0	00 0	0.00				0 00	00.00	,	•
RM #1, (SE)	233	51	14							
14.39 ft (distance te										
4.386 m center of p	ipe)		;		•					
XLE (shoran)	272	3 8	05.6							
flag Pole	273	02	09.4							
RM #2 (SW)	324	47	25							
13.74 ft (distance to	,									
4.188 m center of pi	pe)									

All observations made from instrument tripod. No eccentricity of instrument or target.

^{*} These columns are for office use and should be left blank in the field.

Station: Ken

Chief of party: C. V. H.

Observer: C. V. H.

State: Maryland

Date: 1917

Instrument: No. 168

Computed by: O. P. S.

Checked by: W. F. R.

OBSERVED STATION	Observe	od dire	ection		centric luction	Sea level reduction	Corre		irection with initial	Adji dired	isted ction
Chevy Tank west of \(\triangle \) Dulce Ken (center), 3.469 meters Forest Glen standpipe Home Bureau of Standards, wireless pole. Reno Reference mark, 16.32 m Ken To Home Vo. 56	176 313 326 352 357 358	00 03 42 24 31 17 28 31	53.0 30.21 20.8 48.63	, -1 +3 + +	7.31 09.8 01.2 31.93 5.7 1.16	"	0 29 313 326 352 357	, 00 02 28 32 17 28	00.00 34.5 01.5 09.45 33.8 54.78		

This form, with the first three and fifth columns properly filled out and checked, must be furnished by field parties. To be acceptable it must contain every direction observed at the station.

It should be used for observations with both repeating and direction theodolites.

The directions at only one station should be placed on a page.

If a repeating theodolite is used, do not abstract the angles in tertiary triangulation. The local adjustment corrections (to close horizon only) are to be written in the Horizontal Angle Record, and the List of Directions is to be made from that record directly.

Choose as an initial for Form 24A some station involved in the local adjustment, and preferably one which has been used as an initial for a round of directions on objects not in the main scheme. Use but one initial at a station. Call the direction of the initial 0° 00′ 00.″ 00, and by applying the corrected angles to this, fill in opposite each station its direction reckoned clockwise around the whole circumference regardless of the direction of graduation of the instrument. The clockwise reckoning is necessary for uniformity and to make the directions comparable with azimuths.

If a station has been occupied eccentrically, reduce to the center and enter in this form, in ink, the resulting corrections to the observed directions in the column provided for them. If an eccentric reduction is necessary, but not made in the field, leave the column blank. If the station was occupied centrally, and no eccentric reduction is required, put dashes in the column to show that no corrections are necessary.

Directions in the main scheme should be entered to hundredths of seconds in first-order triangulation; otherwise to tenths only. Points observed upon but once, direct and reverse, should be carried to tenths in first-order and second-order triangulation, and to even seconds only in third-order triangulation. In general, but two uncertain figures should be given.

It is recommended that the following simple plan of observing be used with a repeating instrument: Measure each single angle in the scheme at each station and the outside angle necessary to close the horizon. *Measure no sum angles.* Follow each measurement of every angle immediately by a measurement of its explement. Six repetitions are to constitute a measurement. The local adjustment will consist simply of the distribution of the error of closure of the horizon.

DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY Form 24A Rev. Oct., 1932

LIST OF DIRECTIONS

Station ZETO (USN) 193 Chief of party S. B. Green		Alaska 6-55		TXP
Observer FXP	Instrument_		Checked by	
OBSERVED STATION	Observed direction		Sea level Corrected direction with eduction * zero initial	Adjusted direction •
	o / #	, ,,	0 1 11	, ,
REV (USN) 1933	0 00 00.00		0 00 00.00	
Axle (Shoran mast)	85 38 29.1			

Observations from an instrument tripod
No eccentricity of instrument of signal

^{*}These columns are for office use and should be left blank in the field.

Station: Ken

Chief of party: C. V. H.

Observer: C. V. H.

State: Maryland

Date: 1917

Instrument: No. 168

Computed by: O. P. S.

Checked by: W. F. R.

OBSERVED STATION	Observed direction	Eccentric reduction	Sea level reduction	Corrected direction with zero initial	Adjusted direction
Chevy Tank west of \triangle Dulce Ken (center), 3.469 meters Forest Glen standpipe Home Bureau of Standards, wireless pole. Reno Reference mark, 16.32 m Kern To Home	0 00 00.00 29 03 37.0 176 42 313 24 53.0 326 31 30.21 352 17 20.8 357 28 48.63 358 31 20	7.31 -1 09.8 +3 01.2 + 31.93 + 5.7 - 1.16	"	0 00 00.00 29 02 34.5 313 28 01.5 326 32 09.45 352 17 33.8 357 28 54.78	, ",

This form, with the first three and fifth columns properly filled out and checked, must be furnished by field parties. To be acceptable it must contain every direction observed at the station.

It should be used for observations with both repeating and direction theodolites.

The directions at only one station should be placed on a page.

If a repeating theodolite is used, do not abstract the angles in tertiary triangulation. The local adjustment corrections (to close horizon only) are to be written in the Horizontal Angle Record, and the List of Directions is to be made from that record directly.

Choose as an initial for Form 24A some station involved in the local adjustment, and preferably one which has been used as an initial for a round of directions on objects not in the main scheme. Use but one initial at a station. Call the direction of the initial 0° 00′ 00.″ 00, and by applying the corrected angles to this, fill in opposite each station its direction reckoned *clockwise* around the whole circumference regardless of the direction of graduation of the instrument. The clockwise reckoning is necessary for uniformity and to make the directions comparable with azimuths.

If a station has been occupied eccentrically, reduce to the center and enter in this form, in ink, the resulting corrections to the observed directions in the column provided for them. If an eccentric reduction is necessary, but not made in the field, leave the column blank. If the station was occupied centrally, and no eccentric reduction is required, put dashes in the column to show that no corrections are necessary.

Directions in the main scheme should be entered to hundredths of seconds in first-order triangulation; otherwise to tenths only. Points observed upon but once, direct and reverse, should be carried to tenths in first-order and second-order triangulation, and to even seconds only in third-order triangulation. In general, but two uncertain figures should be given.

It is recommended that the following simple plan of observing be used with a repeating instrument: Measure each single angle in the scheme at each station and the outside angle necessary to close the horizon. Measure no sum angles. Follow each measurement of every angle immediately by a measurement of its explement. Six repetitions are to constitute a measurement. The local adjustment will consist simply of the distribution of the error of closure of the horizon.

11--0121

State: Hoak Island , Alaska

	NO.	STATION	OBSERVED ANGLE	CORR'N	Spher'l Angle	Spher'l Excess	PLANE ANGLE AND DISTANCE	LOGARITHM
				0024	ANGLE	EXCESS	AND DISTANCE	DOGABITHM
		2-3 1 AXLE 2 ZETO 3 REV 1-3 1-2	(77 47 327) 85 38 291 16 33 582	/ ·				3.611 882 - 0.009 933 - 9.998 742 - 9.455 031 - 3.620 557 -
•		•	187 00 00.0	•				3.076 846
nargin		2-3 1 AXLE 2 REV 3 SOUTH 1-3 1-2	(6 1 04 40.1) 31 33 25.5 87 21 54.4 180 00 00.0					3.563 163 - 0.057 854 - 9.718 790 - 9.999 541 - 3.339 8071 3.620 558
Do not write in this margin		2-3 1 2 3 1-3						
		1-2						
		2-3 1 2 3 1-3 1-2						
		1-2					To a the second distance for the constraint of t	

compfxro

SCH

POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

.

-:									···· -														
16.7	54.4	, 8.12	30.3	0.00	52.1-		36.05	38.434	59.622		185.44	Values in					-38.4335		30,256+				
*	17	2 2	9	00	77	-	5,5	,	32		55	-		00	=	22		l					THOUSANT TO
79	- 87	340	+	180	0 9		92/	+	116	-	51	Logarith	3.339 807	9.526 208	8.508 8.14	0.209 881	5847.16	1.896 11	1.480821				63 4. 6. 6007
						-	_	ৰ	>		(++¢)		• • •		-	`		4	8				11 -6863
				,	3	ļ F							99	Sing	Α'	Sec 4'	ৰ	Sin (4+4/)	Δα				
to 3 REV		かしもなんど					30074		Axlo	Values in seconds				(66.6420				+ 0.0017			+ 0.0001	65 49. 99	
\$ 03	ઋ	to 1			\$ 63	1	, 20		6	lues in													ł
						*	17.903	449.90	11.259	Va		, ,		1st term	n-			2d term			3d term	-24	
SOUTH		SOUTH	ż				5.6		55	1	9 807	Cosa 9.974 004	8.509 937	1.823 748	6.679 61	2 42	1.509 52	124155	7 #	10	7.5		
83 2		8			1	•	ì	,	ফ	Log	3.339	9.97	8.50	1.87	و و	9.052	1.50	۲. ۲	3.647 4	2.380	6.0275		
8	7 p8	B	ΦΦ		α,		*	φ0	è		43	Cosa	м	, h	6	Sinsa	Ö		P.	Q			
56.7	125.5	22.2	49.7	0.00	1.9	40.1	35.179	35.55	59.623		22.148	Values in seconds	139, 50 -50 115	(111)			215,556		64945				
4,	33	15	02	00	18	40	36	63	3 2	-	55	-			بد			;	1				
247	31	279	+	180	66	79.	176	ï	١٦٥,	•	51 5	Logarithms	3.620 558	9.994 308	8.508 814	0.209 881	1.333 561	4.896 014	2.229 635 - 16,969				
	+	''					~	ৰ	ゝ		(4 4 /)	<u> </u>	3.6	9.6	90		1.3		ج ح				
						TRIANGE					ф) {			Sin a	Α'	Sec 4'	ঠ	Sin \$ (++ 4')	Δα				٠
BUTH		AXLE	-			FIRST ANGLE OF TRIANGLE	REV		Axle	Values in seconds	347.98 . 173.99	(1506. 44)(1530)		77.17				+0.0548	J		l	21. 1715	1.46
to 8 South	ઋ	to 1			\$ \$3	FIRST	(61		H	es in s	347.49	506.									+		
	Ş					:	33.037	21,778	11.259 1	Valu	(17)	<i>ت</i> —		1st term	j i			2d term	<u> </u>		3d term	Φ ∇	
REV	-	REV					55		5.5	Logarithms	558	418	9 938	# 16 788.1	112	198	133	907	3.8	10	39		
61		2			7	٥	21		51	Loga	3.620 558	Cosa 9.206 418	8.509 938		7.24112	Sin3 2.98861	1.50933	8.73907	bs 26738	2.3801	5.0539		
8	7 P.	8	γα		α,		•	\$₹	`		69	78 20 20 20 20 20 20 20 20 20 20 20 20 20	В	ц	3,	Sin³a	C		24	А			

1139.5

DEPARTMENT OF COMMENCE U.S. COAST AND SEDENT SURVEY FORES 36—Ber? Apr. 11, 1390

のでは、100mmの

4505 Computation first-order triangulation Shoram

U.S. GOVERNMENT PRINTING OFFICE: 1841 Sylvens. 9. 412 9962-2.5446263 50.45 50.073 8 508 8084 544 6233 0.212 0519 4. 410 7698 40- - 1324.84 00.00 59.622 p= 952.25 ((8,8,8)) 8 ٤. Logarithms Q. 05 8 32 38 Sum Arc-sin corr. 165 \$ (++¢') sec $\frac{\Delta \phi}{2}$ (approx.) sin-}(φ+φ') 1 180 Hin a ,φ oag 2 --Δα ৰ ¥ ę (8) × ৰ Logs 9.699 4.422 5 912 0. 477 3 (colog) E . cos, a 96034 9 9 M 闰 60 ε 25749.56 16 Miles **(**(3) ße, -204.574 h 8 0.016 804.590 s 4.410 7698-(1) -804.733 0.143 Ę, for | 11.5 0/ | 7 to 1 \$ 步 \$ 0080 9.984 9438 1 (2) + 24.574 52 08 35 835 Sum Total 11.259 ව 9 ŠŠ € 9 53961 9. 413 9962-(1)=h 2.905 6520 8. 509 9384 mins a 8.825 9924 7-647-537 (146.941) 5 1.509.24 57 57 2.3802 dm: 1107.54 8.1915 (84)2 5.8113 8.821 (Z)-K 9 .1 56 + 5 8 <u>,</u> 3ª Z щ ပ s2in3a . ල γα ٦, А 4 ₽ 8 8 Ħ € 8. 508 8112. 35 54.406 4.109 7398 2,242 50th 59.622 54.786 2.242.5065 34+: 2180.42 90.00 dp= 1037:14 (166.64) 00 : 1747964 Logarithms ٥ 20 8 32 8 Logs 9. 699 4(4+4') 165 Sum Are—sin corr. + sin a (approx.) $-\Delta\alpha$ 88 , p ina∮(φ+φ′) 2 $\sec rac{\Delta \phi}{2}$ 2 $-\Delta\alpha$ ð ¥ 8 용 ৰ > ৰ 5.912 8.29 0, 477 First Angle of Triangle (coleg.) E 12874.78 mm cos a . % 8ec34 8 miles M 9 9 ε 闰 ့က **€**(XA) Axle æ ⊛ -402.327 0.036 .004 4.109 7398 (i) = 402.367 Sum - 402.331 8 Arc-sin corr. 3 \$ \$ to 1 3 뇽 52 01 53.586 Total 06 42.327 11.259 <u>8</u> 7 (3) ė \$ • ₫ 9 3 cos a 984 9438-(1)=1 2 604 6220 8, 219 479 6-B 8 509 9384 min 8 8 25 9 9 24 80 will a 7. O45 4TV Logarithms 1.509 24 52-00+ 3510.72 (Z)=K 8.554 71 -h 2-604 62 52 7.588 4 2.380 2 (148. 24) dm 1656.24 Hab (34) 5.7.08 + S . € ල ğ δ 8

100= 2601.481

ij

DEPARTMENT OF COMMERCE

U. S. COMPT AND SEDEMIC SURVEY

BOTTO SE - COMPT AND SEDEMIC SURVEY

FOSTION COMPUTATION, FIRST-ORDER TRIANGULATION

		1, 1980			• -	-	:							•		
8	51	to 8						8	 ເຄ		\$ \$			_		
742		35			+			34 /								
8	23	to 1			1	2	1	7			8	-		1		
Δ			1		3	3	2	8	99		101	-		205	00	
					1			δα						_		
					180	8	00.00							180	8	8
8	1	to 2						α'	1	, +	to 33				1	8
		". First Angle of Tri	of Trian	iangle	۰		ž					-		-		
•	51 55	11.259 2 Axle			1-1	20	59.611		7.	-	1.11		-	•	- -	
\$	+ 20	06.842 38624.3	4.33 m.	'	 	1	46.992	2	3 8	8 227 11	14.4	- 1	<u> </u>	9		775
æ	52 5	18 901 1 24	Miles	-	176	1 -	419,94		9 0	667 30	12874.	8 0	· · ·	+	5	205
• ' · •	Logarithms ,	1 "		Loga			" '	1	Logarithms	- -	II.	3 -	· -		41 87	160
	1000 NOO 0	7) (1)		669	4(+4)	_ :		60	4.100 7398-	3	377.532	-#	9.699	(, + + + + + + + + + +		
608 2	1. 184 145	(3) + 0.525	ر م	\$	7	Logarithms	80	808 a	9. 957 2757	7 (2) +	9 60.0	70,	8.219		Logarithms	
m	509	93848um - 120 6.677	7 K		8	4.586	6008	e e	8 509 9384 Sum		-277 436	ļ			7	
П =(I)	3	31 (3) + 0.035	E		sin 4	9.412	9962	(I)=h			0 000	<u> </u>		2	- [.	348
2,	9.173 72+8	(4)	(5)		Α'	8.508	8056	3,		3	2	 		Sin a		K24
sin3 a	တ်	4 (5) -	3	0. 477	βθ¢ φ′	0.21	0.213 1432	1 8	251			9		V.		=======================================
0	1,50924	+ (9)	c083 a		- E	1	2059		7.00 2/1	<u> </u>		®	0. 477	8ec 4,	-1	412
(Z)== K	9.5.08	+ (2)			Arc—sin		200	1	0 0	+ (9)	-	COS3a		Sum Arc-sin	2.4553966	196
(8)	(34)3 6 1625	-40-1206, X 42	(salage) E		4	1.77.1	1 82		ᆌ -	+1	<	9	-	COTT.		مار
Ä	2,3802	Δφ 29	Asur31"	F 010	11/4 4/1				1	,	311 .4 33	(Select)		4	2.455 36	3964
ම	8.54.27		1 2		\$6 \$1 \$1 \$1			-}-	7 2805	 67		3	5 912	Sing (++¢)		
			8		(approx.)			- -	1 -5 54			Beck		860 2 P		i
S sin S	7. 999 7				700			7				E		(approx.)		
F£	-		_					Shinka	7.47 39			_		qo	"	!
1 8				1	©	dp=884.22	4.22	田田		Are-sin corr.	corr.			8	16-11-24	· .
		97 -	1 (xy)	1	-\\$a	5	253.42)	€		oj, •	3	•(۲۷)		- Δα	(61,2,12)	٦
S WE	(1900)	↑	ß.	7		1 + 0+	26,4841 = + 04	dm.	18.988	for Δλ		j _E ,		1	30- = 2016:25	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
1	י ה	Total = (8)	6		ধ	+526.992	766		(967.67)	Total	-2 (8)	┡		ৰ	- 985,319	1
24 10.43	6.43		٠.				ις,	2-00-4	52-00 + 2741.29			1	GOVERNMENT	PRINTING OFFICE	U. S. GOVERNMENT PRINTING OFFICE : 1941-0700	اد

	×
188. a. 1	1 1
1200 F	
1.2	_
TIP .	V
\	Z
2.30	2
5	5
30 /4 40	5
N. T.	3
	ž
· · · · ·	≾
	E
3. 1	9
	Ö
	7
	Ŋ
Asset Section	Ħ
	-
	Z.
# / N	멀
	7
Antonio	E
¥1	도 .
	Ž.
4	8
74.48	÷°
Av ·	ିଟ
	F
	<u> </u>
er ve	8
\$20 m	-
\$3;	
£	
10 Y	•
	-
	. 2
	M Z S
	200
1	粪무
	S E
	- ā
•	200
	181
1 may 1 mg	E S
714.	528

DEPARTMEN B. S. COAST AND FORTH SE-	U.S. COAST AND GEODETIC SURVEY FORTH 26-Bay: Apr. 11, 1030	11, 1930	į.				•						2	rosilion computation, riksi-ordek irlangulation						/ ≈
ä	GQ.		to 3							, 8	· 60			珨	to 23					
242			48				+			347				-25				l		
8	63		to 1	,			205	90	90	8	8			\$	1			7,	205 0	9
Δα										γα			į						,	
							180	8	00:00									-	180	00.00
8	H	,	to 23							δ,				Ş	8					
	•	:	First Angle of Triangle	gle of	Triangle		۰	•			•	•	*							=
•	51 55 11.	11.259	2 Ax	1/0		۸	176	25	59.622	•	51	55	11.259	9 8	A	4x/c		۵۲۱ د	6 32	2 59.622
\$	1 12 34.	34.668	5= 25	25749.56	56	4	١	80	32.063	4	+	18	51.649		38624.	24.3	3	র		1 20 193
14	54 10 25	45.927	1/6	14	M:105.	۶	911	23	27.559		52	7 -	\$36.20	# \$\$	3	11.10	2	┝	_ _2 	18 39 54
•	Logarithms 4.410 1698 -(1)		- 755.065	. 5		Logs 9. 699	\$(++4)	•	<i>ii</i> ,	•	Logari 4.586	Logarithms 586 860	thms 8609-(1)		-1132.591		1.0g	3	-	1
₩ 8 00	9. 957 2157 (2)		+ 0.383	83		8.92K	ı	Logarithms	ms	008 a	9. 957	1212	(3)		198.0	<u> </u>	Ī		Loga	Logarithms
ď	8,509	_	- 754.682	78	M		8	०।न प्	4809L C		8,509			1131	1.730	<u> </u>	,	•	4	586 8609
(I)	2.8779839	8	0, +	410	田		sin a	9.625	5 94834(1)=h	(I)=h	3.054		0750 (3)	+	0.031	E		eir.	8	625 9483
3,	8.8245396	€			9		Α/	8.508	- 1	8	9.113	1218	(+)			(5)		Α,	8	508 806
sin3 a	9.2518966	<u>(</u>		.	8	0. 477	±,¢	0.21	. !	sin³ a	9.251	.99 68	(E)				0. 477	7 sec 4'	هر ٥.	212 9396
O	1.509 24	9	_+		c083 a		Sum	2.754	47 434 CC	20	1,509	24	9	+		2 800	8	Sum	n 2	934 5549
(Z)=K	9 587 68	3	+		(9)		corr.		+	(Z)=K	426.6	486	3	+		9		Arc—sin	-sin T.	1
(\$	5.7559		- 754.668	1	Colog)		4	7-156	6 6436	(\$ \$	801.9	- 8	- \$ \$	1131	1.69	60	邑	্ধ	1. 2.	8452 45P.
Ö	2.3802	8 0		4 (1 1		5. 912	(^φ+φ/) (φ+φ/)	2.757	7 4437	Ω	2, 38	3802.	\$ 60			Abuta1"	5. 912	2 mil(4+4')	+	
(8)	8.1361				sec.		sec 2/2			(8)	8.48	883				ec.	-6-	8ec 2	\$ 60	-
4					ε	٦	(approx.) \Delta \alpha			h						E		(approx.)	() A	
s iin a	8.013 4	$\downarrow \downarrow$					ф	dp	524.28	** nin ta	3448	70						육	1,28	. 749.92
闰		Arc	Arc-sin corr.				8	. \	(10-11)	臼			Arc	-sin	сон.		- 	⊗	_	(388.82)
(4)		for s	23	প্ত			Δα	124:	22+= 1665,72	(4)			for	1	2.6	*(xd)		Δα	2,	\ ; <u>'</u>
dma	1419.51	টুর	4	Ēų				572.	572.063	dm e	91.43	13 /	ইব		12	ß.				1009
	(424.07)	Ē	4				-	,	"			/	_	Т					ł	

16 - = B617.65V

00+= 3274,00°

1.5	
	.T. (
244	
25	· ,
文形 4	
	Ž
	Ĕ
	₹
	5
	Ö.
	3
2.1.1	3
• 1	F
1.5	2
	Ä
	2
	Ŷ
1000	Ħ
	2
3	E
4.76	-5
751	ð :
	Ē
	≥
	5 、
fa.	Ę
198	ð.
300	o.
(3)	Ž
3.5	Ĕ
	2
	Ö
464	_
17.7	`.
ξ., 	
7.77	
- a	
N.	
g V	,
netyší.	w 2
	255
4.	<u>يو ي</u>
	Ŕ
37,	18
	08
	23.
1.45	EF.
	33
12.57	10
23.	

											•		
Ø1	£0.33					8	8	to 2				+	
	45		+			342		48			1	_	
8	to 1		243	00	00	b	8	to 1			24	13 00	9
			-			γα		ł					
			180	8	00.00						18	- 80	00.00
1	to 2					α'	1	to 3					
0	First Angle o	f Triangle		•			•	, , ,			•		2
55	61			32 /	59.622	-0	51 55 11	8	1x/c.	•	11 x	6 32	59.622
		\		0	826.00	Δφ	4 06 16		749.5	9	٠ ج	20	03,251
51 58 19	=	S)	911	12 5	4 69.85	φ,	52 01 27	.181	11.10	. 6	11 א	6 12	1 56 371
Logarithms	"	7		۰	" '	,							" 1 0
4. 109 7398-	81 -	9.699	, ¢+ ¢,	_ :		1 0	4.410, 7698	(I) = 3.1				्र इ	
9.657 Of68-	(2) + 0.425	8.219		ogarithn		00 a	1.657 0468	+		T	#	Logar	ithms
8.509 9384	Sum 188 :690	Ж	89	4.18	1398	М	8 509 938	_ '		M	•0	- 4	4.410 7698
(1)-h 2.276 7250	(3) + (2)	Œ	sin a	9. 949	3809 4		2.577 7550	(3) +	-	<u>ы</u>	sin.		9.949 8809-
8.219 4 796	(4)	(5)	Α'	9.50	8127	3		()	0	 	Α,	ý	508 8113
sin a 9. 899 7618	(5) –	3 0.477	, p 008	0.21	3885	eins a	9	(2)					. 210 8949
اس.	+ (9)	α 608 3 α	Sum	7	8 8219	ဝ	1.509 24	. + (9)	Ş	2,8	Sun	3	.080 35691
,	(3) +	(9)	Arc-sin corr.			2)=K	0.230 54	(7)		6	Arc	ig .	4-13
4.5534	-20-188.689	(coleg) E	\$	2,77	\$2.22	(\$4)3	5.1555	- 376.		田田	4	E.	080 3582
2.380 2	$\frac{\Delta \phi}{2}$					D,	7,3802	2	₹	Iα		Γφ')	
6.9336		sec34	Bec 24			(3)	7.5357		82	ą,	y sec √	\$ 02	
-h		9	(approx.)			q				9	(appro) () () () () () () () () () (
80 ins a 8 11 24			පි	11 - dp		Sain a	कर स्थ		!		op	db	88.4101
	Arc-sin corr.		(8)		24.43 V	阳	-	Are-sin corr.			(8)		(64.20)
	- 3	٠	Δα	24-=	1170.33	(*)			গ্ ৰ		Δ-		14-= 1213.28
dm = 616.55	-e +	154		\$00		dm=	858.66	for + 25	ß-,				
(1237.93)	+3	8)	ৰ	1	ofte	۳	195.82) 1	Total † /3	(8)		ধ		1203.251
52-00- = 3092. 11		•			!	* +	2713.14			U. S. GOVE	RACET PRINTING	OFFICE : 1	Handme
	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	11.259 2 2 6.6 4.8 1 1 1 259 2 2 6.0 1 1 4.8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	to 2 to 2 1.759 2	180 102 102 11.759 2	10.22 11.259 2	11.259 2 Ax/e 3 176 22 59.672 18. First Angle of Triangle 0. 1. 18. 19. 20. 00. 00.00 19.948 1 8 XX/e 3 176 22 59.672 19.948 1 8 XX/e 3 176 22 59.672 19.948 1 8 XX/e 3 176 22 58.694 19.948 1 8 XX/e 3 177 59. 00. 778 8294 19.948 1 8 XX/e 3 177 59. 00. 778 8294 19.948 1 8 XX/e 3 177 59. 00. 778 8294 19.948 1 8 XX/e 3 177 59. 00. 778 8294 19.948 1 8 XX/e 3 177 59. 00. 778 8294 19.948 1 8 XX/e 3 177 59. 00. 778 8292 19.948 1 8 XX/e 3 177 59. 00. 778 8292 19.948 1 8 XX/e 3 177 59. 00. 778 8292 20.00000000000000000000000000000000	to 2 to 3	to 1 to 2 to 2 The standard of Triangle of Triangl	1.25 2 2.42 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	10 10 10 10 10 10 10 10	10 1 1 1 1 1 1 1 1 1	10 1 1 1 1 1 1 1 1 1	150 24/3 2 2 2 2 2 2 2 2 2

4-= 2113.14

8 180 to 3 to 2 to 1 POSITION COMPUTATION, FIRST-ORDER TRIANGULATION 43 : 342 ۷α ช 8 00.00 g = 0 8 243 180 + First Angle of Triangle DEPATMENT OF COMMERCE
U.S. COMPT AND SECONT SURVEY
FOUTH SEC. 11, 1190 **\$** to 1 \$ \$ અ = 8 Ċ7 8 اه 7ª7 δα

00.00

	ı	1	ĺ	:	٠. •	ı	1	1	1	ı			١	i	1	1		1	1	1	r. F	1
:					•	8	1										#					D - 305152
				Ĺ	· .	Logarithms																1941
۰					14147	la.		Sin a	٨,	sec φ′	Sum	Arc-sin	2	1	Rec Δφ	(approx.)	ğ .	8 6	6	170	1	U. S. GOVERNMENT PRINTING OFFICE : 1041 O - 205152
	.~	2	>	-			<u> </u>	-			<u> </u>	A.				<u>a</u>	+	-			igspace	ENT PRINT
				1	690	-	_	<u> </u>	<u> </u>	0. 477	!			1								GOVERN
			ŀ	_		, 7	,	1 62	9	6	2,802	9	(al.)	A*w*1	79	960	3	brack		-	<u> </u>	-
																		_	3	-	√ <u>@</u>	
				=														100				
:	- 8		<u> </u>	-	Ξ	 (8)		+	€	(5)	+ 9			101				Are-sin corr.	for	\$ \$		
			,	<u> </u>			<u> </u>		<u> </u>	2				왕 	<u>' </u>	1	<u> </u>		9 1	≅	Total	
•				Logarithma																		
•				Į,	b					,											Ì	
	•	\$	`		•	208 a	æ	(I)=h	26	stn³α	C	(2)—K	(\$¢)	А	8	1	S-tiin-to	田田	•			
"	59.622	08.90	249	:			900	9. 949 8809 (I)=h	۵	1	919	+306	9546 (84):			T			63			Comp 48H
	59	و ۵	52.642	-		hms	4.586 8609	P8 88	4.508.810	0, 211 3997	3.2569516		256 9				dp=1002.57	140,13	= 1282,83		-1806.980	Corre
`	32	30	07	<u> </u>		Logarithms	4.59	9.0	8.5	0, 2			3.2				dp		-40		9081-	
۰	911	1	176		\$(++¢)	П	8	sin a	Α'	βec φ'	Sum	Arc—sin corr.	ধ	<u> </u>	sec 2	$\frac{(approx.)}{-\Delta\alpha}$	op	(8)	Δα		ধ	
	٨	ধ	ኦ	Logs	_					0. 477		4		5. 912 in		<u>e</u>						
,		3	cs.	ı	16	-8					ğ		E	143	39	_						
	O		Mile	_	-		Ж	E	9	က	008 a	.9	(coleg) E	A Sur	sec.	3			3 (x4)	ρ _{E4}	88	
,	Ax/c	386243	24 Mil	į .	-567.344	3.826	563518	\$ 00.0					.510					ا ن	29	5		
	61	W	Ħ	`	- 56		56	ĺ					563					Arc-sin corr.	7	+	+30	
=	11.259	23,510	769			<u>8</u>	Sum	8	€	9	9	3	-40-563.	₽ ≈				Arc-		₽ Ş	Total	
			04 34.769	88	4.586 8609- (1)	con a 9.657 0468 - (2) +	B 8.509 9384 Sum	(1)=h 2.753 8461 (3) +	9.173 7218-(4)		ī	2	.	İ			\					, -
•	55	60	04	Logarithma	868	37.0	9 9	53	737	196	1, 509 24	178	10	2.3862	7.8878		少女		.	49.	(48.811)	1.32
•	2	+	52	ឣ	4.5	9.65	<u>00</u>	2.7	9.1	8102 90 40 1618	- 5	(Z)=K 0.58272	64) \$.507.6	2.3	7.6		200			4501	马	2634
	•	\$	è		•0	C 2	m	(I)	2,	sin3 a	O	(2)=K	(%)	Q	(3)	-h	S pin 3	Œ	(4)	40.4101 mb		66 - 2634:32
							7	,												*,		,

66 - 2634:32

State Great Sitkin Island, Alaska

Station SAND (Shoran) Computed by FXP

Date 24 May 1955

Observer HAG Checked by FXP

Inst. No. 30657

<u> </u>		erver _ F-1.F-1.G.	18-39704-9	Checked l	by FX	<i></i>	Inst. No	30451	
	Position No.	GZ SALTTERUM LE . VI. TRANSFE	7.00 1210 1200000000000000000000000000000		STATIONS	OBSERVED			
		Bose B	Great Sitkin (USN) 1934	Base A					,
		(INITIAL) 0° 00'	04 23	07 42	° ,	0 /	0 /	0 /	0 ,
	1	0.00	18.0-	30.0 -					<i>v</i>
	2	0.00	183-	26.7 -					
	3	0.00	16.7 -						
	4	0.00	16.5 -	25.7 - 26.8 -					
	5	0.00							
	6	0.00							
	7	0.00						+	
DO NOT WRITE IN THIS MARGIN	8	0.00							
IS MA	9	0.00							
Z T	10	0.00							
NTE 1	11	0.00							
T WF	12	0.00							
00	13	0.00							
ш	14	0.00							
	15	0.00							
	16	0.00							
	Sum.		4) 205- 4	202					
•	Mean,		4) 29.5 17.4	77.6					
•	Cor. for ecc.,		11.*	2/3					
:	Direction,								
						<u> </u>			

DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY FORM 25 Ed. Jan., 1929

COMPUTATION OF TRIANGLES

State: _____

	_							
	NO.	STATION	OBSERVED ANGLE	CORR'N	SPHER'L ANGLE	SPHER'L EXCESS	PLANE ANGLE AND DISTANCE	LOGARITHM
			04-23-17.4 (85 36 35.4) 90 00 07.2					1.631 7379 - 1.116 2641 - 9.998 7239 - 10.000 0000 - 2.746 7259
		1-2					558.118	2.748 0090
U		2-3 1 Sand 2 Great Sitkin	89 59 24.7 ×					1.510 0354 1.237 3038 10.000 0000
is mergin		1-3 1-2	(86 41 25.4)			·	557.974 ^J	9.499 2750° 2.747 3392° 2.746 6142°
Do not write in this		3	n of base net	at s	horan	Sta		558.046 Mn Longth. , cape Kiugilak.
		1-3 1-2	· · · · · · · · · · · · · · · · · · ·			Sand	0	
	·	2-3 Akuya 1	10		39 2	18,2	90 BA	5F B 00'07'2 8 3 3 m
	•	2 3		89°	59' 24;	E	32.362	- M
		1-3 1-2						

Comp. KBJ.

Values in seconds 2 0.00 Logarithms 8 \$(++¢) ৰ × 180 Sin 1 (4+4) Sina Sec 4 -04 , A' ৰ্ব Values in seconds 60 POSITION COMPUTATION, THIRD-ORDER TRIANGULATION 1st term 2d term 3d term \$ \$ **F** 93. : 광 Logarithms (829) Sinaa 347 Coss P3 ပ Б 8 δα 51.311 12.970 (1.0151)-ci 1.112946 -12.9702 4978.48 04.281 121.01-Values in seconds (8.59) 46.60 48.5 10.7 06.7 6.91 0.00 1 0 0.210 7061 1.009 494 9.646 7581 52 00 2.7 46 670 2d term | +, 000 'z / Sin 1 (0+4') | 9.896 548 Logarithms 8.508 812 76 176 61 57 8 6 7 ҳ \$(++¢') 166 ৰ 39 206 76 180 FIRST ANGLE OF TRIANGLE 17.827 1 Sanc/ (Shoran) Sina Sec 4' $-\Delta\alpha$ 01.644 2 Great Sitkin 558,046 m. 4681.91 -551.0 / 2755 (1303.5) (651.75) 1st term - /6./836 Values in seconds 26reat Sitkin to 3 Akuyan 16.183 3d term 44 \$ 5 د DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
FORD APRIL 1947

Ed. April 1947 Cosa 9.952 474 2.746 670 / B . 8.569, 932 1.209076 Logarithms 90 00 Sin3a 9.29351 6.29733 5 549334 1.51048 2.3799 ટ Д 7 pg 2 Qα

TIDE NOTE FOR HYDROGRAPHIC SHEET

PAYANEX KAPERO XPOX HOLEYAIG

18 November 1955

Division of Charts: R. H. Carstens

Plane of reference approved in 4 volumes of sounding records for

HYDROGRAPHIC SHEET

8233

Locality Adak Island, Aleutian Islands

Height of mean high water above plane of reference is 3.7 feet

Condition of records satisfactory except as noted below:

Act, 9 Chief, Division of Tides and Currents.

. S. GOVERNMENT PRINTING OFFICE 877988

GEOGRAPHIC NAMES Survey No. H-8233			or Ho. Or	S. Mod.		Mag	Cuide	ASC WEASIN	ALIOS	\$
Name on Survey	of A	Ao. B	C 40. Oc	J.S. Mag	or oco to E	Or oco Mari	2 O Guille	Pour Mc	K K	
Alaska		γ								1.
Aleutian Island	\$	1	for	ti	the		-			2
Andreanof Is	land	۷.)				ļ,			3
Bering Sen			ļ						BOH	4
Great Sitkin	/	lan							4	5
Sitkin Sour		77.9	1	1		atio	/		0.44	6
Cape Kingi Adak Isla	121	p.	lone	tide	sta	tion	-	·	BEH	7
Sand Bay	N.A.				N.		- 00	اء ددا	- 11	9
Cape Adagdak					Nas	0-53	1	noved . Hec		10
Swallow Head								1166		11
Saddle Pt					:					12
Teapot Rock										13
Sweeper Cove		(av	et.	de	18	atio	n)		BFIY	14
					***				,	15
	,									16
					· ·					17
		•			·					18
										19
							•		•	20
										22
·						,				23
										24
										25
				· ·						26
							<u>.</u>			27
1	ļ			1	,		ļ		Į,	1 234

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. .8233....

Records accompanying survey:	,	•	•
Boat sheets; sounding vols;	wire drag v	ols	••;
bomb vols; graphic recorder rolls	1-Env.		
special reports, etc. 1-Descriptive report, 1	-Cahier, l-Sm	ooth sheet	i
and 1-Cloth overlay tracing (to serve as the boa	t sheet).	• • • • • • •	•••
The following statistics will be submitted w rapher's report on the sheet:	ith the car	rtog-	
Number of positions on sheet	•	700	· · · · · · · · · · · · · · · · · · ·
Number of positions checked	• •	58	
Number of positions revised	• •	.2.	
Number of soundings revised (refers to depth only)		33.	
Number of soundings erroneously spaced	• •	0	
Number of signals erroneously plotted or transferred	• •	0	
Topographic details		32 hrs	
Junctions	Time .	ABhis.	
Verification of soundings from graphic record	Time	3hrs	
Verification by KENNONTotal time			
Reviewed by his reskind Time	e .38 D	ete 6-2	0-56
to Includes time require line print of smooth sheet plotting on H-7605	and rep	cent of fac	blue
plotting on A-7605			

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-8233

FIELD NO. EX-4155

Alaska, Aleutian Islands, Andreanof Islands, North Coast Adak Island to Great Sitkin Island

Project No. CS-218

Surveyed - May - Sept., 1955

Scale 1:40,000

Soundings:

Control:

808 Fathometer

Shoran

Edo Fathometer

Sextant fixes on shore signals

Chief of Party - S. B. Grenell
Surveyed by-S. B. Grenell, J. Bowie, K. B. Jeffers,
and E. F. Hicks
Protracted by - S. B. Grenell, J. Bowie, K. B. Jeffers,
and E. F. Hicks
Soundings plotted by - K. B. Jeffers
Verified and inked by - D. J. Kennon
Reviewed by - I. M. Zeskind 6-20-56
Inspected by - R. H. Carstens

1. Shoreline and Control

The shoreline originates with unreviewed air-photographic surveys T-11322, T-11323, T-11537, T-11538 and T-11539 of 1953-55.

The source of the control is described in the Descriptive Report.

2. Sounding Line Crossings

The sounding line crossings are in good agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves were adequately delineated.

The survey covers the offshore area lying north of Adak and Great Sitkin Islands between long. 176°00' and 176°46'. The bottom consists of the island shelves and slopes of the above-mentioned islands to depths of about 1800 fms. Submarine

canyons and troughs indent the island slopes.

4. Junctions with Contemporary Surveys

An adequate junction was effected with H-7605 (1946) on the south. A portion of H-7605 in the junctional area with the present survey had been plotted in error as a result of misidentification of a signal. Replotting of the sounding lines on H-7605 resolved conflicts of as much as 8 fms. in junctional depths. The junctions with the following surveys will be considered in the reviews of those surveys:

H-7973 (1952) on the west and north. H-8236 (1955) inshore north of Adak Island. H-8237 (1955) inshore west and northwest of Great Sitkin Island.

Project surveys on the east have not yet been received in the Washington Office.

5. Comparison with Prior Surveys

H-6881 (1933), 1:40,000 H-6892 (1934), 1:30,000 H-6898 (1934), 1:60,000

A comparison between these U. S. Navy reconnaissance surveys and the present survey reveals differences in depths of as much as 329 fms. Several of these discrepancies in depths are noted in paragraph 6 below. These discrepancies in depths are attributed to weak control, improper spacing of soundings and errors in depths on the Navy surveys.

The present survey is adequate to supersede the prior surveys within the common area.

6. Comparison with Chart 8863 (latest print date 1-14-52)
Chart 9139 (latest print date 6-2-52)
Chart 9193 (latest print date 7-5-54)

A. Hydrography

The charted hydrography originates principally with the previously discussed prior surveys which need no further consideration, with advance information of H-7973, 1952 (Bp. 49336), with trackline surveys of 1945 (Chart letter 243), 1946 (Chart letter 177), and from sources not readily ascertainable. The following discrepancies between the charted information and the present survey are noted:

1. The 90-fm sounding charted in lat. 52°01.4', long. 176°35.0', from H-6881 (1933), U. S. N., falls in present depths of 325 fms. and should be deleted from the chart. The charted sounding is considered to be out of position and should actually fall on the present survey about mile south-southwestward where comparable present depths are found.

2. The 175-fm. sounding charted in lat. 52°01.6', long. 176°34.0', from H-6881 (1933), U. S. N., falls in present depths of about 500 fms. and should be deleted from the chart. The charted sounding is considered to be disproved by the general depths and configuration of the bottom in the vicinity of the charted sounding. The sounding is believed to be out of position and should actually fall about 0.8 mile southwestward where comparable depths are found.

3. The landmark Loran Tower, charted in lat. 51°59.58', long. 176°36.7', from chart letter 660 (1950) no longer exists and should be deleted from the chart (See page 5, paragraphs P and Q of the Descriptive Report.).

The present survey is adequate to supersede the charted hydrography within the common area.

B. Aids to Navigation

The only aid to navigation falling within the limits of the present survey is the untended light on Swallow Head, Great Sitkin Island. Its survey position is in substantial agreement with the charted position and adequately marks the feature intended.

7. Condition of Survey

- (a) The sounding records and Descriptive Report are complete and comprehensive.
- (b) The smooth plotting was accurately done.
- (c) Only two bottom characteristics were obtained in the area. covered by the present survey.
- (d) In order to provide a satisfactory copy of the survey for registry a blue line lithographic print was made of the penciled smooth sheet originally submitted on Dinoplex. The projection, signal names and symbols and position numbers were re-inked before verification was begun.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions, except as noted in paragraph 7c above.

9. Additional Field Work Recommended

The survey is considered basic and no additional field work is recommended. As a matter of record attention is directed to the lack of bottom characteristics obtained in the area of the present survey, as noted in paragraph 7c above.

Examined and Approved:

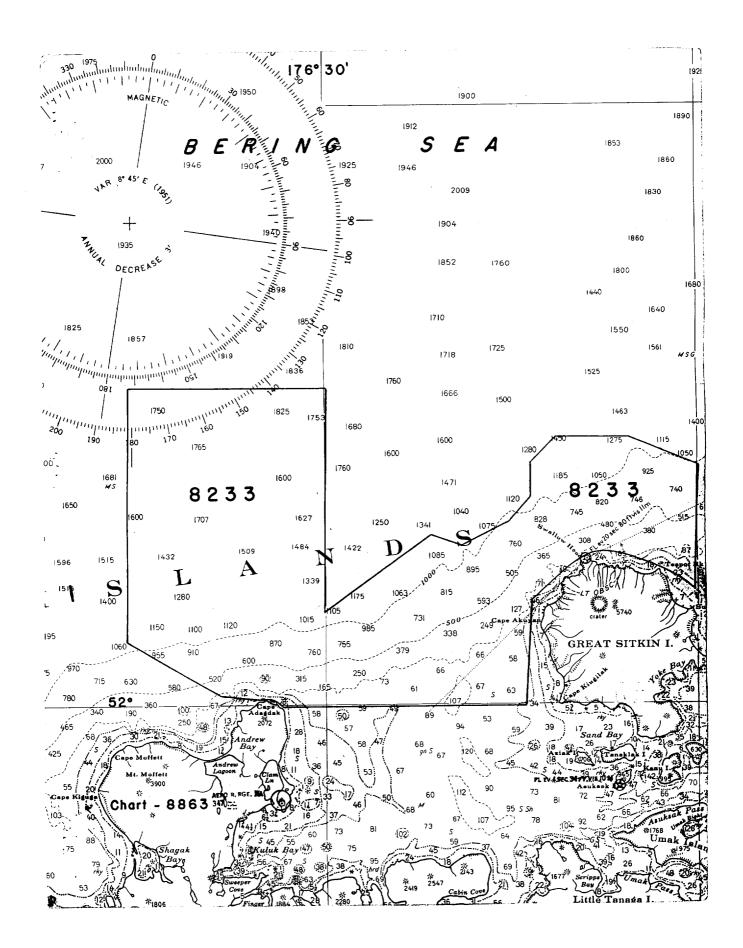
H. R. Edmonston

Chief, Nautical Chart Branch

Chief, Mydrøgraphy Branch

Charles A. Schanck Chief, Chart Division

Chief, Division of Coastal Surveys



NAUTICAL CHARTS BRANCH

SURVEY NO. H-8233 /955

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
2-1-56	8863	H.F. Stegman	Before After Verification and Review Partial application
1/9/57	9193	Ha Mirau	Consider as fully applied until shart in reconstructed
5/28/57	9/02	dan R. Wittman	,
7-15-51	8863	Chao R. Withman	Before After Verification and Review Complete appli.
1/10/59	9/39	Melwer	After Verification and Review Latel. No flying
			added after examination.
1-18-66	9/39 -	ENT Trogonji	To be causidourd as fine of opplication of the chart is vecous frueted.
			Chart 1s vecoustructed.
2/21/66	9/93	John Power	-Refere After Verification and Review Part Applied
·			consider tully applied in grea of the 9139 until reconstr.
12/30/92	16967	Joseph Robins	Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
	١.	•	•
		{	
			·
			,
	·		

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.