10253

Diagram No. 8802-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

10253

Type of Survey Hydrographic

Field No. RA-20-5-87

Registery No. H-10253

LOCALITY

State Alaska

General Locality Togiak Bay

Sublocality Northern Hagemeister Strait and Vicinity

1987

CHIEF OF PARTY
CAPT C.W. Fisher

LIBRARY & ARCHIVES

DATE November 1, 1988

CARTOG:
SIGN OFF ONLY
ON SHEET IN
REAR OF D.R.
"GP"

CHTS:
16305
16315
16011
16006

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NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10253

HYDROGRAPHIC TITLE SHEET

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

FIELD NO.

RA 20-5-87

State Alaska

General locality Togiak Bay

Locality Northern Hagemeister Strait and Vicinity

Scale 1:20,000 Date of survey August 7 - September 2, 1987

Instructions dated March 6, 1987 Project No. OPR-R184-RA-87

Vessel RAINIER S221 (2120), Launches 2123, 2124, 2125, 2126, Skiff 2129

Chief of party Carl W. Fisher, Capt. NOAA

Surveyed by LT White, LTJG Damm, ENS O'Mara, ENS Hill, ENS Meis, ENS Larsen, ENS Smith, ENS Groeneveld, ENS Noll

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

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by ~~Protracted by~~ G.E. Kay Automated plot by PMC Xynetics Plotter

Verification by M. Sanders

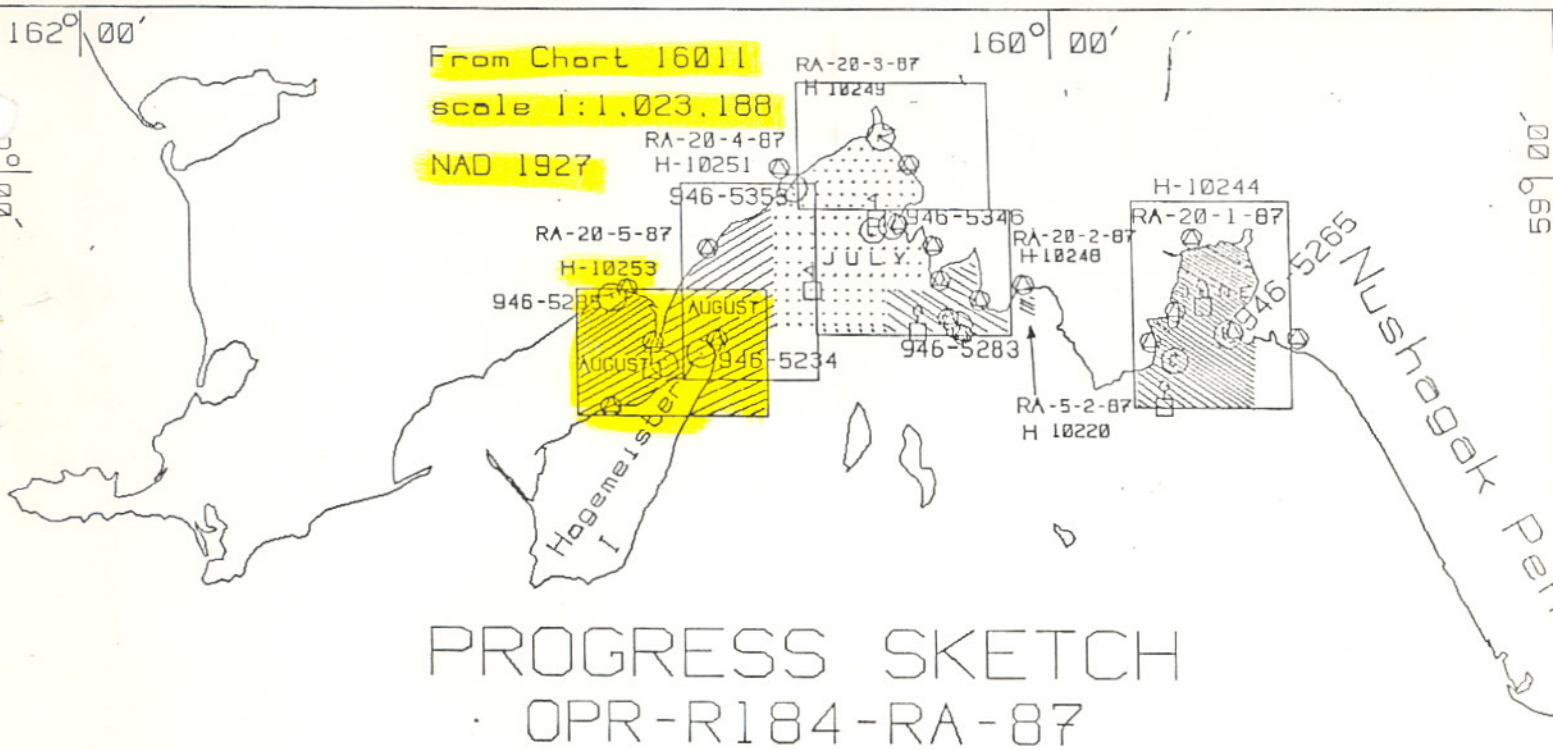
Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW and tenths

REMARKS: Comments in black are made by the Evaluator. Separates have been removed and filed with the survey records.

5 03-26-97 Awois + SURF ✓ RWD 9/89

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

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174



PROGRESS SKETCH

OPR-R184-RA-87

HYDROGRAPHIC SURVEY

TOGIAK BAY, ALASKA

JUNE 7 - SEPT. 01

NOAA SHIP RAINIER

CARL W. FISHER, CAPT. NOAA

COMMANDING

JUN	JUL	AUG	SEP	
81.4	122.7	94.88	-	SQ.N.M. Sounding
1108	1565	1961	-	L.N.M. Sounding
460	988	1015	10	L.N.M. Misc. Distance
78	65	119	1	Bottom Samples (Grab)
10	8	5	-	Electronic Control Stations
4	--	-	-	Temp. Depth. Sound Velocity
—	3	2	-	Nansen Cast
4	2	1	-	Tide Gages
15	11	5	-	Geodetic Control Stations
3	18	17	-	Water Samples Analyzed
1.65	2.97	2.42	-	SQ. N.M. Side Scan Sonar
82	15.4	76.4	-	L.N.M. Side Scan Sonar
1	1	2	-	Current Stations Occupied

Descriptive Report to Accompany Hydrographic Survey H-10253

Field Number RA-20-5-87
Scale 1:20,000
1987

NOAA Ship RAINIER
Chief of Party: Captain Carl W. Fisher

A. Project

A basic hydrographic survey of the north end of Hagemeister Strait, including Matogak Bay to the north and the east and north sides of Hagemeister Island, was completed as specified by Project Instructions OPR-R184-RA, dated March 6, 1987; Change Number 1, dated March 20, 1987; Change Number 2, dated June 2, 1987; and Change Number 3, dated August 10, 1987.

This was one of a series of surveys in a project to provide modern hydrographic survey coverage of Bristol Bay, Alaska, between Cape Newenham and Cape Constantine, for existing and new charts that are planned for 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.

The survey was designated sheet G on the original sheet layout for the project dated January 25, 1985. The field number for the survey was RA-20-5-87 and the assigned registry number was H-10253.

B. Area Surveyed

The survey was located in northern Bristol Bay, Alaska, in and near Hagemeister Strait between the northern half of Hagemeister Island and the mainland. The survey extends from Togiak Bay southwestward, halfway down Hagemeister Strait, and includes waters to the east, north, and west of Hagemeister Island and all of *Matogak Bay. * Not an approved geographic name.

The area includes a deep channel through the strait bordered by shallow water west and north of Tongue Point and foul areas along the northwestern shore of Hagemeister Island. The northern point of Hagemeister Island, appropriately named Rocky Point, is very rocky and foul, with submerged rocks as much as 2 nautical miles offshore of the point. The southeast side of Hagemeister Island is a wide, steeply sloping sand beach.

The survey area was bounded by the following geographic limits:

North	58° 53' 06" N
South	58° 44' 20" N
East	160° 36' 00" W
West	161° 01' 00" W

Data acquisition was conducted from August 7 through September 2, 1987 (day 219 - day 244).

C. Sounding Vessels

Data were acquired with the following vessels:

Vessel	EDP No.	Operation
RAINIER	2120	Velocity cast
RA-3	2123	R/R, Side scan
RA-4	2124	R/R
RA-5	2125	B.S.,Shore. ver., R/R, R/AZ
RA-6	2126	R/R, Shore. ver.
RA-9 (MonArk)	2129	Shoreline verification

No changes to the standard sounding configuration of the automated survey launches were necessary.

A 19-foot, aluminum-hulled MonArk was used during shoreline verification on day 244. The vessel was outfitted with the MiniRanger console and R/T unit from RA-5 for taking detached positions during a visual search.

D. Sounding Equipment and Corrections to Echo Soundings

The automated survey launches used for this survey were equipped with Raytheon DSF-6000N echo sounders (Table 3). 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 fathoms and tenths of fathoms. Two-fathom bar checks were conducted and recorded daily, using both the LOW and the HIGH + LOW (HIGH DIGITIZED) functions, in accordance with the Provisional Instructions "RAYTHEON DSF-6000N ECHO-SOUNDER OPERATING AND PROCESSING INSTRUCTIONS," dated July 5, 1983, and the N/CG2 memorandum "DSF-6000N Depth Errors as a Function of Receiver Gain," dated May 23, 1986.

The echo sounders functioned properly throughout the project. At no time during the survey did a mechanical failure cause any of the echo sounders to be replaced in any of the launches.

Raytheon DSF-6000N Echo Sounders

Vessel	Serial Number	Day Numbers
2123	A117N	219-243
2124	A114N	219-243
2125	A103N	219-243
2126	A119N	219-243

A Klein side scan unit was used to investigate AWOIS items 50918, 50922, and 50923. The unit was operated in accordance with the Provisional Side Scan Sonar Manual, dated April 25, 1986.

Klein Side Scan System

Equipment	Model	Serial No.
Recorder	521T	254
Transducer	422XS-101AF	410M

Least depths were obtained by divers with a 3D Instruments pneumatic depth gage (S/N 8504192N). The gage was operated in accordance with Hydrographic Survey Guideline #55, and was last calibrated December 19, 1986 by 3D Instruments, Inc. (Appendix IV).

Corrections to Echo Soundings

Corrections to all soundings were determined for sea conditions, draft, velocity of sound through water, settlement and squat, and tides. These correctors are eventually to be applied to all survey vessels and all areas of this survey. However, in plotting the final field sheet, the determined correctors were applied for sea conditions, draft, and velocity only. Settlement and squat correctors were not applied. Predicted tide correctors were used in lieu of field-determined correctors. Variations in the instrument initial, stylus arm length, and belt tension are not present with the DSF-6000N.

Sea Conditions

Corrections for sea conditions were applied while scanning. The scanning technique used in comparing the analog trace with the digital record was chosen to eliminate fluctuations greater than 0.2 fathoms resulting from sea action .

Draft

Transducer depths of 0.3 fathom were measured for all four launches on March 26, 1987 by divers using a large wooden T-square. The draft measurements were made at PMC with the fuel tanks all between full and half full, and with zero, then four, people aboard. The average transducer depths of 0.3 fathom agree with RAINIER historical records. Transducers are mounted starboard, midships, in a location such that all sounding corrections apply to both the low- and high-frequency echo-sounder signals.

Velocity Correctors

Velocity of sound through water and the associated corrections to echo soundings were determined by two Nansen casts. On day 218 a Nansen cast (cast ~~#8~~ 10 was taken to a depth of 38 meters at a location in the deep water of the channel that cuts through Hagemeister Strait. On day 242 another Nansen cast (cast #11) was taken to a depth of 30 meters in the same general vicinity as cast #10. The velocity correctors used in this survey were determined by taking a mean of the two Nansen casts. Velocity tape #5, as listed in Appendix IV, was used on the final smooth plot for this survey.

Velocity Cast Locations

Cast No.	Deepest Depth (m)	Day Number	Geographic Position
10	38	218	58°48.3'N, 160°~~48.0~~ 48'18" 48'00" 'W
11	30	242	58°~~48.0~~ 48'00" 'N, 160°~~48.9~~ 48'54" 'W

The Nansen cast provides data only at discreet, preselected depths, rather than continuously throughout the water column. Therefore, the method used to compute velocity correctors is similar to that outlined in the Hydrographic Manual Fourth Edition as Example 2 on page 4-77 (Appendix IV).

Settlement and Squat

Settlement and squat correctors were determined for the automated survey launches in Seymour Canal on April 28 and May 5, 1987 over hard bottom in a depth well exceeding seven times the vessels' drafts. Both sea and wind were calm. Observations were made through a Zeiss Ni2 leveling instrument (S/N 87102) to a rod held vertically on deck of each launch, almost directly over the transducer. Five level readings were made at each speed tested, and the average taken, to compute the correctors. Tide staff readings were taken concurrently with each set of level readings, and all tide height differences were normalized to the tide height of the dead-in-the-water level readings before the correctors were computed.

Soundings on the final field sheet are not corrected for settlement and squat, although corrections of 0.1 fathom must be made for certain vessels at some RPMs. TC/TI tapes for each automated sounding vessel have been prepared and submitted with this survey. Records of settlement and squat data are included in Appendix IV.

Tide Correctors

Tide correctors for this survey were provided by the Sea and Lake Levels Branch (Appendix XIII). These predicted tides proved inadequate as evidenced by inconsistencies when comparing mainscheme soundings to the adjacent 100 meter splits run on a different day. After examining the data from the tide gages installed for the project more suitable correctors were developed for use on this survey. The correctors apply to predicted tides for Black Rock, Walrus Islands, Alaska (946-5182). The method for determining the new zoning is discussed in detail in the Field Tide Note (Appendix II). ✓

Tide Correctors

Applicable Area	Time Correction High Water	Time Correction Low Water	Height Ratio
East of longitude 160°50'W	+ 50 min	+ 50 min	x0.85
West of longitude 160°50'W	+1h 05 min	+1h 05 min	x0.85 ✓

Tide stations were established and operated continuously at Summit Island (946-5283), East Togiak (946-5346), West Togiak (946-5359), Hagemeister Island (946-5234), and Matogak River (946-5285) for the survey. A request for approved tides has been filed (Appendix XI). Field tide records have been forwarded to N/OMA121, in accordance with Hydrographic Survey Guideline #50 and the PMC OPORDER.

E. Hydrographic Sheets

The field sheets were all prepared aboard RAINIER, on a Houston Instrument Complot DP-3 roll plotter, using the PDP8/e Hydroplot system and program RK201, "Grid, Signal, Lattice Plot". Program RK201 draws a modified transverse mercator projection. The final field sheet, a 1:20,000-scale projection, was plotted on two plotter sheets designated RA-20-5N-87 and RA-20-5S-87. In order to include the required area, a reduction of the smooth sheet border from 7.5 cm to 5.0 cm was requested and approved on August 11, 1987 (Appendix XIII). ✓

Five expansion sheets at 1:5,000 scale were used to plot special investigations and are also included with the survey data.

The hydrographer did NOT smooth plot this data.

Expansion Sheets

Sheet	Survey Area	Boundaries
Expansion #1	AWOIS #50922 AWOIS #50923 Side Scan Sonar	North - 58° 49' 30" N South - 58° 48' 15" N East - 160° 38' 45" W West - 160° 44' 45" W

Expansion #2	AWOIS #50918 Side Scan Sonar	North - 58° 47' 45" N South - 58° 46' 45" N East - 160° 45' 30" W West - 160° 47' 45" W
Expansion #3	AWOIS #50925	North - 58° 51' 30" N South - 58° 48' 15" N East - 160° 36' 30" W West - 160° 44' 00" W
Expansion #4	AWOIS # 50926	North - 58° 52' 15" N South - 58° 51' 00" N East - 160° 55' 30" W West - 160° 58' 45" W
Expansion #5	Shoal Development	North - 58° 49' 15" N South - 58° 48' 45" N East - 160° ~~55' 30~~" W 48'45" West - 160° ~~58'~~ 51' 45" 00" W

Sheet 5 data was included on a preliminary Field Sheet with other data.

*	Expansion #6	Shoal Development	North - 58° 46' 15" N South - 58° 44' 45" N East - 160° 51' 45" W West - 160° 54' 30" W

* Sheet 6 was NOT forwarded to P.M.C.

Least depths from these expansion sheets have been transferred to the final field sheet. The central meridian, false easting, and controlling latitude were held constant on all field sheets (Appendix I).

Depth contours are drawn on the final field sheet in accordance with the Hydrographic Manual.

Depth Contour(fm)	Color
0	Orange
1	Green
2	Red
3	Blue
* 4	Orange
5	Red
* 6	Green
* 8	Brown
10	Orange
12	Brown
* 14	Brown
20	Blue

* only standard curves are shown on smooth sheet.

The final field sheet and accompanying field records, along with this Descriptive Report, are being forwarded to the Pacific Marine Center for ~~verification~~. processing

F. Control Stations

Six geodetic stations were used to control this survey. Position for SUMMIT AZ is from the NGS data base. Positions for MATOGAK, TONGUE POINT 2, and VELO were provided by NOS/PMC Pacific Photo Party as unadjusted field positions. QUIG was the only new station positioned during this survey, and also has an unadjusted field position.

Station	Order,Class	Date Established (NAD 1927)	Signal #
MATOGAK	31	1985	123
QUIG	31	1987	226
STRAIT	21	1948	224
SUMMIT AZ	11	1948	201
VELO	31	1985	124
TONGUE POINT 2	31	1985	225

MATOGAK, STRAIT, SUMMIT AZ, TONGUE POINT 2, and VELO were verified with check angles and distances during the horizontal control field work. QUIG was located by triangulation from VELO and STRAIT.

All stations met third-order, class I standards for positioning and further information can be found in the Horizontal Control Report, OPR-O184-RA-87.

Geographic positions were based on the North American Datum of 1927 and Clark Ellipsoid of 1866.

G. Hydrographic Position Control

Soundings were located using range-range and range-azimuth geometry. Range data were acquired with Motorola's Mini-Ranger III electronic positioning system. Azimuths were measured using WILD T-2 theodolites.

Positioning Equipment

Four Mini-Ranger console/rt pairs were used during this survey; each pair remained with an assigned vessel for the survey's duration. The following table lists the days of use and corresponding vessel for each console/rt pair.

Console/RT pair	DN	EDP #	Vessel Name
720/B1405	219-245	2123	RA-3
30269/C1712	219-245	2124	RA-4
715/H3705	219-243,245	2125	RA-5
711/B1388	219-245	2126	RA-6
715/H3705	243-244	2129	RA-9

The following seven shore transponders were used to locate the vessels:

Code	Serial Number
C	G3500
E	F3256
F	G3501
0	C1789
1	C1883
2	B1106
3	911635

The following theodolite was used to acquire azimuth data during this survey:

Model	Serial Number
Wild T-2	75599E

Calibrations and System Checks

Opening baseline calibrations for the console/rt pairs and transponders were conducted in accordance with PMC OPORDER 3.3 at the following locations on the corresponding dates:

Console/RT Pair	Location	Date	Codes
720/B1405	Sitka, AK	17 May 87	A-3
30269/C1712	Sitka, AK	19 May 87	A-3
711/B1388	Summit Is, Ak	20 Jun 87	A-3
715/H3705	Dutch Harbor, AK	01 Jul 87	A,D-0,3
715/H3705	Summit Is, AK	18 Jul 87	1,2
715/H3705	Dutch Harbor, AK	14 Aug 87	C

Closing calibrations for all codes and console/rt pairs were conducted over Lake Washington in Seattle, WA, on September 15-16, 1987. All calibrations were conducted over open water; baseline ranges were as follows:

Calibration Site	Baseline Distance
Sitka, AK	1910.0 meters
Summit Is, Bristol Bay, AK	810.0 meters
Dutch Harbor, AK	1215.0 meters
Lake Wash., Seattle, WA	1312.5 meters

From these calibrations, signal strength cutoffs and baseline correctors were developed; see Appendix V for a summary of opening, closing, and final baseline correctors and signal strength cutoffs.

Non-critical system checks (launch to launch comparisons) were conducted daily. Critical system checks were conducted at least once per week using the theodolite intersection method. All system checks were performed in accordance with PMC OPORDER 3.3. Throughout the survey, system checks agreed within ten meters of the opening baseline calibration results.

The final field sheet plotted onboard the RAINIER was plotted using the opening baseline correctors. A waiver of bi-monthly baseline calibrations was issued on March 23, 1987 (see Appendix V). The computed means of the opening and closing calibration results are recommended to be used in plotting the smooth sheet.

A complete discussion of the electronic control for this project, including baseline calibrations and summaries of system checks may be found in Electronic Control Report OPR-R184-RA-87.

Problems and Unusual Position Configurations

Null zones with low signal strengths were encountered throughout the survey. Positions within null zones were computed using time and course interpolations over distances of less than 5 centimeters at the survey scale. Ranges with signal strengths 1 unit less than the cut off were recorded. The low signal strengths appear to be associated with null zones. Positions computed from these ranges were retained as long as they plotted in agreement with dead reckoning.

On day 220 code 0, located on station STRAIT (224), failed due to an improperly sized fuse and was replaced with code E. The data gathered with this code was not affected by the failure.

There were no unusual position configurations used for this sheet.

Antenna Offset Distances (ANDIST)

Each launch's RT antenna unit was located directly over the fathometer's transducer; hence, all ANDIST values were 0,0.

H. Shoreline

Shoreline features on the field sheet were transferred from NOS shoreline manuscripts TP-01177, TP-01180, and TP-01181, compiled in November, 1986, from photography obtained in July and August, 1985. ✓

NATIONAL OCEAN SERVICE
SHORELINE MANUSCRIPT
TP-01177
ALASKA
TOGIAK BAY TO
CAPE CONSTANTINE
MATOGAK RIVER
SCALE 1:20,000 ✓
TRANSVERSE MERCATOR PROJECTION
10,000 FOOT GRID BASED ON
ALASKA STATE PLANE COORDINATE SYSTEM
ZONE 7
1927 NORTH AMERICAN DATUM

NATIONAL OCEAN SERVICE
SHORELINE MANUSCRIPT
TP-01180
ALASKA
TOGIAK BAY TO
CAPE CONSTANTINE
HAGEMEISTER STRAIT ✓
SCALE 1:20,000
TRANSVERSE MERCATOR PROJECTION
10,000 FOOT GRID BASED ON
ALASKA STATE PLANE COORDINATE SYSTEM
ZONE 7
1927 NORTH AMERICAN DATUM

NATIONAL OCEAN SERVICE
SHORELINE MANUSCRIPT
TP-01181
ALASKA
TOGIAK BAY TO
CAPE CONSTANTINE
ROCKY POINT
SCALE 1:20,000
TRANSVERSE MERCATOR PROJECTION
10,000 FOOT GRID BASED ON
ALASKA STATE PLANE COORDINATE SYSTEM
ZONE 6 ✓
1927 NORTH AMERICAN DATUM

Shoreline details were verified by visual inspection from a skiff (vessel 2129) or launch (vessels 2123, 2125, and 2126) at or near low tide. Shoreline verification was accomplished in all areas. Features which appeared as depicted on the TP-sheets were assigned reference numbers and heights as directed in PMC OPORDER 3.6. The reference numbers were recorded with heights in a sounding volume and on a paper copy of the TP-sheets. Descriptive annotations were recorded on the TP-sheets and occasionally supplied on the raw data printouts at the inshore terminations of sounding lines. The paper copies of the TP-sheets contain notes about topography behind the high water line over the entire area. Significant descriptions have been transferred to the final field sheet. ✓

The location of significant offshore features, and additional alongshore features not shown on the TP-sheets, were recorded as detached positions. Cartographic codes have been assigned in the field records. ✓

Shoreline details and features have been transferred to the field sheet with additions shown in black. Reference locations were plotted with their three-digit numbers, preceded by an 'R'. Heights were given in feet and have been corrected for predicted tides. Heights given for ledges, reefs, foul areas, rocks, and islets refer to the highest portion or portions of each feature or area. ✓

It was evident during the field work that the photography for TP-01177, TP-01180, and TP-01181 was flown during a stage of tide higher than MLLW, probably as high as mid-tide. The majority of shoreline features depicted on the TP-sheets were isolated rocks and groups of rocks. Field work performed at periods of low water proved most of the depicted rocks to be within the limits of an area foul with rocks. On the final field sheet, where groups of rocks were depicted, foul area delimiters (a dashed line) have been shown in black as additions to the shoreline. In some cases, depicted rocks proved to be the higher points of ledges. These ledges have been shown in black as additions. ✓

Additions

Several foul areas were found to extend further offshore than shown on the TP-sheets. All of these extensions were indicated on the previous T-sheets and are discussed below in the section Prior Photogrammetric Survey. ✓

Two other additions, to TP-01181, were rocks located while delineating the foul area at the north end of Hagemeister Island:

Feature Location	Position Number	Status
58°49'~~15~~ 14.75"N 160°40'~~52~~ 51.48"W	DP 6096	Rock 1.0 Height: ~~2.4~~ ft * (1)
58°49'~~08~~ 07.62"N 160°41'~~47~~ 46.22"W	DP 6098	Rock Height: ~~1.8~~ 0.5 ft * (1)

Prior Photogrammetric Survey

The shoreline manuscripts provided for this survey did not show several features that were shown on prior maps. These features were presented as circled areas outlining rocks or shoreline changes originating from U.S. Coast and Geodetic Survey Topographic Maps (1:20,000 scale, 1927 NAD) compiled in 1950 from aerial photographs taken in 1948. The maps were not available for use during the survey. See EVALUATION REPORT SECTION 6

Two of these features were investigated on TP-01177 and their status determined as follows:

Feature Location	Position Number	Status	
58°52'30"N 160°51'18"W	R107	Compiler noted shoreline had changed from T-9235. Shoreline was found to be as delineated on TP-01177.	✓
58°52'59"N 160°52'56"W	R120	Compiler noted shoreline had changed from T-9235. Shoreline was found to be as delineated on TP-01177. Fish camps are located on each side of the stream. Shallow area consists of sand bars	✓

Three of these features were investigated on TP-01180 and their status determined as follows:

Feature Location	Position Number	Status	
58°52'00"N (51' 59.47") 160°57'50"W (57.86")	R113 DP 5075	Foul area extends south as indicated by T-9241. Offshore limit is delineated by DP 5075.	*(3)
58°51'12"N 160°59'22"W	R116	TP-01180 rock found 30 m offshore. Several smaller rocks inshore of it. No other indication was found of the foul area shown on T-9241.	
Pos. #5080 58°50'40"N (40.19") 160°00'56"W (56.12')	R119 DP 5078 DP 5080	Additional rocks found where indicated by T-9240. DP 5080 is SW end of foul area.	*(1)

Four of these features were investigated on TP-01181 and their status determined as follows:

Feature Location	Position Number	Status	
58°46'46.59"N 160°46'47"W 47' 07.74" Pos.#6102	R102 R104 DP 6099- DP 6102	Large foul area exists in area delineated as shallow on TP-01181. T-9241 showed additional rocks in area. The north limit is DP 6099. The western limit is delineated by DP's 6100-6102.	
58°46'21.84"N 160°46'57"W 47'48.48" Pos.#6105	R103 DP 6103 DP 6105 DP 6107	Large foul area exists in area delineated as shallow on TP-01181. T-9241 showed additional rocks in area. DP's 6105, and 6107 delineate offshore extent of foul area.	Pos.#6105 * (1) Pos.#6107 * cov 1 ft at MLLW
58°45'45.14"N 160°49'14"W 20.88' Pos.#6109	R106 DP 6109- DP 6113	TP-01181 rock and rocks at DP's 6109 -6113 were found in area indicated on T-9241.	Pos.#6109 * (3) Pos.#6111 * cov 1 ft at MLLW Pos.#6112 * (2) Pos.#6113 * cov 2 ft at MLLW
58°44'54.40" 160°53'22"W 21.53" Pos.#5794	R122 DP5789- DP5794	Foul area extends offshore as indicated by T-9247 and delineated by DP's 5789 to 5794 and shallow line from TP-01181. No islets were observed as indicated on T-9247. However, there are two sand bars 20 m offshore of the river mouth; 50 m in diameter.	

Control Stations Seaward of the Shoreline

There were no control stations located seaward of the shoreline during this survey.

✓

I. Crosslines

A random sampling of 123 comparisons between mainscheme and crosslines gave the following results.

Difference	% Agreement
0.0 fm	35%
0.1 fm	64%
0.2 fm	84%
0.3 fm	93%
0.4 fm	98%
0.5 fm	100%

✓

In areas with an irregular bottom or very steep slope, there were discrepancies of up to 0.5 fm. These were due to large changes in depth over short distances. With no major discrepancies noted, agreement between mainscheme and crossline soundings was evaluated to be good. ✓

Southwestern Togiak Bay and Matogak Bay are generally flat and shallow. Adjacent sounding lines, run 100 meters apart on different days and sometimes with different survey launches, were occasionally found to differ by as much as 0.5 fm in these flat areas, as evidenced by oscillating depth curves on the final field sheet. Some of the difference (up to 0.1 fm) may be accounted for by the fact that settlement and squat correctors have not yet been applied. The greatest part of the difference, however, is probably due to local effects of weather on the tide. Although field zoning of predicted tides improved the agreement of adjacent sounding lines during the survey (see section D), a new zoning, based upon complete series from five tide stations in the area, should improve the adjacent sounding line agreement even more. ✓

J. Junctions

This survey junctions with one contemporary survey: H-10251 to the north. EAST This survey is also a 1:20,000 scale survey conducted by the RAINIER in 1987 as part of this project. A sample of 76 sounding comparisons was made. In all areas junction agreement was within 0.5 fm. ✓

Junction Sounding Agreement With H-10251

Within 0.1 fathom	21%
Within 0.2 fathom	46%
Within 0.3 fathom	86%
Within 0.4 fathom	99%
Within 0.5 fathom	100%

Junction agreement between the sheets was considered good. In some areas, however, there are differences of up to 0.5 fm. These differences probably result from the factors already discussed in Section I. It should also be noted that field tide zoning caused slightly different predicted tide correctors to be applied to the two surveys in the area of overlap. SEE EVALUATION REPORT SECTION 5

K. Comparison with Prior Surveys

There were no prior surveys of the area. SEE EVALUATION REPORT SECTION 6

L. Comparison with the Chart

This survey includes areas covered by the following charts:

Chart Number	Scale	Edition	Date
16006	1:1,534,076	29th	8/23/86
16011	1:1,023,188	31st	6/29/86
16305	1:100,000	3rd	2/28/87
16315	1:100,000	3rd	1/24/87

SEE EVALUATION REPORT SECTION 7

Dangers to Navigation

One report of dangers to navigation was submitted on October 9, 1987, containing ten items from to this survey area. This correspondence was sent to both the U.S.C.G. Seventeenth District (Juneau, AK), and DMAHTC (Washington, DC.). Copies of this correspondence are attached in Appendix XII.

The following items were reported as dangers to navigation:

Feature	Limits
Shoal area Less than ~~4~~ 3.9 fathoms	58° 50.0' N to 58° 51.0' N and 160° 36.0' W to 160° 39.0' W
Shoal area Less than 3 fathoms	58° 49.0' N to 58° 44.0' N and 160° 35.0' W to 160° 45.0' W
Shoal area Less than 3 fathoms	58° 47.9'N to 58° 53.0' N and 160° 50.0' W to 160° 56.1' W
Shoal area Less than 4 fathoms	58° 45.0' N to 58° 46.0' N and 160° 46.0' to 160° 58.0'N

Reported Depth	Position Number	Position
1.~~4~~ 3 fathoms	7385+2	58° 47.~~9~~ 55.18" N, 160° 39.~~2~~ 33.49" W
1.~~2~~ 4 fathoms	8694+4	58° 48.~~4~~ 27.94' N, 160° 56.~~1~~ 09.46" W
2.~~6~~ 7 fathoms	6508+4	58°45.~~7~~ 39.09" N, 160° 59.~~8~~ 49.10" W
~~2.2~~ 1.8 fm Rock	~~9265~~ 6124	58° 49.~~8~~ 45.52" N, 160° 40.~~4~~ 22.68" W
3.~~4~~ 8 fm Rock	8600	58° 49.~~0~~ 00.80" N, 160° 49.~~2~~ 12.05" W
4.0 fm ~~Rock~~ Shoal	2000+3	58° 45.~~4~~ 25.12" N, 160° 53.~~9~~ 54.67" W

Comparison of Soundings

Chart 16315 and 16305 were used to make comparisons with this survey, being the largest scale charts of the survey area. No soundings on chart 16305 lie within the survey area. Two soundings from chart 16315 lie within the survey area, and these were compared to depths obtained in this survey.

Charted Sounding	Geographic Position	H-10253 Sounding
5 fm	58° 49.9' N 160° 45.5' W	13.1 fm
10 fm	58° 46.1' N 160° 58.5' W	4.8 fm

The discrepancies noted between the charted and surveyed soundings are believed to be due to poor position control for the charted data and to the small scale of the chart relative to the survey. It is recommended that the charted depths be superseded by the current survey depths.

Shoal Developments

There were two areas within the survey that were developed by splitting the basic line spacing to 50 meters. They were plotted on two expansion sheets and are discussed below. In addition, two AWOIS items were investigated for shoaling. They are AWOIS 50919 and 50920, also discussed below. All depths given below have been corrected for ~~predicted~~ tides.

Tongue Point

A 3.7 fm shoal was discovered approximately 0.65 nautical mile northeast of Tongue Point. The area was developed with 50-meter line spacing, and a least depth was determined by echosounder. The results of this development are plotted on Expansion Sheet # 5 (1:5,000).* The applicable information is listed below:

Depth	Geographic Position	Position Number
3.7 fm	58° 49' 00.6"N 160° 49' 12.8"W	8600

This feature was submitted as a danger to navigation (Appendix XII).

* WAS NOT FORWARDED TO PACIFIC MARINE CENTER BY THE HYDROGRAPHER

Northwest Side of Hagemeister Island

Another shoal near the mouth of the small unnamed inlet east of station VELO and offshore of a foul area was developed as follows. The area was sounded with 50-meter line spacing, and least depths were determined by echosounder. The results of this development are plotted on Expansion Sheet # 6 (1:5,000). Least depths are listed below:

Depth	Geographic Position	Position Number
1.9 fm RK	58° 45' 08" N 160° 53' 53" W	1690
1.9 fm	58° 45' 07" N 160° 53' 20" W	1620+6
0.9 fm	58° 44' 59"N 160° 53' 10"W	1601+3
2.7 fm	58° 45' 10"N 160° 53' 01" W	1669+3
1.4 fm	58° 45' 00"N 160° 52' 22" W	1578+3+insert
5.0 fm	58° 46' 07"N 160° 51' 57"W	~~1569+1~~ ~~8716+1~~
4.8 fm	58° 45' 48"N 160° 52' 21"W	1581+1+insert
~~4.9 fm~~	~~58° 46' 07"N~~ ~~160° 51' 57"W~~	~~1569+1~~ duplicate

AWOIS 50919 AND 50920

AWOIS 50919

GROUNDING **LATITUDE:58° 47' 12.00" N**
LONGITUDE:161° 00' 00.00"W

HISTORY: CL909/71--3 FM shoaling reported in Hagemeister Strait in Latitude 58° 47' 12.00"N, Longitude 161° 00' 00.00" W, midway between the charted 1.5FM sounding and the mainland.

SURVEY REQUIREMENTS: Full--Verify or disprove. Disprove by splitting the basic line spacing for a band 1.5 miles wide from Longitude 160° 46' W to the western limit of sheet "G", mid-channel of Hagemeister Strait to ensure adequate bottom coverage. Least depths and geodetic positions are required.

ASSIGNED: OPR-R184-RA-87

AWOIS 50920

OBSTRUCTION **LATITUDE: 58° 47' 30.00" W**
LONGITUDE: 160° 55' 42.00" W

HISTORY: BP125151 (1985)--Alaska Department of Safety; 2FM depths PA foul area (rep 1985) is approximately 1700m in diameter and consists of three 2FM soundings. The central position has been scaled from provisional chart 16315 in Latitude 58° 47' 30" N , Longitude 160° 55' 42"W. Horizontal and vertical control dubious.

This AWOIS ITEM 50920 CAN be grouped with ITEM 50919. Both AREAS sounding (shoaling) have been determined.

SURVEY REQUIREMENTS: Full--Verify or disprove. Disprove by splitting basic line spacing for a minimum radius of 0.75 nautical miles to ensure adequate bottom coverage. Least depths and geodetic positions are required on findings.

ASSIGNED: OPR-R184-RA-87

Investigation

The approximate positions given in the AWOIS item listing plotted in areas found to be 6 to 12 fms in depth, with no evidence of shoaling. Mainscheme hydrography west of Tongue Point in Hagemeister Strait revealed two large areas of shoaling which were investigated with sounding lines at 100 m spacing. The data covering these shoals is listed below:

Day Number	Position Numbers	VESNO	Data Type
231	7396-7431	2124	M
231	7634-7645	2124	M
233	7457-7514	2124	M
233	7484-7633	2124	M
234	7780-7930	2124	M
234	3576-3913	2123	M
234	3588-3839	2123	M
235	8055-8078	2124	M
235	8082-8152	2124	M
235	8155-8159	2124	M
239	8618-8705	2124	M
242	6298-6369	2126	X
242	6370-6483	2126	M
242	6484-6535	2126	M
242	6555-6560	2126	X
242	9212-9309	2124	M

Results

The northern shoal, a bar across the entrance to* Matogak Bay, has the following limits:

North 58° ~~49'~~ 48' ~~00~~ 42"N
South 58° 47' ~~48~~ 58"N
East 160° 54' ~~39~~ 48"W
West 160° 01' 00"W.

* NOT AN APPROVED GEOGRAPHIC NAME.

This shoal ranged in depth from 1,3 4 fm to about 2 fms with depths rapidly deepening to greater than 10 fms on the south, but only deepening to 3 fms or less on the north. A least depth of 1,3 4 fm (Fix 8679+3) obtained by echo sounder at 58° 48' 46 25.56"N, 160° 56' 54 59.51"W. The bottom in the eastern part of the shoal showed an oscillation on the echograms and a dive investigation (Fix 6128) revealed compacted silt/clay eroded in a wave-like pattern up to 3 feet in amplitude. No other evidence of a foul bottom or submerged rocks was found. AREA OF 1¼ FM least depth IS CENTERED at LAT. 58/48/56.4 N, LONG. 160/56/45 W.

A second shoal was found in the southwestern corner of the survey, roughly "midchannel" in Hagemeister Strait, with the following limits:

North 58° 46' 03"N
South 58° 45' 16"N
East 160° 58' 45"W
West 160° 01' 00"W. — AND FARTHER WEST beyond survey limit

The shoal, as developed within the limits of this field sheet, ranged in depth from 2.5 to approximately 6 fathoms with a least depth of 2.5 fm (Fix 6299+2) obtained by echo sounder at 58° 45' 36"N, 161° 00' 10"W. A bottom sample showed the shoal to consist of sand, coarse pebbles and broken shells.

Recommendations

Notes referring to midchannel shoaling and the PA foul area should be removed from the chart and replaced with soundings and contours derived from this survey. CONCUR
THE EXISTENCE of the SHOAL HAS BEEN ESTABLISHED AND will be defined MORE AS SURVEY OPERATIONS PROCEED WESTWARD. CHART AREA AS SHOWN ON the SMOOTH SHEET.

Comparison of Non-Sounding Features

Most non-sounding features are charted along the shoreline. A complete shoreline verification was performed during this survey and discussed in Section H of this report. It is recommended that all charted shoreline features be revised to reflect this survey.

It has been noted that there exist two points labeled "Rocky Point"* about 14.5 miles apart on chart 16315. One point is located on the mainland north of Summit Island. The other is located on the northeast end of Hagemeister Island.* It was not determined whether the duplicate geographic names cause confusion among local mariners. However, to avoid possible confusion, the hydrographer recommends that only one feature be labeled "Rocky Point." The local government should be consulted regarding which point is more appropriate.

Five offshore features were investigated as AWOIS items:

* THIS GEOGRAPHIC NAME "ROCKY POINT" ON HAGEMEISTER ISLAND WAS DELETED FROM CHART 16315 4TH ED.

AWOIS 50918

OBSTRUCTION **LATITUDE:58° 47' 12.00" N**
LONGITUDE:160° 46' 42.00" W

HISTORY: T9241 (1948)--"Not visible on photographs"(compilation scale 1:20,000).
Unknown source--submerged rock first appears on chart 16011 in latitude 58° 47.2' N, longitude 160° 46.7' W.
NM18/65--Submerged rock. Added to provisional chart 16315 in latitude 58° 47.2'N and longitude 160° 46.7' W from chart 16011.

SURVEY REQUIREMENTS: Full-- Verify or disprove. Disprove by bottom drag or diver investigation for a 0.5 nautical mile radius. If found a least depth and geodetic position are required.

ASSIGNED: OPR-R184-RA-87

Investigation

A region 0.5 nautical mile in radius around the plotted AWOIS position was investigated with 200% side scan sonar coverage where depth permitted, and sounding lines spaced at 50 meters. The applicable day numbers, fix numbers, and vessel numbers are summarized below.

Day Number	Position Numbers	VESNO	Data Type
222	4735-4847	2124	M
232	6021-6036	2126	SH
234	2000-2262	2123	SSS
235	2263-2369	2123	SSS
236	8167-8235	2124	M

Results

The bottom is gently sloping from depths of 10 fm in the northwest up to 1.5 fm in the southeast. Both side scan sonar and sounding lines revealed several peaks of depths ranging from 2.8 fm, in 3.5 fm surrounding depths, to 0.7 fm, in 1.4 fm surrounding depths, in the southwest portion of the search area. The farthest offshore of these peaks has a least depth of 2.3 fm obtained by echo sounder (Fix ~~# 2367~~ 4823/4) and is located 0.24 ~~nautical mile~~ 513 meters from the shore at 58° 46' 58.92" N, 160° 46' 59.99" W, with surrounding depths of 3.2 to 3.8 fm. These peaks are part of a shoal, rough bottom extending north from the shoreline of Hagemeister Island.

Recommendations

The hydrographer recommends that the rock awash symbol (RA) be removed from its charted position at 58° 47' 12" N, 160° 46' 42" W. CONCUR A ROCK COVERS 1ft at MLLW, should be charted at Lat. 58°46'46.87"N, Long. 160°46'56.59"W Pos.# 6100

AWOIS 50922

OBSTRUCTION **LATITUDE: 58° 48' 54.00" N**
LONGITUDE: 160° 39' 54.00" W

HISTORY: T9241(1948)--"Not visible on photographs"(compilation scale 1:20,000).
Unknown source--Submerged Rock; ~~added to provisional chart 16315~~ FIRST APPEARS ON CHART 16011 ~~(1963)~~ in Latitude 58° 48.9'N, Longitude 160° 39.9'W.
NM18/85--Submerged Rock; Added to provisional chart 16315 in Latitude 58° 48.9'N, Longitude 160° 39.9'W from chart 16011.
TP01181/85--reviewed, class III, Nth; not visible on photographs.

SURVEY REQUIREMENTS: Full--Verify or disprove. Disprove by bottom drag or diver investigation for a 0.5 nautical mile minimum radius. If found least depth and geodetic position are required.

ASSIGNED: OPR-R184-RA-87

Investigation

A region 0.5 nautical mile in radius around the plotted position of the item was investigated with at least 100% side scan sonar coverage run parallel to the contours where depths allowed. The southeastern third of the search area was developed with sounding lines spaced 40 m apart and also oriented parallel to the contours. On the west side of the area sounding lines spaced 25 m apart were run near the shoreline of Hagemeister Island. Applicable data is summarized below:

Day Number	Position Numbers	VESNO	Data Type
219	4000-4426	2124	M
223	3163-3327	2123	M
238	2813-2990	2123	SSS
239	2991-2999	2123	SSS
239	1000-1178	2123	SSS
239	1179-1321	2123	NSP
239	1325-1331	2123	NSP

Results

The area is a gently sloping, shallow plateau with depths ranging from 4 fm in the northeast to 1.6 fm in the southwest. A least depth of 1.4 fm was obtained by echo sounder at 58° 49' 24"N, 160° 39' 40"W (Fix # 2885+2). At the west side of the area is a 5 fm depression near the northeast shore of Hagemeister Island.

Side scan sonar, in areas where depths permitted, did not reveal any significant contacts, except near the northeastern shore of Hagemeister Island. The most offshore contact (G103) rose 1.0 fm (1.8 m) in 4.5 fm.

* Pos. # 2885/2 depth is 4.2 fm. The shoalest depth in the AREA is Pos. #1176/1 0.8 fm NEAR SHORE, at Lat. 58°48'59" N, Long. 160°40'45" W.

Recommendations

The hydrographer recommends that the rock awash symbol be removed from its 0.8 Fm DEPTH charted position at 58° 48' 54.00" N, 160° 39' 54.00" W, and that a ~~submerged rock~~ SEE EVALUATION (not dangerous to surface navigation) be charted at 58° 49' 04" N, 160° 40' 40" W REPORT SECTION 7 (G103). ~~Pos. #1174/7 0.8fm~~ 1176/1 0.8 Fm See Addendum

AWOIS 50923

OBSTRUCTION **LATITUDE: 58° 49' 00.00" N**
LONGITUDE: 160° 43' 36.00" W

HISTORY: T9241(1948)--"Not visible on photographs"(compilation scale 1:20,000).
Unknown source--Submerged rock first appears on chart 16011 in 1963 in Latitude 58° 49.0'N, Longitude 160° 43.6'W.
NM18/85--Submerged Rock; added to provisional chart 16315 in Latitude 58°49.0'N, Longitude 160° 43.6'W from chart 16011.
TP01181/85--Reviewed, Class III, Nth; not visible on photographs.

SURVEY REQUIREMENTS: Full--Verify of disprove. Disprove by a bottom drag or diver investigation for a 0.5 NM radius. Least depths and geodetic positions required.

ASSIGNED: OPR-R184-RA-87

Investigation

A region 0.5 nautical mile in radius around the plotted position was investigated with 200% side scan sonar coverage. Applicable data is summarized below:

Day Number	Position Numbers	VESNO	Data Type
220	4427-4593	2124	M
222	4682-4719	2124	M
231	7417-7419	2124	M
231	3456-3463	2123	M
232	3471-3511	2123	M
234	8000-8016	2124	M
235	8017-8051	2124	~~NSP~~ SMOOTH PLOTTED
235	2263-2369	2123	SSS
236	8263-8290	2124	~~NSP~~ SMOOTH PLOTTED
236	2370-2529	2123	SSS
237	2530-2774	2123	SSS
238	2775-2812	2123	SSS

Results

The area investigated consists of depths ranging from 11 fm in the northwest to 1.7 fm in the southeast. A broad shelf-like feature extends 0.6 nm north from the shore of Hagemeister Island.

Side scan sonar and sounding lines revealed several peaks southwest EAST of the charted position of the submerged rock. The most offshore of these peaks has a depth of 5.6 ~~4.2~~ fm (Fix # 8014+3) obtained by echosounder in surrounding depths between 4.8 fm and 6.0 fm. It is located at 58° 48' ~~44"~~ 43.83" N, 160° 43' ~~48"~~ 48.90" W. Three side scan sonar contacts appeared significant, rising about 1 m off the bottom in 2 to 3 fms, (G106-108).

Recommendations

The rock awash symbol should be removed from its charted position at 58° 49' 00.00" N, 160° 43' 36.00" W, and ~~submerged rocks~~ soundings (rky) should be charted at: SEE EVALUATION REPORT SECTION 7.

Geographic Position	Side Scan Contact Number		Position Number	
58° 48' 45"N, 160° 43' 32"W	3.2	G106	2589/3	3.7 rky
58° 48' 50"N, 160° 43' 22"W	3.4	G107	2590/4	3.9 rky
58° 48' 37"N, 160° 43' 30"W	1.5	G108	2659/4	1.8 rky

AWOIS 50925

OBSTRUCTION **LATITUDE: 58° 50' 52.00" N**
LONGITUDE: 160° 38' 43.00" W

HISTORY: BP628(1901)--Sand spit; extends approx. 6 NM north east of Rocky Point.
BP18063(1916)--Pacific American Fish; submerged rocks (probably ledge) extends approx 2 miles NE of Rocky Point. Position scaled at 1:100,000 from chart 16315 in Latitude 58° 50' 00" N, Longitude 160° 40' 54" W. Office copy of blueprint is approx 1:260,000, horizontal and vertical control dubious.
T9241(1948)--Not shown, however numerous rocks surround Rocky Point (approx 50) as far offshore as 200 m to Latitude 58° 49' 18" N.
BP125151(1985)--Alaska Department of Public Safety; submerged rocks (8), PA foul area (rep 1985) shown on provisional chart 16315 at 1: 100,000. The farthest offshore rock was scaled at Latitude 58° 50' 52" N, Longitude 160° 38' 43" W. Horizontal and vertical control dubious.
TP01181/85--Reviewed, class III; Nth; not visible on photographs.

SURVEY REQUIREMENTS: Full-Verify or disprove. Disprove by first splitting normal line spacing to ensure adequate bottom coverage, if any features are indicated, then further investigations by bottom drag, SSS(depth permitting) or diver would be required within the area bound by the charted limit line. Any obstructions will be identified, and least depths and geodetic positions will be required.

ASSIGNED: OPR-R184-RA-87

Investigation

The entire charted foul area was sounded with 50-meter line spacing. Shoal features were developed with 25-meter spacing with dive investigations on four of the most significant features. Applicable data is summarized below:

Day Number	Position Numbers	VESNO	Data Type
223	3173-3327	2123	M
231	3328-3408	2123	M
236	8251-8290	2124	NSP
237	8340-8426	2124	NSP
236	8167-8235	2124	M
237	8340-8426	2124	NSP
238	8427-8581	2124	NSP
238	8582-8600	2124	NSP
239	8706-8908	2124	NSP
240	6124-6127	2126	D.P.(Dives)

Analysis

The area was found to be gently sloping except within 0.75 nautical mile of the northern end of Hagemeister Island, where the bottom was rocky and numerous least depths were obtained. In the more offshore area, two features that were investigated with dives proved to be piles of rocks rising up to 0.7 fm off the bottom in 4 to 5 fms of water. Least depths are summarized below:

Position Number	Geographic Position	Depth	Method
3233+1	58° 49' ~~26~~ 25.36" N 160° 41' ~~02~~ 01.84" W	1.7 fm	Echo Sounder
3254+3	58° 49' ~~39~~ 38.91" N 160° 40' ~~51~~ 49.26" W	3.~~1~~ 0 fm	Echo Sounder
6124	58° 49' ~~39~~ 45.52" N 160° 40' ~~24~~ 22.68" W	1.~~7~~ 8 fm Rock	Dive
6127	58° 49' ~~33~~ 32.64" N 160° 39' ~~08~~ 08.50" W	3.~~3~~ 4 fm Rocks	Dive
6125	58° 50' ~~38~~ 37.06" N 160° 38' ~~09~~ 10.96" W	3.~~8~~ 9 fm Rock	Dive
6126	58° 50' ~~12~~ 11.37" N 160° 37' ~~20~~ 19.25" W	~~3.9~~ 4.0 fm Boulders	Dive
6167	58°49'32.64"N 160°39'08.50"W	3.4RK	dive

Recommendations

The charted foul area and submerged rocks should be removed and replaced with depths and contours from this survey.

see EVALUATION REPORT Section 7.

See Addendum

AWOIS 50926

OBSTRUCTION **LATITUDE: 58° 51' 36.00" N**
LONGITUDE: 160° 57' 00.00" W

HISTORY: T9241(1948)--"Not visible on photographs" (compilation scale 1:20,000)
Unknown source--submerged rock first appears on chart 16011 in 1963 in Latitude 58° 51.6' N, Longitude 160° 57.0' W.
BP125151(1985)--Alaska Department of Public Safety; submerged rock, PA (rep 1985) scaled from provisional chart 16315 in Latitude 58° 52' 02" N, Longitude 160° 56' 42" W. Horizontal and vertical control dubious.
NM18/85--Submerged rock: added to provisional chart 16315 in Latitude 58° 51.6' N, Longitude 160° 57.0' W from chart 16011.

SURVEY REQUIREMENTS: Full--Verify of disprove. Disprove by bottom drag or diver investigation for a 0,75 NM minimum radius. If found least depths and geodetic position required.

ASSIGNED: OPR-R184-RA-87

Investigation

A region 0.75 nautical mile in radius around the given position was developed with 50-meter line spacing and with 25-meter line spacing where the bottom was found to appear rough on the echogram (Example: Fix # 5515). A bottom drag was not feasible due to the nature of bottom and shallow water. A visual search of the area was conducted by skiff (2129) during a -0.5 ft tide on day 243. Search areas of 300m from the charted positions of a rock awash and a submerged rock were searched in four directions. Position numbers 9000 and 9005 were taken over the two charted positions.

Day Number	Position Numbers	VESNO	Data Type
238	5343-5435	2125	M
238	5436-5600	2125	NSP
240	5614-5703	2125	NSP
240	5706-5707	2125	B.S.
243	9000-9008	2129	D.P.

Results

The area, near the mouth of the Matogak River, is flat with depths ranging from 0.3 fm in the north to 2.0 fm in the south. Unusually clear water with visibility of up to 2 fm enabled the hydrographer to see the bottom. No rocks were observed. The hydrographer did observe patches of vegetation which grows high enough to be near the surface at low water. The bottom samples indicate the bottom is pebbles, fine sand, and grass .

Recommendations

Remove the submerged rock and rock awash from their charted position. CONCUR
CHART AREA AS SHOWN ON SMOOTH SHEET.

M. Adequacy of Survey

This survey is the first basic survey to be conducted over this area. The data is complete and adequate to be used for charting purposes and to supersede any historical data.

N. Aids to Navigation

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

O. Statistics

EDP No.	Number of Positions	Reference Numbers	Nautical Miles of Sounding Lines
2123	~~2,493~~ 2700	6	400.4
2124	~~3,385~~ 3109	0	762.8
2125	~~717~~ 774	15	94.4
2126	~~512~~ 515	8	121.2
2129	10	1	-
TOTAL	7,107	30	1378.8

SQUARE MILES OF HYDROGRAPHY	:	73.2
MILES OF SIDE SCAN	:	76.4
BOTTOM SAMPLES	:	74
TIDE STATIONS	:	5
VELOCITY CASTS	:	2
DAYS OF PRODUCTION	:	25
MAGNETIC STATIONS	:	0
CURRENT STATIONS	:	1

P. Miscellaneous

Bottom Samples

All bottom samples have been submitted to the Smithsonian Institution (Appendix IX).

Current Stations

Current observations were conducted over a twenty hour period on August 6 and 7 (DN 218, 219) in Hagemeister Strait near the northern entrance. The geographic position is:

58^{o} 48.3' N
160^{o} 48.0' W

The currents are oriented along the main axis of Hagemeister Strait at this location and have helped to maintain the channel between Hagemeister Island and the Alaska mainland, which is deeper than 20 fathoms in places. The current is found to set at a velocity of over 3 knots in both directions. Further information on currents in the area can be found in the Current Report OPR-R184-RA-87. The smooth sheet contains the note "tidal currents"

Loran-C

Fixes were simultaneously acquired with Loran-C and Mini-Ranger control across the survey area. Vessel 2123 was designated to gather the comparison data in order to present a sample of Loran-C performance in the area (in accordance with the Project Instructions and Hydrographic Survey Guideline No. 41). The launch Loran system used was an Internav LC204.

Loran-C available in the area is the 9990 chain, using the Y and Z lines of position. Loran-C control was compared to Mini-Ranger control by converting Mini-Ranger rates to a geographic position, then plotting the geographic position along with the associated Loran rates on chart 16315 (1987 edition). A sample of sixteen comparisons was made. The average difference between the Mini-Ranger positions and the Loran-C positions was 0.07 nautical mile (140 yards). No difference in position was observed in 4 cases.

Loran-C positioning generally agreed very well with positions obtained by the Mini-Ranger positioning system.

Q. Recommendations

The hydrographer considers field work on this survey to be complete. It is recommended that a new tidal zoning scheme be prepared based on all data from the five tide stations installed during this survey, in order to properly account for apparent inconsistencies in tidal reducers (Section I). Charting recommendations have been made in Section L of this report.

R. Automated Data Processing

Data acquisition and processing were accomplished with a PDP 8/e Hydroplot computer system, using the standard programs.

Computer Programs Used For Data Processing

NUMBER	DESCRIPTION	VERSION
RK 112	HYPERBOLIC,R/R HYDROPLOT	3/01/86
RK 116	RANGE-AZIMUTH RTS	3/01/86
RK 201	GRID, SIGNAL, AND LATTICE PLOT	4/18/75
RK 221	COMB R/R & HYPER PLOT NON-RT	7/25/86
RK 226	RANGE-AZ POSN & SND PLOT NON-RT	7/25/86
RK 300	UTILITY COMPUTATIONS	10/21/80
RA 362	RK 330 AND AM 602 COMBINED	8/20/84
RK 407	GEODETIC INVERSE/DIRECT COMP	9/25/78
RK 409	GEODETIC UTILITY PACKAGE	9/20/78
AM 500	PREDICTED TIDE GENERATOR	11/10/72
RK 530	LAYER CORRECTIONS FOR VELOCITY	5/10/76
RK 561	H/R GEODETIC CALIBRATION	12/01/82
RK 562	THEODOLITE CALIBRATION	9/05/84
AM 602	ELINORE - LINE ORIENTED EDITOR	12/08/82
RK 606	TAPE DUPLICATOR	8/22/74
AM 607	SELF-STARTING BINARY LOADER	8/10/80
RK 610	BINARY TAPE DUPLICATOR	1/31/85
RK 900	PLOT TEST TAPE GENERATOR FOR AM902	5/07/76
PM 901	CORE CHECK	3/01/72
AM 902	REAL TIME CHECKOUT	11/10/72
DA 903	DIAGNOSTIC-INSTRUCTION TIMER	2/27/76
RK 905	HYDROPLOT CONTROLLER CHECKOUT	3/18/81
RK 935	HYDROPLOT HARDWARE TESTS	3/15/82
RK 950	HARDWARE TESTS (DOCUMENTATION ONLY)	6/02/75

In plotting the final field sheet, overprints were removed by various techniques. The pen was manually lifted and special corrector tapes were made to edit out individual soundings. These tapes have not been submitted. Some soundings from NSP data, especially least depths, have been transferred by hand to the final field sheet.

Fix Numbers

A standard series of fix numbers was assigned to each survey vessel.

Vessel Number	Survey Fixes	
2123	3000-3913	R123-128
	2000-2999	
	1000-1767	
2124	4000-4914	
	7000-7930	
	8000-9332	
2125	5000-5796	R108-122
2126	6000-6560	R100-107
2129	9000-9009	R129

Series of fixes were duplicated on three occasions: on day 235 with vessel 2123 the series 2273-2321; on day 243 with vessel 2123 the series 1579-1678; and on day 244 with vessel 2129 the series 9000-9009 was duplicated while acquiring detached positions during a visual search. Single duplicated fix numbers are noted in the Abstract of Positions(Appendix VII).

Side scan sonar contacts were labeled with the sheet letter (G), a number corresponding to the expansion sheet on which they were plotted, and a sequence number. Twenty-six contacts were recorded: G101-G113 and G201-G213.

S. Referral to Reports

Several supplementary reports contain additional information relevant to this survey.

Supplemental Reports

TITLE	DATE TO BE SENT TO MARINE CENTER
Horizontal Control Report, OPR-R184-RA-87	October, 1987
Electronic Control Report, OPR-R184-RA-87	October, 1987
Marine Mammal Report, RP-12-87	October, 1987
Coast Pilot Report, OPR-R184-RA-87	October, 1987
Current Report, OPR-R184-RA-87	October, 1987
User Evaluation Report OPR-R184-RA-87	October, 1987

Respectfully Submitted;

Mark S. Larsen
ENS, NOAA

FIELD TIDE NOTE
OPR-R184-RA-87

Field-tide reduction of soundings was based on predicted tides computed with program AM 500, Predicted Tide Generator, by using the predicted tides for Black Rock, Walrus Islands, Bristol Bay tide station (946-5182) provided by the Sea and Lake Levels branch of the National Ocean Service (Appendix XIII). The correctors that were used for Hagemeister Strait (field sheet RA-20-5-87) are as follows:

	Time Correction		Height
	High Water	Low Water	Ratio
E of 160° 50' W	+50 min	+50 min	x0.85
W of 160° 50' W	+1h 05min	+1h 05 min	x0.85

Tide station information follows:

N.E. SUMMIT ISLAND, ALASKA (946-5283)

Geographic Locale- Lat: 58° 50.0' N, Long: 160° 12.6' W.

Installation Date- June 9, 1987

Removal Date- September 1, 1987

Gage Type- Bristol Bubbler (S/N 64A-11030). There was a backup Bristol Bubbler, (S/N 67A-10292), which was installed at the same time. The gages were placed inside a small wooden shed approximately ten feet above the high water line.

Staff- The staff was constructed from a 12 foot long piece of aluminum angle iron with 4-inch webs. It was secured to a rock ledge 100 feet east of bench mark 5283 D with lag bolts. The scale was standard vitrified mounted to the staff. The staff stop was a stainless steel hex machine bolt located at 18.100 feet on the staff. On June 30, it was discovered that the staff had been blown down in heavy weather and on July 7, the staff was recovered and replaced.

Staff Zero/Gage Zero-

Before 7/7:	For S/N 64A-11030: 2.0 feet
	For S/N 67A-10292: 3.2 feet
After 7/7:	For S/N 64A-11030: 1.5 feet
	For S/N 67A-10292: 3.0 feet

Gage Time- Universal Coordinated Time

Bench Marks- Five bench marks were connected by the initial and final leveling. They are: 5283 A 1986, 5283 B 1986, 5283 C 1986, 5283 D 1986, 5283 E 1986.

Levels- Installation levels were run on June 9, connecting four of the five bench marks mentioned above. On July 7, the levels, connecting all five bench marks, were rerun in conjunction with the replacement of the staff. The new staff placement showed a 0.075m (0.24 ft) change in the elevation of the staff. Removal levels were run on September 1.

Marigram Records-
GAGE # 64A-11030: The marigram records are continuous from 6/10/87 at 0504Z until 6/26/87 at 1530 Z, and from 6/27/87 at 2206Z until 8/1/87 at 2112Z and from 8/1/87 at 2200Z until 9/1/87 at 1800Z when the gage was removed.

GAGE # 67A-10292: The marigram records are continuous from 6/11/87 at 0106 Z until 6/17/87 at 1620 Z and from 6/17/87 at 1741 until 6/29/87 at 2318 Z, and from 6/29/87 at 2330Z to 8/1/87 at 2112Z, and from 8/1/87 at 2200Z to 9/1/87 at 1800Z when the gage was removed.

Station Problems- On June 17, the chart drive(S/N 518515) in gage 67A-10292 was replaced with a new chart drive (S/N 513628) due to a problem with the take-up spool. On June 24, at approximately 0100 Z in gage 67A-10292 a "dip" in the marigram trace was noticed. On June 25, at approximately 0450 Z the marigram record for gage 64A-11030 showed a similar 0.5 ft "dip" near low tide; there was no apparent change in the staff to gage ratios in either of the two cases mentioned above. On June 26, gage 64A-11030 was discovered to have run out of paper. On June 30, the staff was discovered to have been blown down in heavy weather,and on July 7, the staff was recovered and replaced. During the period between June 30 and July 7 no hydrographic surveying was conducted.

EAST SIDE, TOGIAK BAY, ALASKA (946-5346)

Geographic Locale - Lat: 58^{o} 57.2' N Long: 160^{o} 19.1' W

Installation Date - June 20, 1987

Removal Date - September 1, 1987

Gage Type - Bristol Bay Bubbler (S/N 73A-231). Back up gage was a Bristol Bay Bubbler (S/N 68A-9333), which was installed at the same time. Both gages were placed against the face of a bluff approximately 20 feet above the high water line. On 6/25/87 gage S/N 68A-9333 was replaced by gage S/N 67A-1029A due to poor staff to gage comparisons.

Staff - The staff was constructed of a 12 foot long 4"x4" aluminum angle iron with vitrified scale. The staff was bolted to a ledge 140 feet west of BM E. The staff stop was a stainless steel lag bolt at 16.010 feet on the staff.

Staff Zero/Gage Zero-
For gage 68A-9333: 4.3 ft
For gage 67A-1029A: 5.6 ft
For gage 73A-231: 4.6 ft

Gage Time - Universal Coordinated Time

Bench Marks - Five bench marks were established when the gage was installed. They are 5346 A 1987, 5346 B 1987, 5346 C 1987, 5346 D 1987, and 5346 E 1987.

Levels - Levels were run during installation on June 20, and upon removal on September 1, connecting the five bench marks. The elevations of the bench marks at installation and removal agreed to within 0.005m (0.016ft).

Marigram Records -
GAGE # 68A-9333: The marigram is continuous from 6/21/87 at 0148Z until 6/24/87 at 0550Z when the gage was replaced by gage 67A-1029A.

GAGE # 67A-1029A: The marigram is continuous from 6/25/87 at 2318 Z until 7/21/87 at 1730 Z, and from 7/21/87/ at 1800 Z until 8/1/87 at 1854 Z, and from 8/1/87 at 1930 Z until 9/1/87 at 1627 Z when the gage was removed.

GAGE # 73A-231: The marigram is continuous from 6/21/87 at 01030 Z until 7/21/87 at 1730 Z, and from 7/21/87 at 1812 Z until 8/1/87 at 1854 Z, and from 8/1/87 at 1930 Z until 8/8/87 at 1912 Z when the gage was removed.

Station Problems- The gage 68A-9333 showed poor staff to gage ratios during three hour observations on 6/23/87 and was replaced on 6/25/87 with gage 67A-1029A.

The staff to gage readings for the month of August showed a drop of 0.5 ft for both gages as compared to the previous months. This would indicate a shift in the depth of the orifices. Since there was no movement of the staff the actual reason for the shift is not known.

There were minor problems with the chart drives loosing time at this station.

WEST SIDE, TOGIAK BAY, ALASKA (946-5359)

Geographic Locale - Lat: 58^{o} 59.2' N Long: 160^{o} 32.5' W

Installation Date- June 7, 1987

Removal Date- August 31, 1987

Gage Type - Bristol Bay Bubbler (S/N 62A-92). Back up gage was a Bristol Bay Bubbler (S/N 68A-9335), which was installed at the same time. Both gages were placed against the face of a bluff approximately 20 feet above the high water line.

Staff - The staff was a 12 foot long 4"x4" aluminum angle iron secured to a rock ledge with lag bolts and supported by 2x4 wooden braces. The staff was located 87 feet southwest of BM A. The staff stop was at 16.871ft on the staff. On August 6 the staff was discovered missing, and was recovered and replaced on August 7.

Staff Zero/Gage Zero-

Before 8/7:	For gage 62A-92: 5.0 ft
	For gage 68A-9335: 2.3 ft
After 8/7:	For gage 62A-92: 5.0 ft
	For gage 68A-9335: 1.8 ft

Gage Time - Universal Coordinated Time

Bench Marks - Five bench marks were established upon installation of the gage; they are 5359 A 1987, 5359 B 1987, 5359 C 1987, 5359 D 1987, and 5359 E 1987.

Levels - Levels were run connecting the five bench marks upon installation of the gage on June 22. Levels were run between bench marks A, B, and E on August 7, when the staff was replaced. Final levels were run on August 31, upon the removal of the gage. Installation and removal elevations agreed to within 0.005m (0.016ft). There was a decrease in elevation of 0.013m when the staff was replaced.

Marigram Records -
GAGE # 68A-9335: Marigram records are continuous from 6/26/87 at 2135Z until 7/6/87 at 0455Z when the chart drive ran out of paper, and from 7/8/87 at 0115 Z until 8/1/87 at 1648 Z, and from 8/1/87 at 1718 Z until 8/19/87 at 2227 Z when the paper was changed, and from 8/19/87 at 2308 Z until 8/31/87 at 2224 Z when the gage was removed.

GAGE # 62A-92: Marigram records are continuous from 6/25/87 at 2206 Z until 7/7/87 at 1530 Z when the chart drive ran out of paper, and from 7/8/87 at 0125 Z until 8/1/87 1648 Z and from 8/1/87 at 1718 Z until 8/20/87 at 2048 Z, and from 8/20/87 at 2100 Z until 8/22/87 1706 Z when the paper was replaced due to damp paper, and from 8/22/87 at 1718 Z until 8/31/87 at 2224 Z when the gage was removed.

Station Problems

On August 6, the staff was discovered to have been blown down, and was replaced on August 7. Otherwise there were no significant problems encountered with the station.

NORTH END HAGEMEISTER ISLAND, HAGEMEISTER STRAIT, ALASKA (946-5234)

Geographic Locale - Lat: 58^{o} 46.6' N Long: 160^{o} 46.6' W

Installation Date - July 19, 1987

Removal Date - September 2, 1987

Gage Type - Bristol Bay Bubbler (S/N 64A-11028). Backup gage was a Bristol Bay Bubbler (S/N 67A-16208), which was installed at the same time. Both gages were placed on top a bluff approximately 30 feet above the high water line.

Staff - The staff was located approximately 100 ft north of 5234 B 1987, and was secured with lag bolts to a rock at the north edge of a ledge. The staff was a 12 ft piece of aluminum angle iron with a 2 ft wooden extension. The staff stop was a machine bolt at 18.250 ft on the staff.

Staff Zero/Gage Zero-
GAGE # 64A-11028: 2.8 ft
GAGE # 67A-16208: 2.3 ft

Gage Time - Universal Coordinated Time

Bench Marks - Five bench marks were established during tide station installation, they are; 5234 A 1987, 5234 B 1987, 5234 C 1987, 5234 D 1987, and 5234 E 1987. All benchmarks are set in bedrock.

Levels - Levels were run, connecting the five bench marks described above, during installation and removal of the tide station. The elevations of the bench marks at installation and removal agreed to within 0.005m (0.016 ft).

Marigram Records -
GAGE # 64A-11028: Marigram records are continuous from 7/20/87 at 0330 Z until 8/1/87 at 2336 Z, and from 8/1/87 at 2354 Z until 8/31/87 at 1525 Z, and from 8/31/87 at 2248 Z until 9/2/87 at 1624 Z, when the gage was removed.

GAGE # 67A-16208: Marigram records are continuous from 7/2/87 at 0330 Z until 8/1/87 at 2336 Z, and from 8/1/87 at 2354 Z until 8/9/87 at 1918 Z, and from 8/9/87 at 1930 Z until 8/23/87 at 1642 Z, and from 8/23/87 at 1654 Z until 9/2/87 at 1624 Z, when the gage was removed.

Station Problems- None.

HAGEMEISTER STRAIT, MATOGAK RIVER ENTRANCE, ALASKA 946-5285

Geographic Locale - Lat: 58^{o} 50.8' N Long: 161^{o} 00.2' W

Installation Date - August 7, 1987

Removal Date - September 2, 1987

Gage Type - Bristol Bay Bubbler (S/N 73A-231), installed on August 7. Back up gage was a Bristol Bay Bubbler (S/N 67A-16205), which was installed on August 10. Both gages were placed on top a bluff approximately 30 feet above the high water line.

Staff - The staff was located approximately 80 ft east of 5285 A 1987. The staff was made from a 16 foot long 2x4 piece of wood with vitrified scale, and was secured to a ledge with lag bolts and guy wires. The staff stop was at 32.808 ft on the staff.

Staff Zero/Gage Zero-
GAGE # 73A-231: 10.4 ft
GAGE # 67A-16205: 10.8 ft

Gage Time - Universal Coordinated Time

Bench Marks - Five bench marks were established during tide station installation, they are; 5285 A 1987, 5285 B 1987, 5285 C 1987, 5285 D 1987, and 5285 E 1987. All benchmarks are set in bedrock.

Levels - Levels were run, connecting the five bench marks described above, during installation and removal of the tide station. The elevations of the bench marks at installation and removal agreed to within 0.004m (0.013 ft).

Marigram Records -
GAGE # 73A-231: Marigram records are continuous from 8/11/87 at 1724 Z until 9/2/87 at 1654 Z when the gage was removed.

GAGE # 67A-16205: Marigram records are continuous from 8/7/87 at 0450 Z until 8/8/87 at 2336 Z, and from 8/8/87 at 2348 Z until 8/17/87 at 2035 Z, and from 8/19/87 at 2018 Z until 9/2/87 at 1654 Z, when the gage was removed.

Station Problems- Gage number 67A-16205 and the staff were installed on August 7, while the other gage (S/N 73A-231) and the benchmarks were installed on August 10. When the second gage was installed on Augus 10, the divers who installed the second orifice moved the plate that the orifices were mounted on, as can be seen on the marigram trace from gage 67A-16205 at approximately 1750 Z on 8/10/87.

The were no major problems encountered at this station while it was in operation. At approximately 2035 Z on 8/17/87 the paper jammed in the chart drive, this problem resulted in a loss of approximately 48 hours of data from gage number 67A-16208.

MASTER STATION LIST
OPR-R184-RA-87
TOGIAK BAY, ALASKA
H-10253; RA-20-5-87

```
123 3  58 52 29373 160 55 57808  250 0000 000000
/MATOGAK 1985,                PACIFIC PHOTO PARTY

124 3  58 44 41531 160 54 59618  250 0000 000000
/VELO 1985     QUAD 581604,  PACIFIC PHOTO PARTY

201 3  58 50 49897 160 13 15720  250 0151 000000
/ SUMMIT 1948 AZ.MK. G-15848, QUAD. 581601,STA.1011

224 3  58 49 04242 160 40 55847  139 0012 000000
/STRAIT 1948     G-15848  QUAD 581604, STA. 1004

225 3  58 48 45571 160 50 09208  139 0000 000000
/TONGUE POINT 2 1985 QUAD 581604 PACIFIC PHOTO PARTY

226 3  58 55 35101 160 42 13672  250 0000 000000
/QUIG 1987                          RAINIER G.P.
```

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA Ship RAINIER S-221
1801 Fairview Ave. East
Seattle, WA 98102-3767

October 9, 1987

Director
DMAHTC
6500 Brooks Lane
Washington, DC 20315-0030

RE: Notice to Mariners

Dear Sir:

During 1987 surveys in northern Bristol Bay, Alaska, the NOAA ship RAINIER has discovered seven dangers to navigation. These have been reported to the Seventeenth Coast Guard District for publication in the Local Notice to Mariners. A copy of the report describing these dangers is attached.

Sincerely,

Carl W. Fisher
Captain, NOAA
Commanding Officer

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA Ship RAINIER S-221
1801 Fairview Ave. East
Seattle, WA 98102

October 9, 1987

Commanding Officer
Seventeenth Coast Guard District
P.O. Box 3-5000
Juneau, AK 99802

RE: Notice to Mariners

Dear Sir:

I request the following be published in the Local Notice to Mariners for the Seventeenth District:

The NOAA ship RAINIER of the National Ocean Service has completed 1987 charting operations in Togiak Bay and Hagemeister Strait, Alaska. The following dangers to navigation have been discovered (all depths have been reduced to MLLW using predicted tides):

A. Sandy shoal area less than 4 fathoms, bounded by: 58°52.0'N to 58°53.5'N and 160°26.0'W to 160°33.0'W, and 58°50.0'N to 58°52.0'N and 160°30.0'W to 160°39.0'W.
Three least depths over the shoal:
1.9 fathoms at 58°51.6'N/160°36.6'W
2.8 fathoms at 58°51.7'N/160°33.7'W
3.3 fathoms at 58°52.5'N/160°30.0'W.

B. Sandy shoal area less than 3 fathoms, bounded by: 58°49.0'N to at least 58°44.0'N and 160°35.0'W to 160°45.0'W.
Least depth 1.4 fathoms at 58°47.9'N/160°39.2'W.

C. Rock 2.2 fathoms at 58°49.8'N/160°40.4'W.

D. Rock 3.4 fathoms at 58°49.0'N/160°49.2'W.

E. Shoal 4.0 fathoms at 58°45.4'N/160°53.9'W.

F. Sandy shoal area less than 3 fathoms, bounded by: 58°47.9'N to 58°53.0'N and 160°50.0'W to at least 161°01.0'W.
Offshore least depth 1.2 fathoms at 58°48.4'N/160°56.1'W.

G. Sand and gravel shoal area less than 4 fathoms, bounded by: 58°45.0'N to 58°46.0'N and 160°58.0'W to at least 161°01.0'W.
Least depth 2.6 fathoms at 58°45.7'N/160°59.8'W.

The following NOS charts are affected:

16305	3RD ED JAN24/87	1:100,000	NAD27 DATUM
16315	3RD ED FEB28/87	1:100,000	NAD27 DATUM
16011	31ST ED JUN29/86	1:1,023,188	NAD27 DATUM
16006	29TH ED AUG23/86	1:1,534,076	NAD27 DATUM.

These are preliminary depths, heights, and positions subject to office review.

Sincerely,

Carl W. Fisher

Carl W. Fisher
Captain, NOAA
Commanding Officer

Enclosure
cc: DMAHTC
N/CG222
N/MOP

PRELIMINARY CHART

1987 EDITION

UNITED STATES

ALASKA - WEST COAST

BRISTOL BAY

TOGIAK BAY AND WALRUS ISLANDS

Mercator Projection
Scale 1:100,000 at Lat. 58°40'
North American 1927 Datum

SOUNDINGS IN FATHOMS
(FATHOMS AND FEET TO ELEVEN FATHOMS)
AT MEAN LOWER LOW WATER

Shallow
Shallow
Foul
PA (Rep 1985)
Foul
Less than 3 fathoms
Less than 4 fathoms
Less than 3 fathoms
PA Foul Area (Rep 1985)
PA Foul Area (Rep 1985)
Mid-strait shoaling to 3 fathoms (Rep 1971)
Foul
TONGUE POINT
ROCKY POINT
HAGEMEISTER STRAIT
ISLAND
JOINS CHART 16305

A
B
C
D
E
F
G

46320
46340
46360
46380
46400
46420
46440
46300
46280
46260
46240
9990Z
9990Y
32640
32650
32660
32670
32680
32690
32700
32710

3rd Ed., Feb. 28/87

16315

LORAN-C OVERPRINTED

55'
50'
58°
161°
55'
50'
45'
40'
35'
30'

CST

FICE

WTEF WTEF 112025Z

NOJ | 2344Z 13 AUG 87

MCJ | 4332KHZ

R 112025Z AUG 87
FM NOAAMOP SEATTLE WA
TO RUWMBBA/NOAAS RAINIER
ACCT CM-VCAA
BT
UNCLAS
RA143-181-168-170-180//MOP2X1
A. YOUR 052350Z AUG 87
B. PHONECON WITH MOP2X1 - 11 AUG 87
1. AS DISCUSSED IN REF B, CG241 CONCURS THAT SHEET G SHOULD BE SHIFTED NORTH TO COVER NORTHERN BOUNDARY OF HAGEMEISTER STRAIT. THE AMOUNT OF THIS SHIFT SHOULD BE MINIMIZED TO PREVENT LOSS OF COVERAGE OF NORTH SHORE OF HAGEMEISTER ISLAND EAST OF SHEET F.
2. IF NECESSARY TO COVER AREA DESCRIVED ABOVE, USUAL 7.5 CM (3 INCHES) BORDER ON EDGE OF SHEET MAY BE REDUCED TO 5.0 CM (2 INCHES). IF THIS STILL DOES NOT COVER COMPLETE AREA, PLEASE ADVISE.
BT

NNNN

APPROVAL SHEET

Descriptive Report to Accompany

Hydrographic Survey

RA-20-5-87

H-10253

Standard procedures were followed in accordance with the Hydrographic Manual, Third Edition; Hydrographic Survey Guidelines; and PMC OPORDER in producing this survey. The data were examined daily during acquisition and processing phases of the survey.

The field sheet and accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved.

Carl W. Fisher
Captain, NOAA
Commanding Officer

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: December 30, 1987

MARINE CENTER: Pacific

OPR: R184

HYDROGRAPHIC SHEET: H-10253

LOCALITY: Northern Hagemeister Strait, Bristol Bay, Alaska

TIME PERIOD: August 7, 1987 - September 2, 1987

TIDE STATION(S) USED: 946-5234 North End Hagemeister Island, AK
946-5285 Hagemeister Strait, Matogak River Entrance AK
946-5358 WEST SIDE TOGIAK BAY, AK

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 946-5234 = 11.27 ft.
946-5285 = 20.13 ft.
946-5358 = 9.08 FT.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 946-5234 = 8.0 ft.
946-5285 = 7.3 ft.
946-5358 = 9.4 FT.

REMARKS: RECOMMENDED ZONING

1. See Page 2.

James R. Hubbard

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

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

TIDE NOTE FOR HYDROGRAPHIC SHEET (PAGE 2)

DATE: December 30, 1987

MARINE CENTER: Pacific

OPR: R184

HYDROGRAPHIC SHEET: H-10253

REMARKS: RECOMMENDED ZONING:

1. North of a line formed by 2 points located at 58 49.0' 58 52.5' 160 41.5' 160 48.0' and from this point across latitude 58 49.0' to the edge of the sheet. Zone on 946-5358 and apply a - 10 minute time correction and a X0.90 range ratio to all heights.

2. In Hagemeister Strait

a. South of the previous line to longitude 160 50.0' (from Tongue Pt. to Hagemeister Island) zone direct on 946-5234.

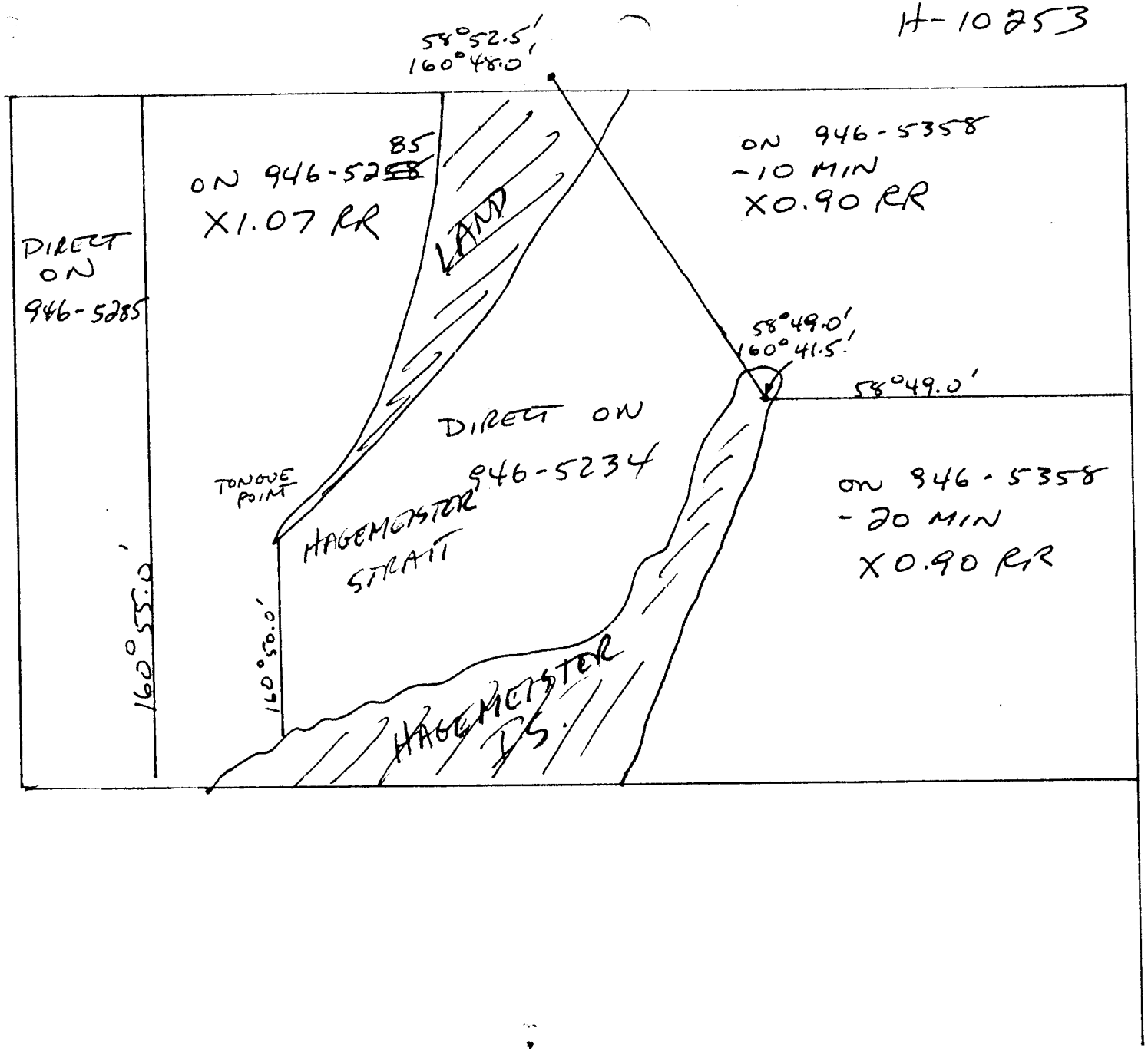
* b. West of longitude 160 50.0' to 160 55.0' zone on 946-5285 and apply a ~~X1.07~~ 1.05 range ratio to all heights.

c. West of longitude 160 55.0' zone direct on 946-5285.

3. On outer Hagemeister Island, south of latitude 58 49.0', zone on 946-5358 and apply a - 20 minute time correction and a X0.90 range ratio to all heights.

* = FROM PHONE CONV. W/ JOE M. ON 1-14-88.

H-10253


58°52.5'
160°48.0'
ON 946-5285
X1.07 RR
LAND
ON 946-5358
-10 MIN
X0.90 RR
DIRECT ON 946-5285
58°49.0'
160°41.5'
58°49.0'
DIRECT ON 946-5234
TONGUE POINT
HAGEMEISTER STRAIT
ON 946-5358
-20 MIN
X0.90 RR
160°55.0'
160°50.0'
HAGEMEISTER I.

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10253

Name on Survey

ALASKA, TOGIAK
NORTHERN HAGEMEISTER
STRAIT

	A ON CHART NO. 16315	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ALASKA (title)	X									1
BRISTOL BAY	X									2
HAGEMEISTER ISLAND	X									3
HAGEMEISTER STRAIT	X									4
MATOGAK RIVER	X									5
TOGIAK BAY	X									6
TONGUE POINT	X									7
										8
										9
										10
										11
										12
										13
										14
										15
										16
				Approved:						17
										18
				Charles E. Harrington						19
				Chief Geographer - N/CG2x5						20
				FEB 26 1988						21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

National Ocean Service
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

FILE COPY

DEC 30 1987

N/MOP21x2/MM/JM

TO: Commanding Officer
NOAA Ship RAINIER

FROM: for N/MOP - Robert L. Sandquist

SUBJECT: Preprocessing Examination of
H-10251, Alaska, Bristol Bay, West Togiak Bay
H-10253, Alaska, Bristol Bay, Northern Hagemeister Strait

Hydrographic surveys H-10251 and H-10253 have been reviewed in accordance with Hydrographic Survey Guideline No. 15, and the Preprocessing Examination Critique for this survey is attached. Surveys H-10251 and H-10253 are accepted for Pacific Marine Center processing.

The Preprocessing Examination Critique is designed to provide information which will be useful to the Command for maintaining the quality of future hydrographic surveys. I encourage you to use this information constructively. Your comments on specific critique items are welcome.

Attachments

cc: N/MOP2x1
N/MOP21x2
N/MOP211
N/CG2

National Ocean Service
Pacific Marine Center
Nautical Chart Branch
7600 Sand Point Way NE
Seattle, Washington 98115-0070

December 28, 1987 N/MOP21x2/MM/JM

TO: N/MOP - Robert L. Sandquist

FROM: N/MOP21 - Thomas W. Richards

SUBJECT: Preprocessing Examination for H-10251 and H-10253

I. SURVEY INFORMATION

A. Field No. RA-20-4-87, RA-20-5-87 Registry No. H-10251, H-10253

B. State: Alaska

General Locality: Bristol Bay

Sublocality: West Togiak Bay, Northern Hagemeister Strait

C. Project Instructions: OPR-R184-RA-87

Original dated: March 6, 1987

Change No. 1 dated: March 20, 1987
No. 2 dated: June 2, 1987
No. 3 dated: August 10, 1987

D. Dates:

	H-10251	H-10253
Field Work Commenced:	July 20, 1987	Aug 7, 1987
Field Work Completed:	Aug 22, 1987	Sept 2, 1987
plus 6 weeks:	Oct 5, 1987	Oct 14, 1987
Data received at Marine Center: *	Oct 23, 1987	Oct 27, 1987
plus 1 month:	Nov 23, 1987	Nov 27, 1987

Examination critique transmitted to field December 30. 1987

Target for completion of Marine Center processing June 30. 1988

* Permission to extend 6-week deadline was requested on Oct 16, 1987 and granted.

II. PREPROCESSING EXAMINATION CRITIQUE

Hydrographic surveys H-10251 and H-10253 were performed by personnel of the NOAA Ship RAINIER, Captain Carl W. Fisher, Commanding Officer. The following personnel supervised portions of the data acquisition: Lieutenant Commander Schomaker, Lieutenant G. White, Lieutenant (jg) Damm, Ensigns O'Mara, Hill, Meis, Larsen, Smith, Groeneveld and Noll.

In accordance with the Preprocessing Examination System set forth in Hydrographic Survey Guideline (HSG) No. 15, Section III, the following items are brought to your attention:

A. Danger to Navigation Report:

RAINIER reported three and six dangers to navigation within the limits of H-10251 and H-10253, respectively.

An error in position was found for one of the dangers reported by RAINIER within the limits of H-10251. The hydrographer reported a 2.8 fm shoal at latitude 58/51.7N, longitude 160/33.7W. The correct position of the shoal as depicted on the final field sheet is latitude 58/51.7N, longitude 160/32.6W (see Attachments A,B).

Errors in depth were found for two of the dangers reported within the limits of H-10253:

1. The hydrographer reported a least depth on a rock as 2.2 fm, at latitude 58/49.8N, longitude 160/40.4W. The final field sheet depicts a 1.7 fm depth at this location. An examination of the field data shows that the 2.2 fm depth came from an echo sounding (position 3265) on the rock. The 1.7 fm depth came from a diver least depth determination of the same feature (position 6124). The 1.7 fm depth is the one that should have been reported. However, since this feature falls well within a charted foul area, no revision to the Dangers to Navigation letter was submitted by PMC (see Attachment C).

The position for fix 6124 was listed in error in section L. of the Descriptive Report. Fix 3265 was listed as 9265 in the same section. Both of these errors made it difficult to check the hydrographic data.

2. The hydrographer reported a least depth on a rock east of Tongue Point, at latitude 58/49.0N, longitude 160/49.2W, as 3.4 fm. The final field sheet shows a depth of 3.7 fm at this location. Positions 8599 and 8600, which fall at this location, were examined and the depths were found to be correctly depicted on the final field sheet. Since this is a deeper depth than that reported by the hydrographer, no revision to the Dangers to Navigation letter was submitted by PMC (see Attachment C).

B. Compliance with Instructions:

Surveys H-10251 and H-10253 generally comply with the Project Instructions. RAINIER investigated eight AWOIS items within the limits of the two surveys (H-10251: AWOIS #50933; H-10253: AWOIS #50918-50920, 50922, 50923, 50925 and 50926).

The following AWOIS items, found on H-10253, required the hydrographer to conduct a bottom drag or diver search for verification or disproval: 50918, 50922, 50923. The hydrographer substituted a side scan search as the means for investigating these items. There was no explanation in the Descriptive Report as to why the AWOIS investigative methods were not followed. An examination of the side scan raw data shows numerous contacts were made during the searches for the above AWOIS items. Several of these contacts are depicted on the final field sheet, designated with a "G" reference number (G106, G107, etc.) and shown with a submerged rock - no depth symbol (carto code 104). A further examination of the records shows that these contacts were positioned from computations based on the sonargrams. None of the contacts were further investigated by proper hydrographic techniques (strong detached position, echo sounder investigation, diver or leadline least depth). During the office processing those features which are considered significant could be recommended for charting as obstructions, position approximate (PA). This will likely result in further field work at a later date [PROVISIONAL SIDE SCAN SONAR MANUAL, sections 3.2.2 and 4.2; PMC OPORDER Section 3.6.4, pp. 3.6-3,4].

A random check of detached positions revealed that check fixes were not always obtained. Example: positions 5075-5080; no check rates were obtained, although four Mini-Rangers were operating and apparently in line-of-sight. To minimize position errors check fixes should be taken on detached positions [HM 4.4.1.].

C. Final Field Sheets:

Bottom sample spacing on both surveys was approximately 9 cm at the scale of the survey. Bottom sample spacing within inshore surveys should not exceed 6 cm [HM 1.6.3].

The final field sheets for both surveys were neat and legible. The use of supplemental 8-, 12- and 14-fathom depth curves assisted in clearly depicting the sloping bottom topography.

D. Descriptive Report:

The following comments pertain to H-10251:

The hydrographer states in section H., Shoreline, that a rock 1.5 ft above MLLW was found at latitude 58/55/45N, longitude 160/41/52W. The rock is not shown on the final field sheet. All point features such as rocks should be plotted on the final field sheet [PMC OPORDER Section 3.5.1.a.2.(b).(2), pp. 3.5-5, HM 4.2.1].

The hydrographer erroneously reported within section L., Comparison with the Chart, that a 5 fathom depth was charted at latitude 58/55/15N, longitude 160/35/35W. Examination of the chart shows that the only 5 fathom depth within 5 nautical miles of the above position is located at latitude 58/55/15N, longitude 160/33/06W (see Attachment B).

Appendix VI, List of Stations, lists eleven stations, eight of which were used for the survey. A station list, containing all of the stations for a project area, may be included in Appendix VI of the Descriptive Report if the signals not used for that survey are crossed out [PMC OPORDER Figure 3.5-1, Descriptive Report Appendices, Appendix VI].

The following pertains to H-10253:

The hydrographer states in section L., Comparison with the Chart, that for AWOIS 50918 a least depth of 2.3 fm, determined by echo sounder (pos. 2367) was found, at latitude 58/46/58N, longitude 160/46/59W. At the stated location on the final field sheet a depth of 2.9 fm is shown. An examination of the data shows that the 2.9 fm depth is correct.

In section L. it would aid the office processor if the discussion of the AWOIS items were listed in consecutive order, by number.

E. Echograms:

There are no apparent problems with the interpretation or annotations on the echograms or sonargrams submitted for either survey.

F. Sounding Volumes and/or Raw Data Printouts:

No major problems were found within the sounding volumes or raw data printouts for either survey. In general, records and annotations were well kept.

K. Special and/or Ancillary Reports:

No problems with the Electronic Control Report or other ancillary reports were found.

L. Automated Data Check:

No significant problems occurred during the spooling of either survey.

N. Survey Acceptance:

The preprocessing examinations for H-10251 and H-10253 were conducted under the time constraints of HSG 15. All comments contained herein are based on a spot check of the data, and it is possible that some problem areas have not been addressed.

Except for the items noted in the critique, surveys H-10251 and H-10253 are in compliance with the Project Instructions. I recommend that H-10251 and H-10253 be accepted for Nautical Chart Branch processing.

Prepared by:

John Miller for:
Marlene Mozgala

John A. Miller
John A. Miller

Attachment A

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

DEC 30 1987 N/MOP21x2/MM

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

Dear Sir:

During the office review of hydrographic survey H-10251, West Togiak Bay, Alaska, a change was noted (see below) which affects the following charts:

16006 (29th Edition, 8/23/86; datum: NAD27)
16011 (31st Edition, 6/29/85; datum: NAD27
16315 (3rd Edition, 2/28/87; datum: NAD27)

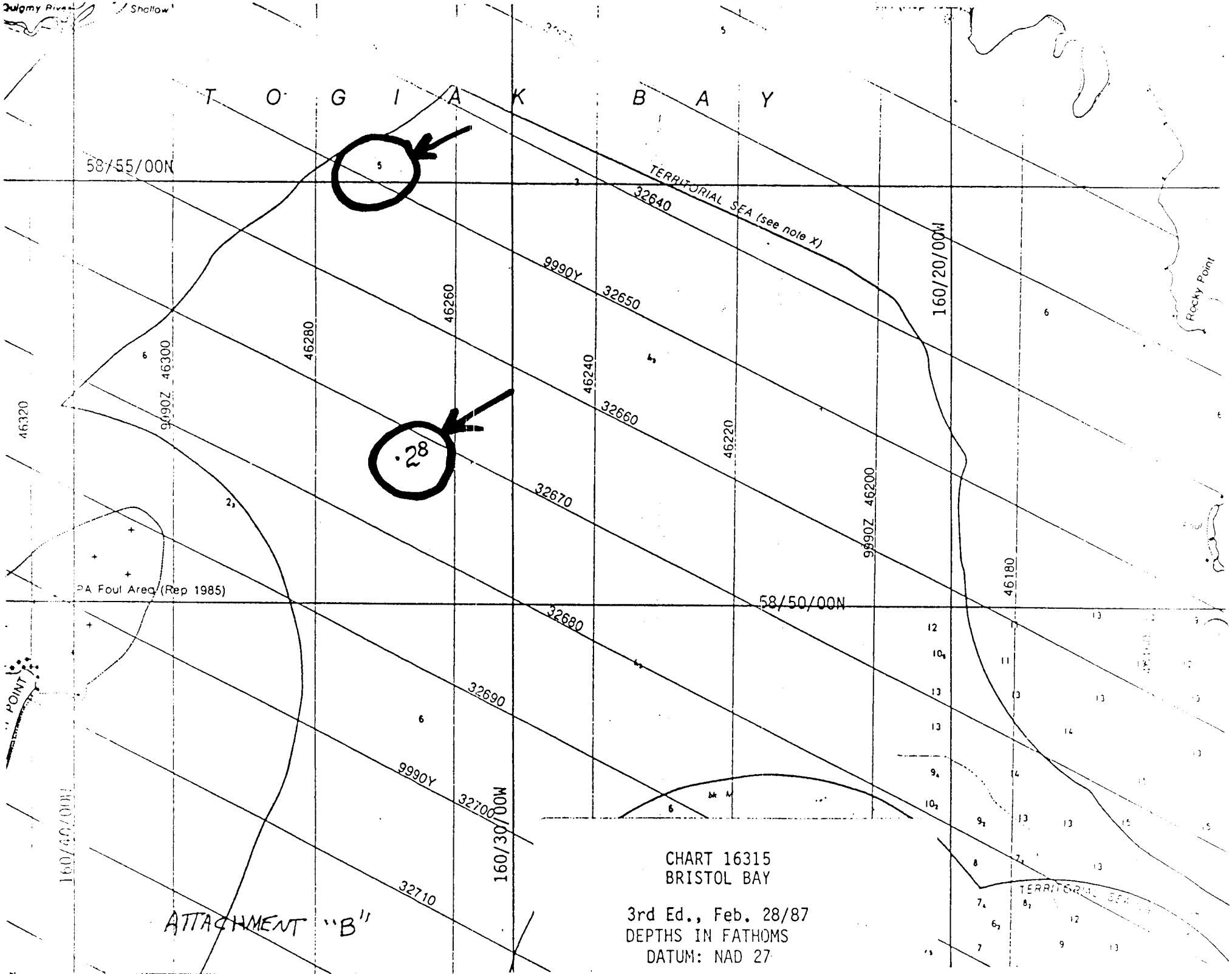
Questions concerning the survey may be directed to Cdr. Thomas W. Richards, Chief, Nautical Chart Branch, telephone (206) 526-6835.

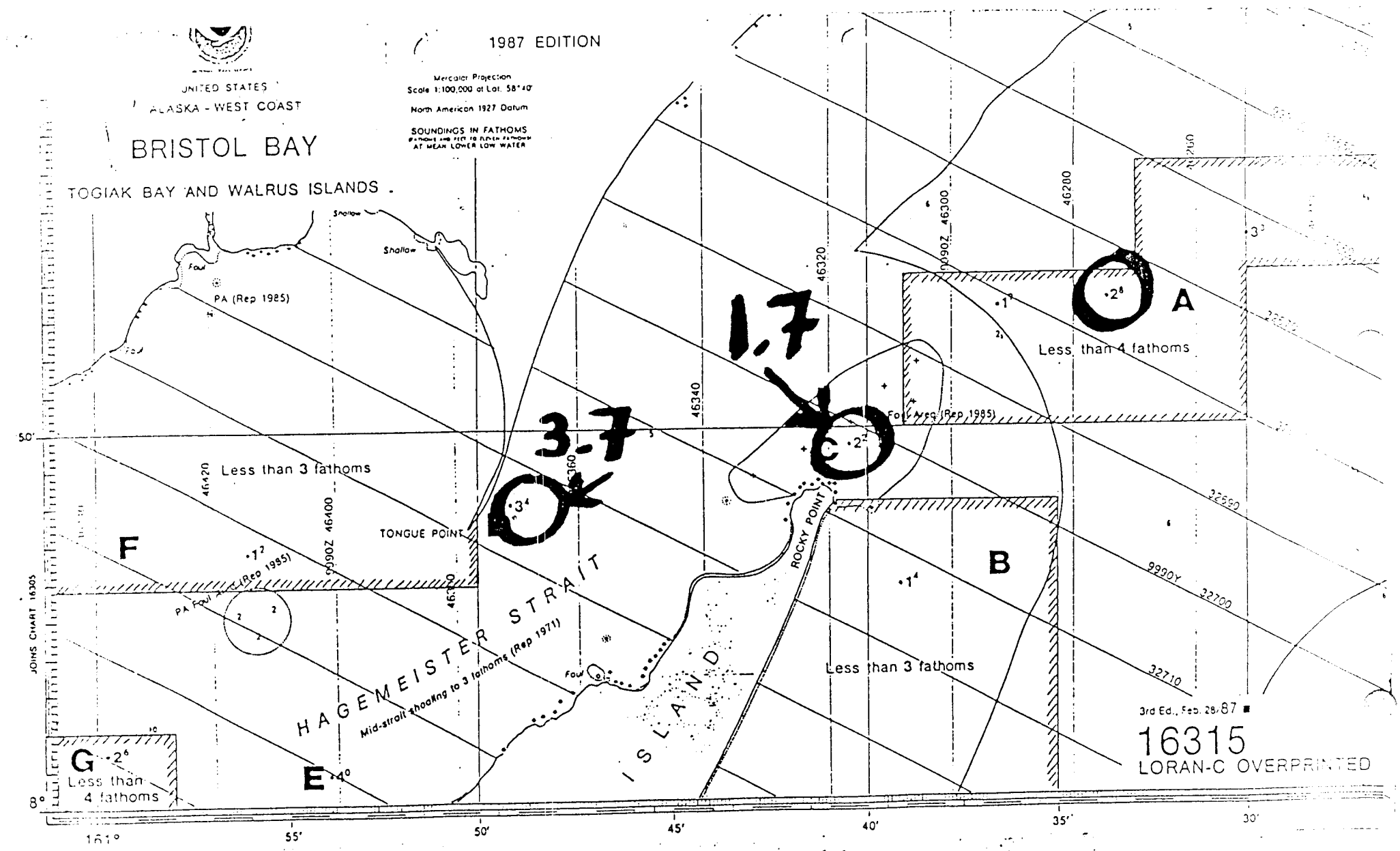
The following statement is recommended for inclusion in the Local Notice to Mariners:

"Revise the position of a 2.8 fathom shoal, originally reported by NOAA Ship RAINIER on October 9, 1987, at latitude 58/51.7N, longitude 160/33.7W, to latitude 58/51.7N, longitude 160/32.6W."

Sincerely,

Sigmund R. Petersen
for Robert L. Sandquist
Rear Admiral, NOAA
Pacific Marine Center


TOGIAK BAY
58/55/00N
58/50/00N
160/20/00W
160/30/00W
160/40/00W
TERRITORIAL SEA (see note X)
32640
9990Y
32650
46260
46280
46300
9990Z
46240
32660
46220
32670
9990Z 46200
46180
32680
32690
9990Y
32700
32710
46320
Rocky Point
PA Foul Area (Rep 1985)
28
ATTACHMENT "B"
CHART 16315
BRISTOL BAY
3rd Ed., Feb. 28/87
DEPTHS IN FATHOMS
DATUM: NAD 27



ATTACHMENT "C"

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Pacific Marine Center
Nautical Chart Branch
7600 Sand Point Way NE
Seattle, Washington 98115-0070

June 9, 1988 N/MOP211/DJH

TO: N/CG24 - Russell Arnold

FROM: N/MOP21 - Thomas W. Richards

SUBJECT: Oversize Smooth Sheet

The smooth sheet for survey H-10253 utilizes a grid which exceeds the standard dimensions for width (north-south). This excess width is evident in the lack of standard 2cm border between the grid and sheet edge for a standard 91cm sheet. To avoid increasing the size of the smooth sheet to a width greater than 91cm approval is requested to compile the smooth sheet with a 1cm border between grid and sheet edge.

cc: N/MOP211

6/17 - Telecon Westbrook. Authorization granted for oversize sheet.
DHill

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

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER
H-10253

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	9
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	4

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES						
ENVELOPES						
VOLUMES	2					
CAHIERS	3					
BOXES			1			

SHORELINE DATA

SHORELINE MAPS (List): TP-01177, TP-01180, TP-01181

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): 16006 18th Ed.

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			7109
POSITIONS REVISED			29
SOUNDINGS REVISED			350
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	73.5		73.5
VERIFICATION OF SOUNDINGS	262.0		262.0
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION VERIFICATION			
COMPILATION OF SMOOTH SHEET	124		124
COMPARISON WITH PRIOR SURVEYS AND CHARTS		18	18
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS	4	38	42
EVALUATION REPORT			
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	463.5	56	519.5

Pre-processing Examination by R. Shipley, J. Shofner, C. Davies	*Beginning Date* 11/30/87	*Ending Date* 12/16/87
Verification of Field Data by R. Shipley, J. Stringham, M. Sanders	*Time (Hours)* 463.5	*Ending Date* 9/20/88
Verification Check by J. Stringham, B.A. Olmstead	*Time (Hours)* 129	*Ending Date* 7/22/88
Evaluation and Analysis by G.E. Kay	*Time (Hours)* 56	*Ending Date* 9/21/88
Inspection by Dennis J. Hill	*Time (Hours)* 4	*Ending Date* 9/22/88

☆ U.S. GOVT. PRINTING OFFICE 1983: 764-006/6061

PACIFIC MARINE CENTER
Evaluation Report
H-10253

1. INTRODUCTION

Survey H-10253 is a basic hydrographic survey accomplished by the NOAA Ship RAINIER under the following Project Instructions.

OPR R184-RA, dated March 6, 1987
CHANGE NO. 1, dated March 20, 1987
CHANGE NO. 2, dated June 2, 1987
CHANGE NO. 3, dated August 10, 1987
CHANGE NO. 4, dated May 2, 1988
CHANGE NO. 5, dated July 19, 1988

This survey is in Alaska and covers the area of Hagemeister Strait between longitude 161°01'00"W on the west to longitude 160°36'00"W on the east. The survey is bounded to the northwest by the Alaskan mainland and to the northeast by survey H-10251 at latitude 58°51'00"N. The southern limit is Hagemeister Island and latitude 58°44'30"N. The bottom characteristics consist of mud, sand, gravel, pebbles and grass. Depths range from the zero curve at the mouth of the Matogak River to an isolated deep of 24 fathoms in the center of Hagemeister Strait.

Predicted tides for Black Rock, Walrus Islands, Bristol Bay, were used for the reduction of soundings during field processing. Approved hourly heights were used during office processing zoned from the following.

Location	Gage Number
North End Hagemeister Island	946-5234
Hagemeister Strait, Matogak River Entrance	946-5285
West Side Togiak Bay	946-5358

The surveyed area exceeds the maximum dimensions in width of 75 centimeters when plotted. Permission was requested and granted by N/CG241 for a one centimeter distance between the grid and the edge of the sheet in order to retain a sheet size of 91 centimeters (36 inches).

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, generated for this survey, includes categories of information required to comply with N/CG2 Hydrographic Survey Guideline No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983. Certain descriptive information, however, may not be in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Sections F and G of the hydrographer's report and the Horizontal and Electronic Control Reports for OPR-R184-RA-87 contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are published and 1985, 1987 field values based on NAD 27. These values were used during office processing for the computation of positions. The smooth sheet and accompanying overlays are annotated with NAD 83 adjustment ticks based on values determined by N/CG121. Geographic positions based on NAD 83 may be plotted on the smooth sheet utilizing the NAD 27 projection by applying the following corrections:

latitude: +2.800 seconds (+86.6 meters)
longitude: -7.950 seconds (-127.7 meters)

The year of establishment of control stations shown on the smooth sheet originates with the field records and the published NGS data and is subject to change pending certification of the data by NGS.

There are 51 weak fixes (angles of intersection less than 30 degrees or more than 150 degrees) noted in this survey. There are no significant plotting differences between the soundings located by these fixes and those in adjacent areas. Also, none of these fixes are used to position dangers to navigation. These fixes are considered acceptable.

The following shoreline maps apply to this survey.

Number	Photo Date	Class
TP-01177	July, August 1985	III
TP-01180	July, August 1985	III
TP-01181	July, August 1985	III

The above contemporary maps originate with photography flown at mid-tide and fail to accurately define nearshore features such as rocks, ledges and reefs. The hydrographer, aware of this significant deficiency, attempted to define the features but was unable to complete the task due to time and weather restrictions. The nearshore area as depicted on the smooth sheet has been supplemented with information from prior shoreline maps. See section 6 for additional details.

3. HYDROGRAPHY

Except as noted below, hydrography is adequate to:

a. delineate the bottom configuration, determine the least depths, and draw the standard depth curves and the supplemental 4-fathom curve;

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.

In areas where side scan sonar was used, contacts were not investigated and the least depths have not been determined (see sections 4 and 7).

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 PMC OPORDER, except as noted in the attached copy of the Preprocessing Examination, dated December 30, 1987 and as follows.

The hydrographer did not investigate significant side scan sonar contacts as required by the Provisional Side Scan Sonar Manual paragraph 1.2.5. See section 7.b of this report for resolution of the specific AWOIS items investigated.

5. JUNCTIONS

Survey H-10253 junctions with the following surveys.

Survey	Year	Scale	Area
H-10251	1987	1:20,000	Northeast
H-10276	1988	1:20,000	Southeast

Soundings along the junction with survey H-10251 are in good agreement, the junction is complete.

Survey H-10276 adjoins to the southeast. This survey is in the field and a junction could not be accomplished. Curves will be brought into coincidence when survey H-10276 is processed.

A comparison with the largest scale and latest edition chart in the junction areas to the east and southwest shows good agreement. A comparison to the west could not be made because of the lack of any sounding data on the chart.

6. COMPARISON WITH PRIOR SURVEYS

There are no prior hydrographic surveys within the limits of survey H-10253.

The following four prior shoreline maps were compared to as required by CHANGE NO. 5 of the Project Instructions.

Survey	Year	Scale	Transferred features, color
T-9235	(1948)	1:20,000	no features transferred
T-9240	(1948)	1:20,000	1 rock, red
T-9241	(1948)	1:20,000	rocks and foul limits, violet
T-9247	(1948)	1:20,000	no features transferred

The prior shoreline maps depict foreshore rocks and foul areas in greater detail than does the present survey or contemporary shoreline maps. The features carried forward are intended to supplement the present survey in areas where nearshore development is deficient.

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

With the transfer of the features noted above, survey H-10253 is adequate to supersede these shoreline maps within the area of common coverage.

7. COMPARISON WITH CHART

Chart 16006, 29th Edition, dated August 23, 1986; scale 1:1,534,076
Chart 16011, 31st Edition, dated June 29, 1978; scale 1:1,023,188
Chart 16305, 3rd Edition, dated February 28, 1987; scale 1:100,000
Chart 16305, 4th Edition, dated December 26, 1987; scale 1:100,000
Chart 16315, 3rd Edition, dated January 24, 1987; scale 1:100,000
Chart 16315, 4rd Edition, dated January 2, 1988; scale 1:100,000

The third and fourth edition of charts 16305 and 16315 are identical in the common area.

a. Hydrography

Charted information on chart 16006 and 16011 originates from unknown sources. The third editions of charts 16305 and 16315 contain data from unknown sources, with alongshore features from shoreline maps T-9235 and T-9241. Present survey H-10253 does not compare well with these charts. The fourth editions of charts 16305 and 16315 have been updated from survey H-10253 field sheets and compare well to the present survey.

Survey H-10253 is adequate to supersede charted hydrography within the common areas.

b. AWOIS

There are seven AWOIS items originating from miscellaneous sources within the area of survey H-10253. These items are adequately discussed in the hydrographer's report, section L, supplemented as follows.

Item 50922, a submerged rock at latitude 58°48'54"N, longitude 160°39'54"W was investigated by conventional echo sounding with 40-meter splits and 100 percent side scan sonar coverage where depths permitted. As mentioned in section 3 and 4 of this report, side scan sonar contacts were not investigated and adequate least depths for these contacts were not determined. The hydrographer identifies several side scan contacts as rocks; however, there is no supporting information that these indications are rocks. The minimum depths obtained with conventional echo sounding and the distance from the reported position are as follows:

Position	Latitude North	Longitude West	Depth in fathoms	Distance in meters
1051/2	58°48'53.27"	160°39'54.81"	1.7	26.1
1174/6	58°48'56.74"	160°40'45.33"	1.9	828.3
1176/1	58°48'59.07"	160°40'45.28"	0.8	837.7
7362/4	58°48'15"	160°39'37"	1.2	1300.0

The side scan sonar investigation, however, was adequate to determine that the submerged rock does not exist at the charted location. This feature should be removed from the chart and the area should be charted according to the smooth sheet. See Addendum

Item 50923, a position approximate submerged rock, at latitude 58°49'00"N, longitude 160°43'36"W, was investigated with 200 percent side scan sonar coverage. The side scan sonar contacts and sounding lines revealed several peaks, however, these contacts were not investigated nor were adequate minimum depths determined. Supporting conventional echo sounding reveals shoaler depths in the vicinity of the side scan sonar contacts. Their positions and the distance from the reported submerged rock are as follows:

Position	Latitude North	Longitude West	Depth in fathoms	Distance in meters
2590/4	58°48'49.53"	160°43'22.99"	3.9	385.4
2655/3	58°48'45.15"	160°43'13.83"	2.1	581.2
2589/3	58°48'45.10"	160°43'31.33"	3.7	717.7
2659/4	58°48'32.60"	160°43'37.13"	1.8	859.7

The side scan sonar investigation, however, is adequate to determine that the submerged rock does not exist at the charted location. Since the significant side scan sonar contacts fall in proximity to features found by conventional echo sounding, this submerged rock should be removed from the chart and the area charted according to the smooth sheet.

Item 50925, a foul area and/or sand spit at latitude 58°50'52"N, longitude 160°38'43"W, was investigated, by echo sounder at 50-meter line spacing over the entire charted area. Line spacing was reduced to 25-meters over the more shallow areas. Dive investigations also were performed on five rock features and least depths were obtained on each (see hydrographer's report, section L, page 24). However, the investigation is not adequate to disprove the existence of other potential rocks. Additional work is not recommended, however, due to the significant difficulty in locating all rocks in this area. ~~Accordingly, the area should remain charted as "foul", and updated with the results of this survey.~~ See Addendum

~~The survey requirements specified in AWOIS for items 50918, 50922, 50923 and 50925 included investigations using bottom drag. This technique was never used, instead, side scan sonar, echo sounding and limited diving was employed. Despite this deviation from the prescribed specifications it is felt that the hydrographer obtained adequate information to supersede the presently charted depiction of rocks and shoals. Additional work may locate~~

~~other rocks but only at the expense of considerable time and effort. The continued judicious use of foul limit lines should provide sufficient indication to mariners of the hazardous nature of this coastline.~~

c. Controlling Depths

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

d. Aids to Navigation

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

e. Geographic Names

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

f. Dangers to Navigation

The hydrographer on October 9, 1987 reported seven dangers to navigation to the Seventeenth Coast Guard District, DMAHTC, and N/CG222. Additional dangers were found during office processing and were reported to the USCG on December 30, 1987. Copies of the reports are attached.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10253 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

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

Gordon E. Kay
Cartographer

This survey has been examined and it meets Charting and Geodetic Services' standards and requirements for use in nautical charting. Approval is recommended.

Dennis Hill
Chief, Hydrographic Section

APPROVALS

I have reviewed the smooth sheet, accompanying data, and reports associated with hydrographic survey H-10253. This survey meets or exceeds Charting and Geodetic Services' standards for products in support of nautical charting.

Thomas J. Richards 9/30/88
Chief, Nautical Chart Branch (Date)

CLEARANCE: SIGNATURE AND DATE:

N/MOP2:LWMordock Lawrence W. Mordock 9/30/88

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards.

Robert L. Sandvik 9/30/88
Director, Pacific Marine Center (Date)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

SEP 8 1989

RCA

MEMORANDUM FOR: Commander Russell C. Arnold, NOAA
Chief, Hydrographic Surveys Branch

FROM: Lieutenant Commander Maureen R. Kenny NOAA
Chief, Operations Section

SUBJECT: Addendum to the Evaluation Report
for Survey H-10253 (1987)

An AWOIS and SURF check of survey H-10253 has been performed. The following is an addendum to the Evaluation Report, Section 7, Comparison with Chart, paragraph b.

AWOIS Item No. 50922

An obstruction, probably a rock, was observed on the sonargram during review by N/CG241. This univestigated contact was noted on a turn immediately prior to resuming a line. The location, latitude 58°49'15.2"N, longitude 160°39'11.3"W (+/-15 meters estimated accuracy), was determined by extrapolating backwards from position 2921. The depth, 3.0 fathoms, was estimated by computing the contact's height above the bottom from the sonargram and applying that value to the survey depth at its location. This new obstruction, which is approximately 900 meters northeast of AWOIS item no. 50922, has been assigned AWOIS item no. 51771.

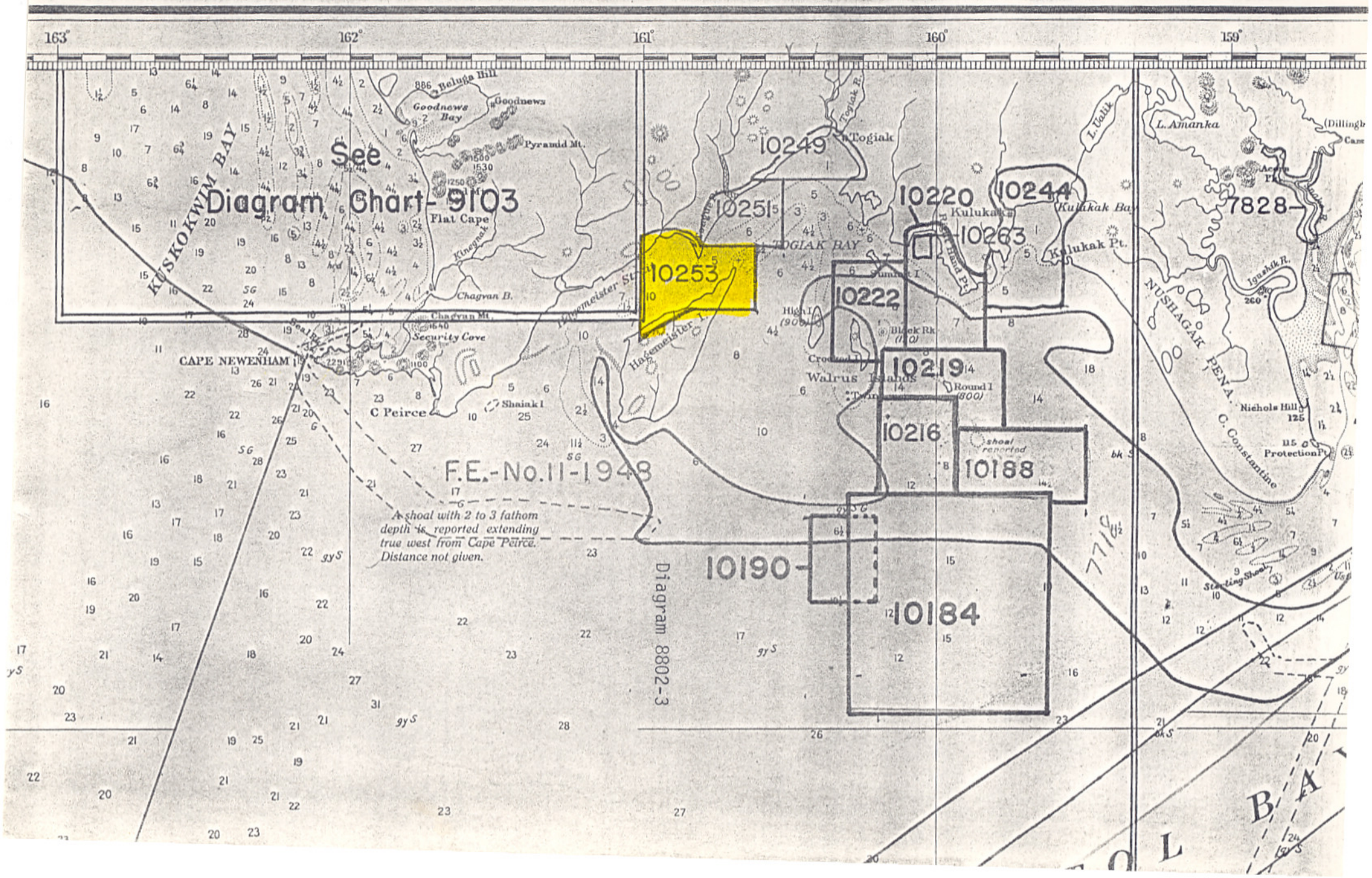
It is recommended that "Obstn" be charted at the above position with a depth of 3.0 fathoms. The position does not need to be charted as position approximate.

AWOIS Item No. 50925

This investigation, although not totally conclusive, is adequate to assure that the area is not foul. The originating source documents were cartographic representations of the area, not actual surveyed features. The present survey is adequate to portray the area; delete the charted foul limit and submerged rock symbols.

cc: N/CG245 - Chelgren-Koterba

Appd:
Raf: 2-1085/89
CJS - 12-12-89


163°
162°
161°
160°
159°
See
Diagram Chart- 9103
KUSKOKWIM BAY
Flat Cape
Goodnews Bay
Goodnews
886 Beluga Hill
Pyramid Mt.
Kinegnak
Chagvan B.
Chagvan Mt.
Security Cove
CAPE NEWENHAM
C Peirce
Shaiak I
Seal Rk
Hagemeister St.
Hagemeister I.
TOGIAK BAY
Togiak
Togiak R.
Summit I
High I
(900)
Black Rk
(110)
Crooked I
Walrus Islands
Twin
Round I
(800)
Kulukak
Kulukak Bay
Kulukak Pt.
Red Hand Pt.
L. Amanka
L. Ualik
Igushik R.
NUSHAGAK PEN.
C. Constantine
Nichols Hill
125
Protection Pt
Sterling Shoal
10249
10251
10253
10220
10244
10263
10222
10219
10216
10188
10190
10184
7828
7718
7715½
F.E.-No.11-1948
A shoal with 2 to 3 fathom depth is reported extending true west from Cape Peirce. Distance not given.
Diagram 8802-3
10188
7718

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

EXAMINED FOR NM
GDBU
12-12-89

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10253

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
16315	11/29/88	E Bodovinac	Full ~~Part Before~~ After Marine Center Approval Signed Via (inspection)
			Drawing No. 4
16305	11/30/88	E. Bodovinac	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 4
16011	3-14-89	Russell P Kennedy	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 30 Applied through 16315 and 16305
16006	6/24/93	Kenny O'Neill	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 27. No Correction Thru C-16011 # 31. at this Scale chart
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.

appd to Chts 11-3-88 Pkm