

H10789

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-10-34-97
Registry No. H-10789

LOCALITY

State Alaska
General Locality Northwest Prince William Sound
Sublocality Head of Kings Bay

1997

CHIEF OF PARTY
CAPT Alan D. Anderson, NOAA

LIBRARY & ARCHIVES

DATE FEB 10 1999

HYDROGRAPHIC TITLE SHEET

H-10789

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-10-34-97

State Alaska

General locality Northwest Prince William Sound

Locality Head of Kings Bay

Scale 1:10,000 Date of survey October 8-21, 1997

Instructions dated August 27, 1997 * Project No. OPR-P125-RA

Vessel RA-2(2122), RA-4(2124), RA-5(2125)

Chief of party CAPT Alan D. Anderson, NOAA

Surveyed by CAPT A. Anderson, LT G. Noll, LT K. Bailey, LT D. Baird

Soundings taken by SST N. Quanbeck, ST K. Callahan DSF-6000N, Knudsen 320M

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: I. Almacen Automated plot by HP Design Jet 650C

Verification by M. Bigelow, D. Doles, E. Domingo, R. Mayor

Soundings in fathoms ~~feet~~ at ~~MSL~~ MLLW and tenths

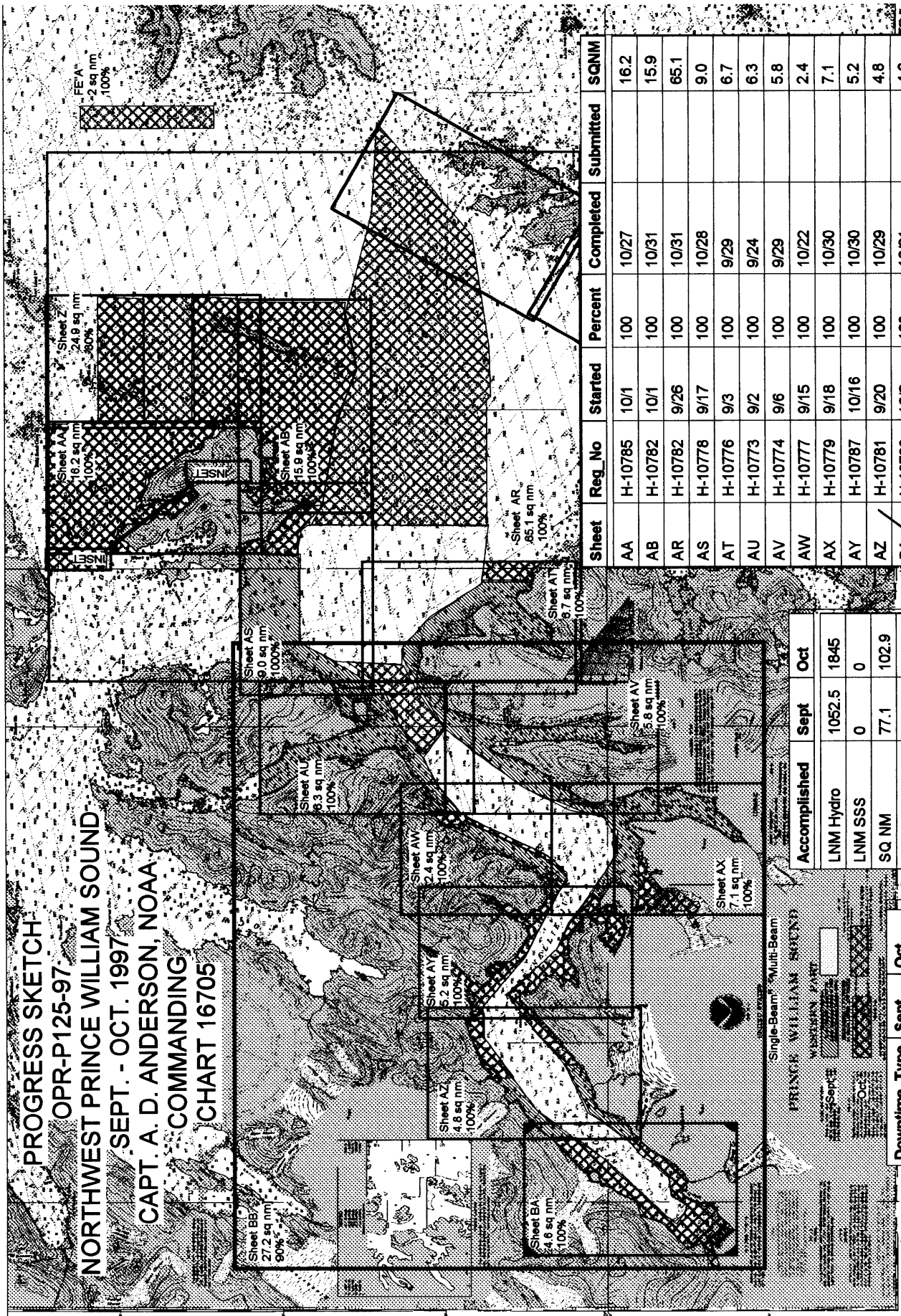
REMARKS: All times are UTC, revisions and marginal notes in black were generated during office processing. All separates are filed with the hydrographic data, as a result page numbering may be interrupted or non-sequential.

All depths listed in this report are referenced to mean lower low water unless otherwise noted.

Change #1 dated Sept. 24, 1997

AWOIS/SURF
01/11/99 mUR

PROGRESS SKETCH
 OPR-P125-97
 NORTHWEST PRINCE WILLIAM SOUND
 SEPT. - OCT. 1997
 CAPT. A. D. ANDERSON, NOAA
 COMMANDING
 CHART 16705



Accomplished	Sept	Oct
LNM Hydro	1052.5	1845
LNM SSS	0	0
SQ NM	77.1	102.9
AWOIS Invest.	0	1
Other Invest.	3	16
LNM Multibeam	164.4	241.5
Days At Sea	28	29

Downtime_Type	Sept	Oct
Weather - Days	3	0
Mechanical -Hr	0	2
Electronic -Hr	0	1

Sheet	Reg_No	Started	Percent	Completed	Submitted	SQNM
AA	H-10785	10/1	100	10/27		16.2
AB	H-10782	10/1	100	10/31		15.9
AR	H-10782	9/26	100	10/31		65.1
AS	H-10778	9/17	100	10/28		9.0
AT	H-10776	9/3	100	9/29		6.7
AU	H-10773	9/2	100	9/24		6.3
AV	H-10774	9/6	100	9/29		5.8
AW	H-10777	9/15	100	10/22		2.4
AX	H-10779	9/18	100	10/30		7.1
AY	H-10787	10/16	100	10/30		5.2
AZ	H-10781	9/20	100	10/29		4.8
BA ✓	H-10789	10/8	100	10/21		4.6
BB	H-10775	9/11	100	10/21		27.2
Z	H-10791	9/11	80			24.9
FE"A"	AR INSET	10/5	100	10/5		2.0

16705
 NOAA-C OYERPRINTED

Descriptive Report to Accompany Hydrographic Survey H- 10789

Field Number RA-10-34-97

Scale 1:10,000

October 1997

NOAA Ship RAINIER

Chief of Party: Captain Alan D. Anderson, NOAA

A. PROJECT ✓

This basic hydrographic survey was completed in Northwest Prince William Sound as specified by Project Instructions OPR-P125-RA dated August 27, 1997 and change No. 1 to Project Instructions OPR-P125-RA dated Sept. 24, 1997. Survey H-10789 corresponds to sheet BA as defined in the sheet layout. This survey will provide data to supersede surveys performed in 1959. Requests for hydrographic surveys and updated charts in this area have been received from the Defense Mapping Agency, the U.S. Coast Guard, the Southwest Alaska Pilot's Association, cruise ship lines, and local fishermen.

B. AREA SURVEYED (*See EVAL RPT., Sec B*)

The survey area is head of Kings Bay Alaska. The survey's northern, southern and western limits are bound by shoreline. The eastern limit is $148^{\circ} 36' 01''$ W. The deep water is on survey H-10775. Data acquisition was conducted from October 8, 1997 to October 21, 1997.

C. SURVEY VESSELS ✓

Data were acquired by RAINIER and her survey launches as noted in the Survey Information Summary printout appended to this report.

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

All data were acquired and preliminary processing was accomplished using the Hydrographic Data Acquisition and Processing System (HDAPS). Using the sounding and shoreline data in MapInfo facilitated charted and prior survey comparisons. Final Detached Positions and Soundings based on predicted tides were saved in MapInfo 4.1 format. A complete listing of software for HDAPS is included in Appendix VI.*

E. SONAR EQUIPMENT ✓

Neither Side Scan Sonar nor multi-beam echo sounder equipment was used on this survey. *CONCUR.*

F. SOUNDING EQUIPMENT ✓

The Raytheon DSF-6000N is a dual frequency (100 kHz, 24 kHz), paper trace echo sounder. The Knudsen 320M is a dual frequency, thermal depth sounder using the same transducer frequencies. Serial numbers are included on the headers of the daily Raw Master Printouts.* No new problems, which affect survey data, were encountered. DSF-6000N soundings generally were acquired in meters using the High + Low, high frequency digitized setting, but in depths over 300 meters, low frequency was scanned in place of the high when the fathometer lost its high frequency trace.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

One
(#4)
Two sound velocity casts were acquired within the survey limits as shown in the appended Survey Information Summary report. The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 219), calibrated

* Filed with the hydrographic data.

December 15, 1996. Velocity correctors were computed using the PC programs SEACAT and VELOCITY, version 3.3 (1997), in accordance with Field Procedures Manual (FPM) section 2.4.3. Printouts of the sound velocity profile, data, and correctors used in field processing are included in the "Separates to be Included with Survey Data, IV. Sounding Equipment Calibrations and Corrections".*
Cast #4 was taken outside of the survey limits.

A static transducer depth was determined using FPM Fig 2.2 for vessels 2121, 2122, 2123, and 2125 in the spring of 1997. The static draft and offsets for RAINIER, 2120, were collected in 1995. 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-P125-RA-97. The data for vessels 2121, 2122, and 2123 were collected in Shilshole Bay, Washington in March 1997. The data for 2124 and 2126 were collected in 1996. The data for vessel 2125 were collected in Young Bay, Alaska in March 1997. All offset tables* contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 1-6 correspond to the last digit of the vessel number. The offset tables are included with project data for OPR-P125-RA-97.* The launches are not equipped with heave, roll and pitch sensors. *Concur.*

The Coastal and Estuarine Oceanography Branch (N/OES334) through N/CS31 provided predicted tides for the project on diskette for the Cordova, Alaska reference station (945-4050). HDAPS listings of the data used in generating tidal correctors are included in Appendix V of this report.* Tidal correctors as provided in the project instructions for H-1077X are shown on the appended Survey Information Summary report

Valdez, Alaska (945-4240) and Cordova, Alaska (945-4050) are the primary control stations for datum determination at all subordinate stations. RAINIER personnel installed Sutron 8200 tide gages at Applegate Island (945-4794) on September 1, 1997, Blue Fiord (945-4818) on September 5, 1996 and Kings Bay (945-4951) on September 10, 1997.

Refer to the Field Tide Notes and supporting data in Appendix V* for individual gage performance and level closure information. This information has been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. A request for approved tides was forwarded to N/OES23 in accordance with FPM 4.2.3. Final tides should be derived from Kings Bay (945-4951). *Approved Tide Note dated February 5, 1998 is attached to this report.*

H. CONTROL STATIONS (See EVAL RPT., Sec. H)

The horizontal datum for this project is NAD 83. Station ROCK, recovered in 1996 and checked in 1997, was used to verify and establish local geodetic control for this survey. Station DON, established in 1997, was used for positioning control inside Kings Bay. See the OPR-P125-RA-97 Horizontal Control Report for more information. *A list of control stations used on this survey is included in this report.*

I. HYDROGRAPHIC POSITION CONTROL (See EVAL RPT., Sec. I)

All soundings were positioned using differential GPS. Primary hydrographic control was based on VHF differential reference station at DON. USCG beacons located at the Kenai Peninsula Cape Hinchinbrook, Kodiak Island and Potato Point were also received in this area.

Launch-to-launch DGPS performance checks were performed in accordance with Section 3.4.4 of the FPM. Two observations of position were made from two different DGPS base stations while the launches were rafted together with their GPS antennae within 2-3 meters of each other. RAINIER also used SHIPDIM, version 2.2R (April 1996) with a Trimble Centurion P-code receiver and an Ashtech sensor (both differentially-corrected) to monitor the performance of the USCG Beacon. Periodic comparisons and occasional performance checks were logged with the SHIPDIM system. Some outliers were noted, but none indicated systematic or continuous errors in the beacons. The SHIPDIM OUTLIER.SUM results are included in the project data for OPR-P125-RA-97.*

J. SHORELINE (See EVAL RPT., Sec. J)

* Filed with the hydrographic data.

The shoreline manuscript from Coastal Mapping survey ^{CM-92011} CM-92012 was, supplied by N/CS341 in Standard Digital Data Exchange Format (SDDEF). The digital files from DM-10292 and DM-10293 ^{& DM-10293} were projected to the survey grid with OPR-P125-RA-97 geodetic parameters using program Shore version 2.0, provided by N/CS32, and plotted on the survey using HDAPS.

Limited shoreline verification was conducted in accordance with the Project Instructions. For this survey the general limit of safe navigation of a survey launch is 5-50 meters offshore of apparent low tide, generally 3-10 meters of depth at Mean Lower Low Water. Features shown on the SHORELINE FEATURES layer in the MapInfo workspace inshore of the NALL are the hydrographer's representation of the shoreline while slowly transiting along the shore, and are intended to aid chart compilation.

Shoreline manuscript and field features were compared to an enlargement of chart 16705 BSB version. This was converted to a raster image and registered in MapInfo, and plotted at survey scale by RAINIER personnel for HDAPS sounding comparison. There was general agreement between the charted and manuscript shoreline and what the hydrographer found on this survey.

Charted shoreline features that were not found on the manuscript were verified by field positions when offshore of the NALL. Discrepancies between charted and field shoreline should thus be resolved in favor of the manuscript shoreline and field work as shown on the final field Detached Position and Bottom Sample plot. *Shoreline data was analyzed during office processing and shown on the smooth sheet as warranted*

K. CROSSLINES ✓

Crosslines agreed ^{Concur} within one to five fathoms with mainscheme hydrography, except in areas of steep bathymetry. There were a total of 9.94 nautical miles of crosslines, comprising 18.9% of mainscheme hydrography.

L. JUNCTIONS (See EVAL RPT., Sec. L)

This survey junctions with the following 1997 surveys: H-10781, 1:10,000 on the northeast, and H-10775, 1:40,000 1997 in the center of Kings Bay. Comparing H-10789 with H-10775 survey showed generally good agreement with the exception of the northeast portion of H-10789. Comparing H-10789 with H-10781, the soundings do not match up well, with differences ranging from 0 to 60 meters. The hydrographer recommends using H-10789 in areas where there is a difference between the surveys. Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after reduction to final vertical datum.

M. COMPARISON WITH PRIOR SURVEYS (See EVAL RPT., Sec. M)

^(H-7794, 1:40,000, 1948)
Prior surveys H-8491, 1:10,000, 1959 cover this survey. Agreement with the prior survey is not consistent – some soundings match well, while others are significantly different. The discrepancies range from 5 fathoms up to 50 fathoms. Table 1 below compares some of the discrepancies that occur. The zero meter contour has shifted approximately 150 meters towards the shore on the mudflat south ^{west} of Kings Point. The fact that the data collected in 1959 was acquired while running parallel to shore could cause some of the discrepancies. In addition, the hydrographer attributes the near shore changes to the 1964 earthquake. *Concur with clarification*

Final comparisons will be done a PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

TABLE 1. General depth comparisons ✓

H-8491	H-10789	LATITUDE	LONGITUDE	FIX NO.
69 fm ✓	80.9 fm	60:27:33.834 ✓	148:42:03.420 ✓	20077.8 ✓
-0.2 ✓	8.3 fm	60:27:11.032 ✓	148:42:07.356 ✓	20218.+7 ✓
0.1 fm ✓	1736.6 fm	60:26:47.311 ✓	148:41:23.814 ✓	20057.+7 ✓
0.6 fm	5.6 fm	60:27:38.590 ✓	148:39:43.084 ✓	2422 20287.+1 ✓
34 fm ✓	38 fm	60:29:11.006 ✓	148:35:58.527 ✓	40005 ✓
153 fm ✓	148204 fm	60:29:10.584 ✓	148:36:24.537 ✓	40010.+4 ✓
61 fm ✓	62 fm	60:27:25.431 ✓	148:41:56.739 ✓	20105.+8 ✓

N. ITEM INVESTIGATIONS ✓

None. *Concur*

O. COMPARISON WITH THE CHART (*See EML RPT., Sec. O*)

Charts 16700, 1:200,000, 25th edition, 9/21/96 and 16705, 1:80,000, ^(17th Edition, Sept. 27, 1997) 16th edition, Aug 24/96 are the largest scale charts covering the survey area. Comparison of soundings is described in Section M. Non-sounding features are discussed in Section J. Final sounding comparisons will be made at PHB after reduction to final vertical datum.

Claremont Glacier was not in agreement with the chart. The Glacier has receded and no longer extends to the water line. *Concur*

Dangers to Navigation ✓

No dangers to navigation were discovered during this survey. *Concur.*

P. ADEQUACY OF SURVEY (*See EML RPT., Sec. P*)

Survey H-10789 is complete and adequate to supersede prior soundings and features in their common areas. *Concur.*

Q. AIDS TO NAVIGATION ✓

No navigational aids exist within the survey area. *Concur.*

R. STATISTICS ✓

Refer to the Survey Information Summary attached to this report.

S. MISCELLANEOUS ✓

Bottom samples were collected and sent to the Smithsonian in accordance with Project Instructions. No unusual tidal currents or magnetic variations were found during this survey. Secchi disk observations were performed and indicate that water visibility was zero to five meters, depending on the amount of ice and glacial sediment carried in the water column.

T. RECOMMENDATIONS ✓

None.

U. REFERRAL TO REPORTS ✓

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

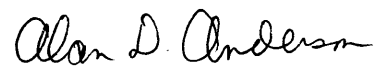
<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
OPR-P125-RA Horizontal Control Report	November, 1997	N/CS34
OPR-P125-RA 1997 Coast Pilot Report	November, 1997	N/CS26
Project related data for OPR-P125-RA	Incremental	N/CS34
Secchi Disk Observations for OPR-P125-RA	November, 1997	N/CS31

Respectfully Submitted,



Kevin R. Callahan
Survey Technician

Approved and Forwarded,



Alan D. Anderson
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 9 Dec 1997 ✓

No	Type	Latitude	Longitude	H	Cart	Freq	Uel Code	MM/DD/YY	Station Name
1		060:14:18.000	146:38:48.000	0	0	0.0	0.0	04/06/96	CAPE HINCHINBROOK USCG BECON
2		060:27:20.117	148:39:54.333	0	0	0.0	0.0	10/01/97	DDN DGPS
3		060:03:23.000	146:41:48.000	0	0	0.0	0.0	03/01/96	POTATO POINT USCG BEACON
4		060:39:17.513	147:58:26.500	18	0	0.0	0.0	00/00/00	ROCK

APPROVAL SHEET

for

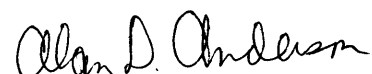
H-10789

RA-10-34-97

Standard procedures were followed in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Guidelines; and the 1994 version of 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 reviewed by me and are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

Approved and forwarded,


Alan D. Anderson
Captain, NOAA
Commanding Officer
NOAA Ship RAINIER

GEOGRAPHIC NAMES

H-10789

Name on Survey	Source of Name									
	A	B	C	D	E	F	G	H	K	
	<small>ON CHART NO. 16700, 16705</small> <small>ON PREVIOUS SURVEY NO.</small> <small>ON U.S. QUADRANGLE MAPS</small> <small>FROM LOCAL INFORMATION</small> <small>ON LOCAL MAPS</small> <small>P.O. GUIDE OR MAP</small> <small>RAND McNALLY ATLAS</small> <small>U.S. LIGHT LIST</small>									
ALASKA (title)	X		X							1
APPLEGATE GLACIER	X		X							2
CLAREMONT GLACIER	X		X							3
KINGS BAY	X		X							4
KINGS POINT	X		X							5
PRINCE WILLIAM SOUND (title)	X		X							6
LANGDON GLACIER *										7
KINGS GLACIER *										8
										9
										10
										11
										12
										13
* Added during office processing.										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

Approved

Dennis J. Rosenthal
 Chief Geographer
 MAY 13 1998



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: February 5, 1998

HYDROGRAPHIC BRANCH: Pacific

HYDROGRAPHIC PROJECT: OPR-P125-RA-97
HYDROGRAPHIC SHEET: H-10789

LOCALITY: Northwest Prince William Sound, AK

TIME PERIOD: Oct 8 - Oct 21, 1997

TIDE STATION USED: 945-4794 Applegate Island
Lat. 60° 37.4'N Lon. 148° 09.9'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.385 meters

TIDE STATION USED: 945-4818 Blue Fjord
Lat. 60° 29.5'N Lon. 148° 14.7'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.407 meters

TIDE STATION USED: 945-4951 Kings Bay Inside
Lat. 60° 27.4'N Lon. 148° 39.9'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.418 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: PWS41A
Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (Meters), relative to MLLW and on Greenwich Mean Time.

Note 2: Use tide data from the appropriate station for each zone according to the order in which they are listed in the "Tidezone" corrector files. For example, tide station one (TS1) would be the first choice for an applicable zone followed by TS2, etc. when data are not available. All zones within a survey sheet may not have the same order of applicable tide stations.

[Signature]

CHIEF, OPERATIONAL ANALYSIS BRANCH



Final tide zone node point locations for OPR P125-RA-97,
Sheet H-10789.

Format: Longitude in decimal degrees (negative value denotes
Longitude West),
Latitude in decimal degrees
Tide Station (in recommended order of use)
Average Time Correction (in minutes)
Range Correction

		Tide Station Order	AVG Time Correction	Range Correction
Zone PWS41A				
-148.534449	60.567284	945-4951	0	1.00
-148.789986	60.446154	945-4818	0	1.00
-148.68369	60.398869	945-4794	0	1.01
-148.466181	60.516083			
-148.534449	60.567284			

HYDROGRAPHIC SURVEY STATISTICS

H-10789

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

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

SHORELINE DATA	
SHORELINE MAPS (List):	DM-10192, DM-10193 and DM-10293
PHOTOBATHYMETRIC MAPS (List):	None
NOTES TO THE HYDROGRAPHER (List):	None
SPECIAL REPORTS (List):	None
NAUTICAL CHARTS (List):	16705, 17th Edition, September 27, 1997

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			
POSITIONS REVISED			
SOUNDINGS REVISED (selected)			4,838
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	58.5		58.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS		15	15
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		48.0	48.0
GEOGRAPHIC NAMES			
OTHER* (Chart Compilation)		55.5	55.5
*USE OTHER SIDE OF FORM FOR REMARKS			
	TOTALS	58.5	118.5
			177.0

Pre-processing Examination by M. Bigelow	Beginning Date 4/14/98	Ending Date 4/14/98
Verification of Field Data by M. Bigelow, D. Doles, E. Domingo, R. Mayor	Time (Hours) 58.5	Ending Date 11/2/98
Verification Check by B. Olmstead	Time (Hours) 3	Ending Date 12/1/98
Evaluation and Analysis by I. Almacen	Time (Hours) 63.0	Ending Date 10/30/98
Inspection by B. Olmstead	Time (Hours) 5	Ending Date 12/8/98

EVALUATION REPORT

H-10789

A. PROJECT

The hydrographer's report contains a complete discussion of the project information.

B. AREA SURVEYED

The survey area is adequately discussed in the hydrographer's report.

The hydrographer has determined the inshore limits of safe navigation by defining a Navigable Area Limit Line (NALL) throughout the survey area. Charted features and soundings inshore of this limit line have not been specifically addressed during survey operations and should be retained as charted. A page size plot of the charted area depicting the specific limits of supersession accompanies this report as Attachment A.

The bottom consists mainly of mud with patches of sand and pebbles. Depth range from 0 to 249 fathoms.

C. SURVEY VESSELS

The hydrographer's report contains adequate information relating to survey vessels.

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 MicroStation 95.

Processed digital data for this survey exists in the standard HPS format, a database format using the .dbf extension. In addition, the smooth sheet drawing is filed in the MicroStation format, i.e., dgn extension. Copies of these files have been forwarded to the Hydrographic Surveys Division and a backup copy retained at PHB. Database records forwarded are in the Internal Data Format (IDF) and are in compliance with specifications in existence at the time of survey processing.

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. Cartographic codes used to describe the digital data are those authorized by Hydrographic Survey Guideline No. 35 and No. 75.

The data is plotted using a Modified Transverse Mercator projection and are depicted on a single 1:10,000 scale sheet.

E. SONAR EQUIPMENT

Side Scan Sonar was not used on survey H-10789.

F. SOUNDING EQUIPMENT

Sounding equipment has been adequately addressed in the hydrographer's report.

G. CORRECTIONS TO SOUNDINGS

Soundings and elevations below Mean High Water (MHW) has 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.

Predicted tides were used for the reduction of soundings during field processing. Actual tide reduction is derived from Kings Bay Inside, Alaska, gage 945-4951. Tide stations at Applegate Island and Blue Fjord Point were listed on the approved tide note but not used for final sounding reduction. Refer to the approved tide note attached to this report concerning recommended tidal zoning.

H. CONTROL STATIONS

Section H and I of the hydrographer's report contain adequate discussions of horizontal control and hydrographic positioning.

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. Geographic positions based on NAD27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude: -2.247 seconds (-69.534 meters)
Longitude: 7.491 seconds (114.413 meters)

The year of establishment of control stations originate with the horizontal control records for this survey.

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. The maximum (HDOP) allowable limit has not been exceeded during this survey and the quality of data obtained is good. DGPS performance checks were conducted in the field and found adequate.

NAD 83 is used as the horizontal datum for plotting and position computations.

Additional information concerning specific control system type, calibration and system checks can be found in the hydrographer's report and in the separates related to horizontal position control and corrections to position data.

J. SHORELINE

Shoreline maps DM-10192, DM-10193 and DM-10293, scale 1:20,000, were compiled on NAD 83 and applied to this survey. Shoreline drawn on the smooth sheet in black originates from the above digital data as provided by the Coastal Mapping Program. The shoreline data and the hydrographic data were merged in MicroStation during the compilation of the smooth sheet.

There are no significant differences noted in the mean high water lines configuration between the present and the previously compiled shoreline. Some of the compiled rocks were found to be the offshore limits or the high points of the ledges located within the survey area. Based on

the size of these features, scale of the chart and the standard charting practices these features will be depicted as rocks awash during chart compilation.

The hydrographer found several new rocks, not included in the photogrammetric data. However, these features were not positioned during this survey and therefore their locations are not recorded in the digital records. These rocks were transferred directly from the survey field sheet to the smooth sheet. The scaled positions are listed below:

<u>Feature</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
Rock	60/30/50.0	148/38/00.0
Rock	60/30/47.7	148/38/02.5
Rock	60/30/46.5	148/38/01.5
Rock	60/30/45.0	148/38/08.0
Rock	60/30/40.0	148/38/11.0
Rock	60/30/38.0	148/38/09.5
Rock	60/30/35.0	148/38/15.0
Rock	60/30/33.5	148/38/12.5

The charted shoreline should be revised based on the latest shoreline map and the results of the field shoreline verification as depicted on the smooth sheet.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10789 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10781	1997	1:10,000	Northern Limits
H-10775	1997	1:40,000	Central Limits

The junction with survey H-10781 is considered complete. A "Joins" note has been added to the smooth sheet at the junction area of the survey. General differences of 0-3 fathoms are noted throughout the common areas and standard depth curves are in good agreement. During office processing many suspected depth discrepancies with H-10781 were further analyzed and found to originate from the poor performance of the echo sounder on steep slopes which were surveyed at excessive vessel speed and improper gain setting on both surveys. After additional processing, agreement with junction survey H-10781 is good.

Multibeam survey H-10775 junctions with the present survey along the deep portion of the bay in depths ranging from 42-247 fathoms. Depths between the two surveys are within 2-5 fathoms. A few soundings have been carried forward to the present survey to delineate the bottom and depth curves within the common area. A "Joins" note has been added to the smooth sheet in the junction area.

M. COMPARISON WITH PRIOR SURVEYS

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
H-7794	(1948)	1:40,000	Valdez
H-8491	(1959)	1:10,000	NAD 27

Prior survey H-7794 covers the middle and deep area of Kings Bay (50-250 fathoms). Sounding agreement is satisfactory with the present survey generally deeper by about 10-50 fathoms along the portion of the bay where the bottom topography is steep and rugged.

Prior survey H-8491 covers the inshore area of the present survey. Sounding agreement is satisfactory with the present survey depths consistently deeper by about 1-15 fathoms except around the areas east and southwest of Kings Point. The present survey is generally deeper by 2-20 fathoms around the east side of Kings Bay and about 5-40 fathoms around the southwest end of the bay. The MHW line has receded approximately 50-150 meters along the extensive mud flat area at the end of the bay and along the east side of Kings Point. These changes are largely due to the tectonic process of the 1964 earthquake and glacial activity. All depths originating from these prior hydrography were adequately addressed during survey operations. A more thorough coverage of the area was accomplished during this recent survey.

Aside from the effects of the natural shifting of the seafloor caused by the 1964 earthquake around Prince William Sound, the other changes noted on this survey may well be attributed also to greater sounding coverage of the present survey, improved positioning and sounding methods used and relative accuracy of the data acquisition techniques.

In accordance with the Hydrographic Guideline No.39, the effects of the 1964 Prince William Sound earthquake were considered in the comparison of this survey. Prince William Sound experienced a bottom change during the 1964 earthquake. However, no reasonable adjustment value for prior soundings could be determined.

The two charted islets at latitude 60/27/02N, longitude 148/42/36W, and latitude 60/26/30N, longitude 148/41/26W, originating from H-8491 were not specifically addressed in the hydrographer's report. These islets were no longer depicted on the latest shoreline map of the area and most likely existed as mud formations extensively covered with grass common in this area at the time of the 1959 survey. These islets may have since been gradually wiped out due to erosion. This place is now made up of sand bar and extensive mud flats. It is recommended that these islets be removed and the area be depicted on the chart based on the present survey.

The charted pile at latitude 60/26/39N, longitude 148/42/29W, originating from survey H-8491 was not addressed by the hydrographer in his report. It was not depicted on the latest shoreline maps of the area. This feature was used as a signal pole during the 1959 survey and may not exist anymore at the present time. This area has experienced significant dynamic change since 1959 and has likely been covered due to erosion and/or decomposed. It is therefore recommended that the pile be deleted from the chart.

The locations of the following charted rocks originating from survey H-8491 were noted to be generally displaced about 60-100 meters offshore of the presently located rocks and ledges. This case could be the results of the extended displacement of features from the rocks true position during chart compilation. These features should be charted as close to the true locations of the rocks as the scale of the chart permits and are listed on the following page.

<u>Feature</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>	<u>Source</u>
Rock awash	60/27/40	148/42/35	DM
Rock awash	60/27/50	148/42/20	Prior
Rock awash	60/27/57	148/42/00	DM
Rock awash	60/28/00	148/41/55	DM
Rock awash	60/28/02	148/41/50	DM
Rock awash	60/28/04	148/41/45	DM
Rock awash	60/28/07	148/41/40	DM

Rock awash	60/29/00	148/40/11	DM
Rock awash	60/29/42	148/39/25	DM
Rock awash	60/31/13	148/37/00	Prior

Most of the above listed prior survey rocks are shown on the smooth sheet from the digital manuscripts. However, five (5) rocks shown on the prior survey were not depicted on the shoreline manuscripts and not addressed by the hydrographer. These features listed below have been transferred in color on the smooth sheet.

<u>Feature</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
Rock awash	60/26/58.5	148/40/06.0
Rock awash	60/27/08.5	148/40/05.0
Rock awash	60/27/37.5	148/42/50.0
Rock awash	60/27/53.0	148/42/22.0
Rock awash	60/31/12.5	148/37/11.0

With the transfer of the prior rocks, survey H-10789 is adequate to supersede the prior surveys within the area of common coverage.

N. ITEM INVESTIGATIONS

There were no item investigations conducted during this survey

O. COMPARISON WITH CHART

Survey H-10789 was compared with the following charts.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16705	16th	Aug. 24, 1996	1:80,000	NAD83
16705	17th	Sept. 27, 1997	1:80,000	NAD83

a. Hydrography

Charted hydrography originates with the previously discussed prior surveys. The prior surveys have been adequately addressed in section M and require no further discussion. Comparison was also made with the 17th edition of the chart and no changes were noted between editions within the common area of the survey.

The application of this survey to charts of a scale less than 1:40,000 may require the generalization of features such as ledges, and reefs. The recommended charting disposition of specific ledges or reefs is their depiction as isolated rocks. The application of this survey to charts of a scale greater than 1:40,000 may be accomplished without generalization of features. Features from survey H-10789 have been generalized on chart 16705 along the shoreline where applicable.

Survey H-10789 is adequate to supersede charted hydrography within the common area.

b. Dangers to navigation

There were no dangers to navigation discovered during this survey.

P. ADEQUACY OF SURVEY

The hydrography contained on survey H-10789 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 with the following exceptions.

Some anomalous soundings were acquired during this survey. They originate from the poor performance of the echo sounder on steep slopes, which were surveyed at excessive vessel speed. The hydrographer attempted to correct the problem by editing the raw sounding data, however, the quality of the echo sounder trace is so poor in some areas that the edits are likely based on judgement rather than quantifiable data. Office review of the problem has determined that, with the exception of obviously erroneous depths, further editing is not reasonable since no corrective action can be taken to improve the quality of the trace. The judgement of the hydrographer has been accepted and generally the data was not altered during office processing. Generally, the affected depths are deep, in excess of 125 fathoms, and will have little negative effect on the quality of nautical charts if compiled at scales smaller than 1:40,000.

In the event that the field units submission of survey data will exceed four weeks from the completion of field work, the Chief of Party will submit a written explanation for the delay indicating the anticipated transmittal date to the Chief of the appropriate processing section. Marine Center ships will forward their explanation through the Marine Center Director. Fieldwork for survey H-10789 was completed on October 21, 1997 but not received for office processing until March 5, 1998.

Q. AIDS TO NAVIGATION

There were no fixed or floating aids to navigation found during this survey.

There were no features of landmark value located within the survey area.

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

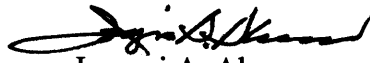
Miscellaneous information is adequately discussed in the hydrographer's report.

T. RECOMMENDATIONS

This is a good hydrographic survey and no additional field work is required.

U. REFERRAL TO REPORTS

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



Isagani A. Almacen
Cartographer

APPROVAL SHEET
H-10789

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 survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Bruce A. Olmstead Date: 12/8/98
Bruce A. Olmstead
Senior Cartographer, Cartographic Section
Pacific Hydrographic Branch

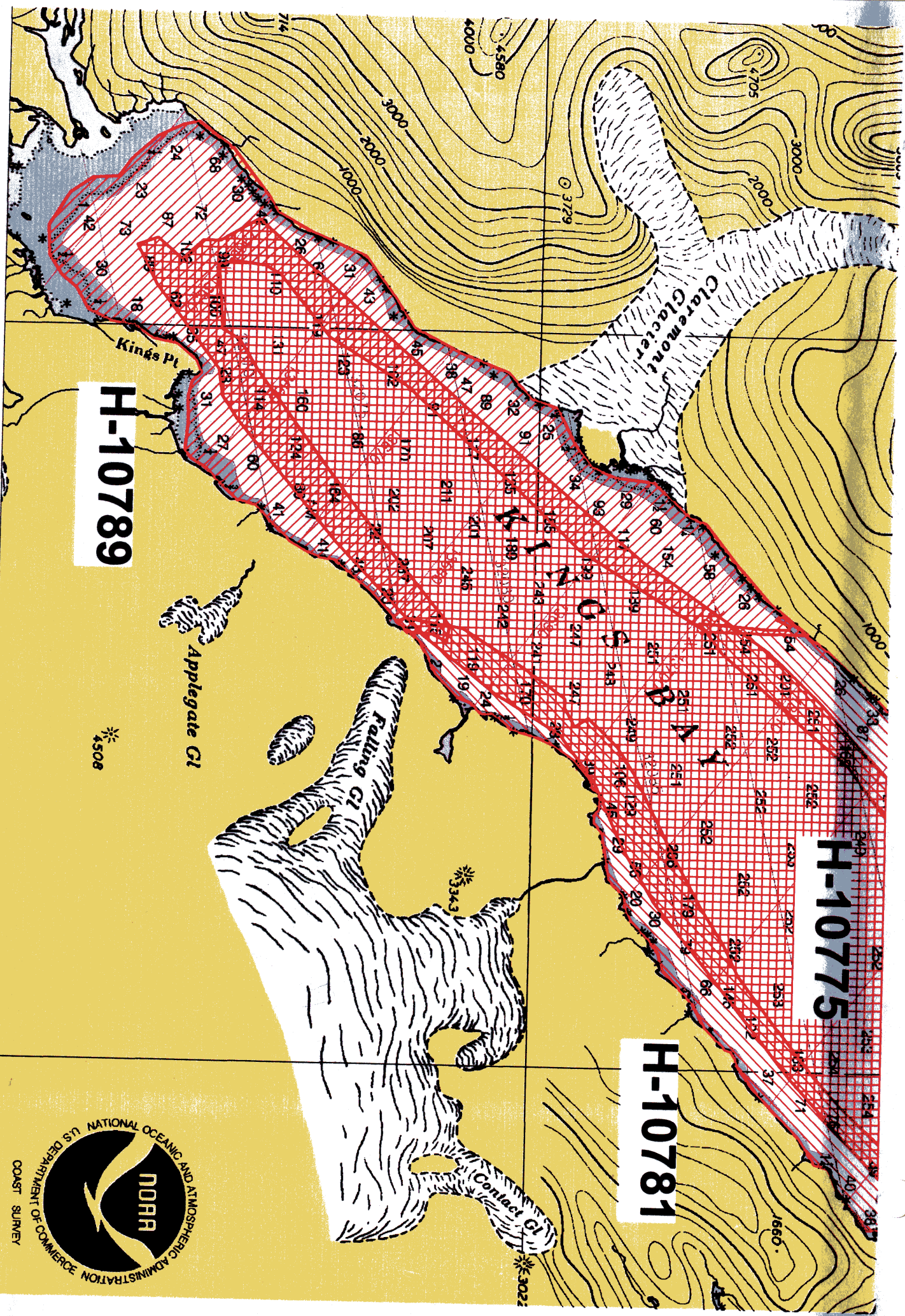
I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

James C. Gardner Date: 12/21/98
James C. Gardner
Commander, NOAA
Chief, Pacific Hydrographic Branch

Final Approval

Approved:

Andrew A. Armstrong III Date: Feb 9, 1999
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division



H-10789

H-10775

H-10781



