

H11006

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-10-10-00

Registry No. H-11006

LOCALITY

State Alaska

General Locality Southwest Prince William Sound
Sublocality Western Coast of Montague Island- Vicinity
of Point Bazil including Hanning Bay

2000

CHIEF OF PARTY

Commander Daniel R. Herlihy, NOAA

LIBRARY & ARCHIVES

DATE March 25, 2002

HYDROGRAPHIC TITLE SHEET

H-11006

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-10-10-00

State Alaska

General Locality Southwest Prince William Sound

Sublocality Western Coast of Montague Island - Vicinity of Point Bazil incl. Hanning Bay

Scale 1:10,000

Date of Survey 9/22/00 - 10/26/00

Instructions Date Aug. 25, 2000

Project No. OPR-P139-RA-00

Vessel RA-1(2121), -2(2122), -3(2123), -4(2124), -5(2125), -6(2126), -7(2127)

Chief of Party Commander D. R. Herlihy, NOAA

Surveyed by RAINIER Personnel

Soundings taken by echo sounder, hand lead, pole SB 1180, RESON 8101, Knudsen 320

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by L. Deodato Automated plot by HP DesignJet 750C

Verification by E. Domingo, R. Davies, D. Dole, R. Mayor, D. Hill, L. Deodato

Soundings in Fathoms at MLLW

REMARKS: Time 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.

*Aweis & SURF
31.102 mcr*

All depths listed in this report are referenced to

mean lower low water unless otherwise noted.

Accomplished	September	October
LNM Singlebeam	356.73	287.78
LNM Multibeam	1095 '4	1797.52
SQ NM Singlebeam	14.23	1.15
SQ NM Multibeam	72.62	100.55
Total SQ NM	86.65	101.7
SV Casts	71	141
Bottom Samples	0	166
AWOIS Invest.	2	15
Tide gauges	4	0
Control station	0	0
Down time (hr)	11	7.5
Days at Sea	16	27

Sheet AQ
H11000

Sheet AT
H11002

Sheet AS
H11001

Sheet AU
H11003

Sheet AV
H11004

Sheet AW
H11005

Sheet AX
H11006

Sheet BE
H11013

Sheet BA
H11012

Sheet BF
H11017

Sheet AY
H11007

Progress Sketch

OPR-P139-RA
Prince William Sound
ALASKA

October 2000

Chart 16701

NOAA Ship RAINIER
CDR D. R. Herlitzky
Commanding

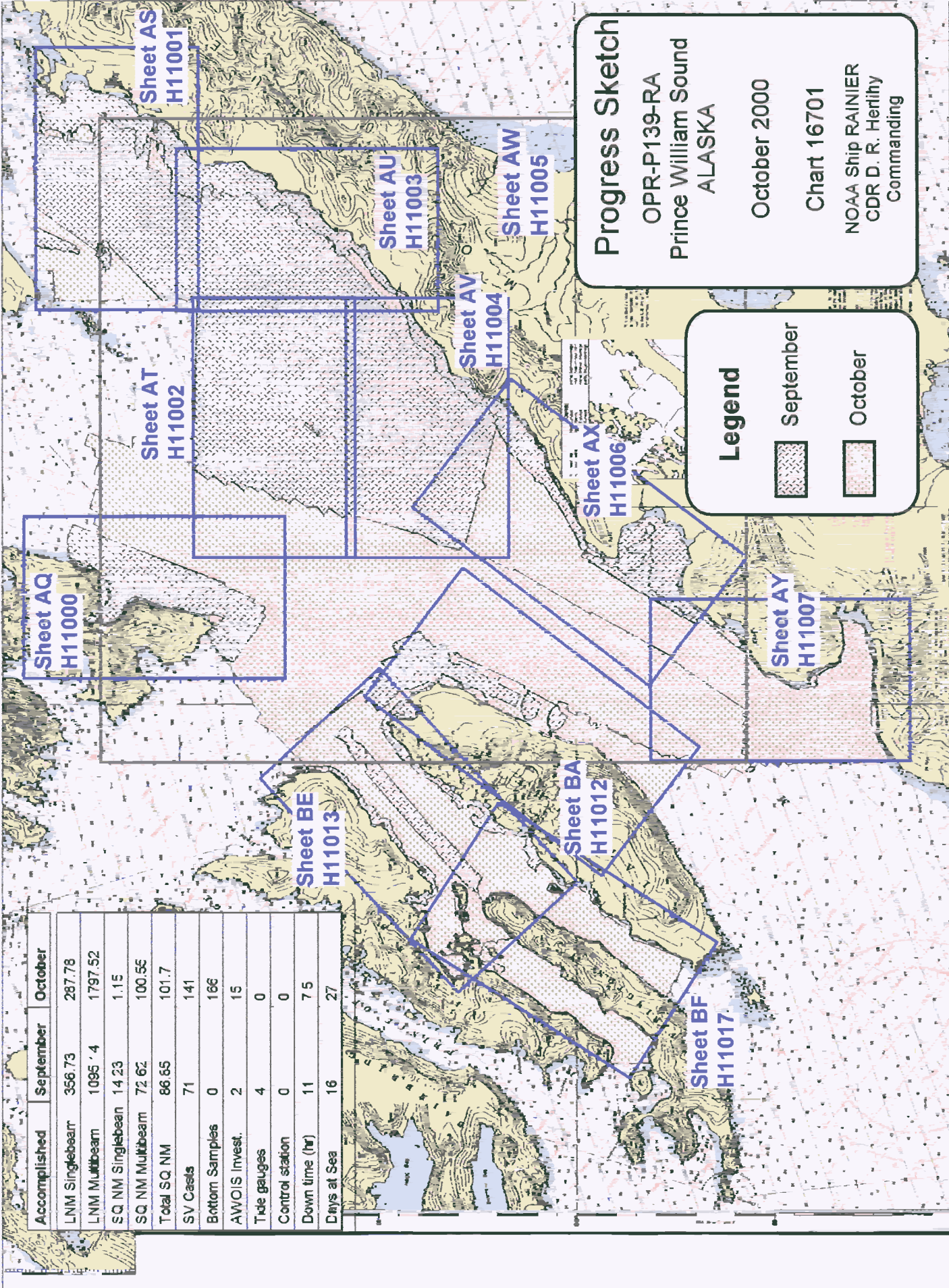
Legend

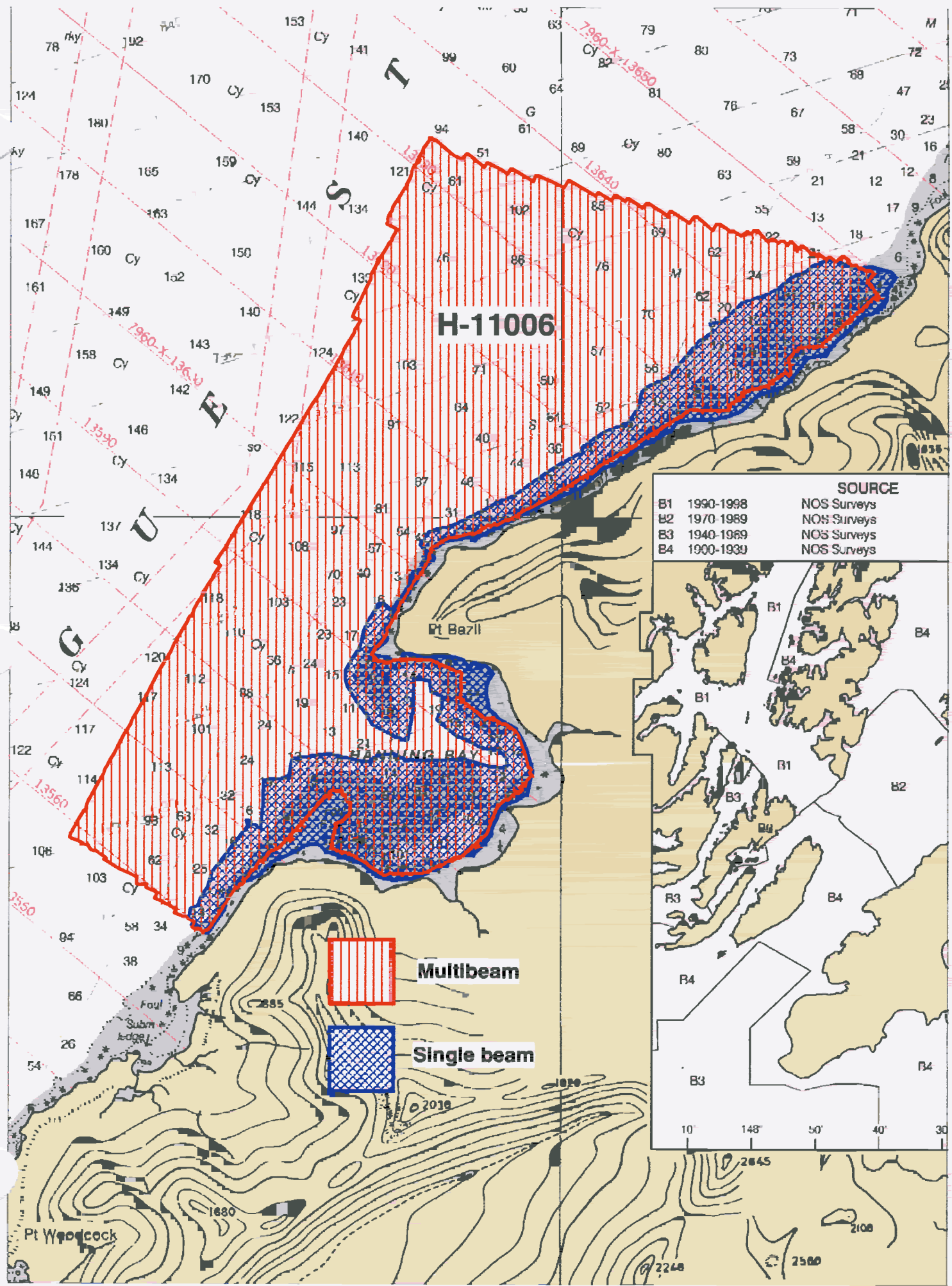


September



October



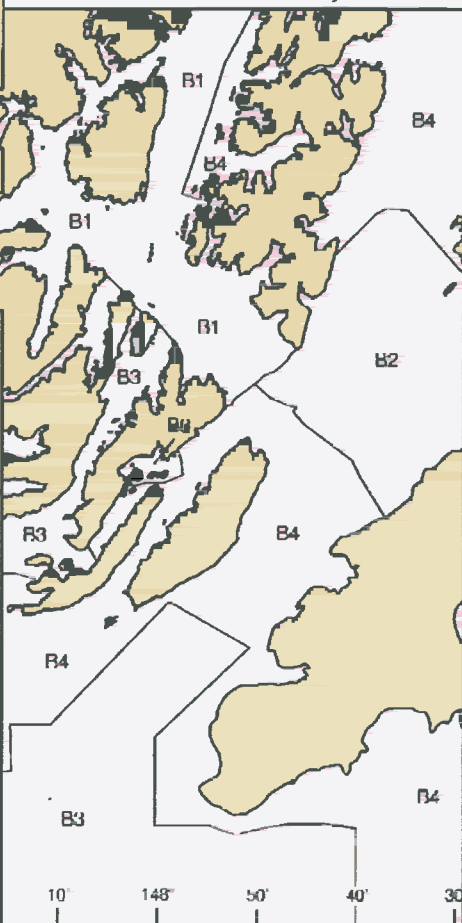


H-11006

Multibeam

Single beam

SOURCE	
B1	1990-1998 NOS Surveys
B2	1970-1989 NOS Surveys
B3	1940-1969 NOS Surveys
B4	1900-1930 NOS Surveys



10' 148' 50' 40' 30'

Descriptive Report to Accompany Hydrographic Survey H11006

Project OPR-P139-RA-00 Southwest Prince William Sound

Scale 1:10,000

Sept.- Oct. 2000

NOAA Ship RAINIER

Chief of Party: Commander Daniel R. Herlihy, NOAA

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

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P139-RA-00, dated August 25, 2000, and the Draft Standing Project Instructions dated April 6, 1998. The survey area is located in Prince William Sound and includes Hanning Bay and its approaches. The survey's northern limit is latitude $60^{\circ}02'59.98''\text{N}$ and the southern limit is latitude $59^{\circ}56'42.86''\text{N}$. The survey's western limit is longitude $147^{\circ}47'43.16''\text{W}$ and the eastern limit is ~~longitude~~ *the western shoreline of Montague Island.*

Data acquisition was conducted from September 22 to October 26, 2000 (DN 266 to 300). ✓

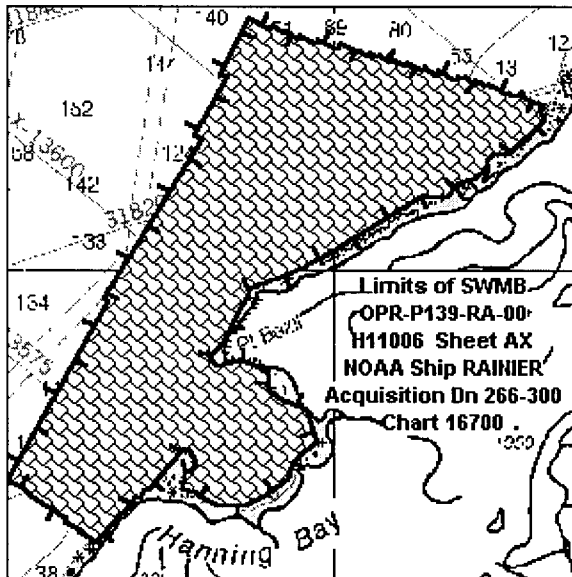


Figure 1: H11006 SWMB Limits

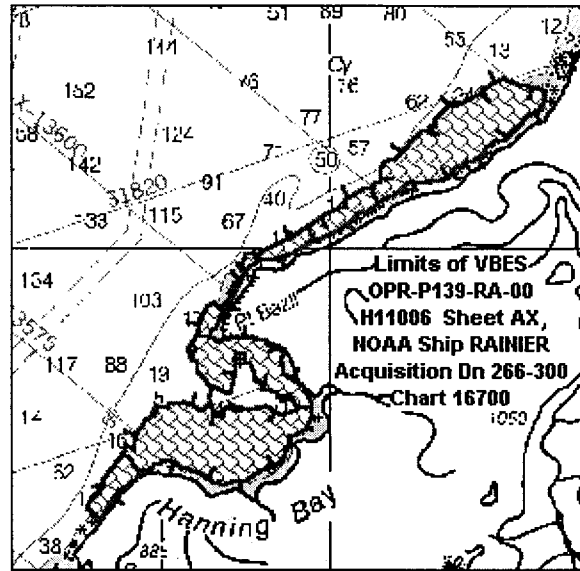


Figure 2: H11006 VBES Limits

B. DATA ACQUISITION AND PROCESSING ✓

A complete description of data acquisition and processing systems, survey vessels, quality control procedures, and data processing methods, can be found in the *OPR-P139-RA-00 Data Acquisition and Processing Report* submitted under separate cover. Items specific to this survey and any deviations from the aforementioned report are discussed in the following sections.

B1. Equipment and Vessels ✓

Data were acquired by RAINIER's survey launches (vessel numbers 2121, 2122, 2123, 2124, 2125, 2126 and 2127). Vessels 2121, 2123, 2124 and 2126 were used to acquire shallow-water multibeam soundings

* Filed with the project report for OPR-P139-RA-00.

and sound velocity profiles. Vessels 2122 and 2125 were used to acquire vertical-beam echo soundings. Vessel 2125 was also used to collect bottom samples. Vessels 2122, 2125, and 2127 were used to obtain detached positions (DPs) during shoreline verification. No unusual vessel configurations or problems were encountered on this survey.

B2. Quality Control ✓

Crosslines ✓

VBES crosslines totaled 11.38 nautical miles, comprising 16.3% of mainscheme hydrography. Crosslines agreed within 1 meter of mainscheme hydrography.

SWMB crosslines totaled 20.98 nautical miles, comprising 7.2% of MB hydrography. The Quality Control Report (CARIS HIPS) for the checkline file averaged 96.2%. See Appendix V for the detailed reports. The report has a depth tolerance factor of 0.013, which conforms to International Hydrographic Organization Order I specifications as detailed in Special Publication S-44, Edition 4, and NOAA depth accuracy standards as set forth in the NOS Hydrographic Surveys Specification and Deliverables Manual (HSSDM).

Junctions ✓ See Eval Rpt., section L

The following contemporary surveys junction with H11006:

Registry #	Scale	Date	Junction side
H11004	1:10,000	2000	North
H11005	1:40,000	2000	Northwest and West
H11007	1:10,000	2000	South

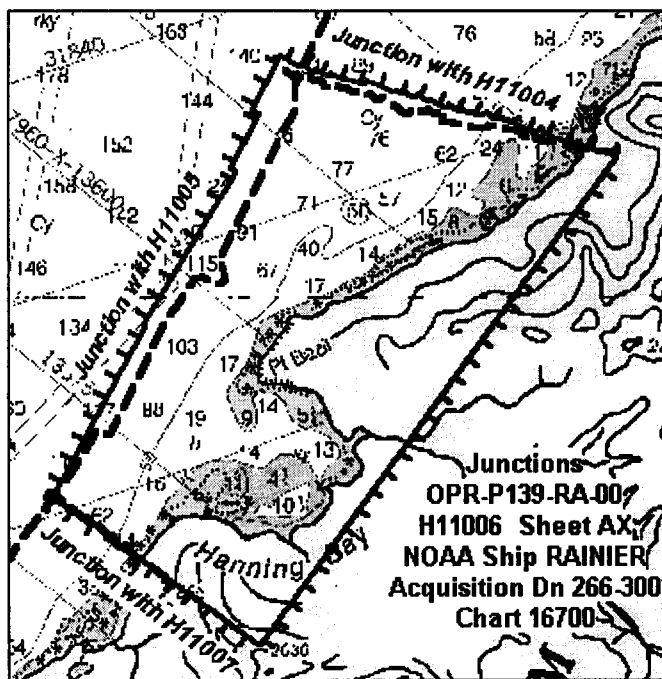


Figure 3: H11006 Survey Junctions

* Filed with the hydrographic data.

Soundings from surveys H11004 and H11005 were generally within 1 fathom of the soundings from H11006. *Concur*

At the time of this report, processing of H11007 was not complete. Comparisons with H11006 will be discussed in the Descriptive Report for H11007.

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

Data Quality Factors ✓

During post processing it was noted that there were some errors in the data likely attributable to the measurement of sound velocity, particularly in the region around the southern entrance to Hanning Bay. This caused the multibeam swaths to “frown” or curve down at the outer beams when viewed during subset cleaning in HDCS. However, this area has a smooth bottom to it with no significant features and the outer beams were usually overlapped with the inner beams of an adjacent survey line. For this reason, the outer beams were usually not rejected during subset cleaning, as shoal biasing would automatically reject them during the final processing. Based on the Quality Control Reports and visual crossline inspection, the Hydrographer believes that data quality has been maintained in this area in the final reduced dataset in accordance with the NOS Hydrographic Surveys Specifications and Deliverables Manual. *Data was analyzed during office processing and found to be consistent with surrounding information.*

It was also noted that the preliminary tides and zoning may not have been completely accurate. In scattered instances, where hydrography was acquired on different days in the same area, soundings differed by as much as 0.5 meters. This should be corrected with the application of smooth tides and final zoning. *Concur. Differences were corrected after application of smooth tides.*

No other unusual conditions were encountered during the survey which affected the expected accuracy and quality of survey data.

B3. Data Reduction ✓

Data reduction procedures for survey H11006 conform to those detailed in the *OPR-P139-RA-00 Data Acquisition and Processing Report*.

C. VERTICAL AND HORIZONTAL CONTROL ✓

A complete description of vertical and horizontal control for survey H11006 can be found in the *OPR-P139-RA-00 Horizontal and Vertical Control Report* submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

Horizontal Control ✓

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. The U.S. Coast Guard Beacons at Potato Point, AK, and Cape Hinchinbrook, AK, were the sources of differential correctors. Launch-to-launch DGPS performance checks were performed weekly in accordance with Section 3.2 of the FPM. Copies of the performance checks are included in the *OPR-P139-RA-00 Horizontal and Vertical Control Report*. *

Vertical Control ✓

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide stations at Cordova, Alaska (945-4050) and Valdez, Alaska (945-4240) will serve as control for datum determination. RAINIER personnel installed Sutron 8200 "bubbler" tide gauges at the following subordinate stations in accordance with the Project Instructions:

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Perch Point	945-4561	30-day	12 September 2000	26 October 2000
Latouche	945-4713	30-day	12 September 2000	27 October 2000
Point Elrington	945-4814	30-day	25 September 2000	25 October 2000

Heavy surf and foul shoreline precluded the installation of a new station in San Juan Bay, Montague Island, as required by the Letter Instructions. After consultation with N/CS31 and N/OPS1, the following historical station was reoccupied in lieu of a new station at San Juan Bay:

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
MacLeod Harbor	945-4674	30-day	21 September 2000	27 October 2000

Raw water level data from these gauges were forwarded to N/OPS1 throughout the project period, with the final package submitted in November 27, 2000 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 for survey H11006 was forwarded to N/OPS1 on October 31, 2000 in accordance with FPM 4.8. *Approved tide note dated February 13, 2001 is attached.*

D. RESULTS AND RECOMMENDATIONS**D.1 Automated Wreck and Obstruction Information System (AWOIS) Investigations**

One AWOIS item was within the limits of H11006 and investigated during this survey. Investigation methods, results, and charting recommendations have been entered into the Microsoft Access AWOIS database and are submitted with the digital data. A printout of the AWOIS Database form is included in Appendix VI of this report. ** Copy attached.*

D.2 Chart Comparison ✓ *See Eval Rpt., section O*

Survey H11006 was compared with chart 16701 (17th Ed.; July 25, 1998, 1:81,436) and chart 16700² (10th Ed.; June 13, 1998, 1:40,000).

Soundings from H11006 were generally 3-5 fathoms shoaler than the charted soundings. This was especially true in and around Hanning Bay. Notable differences are addressed below.

In the vicinity of a charted $1\frac{3}{4}$ -fathom sounding at $59^{\circ}57'35.63''\text{N}$, $147^{\circ}43'07.18''\text{W}$ (459,866 E, 6,647,162 N), the present survey revealed a depth of 7.7 fathoms. This area is close to shore and a $1\frac{3}{4}$ -fathom sounding is 320 meters to the northwest. This area was covered with 100% SWMB.

** Filed with hydrographic data*

In the vicinity of a charted 113-fathom sounding at 59°58'01.46"N, 147°46'12.94"W (456,984 E, 6,648,000 N), the present survey revealed a depth of 103 fathoms. This area was covered by 100% SWMB.

In the vicinity of a charted 7½-fathom sounding at 59°57'23.55"N, 147°42'55.93"W (460,037 E, 6,646,787 N), the present survey revealed a depth of 10.8 fathoms. The 10-fathom curve has shifted 500 meters to the west in this region. This area is close to shore and was covered by 100% SWMB.

In the vicinity of a charted 9-fathom sounding at 59°57'50.55"N, 147°41'26.84"W (461,428 E, 6,647,608 N), the present survey revealed a depth of 11.8 fathoms. The 10-fathom curve has shifted 500 meters to the west in this region. This area was covered by 100% SWMB. *Similar depths are found 200 meters south and west of charted depth.*

In the vicinity of a charted 4½-fathom sounding at 59°57'56.99"N, 147°41'48.27"W (461,097 E, 6,647,810 N), the present survey revealed a depth of 8.5 fathoms. This area was covered by 100% SWMB.

In the vicinity of a charted 103-fathom sounding at 59°59'19.99"N, 147°44'26.01"W (458,662 E, 6,650,405 N), the present survey revealed a depth of 107 fathoms. The charted sounding is 100 meters to the ~~east~~^{west} of a similar depth from the present survey and is on a slope. This area was covered by 100% SWMB.

In the vicinity of a charted 113-fathom sounding at 60°00'22.44"N, 147°43'20.75"W (459,712 E, 6,652,325 N), the present survey revealed a depth of 104 fathoms. This area was covered by 100% SWMB.

In the vicinity of a charted 8¼-fathom sounding at 60°01'44.88"N, 147°36'26.16"W (466,158 E, 6,654,810 N), the present survey revealed a depth of 9.5 fathoms. This area was covered by 100% SWMB. *An 8.3 fms. is found 100 meters northwest of the charted depth.*

The general shoaling throughout the survey can most likely be attributed to the earthquake of 1964 and the deposition of silt from the river at the head of Hanning Bay. The surveyed 10-fathom curve was generally found to be further seaward than charted. See the Danger to Navigation Report in Appendix I* for more details. **Copy attached.*

D.3 Shoreline *See Eval Rpt., section J*

N/NGS3 supplied photogrammetric shoreline data in raster format for T-12716 and T-12671 for use as source shoreline. The T-sheet raster images were registered and digitized in MapInfo by RAINIER personnel and the resultant vector data were used in Hypack for field verification. In addition, features shown on the current editions of charts 16700 and 16701 were digitized in MapInfo by RAINIER personnel and displayed in Hypack for field verification.

Shoreline verification was conducted near predicted low water in accordance with the Project Instructions and FPM 6.1 and 6.2. For this survey the general limit of safe navigation of a survey launch was 10-80 meters offshore of the apparent low water line with the exception of the north and east shores of Hanning Bay where a safe distance off of up to 200 meters was necessary. Water depths along this limit of safe navigation are around 4 meters at Mean Lower Low Water (MLLW). Features unreachable by survey launch are the hydrographer's approximate representation of the shoreline.

** Filed with the hydrographic data.*

Detached positions (DPs) taken during shoreline verification were recorded in HYPACK and on DP forms*, and processed in HPS. These indicate revisions to features, and features not found on the T-sheet or chart.

A detailed “DP and BS Plot,” in both paper copy and MapInfo format, is provided showing all detached positions and bottom samples with notes relating to each feature. The updated shoreline and features are also depicted on the final sounding plot.*

Chart Disprovals ✓

Chart 16700 ✓ Charted rocks discussed below have been generalized offshore. Chart these areas base on the present survey.

The charted rock at 59°59'40.87"N, 147°42'03.69"W (460,892 E, 6,651,026 N), Fix #21247, was disproved using a 5-minute echosounder and visual search in a grid pattern over a 50-meter radius. There was also partial SWMB coverage in the area. The hydrographer recommends removing the rock from the chart. *Concur*

The charted rock at 59°59'31.82"N, 147°42'17.35"W (460,678 E, 6,650,749 N), Fix #21260, was disproved using a 5-minute echosounder and visual search in a grid pattern over a 50-meter radius. The hydrographer recommends removing the rock from the chart. *Concur*

The charted rock at 59°56'56.34"N, 147°45'29.19"W (457,616 E, 6,645,978 N), was disproved with 100% SWMB. The hydrographer recommends removing the rock from the chart. *Concur*

The charted rock at 59°57'07.48"N, 147°45'13.80"W (457,917 E, 6,646,323 N), was disproved with 100% SWMB. The hydrographer recommends removing the rock from the chart. *Concur*

The charted rock at 59°57'18.99"N, 147°44'51.30"W (458,261 E, 6,646,669 N), was disproved with 100% SWMB. The hydrographer recommends removing the rock from the chart. *Concur*

Source Shoreline Disprovals

The TS rock at 59°56'54.75"N, 147°45'20.03"W (457,791 E, 6,645,921 N), Fix #20179, was disproved using a 5-minute echosounder and visual search in a grid pattern over a 50-meter radius. The hydrographer recommends removing the rock from the chart. *TS rock not shown on smooth sheet. Concur*

The TS rock at 59°57'16.97"N, 147°44'44.47"W (458,351 E, 6,646,602 N), Fix #20178, was disproved using a 5-minute echosounder and visual search in a grid pattern over a 50-meter radius. The hydrographer recommends removing the rock from the chart. *TS rock not shown on smooth sheet. Concur*

The TS rock at 59°57'22.65"N, 147°43'40.47"W (459,346 E, 6,646,767 N), Fix #20177, was disproved using a 5-minute echosounder and visual search in a grid pattern over a 50-meter radius. The hydrographer recommends removing the rock from the chart. *TS rock not shown on smooth sheet. Concur*

On the southern shore of Hanning Bay, the T-Sheet and charts depict a river mouth. This was not seen during shoreline verification and the shore was observed to be a continuous and unbroken gravel beach. *Charted as approximate MHWL revision.*

On the southern shore of the entrance to Hanning Bay, the T-Sheet and charts depict a foul area extending approximately 0.5 nautical miles to the northeast. This area was found to be relatively shoal and foul with

* Filed with the survey data.

patches of kelp but passable by the survey launches. VBES data were collected in this area with 50 meter line spacing. *Chart as shown on the smooth sheet.*

Several changes and new features were found and are depicted on the final DP plot. T-sheet rocks were often identified as high points or extents of new ledges. *All changes were depicted on the smooth sheet.*

The hydrographer recommends that the shoreline, as depicted on the DP and BS plot and final sounding plot ^{maps} ~~supersede and complement~~ ^{supplement} shoreline information compiled on the T-sheets as noted. ^{Concur} These revisions are recorded in the MapInfo digital files named "H11006_shoreline" and "H11006_Shoreline_Updates". In addition, field notes made by the Hydrographer, including verification of source features and descriptions of shoreline classification, are submitted in the digital MapInfo file "H11006_Shoreline_Notes."

D.4 Dangers to Navigation ✓ *See Eval Rpt, section O*

One danger to navigation was found and reported to the Pacific Hydrographic Branch on November 6, 2000 for verification and submission to the U.S. Coast Guard. In addition, fifty dangers to navigation were later found and reported on January 5, 2000. Copies of the preliminary Dangers to Navigation Reports are included in Appendix I. *The final reports will be inserted by the Pacific Hydrographic Branch (PHB) following verification and submission to the U.S. Coast Guard. **Copy attached*

D.5 Aids to Navigation ✓

There were no aids to navigation within the survey limits. *Concur*

** Filed with the hydrographic data.*

E. APPROVAL ✓

As Chief of Party, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Survey Guidelines; the Field Procedures Manual, and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for 2000.

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

Survey H11006 is complete and adequate to supersede charted soundings and features in their common areas. There is no additional work required on this survey. *Concur*

Listed below are supplemental reports submitted separately which contain additional information relevant to this survey:

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Data Acquisition and Processing Report for OPR-P139-RA-00	November 25, 2000	N/CS34
Horizontal and Vertical Control Report for OPR-P139-RA-00	TBD	N/CS34
Tides and Water Levels Package for OPR-P139-RA-00	November 27, 2000	N/OPS1
Coast Pilot Report for OPR-P139-RA-00	TBD	N/CS26

Approved and Forwarded: *Daniel R. Herlihy*
 Daniel R. Herlihy
 Commander, NOAA
 Commanding Officer

In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Sheet Manager: *Bradley H. Fritzler*, ENS/NOAA
 Bradley H. Fritzler
 Ensign, NOAA

Field Operations Officer: *E. J. Van Den Ameele*, LT/NOAA
 Edward J. Van Den Ameele
 Lieutenant, NOAA



H11006

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

NOAA Ship RAINIER
 November 6, 2000

*D to N, checked,
 Feb 13, 2001
 Doug Doles*

**ADVANCE
 INFORMATION**

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

Dear Sir or Madam:

It is requested that the following danger to navigation be included in the Local Notice to Mariners. The NOAA Ship RAINIER positioned this feature while conducting hydrographic survey H11006 in Prince William Sound, Alaska, in October 2000. The danger is shown graphically on the attached chartlet.

The following danger to navigation affects the following charts:

<u>Chart</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
16701	1:81,436	17th	25-July-1998
16700	1:200,000	26th	19-September-1998

The positions are on the North American Datum of 1983 (NAD83) datum and depths have been corrected to Mean Lower Low Water (MLLW) using observed water level data.

<u>Feature</u>	<u>Depth (fm)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Depth (m)</u>
Wreck	2 3/4	58°57'54.33"	147°42'10.80"	5.1

59 Corrected Feb 12-2001

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 P139-RA-00 and Danger to Navigation message RA-12-00. More information on current RAINIER survey projects may be obtained by e-mail; contact the Field Operations Officer at FOO.RAINIER@NOAA.GOV.

Sincerely,

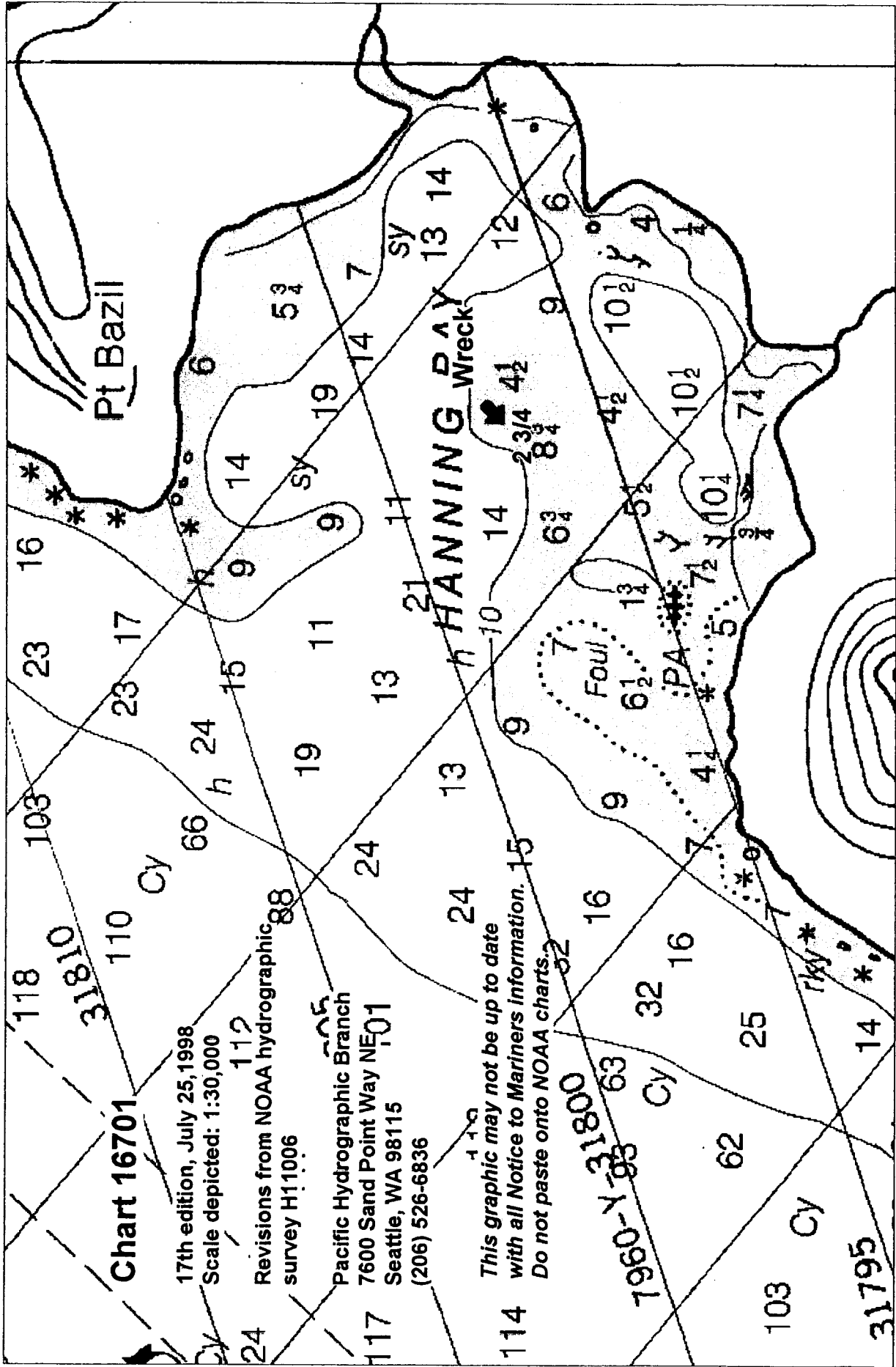
Daniel R. Herlihy

Daniel R. Herlihy
 Commander, NOAA
 Commanding Officer

Attachment

cc: NIMA
 N/CS261
 N/CS34





**ADVANCE
INFORMATION**

Hydrographic Survey Registry Number: H11006

Survey Title: State: Alaska
 Locality: Prince William Sound
 Sub-locality: West coast of Montague Island, vicinity of Point Brazil including Herring Bay

Project Number: OPR-P139-RA-00

Survey Dates: October 2000

Depths are reduced to Mean Lower Low Water using predicted tides.
 Positions are based on the NAD83 horizontal datum.

CHARTS AFFECTED:

CHART	EDITION	DATE	SCALE
16701	17th	7/25/1998	1:81,436
16700	26th	9/19/1998	1:200,000

DANGERS:

FEATURE	DEPTH (fathoms)	LATITUDE(N)	LONGITUDE(W)
Wreck, subm	2¾	59° 57' 54.3"	147° 42' 10.8"

COMMENTS:

[To view chartlet click here](#)

Questions concerning this report should be directed to the Pacific Hydrographic Branch (N/CS34) at (206) 526-6836.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of Marine and Aviation Operations
Marine Operations Center
 1801 Fairview Avenue East
 Seattle, Washington 98102-3767
 NOAA Ship RAINIER
 January 5, 2000

**ADVANCE
 INFORMATION**

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

Dear Sir or Madam:

It is requested that the following dangers to navigation be included in the Local Notice to Mariners. The NOAA Ship RAINIER positioned these features while conducting hydrographic survey H11006 in Prince William Sound, Alaska, in October 2000. The dangers are shown graphically on the attached chartlets.

The following dangers to navigation affect the following charts:

<u>Chart</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
16701	1:81,436	17th	25-July-1998
16700	1:200,000	26th	19-September-1998

The positions are on the North American Datum of 1983 (NAD83) datum and depths have been corrected to Mean Lower Low Water (MLLW) using observed water level data.

<u>Feature</u>	<u>Depth (fm)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Depth (m)</u>
Sounding	0¼	60°00'46.570"N	147°37'36.987"W	0.7
Sounding	0½	60°00'49.585"N	147°38'08.909"W	1.4
Sounding	0¾	60°00'54.749"N	147°37'05.352"W	1.6
Sounding	0¾	60°01'15.061"N	147°36'19.663"W	1.7
Sounding	0¾	59°57'23.528"N	147°44'07.702"W	1.8
Sounding	1½	60°01'19.176"N	147°36'30.111"W	3.1
Sounding	1½	59°59'50.893"N	147°41'24.725"W	3.2
Sounding	1¾	59°57'34.901"N	147°43'37.977"W	3.3
Sounding	1¾	59°59'47.774"N	147°41'54.186"W	3.4
Sounding	1¾	59°58'35.540"N	147°41'27.162"W	3.4
Sounding	2¼	59°57'34.434"N	147°41'05.931"W	4.2
Sounding	2¼	59°58'49.993"N	147°41'43.983"W	4.2
Sounding	2¼	59°57'47.679"N	147°43'22.132"W	4.5
Sounding	2½	59°57'20.782"N	147°43'15.275"W	4.8
Sounding	2½	60°01'23.703"N	147°35'54.567"W	5
Sounding	2½	59°57'10.697"N	147°44'54.894"W	5
Sounding	2¾	60°01'42.952"N	147°35'12.900"W	5.2
Sounding	2¾	60°01'33.309"N	147°35'37.604"W	5.4
Sounding	3¾	59°58'22.627"N	147°41'13.272"W	7
Sounding	3¾	59°57'15.647"N	147°41'58.152"W	7
Sounding	3¾	60°01'06.510"N	147°36'42.323"W	7.1
Sounding	3¾	60°01'19.196"N	147°37'02.024"W	7.2



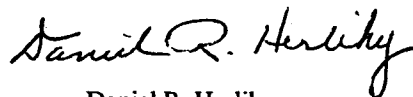
ADVANCE
INFORMATION

<u>Feature</u>	<u>Depth (fm)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Depth (m)</u>
Sounding	3¼	60°00'57.270"N	147°37'55.897"W	7.2
Sounding	3¼	59°58'39.013"N	147°41'54.040"W	7.2
Sounding	4½	59°57'23.990"N	147°44'34.360"W	8.2
Sounding	4¾	59°57'48.526"N	147°40'50.116"W	8.9
Sounding	5¼	59°58'28.298"N	147°42'40.393"W	9.5
Sounding	5¼	59°57'56.155"N	147°43'53.241"W	10
Sounding	5½	59°58'44.520"N	147°42'55.867"W	10.3
Sounding	5¾	59°57'38.473"N	147°44'19.921"W	10.7
Sounding	5¾	59°59'30.504"N	147°42'21.272"W	10.9
Sounding	6¾	60°01'09.180"N	147°37'19.022"W	12.7
Sounding	7¼	60°01'38.786"N	147°35'54.510"W	13.3
Sounding	7¼	60°00'51.523"N	147°38'28.615"W	13.3
Sounding	7¼	59°58'29.350"N	147°43'18.274"W	13.4
Sounding	7½	60°01'30.740"N	147°36'59.888"W	13.8
Sounding	7½	60°01'48.568"N	147°35'38.175"W	14
Sounding	7½	60°00'41.199"N	147°38'55.682"W	14.1
Sounding	8½	59°58'46.666"N	147°42'22.364"W	16
Sounding	8¾	59°57'57.172"N	147°40'54.207"W	16.1
Sounding	8¾	59°58'01.124"N	147°42'25.399"W	16.1
Sounding	8¾	60°01'18.979"N	147°37'31.045"W	16.1
Sounding	8¾	60°01'05.222"N	147°38'02.739"W	16.1
Sounding	8¾	59°57'37.685"N	147°41'21.019"W	16.2
Sounding	8¾	59°56'52.881"N	147°45'36.980"W	16.3
Sounding	9¼	59°58'19.093"N	147°43'40.120"W	17.3
Sounding	9½	59°58'24.456"N	147°41'36.327"W	17.7
Sounding	9½	59°58'06.308"N	147°44'12.693"W	17.7
Sounding	9½	60°00'31.249"N	147°39'34.094"W	17.7
Sounding	9¾	59°58'08.755"N	147°40'39.047"W	18

Survey H11006 revealed depths that were generally 3-5 fathoms shoaler than charted soundings. As a result, the 10-fathom curve was found to be further off shore than depicted on the charts in most areas in and around Hanning Bay. The new 10-fathom contour is depicted on the attached chartlets. Mariners are urged to use extreme caution when navigating in and around Hanning Bay.

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 P139-RA-00 and Danger to Navigation message RA-01-01. More information on current RAINIER survey projects may be obtained by e-mail; contact the Field Operations Officer at FOO.RAINIER@NOAA.GOV.

Sincerely,

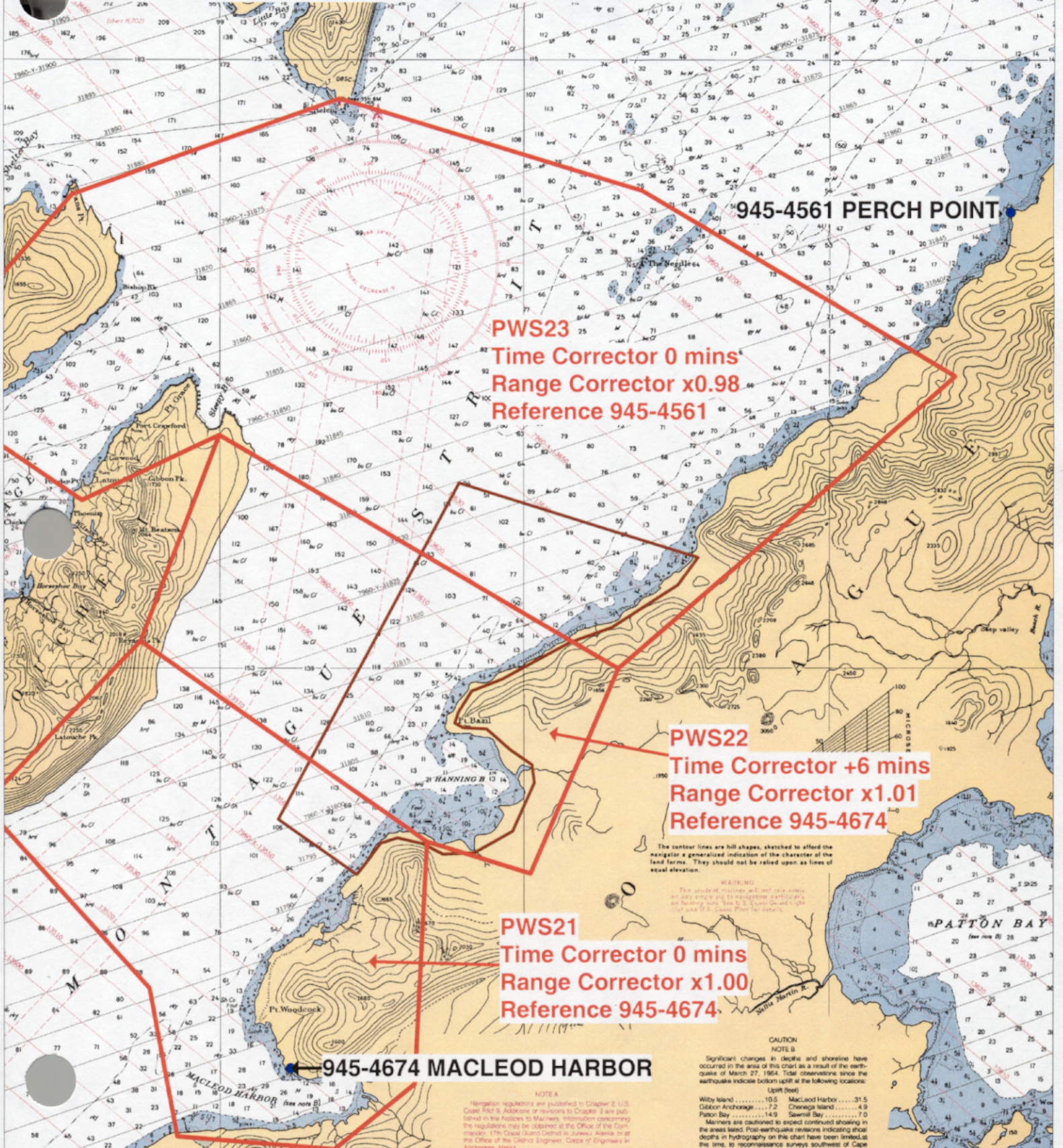


Daniel R. Herlihy
Commander, NOAA
Commanding Officer

Attachment

cc: NIMA
N/CS261
N/CS34

Final Tidal Zoning for OPR-P139-RA-2000 Prince William Sound, AK - Sheet H-11006



945-4561 PERCH POINT

PWS23
Time Corrector 0 mins
Range Corrector x0.98
Reference 945-4561

PWS22
Time Corrector +6 mins
Range Corrector x1.01
Reference 945-4674

PWS21
Time Corrector 0 mins
Range Corrector x1.00
Reference 945-4674

945-4674 MACLEOD HARBOR

The contour lines are hill shapes, sketched to afford the navigator a generalized indication of the character of the land forms. They should not be relied upon as lines of equal elevation.

WARNING

The grade of rocks will not be shown as they are not visible at low tide.

An anchorage, see Sec. 5, Survey Chart 1, 1964, and Sec. 5, Coast Pilot 1, Alaska.

CAUTION

NOTE B

Significant changes in depths and shoreline have occurred in the area of this chart as a result of the earthquake of March 27, 1964. Tidal observations since the earthquake indicate bottom uplift at the following locations:

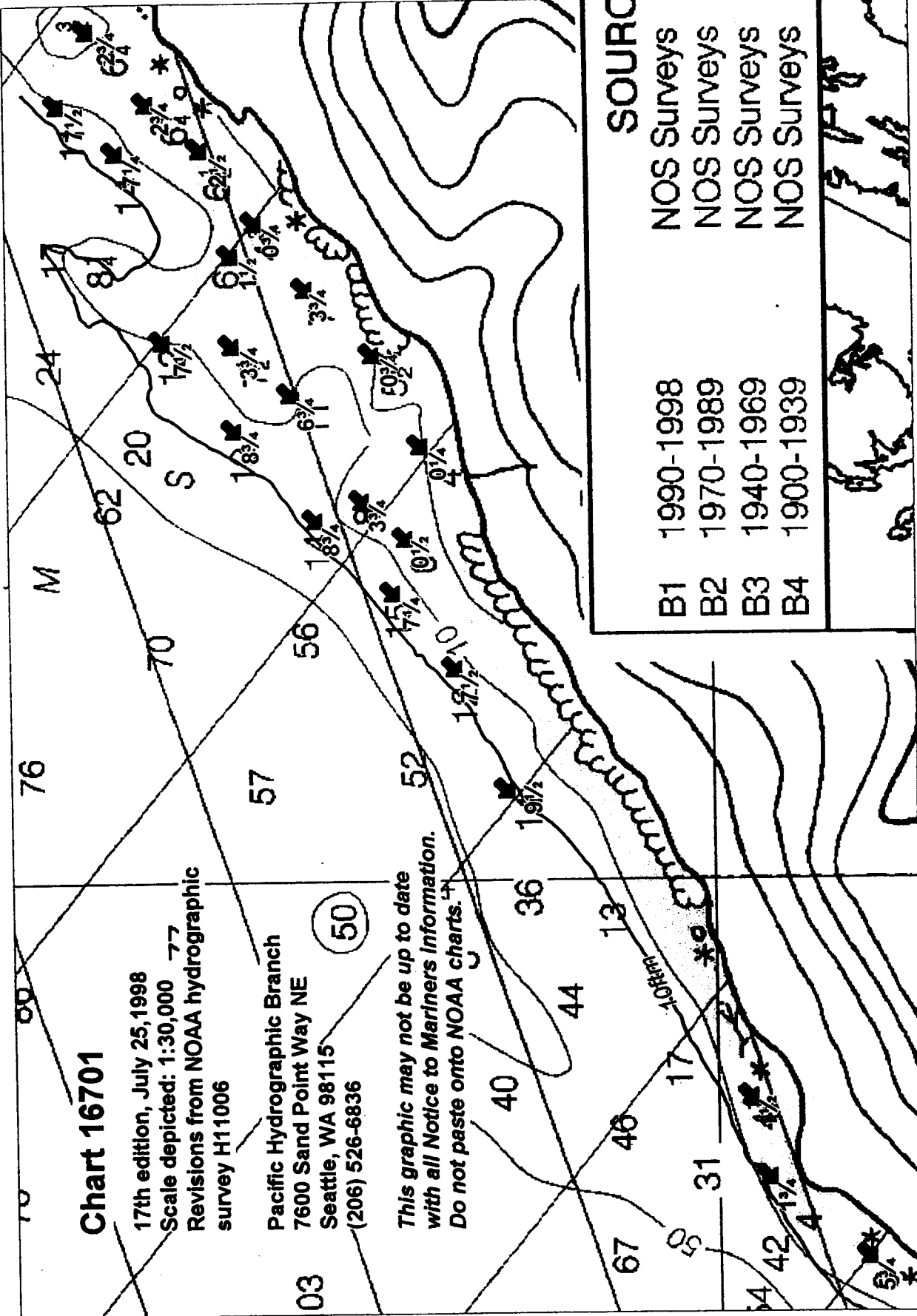
Light (feet)

Willy Island10.5	MacLeod Harbor31.5
Gilboa Anchorage7.2	Chenequa Island4.9
Patton Bay14.9	Sawmill Bay7.0

Mariners are cautioned to expect continued shoaling in the areas listed. Post-earthquake revisions indicating shoal depths in hydrography on this chart have been limited at the time to reconnaissance surveys southwest of Cape Clear and single reconnaissance sounding lines in deep.

NOTE A

Navigation regulations are published in Chapter 3, U.S. Coast Pilot 5, Additions or Revisions to Chapter 3 are published in the Notices to Mariners. Information concerning the regulations may be obtained at the Office of the Commandant, U.S. Coast Guard, in Juneau, Alaska, or at the Office of the District Engineer, Corps of Engineers in Anchorage, Alaska.



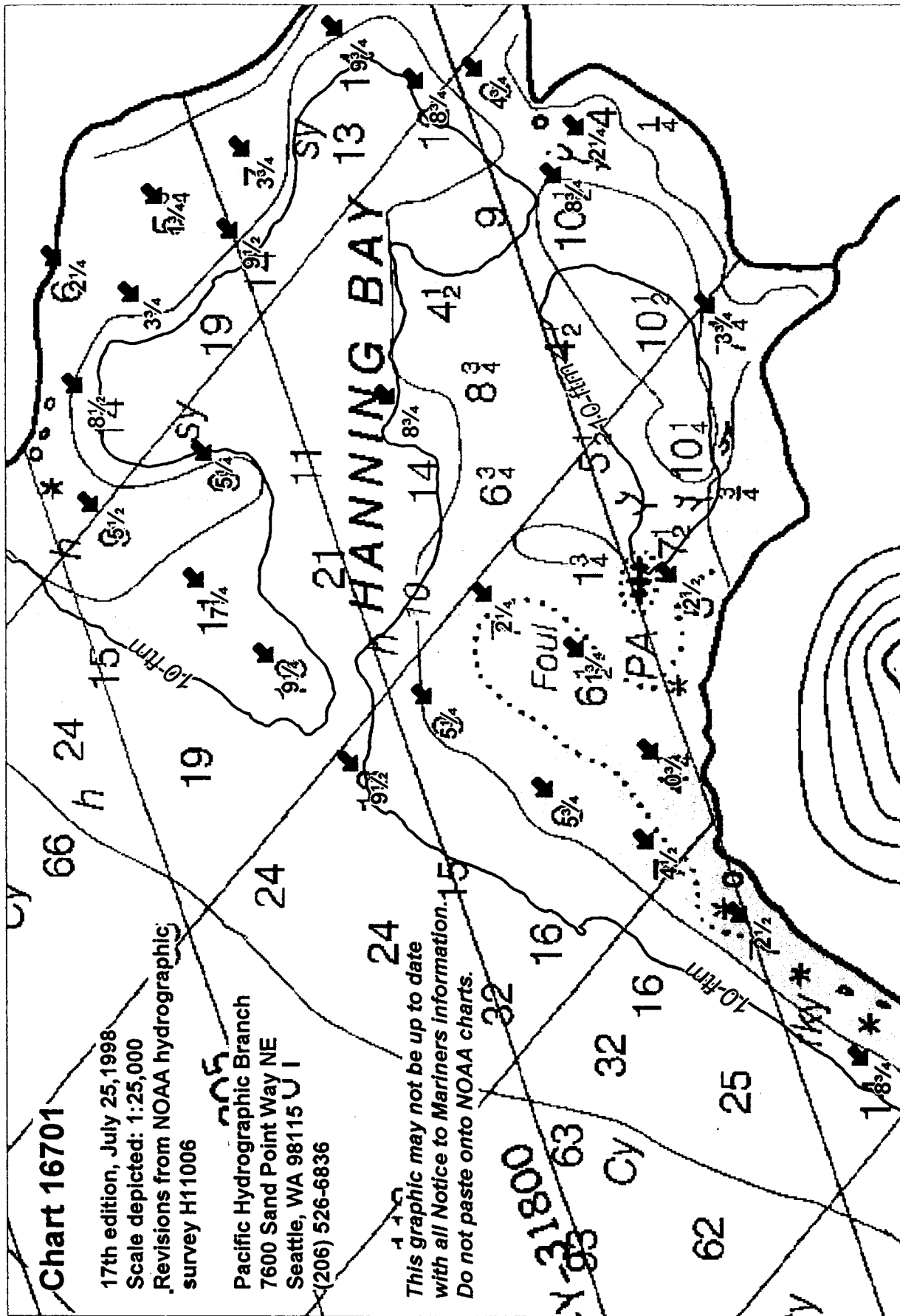


Chart 16701

17th edition, July 25, 1998

Scale depicted: 1:25,000

Revisions from NOAA hydrographic survey H11006



Pacific Hydrographic Branch

7600 Sand Point Way NE

Seattle, WA 98115 U I

(206) 526-6836

This graphic may not be up to date
with all Notice to Mariners Information. 15
Do not paste onto NOAA charts.

RECRD 52589 VESSLTERMS UNKNOWN CHART 16701 AREA P
CARTOCODE 0100 SNDINGCODE DEPTH

LAT83 59 57 27.6 LONG83 147 43 07.16 NATIVDATUM 06
LATDEC: 59.957666666667 LONDEC: 147.71865555556 GPQUALITY Poor
GPSOURCE Direct

PROJECT OPR-P139-00 ITEMSTATUS Assigned SEARCHTYPE Full
RADIUS 0 INIT MCR ASSIGNED 8/10/2000
TECNIQ MB,ES,VS,SD

Techniqnote GP NOT CONSIDERED ACCURATE ENOUGH FOR THE BASES OF AN INVESTIGATION. SEARCH IN WATER SEAWRD OF THE 10 FM CURVE IN ALL AREAS WITHIN HANNING BAY.

History HISTORY
NM14/1952--USN, 4/5/52; WRECK REPORTED SUNK IN 15 FMS OF WATER IN APPROX. POS. 59-57-30, 147-43-00, NAD 27. ENETRED 8/00 MCR

Fieldnote INVESTIGATION:
DATE(S): 09/22/00 AND 10/26/00 (DN:266 AND 300)
POSITION NUMBERS: 21932
INVESTIGATION USED: (IE DI, 200% SIDE SCAN SONAR, ECHO SOUNDER) 100% MULTIBEAM, DIVE
SURVEYED POSITION: LAT.59-57-54.33 N LON. 147-42-10.8 W
POSITION DETERMINED BY: DIFFERENTIAL GPS
INVESTIGATION SUMMARY: HANNING BAY WAS COVERED WITH 100% MULTIBEAM. THE BACKSCATTER DATA WAS ANALYZED AND THE WRECK LOCATED. A DIVE WAS MADE AND REVEALED A LEAST DEPTH OF 5.1 METERS. THE WRECK IS A LANDING CRAFT APPROX. 35 METERS LONG AND 10 METERS WIDE.
CHARTING RECOMMENDATION (HYDROGRAPHER): HYDROGRAPHER RECOMENDS REMOVING THE CHARTED WRECK ON THE SOUTH SIDE OF THE BAY AND TO CHART A SUBMERGED WRECK AT THE LOCATION STATED ABOVE.
EVALUATOR COMMENTS: Delete charted wreck PA at latitude 59/57/27.6N, longitude 147/43/08.6W. Chart 2Wk from SWMB sounding at latitude 59/57/54.160N, longitude 147/42/10.447W.

Proprietary

YEARSUNK 1952 NIMANUM

Print Record

GEOGRAPHIC NAMES

H-11006

Name on Survey	A ON CHART NO. 16701-16700		B ON PREVIOUS SURVEY		C ON U.S. QUADRANGLE MAPS		D FROM LOCAL INFORMATION		E ON LOCAL MAPS		F P.O. GUIDE OR MAP		G RAND McNALLY ATLAS		H U.S. LIGHT LIST		K		
ALASKA (title)	X		X																1
HANNING BAY	X		X																2
MONTAGUE ISLAND	X		X																3
MONTAGUE STRAIT	X		X																4
POINT BAZIL	X		X																5
PRINCE WILLIAM																			6
SOUND (title)	X		X																7
																			8
																			9
																			10
																			11
																			12
																			13
																			14
																			15
																			16
																			17
																			18
																			19
																			20
																			21
																			22
																			23
																			24
																			25

Approved: *[Signature]*

Chief Geographer JUN 20 2001



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: February 13, 2001

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P139 RA 2000
HYDROGRAPHIC SHEET: H-11006

LOCALITY: Prince William Sound, AK
TIME PERIOD: September 22 - October 26, 2000

TIDE STATION USED: 945-4561 Perch Point, AK
Lat. $60^{\circ} 7.6'N$ Lon. $147^{\circ} 23.7'W$
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.254 meters

TIDE STATION USED: 945-4674 MacLeod Harbor, AK
Lat. $59^{\circ} 53.3'N$ Lon. $147^{\circ} 47.8'W$
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.150 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: PWS21, PWS22 & PWS23.

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 H. New 2/13/01

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Final tide zone node point locations for OPR-P139-RA-2000,
Sheet H-11006.

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 PWS21			
-147.964395 59.962459	945-4674	0	1.00
-147.877111 60.007383			
-147.720074 59.952333			
-147.726997 59.885609			
-147.771106 59.86761			
-147.85719 59.871259			
-147.872402 59.912061			
-147.964395 59.962459			
Zone PWS22			
-147.833691 60.063871	945-4674	+6	1.01
-147.877111 60.007383			
-147.720074 59.952333			
-147.663194 59.943531			
-147.614981 59.99982			
-147.833691 60.063871			
Zone PWS23			
-147.430708 60.080034	945-4561	0	0.98
-147.614981 59.99982			
-147.833691 60.063871			
-147.909718 60.046036			
-147.976527 60.06845			
-147.996234 60.084179			
-147.915026 60.129755			
-147.767908 60.155922			
-147.602299 60.130868			
-147.430708 60.080034			

HYDROGRAPHIC SURVEY STATISTICS

H11006

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
SCRIPTIVE 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): T-12671, T-12716, T-12717

PHOTOBATHYMETRIC MAPS (List): NA

NOTES TO THE HYDROGRAPHER (List): NA

SPECIAL REPORTS (List): NA

NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			
POSITIONS REVISED			
BOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET			121
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT			20
GEOGRAPHIC NAMES			
OTHER (Chart Compilation)			30
USE OTHER SIDE OF FORM FOR REMARKS			
TOTALS			171

Pre-processing Examination by	Beginning Date	01/16/2001	Ending Date	
Verification of Field Data by Davies, D. Doles, E. Domingo, D. Hill, L. Deodato	Time (Hours)	121	Ending Date	
Position Check by	Time (Hours)		Ending Date	
Evaluation and Analysis by L. Deodato	Time (Hours)	20	Ending Date	10/23/2001
Inspection by B. Olmstead	Time (Hours)	30	Ending Date	02/04/2002

**EVALUATION REPORT
H11006**

A. PROJECT

Project information is adequately discussed in the hydrographer's report.

B. AREA SURVEYED

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

Depths generally range from one fathom along the shoreline and in areas of shoal development to over 100 fathoms along the western extents of the survey area. The bottom consists of sand, mud and broken shells with considerable areas of kelp and ledges existing along the entire western side of Montague Island. Page-size plots of the charted area depicting the specific limits of supersession accompany this report as Attachments 1 and 2.

C. SURVEY VESSELS

Survey vessels are adequately discussed in the hydrographer's report.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

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

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, June 2000.

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 the survey.

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 Perch Point, Alaska, 945-4561 and LaTouche, Alaska, 945-4713.

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

H. CONTROL STATIONS

Horizontal control is adequately discussed in the hydrographer's report

The positions of horizontal control stations used during hydrographic operations are published values 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: -2.311 seconds (-71.525 meters)

Longitude: 7.147 seconds (110.843 meters)

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 2.5 was specified in the Specifications and Deliverables.

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.

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 T-12671, T-12716, and T-12717 were office compiled on NAD27 and apply to this survey. The shoreline was digitized at the Pacific Hydrographic Branch on NAD 83. Shoreline drawn on the smooth sheet in black originates from the above raster data as provided by the Remote Sensing Division, NGS. The shoreline data and the hydrographic data were merged during MicroStation processing. A few areas of the dotted mean lower low water line as shown on the shoreline maps have been revised by the hydrographer without supporting soundings. These curves have been shown on the smooth sheet in dashed orange as approximate. There is one MHW revision on this survey. This revision is centered at latitude 59°57'10"N, longitude 147°41'39"W and is shown on the smooth sheet in dashed red as approximate.

The shoreline maps and the results of the fieldwork as portrayed on the smooth sheet should supersede charted shoreline.

K. CROSSLINES

Crosslines are adequately discussed in the hydrographer's report.

L. JUNCTIONS

Survey H11006 junctions with the following surveys:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H11004	2000	1:10,000	Northeast
H11005	2000	1:40,000	West
H11007	2000	1:10,000	Southwest

The junctions with surveys H11004, H11005, and H11007 are complete. A "Joins" note has been added to the smooth sheet where applicable. A few soundings from the junctional surveys have been transferred within the common areas of H11006 to better delineate the bottom configuration.

M. COMPARISON WITH PRIOR SURVEYS

The present survey was compared to the following prior surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
H2802	1905	1:20,000	Valdez
H4677	1927	1:20,000	Valdez
H5428	1933	1:20,000	Valdez

The present survey was compared to the digital raster copies of H2802, H4677, and H5428. The registration and legibility of these prior surveys to the present survey was satisfactory.

The prior surveys listed above were conducted using a combination of lead lines and visual positioning with the addition of early echo sounder technology used in 1933. The present survey depths generally reflect a consistent shoal bias of 2-5 fathoms and shoreline changes are readily evident when comparing with the prior work. These changes are most notably seen in Hanning Bay. The present survey shoreline reflects seaward movement ranging from 40-350 meters. In addition, the standard depth curves depicted in 1905 show similar displacement. The evaluator feels these changes are largely due to the 1964 Prince William Sound Earthquake. Additional depth differences maybe attributed to greater sounding coverage, improved positioning and sounding methods and relative accuracy of the data acquisition techniques.

The prior survey work conducted from 1905-33 is on the Valdez Datum. To convert from the Valdez Datum to NAD 83 the user must apply +8.28 seconds to the latitude and -21.12 seconds to the longitude.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
9512	1975	1:20,000	NAD27

The present survey was compared to a digital raster copy of H9512. The registration and legibility of this prior survey to the present survey was good. Prior survey H9512 covers a large part of the present survey and was conducted using Raydist positioning and a single beam echo sounder. Although this prior survey overlaps older prior surveys, the more current survey was not fully applied to the chart. This survey is listed as a Category 1 Hydrographic Data Evaluation Group (HDEG) survey in a memo dated September 10, 1990 and has not received final processing. The present survey depths reflect a consistent shoal bias of 0.5-1 fathom with the 1975 survey work.

Additional information is found in the hydrographer's report, section, D.2.

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. However, the evaluator feels the bottom uplift in this portion of Prince William Sound generally ranges from 18-30 feet.

Survey H11006 is adequate to supersede the above prior surveys within the common area.

N. ITEM INVESTIGATIONS

AWOIS 52589 was assigned to this survey and is adequately addressed in section D.1 of the hydrographer's report.

O. COMPARISON WITH CHART

Survey H11006 was compared with the following charts:

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>
16701	17 th	July 25, 1998	1:81,436
16702	10 th	June 13, 1998	1:40,000

a. Hydrography

Charted hydrography originates with the previously discussed prior surveys and miscellaneous source data. The

O. COMPARISON WITH CHART

Survey H11006 was compared with the following charts:

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>
16701	17 th	July 25, 1998	1:81,436
16702	10 th	June 13, 1998	1:40,000

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. A few charted depths and a wreck PA in Hanning Bay originate from miscellaneous sources and have been adequately addressed in the hydrographer's report, sections D.2 and D.3.

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 H11006 is adequate to supersede charted hydrography within the common area.

b. Dangers To Navigation

Potential dangers to navigation submitted by the NOAA Ship Rainier have been adequately addressed in the hydrographer's report, section D.4 and supplemented as follows. The geographic position for a submerged wreck submitted as a potential danger to navigation on November 6, 2000 was incorrect. This position was revised by the Pacific Hydrographic Branch and submitted February 12, 2001 to N/CS26. Copies of these reports are attached.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H11006 is adequate to:

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

Except as noted below, 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 1998 Edition, and the NOS Hydrographic Surveys Specifications and Deliverables, dated June 2000.

The MapInfo grid as plotted on the field sheet has a discrepancy of 33 to 82 meters south of correct latitude and a discrepancy of 23 to 55 meters east of correct longitude. This was noticed when the field sheet shoreline updates were referenced to the smooth sheet during office processing. This error could have resulted in shoreline updates being incorrectly compiled to the smooth sheet. The cause of this problem is unknown.

An area in Hanning Bay, centered at latitude 59°58'45"N, longitude 147°41'33"W (80x 350 meters) contains no hydrographic sounding data. The size of this holiday exceeds the required sounding density at survey scale. The hydrographer did not specifically address the problem with the survey data in this area.

Q. AIDS TO NAVIGATION

Aids to navigation have been adequately addressed in the hydrographer's report, section D.5

There are no charted landmarks within the survey area. The hydrographer provided no recommendations as to features meriting landmark definition.

R. STATISTICS

This section in the hydrographer's report is no longer required under Specifications and Deliverables, June 2000.

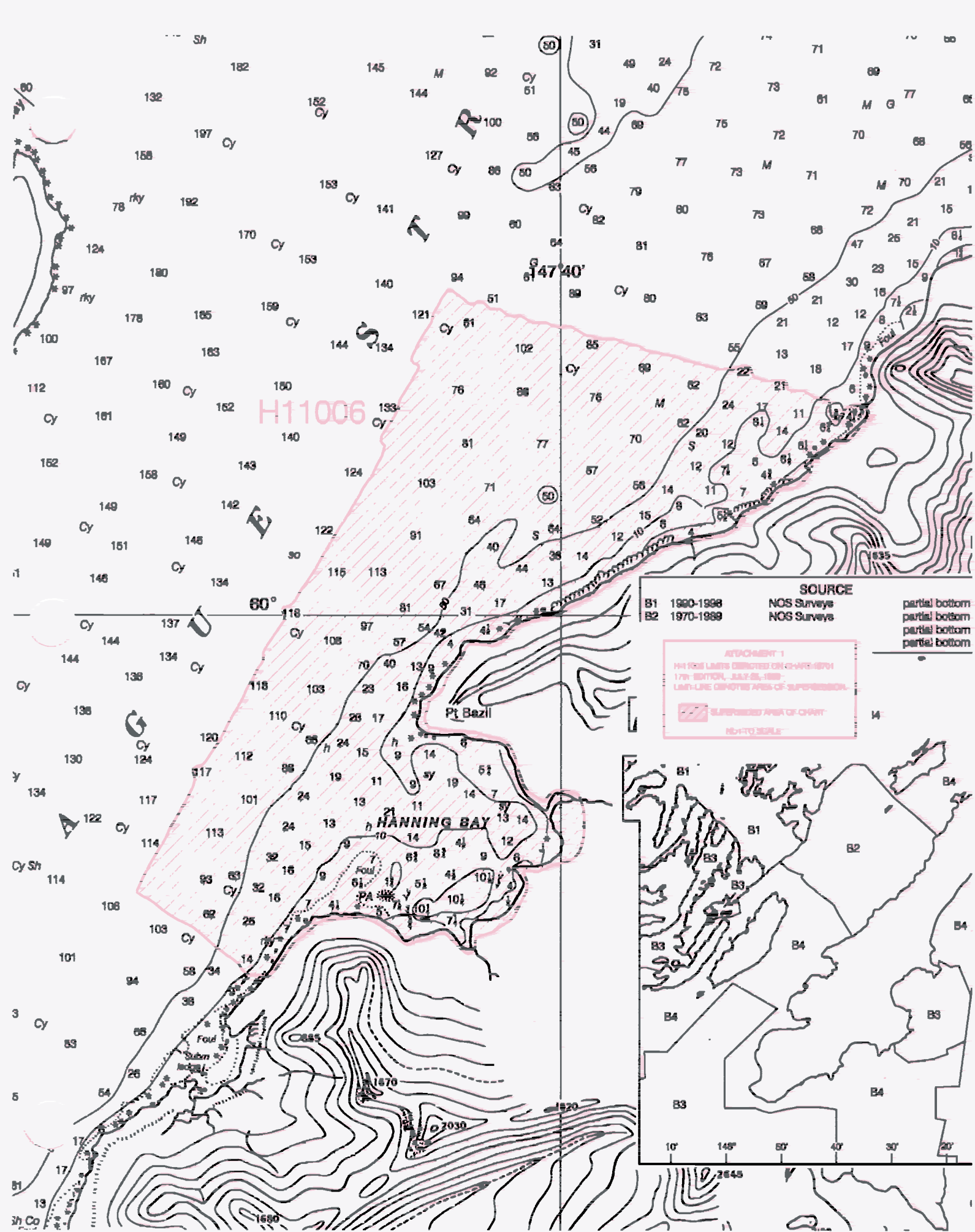
T. RECOMMENDATIONS

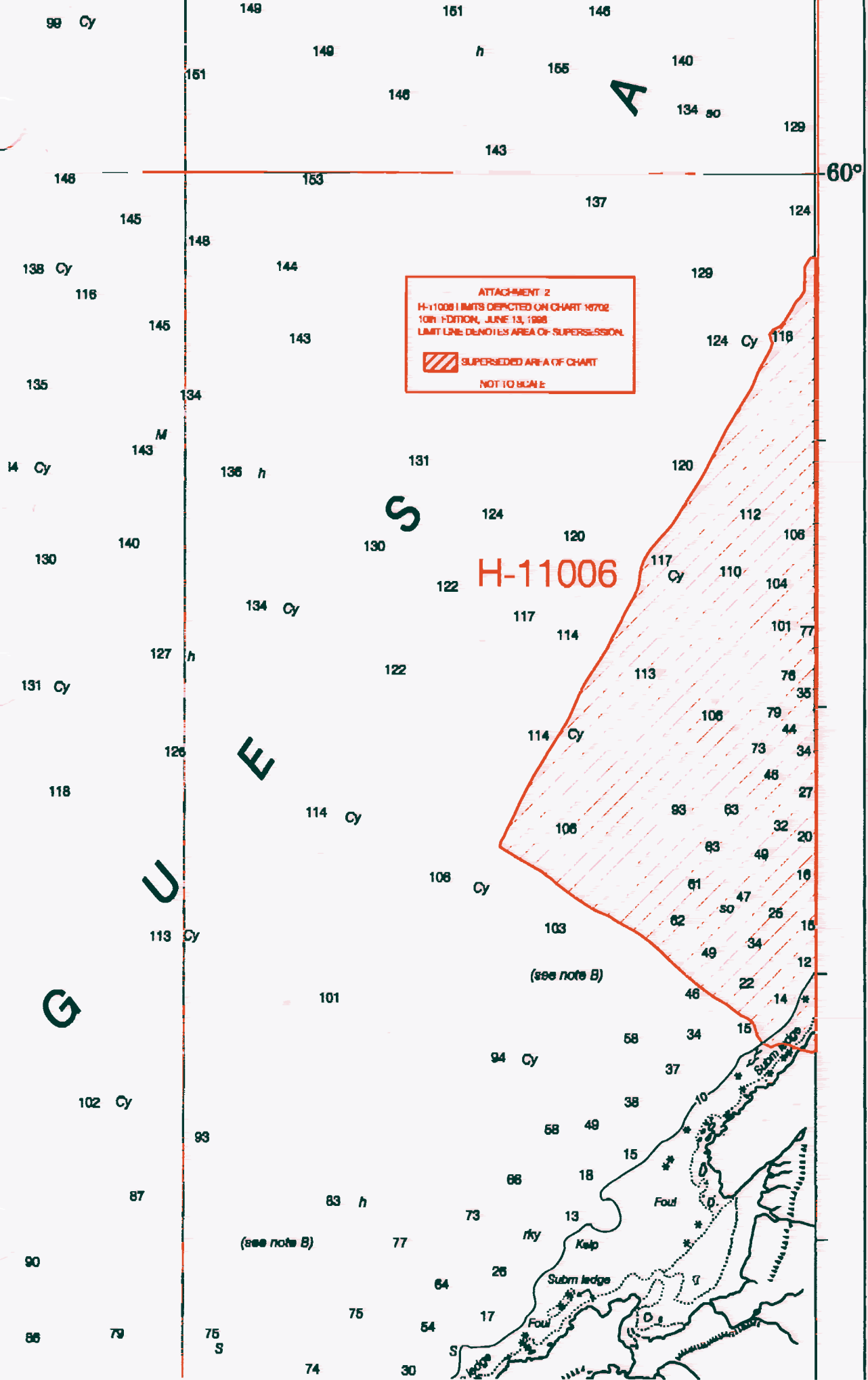
This is an adequate hydrographic survey. No additional work is recommended.

U. REFERRAL TO REPORTS

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

Leonardo T. Deodato
Leonardo T. Deodato
Cartographer





ATTACHMENT 2
H-11006 LIMITS DEPICTED ON CHART 16702
10th EDITION, JUNE 13, 1988
LIMIT LINE DENOTES AREA OF SUPERSESSION.
[Red hatched box] SUPERSEDED AREA OF CHART
NOT TO SCALE

APPROVAL SHEET
H11006

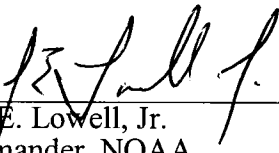
Initial Approvals:

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.



Dennis Hill
Chief, Cartographic Team
Pacific Hydrographic Branch
Date: 2-8-02

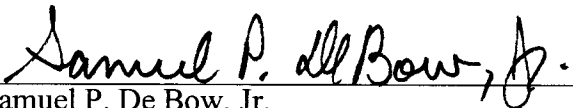
I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.



John E. Lowell, Jr.
Commander, NOAA
Chief, Pacific Hydrographic Branch
Date: 2/22/02

Final Approval

Approved:



Samuel P. De Bow, Jr.
Captain, NOAA
Chief, Hydrographic Surveys Division
Date: March 25, 2002

