H10776

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-10-25-97

Registry No. H-10776

LOCALITY

State Alaska

General Locality Northwest Prince William Sound

Sublocality Main Bay and Approaches

1997

CHIEF OF PARTY
CAPT Alan D. Anderson, NOAA

LIBRARY & ARCHIVES

DATE JAN 8 1999

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-10776

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-10-25-97

State Alaska

General locality Northwest Prince William Sound

Locality Main Bay and Approaches

Scale 1:10,000 Date of survey Sept. 3 to Sept. 29, 1997

Instructions dated 8/27/97, Change #1 9/24/97 Project No. OPR-P125-RA

Vessel RA-2(2122), 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 D. Baird, SST J. Jacobson, ST K. Callahan

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

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

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

~~Protracted by~~

Verification by E. Domingo, M. Bigelow

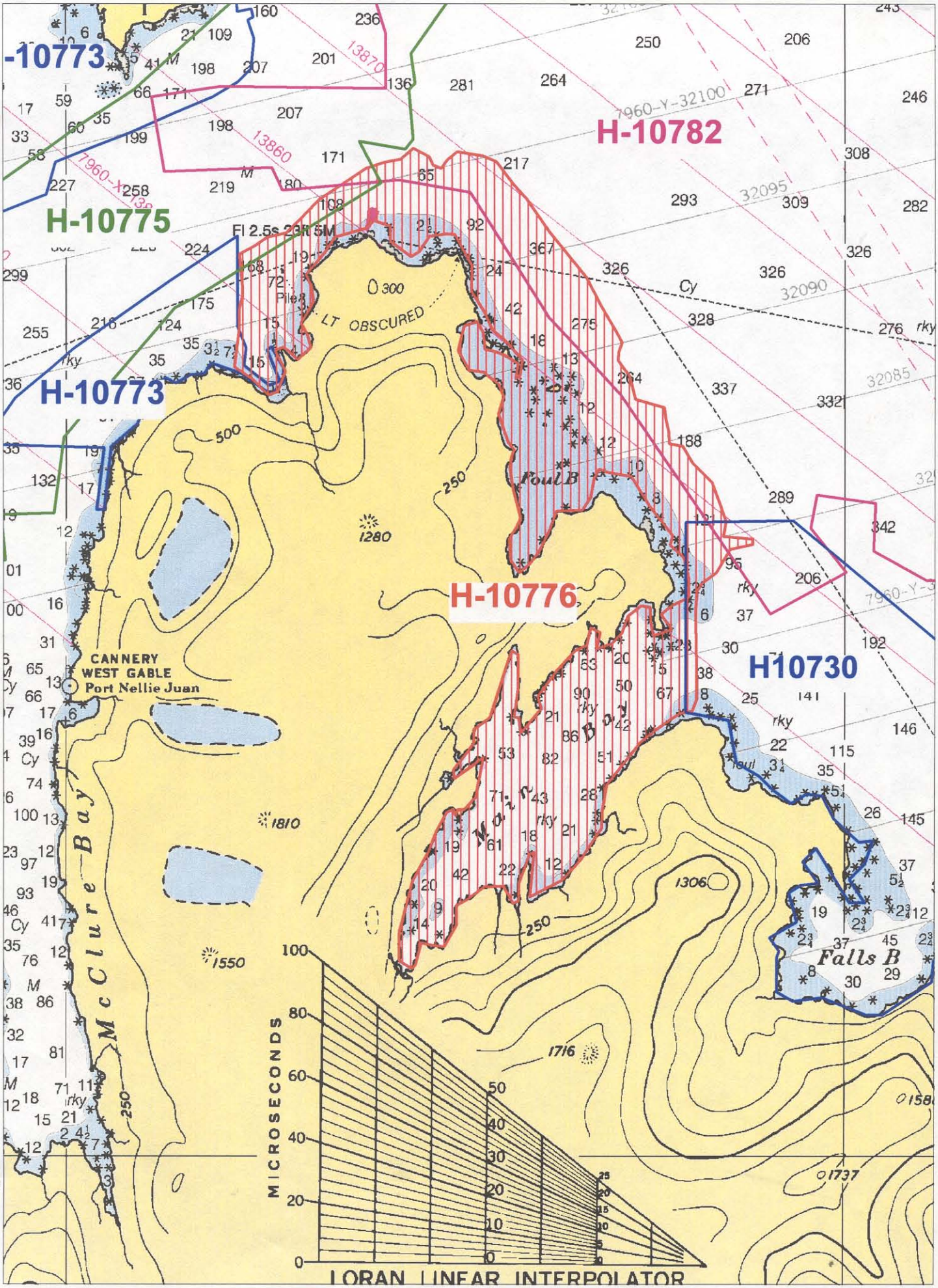
Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW and tenths

REMARKS: All times in 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.

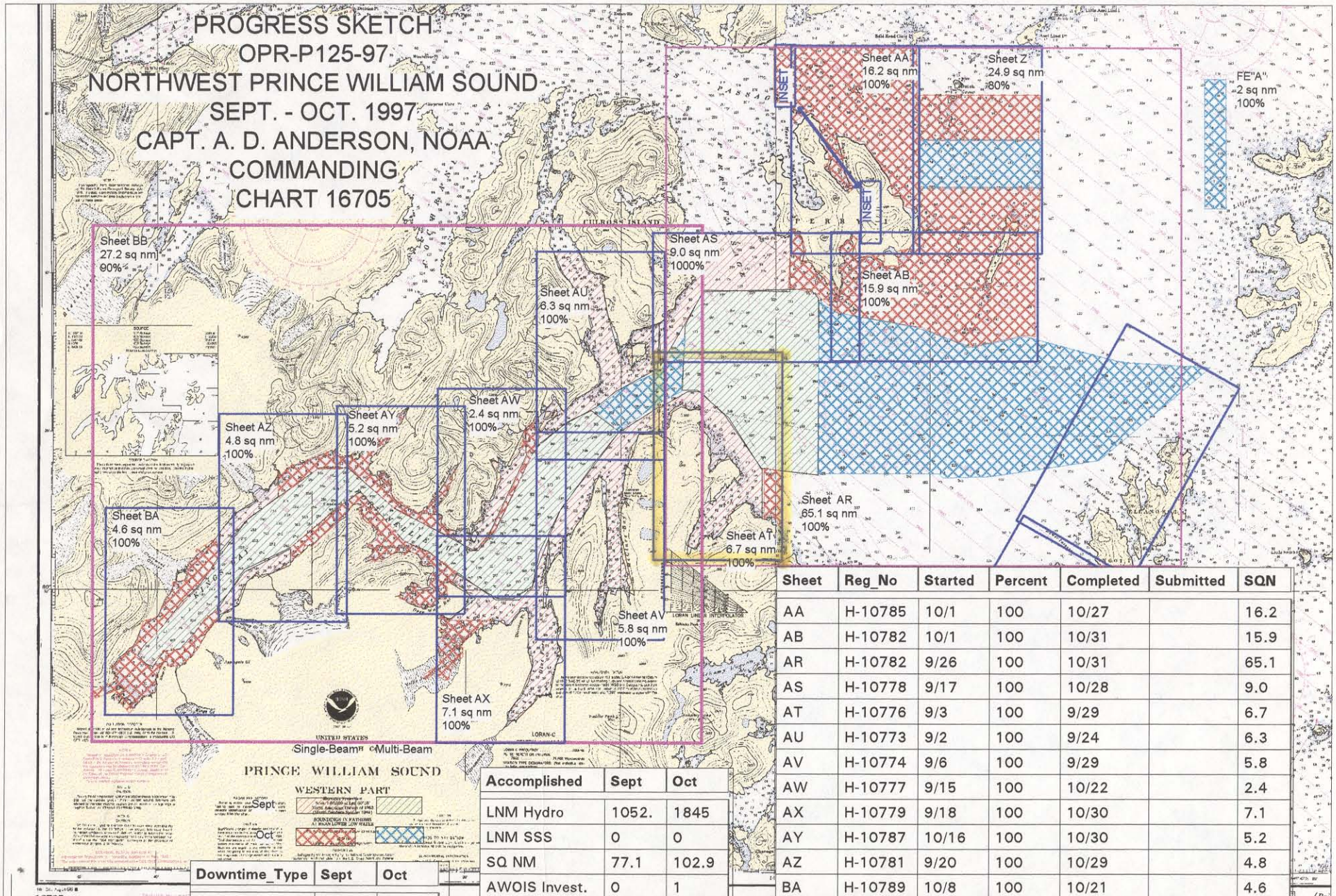
AWOIS / SURF 12/15/98 MCR

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

U.S. GOVERNMENT PRINTING OFFICE: 1986 - 652-007/41215


-10773
H-10782
H-10775
H-10773
H-10776
H10730
CANNERY
WEST GABLE
Port Nellie Juan
McClure Bay
Foul B
Falls B
LT OBSCURED
MICROSECONDS
LORAN LINEAR INTERPOLATOR

PROGRESS SKETCH
OPR-P125-97
NORTHWEST PRINCE WILLIAM SOUND
SEPT. - OCT. 1997
CAPT. A. D. ANDERSON, NOAA
COMMANDING
CHART 16705



Sheet	Reg_No	Started	Percent	Completed	Submitted	SQN
AA	H-10785	10/1	100	10/27		16.2
AB	H-10782	10/1	100	10/31		15.9
AR	H-10782	9/26	100	10/31		65.1
AS	H-10778	9/17	100	10/28		9.0
AT	H-10776	9/3	100	9/29		6.7
AU	H-10773	9/2	100	9/24		6.3
AV	H-10774	9/6	100	9/29		5.8
AW	H-10777	9/15	100	10/22		2.4
AX	H-10779	9/18	100	10/30		7.1
AY	H-10787	10/16	100	10/30		5.2
AZ	H-10781	9/20	100	10/29		4.8
BA	H-10789	10/8	100	10/21		4.6
BB	H-10775	9/11	100	10/21		27.2
Z	H-10791	9/11	80			24.9
FE"A"	AR INSET	10/5	100	10/5		2.0

Accomplished	Sept	Oct
LNM Hydro	1052.	1845
LNM SSS	0	0
SQ NM	77.1	102.9
AWOIS Invest.	0	1
Other Invest.	3	16
LNM Multibeam	164.4	241.5

Downtime_Type	Sept	Oct
Weather - Days	3	0
Mechanical -Hr	0	2
Electronic -Hr	0	1

Descriptive Report to Accompany Hydrographic Survey H-10776

Field Number RA-10-25-97
Scale 1:10,000
September 1997
NOAA Ship RAINIER
Chief of Party: Captain Alan D. Anderson, NOAA

A. PROJECT

This basic hydrographic survey was completed in Northwest Prince William Sound as specified by Project Instructions OPR-P125-RA dated August 27, 1997, Change No. 1, September 24. Survey H-10776 corresponds to sheet AT as defined in the sheet layout. This survey will provide data to supersede surveys performed in 1913, 1917, 1948-49, and 1961. Requests for hydrographic surveys and updated charts in this area have been received from the Defense Mapping Agency, the U.S. Coast Guard, the Southwest Alaska Pilot's Association, cruise ship lines, and local fishermen.

B. AREA SURVEYED

See Evel Rpt., Section B.

The survey area is Main Bay and Approaches. The survey's northern limit is latitude 60° 36' 27.1" N. The survey's southern limit is 60° 31' 10.3" N, the western limit is 148° 07' 50.6" W and the eastern limit is 148° 01' 09.8" W. Data acquisition was conducted from September 3 (DN 246) to September 29, 1997 (DN 272).

C. SURVEY VESSELS

Data were acquired by RAINIER launches as noted in the Survey Information Summary printout ~~appended~~ attached to this report.

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 the sounding and shoreline 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

Neither Side Scan Sonar or multi-beam echo sounder equipment were used on this survey. – concur

F. SOUNDING EQUIPMENT

See Evel Rpt., Section D.

The Raytheon DSF-6000N is a dual frequency (100 kHz, 24 kHz), paper trace echo sounder. Serial numbers are included on the headers of the daily Raw Master Printouts.* On several days during data collection (especially DN 246 and 259), multiple fathogram traces and miss-digitization occurred in the very steep and deep areas located in the Northeast portion of the sheet. These problems generally occurred in 100-300 meter (55-164 fms) depths on very steep slopes and disappeared as the bottom contours leveled out. These problems are most likely a result of the side lobe detecting the steep side. concur Most of these lines were re-run and compared with later collected data. Soundings were rejected based on the quality of the trace, whether the "correct" trace could be identified and by comparison to surrounding terrain.

DSF-6000N soundings generally were acquired in meters using the High + Low, high frequency digitized

* Filed with the hydrographic records.

setting, but in depths over 300 meters, low frequency was scanned in place of the high when the fathometer lost its high frequency trace.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Two sound velocity casts were acquired within the survey limits as shown in the appended Survey Information Summary report. The sound velocity casts were 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 Manual (FPM) section 2.4.3. Printouts of the sound velocity profile, data, and correctors used in field processing are included in the "Separates to be Included with Survey Data, IV. Sounding Equipment Calibrations and Corrections". * Velocity casts taken on days 247 and 260 fall outside the survey limits.

A static transducer depth was determined using FPM Fig 2.2 for vessels 2122, 2124, 2125 and 2126 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-P125-RA-97. The data for vessel 2122 was 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 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-P125-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 Cordova, Alaska reference station (945-4050). HDAPS listings of the data used in generating tidal correctors are included in Appendix V of this report.* Tidal correctors as provided in the project instructions for H-10776 are shown on the appended Survey Information Summary report (attached to this report). Valdez, Alaska (945-4240) and Cordova, Alaska (945-4050) are the primary control stations for datum determination at all subordinate stations. RAINIER personnel installed Sutron 8200 tide gages at Applegate Island (945-4794) September 1-October 30, 1997; and at Herring Point (945-4691) September 2-October 31, 1996. Refer to the Field Tide Notes and supporting data in Appendix V for individual gage performance and level closure information. This information has been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. A request for approved tides was forwarded to N/OES23 in accordance with FPM 4.2.3.
A tide note for survey H-10776, dated February 5, 1998 is attached to this report.

H. CONTROL STATIONS ✓ See Evel Rpt., section H.

The horizontal datum for this project is NAD 83. Station ROCK, recovered in 1996 and checked in 1997, was used to verify and establish local geodetic control for this survey. See the OPR-P125-RA-97 Horizontal Control Report for more information. Control stations used for hydrography on this survey are listed in this report.

I. HYDROGRAPHIC POSITION CONTROL ✓ See Evel Rpt., section I.

All soundings were positioned using either USCG differential GPS or flyaway station ROCK. Primary hydrographic control was based on the USCG beacons located at the Kenai Peninsula and Cape Hinchinbrook. Stations on Kodiak Island and Potato Point were also received in this area. A VHF differential reference station at ROCK and repeated on a second VHF frequency by the ship was used when possible.

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 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. Periodic comparisons and occasional performance checks were logged with the SHIPDIM system. Some outliers were noted, but none indicated systematic or continuous errors in the beacons. The SHIPDIM OUTLIER.SUM results are included

* Filed with the hydrographic data.

in the project data for OPR-P125-RA-97.

J. SHORELINE ✓ See Evel Report, section J.

The shoreline manuscript from Coastal Mapping survey CM-92012 was supplied by N/CS341 in Standard Digital Data Exchange Format (SDDEF). The digital file from DM-10293 was projected to the survey grid with OPR-P125-RA-97 geodetic parameters using program Shore version 2.0, provided by N/CS32, and plotted on the survey using HDAPS.

Limited shoreline verification was conducted in accordance with the Project Instructions. For this survey the general limit of safe navigation of a survey launch is 5-50 meters offshore of apparent low tide, generally 3-10 meters of depth at Mean Lower Low Water. Features shown on the SHORELINE NOTES layer in the MapInfo workspace inshore of the NALL are the hydrographer's representation of the shoreline while slowly transiting along the shore, and are intended to aid chart compilation.

Shoreline manuscript and field features were compared to an enlargement of chart #16705, 16th edition (8/24/96), BSB version. This raster image was registered in MapInfo, and plotted at survey scale by RAINIER personnel for HDAPS shoreline comparison. There was general agreement between the charted and manuscript shoreline and what the hydrographer found on this survey, except in Main and Foul Bays. Portions of the Mean High Waterline in the southwest portion of Main Bay appear to have shifted up to 120 meters to the West. In Foul Bay there are some discrepancies up to 50 meters. Revised shoreline from the current survey should be used. from the charted shoreline; No changes to MHWL were noted by the hydrographer on the field sheets. No MHWL changes are shown on the smooth sheet.
Charted shoreline features that were not found on the manuscript were verified by field positions when offshore of the NALL. Charted features inshore of the NALL in the vicinity of Foul Bay were carried forward onto this survey because of the complex, foul nature of the nearshore area. Discrepancies between charted and field shoreline should thus be resolved in favor of the manuscript shoreline and field work as shown on the final field Detached Position and Bottom Sample plot.

Specific differences noted between the manuscript, chart and this survey are: See Evel Report, Section M and O

The charted rock at 60-32-24.0 N, 148-04-35.8 W (eastern of two rocks), should be removed. This rock now plots in 18 fathoms of water. Both a low-water line verification search and survey line over this position failed to detect any sign of this rock either visually or electronically. The charted shoreline in this area is vastly different from the final field sheet. It is recommend that this area be charted as shown on final field sheet. - concur
This charted rock does not appear on 17th ed. of chart 16705. Hydrographer was using the 16th ed. of chart 16705.
Charted rocks in Foul Bay should be retained and new manuscript rocks added since no attempt was made to DP all rocks. An attempt was made to run hydrography within these extremely foul areas, but were found not to be navigable. Foul limits were drawn accordingly. It is recommended that Foul bay be charted as shown on the final field sheet. - concur

Charted rock at 60-35-53.58 N, 148-06-26.59 W should be re-charted at the position shown in the prior survey (H-8606) 60-35-53.87 N, 148-06-23.6 W. It appears to have moved during compilation. concur This rock does not appear on the 17th Ed. of chart 16705. Hydrographer used the 16th Ed. of chart 16705 for comparison. Prior rock has been transferred in color from H-8606 to the Smooth Sheet. Recharted rock on new chart edition.
Charted rock at 60-35-16.62 N, 148-07-03.7 W should be re-charted at the position shown in the prior survey (H-8606) 60-35-15.09 N, 148-07-01.43 W. It appears to have moved during compilation. concur with clarification. This rock does not appear on the 17th Ed. of chart 16705 at this location. Rock is same as contemporary shoreline manuscript ledge shown on Smooth Sheet. Chart rock from present survey. Prior survey rock from H-8606 was generalized offshore for charting purposes.
Charted rock at 60-35-44.91N, 148-05-59.79 W appears to have moved during compilation from position shown in the prior survey (H-3973) 60-35-56.7 N, 148-05-58.34 W. The actual feature is a new ledge as shown on the final field sheet at this position. The charted rock should be removed and the ledge added. - Concur with clarification.
The charted rock on 16th edition at 60/35/56.7N, 148/05/58.34W originated from H-3973 and plots near the seaward most point of a foul limit defined by the hydrographer. Prior rock has been transferred in color to the Smooth Sheet. Recharted rock on new edition. Chart 2 ledge inshore of prior rock.

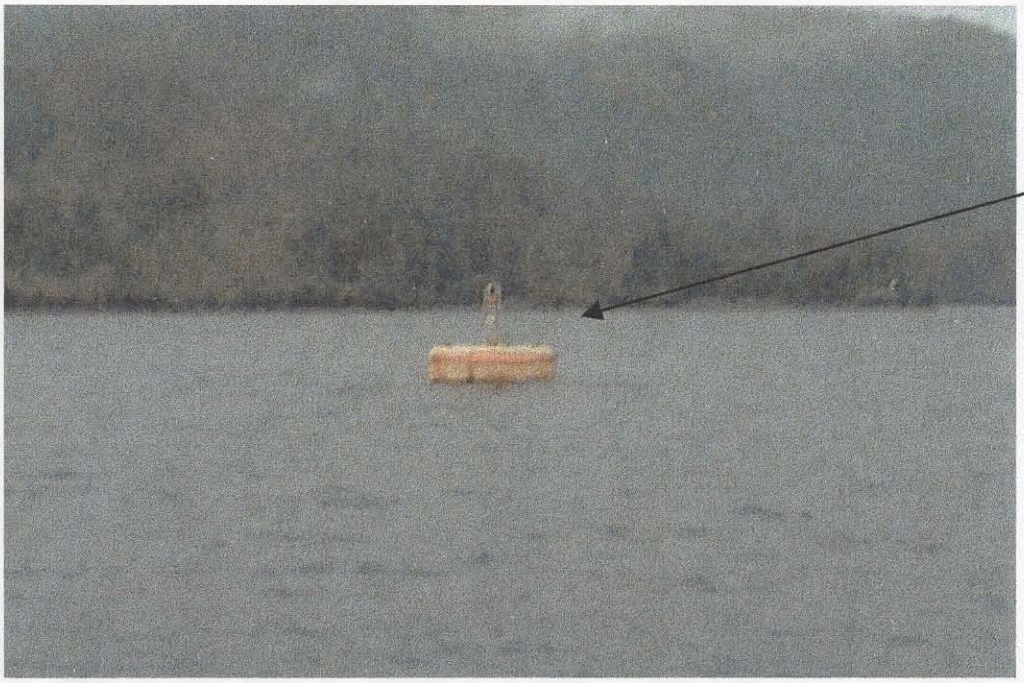
~~survey should be removed.~~

The charted pile (From H-3973, 1917) at 60-35-28.47 N, 148-06-57.91 W should be removed. A drift search was conducted at low water over the area for 15 minutes (DP 50310). Water visibility at the time was 20 ft (5.9 meters). No pile was found. However during the search a new rock (depth ~~3.2~~ 2.7 meters) was found in the same area and should be charted instead (DP 50309). Also note new piles on next embayment to the south could have been mis-compiled in this location. Concur Delete charted Pile, chart rock at survey position. Chart rock * (?) at latitude 60/35/27N, longitude 148/06/55W.

New pilings at 60-35-12.86 N, 148-06-54.46 W (DP 50312) should be charted. See picture below. -concur New piling are located approximately 500 meters south of charted pile.

Un-charted Pilings at DP 50312 ✓

Four new mooring buoys (For attaching oil spill boom and protecting Main Bay fish hatchery; DP's 40054, 40055, 40056, 40057) were positioned. Mooring buoys are shown on the smooth sheet at the survey positions and should be charted accordingly.



The floating dock and fish pen at the Southwest end of Main Bay (DPs 20012 and 20013) should be charted as shown in the manuscript shoreline. See picture below. – CONCUR

Floating dock (DP's 20013, 20012). Picture taken facing South

K. CROSSLINES ✓

Crosslines agreed within 1-2 meters with mainscheme hydrography, except in areas of steep bathymetry, and particularly where the crosslines are parallel to the contours (Northwest corner of survey). It is recommended that the mainscheme soundings be used if there is disagreement since they are perpendicular to the contours. There were a total of 10.49 nautical miles of crosslines, comprising 12.2% of main scheme hydrography.

L. JUNCTIONS See Eval Rpt., Section L.

This survey junctions with the following surveys

Survey	Year	Scale	Area	Field Number
H-10775	1997	1:40,000	North	RA-10-03-97
H-10773	1997	1:10,000	Northwest	RA-10-24-97
H-10782	1997	1:40,000	East	RA-40-04-97
H-10730	1996	1:10,000	South	RA-10-30-96

H-10730: Field soundings were compared by over laying the data corrected to Mean Lower Low Water using predicted tide in MapInfo. Agreement between the surveys was excellent, less than 1 fathom difference. – concur

H-10775: Agreement is good, less than 1 fathom in areas shallower than 160 fathoms, and 3 fathoms between 160-410 fathoms. – concur

This survey junctions with H-10782 (Multi-beam survey) to the east. The area of junction between the two surveys is steep and deep. Agreement between the surveys was generally good but with problem areas. When there were differences, H-10776 soundings were shallower than H-10782. It was noticed that soundings from H-10776 tend to be shallower when survey lines were run offshore and deeper when run towards shore. It is possible that apparently random differences between mainscheme soundings on steep and deep slopes are attributable to weak returns from steep slopes in areas with water column anomalies. The automated bottom tracking functions on the sounders we are using can begin following relatively strong side lobe returns and lose track of the weaker main beam return. This will result in a significant shoal bias on lines in the offshore direction. The contours agree in general at junctions. Concur See Eval Rpt., Section P, Adequacy.

One area of noticeable difference is around 60-35-16.59 N, 148-03-27.57 W where H-10782 is 35-65 fathoms deeper. A review of the data used for comparisons as well as the systems used to collect that data has revealed no definitive causes for differences of this magnitude. It is noted that the differences occur in areas with very steep slopes, deep water, and potential localized water column anomalies. Under these conditions, inherent differences in measurement systems such as beam width, frequency, power output, receiver sensitivity, bottom tracking function and timing latency, are exaggerated. It is probable that the main scheme soundings on the deep steeply sloping bottoms are shoal biased because of beam spreading, especially below180 fathoms. The multibeam data from H-10782 would be expected to be more accurate below 180 fathoms meters due to narrower beam widths, higher power, and a more favorable angle of incidence with the bottom. It therefore is recommended that the multibeam data from H-10782 offshore of the 180 fathom curve be used for charting purposes. See Section T, Recommendations.

This survey junctions with H-10773 to the west. Agreement between the surveys was very good. Concur

Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after reduction to final vertical datum.

M. COMPARISON WITH PRIOR SURVEYS See Eval Rpt., Section M.

Prior surveys H-3573 (1:20,000, 1913), H-7678 (1:20,000, 1948-49), H-3973 (1:20,000, 1917), H-8606 (1:10:000, 1961), H-3570 (1:20,000 & 1:40:000, 1913) were compared to the current survey. Soundings from the prior surveys and the current survey are generally in good agreement with the exception of Main Bay where shoaler depths were found during this survey with denser sounding coverage. Concur These differences may be a result of techniques used in the H-3573 (1913), sounding density, or a change due to the 1964 earthquake. Concur Therefore soundings from the current survey should supercede prior soundings. Concur Three shoaler depths from prior surveys (addressed in the table below) appear to have shifted slightly (50-60 meters) during chart compilation. It is recommended that soundings from the current survey be used instead. Concur

Charted Sounding	Position	Least Depth	Line Spacing	Recommendation
67 fm (H-3573)	60-32-56.81 N 148-02-19.42 W	46 fm ✓	50 m	Chart sounding from current survey - concur
50 fm (H-3573)	60-32-59.28 N 148-02-51.32 W	42fm ✓ 38 Fm Plots 50meters North	50 m	Chart sounding from current survey - concur
53 fm (H-3573)	60-33-07.37 N 148-03-17.12	~~39fm~~ 40FM* ✓	50 m	Chart sounding from current survey - concur
90 fm (H-3573)	60-32-56.04 N 148-03-22.28 W	~~73fm~~ ✓	100 m	Chart sounding from current survey - concur
71 fm (H-3573)	60-32-17.76 N 148-04-26.24 W	~~63fm~~ ✓ 64FM	100 m	Chart sounding from current survey - concur
14 fm (H-3573)	60-31-28.29 N 148-05-26.28 W	~~9 fm~~ ✓ 9.4 FM	50 m	Chart sounding from current survey - concur
61 fm (H-3573)	60-31-58.8 N 148-04-29.93 W	51.4fm ✓	100 m	Chart sounding from current survey - concur
~~43 fm~~ (H-3573) 42 FM	60-31-47.7 N 148-04-55.97 W	34.4 fm ✓	50 m	Chart sounding from current survey - concur
18 fm (H-3573)	60-32-02.32 N 148-04-03.12 W	10.~~1~~ 9 fm* ✓	10 m	Chart sounding from current survey - concur
23 fm (H-3573)	60-33-15.1 N 148-02-07.45 W	~~19.1fm~~ ✓ 18.9 FM	50 m	Chart sounding from current survey - concur
121 fm (H-3570)	60-34-02.83 N 148-01-48.28 W	90.~~8~~9fm ✓	100 m	Chart sounding from current survey - concur
10 fm (H-3570)	60-33-51.43 N 148-02-06.58 W	~~4.3fm~~ ✓ 3.6 FM	50 m	Chart sounding from current survey - concur
367 fm (H-3570)	60-35-46.69 N 148-03-52.9 W	3~~1~~0fm ✓	50 m	Chart sounding from current survey - concur
108 fm (H-3973)	60-36-03.79 N 148-06-35.05 W	98.4 fm ✓	50 m	Chart sounding from current survey - concur
72 fm (H-8606)	60-35-34.2 N 148-07-16.51 W	40fm ✓	50 m	Chart sounding from current survey - concur
20 fm (H-3573)	60-31-43.2 N 148-05-2~~0~~.34 W	25.2fm ✓ 20.7 plots 50 meters western smooth sheet	50 m	Charted 20 fm is approximately 50 meters east of depths indicated by present survey. Recommend using depths from current survey. - concur
13 fm (H-3570)	60-35-04.38 N 148-03-32.11 W	22 fm ✓ 12.3 plots 50 meters southwest on smooth sheet.	50 m	Charted 13 fm is approximately 50 meters east of depths indicated by present survey. Recommend using depths from the current survey. - concur

* Revised based on application of approved tides

				current survey.
65 fm (H-7678)	60-36-14.67 N 148-05-27.26 W	~~74.4~~ 75 * fm 65 fms plots 100 meters west	50 m	Charted 65 fm is approximately 50 meters north of depths indicated by present survey. Recommend using depths from current survey. — concur

* Revised based on application of approved tides.

N. ITEM INVESTIGATIONS

None. — Concur

O. COMPARISON WITH THE CHART See Eval Rpt., Section O.

Charts 16705, 1:8~~1,436~~ 9,999, 16th edition, 8/24/96 is the largest scale chart covering the survey area. Comparison of soundings is described in Section M. Non-sounding features are discussed in Section J. Final sounding comparisons will be made at PHB after reduction to final vertical datum. Soundings from this survey are generally shoaler than charted soundings. This is mostly likely a result of modern surveying techniques and a denser network of sounding data. The blue tint of Foul Bay should be replaced with bathymetry from this survey. The table in section M above summarizes the results.

Dangers to Navigation ✓

Feature Type	Depth (fm)	Latitude (N)	Longitude (W)	Position Number	Depth Meters	Survey Number	
Shoal	6.25	60:31:32.7	148:05:13.0	20631+5	11.7	H-10776	6.4 on Smooth Sheet
Shoal	8.25	60:32:01.1	148:04:03.8	40422+0	15.4	H-10776	8.3 on Smooth Sheet

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

Survey H-10776 is complete and adequate to supersede prior soundings and features in their common areas.

Q. AIDS TO NAVIGATION ✓

Port Nellie Juan Light was positioned using static GPS procedures from station ROCK. There is a 40 meter difference between the charted position and surveyed position, which is not significant at chart scale. See Section Q insert. Chart light as located by the present survey.

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. No unusual tidal currents or magnetic variations were found during this survey.

T. RECOMMENDATIONS See Following Page

In areas where this survey duplicates coverage of Survey H-10782 and at depths deeper than 180 fathoms, the hydrographer recommends that multibeam data be used for charting rather than the single beam HDAPS data. The hydrographer has more confidence in the lower frequency multibeam data on deep and steep slopes. The multibeam has more power, narrower beams, and reflects from the bottom at a higher angle, giving a theoretically more accurate return signal. Concur with clarification. Depths between the present survey and H-10782 generally agree within 1-3 Fathoms in depths of 100-300 Fathoms. There is no consistent shoal bias with either survey. The cartographer recommends compiling depths from either survey within the common area.

U. REFERRAL TO REPORTS

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

Title	Date Sent	Office
OPR-P125-RA Horizontal Control Report	December, 1997	N/CS34
OPR-P125-RA 1997 Coast Pilot Report	December, 1997	N/CS26
Project related data for OPR-P125-RA	Incremental	N/CS34
Secchi Disk Observations for OPR-P125-RA	December, 1997	N/CS31

Respectfully Submitted,

David J. Kruth

David J. Kruth
Lieutenant Commander, NOAA

Approved and Forwarded,

Alan D. Anderson

Alan D. Anderson
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 9 Dec 1997 ✓

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
1		060:14:18.000	146:38:48.000	0	0	0.0	0.0		04/06/96	CAPE HINCHINBROOK USCG BECON
2		060:27:20.117	148:39:54.333	0	0	0.0	0.0		10/01/97	DON DGPS
3		060:03:25.000	146:41:48.000	0	0	0.0	0.0		03/01/96	POTATO POINT USCG BEACON
4		060:39:17.513	147:50:26.500	18	0	0.0	0.0		00/00/00	ROCK

Section Q: Descriptive Report Insert ✓ Original copy was lost.

Name of Aid: Port Nellie Juan Light
Light List #: 25905

Method of Positioning GPS: [x] DGPS: [ ] Other: _____

Positioning Information

	Latitude (N)	Longitude (W)
Charted Pos.	60-35-53	148-06-07
Survey Pos.	60-35-51.72	148-06-07.38

	Easting	Northing
Charted Pos.	38546	38781.1
Survey Pos.	38540.3	38741.5

Difference between Charted and Surveyed Position: Distance: 40 meters
(Bearing from Surveyed to Charted Position) Bearing: 8 deg T

Characteristics
Do characteristics match Light List? Yes [x] No [ ]
If no, what are the characteristics? _____

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

New/Uncharted Aids (If information is known or easily obtained)
Date Est: _____
Maintained By: x Coast Guard Private? Yes [ ] No [ ]
Is aid seasonally maintained? Yes [ ] No [ ]
Frequency of Maintenance: _____

Apparent Purpose: _____

Other Information: Published position 60-35.9N 148-06.1 W

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
November 21, 1997

Commander (mon)
Seventeenth Coast Guard District
Post Office Box 25517
Juneau, Alaska 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 surveys in western Prince William Sound, Alaska. The dangers are shown graphically on the two attached chartlets. They affect chart 16705, 16TH ED., 1996, 1:80,000, and chart 16700, 25TH ED, 1996, 1:200,000. All positions are on the NAD 83 datum and depths have been corrected to Mean Lower Low Water using predicted tides.

Feature Type	Depth (fm)	Latitude (N)	Longitude (W)	Position Number	Depth Meters	Survey Number
Rock	5.75	60:37:04.7	148:09:57.4	19077	10.9	H-10773
Rock	5.25	60:36:55.3	148:09:54.5	35885	9.6	H-10773
Rock	3.75	60:37:52.5	148:10:37.7	35886	7.2	H-10773
Shoal	3.25	60:31:18.0	148:13:57.4	40345+4	6.2	H-10774
Shoal	6.25	60:31:32.7	148:05:13.0	20631+5	11.7	H-10776
Shoal	8.25	60:32:01.1	148:04:03.8	40422+0	15.4	H-10776
Rock Awash	-0.25	60:31:49.7	148:20:14.6	2153	-0.3	H-10777
Rock Awash	-1.5	60:31:42.6	148:20:33.4	2183	-2.6	H-10777
Shoal	3.25	60:28:41.3	148:14:16.1	60296+3	5.9	H-10779
Shoal	6.5	60:44:17.0	147:56:55.0	20132+6	11.9	H-10785
Rock	2.5	60:44:29.0	147:56:10.7	20285+3	4.5	H-10785
Shoal	4.25	60:43:13.1	147:55:48.2	20325+5	7.7	H-10785
Rock	0.75	60:45:53.9	147:55:18.2	41053+0	1.7	H-10785
Rock	2.5	60:45:18.4	147:54:42.9	41130+3	5	H-10785
Rock	0.75	60:42:33.2	147:52:07.9	41231+0	1.5	H-10785
Shoal	5.5	60:43:43.8	147:56:17.1	41232+0	10.3	H-10785
Rock	3.5	60:43:48.5	147:56:23.9	60262+3	6.6	H-10785
Shoal	5.5	60:43:29.7	147:55:56.3	60350+3	10.1	H-10785
Rock	0.25	60:42:56.0	147:55:48.4	60485+0	0.8	H-10785
Rock	3.75	60:39:23.2	147:46:35.0	16246	7	H-10786
Rock	1.5	60:40:37.2	147:44:57.2	18846	3.3	H-10786
Rock	2.5	60:40:28.4	147:44:50.5	18944	4.6	H-10786
Shoal	8.5	60:40:14.5	147:46:59.1	19596	15.7	H-10786
Rock Awash	0	60:40:09.9	147:53:47.9	20248	0.2	H-10786
Rock	2.5	60:41:05.1	147:45:45.7	21266	4.8	H-10786
Shoal	7.25	60:40:50.5	147:50:44.1	21310	13.7	H-10786
Rock	5.25	60:39:45.0	147:51:14.9	54206	9.5	H-10786

ADVANCE INFORMATION

Feature Type	Depth (fm)	Latitude (N)	Longitude (W)	Position Number	Depth Meters	Survey Number
Rock	0.75	60:39:55.5	147:53:18.5	55197	1.7	H-10786
Rock Awash	-0.25	60:39:06.9	147:55:54.7	58138	-0.3	H-10786
Rock	6.5	60:39:18.9	147:55:12.0	58193	12.3	H-10786
Shoal	5.5	60:39:57.9	147:54:08.2	59548	10.4	H-10786
Rock	1.5	60:40:18.9	147:54:26.2	60113	2.7	H-10786
Shoal	6.25	60:40:10.4	147:54:42.7	90005	11.4	H-10786
Shoal	4.5	60:40:03.5	147:55:29.7	90007	8.6	H-10786
Rock	2.25	60:39:27.0	147:53:18.3	90010	4	H-10786
Rock	2.5	60:39:53.9	147:51:28.5	90011	4.5	H-10786
Rock	2.5	60:40:33.8	147:46:14.5	90013	4.6	H-10786
Shoal	3.5	60:32:46.5	148:21:55.1	20055+8	6.6	H-10787
Rock	1.25	60:34:32.2	148:26:08.8	61567+1	2.2	H-10787
Shoal	3.25	60:30:56.7	148:22:32.8	61679+3	5.8	H-10787
Shoal	8.75	60:41:56.2	147:43:54.7	20247+9	16.1	H-10791
Shoal	7.25	60:42:44.2	147:43:44.3	20468+3	13.5	H-10791
Rock	4	60:41:11.4	147:49:47.6	20578+3	7.4	H-10791
Rock	2.25	60:41:45.0	147:50:30.2	20630+3	4.2	H-10791
Rock Awash	-0.25	60:42:01.6	147:45:02.1	40244+0	-0.6	H-10791
Shoal	5.25	60:41:17.1	147:45:30.0	40323+2	9.8	H-10791
Shoal	6.5	60:42:08.6	147:44:06.5	40336+8	12.3	H-10791
Rock	1	60:42:02.5	147:44:41.2	40393+3	1.9	H-10791
Shoal	3.5	60:46:25.1	147:48:31.9	40459+1	6.5	H-10791
Shoal	3.25	60:44:25.0	147:49:08.0	41125+5	6.2	H-10791
Rock	0.5	60:44:49.6	147:49:02.6	41455+4	1.3	H-10791
Shoal	7.5	60:46:30.0	147:48:11.8	60637+6	13.8	H-10791

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-P125-RA-97 and Danger to Navigation message RA-7-97. More information on current RAINIER survey projects may be obtained by e-mail; contact the Field Operations Officer at FOO.RAINIER@NOAA.GOV.

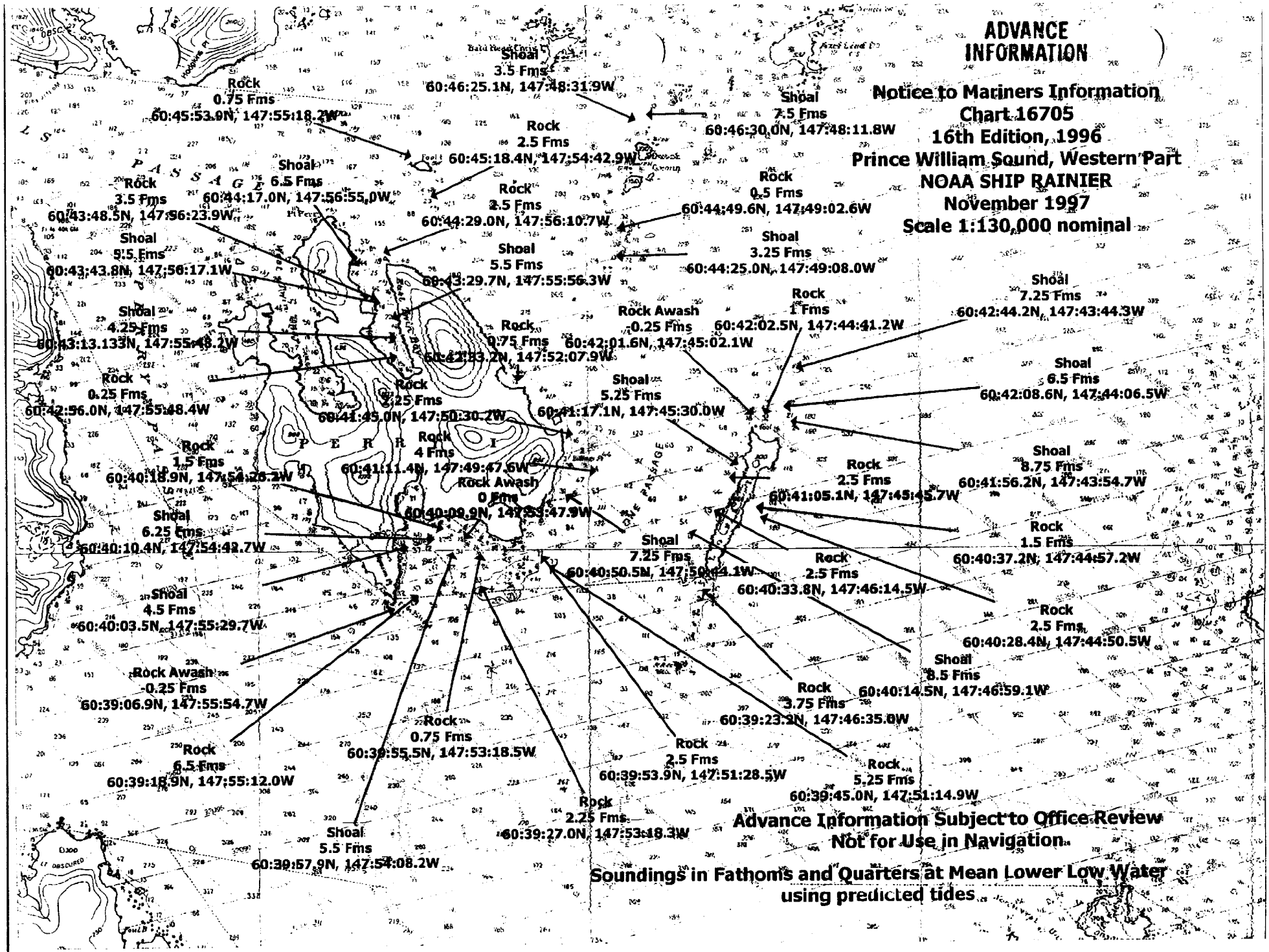
Sincerely,

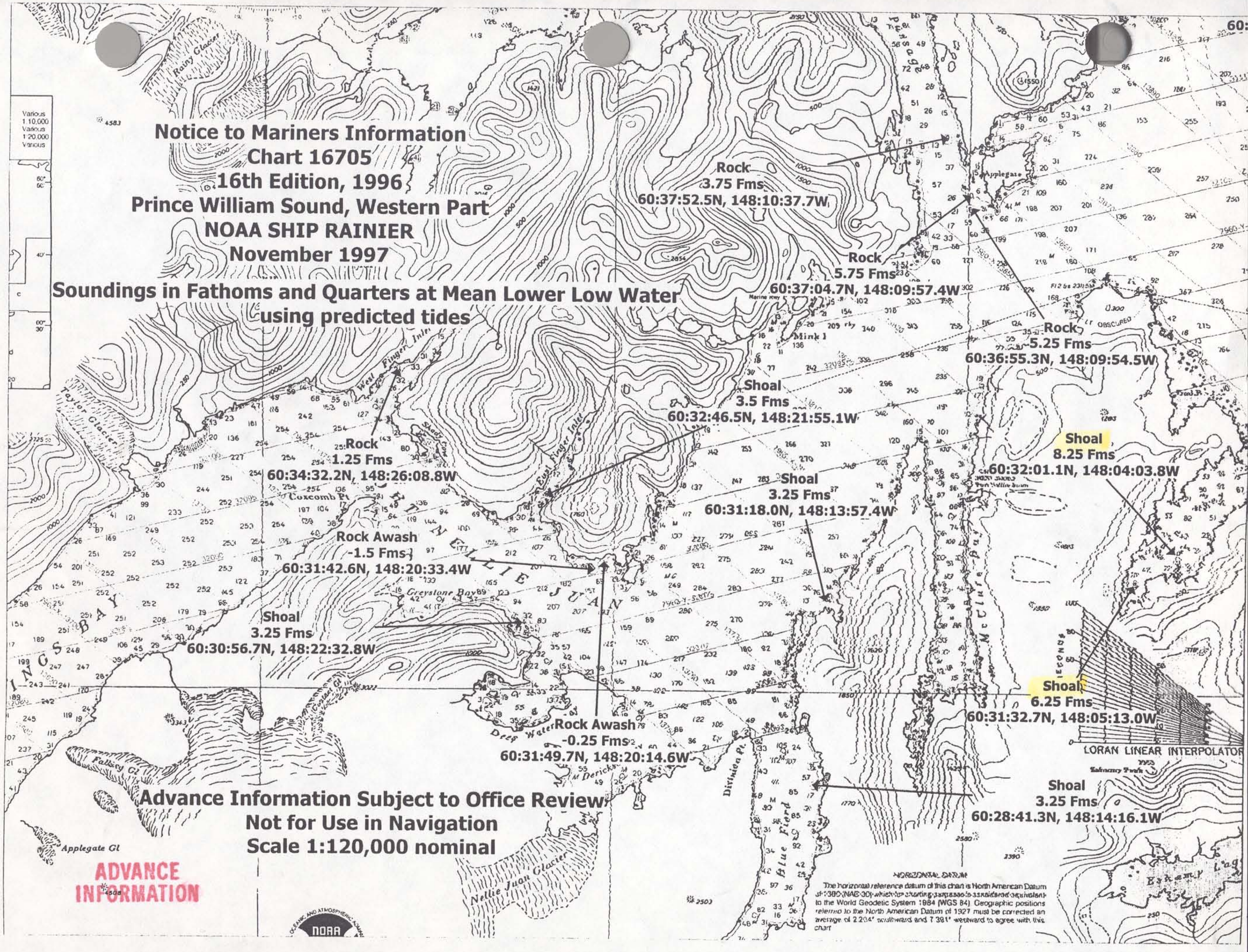
Alan D. Anderson

Alan D. Anderson
Captain, NOAA
Commanding Officer

Attachment

cc: NIMA
PMC
N/CS261
N/CS34


ADVANCE INFORMATION
Notice to Mariners Information
Chart 16705
16th Edition, 1996
Prince William Sound, Western Part
NOAA SHIP RAINIER
November 1997
Scale 1:130,000 nominal
Shoal 3.5 Fms 60:46:25.1N, 147:48:31.9W
Rock 0.75 Fms 60:45:53.9N, 147:55:18.2W
Shoal 7.5 Fms 60:46:30.0N, 147:48:11.8W
Rock 2.5 Fms 60:45:18.4N, 147:54:42.9W
Shoal 6.5 Fms 60:44:17.0N, 147:56:55.0W
Rock 3.5 Fms 60:43:48.5N, 147:56:23.9W
Rock 0.5 Fms 60:44:49.6N, 147:49:02.6W
Rock 2.5 Fms 60:44:29.0N, 147:56:10.7W
Shoal 5.5 Fms 60:43:43.8N, 147:56:17.1W
Shoal 5.5 Fms 60:43:29.7N, 147:55:56.3W
Shoal 3.25 Fms 60:44:25.0N, 147:49:08.0W
Shoal 4.25 Fms 60:43:13.133N, 147:55:48.2W
Rock 0.75 Fms 60:42:33.2N, 147:52:07.9W
Rock Awash 0.25 Fms 60:42:01.6N, 147:45:02.1W
Rock 1 Fms 60:42:02.5N, 147:44:41.2W
Shoal 7.25 Fms 60:42:44.2N, 147:43:44.3W
Rock 0.25 Fms 60:42:56.0N, 147:55:48.4W
Rock 2.25 Fms 60:41:45.0N, 147:50:30.2W
Shoal 5.25 Fms 60:41:17.1N, 147:45:30.0W
Shoal 6.5 Fms 60:42:08.6N, 147:44:06.5W
Rock 4 Fms 60:41:11.4N, 147:49:47.6W
Rock 1.5 Fms 60:40:18.9N, 147:54:26.2W
Rock Awash 0 Fms 60:40:09.9N, 147:53:47.9W
Rock 2.5 Fms 60:41:05.1N, 147:45:45.7W
Shoal 8.75 Fms 60:41:56.2N, 147:43:54.7W
Shoal 6.25 Fms 60:40:10.4N, 147:54:42.7W
Shoal 7.25 Fms 60:40:50.5N, 147:50:44.1W
Rock 2.5 Fms 60:40:33.8N, 147:46:14.5W
Rock 1.5 Fms 60:40:37.2N, 147:44:57.2W
Shoal 4.5 Fms 60:40:03.5N, 147:55:29.7W
Rock 2.5 Fms 60:40:28.4N, 147:44:50.5W
Rock Awash -0.25 Fms 60:39:06.9N, 147:55:54.7W
Shoal 8.5 Fms 60:40:14.5N, 147:46:59.1W
Rock 3.75 Fms 60:39:23.2N, 147:46:35.0W
Rock 0.75 Fms 60:39:55.5N, 147:53:18.5W
Rock 6.5 Fms 60:39:18.9N, 147:55:12.0W
Rock 2.5 Fms 60:39:53.9N, 147:51:28.5W
Rock 5.25 Fms 60:39:45.0N, 147:51:14.9W
Rock 2.25 Fms 60:39:27.0N, 147:53:18.3W
Shoal 5.5 Fms 60:39:57.9N, 147:54:08.2W
Advance Information Subject to Office Review
Not for Use in Navigation
Soundings in Fathoms and Quarters at Mean Lower Low Water
using predicted tides



Notice to Mariners Information
Chart 16705
16th Edition, 1996
Prince William Sound, Western Part
NOAA SHIP RAINIER
November 1997
Soundings in Fathoms and Quarters at Mean Lower Low Water
using predicted tides
Rock
3.75 Fms
60:37:52.5N, 148:10:37.7W
Rock
5.75 Fms
60:37:04.7N, 148:09:57.4W
Rock
5.25 Fms
60:36:55.3N, 148:09:54.5W
Shoal
3.5 Fms
60:32:46.5N, 148:21:55.1W
Shoal
8.25 Fms
60:32:01.1N, 148:04:03.8W
Rock
1.25 Fms
60:34:32.2N, 148:26:08.8W
Shoal
3.25 Fms
60:31:18.0N, 148:13:57.4W
Rock Awash
-1.5 Fms
60:31:42.6N, 148:20:33.4W
Shoal
3.25 Fms
60:30:56.7N, 148:22:32.8W
Shoal
6.25 Fms
60:31:32.7N, 148:05:13.0W
Rock Awash
-0.25 Fms
60:31:49.7N, 148:20:14.6W
Shoal
3.25 Fms
60:28:41.3N, 148:14:16.1W
Advance Information Subject to Office Review
Not for Use in Navigation
Scale 1:120,000 nominal
ADVANCE INFORMATION
Rainy Glacier
Taylor Glacier
West Finger Inlet
East Finger Inlet
Coxcomb Pt
Greystone Bay
Mink I
Applegate
Applegate Gl
Deep Water
Division Pt
Blue Fiord
Nellie Juan Glacier
Falling Gl
LORAN LINEAR INTERPOLATOR
HORIZONTAL DATUM
NOAA

ADVANCE INFORMATION

Author: FOO Rainier at Rainier
Date: 11/21/97 11:32 AM
Priority: Normal
TO: akcgnav@alaska.net at RDC
CC: dhill@pachydro.noaa.gov at RDC
CC: ktimmons@pachydro.noaa.gov at RDC
CC: navinfonet@nima.mil at RDC
CC: Lynn [NDS-NCG22] Preston at RDC
CC: Chief Survey Technician Rainier
CC: CO Rainier
Subject: Dangers to Navigation for Prince William Sound 1997
---------- Message Contents ----------

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 surveys in western Prince William Sound, Alaska. The dangers are shown graphically on two chartlets in the hard copy version of this message forwarded separately. They affect chart 16705, 16TH ED., 1996, 1:80,000, and chart 16700, 25TH ED, 1996, 1:200,000. All positions are on the NAD 83 datum and depths have been corrected to Mean Lower Low Water using predicted tides.

Feature Type	Depth Fathoms	Latitude (N)	Longitude (W)	Position Number	Depth Meters	Survey Number
Rock	5.75	60:37:04.7	148:09:57.4	19077	10.9	H-10773
Rock	5.25	60:36:55.3	148:09:54.5	35885	9.6	H-10773
Rock	3.75	60:37:52.5	148:10:37.7	35886	7.2	H-10773
Shoal	3.25	60:31:18.0	148:13:57.4	40345+4	6.2	H-10774
Shoal	6.25	60:31:32.7	148:05:13.0	20631+5	11.7	H-10776
Shoal	8.25	60:32:01.1	148:04:03.8	40422+0	15.4	H-10776
Rock Awash	-0.25	60:31:49.7	148:20:14.6	2153	-0.3	H-10777
Rock Awash	-1.5	60:31:42.6	148:20:33.4	2183	-2.6	H-10777
Shoal	3.25	60:28:41.3	148:14:16.1	60296+3	5.9	H-10779
Shoal	6.5	60:44:17.0	147:56:55.0	20132+6	11.9	H-10785
Rock	2.5	60:44:29.0	147:56:10.7	20285+3	4.5	H-10785
Shoal	4.25	60:43:13.1	147:55:48.2	20325+5	7.7	H-10785
Rock	0.75	60:45:53.9	147:55:18.2	41053+0	1.7	H-10785
Rock	2.5	60:45:18.4	147:54:42.9	41130+3	5	H-10785
Rock	0.75	60:42:33.2	147:52:07.9	41231+0	1.5	H-10785
Shoal	5.5	60:43:43.8	147:56:17.1	41232+0	10.3	H-10785
Rock	3.5	60:43:48.5	147:56:23.9	60262+3	6.6	H-10785
Shoal	5.5	60:43:29.7	147:55:56.3	60350+3	10.1	H-10785
Rock	0.25	60:42:56.0	147:55:48.4	60485+0	0.8	H-10785
Rock	3.75	60:39:23.2	147:46:35.0	16246	7	H-10786
Rock	1.5	60:40:37.2	147:44:57.2	18846	3.3	H-10786
Rock	2.5	60:40:28.4	147:44:50.5	18944	4.6	H-10786
Shoal	8.5	60:40:14.5	147:46:59.1	19596	15.7	H-10786
Rock Awash	0	60:40:09.9	147:53:47.9	20248	0.2	H-10786
Rock	2.5	60:41:05.1	147:45:45.7	21266	4.8	H-10786
Shoal	7.25	60:40:50.5	147:50:44.1	21310	13.7	H-10786
Rock	5.25	60:39:45.0	147:51:14.9	54206	9.5	H-10786
Rock	0.75	60:39:55.5	147:53:18.5	55197	1.7	H-10786
Rock Awash	-0.25	60:39:06.9	147:55:54.7	58138	-0.3	H-10786

ADVANCE INFORMATION

Rock	6.5	60:39:18.9	147:55:12.0	58193	12.3	H-10786
Shoal	5.5	60:39:57.9	147:54:08.2	59548	10.4	H-10786
Rock	1.5	60:40:18.9	147:54:26.2	60113	2.7	H-10786
Shoal	6.25	60:40:10.4	147:54:42.7	90005	11.4	H-10786
Shoal	4.5	60:40:03.5	147:55:29.7	90007	8.6	H-10786
Rock	2.25	60:39:27.0	147:53:18.3	90010	4	H-10786
Rock	2.5	60:39:53.9	147:51:28.5	90011	4.5	H-10786
Rock	2.5	60:40:33.8	147:46:14.5	90013	4.6	H-10786
Shoal	3.5	60:32:46.5	148:21:55.1	20055+8	6.6	H-10787
Rock	1.25	60:34:32.2	148:26:08.8	61567+1	2.2	H-10787
Shoal	3.25	60:30:56.7	148:22:32.8	61679+3	5.8	H-10787
Shoal	8.75	60:41:56.2	147:43:54.7	20247+9	16.1	H-10791
Shoal	7.25	60:42:44.2	147:43:44.3	20468+3	13.5	H-10791
Rock	4	60:41:11.4	147:49:47.6	20578+3	7.4	H-10791
Rock	2.25	60:41:45.0	147:50:30.2	20630+3	4.2	H-10791
Rock Awash	-0.25	60:42:01.6	147:45:02.1	40244+0	-0.6	H-10791
Shoal	5.25	60:41:17.1	147:45:30.0	40323+2	9.8	H-10791
Shoal	6.5	60:42:08.6	147:44:06.5	40336+8	12.3	H-10791
Rock	1	60:42:02.5	147:44:41.2	40393+3	1.9	H-10791
Shoal	3.5	60:46:25.1	147:48:31.9	40459+1	6.5	H-10791
Shoal	3.25	60:44:25.0	147:49:08.0	41125+5	6.2	H-10791
Rock	0.5	60:44:49.6	147:49:02.6	41455+4	1.3	H-10791
Shoal	7.5	60:46:30.0	147:48:11.8	60637+6	13.8	H-10791

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-P125-RA-97 and Danger to Navigation message RA-7-97. More information on current RAINIER survey projects may be obtained by e-mail; contact the Field Operations Officer at FOO.RAINIER@NOAA.GOV. Hard copy (letter) is being sent November 21, 1997 by regular mail.

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

Survey Information Summary

Project: OPR-P125-97 **Project Name:** NORTHWEST PRINCE WILLIAM SOUND

Instructions Dated: 8/27/97 **Project Change Info:**

Change #	Dated
1	9/24/97

Sheet Letter: AT **Registry Number:** H-10776

Sheet Number: RA-10-25-97

Survey Title: MAIN BAY AND APPROACHES

Data Acquisition Dates: **From:** 03-Sep-97 246 **To:** 29-Sep-97 272

Vessel Usage Summary

VESNO	MS	SPLITS	DEV	XL	S/L	DP	BS	DIVE
2122	4	7	3	3	5	7		
2124	8		2	4	7	7		
2125	1	2		1	1	1	2	
2126	1				1			

Sound Velocity Cast Information

Launch Table #	Ship Table #	Cast DN	Max Depth	Position	Applicable DN
1		247	786.4	60/35/12 148/12/54	
2		260	632	60/35/30 148/10/20	

Tide Zone Information

Zone #	Time Corr.	Height Corr.
PWS38		X0.95

Tide Gage Information

Tide Gage #	Gage Name	Installed	Removed
945-4691	HERRING POINT	9/2/97	10/31/97
945-4794	APPLEGATE ISLAND	9/1/97	10/30/97

Statistics Summary

Type	Total:
BS	30
DEV	21.5
DP	44
MS	85.72
S/L	23.55
SPLIT	57.39
XL	10.49

Percent XL: 12.2%

SQNM: 6.7

APPROVAL SHEET

for

H-10733

RA-10-2-97

Standard procedures were followed in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Guidelines; and the 1994 version of the Field Procedures Manual in producing this survey. The data were examined daily during data acquisition and processing.

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

Alan D. Anderson
Captain, NOAA
Commanding Officer

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: February 5, 1998

HYDROGRAPHIC BRANCH: Pacific

HYDROGRAPHIC PROJECT: OPR-P125-RA-97
HYDROGRAPHIC SHEET: H-10776

LOCALITY: Northwest Prince William Sound, AK

TIME PERIOD: Sep 3 - Oct 14, 1997

TIDE STATION USED: 945-4691 Herring Point, Knight Island Passage
Lat. 60° 28.5'N Lon. 147° 47.5'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.326 meters

TIDE STATION USED: 945-4729 Pt. Perry, Perry Island
Lat. 60° 45.1'N Lon. 147° 57.8'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.386 meters

TIDE STATION USED: 945-4794 Applegate Island
Lat. 60° 37.4'N Lon. 148° 09.9'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.385 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: PWS38, PWS42 & PWS52
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: Use tide data from the appropriate station for each zone according to the order in which they are listed in the "Tidezone" corrector files. For example, tide station one (TS1) would be the first choice for an applicable zone followed by TS2, etc. when data are not available. All zones within a survey sheet may not have the same order of applicable tide stations.

CHIEF, OPERATIONAL ANALYSIS BRANCH

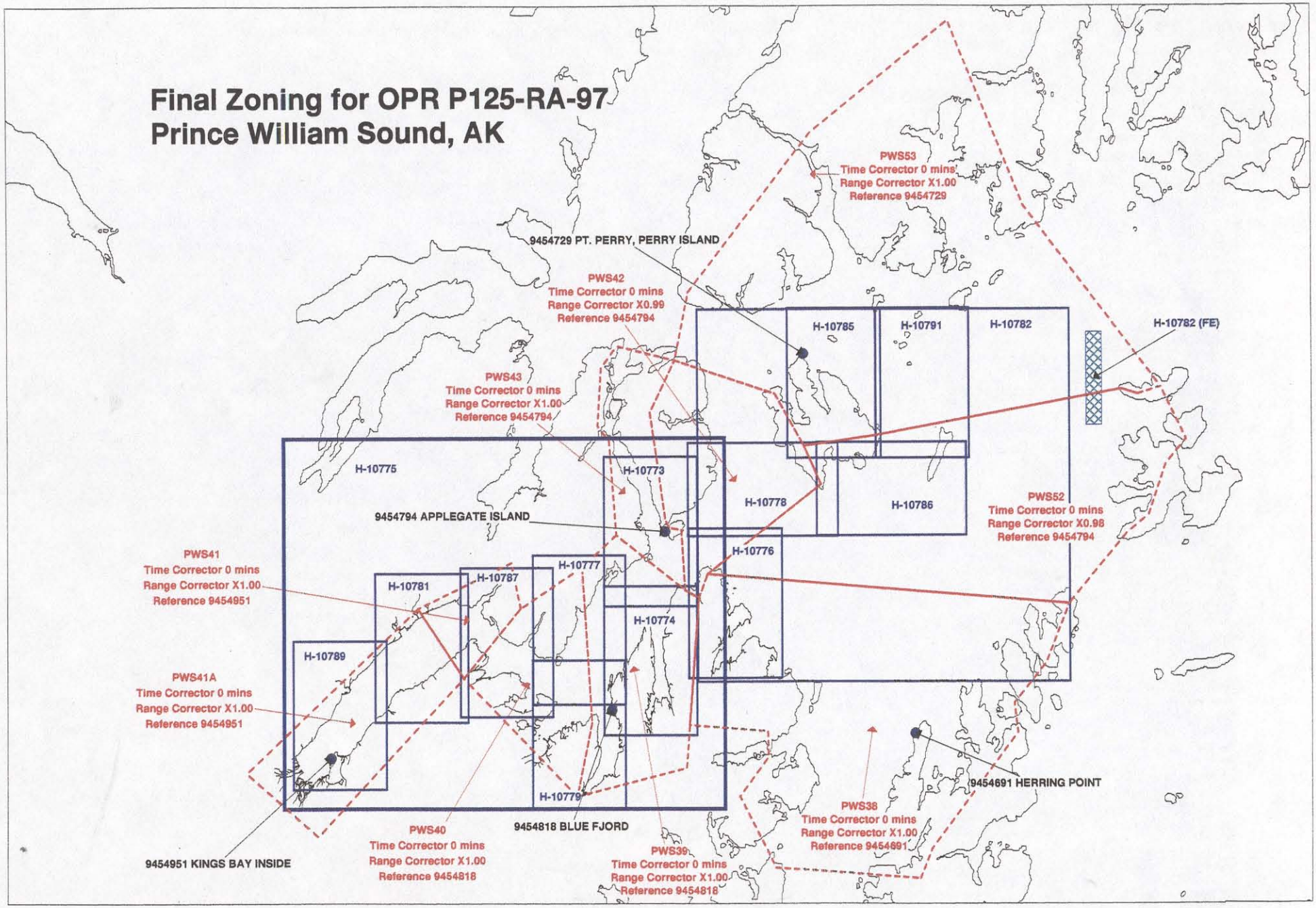
Final tide zone node point locations for OPR P125-RA-97,
Sheet H-10776.

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 PWS38			
-147.78401 60.368002	945-4691	0	1.00
-147.766126 60.390181	945-4794	0	0.98
-147.638164 60.475795	945-4729	0	0.99
-147.643214 60.497618			
-147.595271 60.527063			
-147.560712 60.570642			
-148.101183 60.592465			
-148.114598 60.574838			
-148.128786 60.481602			
-148.012385 60.476742			
-148.011446 60.457767			
-148.054039 60.428791			
-148.006895 60.382627			
-148.00016 60.375912			
-147.78401 60.368002			
Zone PWS42			
-148.101183 60.592465	945-4794	0	0.99
-147.93198 60.657934	945-4729	0	1.00
-147.957558 60.686216	945-4691	0	1.01
-148.000248 60.724243			
-148.149283 60.748856			
-148.18628 60.710814			
-148.164093 60.631914			
-148.158371 60.62628			
-148.140411 60.624813			
-148.135079 60.580714			
-148.114598 60.574838			
-148.101183 60.592465			
Zone PWS52			
-147.93198 60.657934	945-4794	0	0.98
-147.957558 60.686216	945-4729	0	0.99
-147.848006 60.693887	945-4691	0	1.00
-147.48158 60.72734			
-147.456957 60.723688			
-147.422995 60.72893			
-147.385582 60.690765			

-147.416199 60.672546
-147.441099 60.63539
-147.474131 60.622033
-147.560712 60.570642
-148.101183 60.592465
-147.93198 60.657934

Final Zoning for OPR P125-RA-97
Prince William Sound, AK



NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-10776

GEOGRAPHIC NAMES

Name on Survey	A ON SHART NO. 16700, 16705	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ALASKA (title)	X									1
FOUL BAY	X		X							2
KENAI PENINSULA	X		X							3
MAIN BAY	X		X							4
PORT NELLIE JUAN	X		X							5
PRINCE WILLIAM SOUND	X		X							6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

Approved

Dennis J. Romerhug
Chief Cartographer

APR 2 1998

NOAA FORM 76-155 SUPERSEDES C&GS 197

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

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10776

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

DESCRIPTION	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-10293

PHOTOBATHYMETRIC MAPS (List): NA

NOTES TO THE HYDROGRAPHER (List): NA

SPECIAL REPORTS (List): NA

NAUTICAL CHARTS (List): 16705 17th Ed., September 27, 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			
SITIONS REVISED			
NDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS	63.0		63.0
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET			
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		40.0	40.0
GEOGRAPHIC NAMES			
OTHER* (Chart compilation)		67	67
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	63.0	107	170

Pre-processing Examination by M. Bigelow	*Beginning Date* 2/13/98	*Ending Date* 2/13/98
...ification of Field Data by E. Domingo	*Time (Hours)* 63.0	*Ending Date* 6/17/98
...rification Check by B. Olmstead	*Time (Hours)* 16	*Ending Date* 10/14/98
Evaluation and Analysis by B. Mihailov	*Time (Hours)* 40.0	*Ending Date* 9/29/98
Inspection by B. Olmstead	*Time (Hours)* 16	*Ending Date* 11/3/98

EVALUATION REPORT

H-10776

A. PROJECT

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

B. AREA SURVEYED

The survey is adequately described in the hydrographer's report and supplemented as follows:

The surveyed area includes Main Bay and Foul Bay and extends an additional 2.5 nautical miles northwest, from Foul Bay to along the eastern side of Port Nellie Juan. The foreshore is largely comprised of numerous rocks, extensive ledges and reefs

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.

The bottom consists mainly of mud, gravel and sand. Depths range from the mean lower low water line to 324 fathoms.

C. SURVEY VESSELS

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

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Survey data were 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, that is a database format using the .dbf extension. In addition, the plot is filed both in the MicroStation drawing format, i.e., dgn (extension), and in the more universally recognized graphics transfer format, .dxf (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 symbolization. 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 information relating to sonar equipment.

F. SOUNDING EQUIPMENT

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

G. CORRECTIONS TO SOUNDINGS

Sounding 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 Applegate Island, AK , tide gage 945-4794. Herring Point , Knight Island Passage and Point Perry, Perry Island tide gages listed on the approved tide note were not used.

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:	-2.090 seconds	(-113.263 meters)
Longitude:	7.434 seconds	(113.263 meters)

The year of establishment of control stations originate with the horizontal control records for this survey.

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 map DM 10293, scale 1:20,000 was compiled on NAD83 and applies to this survey. Shoreline shown on the smooth sheet in black originates from a digital file as provided by the Coastal Mapping Program. The shoreline data and the hydrographic data were merged during MicroStation processing. The shoreline map and the results of the fieldwork as portrayed on the smooth sheet should supersede charted shoreline.

Most of the rocks depicted on the shoreline manuscript were identified in the field and many were found to be high points or extensions of newly located reefs and ledges.

Further discussions concerning shoreline noted during this survey is included in the hydrographer's report.

There were no revisions to the mean high water line.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10776 junctions with the following surveys:

Survey	Year	Scale	Area
H-10775	1997	1:40,000	North
H-10773	1997	1:10,000	Northwest
H-10782	1997	1:40,000	East
H-10730	1996	1:10,000	South

The junction with survey H-10730 was not formally completed since this survey has previously been processed and forwarded for charting. There is good agreement between standard depth curves and soundings within the common area of the junction surveys. An adjoins note has been shown on the smooth sheet were applicable.

The junctions with surveys H-10775 and H-10773 are complete. A "Joins" note has been added to the smooth sheet where applicable. A comparison was made of soundings between the nearshore single beam survey and the offshore multibeam survey H-10782. The examination reveals good agreement between soundings and standard depth curves. A joins note has been added to the smooth sheet.

M. COMPARISON WITH PRIOR SURVEYS

Survey	Year	Scale
H-3573	(1913)	1:20,000
H-3973	(1917)	1:20,000
H-3570	(1913)	1:20,000 & 1:40,000

The prior surveys listed above were conducted using leadlines and cover most of the survey area except for Foul Bay. Comparison with the present survey generally reveals differences of 0.5-2 fathoms in depths to fifty fathoms and larger differences of 2-7 fathoms in depths from 50-100 fathoms. Much larger differences (20-50 fathoms) are readily evident with H-3573 in depths exceeding 100 fathoms when the bottom slopes off rapidly. In all cases, the present survey tends to reflect a shoaler bias.

Depth differences with these prior surveys are largely attributed to more modern data aquisisition, positioning techniques and increased bottom coverage. However, the effects of the 1964 Prince William Sound earthquake are known to have caused bottom uplift.

The following features were transferred to the smooth sheet from the above prior surveys. These features generally fall inside the NALL and were not specifically addressed by the hydrographer.

Feature	Latitude (N)	Longitude(W)	Survey
Ledge	60/34/00	148/02/30	H-3573
Ledge	60/33/52	148/02/23	H-3573
Rock	60/32/26	148/04/37	H-3573
Rock	60/32/24	148/04/37	H-3573
Rock	60/32/15	148/03/09	H-3573
Rock	60/35/57	148/05/58	H-3973
Rock	60/35/56	148/05/52	H-3973

Survey	Year	Scale
H-7678	(1948-49)	1:20,000
H-8606	(1961)	1:10,000

The above prior surveys cover the northern portion of the present survey. Differences in depths generally range from 0.5 to 1 fathoms in 0-50 fathom depth range. From 50–300 fathoms, the differences range from 1-3 fathoms with no consistent pattern of shoaling or an increase in depths between the prior surveys and the present survey. However, the present survey tends to reflect a shoaler bias likely based on greater sounding coverage, improved positioning 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. Refer to the hydrographer's report for a discussion regarding specific areas of difference.

The following features were transferred to the smooth sheet from the above prior surveys. These features generally fall inside the NALL and were not specifically addressed by the hydrographer.

Feature	Latitude (N)	Longitude(W)	Survey
Ledge	60/35/50	148/0600	H-7678
Ledge	60/35/45	148/05/00	H-7678
Ledge	60/35/18	148/04/45	H-7678
Ledge	60/35/16	148/04/57	H-7678
Ledge	60/34/55	148/04/25	H-7678
Ledge	60/34/31	148/04/15	H-7678
Rock	60/35/47	148/05/16	H-8606
Ledge	60/34/56	148/07/37	H-8606
Ledge	60/35/05	148/07/15	H-8606
Rock *(6)*	60/35/54	148/06/24	H-8606
Rock *(Cov 1 ft)*	60/35/56	148/06/10	H-8606

In accordance with the Hydrographic Guideline No. 39, the effect of the 1964 Prince William Sound earthquake were considered in the comparison of this survey. Prince William Sound experienced a bottom uplift of 4-32 feet during the 1964 earthquake. No reasonable adjustment value for prior soundings could be determined.

With the transfer of the prior soundings and features brought forward, survey H-10776 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-10776 was compared with the following chart.

Chart	Edition	Date	Scale	Datum
16705	16th	August 24, 1996	1:80,000	NAD83
16705	17th	September 27, 1997	1:80,000	NAD83

a. Hydrography

Charted hydrography originates with the previously discussed prior surveys and miscellaneous source data.. The prior surveys have been adequately addressed in section M and require no further discussion. The evaluator noted differences between the 16th/17th editions of Chart 16705 involving charted rocks. Some of the rocks removed from the 17th edition of chart 16705 were verified by the hydrographer to exist and are discussed below.

The hydrographer compared survey H-10776 with the 16th Edition of Chart 16705 and found a few rocks which appear to have been repositioned as shown on the prior surveys. These rocks were verified to exist as seaward points of foul areas as defined by the hydrographer. It is recommended these rocks be recharted on the next edition. Refer to the hydrographer's report, section J and the evaluator's report section M for further discussion and specific locations.

Numerous rocks in Foul Bay and vicinity were not specifically investigated by the hydrographer and were recommended to be recharted as shown on the 16th edition of Chart 16705. These areas were found to be extremely foul and not safe for navigation. The rocks listed below are from Chart 16705, 16th edition and could not be identified as to a prior source.

Latitude(N)	Longitude(W)
60/34/30.5	148/03/18
60/34/27	148/03/20.5
60/34/25	148/03/24
60/34/24.5	148/03/31.5
60/34/22.5	148/03/18
60/34/18	148/03/18
60/35/02.5	148/04/01.5
60/34/07	148/03/45
60/34/09.5	148/04/11

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. The areas containing features which might be subject to generalization are described as: The west shoreline of Foul Bay. The west and east shoreline of Main Bay.

Except as noted above, survey H-10776 is adequate to supersede charted hydrography within the charted area.

b. Dangers To Navigation

Two dangers to navigation were discovered during survey operations and reported to the USCG on November 21, 1997. No additional dangers to navigation were found during office processing.

P. ADEQUACY OF SURVEY

The hydrography contained on survey H-10776 is adequate to:

a. Delineate the bottom configuration, determine least depths, and draw the required depth curves;

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

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

With the exception of those items listed above, the hydrographic records and reports received for processing are adequate and conform to the Project Instructions and 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. with the exception of the following.

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 September 29, 1997 but not received for office processing until February 13, 1998.

Some anomalous soundings were acquired during this survey. They originate from the poor performance of the echo sounder on steep slopes, which were surveyed at excessive vessel speed. The hydrographer attempted to correct the problem by editing the raw sounding data, however, the quality of the echo sounder trace is so poor in some areas that the edits are likely based on judgement rather then quantifiable data. Office review of the problem has determined that, with the exception of obviously erroneous depths, further editing is not reasonable since no corrective action can be taken to improve the quality of the trace. The judgement of the hydrographer has been accepted and generally the data was not altered during office processing. Generally, the affected depths are deep, in excess of 150 fathoms, and will have little negative effect on the quality of nautical charts if compiled at scales smaller the 1:40,000.

Q. AIDS TO NAVIGATION

Fixed aids have been adequately addressed in the hydrographer's report. There are no floating aids to navigation and/or features of landmark value within the survey area. Four mooring buoys (two lighted) were positioned in Main bay near the hatchery. These buoys are used to secure an oil boom and protect the fish hatchery in the event of an oil spill.

R. STATISTICS

Statistics are 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.

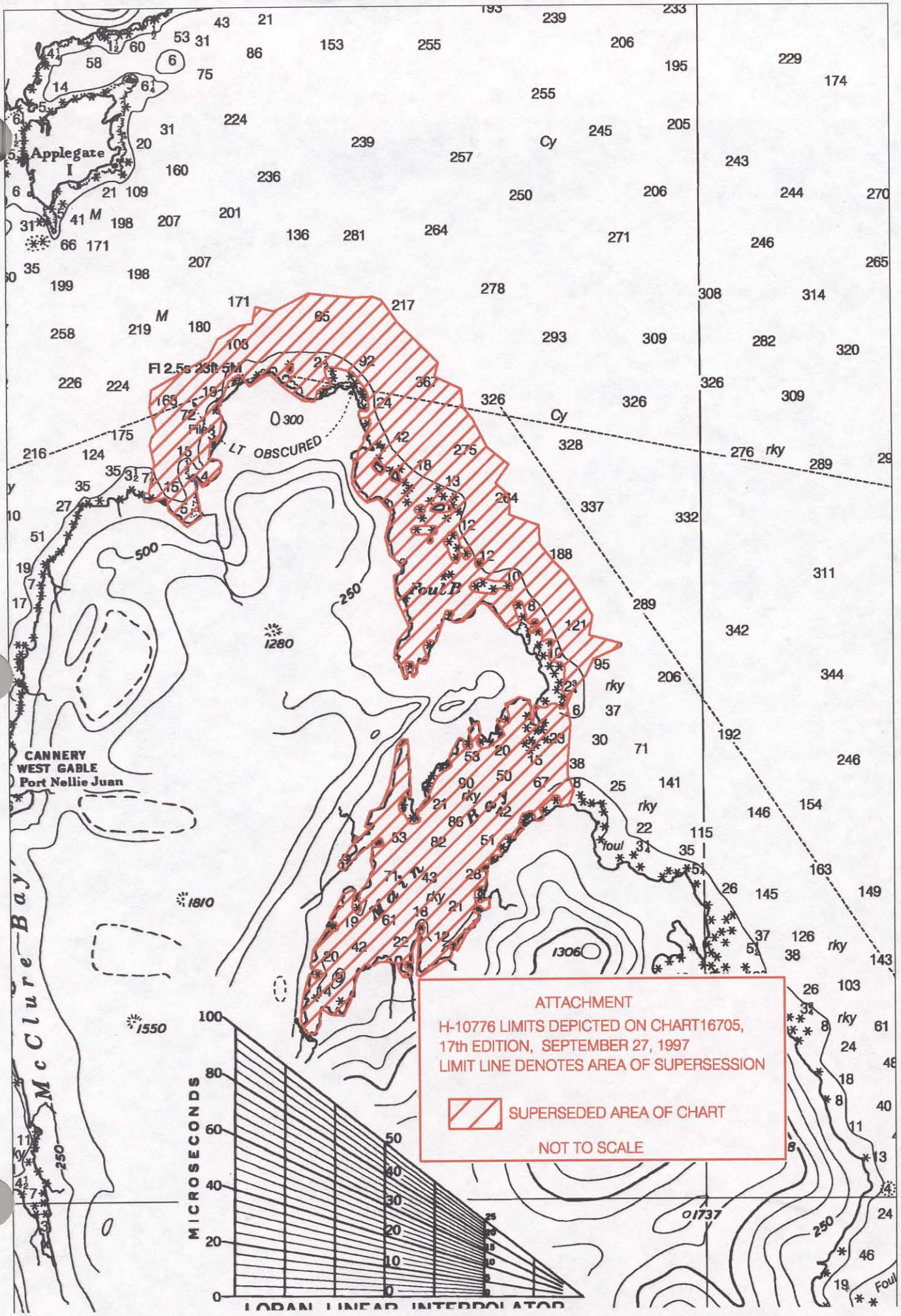
T. RECOMMENDATIONS

This is a good hydrographic survey. No additional work is recommended.

U. REFERRAL TO REPORTS

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

Bob Mihailov
Cartographer


Applegate I
Fl 2.5s 23ft 5M
LT OBSCURED
Foul B
CANNERY
WEST GABLE
Port Nellie Juan
McClure Bay
MICROSECONDS
LORAN LINEAR INTERPOLATOR
ATTACHMENT
H-10776 LIMITS DEPICTED ON CHART16705,
17th EDITION, SEPTEMBER 27, 1997
LIMIT LINE DENOTES AREA OF SUPERSESSION
SUPERSEDED AREA OF CHART
NOT TO SCALE

APPROVAL SHEET
H-10776

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: 11/4/98
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: 12/4/98
James C. Gardner
Commander, NOAA
Chief, Pacific Hydrographic Branch

****

Final Approval

Approved:

Andrew A. Armstrong III Date: Jan 7 1999
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10776

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
16705	8/28/98	B. Mihailov	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. Full application of soundings and features from
			smooth sheet
			Full Part Before After Marine Center Approval Signed Via
16705	1/21/99	MATT Kroll	Drawing No. applied Sndgs, curves, features to chart
			thru BP-166943
			Full Part Before After Marine Center Approval Signed Via
16700	1/25/99	MATT Kroll	Drawing No. Applied Sndgs, curves, features to chart
			thru chart 16705
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.