

10384

Diagram No. 8802-3

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-20-2-91 ..
Registry No. ... H-10384 ..

LOCALITY

State Alaska ..
General Locality .. Togiak Bay ..
Sublocality Central Portion of ..
..... Hagemeister Strait ..

19 91

CHIEF OF PARTY
CAPT T.W. Richards

LIBRARY & ARCHIVES

DATE August 24, 1992 ..

10384

PRODUCTS
16305
16315
16011
16006
530
CP 9

HYDROGRAPHIC TITLE SHEET

H-10384

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-20-2-91

State Alaska

General locality Togiak Bay

Locality Central Portion of Hagemeister Strait

Scale 1:20,000 Date of survey June 08 - July 23, 1991

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

Vessel NOAA Ship RAINIER (2120), Launches (2123), (2124), (2125), (2126), (2127)

Chief of party CAPT Thomas W. Richards

Surveyed by LT Huddleston, LT Waddell, LTJG Nelson, LTJG Lemke, LTJG Weber, LTJG Ward, ENS Johnson, ENS Ramos, ENS Klay

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.A. Shipley Automated plot by PHS Xynetics Plotter

~~Products by~~ Evaluation by: C.R. Davies

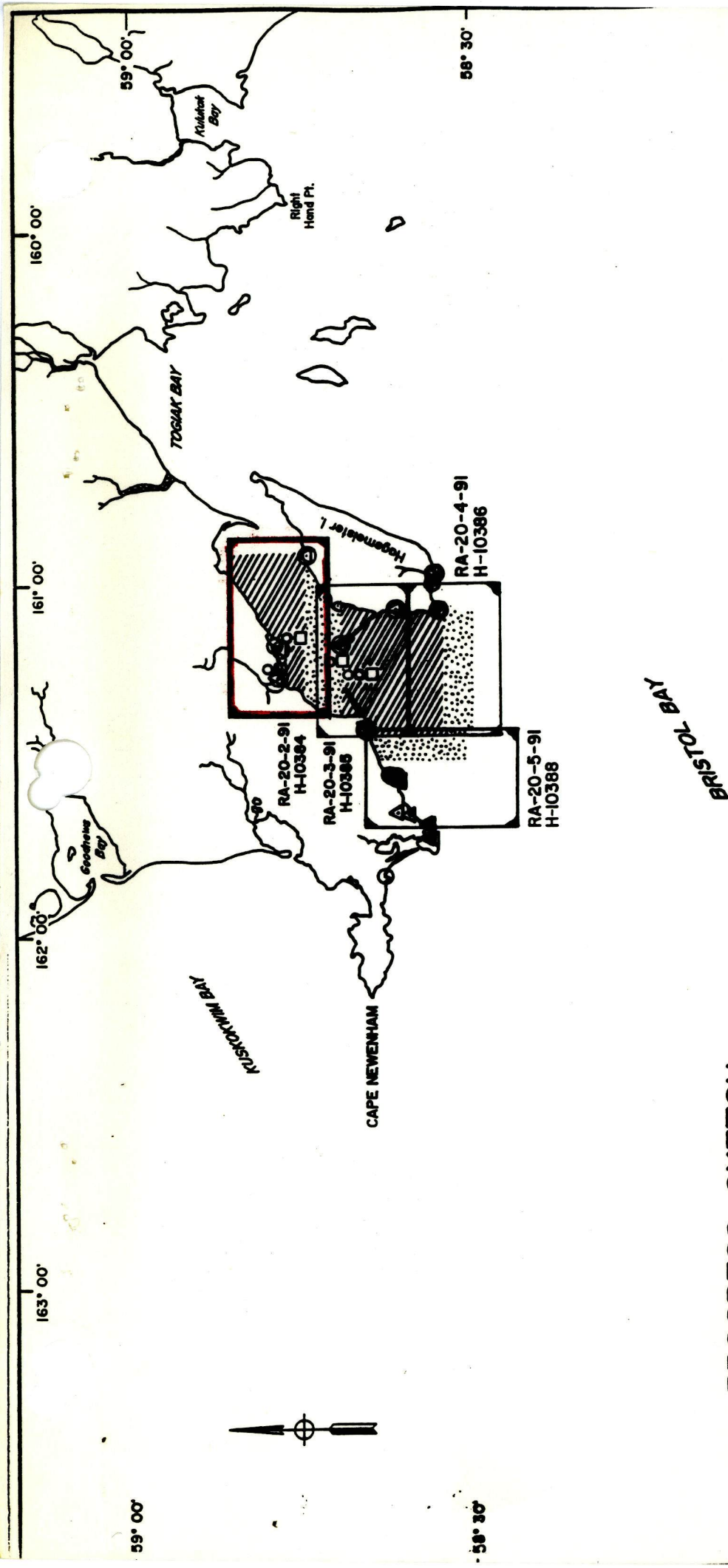
Soundings in ~~fathoms xxxxxx~~ meters at ~~MHW~~ MLLW and decimeters

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

SC JAN 29 1997

XWW 8/28/92

AWOIS + SURF - Rnd 8/92



PROGRESS SKETCH

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

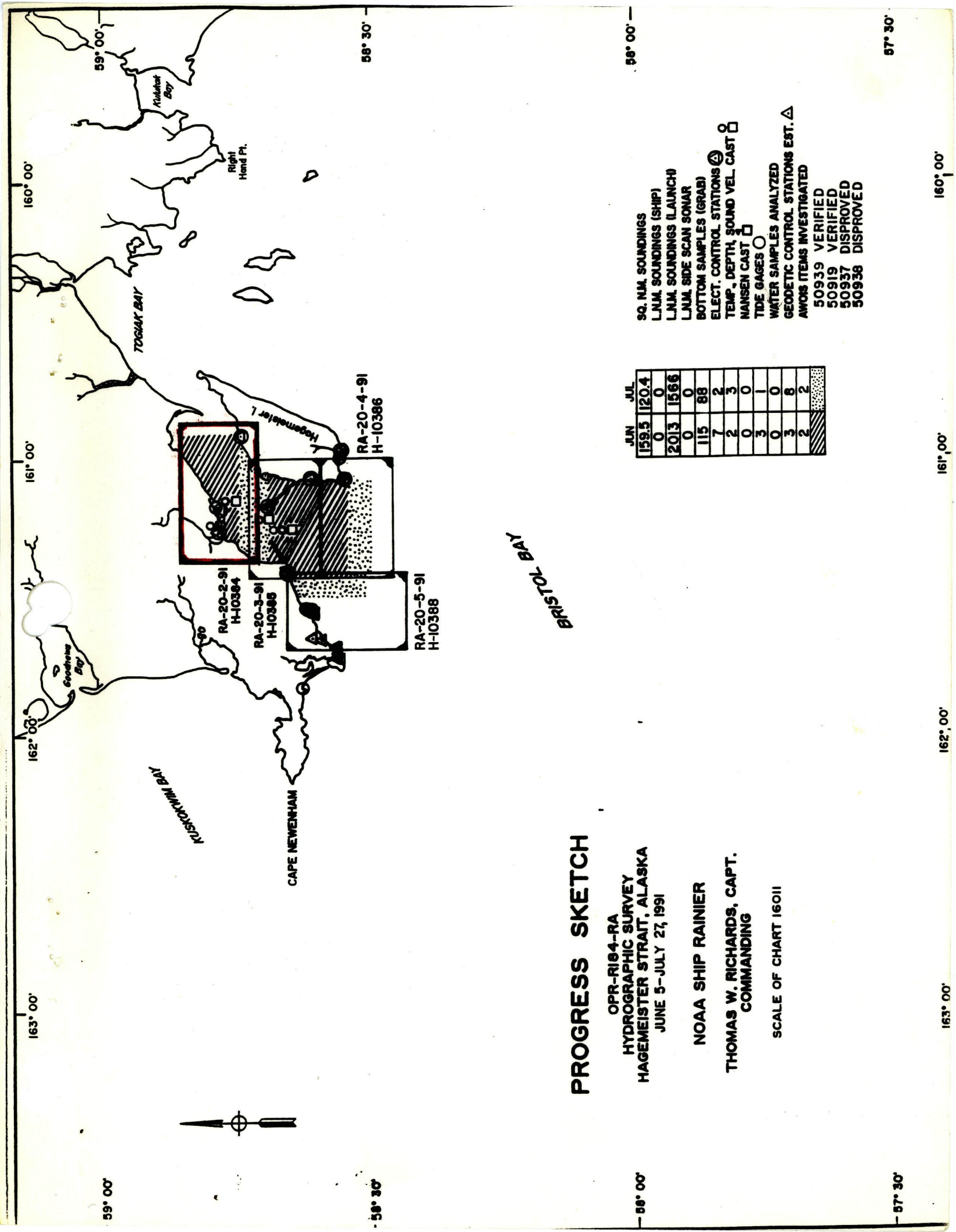
NOAA SHIP RAINIER

THOMAS W. RICHARDS, CAPT.
 COMMANDING

SCALE OF CHART 16011

	JUN	JUL
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
MANSEN CAST	0	0
TIDE GAGES	3	1
WATER SAMPLES ANALYZED	0	0
GEODETTIC CONTROL STATIONS EST.	3	8
AWOS ITEMS INVESTIGATED	2	2
50939	VERIFIED	
50919	VERIFIED	
50937	DISPROVED	
50938	DISPROVED	

BURISTOL BAY



Descriptive Report to Accompany Hydrographic Survey H-10384

Field Number RA-20-2-91

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 Togiak 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 F 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 Togiak Bay, Alaska, 26.5 NM southwest of Togiak, encompasses Hagemester Strait. The survey's limits are latitudes $58^{\circ}51'06''$ N to $58^{\circ}42'36''$ N, and longitude $160^{\circ}55'48''$ W to the western shore of Hagemester Strait. Data acquisition was conducted from June 08 through July 23, 1991 (DN 159 to 204).

C. SURVEY VESSELS ✓

Data were acquired by NOAA Ship RAINIER's four automated survey launches and a Boston Whaler as noted below:

<u>Vessel</u>	<u>EDP No</u>	<u>Operation</u>
RA-3	2123	Hydrography Shoreline Verification Velocity Cast
RA-4	2124	Hydrography Shoreline Verification Dive Operations
RA-5	2125	Hydrography Shoreline Verification Velocity Casts Bottom Samples

RA-6	2126	Hydrography
RA-7	2127	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:

<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 Sheet F(east)	5/30-6/10 6/19-7/09	6/11-6/18	7/10-Present
Processing System #2 Sheet F(central)	5/30-6/10 6/19-7/10	6/11-6/18	7/11-Present
Processing System #3 Sheet F(west)	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>
2123	A117N	160-198
2124	A103N	160-203

2125	B048N	159-201
2126	A114N	160-192

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. While running over steep or irregular areas, the echo sounders sometimes failed to track properly. Running at minimum speeds usually alleviated this problem, but marginal analog traces could not always be avoided.

Lead line soundings were conducted in areas of Osviak River that were too shoal for a survey launch. RA-7 was used along with range-azimuth positioning to conduct lead line hydrography.

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>
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:

<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>
1	1	16.9	159-164	58°45'02"N 161°09'39"W	159
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	4.2		58°47'00"N 161°14'00"W	192
4	5	29.6	199-207	58°38'53"N 161°14'52"W	205

Sound velocity cast number 1 was acquired with an SBE SEACAT Profiler, S/N 281, which was calibrated at the Northwest Regional Calibration Center (NRCC) in Bellevue, WA, on January 21, 1991. Sound velocity casts numbered 2, 3, 4, and 5 were acquired with an AML SVP, S/N 3042, which was calibrated at NRCC on March 11, 1991. Cast number 4 was performed in the Osviak River and because of the shallow water, required no velocity corrector application.

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. 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.

Pneumatic Depth Gage ✓

Not applicable.

Bar Check and Lead Lines ✓

Bar check and lead 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:

	<u>Zone</u>	<u>Time Correctors</u>	<u>Range Ratio</u>
1.	North of 58°41'00"N	+0 hr 10 min	x1.07

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 NOAA's FAIRWEATHER's 1988 site at the south end of Hagemeister 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 Estus Point station (946-5429) with predicted tides for Sheet F's geographic area using LOTUS 1-2-3 graphics. From this comparison of predicted versus real tide curves, a height corrector of -6.0 feet was determined to reduce the raw digital tide data to MLLW. This tide corrector was further refined to -5.5 feet by comparing, at the junction, the soundings of this survey with H-10253 (1:20,000; 1987). Additional sounding lines were run at this junction to ensure adequate comparisons with which to judge the tide corrector. Estimated real-time tides using a tide corrector of -5.5 feet were then applied throughout Sheet F.

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 the 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 2~~
this report.

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 either the Motorola Mini Ranger Falcon 484 microwave positioning system in multiple-range and manual range-azimuth modes. For some positioning within the Ozviak River, manual range-azimuth was conducted from a small boat using a Hewlett Packard electronic distance measuring instrument (EDMI) and retro prism in conjunction with a Wild T-2 theodolite.

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, data were usually rejected and the area rerun with different control. If maximum residuals exceed 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) or an EDM. 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 is 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 acquired with two LOP's were always bracketed by multiple LOP data acquired with ECR and maximum residuals within acceptable limits, which served as critical system checks. Critical system checks for range-azimuth hydrography were made by observing the range-azimuth M/R code in conjunction with two or more M/R codes. In addition, azimuth checks for range-azimuth hydrography were performed by sighting on another third-order control station. The check was considered satisfactory if the azimuth difference was less than 30 seconds of arc.

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, section 2*

Shoreline maps (T-sheets) used to transfer shoreline detail to the final sheets were TP-01179 and TP-01180 (July 1985-photography, 1:20,000-scale, NAD27). Topographic maps (1948), noted in section M, were used to augment the existing registered shoreline manuscripts, as they appear to have been flown at a lower stage of tide.

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 using estimated real-time tides, 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.

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 were found to be isolated boulders or high points within foul areas. 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. *All shoreline is drawn in black on the smooth sheet.*

* Filed with the hydrographic data

Detailed 1:20,000-scale paper plots showing all DPs, reference numbers, and notes relating to each feature are included with the sheets submitted with this survey. The HDAPS DP Program requires that cartographic codes be assigned to all DPs. These cartographic code symbols were not plotted because the majority of DPs describe features that are offset slightly from the DP. Position numbers for all DPs are plotted on the DP overlays. Heights are recorded in meters and are corrected to predicted MLLW.

Disprovals ✓

Not Applicable.

New Features ✓

The following are significant new features found during shoreline verification near lower low water. The following features are located in navigable areas and were not depicted on the T-sheet. All new features are as shown on the FFS. + SS.

Position No. 2969 describes a rock at $58^{\circ}47'38.20''N$, $161^{\circ}10'15.74''W$ which ⁵ ~~bare~~ ^{uncovers 1.0} ~~0.9~~ m. This item does not appear on the T-sheet or chart.

Position Nos. 4660 and 6445 describes rocks at $58^{\circ}47'31.48''N$, $161^{\circ}10'19.268''W$ and $58^{\circ}47'31.55''N$, $161^{\circ}10'18.90''W$, respectively. Position No. 4660 ⁷ ~~bare~~ ^{uncovers 0.3} m while Position No. 6445 is covered 0.4 m. Both items are believed to be part of the same feature. They do not appear on the T-sheet or chart. *Position 6445 was excessed for a rock uncovers 0.6m at MLLW.*

Recommendation: The hydrographer recommends that shoreline detail from this survey be used to supersede prior shoreline information. *Concur, except for two rocks transferred from the prior shoreline map listed in section 6 of the Euc Report.*

Unverified Features

Portions of shoreline upstream from the last sounding in Osviak River at $58^{\circ}46'55.36''N$, $161^{\circ}15'50.46''W$ were not verified due to depths too shoal for skiff navigation. These areas are noted in blue on the FFS. *Shoreline was transferred in block from shoreline map TP-00179.*

K. CROSSLINES ✓

A total of 44.1 nautical miles of crosslines were run perpendicular to mainscheme lines, representing 9.6% of the mainscheme hydrography; this percentage does not reflect additional splits or developments run during additional investigations. 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. *With the application of smooth tides crosslines soundings agree with mainscheme soundings.*

L. JUNCTIONS *See Euc Report, section 5*

This survey junctions with H-10253 (1:20,000; 1987) to the east and H-10385 (1:20,000; 1991) to the south. There are no other contemporary surveys junctioning with this survey. No irregularities were found when comparing soundings and depth contours. Agreement between overlapping soundings is excellent, with all junction soundings agreeing to within 2 meters. *With the application of smooth tides overlapping soundings agree.*

M. COMPARISON WITH PRIOR SURVEYS

See Enac Report, section 6

T-9240 (1:20,000; 1948)

T-9241 (1:20,000; 1948) - Not used for survey H-10384

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

T-9246 (1:20,000; 1948)

T-9247 (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.

BP-23186 (1930)

BP-125151 (1985)

BP-134098 (1985 - 1987)

BP-134099 (1985 - 1987)

The blueprints are not listed in the project instructions and are treated as miscellaneous sources.

Eleven charted soundings originated from the above four prior surveys. Their comparison with the present survey is discussed in section N.

N. COMPARISON WITH THE CHART

See Enac Report, section 7

The hydrographer compared all soundings from NOS chart 16305, 7th Edition, Feb. 9/91, 1:100,000 (NAD83) to this survey. See Enac Report, section 7a.

Comparison of Sounding Features ✓

Overall agreement between this survey and the chart is poor, with discrepancies as noted below. The most probable causes for the discrepancies are the questionable positioning methods used and the inaccurate depth recorders available at the time.

A charted depth of 3 fm 4 ft (6.7 m) at $58^{\circ}44.3'N$, $160^{\circ}57.5'W$ corresponds to a 6.4 m depth (Pos. No. 2363+3) from this survey at $58^{\circ}44'19.5''N$, $160^{\circ}57'31.2''W$. The depth from this survey was developed using 100 m line spacing.

A charted depth of 4 fm (7.3 m) at $58^{\circ}44.8'N$, $161^{\circ}01.8'W$ corresponds to a ^{7.9}~~8.0~~ m depth (Pos. No. 2623+0) from this survey at $58^{\circ}44'48.7''N$, $161^{\circ}01'45.5''W$. The depth from this survey was developed using 50 m line spacing.

A charted depth of 10 fm (18.3 m) at $58^{\circ}46.3'N$, $161^{\circ}03.2'W$ corresponds to a ⁷~~18.8~~ m depth (Pos. No. 6316+5) from this survey at $58^{\circ}46'17.9''N$, $161^{\circ}03'10.7''W$. The depth from this survey was developed using 50 m line spacing.

A charted depth of 0 fm 5 ft (1.5 m) at $58^{\circ}44.9'N$, $161^{\circ}03.9'W$ corresponds to a ⁵~~9.6~~ m depth (Pos. No. 8181+1) from this survey at $58^{\circ}44'54''N$, $161^{\circ}03'56.0''W$. The depth from this survey was developed using 100 m line spacing. ^{.99}

A charted depth of 1 fm 3 ft (2.7 m) at 58°45.0'N, 161°04.1'W corresponds to a 10.⁸ m depth (Pos. No. 8247+0) from this survey at 58°44'58.⁶"N, 161°04'08.2"²W. The depth from this survey was developed using 100 m line spacing.

A charted depth of 8 fm 1 ft (14.9 m) at 58°45.5'N, 161°04.1'W corresponds to a 19.⁸ m depth (Pos. No. 8245+9) from this survey at 58°45'30.4"²N, 161°04'07.7"¹W. The depth from this survey was developed using 100 m line spacing.

A charted depth of 11 fm (20.1 m) at 58°44.9'N, 161°06.8'W corresponds to a 22.⁶ m depth (Pos. No. 6434+6) from this survey at 58°44'54.2"²N, 161°06'47.1"³W. The depth from this survey was developed using 50 m line spacing.

A charted depth of 11 fm (20.1 m) at 58°43.9'N, 161°08.2'W corresponds to a 3.⁷ m depth (Pos. No. 3345+6) from this survey at 58°43'53.1"²N, 161°08'15.0"⁶W. The depth from this survey was developed using 50 m line spacing.

A charted depth of 8 fm 3 ft (15.5 m) at 58°43.9'N, 161°08.7'W corresponds to a 19.⁷ m depth (Pos. No. 3363+5) from this survey at 58°43'54.0"³N, 161°08'46.1"⁶W. The depth from this survey was developed using 50 m line spacing.

A charted depth of 9 fm 3 ft (17.4 m) at 58°43.2'N, 161°11.5'W corresponds to a 19.⁷ m depth (Pos. No. 3239+7) from this survey at 58°43'12.5"²N, 161°11'34.0"³W. The depth from this survey was developed using 50 m line spacing.

A charted depth of 9 fm (16.4 m) at 58°43.3'N, 161°12.3'W corresponds to a 21.⁷ m depth (Pos. No. 3222+4) from this survey at 58°43'17.8"²N, 161°12'19.0"⁴W. The depth from this survey was developed using 50 m line spacing.

A charted depth of 5 fm (9.1 m) at 58°44.5'N, 161°14.4'W corresponds to a 9.⁴ m depth (Pos. No. 3147+7) from this survey at 58°44'29.2"²N, 161°14'30.1"³W. 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 soundings on the chart. *Correct*

Comparison of Non-Sounding Features ✓

The Osviak River was sounded from its mouth upstream to 58°46'55.4"N, 161°15'50.5"W. A survey launch was used when depths permitted. In shoaler depths, lead line soundings were taken using RA-7. Its channel was found to run approximately midstream. The average depth throughout the river survey was 0.4 m. The river up to the last noted sounding is safely navigable throughout by survey launch or small fishing vessel when the tide is 1.6 m or greater. Soundings were not taken upstream from the above noted position due to shoal depths.

AWOIS Items ✓

The following two AWOIS items were listed as shoals. The areas were thoroughly investigated with closely spaced sounding lines with the following results:

AWOIS No. 50919: A 2 to 3 fm shoal at 58°47'09.19"N, 161°00'07.95"W (NAD 83). RAINIER conducted 200 m line spacing in areas where depths exceeded 10 m and decreased the line spacing to 100 m in areas where depths were less than 10 m. Lenticular shoals of varying

depths were noted throughout the development area. These shoals are believed to change shape and depth with currents in the strait. Shoaler depths were found predominately in the southern strait near Hagemeister Island while deeper depths were found in the northern strait. As suggested in the AWOIS survey requirements, this item is believed to be the same as AWOIS Item 50939.

Recommendation: The hydrographer recommends that charted note "Mid-strait shoaling to 3 fathoms (Rep 1971)" be removed from the chart and that least depths from this survey be used to update the chart. *Concur*

AWOIS No. 50939: A 0.9 fm shoal at 58°44'57.18"N, 161°04'01.95"W (NAD 83). RAINIER developed the survey area with 100 m line spacing, meeting AWOIS survey requirements. This technique revealed a least depth of 1.3⁴m (Pos. No. 6330+0) within the search area at 58°44'14.96"N, 161°04'52.51"W. Further development of the 5 m depth curve was conducted within and beyond the AWOIS' limits to delineate its extent. The 2 m depth curve was found to be lenticularly shaped and oriented NE to SW. Least depths of 1.1 m were sounded close to and included 58°44'08.63"N, 161°07'09.79"W (Pos. No. 8532+1). When comparing the initial mainscheme of this lenticular feature from DN 173 with its 50 m splits run on DN 181, the 2 m shoal's western most tip was found to have migrated. It is the hydrographer's opinion that this area's depth curves are variable with local currents.

Recommendation: The hydrographer recommends that AWOIS listing No. 50939 be updated, and soundings acquired from this survey be used to update the chart. *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 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. A copy was also sent to N/CG245. The recommendation was made that the chartlet be included in the Local Notice to Mariners as direct chart overlays for preliminary charts 16305 and 16315.

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. *Except where noted in the Error Report, section 6*

P. AIDS TO NAVIGATION ✓

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

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

Q. STATISTICS ✓

<u>Vessel:</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>2126</u>	<u>2127</u>	<u>Total</u>
# of Pos	1852	661	415	619	17	3564
NM Hydro	454.8	221.2	116.3	251.4	0	1043.7
NM ² Hydrography		53.19		Velocity Casts		4
Detached Positions		111		Tide Stations		2
Reference Numbers		127		Current/Magnetic Stations		0
Bottom Samples		48				

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.

Current observations were made by RAINIER at anchor in Hagemeister Strait during periods DN 159-161 and DN 172-173. Data were collected using a chip log, as found on page 11 of American Practical Navigator, and computed using the formula on page 731 of the same text. Graphs showing current direction and current speed/estimated real-time tides versus time of day were constructed. These results can be found in Appendix V. Ebbing occurs at approximately 220°T and 1.0 knot while flooding at 060°T and 0.3 knots. These directions basically conform to the local shoreline. Visual and computed observations also show that the current continues to flood even though the tide is not rising. The hydrographer believes that the currents shifting the bottom contours are the reason for discrepancies noted in section N. *Forwarded to N/OMA 132*

A 1:5000 expansion plot of Osviak River was made for the FFS to portray the river's navigability for small craft at higher stages of tide. Selected deeper depths were inserted to best portray the midchannel axis. *Submitted with survey records. See smooth sheet for portrayal of channel.*

Four range-azimuth soundings (positions 8644 to 8647) within the Osviak River contained consistent range-azimuth values within the data, but plotted erratically. All shipboard processing attempts to correct this plotting problem were unsuccessful. Since the recorded data appears correct, the hydrographer chose to retain the data as not to be smooth plotted. Further office processing may resolve the plotting problem. *Except for positions 8644 and 8647, all positions and in between are in excess. Positions 8644 and 8647 were accepted and are shown on the smooth sheet.* Fix numbers 8349 to 8359 were plotted using sound velocity and tide tables rather than with program REAPPLY. Program REAPPLY was found to have incorrectly applied a -0.7 m tide corrector for these fixes. *The above positions have been corrected with the appropriate smooth correctors and have been plotted on this survey.*

S. RECOMMENDATIONS ✓

A note should be placed on the chart warning the mariner of potential migrating shoals within the strait. *Concur. Recommendations forwarded to N/CG22 for entry into the Chart Request Data Base.*

A 1:20,000 scale chart inset of Osviak River should appear on the next chart edition. The hydrographer has noted that the Osviak River is being navigated by small craft at various times of the year, especially during the spring herring season.

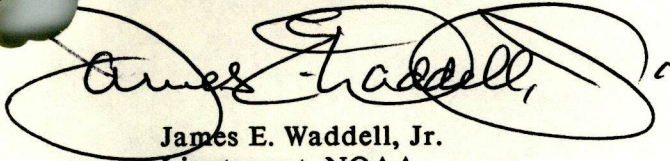
Recommendations forwarded to N/CG22 for entry into the Chart Request DATA Base.

T. REFERRAL TO REPORTS

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

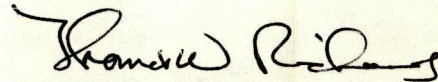
<u>Title</u>	<u>Date Sent</u> to <u>N/CG245</u>
Summer 1991 Horizontal Control Report for OPR-R184-RA	September 1991
Summer 1991 Electronic Control Data Package for OPR-R184-RA	September 1991
Summer 1991 Corrections to Echo Soundings Data Package for OPR-R184-RA	September 1991
Summer 1991 Coast Pilot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

Respectfully Submitted,



James E. Waddell, Jr.
Lieutenant, NOAA

Approved and Forwarded,



Thomas W. Richards
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 22 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 581604
111	F	058:32:46.187	161:04:32.384	11	250	0.0	0.0	A	06/26/91	STA #6	TIP 1990
211	Z	058:32:46.187	161:04:32.384	9	250	0.0	0.0	06/26/91	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	MOBY 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	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 581611
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 581611
210	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	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: *Thomas W. Richards*
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 with this report.

(BP. 144142)

**ADVANCE
INFORMATION**



APPROVAL SHEET

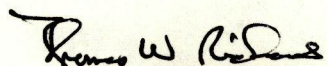
for

H-10384

RA-20-2-91

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-10384

LOCALITY: Central Portion of Hagemeister Strait, Bristol Bay,
Alaska

TIME PERIOD: June 8 - July 22, 1991

TIDE STATIONS USED: 946-5249 Estus Point, Hagemeister Strait,
Alaska
Lat. $58^{\circ} 47.3'N$ Lon. $161^{\circ} 10.8'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 7.2 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 8.2 ft.

REMARKS: RECOMMENDED ZONING

Times and heights are direct on Estus Point (946-5249).

Note: Times are tabulated in Greenwich Mean Time.

William M. Gibson
for CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

Name on Survey

A ON CHART NO. 16305
5th Ed.
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

Name on Survey	A	B	C	D	E	F	G	H	K
ALASKA (TITLE)									1
ESTUS PT	X		X						2
HAGEMEISTER ISLAND	X		X						3
HAGEMEISTER STRAIT	X		X						4
OSVIAK	X		X						5
OSVIAK RIVER	X		X						6
TOGIAK BAY (title)									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
					Approved:				17
					<i>C. Haberman</i>				18
					Chief Geographer - <i>N/C&2x5</i>				19
									20
					APR 30 1992				21
									22
									23
									24
									25

HYDROGRAPHIC SURVEY STATISTICS

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		7
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		11
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES	2				
CAHIERS					
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			3564
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	93		93
VERIFICATION OF SOUNDINGS	185		185
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	139		139
COMPARISON WITH PRIOR SURVEYS AND CHARTS		7	7
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		12	12
GEOGRAPHIC NAMES			
OTHER* Digitizing			
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	417	19

Pre-processing Examination by M. Brown	Beginning Date	5-9-91	Ending Date	9-25-91
Verification of Field Data by E. Domingo, R. Shipley	Time (Hours)	417	Ending Date	6-3-92
Verification Check by S. Otsubo	Time (Hours)	34	Ending Date	6-5-92
Evaluation and Analysis by C.R. Davies	Time (Hours)	19	Ending Date	7-9-92
Inspection by D. Hill	Time (Hours)	2	Ending Date	8-11-92

EVALUATION REPORT

H-10384

1. INTRODUCTION

Survey H-10384 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 occurred in Alaska and covers an area in Togiak Bay, centered in Hagemeister Strait between the mainland and Hagemeister Island. The surveyed area extends from latitude 58/42/42N to latitude 58/50/40N and from longitude 160/56/27W to longitude 161/22/00W. The shoreline along the mainland and Hagemeister Island is characterized by rocks, rock ledges and a few submerged rocks near shore. The bottom consists of mud, sand and pebbles. Depths range from zero to 23.2 meters.

Predicted tides for South End, Hagemeister Island, Alaska, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Estus Point, Hagemeister Strait, Alaska, gage 946-5249, 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 1990 and 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: -2.812 seconds (-87.019 meters)
Longitude: 7.961 seconds (127.932 meters)

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

The quality of several positions exceeds limits in terms of error circle radius and residual or have angles of intersection less than 30 degrees or more than 150 degrees. A review of the data, however, indicates that none of these fixes are used to position dangers to navigation. The features or soundings located by these fixes are consistent with surroundings. These fixes are considered acceptable.

The following shoreline maps apply to this survey.

	<u>Photo Date</u>	<u>Class</u>
TP-001179	July 1985	III
TP-001180	July 1985	III

The following features were transferred from the final field sheet without supporting positional information.

<u>Feature</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
rock	58/47/38.2	161/10/15.7
rock	58/47/31.5	161/10/19.3

3. HYDROGRAPHY

Except as noted below and elsewhere in this report, 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.

Because of the rocky shoreline and wave action, the zero meter depth curve was not always adequately drawn and developed.

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 or features. (FPM, Figure 6-1)

5. JUNCTIONS

Survey H-10384 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10253	1987	20000	East
H-10385	1991	20000	South

The junction with survey H-10385 is complete. The junction with survey H-10253 was not formally completed since this survey was previously processed and forwarded for charting. Soundings have been transferred from both surveys to better portray the bottom in the common areas.

6. COMPARISON WITH PRIOR SURVEYS

There are no prior hydrographic surveys common to the area covered by survey H-10384.

T-9240(1948) 1:20,000
T-9245(1948) 1:20,000
T-9246(1948) 1:20,000
T-9247(1948) 1:20,000

Two rocks originating from survey T-9240 and T-9246 were not found or disproven during this survey. These features, listed below, have been brought forward onto this survey.

<u>Feature</u>	<u>Latitude(N)</u>	<u>Longitude(W) NAD83</u>
rock awash	58/44/14	161/19/54
rock awash	58/47/57	161/08/16

With the transfer of the features noted above, survey H-10384 is adequate to supersede these prior shoreline maps as a source for charted hydrography within the common area.

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

7. COMPARISON WITH CHART

Chart 16305, 7th edition, dated February 9, 1991; scale 1:100,000
Chart 16305, 8th edition, dated March 21, 1992; scale 1:100,000

a. Hydrography

Charted hydrography on the 7th edition of chart 16306 originates with miscellaneous sources.

Charted hydrography on the 8th edition of chart 16305 originates from miscellaneous sources and the final field sheet of survey H-10384 and requires no further discussion.

Soundings from miscellaneous sources are noted by the hydrographer in section N as being shoaler than the data found on this survey. However, shoaler data is found on this survey in close proximity of the charted soundings. Considering the accuracy of the charting source, survey H-10384 is adequate to supersede charted hydrography within the common area.

b. AWOIS

All AWOIS items originate with miscellaneous sources. Refer to the hydrographer's report for discussion and disposition of these features.

c. Controlling Depths

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

d. Aids to Navigation

There are no floating or fixed aids to navigation within the survey limits.

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

The hydrographer submitted a chartlet of the surveyed area as a danger to navigation to the USCG. A copy of the transmitting letter is attached.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10384 adequately complies with the Project Instructions except where noted in this report.

9. ADDITIONAL FIELD WORK

This is an adequate hydrographic survey. Additional field work is recommended to resolve items mentioned in section 6 of this report.



Charles R. Davies
Cartographer

APPROVAL SHEET
H-10384

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.

Dennis J. Hill Date: 8-11-92
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: 8/13/92
Commander Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section

Final Approval

Approved:

J. Austin Yeager Date: 4/6/93
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

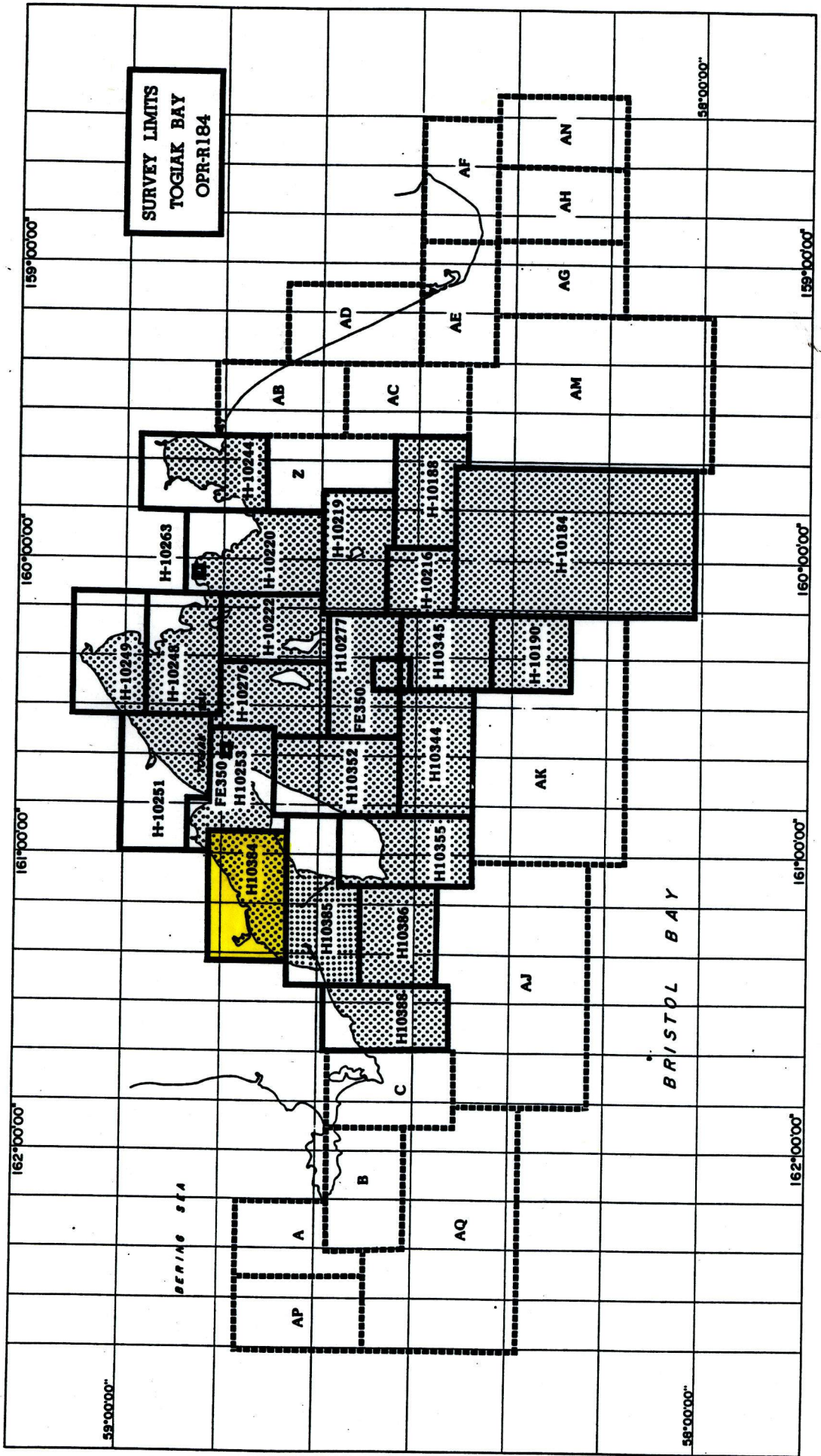


Diagram No. 8802-3

