

# 10355

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-10-6-90  
Registry No. .... H-10355

### LOCALITY

State ..... Alaska  
General Locality ..... Bristol Bay  
Sublocality ..... South of Hagemeister Island

19 90

CHIEF OF PARTY  
CAPT J.C. Albright

### LIBRARY & ARCHIVES

DATE ..... October 7, 1991

# 10355

CHTS

16305

16315

16011

16006

**HYDROGRAPHIC TITLE SHEET**

H-10355

**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 20-6-90

State Alaska

General locality Bristol Bay

Locality South of Hagemeister Island

Scale 1:20,000 Date of survey August 6 - August 30, 1990

Instructions dated April 30, 1990 Project No. OPR-R184-RA

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

Chief of party CAPT J.C. Albright

Surveyed by LTJG Glang, LTJG Haines, LTJG Simmons, ENS Schoonover, ENS Muench, ENS Weber, ENS Ward

Soundings taken by ~~echo sounder, hand held, 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

Evaluation by: C.R. Davies

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

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

*SA-28-97  
XNW 10/29/91*

*AWOIS + SURF RWD 10/91*



# Descriptive Report to Accompany Hydrographic Survey H-10355

Field Number RA-20-6-90

Scale 1:20,000

August 1990

NOAA Ship RAINIER

Chief of Party: Captain John C. Albright

## A. PROJECT ✓

This basic hydrographic survey was completed in Bristol Bay, Alaska, as specified by Project Instructions OPR-R184-RA dated April 30, 1990, and Change No. 1 dated August 21, 1990. This survey is designated Sheet N on the revised layout dated December 12, 1989.

This survey is one in a series that will provide modern hydrographic data for updating existing nautical charts, new preliminary charts, and for planned larger scale coverage of Bristol Bay from Cape Newenham to Cape Constantine. It 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.

## B. AREA SURVEYED ✓

The survey is located in Bristol Bay, Alaska, 36 NM southwest of Togiak, and encompasses the area south of Hagemeister Island. The eastern and western limits are longitudes  $160^{\circ}52'00''$ W and  $161^{\circ}04'30''$ W, respectively. The survey is bounded to the north by Hagemeister Island. The southern limit is latitude  $58^{\circ}24'00''$ N. Data acquisition was conducted from August 06, 1990, to August 30, 1990 (DN 218 to 242).

## C. SURVEY VESSELS ✓

All data were acquired by NOAA Ship RAINIER and the four automated survey launches shown below:

<u>Vessel</u>	<u>EDP No.</u>	<u>Operation</u>
RAINIER	2120	AML/Nansen Casts
RA-3	2123	Hydrography Shoreline Verification
RA-4	2124	Hydrography Shoreline Verification Bottom Samples
RA-5	2125	Bottom Samples AML Casts

RA-6

2126

Hydrography  
Shoreline Verification  
Bottom Samples

#### 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>Version</u>	<u>Date Installed</u>
SURVEY, w/ RAINIER mods	4.32	6-09-90
	4.33	8-05-90
POSTSUR, w/ RAINIER mods	4.14	6-01-90
POSTSUR, w/ S&S mod	4.14	7-23-90
FILESYS	1.55	6-01-90
ABST, w/ RAINIER mods	3.05	6-01-90
PLOTALL, w/ RAINIER mods	1.60	6-01-90
	1.69	7-23-90
POINT	1.10	3-09-90
BACKUP	1.02	3-09-90
DIAGNOSTIC	2.15	3-09-90
INVERSE	1.10	7-03-90
INSTALL	1.20	3-09-90
CONPUTE	2.02	3-09-90
CONSTAT, w/ RAINIER mods	2.05	7-03-90
CONPLOT, w/ RAINIER mods	1.02	7-03-90
AUTOST (BIGAUTOST)	2.00	3-09-90
BASELINE	1.01	3-09-90

Velocity corrections were determined using:

<u>Program Name</u>	<u>Version</u>	<u>Version Date</u>
VELOCITY	1.11A	7-05-90

The HDAPS SURVEY and PLOTALL programs are modified to print the tenth-meter fraction of each sounding as superscript. The position of each sounding is at the center of the integer character string.

The HDAPS SURVEY (version 4.33) and POSTSUR program (version 4.14) was modified to apply settlement and squat (S&S) during both data acquisition and processing.

The HDAPS CONSTAT and CONPLOT programs are modified to allow up to 25-character descriptions to be entered in the "Remarks" field of a Contact Table. This is necessary for plotting legible bottom sample descriptions.

On DN 241, range/azimuth data (position nos. 2673-2782) were acquired by Vesno. 2123 with Plotter Sheet Table 10 selected incorrectly. The data should have been collected with Plotter Sheet Table 11 selected. The data were correctly plotted by RAINIER by selecting Plotter Sheet 11 in the HDAPS Post Survey program with Plotter Sheet Table 10 selected as the source. RAINIER will forward an additional 32 track tape for Plotter Sheet Table 10 containing this data only. This data was received for office processing.

**E. SONAR EQUIPMENT** ✓

Not applicable.

**F. SOUNDING EQUIPMENT** ✓

RAINIER and 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	218-242
2124	A119N B046N	218 220-242
2126	A119N A114N	220-225 226-239

The echo sounders were continuously monitored during data acquisition. All sounding data were scanned at least two times, not only to ensure all significant peaks were inserted, but also 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, and predicted tides. 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 1990 Corrections to Echo Soundings Data Package for OPR-R184-RA.

**Sound Velocity** ✓

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

<u>Cast No.</u>	<u>Deepest Depth (m)</u>	<u>DN</u>	<u>Geographic Position</u>
3	24.1	198	58°35'24"N, 160°23'13"W
4*	31.1	215	58°35'24"N, 160°23'06"W
5	26.2	226	58°35'24"N, 160°24'00"W
N1**	20.0	226	58°35'24"N, 160°24'00"W
6*	23.5	239	58°45'36"N, 160°25'12"W

\* Data from Cast No. 4 and Cast No. 6 were not applied to echosoundings as results were almost identical to Cast No. 3 and Cast No. 5 respectively.

\*\* Cast No. N1 was performed on the same day as Cast No. 5 to ensure that the AML SVP Profiler was operating properly. The two casts showed excellent agreement; therefore, data from Cast No. N1 was not applied to echosoundings.

Sound velocity correctors were acquired with an AML SVP Profiler, S/N 3042, which was calibrated at the Northwest Regional Calibration Center (NRCC) in Bellevue, WA, on March 27, 1990.

Thermometers used for the Nansen cast were calibrated between April 26, 1989, and January 25, 1990, at NRCC. The Beckman Salinometer, S/N 59265, was calibrated at NRCC on March 9, 1990.

The surface water temperature, and the corresponding sound velocity, increased over time during this project; therefore, sound velocity correctors were applied temporally to this survey. The casts used for each velocity table, and the days to which each velocity table is applied, are shown below:

<u>Velocity Table No.</u>	<u>Cast No.</u>	<u>Applicable DN</u>	<u>Vessel Acquiring Data</u>
5	3	191-219	All Launches
6	5	220-242	All Launches

Velocity correctors were computed using the PC program VELOCITY in accordance with Hydrographic Survey Guideline 69 (HSG 69). Printouts of velocity tables used in the HDAPS Post Survey program are included with the separates accompanying the survey data. ✕

#### Static Draft ✓

For all launches, the distance from the transducer face to the gunwhale was measured with a large metal square. Static draft measurements were then determined by dropping a leadline from the gunwhale to the water and subtracting this distance from the distance measured with the square. The measurements from the gunwhale to the waterline were conducted with the fuel tanks averaging 3/4 full and three people aboard. A transducer depth of 0.6 meter was determined for all launches on March 20, 1990. This transducer depth agrees with the launches' historical records.

#### Settlement and Squat ✓

Settlement and squat correctors were determined for two of the automated survey launches in Shilshole Bay, WA, on February 23, 1990 (Vesno 2124 and 2126). Vesno 2123 was tested on April 12, 1990 near Pt. Adolphus in Icy Strait, AK.

\* Filed with the hydrographic data.

All tests were conducted over a hard bottom in depths well exceeding seven 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.

The following is a summary of all Offset Tables used on this survey and their applicable period:

<u>Vessel No.</u>	<u>Offset Table No.</u>	<u>Period used online (DN)</u>
2123	3	218-242
2124	4	218-242
2126	6	220-242

Copies of all offset tables are included with the separates supplementing this report. \* Offset tables were not used during office processing. Draft and settlement and squat correctors were included in the TRA tables.

**Heave** ✓

Corrections for heave were applied while scanning echograms. The scanning technique used in comparing the analog trace with the digital record eliminated significant fluctuations resulting from sea action.

Some data on this survey was 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. The decision was made to retain this data because of deteriorating weather and sea conditions late in the season. The hydrographer concluded that because the prevailing bottom character was established by hydrography conducted in better sea conditions, data quality would not be seriously impaired by conducting sounding operations in these conditions. The hydrographer is confident that the scanning technique employed resulted in high-quality data.

The scanning technique employed in comparing analog traces with the digital record was to take readings along a line representing the mean depth. This line was an average position in the jagged sawtooth profile of choppy seas, or the average of the undulations caused by a following sea. In some cases a fine line was drawn on the echogram to assist in check-scanning. This is an acceptable and standard practice in accordance with HSG 31.

**Bar Check Lines** ✓

Bar check lines were calibrated by RAINIER personnel during January 1990 at PMC. Calibration forms are included in the Summer 1990 Corrections to Echo Soundings Data Package for OPR-R184-RA.

**Tide Correctors** ✓

Daily predictions for the Hagemester Island, Alaska, reference tide station (946-5089) were applied directly for both heights and times to all data acquired during this survey. HDAPS listings of the data used in generating tide corrector tables are included in Appendix V of this report. \*

\* Filed with the hydrographic data



Tide gages were installed and maintained by RAINIER personnel at stations on the southeast side of Hagemeister Island (946-5089) and on the west side of High Island (946-5173). The Hagemeister Island station ceased operation and was damaged irreparably by a storm on August 17 (DN 229). RAINIER received approval from N/CG241 via radio message R231605Z AUG 90 (included in Appendix VI)\*\* to acquire data at selected time periods without the Hagemeister Island Tide Station in operation. \*\* Attached to this report. Tides from High Island gage were used for the period of hydrography after August 17. See Tide Note which is attached.

The field tide records and the Field Tide Notes for these stations 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 requests for approved tides are included in Appendix V. \*

## H. CONTROL STATIONS ✓

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

Horizontal control stations are listed in Appendix III of this report. *Attached to this report*

Positions for all existing stations are from the NGS data base and prior surveys conducted in 1985 and 1987. Several geographic positions are NAD83 adjusted, and were obtained from N/CG2333. Existing stations were recovered in accordance with FPM 5.2.4. New stations were positioned via traverse methods to meet third-order class I standards. Further information can be found in the Summer 1990 Horizontal Control Report for OPR-R184-RA.

## I. HYDROGRAPHIC POSITION CONTROL ✓

Soundings were located using DM-54 Automatic Ranging Grid Overlay (ARGO) medium-range positioning system, and Motorola Mini-Ranger Falcon 484 microwave short-range positioning system in multiple-range modes. Falcon range/azimuth techniques were employed for most inshore hydrography and detached positions (DPs). Most bottom samples on this survey were located with a Furuno LC-90 Mark-II Loran positioning system.

### Positioning Equipment ✓

The following tables summarize the Falcon mobile console/RT pairs and shore transponders used during this survey:

#### Mobile Equipment

<u>EDP No.</u>	<u>Vessel</u>	<u>Console/RT</u>	<u>DN</u>
2123	RA-3	E0148/F3413	218-242
2124	RA-4	D0051/D2395	220-242
2126	RA-6	F0245/F3414	218-242

\* Fitted with the hydrographic data

### Shore Equipment

Transponder Serial No.	Code	Transponder Serial No.	Code
911059	1	B1413	5
B1106	2	C1883	B/11*
E2713	3	G3500	C/12*
F3248	4	G3501	F/15*

\* hexadecimal/numerical designations

Serial numbers of theodolites used for range/azimuth positioning are recorded in the survey data. Serial numbers of the ARGO range processing units and control display units are recorded in the survey data. A complete list of the serial numbers of the electronic equipment used during the project is included in the Summer 1990 Electronic Control Data Package.

#### **Baseline Calibrations (for Mini-Ranger equipment only) ✓**

All baseline calibrations were conducted over land and water in accordance with FPM 3.1.3.2. On May 20, 1990 (DN 140), calibrations were conducted in Bartlett Cove, Glacier Bay, Alaska over a measured distance of 1678.4m. On July 10, 1990 (DN 191), calibrations occurred on Hagemeister Island, Bristol Bay, Alaska over a measured distance of 1224.3m. Detailed information, calibration data, and a description of the baselines is included in the Summer 1990 Electronic Control Data Package for OPR-R184-RA.

The final field sheets were plotted with correctors determined from baseline calibrations. System check results confirmed the calibration data applied to the raw positioning data was adequate for the scale of this survey.

#### **System Check Procedures ✓**

System checks were conducted prior to data collection, and any time ECR and maximum residual values exceeded allowable limits.

Falcon critical system checks were conducted in accordance with FPM 3.1.3.3 when MiniRangers were operated separately from ARGO. Printouts of HDAPS screen graphics displaying multiple lines of position (LOPs) confirmed that the error circle radius and maximum residual did not exceed allowable limits. Falcon units used for range/azimuth position control were included in daily HDAPS critical systems checks which served to confirm the applicable baseline calibration correctors.

The ARGO positioning system was calibrated with the Falcon positioning system using the Secondary by Primary System Calibration function in the HDAPS Survey program. With this method, the Falcon was designated as the primary positioning system and the ARGO was designated as the secondary positioning system. The calibrated position fix was computed by using three Falcon lines of position (LOPs). The program computes an inverse distance from the Falcon position fix to each secondary ARGO shore station. Partial lane correctors are shown as "residuals" on the secondary positioning screen. When the error circle radius (ECR) and maximum residual values fell within the allowable limits stated in FPM 3.1.3.3, the ARGO partial lane correctors were minimized to less than  $\pm 0.05$  units. Hard

copies of both calibrated system checks were produced using the Dump Alpha function and can be found in the survey data. Residuals for the Falcon system were displayed in meters and residuals for the ARGO system were displayed in lanes.

### Problems and Unusual Position Configurations ✓

Four positioning configurations were used for collecting sounding data: ARGO, Falcon, a hybrid of ARGO and Falcon, and Falcon range/azimuth. Simultaneous use of ARGO and Falcon systems worked well for this survey, especially along the eastern shore of Hagemeister Island. An LOP from the ARGO station at CROOKED AZ ECC improved the positioning geometry over most of this survey. Range/azimuth position control was used for inshore hydrography and DPs along the southern shore of Hagemeister Island where multi-range control was not available, and range/range intersections were weak.

In the area of overlap between multi-range and range/azimuth controlled hydrography, soundings from both sources have been retained, and the shoaler soundings, corrected for predicted MLLW, are depicted on the final field sheet where overlapping soundings have been deselected to improve legibility. The application of smooth tides during office processing may require the selection of different soundings in some cases. *Excess program during office processing selected shallowest depths on the smooth sheet.*

On occasion, while using ARGO, maximum residuals would gradually increase over a period of minutes, indicating a jump in lanes. At these times, data acquisition was halted and a recalibration conducted. Probable causes of lane jumps were fog, rain, skywaves, or ground changes to the antenna load.

On several occasions while using the hybrid position configuration to collect data, Mini-Ranger signal strengths would fall below minimum values causing HDAPS to deselect those stations. When this occurred, a small amount of data was collected with only two ARGO LOPs or with one ARGO and one Mini-Ranger LOP. Maximum residuals and ECRs were observed on-line and stayed within allowable limits. Data were considered acceptable. *Concur*

A small amount of data was collected with maximum residuals or ECRs above the limits stated in FPM 3.1.3.1. The soundings were flagged while on-line and later edited during processing.

A lack of ARGO equipment made it necessary to position most of the bottom samples on this survey using a Furuno LC-90 Mark-II Loran positioning system. Because this system uses the WGS 72 datum, for which no shift to NAD83 was available, RAINIER determined an average offset distance and azimuth from the Furuno positions to ARGO and MiniRanger positions on this survey. The records and calculations for this offset are included with the bottom sample records in the separates accompanying the survey data.\* This empirically determined shift to NAD83 has been applied to all bottom samples positioned by Furuno Loran on this survey. *All bottom samples were accepted and are shown on the smooth sheet. The average shift between Loran-C and HDAPS was 579.9536 meters.*

\* Filed with the hydrographic data

### Antenna Offset Distances ✓

Antenna offset and layback correctors were determined and applied to the raw data. Copies of the Offset Tables are in the separates included with the survey data.

### J. SHORELINE *See EVAL Report, section 2*

Two shoreline maps (T-sheets) were used to transfer shoreline detail to the final field sheets. Hagemester Island shoreline originates from TP-00933 (1:20,000; NAD27), and TP-00899 (1:20,000; NAD27).

Shoreline verification was conducted either at or near lower low water in accordance with FPM 7.1.

DPs taken at lower low water indicate that the T-sheet photography was flown during a stage of tide higher than MLLW. T-sheet rocks were found to be isolated boulders, reefs, islets or high points within foul areas or ledges. Changes in shoreline detail are shown in red on the final field sheets. Shoreline that has not been verified is shown in blue. Shoreline verification west of  $161^{\circ}00'00''\text{W}$  was not completed due to adverse weather and sea conditions; see recommendation below.

DPs were recorded on the master printouts or on properly annotated sheets included with the master printouts. Detailed 1:20,000-scale paper plots showing all DPs and notes relating to each feature are included with the sheets submitted with this survey. Position numbers for all DPs are plotted on the the DP overlay. Heights are recorded in meters and are corrected to predicted MLLW.

On DN 227, position nos. 2661 and 2672 (acquired via Range/Azimuth) were acquired too close to the T-2 observer and Falcon Mini Ranger to plot accurately. Adverse weather conditions precluded setting up alternate Range/Azimuth observer stations to collect this data. This area is instead described by reference numbers R2661 and R2672 on the final field sheet. *These reference numbers verified the MHWL on the shoreline map.*

Three T-sheet rocks in the vicinity of  $58^{\circ}33'21''\text{N}$ ,  $160^{\circ}59'54''\text{W}$ , were visually inspected on DN 227 (pos. 2667), and were not individually distinguishable due to the large swell present. The hydrographer described the feature as numerous rocks awash as there appeared to be as many as ten features awash at the time of inspection. *Assigned for additional work in 1991, survey H-10386.*

The only significant shoreline change noted is in the vicinity of  $58^{\circ}33'24''\text{N}$ ,  $161^{\circ}00'00''\text{W}$ , where hydrography and DPs (pos. 2668) indicate the shoreline extends approximately 50 meters further offshore than indicated on the shoreline manuscript. Since the high water line (HWL) on both sides of this feature was observed to be accurately depicted on the manuscript, it is likely this discrepancy is due to the difficulty of interpreting the HWL among the rocks at the base of this rock cliff.

**Recommendation:** The hydrographer recommends that shoreline detail from this survey be used to supersede prior survey information. The hydrographer also recommends that shoreline verification west of  $161^{\circ}00'00''\text{W}$  be included as additional work for next season, along with reexamination of the area in the vicinity of positions 2667 and 2668, described above. *Additional work, included in Project Instructions for 1991, assigned to survey H-10386. These areas will be addressed at that time. Rocks were carried forward from the shoreline maps, TP-00899 and TP-00933, in the interim.*

\* Filed with the hydrographic data.

**K. CROSSLINES** ✓

A total of 70.8 nautical miles of crosslines were run perpendicular to mainscheme lines, representing 8.0% of the mainscheme hydrography. Crossline soundings agree to within one meter with mainscheme soundings in all areas. The vessel acquiring crossline data did not always collect the corresponding mainscheme data. However, agreement was equally good between soundings acquired by different echo sounders in a common area.

**L. JUNCTIONS** ✓

This survey junctions with H-10352 (1:20,000; 1990) and H-10344 (1:20,000; 1990) to the east. There are no contemporary surveys junctioning this survey to the west or to the south. No irregularities were found when comparing soundings and depth contours. Overall agreement of overlapping soundings between surveys is excellent, with all soundings agreeing to within two meters of the junction soundings.

**M. COMPARISON WITH PRIOR SURVEYS** ✓ *See EVAE Report, section 6*

This survey was compared to the following prior surveys:

**H-7718** (1:100,000; 1948; Reconn.):

Soundings on the 1:20,000-scale copy of H-7718 provided are 90% illegible, making a direct comparison to this survey difficult. Those soundings that were legible showed good agreement to within two meters. A more accurate comparison was made to the soundings carried forward onto Preliminary Charts 16305 and 16315.

Four charted soundings originate from H-7718. Survey agreement with these soundings is good, with soundings agreeing to within two meters.

**Recommendation:** The hydrographer recommends soundings from this survey be used to supersede the soundings from the prior survey. *CONCUR*

**BP-134100** (Chart 16315, base; 1985-87; RAINIER Reconn., "Vanderchart"):

*Not required in the Project Instructions*

Overall sounding agreement between surveys is good, with soundings agreeing to within two meters.

**Recommendation:** The hydrographer recommends data from this survey be used to supersede data from the prior survey. *CONCUR*

There are no AWOIS items originating from any source within the limits of this survey. *CONCUR*

## N. COMPARISON WITH THE CHART *See Euvac Report, section 7*

This survey was compared to two NOS Preliminary Charts: 16315, 6<sup>th</sup> Edition, January 6/90, 1:100,000 (NAD83), and 16305, 6<sup>th</sup> Edition, December 2/89, 1:100,000 (NAD83). *See Euvac Report, section 7 for additional charts this survey was compared to.*

### Comparison of Sounding Features ✓

All charted depths originated from prior surveys discussed in Section M, and will not be addressed here.

**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.

### Dangers to Navigation ✓

Seven dangers to navigation within the limits of this survey were reported by radio message and hard copy to the Seventeenth Coast Guard District and DMAHTC. Copies of the correspondence are appended to this report. Position numbers associated with each reported danger are included on the copy of the radio message.

## O. ADEQUACY OF SURVEY *See Euvac Report, section 9*

This survey is 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. Adverse weather conditions precluded the completion of the inshore portion of this survey. See Sections J and S.

## P. AIDS TO NAVIGATION ✓

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

## Q. STATISTICS ✓

<u>Vessel:</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>2126</u>	<u>Total</u>
# of Pos	682	1068	58	798	2606
NM Hydro	234.4	391.3	0	254.4	880.1
NM <sup>2</sup> Hydrography	65.04		Velocity Casts		5
Detached Positions	37		Tide Stations		2
Bottom Samples	67		Current/Magnetic Stations		0

**R. MISCELLANEOUS** ✓

Areas of irregular bottom topography are suspected to be sand waves for the following reasons: characteristic sand wave echo trace, suspended sand at the water surface observed by RAINIER personnel, suspended sand observed during dive operations on adjacent sheets, and bottom samples of fine to medium black sand.

Echo-sounder investigations in accordance with FPM 7.2.2 were used in lieu of diver investigations to determine least depths over several features of small extent on this survey, suspected to be sand waves for the reasons cited above. Diver investigations could not be accomplished safely on this survey due to the combination of shallow depths and large seas prevailing late in the survey season.

RAINIER personnel noted a cycle of accretion and erosion of the sand beach at Hagemester Island tide station (946-5089), in the vicinity of  $58^{\circ}33'24''\text{N}$ ,  $160^{\circ}57'00''\text{W}$ . Between June, when RAINIER arrived in the working grounds, and early August, the beach height was observed to have increased approximately 1 meter against the cliff face; in late August, when RAINIER personnel recovered station gear destroyed by the first major winter storm, the beach was observed to have begun to erode again.

All bottom samples were submitted to the Smithsonian Institution.

No current measurements were made as no anomalous currents were observed within this survey's limits .

Position no. 2417 was duplicated on this survey on DN 222

**S. RECOMMENDATIONS** ✓

Strong winds and heavy swells from the southwest during August prevented completion of inshore hydrography as well as shoreline verification west of longitude  $161^{\circ}00'00''\text{W}$  (both via range/azimuth). Wind and sea conditions were normally much worse along the southern coast of Hagemester Island than anywhere else in the project area. Positioning geometry dictated range/azimuth control for much of the inshore work, but large swells often prevented theodolite observers from getting on and off the beach safely, despite the use of an inflatable boat and wet suits. Swells and surf also prevented the launches from working close inshore to locate shoreline features and approach the 0-meter curve.

All of this survey lying more than 0.1-0.2 nm offshore from the high water line is complete. It is strongly recommended that H-10355 be accepted and processed as a complete survey in order to move the data toward preliminary charts 16305 and 16315 as rapidly as possible. Continuing to meet the NOS commitment to update and compile these charts annually is important. It is further recommended that the following additional work on H-10355 be assigned for completion during 1991 operations on adjacent Sheet P:

*This survey, H-10355, has been accepted and processed as a complete survey.*

1. Shoreline verification from longitude  $161^{\circ}00'00''\text{W}$  west to Calm Point (a serious misnomer!)

2. Inshore hydrography between longitudes 160°56'30"W and 160°57'45"W and from longitude 161°00'40"W west to Calm Point.

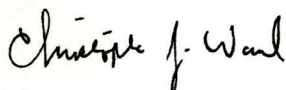
This additional work is estimated to require 1-2 days to complete during favorable weather conditions. *This additional work has been assigned to survey H-10386.*

#### T. REFERRAL TO REPORTS ✓

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

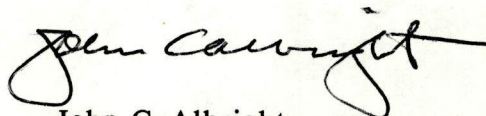
<u>Title</u>	<u>Date Sent to</u> <u>N/CG245</u>
Summer, 1990 Horizontal Control Report for OPR-R184-RA	September, 1990
Summer 1990 Electronic Control Data Package for OPR-R184-RA	September, 1990
Summer 1990 Corrections to Echo Soundings Data Package for OPR-R184-RA	September, 1990
Summer 1990 Coast Pilot Report for OPR-R184-RA	October, 1990

Respectfully Submitted,



Christopher J. Ward  
Ensign, NOAA

Approved and Forwarded,



John C. Albright  
Captain, NOAA  
Commanding Officer



CONTROL STATIONS									
No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY
100	A	058:34:41.239	160:55:09.657	0	250	1658.4	299670.0	1	06/08/90
101	A	058:39:23.968	160:50:01.293	0	254	1658.4	299670.0	2	06/08/90
102	A	058:38:19.199	160:16:16.481	0	254	1658.4	299670.0	3	06/08/90
200	F	058:34:41.239	160:55:09.657	253	250	0.0	0.0	2	06/08/90
201	F	058:39:23.968	160:50:01.293	232	254	0.0	0.0	5	06/08/90
202	F	058:38:19.199	160:16:16.481	71	254	0.0	0.0	3	06/08/90
203	F	058:49:01.447	160:41:03.793	22	250	0.0	0.0	B	07/11/90
204	F	058:40:51.508	160:47:58.431	7	254	0.0	0.0	E	07/15/90
205	F	058:39:30.556	160:49:14.911	10	250	0.0	0.0	4	07/15/90
206	F	058:35:04.044	160:52:45.530	14	250	0.0	0.0	F	07/15/90
207	F	058:47:14.904	160:42:20.529	5	254	0.0	0.0	1	07/11/90
208	F	058:33:38.440	160:55:35.694	16	254	0.0	0.0	1	08/05/90
209	F	058:33:16.040	160:57:09.142	10	250	0.0	0.0	4	08/05/90
210	F	058:33:04.248	160:57:49.321	21	254	0.0	0.0	C	08/05/90
211	F	058:32:46.208	161:04:32.374	15	250	0.0	0.0	B	08/05/90

100 CALM PT., 1948  
 101 GEM TP, 1990  
 102 CROOKED AZ ECC, 1990  
 200 CALM PT., 1948  
 201 GEM TP, 1990  
 202 CROOKED AZ ECC, 1990  
 203 STRAIT, 1948  
 205 SLIDE, 1990  
 206 BEACH, 1990  
 208 TP 3, 1990  
 209 VIEW, 1990  
 210 MOON TP, 1990  
 211 TIP, 1990

For ARGO stations, the height of the base of the antenna was the station elevation.

ARGO Station	Antenna Elevation (m)
100	253
101	232
102	71



**U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration**

Office of NOAA Corps Operations  
NOAA Ship RAINIER S221  
1801 Fairview Avenue East  
Seattle, Washington 98102-3767

September 10, 1990

Director  
DMAHTC  
Attn: MCNA  
6500 Brooks Lane  
Washington, D.C. 20315-0030

Dear Sir:

While conducting hydrographic survey operations in Bristol Bay, Alaska, NOAA Ship RAINIER discovered 20 dangers to navigation. An additional 4 dangers to navigation were discovered on a bathymetric trackline from Cape Peirce to Cape Etolin, Alaska. They have been reported to DMAHTC (NAVWARN) and the Seventeenth Coast Guard District. A copy of the correspondence describing the dangers is enclosed.

Sincerely,

A handwritten signature in cursive script that reads "John C. Albright".

John C. Albright  
Captain, NOAA  
Commanding Officer

Enclosure





**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
Office of NOAA Corps Operations  
NOAA Ship RAINIER S221  
1801 Fairview Avenue East  
Seattle, Washington 98102-3767

September 10, 1990

Commander  
Seventeenth Coast Guard District  
Post Office Box 3-5000  
Juneau, Alaska 99802

Dear Sir:

Attached is a confirmation copy of the radio message sent to your office regarding the dangers to navigation which I recommend for inclusion in the Local Notice to Mariners for the Seventeenth Coast Guard District. A copy of the charts showing the areas in which the dangers exist is also attached.

Sincerely,

A handwritten signature in cursive script, reading "John C. Albright", is written over the typed name.

John C. Albright  
Captain, NOAA  
Commanding Officer

Enclosures

cc: DMAHTC  
N/CG221  
PMC



KUS/TPOST  
EJA/090230Z Sep 90

FTTUZYUW RUHPTEF0029 2520223-UUUU--RUHPSUU.

ZNR UUUUU

P 090223Z SEP 90

FM NOAA RAINIER

TO CCGDSEVENTEEN JUNEAU AK

DMAHTC (NAVWARN) WASHINGTON DC//MCNM//

INFO NOAA MOP SEATTLE WA

ACCT CM-VCAA

BT

UNCLAS

NOAA SHIP RAINIER HAS FOUND 20 DANGERS TO NAVIGATION IN BRISTOL BAY, ALASKA (PROJECT OPR-R184-RA) WITHIN THE LIMITS OF HYDROGRAPHIC SURVEYS H-10344 (10 MILES SE OF HAGEMEISTER ISLAND; ITEMS QA-QB), H-10345 (NINE MILES SOUTH OF THE TWINS; ITEMS VA-VE), H-10352 (EAST OF HAGEMEISTER ISLAND; ITEMS MA-MF), AND H-10355 (SOUTH OF HAGEMEISTER ISLAND; ITEMS NA-NG). FOUR ADDITIONAL DANGERS TO NAVIGATION WERE DISCOVERED BY LORAN C POSITIONING ALONG A BATHYMETRIC TRACKLINE FROM CAPE PEIRCE TO ETOLIN STRAIT, ALASKA (ITEMS TA-TD). THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL NOTICE TO MARINERS:

CHARTS AFFECTED:	16315	6TH ED	JAN 6/90	1:100,000	NAD83
	16305	6TH ED	DEC 2/89	1:100,000	NAD83
	16011	32TH ED	FEB 3/90	1:1,023,188	NAD83
	16006	29ND ED	AUG 23/86	1:1,534,076	NAU27

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

*Coordinates and depths are unrevised and retained as submitted*

ITEM	DANGER	CHART	DEPTH	DATUM	LATITUDE	LONGITUDE	POSITION NUMBERS
QA.	SHOAL	16315	4FM 1FT	NAD83	58-26-43.93N	160-27-35.99W	2006+9
	COV	16011	4FM	NAD83			
		16006	4FM	NAU27	58-26-46.74N	160-27-28.12W	
QB.	SHOAL	16315	3FM 4FT	NAD83	58-28-14.45N	160-27-33.66W	2009+8
	COV	16011	3 1/2FM	NAD83			
		16006	3 1/2FM	NAU27	58-28-17.26N	160-27-25.79W	
VA.	THE SHOAL CHARTED AT 58-31-24N, 160-22-48W (NAD83) EXTENSUS SOUTH TO 58-28-48N. DEPTHS SHOALER THAN 1 FATHOM MAY BE ENCOUNTERED IN THIS AREA OF SHIFTING SAND WAVES.						
VB.	SHOAL	16315	2FM 3FT	NAU83	58-28-25.33N	160-20-53.30W	8172+0
	COV	16011	2 1/2FM	NAD83			
		16006	2 1/2FM	NAU27	58-28-28.14N	160-20-45.43W	
VC.	SHOAL	16315	2FM 4FT	NAD83	58-30-26.53N	160-17-43.34W	2292+5
	COV	16011	2 1/2FM	NAD83			
		16006	2 1/2FM	NAU27	58-30-29.33N	160-17-35.47W	
VD.	SHOAL	16315	2FM 4FT	NAD83	58-30-21.62N	160-20-39.15W	2228+7
	COV	16011	2 3/4FM	NAD83			
		16006	2 3/4FM	NAU27	58-30-24.42N	160-20-31.38W	

VE.	SHOAL	16315	3FM	2FT	NAD83	58-25-45.80N	160-25-35.00W	8285+7
	COV	16011	3	1/4FM	NAD83			
		16006	3	1/4FM	NAD27	58-25-48.61N	160-25-27.14W	
MA.	SHOAL	16315	4FM	4FT	NAD83	58-34-45.62N	160-43-10.90W	765+5
	COV	16011	4	3/4FM	NAD83			
		16006	4	3/4FM	NAD27	58-34-48.43N	160-43-02.99W	
MB.	ROCK	16315	0FM	1FT	NAD83	58-42-41.79N	160-46-40.10W	2430
	COV	16011	0FM		NAD83			
		16006	0FM		NAD27	58-42-44.59N	160-46-32.16W	
	EAST LIMIT OF FOUL AREA							
MC.	ROCK	16315	0FM	2FT	NAD83	58-42-18.93N	160-46-52.86W	2434
	COV	16011	1/4FM		NAD83			
		16006	1/4FM		NAD27	58-42-21.74N	160-46-44.92W	
	EAST LIMIT OF FOUL AREA							
MD.	ROCK	16305	2FT		NAD83	58-40-51.14N	160-47-49.88W	2446
	UNCOV	16315	2FT		NAD83			
		16011	2FT		NAD83			
		16006	2FT		NAD27	58-40-53.95N	160-47-41.95W	
	EAST LIMIT OF FOUL AREA							
ME.	ROCK	16305	0FT		NAD83	58-39-28.94N	160-49-08.05W	5118
	UNCOV	16315	0FT		NAD83			
		16011	0FT		NAD83			
		16006	0FT		NAD27	58-39-31.75N	160-49-00.18W	
	EAST LIMIT OF FOUL AREA							
MF.	NUMEROUS ROCKS COVERING LESS THAN 0FM 3FT LIE WITHIN 100M OF THE EAST SHORE OF HAGEMEISTER ISLAND BETWEEN LATITUDES 58-41-00N AND 58-42-15N (NAD83). MARINERS SHOULD EXERCISE CAUTION WHEN NAVIGATING CLOSE INSHORE IN THIS AREA.							
NA.	SHOAL	16315	3FM	5FT	NAD83	58-32-02.99N	161-00-50.37W	4393+3
	COV	16305	3FM	5FT	NAD83			
		16011	3	3/4FM	NAD83		H-10355	
		16006	3	3/4FM	NAD27	58-32-05.81N	161-00-42.45W	
NB.	SHOAL	16315	3FM	2FT	NAD83	58-31-06.59N	161-00-26.34W	8287+6
	COV	16305	3FM	2FT	NAD83			
		16011	3	1/4FM	NAD83		H-10355	
		16006	3	1/4FM	NAD27	58-31-09.42N	161-00-18.43W	
NC.	SHOAL	16315	4FM	2FT	NAD83	58-28-12.98N	161-00-15.65W	8033+8
	COV	16305	4FM	2FT	NAD83			
		16011	4	1/4FM	NAD83		H-10355	
		16006	4	1/4FM	NAD27	58-28-15.81N	161-00-07.75W	
ND.	SHOAL	16315	5FM	2FT	NAD83	58-26-07.30N	161-04-17.23W	8566+3
	COV	16305	5FM	2FT	NAD83			
		16011	5	1/4FM	NAD83		H-10355	
		16006	5	1/4FM	NAD27	58-26-10.13N	161-04-09.32W	
NE.	SHOAL	16315	7FM	0FT	NAD83	58-24-54.98N	160-58-51.14W	2155+1
	COV	16305	7FM	0FT	NAD83			
		16011	7FM		NAD83		H-10355	
		16006	7FM		NAD27	58-24-57.81N	160-58-43.25W	

NF.	SHOAL	16315	5FM	3FT	NAD83	58-26-02.93N	160-54-50.14W	4991+5
	COV	16305	5FM	3FT	NAD83			
		16011	5	1/2FM	NAD83		H-10355	
		16006	5	1/2FM	NAD27	58-26-05.76N	160-54-42.24W	
NG.	SHOAL	16315	2FM	0FT	NAD83	58-30-30.05N	160-57-33.21W	8196+2
	COV	16305	2FM	0FT	NAD83			
		16011	2FM		NAD83		H-10355	
		16006	2FM		NAD27	58-30-32.87N	160-57-25.30W	

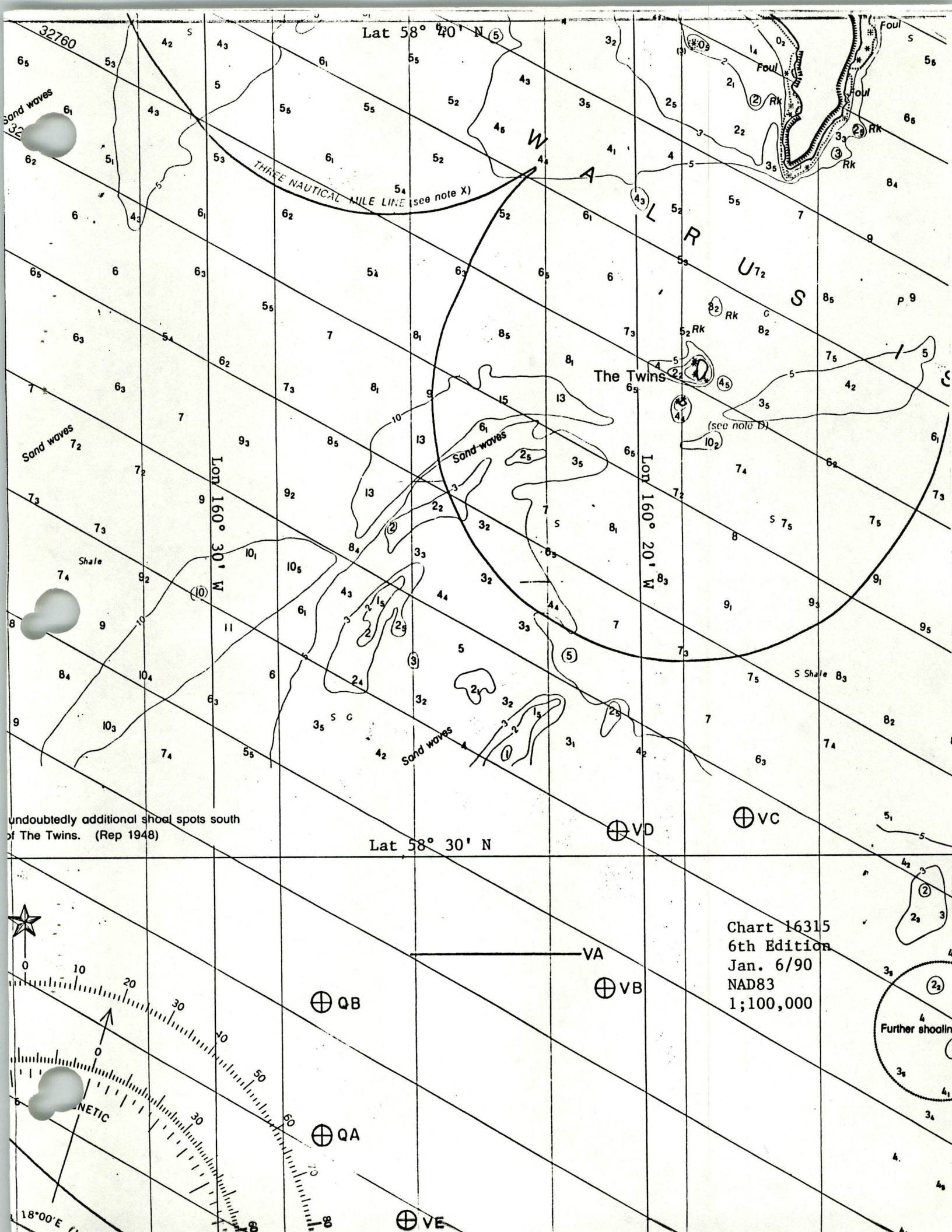
LORAN C POSITIONING (POSITION APPROXIMATE):

TA.	SHOAL	16305	13FM	4FT	NAD83	58-28.2N	161-52.1W	067+3
	COV	16006	13	1/2FM	NAD27	58-28.3N	161-52.0W	
TB.	SHOAL	16305	13FM	5FT	NAD83	58-29.8N	161-55.0W	010+2
	COV	16006	13	3/4FM	NAD27	58-29.8N	161-54.8W	
TC.	SHOAL	16006	6	1/4FM	NAD27	60-34.9N	165-42.7W	037+2
	COV							
TU.	SHOAL	16006	5	1/2FM	NAD27	59-53.3N	165-09.3W	054+1
	COV							

THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW.  
 QUESTIONS CONCERNING THIS MESSAGE SHOULD BE DIRECTED TO THE  
 CHIEF, PACIFIC HYDROGRAPHIC SECTION AT (206) 526-6835. A  
 LETTER WITH ATTACHED CHARTLET IS BEING MAILED TO CONFIRM  
 THIS MESSAGE.

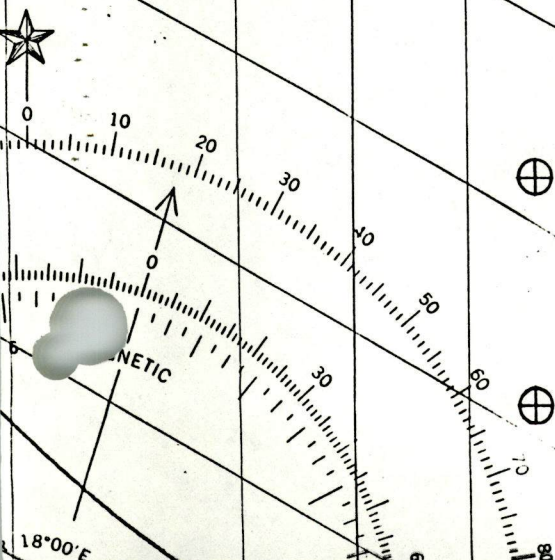
BT  
 #0029

NNNN



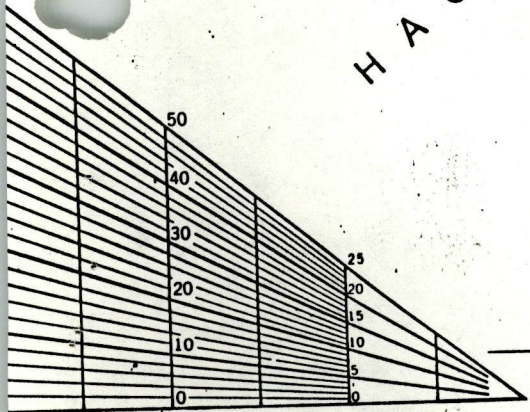
undoubtedly additional shoal spots south of The Twins. (Rep 1948)

Chart 16315  
6th Edition  
Jan. 6/90  
NAD83  
1:100,000



There appears to be a  
between High and Hager

H A G E M E I



FRAN LINEAR INTERPOLATOR

FRAN-C  
EXPLANATION

..... 100kHz.  
INTERVAL  
..... 99,900 Microseconds  
NATORS: (Not individual sta-

Boundary  
Boundary  
Boundary  
Boundary

IN THIS CHART  
BY 9990-Z

Charts published by the Defense  
Users should not be used with this  
information shown have been adjusted  
by determined overland signal  
they have not been verified by  
any data. Every effort has been  
made to meet nautical mile accuracy criteria  
of the U.S. Coast Guard. Mariners are  
responsible for the lattices in inshore

THREE NAUTICAL MILE ZONE  
019 XI

Chart 16315  
6th Edition  
Jan. 6/90  
NAD83  
1:100,000

Lon 160° 50' W

Lon 160° 40' W

Lat 58° 40' N

Lat 58° 30' N

MB  
MC  
MF  
PA Shooting  
(Rep 1986)  
MD  
ME

MA

34

43

51

6

44

65

32790

73

32800

8

32810

82

32820

S Shale

93

32830

32840

9990Y

32850

74

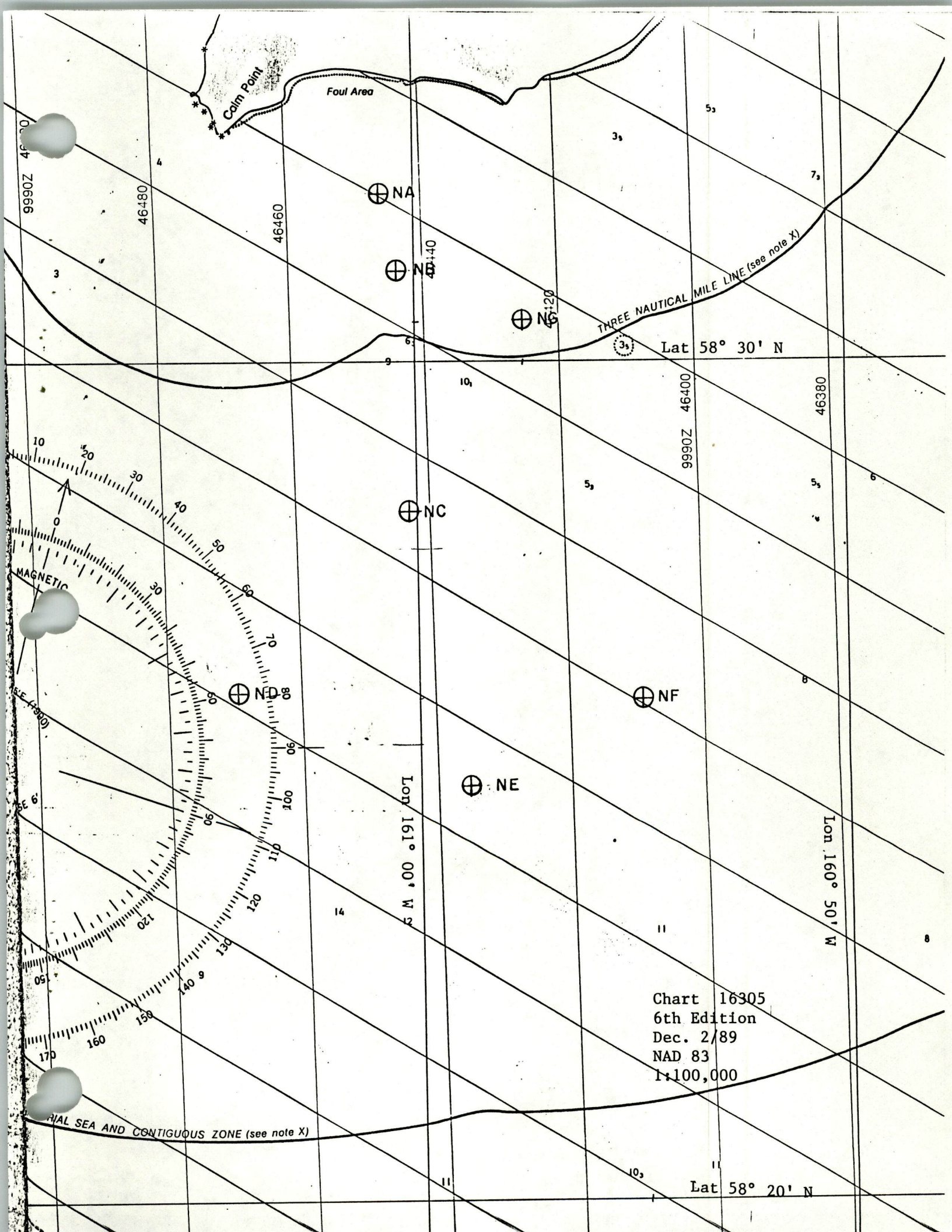
33

73

44

33





9990Z 46400

46480

46460

53

33

73

⊕ NA

⊕ NB

⊕ NC

THREE NAUTICAL MILE LINE (see note X)

Lat 58° 30' N

9990Z 46400

46380

⊕ NC

⊕ ND

⊕ NF

⊕ NE

Lon 161° 00'

Lon 160° 50'

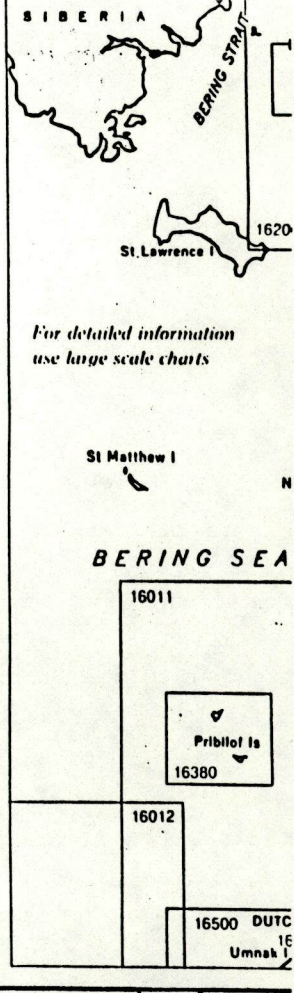
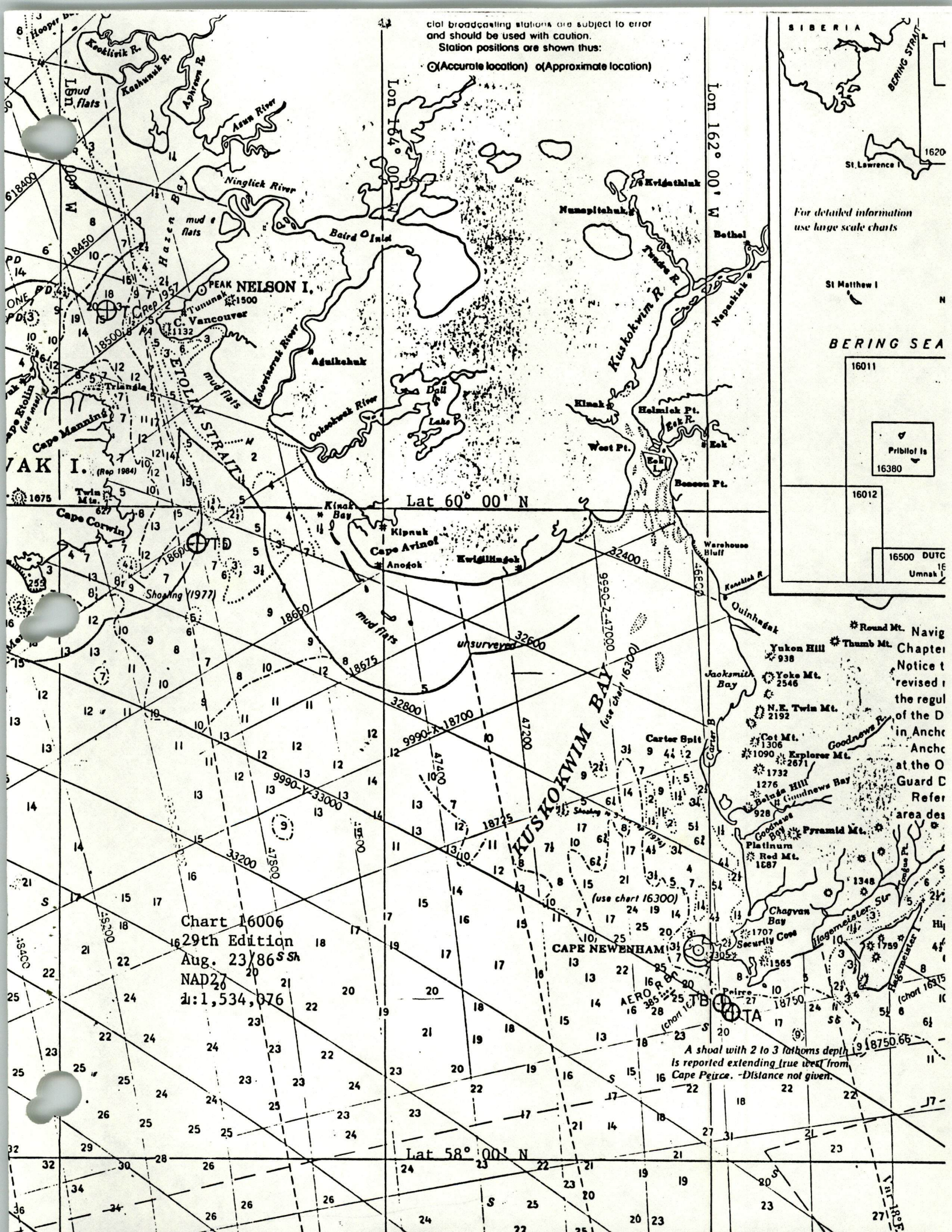
Chart 16305  
6th Edition  
Dec. 2/89  
NAD 83  
1:100,000

TERRITORIAL SEA AND CONTIGUOUS ZONE (see note X)

Lat 58° 20' N

radio broadcasting stations are subject to error and should be used with caution. Station positions are shown thus:

(O) (Accurate location) (o) (Approximate location)



For detailed information use large scale charts

BERING SEA

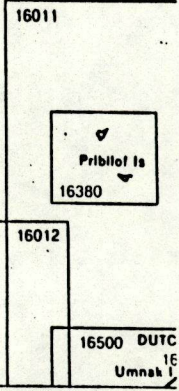


Chart 16006  
29th Edition  
Aug. 23/86 S.S.A.  
NAD 27  
1:534,076

A shoal with 2 to 3 fathoms depth is reported extending true west from Cape Peirce. -Distance not given.

\*Round Mt. Navig  
Yukon Hill \*Thumb Mt. Chapter  
1306 Yoke Mt. 2546  
2192 N.E. Twin Mt.  
1306 Explorer Mt.  
1732  
1276 Balala Hill  
928 Goodnews Bay  
Platinum  
Red Mt. 1687  
Pyramid Mt.  
1348  
1799  
18750.66



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Coast and Geodetic Survey  
Seattle, Washington 98115-0070

September 24, 1991

Commander (OAN)  
Seventeenth Coast Guard District  
P.O.Box 3 - 5000  
Juneau, Alaska 99802-1217

Dear Sir:

During office review of hydrographic survey H-10355, Alaska, Bristol Bay, South of Hegemeister Island, two previously submitted dangers to navigation affecting the following charts should be revised.

<u>Chart</u>	<u>Edition/date</u>	<u>Datum</u>
16305	7th ed., 2/9/1991	NAD 83
16315	7th ed., 3/2/1991	NAD 83
16006	29th ed., 8/23/1986	NAD 27
16011	32nd ed., 2/3/1990	NAD 83

It is recommended that the enclosed Report of Dangers to Navigation be included in the Local Notice to Mariners.

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.

Sincerely,

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

Enclosure

cc: DMA/TC  
N/CG221



REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10355  
Survey Title: State: Alaska  
                  Locality: Bristol Bay  
                  Sublocality: South of Hagemeister Island  
Project Number: OPR-R184-RA, NOAA Ship RAINIER

Application of actual tides results in revisions to two dangers previously submitted by NOAA Ship RAINIER on September 9, 1990.

Objects discovered: Two shoals corrected to actual tides.

Affected nautical charts

<u>CHART NUMBER</u>	<u>EDITION</u>		<u>REPORTED DEPTH</u>	<u>CHARTED HORIZ DATUM</u>	<u>GEOGRAPHIC POSITION</u>	
	<u>NO.</u>	<u>DATE</u>			<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
16305	7th	2/9/91	4FM 5FT	NAD 83	58°26'07.29"	161°04'17.23"
16315	7th	3/2/91	4FM 5FT	NAD 83	58°26'07.29"	161°04'17.23"
16006	29th	8/23/86	4 3/4FM	NAD 27	58°26'10.12"	161°04'09.32"
16011	32nd	2/3/90	4 3/4FM	NAD 83	58°26'07.29"	161°04'17.23"
16305	7th	2/9/91	5FM 2FT	NAD 83	58°26'02.92"	160°54'50.14"
16315	7th	3/2/91	5FM 2FT	NAD 83	58°26'02.92"	160°54'50.14"
16006	29th	8/23/86	5 1/4FM	NAD 27	58°26'05.75"	160°54'42.23"
16011	32nd	2/3/90	5 1/4FM	NAD 83	58°26'02.92"	160°54'50.14"

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.

KUS / TPOST  
ESA / 102215Z AUG 90

R 092040Z AUG 90  
FM NOAA MOP SEATTLE WA  
TO NOAA S RAINIER

BT

UNCLAS

RA-PMC-160-182/PMC1X2/PMC1

SUBJ: SOUNDING DISCREPANCIES

NOREP

1. N/CG241 INDICATES RESOLUTION OF SOUNDING DISCREPANCIES CAUSED BY INADEQUATE TIDE CORRECTORS IS EXPECTED TO OCCUR WHEN TIDAL DATA IS THOROUGHLY ANALYZED IN ROCKVILLE.
2. ACCURATE TIDE CORRECTORS MAY NOT BE DETERMINED BEFORE YOU LEAVE PROJECT AREA.

BT

KUJ / TPOST  
EBA / 231749 Z Aug

R 231605Z AUG 90  
FM NOAA MOP SEATTLE WA  
TO NOAA S RAINIER  
BT

UNCLAS

PMC-RA-202-172/PMC1X2/PMC1

SUBJ: TIDE RESTRICTIONS

A. TELECON RA/CG241 22 AUG 90

NOREP

1. IF NO TIDE DATA ARE BEING COLLECTED FROM THE HAGEMEISTER STATION BUT THE HIGH ISLAND STATION IS OPERATIONAL, THE FOLLOWING RESTRICTIONS APPLY TO ACQUIRING HYDROGRAPHY ON SHEET N:

DATE	ACQUISITION PERIOD (UTC)
UNTIL 26 AUG 90	NONE
26 AUG 90	0000-0700
27 AUG 90	0000-1000
28 AUG 90	0000-1000

ACQUISITION IS ALLOWED ONLY DURING RISING TIDE BETWEEN LOWER LOW AND HIGHER HIGH TIDES. ACQUISITION CANNOT TAKE PLACE WHEN MOON IN EQUATORIAL PLANE.

2. THERE ARE NO RESTRICTIONS FOR CONDUCTING HYDROGRAPHY ON SHEET V.

BT

## APPROVAL SHEET

for

**H-10355**

(RA-20-6-90)

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 sheets and accompanying records have been examined by me and are approved. This survey is considered complete and adequate for charting purposes with the recommendation for additional work noted in Section S.



John C. Albright  
Captain, NOAA  
Commanding Officer

ORIGINAL

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: October 30, 1990

MARINE CENTER: Pacific

OPR: R184

HYDROGRAPHIC SHEET: H-10355

LOCALITY: South of Hagemeister Island, Bristol Bay, Alaska

TIME PERIOD: August 6 - August 30, 1990

TIDE STATION(S) USED: 946-5089 Hagemeister Island, AK  
946-5173 High Island, AK

PLANE OF REFERENCE (MEAN LOWER LOW WATER):  
946-5089 11.16 feet  
946-5173 10.63 feet

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:  
946-5089 6.7 feet  
946-5173 8.5 feet

REMARKS: RECOMMENDED ZONING  
Zone direct on 946-5089.

After August 17, tide data from Hagemeister Island is not available. For surveys after August 17, east of  $161^{\circ} 02'$ , apply a  $\times 0.86$  range ratio to all heights and a +45 min time correction on 946-5173.

West of  $161^{\circ} 02'$ , apply a  $\times 0.86$  range ratio to all heights and a +1 hour time correction on 946-5173.

*James R. Hubbard*  
CHIEF, TIDAL DATUM QUALITY  
ASSURANCE SECTION



GEOGRAPHIC NAMES

H-10355

Name on Survey	A ON CHART NO. 16215 & 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									
BRISTOL BAY	X										2
CALM POINT	X										3
HAGEMEISTER ISLAND	X										4
											5
											6
											7
											8
											9
											10
											11
											12
											13
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											23
											24
											25

Approved:

*Charles E. Harrington*  
Chief Geographer - N/CG 2x5

APR - 8 1991

**HYDROGRAPHIC SURVEY STATISTICS**

H-10355

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		6
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES					
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			2606
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	141.5		141.5
VERIFICATION OF SOUNDINGS	107.5		107.5
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	47		47
COMPARISON WITH PRIOR SURVEYS AND CHARTS		6	6
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		15	15
GEOGRAPHIC NAMES			
OTHER* <b>Digitizing</b>	5		5
*USE OTHER SIDE OF FORM FOR REMARKS			
	<b>TOTALS</b>		
	301	21	322

Pre-processing Examination by <b>M. Brown</b>	Beginning Date 8/6/90	Ending Date 8/30/90
Verification of Field Data by <b>R. Shipley</b>	Time (Hours) 296	Ending Date 7/23/91
Verification Check by <b>J. Stringham, S. Otsubo</b>	Time (Hours) 53	Ending Date 7/24/91
Evaluation and Analysis by <b>C.R. Davies</b>	Time (Hours) 21	Ending Date 9/11/91
Inspection by <b>D. Hill</b>	Time (Hours) 4	Ending Date 9/24/91

# EVALUATION REPORT

H-10355

## 1. INTRODUCTION

Survey H-10355 is a basic hydrographic survey accomplished by the NOAA Ship RAINIER under the following Project Instructions.

OPR-R184-RA, dated April 30, 1990  
CHANGE NO. 1, dated August 15, 1990

This survey occurred in Alaska and covers an area in Bristol Bay along the southern coastline of Hagemeister Island. The surveyed area extends from latitude 58/23/45N to latitude 58/36/50N and from longitude 160/51/40W to longitude 161/04/30W. The surveyed area extends from Calm Point east and north along Hagemeister Island. The shoreline along Hagemeister Island is characterized by rocks, sand, gravel and pebble beaches. The bottom consists of sand, gravel, pebbles and shells. Depths range from zero to 23.5 meters.

Predicted tides for Hagemeister Island, Alaska were used for the reduction of soundings during field processing. Approved hourly heights zoned from Hagemeister Island and High Island, Alaska, gages 946-5089 and 946-5173, 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 1990 Horizontal and Electronic Control Reports for OPR-R184-RA contain adequate discussions of horizontal control and hydrographic positioning, except for the following.

On day 241, Vesno 2124, positions 2692 to 2780, an incorrect initial, station 208, was used for range/azimuth controlled hydrography. This error was corrected by plotting the data with the correct initial, station 209. With this correction, these positions were accepted.

Positions of horizontal control stations used during hydrography are 1948, 1985 and 1990 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: -2.825 seconds (-87.398 meters)  
Longitude: 7.910 seconds (128.076 meters)

The year of establishment of control stations shown on the smooth sheet originates with NGS listing and the hydrographer's signal list.

The quality of several positions exceeds limits in terms of error circle radius and residual. 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-00899	July 1985	III
TP-00933	August 1985	III

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

	<u>Latitude(N)</u>	<u>Longitude(W)</u>
HWL	58/33/20	161/00/00

Shoreline verification on map TP-00899 west of longitude 160/00/00W was not conducted during operations on survey H-10355 due to adverse weather conditions. Two other areas on shoreline map TP-00933, identified as position 2667, rocks in the vicinity of latitude 58/33/21N, and longitude 160/59/54W, and position 2668, shoreline change in the vicinity of latitude 58/33/20N, longitude 161/00/00W, also require investigation. These recommendations are further addressed in the hydrographer's report, sections J and S. This work has been assigned by the project instructions for the 1991 field season and will be addressed on survey H-10386.

### 3. HYDROGRAPHY

With exceptions 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.

Holidays exist at the following locations.

<u>Latitude(N)</u>	<u>Longitude(W)</u>
58/33/05	160/57/36
58/33/15	160/56/55
58/33/28	160/55/35
58/33/06	161/00/52

Standard depths curves were adequately drawn and developed with the exception of the zero, one, two and three-meter curves.

Due to the failure of the Hagemester Island tide gage on August 17, 1990, hydrographic operations were restricted by headquarters to specific dates and times. That information was transmitted to the ship in a radio message, dated August 23, 1990 (copy attached). Hydrographic operations were subsequently conducted on August 28 (DN 241), a restricted period, from time 1647 to 2339 (UTC). Specific information regarding these operations was forwarded to N/OMA12 by the hydrographer and, subsequently, approved tide correctors were provided to N/CG245 for use in reducing raw soundings. On September 25, 1990, N/OMA12 personnel verified via telephone that the approved tide correctors are adequate to reduce soundings acquired during the restricted period.

#### 4. CONDITION OF SURVEY

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, January 1990 Edition, except as follows.

The hydrographer did not compare with all prior surveys required by the project instructions. The prior shoreline maps, T-9251 and T-9252, should have been addressed.

An incorrect initial station was used for some position computations. See section 2 for additional information.

#### 5. JUNCTIONS

Survey H-10355 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10344	1990	20000	East
H-10352	1990	20000	Northeast
H-10386	1991	20000	West

The junctions with surveys H-10344 and H-10352 have been completed. There are no contemporary surveys which junction survey H-10355 to the south and west. A comparison with charted depths reveals fair agreement in the common areas. Survey H-10386 is in the preliminary stages of office processing, therefore, the junction will be addressed in the evaluation report for that survey.

#### 6. COMPARISON WITH PRIOR SURVEYS

H-7718(1948) 1:100,000

Survey H-7718 is a reconnaissance survey with two lines of soundings along the central portion of the present survey. The present survey is up to 2 meters shoaler than the prior survey. Taking into consideration the differences in the scales of the surveys and the

*Line of hydro  
superseeded by  
common coverage  
on H-10386.  
GKul  
9-4-92*

methods of surveying, comparison with this prior is satisfactory.

Survey H-10334 is adequate to supersede the prior survey within the common area.

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 southern coastline of Hagemeister Island has eroded in some places as much as 140 meters.

Survey H-10334 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 the prior surveys applicable to the present survey.

## **7. COMPARISON WITH CHART**

Chart 16305, 6th edition, dated December 2, 1989; scale 1:100000

Chart 16305, 7th edition, dated February 9, 1991; scale 1:100000

Chart 16315, 6th edition, dated January 6, 1990; scale 1:100000

Chart 16315, 7th edition, dated March 2, 1991; scale 1:100000

### **a. Hydrography**

The charted hydrography on the 6th edition of charts 16305 and 16315 originates from the prior surveys, mentioned in section 6 of this report, and requires no further discussion. Charted hydrography on the 7th edition of charts 16305 and 16315 has been updated from the final field sheet submitted by the hydrographer.

Survey H-10334 is adequate to supersede charted hydrography within the common area.

### **b. AWOIS**

There are no AWOIS items originating from miscellaneous sources

### **c. Controlling Depths**

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

### **d. Aids to Navigation**

There are no 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 reported seven shoals to the USCG, DMAHTC, N/CG221 and PMC. A copy of the message is attached. Two dangers were revised during office processing and reported to the USCG and DMAHTC.

**8. COMPLIANCE WITH INSTRUCTIONS**

Survey H-10355 adequately complies with the Project Instructions, except where noted in this report.

**9. ADDITIONAL FIELD WORK**

This is a good hydrographic survey. Shoreline verification mentioned in section 2 of this report and sections J and S of the hydrographer's report will be addressed in the descriptive report for survey H-10386. Additional field work is recommended on a low priority basis in the areas identified as holidays in section 3 of the report.



C. R. Davies  
Cartographer

APPROVAL SHEET  
H-10355

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 Hill* Date: 9/24/91  
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: 26 Sep 1991  
Commander Douglas G. Hennick, NOAA  
Chief, Pacific Hydrographic Section

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Final Approval

Approved:

*J. Austin Yeager* Date: 10/25/91  
J. Austin Yeager  
Rear Admiral, NOAA  
Director, Coast and Geodetic Survey



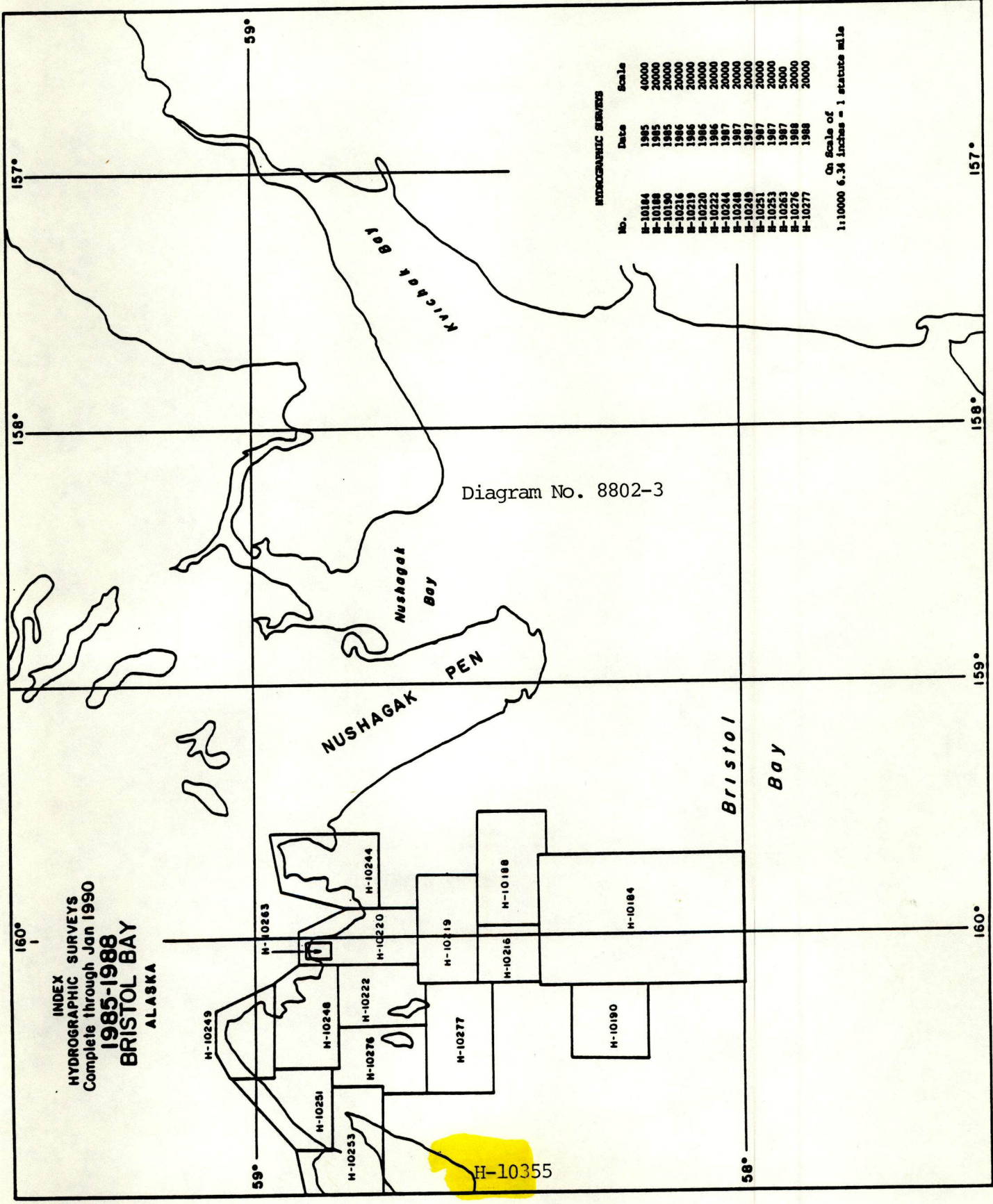


Diagram No. 8802-3

INDEX  
HYDROGRAPHIC SURVEYS  
Complete through Jan 1990  
1985-1988  
BRISTOL BAY  
ALASKA

HYDROGRAPHIC SURVEYS		
No.	Date	Scale
H-10184	1985	40000
H-10184	1985	20000
H-10190	1985	20000
H-10216	1986	20000
H-10219	1986	20000
H-10220	1986	20000
H-10222	1986	20000
H-10244	1987	20000
H-10248	1987	20000
H-10249	1987	20000
H-10251	1987	20000
H-10253	1987	20000
H-10253	1987	5000
H-10276	1988	20000
H-10277	1988	20000

On Scale of  
1:10000 6.34 inches = 1 statute mile

MARINE CHART BRANCH  
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10355

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 Form.

CHART	DATE	CARTOGRAPHER	REMARKS
16315	10-18-90	Bruce Alan Clement	Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Partial application of Drawing No. Sndgs from field sheet
16305	10-22-90	Bruce Alan Clement	Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Partial application of Drawing No. Sndgs from field sheet
16315	10-1-91	Bill Davis	Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Full application of Drawing No. of Sndgs from south sheet.
16305	10-10-91	Bill Davis	Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Full application of Drawing No. soundings from south sheet.
530	8-12-92	ALMACEN	Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Applied 4 3/4 fms. sndg. Drawing No. from SS thru 16305 & 16315.
16011	10-29-92	ALMACEN	Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Full application of Drawing No. of sndgs. from SS thru 16305 & 16315.
16006	10-30-92	ALMACEN	Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Full application of Drawing No. sndgs. from SS thru 16011.
			Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Drawing No.
			Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Drawing No.
			Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Drawing No.
			Full Part Before After Marine Center Approval <del>SE</del> <del>SW</del> <del>NE</del> <del>NW</del> Drawing No.

