10251

Diagram 8802-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey .... Hydrographic

Field No. RA-20-4-87

Registery No. H-10251

LOCALITY

State .... Alaska

General Locality .... Bristol Bay

Sublocality .... West Togiak Bay

1987

CHIEF OF PARTY
CAPT C.W. Fisher

LIBRARY & ARCHIVES

DATE .... October 14, 1988

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

10251

"P"
~~6315~~
16305 ok
16011 ok
16006
CARTOG SIGNOFF ON FMI IN BACK

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-10251

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

FIELD NO.

RA 20-4-87

State Alaska

General locality Togiak Bay

Locality West Togiak Bay

Scale 1:20,000 Date of survey July 20 - Aug 22, 1987

Instructions dated March 6, 1987 w/change 1-3 Project No. OPR-R184-RA-87

Vessel RAINIER (2120), Launch (2123), (2124), (2125), (2126), Skiff (2127), (2128)

Chief of party Carl W. Fisher, CAPT, NOAA

Surveyed by LT White, ENS 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

Verification by: ~~Protracted by~~ R.A. Shipley Automated plot by PMC Xynetics Plotter

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

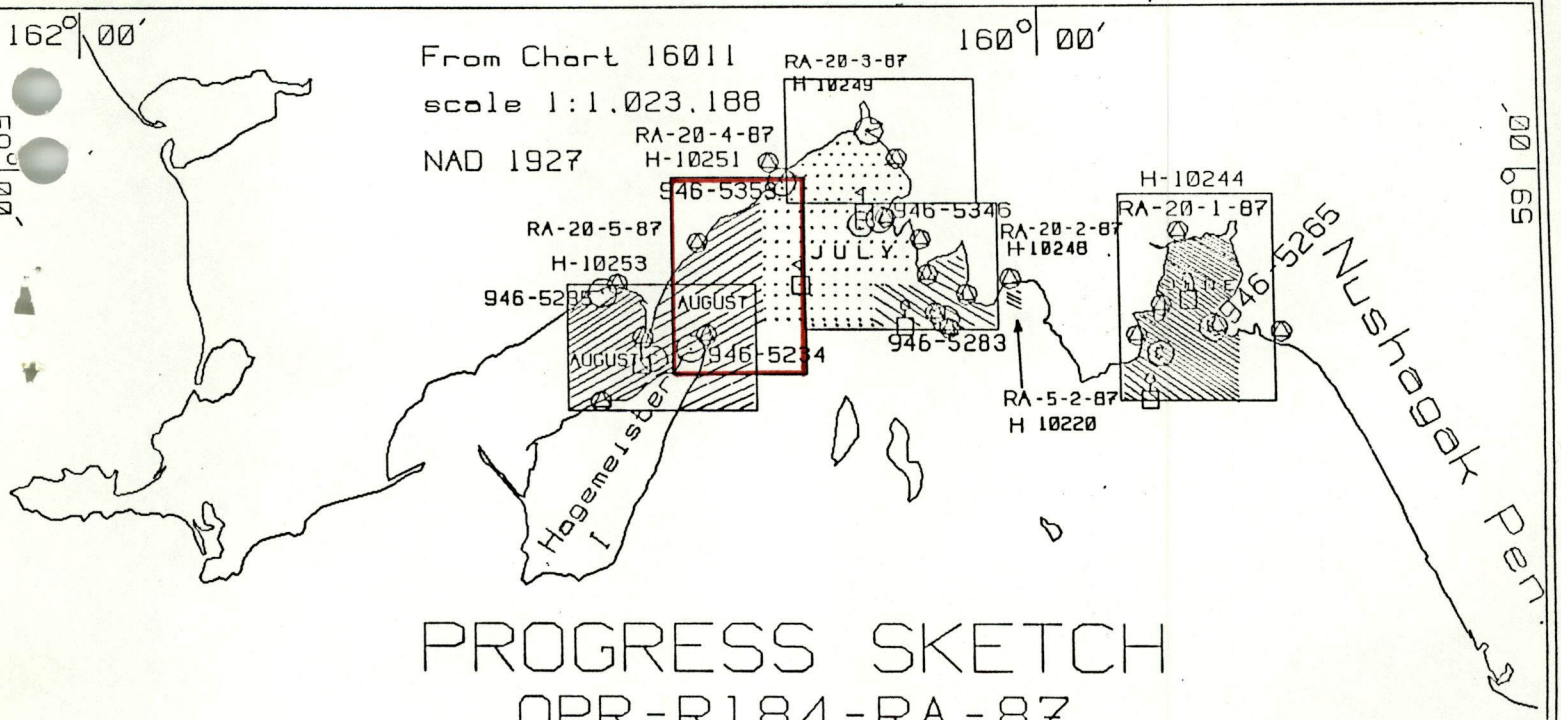
Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW and tenths of fathoms

REMARKS: All times in UTC. Marginal notes in black generated during office processing. Separates are filed with the hydrographic data.

SC 3-26-97 ✓ AWOIS and SURF 4/89 RWD

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-10251

Field Number RA-20-4-87
Scale 1:20,000
1987

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

A. Project

A basic hydrographic survey of west Togiak Bay 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 survey 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 preliminary 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 H on the original sheet layout for the project dated January 25, 1985. The field number for the survey is RA-20-4-87 and the assigned registry number is H-10251.

B. Area Surveyed

West Togiak Bay is located in northeast Bristol Bay, Alaska. Togiak Bay is a shallow bay, 22 miles wide at its mouth and extending northward 11 miles into the Alaskan mainland. This region is surrounded with treeless tundra, marshes, and gently sloping mountains. On land, grizzly, fox, and bald eagles are common; the sea is populated with salmon, humpback whale, sea-lion, seals, walrus, and Dall porpoise. The most important settlement nearby is the native village of Togiak (population 470). The town supports an airfield, post office, several small stores, and two fish processors; the economy is based upon fishing. The bay is exposed to southeast winds; sea swells are usually two to three feet in height from the south.

The survey covers an area heavily used by commercial herring fleets and local fishermen; tug companies also use the area as a route to the town of Togiak. Vessels coming through Hagemeister Strait, enroute to Togiak Bay, pass through the survey area.

The survey area encompassed all waters bounded as follows:

North of latitude: 58° 51' 00"
South of latitude: 58° 59' 26"
East of longitude: 160° 48' 29"
West of longitude: 160° 30' 31"

An area (2.2 x 2.4 kilometers) in the sheet's northeast corner, was excluded from this survey and covered by H-10249 (RA-20-3-87).

The survey area is bounded by mainland to the north and west. The shoreline varies from stretches of flat sandy beaches, to shear rock cliffs rising 80 to 100 feet from the surf. There are numerous streams and small rivers flowing into the bay from the cliffs. An extensive system of tidal marshes lies along the southwestern shore.

The bottom was found to be smooth and very gently sloping, dropping with 0.2% grade from 2 fathoms at the survey sheet's northern boundary to 8-10 fathoms at the southern boundary. However, the extreme southeastern region of the sheet revealed a sharp shoaling to depths of 2-3 fathoms from the 10 fathom depth. A broad trench borders this shoal on the north, becoming deeper (to 15 fathoms) and more narrow as it curves southward around the northern edge of Hagemeister island and into Hagemeister Strait. Strong currents run through the trench. Bottom sediment ranged from fine-grained sand to pebbles; some foul areas along the cliffy shoreline consisted of metamorphic rocks up to 10 meters in diameter lying on a fine-grained sediment bottom.

Data acquisition was conducted from July 20 through August 22, 1987 (DN 201 - DN 234).

C. Sounding Vessels

All data were acquired with the ship's four automated survey launches and two skiffs.

Vessel	EDP No.	Operation
RA-3	2123	R/R, Shoreline Verification
RA-4	2124	R/R
RA-5	2125	Bottom samples
RA-6	2126	R/R
RA-7	2127	Shoreline Verification
RA-8	2128	Shoreline Verification

There were no changes to the standard sounding configurations. Launch RA-5 was used solely for bottom sampling.

D. Sounding Equipment and Corrections to Echo Soundings

The automated survey launches used for this survey were equipped with Raytheon DSF-6000N echo sounders. 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, with no malfunctions of any sort:

Raytheon DSF-6000N Echo Sounders

Vessel	Serial Number	Day Numbers
2123	A117N	201-234
2124	A114N	201-234
2125	A103N	201-234
2126	A119N	201-234

On day 234 a leadline (S/N RA-104) was used to obtain the depth over a shoal. The leadline was last calibrated by members of the RAINIER Survey Department on April 8, 1987.

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 212 a Nansen cast (cast #8) was taken to a depth of 15 meters at a location near the eastern edge of the survey area. On day 218 another Nansen cast (cast #10) was taken to a depth of 38 meters in the deep water of the channel that cuts through Hagemeister Strait:

Velocity Cast Locations

Cast No.	Deepest Depth (m)	Day Number	Geographic Position
8	15	212	58°54.6'N, 160°30.3'W
10	38	218	58°48.3'N, 160°48.0'W

The velocity correctors used in this survey were determined by taking a mean of the two Nansen casts. Velocity tape #4, showing a corrector of 0.1 fm starting at a depth of 3.3 fm, 0.2 fm starting at a depth of 9.5 fm, and 0.3 fm starting at 16.1 fm, was used in the plot of the final field sheet (Appendix IV).

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. Settlement and Squat correctors were applied to the smooth sheet.

Tide Correctors ✓ See Eval Report section I

Tide correctors for this survey were provided by the Sea and Lake Level Branch (Appendix XIII). This preliminary zoning proved inadequate as evidenced by inconsistencies of up to 0.6 fm observed when comparing mainscheme soundings to the adjacent 100 meter splits. After examining a portion of the data from tide gages which were installed for this survey more suitable field 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 field zoning is discussed in detail in the Supplemental Information section (Appendix XIII).

Tide Correctors

Applicable Area	Time Correction		Height Ratio
	High Water	Low Water	
Entire Sheet	+ 45 min	+ 45 min	x0.95

Four temporary tide stations were in operation during this survey: N.E. Summit Island (946-5283); West Side, Togiak Bay (946-5359); East Side, Togiak Bay (946-5346); and North End Hagemeister Island, Hagemeister Strait (946-5234) (see Appendix II). Field tide records have been forwarded to N/OMA121 in accordance with Hydrographic Guideline #50 and the PMC OPORDER. A request for approved tides has been filed (Appendix XI).

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-20-4E-87 and RA-20-4W-87. Two expansion sheets, 1:5,000-scale projections, of NSP and mainscheme data were plotted for investigations on RA-20-4E-87; these were designated Expansion #1 and Expansion #2.

Survey Area	Boundaries
Expansion #1 AWOIS 50933 Submerged reef & Shallow area	North - 58° 57' 30" N South - 58° 56' 25" N East - 160° 38' 20"W West - 160° 40' 10"W
Expansion #2 Shoals	North - 58° 52' 15" N South - 58° 51' 00" N East - 160° 30' 15" W West - 160° 37' 00" W

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	~~Gray~~ Orange
12	Brown

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

F. Control Stations

Seven geodetic stations were used to control this survey. Positions for NEMESIS, OWENS, STRAIT, and SUMMIT AZ are from the NGS data base. The position for TONGUE POINT 2 was provided by NOS/PMC Pacific Photo Party as an unadjusted field position. QUIG and TOG were positioned during this survey and their positions are unadjusted field positions.

Station	Order, class	Date established	Signal No.
NEMESIS	11	1948	223
OWENS	11	1948	119
QUIG	31	1987	226
STRAIT	21	1948	224
SUMMIT AZ	11	1948	201
TOG	31	1987	121
TONGUE POINT 2	31	1985	225
BLAKE	31	1987	122

NEMESIS, OWENS, STRAIT, SUMMIT AZ, and TONGUE POINT 2 were verified with check angles and distances during horizontal control field work. TOG was located by triangulation from OWENS and SUMMIT AZ. QUIG was located by triangulation from VELO and STRAIT. The position for station VELO, established in 1985, was provided by NOS/PMC Pacific Photo Party as an unadjusted field position.

All stations met third-order, class I standards for positioning. Further information can be found in the Horizontal Control Report, OPR-R184-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 geometry. Range data were acquired with Motorola's Mini-Ranger III electronic positioning system.

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	201-234	2123	RA-3
30269/C1712	201-234	2124	RA-4
715/H3705	201-234	2125	RA-5
711/B1388	201-234	2126	RA-6

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

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:

Opening Baseline Calibrations

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. Attached

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 critical 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 theodolites used to conduct T2 critical system checks during the survey were:

Theodolite Make	Serial Number
Wild T-2	75599E
Wild T-2	73226
Wild T-2	57259
Wild T-2	68648

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 Y). The computed means of the opening and closing calibration results ~~are recommended to be~~ were 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 ✓ See Evac Report Section 2

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 the following three NOS shoreline manuscripts:

NATIONAL OCEAN SERVICE
SHORELINE MANUSCRIPT

TP-01178
QUIGMY RIVER

TP-01177
MATOGAK RIVER

TP-01181
TONGUE POINT

ALASKA
CAPE NEWENHAM TO
TOGIAK BAY
SCALE 1:20,000
TRANSVERSE MERCATOR PROJECTION
10,000 FOOT GRID BASED ON
ALASKA STATE PLANE COORDINATE SYSTEM
ZONE 7
1927 NORTH AMERICAN DATUM

Shoreline details were verified by visual inspection from a skiff (vessels 2127 & 2128) or launch (vessel 2123) at or near low tide. There were no areas where verification was not accomplished. Features which appeared as depicted on the TP-sheet were assigned reference numbers and heights as directed in the PMC OPORDER. The reference numbers were recorded with heights in a sounding volume and indexed on a paper copy of the TP-sheet. Descriptive annotations were recorded on the TP-sheet and occasionally supplied on the raw data printouts of the shoreline sounding lines. The paper copy of the TP-sheet contains notes about topography behind the high water line over the entire area. Significant descriptions have been transferred to the final field sheet.

The locations of significant offshore features, and alongshore features not fully delineated on the TP-sheet, were determined with detached positions. Detached positions recorded in the sounding volume have been digitized and transferred onto a master data tape. 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 and changes shown in red. Referenced positions 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, rocks, and islets refer to the highest portion or portions of each feature.

It was clearly evident during the field work that the photography for the TP sheets (TP-01177, TP-01178, & TP-01181) were taken during a stage of tide higher than MLLW. 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 many of the rocks to be within the limits of a foul area. On the final field sheet, foul area delimitations (a dashed line) have been shown in black as additions to the shoreline. In some cases, depicted groups of rocks were found to be the higher points of a ledge or group of interconnected ledges and reefs. These ledges have been shown in black as additions and the TP-sheet rock symbols have not been transferred to the final field sheet unless they represent a point or points to which a height or average height was assigned.

Additions

A single rock was the only significant natural feature to be added to the shoreline described by TP-01178:

Detached Position No.	Location	MLLW Height
2347 ✓	58° 55' 44.45" 160° 41' 52.67⅞" TP-01178	~~-6.0~~ ~~1.8~~ feet

In addition, several man-made features were observed along the shoreline:

See EVAL Report Sections 4 and 7

Detached Position No.	Location	Data & Height
2274	58° 54' 56.81" 160° 43' 38.41" TP-01178	Wreck of 58 ft power skow Ocean Venture Height: 40 feet
2273	58° 52' 57.37" 160° 46' 56.30" TP-01177	Wreck of 30 ft fishing boat Seahawks (Anchorage) Height: 15 feet

Prior Photogrammetric Survey ✓

TP-01178 included 2 shoreline features which were not shown by positions, but were presented as circled areas outlining items from a prior map. These features originated from U.S. Coast and Geodetic Survey Topographic Map T-9236 (1:20,000 scale polyconic projection, 1927 NAD) compiled in 1951 from aerial photographs taken in October, 1946, and August, 1950. T-9236 was not available for comparison during this survey.

See EVAL Report, section 6

The features were investigated during shoreline verification and their status determined as follows:

Location	Reference Number	Feature Status
58° 59' 14" 160° 33' 46" TP-01178	R1Ø6	Islet (3) ~~Rock~~ was detached and at base of cliff, lying on beach. chart islet bare 3 ft at MHW
58° 57' 10" 160° 39' 00" TP-01177	DP2363 & DP2272	Rock/reef/islet not observed. See AWOIS item 50933 in section ~~K~~ L for details.

Control Stations Seaward of the Shoreline

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

I. Crosslines

A total of 59.7 nautical miles of crosslines were run, representing 12.3% of the mainscheme hydrography. In all cases, crossline soundings agreed with mainscheme soundings within three tenths of a fathom. A sample of 163 comparisons was made across the sheet.

Crossline/Mainscheme Agreement	
Within 0.1 fathom	80%
Within 0.2 fathom	90%
Within 0.3 fathom	100%

With no major discrepancies noted, agreement between mainscheme and crossline soundings was evaluated to be very good.

J. Junctions

See EVAL Report section 5

There were no prior surveys with which to perform a junction comparison. However, this survey junctions with three contemporary surveys which were completed during the 1987 field season. H-10251 junctions with: 1) H-10248 along the east boundary; 2) H-10249 along the northeast corner; and 3) H-10253 along the southern boundary.

For each of the cases below, a sample of twenty junction sounding comparisons was made at the locations where soundings directly overlapped.

Junction Sounding Agreement With H-10248

Within 0.1 fathom	50%
Within 0.2 fathom	75%
Within 0.3 fathom	85%
Within 0.4 fathom	100%

Junction Sounding Agreement With H-10249

Within 0.1 fathom	90%
Within 0.2 fathom	95%
Within 0.3 fathom	100%

Junction Sounding Agreement With H-10253

Within 0.1 fathom	75%
Within 0.2 fathom	85%
Within 0.3 fathom	100%

All soundings compared with H-10248 were within 0.4 fathoms; all soundings compared with H-10249 and H-10253 were within 0.3 fathoms. Tide zoning differences may account for the larger discrepancies between this sheet and H-10248; see*Appendix XIII for explanation regarding rezoning of tides for this survey. * Filed with the hydrographic data. See Tide Note for zoning, no discrepancies were noted after smooth tides were applied.
Junction agreement between the sheets was considered very good, there being no discontinuities of depth curves between surveys. concur

K. Comparison With Prior Surveys ✓

There were no prior surveys that covered the area of this contemporary survey. concur
See Evsc Report, Section 6

L. Comparison With the Chart ✓ See Evsc Report section 7

This survey was compared to the following charts:

Chart Number	Scale	Edition	Date
16006	1:1,534,076	29th	8/23/86
16011	1:1,023,000	31st	6/29/85
16315	1:100,000	3rd	2/28/87
16315	1:100,000	4th	1/2/88

Danger to Navigation Reports

A report summarizing dangers to navigation discovered during this and a subsequent survey (H-10253) was sent to the Seventeenth Coast Guard District, Juneau, Alaska, on October 9, 1987. A broad shoal area and two least depths from this survey were reported:

Feature	Limits
Shoal area Less than 4 fathoms	58° 52.0' N to 58° 53.5' N 160° 30.0' W to 160° 33.0' W and 58° 51.0' N to 58° 52.0' N 160° 30.0' W to 160° 39.0' W

Depth	Position Number	Position
2.1 ~~1.9~~ fathoms	7954 ~~3464 + 1~~	32.41" 35.93" 58° 51.6' N, 160° 36.6' W
2.8 fathoms	4126 + 3	42.12" 39.41" 58° 51.7' N, 160° 32.7' W
2.4 fathoms	2168	58° 51' 40.25"N 160° 32' 32.62"W

Comparison of Sounding Features ✓

Since chart 16315 was the largest scale covering the area, it was used for the comparison. There were three charted soundings within the limits of the survey. A comparison was made for the three soundings as follows:

Charted Sounding	Geographic Position	H-10251 Sounding
6.0 fm	58° 52' 57"N 160° 38' 25"W	9.5 fm
2.3 fm	58° 51' 18"N 160° 36' 30"W	2.7 fm
5.0 fm	58° 55' 15"N 160° 35' 35"W	6.3 fm

No significant disagreements were found in this comparison. Due to the extensive coverage of soundings obtained in this survey, and the smaller scale of the charts, it is recommended that the survey depths supersede the charted depths in the survey area. Concur

Shoal Investigation ✓

A shoal which runs east-west along the southern edge of the survey area was investigated. The entire shoal area was split using 100 meter line spacing. Five small NSP investigations were made to determine least depths. The entire shoal investigation was labeled Development #2 and was plotted on Expansion Sheet #2.

Least depths obtained from this investigation were found to be not significant, usually only 1/2 fathom shallower than the average surrounding depth. All depths have been corrected to MLLW using predicted tides.

Least Depth	Location	Position Data
2.1 ~~1.9~~ fathoms	58° 51' 32.28"N 160° 36' 35.84"W	Fix ~~3464 +1~~ 7953
3.0 ~~2.8~~ fathoms	58° 51' 23.20"N 160° 34' 55.80 W	Fix 3320 +4
2.9 ~~2.8~~ fathoms	58° 51' ~~39.~~ 42.12" N 160° 32' 38.41"W	Fix 4126 + 3
2.9 ~~2.8~~ fathoms	58° 51' ~~43"~~ 38.90"N 160° 32' 38.45"W	Fix 4126 + 4
2 ~~3.1~~ fathoms	58° 51' 40" 160° 30' 32"	4002 +4 Fix ~~7944 +1~~
1 ~~6.3~~ fathoms	58° 51' 40" 160° 39' 14"	7963+5 AND 7961+1 Fix ~~7970~~
2.4 fathoms	58° 51' 40.25"N 160° 32' 32.62"W	Fix 2168

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. Two nearshore features are discussed below: Chart 16315 islet and AWOIS item 50933. Concur

Chart 16315 Islet

(Lat. 58° 58' 23" N, Long. 160° 35' 35" W)
An islet shown on chart 16315, but not plotted on TP-01178 was not observed. Two islets (referenced R110 and R111) on TP-01178 were observed 100 meters to the west; however, there were no other islets in the vicinity of this item. Chart according to smooth sheet

AWOIS Item 50933

Obstruction:

LATITUDE ..... 58° 57' 08.00" N
LONGITUDE ... 160° 38' 52.00" W

History:

T9236/48 -- Shallow area; extends approximately 350 meters eastward from the mouth of the Quigmy River to latitude/longitude shown above. (Entered 6/85 RWD).

USGS Quad -- Hagemeister Island (D-2) 1953; Reef, scaled in LAT 58° 57' 10" N, LONG 160° 39' 00" W.

TP01178/85 -- Reviewed, Class III, Nth; Shallow area extends to LAT 58° 57' 00" N, LONG 160° 39' 00" W, the reef charted from the USGS Quad above is not shown. (Updated 2/87 RWD)

Survey Requirements:

Full -- Verify or disprove the extent of the charted shallow feature using standard hydrographic procedures, verify the existence of the reef and rock awash at MLLW, if not visible disprove by bottom drag/diver for a minimum radius of 150 meters of the position given in the quad above. If found GP, LD, or elevations required.

Assigned: OPR-R184-RA-87

A region extending 350 meters in radius from the plotted AWOIS position was developed with sounding lines. Data was collected using: (1) 50 meter line spacing over the entire region; and (2) 25 meter line spacing over an area 150 meters in radius from the plotted AWOIS item. Applicable data is summarized below:

Day Number	Vessel	Position Numbers	Data Type
212	2124	4325-4411	M
213	2126	6176-6188	M
214	2126	6223-6227	M
218	2123	3752-3776	SH
218	2123	3799-3805	M
219	2123	2057-2072	M (100m)
219	2123	2073-2134	NSP (50 & 25 m)

The site was visited on two separate occasions during low water and detached positions were taken while visually examining the area:

	Day Number	UTC	Vessel	Position Number	Predicted Tide
1)	219/220	022313	2123	2272	-1.8 ft
2)	222/223	021019	2123	2363	+5.4 ft

On the first occasion, because of the shallow depth, the launch was confined to pulling up to the mouth of the Quigmy River about 40 meters from the closest point of shore; the detached position was taken 200 meters southwest of the charted site of the rock awash. There were no rocks or reefs of any kind visible above water; however, a sandbar was exposed 1 foot above the water 100 meters northeast. The sandbar was estimated to be 60x40 meters in area, the long axis parallel with the shore.

On the second occasion, fix 2363 was taken over the charted position of the rock; there were no rocks or reefs of any kind observed. The water visibility was good to a depth of 3 feet.

The shallow area is a prograding river delta with a bottom composed of medium to fine grained sand. There are no rocks or outcrops visible in the water or on shore within one mile of the AWOIS site. The shore is a flat beach which extends back 50-60 meters from the water edge, then modifies to a low lying floodplain with small grassy vegetation.

Hydrography revealed the bottom as flat and featureless. The location and height of the sandbar observed to the northeast of fix 2363 agreed well with the hydrographic data. The exposed sandbar at low tide could be mistaken as an islet or rock when seen from aerial photographs. Based upon predicted tides, recorded depths ranged from a minimum of -0.4 fathoms (fix ~~2104~~ 3755/03) to a maximum of +1.7 fathoms (fix 4370 + 2) within the charted shallow area.

It is recommended that the rock charted at 58° 57' 10" N, 160° 39' 08" W, and the islet charted at 58° 57' 10" N, 160° 39' 08" W, be deleted. It is also recommended that depth contours from this survey be charted in lieu of the shallow area. Concur

M. Adequacy of Survey

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

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	1297	22	247.6
2124	930	--	250.0
2125	50	--	0.0
2126	330	--	95.4
2127	--	9	--
2128	--	5	--
TOTAL	2607	36	593.0

SQUARE MILES OF HYDROGRAPHY	49.23
MILES OF SIDE SCAN	0.0
BOTTOM SAMPLES	50
TIDE STATIONS	3
VELOCITY CASTS	2
DAYS OF PRODUCTION	24
MAGNETIC STATIONS	0
CURRENT STATIONS	0

P. Miscellaneous

Bottom Samples

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

Currents

No current observations were made within the survey; however, on August 6-7, a 20 hour observation was made in Hagemeister Strait at: 58^{0} 48.3' N, 160^{0} 48.0' W. Strong currents were observed oriented along the main axis of Hagemeister Strait at this location in a channel between Hagemeister Island and the Alaska mainland which drops to over 20 fathoms in places. The current was found to set at a velocity of over 3 knots in both directions. It was noted that the current flowed northeastward through Hagemeister Strait nearly at the time of low water and southwestward at the time of high water. Refer to the Currents Report OPR-R184-RA-87 for more details.

Loran-C

Fixes were simultaneously acquired with Loran-C and Mini-Ranger control across the survey area from day 210 - day 222. 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 secondary-station lines of position. Loran-C control was compared to Mini-Ranger control by converting Mini-Ranger rates to a geographic position, then plotting the G.P. along with the associated Loran rates on chart 16315 (1987 edition). A sample of twenty comparisons was made. Loran-C was offset an average value of 0.07 nautical miles/bearing 100^{0} T from Mini-Ranger positions.

The launch (2123) attempted to perform Loran-C comparisons daily with either another launch or with the RAINIER; however, despite reasonable comparisons,

Loran-C position busts did occur. The above twenty comparisons were made with Loran-C data which gave reasonable positions. Occasionally the time rates appeared to be off by more than 10 microseconds, resulting in bogus positions which were more than a mile away from the Mini-Ranger positions. Caution must be exercised if the Loran-C information recorded during this survey is used for navigational purposes.

Q. Recommendations ✓ See Evac Report, section 9

The hydrographer considers field work on this survey to be complete. No construction or dredging is planned in this area.

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, especially least depths, have been transferred by hand to the final field sheet from NSP data.

Fix Numbers

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

Vessel Number	Survey Fixes
2123	3000-3932
	2000-2363
2124	4000-4869
2125	5000-5049
2126	6000-6329

One fix number was duplicated; both soundings are for mainscheme data:

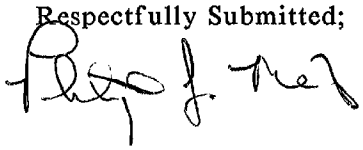
Vessel Number	Day Number	Duplicate Fix Number
2123	215	3567

S. Referral to Reports

Several supplementary reports contain additional information relevant to this survey.

Title	Date 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;



Philip J. Meis
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 (attached). The correctors that were used for Togiak Bay (field sheet RA-20-4-87) are as follows:

Time Correction		Height
High Water	Low Water	Ratio
+0hr 30min	+0hr 30min	x1.06

Tide station information follows:

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

Geographic Locale- Lat: 58^{o} 50.0' N, Long: 160^{o} 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.

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.

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.

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.

MASTER STATION LIST
OPR-R184-RA-87, TOGIAK BAY, ALASKA
RA-20-4-87 (H-10251)

FINAL VERSION

119 3 58 55 55384 160 14 24307 250 0028 000000
/OWENS 1948, G-15848, QUAD 581601, STA. 1008

120 3 58 52 07284 160 09 46645 139 0004 000000
/UNGALI 1987 RAINIER G.P.

121 3 58 56 46472 160 18 58407 139 0030 000000
/TOG 1987 RAINIER G.P.

122 3 59 00 46511 160 15 55039 250 0025 000000
/BLAKE 1987 RAINIER G.P.

124 3 58 44 41531 160 54 59618 139 0073 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

209 3 58 53 19525 160 14 32983 139 0009 000000
/DUCE 1987 RAINIER G.P.

223 3 59 01 57366 160 28 15468 250 0058 000000
/NEMISIS 1948, G-15848, QUAD 591607, STA. 1007

224 3 58 49 04242 160 40 55847 250 0012 000000
/STRAIT 1948 QUAD 581604, STA. 1004

225 3 58 48 45571 160 50 09208 250 0014 000000
/TONGUE POINT 2 1985 QUAD 581604 PACIFIC PHOTO PARTY

226 3 58 55 35101 160 42 13672 250 0071 000000
/QUIG 1987 RAINIER G.P.

ABSTRACT OF BASELINE CALIBRATION RESULTS

Note: The following calibration results are shown as
corr/cutoff
where corr is the observed corrector value in meters and cutoff is the observed signal strength cutoff value.

console: 720
RT unit: B1405

Code	Calibration Results Opening	Calibration Results Closing	Final Baseline Corr	Signal Strength Cutoff
A	+1/6	-1/6	+0	6
C	+0/7	+0/7	+0	7
D	-3/6	-4/6	-4	6
E	+0/6	-1/5	+0	5
F	-1/6	-3/5	-2	5
0	-2/7	-3/6	-3	6
1	-3/7	-2/2	-2	2
2	-1/6	-2/6	-2	6
3	+0/6	-1/6	+0	6

console: 715
RT unit: H3705

Code	Calibration Results Opening	Calibration Results Closing	Final Baseline Corr	Signal Strength Cutoff
A	+0/4	-1/5	+0	4
C	-7/4	-9/4	-8	4
D	+0/4	+0/3	+0	3
E	+0/4	+0/3	+0	3
F	+0/4	+0/3	+0	3
0	+0/5	-1/4	-1	4
1	-3/4	-1/2	-2	3
2	-5/3	-6/4	-6	4
3	+0/5	-1/3	+0	4

console: 30269
RT unit: C1712

Code	Calibration Results Opening	Closing	Final Baseline Corr	Signal Strength Cutoff
A	+0/11	+0/9	+0	10
C	+1/11	+0/9	+0	10
D	+0/09	+3/9	+2	9
E	+0/10	-2/9	-1	9
F	+1/11	+0/9	+0	10
0	+1/10	+0/9	+0	9
1	+2/10	+2/5	+2	8
2	+1/10	-1/9	+0	9
3	+0/10	-1/9	-1	9

console: 711
RT unit: B1388

Code	Calibration Results Opening	Closing	Final Baseline Corr	Signal Strength Cutoff
A	+1/3	-2/4	-1	4
C	+0/4	+0/3	+0	4
D	-1/4	+1/5	+0	5
E	+0/4	-1/4	+0	4
F	+2/4	+0/4	+1	4
0	+0/4	-1/5	+0	5
1	-1/5	+2/3	+1	4
2	-2/4	+2/5	+0	4
3	+0/4	-1/4	+0	4

FOOCW5
cc XO

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

CST FILE W/ PROJ, INST,

March 23, 1987 N/MOP2x1/GBM

TO: Commanding Officer
NOAA Ship RAINIER

FROM: N/MOP - Robert L. Sandquist

SUBJECT: Waiver of Bi-Monthly Mini-Ranger Baseline Calibrations, OPR-R184

Per section 6.2 of Hydrographic Project Instructions OPR-R184-RA, Togiak Bay, Alaska, CY 1987, the requirement for bi-monthly Mini-Ranger baseline calibrations prescribed in PMC OPORDER Appendix M is waived. Baseline calibrations must be conducted at all other times required by Appendix M including the beginning and end of the project. This waiver was granted to increase efficiency by eliminating the dismantling and subsequent reestablishment of Mini-Ranger setups on mountain peaks in the project area. Critical and non-critical system checks must be closely monitored to ensure continuous agreement with initial baseline correctors. This waiver is only applicable to OPR-R184, Togiak Bay, for CY 1987 operations.

cc: N/CG2
N/MOP21

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.

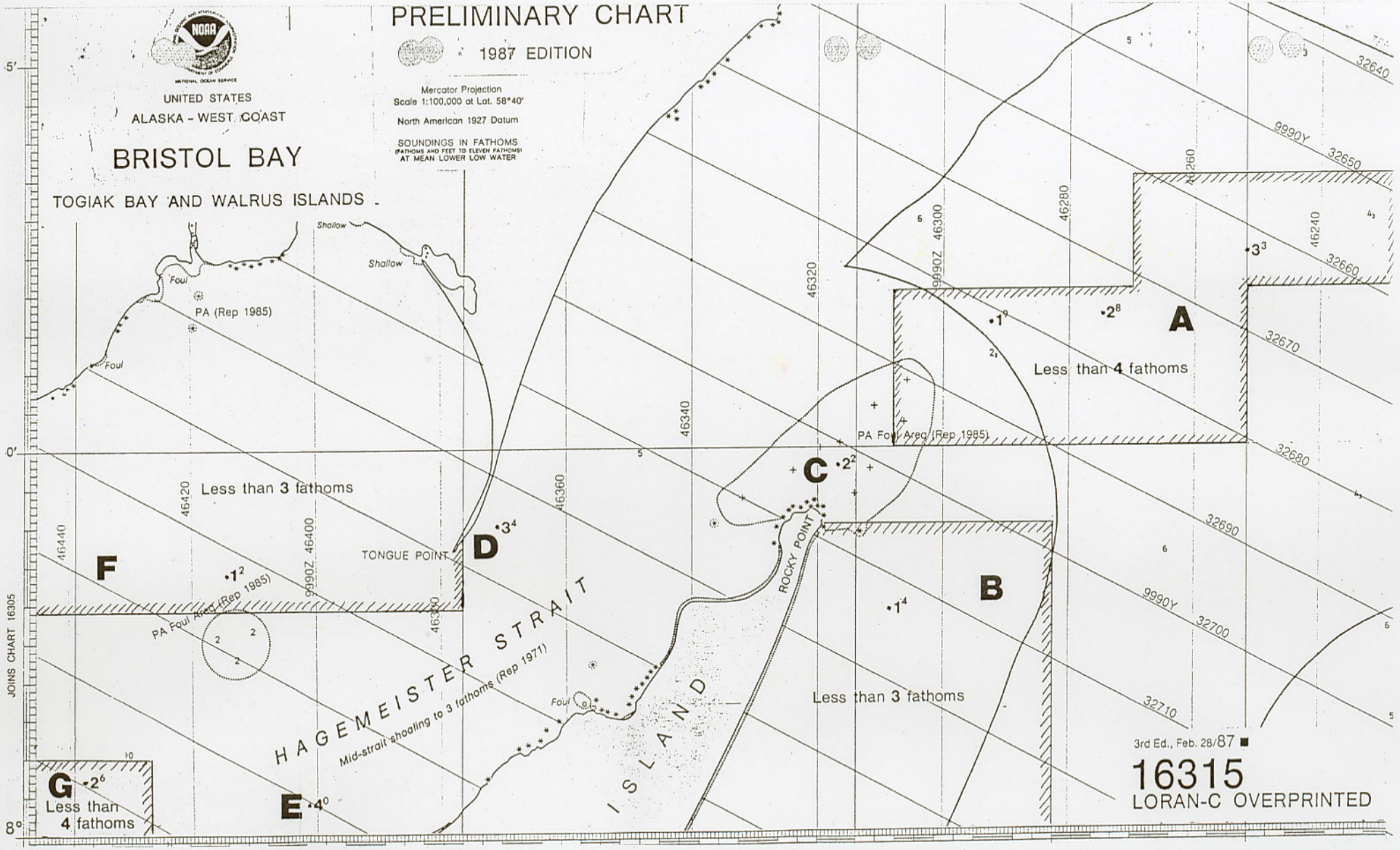
These are preliminary depths, heights, and positions subject to office review.

Sincerely,

Carl W. Fisher

Carl W. Fisher
Captain, NOAA
Commanding Officer

Enclosure
cc: DMAHTC
N/CG222
N/MOP


PRELIMINARY CHART
1987 EDITION
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
UNITED STATES
ALASKA - WEST COAST
BRISTOL BAY
TOGIAK BAY AND WALRUS ISLANDS
Shallow
Shallow
Foul
PA (Rep 1985)
Foul
Less than 4 fathoms
PA Foul Area (Rep 1985)
Less than 3 fathoms
TONGUE POINT
ROCKY POINT
HAGEMEISTER STRAIT
Mid-strait shoaling to 3 fathoms (Rep 1971)
Foul
ISLAND
Less than 3 fathoms
PA Foul Area (Rep 1985)
Less than 4 fathoms
A
B
C
D
E
F
G
32640
9990Y
32650
46280
46300
9990Z
46320
32660
46240
32670
46340
32680
46360
32690
46380
9990Y
32700
46400
9990Z
46420
32710
46440
5'
0'
8°
JOINS CHART 16305
3rd Ed., Feb. 28/87
16315
LORAN-C OVERPRINTED

APPROVAL SHEET

Descriptive Report to Accompany
Hydrographic Survey
RA-20-4-87
H-10251

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 ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SURVEY (PAGE 2)

DATE: December 30, 1987

MARINE CENTER: Pacific

OPR:R184

HYDROGRAPHIC SHEET: H-10251

REMARKS: RECOMMENDED ZONING:

1. North of a line formed by 2 points located at 58 55.0' 58 57.5'
   160 ~~31.0~~ 30.0' 160 39.0'
   zone direct on 946-5358. *

2. South of the previous line to a line formed by 2 points
   located at 58 ~~51.0'~~ 50'30.0" 58 55.5' zone on 946-5358 and apply a
   160 ~~31.0'~~ 30.0" 160 43.0'
   X0.96 range ratio to all heights.

3. South of the previous line to a line formed by 2 points
   located across Hagemeister Strait at 58 49.0' 58 52.5'
   160 41.5' 160 48.0'
   and then 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.

4. In Hagemeister Strait, south of the previous line. Zone direct
   on 946-5234.

~~5~~. 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. (NO HYDRO HERE)

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

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-10251

LOCALITY: West Togiak Bay, Alaska

TIME PERIOD: July 20 - August 22, 1987

TIDE STATION(S) USED: 946-5234 North End Hagemeister Island, AK
946-5358 West Side Togiak Bay, AK

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

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

REMARKS: RECOMMENDED ZONING

1. See page 2.

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10251

Name on Survey	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 TP-	
ALASKA, TOGIAK										
WEST TOGIAK BAY										
ALASKA (TITLE)										1
QUIGMY RIVER	X								01178	2
TOGIAK BAY	X								01178	3
TONGUE POINT	X								01181	4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
				Approved:						17
										18
				Charles E. Harrington						19
				Chief Geographer-N/CG2x5						20
				JUN 1 1988						21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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 - Sigmund R. Petersen
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

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

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)

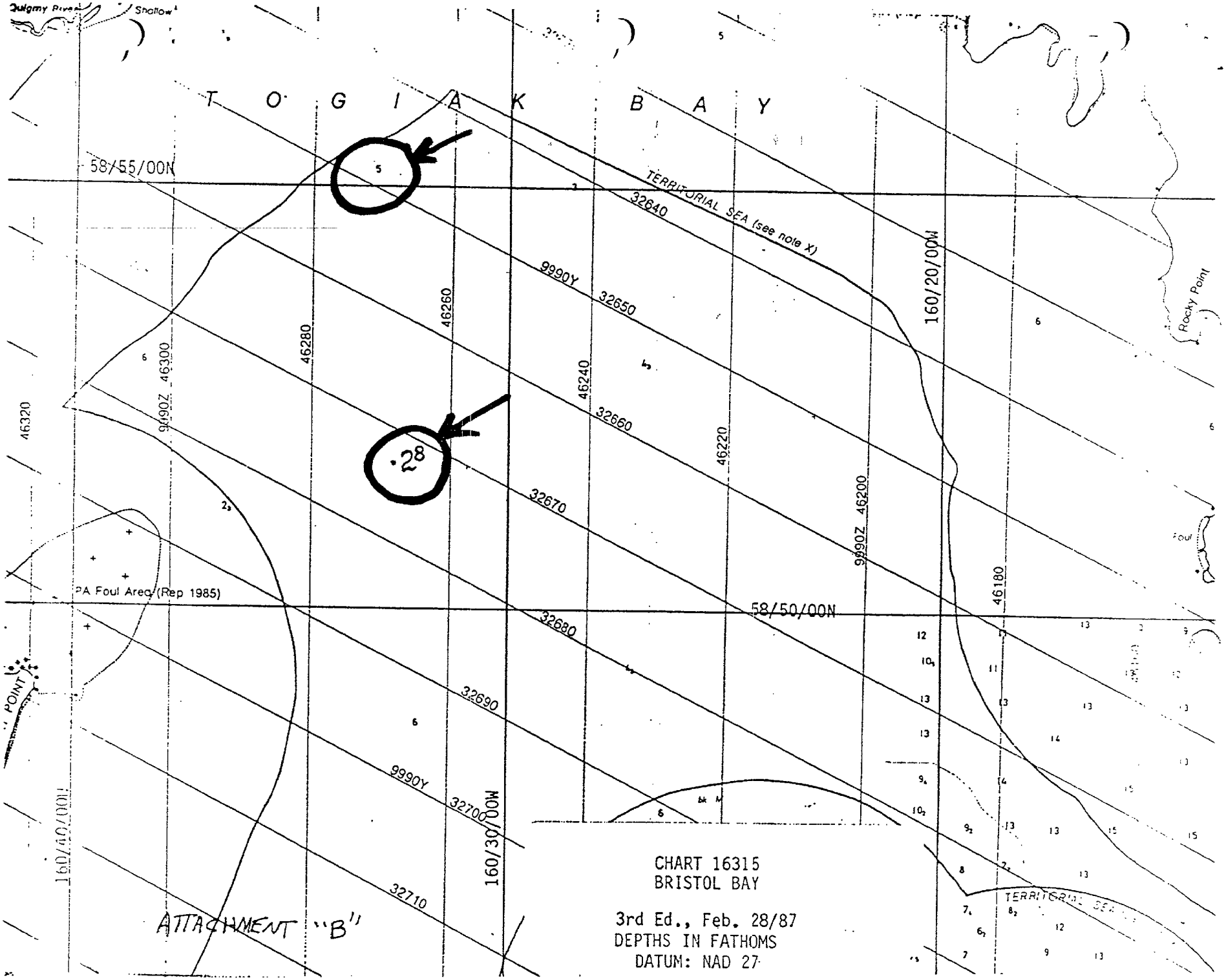
Questions concerning the survey may be directed to Cdr. Thomas W. Richards, Chief, Nautical Chart Branch, telephone (206) 526-6835.

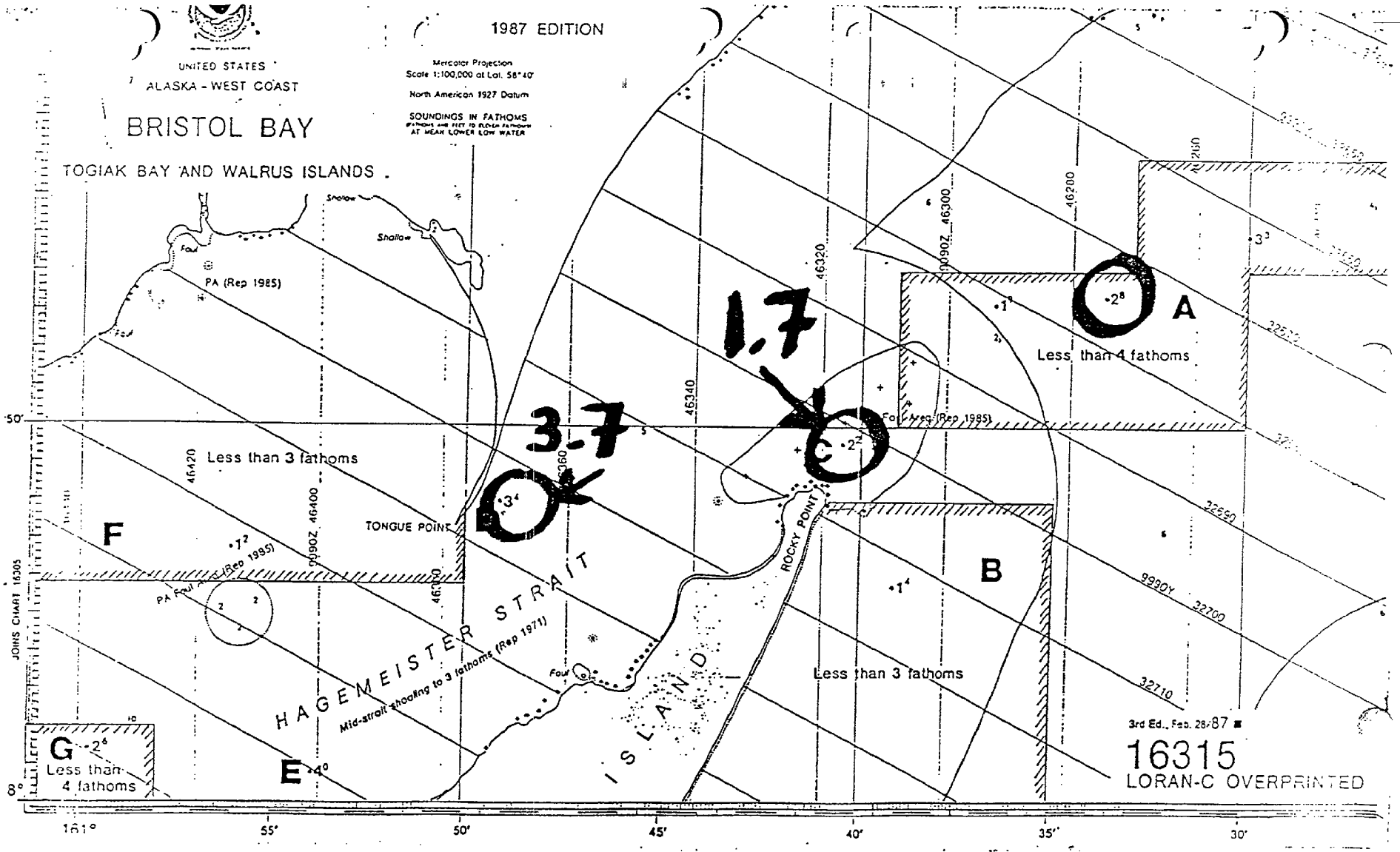
The following statement is recommended for inclusion in the Local Notice to Mariners:

"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


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



ATTACHMENT "C"

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

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10251

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	8
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	4

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

SHORELINE DATA

SHORELINE MAPS (List): TP-01177, TP-01178, TP-01181

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			2406
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS	129.0		129.0
VERIFICATION OF JUNCTIONS	274.5		274.5
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET			
COMPARISON WITH PRIOR SURVEYS AND CHARTS	26.5		26.5
EVALUATION OF SIDE SCAN SONAR RECORDS		5.0	5.0
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		37.0	37.0
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	430	42.0	472.0

Pre-processing Examination by: J. Miller, M. Mozgala	*Beginning Date*: 10/23/87	*Ending Date*: 12/30/87
Verification of Field Data by: R.A. Shipley	*Time (Hours)*: 430	*Ending Date*: 7/5/88
Verification Check by: J. Stringham, B. Olmstead	*Time (Hours)*: 49	*Ending Date*: 7/1/88
Evaluation and Analysis by: C.R. Davies	*Time (Hours)*: 42	*Ending Date*: 9/13/88
Inspection by: D.J. Hill	*Time (Hours)*: 4	*Ending Date*: 9/15/88

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

PACIFIC MARINE CENTER
Evaluation Report
H-10251

1. INTRODUCTION

Survey H-10251 is a basic hydrographic survey accomplished by the NOAA Ship RAINIER under the following Project Instructions.

OPR-R184-RA-87, 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 northwest Bristol Bay, Alaska and covers the area of west Togiak Bay, between Rocky and Tongue Points. The east side of the surveyed area extends from latitude 58°50'45"N, north to latitude 58°59'30"N along longitude 160°30'45"W. The west side of the survey ends at the mainland. The shoreline is characterized by high bluffs, pebble beaches and isolated foul areas. Offshore, the bottom is smooth and gently sloping with a 2 to 3-fathom shoal located to the southeast. The bottom consists of sand, mud and pebbles. Depths range from 0 to 15.4 fathoms.

Predicted tides for Black Rock, Walrus Islands, were used for the reduction of soundings during field processing. Approved hourly heights zoned from North End Hagemeister Island and West Side Togiak Bay, gages 946-5234 and 946-5358 respectively, were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. The TRA, sound velocity and electronic control correctors are adequate. An accompanying computer printout contains the parameters and the correctors.

A digital file, 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 1987 field and published 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: -7.952 seconds (-127.7 meters)

The year of establishment of control stations shown on the smooth sheet originates with the hydrographer's signal list and is subject to change pending certification of the data by NGS.

There are 29 weak fixes (angles of intersection less than 30 degrees or more than 150 degrees) noted in this survey. However, 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.

	Photo Date	Class
TP-01177	July 1985	III
TP-01178	July 1985	III
TP-01181	July, August 1985	III

3. HYDROGRAPHY

Hydrography is adequate to:

a. delineate the bottom configuration, determine least depths, and draw the standard depth curves;

b. reveal there are no significant discrepancies or anomalies requiring further investigation; and

c. show the survey was properly controlled and soundings are correctly plotted.

4. CONDITION OF SURVEY

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3; the Hydrographic Survey Guidelines; and the PMC OPORDER, except as noted in the attached copy of the Preprocessing Examination, dated December 30, 1987, and as follows.

Two wrecks, the "Ocean Venture", latitude 58°54'56"N, longitude 160°43'38"W, and the "Seahawk", latitude 58°52'57"N, longitude 160°46'56"W, were not satisfactorily positioned during the survey. The positions of these features are based on estimated bearings and distances from an offshore observation point.

5. JUNCTIONS

Survey H-10251 junctions with the following surveys.

Survey	Year	Scale	Area
H-10248	1987	1:20,000	east
H-10249	1987	1:20,000	northeast
H-10253	1987	1:20,000	south
H-10276	1988	1:20,000	southeast

Soundings are in good agreement with the 1987 surveys. Some soundings have been transferred to H-10251 to better portray the bottom in the common area. The junctions with the 1987 surveys have been adequately effected.

H-10276 adjoins H-10251 to the southeast. The survey is in the field and a junction could not be accomplished. The junction will be addressed in the Evaluation Report for that survey.

6. COMPARISON WITH PRIOR SURVEYS

There are no prior hydrographic surveys common to this survey.

The following prior shoreline maps were compared with as required by CHANGE No. 5 of the Project Instructions.

Survey	Year	Scale
T-9235	1948	1:20,000
T-9236	1948	1:20,000
T-9241	1948	1:20,000

A comparison was made with these prior shoreline maps. Excellent agreement was found between these maps and survey H-10251.

H-10251 is adequate to supersede the prior shoreline maps as a charting source for the areas of common coverage.

There are no AWOIS items originating from prior surveys which are common to the survey area.

7. COMPARISON WITH CHART

Chart 16006, 29th Edition, dated August 23, 1986; scale 1:1,534,076
Chart 16011, 31st Edition, dated June 29, 1985; scale 1:1,023,000
Chart 16315, 3rd Edition, dated February 28, 1987; scale 1:100,000
Chart 16315, 4th Edition, dated January 2, 1988; scale 1:100,000.

a. Hydrography

All charted information for charts 16006, 16011 and 16315, 3rd Edition originates with miscellaneous sources and is adequately discussed in section L of the hydrographer's report.

Soundings and features on chart 16315, 4th Edition, are from the final field sheet of survey H-10251.

Two visible wrecks were located on the beach. Their scaled positions are approximately latitude 58°52'57"N, longitude 160°46'56"W and latitude 58°54'56"N, longitude 160°43'38"W. These positions are located behind the photogrammetrically determined high water line; therefore, the wrecks are not displayed on the smooth sheet. Charting of the wrecks is at the discretion of the chart compiler.

A cabin appearing on chart 16315, 4th Edition, at latitude 58°56'24"N, longitude 160°41'04"W, appears to originate from the field sheet. The cabin is described in the hydrographic records as useful for navigation; however, adequate positioning data for the cabin was not provided. Continued charting is at the discretion of the chart compiler.

Survey H-10251 is adequate to supersede charted hydrography within the common area.

b. AWOIS

There is one AWOIS item originating from a miscellaneous source applicable to the survey. AWOIS item 50933 is adequately discussed in section L of the hydrographer's report.

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 reported a shoal and two least depths to the USCG and DMAHTC. No additional dangers were reported during office processing except for a correction in the position of one of the dangers previously reported to USCG and DMAHTC. Copies of the messages/reports are attached.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10251 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is a good hydrographic survey. Additional field work to position the two wrecks discussed in section 7 of the report should be accomplished on a low priority basis.

Charles R Davies

C.R. Davies
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

Dennis Hill
Chief, Hydrographic Section

APPROVALS

I have reviewed the smooth sheet, accompanying data, and reports associated with hydrographic survey H-10251. This survey meets or exceeds Charting and Geodetic Services' standards for products in support of nautical charting.

Thomas W. Richards 9-19-88
Chief, Nautical Chart Branch (Date)

CLEARANCE: SIGNATURE AND DATE:

N/MOP2:LWMordock Larry W. Mordock 9/19/88

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

Robert L. Sandifer 9/19/88
Director, Pacific Marine Center (Date)

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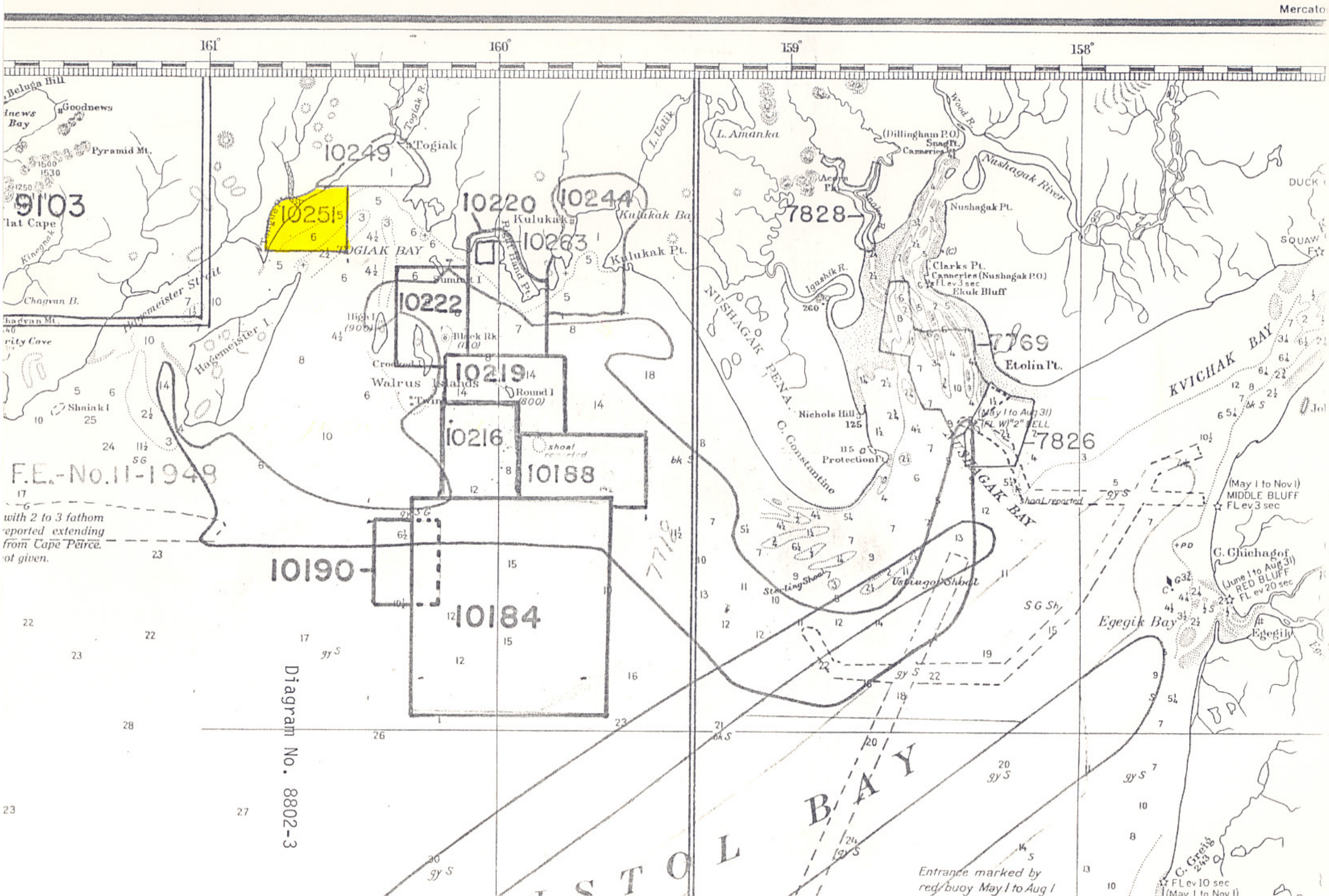
7712


Mercator
161°
160°
159°
158°
Beluga Hill
Goodnews
Goodnews Bay
Pyramid Mt.
9103
Flat Cape
Kinegnak
Chagvan B.
Chagvan Mt.
Security Cove
Hagemeister Strait
Hagemeister I.
Shaiak I
10249
Togiak
Togiak R.
10251
TOGIAK BAY
10220
10244
Kulukak
Kulukak Bay
10263
Right Hand Pt.
Kulukak Pt.
L. Ualik
Summit I
10222
High I (900)
Black Rk (150)
Crooked I
Walrus Islands
Twins
10219
Round I (800)
10216
shoal reported
10188
F.E.-No.11-1948
with 2 to 3 fathom reported extending from Cape Peirce. not given.
10190
10184
7712
L. Amanka
(Dillingham P.O.)
Snag Pt.
Canneries
Wood R.
Nushagak River
Aleknagik Pt.
7828
Snake R.
Nushagak Pt.
Igushik R.
Clarks Pt.
Canneries (Nushagak P.O.)
Fl ev 3 sec
Ekuk Bluff
NUSHAGAK PENA.
7769
Etolin Pt.
Nichols Hill 125
C. Constantine
Protection Pt.
(May 1 to Aug 31) (FL W) "2" BELL
7826
NUSHAGAK BAY
Shoal reported
Sterling Shoal
Ustiugof Shoal
KVICHAK BAY
DUCK
SQUAW
(May 1 to Nov 1) MIDDLE BLUFF FL ev 3 sec
C. Chichagof
(June 1 to Aug 31) RED BLUFF FL ev 20 sec
Egegik Bay
Egegik
BRISTOL BAY
Entrance marked by red buoy May 1 to Aug 1
C. Greig 243
FL ev 10 sec (May 1 to Nov 1)
Diagram No. 8802-3

NOAA FORM 75-96
(10-83)

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

EXAMINED FOR NM
GDBU
[illegible] - 12-7-89

EXAMINED FOR NM
GDBU
[illegible] 12/11/89

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10251

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	11-3-88	Eli Bodan	Full ~~Part~~ Before After Marine Center Approval Signed Via
			Drawing No. 4
16011	3-14-89	Russell P Kennedy	Full ~~Part Before After~~ After Marine Center Approval Signed Via
			Drawing No. 30 Applied through 16315
16006	3-21-90	John Pierce	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 26 Applied through chart 16011
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.