

# 10345

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-20-4-90 .....  
Registry No. .... H-10345 .....

### LOCALITY

State ..... Alaska .....  
General Locality ... Bristol Bay .....  
Sublocality ..... Nine Miles South .....  
..... of the Twins .....  
.....  
..... 19 90 .....  
.....  
CHIEF OF PARTY  
CAPT J.C. Albright .....

### LIBRARY & ARCHIVES

DATE ..... February 19, 1992 .....

10345

CHTS  
16315  
16011  
500NC

**HYDROGRAPHIC TITLE SHEET**

H-10345

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

FIELD NO.

RA-20-4-90

State Alaska

General locality Bristol Bay

Locality Nines Miles South of The Twins

Scale 1:20,000 Date of survey June 11 - August 7, 1990

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

Vessel NOAA Ship RAINIER 2120, and Launches 2123, 2124, 2125, 2126

Chief of party CAPT J.C. Albright

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

Soundings taken by echo sounder, ~~hand level, etc.~~ DSF-6000N

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: Gordon E. Kay Automated plot by PHS Xynetics Plotter

~~Produced by xxx~~

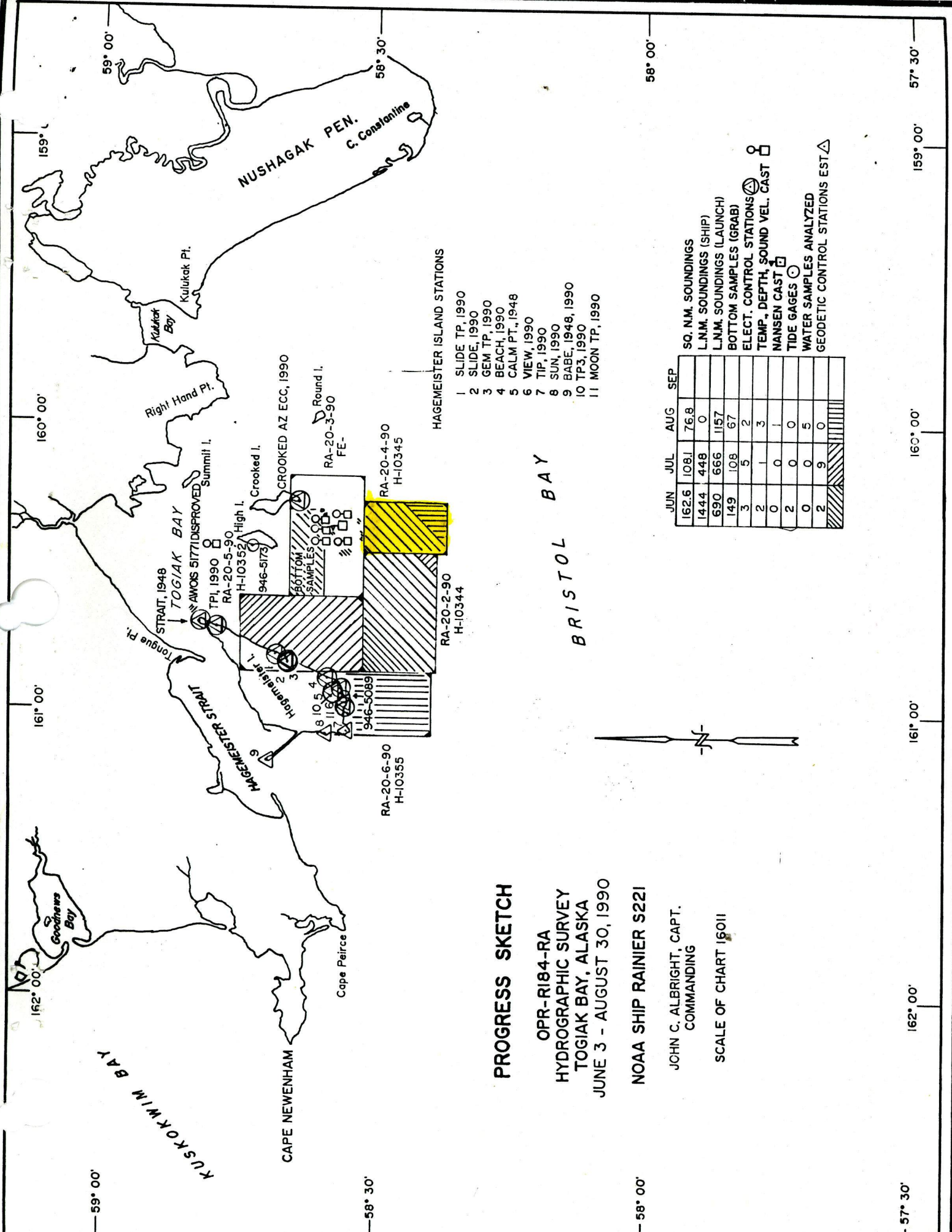
Verification by Thelma O. Jones

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

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

*SL 1-30-97*  
*RWH 3/18/92*

*KUD 2/24/92*



**PROGRESS SKETCH**

OPR-R184-RA  
 HYDROGRAPHIC SURVEY  
 TOGIK BAY, ALASKA  
 JUNE 3 - AUGUST 30, 1990

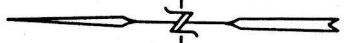
NOAA SHIP RAINIER S221  
 JOHN C. ALBRIGHT, CAPT.  
 COMMANDING

SCALE OF CHART 16011

	JUN	JUL	AUG	SEP	
SQ. N.M. SOUNDINGS	162.6	108.1	76.8		
L.N.M. SOUNDINGS (SHIP)	144.4	44.8	0		
L.N.M. SOUNDINGS (LAUNCH)	69.0	66.6	115.7		
BOTTOM SAMPLES (GRAB)	14.9	10.8	6.7		
ELECT. CONTROL STATIONS	3	5	2		
TEMP., DEPTH, SOUND VEL. CAST	2	1	3		
NANSEN CAST	0	0	1		
TIDE GAGES	2	0	0		
WATER SAMPLES ANALYZED	0	0	5		
GEODETIC CONTROL STATIONS EST	2	9	0		

**HAGEMESTER ISLAND STATIONS**

- 1 SLIDE TP, 1990
- 2 SLIDE, 1990
- 3 GEM TP, 1990
- 4 BEACH, 1990
- 5 CALM PT., 1948
- 6 VIEW, 1990
- 7 TIP, 1990
- 8 SUN, 1990
- 9 BABE, 1948, 1990
- 10 TP3, 1990
- 11 MOON TP, 1990



## Descriptive Report to Accompany Hydrographic Survey H-10345

Field Number RA-20-4-90

Scale 1:20,000

June - August 1990

NOAA Ship RAINIER

Chief of Party: Captain John C. Albright, NOAA

### 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 V on the revised sheet layout dated December 12, 1989. ✓

This survey is one in a series that will provide modern hydrographic survey coverage to update existing nautical charts and new preliminary charts of the area. This project responds to requests from the Alaska congressional delegation, U.S. Coast Guard, State of Alaska, Bristol Bay Native Association, Togiak Fishing Fleet and other commercial fishermen. ✓

### B. AREA SURVEYED

The survey is located in Bristol Bay, Alaska, 38 NM south of Togiak, and 9 NM south of the Twins. The northern and southern limits are  $58^{\circ}31'24''\text{N}$  and  $58^{\circ}21'30''\text{N}$ , respectively. The eastern and western limits are  $160^{\circ}11'30''\text{W}$  and  $160^{\circ}27'00''\text{W}$  respectively. Survey data was acquired from June 11 through August 7, 1990 (DN 162-219). ✓

### 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	Hydrography
RA-3	2123	Hydrography
RA-4	2124	Hydrography Velocity Casts ✓
RA-5	2125	Bottom Samples
RA-6	2126	Hydrography

No changes to the standard sounding configurations were necessary.

#### 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
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
COMPUTE	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	1.11	3-09-90

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

The HDAPS POSTSUR program (version 4.14) was modified on July 23, 1990, to apply settlement and squat 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. ✓

#### 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), Section 2.2.

#### Raytheon DSF-6000N Echo Sounders

<u>Vessel</u>	<u>Serial No.</u>	<u>DN</u>
2120	A119N	172-173
2123	A117N	174-180
	A114N	181
	A117N	214-217
2124	A119N	162-164
	B048N	171-176
	B046N	215-219
2126	A114N	177-180
	A119N	180-181

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 velocity of sound through water, static draft, settlement and squat, heave, 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>
1	23.5	164	58°35'18"N, 160°23'51"W
2	23.2	179	58°35'18"N, 160°23'24"W
3	24.1	198	58°35'24"N, 160°23'13"W

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, Washington, on March 27, 1990.

The surface water temperature, and the corresponding sound velocity, increased over time during the project; therefore, sound velocity correctors were applied temporarily 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>
1	1	159-165	All Launches
4	2	170-186	RAINIER
<del>86</del> 5	3	191-219	All Launches
	2	170-186	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 in the separates supplementing this report.

**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 leadline 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 20, 1990. This transducer depth agrees with the launches' historical records.

While RAINIER was in drydock on January 22, 1990, the distance from the transducer to an upper deck was measured with a leadline. Distances on both port and starboard sides (from the upper deck to the water) were then measured when the ship was refloated and the fuel tanks were at 70% capacity. A transducer depth of 4.5 meters was calculated from these measurements.

**Settlement and Squat**

On June 29, 1990, RAINIER determined the HDAPS Survey and Post Survey programs were not applying settlement and squat correctors. The corrected Post Survey program was installed on July 23, 1990; therefore, settlement and squat correctors were applied to the final field sheet, but not applied during data acquisition.

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

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. ✓

Settlement and squat testing for RAINIER was not conducted in 1990 prior to this survey's completion. Data from RAINIER's April 1, 1989 Turnabout Island, Frederick Sound, Alaska, test was used to compute correctors for this survey. Those correctors are included in Offset Table 1. RAINIER will forward the 1990 results when they become available. ✓

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 on line (DN)</u>
2120	1	160-171 172-173
2123	3	194-197 175-216
2124	4	162-219
2126	6	177-181

Copies of all offset tables are included in the separate ~~supplementing this report.~~ ✓

Heave *SEE NEXT PAGE 5A*

*Filed with the SURVEY RECORDS.* ✓

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

#### 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

Tidal zoning and correctors applicable to predicted tides for the Hagemester Island, Alaska, reference tide station (946-5089) were provided in the Project Instructions, and are shown below. ✓

<u>Zone</u>	<u>Time Corrections</u>	<u>Ratio</u>
West of 160°20'00"W	High Water: -30 min Low Water: -30 min	direct
East of 160°20'00"W	High water: -1 hr Low water: -1 hr	direct

Correctors from the first zone were applied to all soundings on RA-20-4W-90. Correctors from the second zone were applied to all soundings on RA-20-4E-90. HDAPS listings of the data used in generating tide corrector tables are included in Appendix V of this report. ✓



**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 continue operations in these conditions because weather and sea conditions prevailing early in the season made it uncertain that better conditions would be available in the survey area. The hydrographer concluded that because of the prevailing flat bottom character, data quality would not be seriously impaired by conducting sounding operations in these conditions. RAINIER was later able to rerun most of the sounding lines obtained in the worst conditions, and 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. ✓

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 field tide records and the Preliminary 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 Preliminary Field Tide Notes and the requests for approved tides are included in Appendix V. *SEE EVALUATION REPORT SECTION L.*

#### H. CONTROL STATIONS

Horizontal control stations are listed in Appendix III of this report, *(attached)*.

Positions for existing stations are from the NGS data base and from prior surveys conducted in 1985 and 1987. Existing stations were recovered in accordance with FPM 5.2.4. New stations meet Third-Order Class I standards and were positioned via traverse methods. Geographic positions are based on the North American Datum of 1983 and the Geodetic Reference System 1980 Ellipsoid. Several geographic positions were NAD83 adjusted, and were obtained through N/CG2333. 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 multi-range modes. Bottom samples were located using a Furuno LC-90 Mark-II Loran positioning system and the Mini-Ranger Falcon system. All systems were operated in a manner consistent with accuracy requirements specified in the Hydrographic Manual and the FPM.

##### Positioning Equipment

Serial numbers of the mobile electronic positioning equipment (Mini-Ranger console/RTs, and 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 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 were conducted 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 the 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

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. ✓

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

### Problems and Unusual Position Configurations

Three positioning configurations were used for collecting sounding data: ARGO, Falcon, and a hybrid of ARGO and Falcon. ✓

On DN 174, Vesno 2123 calibrated the ARGO system using an uncalibrated console/RT pair: F0247/B1405. The calibration was successful and the collected data were considered acceptable (Pos. Nos. 2000-2026). The data were later rejected due to tide problems and the lines were rerun. ✓

On DN 181, Vesnos 2123 and 2126 calibrated ARGO with two Mini-Ranger stations instead of three. Maximum residuals and ECRs were within allowable limits during the calibrations and during data collection and data were considered acceptable. CONCUR ✓

On DN 184, the RT unit S/N B1405 failed in the field. It was replaced with RT D2395. Both RTs were calibrated with the console D0051. ✓

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 re-calibration conducted. Probable causes of lane jumps were fog, rain, skywaves, or ground changes to the antenna load. ✓

A small amount of data were 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 bottom samples 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 with Loran on this survey. ✓

#### 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

Not Applicable. ✓

#### K. CROSSLINES

A total of 106 nautical miles of crosslines were run perpendicular to mainscheme lines, representing 8.9% of the mainscheme hydrography. Crossline soundings agree within one meter compared to mainscheme soundings. The vessel which acquired crossline data did not always collect the corresponding main scheme data; agreement between soundings acquired with different equipment is as stated above. ✓

#### L. JUNCTIONS *SEE EVALUATION REPORT sections 1 and 5.*

This survey junctions with H-10277 (1:20,000; 1988) to the north, H-10184 (1:40,000; 1985) and H-10216 (1:20,000; 1986) to the east, H-10190 (1:20,000; 1985) to the south, and H-10344 (1:20,000; 1990) to the west. There is no contemporary survey south of latitude 58°23'30"N on the western boundary. ✓

Junction surveys H-10277, H-10184, H-10216, and H-10190 all agree within 1 to 2 meters of this survey. Interestingly, in all 4 cases the junction survey is shoaler than this survey. Agreement with H-10344 is within 1 to 2 meters, with no irregularities in depths or contours noted. ✓

Junction differences are probably due to inadequate tide correctors, which were addressed in the Project Instructions, Section 5.9. A radio message from PMClx2 (R 092040Z AUG 90, <sup>Attached</sup> ~~Appendix VI~~) indicates that N/CG241 expects to resolve these discrepancies after analysis of this year's tidal data. ✓

M. COMPARISON WITH PRIOR SURVEYS

This survey was compared with the following prior surveys:

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

A 1:20,000-scale enlargement of H-7718 was used for comparison with this survey. In general, agreement between depths on H-7718 and this survey is good. Depths in the southern portion of the survey agree within two meters. Soundings in the northeast portion of H-7718 are illegible, and no comparison could be made. To the south and east of this area the depths on H-7718 are up to three meters shoaler than depths from this survey. Probable causes for these differences are variations in the tidal datums and bottom changes due to migrating sand waves.

Recommendation: The hydrographer recommends data from this survey be used to supersede data from H-7718.

CONCUR

AWOIS Item 50904 SEE EVALUATION REPORT SECTION 6.

AWOIS 50904 consists of 2 shoals reported in the same general vicinity:

A charted <sup>2 feet</sup> 2.2-fathom sounding at <sup>27.1</sup> 58°-28'-30"N, <sup>22.8</sup> 160°-13'-15"W (NAD<sup>83</sup>27), originated from a 2.3 fathom sounding on H-7718 (1948), which is considered to have reconnaissance value only. H-7718 is also the source of the charted note, "Further Shoaling is Likely", in this vicinity. RAINIER found no indication of a 2.3 fathom (4.2 meters) shoal in this vicinity. <sup>CONCUR</sup> The least depth <sup>ON THE SHOAL</sup> found at this position is <sup>4.0</sup> 4.3 fathoms (7.8 meters). This difference is probably due to the improved accuracy of modern positioning systems. <sup>CONCUR</sup> Position #259616 at Latitude 58°29'41.00"N, Longitude 160°13'23.39"W. This position is 2.283 meters due north of reported depth.

Recommendation: The hydrographer recommends deletion of the charted note and use of data from this survey to supersede all data from H-7718 during chart compilation.

CONCUR

The second part of AWOIS 50904 <sup>186</sup> is a 2-fathom shoal discovered by RAINIER in 1986 (Special Investigation CL842) at <sup>36.2</sup> 58°29'29.0"N, <sup>28.9</sup> 160°13'21.0"W (NAD27), and a 2.1 fathom sounding located by the same vessel in the same year (D66/86 as part of OPR-R184-RA-86) at <sup>36.2</sup> 58°29'29.0"N, <sup>29.7</sup> 160°13'21.8"W (NAD27). A least depth of 2.2 fathoms (4.0 meters) was discovered on a manscheme sounding line at <sup>3.9</sup> 58°29'42.4"N, <sup>25.4</sup> 160°13'20.8"W (NAD83) (POS 465149). Developments with 50-meter and 10-meter line spacing <sup>3.9</sup> revealed nothing shoaler, although different depths may be revealed with the application of smooth tides to this data. A possible reason for the slight difference in position is the migratory nature of sand waves which are suspected to exist in this vicinity. No dive investigation was conducted on this shoal because of poor visibility from suspended sand and the extreme flatness of the shoal which would have prevented any feature identification..

Recommendation: The hydrographer recommends data from this survey be used to supersede the 1986 data during chart compilation. CHART AREA AS SHOWN ON SMOOTH SHEET.

CONCUR

\* This Position 465119 WAS EXCEEDED BY A SHOALER DEPTH OF POSITION 259616

**BP-18063 (Old Fishing Industry Chart; 1916):**

This survey was not available for comparison. However, one charted sounding originated with BP-18063, and agrees within 2 meters of surrounding depths on this survey. ✓

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

**N. COMPARISON WITH THE CHART** *SEE EVALUATION REPORT SECTION 7*

This survey was compared to NOS Preliminary Chart 16315, 6th Edition, January 6/90, 1:100,000 (NAD 83). ✓

**Dangers to Navigation**

Five 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~~ <sup>attached</sup> to this report. Position numbers associated with each reported danger are indicated on the copy of the radio message. ✓

**Comparison of Sounding Features**

All charted soundings originate from the prior surveys discussed in Section M, or the junction surveys discussed in Section L, and will not be discussed here. ✓

**Comparison of Non-Sounding Features**

There are no non-sounding features within the limits of this survey. ✓

**O. ADEQUACY OF SURVEY**

This survey is complete and adequate to supersede the areas common to the prior surveys listed in Section 6.10 of the Project Instructions, and for chart compilation in areas not previously surveyed. CONCUR ✓

**P. AIDS TO NAVIGATION**

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

**Q. STATISTICS**

Vessel:	<u>2120</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>2126</u>	<u>TOTAL</u>
# of POS:	<del>849</del> 711	<del>782</del> 655	<del>1304</del> 1192	<del>56</del> 47	<del>335</del> 280	<del>3326</del> 2785
NM of Hydro:	346.1	272.6	620.5	-	111.1	1350.3
NM <sup>2</sup> Hydrography:		77.4				
Detached Positions:		0				
Bottom Samples:		56				
Tide Stations:		2				
Current Stations:						0
Velocity Casts:						3
Magnetic Stations:						0

**R. MISCELLANEOUS**

During data collection it was observed that soundings from different days collected by the same vessel did not correspond to previous days' data. Contouring the sounding plots showed an uneven or s-curve bottom. The probable cause is inadequate predicted tides (as anticipated in Section 5.9 of the Project Instructions). A radio message from PMC1x2 (R092040Z AUG 90) informed RAINIER that N/CG241 expects to resolve discrepancies caused by inadequate tide correctors after analysis of this year's tidal data. A copy of the radio message is *attached*. ~~included in Appendix VI of this report.~~

The hydrographer has concluded that sand waves exist in the northeast area of this survey. Echogram traces characteristic of sand waves were noted. Other indications of sand waves were bottom samples which consisted largely of fine black sand, suspended sand observed at the water surface during storms and high winds, and suspended sand observed during dive operations in the project area. *The notation "SAND WAVES" is on the Smooth Sheet.* All bottom samples were forwarded to the Smithsonian Institution.

**S. RECOMMENDATIONS**

None.

**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-184-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

September 1990

Respectfully Submitted,

*for James R. May*

Damian Kopcha  
DMA Cartographer

Approved and Forwarded,

*John C. Albright*

John C. Albright, Captain, NOAA  
Commanding Officer



No	Type	CONTROL STATIONS				Freq	Vel	Code	MM/DD/YY
		Latitude	Longitude	H	Cart				
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
<del>204</del>	<del>F</del>	<del>058:40:51.508</del>	<del>160:47:58.431</del>	<del>7</del>	<del>254</del>	<del>0.0</del>	<del>0.0</del>	<del>E</del>	<del>07/15/90</del>
<del>205</del>	<del>F</del>	<del>058:39:30.556</del>	<del>160:49:14.911</del>	<del>10</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>4</del>	<del>07/15/90</del>
206	F	058:35:04.044	160:52:45.530	14	250	0.0	0.0	F	07/15/90
<del>207</del>	<del>F</del>	<del>058:47:14.904</del>	<del>160:42:20.529</del>	<del>5</del>	<del>254</del>	<del>0.0</del>	<del>0.0</del>	<del>1</del>	<del>07/11/90</del>
<del>208</del>	<del>F</del>	<del>058:33:38.440</del>	<del>160:55:35.694</del>	<del>16</del>	<del>254</del>	<del>0.0</del>	<del>0.0</del>	<del>1</del>	<del>08/05/90</del>
<del>209</del>	<del>F</del>	<del>058:33:16.040</del>	<del>160:57:09.142</del>	<del>10</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>4</del>	<del>08/05/90</del>
<del>210</del>	<del>F</del>	<del>058:33:04.248</del>	<del>160:57:49.321</del>	<del>21</del>	<del>254</del>	<del>0.0</del>	<del>0.0</del>	<del>C</del>	<del>08/05/90</del>
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  
 206 BEACH, 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, reading "John C. Albright", is written over a horizontal line.

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 S 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 NAD27

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

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	NAD27	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	NAD27	58-28-17.26N	160-27-25.79W	
VA.	THE SHOAL CHARTED AT 58-31-24N, 160-22-48W (NAD83) EXTENDS 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	NAD83	58-28-25.33N	160-20-53.30W	8172+0
	COV	16011	2 1/2FM	NAD83			
		16006	2 1/2FM	NAD27	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	NAD27	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	NAD27	58-30-24.42N	160-20-31.28W	

*UNREVISED RETAINED AS REPORTED.*

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 HAGEMASTER 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			
		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			
		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			
		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			
		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			
		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			
		16006	5	1/2FM	NAD27	58-26-05.76N	160-54-42.24W	
NG.	SHOAL	16315	2FM	OFT	NAD83	58-30-30.05N	160-57-33.21W	8196+2
	COV	16305	2FM	OFT	NAD83			
		16011	2FM		NAD83			
		16006	2FM		NAD27	58-30-32.87N	160-57-25.30W	

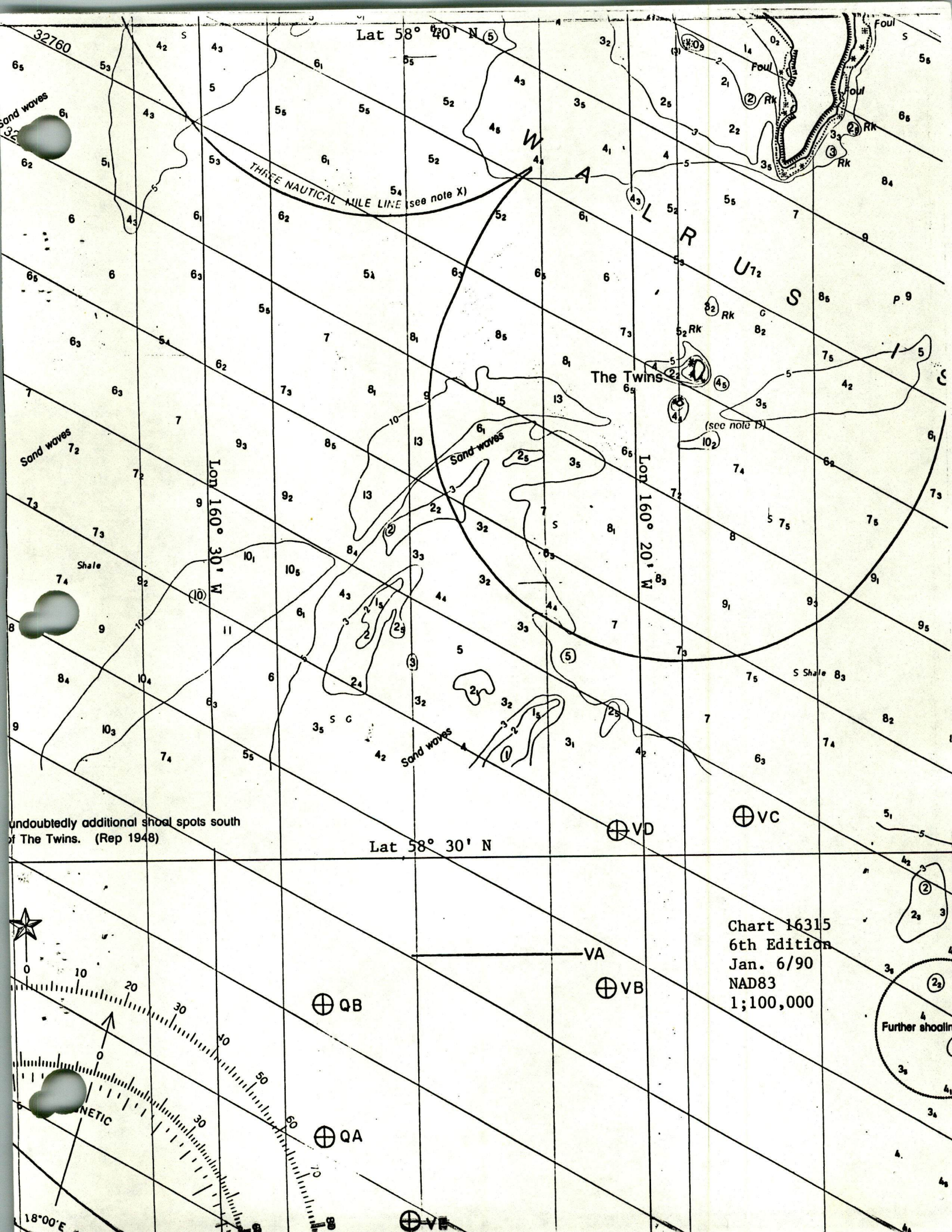
LORAN C POSITIONING (POSITION APPROXIMATE):

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



Lat 58° 40' N (5)

THREE NAUTICAL MILE LINE (see note X)

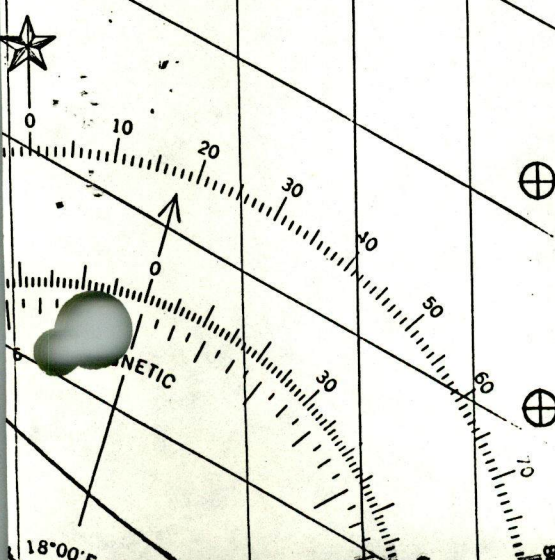
The Twins

(see note D)

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

Lat 58° 30' N

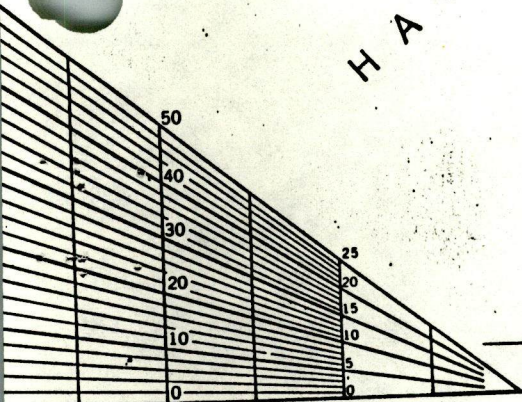
Chart 16315  
6th Edition  
Jan. 6/90  
NAD83  
1:100,000



Further shoals

There appears to be a...  
between High and Hager

H A G E M E I



TRAN LINEAR INTERPOLATOR

TRAN-C  
EXPLANATION

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

IN THIS CHART  
Y 9990-Z

... published by the Defense  
... should not be used with this  
... tion shown have been adjusted  
... determined overland signal  
... they have not been verified by  
... y data. Every effort has been  
... nautical mile accuracy criteria  
... S. Coast Guard. Mariners are  
... solely on the lattices in inshore

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

Lon 160° 50' W

THREE NAUTICAL MILE LANE  
3/10 XI

Lon 160° 40' W

Lat 58° 40' N

Lat 58° 30' N

MB  
MC  
MF  
PA Shooting (Rep 1986)  
MD

ME

MA

44

32790

32800

32810

32820

32830

32840

9990Y 32850

S Shale

93

82

8

73

65

6

51

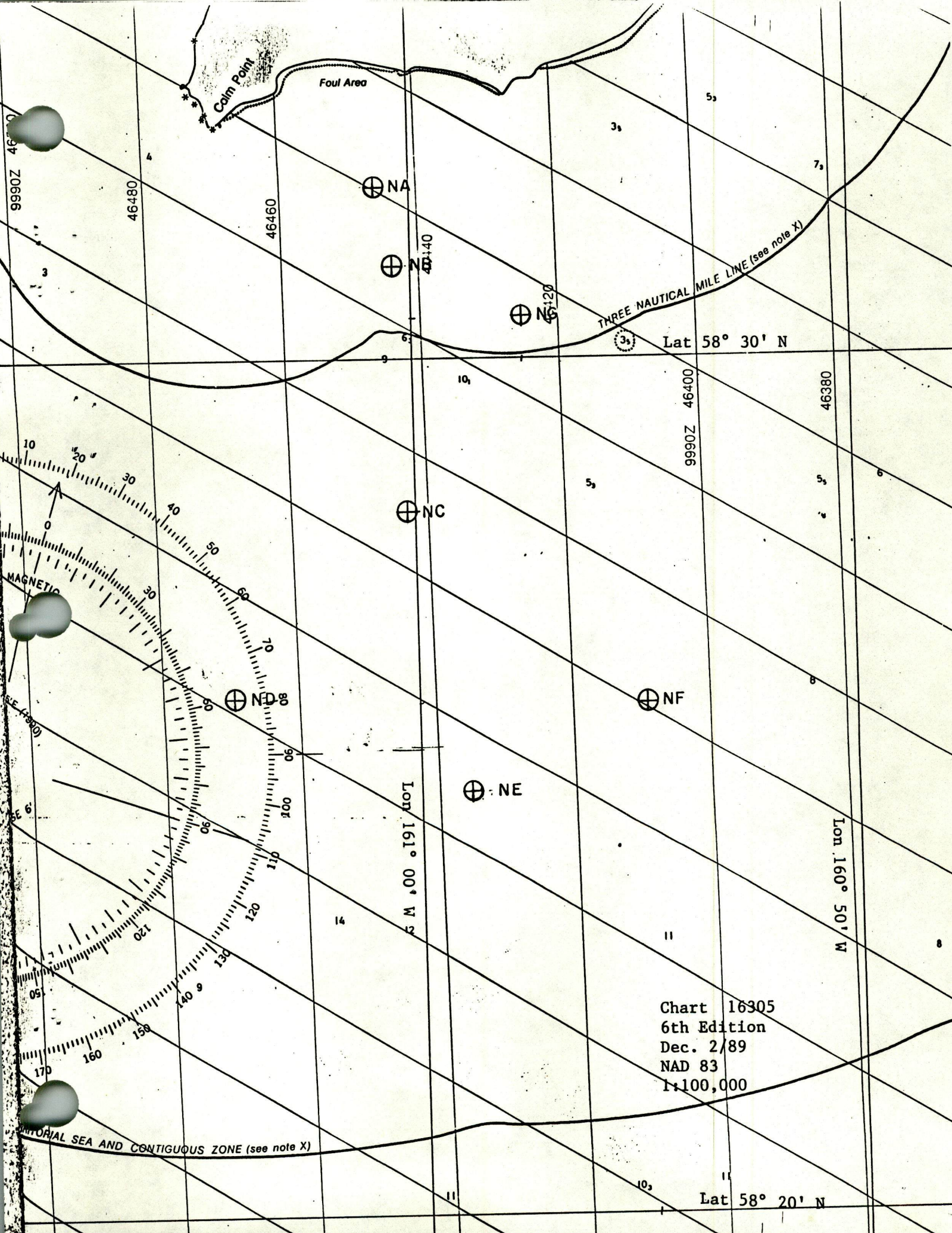
(5)

43

34

33





9990Z 46380

46480

46460

9990Z 46400

46380

Lat 58° 30' N

Lon 161° 00'

Lon 160° 50'

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

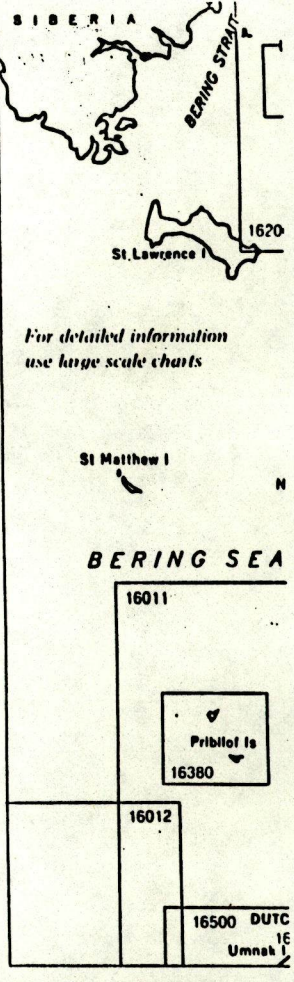
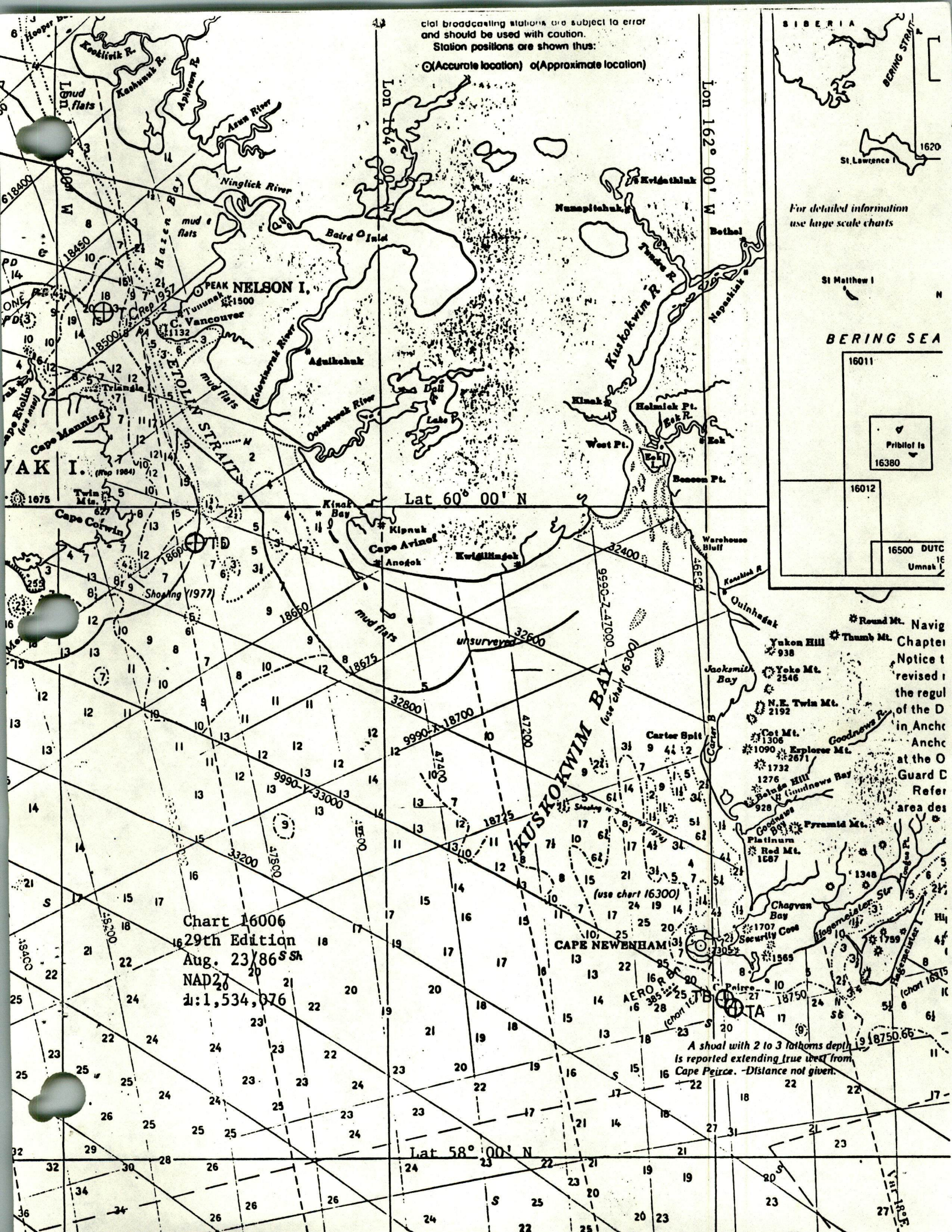
TERRITORIAL SEA AND CONTIGUOUS ZONE (see note X)

Lat 58° 20' N

cial broadcasting stations are subject to error and should be used with caution.

Station positions are shown thus:

⊙ (Accurate location) ○ (Approximate location)



For detailed information use large scale charts

BERING SEA

16011

Pribilof Is  
16380

16012

16500 DUTC  
Umnek I

Chart 16006  
29th Edition  
Aug. 23/86 SA  
NAD27  
1:1,534,076

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

\*Round Mt. Navig  
\*Thumb Mt. Chapter  
Notice t  
revised i  
the regul  
of the D  
in Anch  
Anch  
at the O  
Guard C  
Refer  
area des

Yukon Hill 938  
Yoko Mt. 2546  
N.E. Twin Mt. 2192  
Cot Mt. 1306  
1090 Explorer Mt. 2871  
1732  
1276  
Balala Hill (Goodnews Bay) 928  
Pyramid Mt.  
Platinum  
Red Mt. 1687  
Chagvan Bay  
Security Cove 1707  
1569  
Peirce 18750  
18750.66  
ATA

Lat 58° 00' N

Lat 60° 00' N

Lon 162° 00' W

Lon 164° 00' W

Lat 163° E

C  
F

KUS / TPOST  
ESAA / 182215Z AUG 90

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

BT  
UNCLAS

RA-PMC-160-189/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.

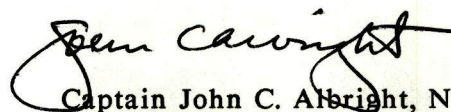
BT

## APPROVAL SHEET

H-10345  
(RA-20-4-90)

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, are considered complete and adequate for charting purposes, and are approved.



Captain John C. Albright, NOAA  
Commanding Officer

**ORIGINAL**

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: August 26, 1991

MARINE CENTER: Pacific

OPR: R184

HYDROGRAPHIC SHEET: H-10345 (REVISED)

LOCALITY: Nine Miles South of The Twins, Bristol Bay,  
Alaska

TIME PERIOD: June 11 - August 7, 1990

TIDE STATIONS USED: 946-5182 Black Rock, Alaska  
(444-5182 PREDICTED DATA)  
Lat. 58° 42.5'N Lon. 160° 11.3'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.00 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 9.0 ft.

**REMARKS:**

The type of tide at Hagemeister Island is significantly different from the tide at Black Rock, Alaska. The area covered by this H-sheet is south of Black Rock and west towards Hagemeister Island. Problems were encountered in an attempt to zone Hagemeister Is. data to cover this area so that it junctions adequately with adjacent sheets that were previously zoned from Black Rock. It appears that the type of tide in this area is more similar to that of Black Rock than Hagemeister Island. Black Rock was not operating during this field operation. The difference between the predicted data and observed data at Hagemeister Island, which was operating, was reasonably small, being an average of 0.02 foot. It is reasonable to assume that the difference between the predicted and observed for Black Rock would also be reasonably small for the same time period. Therefore, it is recommended that predicted data for Black Rock be used to zone from for this H-sheet.

RECOMMENDED ZONING:

1. East of  $160^{\circ} 20.0'W$ , times are direct and apply a x0.80 range ratio to Black Rock Predictions (444-5182).
2. West of  $160^{\circ} 20.0'W$ , apply a +15 min. and apply a x0.80 range ratio to Black Rock Predictions (444-5182).

**Note:** Times are tabulated in Greenwich Mean Time.

*for B. H. Conway*  
-----  
CHIEF, TIDAL DATUM QUALITY  
ASSURANCE SECTION

GEOGRAPHIC NAMES

Name on Survey	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">A ON CHART NO. 16315</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">B ON PREVIOUS SURVEY NO.</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">C ON U.S. QUADRANGLE MAPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">D FROM LOCAL INFORMATION</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">E ON LOCAL MAPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">F P.O. GUIDE OR MAP</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">G GRAND McNALLY ATLAS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">H U.S. LIGHT LIST</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">K</div> </div>											
	A	B	C	D	E	F	G	H	K			
ALASKA (TITLE)	X											1
BRISTOL BAY	X											2
TWINS, THE (title)	X											3
												4
												5
												6
												7
												8
												9
												10
												11
												12
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												18
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												20
												21
												22
												23
												24
												25

Approved:

*Charles B. Harrington*  
Chief Geographer - N/CG2 x5

APR 25 1991

**HYDROGRAPHIC SURVEY STATISTICS**

H-10345

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		6
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES					
ENVELOPES					
VOLUMES					
CAHIERS	2				
BOXES					

**SHORELINE DATA**

SHORELINE MAPS (List):	None
PHOTOBATHYMETRIC MAPS (List):	None
NOTES TO THE HYDROGRAPHER (List):	None
SPECIAL REPORTS (List):	None
NAUTICAL CHARTS (List):	16315 7th Ed., Mar. 2, 1991

**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			2785	
POSITIONS REVISED			70	
SOUNDINGS REVISED			564	
CONTROL STATIONS REVISED				
	TIME-HOURS			
	VERIFICATION	EVALUATION	TOTALS	
PRE-PROCESSING EXAMINATION				
VERIFICATION OF CONTROL				
VERIFICATION OF POSITIONS	75		75	
VERIFICATION OF SOUNDINGS	265.5		265.5	
VERIFICATION OF JUNCTIONS				
APPLICATION OF PHOTOBATHYMETRY				
SHORELINE APPLICATION/VERIFICATION				
COMPILATION OF SMOOTH SHEET	72		72	
COMPARISON WITH PRIOR SURVEYS AND CHARTS		7	7	
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT		20	20	
GEOGRAPHIC NAMES				
OTHER* Digitization	417.5	27	439.5	
*USE OTHER SIDE OF FORM FOR REMARKS	<b>TOTALS</b>	412.5	27	439.5

Pre-processing Examination by <b>M. Brown</b>	Beginning Date <b>9/18/90</b>	Ending Date <b>10/2/90</b>
Verification of Field Data by <b>L. Deodato, E. Brown, T. Jones</b>	Time (Hours) <b>412.5</b>	Ending Date <b>12/13/91</b>
Verification Check by <b>L. Deodato, J. Stringham, G. Kay</b>	Time (Hours) <b>52.5</b>	Ending Date <b>1/8/92</b>
Evaluation and Analysis by <b>G.E. Kay</b>	Time (Hours) <b>27.0</b>	Ending Date <b>1/10/92</b>
Inspection by <b>D.J. Hill</b>	Time (Hours) <b>2.0</b>	Ending Date <b>2/4/92</b>



# EVALUATION REPORT

H-10345

## 1. INTRODUCTION

Survey H-10345 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 was conducted in Alaska and covers an area in Bristol Bay nine miles south of The Twins. The northern limit of this survey is latitude 58/31/24N, to the south latitude 58/21/44N. The eastern limit is longitude 160/11/12W and to the west longitude 160/27/18W. This is the initial basic survey of the area; the prior survey contained a few lines of reconnaissance hydrography. The bottom consists of sand, pebbles and broken shells. Depths range from 2.5 to 15.6 meters.

During the processing of the 1990 surveys in Bristol Bay, irreconcilable differences were noted in attempting to junction with the surveys conducted during the 1985 to 1988 field seasons. These discrepancies were reported to the Hydrographic and Marine Boundary Unit (N/OMA1231), which provided revised zoning for this survey. Furthermore, since there was little historical tide data for the area and the differences were also attributable to the zoning on the older surveys, revised zoning was also provided for several junction surveys previously processed. The affected surveys are: H-10184(1985), H-10190 (1985), H-10216(1986), and H-10277(1988). These previously processed surveys had the new tide reducers applied to the soundings and new sounding overlays produced.

Predicted tides for Hagemeister Island, Alaska, gage 946-5089, were used for the reduction of soundings during field processing. Predicted hourly heights zoned from Black Rock, Alaska, gage 444-5182, were used during office processing. Refer to the Tide Note for Hydrographic Survey, attached to this report, for the authorization and justification for use of predicted tides in lieu of observed tides for this survey.

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 Number 52, Standard Digital Data Exchange Format, April 15, 1986. Certain feature descriptive information, however, may not be in the digital record due to 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 Control Report for OPR-R184-RA, contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are 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 using the NAD 83 projection by applying the following average corrections.

Latitude: -2.806 seconds (-86.823 meters)  
Longitude: 7.855 seconds ( 127.465 meters)

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

The quality of several positions exceeds specifications 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.

There are no shoreline maps applicable to this survey.

## **3. HYDROGRAPHY**

Hydrography is adequate to:

- a. delineate the bottom configuration, determine least depths, and draw the standard depth curves;
- b. reveal there are no significant discrepancies or anomalies requiring further investigation; and
- c. show the survey was properly controlled and soundings are correctly plotted.

## **4. CONDITION OF SURVEY**

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

## 5. JUNCTIONS

Survey H-10345 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10184	1985	1:40,000	Southeast
H-10190	1985	1:20,000	South
H-10216	1986	1:20,000	Northeast
H-10277	1988	1:20,000	North
H-10344	1990	1:20,000	West

The junctions with the 1985 to 1988 surveys were accomplished with the sounding overlays based on the revised tidal zoning provided for those surveys. Since these surveys were conducted in fathoms and the 1990 surveys in meters and the depth curves delineate different depths, the junction could not be formally completed.

Survey H-10184(1985) junctions to the southeast. Several soundings were transferred to the present survey to support the 10 meter curve.

Survey H-10190(1985) junctions to the south. The only depth curve in the junction area, a 15 meter deep at latitude 58/22/00N, longitude 160/16/30W, does not appear on survey H-10190.

Survey H-10216(1986) junctions to the northeast. Many soundings were transferred to the present survey to support the junction curves.

Survey H-10277(1988) junctions to the north. Even with the application of revised tides, a butt junction is necessary east of longitude 160/20/00W. This survey supersedes the data on survey H-10277 in the common area. West of longitude 160/20/00W, the junction can be readily accomplished, with a slight adjustment to the 5 meter curve.

Survey H-10344(1990) junctions to the west. An excellent junction could be made. A shoal sounding of 9.9 meters at latitude 58/25/24N, longitude 160/27/06W, was transferred to survey H-10345.

There is no junction survey to the west, south of latitude 58/23/30N. A comparison was made to the chart. There are no charted soundings in this junction area.

## 6. COMPARISON WITH PRIOR SURVEYS

H-7718(1948) 1:100,000

Survey H-7718 contains three lines of hydrography common to this survey. The soundings on survey H-7718 are consistently two meters shoaler than the soundings on the present survey. Considering the differences in the scales of the surveys, and the uncertainty of the tide correctors for this area, comparison with this prior survey is satisfactory.

AWOIS item 50904, a 2.3 fathom sounding (4.2 meters), originates with prior survey H-7718 and is adequately discussed by the hydrographer in section K of his report.

Survey H-10345 is adequate to supersede the prior survey H-7718 within the common area.

## 7. COMPARISON WITH CHART

Chart 16315, 6th Edition, dated December 2, 1989; scale 1:100,000  
Chart 16315, 7th Edition, dated March 2, 1991; scale 1:100,000

### a. Hydrography

Charted hydrography on the sixth edition originates with survey H-7718. Charted hydrography on the seventh edition originates with the unverified field sheet of the present survey, survey H-7718 and miscellaneous sources and requires no further discussion.

Survey H-10345 is adequate to supersede charted hydrography within the common area.

### b. AWOIS

There are no AWOIS items originating from miscellaneous sources.

### c. Controlling Depths

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

### d. Aids to Navigation

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

### e. Geographic Names

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

### f. Dangers to Navigation

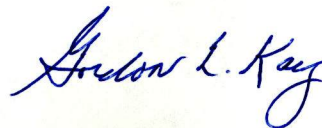
The hydrographer reported five dangers to the USCG and DMAHTC on September 9, 1990. Copies of the messages are attached. No additional dangers were discovered during office processing.

## 8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10345 adequately complies with the Project Instructions.

## 9. ADDITIONAL FIELD WORK

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



Gordon E. Kay  
Cartographer

APPROVAL SHEET  
H-10345

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts have been made and are included with the survey records. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

*Dennis J. Hill*

Date: 2-5-92

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: 2/6/92

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

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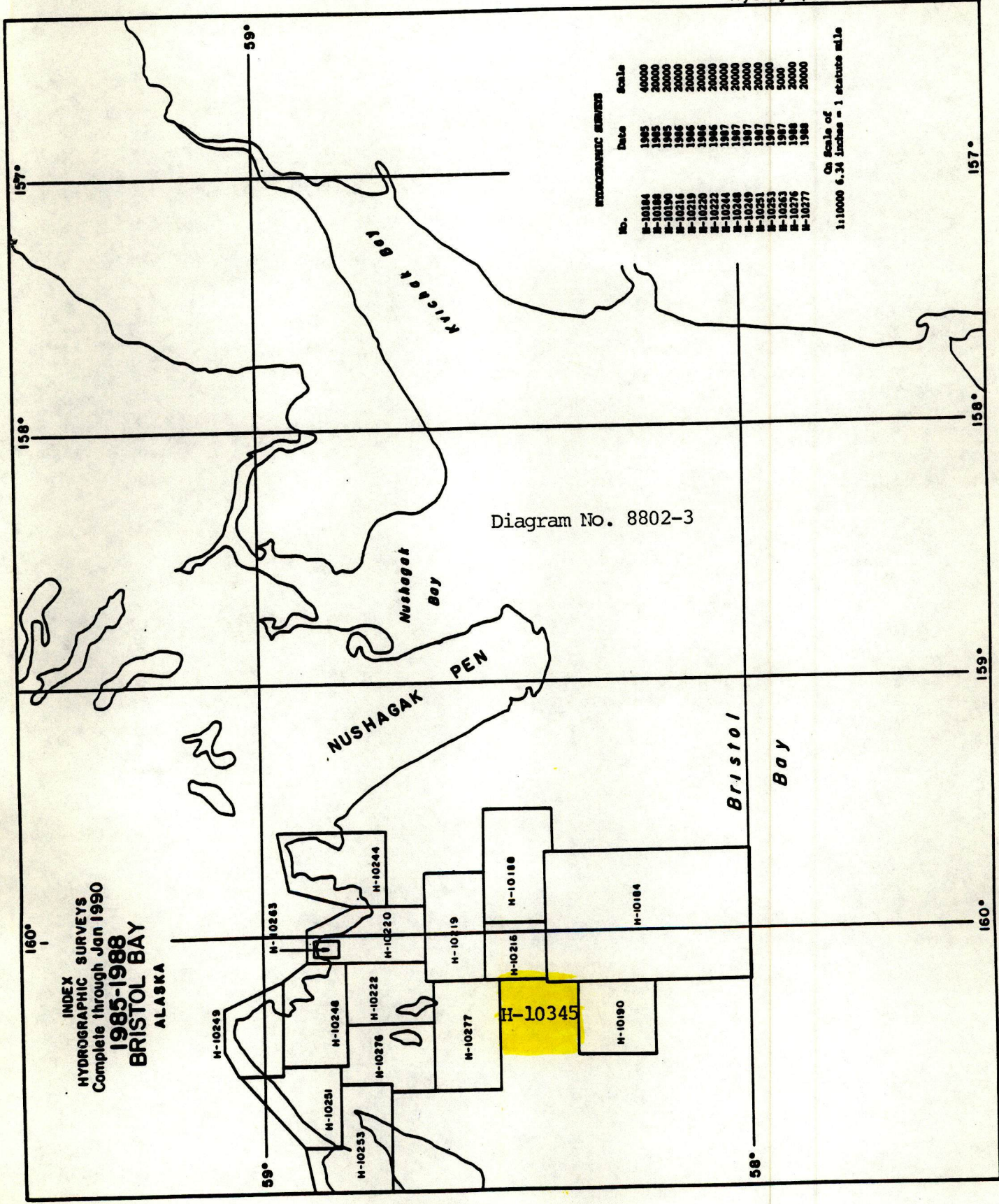
Final Approval

Approved:

*J. Austin Yeager*

Date: 3/16/92

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



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

Diagram No. 8802-3

HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-10184	1985	40000
H-10188	1985	20000
H-10190	1985	20000
H-10216	1985	20000
H-10219	1985	20000
H-10220	1985	20000
H-10222	1985	20000
H-10244	1987	20000
H-10246	1987	20000
H-10249	1987	20000
H-10251	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-10345

**INSTRUCTIONS**

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
530	10-4-93	P. Elliott	Full <del>Part Before</del> After Marine Center Approval Signed Via
			MK Drawing No. 36 Re-exam, appl'd sdg's thru 16006 #17
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
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