

9771

Diag. Cht. No. 8553,8554-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey ... Hydrographic
Field No. ... FA-20-3-78
Office No. ... H-9771

LOCALITY

State ... Alaska
General Locality ... Cook Inlet
Locality ... Tuxedni Bay

1978

CHIEF OF PARTY
B.I. Williams

LIBRARY & ARCHIVES

DATE ... July 29, 1980

T 2126

HYDROGRAPHIC TITLE SHEET

H-9771

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-20-3-78

State Alaska

General locality Cook Inlet

Locality Tuxedni Bay

Scale 1:20,000

Date of survey 22 June - 18 August 1978

Instructions dated 17 April 1978

Project No. OPR-P114-FA-78

Vessel NOAA Ship FAIRWEATHER, Launches EDP 2023, 2024, 2025, and 2028

Chief of party CDR B. I. Williams

Surveyed by LT A. Kissam, LT A. Yanaway, LT J. Withrow, LTJG R. Crowell

Soundings taken by echo sounder, hand lead, pole ^{*Raytheon*} Echo sounder and pole

Graphic record scaled by Ross Digitizers & Ship's Personnel

Graphic record checked by Ship's Personnel

Positions verified by Isagani A. Almacen

Automated plot by PMC Xynetics Plotter

Soundings verified by Isagani A. Almacen

Soundings in fathoms ^{*and tenths*} ~~at~~ at ~~MLLW~~ MLLW

REMARKS: This survey is complete and adequate for charting.

*App'd to standards
WJT-6-23-81*

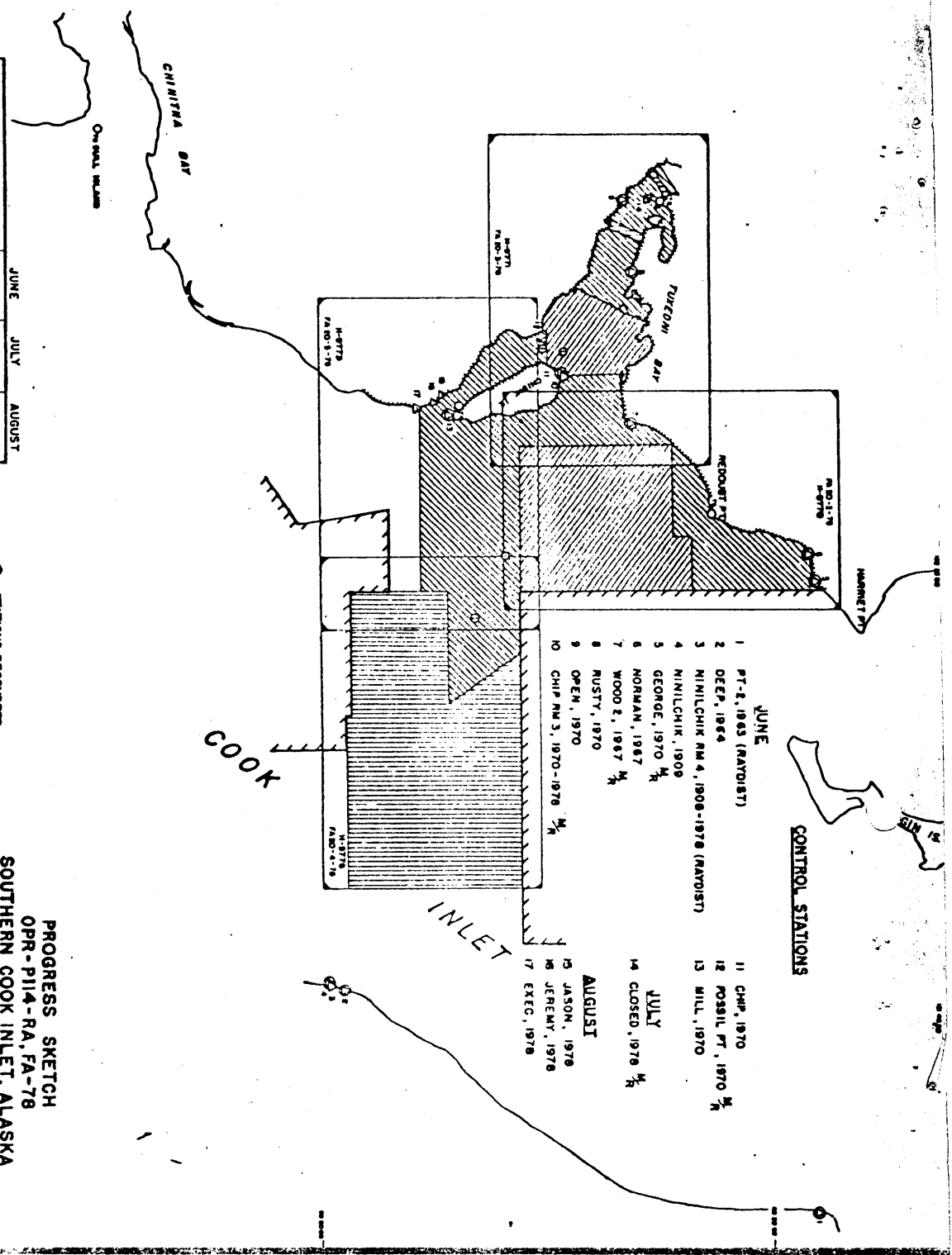
7-6
5-4

	JUNE	JULY	AUGUST
LNM SOUNDING LINE	549.8	928.0	1100.0
SO NM SOUNDING LINE	50.8	70.0	85.0
STD CAST (MARTER)	0	1	2
BOTTOM SAMPLE	0	67	167

|||||

- ⊙ STATIONS RECOVERED
- △ STATIONS ESTABLISHED
- TIDE GAUGE
- ⊙ MARTER CAST
- ⊙ FIELD EDT

PROGRESS SKETCH
 OPR-P114-RA, FA-78
 SOUTHERN COOK INLET, ALASKA
 NOAA SHIP FAIRWEATHER S220
 CDR BRUCE L. WILLIAMS, CMDG
 SCALE OF NOS CHARTS 16660-16640
 -1978-



CONTROL STATIONS

- JUNE**
- 1 PT. E., 1863 (RAYDIST)
- 2 DEEP, 1964
- 3 MINILCHIK RM 4, 1908-1978 (RAYDIST)
- 4 MINILCHIK, 1909
- 5 GEORGE, 1970 M
- 6 NORMAN, 1987
- 7 WOOD 2, 1987 M
- 8 RUSTY, 1970
- 9 OPEN, 1970
- 10 CHIP RM 3, 1970-1978 M
- JULY**
- 11 CHIP, 1970
- 12 POSSIL PT., 1970 M
- 13 MILL, 1970
- 14 CLOSED, 1978 M
- AUGUST**
- 15 JASON, 1978
- 16 JEREMY, 1978
- 17 EXEC, 1978

DESCRIPTIVE REPORT
HYDROGRAPHIC SURVEY H-9771
SCALE 1:20,000 YEAR 1978

Cdr. Bruce I. Williams, NOAA
Commanding Officer, NOAA Ship FAIRWEATHER

PROJECT

Project instructions OPR-P114-FA-78 (17 April 1978) and changes number 1 (25 April 1978), number 2 (2 May 1978), and number 3 (2 May 1978) concern this survey.

AREA SURVEYED

The area surveyed is Tuxedni Bay in Cook Inlet, Alaska. The area extends eastward from the Tuxedni River mouth to longitude 152 31'W. The survey includes most of Chisik Island vicinity waters and the northern third of Tuxedni Channel. Dates of hydrography were from 22 June to 18 August 1978.

SOUNDING VESSELS

Sounding vessels used were FA 3 (2023 EDP), FA 4 (2024 EDP), FA 5 (2025 EDP), and Boston Whaler II (2028 EDP). The 2028 EDP vessel is a 17 foot Boston Whaler fitted with a portable Mini-Ranger III receiver and Raytheon survey fathometer.

SOUNDING EQUIPMENT

Electronic sounding equipment used is listed in the appended equipment utilization abstract. No problems were experienced with the equipment that could not be corrected when scanning the graphics. The Raytheon portable fathometer was not correctly calibrated on JD 194-195 and the soundings were scaled using a Gerber variable scale.

Draft of the transducer was determined from daily bar checks for all survey vessels except Whaler II. A pole sounding was used to obtain the transducer draft of Whaler II.

Soundings ranged from 0 to 25 fathoms at MLLW. All soundings were reduced for TRA and ^{predicted} tide height before plotting in fathoms. See REPORT ON CORRECTIONS TO ECHO SOUNDINGS, OPR-P114-FA-78.

HYDROGRAPHIC SHEETS

The survey was divided into two field sheets, 3E and 3W, by a line drawn north from the north end of Chisik Island. Sheets were constructed using a modified transverse mercator projection at a scale of 1:20,000. The skew for the 3E sheet is 90,22,36 and for the 3W sheet the skew is 150,22,54.

The sounding density on the 3W sheet is excessively dense at a 1:20,000 scale in the vicinity of station CLOSED 1978 (signal 030). For clarity on the field smooth sheet, a 1:10,000 plot of this area is used as indicated on the 1:20,000 smooth sheet. Skew for this 1:10,000 smooth sheet is 0,22,20.

A copy of the parameter tape printout for all sheets is appended.

CONTROL STATIONS

Horizontal control was based on the 1927 North American Datum. No photogrammetrically located signals or stations were used. See SOUTHERN COOK INLET, ALASKA, HORIZONTAL CONTROL REPORT OPR-P114-FA-78. ✓

HYDROGRAPHIC POSITION CONTROL

All position control for the 3W sheet was by range-azimuth methods. Motorola Mini-Ranger III transmitter and receiver systems established the sounding vessel range from the control station. A Wild T-1 theodolite at the control station established the azimuth. Control stations used for range-azimuth control were CLOSED 1978 (signal 030), CHIP RM3 1970 (signal 020), and FOSSIL PT 1970 (signal 025). *Some rocks were located by sextant.*

On the 3E sheet, all hydrography was controlled by Raydist range-range located at stations PT-2 (signal 124) and Ninilchik (signal 125). Launches FA 3 and FA 4 used the Hydroplot system for on-line real time plotting. Launch FA 5 used Hydrolog in the range-range mode. ✓

Calibration and calibration checks were done before and after hydrography each day. The calibration was done at a steel pole (signal 055) placed northeast of Chisik Island and the steel pipe was located by third order methods. On one day, a check calibration for the Mini-Ranger was done using a sextant fix (2028 EDP, JD 201). ✓

The Mini-Ranger and Raydist range values to the steel pipe calibration point (known aboard the FAIRWEATHER as the Tide Monster) are listed by transmitter location in the appended text of the report. A signal listing is also appended. See ELECTRONIC SYSTEMS CALIBRATION REPORT, OPR-P114-FA-78. ✓

SHORELINE

Shoreline details were taken from Class Three 1:20,000 scale manuscripts (T-12353, T-12352, T-12354) and were field edited during the time of hydrography. Field edit was not done in the Tuxedni River mouth area west of station CLOSED (signal 030) because hydrography was discontinued in this area. It was not cost effective to continue into the Tuxedni River because of its minimal navigability and possible shifting shoals. See FIELD EDIT REPORT, OPR-P114-FA-78. ✓

The shoals and mud flats have shifted significantly from the Fossil Point area to the Tuxedni River. This entire area above the MLLW line should be examined and recharted. Local mariners report the winter ice causes rocks and mud flats to shift. With the exception of the rocks, the shoreline and navigable channels return to normal

✓
See Q.C.
Report

1995

within a few weeks of spring thaw. See QC Report

CROSSLINES

Nautical miles of hydrography totaled 386 miles of which 12% were crosslines. Depth comparisons at crossings are in good agreement. ✓

JUNCTIONS

This survey junctions with H-9770 (FA-20-2-78) and H-9773 (FA-20-5-78). Comparisons for depth agreement between surveys are good. *concur for H-9770* ✓

COMPARISON WITH PRIOR SURVEY

Prior surveys H-3318, H-3319, and H-3320 were compared with the smooth field sheet FA-20-3-78. ✓

*H-9773 not in office
9/17/80
JPS*

Shoaling is evident from Fossil Point into the Tuxedni River. Depth comparisons show shoaling up to 30 feet and narrowing of navigable channels. *This is PSR item 4* ✓

At 60° 10' ^{26"} 39" N, 152° 39' 39" W a 1.6 ⁵ fms sounding was obtained on FA-20-3-78 (JD 175, time 000430, 2025 EDP). Comparison with the prior survey H-3319 shows this area to be charted as 16.6 fms. East of this position the depth increases rapidly ~~from 2 to 10 fathoms~~ *to 23 fms.* ✓

The deep offshore (east) of this has filled in from prior maximum depths of 202 ft (33 fms) to present maximum depths of 150 ft (25 fms)

Dis regard - the 15 fm depth is near the offshore terminus of a rky shoal contiguous to shore & is in approximate agreement with the prior survey location of the shoal.

COMPARISON WITH THE CHART NOS chart number 16640, 15th edition, is at a scale of 1:200,000 and extensive comparison is not possible. The Tuxedni Bay note on the chart is accurate concerning the shoaling. *concur* ✓

PSR 4 (shoaling) was developed only to the extent displayed by mainscheme hydrography. This PSR actually extends over the entire western portion of the 3W sheet and its inclusion appears redundant in light of the chart note or normal field hydrographic observations. ✓

No need to chart shoaling note - chart the area as shown on the present survey.

ADEQUACY OF THE SURVEY

This survey is complete and adequate for charting of Tuxedni Bay. No part of this survey is substandard. *That portion of the field edit incorporated into the hydrography is weak in some areas.* ✓

AIDS TO NAVIGATION

There are no aids to navigation in the area covered by this survey. ✓

JPS

STATISTICS

	<u>Positions</u>	<u>Miles</u>	<u>Sq. Miles</u>	<u>Bottom Samples</u>
FA3 (2023)	188	53	5	0
FA4 (2024)	113	36	3	10
FA5 (2025)	1235	270	18	19
Whaler (2028)	185	27	2	2
TOTALS	1721	386	28	31

Appended to this report are copies of NOAA Form 75-44, Oceanographic Log Sheet M, Bottom Sediment Data.

MISCELLANEOUS

The control tide station for this survey was located at Snug Harbor near the entrance to Tuxedni Channel from Cook Inlet. As the survey proceeded towards the Tuxedni River, marked differences in the water clarity and the actual height versus predicted height of tide were noted. In addition to the effects of the river exit waters, the shoaling in Tuxedni Bay was significant enough to possibly affect the hydraulics of the water mass. The Snug Harbor tide station, located approximately 12 miles from the working area, was considered inadequate tidal control. (See approved tide & recommended zoning for H-9771) ✓

A bubbler tide gage was installed at Meadow Island near the Tuxedni River mouth. It is recommended that tide control for the survey be zoned using the records of both Meadow Island and Snug Harbor tide gages. The hydrographer recommends that the tide zone be established at the vicinity of station RUSTY 1970 (signal 010). Meadow Island was named by FAIRWEATHER personnel and is included in the appended Geographic Names list. *"Meadow Island" tide gage was not used.*

Future surveys of this area will require tide control near the Tuxedni River mouth and this should be stated in the project instructions.

Position 5327 (2025 EDP) was used twice on the same sounding line. This is noted on the data record and on the appended position abstract.

RECOMMENDATIONS

Small craft (13 to 65 feet) anchor at the north end of Chisik Island. During fishing season, these craft navigate both sides of Chisik Island and as far up the bay as the Tuxedni River mouth. Considering the scale of the existing chart and the changes in the bottom topo- ✓

✓
RPS

graphy, these mariners are navigating using only local knowledge of this area. NOS should consider using a chart inset of Tuxedni Bay on a separate chart issuance.

Proposed chart issuance indicates that a 1:100,000 scale chart of Tuxedni Bay may be printed. This scale would be adequate for piloting of Tuxedni Bay and the Chisik Island waters. It is recommended, however, that a 1:40,000 inset be provided of the waters surrounding the north end of Chisik Island to Fossil Point. This area is a fine anchorage and many small craft were observed moored to temporary buoys or anchored. ✓

As a final recommendation, the NOS is encouraged to continue chart warnings for possible shoaling in Tuxedni Bay. The river deposits large amounts of sediment and annual ice floes change the topography. Reports of shoaling by local mariners deserve immediate attention by NOS. *See Q.C. Report*

AUTOMATED DATA PROCESSING

RK 111, Range-range Real Time Plot (dated 1-30-76) was used by Hydroplot equipped launches FA3 (2023) and FA4 (2024). RK 211, Range-range Non-real Time Plot (dated 1-30-76) was used during ship-board processing to plot all range-range controlled hydrography. ✓

RK 215, Range-azimuth Non-real Time Plot (dated 2-5-76) was used to plot all range-azimuth controlled hydrography.

The field sheets were made using RK 201 (dated 4-18-75), Grid-Signal-Lattice Plot.

REFERENCES TO REPORTS

Field Edit Report OPR-P114-FA-78
 Southern Cook Inlet, Alaska, Horizontal Control Report OPR-P114-FA-78
 Electronic Systems Calibration Report OPR-P114-FA-78
 Report on Corrections to Echo Soundings OPR-P114-FA-78

Report prepared by:

Allan D. Kissam
 Lt. Allan D. Kissam, NOAA

OPR-P114-FA-78 SIGNAL TAPE - SOUTHERN COOK INLET
AUGUST 27, 1978

RUSTY 1970

010 1 60 13 37159 152 46 16282 139 0018 000000

WOOD 2 1967

015 0 60 13 47718 152 32 48754 139 0009 000000

CHIP 1970

019 3 60 11 00901 152 37 00566 250 0005 000000

CHIP 1970 RM 3

020 7 60 11 02844 152 37 00332 250 0004 000000

CHIP 1970 RM 3 FIELD EDIT OFFSET

021 0 60 11 02842 152 37 00163 243 0004 000000

FOSSIL PT, 1970

025 3 60 09 59725 152 40 33994 250 0014 000000

CLOSED (ESTB. 1978)

030 3 60 14 16898 152 52 38734 250 0004 000000

GEORGE 1967

035 3 60 21 39621 152 18 40264 139 0003 000000

NORMAN 1967

040 3 60 21 27739 152 21 08903 139 0003 000000

EXEC 1978

045 0 60 04 22737 152 34 09608 250 0003 000000

MILL 1970

050 0 60 05 44223 152 33 46484 250 0007 000000

TIDE MONSTER CALIBRATION POLE

055 0 60 11 03599 152 36 23968 250 0000 000000

RAINIER RED RAYDIST 1978 (SNUG HARBOR)

060 0 60 06 21437 152 33 53267 250 0159 329646

PT-2 1963 (RED RAYDIST)

124 0 60 21 55694 151 22 27250 250 0015 330040

NINILCHIK RM 4 (GREEN RAYDIST)

125 0 60 00 33344 151 42 43441 250 0089 330040

Velocity Corrector Tapes
H-9771

000035 0 0000 0001 001 202500 009771
000090 0 0001
000140 0 0002
000195 0 0003
000251 0 0004
000301 0 0005
000355 0 0006
000407 0 0007
000460 0 0008
000515 0 0009
000568 0 0010

000035 0 0000 0001 001 202300 009771
000090 0 0001
000140 0 0002
000195 0 0003
000251 0 0004
000301 0 0005
000355 0 0006
000407 0 0007
000460 0 0008
000515 0 0009
000568 0 0010

000035 0 0000 0001 001 202400 009771
000090 0 0001
000140 0 0002
000195 0 0003
000251 0 0004
000301 0 0005
000355 0 0006
000407 0 0007
000460 0 0008
000515 0 0009
000568 0 0010

000035 0 0000 0001 001 202800 009771
000090 0 0001
000140 0 0002
000195 0 0003
000251 0 0004
000301 0 0005
000355 0 0006
000407 0 0007
000460 0 0008
000515 0 0009
000568 0 0010

H-9771
TC/TI LISTINGS

003245 0 0003 0001 190 202300 000000
022859 0 0003 0001 204 202300 000000

002445 0 0003 0001 191 202400 000000
225759 0 0003 0001 200 202400 000000

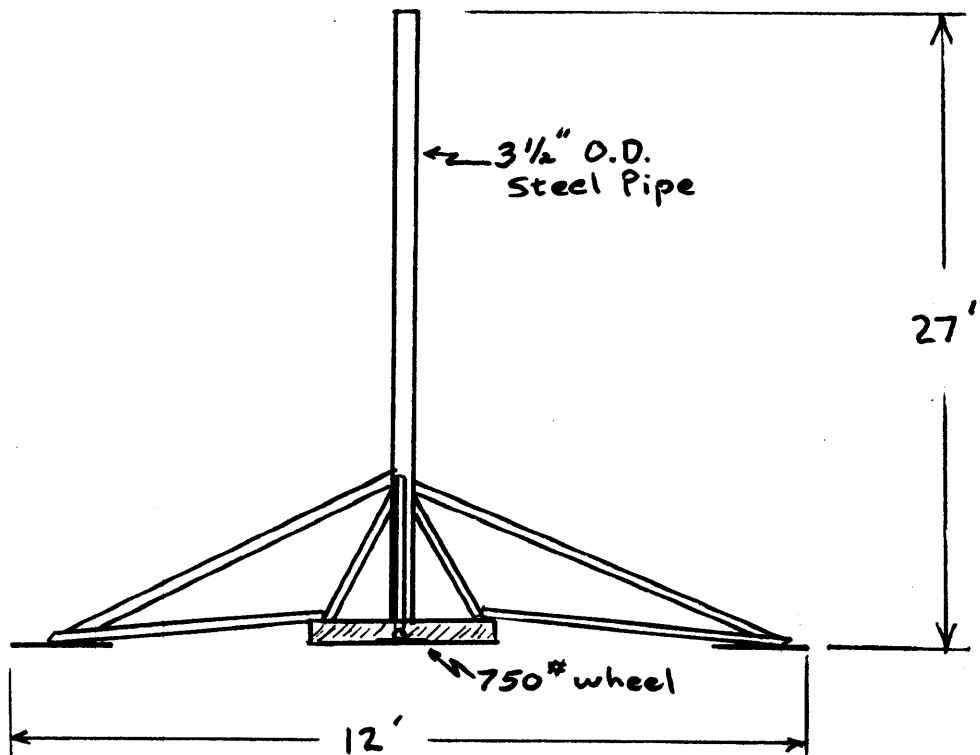
200236 0 0003 0001 173 202500 000000
045619 0 0003 0001 191 202500 000000

020230 0 0014 0001 194 202800 000000
022606 0 0000 0000 195 202800 000000
023900 0 0014 0001 195 202800 000000
024645 0 0000 0000 195 202800 000000
024930 0 0014 0001 195 202800 000000
051837 0 0000 0000 195 202800 000000
000100 0 0014 0001 201 202800 000000
012720 0 0000 0000 230 202800 000000
014601 0 0000 0000 230 202800 000000

CALIBRATION RANGES

Calibration of Raydist and check calibration for Mini-Ranger III systems was done at a steel pole (signal 055) implanted north of Chisik Island. The object was given the name "Tide Monster" by most of the FAIRWEATHER personnel because the steel pipe was originally constructed for mounting an ADR tide gage system. The pipe assembly is attached to a railroad wheel at its base along with support legs extending 6 feet outward at 90 degree angles on a horizontal plane. The object is heavy and required two survey launches to remove it from the mud at the project close.

The appended signal to calibration pole range list is to be used for Mini-Ranger III check calibrations. Also appended are sketches of the Raydist lanes at the calibration pole. Below is a sketch of the "Tide Monster".



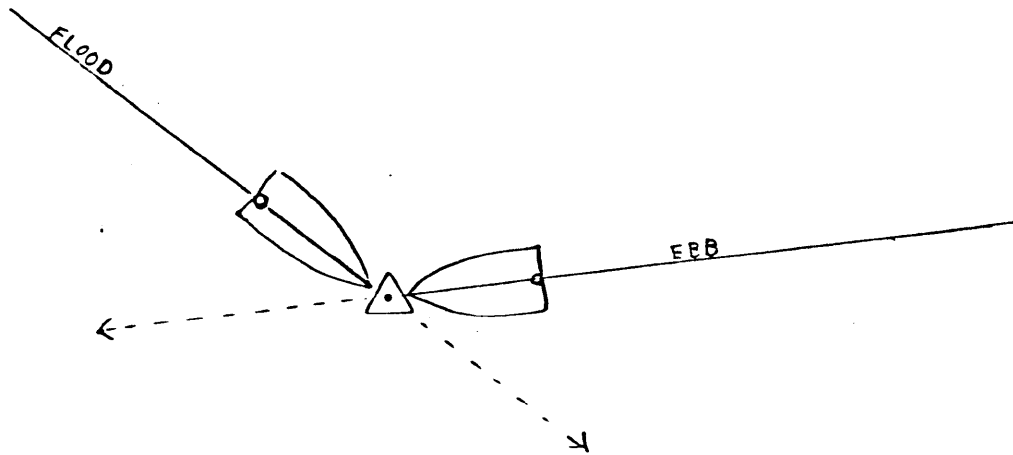
"Tide Monster"
Approx. weight = 1,100#

Mini-Ranger Check Calibrations

DISTANCE FROM CALIBRATION MASTER

~~PATTERN 1~~ 4332.81 m FROM FOSSIL PT 1970
~~PATTERN 2~~ 16161.28 m FROM CLOSED (ESTB. 1978)
560.96 m FROM CHIP RM3 1970

FA - 20 - 2 - 78	H 9770
FA - 20 - 3 - 78	H 9771
FA - 20 - 5 - 78	H 9773
FA - 20 - 4 - 78	H 9776

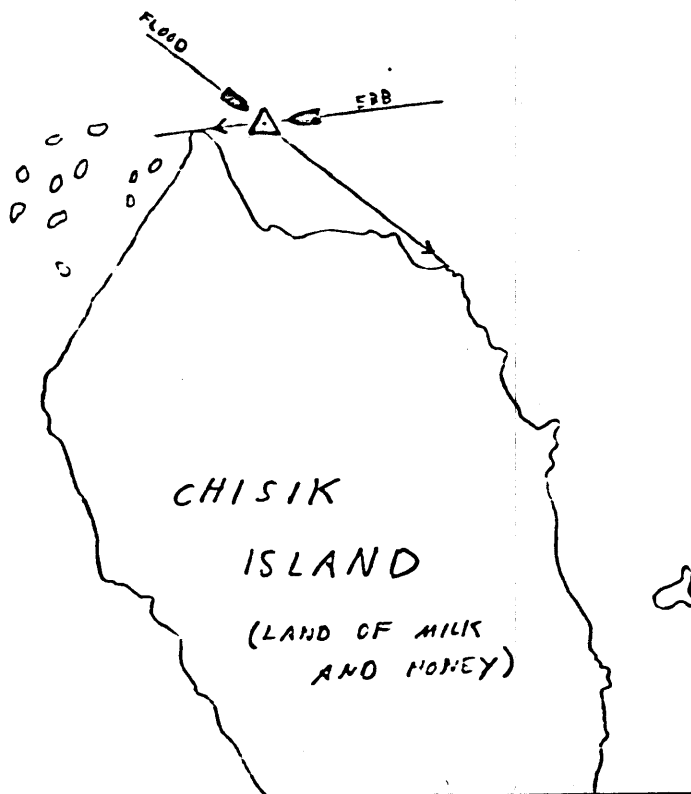


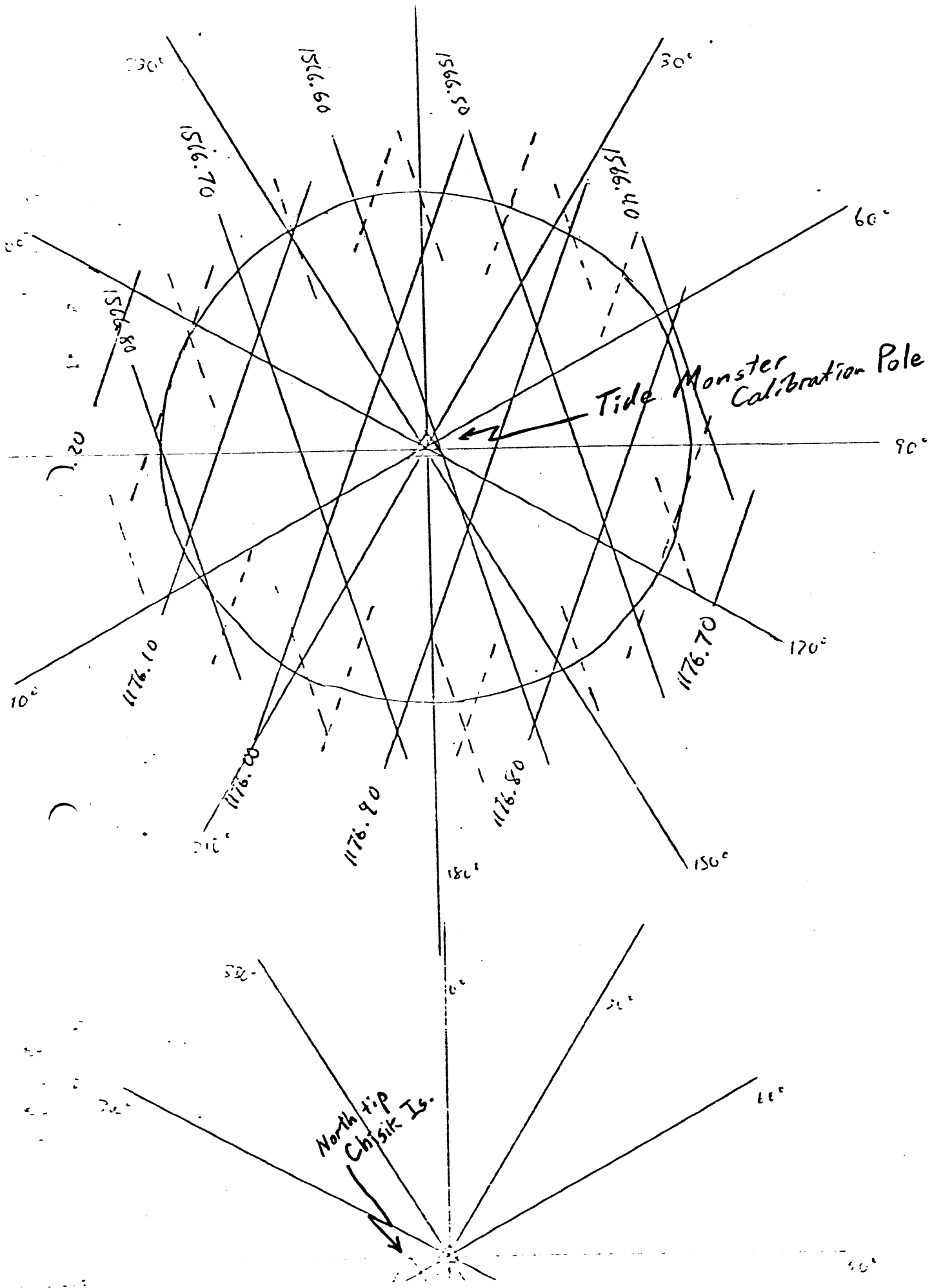
CALIBRATION

RATES

High digits = 1,1

	LEFT PATTERN	RIGHT PATTERN
TIDE MONSTER CALIBRATION PT	1566.61	1175.95
LAUNCH ANTENNA FLOOD POSITION	1566.73	1176.16
LAUNCH ANTENNA EBB POSITION	1566.41	1175.77





EQUIPMENT UTILIZATION

Raydist R/R Hydrography

<u>Vessel</u> <u>EDP</u>	<u>JD</u>	<u>SN</u> <u>Fathometer</u>	<u>SN</u> <u>Navigator</u>	<u>SN</u> <u>Mobile Transmitter</u>
2023	189-204	1046	016	090
2024	191-216	1047	018	096
2025	189-190	1036	020	088

Mini-Ranger III R/A Hydrography

<u>Vessel</u> <u>EDP</u>	<u>JD</u>	<u>SN</u> <u>Fathometer</u>	<u>SN</u> <u>Console</u>	<u>SN</u> <u>XPONDER</u>
2025	173-191	1036	702	703
2025	199-200	1036	702	701
2025	219-220	1036	702	703
2028	194-195	6168	701	703
2028	201-214	6168	703	703
2028	230	POLE	703	701

NOTE: The 2028 EDP fathometer is a Raytheon portable survey fathometer SN 6168.

The 701 XPONDER magnetron failed on JD 236 (after completion of this survey) and could not be baseline calibrated at the end of the project. The daily calibration checks show that the unit was functioning well on the days it was used to control this survey. On no day was the check calibration for XPONDER 701 (with baseline corrector applied at the observed signal strength) outside the 10 meter deviation allowed by the PMC OORDER page M-6. It is recommended that the records from FA-20-5-78 and Field Edit be used to substantiate the accuracy of XPONDER 701.

FIELD TIDE NOTE
OPR-P114-FA-78

(H-9770), (H-9771), (H-9773), (H-9776)

Field tide reductions, of soundings, were based on the reference station at Seldovia, based on predicted tides for 1978 adjusted using factors supplied by Pacific Tides Party. The values were interpolated by the PDP-8e computer using program AM 500, Predicted Tide Generator. In all cases, GMT was used. The time and height corrections, applied to the Seldovia predicted tides, were as follows:

<u>FIELD SHEET</u>	<u>HEIGHT (ratio)</u>	<u>HIGH WATER</u>	<u>LOW WATER</u>
FA-20-2-78 (H-9770)	0.90	+1Hr 28M	+1Hr 34M
FA-20-3-78 (H-9771)	0.90	+1Hr 28M	+1Hr 34M
FA-20-4-78 (H-9776)	0.97	+1Hr 01M	+1Hr 14M
FA-20-5N-78 (H-9773)	0.87	+1Hr 14M	+1Hr 20M

The final field smooth sheets were plotted using these predicted tides.

Two bubbler gages and two ADR gages were installed by FAIRWEATHER Personnel and one gage at Ninilchik was installed and tended by RAINIER personnel. (Refer to FIELD TIDE NOTE OPR-P114-RA-78). The following gages were installed by FAIRWEATHER personnel as per project instructions:

<u>SITE</u>	<u>LOCATION</u>	<u>PERIOD OF OPERATION</u>
SNUG HARBOR 945-6173 ADR Gage	LAT 60°06.5'N LONG 152°34.7'W	6-20-78 - 8-21-78
REDOUBT POINT 945-6094 ADR Gage	LAT 60°18'07"N LONG 152°23'08"W	6-25-78 - 8-16-78
CHINITNA BAY 945-6357 Bristol Bubbler Gage	LAT 59°50.3'N LONG 153°00.0'W	7-10-78 - 8-22-78

In addition, to further clarify the tidal effect in the Tuxedni River, a tide gage was located upriver as follows:

MEADOW ISLAND ^{H-9771} (not used) Bristol Bubbler Gage	LAT 60°14.7'N LONG 152°52.5'W	7-22-78 - 8-18-78
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REDOUBT POINT

ADR gage S/N 7403A3402M12, replaced by ADR gage S/N 7601A469M20, was installed on a portable pole mounted on a railroad wheel similar to the installation made at Fire Island during OPR-SP-207-FA-78 earlier in June, 1978. The original gage was installed and operational on 26 June. But on 27 June, the gage jammed at 1524 GMT. The gage was restarted the same day at 2154 GMT. Again on 28 June, the gage jammed at 1118 GMT and was restarted on 13 July at 2218 GMT. On 16 July, the gage jammed at 2000 GMT and was restarted on 20 July at 2106 GMT. The gage jammed one more time on 28 July at 2318 GMT and was replaced on 2 August at 2018 GMT. The new gage ran without incident until its removal on 16 August at 2006 GMT. The fact that the original gage jammed four times was probably due to the free motion of water in the floatwell. Originally, the floatwell had several intakes drilled at different levels of the pipe to prevent a single intake from becoming clogged. But the multiple intake caused too much rapid swell and chop action on the float, and the water level changed too rapidly for the punch to operate properly. The rapid water level changes caused the punch blocks to jam. When the gage was replaced on 2 August, several small rocks were dropped into the floatwell and these rocks retarded the water motion in the floatwell. After this modification of the intakes, no difficulties were encountered at this gage. On installation of the gage, observation records were kept at the gage, but rain destroyed the first observation record, so after 13 July, all records were kept on the ship.

Zero staff level to marigram comparisons:

13 July 21.3 feet

23 July 14.5 feet

2 Aug. 42.5 feet

SNUG HARBOR

Fisher Porter ADR gage S/N 6903A5568M13 was installed on 20 June, and operated properly until its removal on 21 August, 1978. The floatwell was affixed to a 24 ^{inch} foot diameter piling on the Snug Harbor Pier which supplied an excellent observing platform. The staff stop was a fixed point on the piling casing and its value was set at 50.00 feet which led to a zero foot staff to marigram relation of 3.1 feet.

CHINITNA BAY

Bristol Bubbler gage S/N 67A10292 range 0-30 feet, was installed on 10 July, 1978. On 3 August, the marigram jammed and the tidal record was lost until 5 August when the gage was reset. The gage operated well until 10 August when the bubbler tubing parted. Only 6 hours lapsed before the tubing was spliced and from this time until the gage was removed on 22 August, no difficulties were encountered. Zero-staff level to marigram relation- 6.1 feet.

MEADOW ISLAND

Bristol Bubbler gage S/N 64A11032, range 0-30 feet, was installed at the discretion of the Commanding Officer because it appeared that the Tuxedni River was not affected by all stages of the tidal range. No difficulties were encountered from the gage's installation on 22 July to its removal on 18 Aug., 1978. The zero-foot staff to marigram relation was 5.0 feet. *(not used)*

LEVELS

Snug Harbor was leveled to 5 existing bench marks upon installation of the gage and again on the gage's removal. Apparently, an error was made while leveling to the CANNERY 1970 bench mark. If this mark is not included in the comparisons, the staff stop settled 0.029 feet from the time of gage installation to the time of gage removal.

Redoubt Point was leveled to five existing bench marks upon installation of the original gage and again on removal of the second gage. There is an apparent error in the leveling to BM 3. If this bench mark is ignored, there is a staff stop change of approximately 0.025 feet.

Chlnitna Bay was leveled to five existing bench marks upon installation of the gage and again upon its removal. If the change of all five marks is averaged, the staff apparently changed 0.016 feet during the period of gage operation.

As required for tide stations established for less than 30 days, the Meadow Island tide station was leveled to three recoverable temporary bench marks, two eyebolts and a pointed rock painted yellow. There was good agreement between the opening levels of 22 July and the closing levels of 18 August.

MISCELLANEOUS

The ADR gage at Snug Harbor should be used to rectify any questionable data from other gages in the survey area because this gage operated without problems for the entire period of Field Edit and Hydrography.

Respectfully Submitted;

Mark S. Finke
Mark S. Finke Ensign NOAA

APPROVAL SHEET

Field number FA-20-3-78

Register number H-9771

This data package is complete and is transmitted
for verification.



Cdr. Bruce I. Williams, NOAA

Commanding Officer

NOAA Ship FAIRWEATHER

April 19, 1979

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for Form 362

Tide Station Used (NOAA Form 77-12): 945-6298 Meadow Island, AK - Not used
945-6173 Snug Harbor, AK

Period: June 22 - August 18, 1978

HYDROGRAPHIC SHEET: H-9771

OPR: P114

Locality: Southern Cook Inlet, AK

Plane of reference (mean lower low water): 4.4 ft. - Meadow Island - Not used
26.84 ft. - Snug Harbor
Height of Mean High Water above Plane of Reference is
13.8 ft. Meadow Island; 15.0 ft. - Snug Harbor

Remarks: Recommended zoning:

- (1) East of 152°36' zone on Snug Harbor applying +10 minute time correction and range ratio xl.08.
- (2) 152°36' to 152°46' (Tuxedni Channel) zone direct on Snug Harbor.
- (3) West of 152°46' zone ~~direct on Meadow Island~~. on Snug Harbor applying +10 minute time correction and range ratio x 0.92. Per telegram Green/Stoney, 7/6/79.

James R. Hubbard
Chief, Datums and Information Branch

Memorandum

COAST AND GEODETIC SURVEY
632 Sixth Ave., Rm. 302 (1969)
Anchorage, Alaska 99501

1364

TO : Chief, Marine Chart Division
C32

DATE: October 15, 1969

In reply refer to: CF35/2.130
/8554

FROM : Director, Anchorage Field Office

SUBJECT: Report of Shoaling, Tuxedni Bay, Chart 8554

Fishermen with local knowledge have reported to this office that in Tuxedni Bay (Chart 8554) much shoaler than charted conditions prevail. West of Longitude 152°40'W depths of 2-3 fathoms were noted by fathometer where 6-8 fathoms are charted. The upper reaches of the bay are nearly bare at MLLW. These conditions are well known by local fishermen who are about the only mariners who enter Tuxedni Bay, however, an appropriate note on the next printing of the chart is recommended.

G. E. Haraden
G. E. Haraden

RECEIVED
NOV 10 1969
MARINE CHART DIVISION

788

JOHN O. ROYER, CHIEF
MARINE CHART DIVISION

N/A 45

Charts
8553 April 10-24 69 cc
8554 April 12-17-69 cc
8502 April J.T.G. 4-27-70 This was at construction site,
4420 is being located in Tuxedni Bay and
note (use chart 8554) added.
N/A 45/69



NAVY DEPARTMENT FILES

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 76640 B ON PREVIOUS SURVEY NO. H-3319 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 T-Sheet									
	A	B	C	D	E	F	G	H	T-Sheet	
CHISIK ISLAND	X	X		X					X	1
COOK INLET	X			X					X	2
CRESCENT RIVER				X					X	3
DIFFICULT CREEK				X					X	4
DUCK ISLAND	X			X					X	5
FOSSIL POINT	X	X		X					X	6
*MEADOW ISLAND										7
TUXEDNI BAY	X	X		X					X	8
TUXEDNI CHANNEL	X	X		X					X	9
TUXEDNI RIVER				X					X	10
HUNGRYMAN CREEK										11
MAGNETIC ISLAND										12
* Named by NOAA Ship FAIRWEATHER on the small island at the entrance to Tuxedni River where the tide gage was installed during the survey.										13
Local residents have no name for this island. Do not use C&G										14
OPEN CREEK									Not sufficient amount of information to submit to B&N	15
SQUAREHEAD COVE										16
										17
										18
									Approved:	19
										20
									Chris E. Harrington	21
									Chief Geographer - C3x5	22
									6 OCT. 1980	23
										24
										25

APPROVAL SHEET

FOR

SURVEY H- 9771

- A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position print-out has been made. A new final sounding print-out has been made.
- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the verifier's report.

Date: 12 Jun 1980

Signed: _____

J. S. Green

Title: Chief, Verification Branch

REGISTRY NO. 4-9771

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey, the following shall be completed:

CARDS CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

REGISTRY NO. _____

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

PACIFIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9771

FIELD NO. FA-20-3-78

Alaska, Cook Inlet, Tuxedni Bay

SURVEYED: 22 June - 18 August 1978

SCALE: 1:20,000

PROJECT NO. OPR-P114

SOUNDINGS: Ross Fineline Fathometer
Raytheon DE-719B Fathometer
& Sounding Pole

CONTROL: Raydist range/range
Miniranger range/azimuth

Chief of Party.....CDR Bruce I. Williams
Surveyed by.....LT A. KISSAM, LT A. Yanaway
LT J. Withrow, LTJG R.
B. Crowell

Automated plot by.....PMC Xynetics Plotter
Verified by.....Isagani A. Almacen
12 June 1980

1. INTRODUCTION

a. This basic hydrographic survey of Tuxedni Bay was accomplished by NOAA Ship FAIRWEATHER from 22 June to 18 August 1978.

b. No unusual problems were encountered during the verification of this survey.

2. CONTROL AND SHORELINE

a. Horizontal control used on this survey consisted of existing triangulation stations and a newly established Third-Order control station.

No photogrammetrically located stations were used on this survey.

b. Shoreline detail information was obtained from unreviewed Class I Shoreline Manuscripts T-12352, T-12353 and T-12354. The date of photography was July 1970. Field edit was done between June and August 1978.

The field edit records for this survey and two (2) adjoining surveys (H-9770 and H-9773) submitted to Coastal Mapping Division in ~~Rockville~~^{etc} were returned to Pacific Marine Center. Coastal Mapping Division classified these records as hydrographic data and therefore they were not incorporated on the compilation of the above mentioned shoreline manuscripts. Field edit rocks on this survey were plotted on the smooth sheet based on the field record and plotting on the boat sheet.

795

c. Additional rocks from H-3319 (1911) survey not covered by the recent field edit were carried forward on the smooth sheet.

d. Rock elevations appearing on the smooth sheet are based on actual tides.

3. HYDROGRAPHY

a. Crossline soundings were in good agreement. It agrees to within 0.2 fathoms throughout the survey.

b. The development of the bottom configuration and the determination of least depths are adequate. *(Very good)*

c. The construction of depth curves on the smooth sheet is complete. *The delineation of the bottom configuration with the depth curves is adequate.*

4. CONDITION OF SURVEY

The automated plotting of smooth sheet including overlays, hydrographic records, reports and field procedures employed on this survey are adequate and conform to the requirements and procedures prescribed by NOS Hydrographic Manual. *See QC, Report*

5. JUNCTIONS

a. Adequate junctions were effected with the following surveys:

H-9770 (1978) 1:20,000 - to the East *OK-7PS*

H-9773 (1978-79) 1:20,000 - to the South *not in Rockville office - 9/16/80*

Comparison with these two (2) contemporary surveys is good. Junction soundings agrees to within 0.2 fathoms throughout the survey.

6. COMPARISON WITH PRIOR SURVEYS

This survey was compared to the following prior surveys:

H-3318 (1911) 1:40,000

H-3319 (1911) 1:20,000

H-3320 (1911) 1:40,000

Comparison between these prior surveys of 1911 and the present survey shows the following changes.

a. The portion of Tuxedni Channel leading to Tuxedni Bay and off Fossil Point appears to be shoaler on this survey, It is on this particular area of the bay where fishing boats were observed either anchored or moored to temporary buoys. No soundings deeper than 25 fathoms were found on this area as compared to soundings of up to 202 feet (charted as 33 fathoms) found in 1911 survey. *concur 7PS*

b. Narrowing of the navigable channels is evident on both sides of the bay caused by shoaling of up to 5 fathoms from Fossil Point up to the mouth of Tuxedni River.

7PS

PSR Item 4: The reported shoaling originating from Chart Letter No. 1364 of 1969 in the vicinity of Latitude 60°12'30"N and Longitude 152°43'30"W was investigated in the field and shoaling of up to 7 fathoms was found in the area. It was also confirmed on this survey that the middle portion and the upper reaches of the bay was nearly bare at MLLW. This condition was primarily due to the movement of large amounts of sediment and ice floes into the bay causing continuous changes in the bottom configuration of the area. Although the present situations are well known to local fishermen, it is still proper that the Tuxedni Bay note concerning the shoaling be retained and latest soundings on this particular shoal area be incorporated on the chart. *Do not concur see QC. Report*

Significant soundings from H-3319 survey were carried forward on the smooth sheet to supplement the present survey. ✓

The current survey is adequate to supersede the prior surveys of 1911 for areas of common coverage. *concur*

7. COMPARISON WITH CHART

This survey was compared with Chart 16640 (C&GS 8554), scale 1:200,000, 15th Edition, 27 November 1976.

a. Hydrography

The charted depths and other features on this chart primarily originated from the prior surveys of 1911. As it was previously mentioned in the preceding section of this report and in the attached copy of Chart Letter No. 1364 dated 15 October 1969, significant changes have been found in the area of Tuxedni Bay. Due to the continuous movement of sediment and ice floes around the bay, future shoaling ~~could~~ be expected. *can*

b. Aids to Navigation

There are no aids to navigation on this survey. ✓

8. COMPLIANCE WITH PROJECT INSTRUCTIONS

This survey complies with the project instructions. ✓

9. ADDITIONAL FIELD WORK

This is a good basic hydrographic survey and no additional field work is recommended. ✓

10. NOTES TO COMPILER

a. Tide data from the tide gage in Meadow Island (a small island at the entrance to Tuxedni River named by NOAA Ship FAIRWEATHER) was not used on this survey. See attached Tide Note and approved tide zoning for H-9771. ✓

JPS

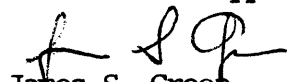
b. In some instances field edit rocks were located more than once on this survey and one (1) rock was erroneously plotted on the boat sheet. This rock is correctly plotted on the smooth sheet

Submitted by:



Isagani A. Almacén
Cartographic Technician

Examined and approved:



James S. Green
Chief, Verification Branch



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102

June 30, 1980

OA/CPM3/JWC

TO: OA/CPM - Eugene A. Taylor
FROM: OA/CPM3 - John W. Carpenter *John W. Carpenter*
SUBJECT: PMC Hydrographic Inspection Team Report for Survey H-9771

This survey is a basic hydrographic survey of Tuxedni Bay, Cook Inlet, Alaska. This survey was conducted by NOAA Ship FAIRWEATHER in 1978 in accordance with Project Instructions OPR-P114-FA-78 dated April 17, 1978, Change No. 1 dated April 25, 1978, Change No. 2 dated May 2, 1978 and Change No. 3 dated May 2, 1978.

The following items were noted:

1. The field edit data was not properly identified to the applicable photo manuscript which resulted in having the data being handled as hydrographic data; this added considerable difficulty to the surveys verification. *See Q.C. Report*

2. The Descriptive Report was not specific and detailed enough in certain parts; specifically the sections on Crosslines and Junctions.

3. The approval sheet required by the Commanding Officer did not meet the requirements specified in the Hydrographic Manual (Section 5-13 (J)) in that there was no statement concerning the amount and degree of personal supervision exercised over the actual field work.

4. A notation should be affixed to future chart editions reflecting the statement in the Descriptive and Verifier's Reports that the area is subject to future change and shoaling. *See Q.C. Report*

5. The recommendation in the Descriptive Report for a 1:40,000 inset on future chart editions is endorsed. *1:100,000 is considered adequate.*

The inspection team finds H-9771 *with the addition of items forwarded from prior surveys* to be a basic survey adequate to supersede common areas of prior surveys and charted hydrography. Administrative approval is recommended.

John W. Carpenter
John W. Carpenter

James W. Steensland
James W. Steensland

Pamela R. Chelgren
Pamela R. Chelgren

Arnold E. Eichelberger
Arnold E. Eichelberger



JPS

ADMINISTRATIVE APPROVAL
H-9771

The smooth sheet and reports of this survey have been examined and the survey is adequate for charting and to supersede common areas of prior surveys.



Eugene A. Taylor, RADM
Director
Pacific Marine Center

JUN 30 1980

Date



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

OA/C352:FPS

September 18, 1980

TO: Glen R. Schaefer *GRS*
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch *pm*

FROM: F. P. Saulsbury *F. P. Saulsbury*
Quality Evaluator

SUBJECT: Quality Control Report for H-9771 (1978), Alaska, Cook Inlet,
Tuxedni Bay

A quality control inspection of H-9771 was accomplished to monitor the survey for adequacy with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, shoreline transfer, smooth plotting, decisions and actions taken by the verifier, and the cartographic presentation of data. In general, it was found to conform to the National Ocean Survey's standards and requirements except as stated in the Verifier's Report, the HIT Report, and as follows:

1. This area was last surveyed in 1911. The changes in the bottom addressed by the hydrographer are considered to have occurred over this period of time, and not abruptly. Local mariners (as indicated in the Descriptive Report) report that winter ice causes rocks and mud flats to shift; but with the exception of rocks, the shoreline and navigable channels return to normal within a few weeks of spring thaw. In consideration of this information, rather than note shoaling on the chart as recommended by the hydrographer, it may be advisable to indicate the shifting of rocks and the possibility of uncharted rocks within Tuxedni Bay.
2. An examination of photographs covering the area of the present survey during quality control with personnel of the Photogrammetry Division verified the questionable existence of some rocks depicted on the smooth sheet.
3. Many rocks shown on the present survey are from volumes containing data designated field edit material. These data were processed during verification; however, the final listing format is not complete in respect to: the existence of some features plotted, proper use of cartographic codes, and application of tide correctors. The volumes are filed with the records of H-9770 (1978).



4. Bare rocks, PA on T-12353 (1970-78) are to be charted as shown on the present survey. The geographic positions of these features are as follows:

<u>Latitude (N)</u>	<u>Longitude (W)</u>
60°11.79' 47.4"	152°46.13' 7.8"
60°11.59' 35.4"	152°45.70' 42.0"
60°11.25' 15.0"	152°44.70' 42.0"

5. Marsh areas of shoreline are not adequately delineated on the present survey and may be acquired from the contemporary topographic surveys.

6. Sunken rocks, with reliable survey depths, covered 3 feet or more at MLLW, are not shown on the present survey as prescribed by the Hydrographic Manual. A sounding in whole fathoms and tenths augmented by Rk should have been shown instead of a sunken rock symbol described by the depth of water in feet the feature is covered at mean lower low water. Since this information is perfectly clear with no danger of misinterpretation, it was not revised during quality control inspection.

7. Signal CHIP 1970 RM3 was erroneously described as a basic recoverable control station on the smooth sheet instead of an undescribed, nonrecoverable station as listed in the final signal listing. The status of this station was confirmed by National Geodetic Survey during quality control.

8. Tide-controlled photography, flown at both mean high water and at mean lower low water, would have been very beneficial in this area.

cc:
OA/C351



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

OA/C351:DJH

JUN 2 1981

TO: OA/CPM - Charles K. Townsend

FROM: *[Signature]*
F/OA/C3 - Roger F. Lanier

SUBJECT: H-9771 (1978), OPR-P114, Alaska, Cook Inlet, Tuxedni Bay, Report of Compliance with Project Instructions

The smooth sheet and Descriptive Report for the subject survey have been examined. This survey, except as noted in the Quality Control Report, dated September 18, 1980 (copy attached), and the Hydrographic Survey Inspection Team Report, dated June 30, 1980, is complete and adequate for the purposes intended and is in compliance with Project Instructions OPR-P114 - RA,FA-78, dated April 17, 1978.

Attachment

cc:
OA/C352 w/o att.

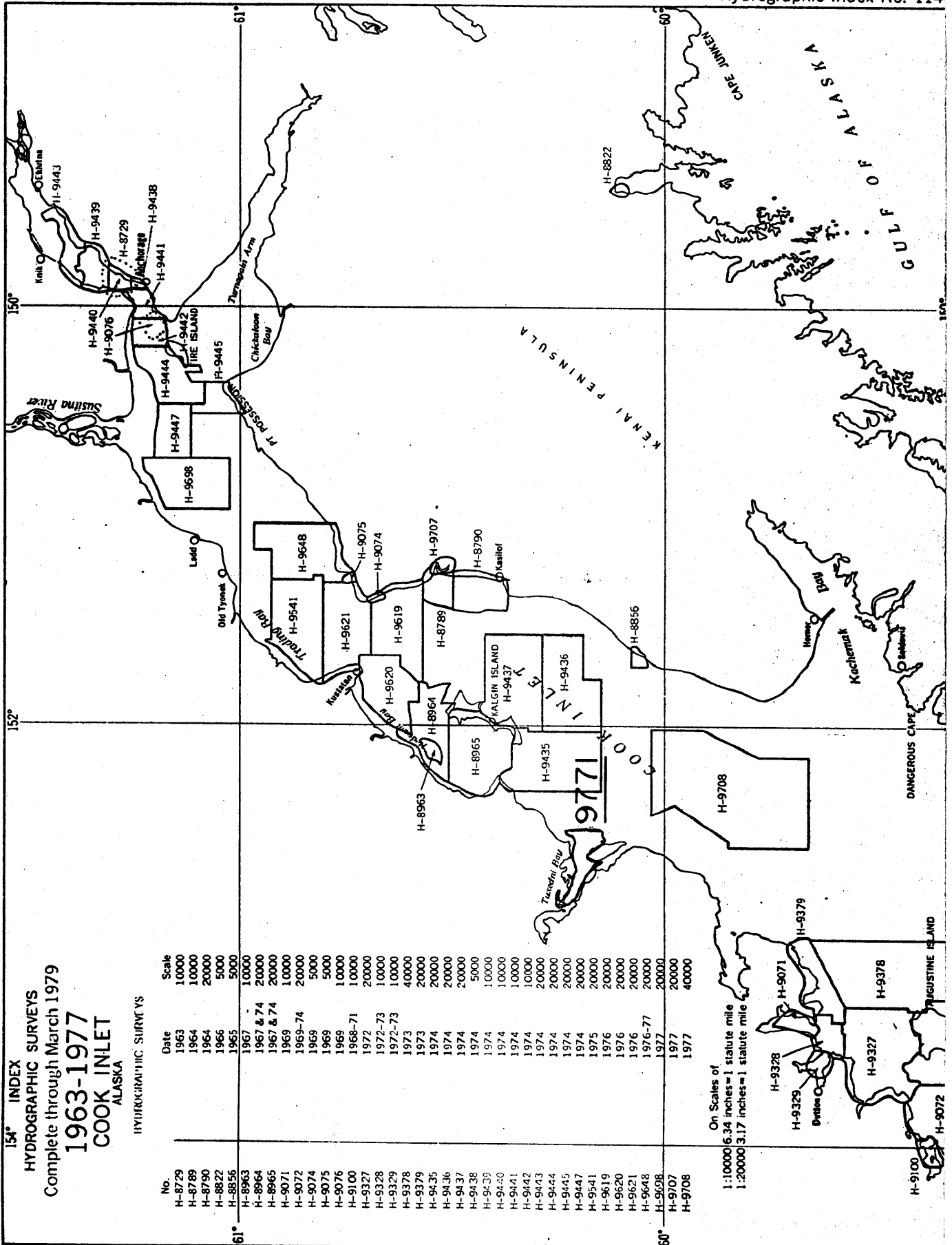


10TH ANNIVERSARY 1970-1980

National Oceanic and Atmospheric Administration

A young agency with a historic
tradition of service to the Nation

TYPE OF ACTION		RESPONSIBLE PERSONNEL		ORIGINATOR	
		NAME		<input type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)	
OBJECTS INSPECTED FROM SEAWARD				<input type="checkbox"/> FIELD ACTIVITY REPRESENTATIVE <input type="checkbox"/> OFFICE ACTIVITY REPRESENTATIVE	
POSITIONS DETERMINED AND/OR VERIFIED				<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE	
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES					
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'					
(Consult Photogrammetric Instructions No. 64.)					
OFFICE I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75			FIELD (Cont'd) B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982		
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection P - Photogrammetric Vis - Visually 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75			II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75		
*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods. **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.					



RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9771

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
16640	6/29/81	Warren Hannon	Full Part Before After Verification Review Inspection Signed Via Drawing No. 21. Exam as Daily ^{N/M} Arrival Item. No Corr.
16660	10/8/81	C. d. Switlick	Full Part Before After Verification Review Inspection Signed Via Drawing No. 26 ²⁶ Chart 16660
16013	5/10/82	Robert Lockman	Full Part Before After Verification Review Inspection Signed Via Drawing No. 26 Fully appl'd hydro
16640	11-5-81	Switlick ^{LAS}	Full Part Before After Verification Review Inspection Signed Via Drawing No. 21
531	11-22-82	L.A. Simmons	Full Part Before After Verification Review Inspection Signed Via Drawing No. 18 Exam. No Correction
16640	8-24-81	Roy A. Williams	Full Part Before After Verification Review Inspection Signed Via Drawing No. 1
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
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