

H10545

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. RA-10-6-94
Registry No. H-10545

LOCALITY

State Alaska
General Locality Alaska Peninsula
Sublocality Four Nautical Miles West of
..... Sutwik Island

19 94

CHIEF OF PARTY
CAPT Russell C. Arnold, NOAA

LIBRARY & ARCHIVES

DATE AUG. 22, 1995

NOAA FORM 77-28 21	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTER NO. H-10545
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HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.	FIELD NO. RA-10-6-94
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State Alaska

General locality Alaska Peninsula

Locality Four Nautical Miles West of Sutwik Island

Scale 1:10,000 Date of survey June 5 - June 25, 1994

Instructions dated 5/5/94 Project No. OPR-P180-RA

Vessel NOAA Ship RAINIER (2120), RA-3(2123), RA-4(2124), RA-5(2125)
RA-6(2126)

Chief of party CAPT Russell C. Arnold, NOAA

Surveyed by CAPT R. Arnold, LT D. Neander, LT D. Haines, LTJG D. Lemke, ENS J. Graham
ENS A. Caron, ENS G. Glover, ENS S. Smith, CST F. Parana, ST M. Frost
ST. B. Roraback

Soundings taken by echo sounder, hand lead, pole DSF-6000N

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: B. Mihailov Automated plot by HP Design Jet 550L

Verification by R. Mayor, J. Stringham, R. Shipley, D. Doles

Soundings in ~~fathoms~~ meters & decimeters at ~~MLLW~~ MLLW

REMARKS: All times are UTC. Revisions and marginal notes in black were
generated during office processing. All separates are filed with
the hydrographic data, as a result page numbering may be interrupted
or non-sequential. All depths are listed in this report are
referenced to mean lower low water unless otherwise noted.

Surv/Audio 9/28/95 mcr

*12-19-96 SC
AUG 22 1995*

EAGLE I.
GARDEN I.

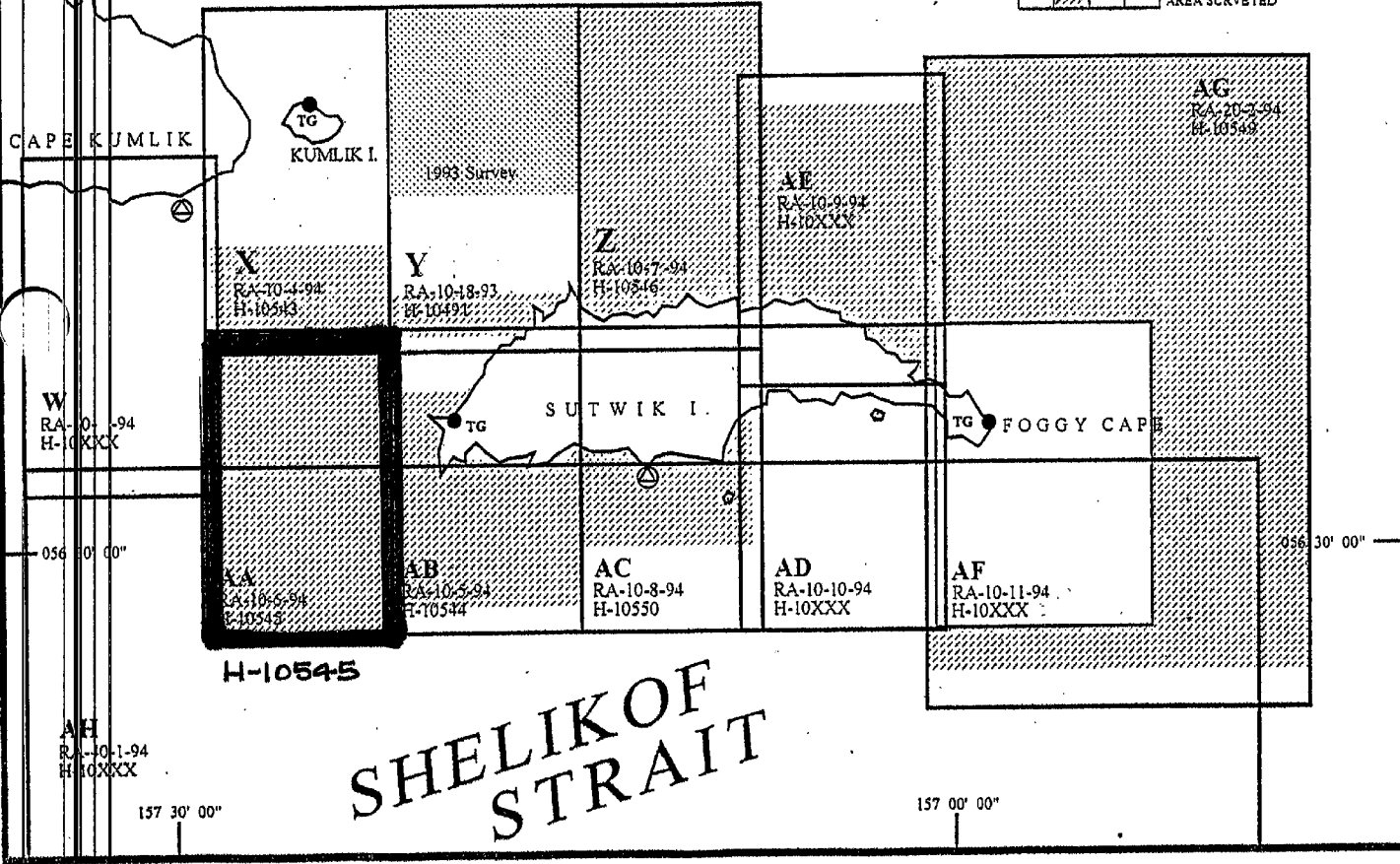
PROGRESS SKETCH
OPR-P180-RA
HYDROGRAPHIC SURVEY
SOUTHERN ALASKA PENINSULA, ALASKA
MAY 27-JUNE 30, 1994

157 00' 00"
HYDRA I.

NOAA SHIP RAINIER
R. C. ARNOLD, CAPT. NOAA
COMMANDING
SCALE OF CHART 16568
1:106,600

	MAY	JUN	JUL	AUG
19.3				
593				
0				
0				
3				
0				
3				
3				
0				

SQ NM SOUNDINGS
LNM SOUNDINGS
LNM SIDE SCAN SOUNDINGS
BOTTOM SAMPLES (GRAB)
ELECTRONIC CONTROL STATIONS
TEMP. DEPTH. SOUND VEL. CAST
TIDE GAGES
GEO CONT. STATIONS EST. REC.
AWOIS ITEMS INVESTIGATED
AREA SURVEYED



SHELIKOF STRAIT

Descriptive Report to Accompany Hydrographic Survey H-10545

Field Number RA-10-6-94

Scale 1:10,000

June 1994

NOAA Ship RAINIER

Chief of Party: Captain Russell C. Arnold

A. PROJECT ✓

This basic hydrographic survey was completed along the Southern Alaskan Peninsula as specified by Project Instructions OPR-P180-RA dated May 5, 1994.

Survey H-10545 corresponds to "sheet AA" as defined in the Project Instructions.

This survey will provide contemporary hydrographic survey data for updating existing nautical charts, and for constructing two new 1:100,000 scale metric charts. The new charts will cover inshore and offshore areas between Sutwik Island and Mitrofanina Island, along the Southern Alaska Peninsula. Requests for hydrographic surveys and updated charts have been received from the U.S. Coast Guard, Alaskan Congressional Delegates, NOAA, Defense Mapping Agency, and local fishermen.

B. AREA SURVEYED ✓ See Evaluation Report Section B.

This survey area is located west of Sutwik Island, along the Southern Alaskan Peninsula. The survey limits are latitudes 56°34.5'N, 56°28.3'N, and longitudes 157°28.5'W, 157°21.8'W. This survey contains no shoreline.

Data acquisition was conducted from June 5, Day Number (DN) 156, through June 25, (DN) 176.

C. SURVEY VESSELS ✓

Data were acquired by the NOAA SHIP RAINIER, four survey launches as noted below:

<u>Vessel</u>	<u>EDP No</u>	<u>Operation</u>
RAINIER	2120	SV Casts Bottom Samples
RA-3	2123	Hydrography
RA-4	2124	Hydrography
RA-5	2125	Hydrography
RA-6	2126	Hydrography

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Data acquisition and processing were accomplished with the following HDAPS programs.

<u>HDAPS 1994</u> <u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
BACKUP	2.00	3/7/94
BASELINE	1.14	3/7/94
BIGABST	2.07	3/7/94
BIGAUTOST	3.01	3/7/94
BLKEDIT	2.02	3/7/94
CARTO	2.13	5/12/94
CLASSIFY	1.05	3/7/94
CONVERT	3.62	3/7/94
DAS_SURV	6.70	5/12/94
DIAGNOSE	3.04	5/12/94
DISC-UTIL	1.00	3/7/94
DP	2.14	3/7/94
EXCESS	4.21	3/7/94
FILESYS	3.24	5/12/94
GRAFEDIT	1.06	3/7/94
LISTDATA	1.02	3/7/94
LOADNEW	2.10	3/7/94
LSTAWOIS	3.07	5/12/94
MAINMENU	1.20	3/7/94
MAN_DATA	2.01	3/7/94
NEWPOST	6.01	3/7/94
PLOTALL	2.27	5/12/94
POINT	2.10	3/7/94
PREDICT	2.01	3/7/94
PRESURV	7.08	5/12/94
PRINTOUT	4.03	5/3/94
QUICK	2.05	5/12/94
RAMSAVER	1.02	3/7/94
REAPPLY	2.10	3/7/94
SCANNER	1.00	3/7/94
SELPRINT	2.04	3/7/94
SYMBOLS		3/7/94
VERSIONS	1.00	3/7/94
ZOOMEDIT	2.24	5/12/94

Velocity corrections were determined using:

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
VELOCITY	2.10	15 Mar 1994

E. SONAR EQUIPMENT ✓

Sonar equipment was not used on ~~sheet A.A.~~ survey **H-10545**

F. SOUNDING EQUIPMENT ✓

The Raytheon DSF-6000N is a dual frequency (100 kHz, 24 kHz), paper trace echo sounder. Serial numbers are included on the headers of the daily Raw Master Printouts. *No problems which affect survey data were encountered. All DSF-6000N soundings were acquired using the High + Low, High frequency digitized setting.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Correctors for the velocity of sound through water were determined from the casts listed below:

<u>Velocity Table No.</u>	<u>Cast No.</u>	<u>Deepest Depth (m)</u>	<u>Applicable DN</u>	<u>Cast Position</u>	<u>Day</u>
2	2	220	156-170	56°36'24"N 157°10'24"W	160
3	3	240	171-176	56°36'08"N 157°10'08"W	172

Velocity casts 2 and 3 plot outside the survey limits.

The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 811). The SBE SEACAT was calibrated on 12/17/93. Velocity correctors were computed using the PC program VELOCITY in accordance with Hydrographic Survey Guideline (HSG) No. 69. A printout of the Sound Velocity Corrector Tables used in the HDAPS Post Survey program is included in the "Separates to be Included with Survey Data, IV. Sounding Equipment Calibrations and Corrections". *

Static Draft

A transducer depth was determined using FPM Fig 2.2 for launches 2123, 2124, 2125 and 2126 in the spring of 1994 and was entered into the offset tables for each launch.

Settlement and Squat

Correctors were computed in accordance with Hydrographic Manual Section 4.9.4.2, using FPM Fig. 2.2 and 2.3, and are included with project data for OPR-P180. The data used was collected in Shilshole Bay, Washington in March of 1994.

settlement and squat

Offset Tables

Offset tables contain offset for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 3,4,5 and 6 correspond to the number of the launch. The offset tables were compiled with new measurements in the spring of 1994 and are contained in the "Separates to be Included with Survey Data". *

* Filed with the hydrographic data.

Heave

The launches are not equipped with heave, pitch, and roll sensors. Data acquired during periods of significant sea action were scanned to account for inaccuracies caused by heave.

Bar Check and Lead Lines

Bar check and lead lines were calibrated by RAINIER personnel during the winter inport 1993-1994. Calibration forms are included with project data for OPR-P180. Bar checks were performed weekly and served as a functional check of the DSF-6000N.*

Tide Correctors

Predicted tides for the project were provided on diskette by N/OES334 for the Ugaiushak, Alaska reference station (945-8553).

Tidal correctors as provided in the project instructions for this sheet are:

<u>Time Correction</u>	<u>Height Correction</u> <u>Range Ratio</u>
0hr 0min	x0.95

HDAPS listings of the data used in generating tide corrector tables are included in Appendix V of ~~this~~ ^{separates} the report.*

RAINIER personnel installed an 8200 digital gage at West end of Sutwik Island (945-8665) on 26 May 1994. Opening levels of the staff were conducted upon installation. Closing levels for the tide station will be completed by RAINIER personnel at the conclusion of the project. Bracketing levels were completed at the end of June.

The control station was Sand Point, Alaska (945-9450). Opening levels for the control station were conducted by RAINIER personnel on May 21-22, 1994. Closing levels at Sand Point, Alaska will be completed by the Pacific Operation Section N/OES214 during their annual visit in late July as per phone conversation with Mr. Mike Gibson (OES212).

The station descriptions, field tide records, and Field Tide Note (Appendix V) will be forwarded to N/OES212 monthly in accordance with HSG 50 and FPM 4.3, and at the end of the project. Requests for approved tides were forwarded to N/OES2 at the beginning of July. Tide note dated OCT 28, 1994 is attached to this report.

H. CONTROL STATIONS ✓ See Eval Rpt., Section H.

A listing of the geodetic stations used to control this survey is included in ~~Appendix III~~ of this report. The horizontal datum for this project is NAD83.

DGPS stations were set up on existing stations CLAY 2, LAND and HYDRA. Station LAND is located on a small islet in the northern Aniakchak Bay, station CLAY 2 is located on a small islet southwest of Kumlik Island, and station HYDRA is located on Hydra Island. These stations were recovered in accordance with methods stated in Sections 5.2.4 of the FPM.

* Filed with the hydrographic data.

An additional DGPS station, TWIK, was established by RAINIER personnel on the south side of Sutwik Island. This station was positioned to Third-Order Class I accuracy using static GPS methods. Existing stations LAND and CLAY2 were used as control stations. For further information see the "Summer 1994 Horizontal Control Report" that will be submitted at the end of the project.

I. HYDROGRAPHIC POSITION CONTROL ✓

Method of Position Control

All soundings and features were positioned using differential GPS. Serial numbers for Ashtech GPS equipment are annotated on the data printouts. *

Calibrations & Systems Check Methods

System checks were performed by launch to launch comparisons of position. Three observations of position were made using correctors from two independent DGPS base stations. System checks were performed weekly. The results were transferred to forms which are included in the project data for OPR-P180. An abstract of the system checks is included in the "Separates to be Included with Survey Data, III. Horizontal Position Control and Corrections to Position Data". *

Problems

None.

Ashtech GPS

VHF differential shore stations were established at stations LAND, CLAY2, HYDRA and TWIK. The difference between each station's computed location and published location was recorded by the MONITOR program on a PC. Data from a 24 hour period were recorded and examined for signs of multipath signal reflection, which was not evident at any of the stations. Scatterplot results are included in the "Project related data for OPR-P180-RA". The scatterplot results for station LAND and HYDRA were obtained last year. The areas around LAND and HYDRA remain undeveloped, and the geography unchanged.

Problems

None.

Offset

The launch GPS antenna offsets are stored in the HDAPS Offset Tables as listed in Section G. Copies of the Offset Tables are included in the "Separates to be Included with Survey Data". *

J. SHORELINE ✓

There was no shoreline located on this survey.

K. CROSSLINES ✓

Crosslines are in good agreement with mainscheme hydrography except in areas of complex bathymetry. Crosslines totaled 33.2 nautical miles, representing 8.4% of the total mainscheme hydrography.

L. JUNCTIONS *See Eval. Rpt., section L.*
H-10557

This survey junctions with survey ~~H-10543~~ (1:10,000, 1994) to the north, and H-10544 (1:10,000, 1994) to the east. No irregularities were found when comparing soundings and depth curves. Final comparisons will be made at the Pacific Hydrographic Section (PHS).

M. COMPARISON WITH PRIOR SURVEYS *See Eval. Rpt., section M.*

Two prior surveys were compared: H-4495 (1:20,000, 1925) and H-4506 (1:60,000, 1925). Sparse soundings from these prior surveys were in general agreement with the present survey. However, the present survey, due to much greater sounding density, revealed numerous shoal soundings not found during the prior surveys. There were no instances where prior survey soundings were shoaler in a corresponding area.

Final comparisons will be conducted by PHS.

N. ITEM INVESTIGATIONS ✓

There were no item investigations for ~~sheet A~~ survey H-10545.

O. COMPARISON WITH THE CHART *See Eval Report, Section 7.*

This survey was compared to NOS chart 16568, 9th Edition, March 21, 1992, 1:106,600 (NAD83) and NOS chart 16566, 7th Edition, October 28, 1989, 1:77,477 (NAD83). The charted soundings were found to be in general agreement with this survey except in areas of complex bathymetry. Final comparisons will be made at PHS.

Dangers to Navigation

There are no dangers to navigation within the limits of this survey. *No additional dangers were discovered during office processing*

P. ADEQUACY OF SURVEY ✓

Prior to final approval, survey H-10545 is complete and adequate to supersede charted depths in their common areas. *Concur*

Q. AIDS TO NAVIGATION ✓

None

R. STATISTICS ✓

<u>Vessel:</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>2126</u>	<u>2120</u>	<u>Total</u>
# of Pos	870	890	448	1099	93	3400
NM Hydro	161	167.0	86.1	184.2	00	598.3
NM ² Hydrography	22					
Velocity Casts	2					
Detached Position	0					
Tide Stations	1					
Reference Numbers	0					
Bottom Samples	84					

S. MISCELLANEOUS ✓

Bottom samples were sent to the Smithsonian Institution in accordance with Project Instructions.

Coast Pilot current comparisons were made in accordance with the Project Instructions. No tidal current predictions are available within the sheet limits.

No unusual magnetic variations were noted.

T. RECOMMENDATIONS ✓

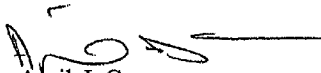
None

U. REFERRAL TO REPORTS ✓

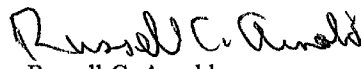
The following supplemental reports contain additional information relevant to this survey:

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Summer 1994 Horizontal Control Report for OPR-P180-RA-94	August 1994	N/CG245
Summer 1994 Coast Pilot Report for OPR-P180-RA-94	August 1994	N/CG245
Project related data for OPR-P180-RA	Incremental	N/CG245

Respectfully Submitted,


April J. Caron
Ensign, NOAA

Approved and Forwarded,


Russell C. Arnold
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 23 Jun 1994

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
100	F	056:45:19.732	157:29:28.737	42	250	0.0	0.0		05/24/94	LAND(DGPS)
101	F	056:44:35.925	157:00:57.249	50	250	0.0	0.0		05/24/94	HYDRA(DGPS)
102	F	056:36:08.811	157:29:12.200	44	250	0.0	0.0		05/24/94	CLAY 2(DGPS)
103	F	056:31:22.546	157:11:42.067	35	250	0.0	0.0		06/03/94	TWIK(DGPS)

APPROVAL SHEET

for

H-10545
RA-10-6-94

Standard procedures were followed in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Survey Guidelines; and the Field Procedures Manual in producing this survey. The data were examined daily during data acquisition and processing.

The field sheet and accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved.



Russell C. Arnold
Captain, NOAA
Commanding Officer

GEOGRAPHIC NAMES

H-10545

Name on Survey	ON CHART NO. 16568											
	A	B	C	D	E	F	G	H	K			
	ON PREVIOUS SURVEY NO.	CON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP ATLAS	GRAND McNALLY	U.S. LIGHT LIST					
ALASKA (title)	X		X									1
ALASKA PENINSULA (title)	X		X									2
NORTH PACIFIC OCEAN	X		X	(BGN Decision)								3
												4
												5
												6
												7
												8
												9
												10
												11
												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25

Approved:

[Signature]
Chief Geographer

APR 3 1995



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Silver Spring, Maryland 20910

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: October 28, 1994

MARINE CENTER: Pacific

OPR: P180

HYDROGRAPHIC SHEET: H-10545

LOCALITY: 4 NM west of Sutwik Island, Shelikof Strait, Alaska

TIME PERIOD: June 5 - 25, 1994

TIDE STATION USED: 945-8665 West Sutwik Island
Alaska
Lat. $56^{\circ} 32.4'N$ Lon. $157^{\circ} 19.6'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = 1.40 feet

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 8.6 feet

REMARKS: RECOMMENDED ZONING

Times and heights are direct on West Sutwik Island, Ak.
(945-8665).

NOTES: Hourly heights are tabulated on Greenwich Mean Time.
The data for West Sutwik Island, Ak. (945-8665) is stored
in the Next Generation Water Level Measurement System
temporary file #745-8665.

William W. Helms
CHIEF, DATUMS SECTION



HYDROGRAPHIC SURVEY STATISTICS

H-10545

RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		
DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES					
ENVELOPES					
VOLUMES					
CAHIERS	2				
BOXES					

SHORELINE DATA					
SHORELINE MAPS (List):					
PHOTOBATHYMETRIC MAPS (List):					
NOTES TO THE HYDROGRAPHER (List):					
SPECIAL REPORTS (List):					
NAUTICAL CHARTS (List):					

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			3400
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	68.0		68.0
VERIFICATION OF SOUNDINGS	129.0		129.0
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPIATION OF SMOOTH SHEET	121.50		121.50
COMPARISON WITH PRIOR SURVEYS AND CHARTS		3.0	3.0
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		40.0	40.0
GEOGRAPHIC NAMES			
OTHER			
*USE OTHER SIDE OF FORM FOR REMARKS		TOTALS	361.50
		318.50	43.0

Pre-processing Examination by LT M. Larsen	Beginning Date 6/5/94	Ending Date 7/21/94
Verification of Field Data by R. Mayor, R. Shipley, D. Doles	Time (Hours) 318.5	Ending Date 5/11/95
Verification Check by B. Mihailov, B. Olmstead	Time (Hours) 10	Ending Date 7/31/95
Evaluation and Analysis by B. Mihailov	Time (Hours) 68	Ending Date 8/2/95
Inspection by B.A. Olmstead	Time (Hours) 28	Ending Date 8/7/95

EVALUATION REPORT

H-10545

A. PROJECT

Project information is discussed in the hydrographer's report.

B. AREA SURVEYED

This survey was conducted in Alaska, and is located along the Alaska Peninsula, approximately 80 nautical miles southwest of Kodiak Island. Specifically, the surveyed area resides four nautical miles west of Sutwik Island and is bounded by latitude 56/34/30N to the north and latitude 56/28/18N to the south. The eastern limit is longitude 157/21/45W and the western limit is longitude 157/28/30W. There is no shoreline on survey H-10545. The bottom consists mainly of sand, mud and broken shells. Depths range from 22.2 to 192 meters.

C. SURVEY VESSELS

Survey vessel information is found in the hydrographer's descriptive report.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Survey data were processed using the same Hydrographic Data Acquisition/Processing System (HDAPS) software used by the hydrographer, the Hydrographic Processing System (HPS) and AutoCad, Version 12.0.

At the time of the survey certification the format for transmission of digital data had not been formally approved. In the interim, digital data for this survey exists in the standard HPS format which is a database format using the .dbf extension. In addition, the sounding plot was created with .dbf (extension) and enhanced using the AutoCad system, are filed both in the AutoCad drawing format, .dwg (extension); and in the more universally recognized graphics transfer format, .dxf (extension). Copies of these files will be retained at PHS until data transfer protocols are developed and improved.

The drawing files necessarily contain information which is not part of the HPS data set such as geographic names text, line-type data, and minor symbolization. In addition, those soundings deleted from the drawing for clarity purposes, remain unrevised in the HPS digital files to preserve the integrity of the original hydrographic data set. Cartographic codes used to describe the digital data are those authorized by Hydrographic Survey Guideline No. 75.

The field sheet parameters have been revised to center the hydrographer on the office plot. The data is plotted using a Modified Transverse Mercator projection and are depicted on a single sheet.

E. SONAR EQUIPMENT

Side scan sonar was not used on survey H-10545.

F. SOUNDING EQUIPMENT

Sounding equipment is discussed in the hydrographer's report.

G. CORRECTIONS TO SOUNDINGS

The sounding data have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for an actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with NOS specifications. Actual tide reduction is derived from the West Sutwik Island, Alaska gage (945-8665).

H. CONTROL STATIONS

Control stations are discussed in the hydrographer's report and separates. A list of control stations used on survey H-10545 is attached to this report.

The positions of horizontal control stations used during hydrographic operations are published values based on NAD 83. The geographic positions of all survey data are based on NAD 83. The smooth sheet is annotated with an NAD 27 adjustment tick based on values determined with the NGS program NADCON.

Data based on NAD 27 may be referenced to this survey by applying the following corrections:

Latitude: -2.680 seconds (-82.918 meters)
Longitude: 7.557 seconds (124.918 meters)

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 3.75 was computed for survey operations. No positions exceeded this limit. Additional information may be found in the hydrographer's report.

J. SHORELINE

There is no shoreline within the limits of survey H-10545.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10545 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10491	1993-94	1:10,000	Northeast
H-10543	1994	1:10,000	North
H-10544	1994	1:10,000	East
H-10557	1994	1:10,000	West
H-10554	1994	1:40,000	South

The junctions with surveys H-10543 and H-10544 is complete and the soundings are in good agreement. Comparison with the chart in areas not covered by a junction indicates good agreement.

M. COMPARISON WITH PRIOR SURVEYS

Survey H-10545 was compared with the following prior surveys.

H-4495 (1925) 1:20,000
H-4506 (1925) 1:60,000

Surveys H-4495 and H-4506 cover the entire area of the present survey. The majority of the charted sounding information originates from survey H-4506. The sounding agreement is good. Comparison with the prior soundings reveals differences of 1-2 meters. Soundings from prior survey H-4495 common to the present survey, also reveals good agreement. Differences between the prior surveys and the present survey can be attributed to increased bottom coverage and less accurate positioning and sounding methods available in 1925.

H-10545 is adequate to supersede the prior surveys within the common area.

N. ITEM INVESTIGATIONS

There were no item investigations assigned within the boundaries of survey H-10545.

O. COMPARISON WITH CHART

Survey H-10545 was compared with the following charts.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16566	7th	October 28, 1989	77,477	NAD83
16568	9th	March 21, 1992	1:106,600	NAD83

a. Hydrography

Charted hydrography originates with the previously discussed prior surveys and requires no further discussion.

Survey H-10545 is adequate to supersede charted hydrography within the common area.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H-10545 is adequate to:

- a. delineate the bottom configuration, determine least depths, and draw the required depth curves;
- b. reveal there are no significant discrepancies or anomalies requiring further investigation; and
- c. show the survey was properly controlled and soundings are correctly plotted.

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, April 1994 Edition.

Q. AIDS TO NAVIGATION

There are no fixed or floating aids to navigation located within the survey area. There are no features of landmark value located within the area of this survey.

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

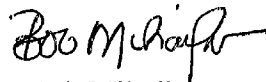
Miscellaneous information is discussed in the hydrographer's report. No dangers to navigation were reported by the hydrographer. No additional items were noted during office processing.

T. RECOMMENDATIONS

This is a good hydrographic survey. No additional work is recommended.

U. REFERRAL TO REPORTS

Referral to reports is discussed in the hydrographer's report.



Bob Mihailov
Cartographer

APPROVAL SHEET
H-10545

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report. Final control, position and sounding printouts have been included with the survey records.

Bruce A. Olmstead Date: 8/8/95
Bruce A. Olmstead
Senior Cartographer, Cartographic Section
Pacific Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Dennis Hill Date: 8/14/95
Kathy Timmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

Final Approval

Approved:

Andrew A. Armstrong III Date: 8/24/95
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10545

INSTRUCTIONS

1. Basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
2. Letter all information.
3. In "Remarks" column cross out words that do not apply.
4. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
16568	6/94	B. Mikhailev	Full Part Before After Marine Center Approval Signed Via Drawing No. 12 Revisions applied to H-16568
16516	6/10/96 135a-96	D. M. K. [Signature] D. K. [Signature]	Full Part Before After Marine Center Approval Signed Via Drawing No. 14 7TH EDITION FULL APPLICATION OF SPINGS, DEPTH CURVES ETC THROUGH CHART 16568 & BP15766
16513	6/10/96 6-15-96	D. M. K. [Signature] D. K. [Signature]	Full Part Before After Marine Center Approval Signed Via Drawing No. 30 24TH AUG 92 RECEIVED SOUNDINGS THRU CHART 16568 H-DRAWING BP15766
16011	6-22-96	[Signature] William J. [Signature]	Full Part Before After Marine Center Approval Signed Via Revised hydro thru Drawing No. 32 chrt 16013
16006	8-15-96	[Signature] William J. [Signature]	Full Part Before After Marine Center Approval Signed Via Revised hydro thru Drawing No. 28 chrt 16011
531	8-21-96	William J. [Signature]	Full Part Before After Marine Center Approval Signed Via Revised hydro thru Drawing No. 22 16006
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.