10386

10386

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-20-4-91

Registery No. H-10386

LOCALITY

State Alaska

General Locality Bristol Bay

Sublocality Southern Approach to Hagemeister Strait

19 91

CHIEF OF PARTY
CAPT T.W. Richards

LIBRARY & ARCHIVES

DATE August 28, 1992

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

CP-9

16305
16011
16006
530

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10386

HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

RA-20-4-91

State Alaska

General locality Bristol Bay

Locality Southern Approach 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-3 (2123), RA-4, (2124), RA-5, (2125) and RA-6 (2126)

Chief of party Captain Thomas W. Richards, NOAA

Surveyed by LT R. Huddleston, LTJG E. Nelson, LTJG C. Ward, 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

Evaluation by:

~~Protracted by~~ R.N. Mihailov Automated plot by PHS Xynetics Plotter

Verification by E. Domingo

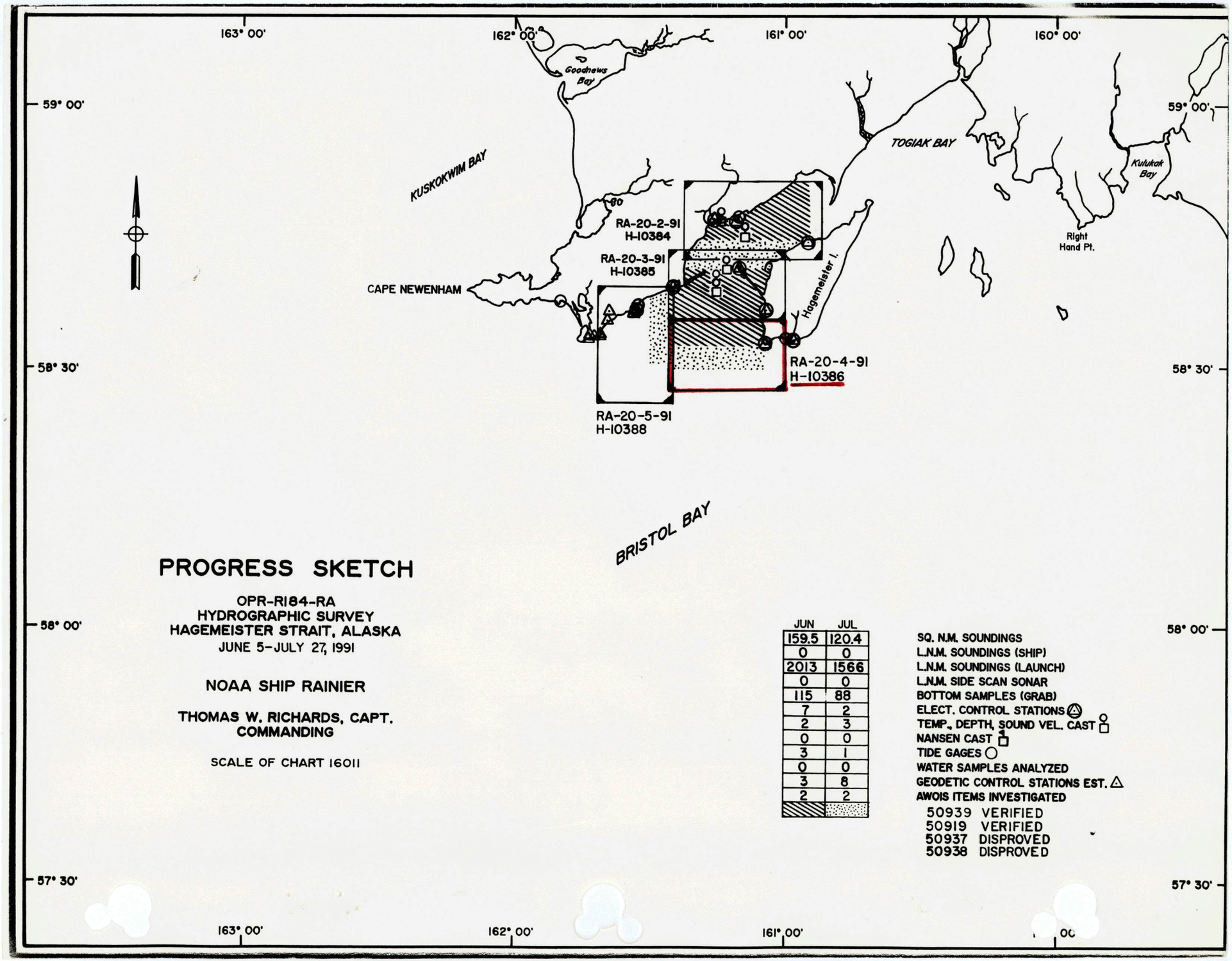
Soundings in ~~fathoms~~ ~~feet~~ at ~~MLW~~ MLLW meters and decimeters

REMARKS: Att times 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.

JAN 29 1997 AWOIS + SURF 8/92 RWD

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

U.S. GOVERNMENT PRINTING OFFICE: 1986 - 652-007/41215



PROGRESS SKETCH

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

NOAA SHIP RAINIER

THOMAS W. RICHARDS, CAPT.
COMMANDING

SCALE OF CHART 16011

JUN	JUL
159.5	120.4
0	0
2013	1566
0	0
115	88
7	2
2	3
0	0
3	1
0	0
3	8
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
NANSEN CAST
TIDE GAGES ○
WATER SAMPLES ANALYZED
GEODETIC CONTROL STATIONS EST. △
AWOIS ITEMS INVESTIGATED
50939 VERIFIED
50919 VERIFIED
50937 DISPROVED
50938 DISPROVED

Descriptive Report to Accompany Hydrographic Survey H-10386

Field Number RA-20-4-91
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, western 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 P 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 consists of reconnaissance surveys of this agency and private fishing company charts. This project responds to requests from the Alaska congressional delegation, U.S. Coast Guard, State of Alaska, Bristol Bay Native Association, Togiak Fishing Fleet, and other commercial fisherman for a detailed survey to aid in the safe navigation of this area.

B. AREA SURVEYED

The survey, located in western Alaska, 40 NM southwest of Togiak, encompasses the southern approach to Hagemeister Strait. The survey's northern and southern limits are 58°35'30" and 58°30'00"N respectively. The eastern and western limits are 161°26'~~00~~ 20"W and 16~~1°04'20"~~ 0°55.15"W respectively. Data acquisition was conducted from June 27 through July 25, 1991 (DN 178 to 206). The area surveyed differs from the boundaries designated on the sheet layout due to a shortened field season. The area surveyed was squared off at latitude 58°30'00"N. Additional work accomplished on prior survey H-10355 (1990) as specified in the project instructions section 4.1.2.1 was included as part of this survey, and is addressed in section R.

C. SURVEY VESSELS

Data were acquired by NOAA Ship RAINIER's four automated survey launches shown below:

Vessel	EDP No	Operation
RA-3	2123	Hydrography Shoreline Verification
RA-4	2124	Hydrography Shoreline Verification

RA-5	2125	Hydrography Velocity Casts Bottom Samples
RA-6	2126	Hydrography

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, range/azimuth hydrography, 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:

Program Name	Initial Program	Program Change 1	Program Change 2
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 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.

HDAPS System	Initial Program	Program Change 1	Program Change 2
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:

Program Name	Version	Date Installed
VELOCITY	1.11	09 Mar 1990

E. SONAR EQUIPMENT ✓

Not Applicable Side scan sonar not used on this survey.

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

Vessel	Serial No.	DN
2123	A117N	178-206
2124	A103N	180-205
2125	B048N	191-199
2126	A114N	180-205

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

Vessel	Offset Table No.
2123	3
2124	4
2125	5
2126	6

Sound Velocity

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

Velocity Table No.	Cast No.	Deepest Depth (m)	Applicable DN	Cast Position	Day
2	2	37.9	167-182	58°41'31"N 161°13'20"W	180
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 2, 3, and 5 were acquired with an AML SVP, S/N 3042, which was calibrated at Northwest Regional Calibration Center 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 are 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 gunwale was measured with a large metal square. Static draft measurements were then determined by dropping a lead line from the gunwale to the water and subtracting this distance from the distance measured with the square. The measurements from the gunwale 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. This 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. This data has been accepted.

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 Hagemeister, 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:

	Zone	Time Correctors	Range Ratio
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.*

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 Hagemeister Island (946-5089). Due to large discrepancies between crosslines, adjacent mainscheme lines and prior surveys when plotting soundings with predicted tides, estimated real-time tide data acquired from digital bubblers were applied to semi-smooth sounding plots and FFS during this project.

The estimated real-time tides were created by comparing raw digital tidal data from the Pyrite Point station (946-5429) for Sheet P with the Hagemeister Island station (946-5089) predicted tides using LOTUS 1-2-3 graphics. From this comparison a height corrector of -6.0 feet was determined to reduce the raw digital tidal data to MLLW. Estimated real-time tides using a tide corrector of -6.0 feet were then applied throughout sheet P.

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. *

* Filed with hydrographic data.

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 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 Position Control

Soundings, bottom samples, and detached positions were located using the Motorola Mini Ranger Falcon 484 microwave positioning system in multiple-range and manual range-azimuth modes.

Accuracy Requirements/Problems

Accuracy requirements specified in the Hydrographic Manual and in FPM 3.1.3.1 were generally met. Under some wind and sea conditions null zones were experienced. When this problem was suspected, the R/T mast height or shore transponder height was adjusted to improve control. 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 usually rejected and the area rerun 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 collecting 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.

Equipment

A Wild T-2 theodolite was used for manual range/azimuth observations in conjunction with a Motorola Mini Ranger (M/R). 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 (DN 141-DN 143) 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 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 ✓

The shoreline map (T-sheet) used to transfer shoreline detail to the final field sheets was a 1:20,000-scale of TP-00899 and TP-00933 (1:20,000; NAD27, flown 1985).

Shoreline verification was conducted below or near predicted lower low water in accordance with FPM 7.1. Shoreline verification was mostly accomplished by assigning sequential reference numbers and taking detached positions (DPs) in a manner explained later in this section. DPs and inshore hydrography show 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, descriptions and heights, corrected to MLLW based on estimated real tides, are recorded in the sounding volumes. Corresponding notes were annotated on the photocopies of the T-sheet. Changes to shoreline features are described in the sounding volumes where applicable. The annotated photocopies of the T-sheet are attached to the sounding volumes which are included with the survey data.

DPs taken during shoreline verification were recorded on the master printouts and indicate significant features, features not found on the T-sheet, and locations of disprovals. Where possible, positions of some T-sheet features were verified during inshore mainscheme hydrography and annotated on the master printouts.

Some T-sheet rocks in the vicinity of 58°32'45"N, 161°04'25"W were found to be part of the HWL and are shown in red on the FFS. T-sheet features which were verified were retained and shown on the final field sheets (FFS). Verified shoreline and new features are shown in black on the FFS, changes to the shoreline are shown in red, and unverified shoreline is shown in blue. No blue shoreline on this survey.

Disprovals

None.

Unverified Features

None.

New Features

None.

Recommendation: The hydrographer recommends that shoreline detail from this survey be used to supersede prior survey information. concur

K. CROSSLINES

A total of 70.7 nautical miles of crosslines were run perpendicular to mainscheme lines, representing 11.6% of the mainscheme hydrography; this percentage does not reflect splits or developments run during investigations. The contour lines indicated a tide problem with the crosslines and mainscheme lines east of 58°31'07"N, 161°08'08"W (NAD 83). The hydrographer believes this is caused by using real tides calculated from the Pyrite Point tide gauge for the entire sheet. Crossline soundings agree to within 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. See attached tide note. Use of approved tides and zoning improved agreement to within 1 meter.

L. JUNCTIONS See Evaluation Report, section 5.

This survey junctions with H-10355 (1:20,000; 1990) to the east, H-10385 (1:20,000; 1991) to the north, and H-10388 (1:20,000; 1991) to the west. No irregularities were found when comparing soundings and depth contours. Agreement between overlapping soundings is excellent, with all junction soundings agreeing to within 1 meter.

M. COMPARISON WITH PRIOR SURVEYS ✓

This survey was compared to the following prior survey:

H-7718 (1:100,000; Recon 1948):

Overall agreement between this survey and the prior survey is fair with agreement within 2 meters in all cases. The soundings from the prior survey common to this survey were done in an area where the bottom was relatively uniform; the hydrographer believes the disagreement with the prior survey may be due, in part, to tide corrector differences and strong currents shifting the bottom sediment.

Recomendation: The hydrographer recommends the soundings and least depths acquired from the present survey be used to supersede those of H-7718 within their common area. Concur

T-9251 (1:20,000; 1948)
T-9252 (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 T-sheets. Features on the topographic maps not portrayed on the registered T-sheets were included in the Notes to Hydrographer. T-9251 is discussed in section J while T-9252 is discussed in section R.

BP-628 (1901)
BP-18063 (1916)
BP-134098 (1985-1987)

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

N. COMPARISON WITH THE CHART

This survey was compared to the 1:100,000-scale NOS Preliminary chart 16305, 7th Edition, February 9/91, (NAD83). See Evaluation Report, section 7a.

Comparison of Sounding Features

A charted depth of 6 fm (~~11.0~~ 10.9 m) at 58°33.6'N, 161°25.4'W corresponds to a 13.~~3~~ 6 m depth (Pos. No. 2567+4) from this survey at 58°33.6'N, 161°25.4'W. The depth from this survey was developed using 100 m line spacing. A 10.9 meter depth is located 1200 meters east. See Evaluation Report, section 7a.

A charted depth of 25 fm (45.8 m) at 58°33.3'N, 161°24.5'W corresponds to a ~~11.9~~ 12.2 m depth (Pos. No. 4249+3) from this survey at 58°33.3'N, 161°24.5'W.

A charted depth of 5 fm (9.2 m) at 58°33.8'N, 161°21.9'W corresponds to a 9.1 m depth (Pos. No. ~~4944+5~~ 5647+5) from this survey at 58°33.8'N, 161°21.8'W. The depth from this survey was developed using 100 m line spacing.

A charted depth of 24 fm (43.9 m) at 58°30.5'N, 161°20.8'W corresponds to a 15.~~3~~ 6 m depth (Pos. No. 8241+9) from this survey at 58°30.4'N, 161°20.7'W. The depth from this survey was developed using 100 m line spacing.

A charted depth of 11 fm (20.1 m) at 58°30.8'N, 161°14.3'W corresponds to a 10.~~5~~ 9 m depth (Pos. No. 4664+3) from this survey at 58°30.8'N, 161°14.3'W.

A charted depth of 4 fm (7.3 m) at 58°32.4'N, 161°05.9'W corresponds to a 14.5 m depth (Pos. No. 4074+2) from this survey at 58°32.4'N, 161°05.9'W. The depth from this survey was developed using 100 m line spacing. A 5.9 meter depth is located 1500 meters northeast. See Evaluation Report, section 7a.

A charted depth of 6 fm (~~11.0 m~~ 10.9) at 58°35.2'N, 161°22.5'W corresponds to a 11.~~0~~4 m depth (Pos. No. 4857+4) from this survey at 58°35.2'N, 161°22.5'W. The depth from this survey was developed using 100 m line spacing. A 10.9 depth is located 120 meters southwest

note "shoaling to 5 fms 1988 PA

A charted ~~depth of 5 fm~~ (9.2 m) at 58°34.0'N, 161°24.4'W corresponds to a 10.8 m depth (Pos. No. 4237+6) from this survey at 58°34.0'N, 161°24.4'W. The minimum depth on this shoal is 7.1 meters (3.9 fathoms) at latitude 58° 33'44" N, longitude 161° 22'02 W.

A charted depth of 2.5 fm (4.6 m) at 58°34.1'N, 161°13.3'W corresponds to a 11.0 m depth (Pos. No. ~~4688+4~~ 2627) from this survey at 58°34.1'N, 161°13.3'W. The depth from this survey was developed using 100 m line spacing. See AWOIS No. 50938 below.

A charted depth of 3.0 fm (5.5 m) at 58°31.0'N, 161°08.3'W corresponds to a 14.~~0~~6 m depth (Pos. No. ~~2633+3~~ 4850+1) from this survey at 58°31.0'N, 161°08.3'W. The depth from this survey was developed using 100 m line spacing. See AWOIS No. 50937 below.

Recommendation: The hydrographer recommends sounding data from this survey be used to update and compile the chart. — concur

Comparison of Non-Sounding Features

Comparison of charted shoreline with this survey is discussed in section J.

AWOIS Items

The following two AWOIS items were listed as shoals. Each area was investigated with 100 m line spacing with the following results:

AWOIS No. 50937: A charted 3.0 fm shoal sounding originated from an old fishing industry chart BP-628 dated 1901. This shoal was reportedly centered at 58°31'07"N, 161°08'08"W (NAD 83).

RAINIER developed the survey area with 100 m line spacing within a 1 NM radius from the AWOIS position. This technique produced a least depth of 13.~~1~~6 m (7.~~2~~4 fm) at 58°31'~~47~~44"N, 161°08'~~46~~48"W (Pos. No. 2648+0 6801+1). Contour analysis of this area revealed a relatively flat and featureless bottom.

Recommendation: The hydrographer recommends that the 3.0 fm sounding be removed from the chart and replaced with soundings from this survey. — concur

AWOIS No. 50938: A charted 2.5 fm shoal sounding originated from an old fishing industry chart BP-628 dated 1901. This shoal was reportedly centered at 58°34'06"N, 161°13'18"W (NAD 83).

RAINIER developed the survey area with 100 m line spacing within a 1 NM radius from the AWOIS position. This technique produced a least depth of 9.~~3~~7 m (5.~~1~~3 fm) at 58°34'~~19~~28"N, 161°11'~~29~~17"W (Pos. No. 6161+1 2712+5). Contour analysis of this area revealed a relatively flat and featureless bottom.

Recommendation: The hydrographer recommends that the 2.5 fm sounding be removed from the chart and replaced with soundings from this survey. concur

Dangers to Navigation

Due to inadequate sounding density on the present chart, RAINIER chose to submit a 1:100,000 excessed 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 HDAP's software does not allow us to plot soundings in fathoms and feet. The 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

This survey is complete and adequate to supersede the areas common to the prior surveys listed in Section 6.10 of the Project Instructions and for chart compilation in previously unsurveyed areas. CONCUR

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 ✓

Vessel:	2123	2124	2125	2126	Total
# of Pos	807	1436	284	250	2777
NM Hydro	207	469	102	101	881

NM^2 Hydrography	61.24	Velocity Casts	3
Detached Positions	18	Tide Stations	2
Reference Numbers	55	Current/Magnetic Stations	0
Bottom Samples	62		

R. MISCELLANEOUS See Evaluation Report, section 5

Additional work on H-10355 (1990) addressed in the Project Instructions (section 4.1.2.1) was included as an extension to this survey. This work was conducted on the last day of operations (DN 206) due to a shortened field season and the FFS is included with this descriptive report. The stage of tide was approximately 3 feet above MLLW and water visibility was 1 to 2 feet. Range/Azimuth positioning was used for control.

Two of the three rocks shown on TP-00899 in the vicinity of 58°33'21"N, 160°59'54"W were verified on the 1991 survey by reference numbers R3-2 and R3-3. They are high points of a ledge that is connected to the shoreline. The hydrographer thought he was positioning the third rock of the group (on T-sheet at 58°33'21"N, 160°59'57"W) with positioning number 2060 as a rock 1.9 m above MLLW. A review of the rough plot indicated that the hydrographer was actually positioning a feature near one described as a rock covered 0.2 m MLLW depicted on the 1990 FFS for H-10355 which does not appear on the T-sheet. The feature described on the 1991 survey is probably part of the shoreline at MLLW and the hydrographer could not see the feature from the 1990 survey because of the stage of tide and poor visibility. The unverified third T-sheet rock at the position described above is probably part of the same ledge described by R3-2 and R3-3 and could not be seen due to the stage of tide. It is also important to note that RAINIER tide observers noticed a five foot change in the level of the sand on the beach in this area which is described in the Field Tide Note for the South End, Hagemeister Island Tide Station. *

Position Number 2061 describes a rock 2.4 m above MLLW. The hydrographer thought he was positioning a feature described as bare rocks on T-9251. After reviewing the rough DP plot, it was evident that the hydrographer had positioned the same feature described by R4-35 on DN 193 as a rock 2.2 m above MLLW. No rocks were seen in the area described as bare rocks.

Some additional inshore hydrography was also conducted in this area. The soundings, positions, and contours show excellent agreement with the 1990 FFS. See Evaluation Report section 5.

Recommendation: The hydrographer recommends that shoreline detail from this survey be used to supersede prior survey information. See Evaluation Report, section 5

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 in accordance with the project instructions.

S. RECOMMENDATIONS

A note should be placed on the chart warning the mariner of potential migrating shoals within the strait. Concur. Recommendation forwarded to N/CS22 for entry into the Chart Request Data Base.

* Filed with the hydrographic records.

T. REFERRAL TO REPORTS

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

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

Respectfully Submitted,

Ray T. Huddleston
Lieutenant, NOAA

Approved and Forwarded,

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
~~124~~	~~F~~	~~058:44:38.714~~	~~160:55:07.610~~	~~76~~	~~250~~	~~0.0~~	~~0.0~~	~~1~~	~~06/07/91~~	~~STA #5~~	~~VELO 1985~~	
111	F	058:32:46.187	161:04:32.384	11	250	0.0	0.0	A	06/26/91	STA #6	TIP 1990	581611
211	Z	058:32:46.187	161:04:32.384	9	250	0.0	0.0		06/26/91	STA #7	TIP 1990 R/AZ	581611
~~104~~	~~F~~	~~058:41:59.967~~	~~161:03:41.291~~	~~2~~	~~250~~	~~0.0~~	~~0.0~~	~~3~~	~~06/26/91~~	~~STA #8~~	~~MOLY 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~~	~~058:47:03.786~~	~~161:14:21.527~~	~~47~~	~~250~~	~~0.0~~	~~0.0~~	~~3~~	~~07/10/91~~	~~STA #11~~	~~OZ 1991~~	
~~207~~	~~Z~~	~~058:47:03.786~~	~~161:14:21.527~~	~~47~~	~~250~~	~~0.0~~	~~0.0~~		~~07/10/91~~	~~STA #12~~	~~OZ 1991 R/AZ~~	581611
~~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	581604
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	581604

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 Not included

APPROVAL SHEET

for

H-10386

RA-20-4-91

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

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

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 26, 1991

MARINE CENTER: Pacific

OPR: R184-RA

HYDROGRAPHIC SHEET: H-10386

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

TIME PERIOD: June 27 - 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
Hagemeister Island (946-5089) was the more appropriate tide station for the eastern portion of this sheet. However, due to gauge and staff problems at that station, it is not being used. If problems occur joining sheets H-10386 and H-10355, notify the Datums Section.

1. East of 161° 13.0'W, apply a -1 hr. time correction and a x1.03 height ratio to Pyrite Point (946-5123).

2. East of 161° 23.7'W (or the eastern border of sheet H-10388) and west of 161° 13.0'W, apply a -30 min. time correction and a x1.02 height ratio to Pyrite Point (946-5123).

3. West of 161° 23.7'W (or the eastern border of sheet H-10388) time and heights are direct on Pyrite Point (946-5123).

Note: Times are tabulated in Greenwich Mean Time.

William M. Hobson
for, CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER
H-10386

Name on Survey	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	
ALASKA (TITLE)	X									1
BRISTOL BAY	X									2
CALM POINT	X									3
HAGEMEISTER ISLAND	X									4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
				Approved:						15
										16
				Charles E. Harrington						17
				Chief Geographer - N/CG2x5						18
				FEB 10 1992						19
										20
										21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27(H)
(9-83)

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER
H-10386

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET		SMOOTH OVERLAYS: POS., ARC, EXCESS	
DESCRIPTIVE REPORT		FIELD SHEETS AND OTHER OVERLAYS	

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES						
ENVELOPES						
VOLUMES	1					
CAHIERS	2					
BOXES						

SHORELINE DATA

SHORELINE MAPS (List):

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			2644
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			

	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	22.50		22.50
VERIFICATION OF SOUNDINGS	59.0		59.0
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	77.0		77.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS		7.0	7.0
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		30.0	30.0
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	158.5	37.0	195.5

Pre-processing Examination by M. Brown	*Beginning Date* 9/11/91	*Ending Date* 9/11/91
Verification of Field Data by E. Brown, E. Domingo, J. Stringham	*Time (Hours)* 158.5	*Ending Date* 3/9/92
Verification Check by S. Otsubo	*Time (Hours)* 30.5	*Ending Date* 3/13/92
Evaluation and Analysis by R.N. Mihailov	*Time (Hours)* 37.0	*Ending Date* 8/13/92
Inspection by D. Hill	*Time (Hours)* 2	*Ending Date* 8-11-92

EVALUATION REPORT
H-10386

1. INTRODUCTION

Survey H-10386 is a basic hydrographic survey accomplished by the NOAA Ship RAINIER under the following Project Instructions.

OPR-O184-RA, dated April 19, 1991
CHANGE NO. 1, dated June 17, 1991
CHANGE NO. 2, dated July 18, 1991

This survey was conducted in Alaska and covers the area in Bristol Bay along the south shore of Hagemeister Island. The survey area is approximately 40 nautical miles southwest of the city of Togiak, Alaska.

Additional field work was included as a supplement to survey H-10355, east of longitude 161/04/25W, as specified by the project instructions section 4.1.2.1. This additional work was the result of a shortened 1990 field season due to mechanical problems and is discussed in section R of the hydrographer's report and depicted on survey H-10386 as an inset.

Sheet limits extend from latitude 58/30/00N to latitude 58/35/30N and longitude 160/55/15W to longitude 161/26/20W. The shoreline along Hagemeister Island is characterized by rocks, sand, and pebble beaches. The bottom consists mainly of sand and mud. Depths range from 0.5 meters to 20.8 meters.

Unverified observed tides from Pyrite Point, Alaska, gage 946-5123, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Pyrite Point, Alaska, gage 946-5123, were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet, to provide for the additional work to supplement survey H-10355 as an inset 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 that includes categories of information required to comply with 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 information.

2. CONTROL AND SHORELINE

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

Positions of horizontal control stations used during hydrography are published and 1990 and 1991 field 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 correction.

Latitude:	-2.826 seconds	(-87.454 meters)
Longitude:	7.931 seconds	(128.217 meters)

The year of establishment of control stations shown on the smooth sheet originates with the horizontal control records and published NGS data.

The quality of several positions exceeds limits in terms of the error circle radius and residual or have angles of intersection less than 30 degrees or more than 150 degrees. A review of the data indicates that none of these fixes are used to position the dangers to navigation contained within the limits of this survey. The soundings located by these fixes are consistent with the surrounding data. Refer to Section I of the hydrographer's report for a further discussion of this data.

The following shoreline maps apply to this survey.

Map Number	Photo Date	Class
TP-00899	July 1985	III
TP 00933	August 1985	III

Shoreline drawn on the smooth sheet originates from 1:20,000 scale manuscripts compiled on NAD 27. A grid adjustment to NAD 83 was performed during office processing using datum values as provided by the NGS program NADCON.

The following shoreline change was determined with supporting positional information. The revision is adequate to supersede the common photogrammetrically delineated shoreline.

	Latitude(N)	Longitude(W)
HWL	58/32/46	161/04/32

3. HYDROGRAPHY

Except for the zero, one and two meter depth curves, which could not be delineated because of the rocky nature of the shoreline, 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

Except as follows, 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.

In section I the hydrographer discusses procedures used to verify the adequacy of positioning when using only two LOP's. The explanation that this type of hydrography was bracketed with multiple LOP positioning fails to address the potential for significant deviations from assumed launch locations in situations other than those involving dead reckoning. Randomly located detached positions must be independently checked with multiple LOP's. A review of the survey data did not disclose any such deficiencies in positioning, however, descriptive reports should be very specific in identifying positioning problems and their potential effect on the quality of the survey.

The hydrographer's comparison with charts in section N lacks a discussion of the general trends such as shoaling or deepening. Instead, the section consists of detailed discussion of individual charted soundings as compared to the survey. Detailed discussions should be restricted to significant depths for features. (FPM, figure 6-1).

5. JUNCTIONS

Survey H-10386 junctions with the following surveys.

Survey	Year	Scale	Area
H-10355	1990	1:20,000	East
H-10385	1991	1:20,000	North
H-10388	1991	1:20,000	West

The junction with survey H-10355 to the east agrees well. In addition to the conventional junction to the east, additional work was accomplished on survey H-10355 along the south shore of Hagemeister Island, east to longitude 161/55/15W. This additional work supplements junction survey H-10355, except for a line of hydrography at latitude 58/33/15N, longitude 161/02/45W, where survey H-10385 soundings are shoaler and the 5-meter curve is affected. Soundings from survey H-10386 supersede those soundings on survey H-10355 in the common area. The cause of this disagreement is unknown. See the hydrographer's report, section R, for further discussion.

Checked & shoaler as superseded on H-10355. GFM 9-4-92

The junctions with surveys H-10385 and H-10388 are complete and the soundings are in good agreement.

Several soundings have been transferred to survey H-10386 to better portray the depth curves in the common area.

6. COMPARISON WITH PRIOR SURVEYS

H-7718 (1948) 1:100,000

Survey H-7718 is a reconnaissance survey that has two lines of positions (22 soundings) that run along the southeast portion of the present survey. The present survey agrees to within plus or minus one meter with the prior survey. Taking into consideration the differences in the scales of the surveys and the methods of surveying, survey H-10386 is adequate to supersede survey H-7718 in the area of common coverage.

T-9251 (1948) 1:20,000
T-9252 (1948) 1:20,000

Shoreline maps T-9251 and T-9252 cover the entire survey area of the present survey. The shoreline along the southeastern coastline of Hagemeister Island has eroded in some places as much as 180 meters.

Survey H-10386 is adequate to supersede the prior shoreline maps as a source for charted hydrography within the common area.

There are no AWOIS items originating from prior surveys applicable to this survey.

7. COMPARISON WITH CHART

Chart 16305, 7th edition, dated February 9, 1991; scale 1:100,000 (NAD 83)
Chart 16305, 8th edition, dated March 21, 1992; scale 1:100,000 (NAD 83)
Chart 16315, 7th edition, dated March 2, 1991; scale 1:100,000 (NAD 83)
Chart 16315, 8th edition, dated March 21, 1992; scale 1:100,000 (NAD 83)

a. Hydrography

The charted hydrography on the 7th edition of chart 16305 and 16315 originates from the prior surveys, mentioned in section 6 of this report. The 8th edition of these charts have been updated from the final field sheet for this survey.

In most cases, this survey showed shoaler soundings in the proximity of the charted soundings. Two exceptions, noted in section N of the hydrographer's report, did not indicate shoaler data within 1500 meters (the maximum case). However, in view of the intense development on this survey and the apparent inaccuracy of the charting source, survey H-10386 is adequate to supersede the charted hydrography within the common area.

b. AWOIS

There are two AWOIS items (50937 and 50938) located within the limits of survey H-10386. These items originate from a miscellaneous source. Refer to the hydrographer's report section N for disposition of these items.

c. Controlling Depths

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

d. Aids to Navigation

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

e. Geographic Names

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

f. Dangers to Navigation

The hydrographer submitted a 1:100,000 scale chartlet of the survey area to the Nautical Data Section, N//CG221, for submission to the DMAHTC and the Seventeenth Coast

Guard District. A copy of the accompanying letter is attached to this report. No additional dangers were discovered during office processing.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10386 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is an good hydrographic survey. No additional field work is recommended.

R. N. Mihailov

Robert N. Mihailov
Cartographer

APPROVAL SHEET
H-10386

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. 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.

Dennis Hill Date: 5-12-92

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: 8/14/92

Commander Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section

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Final Approval

Approved:

J. Austin Yeager Date: 4/6/93

J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

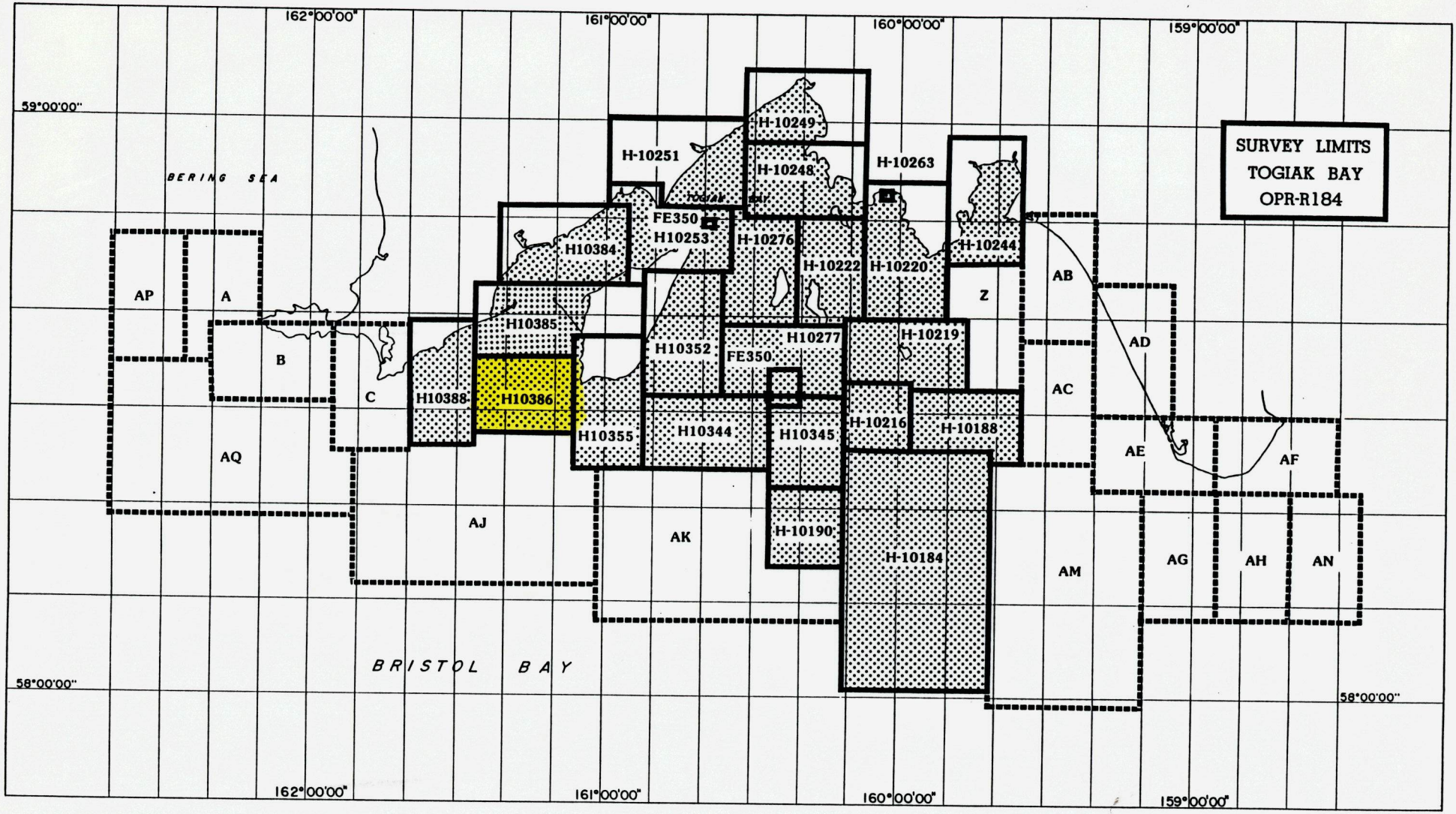

Diagram No.
8802-4

118

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10386

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
11305	10/28/91	[illegible]	~~Full~~ Part Before ~~After~~ Marine Center Approval Signed Via partial application
			Drawing No. of soundings from final field sheet
16305	8/11/92	R. Michaels	Full ~~Part~~ Before ~~After~~ Marine Center Approval Signed Via Full application of sndgs
			Drawing No. from S.S.
530	8-14-92	ALMACEN	Full ~~Part~~ Before After Marine Center Approval Signed Via Applied 3½ & 5 fms.
			Drawing No. sndgs. from SS thru 16305.
16011	10-29-92	ALMACEN	Full ~~Part~~ Before After Marine Center Approval Signed Via Full application of
			Drawing No. sndgs. from SS thru 16305.
16006	11/02/92	ALMACEN	Full ~~Part~~ Before After Marine Center Approval Signed Via Full application
			Drawing No. of sndgs. from SS thru 16011.
			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.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10386

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
11305	10/28/91	[illegible]	~~Full~~ Part Before ~~After~~ Marine Center Approval Signed Via partial application
			Drawing No. of soundings from final field sheet
16305	8/11/92	R. Mahaffey	Full ~~Part~~ Before After Marine Center Approval Signed Via ~~Full~~ application of sndgs
			Drawing No. from S.S.
530	8/14/92	Almacen	Full ~~Part Before~~ After Marine Center Approval Signed Via Applied 3½ fm
			Drawing No. fm sndgs from RS thru 16305
16305	10/2/92	Fannie B Powers	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. #8
530	10-4-93	R. Elliott	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 36 Re-exam, appl'd sndgs thru 16006 #27
			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.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED