

H10546

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-10-7-94
Registry No. H-10546

LOCALITY

State Alaska
General Locality ... Alaska Peninsula
Sublocality Northwest Central Sutwik
Island

1994

CHIEF OF PARTY
CAPT Russell C. Arnold, NOAA

LIBRARY & ARCHIVES

DATE AUG 22 1995

☆U.S. GOV. PRINTING OFFICE: 1985-566-064

16568
16013
16011
16006
531
500
536
50

HYDROGRAPHIC TITLE SHEET

H-10546

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-10-7-94

State Alaska

General locality Northwest Central Sutwik Island

Locality Alaska Peninsula

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)
RA-9(2129)

Chief of party CAPT Russell C. Arnold, NOAA

Surveyed by CAPT R. Arnold, LT D. Neander, LT D. Haines, LTJG D. Lemke, ENS A. Caron

Soundings taken by echo sounder, hand lead, pole DSF-6000N, Innerspace 448

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

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



Verification by L. Deodato, D. Doles, J. Stringham

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

REMARKS: Time in 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 listed in this report are referenced to mean lower low water unless otherwise noted.

SURF/AUGLS 9/28/95 mlr12-18-96
AUG 22 1995

EAGLE I. 
GARDEN I. 

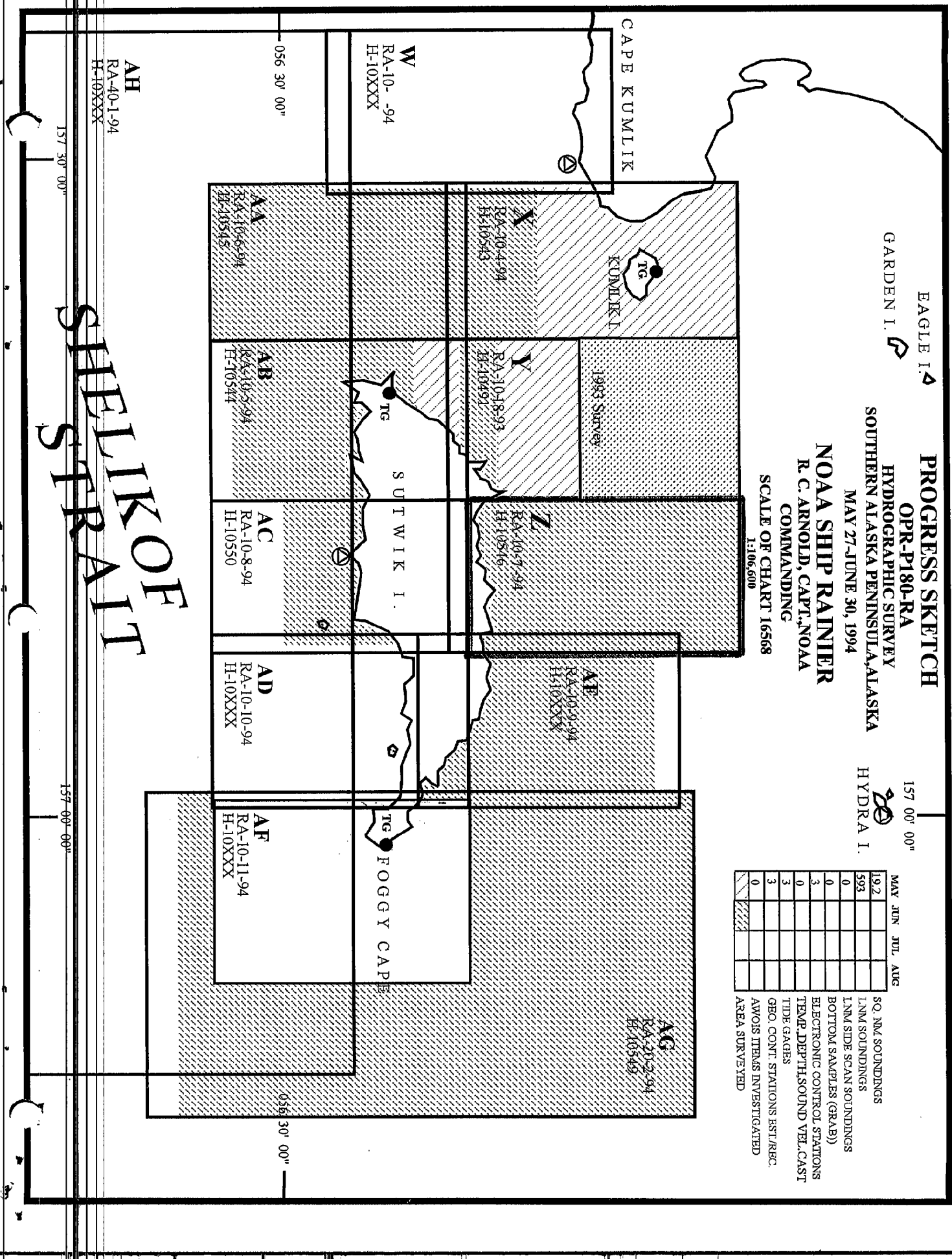
PROGRESS SKETCH
OPR-P180-RA
 HYDROGRAPHIC SURVEY
 SOUTHERN ALASKA PENINSULA, ALASKA
 MAY 27-JUNE 30, 1994

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

157 00' 00"
 HYDRA I. 

	MAY	JUN	JUL	AUG
19.2				
593				

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.
 AVOIS ITEMS INVESTIGATED
 AREA SURVEYED



SHELLKROFF STRAIT

AH
 RA-40-1-94
 H-10XXXX

W
 RA-10-94
 H-10XXXX

AA
 RA-10-6-94
 H-105545

X
 RA-10-4-94
 H-105543

AB
 RA-10-5-94
 H-105544

Y
 RA-10-8-93
 H-104991

AC
 RA-10-8-94
 H-105550

Z
 RA-10-7-94
 H-10546

AD
 RA-10-10-94
 H-10XXXX

AE
 RA-10-9-94
 H-10XXXX

AF
 RA-10-11-94
 H-10XXXX

AG
 RA-20-2-94
 H-10549

157 30' 00"

157 00' 00"

056 30' 00"

056 30' 00"

Descriptive Report to Accompany Hydrographic Survey H-10546

Field Number RA-10-7-94

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 Alaska Peninsula, Alaska, as specified by Project Instructions OPR-P180-RA dated May 5, 1994.

Survey H-10546 corresponds to "sheet Z" as defined in the Project Instructions.

This survey will provide contemporary hydrographic survey data for updating existing nautical charts, and for constructing two 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, Alaska congressional delegates, NOAA, Defense Mapping Agency, and local fishermen.

B. AREA SURVEYED ✓ See Eval Rpt, Section B

The survey area is located along the Southern Alaska Peninsula, southwest of Kodiak Island. The survey's northern limit is bounded by latitude $56^{\circ}40.6' N$, and the southern limit is bounded by the north shore of Sutwik Island. The eastern and western limits are bounded by longitudes $157^{\circ}14.8' W$ and $157^{\circ}07.5' W$. The north and east limits at the northeastern corner of the survey are latitude $56^{\circ}39.5' N$ and longitude $157^{\circ}10.7' W$.

Data acquisition was conducted from June 5, 1994, Day Number (DN 156), through June 25, 1994, DN 176.

C. SURVEY VESSELS ✓

Data were acquired by the NOAA SHIP RAINIER, four survey launches and a Munson Hammerhead skiff as noted below:

<u>Vessel</u>	<u>EDP #</u>	<u>Operation</u>
RAINIER	2120	Sound Velocity Cast Bottom Samples
RA-3	2123	Hydrography Shoreline Verification
RA-4	2124	Hydrography Shoreline Verification
RA-5	2125	Hydrography Bottom Samples Shoreline Verification

RA-6	2126	Hydrography Shoreline Verification
RA-9	2129	Hydrography

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Data acquisition and processing were accomplished with the following HDAPS and Coastal Oceanographics HYPACK programs:

HDAPS 1994

<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

<u>HYPACK Program Name</u>	<u>Version</u>	<u>Date Installed</u>
HYPACK.EXE	4.16	2/24/94
PLOTFILE.EXE	4.16	2/25/94
SETUP.EXE	4.16	2/15/94
VIEW.EXE	4.16	12/12/93
DESIGN.EXE	4.16	2/1/94
VOLUME.EXE	4.16	1/27/94
FORGP.EXE	4.16	11/12/93
NAVITRACK.EXE	4.16	2/1/93
CONTPICK.EXE	4.16	12/8/92
DIGITIZE.EXE	4.16	1/12/94
HYDROLIN.EXE	4.16	8/20/93
UPLOAD.EXE	4.16	8/12/92
TESTFIG.EXE	4.16	11/30/93
INVERSE.EXE	4.16	11/12/94
NAV.EXE	4.16	2/21/94
DATUM.EXE	4.16	11/23/94
GRIDCONV.EXE	4.16	12/21/93
DXF.EXE	4.16	2/11/94
MENUCOLO.EXE	4.16	8/12/92
IOTEST.EXE	4.16	2/22/94
TRANS.EXE	4.16	1/6/94
OVERLAY.EXE	4.16	5/19/93
UNITCONV.EXE	4.16	11/12/93
POINTFIG.EXE	4.16	11/12/93
TRACKS.EXE	4.16	12/12/93
MANDIG.EXE	4.16	9/30/92
DATADIRS.EXE	4.16	12/17/93
COMISET.EXE	4.16	9/15/92
NEWSETUP.EXE	4.16	2/22/94
IONEW.EXE	4.16	2/9/94
MANAGER.EXE	4.16	12/13/93
PRINTFIG.EXE	4.16	10/25/93

Some data were collected using a Munson Hammerhead Skiff equipped with a laptop computer, Coastal Oceanographics HYPACK data acquisition software, standard Ashtech DGPS, and an Innerspace 448 fathometer.

Post processing was conducted using the HDAPS HP system. HYPACK files were translated to a PC-DAS format using a modified PowerBasic program provided by N/CG24. The PowerBasic program, CONV_HYP.BAS, was run through an accompanying batch routine called HYPCON.BAT (2/14/94). OSWEGO HPCOPY was used to copy the data onto a HP formatted disk. Data were then processed in the same manner as PC-DAS on the HP system.

In addition, the following batch routine, GPSINIT.BAT(5/19/94), was used to initialize the Ashtech GPS receiver.

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 Z.

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. The InnerSpace 448, serial number 300, is a single frequency thermal depth sounder recorder (208 kHz). No problems which affect survey data were encountered. All DSF-6000N soundings were acquired using the High + Low, high frequency digitized setting.

Problems

None

G. CORRECTIONS TO ECHO SOUNDINGS ✓

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

<u>Velocity Table #</u>	<u>Cast#</u>	<u>DN</u>	<u>Cast Position</u>	<u>Deepest Depth</u>	<u>Applicable DN</u>
2	2 ^{**}	160	56°36'24" N 157°22'58" W	220	156 - 170
3	3	172	56°36'08" N 157°10'08" W	240	171 - 176

*** Plots outside the Survey limits.*

The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 811), calibrated 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, 2126 and 2129 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. 2.3, and are included with project data for OPR-P180-RA. The data used was collected in Shilshole Bay, Washington in March of 1994.

* Filed with the hydrographic record.

Offset Tables

Offset tables contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 3-6 and 9 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". *

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-RA. Bar checks were performed weekly and served as a functional check of the DSF-6000N and the InnerSpace 448.

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>
0 hr 0 min.	X0.94

HDAPS listings of the data used in generating tide corrector tables are included in Appendix V of this report. *

Two tide gages were installed by RAINIER personnel at Kumlik Island (945-8704) on May 26, 1994, DN 146. Two 8200 digital gages were placed at the site, and opening levels of the staff were conducted upon installation. A problem was noted during the initial three hour observation, the two gages' pressure readings were not in agreement. One gage had an improper slope and offset entered, while the other gage had pressure sensor problems. The slope and offset problem was corrected, and the gage was put back on line. The gage with the faulty pressure sensor was removed and returned to N/OES214. Bracketing levels were completed at the end of June, and closing levels will be completed by RAINIER personnel at the conclusion of the project.

RAINIER personnel installed an 8200 digital gage at Foggy Cape (945-8582) on June 4, 1994, DN 155. Opening levels were conducted upon installation. Only two of the three hours of opening observations were able to be completed due to inclement weather. Bracketing levels were completed at the end of June, and closing levels will be completed by RAINIER personnel at the conclusion of the project.

The control station was Sand Point, Alaska (945-9450). Opening levels of the control station were performed by RAINIER personnel on May 21 and 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).

* Filed with the hydrographic records.

The station description, 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. A request for approved tides was forwarded to N/OES2 at the beginning of July. Approved Tide Note dated October 28, 1994 is attached.

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 setup on existing stations LAND, CLAY 2 and HYDRA. Station LAND is on an islet in Aniakohak Bay, station CLAY 2 is located on an islet south of Cape Kumlik, and station HYDRA is located on Hydra Island. These stations were recovered in accordance with methods stated in Section 5.2.4 of the FPM. Additional information is contained in the "Summer 1994 Horizontal Control Report", which 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.*

Ashtech GPS

VHF differential shore stations were established at stations LAND, CLAY 2 and HYDRA. The difference between the computed location and the station's published position was recorded by the MONITOR program on a PC. Data from a 24-hour period were recorded and examined for signs of multi-path 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 stations LAND and HYDRA were obtained last year. The areas around stations LAND and HYDRA remain undeveloped, and the geography unchanged.

Problems

None

Calibrations & Systems Check Methods

System checks were performed by launch to launch comparisons of position. Three observations of position were made by each launch using correctors from two independent DGPS base stations. System checks were performed on a weekly basis. 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

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".*

* Filled with the hydrographic records.

J. SHORELINE ✓ See Eval Rpt, Section J.

The shoreline map (T-sheet) used to transfer shoreline detail to the final sheets was TP-01158 (enlarged to 1:10,000 from 1:20,000, NAD 27).

Shoreline verification was conducted near predicted lower low water in accordance with FPM 7.1. Shoreline verification was accomplished by assigning sequential reference numbers and taking detached positions (DPs), as explained later in this section.

Shoreline and T-sheet features verified via visual inspection were assigned sequential reference numbers, described, and recorded in the field using reference forms and corresponding 1:10,000 photocopies of the T-sheet. Reference numbers, descriptions, and heights corrected to MLLW using predicted tides are recorded on the reference form. Corresponding notes were annotated on the photocopies of the T-sheet when deemed necessary. The annotated photocopies of the T-sheet and the reference forms are included with the survey data.

DPs taken during shoreline verification were recorded on the master printouts^{*} and on the DP forms^{*}. These indicate significant T-sheet features and features not found on the T-sheet. Where possible, positions of some T-sheet features were verified during inshore mainscheme hydrography and annotated on the master printouts.

Detailed 1:10,000 "Rough Bottom Sample and Detached Position Plots" are provided showing all DPs, reference numbers, and notes relating to each feature. The information from these plots was transferred to a final field plot where possible. Where such information would interfere with the legibility of the final plot the appropriate cartographic symbol has been transferred, but height and position number information remains on the rough plot, which serves as an overlay (FPM 6.1.2.5). Verified T-sheet features were retained and shown in black. Changes to the shoreline were shown in red. Field cartographic codes were assigned using the HDAPS DP editor. Heights are recorded in meters and are corrected to predicted MLLW. No MHW changes to the shoreline are shown on the smooth sheet. Heights of alongshore and offshore features appearing on the smooth sheet are corrected for approved tides. Charted rocks were either identified as T-sheet rocks, or high points or extensions of T-sheet ledges.

Changes

Several changes to the T-sheet shoreline were found and depicted in red on the final field plot. The changes are a result of aerial photography being flown at a higher stage of tide. Ledges were found to extend further than their depicted positions on the T-sheet, and T-sheet rocks were often high points of ledges. There was no revision to the mean high water line.

Recommendations: The hydrographer recommends that the shoreline changes from this survey be used to supersede prior shoreline information compiled on T-sheet TP-01158. Concur

New Features

Twelve new features were found and are depicted on the final field plot. Depths are referenced to predicted MLLW, on the final field sheet.

* Filed with the hydrographic records.

<u>Item</u>	<u>Approx. Position</u>	<u>Position No.</u>	<u>Depth (m)</u>	<u>Remarks</u>
Rock	56°34'57"N 157°11'08"W	1094	-0.4 -0.5	Uncovered Exposed
Rock	56°34'57"N 157°10'58"W	1096	- 0.8	Uncovered Exposed
Rock	56°35'03"N 157°10'18"W	1101	- 0.2	Uncovered Exposed
Rock	56°35'03"N 157°10'22"W	1102	-0.4 -0.5	Uncovered Exposed
Rock	56°35'06"N 157°10'11"W	1103	- 1.8	Uncovered Exposed
Rock	56°35'06"N 157°09'01"W	1104	- 0.7	Uncovered Exposed
Rock	56°35'20"N 157°08'23"W	1278	-0.1 -0.3	Uncovered Exposed
Rock	56°35'15"N 157°08'30"W	1279	0.7 -0.5	Below covered
Rock	56°35'03"N 157°08'12"W	1280	-0.7 -1.0	Uncovered Exposed
Rock	56°34'41"N 157°13'46"W	3375	- 0.6	Uncovered Exposed
Rock	56°34'44"N 157°12'38"W	3377	- 0.6	Uncovered Exposed

A new foul area in the vicinity of latitude 56°35'00"N, longitude 157°10'45"W is outlined by position no's 1098 and 1100. Position no. 1098 depicts a T-sheet rock, and position no. 1100 a new rock.

K. CROSSLINES ✓

Crosslines are within 1-2 meter agreement with mainscheme hydrography except in areas of complex bathymetry. Crosslines totaled 15.7 nautical miles, representing 4.3% of the total mainscheme hydrography.

L. JUNCTIONS ✓ See Evaluation Report, section L.

This survey junctions with survey H-10491 (1:10,000, 1993) to the west, H-10487 (1:10,000, 1993) to the north, H-10482 (1:10,000, 1993) at the northeast corner, and H-10551 (1:10,000, 1994) to the east. These soundings were found to be in general agreement with this survey.

Final comparisons will be made at the Pacific Hydrographic Section (PHS).

M. COMPARISON WITH PRIOR SURVEYS ✓ See Evaluation Report, section M.

One prior survey was compared: H-4506 (1:60,000, 1925). Sparse soundings from this prior survey 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 survey. 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 on sheet z.

O. COMPARISON WITH THE CHART ✓ See Evaluation Report, section O.

This survey was compared to NOS chart 16568, 9th Edition, March 21, 1992, 1:106,600 (NAD83). The charted soundings were found to be in general agreement with this survey. Final comparisons will be made at PHS.

Non-sounding charted features are discussed in Section J, Shoreline.

Dangers to Navigation

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

P. ADEQUACY OF SURVEY ✓

Prior to final approval, survey H-10546 is complete and adequate to supersede charted depths and features in their common areas. *Concur*

Q. AIDS TO NAVIGATION ✓

None

R. STATISTICS ✓

<u>Vessel:</u>	<u>2120</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>2126</u>	<u>2129</u>	<u>Total</u>
Number of Positions	75	480	718	659	676	966	3574
NM Hydrography	0	93.8	104.9	97.7	122.8	22.8	442.0
Velocity Casts		2					
Detached Position		23					
Bottom Samples		70					
Tide Stations		2					
NM ² Hydrography		18					

S. MISCELLANEOUS ✓

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

Coast Pilot current comparisons were made in accordance with 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	August 1994	N/CG2333
Summer 1994 Coast Pilot Report for OPR-P180-RA	August 1994	N/CG245
Project related data for OPR-P180-RA	Incremental	N/CG245

Respectfully Submitted,

Stacy M. Maenner
Stacy M. Maenner
Ensign, NOAA

Approved and Forwarded,

Russell C. Arnold
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)

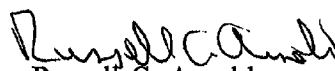
APPROVAL SHEET

for

H-10546
RA-10-7-94

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



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-10546

LOCALITY: Northwest Central Sutwik Island, Shelikof Strait,
Alaska

TIME PERIOD: June 5 - 26, 1994

TIDE STATION USED: 945-8704 Cape Kumlik (Kumlik Island)
Alaska
Lat. $56^{\circ} 38.8'N$ Lon. $157^{\circ} 25.5'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = -1.15 feet

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 8.9 feet

REMARKS: RECOMMENDED ZONING

Times are direct and apply a X1.03 range ratio to heights at Cape Kumlik (Kumlik Island), Ak. (945-8704).

NOTES: Hourly heights are tabulated on Greenwich Mean Time.
The data for Cape Kumlik (Kumlik Island), Ak. (945-8704)
is stored in the Next Generation Water Level Measurement
System temporary file #745-8704.

William M. Hobbs
CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 16568 B ON PREVIOUS SURVEY NO. TD-01158 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 (title)	X										
ALASKA PENINSULA (title)	X											2
SUTWIK ISLAND	X	X	X									3
												4
												5
												6
												7
												8
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Approved

Charles C. Loy

Chief Geographer

FEB 27 1995

HYDROGRAPHIC SURVEY STATISTICS

H-10546

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		
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES					
CAHRS					
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			3574
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	25.0		25.0
VERIFICATION OF SOUNDINGS	107.0		107.0
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPLETION OF SMOOTH SHEET	122.0		122.0
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	254.0	43.0	297.0

Pre-processing Examination by L. M. Larsen	Beginning Date 6/5/94	Ending Date 7/21/94
Revision of Field Data by D. Doles, J. Stringham, L. Deodato	Time (Hours) 354	Ending Date 4/12/95
Verification Check by J. Stringham	Time (Hours) 7.0	Ending Date 4/13/95
Evaluation and Analysis by B. Mihailov	Time (Hours) 40.0	Ending Date 5/24/95
Inspection by B. A. Olmstead	Time (Hours) 34	Ending Date 7/26/95

EVALUATION REPORT

H-10546

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 60 nautical miles southwest of Kodiak Island. Specially, the surveyed area resides offshore-northwest central portion of Sutwik Island and is bounded by latitude 56/40/05N to the north and latitude 56/34/30N to the south. The eastern limit is longitude 157/07/30W and the western limit is longitude 157/14/45W. Shoreline along Sutwik Islands borders the southern part of the survey area. Rocky ledges, reefs and several isolated rocks encompass the majority of the shoreline. The bottom consists mainly of sand and broken shells. Depths range from 0 meters along the shoreline to 223 meters located approximately 1.5 nautical miles from Sutwik Island in the northeastern portion of the survey area.

C. SURVEY VESSELS

Survey vessel information is found in the hydrographer's 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-10546.

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 Cape Kumlik (Kumlik Island), Alaska, gage (945-8704).

H. CONTROL STATIONS

Control stations are discussed in the hydrographer's report and separates. A list of control stations used on survey H-10546 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: -2.697 seconds (-83.418 meters)
Longitude: 7.334 seconds (125.069 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.

J. SHORELINE

The following registered shoreline map compiled on NAD 27 applies to this survey.

<u>Map Number</u>	<u>Photo Date</u>	<u>Scale</u>
TP-01158	July 1982 August 1983	1:20,000

Shoreline drawn on the smooth sheet originates from a 1:10,000 scale photographic enlargement of the shoreline map.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10546 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10491	1993-94	1:10,000	West
H-10487	1993	1:10,000	North
H-10482	1993	1:20,000	North
H-10551	1994	1:10,000	East

The junction with surveys H-10482 and H-10487 have not been formally completed as these surveys were previously forwarded for charting. The junctions were made using a copy. There is good agreement between soundings.

The junctions with surveys H-10491 and H-10551 are complete and the soundings are in good agreement.

M. COMPARISON WITH PRIOR SURVEYS

H-4506 (1925) 1:60,000

Survey H-4506 (1925) covers the entire area of the present survey. Sounding coverage on prior survey H-4506 is sparse, with only 14 soundings common to the survey area.. The sounding agreement is good, with the present survey depths shoaler within one meter. The small differences can be attributed to increased bottom coverage and less accurate positioning and sounding methods available in 1925 .

H-10546 is adequate to supersede the prior survey within the common area.

N. ITEM INVESTIGATIONS

There were no item investigations assigned within the boundaries of survey H-10546.

O. COMPARISON WITH CHART

Survey H-10546 was compared with the following chart.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16568	9th	March 21, 1992	1:106,600	NAD83

a. Hydrography

Charted hydrography originates with the previously discussed prior survey and miscellaneous source data from survey work conducted between 1925 and 1945. The prior survey is discussed in section M and requires no further discussion.

Comparison with depths originating from miscellaneous sources reveal general differences of 10-60 meters. There is no consistent pattern of deepening or shoaling between this data and the present survey. The greater sounding coverage and the relative accuracy of the data acquisition methods account for the differences.

The following charted items were not addressed during survey operations and should be retained.

<u>Feature</u>	<u>LatitudeN</u>	<u>LongitudeW</u>
rock	56/35/03	157/07/53
rock	56/34/57	157/07/52
rock	56/35/10	157/09/20
rock	56/35/09	157/10/25

Survey H-10546 is adequate to supersede charted hydrography within the common area.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H-10546 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

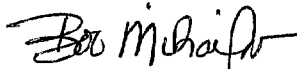
Miscellaneous information is discussed in the hydrographer's report. No dangers to navigation were reported by the hydrographer. No additional items were noted during office processing.

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-10546

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, Alan Olmstead Date: 8/2/95
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.

Kathy Simmons Date: 8/11/95
Kathy Simmons
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-10546

INSTRUCTIONS

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

CHART	DATE	CARTOGRAPHER	REMARKS
16568	6/94	B. Michaelson	Full Part Before After Marine Center Approval Signed Via Drawing No. 12 Revisions thru H-16568
16013	6/5/96	D.M. McALLIDEN	Full Part Before After Marine Center Approval Signed Via Drawing No. 38 26TH ED. AUG 92 REVISED SOUNDINGS THRU CHART 16568 H-DRAWING BP157660
16011	6-29-96	D. Harrison William J. Orr	Full Part Before After Marine Center Approval Signed Via Revised thru 16013 Drawing No. 32
16006	8-20-96	Christopher Jones William J. Orr	Full Part Before After Marine Center Approval Signed Via Revised soundings Drawing No. 28 thru 16011
531	8-21-96	William J. Orr	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.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.