

10388

Diagram No. 8802-4

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-20-5-91
Registry No. ... H-10388

LOCALITY

State ... Alaska
General Locality ... Bristol Bay
Sublocality ... Southwestern Approaches to
Hagemeister Strait

19 91

CHIEF OF PARTY
CAPT T.W. Richards

LIBRARY & ARCHIVES

DATE ... March 25, 1992

10388

wc/L
PRODUCTS
16305
16011
16006

HYDROGRAPHIC TITLE SHEET

H-10388

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 20-5-91

State Alaska

General locality Bristol Bay

Locality Southwestern Approaches to Hagemeister Strait

Scale 1:20,000 Date of survey June-July, 1991

Instructions dated April 19, 1991 Project No. OPR-R184-RA

Vessel NOAA Ship RAINIER, Launches RA-4 (2124), RA-5 (2125), RA-6 (2126)

Chief of party Captain Thomas W. Richards

Surveyed by LTJG E. Nelson, ENS H. Johnson, ENS J. Klay, ENS R. Ramos

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

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Verification by: R. Shipley, E. Domingo Automated plot by PHS Xynetics Plotter

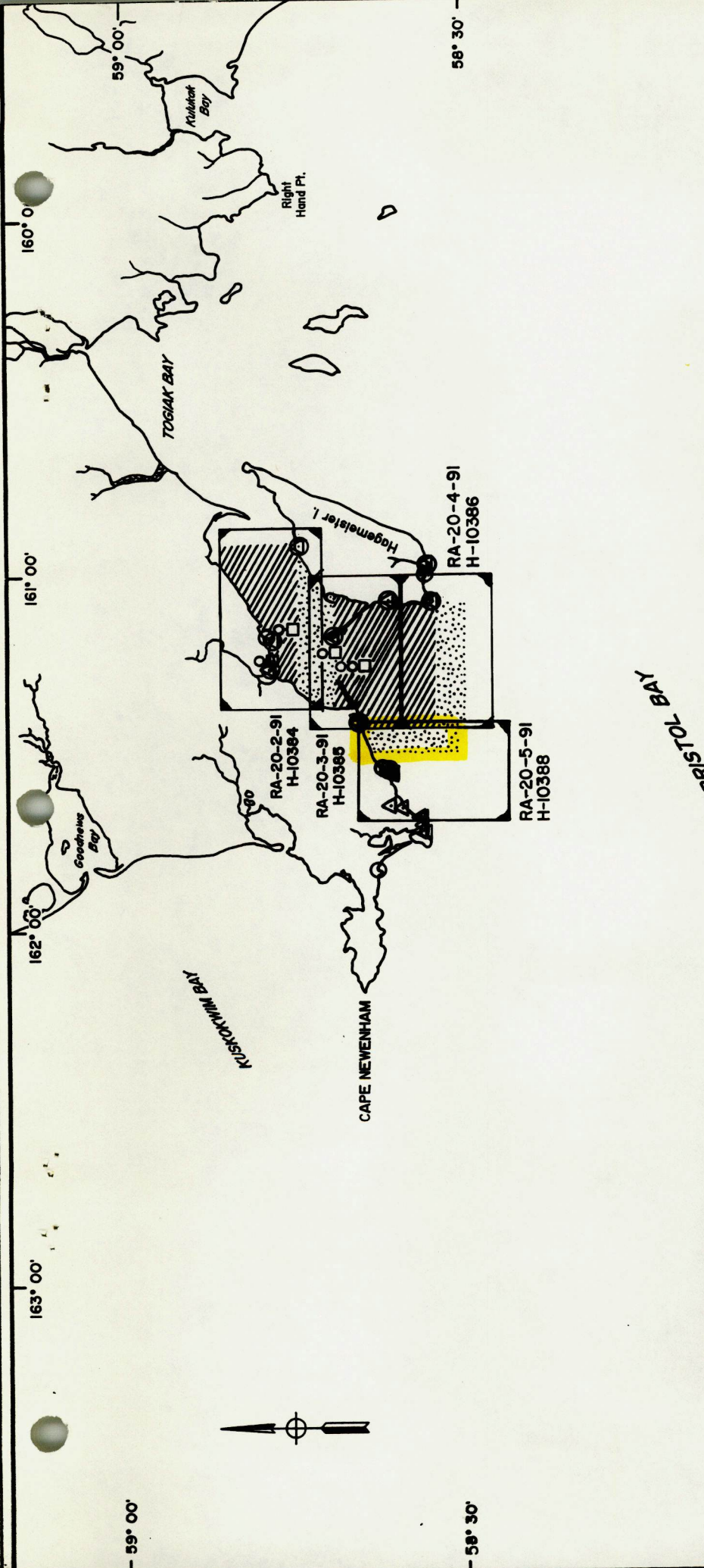
Evaluation by: I. Almacen

Soundings in meters at MLW MLLW and decimeters

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

*AWOLIS & SURF check
3/26/92 MCR*

SW JAN 29 1997
RWW 4/10/92



PROGRESS SKETCH

OPR-R184-RA
 HYDROGRAPHIC SURVEY
 HAGEMELSTER STRAIT, ALASKA
 JUNE 5-JULY 27, 1991

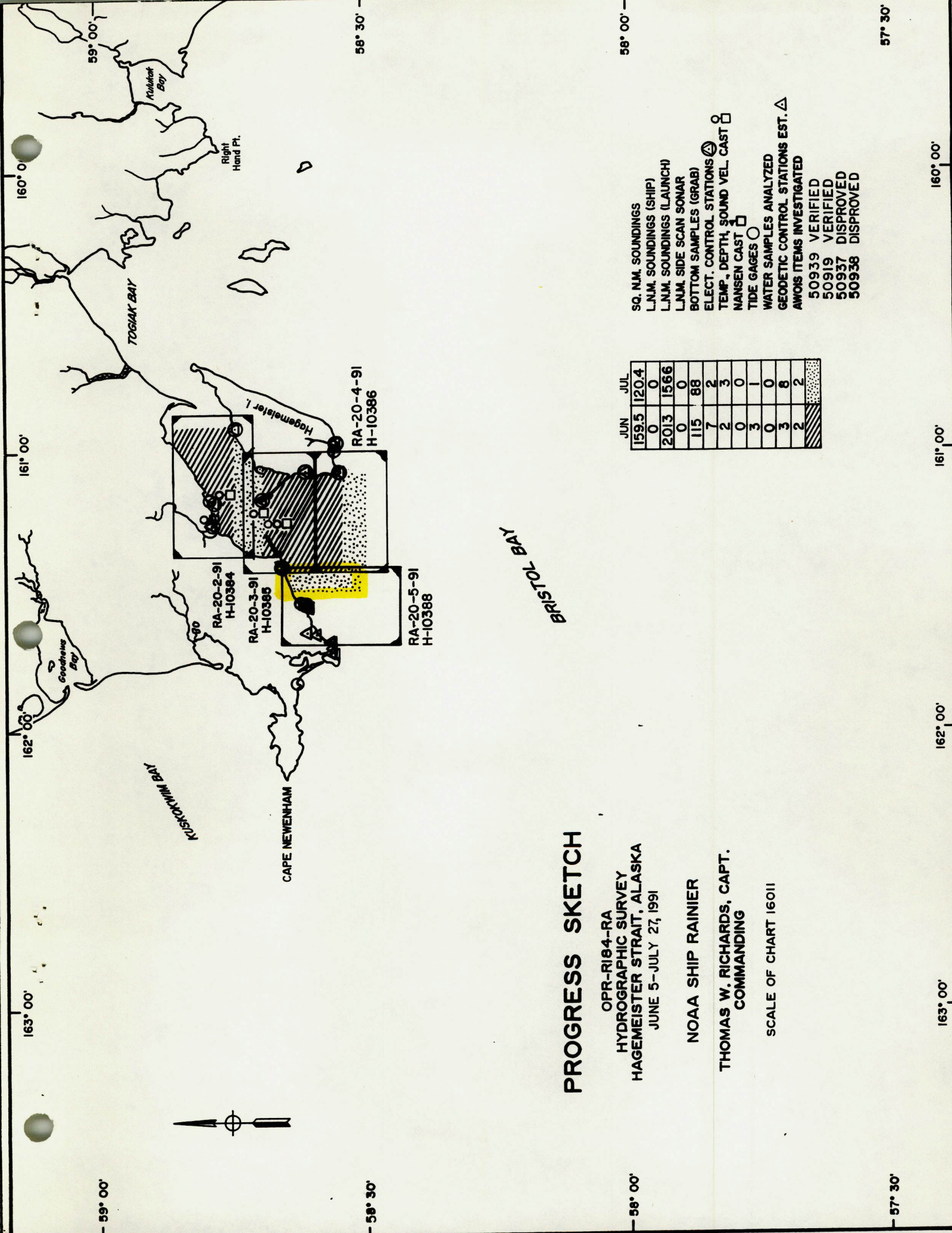
NOAA SHIP RAINIER

THOMAS W. RICHARDS, CAPT.
 COMMANDING

SCALE OF CHART 16011

	JUN	JUL
SQ. N.M. SOUNDINGS	159.5	120.4
L.N.M. SOUNDINGS (SHIP)	0	0
L.N.M. SOUNDINGS (LAUNCH)	2013	1566
L.N.M. SIDE SCAN SONAR	0	0
BOTTOM SAMPLES (GRAB)	115	88
ELECT. CONTROL STATIONS	7	2
TEMP., DEPTH, SOUND VEL. CAST	2	3
NAISEN CAST	0	0
TIDE GAGES	3	1
WATER SAMPLES ANALYZED	0	0
GEODEIC CONTROL STATIONS EST.	3	8
AWOS ITEMS INVESTIGATED	2	2

- SQ. N.M. SOUNDINGS
- L.N.M. SOUNDINGS (SHIP)
- L.N.M. SOUNDINGS (LAUNCH)
- L.N.M. SIDE SCAN SONAR
- BOTTOM SAMPLES (GRAB)
- ELECT. CONTROL STATIONS
- TEMP., DEPTH, SOUND VEL. CAST
- NAISEN CAST
- TIDE GAGES
- WATER SAMPLES ANALYZED
- GEODEIC CONTROL STATIONS EST.
- AWOS ITEMS INVESTIGATED
- 50939 VERIFIED
- 50919 VERIFIED
- 50937 DISPROVED
- 50938 DISPROVED



Descriptive Report to Accompany Hydrographic Survey H-10388

Field Number RA-20-5-91

Scale 1:20,000

June - July 1991

NOAA Ship RAINIER

Chief of Party: Captain Thomas W. Richards

A. PROJECT ✓

This basic hydrographic survey was completed in Bristol Bay, northwestern Alaska, as specified by Project Instructions OPR-R184-RA dated April 19, 1991, Change No. 1 dated June 17, 1991, and Change No. 2 dated July 18, 1991. This survey is designated Sheet D on the sheet layout dated December 12, 1989.

This survey is one in a series that will provide contemporary hydrographic data for updating existing and new preliminary charts of the Togiak Bay area. Charted data presently consist of reconnaissance surveys of this agency and private fishing company charts. This project responds to requests from the Alaska congressional delegation, the U.S. Coast Guard, State of Alaska, Bristol Bay Native Association, Togiak Fishing Fleet, and other commercial fishermen for a detailed survey to aid in the safe navigation of this area.

B. AREA SURVEYED ✓

The survey, located in Bristol Bay, Alaska, 36 NM southwest of Togiak, encompasses the southwestern approach to Hagemester Strait. The survey's northern boundary is the southern shore of the mainland. The southern sheet limit is 58°30'40"N, the eastern limit is 161°25'30"W, and the western limit is 161°30'00". The survey area was squared off at the western limit due to a shortened field season. Crosslines extend beyond this limit due to the original intent of completing the entire survey. Data acquisition was conducted from July 14 through July 25, 1991 (DN195 to DN206). *Crosslines extending beyond survey limits have been rejected.*

C. SURVEY VESSELS ✓

All data were acquired by three of NOAA Ship RAINIER's four automated survey launches, shown below:

<u>Vessel</u>	<u>EDP No.</u>	<u>Operation</u>
RA-4	2124	Hydrography
RA-5	2125	Velocity Casts Bottom Samples
RA-6	2126	Hydrography Shoreline Verification

In addition to the survey vessels listed above, two 17' Boston Whalers, a 19' MonArk, and a 12' Zodiac were used to support operations for horizontal control, tide station installation and maintenance, and diving.

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Data acquisition and processing were accomplished with Hewlett-Packard (HP) 340M workstations and the following HDAPS programs:

<u>Program Name</u>	<u>Initial Program</u>	<u>Program Change 1</u>	<u>Program Change 2</u>
DISC_UTIL	1.00	--	--
MB	0.00	--	--
HJ	0.00	--	--
AUTOST	1.10	--	--
SURVEY	5.11	6.00	6.04
POINT	1.30	1.31	--
PLOTALL	1.91	1.93	--
PRINTOUT	2.30	--	--
CARTO	1.20	--	--
BASELINE	1.10	--	--
QUICK	1.10	--	--
CONVERT	2.40	2.42	--
INVERSE	1.30	1.31	--
LOADNEW	1.30	--	--
GLOBAL	1.10	1.11	--
REJECT	1.00	--	--
MAKEFIX	1.00	--	--
BIGABST	1.11	1.12	--
REAPPLY	1.30	1.31	--
DIAGNOSTIC	2.70	--	--
HPRAZ	1.21	1.22	1.23
FILESYS	2.11	--	--
BACKUP	2.00	--	--
BACKOLD	1.10	1.11	--
NEWCONT	1.10	--	--
LISTAWOIS	1.20	1.32	--
PREDICT	1.10	1.11	--
POSTSUR	5.10	5.12	5.14
READPROJS	1.06	1.07	--
SOFTCHECK	1.10	1.11	--
DP	1.10	1.11	--
MANU_DATA	1.10	1.11	--
RAMSAVER	1.00	--	--
GRAPHEDIT	1.60	--	--
EXCESS	3.00	--	--
Vers	***	--	--
DAS_SURV	N/A	6.00	6.05
CAT_KEYS	N/A	0.99B	--
CSTAT_UP	N/A	1.00	--
BIGAUTOST	N/A	1.10	--

INSTALL	1.31	2.01	--
ABST	N/A	3.05	--

Change 1 software, loaded near the beginning of the project, plotted plotter sheets with incorrect origins and coordinates making the sheets inconsistent with the original boat sheets plotted previously with the initial program's software. Since there was not an immediate fix, the initial program's software was reloaded onto the workstations. Upon resolution of the problem, Change 2 software was loaded onto all systems. The following is a breakdown of the separate systems and when the specific versions were run.

<u>HDAPS System</u>	<u>Initial Program</u>	<u>Program Change 1</u>	<u>Program Change 2</u>
Processing System #1	5/30-6/10 6/19-7/09	6/11-6/18	7/10-Present
Processing System #2	5/30-6/10 6/19-7/10	6/11-6/18	7/11-Present
Processing System #3	5/30-6/11 6/19-7/10	6/12-6/18	7/11-Present
RA-3 Launch	5/30-7/12	-----	7/13-Present
RA-4 Launch	5/30-7/12	-----	7/13-Present
RA-5 Launch	5/30-7/12	-----	7/13-Present
RA-6 Launch	5/30-7/11	-----	7/12-Present

Change 2 software updates incorporated modifications of programs SURVEY and DAS_SURV by the HDAPS office to accommodate RAINIER's need of straight line interpolation for manually entered real tides. Since the tide data was entered for every half hour, this allowed straight line interpolation between tide data rather than sinusoidal curves.

RAINIER noticed during processing that HDAPS had not updated the day number after crossing 0000 GMT. This happened only when HDAPS was logging data during the crossover between days. If the line was broken before 0000 GMT and restarted after 0000 GMT then the day number was updated and the correct tide correctors applied. Otherwise when HDAPS logged data through 0000 GMT, correctors of the previous day were applied to the data until the line ended. The HDAPS Office was notified of this problem on July 22. Consequently, all data logged on line through 0000 GMT had incorrect tide correctors applied on the portion of data run between 0000 GMT and the end of the line. ✓

On August 8, 1991, RAINIER loaded programs REAPPLY (Ver 1.33), POSTSUR (Ver 5.16), and PLOTALL (Ver 1.96) onto all acquisition and processing systems. This new software was received from the HDAPS Office in an attempt to fix the above tide corrector problem.

The new versions did not correct the problem. The new programs correctly updated the day number after 0000 GMT, but it was still using incorrect tide correctors from 24 hours previous. In addition, when the line was broken after being on line through 0000 GMT, the program would incorrectly update the day number again. The HDAPS Office was notified of this problem on August 12, 1991.

On August 16, 1991, RAINIER loaded programs REAPPLY (Ver 1.33), POSTSUR (Ver 5.17), and PLOTALL (Ver 1.97) onto all acquisition and processing systems. The new versions corrected the tide corrector problem mentioned above. The correctors have been reapplied to the data, and therefore the problem resolved.

Velocity corrections were determined using:

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
VELOCITY	1.11	09 Mar 1990

E. SONAR EQUIPMENT ✓

Not Applicable.

F. SOUNDING EQUIPMENT ✓

All survey launches were equipped with the Raytheon DSF-6000N echo sounders shown below. The echo sounders were operated in the HIGH + LOW (HIGH DIGITIZED) function, using manual gain controls on both high and low frequencies to obtain the best analog trace. Soundings were recorded in meters and tenths of meters. Six-meter bar checks were conducted and recorded daily, using both the LOW and the HIGH + LOW (HIGH DIGITIZED) functions. The echo sounders were operated in accordance with the Provisional Instructions "Raytheon DSF-6000N Echo-Sounder Operating and Processing Instructions", dated July 5, 1983, and the Field Procedures Manual for Hydrographic Surveying (FPM).

Raytheon DSF-6000N Echo Sounders

<u>Vessel</u>	<u>Serial No.</u>	<u>DN</u>
2124	A103N	203
2125	B048N	199
2126	A114N	195-206

The echo sounders were continuously monitored during data acquisition. All sounding data were scanned at least two times, to ensure all significant peaks were inserted, and to verify the digitized depths.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Corrections to echo soundings were determined for static draft, heave, velocity of sound through water, settlement and squat. Predicted tides were used for all rough plots and estimated real-time tides were used on all other plots including the FFS. Sounding

correctors apply to both narrow and wide beams of the DSF-6000N echo sounder. Supporting data and computations for all corrections to echo soundings, except heave, are included in the Summer 1991 Corrections to Echo Sounding Data Package for OPR-R184-RA.

Offset Tables

<u>Vessel</u>	<u>Offset Table No.</u>
2124	4
2125	5
2126	6

Sound Velocity ✓

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>
3	3	36.9	190-198	58°39'01"N 161°14'26"W	192
4	5	29.6	199-207	58°38'53"N 161°14'52"W	205

Sound velocity casts numbered 3 and 5 were acquired with an AML SVP, S/N 3042, which was calibrated at Northwest Regional Calibration Center (NRCC) in Bellevue, WA, on March 11, 1991.

Velocity correctors were computed using the PC program VELOCITY in accordance with Hydrographic Survey Guideline (HSG) #69. A printout of the Sound Velocity Corrector Tables used in the HDAPS Post Survey program is included in the Summer 1991 Corrections to Echo Sounding Data Package for OPR-R184-RA.

Static Draft ✓

For all launches, the distance from the transducer face to the gunwhale was measured with a large metal square. Static draft measurements were then determined by dropping a leadline from the gunwhale to the water and subtracting this distance from the distance measured with the square. The measurements from the gunwhale to the waterline were conducted with the fuel tanks averaging 3/4 full and three people aboard. A transducer depth of 0.6 meter was determined for all launches on March 23-25, 1991. This transducer depth agrees with the launches' historical records.

Settlement and Squat ✓

Settlement and squat correctors were determined in Shilshole Bay, WA, for Vesnos 2123 and 2125 on February 25, 2126 on February 26, and 2124 on March 12, 1991. All tests were

conducted over a hard bottom in depths well exceeding 7 times the vessels' drafts. Both sea and wind were calm. Observations were made through a Zeiss Ni2 leveling instrument (S/N 103453) to a rod held vertically on deck, directly over the transducer. Correctors were computed in accordance with Hydrographic Manual 4.9.4.2, using FPM Fig. 2.2 and 2.3, and are included in the Summer 1991 Corrections to Echo Sounding Data Package for OPR-R184-RA.

Heave ✓

Corrections for heave were applied while scanning echograms. The scanning technique employed in comparing analog traces with the digital record was to take readings along a line representing the mean depth, (in accordance with HSG 31). This line was an average position in the jagged sawtooth profile of choppy seas, or the average undulations caused by a following sea.

In a few cases data on this survey were collected in conditions which were marginal due to sea action; i.e., recorded heave, crest to trough, exceeded 10% of surveyed depths, and sometimes continued for periods longer than 5 minutes. These data were considered acceptable due to the uniform nature of the bathymetry. A close comparison with adjacent soundings acquired in better sea conditions showed an acceptable trend in the bottom character. It was concluded that data quality would not be impaired by conducting sounding operations in these conditions.

Pneumatic Depth Gage

Not Applicable.

Bar Check Lines ✓

Bar check lines were calibrated by RAINIER personnel during January 1991 at PMC. Calibration forms are included in the Summer 1991 Corrections to Echo Sounding Data Package for OPR-R184-RA.

Tide Correctors ✓

Tidal zoning and correctors applicable to predicted tides for the Hagemester, Alaska, reference station (945-5089) were provided in the Project Instructions as amended by change No. 2, dated July 18, 1991, and are shown below:

	<u>Zone</u>	<u>Time Correctors</u>	<u>Range Ratio</u>
1.	South of 58°41'00"N	Direct	Direct

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

Tide gages were installed and maintained by RAINIER personnel at Estus Point (946-5429) and at Pyrite Point (946-5123). The control station was re-established at NOAAS FAIRWEATHER's 1988 site at the south end of Hagemester Island (946-5089). Due to large discrepancies between crosslines, adjacent mainscheme lines and prior survey comparisons when plotting soundings with predicted tides, estimated real-time tide data acquired from

digital bubblers were applied to semi-smooth sounding plots and the FFS during this project.

The estimated real-time tides were created by comparing raw digital tide data from the Pyrite Point station (946-5123) with predicted tides from the Hagemeister, Alaska reference station (946-5089) using LOTUS 1-2-3 graphics. From this comparison of predicted vs. real correctors, a height corrector of -6.0 feet was determined to reduce the raw digital tide data to MLLW. Estimated real-time tides using a tide corrector of -6.0 feet were then applied throughout Sheet D.

The station descriptions, field tide records, and Field Tide Notes have been forwarded to N/OMA1212 in accordance with HSG 50 and FPM 4.3. Requests for approved tides have been forwarded to N/OMA12. Copies of the Field Tide Notes and the request for approved tides are included in Appendix V. *

H. CONTROL STATIONS ✓

Geographic positions for all control stations are based on the North American Datum of 1983 (NAD83) and the Geodetic Reference System 1980 Ellipsoid.

A listing of the geodetic stations used to control this survey is ^{attached.} ~~included in Appendix 3.~~

Positions for all existing stations are from the NGS data base. All existing stations were recovered in accordance with methods stated in Section 5.2.4 of the Field Procedures Manual. New stations were positioned via traverse methods to meet third-order class I standards. Further information can be found in the Summer 1991 Horizontal Control Report for OPR-R184-RA.

I. HYDROGRAPHIC POSITION CONTROL ✓

Method of Sounding Position Control

Soundings and bottom samples were located using the Motorola Mini Ranger Falcon 484 microwave positioning system in multiple-range mode.

Accuracy Requirements/Problems

Accuracy requirements specified in the Hydrographic Manual and in FPM 3.1.3.1 were generally met. When maximum residuals exceeded the specified limits, OIC's deselected the station(s) with the highest residual value and continued hydrography. Occasionally, ECR's and maximum residuals exceeded the specified limits. When this happened, the data were generally rejected and the area re-run with different control. If maximum residuals exceeded tolerances, they were flagged and reviewed. Data between good positions were smoothed when maximum residuals showed unusual accelerations off the expected track.

The loss of one or more LOP's frequently occurred when acquiring data close inshore. If this loss generated high ECR's and/or maximum residuals, the OIC's annotated the raw master printout (RMPO). If the data plotted on track and sounding intervals appeared correct, the data were retained. Some data were acquired with only two LOP's because stations were blocked or deselected. When this occurred, data were bracketed by multiple LOP hydrography providing continuous critical system checks when ECR's and maximum residuals fell within survey specifications.

* Filed with the hydrographic data.

Equipment ✓

Serial numbers for all positioning equipment are annotated on the RMPO for each day of hydrography. A complete list of all electronic equipment serial numbers is included in the Summer 1991 Electronic Control Data Package.

Calibrations & Systems Check Methods ✓

Baseline calibrations were conducted in accordance with FPM 3.1.2.1 and 3.1.3.2. On May 15-17 (DN135-DN137), and May 21-23 (DN141-DN143) calibrations were conducted at the SANDPOINT BASELINE over a known distance of 1058.1876 m. Calibration data and a description of the baseline are included in the Summer 1991 Electronic Control Data Package.

In accordance with FPM 3.1.3.3, formal system checks were not documented for multiple LOP hydrography. Data collected with two LOP's were always bracketed by multiple LOP data acquired with ECR's and maximum residuals within acceptable limits. These served as critical system checks.

Other Factors

Antenna offset and layback correctors were applied via HDAPS offset tables, and are found in the separates included with the survey data.

J. SHORELINE *See EVAL RPT. SEC. 2 .*

Shoreline maps (T-sheets) used to transfer shoreline detail to the final sheets ^{was} ~~were~~ TP-~~01184~~ and TP-01185 (1:20,000-scale, NAD27, flown 1985).

Shoreline verification was conducted near predicted lower low water in accordance with FPM 7.1. Shoreline verification was accomplished by assigning sequential reference numbers in a manner explained later in this section.

Inshore hydrography shows that photogrammetric and hydrographic positioning are in excellent agreement.

Shoreline and T-sheet features verified via visual inspection were assigned sequential reference numbers and were recorded in the field using sounding volumes and corresponding 1:20,000 scale photocopies of the T-sheet. Reference numbers and descriptions are recorded in the sounding volumes. Corresponding notes were annotated on the photocopies of the T-sheet. The annotated photocopies of the T-sheet are attached to the sounding volumes which are included with the survey data.

T-sheet features which were verified were retained and shown on the final field sheets (FFS). Verified shoreline is shown in black on the FFS and unverified shoreline is shown in blue. No changes to the shoreline were noted and no new features were found. ✓

Disprovals

Not Applicable.

New Features

Not Applicable.

Unverified Features

Not Applicable.

K. CROSSLINES ✓

A total of 32 nautical miles of crosslines were run perpendicular to mainscheme lines, representing 20% of the mainscheme hydrography; this percentage does not reflect additional splits or developments run during additional investigations. Crossline soundings agree to within 1.2 meters with mainscheme soundings. The vessels acquiring crossline data did not always acquire the corresponding mainscheme data. Agreement between soundings acquired by different echo sounders in a common area is as stated above.

L. JUNCTIONS ✓

This survey junctions with H-10385 (1:20,000; 1991) and H-10386 (1:20,000; 1991) to the east. There are no contemporary surveys junctioning with this survey to the south or west. No irregularities were found when comparing soundings and depth contours. Agreement between overlapping soundings is excellent, with all junction soundings agreeing to within one meter.

M. COMPARISON WITH PRIOR SURVEYS ✓ *See EVAL RPT. SEC. G.*

T-9245 (1:20,000; 1948)

T-9250 (1:20,000; 1948)

The above topographic maps, believed to have been flown at a lower stage of tide, were used to augment the existing registered shoreline manuscripts. Features on the topographic maps not portrayed on the registered T-sheets were included in the Notes to Hydrographer and are discussed in section J.

⁶²⁸
BP-645 (1901)
BP-134098 (1985 - 1987)

Two charted soundings originated from the above prior surveys. Copies of these blueprints were not provided to RAINIER. Comparison of the charted soundings with the present survey is discussed in section N.

N. COMPARISON WITH THE CHART ✓

The hydrographer compared all of the soundings from NOS 1991 preliminary chart 16305, 7th Edition, Feb. 9/91, 1:100,000 (NAD83) to this survey.

Comparison of Sounding Features ✓

Overall agreement between this survey and the chart is good, with agreement to within 1.6 meters. The most probable causes for the discrepancies are questionable positioning control used to obtain charted soundings, and possibly inaccurate depth recording devices.

A charted depth of 5 fm (9.1 m) at $58^{\circ}36'45''$ ^{24"}N, $161^{\circ}27'00''$ ^{00"}W corresponds to a ^{10.1}9.8 m depth (Pos. No. 4024+7.5) from this survey at $58^{\circ}36'58''$ ^{36"}N, $161^{\circ}27'37''$ ^{24"}W. The depth from this survey was developed using 100 m line spacing.

A charted depth of 7 fm 5 ft (14.3 m) at $58^{\circ}31'8''$ ^{48"}N, $161^{\circ}27'35''$ ^{23"}W corresponds to a ^{16.1}15.9 m depth (Pos. No. 8145+2) from this survey at $58^{\circ}31'75''$ ^{46"}N, $161^{\circ}27'25''$ ^{14"}W. The depth from this survey was developed using 100 m line spacing.

Recommendation: The hydrographer recommends sounding data from this survey be used to supersede all charted soundings, and compile the chart. *Concur.*

Comparison of Non-Sounding Features

Charted shoreline is compared and discussed in section J.

AWOIS Items

No AWOIS items were located within the survey area.

Dangers to Navigation *See EVAL RPT. SEC. 7 (f)*

Due to inadequate sounding density on the present chart, RAINIER chose to submit a 1:100,000 excess chartlet of the area surveyed in lieu of a danger to navigation radio message. The chartlet was submitted in fathoms and tenths of fathoms because HDAPS software does not allow us to plot soundings in fathoms and feet. This chartlet was submitted to the Nautical Data Section, N/CG221, in accordance with Hydrographic Survey Guideline No. 66. An additional copy was also sent to N/CG245. The recommendation was made that the chartlet be used for compilation of chart overlays for inclusion in the Local Notice to Mariners for preliminary chart 16305.

O. ADEQUACY OF SURVEY *See EVAL RPT. SEC. 1.*

The squared-off survey area east of $161^{\circ}30'00''$ and north of $58^{\circ}30'40''$ is complete and adequate to supersede the areas common to the prior surveys listed in Section 6.10 of the Project Instructions. Crosslines extending west of the squared-off hydrography limit provide reconnaissance information, and are adequate to update the chart. *These crosslines have been rejected.*

P. AIDS TO NAVIGATION

No aids to navigation lie within the limits of the survey.

There are no floating aids to navigation, bridges, overhead cables, submerged pipelines, or ferry routes within the limits of the survey.

Q. STATISTICS ✓

<u>Vessel:</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>2126</u>	<u>Total</u>
# of Pos	0	84	8	602	695
NM Hydro	0	40.7	0	199.0	239.7

NM ² Hydrography	16.60	Velocity Casts	2
Detached Positions	0	Tide Stations	3
Reference Numbers	2	Current/Magnetic Stations	0
Bottom Samples	8		

R. MISCELLANEOUS ✓

Loran C comparisons were sent to DMAHTC and U.S. Coast Guard in accordance with the project instructions.

All bottom samples were submitted to the Smithsonian Institution.

S. RECOMMENDATIONS ✓

The hydrographer has no further recommendations.

T. REFERRAL TO REPORTS ✓

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

<u>Title</u>	<u>Date Sent to</u> <u>N/CG245</u>
Summer 1991 Horizontal Control Report for OPR-R184-RA	September 1991
Summer 1991 Electronic Control Data Package for OPR-R184-RA	September 1991
Summer 1991 Corrections to Echo Soundings Data Package for OPR-R184-RA	September 1991
Summer 1991 Coast Pilot Report for OPR-R184-RA	September 1991

Respectfully Submitted,

Jonathan M. Klay

Jonathan M. Klay
Ensign, NOAA

Approved and Forwarded,

Thomas W. Richards

Thomas W. Richards
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 28 Aug 1991

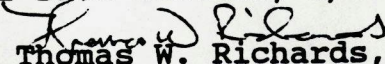
No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name	QUAD NOS.
100	F	058:39:13.589	161:24:57.410	20	250	0.0	0.0	5	06/07/91	STA #1 FIFTEEN 1948	581611
101	F	058:41:38.125	161:10:21.782	14	250	0.0	0.0	C	06/07/91	STA #2 BABE 1990	581611
102	F	058:36:49.259	161:04:24.694	31	250	0.0	0.0	B	06/07/91	STA #3 STER 1985	581611
103	F	058:46:52.058	161:10:58.582	27	250	0.0	0.0	E	06/07/91	STA #4 ESTUS 1948	581611
104	F	058:44:38.714	160:55:07.610	76	250	0.0	0.0	1	06/07/91	STA #5 VELD 1985	
111	F	058:32:46.187	161:04:32.584	11	250	0.0	0.0	A	06/26/91	STA #6 TIP 1990	581611
211	Z	058:32:46.187	161:04:32.584	9	250	0.0	0.0	06/26/91	STA #7 TIP 1990 R/AZ		
104	F	058:41:59.967	161:03:41.291	2	250	0.0	0.0	3	06/26/91	STA #8 MDLY 1985	
105	F	058:36:34.226	161:32:56.429	130	250	0.0	0.0	4	06/30/91	STA #9 PYRE 1991	581611
106	F	058:36:12.330	161:33:46.243	145	250	0.0	0.0	06/30/91	STA #10 PYRITE 1991		
107	F	058:47:03.706	161:14:21.527	47	250	0.0	0.0	3	07/10/91	STA #11 GZ 1991	
207	Z	058:47:03.706	161:14:21.527	47	250	0.0	0.0	07/10/91	STA #12 GZ 1991 R/AZ		
203	Z	058:46:52.058	161:10:58.582	27	250	0.0	0.0	07/11/91	STA #13 ESTUS 1948 R/AZ		
112	F	058:33:04.221	160:57:49.330	16	250	0.0	0.0	3	07/21/91	STA #14 MOON TP 1990	
212	Z	058:33:04.221	160:57:49.330	16	250	0.0	0.0	07/25/91	STA #15 MOON TP 1990 R/AZ		



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS
NOAA Ship RAINIER S221
1801 Fairview Avenue East
Seattle, Washington 98102-3767

September 12, 1991

MEMORANDUM FOR: Nautical Data Section, N/CG221
FROM: 
Captain Thomas W. Richards, NOAA
Commanding Officer, NOAA Ship RAINIER
SUBJECT: Alaska Dangers to Navigation Chartlet for
Preliminary Charts 16305 and 16315
REFERENCE: OPR-R184-RA, Togiak Bay, Alaska

Due to inadequate sounding density on the present chart, RAINIER has chosen to submit a 1:100,000 excessed chartlet of the area surveyed as per Hydrographic Survey Guideline No. 66. The chartlet is submitted in fathoms and tenths of fathoms vice the charted units of fathoms and feet.

Due to large discrepancies between crosslines, mainscheme lines, and prior surveys when plotting soundings with predicted tides, real tide data acquired from digital bubblers were applied to all sounding data during this project. Details on each tide station and its' data application can be found in the enclosed Field Tide Notes.

All soundings were positioned in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Survey Guidelines; and the Field Procedures Manual. The chartlet and accompanying records have been examined by me, and are considered complete and adequate for charting purposes. I recommend RAINIER's chartlet be used by N/CG22 as a source document for the compilation of chart overlays in fathoms and feet for issuance in the Local Notice to Mariners.

Enclosures



APPROVAL SHEET

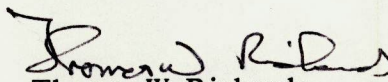
for

H-10388

RA-20-5-91

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.



Thomas W. Richards
Captain, NOAA
Commanding Officer

ORIGINAL



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Rockville, Maryland 20852

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 26, 1991

MARINE CENTER: Pacific

OPR: R184-RA

HYDROGRAPHIC SHEET: H-10388

LOCALITY: Southern Approach to Hagemeister Strait, Bristol Bay,
Alaska

TIME PERIOD: July 14 - July 25, 1991

TIDE STATIONS USED: 946-5123 Pyrite Point, Bristol Bay,
Alaska - Lat. 58° 37.2'N Lon. 161° 32.5'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 11.1 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 6.4 ft.

REMARKS: RECOMMENDED ZONING

1. Times and heights are direct on Pyrite Point (946-5123).

Notes: Times are tabulated in Greenwich Mean Time.

for, William M. Gibson

CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

H-10388

Name on Survey	<div style="display: flex; justify-content: space-between;"> A ON CHART NO. 16305 B ON PREVIOUS SURVEY NO. C ON U.S. QUADRANGLE MAPS D FROM LOCAL INFORMATION E ON LOCAL MAPS F P.O. GUIDE OR MAP G RAND McNALLY ATLAS H U.S. LIGHT LIST K </div>											
	ALASKA (title)	X										
BRISTOL BAY	X											2
HAGEMEISTER STRAIT (title)	X											3
PYRITE POINT	X											4
												5
												6
												7
												8
												9
												10
												11
												12
												13
												14
									Approved:			15
												16
									<i>Charles E. Harrington</i>			17
									Chief Geographer - N/CG 2x5			18
									JAN 28 1992			19
												20
												21
												22
												23
												24
												25

HYDROGRAPHIC SURVEY STATISTICS

H-10388

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		6
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		4
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES					
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List): TP-01185

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): 16305

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			685	
POSITIONS REVISED				
SOUNDINGS REVISED				
CONTROL STATIONS REVISED				
	TIME-HOURS			
	VERIFICATION	EVALUATION	TOTALS	
PRE-PROCESSING EXAMINATION				
VERIFICATION OF CONTROL				
VERIFICATION OF POSITIONS	21.0		21.0	
VERIFICATION OF SOUNDINGS	19.0		19.0	
VERIFICATION OF JUNCTIONS				
APPLICATION OF PHOTOBATHYMETRY				
SHORELINE APPLICATION/VERIFICATION				
COMPILATION OF SMOOTH SHEET	21.5		21.5	
COMPARISON WITH PRIOR SURVEYS AND CHARTS		5.0	5.0	
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT		9.0	9.0	
GEOGRAPHIC NAMES				
OTHER* Digitizing				
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	61.5	14.0	75.5

Pre-processing Examination by LT M. Brown	Beginning Date 9/6/91	Ending Date 9/25/91
Verification of Field Data by R. Shipley, E. Domingo	Time (Hours) 61.5	Ending Date 2/3/92
Verification Check by J. Stringham, S. Otsubo	Time (Hours) 15.5	Ending Date 2/4/92
Evaluation and Analysis by I. Almacen	Time (Hours) 14.0	Ending Date 3/3/92
Inspection by D. Hill	Time (Hours) 2.0	Ending Date 3/16/92

EVALUATION REPORT H-10388

1. INTRODUCTION

Survey H-10388 is a basic hydrographic survey accomplished by the NOAA Ship RAINIER, under the following Project Instructions.

OPR-R184-RA, dated April 19, 1991
CHANGE NO. 1, dated June 17, 1991
CHANGE NO. 2, dated July 18, 1991

This survey was conducted in Bristol Bay, Alaska, covering an area along the southwestern approaches to Hagemeister Strait. The surveyed area extends from the coast south to latitude 58/30/45N and stretches from longitude 161/26/00W to longitude 161/30/00W. This is the first basic survey of the area, the presently charted depths originated from prior reconnaissance hydrography. The bottom generally consists of sand, gravel and pebbles. Depths range from 0.2 to 19.9 meters.

NOAA Ship RAINIER's 1991 field season was cut short due to some operational problems and for this reason only half of the planned coverage of sheet D on the approved OPR-R184 sheet layout was accomplished. It was decided to process this data as a complete survey and to revise the sheet layout accordingly. The remaining portion of the originally planned survey is to be completed in the near future.

Predicted tides for Hagemeister Island, Alaska, gage 946-5089, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Pyrite Point, Bristol Bay, Alaska, gage 946-5123, were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. The TRA, sound velocity and electronic control correctors are adequate. An accompanying computer printout contains the parameters and the correctors.

A digital file has been generated for this survey as required by the specifications contained in Hydrographic Survey Guideline No. 52, Standard Digital Data Exchange Format, April 15, 1986. Certain descriptive information, however, may not be in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete depiction of survey data.

2. CONTROL AND SHORELINE

Sections H and I of the hydrographer's report and the Summer 1991 Horizontal and Electronic Control Reports for OPR-R184-RA contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are 1991 field and published values based on NAD 83. These values were used during office processing for the computation of positions. The smooth sheet and accompanying overlays are annotated with NAD 27 adjustment ticks based on values determined with the NGS program, NADCON. Geographic

positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude: -2.835 seconds (-87.729 meters)
Longitude: 7.946 seconds (128.414 meters)

The year of establishment of control stations shown on the smooth sheet originates with the NGS listing and the previously referenced horizontal control report.

There are a few instances during the survey where the maximum allowable limits of error circle radius (ECR) and residual values have been exceeded. However, the positioning of these soundings was found consistent with the surrounding areas. The data obtained at these particular areas have been accepted, as the effect of the larger ECR and residual values appear to be insignificant. None of these survey positions are used to locate dangers to navigation.

The following shoreline map applies to this survey.

	<u>Photo Date</u>	<u>Class</u>
TP-01185	July 1985	III

No changes to the shoreline were noted and no new features were found during this survey.

3. HYDROGRAPHY

Hydrography is adequate to:

- a. delineate the bottom configuration, determine least depths, and draw the standard 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.

4. CONDITION OF SURVEY

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 1990 Edition.

5. JUNCTIONS

Survey H-10388 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10385	1991	1:20,000	East
H-10386	1991	1:20,000	East

The junctions with surveys H-10385 and H-10386 are complete. Comparison is good, however, some soundings were transferred to survey H-10388 to justify depth curves and portray shoaler information within the adjoining area.

There are no contemporary surveys to the south and west of this survey. Comparison with the few charted depths along these areas is satisfactory.

6. COMPARISON WITH PRIOR SURVEYS

T-9245(1948) 1:20,000
T-9250(1948) 1:20,000

Shoreline maps T-9245 and T-9250 cover the area of this survey. These 1948 maps were considered the only source of shoreline and foreshore information available at that time.

Survey H-10388 is adequate to supersede the prior shoreline maps as a source of charted hydrography within the common area.

There are no AWOIS items originating from the prior shoreline maps applicable to the present survey.

7. COMPARISON WITH CHART

Chart 16305, 7th edition, dated February 9, 1991; scale 1:100,000

a. Hydrography

The charted hydrography on the 7th edition of chart 16305 originates from miscellaneous sources and requires no further discussion.

Survey H-10388 is adequate to supersede charted hydrography within the common area.

b. AWOIS

There are no AWOIS items originating from miscellaneous sources.

c. Controlling Depths

There are no charted channels with controlling depths within the area of this survey.

d. Aids to Navigation

There are no fixed or floating aids located within the area of this survey.

e. Geographic Names

Names appearing on the smooth sheet and in the survey title have been approved by the Chief Geographer.

f. Dangers to Navigation

There are no dangers to navigation reported during this survey. However, due to the inadequacy of charted depths in the area at the present time, the hydrographer found it proper to submit a compiled 1:100,000 scale chartlet of the survey in accordance with Hydrographic Survey Guideline No.66. This chartlet was forwarded to N/CG221 for application to chart 16305 and inclusion in the Local Notice to Mariners. A copy of the memorandum from the Commanding Officer, dated September 12, 1991, concerning the chartlet is attached.

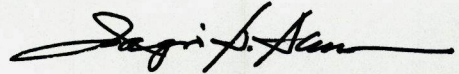
No dangers were discovered during office processing.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10388 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

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



Isagani A. Almacén
Cartographer

APPROVAL SHEET
H-10388

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 disproof 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. Final control, position, and sounding printouts have been made and are included with the survey records. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

for *D. J. Hill* Date: 3/16/92
Dennis J. Hill
Chief, Hydrographic Processing Unit
Pacific Hydrographic Section

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.

Douglas G. Hennick Date: 3/16/92
Commander Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section

Final Approval

Approved:

J. Austin Yeager Date: 4/9/92
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

INDEX
HYDROGRAPHIC SURVEYS
Complete through Jan 1992
1985-1992
BRISTOL BAY
ALASKA

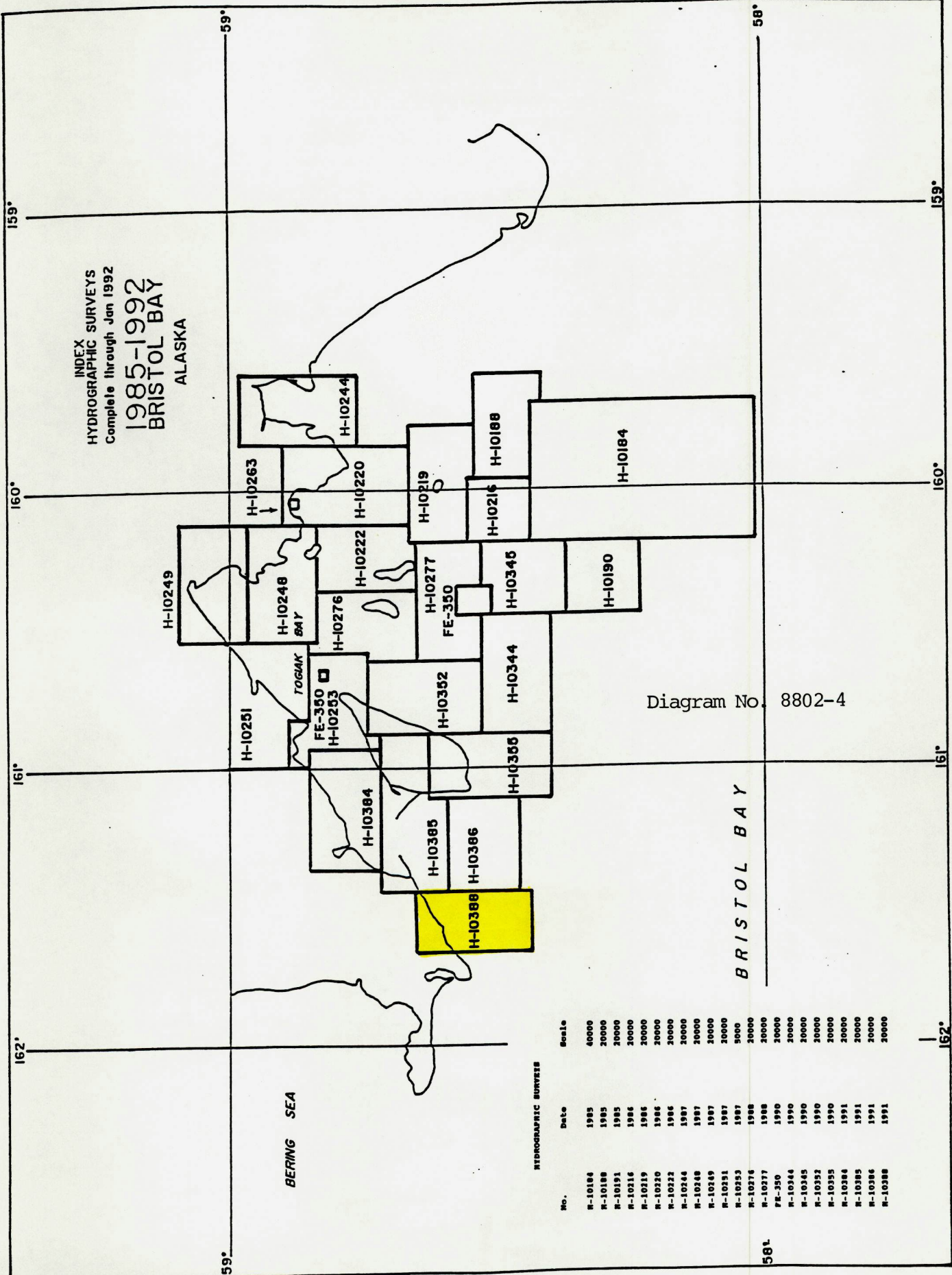


Diagram No. 8802-4

HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-10184	1985	40000
H-10188	1985	20000
H-10191	1985	20000
H-10216	1986	20000
H-10219	1986	20000
H-10220	1986	20000
H-10222	1986	20000
H-10244	1987	20000
H-10248	1987	20000
H-10249	1987	20000
H-10251	1987	20000
H-10253	1987	9000
H-10276	1988	20000
H-10277	1988	20000
FE-350	1990	20000
H-10344	1990	20000
H-10345	1990	20000
H-10352	1990	20000
H-10355	1990	20000
H-10384	1991	20000
H-10385	1991	20000
H-10386	1991	20000
H-10388	1991	20000

58°

162°

