10250

Diagram No. 8553-2

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. ... FA-20-1-87

Registery No. ... H-10250

LOCALITY

State ... Alaska

General Locality ... Cook Inlet

Sublocality ... Fire Island and West Point Shoals

1987

CHIEF OF PARTY
J.W. Carpenter

LIBRARY & ARCHIVES

DATE ... February 4, 1988

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

10250

Hiem 5
CHT
16665
16663
16660
} TO SIGN OFF REFER TO "RECORD OF APPLICATION"

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10250

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.

FA 20-1-87

State Alaska

General locality Cook Inlet

Locality Fire Island and West Point Shoals

Scale 1:20,000 Date of survey DN 196 07/15/87 DN 224 to 08/12/87

Instructions dated June 9, 1987 Project No. S-P925-FA

Vessel FAIRWEATHER 2020, 2023, 2026

Chief of party Captain John W. Carpenter

Surveyed by LCDR Kenny, CST Krick, LT Ruiz, ENS Cone, ENS Lynch, ENS Bernard, ENS Nodine, ENS Lemon, ENS Birk-Risheim

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

Graphic record scaled by FAIRWEATHER Personnel

Graphic record checked by FAIRWEATHER Personnel

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

Verification by L. Deodato

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

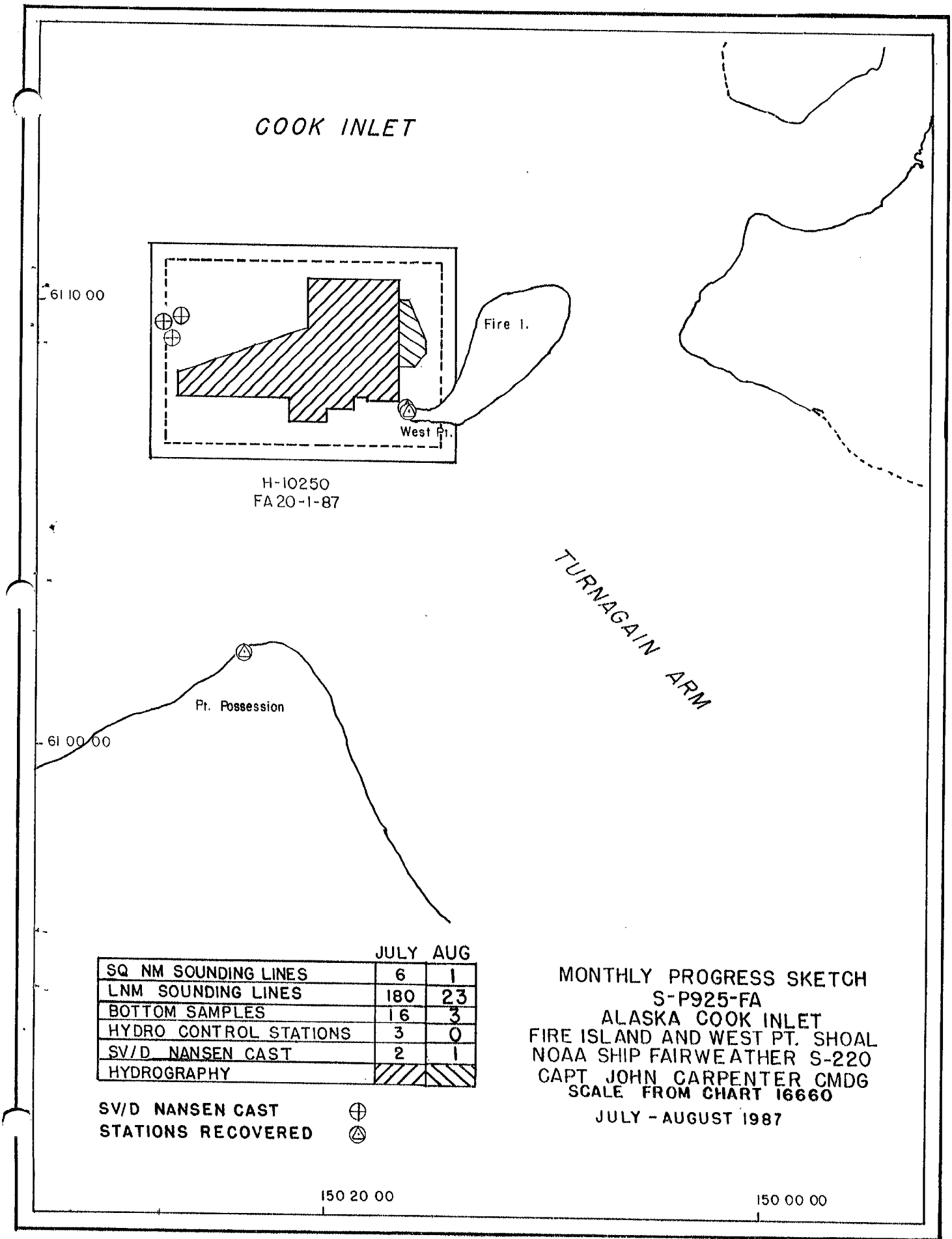
REMARKS: Comments in black are made by the evaluator. Separates have been removed and filed with the survey records.

AWOIS/SURF MAM 2/12/88

SC 375-97
K WLA 5/9/91

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

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



	JULY	AUG
SQ NM SOUNDING LINES	6	1
LNM SOUNDING LINES	180	23
BOTTOM SAMPLES	16	3
HYDRO CONTROL STATIONS	3	0
SV/D NANSEN CAST	2	1
HYDROGRAPHY		

SV/D NANSEN CAST ⊕
STATIONS RECOVERED ⊙

MONTHLY PROGRESS SKETCH
S-P925-FA
ALASKA COOK INLET
FIRE ISLAND AND WEST PT. SHOAL
NOAA SHIP FAIRWEATHER S-220
CAPT JOHN CARPENTER CMDG
SCALE FROM CHART 16660
JULY - AUGUST 1987

Descriptive Report
to Accompany Hydrographic Survey H-10250
Field No. FA-20-1-87, Scale 1:20,000
NOAA Ship FAIRWEATHER S-220
Captain John W. Carpenter, Commanding
1987

A. PROJECT

Hydrographic survey H-10250 was conducted at the request of the U.S. Army Corps of Engineers in accordance with Project Instructions S-P925-FA, Fire Island Shoal, Alaska, dated June 9, 1987. The PMC OPORDER, the Hydrographic Manual (Fourth Edition) and the Hydrographic Survey Guidelines are also applicable. ✓

This is a basic hydrographic survey of a limited area for the purpose of monitoring the location and rates of movement and growth or dissipation of Fire Island Shoal and West Point Shoal. This area was last surveyed by RAINIER in 1982 (H-10000) and will be investigated periodically in the future. ✓

This sheet is designated as "A" in the project instructions. ✓

B. AREA SURVEYED

The survey area is located at the northern end of Cook Inlet, approximately 165 miles from its entrance. Fire Island lies approximately 10 miles west-southwest of Anchorage, and Fire Island Shoal lies approximately 3 miles west of Fire Island. West Point Shoal lies approximately 1 1/2 miles west of Fire Island. Port of Anchorage shipping presently navigates a channel between Fire Island and Fire Island Shoal. ✓

The limits of this survey were governed by the position and extent of Fire Island Shoal and West Point Shoal. The survey area is bounded by latitude 61/10/27 N on the north and latitude 61/07/08 N on the south and by longitude 150/15/17 W on the east and longitude 150/25/33 W on the west. ✓

The field work for this survey began July 15, 1987 (DN 196) and was completed August 12, 1987 (DN 224). ✓

C. SOUNDING VESSELS

Hydrographic data for this survey was collected with Jensen survey launches FA-3 (2023) and FA-6 (2026). The NOAA ship FAIRWEATHER (2020) was used for the three sound velocity casts performed. ✓

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Two of FAIRWEATHER's survey launches, each equipped with dual-beam Raytheon DSF-6000N echo sounders, were used to obtain soundings for this survey. See Table I for a list of equipment by vessel.

Table I
Sounding Equipment

Vessel	Instrument/Model	Recorder
FA-3 (2023)	RAYTHEON DSF-6000N	A104N
FA-6 (2026)	RAYTHEON DSF-6000N	B048N

Echo-sounding equipment was monitored continuously while on line. All hydrographic data was scanned at least twice to insert peaks and deeps between soundings and to ensure proper depth digitization.

No mechanical problems that degraded data quality were encountered with the DSF-6000N echo sounders during this investigation. Bar checks at three fathoms were done daily to ensure that the Raytheon DSF-6000N echo sounders were operating properly. Sounding corrections determined for this survey apply to both the high- and low-frequency data. High-frequency data was digitized for all depths.

FAIRWEATHER's survey launches were tested for settlement and squat on May 22, 1987 (DN 142) in Womens Bay, Kodiak, Alaska. The test results were used to plot settlement and squat curves for each launch. Measurements were conducted in accordance with Section 4.9.4.2 of the Hydrographic Manual. The settlement and squat correctors for each launch can be found in the Sounding Correction Abstracts in Separate III. These correctors were not applied to the final field sheet. Refer to the echo soundings data submitted with the survey data for details concerning settlement and squat determinations.

An accurate determination of launch transducer depths was obtained through physical measurement. An oversized carpenter's square was constructed of angle iron, with foot and tenth markings noted on the rise. Divers held the foot of the carpenter's square flush against the transducer while the rise was leveled by personnel on the pier using a circular bubble level. On March 26, 1987 transducer drafts of 1.7 feet and 1.6 feet were recorded for survey launches 2023 and 2026, respectively. All launch soundings on the final field sheet were plotted using a TRA value of 1.8 feet. The TC/TI tapes, however, include the correct TRA values for the two launches.

Velocity correctors were determined from three SV/D casts in accordance with section 4.9.5.2 of the Hydrographic Manual. Table II shows the date and locations of the casts.

Table II
Velocity Casts

Cast No.	Date (DN)	Latitude	Longitude
8	195	61/09.6 N	150/26.8 W
9	202	61/09.5 N	150/27.5 W
14	224	61/09.2 N	150/27.9 W

Program VELTAB was used to compute tables from cast data. The results of the SV/D casts performed were similar enough to average and combine into one table (Velocity Table 1). Velocity corrections from a preliminary velocity table were applied to all echo sounder depths plotted on the final field sheets.

The SV/D casts were performed using a Plessey Model 9040 Environmental Profiling System (s/n 5647). This instrument was calibrated at the Northwest Regional Calibration Center on March 9, 1987. Surface temperatures were taken during the SV/D casts as a check on the Plessey System.

TC/TI tapes were made in accordance with the PMC OPORDER. Printouts of TC/TI tapes are included in the separates following the text of this report.

Predicted tide correctors (generated using HYDROPLOT program AM 500) were applied to the soundings plotted on the final field sheets for this survey. The tide correctors used were from the 1987 West Coast of North and South America Tide Tables. Tide correctors use Anchorage, Alaska as the reference station with a height correction range ratio of "x0.93" and a time corrector of -0 hour 25 minutes for high water and -0 hour 30 minutes for low water. FAIRWEATHER personnel leveled the Anchorage tide station at the beginning of the survey period (on DN 195). The Anchorage Liason Officer leveled the Anchorage tide station at the end of the survey period (on DN 230). No tide gages were required to be installed by FAIRWEATHER. (Note: A Field Tide Note is not appended as all applicable information is included in this section.)

E. HYDROGRAPHIC SHEET

The final field sheet was plotted on mylar aboard FAIRWEATHER using a PDP/8e computer and complot plotter. This survey consists of a final field sheet and an overlay.

All hydrographic data for this survey will be forwarded to the Pacific Marine Center in Seattle, Washington for verification and smooth plotting.

F. CONTROL STATIONS

Existing horizontal control stations were used for this ~~field examination~~ hydrographic survey and were recovered by FAIRWEATHER personnel. All geodetic positions are based on the North American 1927 Datum. Stations used in support of this survey are listed in Separate IV, List of Stations.

G. HYDROGRAPHIC POSITION CONTROL

Hydrographic position control was accomplished using the Motorola Mini-Ranger III system. The control configuration consisted of range/range and range/azimuth for all positioning. Table III contains a list of console and R/T units for each sounding vessel.

Table III
Mini-Ranger Equipment by Vessel

Vessel Number	Console/RT Number
2023	703/B1108
2026	B0323/B1398

Mini-Ranger base line calibrations (BLC's) were conducted in accordance with Section 3.3.1.1 of the PMC OPORDER.

Beginning BLC's were performed on DN's 142 and 146 along a distance of 855.4 meters between two recoverable points in Womens Bay, Kodiak, Alaska. Ending BLC's were performed on DN's 226 and 229 along a distance of 855.4 meters between the same recoverable points in Womens Bay, Kodiak, Alaska. All combinations of codes and consoles were calibrated before commencing and after completing H-10250.

As the differences between beginning and ending BLC's were five meters or less, the beginning and ending calibrations were not averaged. The beginning correctors were used as the final correctors. Final baseline correctors and minimum signal strengths can be found with the data forwarded for survey H-10250.

Hydrographic positioning equipment was critically system checked daily. All hydrographic positioning equipment was found to be accurate within the limits set forth in the PMC OPORDER. The system checks were accomplished using a theodolite cut and an EDMI range. The instruments used were a Wild T-2 theodolite with serial number 85652 and a Hewlett-Packard 3808A EDMI with serial number 1723A00172.

In all cases, the launch R/T units were located directly over the transducers, eliminating the need for ANDIST correctors.

H. SHORELINE

Does not pertain to this report. See Evaluation Report section 2

I. CROSSLINES

All crosslines were run at a minimum of 45 degrees with respect to the main scheme lines. Crosslines account for 13% of the total coverage. ✓

During review of the mainscheme, mainscheme splits, and crossline sounding data, it was noted that there were discrepancies of up to 3 feet between the three types of hydrography in the area west of longitude 150/17.0 W. These differences are partly due to the irregular nature of the bottom (sand waves were found over the majority of the survey area). However, given the extreme tidal range in the area, predicted tide problems are suspected. When smooth tides are applied, it is expected that agreement should be good.* There are also discrepancies between crossline and mainscheme sounding lines in areas of rapidly changing bottom contours. This is most evident on the leading, southeastern face of Fire Island Shoal. There is no systematic problem that would account for differences in these areas. ✓ * After application of smooth tides agreement is good.

East of longitude 150/17.0 W, one north-south crossline was run over sounding lines run in an east-west direction. Comparison of this crossline with mainscheme shows the crossline to be shoaler by 0 to 8 feet. It was observed that the large discrepancies occur on a plateau and when the mainscheme was run at or close to slack water and the crossline was run when high currents were present. The bottom type in this area was found to be very fine sand. Besides differences due to the suspected predicted tides problem, it is theorized that when a current is present, the bottom becomes unconsolidated resulting in shallower depths being recorded than at times of slack water, when the sediment has settled out. Note that there were no differences between high- and low-frequency echogram traces in this area. Again there is no systematic problem that would account for the differences in these area. ✓ After application of real tides does not reveal any problems.

No differences were attributed to the use of different vessels for crosslines and mainscheme hydrography. ✓

J. JUNCTIONS

Does not pertain to this report. See Evaluation Report section 5

K. COMPARISONS WITH PRIOR SURVEYS

This basic hydrographic survey was conducted five years after prior survey H-10000 (Scale 1:20,000; 1982) to determine the present location and size of Fire Island Shoal and West Point Shoal. As anticipated, Fire Island Shoal has migrated from its position as surveyed in 1982. In addition, West Point Shoal has enlarged and shoaled since survey H-10000 was conducted. ✓

Fire Island Shoal is a crescent-shaped shoal approximately ~~3.5 nautical miles~~ 5580 METERS long and ~~0.4 nautical miles~~ 840 METERS wide. This shoal has migrated approximately ~~250 yards~~ 229 METERS to the southeast and bares from 0 to 2 feet in some locations.

Sounding by sounding comparison with survey H-10000 is not possible due to the great distance Fire Island Shoal has migrated. SEE EVALUATION REPORT SECTION 5

The present survey shows that since 1982 West Point Shoal has enlarged and the least depth has shifted approximately ~~400~~ 445 meters to the west. Prior survey H-10000 found West Point Shoal to be approximately 300 meters long and 200 meters wide (using the 30-foot depth curve as a rough boundary for the shoal), with a least depth of ~~30~~ feet. West Point Shoal is now approximately ~~800~~ 1868 meters long and ~~350~~ 460 meters wide (again using the 30-foot curve) and has a least depth of 26 feet. A second area, approximately 800 meters northeast of West Point Shoal, has also shoaled since survey H-10000 was conducted. This area, with a least depth of 30 feet, appears to be part of the bottom feature that includes West Point Shoal. * Position Number 22641 Latitude 61°08'34.75" N. Longitude 150°01'06.5" W

Fire Island Shoal is monitored by the U.S. Army Corps of Engineers due to the potential hazard it poses to vessels approaching the Port of Anchorage. The Army Corps of Engineers believes the shoal formations of upper Cook Inlet to be a result of transportation of river sediments as bed load by strong tidal currents. These shoals are affected by complex factors which make their formation and behavior difficult to predict.*

No AWOIS items lie within the limits of this survey.

L. COMPARISON WITH THE CHART

This survey was compared to Chart 16665, 1st edition, August 9, 1986, scale 1:50,000. All charted soundings in the survey area were derived from prior survey H-10000 and were discussed in section K of this report. No further discussion of sounding comparisons is necessary.

The channel in Cook Inlet west of Fire Island is marked by a 058-degree lighted range at the NW end of Fire Island. This range line was run during survey operations and a least depth of 38 feet recorded. Least depths of 33 feet were recorded at several locations within 200 meters of the range line.

Changes in both Fire Island Shoal and West Point Shoal were reported as dangers to navigation during this survey and recommended for inclusion in the Local Notice to Mariners. These dangers were reported to the Seventeenth Coast Guard District, Juneau, Alaska, and DMAHTC. Copies of the Danger To Navigation Reports are included in Separate VII.

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* Fire Island Shoal at Anchorage, Interim Technical Report - Southcentral Alaska Deep-Draft Navigation Study. September 1986. Alaska District, Corps of Engineers.

M. ADEQUACY

This survey is complete and adequate to supplement prior surveys in their common areas. No additional field work is necessary within the area defined by this basic hydrographic survey of a limited area. ✓

N. AIDS TO NAVIGATION

There is one floating aid to navigation within the limits of this survey. Seasonal (May 1 through November 1) Lighted Bell Buoy 5 is described as a green buoy with a flashing green, 4-second light in the U.S. Coast Guard Light List (Light List Number 26385). Its location is given as latitude 61/08.? N, longitude 150/20.8 W. Lighted Bell Buoy 5 is shown at latitude 61/08.3 N, longitude 150/20.8 W on Chart 16665. ✓

The color and characteristic of Lighted Bell Buoy 5 agree with the description given in the Light List and the buoy is correctly shown on the chart. A detached position (Position Number 6021) on this buoy locates it at latitude 61/08~~/2~~ 14.22 N, longitude 150/20~~/8~~ 20.31 W. This is within 25 meters of its charted position. Given the scope of a buoy chain, the strong tidal currents of upper Cook Inlet and the fact that this buoy is a seasonal one, the difference in position is negligible. It is recommended the buoy remain as charted. CONCUR

This aid continues to adequately mark ~~West Point~~ Fire Island Shoal.

O. STATISTICS

Vessel	2020	2023	2026	Total
Number of Positions	-	~~389~~ 497	~~386~~ 351	~~775~~ 848
Linear Nautical Miles	-	106	83	189
Square Miles	-	-	-	7
Bottom Samples	-	18	-	18
Velocity Casts	3	-	-	3
Tide Stations	-	-	-	-
Days of Production	-	-	-	7

No magnetic or current stations were established during this survey. ✓

P. MISCELLANEOUS

Observed periods of slack water were found to correspond well with predicted times of slack water. The strong tidal currents of upper Cook* Inlet were a challenge for launch coxswains. In order to compensate for the currents encountered when running east-west sounding lines, coxswains were required to run with headings 10 to 30 degrees off the true courses.

* A NOTE: "STRONG tidal CURRENTS" WAS Added to the SMOOTH Sheet.

No unusual magnetic variations were observed during the survey period.

In accordance with Project Instructions, bottom samples were not forwarded to the Smithsonian Institution. Therefore, Log Sheet M is also not submitted per Hydrographic Survey Guideline Number 36. ✓

Q. RECOMMENDATIONS

Fire Island Shoal and West Point Shoal should be charted as shown by this basic hydrographic survey of a limited area. CHART AREA AS SHOWN ON SMOOTH SHEET

Fire Island Shoal and West Point Shoal should be reinvestigated periodically, as planned, to monitor their location and rates of movement. CONCUR

Given that the Fire Island Shoal is slowly encroaching on the Race Point Range navigation route and West Point Shoal is shoaling and enlarging in this area, consideration may need to be given in the future to moving the navigation route to the north side of Fire Island Shoal. CONCUR

R. AUTOMATED DATA PROCESSING

The following is a list of the hydroplot programs used for processing and data acquisition during this survey. ✓

Number	Program	Version Date
RK 112	Range-Range Real Time Plot	04/23/84
RK 116	Range-Azimuth Real Time Plot	03/01/86
RK 201	Grid, Signal and Lattice Plot	04/18/75
RD 221	Range-Range Non-Real Time Plot	07/25/86
RK 226	R/Az Non Real Time Plot	03/26/86
RK 300	Utility Computations	10/21/80
RK 330	Reformat and Data Checker	05/04/76
RA 362	330/602 Combined	08/20/84
AM 500	Predicted Tide Generator	11/10/72
AM 602	Elinore	12/08/82
	VELTAB	02/01/85

S. REFERRAL TO REPORTS

The Coast Pilot Report will be submitted separately in September, 1987. ✓

SIGNAL TAPE LISTING
S-F925-FA
H-10250
QUADS 611502

FIRE ISLAND LT, 19~~65~~ 82
100 0 61 07 35808 150 16 48039 250 0009 000000

WEST POINT, 1982
102 0 61 07 35804 150 16 48041 250 0005 000000

PT POSSESSION LT, 1974
104 0 61 02 03954 150 24 10627 250 0023 000000

RACE POINT LT, 1982
106 0 61 10 05201 150 13 21833 139 0052 000000

TOD
NOJ/162326ZJUL87
ESA/4.3320MHZ RTTY

CC
XC
OP
ENS
CST
CPR

PTTUZYUW RUHPTEB0228 1972205-UUUU--RUHPSUU.
ZNR UUUUU
P 162205Z JUL 87
FM NOAAS FAIRWEATHER
TO CCGDSEVENTEEN JUNEAU AK
DMAHTC WASHINGTON DC//NVS//
INFO NOAAMOP SEATTLE WA
NLNO ANCHORAGE AK
ACCT CM-VCAA
BT
UNCLAS
DANGER TO NAVIGATION
1. FIRE ISLAND AND WEST POINT SHOAL HYDROGRAPHIC SURVEY IN COOK INLET BY NOAAS FAIRWEATHER COMMENCED ON 15 JUL 87. DATA FROM THE FIRST DAY SHOWS AN APPARENT SHOALING OF WEST POINT SHOAL.
2. SURVEY OF SHOAL NOT COMPLETE. WILL CONTINUE SURVEY AND PASS FURTHER INFORMATION AS SURVEY PROGRESSES.
3. DETAILS OF PRESENT DANGER TO NAVIGATION: "WEST POINT SHOAL (APPROXIMATE LAT OF 61-08.6N AND LONG OF 150-18.8W AND CENTERED ON THE THIRTY FOOT SOUNDING SHOWN ON NOS CHART 16665) HAS APPARENTLY BECOME MORE SHOAL AND EXTENDED TO THE NORTHEAST. THE THIRTY FOOT SOUNDING ITSELF HAS SHOALED TO TWENTY FIVE (25) FEET. OTHER SIGNIFICANT SOUNDINGS ARE TWENTY FOUR (24) FEET LOCATED 800 YARDS IN A 060 DEGREE DIRECTION FROM THE SHOAL, TWENTY EIGHT (28) FEET AT 900 YARDS IN A 025 DEGREES DIRECTION AND TWENTY SEVEN (27) FEET AT 300 YARDS IN A 090 DEGREE DIRECTION. THESE SOUNDINGS ARE BASED ON PREDICTED TIDES REFERENCED TO MLLW".
BT
#0228

NNNN

TOR

NOJ/240711ZJUL87
E84/4,332Ø MHz R/T/Y

PTTUZYUW RUHPTEB0241 2042328-UUU--RUHPSUU.
ZNR UUUUU
P 232328Z JUL 87
FM: NOAAS FAIRWEATHER
TO: CCGDSEVENTEEN JUNEAU AK
DMAHTC WASHINGTON DC//NVS//
INFO NOAAMOP SEATTLE WA
NLNO ANCHORAGE AK
ACCT CM-VCAA
BT
UNCLAS
REVISION OF DANGER TO NAVIGATION
A. MY P162205Z JUL 87
1. CONTENTS OF THIS MESSAGE COMPLETELY SUPERSEDE THE CONTENTS OF REF A. AND THE INFORMATION DISSEMINATED IN THE P172253Z JUL 87 BROADCAST NOTICE TO MARINERS ISSUED BY CCGDSEVENTEEN JUNEAU AK//OAN//.
2. FURTHER SURVEY OPERATIONS BY THE NOAA SHIP FAIRWEATHER IN THE VICINITY OF FIRE ISLAND AND WEST POINT SHOALS, COOK INLET, ALASKA (SURVEY FA-20-1-87) HAVE SHOWN THE INFORMATION PREVIOUSLY FORWARDED IN REF A TO BE IN NEED OF REVISION.
3. DETAIL OF PRESENT DANGER TO NAVIGATION: THE FOLLOWING ITEMS WERE NOTED AND ARE CONSIDERED DANGERS TO NAVIGATION. ALL ITEMS PERTAIN TO CHARTS 16663 AND 16665 (NAD27 DATUM). DEPTHS ARE REFERENCED TO MLLW BASED ON PREDICTED TIDES.
A. WEST POINT SHOAL HAS ENLARGED AND SHOALED. REPRESENTATIVE DEPTHS FOLLOW. BEARINGS (DEGREES TRUE) AND DISTANCES ARE FROM FIRE ISLAND LIGHT 6 (LIGHT LIST NUMBER 26390) ON WEST POINT.

		LATITUDE	LONGITUDE	BEARING	DIST(NM)
1.	26 FOOT DEPTH	61/08/34N	150/19/10W	311	1.50
2.	30 FOOT DEPTH	61/08/48N	150/18/00W	335	1.35
3.	30 FOOT DEPTH	61/08/31N	150/19/40W	304	1.66
4.	34 FOOT DEPTH	61/09/05N	150/17/22W	349	1.52

B. FIRE ISLAND SHOAL HAS MIGRATED APPROXIMATELY 250 YARDS TO THE SOUTHEAST AND IS AWASH AT SOME LOCATIONS.
4. CONFIRMATION LETTER CONTAINING SAME INFORMATION OF PAR #4 WILL BE FORWARDED TO CCGDSEVENTEEN.
5. SURVEY OF SHOAL AREA STILL NOT COMPLETE. OPERATIONS HAVE BEEN INTERRUPTED BY ASSIGNMENT TO PROJECT OFF KENAI AK. WILL PROBABLY RESUME SURVEY OPERATIONS AT FIRE ISLAND WEEK OF 27-31 JUL 87.
6. REPEAT. THE CONTENTS OF THIS MESSAGE COMPLETELY SUPERSEDE THE CONTENTS OF REF A.
BT
#241

NNNN

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA Ship FAIRWEATHER
1801 Fairview Ave. East
Seattle, Washington 98102

July 24, 1987 1703-01.05

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

Dear Sir:

This letter confirms my radio message, P 232328Z JUL 87.

Further survey operations by the NOAA Ship FAIRWEATHER in the vicinity of Fire Island and West Point Shoals, Cook Inlet, Alaska (survey FA-20-1-87) have shown that the information forwarded by radio message P 162205Z JUL 87 (copy enclosed) is in need of revision and should be superseded in its entirety by the information contained in this letter. Questions concerning the survey may be directed to Chief, Nautical Chart Branch, telephone (206) 526-6835.

The following items were noted as dangers to navigation and are recommended for inclusion in the Local Notice to Mariners:

ITEM 1:
"West Point Shoal has enlarged and shoaled. Representative depths are listed below and should be added to Charts 16663 and 16665 (NAD27 datum). All depths are reduced to MLLW based on predicted tides.

			FROM FIRE ISLAND LIGHT 6 (LIGHT LIST NO. 26390)	
DEPTHS	LATITUDE	LONGITUDE	BEARING	DISTANCE(nm)
1. 26 feet	61/08/34N	150/19/10W	311 T	1.50
2. 30 feet	61/08/48N	150/18/00W	335 T	1.35
3. 30 feet	61/08/31N	150/19/40W	304 T	1.66
4. 34 feet	61/09/05N	150/17/22W	349 T	1.52"

ITEM 2:
"Fire Island Shoal has migrated approximately 250 yards to the southeast and is awash at some locations."

Sincerely,

John W. Carpenter
Captain, NOAA
Commanding Officer

Enclosures: Copy of P 162205Z JUL 87
Copy of P 232328Z JUL 87

cc: N/CG222 - Chart Information Section, with chartlet
N/MOP21 - Nautical Chart Branch, with chartlet

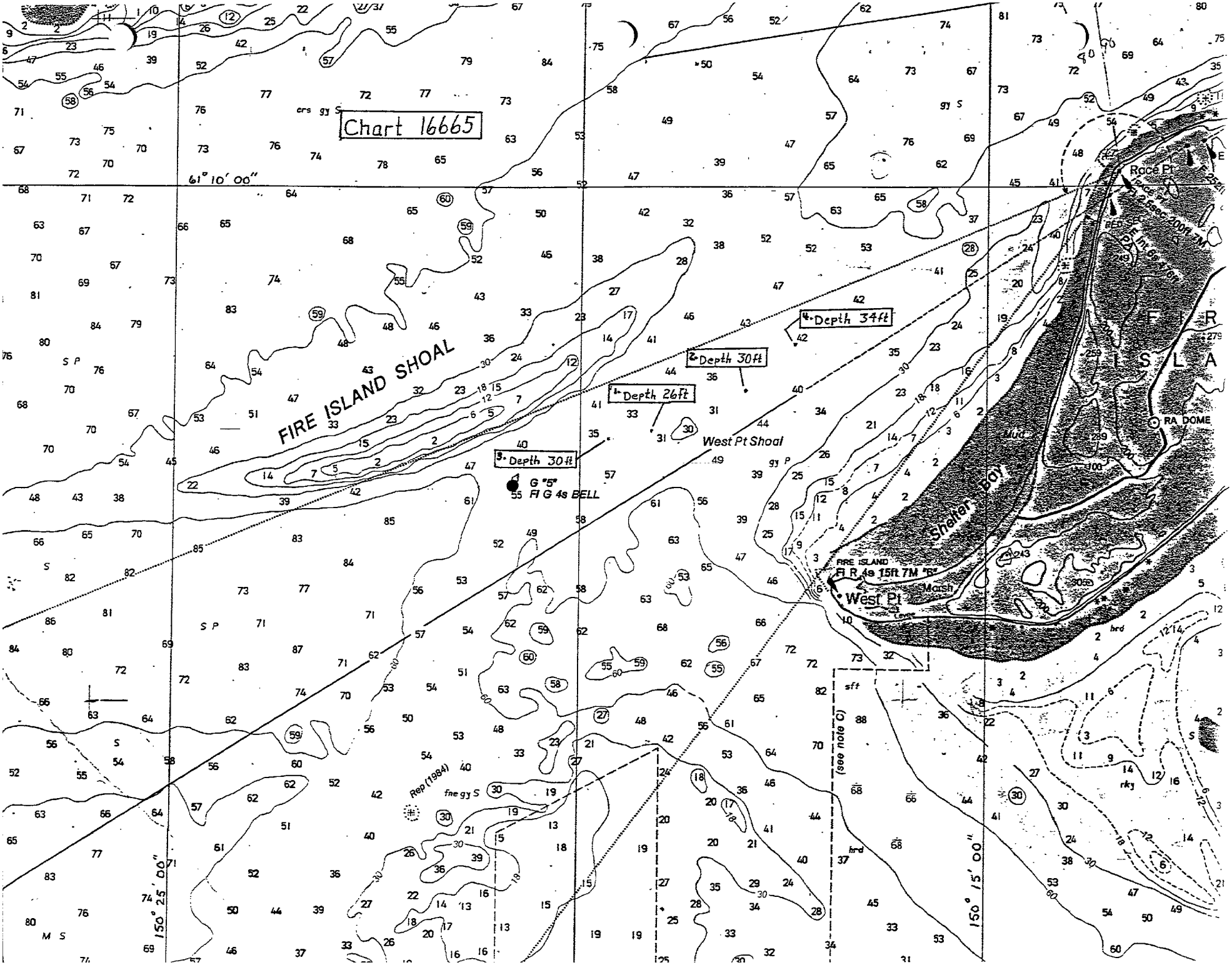


Chart 16665
61° 10' 00"
150° 25' 00"
150° 15' 00"
FIRE ISLAND SHOAL
West Pt Shoal
Depth 34ft
Depth 30ft
Depth 26ft
Depth 30ft
G "5"
Fl G 4s BELL
Race Pt
Fl W 4sec 200ft 7M
RED SEC
Fl R 4s 78ft
RA DOME
Shelter Bay
FIRE ISLAND
Fl R 4s 15ft 7M "5"
West Pt
Marsh
Mud
(see note C)
Rep (1984)
crs gy S
fine gy S
gy S
gy P
S P
M S
sft
brd
rky

APPROVAL SHEET

This descriptive report and the accompanying records have been reviewed for accuracy, completeness, compliance with project instructions, and adherence to required standards and procedures. This data is forwarded for final review and processing.

Submitted by:

Stacy L. Birk-Risheim

Stacy L. Birk-Risheim
Ensign, NOAA

Reviewed by:

Maureen R. Kenny

Maureen R. Kenny
Lieutenant Commander, NOAA
Field Operations Officer

Approved by:

John W. Carpenter

John W. Carpenter
Captain, NOAA
Commanding Officer

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10250

Name on Survey	A ON CHART NO. 16665 - 16663	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
COOK INLET	X									2
FIRE ISLAND SHOAL	X									3
FIRE ISLAND	X									4
RACE POINT	X									5
SHELTER BAY	X									6
WEST POINT	X									7
WEST POINT SHOAL	X									8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
				Approved:						19
				Charles E. Harrington						20
										21
				Chief Geographer - N/CG2x5						22
				DEC 2 1987						23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

DATE: October 15, 1987

Marine Center: Pacific

OPR: P925

Hydrographic Sheet: H-10250

Locality: West of Fire Island Shoal, Cook Inlet, Alaska

Time Period: July 15 - August 12, 1987

Tide Station Used: 945-5920 Anchorage, AK

Plane of Reference (Mean Lower Low Water): 6.61 ft.

Height of Mean High Water Above Plane of Reference: 28.1 ft.

Remarks: Recommended Zoning:

1. West of longitude 150°15.0' to 150°20.0' apply a - 0hr 30 minute time correction and a X0.91 range ratio to all heights.
2. West of longitude 150°20.0' to 150°~~25~~26.0' * apply a - 0hr 40 minute time correction and a X0.89 range ratio to all heights.
3. ~~West of longitude 150°25.0' to 150°30.0' apply a - 0hr 45 minute time correction and a X0.87 range ratio to all heights.~~

James Hubbard
Chief, Tidal Datum Quality Assurance Section

* FROM PHONE CONV. W/ JOE M. 10-26-87

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

FILE COPY

October 26, 1987

TO: Commanding Officer
NOAA Ship FAIRWEATHER

FROM: N/MOP - Robert L. Sandquist

SUBJECT: Preprocessing Examination of H-10250, Alaska, Cook Inlet, Fire Island and West Point Shoals

Hydrographic survey H-10250 has been reviewed in accordance with Hydrographic Survey Guideline No. 15, and the Preprocessing Examination Critique for this survey is attached. Hydrographic survey H-10250 is 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.

Attachment

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

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Pacific Marine Center
Nautical Chart Branch
7600 Sand Point Way NE
Seattle, Washington 98102-3767

October 23, 1987 N/MOP21x2/MM

TO: N/MOP - Robert L. Sandquist

FROM: N/MOP21 - Thomas W. Richards

SUBJECT: Preprocessing Examination for H-10250

I. SURVEY INFORMATION

A. Field No. FA-20-1-87 Registry No. H-10250

B. State: Alaska

General Locality: Cook Inlet

Sublocality: Fire Island and West Point Shoals

C. Project Instructions: S-P925-FA

Original dated: June 9, 1987

D. Dates:

Field Work Commenced: July 15, 1987
Field Work Completed: August 12, 1987

plus 6 weeks: September 23, 1987

Data received at Marine Center: September 28, 1987

plus 1 month: October 28, 1987

Examination critique transmitted to field October 26, 1987

Target date for completion of Marine Center processing April 26, 1988

II. PREPROCESSING EXAMINATION CRITIQUE

Hydrographic survey H-10250 was performed by personnel of NOAA Ship FAIRWEATHER, Captain John W. Carpenter, Commanding Officer. The following personnel supervised portions of the data acquisition: Lieutenant Commander Kenny, Lieutenant Ruiz, Ensigns Cone, Lynch, Bernard, Nodine, Lemon and Birk-Risheim and Chief Survey Technician Krick.

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:

FAIRWEATHER reported the following information as dangers to navigation: four shoal depths (with positions) over West Point Shoal and the depths and extent of Fire Island Shoal.

No additional dangers to navigation were identified during the preprocessing examination.

B. Compliance with Instructions:

Hydrographic survey H-10250 complies with applicable instructions. There are no AWOIS items within the limits of the survey.

C. Final Field Sheet:

The final field sheet and overlay were neat and legible. Contours were drawn correctly.

D. Descriptive Report:

The hydrographer states in Section I (Crosslines) that there exists a 0-8 foot discrepancy between depths on one crossline and several mainscheme lines run over a flat bottom. The cause is attributable to the change in movement rates of the bottom materials between flood and slack waters. The crossline was run on the last day of hydrography; soundings were acquired at a flood tide (with predicted height of 22 feet above MLLW) whereas the mainscheme lines in the general area were run during periods of lower water. If practical, the crossline should be run at the beginning of the survey and during times of predicted low water [HM 1.4.2].

E. Echograms:

There were no apparent problems with the annotations or interpretation of the echograms.

F. Raw Data Printouts:

A non-standard abbreviation, "LG", appeared on one sounding line. Examination of the position plot reveals the proper annotation should have been "LBks" (line breaks). Abbreviations used on the raw data printouts should either originate from Appendix E of the Hydrographic Manual or be noted at the beginning of the raw data printout.

K. Special and/or Ancillary Reports:

The Corrections to Echo Soundings Report was briefly reviewed. No measurement units were assigned to the settlement and squat abstracts. This was particularly confusing as the abstract from which the settlement and squat correction graph was determined had no units, and the numerical values within the abstract did not coincide with those on the graph. Closer examination of the data showed that the abstract and graph were determined, initially, in fathoms. The graph's measurement units were then converted to feet.

There appear to be no problems with the Electronic Control Report forwarded with this survey.

L. Automated Data Check:

No problems were encountered during the spooling of the survey data tapes.

N. Survey Acceptance:

The preprocessing examination of H-10250 was conducted under the time constraints of HSG 15. Therefore, all comments contained herein are based on a spot check of the data. It is possible that some problem areas have not been addressed.

Hydrographic survey H-10250 is in compliance with applicable instructions. I recommend that H-10250 be accepted for Nautical Chart Branch processing.

Prepared by:

Marlene Mozgala

Marlene Mozgala

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

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER
H-10250

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	4
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	2

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

SHORELINE DATA

SHORELINE MAPS (List):

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List):

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			848
POSITIONS REVISED			0
SOUNDINGS REVISED			10
CONTROL STATIONS REVISED			0
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	14		14
VERIFICATION OF SOUNDINGS	23		23
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	22		22
COMPARISON WITH PRIOR SURVEYS AND CHARTS		17	17
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT	0	18	18
GEOGRAPHIC NAMES			
OTHER* Digitizing			0
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	59	35	94

Pre-processing Examination by M. Mozgala	*Beginning Date* 9/28/87	*Ending Date* 10/26/87
Verification of Field Data by P. Niland, L. Deodato	*Time (Hours)* 59	*Ending Date* 12/10/87
Verification Check by S. Otsubo, B. Olmstead, J.S. Green	*Time (Hours)* 24	*Ending Date* 1/6/88
Evaluation and Analysis by G. E. Kay	*Time (Hours)* 35	*Ending Date* 1/6/88
Inspection by Dennis J. Hill	*Time (Hours)* 2	*Ending Date* 1/11/88

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

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10250

1. INTRODUCTION

H-10250 is a basic hydrographic survey accomplished by the NOAA Ship FAIRWEATHER under Project Instruction OPR-S-P925-FA, dated June 9, 1987.

This survey in Cook Inlet, Alaska includes Fire Island Shoal and West Point Shoal. The area is about five nautical miles west of Turnagain Arm and fifteen nautical miles southwest of Anchorage. Strong currents that can exceed six-knots and semi-diurnal tides with a range of twenty seven feet characterize the survey area. These strong natural forces acting upon the sand bottom result in continuous dynamic change. This area is traversed by heavy ocean traffic proceeding to and from the port of Anchorage. Shipping follows a course indicated by the Point MacKenzie and Race Point ranges which direct shipping between Fire Island Shoal and Fire Island. The growth and migration of these shoals continues to narrow this shipping corridor. Depths on this survey range from 68 fathoms to zero feet on Fire Island Shoal, which uncovers 2 feet at MLLW.

Field processing used predicted tides for Anchorage, Alaska. Office processing used approved hourly heights zoned from the Anchorage, Alaska gage (945-5920).

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 used for this survey.

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 included 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

Adequate discussions of horizontal control and hydrographic positioning can be found in sections F and G of the hydrographer's report.

Positions of horizontal control stations used during hydrography are published (1965 and 1974) and field values (1982) based on the NAD 27. The computation of positions accomplished during office processing used these same values. The smooth sheet and accompanying overlays are annotated with NAD 83 adjustment ticks based on values determined by N/CG121. Geographic positions based on the NAD 83 may be plotted on the smooth sheet utilizing the NAD 27 projection by applying the following corrections.

Latitude: +1.985 seconds (+61.4 meters)
Longitude: -8.058 seconds (-120.3 meters)

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

There are no weak fixes (angles of intersection less than 30 degrees or greater than 150 degrees) noted on the survey.

Shoreline maps were not available and not required by the Project Instructions (section 4.0.). Shoreline, shown in brown on the smooth sheet for orientation purposes only, originates with chart 16665, 1st Edition, dated August 9, 1986.

3. HYDROGRAPHY

Hydrography within the limits of the sheet 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.

c. Show that the survey was properly controlled and soundings plotted correctly.

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 Report, dated October 26, 1987, and the following.

The hydrographer attributes the difference in depths between crosslines and mainscheme lines to unconsolidated bottom and tidal variation. Discussions with personnel of the Tidal Datums Quality Assurance Section, N/OMA123, partially support this contention. The complexity of the tidal environment across a survey area may result in unspecified large differences between predicted and actual tides. Without field installed secondary gages, hydrographers may not be able to determine the magnitude of the differences or times of significant discrepancy during the tidal cycle. Headquarters recommends that in these situations critical soundings should be restricted to periods of high and falling tide when predictions are generally most accurate. During office processing the application of approved hourly heights corrected the crossline problem.

5. JUNCTIONS

Junctions were not required by the Project Instructions (section 6.9.). A comparison with charted depths (Chart 16665, 1st Edition, dated August 9, 1986, scale 1:50,000) reveals poor agreement with the present survey on the north, west and south junctions. This appears to be the result of the migration of Fire Island Shoal. The east junction agrees with the charted depths.

6. COMPARISON WITH PRIOR SURVEYS

H-10000 (1982) 1:20,000

Survey H-10250 covers a central portion and is completely surrounded by this prior survey. The west, north and south sides do not compare very well with the present survey. These differences are attributed to the tidal currents described in section 1. Soundings along the eastside of the present survey H-10250 matches well with this prior survey. This eastern side of the survey has changed little since the 1940's. The 20, 30 and 60-foot curves are in agreement indicating stability along this subterranean slope of Fire Island.

Fire Island Shoal has migrated east-southeast approximately 445 meters since 1982. It has increased in height, and now uncovers 2 feet at MLLW. AWOIS #50597

The enlargement of West Point Shoal since 1982 is evident by the size of the area enclosed within the 30-foot curve. Minimum depths are now 25 feet at MLLW and the center has moved west approximately 200 meters toward Fire Island Shoal. AWOIS #50264

Additional information can be found in section K of the hydrographer's report.

There are no AWOIS items originating from survey H-10000.

Survey H-10250 is adequate to supersede the prior survey within the common area.

7. COMPARISON WITH CHART

Chart 16665, 1st Edition, dated August 9, 1986, scale 1:50,000

a. Hydrography With the exception of two soundings, all charted soundings in the common area originate with the prior survey H-10000 discussed in section 6 of this report and require no further discussion. The following two soundings originate with other sources.

Latitude N	Longitude W	Charted Depth	H-10250 Depth
61°08'48"	150°17'48"	44	40
61°08'24"	150°18'18"	49	49

The 44-foot sounding originates from H-9966 (1981) and was superseded by survey H-10000 (1982). This 44-foot depth should be removed from the chart and the 40-foot sounding from this survey charted.

The 49-foot depth originates from an unknown source and is confirmed by the present survey.

Additional information can be found in section L of the hydrographer's report.

Survey H-10250 is adequate to supersede charted hydrography within the common area.

b. AWOIS There are no AWOIS items originating from miscellaneous sources.

c. Controlling Depths There are no charted channels with controlling depths within the limits of this survey.

d. Aids to Navigation There are no fixed aids and one floating aid to navigation within the limits of survey H-10250. The charted position and description of Lighted Bell Buoy 5, Light List Number 26385 (seasonal), was verified (position number 6021) at latitude 61°08'14.22"N, longitude 150°20'50.51"W. The aid adequately serves its intended purpose.

e. Dangers to Navigation The hydrographer submitted a danger to navigation report to the Seventeenth Coast Guard District on July 16, then subsequently superseded the information with a July 23 radio message (copy attached). An additional danger to navigation report was submitted during office processing (copy attached).

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

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10250 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is a good basic survey. In view of the continued eastward migration of the Fire Island Shoal and the rapid growth of the West Point Shoal, which may result in hazardous conditions, periodic reinvestigation of this area is recommended.

for Gordon E. Kay
Cartographer

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

Dennis Hill
Chief, Hydrographic Section

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

January 11, 1988 N/MOP211C/JG

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

Dear Sir:

During office review of hydrographic survey H-10250, Fire Island and West Point Shoal, Cook Inlet, Alaska, the following change affecting chart 16665 was noted. 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:

> "West Point Shoal is now covered by 25 feet at MLLW; Chart No. 16665, 1st Edition, August 9, 1986; Latitude 61°08'34"N, Longitude 150°19'10"W (NAD 27); distance 1.5 nautical miles bearing 311° true from Fire Island Light 6."

Sincerely,

Robert L. Sandquist
Rear Admiral, NOAA
Director, Pacific Marine Center

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10250

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. The hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

Chief, Nautical Chart Branch (Date) 1/15/88

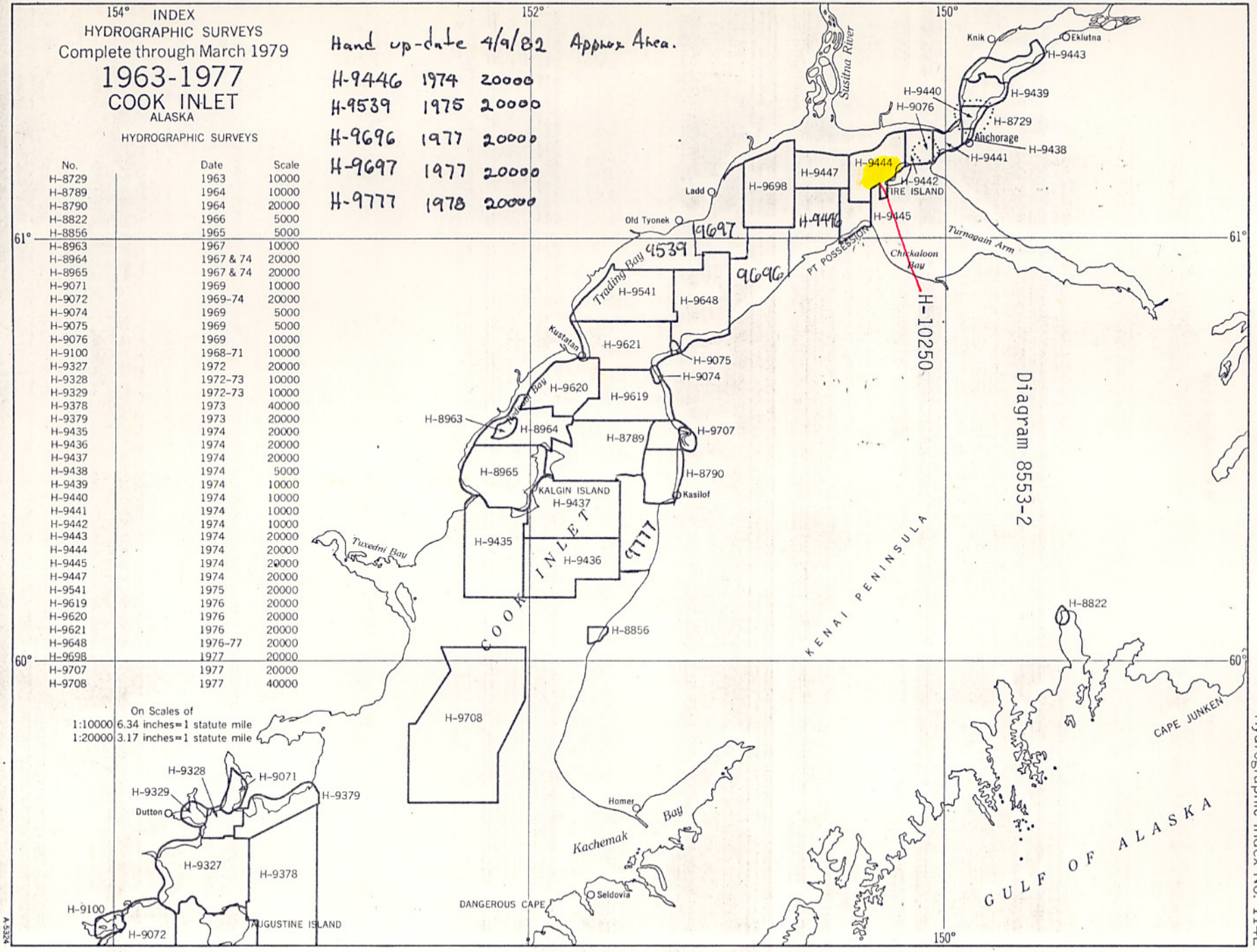
CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE: 1/15/88

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above.

Director, Pacific Marine Center (Date) 1/15/88



DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Washington, D.C.

Hydrographic Index No. 114E

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10250

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
16665	4/18/88	R.S. House	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. 2
16663	4/21/88	R.S. House	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. 2
Appl 16660	4/17/89	Russell P Kennedy	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 28 Applied through 16663
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.

app'd to Stds 2-5-88 Rer