

8234

Diag. Cht. No. 8863-3

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. EX-4255 Office No. H-8234

LOCALITY

State Alaska

General locality Aleutian Islands, Andreanof Group.

Locality Offshore - South Side of Adak Island

19A/55

CHIEF OF PARTY

S. B. Grenell

LIBRARY & ARCHIVES

DATE October 27, 1955

8234

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-8234

Field No. EX-4255

State Alaska

General locality Alutian Islands, Andreanof Group

Locality Offshore-South side of Adak Island, Cape Lisianski to Deet Bay

Scale 1:40,000 Date of survey 21 July to 26 July 1955

Instructions dated 16 December 1954 and 20 January 1955

Vessel Ship EXPLORER

Chief of party S. B. Grenell

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

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

Fathograms scaled by Fathometer Readers

Fathograms checked by K. B. Jeffers and V. J. Franze

Protracted by K. B. Jeffers

Soundings penciled by G. E. Haraden

Soundings in fathoms ~~100~~ at ~~MLW~~ MLLW

REMARKS: This is a combination boat sheet and smooth sheet; however practically all of it was protracted after the work was done because it was not possible to determine the shore corrections until the sheet was almost complete.

J.H.F.

Descriptive Report

to accompany

Hydrographic Survey No. H-8234

(Field No. EX-4255)

Offshore--South Side of Adak
Island, Cape Yakak to Boot Bay

Aleutian 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 executed in accordance with the following instructions for Project 1218(CS-218).

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

B. SURVEY LIMITS AND DATES

This survey includes the offshore area from Cape Yakak, Adak Island eastward to longitude $176^{\circ} 32'$ south of Boot Bay, Adak Island. The southwest corner of this survey makes a junction with H-7978, E. P. I. 1952, scale 1:400,000.

A junction was effected at the western limit of the survey off Cape Yakak with survey H-8140, 1954, scale 1:40,000.

Junctions were made with contemporary surveys as follows:

H-7978 (1952) on the S.W.

H-8238 (1:20,000) ⁽¹⁹⁵⁵⁾ south coast of Adak Island from Cape Yakak eastward to longitude $176^{\circ} 39'$ Not registered

H-8239 (1:20,000) ⁽¹⁹⁵⁵⁾ south coast of Adak Island from longitude $176^{\circ} 39'$ eastward to longitude $176^{\circ} 19'$ Not registered

H-8235 (1:40,000) ⁽¹⁹⁵²⁾ offshore, south coast of Adak Id., Boot Bay eastward to Azamis Cove on the south coast of Little Tanaga Island.

H-8140 (1954) on the NW

C. VESSEL AND EQUIPMENT

All hydrography on this survey was accomplished by the EXPLORER.

Turning radius of the ship (from 1952 Descriptive Report):

Full right rudder - 360 meters.

Full left rudder - 275 meters.

Soundings were scaled from continuous profiles recorded on 808 fathometer No. 136 SP in depths up to approximately 110 fathoms and Edo fathometer No. 4 in greater depths.

D. TIDE AND CURRENT STATIONS

A portable automatic tide gage was in operation at Chapel Roads during the period of this survey.

Current Stations Nos. 13 and 14 were occupied within the limits of this sheet with the Roberts Radio Current Meter.

E. SMOOTH SHEET

On this survey a combination boat sheet and smooth sheet was used under authority contained in the Director's letter 22/MEK, S-2-EX, dated 26 April 1954 and Hydrographic Instruction 2, Sec. 4.14 dated 30 November 1954.

The smooth sheet projection was made on the projection ruling machine in the Washington Office. Shoran station positions and arcs were plotted on the sheet as soon as the positions of the shoran stations were actually determined. By this time, however, some distortion had occurred. Several north-south and east-west measurements were made and meaned and a distortion factor of 1.0015 was obtained. All distances to shoran arcs were then multiplied by this factor and the arcs drawn on the sheet. After the arcs were on the sheet one geographic position was computed from Yaka and one from Elf at a distance of 28 miles. The points were then plotted on the sheet. The point computed from Yaka fell right on the 28 mile arc from Yaka and the point from Elf fell about 4 meters off of the arc. The two points are indicated on the smooth sheet by small crosses, blue for the point from Yaka and red for the point from Elf.

An overlay of tracing cloth was made on which hydrography was plotted as it was accomplished. However, as it was not possible to obtain a shoran calibration until the middle of "C" day the hydrography was not pricked thru for the first two and a half days but instead merely plotted on the cloth overlay. These first two and a half days were plotted on the smooth sheet at the first opportunity; after obtaining the shoran corrections hydrography was plotted as accomplished and sounding lines were drawn on the smooth sheet and positions inked at the end of each day. Uncorrected soundings were plotted on the overlay. Corrected soundings were pencilled on the smooth sheet after they were reduced.

See paragraph I (Control of Hydrography) of this report for a discussion of methods used.

F. CONTROL STATIONS

DAK 1943, U.S.E.

FANG 1955, S. B. Grenell

HID 1943, C. D. Meaney

YAKA 1954, S. B. Grenell

ELF * A hydrographic control station located by a sextant angle and a taped distance from DAK.

YAKA, FANG, and HID were used in visual fixes for calibration of shoran and YAKA and ELF were used as sites for the shoran antennas.

G. SHORELINE AND TOPOGRAPHY

No shoreline or topography is shown on this sheet. The nearby shoreline is shown on large scale inshore surveys completed in the current year by this party. H.W.L. added from T-11325, T-11330, T-11331, T-11337 (1953-55)

H. SOUNDINGS

The soundings were all taken by echo sounding with an Edo fathometer, and/or 808 fathometer mounted on the Ship EXPLORER. A considerable number of comparisons were made between soundings taken with the Edo fathometer and the 808 fathometer on different phases or scales to make sure that there would be as few discrepancies as possible. The 808 type fathometers are old and worn, especially the phasing heads. Observations indicate that the phase corrections for any 808 fathometer are not constant. The phase corrections used are such that simultaneous Edo and 808 soundings seldom disagree by more than one (1) fathom. See Special Report on Fathometer Corrections, which will be submitted at a later date, for further discussion of this problem.

I. CONTROL OF HYDROGRAPHY

The horizontal control for all hydrographic fixes on this sheet were shoran distances read from two shoran stations YAKA and ELF. Final corrections for this sheet were determined and applied to the readings before plotting in the field. The plotting was done directly on the smooth sheet except as noted in Section E.

The corrections for the shoran distances were determined in the following manner: The three boat sheets for H-8238⁽¹⁹⁵⁵⁾ were checked and one was found to have negligible distortion. Simultaneous visual and shoran fixes were taken while laying to. These fixes were assigned a position number and recorded in the sounding volumes, the shoran distances being placed in the remarks column. The positions were then plotted on H-8238 (1:20,000) from the visual fixes and "true" distances read from the distance circles. The observed shoran distance was then subtracted from the "true" distance and the correction determined.

Approximately hourly ZERO CHECKS were taken on the ship to guard

against any drift in the ship equipment. The variation so determined was not plottable at the scale of the sheet and was not taken into account.

For convenience in plotting, an independent record of the horizontal control data was recorded on a shoran plotting abstract (form M-2527-1). The corrections for the shoran distances were entered at the head of the column for distance readings. The corrected shoran distance was computed and entered in colored pencil directly above the distance reading on the shoran abstract. The corrected distances were then plotted to obtain the final smooth sheet positions. These plotting abstracts are submitted with this report. Neither the correction, nor the corrected shoran distances appear in the sounding volume.

Fog prevented the taking of calibration fixes until about the middle of "C" day by which time most of the hydrography had been completed. "C" day was the only day on which calibration fixes were taken. Fixes 62, 63, and 64 were the first taken. The shoran distances as actually read and the "true distances" as scaled were tabulated on the back of page 17 of the shoran abstracts. The differences were determined and meaned and those were the corrections applied to all distances up to and including position 62 C. As the correction was fairly large the ZERO SET was changed and calibration fixes with position numbers 66, 67, and 68 C were taken, plotted and corrections determined and meaned. Since the corrections were still large, the zero set was again adjusted and a third set of fixes, positions numbered 69, 70, and 71 C were taken and the corrections determined and meaned and these corrections were used for all subsequent hydrography on the sheet.

Had this sheet been processed in the usual manner with final corrections computed and applied before plotting the smooth sheet, the procedure would have differed only to the extent that a correction would have been applied for the wandering of the zero check, an error of the order of about 0.010 statute mile at the greatest and an unplottable one (as far as soundings are concerned) on the scale of this sheet. ✓

J. ADEQUACY OF SURVEY

The survey of the area is complete and is adequate to supersede prior surveys. The survey complies with the project instructions.

At the junction with H-7978 (1:400,000, 1952) no overlap was obtained. There is at this junction, a uniform displacement of the depth curves of approximately one mile. (*sharp slope at junction*)

The junction with H-8140 (1:40,000, 1954) is good and all the depth curves join smoothly along the northerly portion of the western limits of this sheet. ✓

A comparison of the junctions with H-8238 (1:20,000, 1955) and H-8239 (1:20,000, 1955) inshore surveys for the current season, cannot be made until those smooth sheets are plotted. A discussion of these junctions will be made in the reports for those two 20,000 scale sheets.

K. CROSSLINES

Crosslines represent approximately eighteen (18) per cent of the hydrography. The discrepancies at crossings are slight (one or two fathoms) in all cases. (Xings are all on slopes)

L. COMPARISON WITH PRIOR SURVEYS

The inshore half of the area covered by this sheet was previously surveyed by U. S. Navy in 1934, H-6899 ^{also H-6827 (1937)} on a 1:60,000 scale. The Navy survey was more in the nature of a reconnaissance survey. There is reasonable agreement between this survey and the Navy survey, however there is some displacement of the depth curves. This survey is more complete and should supersede the old survey. There are no dangers to navigation in the area on either survey.

M. COMPARISON WITH CHART

The charted soundings are derived from Survey No. H-6899. See Chart No. 9193, 2nd. edition print 54-7/5. The new survey should supersede for the reason cited in Paragraph "L" above. ^{also H-6832 (1937)}

N. DANGERS AND SHOALS

There are no dangers to navigation or shoals within the limits of this survey.

O. COAST PILOT INFORMATION

See "Coast Pilot Notes, U. S. Coast Pilot 9, Alaska, Cape Spencer to Arctic Ocean, Ship EXPLORER, 1955" which will be submitted at a later date.

There are no anchorages in the area of this survey.

During the period of the survey there was an apparent westerly setting oceanic current of approximately one-half to a knot within the area of this survey.

P. AIDS TO NAVIGATION

The only aid to navigation in this area is the unwatched light at the south end of Cape Yakak. See air photo manuscript T-11334 for position and elevation of the light. ^{see inshore surveys.}

No bridges, submarine or overhead cables, or ferry routes exist.

Q. LANDMARKS FOR CHARTS

There are no Landmarks for Charts in this area except the two towers on Cape Yakak which were recommended for charting in the Descriptive Report for H-8140 (1:40,000, 1954). *see shoran surveys* ✓

R. GEOGRAPHIC NAMES

See "Special Report on Geographic Names, Adak, Kagalaska, Little Tanaga and Great Sitkin Islands, USC&GSS EXPLORER, Season 1955", which will be submitted at a later date. *on file, 854: L.H.*

Z. TABULATION OF APPLICABLE DATA

1. Forwarded with this report:
 - (a) Combination Boat and Smooth Sheet H-8234.
 - (b) Tracing used as overlay boat sheet.
 - (c) 4 volumes of sounding records.
 - (d) 1 envelope of fathograms.
 - (e) 1 cahier of shoran abstracts.

2. Data forwarded separately.
 - (a) Special Report on Geographic Names, Adak, Kagalaska, Little Tanaga and Great Sitkin Islands, USC&GSS EXPLORER, 1955.
 - (b) Special Report on Fathometer Corrections, 1955, EXPLORER, Project CS-218.
 - (c) Coast Pilot Notes, U. S. Coast Pilot 9, Cape Spencer to Arctic Ocean, EXPLORER, 1955.
 - (d) Tide Observations at Chapel Roads, Adak Island.
 - (e) Seasons Report, Ship EXPLORER, Project 1218, 1955.
 - (f) Current observations for stations 13 and 14. ✓

Respectfully submitted

Francis X. Popper
Francis X. Popper
LCDR., USC&GS

STATISTICS

Hydrographic Survey H-8234

Field No. EX-4255

Ship EXPLORER

Project 1218

<u>Vol. No.</u>	<u>Day Ltr.</u>	<u>Date</u>	<u>No. Pos.</u>	<u>Wire Sdgs.</u>	<u>Sdg. Line</u>	<u>Sta. Miles</u>
1	A	7-21-55	161	0		127.2
2 & 3	B	7-22-55	207	0		162.1
3	C	7-23-55	113	10		72.9
3	D	7-24-55	33	0		27.9
4	E	7-26-55	12	3		6.1
TOTALS			526	13		396.2

Area Surveyed:

393 sq. stat. miles

TIDAL NOTE

To accompany Hydrographic Sheet EX-4255 Reg. No. H-8234

Tide reducers for the whole sheet were taken from the records of the Chapel Roads gage with no correction for distance from the gage. Tide reducers were not applied in depths greater than 150 fathoms.

Position of the gage: Latitude 51° 38' 31" N.
Longitude 176° 49' 32" W.

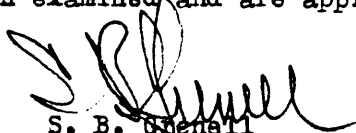
Staff reading of MLLW was 3.4 feet.

APPROVAL SHEET

H-8234 (EX-4255)

All hydrography on this survey was accomplished under my direct supervision. The method of smooth plotting conforms with Hydrographic Instruction 2, sec. 4.14 dated 30 November 1954.

The records and smooth sheet have been examined and are approved.



S. B. Bennett
Captain, USC&GS
Comdg. Ship EXPLORER

/ POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

α	2	DAK 1945 to 3	EASY 1943	187	12	04	α	3	to 2				
2d L		EASY ϕ 0	EIF	+ 81	41	30	3d L		&				
α	2	DAK to 1	EIF	268	53	34	α	3	to 1				
$\Delta\alpha$				180	00	00.0	$\Delta\alpha$			180	00	00.0	
α'	1	to 2					α'	1	to 3				

FIRST ANGLE OF TRIANGLE

ϕ	51	42	42.411	2	DAK	λ	176	32	01.2226	ϕ			
$\Delta\phi$		+	0.030		47.85 m.	$\Delta\lambda$			02.492	$\Delta\phi$			
ϕ'	51	42	42.441	1	EIF (Shoreway)	λ'	176	31	58.734	ϕ'			

s	Logarithms	Values in seconds		$\frac{1}{2}(\phi+\phi')$	Logarithms	Values in seconds	s	Logarithms	Values in seconds		$\frac{1}{2}(\phi+\phi')$	Logarithms	Values in seconds
		1st term	2d term						1st term	2d term			
1679.882		1311.68											
8286.085		(542.68)											
8509.954													
B													
h		1st term	0.2299										
s^2													
3.359764													
$\sin^2\alpha$													
9.999838													
C													
1.5060													
4.8656		2d term	+										
h^2													
D													
		3d term	+										
		- $\Delta\phi$	-	0.2299									

Comp HAG
12/15

GEOGRAPHIC NAMES

Survey No. H-8234

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									1
Aleutian Islands									2
Andreanof Islands									3
Adak Island									4
Chapel Roads				(tide station)					5
Elf Island				(new name)					6
Boat Bay									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25
									26
									27
									✓ M 234

} for title

Names approved
11-10-55 L. Heck

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-8234...

Records accompanying survey;

Boat sheets; sounding vols. ..4...; wire drag vols.;
 bomb vols.; graphic recorder rolls 1-Env;
 special reports, etc. 1-Descriptive report, 1-Cahier, 1-Smooth sheet,...
 and 1-Cloth overlay tracing (to serve as the boat sheet).....

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

Number of positions on sheet	526 -
Number of positions checked	4 65
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	8 hrs -
Junctions	Time	16 hrs -
Verification of soundings from graphic record	Time	4 hrs 4 hrs

Prelim
 Verification by *Paul E. Hamison* Total time *21 hrs* Date *7/23/56*
A.R. STIRNI *34 hrs* Date *1/31/56*

Reviewed by *A.R. STIRNI* Time *32 hrs* Date *2/6/56*

Addendum by J P Weir *2/26/63*

RHC

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~DIVISION OF COASTAL SURVEYS~~

18 November 1955

Division of Charts: R. H. Carstens

Plane of reference approved in
4 volumes of sounding records for

HYDROGRAPHIC SHEET 8234

Locality Adak Island, Aleutian Islands

Chief of Party: S. B. Grenell in 1955
Plane of reference is mean lower low water, reading
3.4 ft. on tide staff at Chapel Roads (Chapel Cove)
4.5 ft. below B. M. 1 (1955)

Height of mean high water above plane of reference is 3.5 feet.

Condition of records satisfactory except as noted below:

Act'g Chief, Division of Tides and Currents, Branch

DIVISION OF CHARTS
REVIEW SECTION - NAUTICAL CHART BRANCH
REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-8234

FIELD NO. EX-4255

Alaska, Aleutian Islands, Andreanof Group, Offshore - South
Side of Adak Island

Project CS-218

Surveyed - July, 1955

Scale 1:40,000

Soundings:

Control:

808 Fathometer

Shoran

Edo Fathometer

Chief of Party - S. B. Grenell
Surveyed by - S. B. Grenell, J. Bowie, K. B. Jeffers, E. F. Hicks
Protracted by - K. B. Jeffers
Soundings plotted by - G. E. Haraden
Preliminary Verification by - A. R. Stirni
Verified and inked by - *PE. Harrison*
Reviewed by - A. R. Stirni 2/6/56
Inspected by - R. H. Carstens

1. Shoreline and Control

The high-water line originates with advance prints of unreviewed air-photographic surveys T-11329 (1953-55), T-11330 (1953-55), T-11331 (1953-55), and T-11334 (1953-55) and was applied in the Washington Office.

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

2. Sounding Line Crossings

The sounding line crossings are in good agreement.

3. Depth Curves and Bottom Configuration

The present survey covers an area of fairly smooth slope extending southward from Adak Island toward the northern limit of the Aleutian Trench. The usual depth curves are adequately delineated.

4. Junctions with Contemporary Surveys

The present survey is in harmony with preliminary verified surveys H-8235 (1954) on the northeast, and H-8140 (1954) on the northwest and with reviewed survey H-7978 (1952) on the southwest. Further disposition of the junctions is deferred pending complete verification and review of the adjoining surveys and the present survey. Inshore surveys H-8238 (1955) and H-8239 (1955) which join the present survey on the north have not yet been registered.

5. Comparison with Prior Surveys

H-6882 (1933), 1:40,000

H-6899 (1934), 1:60,000

Some lines of soundings on these prior Navy surveys are in disagreement with present survey soundings by as much as 15 fms. in depths less than 500 fms. and several hundred fathoms in greater depths. The differences in depth are attributed to errors in position of the sounding lines on the prior surveys in an area of sloping bottom.

The present survey entirely supersedes the prior surveys.

6. Comparison with Chart 9193 (print date 7/5/54)
Chart 8863 (print date 1/14/52)A. Hydrography

The charted hydrography on Chart 9193 originates with the previously discussed surveys with the addition of a 343-fm. sounding at lat. $51^{\circ}27.7'$, long. $176^{\circ}42.6'$ from a Navy track-line survey of 1939 (Chart letter 567, 1939). Hydrography charted on Chart 8863 is from the same sources as above with the further addition of four soundings along the southern limits from U. S. Navy sources not readily ascertainable. Soundings charted from these supplementary sources differ with present depths by 10 to 100 fms.

The Charted hydrography is entirely superseded by the present survey.

B. Aids to Navigation

There are no aids to navigation charted within the limits of the present survey.

7. Condition of Survey

(a) The sounding records and Descriptive Report are complete and comprehensive.

(b) The preliminary verification indicated that the smooth plotting was accurately done.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

9. Additional Field Work

The survey is considered basic within the limits covered and no additional field work is recommended. As a matter of record it is noted that a prominent indentation in the insular slope in the vicinity of lat. $51^{\circ}28'$, long. $176^{\circ}54'$ is only sparsely delineated.

Examined and Approved:



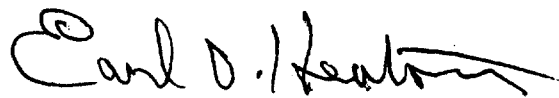
H. R. Edmonston
Chief, Nautical Chart Branch



E. R. McCarthy
Chief, Chart Division



J. C. Bull
Chief, Hydrography Branch



Earl O. Heaton
Chief, Division of Coastal Surveys

Addendum to Review

H-8234 (1955)

Verified and inked by - P. E. Harrison
Review addendum by - J. P. Weir 2/26/63
Inspected by - I. M. Zeskind

The verification of this survey has been completed. Soundings and depth curves have been completely inked.

Junctions with Contemporary Surveys

Adequate junctions were effected with H-8238(1955) on the north, with H-8239(1955) on the northeast, with H-8235(1955) on the east, and with H-8140(1954) on the northwest. Differences of 5 fms. with depths on the southern part of H-8140 could not be resolved. On the south the charted depths are in adequate agreement with the present depths at the project limits.

Comparison with Chart 9193(print date 3/21/60)
Chart 8863(print date 5/4/59)

The charted hydrography on chart 9193 originates with the present survey subsequent to verification and preliminary review, supplemented by a few soundings from H-6899(1934) which are in close agreement with the present survey.

The charted hydrography on chart 8863 originates with the present survey subsequent to verification and preliminary review of the present survey.

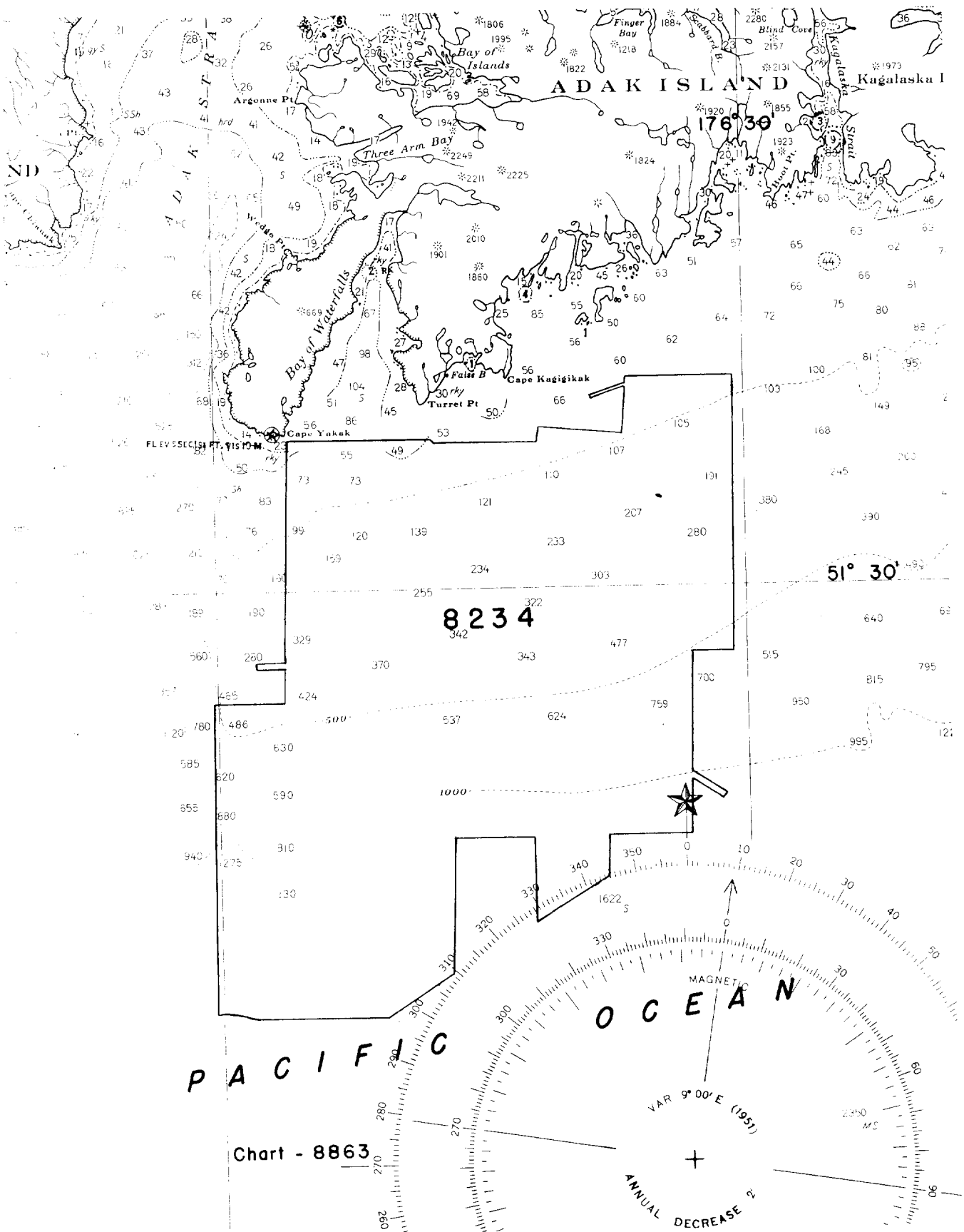
Charted soundings on the above charts are in adequate agreement with present survey depths.

Condition of Survey

- (a) Completion of the verification reveals that the smooth plotting was well done.
- (b) The Descriptive Report is complete and comprehensive.

Approved:

Marvin T. Paulson
Chief, Nautical Chart Division



ADAK ISLAND

KAGALASKA I

8234

51° 30'

MAGNETIC OCEAN

VAR 9° 00' E (1951)

Chart - 8863

ANNUAL DECREASE 2

NAUTICAL CHARTS BRANCH

SURVEY NO. H-8234

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
1/23/56	8863	<i>L.F. Stegman</i>	Before After Verification and Review <i>Partially applied</i> <i>Added depth curves and soundings to supplement charted soundings -</i>
1/30/57	9193	<i>L.S. Kraut</i>	Before After Verification and Review <i>consider as completely applied until chart is reconstructed 3712</i>
5/28/57	9102	<i>Wittman</i>	Before After Verification and Review 3712
7-22-58	8863	<i>Wittmann</i>	Before After Verification and Review
12/30/92	16467	<i>Joseph Robison</i>	Before After Verification and Review
			Before After Verification and Review
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			Before After Verification and Review

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.