

H10925

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-40-02-99

Registry No. H-10925

LOCALITY

State Alaska

General Locality Southwest Prince William Sound

Sublocality Montague Point to Snug Harbor

1999

CHIEF OF PARTY

Commander Daniel R. Herlihy, NOAA

LIBRARY & ARCHIVES

DATE

JUN 12 2001

HYDROGRAPHIC TITLE SHEET

H-10925

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.

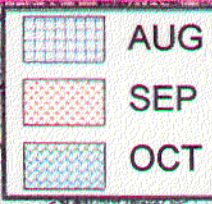
RA-40-02-99

State AlaskaGeneral locality Southwest Prince William SoundLocality Montague Point to Snug HarborScale 1:40,000 Date of survey 8/16/99 - 10/7/99Instructions dated July 30, 1999 Project No. OPR-P139-RA-99Vessel RAINIER (2120)Chief of party CDR Daniel R. Herlihy, NOAASurveyed by RAINIER PersonnelSoundings taken by echo sounder, hand lead, pole Seabeam 1050D LFGraphic record scaled by RAINIER PersonnelGraphic record checked by RAINIER PersonnelEvaluation by: L. Deodato Automated plot by HP 750C
~~XXXXXXXXXX~~Verification by M. Bigelow, R. Davies, E. Domingo, R. Mayor, G. NelsonSoundings in fathoms ~~xxx~~ at ~~xxxx~~ 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.

AW015/SURF 5/22/01 DAS



Sheet AP
85.4 sq nm

Sheet AC
1.97 sq nm

Sheet AD
14.46 sq nm

Sheet AG
13.58 sq nm

Sheet AJ
19.89 sq nm

Sheet AF
5.85 sq nm

Sheet AH
14.34 sq nm

Sheet AE
9.79 sq nm

Sheet AK
7.40 sq nm

Sheet AL
8.32 sq nm

Sheet AM
9.19 sq nm

Sheet AN
10.91 sq nm

Sheet AR
14.19 sq nm

AQ

AT

AU

AV

Downtime_Type	August	September	October
Weather -Hr	0	0	0
Mechanical -Hr	0	0	0
Electronic -Hr	0	0	0

PROGRESS SKETCH

OPR-P139-RA
Southwest
Prince William Sound
ALASKA

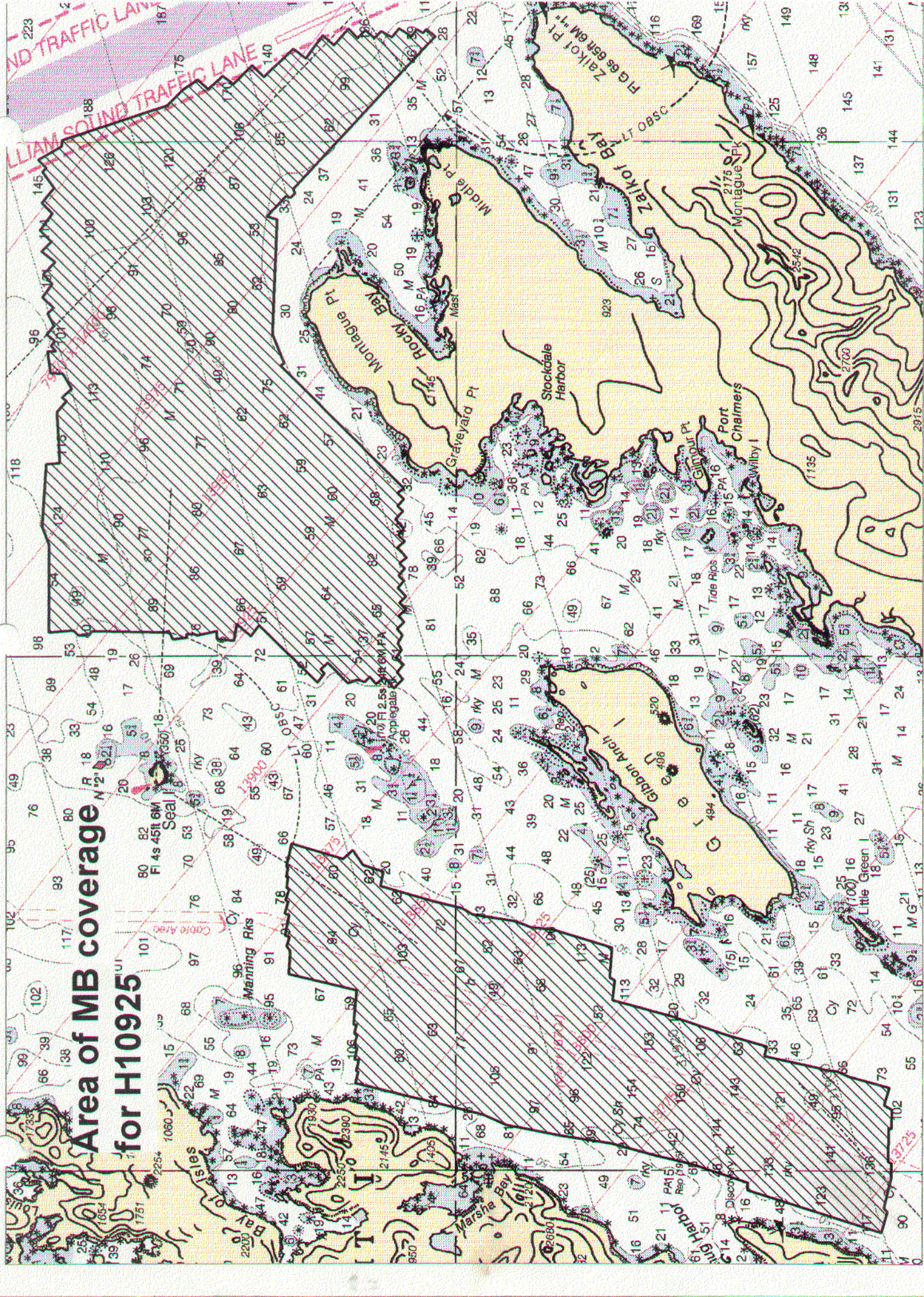
October 1999

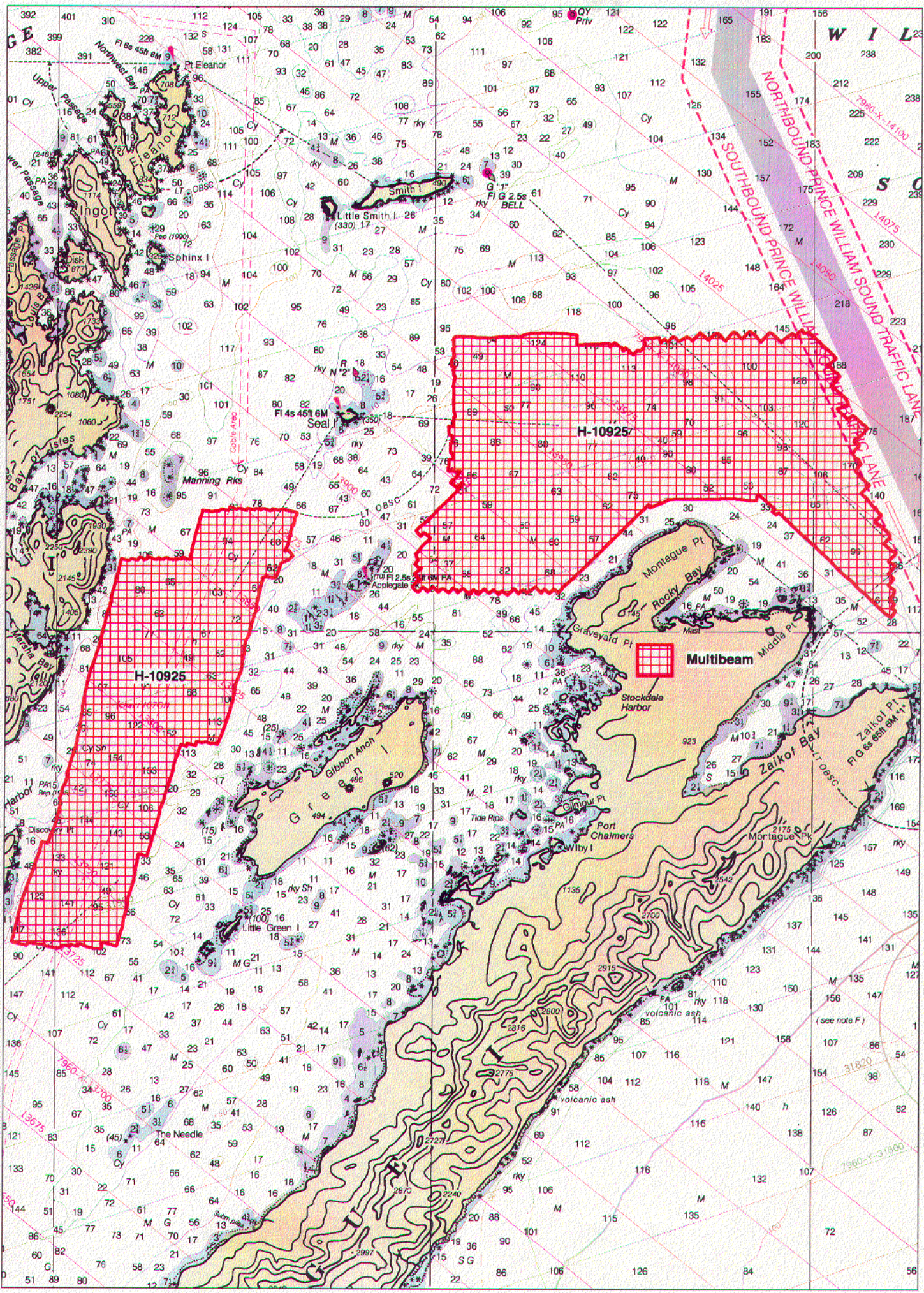
Chart 16700
NOAA Ship RAINIER
CDR Daniel R. Herlihy
Commanding

Sheet	Reg No	Started	Percent	Completed	Submitted	SQNM
AC	H10923	8/15/99	100	8/27/99	9/4/99	1.97
AD	H10921	8/11/99	100	10/6/99		14.46
AE	H10920	8/11/99	100	9/28/99		9.79
AF	H10932	9/9/99	100	10/19/99		5.85
AG	H10929	8/29/99	100	10/20/99		13.58
AH	H10927	8/26/99	100	10/20/99		14.34
AJ	H10918	8/12/99	100	10/20/99		19.89
AK	H10933	9/9/99	100	10/20/99		7.40
AL	H10928	8/27/99	100	10/20/99		8.32
AM	H10922	8/13/99	100	9/28/99		9.19
AN	H10919	8/12/99	100	10/11/99		10.91
AP	H10925	8/16/99	100	10/7/99		85.4

Accomplished	August	September	October
LNM Hydro	1166.48	1204.09	629.37
LNM SSS	0	0	0
SQ NM	65.89	39.77	109.63
AWOIS Invest.	7	4	10
Other Invest.	0	0	0
LNM Multibeam	654.67	609.86	980.62
Days at Sea	17	26	17

Area of MB coverage for H10925





Descriptive Report to Accompany Hydrographic Survey H10925

Field Number RA-40-02-99

Scale 1:40,000

August - October 1999

NOAA Ship RAINIER

Chief of Party: CDR Daniel R. Herlihy, NOAA

A. PROJECT ✓

This basic hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P139-RA dated July 30, 1999, and the Draft Standing Project Instructions dated April 6, 1998. Survey H10925 corresponds to sheet AP as defined in the sheet layout. This survey will provide data to supersede prior surveys conducted in the early to mid 1900s, and will affect Charts 16700, 16701, 16705, and 16709. Requests for hydrographic surveys and updated charts in this area have been received from the National Imagery and Mapping Agency (NIMA), the U.S. Coast Guard, the Southwest Alaska Pilot's Association, cruise ship lines, and local fishermen.

Significant changes in depths and shoreline may have occurred in the project area as a result of the earthquake of March 27, 1964.

B. AREA SURVEYED ✓ *See Eval Rpt., section B*

The survey area is located from Montague Point to Snug Harbor. The survey's northern limit is latitude $60^{\circ}28'00''\text{N}$ and the southern limit is latitude $60^{\circ}11'39''\text{N}$. The survey's western limit is longitude $147^{\circ}47'42''\text{W}$ and the eastern limit is longitude $146^{\circ}54'34''\text{W}$. Within the survey limits, hydrography was confined to the deeper areas (generally over 50 fathoms), while separate 1:10,000 scale sheets covered the shallower near shore regions.

Data acquisition was conducted from August 16 to October 6, 1999 (DN 228 to 280).

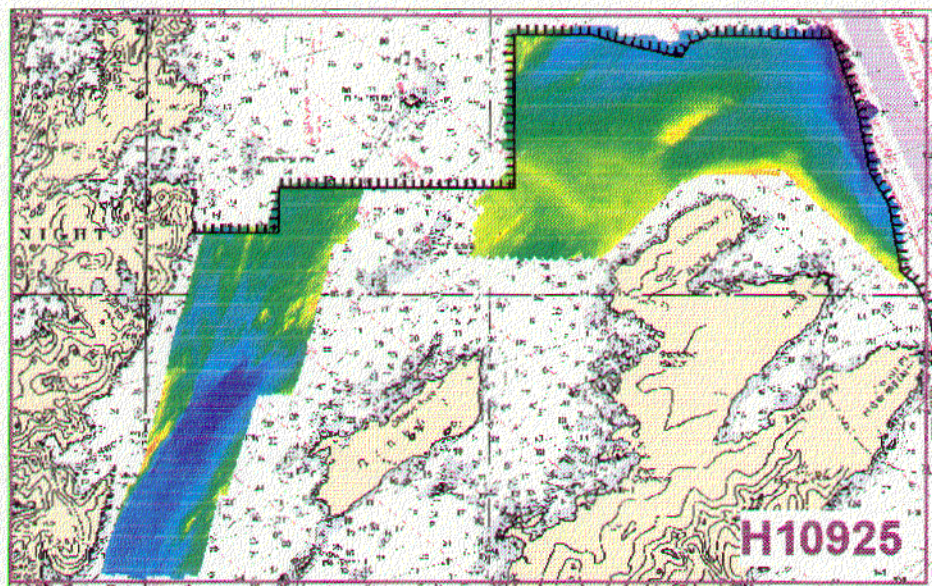


Figure 1. H10925 survey area

C. SURVEY VESSELS ✓

Data were acquired exclusively by RAINIER (vessel number 2120) as noted in the Survey Information Summary included with this report. RAINIER was used for the acquisition of multibeam data and sound velocity profiles. See the Project Related Data for OPR-P139-RA-99 for vessel descriptions. No unusual vessel configurations or problems were encountered on this survey.

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Multibeam data collected by RAINIER were acquired using Triton-Elics' ISIS software version 4.32 in conjunction with Elac-Nautik's HydroStar Online version 2.8.9, and processed using CARIS HIPS software version 4.3.

Multibeam data were reviewed with the CARIS Hydrographic Data Cleaning System (HDGS). Depth fliers were identified and manually flagged as "rejected". Vessel positioning and attitude data from each system were similarly displayed and manually cleaned. Additionally, instantaneous speed as computed from the positioning data was checked for speed jumps exceeding 3 knots as an indication of potential position fliers. For this survey, all soundings beyond a maximum angle of 60° off nadir were rejected in an attempt to reduce the noise and refraction errors observed in these outer beams. In a few cases some of these outer beam were manually re-accepted when slight gaps were discovered after creation of digital terrain models. These data were closely examined to ensure data consistency and quality prior to re-acceptance.

After review and cleaning, depth, position, and attitude data were merged with sound velocity, preliminary tide and dynamic draft correctors to compute the corrected depth and position of each sounding. Processed soundings were read into a CARIS Workfile by selecting shoal-biased "line-by-line" binning at a two densities; one at 12m x 12m and the other at 1.5mm x 1.5mm at survey scale. The former was used to create digital terrain models (DTMs) that were used to demonstrate multibeam coverage and perform multibeam quality-assurance, while the latter was used to export soundings into HPS through HPTools. Preliminary tides were applied in the Hydrographic Processing System (HPS), with the processed soundings excessed using a 3mm character size and plotted at a 2 mm character size to produce the final sounding plot. Final selected soundings were saved and plotted in MapInfo. Raster images registered in MapInfo facilitated chart and prior survey comparisons.

Survey H10925 is defined as sheet 12 in HPS. The CARIS workfiles were created and named as follows: "h10925_60" for soundings to be exported to HPS, "h10925_12" for the DTM showing multibeam coverage, and "h10925_qc" for the crossline Quality Control Report. The project name is identified as "P139_SheetAP" in HDGS.

All final plots were created in MapInfo using UTM Zone 6 projection.

A complete listing of software is included in Appendix H. A data flow diagram is included in Appendix G.*

E. SONAR EQUIPMENT ✓

Side Scan Sonar (SSS) equipment was not used on this survey. *concur*

** Filed with the hydrographic data.*

F. SOUNDING EQUIPMENT ✓

Only one category of echo sounder system was used on this survey as described below:

1. Ship Shallow-Water and Intermediate Depth Multibeam (RAINIER)

RAINIER utilized the SeaBeam 1050D MKII, which is a hull-mounted, dual frequency (180 kHz, 50 kHz), high-resolution multibeam echo sounder system for shallow and intermediate water depths. A TSS 335B attitude sensor was used to correct for the effects of heave, roll, and pitch, and a Sperry MK227 gyro was used for heading. The SeaBeam 1050D MKII ensonifies the seafloor utilizing two narrow beamwidth transducer arrays pinging into 14 sectors. The receiving beamformer generates 3 narrow beams each sector with a beam width of 1.5° and a spacing of 1.25°. Three subfans are one total fan. Hence, there are 14 sectors x 3 beams x 3 subfans resulting in 126 total beams. Serial numbers for the SeaBeam 1050D MKII, TSS335B and Sperry MK227 are included in Appendix H*

The high frequency array (180 kHz) is used in depths ranging from 10 to 300 meters, while the low frequency array (50 kHz) is used in depths ranging from 100 to 3100 meters. High frequency was used exclusively on survey H10925 with an acquisition swath width of 128°. During processing, all soundings outside of 60° from nadir were rejected in an attempt to reduce noise and refraction errors in the outer beams. Some of these soundings were later re-accepted during the final stages of subset cleaning to fill in some small gaps that were identified between adjacent lines

G. CORRECTIONS TO ECHO SOUNDINGS ✓**Water Level Correctors**

Soundings were reduced to Mean Lower-Low Water (MLLW) using unverified observed tide data for station Cordova, AK (945-4050) obtained from the Center for Operational Oceanographic Products and Services (CO-OPS) web site. These data were used in creating HPS tide table #1. All tide correctors were fully adjusted for the MapInfo tidal zoning scheme supplied with the project files.

Listings of HPS tide tables used for H10925 and tidal correctors as provided in the Project Instructions for H10925 are contained in the Survey Information Summary included with this report.

The operating National Water Level Observation Network (NWLON) primary tide stations at Cordova, Alaska (945-5760) and Valdez, Alaska (945-4240) will serve as control for datum determination at four subordinate stations. Because a Next Generation Water Level Measurement System (NGWLMS) Aquatrak sensor is the only sensor installed at these primary stations, RAINIER personnel were neither required nor able to inspect and perform leveling at these stations.

RAINIER personnel installed Sutron 8200 "bubbler" tide gauges at the following subordinate stations:

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Zaikof Point	945-4411	30-day	10 August 1999	14 October 1999
Port Chalmers	945-4511	30-day	10 August 1999	20 October 1999
Snug Harbor	945-4662	30-day	11 August 1999	20 October 1999
Montague Island	945-4616	30-day	31 August 1999	20 October 1999

* Filed with the hydrographic data.

Refer to the Field Tide Notes and supporting data in Appendix D* for individual gauge performance and level closure information.

Raw water level data from these gauges was forwarded to N/OPS1 throughout the project period, with the final package submitted on October 29, 1999 in accordance with HSG 50 and FPM 4.7. The Pacific Hydrographic Branch will apply final approved (smooth) tides to the survey data during final processing. A request for delivery of final approved (smooth) tides to the Pacific Hydrographic Branch was forwarded to N/OPS1 on October 29, 1999 in accordance with FPM 4.8.

Approved tide note dated May 15, 2000 is attached.
Sound Velocity Correctors

The velocity of sound through water was determined by a minimum of one cast every four hours of data acquisition in accordance with the Draft Standing Project Instructions. Cast information is included in the Survey Information Summary and in Appendix I.*

The sound velocity casts were acquired with a SBE SEACAT Profiler (S/N 219). Calibration reports and dates are included with the project data for OPR-P139-RA-99. Velocity correctors were computed using the program VELOCWIN version 4 beta 2, which generates correction tables for both CARIS and HPS. Sound velocity correctors were applied to the multibeam soundings in CARIS.

Settlement and Squat and Static Draft Correctors

The following table shows when the vessel offset correctors used for this survey were last measured:

Vessel No.	Date of Static Draft and Transducer Offset Measurements	Method of Settlement and Squat Measurement	Date of Settlement and Squat Measurement	Location of Settlement and Squat Measurement
2120	March 1999	OTF	March 1999	Port Angeles, WA

Settlement and squat correctors, static draft measurements and vessel offsets are included with the Project Related Data for OPR-P342-RA-99.

Heave, Pitch, Roll and Heading, Including Biases and Navigation Timing Errors

RAINIER utilizes a TSS 335B motion sensor, which provides attitude data (heave, pitch and roll) to correct for the effects of vessel motion during survey operations. Heave resolution is 1cm, with an accuracy of 5cm or 5% of the range, whichever is the greater. The roll and pitch resolution is 0.01° with an accuracy of 0.05° – 0.1°. During acquisition, SeaBeam depth data are corrected for roll in HydroStar to account for beam steering at the transducer face. A Sperry MK227 digital gyro was utilized for vessel heading, which has a resolution of 0.1° and an accuracy of better than 1°. Serial numbers are located in Appendix H.

Heave, roll, pitch, and navigation latency biases for RAINIER were determined during a Patch Test conducted in Lynn Canal, southeast Alaska on May 21, 1999. Subsequent tests in Prince William Sound on August 16, 1999 further refined the pitch bias values. Multibeam system offsets, dynamic draft correctors, and system bias values are contained in CARIS Vessel Configuration Files (VCF's) and were created using the program "VCFEDIT" in CARIS. These offsets and biases are applied to the sounding data during processing in CARIS. A printout of each VCF is contained in Project Related Data for OPR-P139-RA-99, and the VCF's themselves are included with the digital HDCS data.

** Filed with the hydrographic data.*

H. HYDROGRAPHIC POSITION CONTROL ✓

The horizontal datum for this project is NAD 83. Differential GPS was the sole method of positioning. The US Coast Guard Beacons at Cape Hinchinbrook (ID# 894) and Potato Point (ID# 883) were the sources of differential correctors.

Ship-to-launch DGPS performance checks were performed in accordance with Section 3.2 of the FPM. Copies of the performance checks are included in the Project Related Data for OPR-P139-RA-99.

I. SHORELINE ✓ *See Eval Rpt., section J.*

There was no shoreline associated with this survey. *do not concur.*

J. CROSSLINES ✓

Multibeam crosslines totaled 30.47 nautical miles, comprising 6.6% of multibeam hydrography. The Quality Control Report (CARIS HIPS) for the checkline file averaged 95.18%, with a depth tolerance of 0.023. See Appendix E for the detailed report.

K. JUNCTIONS ✓ *See Eval Rpt., section L.*

The following contemporary surveys junction with H10923:

Registry #	Scale	Date	Junction side
H-9382	1:40,000	1973	East (Eastern region)
H-9385	1:20,000	1973	East (Eastern region)
H-10841	1:10,000	1998	North (Western region)
H-10855	1:10,000	1998	West (Eastern region)
H-10849	1:40,000	1998	North (Eastern region)
H-10847	1:10,000	1998	West (Eastern region)
			North (Western region)
H10921	1:10,000	1999	South (Eastern region)
H10923	1:10,000	1999	South (Eastern region)
H10918	1:10,000	1999	South (Eastern region)
H10929	1:10,000	1999	West (Eastern region)
			East (Western region)
H10932	1:10,000	1999	West (Western region)
H10933	1:10,000	1999	West (Western region)
H10940	1:10,000	1999	East (Western region)
H10928	1:10,000	1999	East (Western region)
H10927	1:10,000	1999	East (Western region)

** Filed with the hydrographic data.*

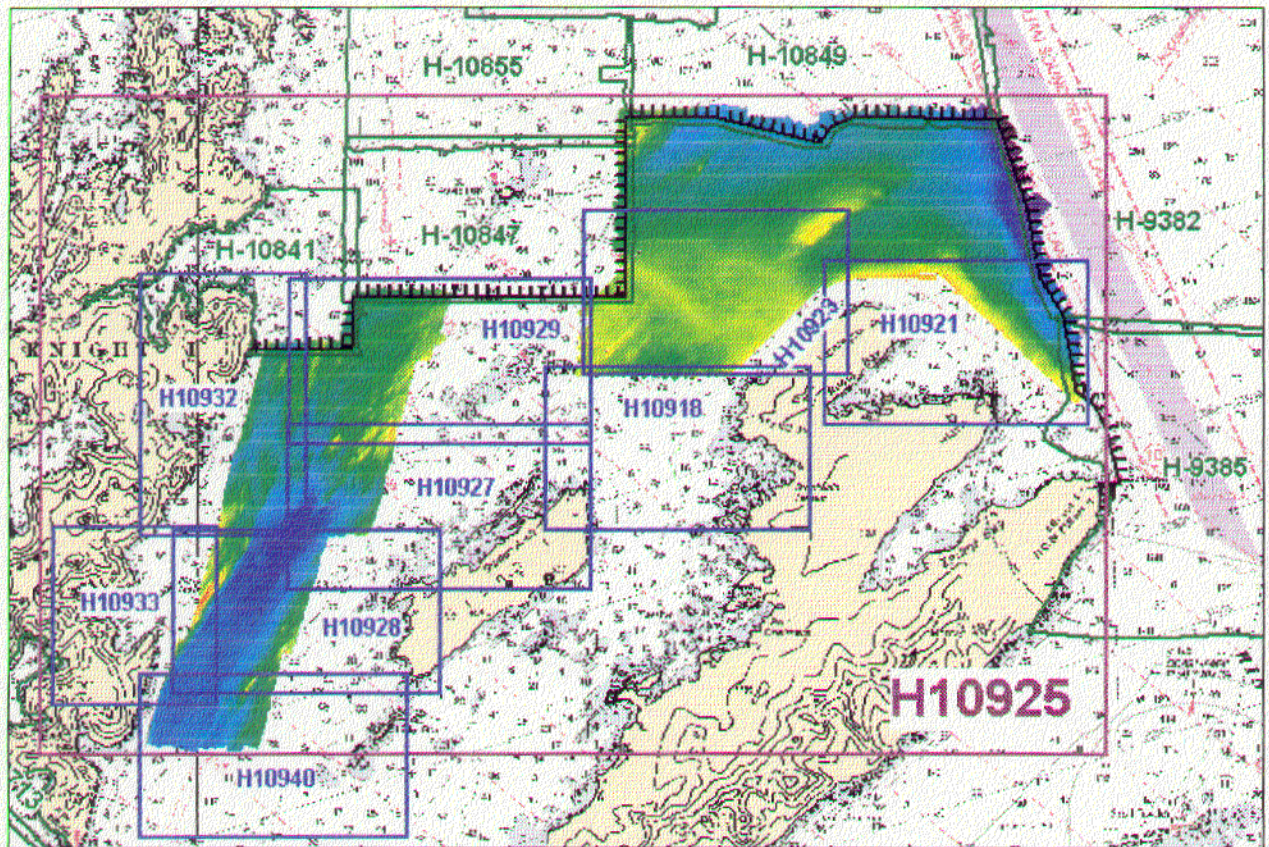


Figure 2. Junction surveys with H10925

Survey H10855 junctions very well with this survey, in an area that is relatively flat, with depths ranging from 55 to 75 fathoms. Differences are generally less than one fathom, with soundings from H10925 slightly shoaler. ✓

Survey H10849 junctions very well with this survey, with differences generally less than two fathoms. The only discrepancy of note is a 52-fathom sounding at $60^{\circ}27'35.46''N$, $147^{\circ}17'16.24''W$ (Pos. #84015) which is in the vicinity of a 59-fathom sounding from junction survey H10849. This discrepancy is possibly explained by the difference in accuracy and resolution between the SeaBeam 1050D (H10925) and the Intermediate Depth Swath Survey System (IDSSS) used for survey H10849. ✓

Survey H-9382 junctions very well with this survey, in an area that is relatively flat and deep. In depths as great as 200 fathoms, differences were generally less than 2 fathoms. *concur.*

Survey H-9385 junctions very well with this survey, with differences generally less than two fathoms in depths as deep as 140 fathoms. Some differences of 3-4 fathoms are noticeable in areas of sloping topography.

Both surveys H10923 and H10921 junction very well with this survey, generally differing by one fathom or less.

Survey H10918 junctions extremely well with this survey, with differences of one fathom or less. *concur.*

Survey H10929 compares within 1 to 2 fathoms to this survey, with one exception. In the vicinity of 60°19'33.39"N, 147°30'16.69"W, this survey acquired soundings of 31 to 34 fathoms, whereas H10929 acquired soundings of 36 to 38 fathoms. These soundings are the least depths over a bathymetric feature. As this feature was covered with 100% multibeam on both surveys, the hydrographer recommends the conservative approach of charting the shoaler depths from this survey.

Survey H-10847 junctions very well with this survey, with differences generally less than one fathom. *concur.*

Survey H-10841 junctions well with this survey, with differences generally less than one to two fathoms. This survey did find shoaler depths of greater magnitude in some instances over features, which can be attributed to the use of multibeam versus vertical beam echo sounder on survey H10841. *concur.*

Surveys H10932 and H10933 junction very well with this survey, differing generally by one fathom or less. The only item of note is an 11.7-fathom sounding at 60°15'33.13"N, 147°39'19.62"W (Pos. #240469) offshore of the entrance to Snug Harbor. In this location, H10933 found a shoal depth of 14.4 fathoms; however this was at the edge of the junctioning survey and was not fully developed. Ship multibeam appears to cover the high point of this shoal, but a 30-meter by 100-meter holiday does exist immediately east of this high point where the bottom trace was lost due to the extreme downward slope. An inspection of the individual line in CARIS indicates a downward trend at the location of the holiday, but it is possible that a shoaler area could exist within this coverage gap.

Surveys H10927, H10928 and H10940 all agree well with this survey, with differences generally less than 2 fathoms. *concur.* Over a shoal surrounded by depths of 70 fathoms, a 45-fathom sounding at 60°18'58.79"N, 147°31'53.1"W (Pos.#229156) obtained on this survey compared with a 48-fathom sounding obtained with single beam on H10927.

Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after application of smooth tides. *concur.*

L. COMPARISON WITH PRIOR SURVEYS ✓ *See Eval Rpt., section M.*

The following prior survey shares common area with survey H10925:

Registry #	Scale	Date	Area covered
H-2612	1:40,000	1902*	Southeast corner (Eastern region)
H-2984	1:20,000	1908	Northwest edge (Western region)
H-3026	1:20,000	1909	Southwest edge (Western region)
H-2741	1:40,000	1911	All (Western region), Northwest corner (Eastern region)
H-3675	1:80,000	1914	Eastern half (Eastern region)
H-5421	1:20,000	1933	Western half (Eastern region)
H-5431	1:20,000	1933	Eastern half (Western region)
H-9513	1:20,000	1975	Southern half (Western region)

*1912 in Project Instructions

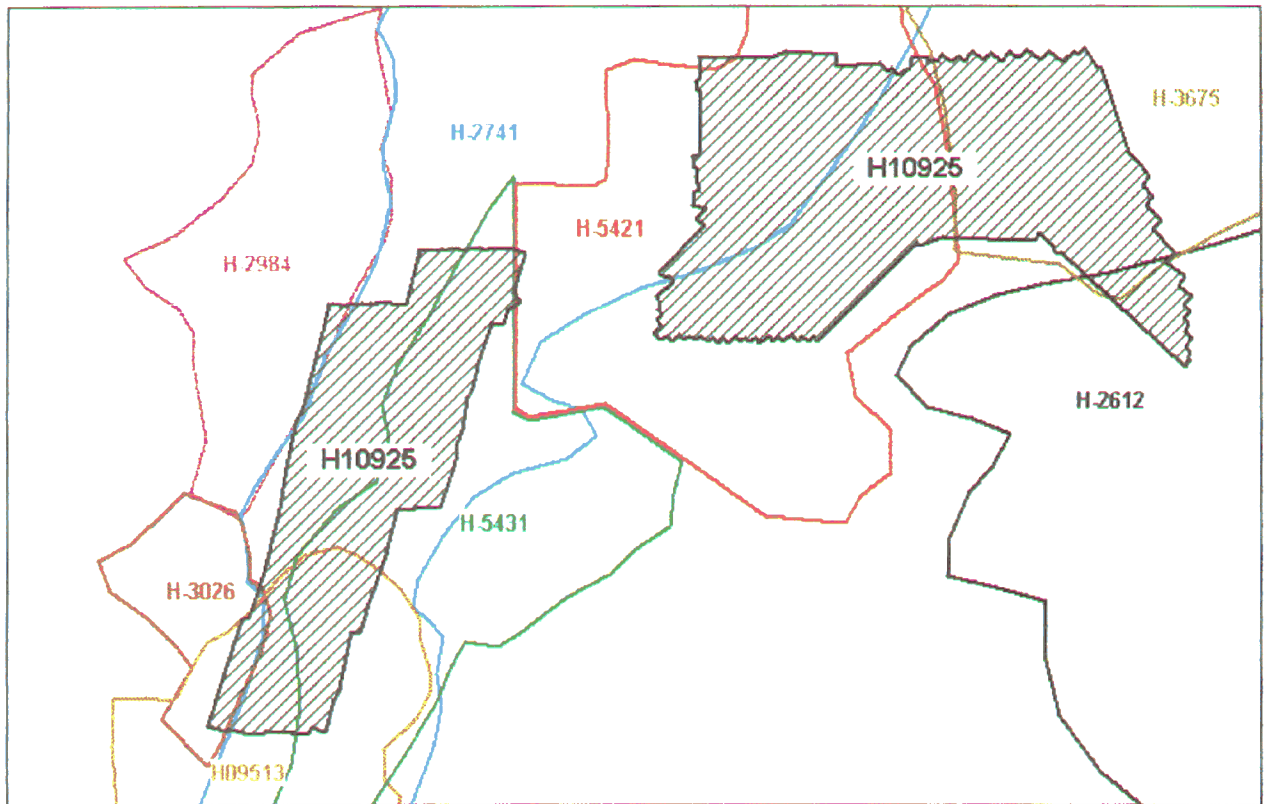


Figure 3. Prior surveys that share common area with H10925

Prior survey H-5431 covers the eastern half of the western region of present survey H10925. Prior soundings agreed very well with the present survey, within 1 to 2 fathoms, down to a depth of approximately 100 fathoms. However beyond this depth, there are a few cases in which prior soundings are as much as 10 fathoms deeper than soundings from the present survey. In one case, a prior sounding of 144 fathoms at $60^{\circ}18'19.13''N$, $147^{\circ}33'50.19''W$ falls in the vicinity of 105- to 122-fathom soundings from H10925. Another example is a prior 167-fathom sounding at $60^{\circ}17'38.94''N$, $147^{\circ}34'47.67''W$ which falls in the vicinity of a 155-fathom sounding from H10925. In addition, sparse sounding density also led to a few instances in which least depths were missed by the prior survey. For example, a 65-fathom sounding from this survey at $60^{\circ}20'45.7''N$, $147^{\circ}33'36.91''W$ (Pos.# 140760) fell between prior survey soundings of 81 and 87 fathoms, which were acquired on sounding lines 1,100 meters apart.

Prior survey H-2984 covers the northwestern edge of the western region of present survey H10925. The prior soundings show fair agreement with the present survey, although differences between the prior and present survey are noticeable on the steep slope along the eastern shore of Knight Island. Further offshore in the deeper, flatter bottom, the prior survey is consistently 2 to 4 fathoms deeper than the current survey. In addition, sparse sounding density on the prior survey results in instances in which shoal depths between sounding lines appear to have been missed. Examples include a current 367-foot (61.2 fathoms) sounding at $60^{\circ}21'13.84''N$, $147^{\circ}35'42.25''W$ (Pos.# 179951) that is located between prior survey soundings of 482 and 505 feet.

Prior survey H-3026 covers the southwestern edge of the western region of present survey H10925, along the southeastern shore of Knight Island. There is no general trend to the comparison, with agreement within 10 feet in areas, and discrepancies as large as 50 to 60 feet in others. Depths between 600 and 900 feet characterize this area, so these discrepancies do not pose any danger to navigation.

Prior survey H-9513 covers the southern portion of the western region of present survey H10925. The prior soundings show excellent agreement with the present survey, matching to within a fathom in depths as great as 140 fathoms. Exceptions are noticeable on the steep slope along the eastern shore of Knight Island. The present survey did, however, find shoaler soundings that fall between sounding lines from the prior survey. ✓

Prior survey H-5421 covers the western half of the eastern region of present survey H10925. Prior soundings agree within 1 fathom in depths to 70 fathoms, but beyond this depth, larger differences are noticeable. In depths over 80 fathoms, the prior soundings are up to 6 fathoms shoaler than the current soundings. In a few cases the current survey found shoaler soundings between sounding lines run on the prior survey. ✓

Prior survey H-2612 covers just the southeast tip of the eastern region of present survey H10925. The prior soundings agree very well with the present survey, except on a steep slope where the bottom rises from 130 fathoms to 40 fathoms over a horizontal distance of 1400 meters. On this slope the differences between current and prior soundings are as large as 10 fathoms, with the prior soundings being shoaler. ✓

Prior survey H-3675 covers the eastern half of the eastern region of present survey H10925. Prior soundings agree very well with the present survey, within 1 fathom, down to a depth of approximately 100 fathoms. In depths of 100-110 fathoms, prior soundings are 2-4 fathoms shoaler, but in depths of 170-180 fathoms, this difference increases to as much as 8-10 fathoms. ✓

Prior survey H-2741 covers the entire western region and the northwest corner of the eastern region of the present survey. However, due to the poor quality of the scan of survey H-2741, no comparison was possible. ✓

Differences between survey H10925 and the prior surveys are most likely attributable to improved positioning and sounding accuracy obtained with modern equipment, increased bottom coverage obtained with multibeam, and possible changes in bathymetry due to the 1964 earthquake. *concur*

Final comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides. *concur*

M. ITEM INVESTIGATIONS ✓

There were no Automated Wreck and Obstruction Information System (AWOIS) items investigated within the survey area. *concur*

N. COMPARISON WITH THE CHART ✓ *See Eval Rpt., section O.*

Survey H10925 was compared with chart 16700 (26th Ed.; September 19, 1998, 1:200,000), chart 16701 (17th Ed.; July 25, 1998, 1:81,436), chart 16705 (18th Ed.; March 27, 1999, 1:80,000), and chart 16709 (21st Ed.; June 29, 1996, 1:80,000)

Depths from the charts were generally 1-2 fathoms deeper than survey depths. Exceptions are noticeable over features in areas of irregular topography, where increased coverage on H10925 acquired shoaler depths than the priors. The most notable differences are addressed below. In all of these cases, the entire area was covered with 100% multibeam. ✓

The present survey revealed a depth of 61 fathoms at 60°21'13.84"N, 147°35'42.25"W (Pos.#179951), midway between charted depths of 80 and 84 fathoms.

The present survey revealed a depth of 65 fathoms at 60°20'45.7"N, 147°33-36.91"W (Pos. #140760), in the vicinity of charted depths of 85 fathoms.

The present survey revealed a depth of 52 fathoms at 60°20'24.45"N, 147°31'13.75"W (Pos. #228766), between charted depths of 72 and 88 fathoms.

The present survey revealed a depth of 45 fathoms at 60°19'40.17"N, 147°31'04.87"W (Pos. #230818), midway between charted depths of 52 and 55 fathoms.

The present survey revealed a depth of 38 fathoms at 60°19'17.58"N, 147°33'10.63"W (Pos. #195576), in the vicinity of a charted depth of 49 fathoms.

The present survey revealed a depth of 45 fathoms at 60°18'58.79"N, 147°31'53.1"W (Pos. #229156), in the vicinity of a charted depth of 63 fathoms.

The present survey revealed a depth of 54 fathoms at 60°16'48.66" N, 147°37'29.17" W (Pos. #173831), between charted depths of 66 and 74 fathoms.

The present survey revealed a depth of 11.7 fathoms at 60°15'33.13"N, 147°39'19.62"W (Pos.# #240469), between charted depths of 67 and 52 fathoms.

The present survey revealed a depth of 58 fathoms at 60°26'17.0"N, 147°14'52.92"W (Pos. #152282), between charted depths of 77 and 90 fathoms.

The present survey revealed a depth of 41 fathoms at 60°26'37.0"N, 147°18'15.17"W (Pos. #239384), falling midway between charted depths of 58 and 93 fathoms.

Dangers to Navigation

No dangers to navigation were found on this survey. *concur*

O. ADEQUACY OF SURVEY ✓

Survey H10925 is complete and adequate to supersede charted soundings and features in their common areas. Intermediate depth multibeam coverage was obtained throughout the survey area. Although 100% coverage was attempted, some small gaps exist, the most significant of which was discussed in section K. Due to the range of depths covered by this survey, none of these gaps are significant enough to warrant further attention.

P. AIDS TO NAVIGATION ✓

No navigational aids exist within the survey area. *concur*

Q. STATISTICS ✓

Refer to the Survey Information Summary attached to this report.

R. MISCELLANEOUS ✓

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

Bottom samples were not collected.

S. RECOMMENDATIONS ✓

None.

T. 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-P139-RA 1999 Coast Pilot Report	TBA	N/CS26
Project related data for OPR-P139-RA-99	December, 1999	N/CS34

Respectfully Submitted,



James B. Jacobson
Chief Survey Technician, NOAA

Approved and Forwarded,



Daniel R. Herlihy
Commander, NOAA
Commanding Officer

Survey Information Summary

Project: OPR-P139-RA **Project Name:** SOUTHWEST PRINCE WILLIAM SOUND

Instructions Dated: **Project Change Info:**

Sheet Letter: AP **Registry Number:** H10925

Sheet Number: RA-20-02-99

Survey Title: Montague Point to Snug Harbor

Data Acquisition Dates: **From:** 16-Aug-99 228 **To:** 06-Oct-99 280

Vessel Usage Summary

VESNO	MS	SPLITS	DEV	XL	S/L	DP	BS	DIVE
2120								

Sound Velocity Cast Information

Cast Name	HPS Table #	Cast DN	Max Depth	Position	Applicable DN

Tide Zone Information

Zone #	Time Corr.	Height Corr.
PWS8	-00 hr 06 min	0.95
PWS9	-00 hr 06 min	0.92
PWS10	-00 hr 06 min	0.90
PWS16	-00 hr 06 min	0.91
PWS36	-00 hr 06 min	0.93
PWS37	00 hr 00 min	0.93

Tide Gage Information

Tide Gauge #	Gauge Name	Installed	Removed
945-4511	Port Chalmers	8/10/1999	10/20/1999
945-4616	Montague Island	8/31/1999	10/20/1999
945-4662	Snug Harbor	8/11/1999	10/20/1999
945-4411	Zaikof Point	8/10/1999	10/14/1999

Statistics Summary

Type	Total
BS	
DP	
MS	
S/L	
SPLIT	
SWMB	
MB	434.81
MBXL	30.47
XL	

Percent XL	6.6
SQNM	85.4

APPROVAL SHEET

for

H10925

RA-40-02-99

Standard field surveying and processing procedures were followed in producing this survey in accordance with the NOS Hydrographic Surveys Specifications and Deliverables; the Hydrographic Survey Guidelines; and the Field Procedures Manual, as updated for 1998.

The field sheet and accompanying records have been examined 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.

Approved and Forwarded,



Daniel R. Herlihy
Commander, NOAA
Commanding Officer
NOAA Ship RAINIER



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: May 15, 2000

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P139-RA-99
HYDROGRAPHIC SHEET: H-10925

LOCALITY: Southwest Prince William Sound, AK

TIME PERIOD: August 16 - October 7, 1999

TIDE STATION USED: 945-4411 Zaikof Point
Lat. 60° 18.6'N Lon. 146° 56.7'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.207 meters

TIDE STATION USED: 945-4662 Snug Harbor
Lat. 60° 14.4'N Lon. 147° 43.2'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.218 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: PWS42, PWS47, PWS52, PWS53 & PWS54.

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 with applicable zoning correctors 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.

Thomas N. Mero 5/16/00

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Final tide zone node point locations for OPR-P139-RA-99,
Sheet H-10925.

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 PWS42			
-147.703642 60.244653	945-4662	-6	1.02
-147.738627 60.227865			
-147.792175 60.19276			
-147.781996 60.187238			
-147.773635 60.161998			
-147.606335 60.147238			
-147.411023 60.097978			
-147.325832 60.179367			
-147.487763 60.226861			
-147.604351 60.274729			
-147.674795 60.308452			
-147.740374 60.278784			
-147.726093 60.266771			
-147.703642 60.244653			
Zone PWS47			
-147.385584 60.525438	945-4662	0	1.04
-147.474011 60.505541			
-147.572046 60.469896			
-147.706768 60.397587			
-147.710815 60.312655			
-147.674795 60.308452			
-147.604351 60.274729			
-147.487763 60.226861			
-147.343216 60.302686			
-147.212948 60.329021			
-147.115049 60.379232			
-147.294086 60.380883			
-147.38032 60.416307			
-147.394959 60.462944			
-147.324788 60.528831			

-147.385584 60.525438

Zone PWS52

-147.017466 60.333488	945-4411	0	1.00
-147.15325 60.323765			
-147.141645 60.273831			
-147.12588 60.248158			
-146.940685 60.290383			
-146.659408 60.329274			
-146.663109 60.334575			
-146.6701 60.339876			
-146.684904 60.34538			
-146.717804 60.370613			
-147.017466 60.333488			

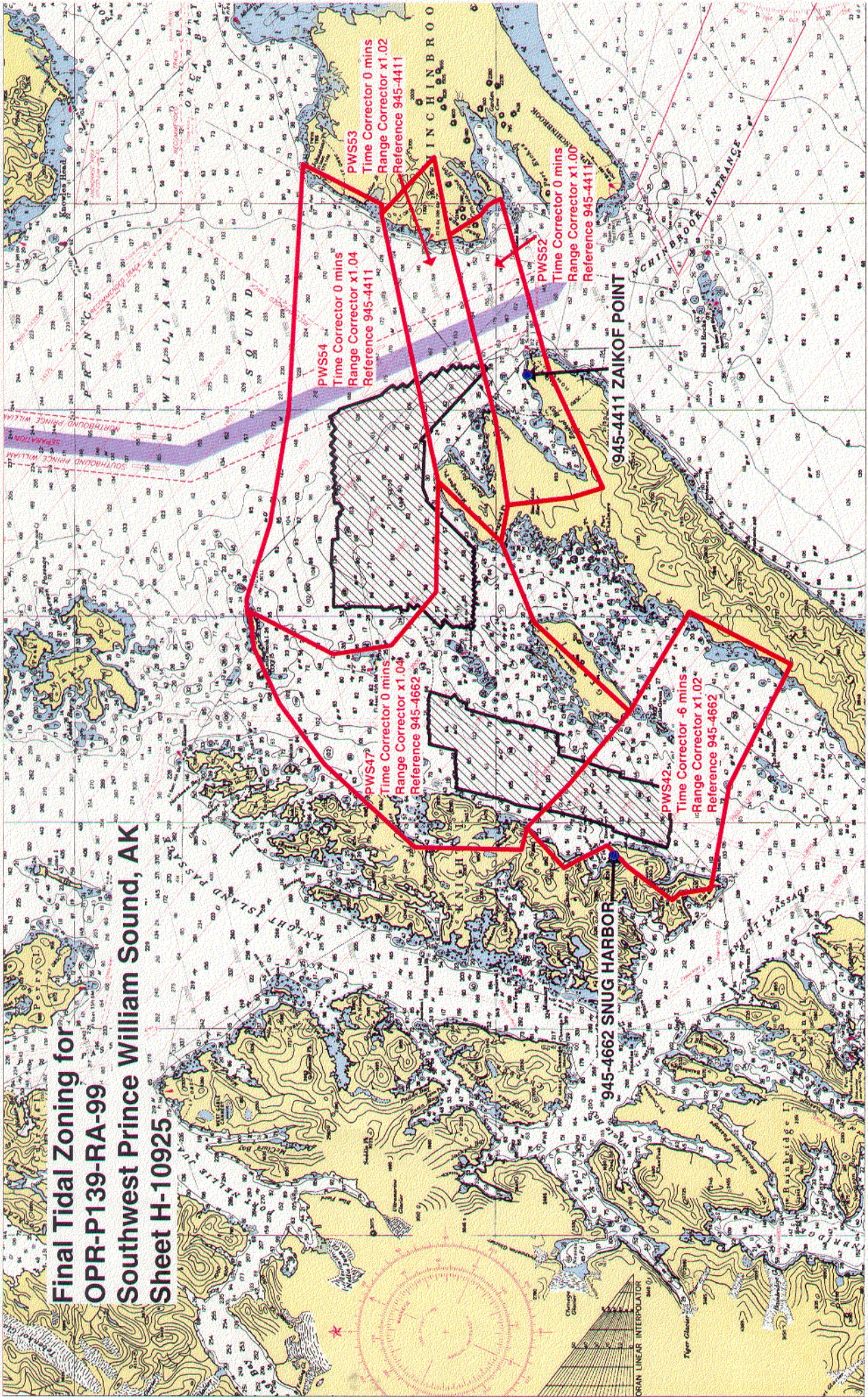
Zone PWS53

-146.683522 60.424393	945-4411	0	1.02
-146.591692 60.382398			
-146.717804 60.370613			
-147.017466 60.333488			
-147.15325 60.323765			
-147.212948 60.329021			
-147.115049 60.379232			
-146.683522 60.424393			

Zone PWS54

-147.324788 60.528831	945-4411	0	1.04
-147.394959 60.462944			
-147.38032 60.416307			
-147.294086 60.380883			
-147.115049 60.379232			
-146.683522 60.424393			
-146.667982 60.423944			
-146.603222 60.486673			
-146.751935 60.491074			
-147.002014 60.497978			
-147.183429 60.512725			
-147.305728 60.531336			
-147.330451 60.530561			
-147.324788 60.528831			

**Final Tidal Zoning for
OPR-P139-RA-99
Southwest Prince William Sound, AK
Sheet H-10925**



GEOGRAPHIC NAMES

H-10925

Name on Survey	16700-16701										
	A	B	C	D	E	F	G	H	I	J	
	ON PREVIOUS SURVEY	ON PREVIOUS SURVEY	ON PREVIOUS SURVEY	ON PREVIOUS SURVEY	ON PREVIOUS SURVEY	ON PREVIOUS SURVEY	ON PREVIOUS SURVEY	ON PREVIOUS SURVEY	ON PREVIOUS SURVEY	ON PREVIOUS SURVEY	
	ON U.S. QUADRANGLE MAPS	ON U.S. QUADRANGLE MAPS	ON U.S. QUADRANGLE MAPS	ON U.S. QUADRANGLE MAPS	ON U.S. QUADRANGLE MAPS	ON U.S. QUADRANGLE MAPS	ON U.S. QUADRANGLE MAPS	ON U.S. QUADRANGLE MAPS	ON U.S. QUADRANGLE MAPS	ON U.S. QUADRANGLE MAPS	
	FROM LOCAL INFORMATION	FROM LOCAL INFORMATION	FROM LOCAL INFORMATION	FROM LOCAL INFORMATION	FROM LOCAL INFORMATION	FROM LOCAL INFORMATION	FROM LOCAL INFORMATION	FROM LOCAL INFORMATION	FROM LOCAL INFORMATION	FROM LOCAL INFORMATION	
	ON LOCAL MAPS	ON LOCAL MAPS	ON LOCAL MAPS	ON LOCAL MAPS	ON LOCAL MAPS	ON LOCAL MAPS	ON LOCAL MAPS	ON LOCAL MAPS	ON LOCAL MAPS	ON LOCAL MAPS	
	P.O. GUIDE OR MAP	P.O. GUIDE OR MAP	P.O. GUIDE OR MAP	P.O. GUIDE OR MAP	P.O. GUIDE OR MAP	P.O. GUIDE OR MAP	P.O. GUIDE OR MAP	P.O. GUIDE OR MAP	P.O. GUIDE OR MAP	P.O. GUIDE OR MAP	
	RAND McNALLY ATLAS	RAND McNALLY ATLAS	RAND McNALLY ATLAS	RAND McNALLY ATLAS	RAND McNALLY ATLAS	RAND McNALLY ATLAS	RAND McNALLY ATLAS	RAND McNALLY ATLAS	RAND McNALLY ATLAS	RAND McNALLY ATLAS	
	U.S. LIGHT LIST	U.S. LIGHT LIST	U.S. LIGHT LIST	U.S. LIGHT LIST	U.S. LIGHT LIST	U.S. LIGHT LIST	U.S. LIGHT LIST	U.S. LIGHT LIST	U.S. LIGHT LIST	U.S. LIGHT LIST	
ALASKA (title)	✓	X		X							1
APPLEGATE ROCK	✓	X									2
BAY OF ISLES		X		X							3
DISCOVERY POINT	✓	X		X							4
GIBBON ANCHORAGE	✓	X		X							5
GRAVEYARD POINT	✓	X		X							6
GREEN ISLAND	✓	X		X							7
KNIGHT ISLAND	✓	X		X							8
MANNING ROCKS	✓	X		X							9
MARSHA BAY	✓	X		X							10
MIDDLE POINT	✓	X		X							11
MONTAGUE ISLAND	✓	X		X							12
MONTAGUE POINT	✓	X		X							13
PRINCE WILLIAM SOUND	✓	X		X							14
SEAL ISLAND	✓	X		X							15
SNUG HARBOR	✓	X		X							16
ZAIKOF BAY	✓	X		X							17
ZAIKOF POINT	✓	X		X							18
											19
											20
											21
											22
											23
											24
											25

Dennis J. Roesburg
APR 10 2000

HYDROGRAPHIC SURVEY STATISTICS

H-10925

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					
ENVELOPES	1				
VOLUMES					
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List): T-12662, T-12709 to T-12715, DM-10297 and DM-10300

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): 16701 17th Ed., July 25, 1998, 16707 18th Ed., March 27, 1999 and 16709 21st Ed., June 29, 1996

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	8		8
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	89	29	118
COMPARISON WITH PRIOR SURVEYS AND CHARTS		38	38
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS		30	30
EVALUATION REPORT			
GEOGRAPHIC NAMES			
OTHER (Chart Compilation)		49	49
USE OTHER SIDE OF FORM FOR REMARKS			
TOTALS	97	146	243

Pre-processing Examination by R. Davies	Beginning Date 12/16/99	Ending Date 12/16/99
Verification of Field Data by M. Bigelow, R. Davies, E. Domingo, R. Mayor, G. Nelson	Time (Hours) 97	Ending Date 1/9/01
Verification Check by I. Almacen	Time (Hours) 6.0	Ending Date 3/29/01
Evaluation and Analysis by L. Deodato	Time (Hours) 97	Ending Date 2/13/01
Inspection by I. Almacen	Time (Hours) 2.0	Ending Date 3/28/01

EVALUATION REPORT H-10925

A. PROJECT

The hydrographer's report contains an adequate discussion of the project information.

B. AREA SURVEYED

The survey area is adequately described in the hydrographer's report. Page-size plots of the charted area depicting the limits of supersession accompany this report as Attachments 1, 2, and 3.

The bottom consists mainly of mud. Depths range from 16.7 to 200 fathoms.

C. SURVEY VESSELS

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

D. AUTOMATED DATA ACQUISITION AND PROCESSING

The acquisition and processing of data in the field has been discussed in the hydrographer's report, section D.

Office processing of survey data was conducted using the same Computer Aided Resource Information System (CARIS), and Hydrographic Processing System (HPS) used by the hydrographer 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 the Specifications and Deliverables, April 1999.

The data are plotted using a Universal Transverse Mercator, Zone 06 projection and are depicted on a single sheet.

E. SONAR EQUIPMENT

Side scan sonar was not used during survey H-10925.

F. SOUNDING EQUIPMENT

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

G. CORRECTIONS TO SOUNDINGS

Soundings and elevations have been reduced to Mean Lower Low Water (MLLW) or Mean High Water (MHW) as appropriate with verified tide correctors obtained from CO-OPS. The correctors are zoned direct from stations 945-4411(Zaikof Point) and 945-4662(Snug Harbor).

Other sounding reducers include corrections for static draft, dynamic draft, sound velocity, heave, roll, and pitch. These reducers have been reviewed and are consistent with NOS specifications.

H. CONTROL STATIONS

Section H 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: -2.046 seconds (-63.313 meters)
Longitude: 7.352 seconds (112.800 meters)

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 15.0 was specified in the project instructions.

During data collection satellite configuration, as indicated by HDOP and the number of satellites, is monitored visually on HYPACK. During multibeam operations final positions are provided by the POS-MV that combines the DGPS position with inertial navigation information. In the event that the differential GPS corrector signal is lost, the POS-MV will continue to provide positions based on inertial navigation. Data was analyzed during processing to ensure it contained no significant errors.

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

Additional information concerning 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 in digital raster file and MapInfo format for T-12662, T-12709, T-12710, T-12711, T-12712, T-12713, T-12714, T-12715, DM-10297, and DM-10300 were office compiled on NAD83 and apply to this survey. Shoreline drawn on the smooth sheet in black originates from the above digital raster data as provided by the Remote Sensing Division, NGS. The shoreline data and the hydrographic data were merged during MicroStation processing. There were no MHW revisions on this survey.

K. CROSSLINES

Crosslines are adequately discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10925 junctions with the following surveys:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-9382	1973	1:40,000	East
H-9385	1973	1:20,000	East
H-10841	1998	1:10,000	North
H-10847	1998	1:10,000	North
H-10849	1998	1:40,000	North
H-10855	1998	1:10,000	West
H-10918	1999	1:10,000	South
H-10921	1999	1:10,000	South
H-10923	1999	1:10,000	South
H-10927	1999	1:10,000	East
H-10928	1999	1:10,000	East
H-10929	1999	1:10,000	East
H-10932	1999	1:10,000	West
H-10933	1999	1:10,000	West
H-10940	1999	1:10,000	East

The junctions with surveys H-9382, H-9385, H-10841, H-10847, H-10849, and H-10855 were not formally completed since these surveys were processed previously. However, depths are in good agreement. An "Adjoins" note has been added to the smooth sheet.

The junctions with surveys H-10918, H-10921, H-10923, H-10927, H-10928, H-10929, H-10932, H-10933, and H-10940 are complete. A "Joins" note has been added to the smooth sheet.

M. COMPARISON WITH PRIOR SURVEYS

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
H-2612	1902	1:40,000	Valdez
H-2741	1905	1:40,000	Valdez
H-2984	1908	1:20,000	Valdez
H-3026	1909	1:20,000	Valdez
H-3675	1914	1:80,000	Valdez
H-5421	1933	1:20,000	Valdez
H-5431	1933	1:20,000	Valdez
H-9513	1975	1:20,000	NAD27

Prior surveys H-2612, H-2741, H-2984, H-3026, H-3675, H-5421, H-5431, and H-9513 covers the entire area of the present survey. The present survey was compared to the digital raster copies of H-2612, H-2741, H-2984, H-3026, H-3675, H-5421, H-5431, and H-9513. The registration of these prior surveys to the present survey was good. The legibility of the digital copies was good for prior surveys H-2612, H-2714, H-2984, H-3675, H-5421, and H-9513 and fair for prior surveys H-3026 and H-5431.

Sounding agreement is good with the present survey depths shoaler or deeper by 1 to 7 fathoms with H-2612, H-2741, H-2984, H-3026, H-3675, H-5421, and H-5431. These differences may be attributed to greater sounding coverage, improved positioning and sounding methods and relative accuracy of the data acquisition techniques. Sounding agreement with the 1975 survey (H-9513) is also good with the present survey depths shoaler by about 1 to 3 fathoms.

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. However, due to the depths of water and the differences in data acquisition methods, no reasonable adjustment value for prior soundings could be determined.

Survey H-10925 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-10925 was compared with the following charts:

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>
16701	17th	July 25, 1998	1:81,436
16705	18th	March 27, 1999	1:80,000
16709	21st	June 29, 1996	1:80,000

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.

Charted miscellaneous source data has been satisfactorily addressed during survey operations.

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.

Survey H-10925 is adequate to supersede charted hydrography within the charted area.

b. Dangers To Navigation

No dangers to navigation were discovered during survey operations and/or during office processing.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H-10925 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.

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, the Field Procedures Manual, April 1994 Edition, and the NOS Hydrographic Surveys Specifications and Deliverables, dated April 23, 1999.

Q. AIDS TO NAVIGATION

There are no fixed and floating aids to navigation within the survey area.

There were no features of landmark value located within the area of this survey.

R. STATISTICS

Statistics are adequately itemized in the hydrographer's report.

S. MISCELLANEOUS

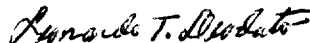
Miscellaneous information is discussed in the hydrographer's report. No additional miscellaneous items were noted during office processing.

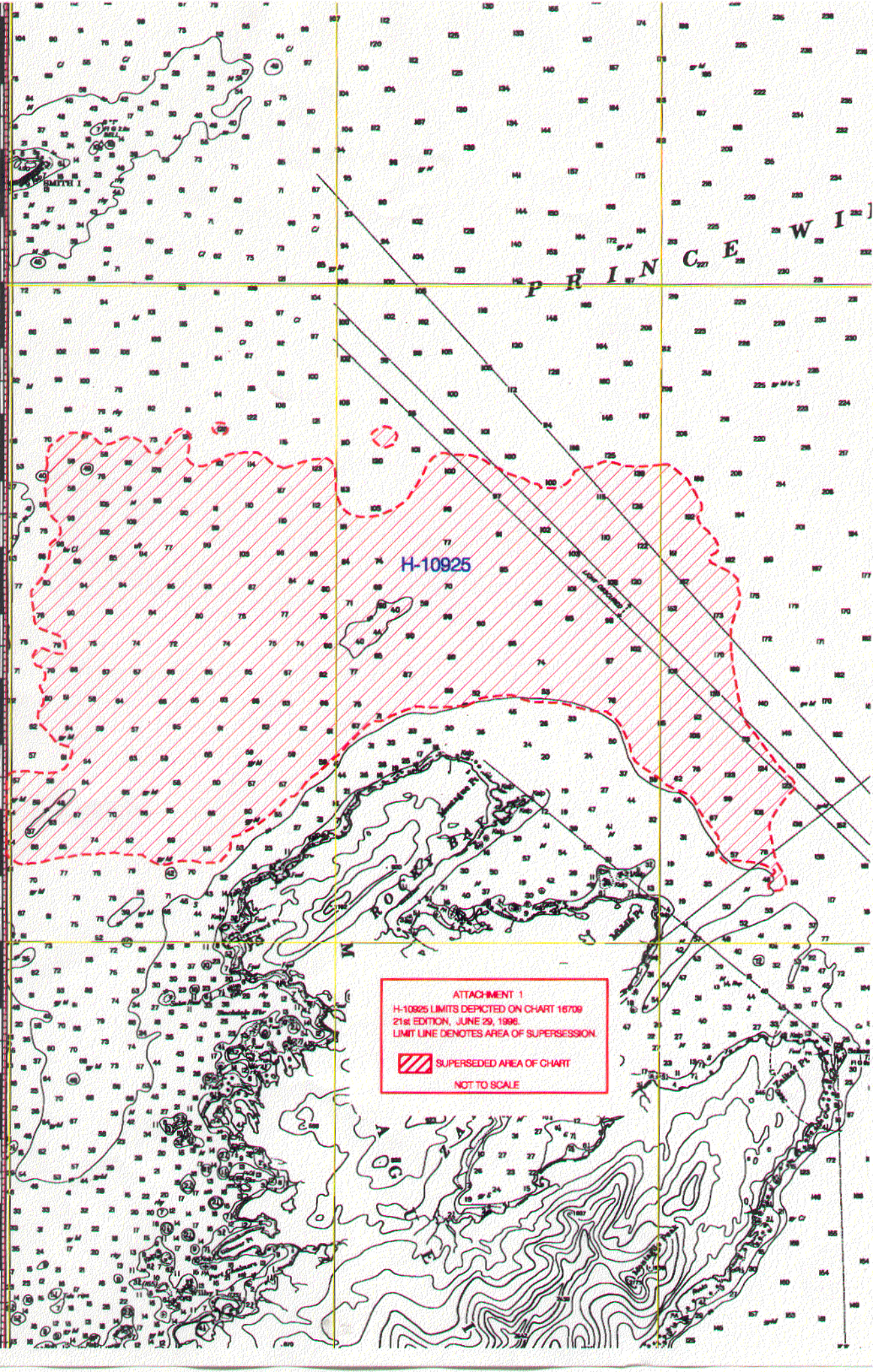
T. RECOMMENDATIONS

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.


Leonardo T. Deodato
Cartographer

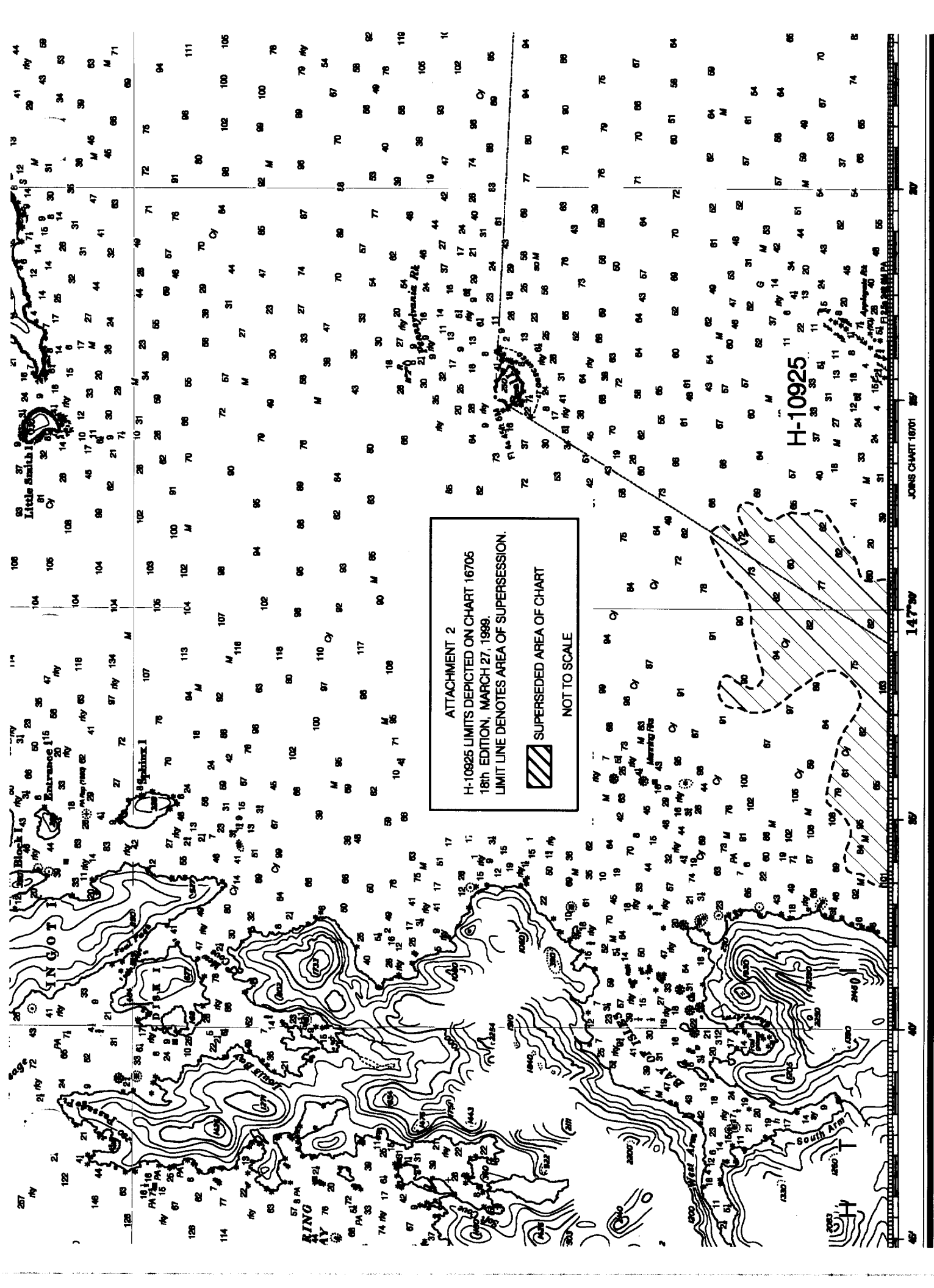


H-10925

ATTACHMENT 1
 H-10925 LIMITS DEPICTED ON CHART 16709
 21st EDITION, JUNE 29, 1996.
 LIMIT LINE DENOTES AREA OF SUPERSESSION.

 SUPERSEDED AREA OF CHART

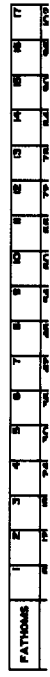
NOT TO SCALE



ATTACHMENT 2
 H-10925 LIMITS DEPICTED ON CHART 16705
 18th EDITION, MARCH 27, 1989.
 LIMIT LINE DENOTES AREA OF SUPERSESSION.



NOT TO SCALE



1:47,300

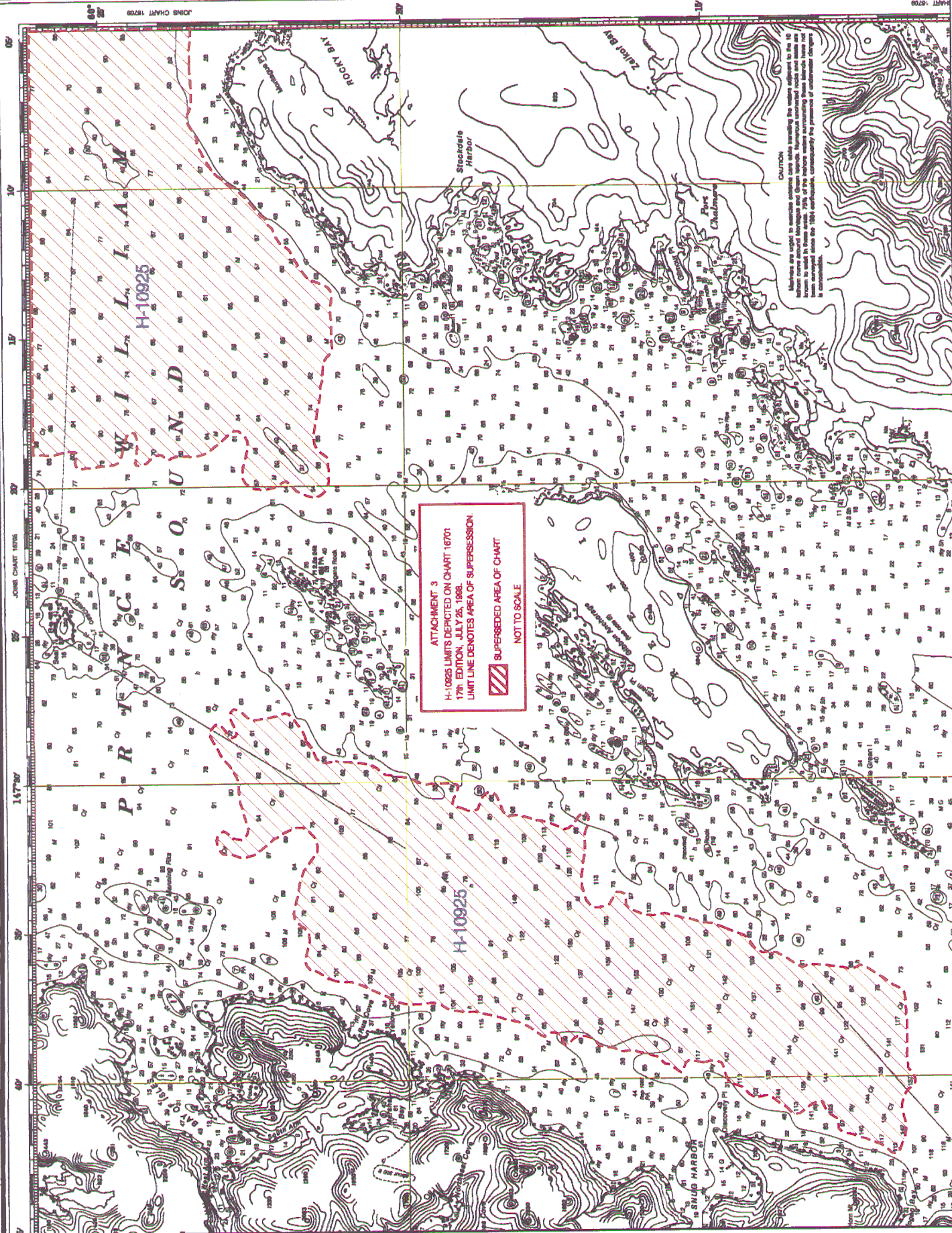
JONS CHART 16701 89


27

(Prince William Sound, Western Pt

Nautical Chart Overlay No. 8, Panel 1

INCHES	FEET		METERS	
1	0	1	0	0
2	0	2	0	0
3	0	3	0	0
4	0	4	0	0
5	0	5	0	0
6	0	6	0 </td <td>0</td>	0
7	0	7	0	0
8	0	8	0	0
9	0	9	0	0
10	0	10	0	0
11	0	11	0	0
12	0	12	0	0
13	0	13	0	0
14	0	14	0	0
15	0	15	0	0
16	0	16	0	0
17	0	17	0	0
18	0	18	0	0
19	0	19	0	0
20	0	20	0	0
21	0	21	0	0
22	0	22	0	0
23	0	23	0	0
24	0	24	0	0
25	0	25	0	0
26	0	26	0	0
27	0	27	0	0
28	0	28	0	0
29	0	29	0	0
30	0	30	0	0
31	0	31	0	0
32	0	32	0	0
33	0	33	0	0
34	0	34	0	0
35	0	35	0	0
36	0	36	0	0
37	0	37	0	0
38	0	38	0	0
39	0	39	0	0
40	0	40	0	0
41	0	41	0	0
42	0	42	0	0
43	0	43	0	0
44	0	44	0	0
45	0	45	0	0
46	0	46	0	0
47	0	47	0	0
48	0	48	0	0
49	0	49	0	0
50	0	50	0	0



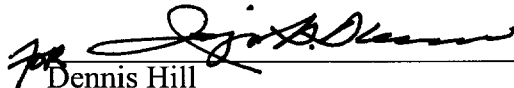
ATTACHMENT 3
 H-10925 LIMITS DERIVED ON CHART 16701
 17th EDITION, JULY 25, 1988.
 LIMIT LINE DENOTES AREA OF SUPERSESSION.
 SUPERBED AREA OF CHART
 NOT TO SCALE

CAUTION
 Mariners are urged to maintain constant alert while transiting the waters adjacent to the 10
 offshore cable array. Uncharted rocks and shoals are present in the area. Mariners are advised to
 exercise extreme caution when navigating in this area. 90% of the bottom under surrounding chart
 is covered by the 1000' depth contour. Consequently the presence of uncharted rocks
 is considered.

APPROVAL SHEET
H10925

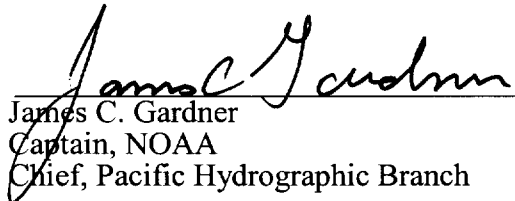
Initial Approvals:

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 disapproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.



Dennis Hill
Chief, Cartographic Team
Pacific Hydrographic Branch
Date: 5-16-01

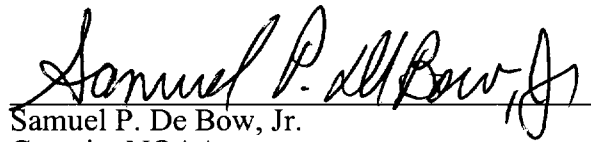
I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.



James C. Gardner
Captain, NOAA
Chief, Pacific Hydrographic Branch
Date: 5-16-01

Final Approval

Approved:



Samuel P. De Bow, Jr.
Captain, NOAA
Chief, Hydrographic Surveys Division
Date: June 17, 2001

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10925

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
16701	2/23/01	L. Nodato	Full Part Before After Marine Center Approval Signed Via Drawing No. <u>Application of soundings and features from smooth sheet.</u>
16705	2/21/01	L. Nodato	Full Part Before After Marine Center Approval Signed Via Drawing No. <u>Application of soundings and features from smooth sheet.</u>
16709	2/14/01	L. Nodato	Full Part Before After Marine Center Approval Signed Via Drawing No. <u>Application of soundings and features from smooth sheet.</u>
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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