

H10756

NOAA FORM 76-35A	
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE	
DESCRIPTIVE REPORT	
Type of Survey	Hydrographic
Field No.	RA-10-13-97
Registry No.	H-10756
LOCALITY	
State	Alaska
General Locality	Stephens Passage
Sublocality	Entrance to Holkham Bay
1997	
CHIEF OF PARTY CAPT Alan D. Anderson, NOAA	
LIBRARY & ARCHIVES	
DATE	MAR 9 1999

H-10756

HYDROGRAPHIC TITLE SHEET

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

FIELD NO.

RA-10-13-97

State Alaska

General locality Stephens Passage

Locality Entrance to Holkham Bay

Scale 1:10,000 Date of survey June 17 to June 24, 1997

Instructions dated 1/30/97, Change #1 4/3/97 Project No. OPR-0324-RA

Vessel RA-1(2121), RA-2(2122), RA-3(2123), RA-4(2124), RA-5(2125), RA-6(2126)

Chief of party CAPT Alan D. Anderson, NOAA

Surveyed by CAPT A. Anderson, LT G. Noll, LCDR D. Kruth, LT S. Lemke, LT D. Baird
CST J. Fleischmann, SST J. Jacobson, ST S. Baum

Soundings taken by echo sounder, hand lead, pole Side Scan EG&G Model 260, DSF-6000N Knudsen 320M

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: B. Mihailov Automated plot by HP Design Jet 650C
~~XXXXXXXXXX~~

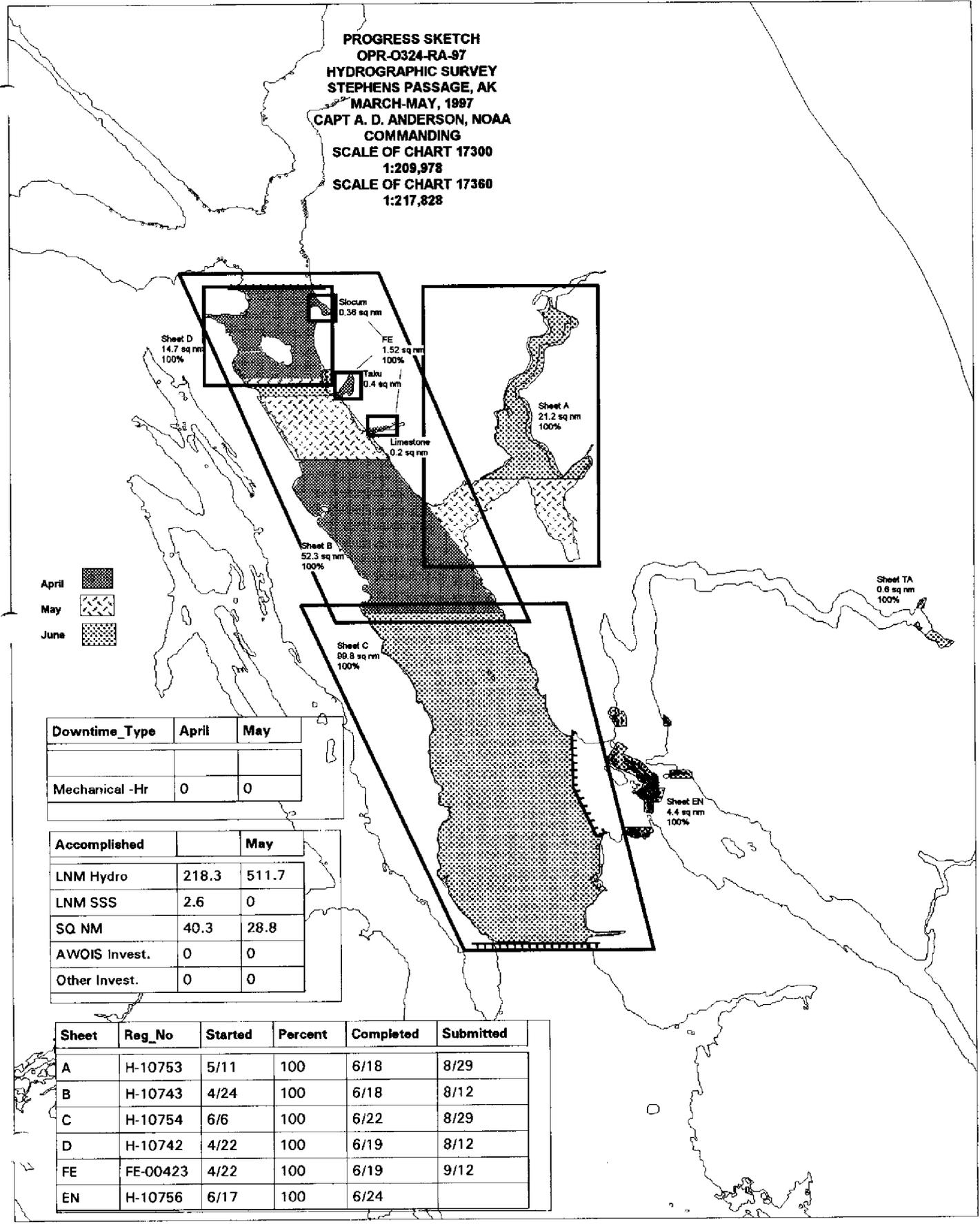
Verification by E. Domingo, M. Bigelow

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

REMARKS: All times are UTC, revisions and marginal notes in black were
generated during office processing. All separates are filed with
the hydrographic data, as a result page numbering may be interrupted
or non-sequential. All depths listed in this report are referenced
to mean lower low water unless otherwise noted.

AWOISV & SURVEY by NOAA 2/5/99

**PROGRESS SKETCH
OPR-0324-RA-97
HYDROGRAPHIC SURVEY
STEPHENS PASSAGE, AK
MARCH-MAY, 1997
CAPT A. D. ANDERSON, NOAA
COMMANDING
SCALE OF CHART 17300
1:209,978
SCALE OF CHART 17360
1:217,828**



April [stippled pattern]
May [cross-hatched pattern]
June [dotted pattern]

Downtime_Type	April	May
Mechanical -Hr	0	0

Accomplished	April	May
LNM Hydro	218.3	511.7
LNM SSS	2.6	0
SQ NM	40.3	28.8
AWOIS Invest.	0	0
Other Invest.	0	0

Sheet	Reg_No	Started	Percent	Completed	Submitted
A	H-10753	5/11	100	6/18	8/29
B	H-10743	4/24	100	6/18	8/12
C	H-10754	6/6	100	6/22	8/29
D	H-10742	4/22	100	6/19	8/12
FE	FE-00423	4/22	100	6/19	9/12
EN	H-10756	6/17	100	6/24	

Descriptive Report to Accompany Hydrographic Survey H-10756

Field Number RA-10-13-97

Scale 1:10,000

June 1997

NOAA Ship RAINIER

Chief of Party: Captain Alan D. Anderson, NOAA

A. PROJECT ✓

This survey was added to Project Instructions OPR-O324-RA dated ~~December 20, 1996~~ ^{January 30, 1997}, and change number one dated April 3, 1997. This survey was performed to Navigable Area Standards to provide contemporary hydrographic survey data as part of a continuing program to improve chart coverage of the Inside Passage in southeast Alaska. Requests for hydrographic surveys and updated charts in this area have been received from the Southeastern Alaska Pilot's Association (SEAPA) and USCG 17th District. In recent years, this area has seen a significant increase in the number of large cruise ships and smaller pleasure craft.

B. AREA SURVEYED ✓ See Encl Rpt., section B.

The survey area is located in Stephens Passage, Alaska, at the entrance of Holkham Bay.

Hydrography was concentrated in the Holkham Bay area to check the area transited by large cruise vessels for evidence of shoaling and to fill in gaps in the coverage of prior surveys to make the charts more useful to small craft. Side Scan Sonar coverage was obtained over the entrance moraine of Tracy and Endicott Arms and along Harbor Island to look for significant boulders that may have escaped detection during prior single beam surveys.

Data acquisition was conducted from June 17-June 24, 1997 (DN 169-175).

C. SURVEY VESSELS ✓

Data were acquired by RAINIER survey launches as noted on the survey information summary ~~provided with this report.~~ ^{attached to}

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

All data were acquired and preliminary processing was accomplished using the Hydrographic Data Acquisition and Processing System (HDAPS). Using exported HDAPS data in MapInfo facilitated charted and prior survey comparisons. Final Detached Positions and Soundings based on predicted tides were saved in MapInfo 4.1 format. A complete listing of software for HDAPS is included in Appendix VI. - Filed with the hydrographic records.

E. SONAR EQUIPMENT ✓

Side scan sonar (SSS) operations were conducted using EG&G model 260 slant-range corrected SSS recorders and EG&G 272-T-dual channel towfish. The towfish were operated on the 100 kHz frequency. The serial numbers of the towfish and recorders used are summarized below:

VES NO	RECORDER S/N	TOWFISH S/N	CABLE LENGTH
2123	0012106	016989	70 meters
2125	0011443	015598	35 meters

The towfish were deployed manually on the starboard quarter of the launches, attached to the aft fall shackle by line and lead around the stern railings. The length of towcables deployed was determined by noting the measured markings on the towfish cable as these markings met the stern railing. The SSS towfish was adjusted to maintain a height off the bottom of 8 to 20 percent of the range scale. The 100-meter range scale was used. SSS operations were conducted at or less than 3 knots.

One hundred percent SSS collection was conducted at the entrance to Tracy and Endicott Arms, and along the north shore of Harbor Island. The recorder gain setting was adjusted for the best return for changing bottom conditions. Grounded and floating icebergs and bergy bits were used for confidence checks, but made SSS operations hazardous. Daily rub tests were conducted prior to operating the SSS. Side scan sonograms were manually scanned for significant contacts in accordance with section 7.3.2 of the project instructions, significant contacts were identified and entered into HDAPS contact tables. The identified contacts were reviewed considering the contact height, depth of water, and slope of the bottom. Most of the contacts were not significant for navigational purposes in comparison to the soundings collected, and therefore were not developed in more detail than the bathymetry in which they were found. Three page-sized plots of significant contacts resulting from the HDAPS Sifter routine are included in Separate V. *Three contacts were not adequately developed and were reported as Dangers to Navigation using the computed "side scan depth."

Depth	Latitude	Longitude	Side Scan Sonar Contact Positions
5 fm 0 ft **	57°46'49.52" N	133° 37'35.34" W	30059.21 and 30229.28
4 fm 3 ft **	57°46'52.18" N	133° 37'58.57" W	30222.61 and 30222.52
3 fm 3 ft	57°47'00.56" N	133° 37'53.16" W	30222.25

** Features cannot be shown at chart scale due to surrounding shoal information.

F. SOUNDING EQUIPMENT ✓

The Raytheon DSF-6000N is a dual frequency (100 kHz, 24 kHz), stylus trace echo sounder. The Knudsen 320M is a dual frequency, thermal depth sounder using the same transducer frequencies. Serial numbers are included on the headers of the daily Raw Master Printouts. *No new problems, which affect survey data, were encountered. All DSF-6000N soundings were acquired in meters using the High + Low, high frequency digitized setting.

G. CORRECTIONS TO ECHO SOUNDINGS ✓ See Eval Rpt., Section G.

One sound velocity cast was acquired within the survey limits. Sound velocity table eight, generated from this cast, was too shoal for much of the survey area therefore sound velocity table seven, which compared favorably with table eight was used for all soundings. Both tables are included with the "Separates to be Included with Survey Data, IV. Sounding Equipment Calibrations and Corrections" for comparison.

The sound velocity cast was acquired with SBE SEACAT Profiler (S/N 219), calibrated December 15, 1996. Velocity correctors were computed using the PC programs SEACAT and VELOCITY, version 3.3 (1997), in accordance with Field Procedures Manuel (FPM) 2.4.3. A printout of the Sound Velocity Corrector Tables used in the HDAPS Post Survey program is included in the "Separates to be Included with Survey Data, IV. Sounding Equipment Calibrations and Corrections".

A static transducer depth was determined using FPM Fig 2.2 for vessels 2121, 2122, 2123, and 2125 in the spring of 1997. Settlement and squat correctors were computed in accordance with Hydrographic Manual Section 4.9.4.2, using FPM Fig. 2.3, and are included with project data for OPR-O324-RA-97. The data for vessels 2121, 2122, and 2123 were collected in Shilshole Bay, Washington in March 1997. The data for 2124 and 2126 were collected in 1996. The data for vessel 2125 were collected in Young Bay, Alaska in March 1997. All offset tables* contain offsets for the

X filed with hydrographic records.

GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 1-6 correspond to the last digit of the vessel number. The offset tables are included with project data for OPR-O324-RA-97. The launches are not equipped with heave, roll and pitch sensors.

The Coastal and Estuarine Oceanography Branch (N/OES334) through N/CS31 provided predicted tides for the project on diskette for the Juneau, Alaska reference station (945-2210). HDAPS listings of the data used in generating tide corrector tables are included in Appendix V of this report. Tidal correctors as provided in the project instructions for H-10756 are listed in the survey information summary.

Juneau, Alaska (945-2210) and Ketchikan, Alaska (945-0460) are the primary control stations for datum determination at all subordinate stations. RAINIER personnel installed a Sutron 8200 tide gage at Holkham (945-2067) on May 13, 1997. Refer to the Field Tide Notes and supporting data in Appendix V for individual gage performance and level closure information. This information and the boundaries of the survey have been forwarded to N/OES212. A request for approved tides was forwarded to N/OES23 in accordance with FPM 4.2.3.

Use of Holkham Bay tide gage data is recommended for final tide correctors. *A tide note for survey H-10756, dated November 17, 1997 is attached to this report.*

H. CONTROL STATIONS ✓ *See Eval Rpt., section H.*

The horizontal datum for this project is NAD 83. The control stations ~~used for this survey are listed in Appendix III.~~ *See the OPR-O324-RA-97 Horizontal Control Report for more information. used for this survey are listed in this report.*

I. HYDROGRAPHIC POSITION CONTROL *See Eval Rpt., section I.*

All soundings were positioned using differential GPS. Primary control was MIDWAY, the VHF differential reference station installed by RAINIER. The US Coast Guard Beacon at GUSTAVUS was used when not using the VHF station. Launch-to-launch DGPS performance checks were performed in accordance with Section 3.4.4 of the FPM. Two observations of position were made from two different DGPS base stations, MIDWAY and GUSTAVUS, while the launches were rafted together with their GPS antennae within 2-3 meters of each other. RAINIER also used SHIPDIM, version 2.2R (April 1996) with a Trimble Centurion P-code receiver and an Ashtech sensor (both differentially-corrected) to monitor the performance of the USCG Beacon. MIDWAY was compared to GUSTAVUS during 8-hour daily comparisons and occasional performance checks. Some outliers were noted, but none indicated systematic or continuous errors. The SHIPDIM OUTLIER.SUM results are included on a floppy in the project data for OPR-O324-RA.

J. SHORELINE ✓ *See EVAL REPORT, section J.*

No shoreline manuscript was supplied by N/CS341 in Standard Digital Data Exchange Format (SDDEF). Shoreline shown on the field sheet for orientation purposes was digitized from the prior surveys and topographic surveys aboard RAINIER, which were scanned and registered in MapInfo. *DM-10308 and DM 10309 in SDDEF were used for shoreline on the SS. Areas not covered by these files, were digitized at PHB*

K. CROSSLINES

from the chart, and shown in brown for orientation purposes only. No MHWL revisions were noted by the Hydrographer.

Crosslines agreed within 1 meter with mainscheme hydrography, except in areas of steep bathymetry. There was 1.6 nautical miles of crosslines, comprising 1.7% of mainscheme hydrography.

L. JUNCTIONS ✓

No contemporary surveys junction with this survey. *- CANKUR*

M. COMPARISON WITH PRIOR SURVEYS See EVAL Report, section M.

Prior surveys H-9392, 1:10,000, 1973 and H-9393, 1:10,000, 1973 cover this survey. Both surveys used Range-Azimuth positioning and did not cover many areas because of consequent visibility problems. The prior soundings agreed well with the present survey, except where shoaler depths were found during this survey with denser sounding coverage. Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

N. ITEM INVESTIGATIONS ✓

No AWOIS or Pre-Survey review items were assigned to this survey. Specific areas of the survey were based on correspondence with the SEAPA and the Coast Guard (see section VI of the Appendices) Correspondence not filed in section VI and cannot be found.

O. COMPARISON WITH THE CHART ✓ See EVAL Report, section O.

Chart 17360-inset, 1:40,000, 30th Edition, 3/1/97 is the largest scale chart covering the survey area. Comparison of soundings is described in Section M. Final sounding comparisons will be made at PHB after reduction to final vertical datum.

Dangers to Navigation ✓

Ten dangers to navigation were found in final field processing in Seattle. The dangers were reported to the Seventeenth Coast Guard District on February 18, 1998.

Feature	Chart Depth	Latitude	Longitude	Fix	Meters	Chart
Rock	7 fm 5 ft	57:47:10.679	133:41:38.503	40023+3	14.5	7 ₄ RK
Rock	Awash	57:45:00.081	133:36:18.880	50114+3	-0.8	7 ₄
Rock	Awash	57:44:53.702	133:36:36.504	20248+0	0.2	7 ₄
Rock	2 fm 5 ft	57:46:46.552	133:37:35.481	30061+3	5.3	3 RK
Rock	1 fm 0 ft	57:46:45.92	133:37:29.2	20445+2	2.1	1 ₁ RK
Rock	0 fm 2 ft	57:46:58.19	133:37:59.41	30239+0	0.7	0 ₄ RK
Rock**	7 fm 1 ft	57:46:48.035	133:37:38.253	20261+1	13.0	
Rock**	5 fm 0 ft*	57:46:49.52	133:37:35.34	30059.21	9.4*	
Rock	3 fm 3 ft*	57:47:00.56	133:37:53.216	30222.25	6.5*	3 ₃ RK
Rock**	4 fm 3 ft*	57:46:56.2	133:37:58.6	30222.61	8.3*	

* as determined by HDAPS Sifter utility
 ** Features cannot be shown at chart scale due to surrounding shoaler information.

P. ADEQUACY OF SURVEY See Eval Rpt., section P.

H-10756 is adequate to supersede prior soundings in the small areas common with prior surveys and to provide soundings in the areas previously uncharted. Full-coverage multi-beam echosounding is recommended before the start of the 1998 cruise ship season on the entrance to Tracy Arm. - Concur

Q. AIDS TO NAVIGATION ✓ See Eval Rpt., section P.

Six aids to navigation exist within the survey area. Four fixed aids, Holkham Bay Range Front Light, Holkham Bay Range Rear Light, Tracy Arm Sector Light,* and Wood Spit Light, were positioned to third order accuracy. See Section Q, Descriptive Report Inset, attached to this report, at the end of this report. Two floating aids, Holkham Bay Buoy 1 and Holkham Bay Buoy 2, were positioned with DGPS by a survey launch, and can be found in the survey records.

* Tracy Arm Sector Light plots outside the survey limits.

R. STATISTICS ✓

Refer to the survey information summary. *Attached to this report.*

S. MISCELLANEOUS ✓

Bottom samples were collected and sent to the Smithsonian in accordance with Project Instructions.

T. RECOMMENDATIONS ✓

This survey filled in gaps left by the previous survey, and provided more detailed information on the entrance moraines to Tracy and Endicott Arms. Many of the gaps would make good anchorage for small craft. It is recommended that this survey be used to update the chart to reflect these areas, and that multi-beam developments be performed on the moraines before the 1998 cruise season. A note should be placed on chart 17360 stating the following: *Course*

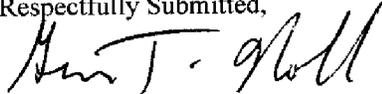
“Strong tidal currents exist in the entrances to both Tracy and Endicott Arm. Maneuverability in these areas can be limited by the presence of icebergs moving with the current.” *Statement added to the smooth sheet.*

U. REFERRAL TO REPORTS ✓

The following supplemental reports contain additional information relevant to this survey:

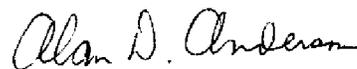
<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
OPR-0324-RA Horizontal Control Report	1997	N/CS34
OPR-0324-RA 1997 Coast Pilot Report	1997	N/CS26
Project related data for OPR-0324-RA	Incremental	N/CS34

Respectfully Submitted,



for J.D. Fleischmann
Chief Survey Technician

Approved and Forwarded,



Alan D. Anderson
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 14 Jan 1998 ✓

No	Type	Latitude	Longitude	H	Cart	Freq	Vel Code	MM/DD/YY	Station Name
1	F	058:25:06.000	135:41:48.000	0	250	0.0	0.0	03/01/92	GUSTAVUS
2	F	057:59:22.443	133:50:34.643	0	250	0.0	0.0	03/01/92	SNET
3	F	057:54:43.873	133:59:33.022	0	250	0.0	0.0	03/01/92	TWIN
4	F	057:50:12.165	133:48:50.563	0	250	0.0	0.0	03/01/92	MIDWAY ISLAND LT

Section Q: Descriptive Report Insert ✓

Name of Aid: Wood Spit Light
 Light List #: 23620

Method of Positioning GPS: DGPS: Other: _____

Positioning Information

	<u>Latitude (N)</u>	<u>Longitude (W)</u>	
Charted Pos.	57/44.3	133/34.5	<i>LIGHT LIST</i>
Survey Pos.	57/44/17.85872	133/34/30.35476	

	<u>Easting</u>	<u>Northing</u>	
Charted Pos.	42357.7	28445.4	
Survey Pos.	42351.9	28446.4 28444.0	

Difference between Charted and Surveyed Position: Distance: 6 meters
 (Bearing from Surveyed to Charted Position) Bearing: 100 deg T

Characteristics

Do characteristics match Light List? Yes No
 If no, what are the characteristics? _____

Does the aid adequately serve its apparent purpose? Yes No
 If no, why not? _____

New/Uncharted Aids (if information is known or easily obtained)

Date Est: _____
 Maintained By: _____ Private? Yes No
 Is aid seasonally maintained? Yes No
 Frequency of Maintenance: _____

Apparent Purpose: _____

Other Information:

Section Q: Descriptive Report Insert ✓

Name of Aid: Holkham Bay Range Front Light
 Light List #: 23625

Method of Positioning GPS: DGPS: Other: _____

Positioning Information

	<u>Latitude (N)</u>	<u>Longitude (W)</u>
Charted Pos.	57/46.0	133/38.6 <i>LIGHT LIST</i>
Survey Pos.	57/46/03.1814	133/38/40.11374

	<u>Easting</u>	<u>Northing</u>
Charted Pos.	38275.7	31583.5
Survey Pos.	38207.3	31681.6

Difference between Charted and Surveyed Position: Distance: 120 meters
 (Bearing from Surveyed to Charted Position) Bearing: 145 deg T

Characteristics

Do characteristics match Light List? Yes No

If no, what are the characteristics? _____

Does the aid adequately serve its apparent purpose? Yes No

If no, why not? _____

New/Uncharted Aids (if information is known or easily obtained)

Date Est: _____

Maintained By: _____ Private? Yes No

Is aid seasonally maintained? Yes No

Frequency of Maintenance: _____

Apparent Purpose: _____

Other Information:

Section Q: Descriptive Report Insert ✓

Name of Aid: Holkham Bay Range Rear Light
 Light List #: 23630

Method of Positioning GPS: DGPS: Other: _____

Positioning Information

	<u>Latitude (N)</u>	<u>Longitude (W)</u>
Charted Pos.	57/46.0	133/38.6 <i>L1645 L155</i>
Survey Pos.	57/46/02.21635	133/38/41.38795

	<u>Easting</u>	<u>Northing</u>
Charted Pos.	38275.7	31583.5
Survey Pos.	38207.3 38186.4	31681.6 31651.7

Difference between Charted and Surveyed Position: Distance: 120 meters
 (Bearing from Surveyed to Charted Position) Bearing: 145 deg T

Characteristics

Do characteristics match Light List? Yes No
 If no, what are the characteristics? _____

Does the aid adequately serve its apparent purpose? Yes No
 If no, why not? _____

New/Uncharted Aids (if information is known or easily obtained)

Date Est: _____
 Maintained By: _____ Private? Yes No
 Is aid seasonally maintained? Yes No
 Frequency of Maintenance: _____

Apparent Purpose: _____

Other Information:

Section Q: Descriptive Report Insert ✓

Name of Aid: Tracy Arm Light
 Light List #: 23635

Fixed aid plots outside the survey limits.

Method of Positioning GPS: DGPS: Other: _____

Positioning Information

	<u>Latitude (N)</u>	<u>Longitude (W)</u>
Charted Pos.	57/49.0	133/334.5 <i>← 161T ← 15T</i>
Survey Pos.	57/49/23.55702	133/34/27.37667

	<u>Easting</u>	<u>Northing</u>
Charted Pos.	42313.2	37326.3
Survey Pos.	42355.70	37898.4

Difference between Charted and Surveyed Position: Distance: 574 meters
 (Bearing from Surveyed to Charted Position) Bearing: 184 deg T

Characteristics

Do characteristics match Light List? Yes No
 If no, what are the characteristics? _____

Does the aid adequately serve its apparent purpose? Yes No
 If no, why not? _____

New/Uncharted Aids (if information is known or easily obtained)

Date Est: _____
 Maintained By: _____ Private? Yes No
 Is aid seasonally maintained? Yes No
 Frequency of Maintenance: _____

Apparent Purpose: _____

Other Information:

UNADJUSTED FIELD GEOGRAPHIC POSITIONS 9/73

571334

NORTH AMERICAN 1927 DATUM 3rd ORDER TRIANGULATION. STATE Alaska

LOCALITY Tracy Arm

STATION	LATITUDE AND LONGITUDE	AZIMUTH	BACK AZIMUTH	TO STATION	DISTANCE METERS
1 REVA, 1973 d.m.	57 53 11.0260 - 133 11 43.6070 -	69 40 24.62 -	249 37 43.01 -	FORE	3,354.044 -
1 SANDER, 1973 d.m.	57 52 43.9755 - 133 11 08.4327 -	100 34 14.46 -	280 29 39.23 -	CYRA	5,447.104 -
4 Tracy Arm Daybeacon d.m.	57 49 24.6834 - 133 34 21.0364 -	10 07 17.7 -	190 06 03.9 -	ROLET	8,208.635 -
4 Woodsnit Light, 1973 d.	57 44 19.108 - 133 34 24.125 -	208 03 13.7 -	26 06 30.7 -	TRAC	8,167.905 -
4 Holkham Bay Range Front Daybeacon, 1973 d.	57 46 04.530 - 133 38 33.766 -	208 05 05.3 -	28 08 23.5 -	TRAC	8,209.754 -
4 Holkham Bay Range Rear Daybeacon, 1973 d.	57 46 03.405 - 133 38 35.196 -				

Page added during
Office processing

No check on this position. Abbreviations used: d.=described; m.=marked; n.=not; r.=recovered; l.=lost; p.=probably.
(Examples: a.d.=not described; p. l.=probably lost.)

**ADVANCE
INFORMATION**



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

NOAA Ship RAINIER
February 18, 1998

Commander (mon)
Seventeenth Coast Guard District
Post Office Box 25517
Juneau, AK 99802-5517

Dear CDR Hamblett:

The following dangers to navigation should be included in the Local Notice to Mariners. These features were positioned by the NOAA Ship RAINIER while conducting hydrographic survey H-10756 in Holkham Bay, Stephens Passage, Alaska. The dangers are shown on the attached chartlet at the 1:40,000 scale. They apply to the inset of chart 17360, 30th Ed., 3/1/97, 1:40,000, and the small-scale charts 17360 (same edition, 1:217,828) and 17300, 27th Ed., 8/14/93, 1:209,978. All positions are on the NAD 83 datum and depths have been corrected to Mean Lower Low Water using predicted tides.

Feature	Depth	Latitude	Longitude	Fix	Meters
Rock	7 fm 5 ft	57:47:10.679	133:41:38.503	40023+3	14.5
Rock	Awash	57:45:00.081	133:36:18.880	50114+3	-0.8
Rock	Awash	57:44:53.702	133:36:36.504	20248+0	0.2
Rock	2 fm 5 ft	57:46:46.552	133:37:35.481	30061+3	5.3
Rock	1 fm 0 ft	57:46:45.92	133:37:29.2	20445+2	2.1
Rock	0 fm 2 ft	57:46:58.19	133:37:59.41	30239+0	0.7
Rock	5 fm 0 ft	57:46:49.5	133:37:35.3	30059.21	9.4*
Rock	3 fm 3 ft	57:47:00.6	133:37:53.2	30222.25	6.5*
Rock	4 fm 3 ft	57:46:56.2	133:37:58.6	30222.61	8.3*
Rock	7 fm 1 ft	57:46:48.035	133:37:38.253	20261+1	13.0

This is advance information subject to office review. Questions concerning this letter should be directed to the Chief, Pacific Hydrographic Branch, (206) 526-6835. Refer to survey project OPR-O324-RA-97 and Danger to Navigation message RA-8-97. Additional advance information for the entrance to Tracy Arm will be forwarded to your office, the USCGC WOODRUSH, and the pilot's associations under separate cover.

for 
CAPT Alan D. Anderson, NOAA
Commanding Officer

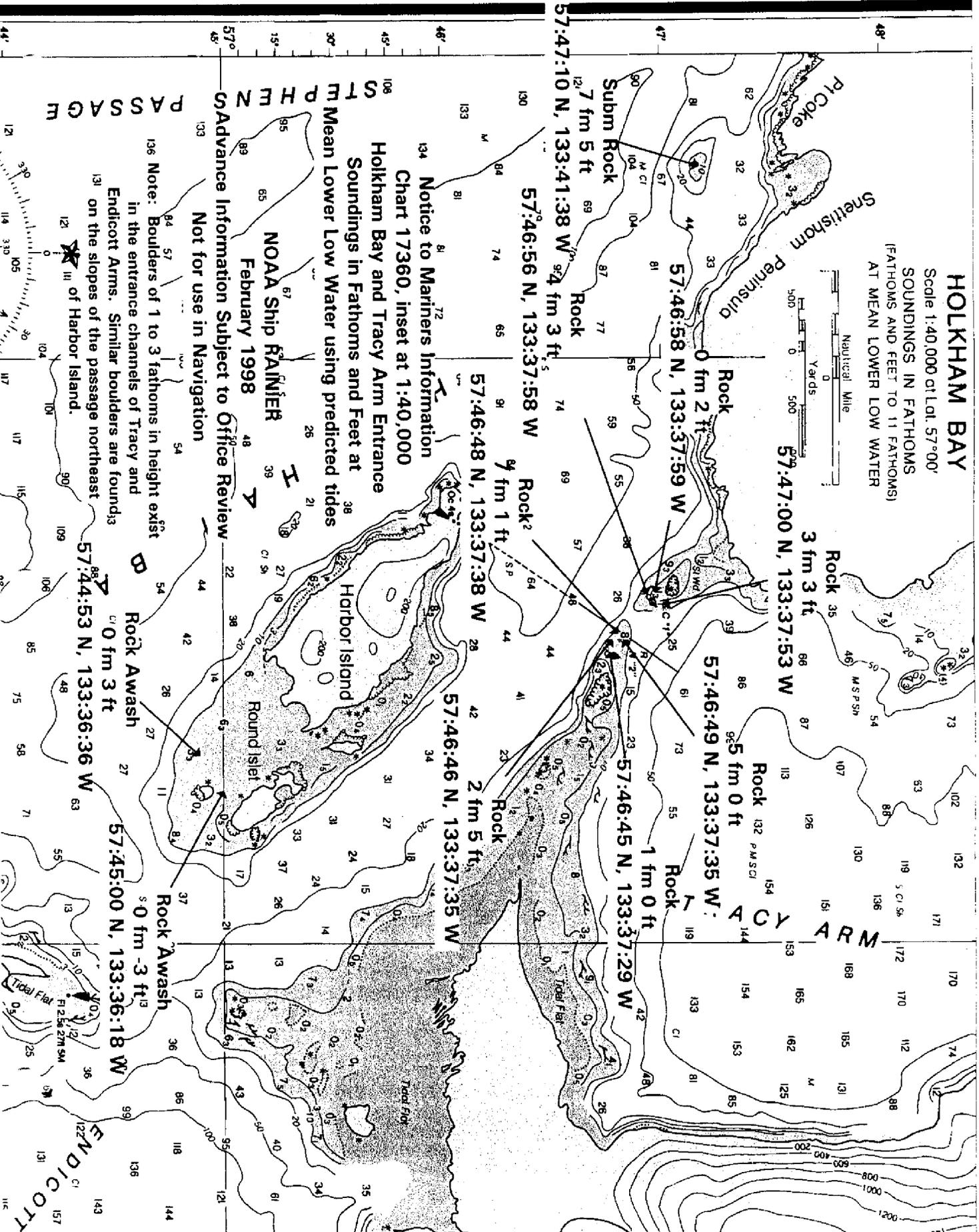
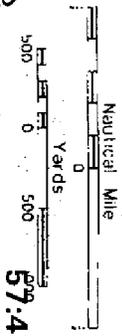
Cc: NIMA
N/CS26
N/CS34
PMC



**ADVANCE
INFORMATION**

HOLKHAM BAY

Scale 1:40,000 at Lat. 57°00'
SOUNDINGS IN FATHOMS
(FATHOMS AND FEET TO 11 FATHOMS)
AT MEAN LOWER LOW WATER



134 Notice to Mariners Information
Chart 17360, inset at 1:40,000
Holkham Bay and Tracy Arm Entrance
Soundings in Fathoms and Feet at
Mean Lower Low Water using predicted tides

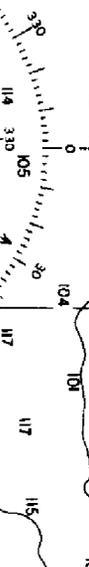
NOAA Ship RAINIER
February 1998

Advance Information Subject to Office Review

Not for use in Navigation

Note: Boulders of 1 to 3 fathoms in height exist in the entrance channels of Tracy and Endicott Arms. Similar boulders are found on the slopes of the passage northeast of Harbor Island.

PASSAGE



APPROVAL SHEET

for

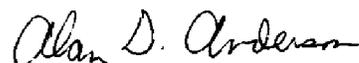
H-10756

Standard techniques of Navigable Area Survey and processing procedures were followed in producing this examination in accordance with the Hydrographic Manual, Fourth Edition, the Hydrographic Survey Guidelines; and the Field Procedures Manual, as updated for 1994.

The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

DATE: January 30, 1998

Approved and Forwarded,



Alan D. Anderson
Captain, NOAA
Commanding Officer
NOAA Ship RAINIER

Survey Information Summary

Project: OPR-0324-97 **Project Name:** STEPHENS PASSAGE
Instructions Dated: 1/30/97 **Project Change Info:**

Change #	Dated
1	4/3/97

Sheet Letter: EN **Registry Number:** H-10756
Sheet Number: RA-10-13-97

Survey Title: HOLKHAM BAY ENTRANCE - HDAPS #10, 13, 14, 15

Data Acquisition Dates: **From:** 17-Jun-97 168 **To:** 24-Jun-97 175

Vessel Usage Summary

VESNO	MS	SPLITS	DEV	XL	S/L	DP	BS	DIVE
2121	2	2	1	2	3	2		
2122	1							
2123	10	4	5		1			
2124		1	10			7		
2125	3	2	1			2	4	
2126	1	3	2					

Sound Velocity Cast Information

Launch Table #	Ship Table #	Cast DN	Max Depth	Position	Applicable DN
7		169	429.6	57/51/16	ALL
				133/51/18	
8		174	144.6	57/44/40	Not Used
				133/37/45	

Tide Zone Information

Zone #	Time Corr.	Height Corr.
SEA8	000 hr 24 min	X1.03

Tide Gage Information

Tide Gage #	Gage Name	Installed	Removed
945-2067	HOLKHAM BAY	5/13/97	6/27/97

Statistics Summary

Type	Total:
BS	10
DEV	52.59
DP	33
MS	96.68
S/L	4.58
SPLIT	51.44
SSS1	13.53
XL	1.6

Percent XL: 1.7%

SQNM: 0



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 17, 1997

HYDROGRAPHIC BRANCH: Pacific

HYDROGRAPHIC PROJECT: OPR-O324-RA
HYDROGRAPHIC SHEET: H-10756

LOCALITY: Stephens Passage, AK. (Sheet EN)

TIME PERIOD: June 17 - June 24, 1997

TIDE STATION USED: 945-2067 Holkham Bay, AK.
Lat. 57° 45.6'N Lon. 133° 36.2'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.473 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: SEA10A, SEA11 & SEA12
Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (Meters), relative to MLLW and on Greenwich Mean Time.

Note 2:

Juneau, AK was used as control for datum determination for all subordinate tide stations for this survey. Relative sea level trends show that the areas of Juneau Alaska are undergoing continual uplift. The relative sea level trend observed at Juneau for the time period 1950 through 1993 is -0.0114 m/yr. with a standard error of 0.0005 m/yr. As a result of high rate of sea level change, the 1960 to 1978 Tidal Epoch value of Mean Lower Low Water (MLLW) used as chart datum and reference datum for NOS tidal predictions does not reflect present conditions. The data are under review to determine an updated value of MLLW. An interim value was computed for Juneau, based on the series of data from 1989 to 1991 and controlled by the 1960-1978 Epoch datums at Ketchikan which is more stable. The provided values adjust the chart datum to a more realistic level and in a direction that is more conservative for navigation purposes.



CHIEF, OPERATIONAL ANALYSIS BRANCH

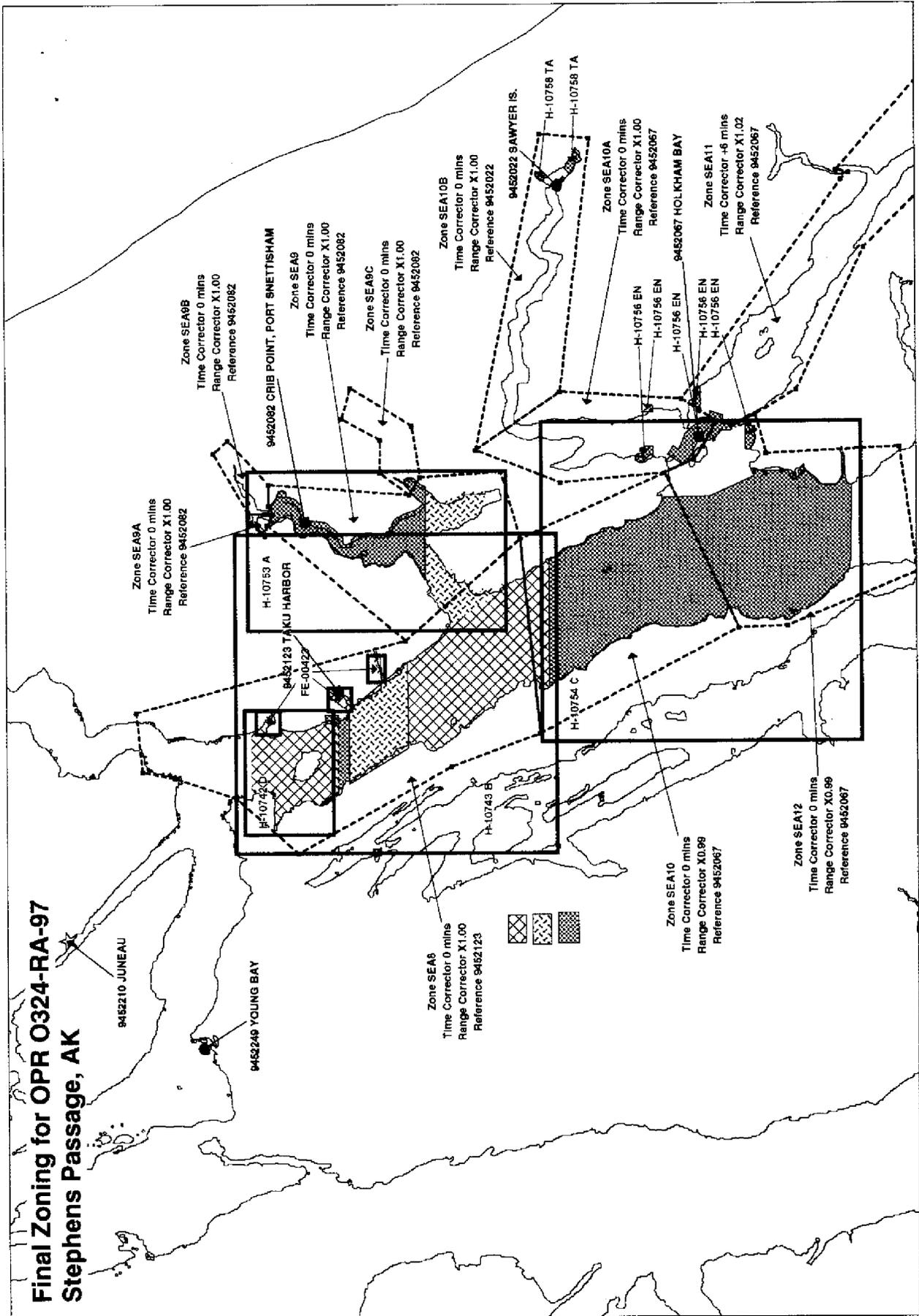


Final tide zone node point locations for OPR O324-RA-97,
Sheet H-10756.

Format: Longitude in decimal degrees (negative value denotes
Longitude West),
Latitude in decimal degrees
Tide Station (in recommended order of use)
Average Time Correction (in minutes)
Range Correction

		Tide Station Order	AVG Time Correction	Range Correction
Zone SEA10A				
-133.659922	57.78936	945-2067	0	1.00
-133.674755	57.878494	945-2123	+6	1.01
-133.622517	57.950602			
-133.529631	57.8785			
-133.541992	57.774872			
-133.577994	57.745236			
-133.618301	57.756651			
-133.639358	57.764576			
-133.659922	57.78936			
Zone SEA11				
-133.567116	57.711884	945-2067	+6	1.02
-133.584332	57.732611	945-2123	+6	1.01
-133.577994	57.745236			
-133.541992	57.774872			
-133.189495	57.637247			
-133.178247	57.631007			
-133.174282	57.642037			
-132.860936	57.493466			
-133.031838	57.475143			
-133.298444	57.61806			
-133.527816	57.676547			
-133.567116	57.711884			
Zone SEA12				
-133.629746	57.702608	945-2067	0	0.99
-133.61974	57.588744	945-2123	0	0.98
-133.820781	57.573326			
-133.907133	57.684706			
-133.910199	57.726615			
-133.659922	57.78936			
-133.639358	57.764576			
-133.618301	57.756651			
-133.577994	57.745236			
-133.584332	57.732611			
-133.567116	57.711884			
-133.629746	57.702608			

Final Zoning for OPR 0324-RA-97 Stephens Passage, AK



GEOGRAPHIC NAMES

Name on Survey	A CHART NO. 17300-17360 B ON PREVIOUS SURVEY 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		X								
ENDICOTT ARM	X		X									2
HARBOR ISLAND	X		X									3
HOLKHAM BAY	X		X									4
POINT ASTLEY	X		X									5
POINT COKE	X		X									6
ROUND ISLET ISLAND	X		X									7
SNETTISHAM PENINSULA	X		X									8
STEPHENS PASSAGE (Title)	X		X									9
TRACY ARM	X		X									10
WOOD SPIT	X		X									11
-												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25

Approved:

Dennis J. Rosenberg
APR 20 1998

HYDROGRAPHIC SURVEY STATISTICS

H-10756

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

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

SHORELINE DATA	
SHORELINE MAPS (List):	DM-10308 and DM-10309
PHOTOBATHYMETRIC MAPS (List):	NA
NOTES TO THE HYDROGRAPHER (List):	NA
SPECIAL REPORTS (List):	NA
NAUTICAL CHARTS (List):	17360 30th Ed., March 1, 1997

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			
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	19.0		19.0
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION-VERIFICATION			
COMPILATION OF SMOOTH SHEET	134.0		134.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS		15.0	15.0
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		45.0	45.0
GEOGRAPHIC NAMES			
OTHER (Chart Compilation)		72.0	72.0
USE OTHER SIDE OF FORM FOR REMARKS			
	TOTALS	153.0	132.0
			285.0

Pre-processing Examination by M. Bigelow	Beginning Date 3/5/98	Ending Date 3/13/98
Verification of Field Data by E. Domingo	Time (Hours) 134.0	Ending Date 10/26/98
Verification Check by B. Olmstead	Time (Hours) 8	Ending Date 12/30/98
Evaluation and Analysis by B. Mihailov	Time (Hours) 10/27/98	Ending Date 1/15/99
Inspection by B. Olmstead	Time (Hours) 12	Ending Date 1/21/99

EVALUATION REPORT

H-10756

A. PROJECT

The hydrographer's report contains a complete discussion of the project information.

B. AREA SURVEYED

The survey area is adequately described in the hydrographer's report.

The hydrographer has determined the inshore limits of safe navigation by defining a Navigable Area Limit Line (NALL) throughout the survey area. Charted features and soundings inshore of this limit line have not been specifically addressed during survey operations and should be retained as charted. Page-size plots of the charted area depicting the specific limits of supersession accompanies this report as Attachment 1 and Attachment 2.

The bottom consists mainly of sand and shells. Depths range from the Mean Lower Low Water (MLLW) line in Holkham Bay to 107 fathoms off Point Coke.

C. SURVEY VESSELS

The hydrographer's report contains adequate information relating to survey vessels.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Survey data was gathered and processed using the Hydrographic Data Acquisition /Processing System (HDAPS) software used by the hydrographer, the Hydrographic Processing System (HPS) and MicroStation 95.

Processed digital data for this survey exists in the standard HPS format, a database format using the .dbf extension. In addition, the smooth sheet drawing is filed in the MicroStation format, i.e., dgn extension. Copies of these files have been forwarded to the Hydrographic Surveys Division and a backup copy retained at PHB. Database records forwarded are in the Internal Data Format (IDF) and are in compliance with specifications in existence at the time of survey processing.

The drawing files necessarily contain information that is not part of the HPS data set such as geographic names text, line-type data, and minor symbolization. In addition, those soundings deleted from the drawing for clarity purposes remain unrevised in the HPS digital files to preserve the integrity of the original hydrographic data set. Cartographic codes used to describe the digital data are those authorized by Hydrographic Survey Guideline No. 35 and No. 75

The data is plotted using a Modified Transverse Mercator projection and are depicted on a single sheet.

E. SONAR EQUIPMENT

The hydrographer's report contains a complete discussion of set-up, operation and processing of side scan sonar operations.

F. SOUNDING EQUIPMENT

Sounding equipment has been adequately addressed in the hydrographer's report.

G. CORRECTIONS TO SOUNDINGS

Soundings and elevations below Mean High Water (MHW) have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for an actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with NOS specifications.

Predicted tides were used for reduction of soundings during field processing. During office processing, tide reductions were derived from approved hourly heights zoned direct from Holkham Bay, AK, gage 945-2067.

H. CONTROL STATIONS

Section H and I of the hydrographer's report contain adequate discussions of horizontal control and hydrographic positioning.

The positions of horizontal control stations used during hydrographic operations are published values based on NAD 83. The geographic positions of all survey data are based on NAD 83. The smooth sheet is annotated with an NAD 27 adjustment tick based on values determined with the NGS program NADCON. Geographic positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections:

Latitude:	-1.209 seconds	(-37.397 meters)
Longitude:	6.208 seconds	(102.648 meters)

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 3.75 was computed for survey operations. The quality of several positions exceeds limits in terms of HDOP. These positions are isolated and occur randomly throughout the survey area. A review of the data, however, suggests that none of these fixes are used to position dangers to navigation. The features or soundings located by these fixes are consistent with the surrounding information. These fixes are considered acceptable. DGPS performance checks were conducted in the field and found adequate.

NAD 83 is used as the horizontal datum for plotting and position computations.

Additional information concerning specific control system type, calibrations and system checks can be found in the hydrographer's report and in the separates related to horizontal position control and corrections to position data.

J. SHORELINE

Shoreline maps DM 10308 and DM 10309 scale 1:20,000, were compiled on NAD83 and apply to this survey. Shoreline drawn on the smooth sheet in black originates from the above digital data as provided by the Coastal Mapping Program. The shoreline data and the hydrographic data were merged in MicroStation during the compilation of the smooth sheet.

Shoreline in the vicinity of Wood Spit and north of Endicott Arm was digitized at PHB from Chart 17360, 30th Edition, dated March 1, 1997 and is shown on the smooth sheet in brown for orientation purposes only.

There were no MHW revisions on this survey

Except as noted above, the shoreline map and the results of the fieldwork as portrayed on the smooth sheet should supersede charted shoreline.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

There are no contemporary surveys that junction H-10756.

M. COMPARISON WITH PRIOR SURVEYS

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
H-9392	1973	1:10,000	NAD27
H-9393	1973	1:10,000	NAD27

The above prior surveys cover the entire area of the present survey. Differences in depths generally range from 0.5 to 1 fathom with the present survey reflecting a shoaler bias. These differences are mostly based on the dynamics of natural bottom changes over the past twenty four years. Justification for smaller changes can probably be attributed to better bottom coverage, improved positioning and sounding techniques, and relative accuracy of the data acquisition methods. A comparison of standard depth curves with the prior surveys reveal little change in configuration except where present hydrography defined new or existing shoal areas.

The following prior survey features falling along or inside the NALL line were not investigated and have been transferred in color to the smooth sheet.

<u>Feature</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>	<u>Survey</u>
Ledge	57/47/03.6	133/38/02.5	H-9392
Ledge	57/46/43.4	133/37/09.3	H-9392
Ledge	57/45/08.6	133/35/56.4	H-9392
Ledge	57/45/04.0	133/34/25.4	H-9393
Kelp	57/44/18.4	133/34/23.5	H-9393
Kelp	57/44/24.6	133/34/33.0	H-9393
Kelp	57/44/00.0	133/35/04.2	H-9393
Kelp	57/43/53.7	133/35/05.6	H-9393
Kelp	57/43/38.5	133/35/05.0	H-9393
Kelp	57/45/02	133/34/20	H-9393

Except as noted above, survey H-10756 is adequate to supersede the prior surveys within the common area.

N. ITEM INVESTIGATIONS

There were no AWOIS items assigned to this survey.

O. COMPARISON WITH CHART

Survey H-10756 was compared with the following chart:

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>
17360	30th	March 1, 1997	1:217,828 (Inset 1:40,000)

a. Hydrography

Charted hydrography originates with the previously discussed prior surveys and miscellaneous sources. The prior surveys have been adequately addressed in section M and require no further discussion.

Six rocks and inshore ledges from latitude 57/42/45.4(N) to latitude 57/43/05.0(N) and longitude 133/35/30.3(W) to longitude 133/34/48.6(W) originate from an unknown source and were not investigated by the hydrographer. These features should be retained as charted.

The application of this survey to charts of a scale less than 1:40,000 may require the generalization of features such as ledges, and reefs. The recommended charting disposition of specific ledges or reefs is their depiction as isolated rocks. The application of this survey to charts of a scale greater than 1:40,000 may be accomplished without generalization of features.

With the exception of the above items, survey H-10756 is adequate to supersede charted hydrography within the common area.

b. Dangers To Navigation

Ten dangers to navigation were discovered during survey operations and reported to the USCG on February 18, 1998. No additional dangers to navigation were found during office processing. A copy of the report is attached. A few of the hydrographer's reported dangers to navigation cannot be shown at existing chart scale due to surrounding shoaler information found on the present survey.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H-10756 is adequate to:

- Delineate the bottom configuration, determine least depths, and draw the required depth curves;
- Reveal there are no significant discrepancies or anomalies requiring further investigation; and
- Show the survey was properly controlled and soundings are correctly plotted.

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, April 1994 Edition except as follows

The three side scan sonar contacts listed below were not adequately developed to ensure a least depth. Ten meter line spacing over these areas would have provided better bottom coverage to provide assurance that a least depth was found. These contacts have been shown on the smooth sheet. See the hydrographer's report, section E, for additional information.

<u>Feature</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
5 Rk	57/46/49.52	133/37/35.34
4 ₆ Rk	57/46/58.18	133/37/58.57
3 ₆ Rk	57/47/00.56	133/37/53.16

In the event that the field units submission of survey data will exceed four weeks from completion of field work, the Chief of Party will submit a written explanation for the delay indicating the anticipated transmittal date to the Chief of the appropriate processing section. Marine Center ships forward their explanation through the Marine Center Director. Field work for survey H-10776 was completed on June 24, 1997 but not received for office processing until March 5, 1998.

The charted features mentioned in the evaluation report, Section O, Comparison with Chart, generally fall within the survey limits and should have been investigated during survey operations.

Q. AIDS TO NAVIGATION

There are four fixed aids to navigation within the survey area. These aids were positioned and adequately serve their intended purpose. See the hydrographer's report, section Q for additional information.

Two floating aids to navigation exist at the entrance to Tracy Arm. Buoy C "1" was positioned by survey launch and plots 200 meters northeast of the charted position and was determined to serve its intended purpose. Buoy N "2" was positioned as charted however, this location does not serve the intended purpose of marking the narrow entrance to Holkham Bay. A recommended location for the buoy is approximately 170 meters WNW of the charted position. These recommendations were not forwarded to the USCG during office processing.

There were no features of landmark value located and or recommended for charting.

R. STATISTICS

Statistics are adequately itemized in the hydrographer's report.

S. MISCELLANEOUS

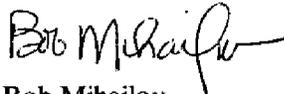
Miscellaneous information is adequately discussed in the hydrographer's report. No additional miscellaneous items were noted during office processing.

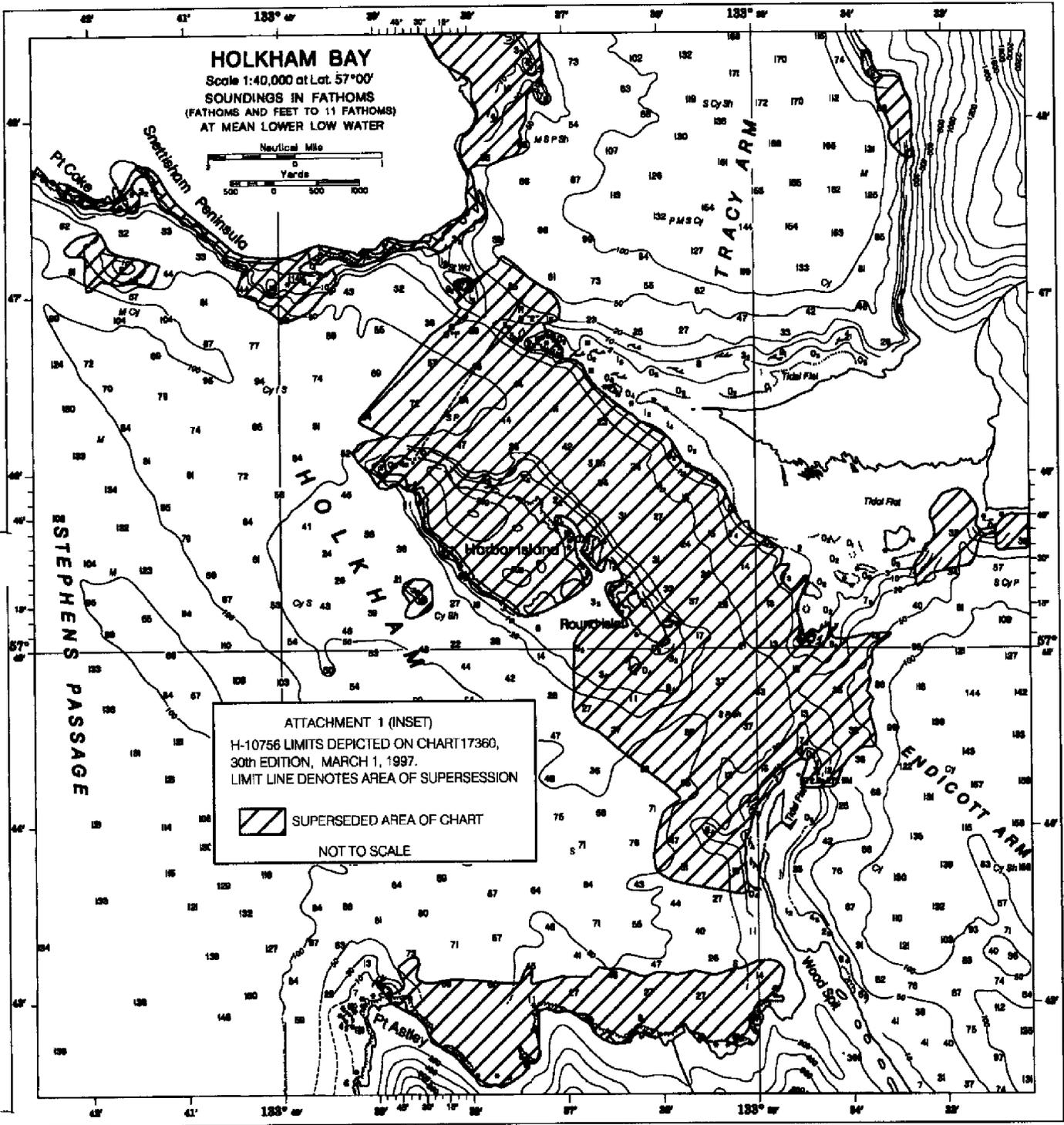
T. RECOMMENDATIONS

This is a good hydrographic survey. Additional work is recommended over the side scan contacts to conduct least depth investigations at the positions itemized in section P of this report. See the hydrographer's report, section T, for additional information.

U. REFERRAL TO REPORTS

Referral to reports is adequately discussed in the hydrographer's report.

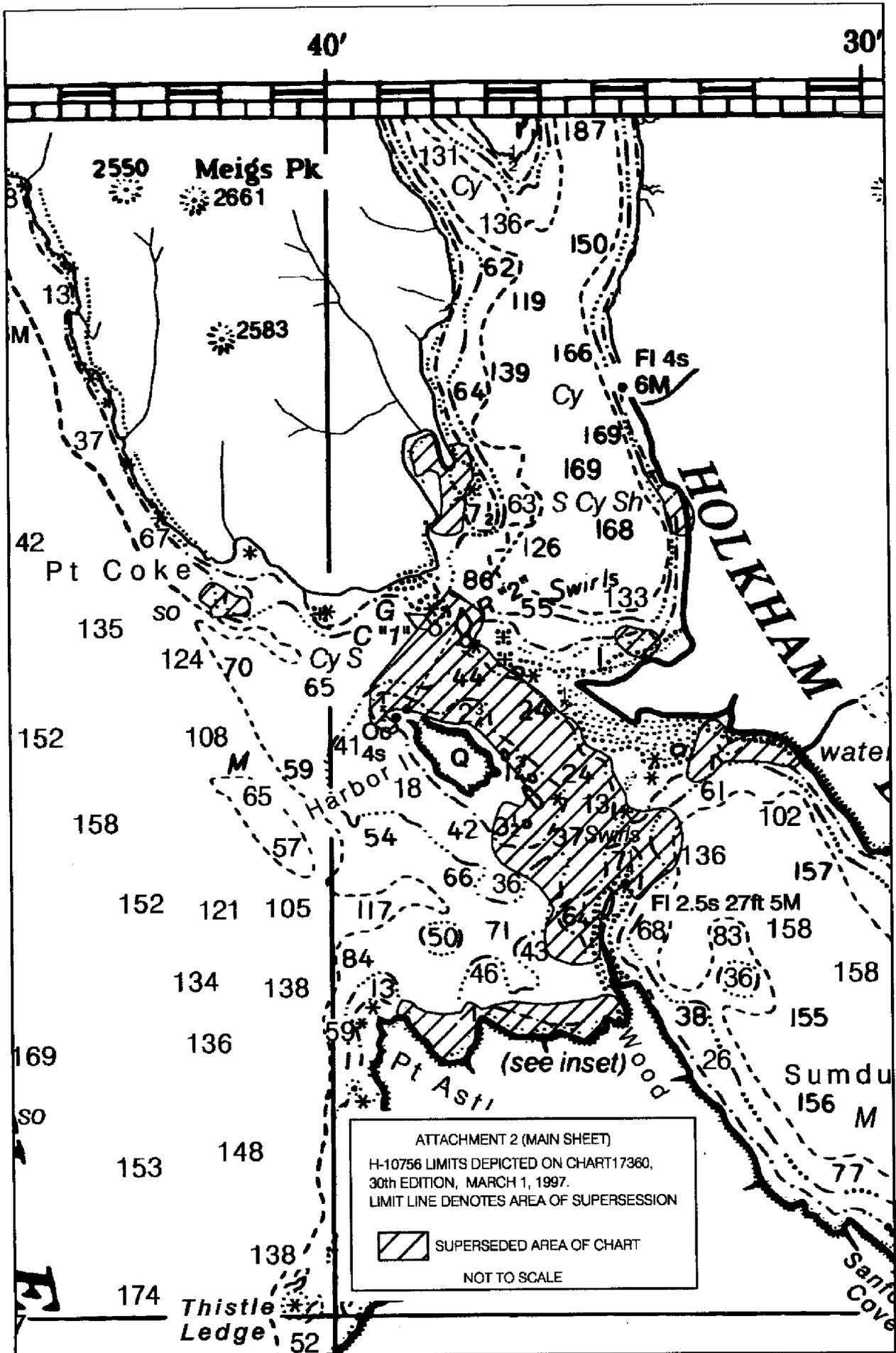

 Bob Mihailov
 Cartographer



ATTACHMENT 1 (INSET)
 H-10756 LIMITS DEPICTED ON CHART 17360,
 30th EDITION, MARCH 1, 1997.
 LIMIT LINE DENOTES AREA OF SUPERSESSION

 SUPERSEDED AREA OF CHART

NOT TO SCALE



APPROVAL SHEET
H-10756

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Bruce A. Olmstead Date: 1/21/99
Bruce A. Olmstead
Senior Cartographer, Cartographic Section
Pacific Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

James C. Gardner Date: 1-26-99
James C. Gardner
Commander, NOAA
Chief, Pacific Hydrographic Branch

Final Approval

Approved:

Andrew A. Armstrong III Date: March 5, 1999
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

