

H10712

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-10-18-96  
Registry No. .... H-10712

### LOCALITY

State ..... Alaska  
General Locality ..... Southwest Prince William Sound  
Sublocality ..... Squire Island and Vicinity

1996

CHIEF OF PARTY  
CAPT Dean R. Seidel, NOAA

### LIBRARY & ARCHIVES

DATE ..... MAR 6 1998

**HYDROGRAPHIC TITLE SHEET**

H-10712

**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-10-18-96

State Alaska

General locality Southwest Prince William Sound

Locality Squire Island and Vicinity

Scale 1:10,000 Date of survey September 3 - 24, 1996

Instructions dated August 23, 1996 Project No. OPR-P139-RA

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

Chief of party CAPT Dean R. Seidel, NOAA

Surveyed by CAPT D. Seidel, LT S. LaBossiere, LT G. Noll, LT M. Larsen, LT S. Lemke, LTJG J. Crocker, ENS E. Christensen, CST J. Fleischmann, SST J. Jacobson, ST K. Brown

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

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: I. Almacen Automated plot by HP Design Jet 650C

Verification by E. Domingo, D. Doles, R. Mayor, J. Stringham

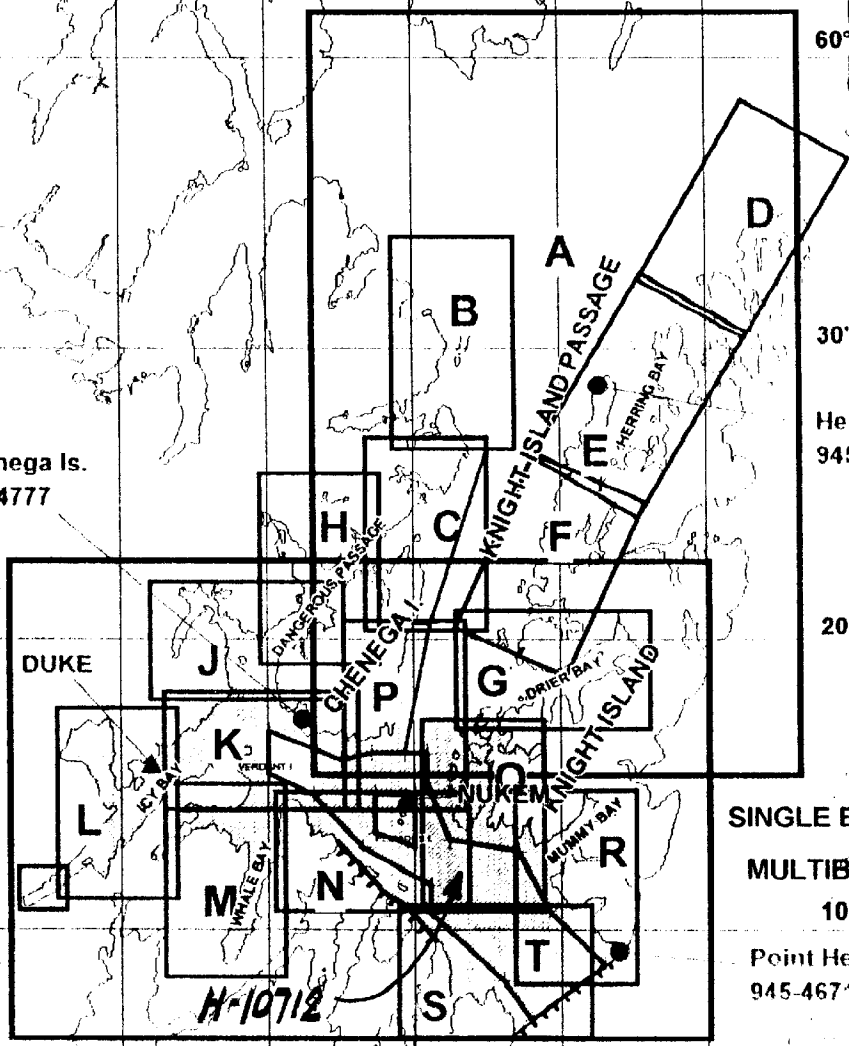
Soundings in fathoms ~~feet~~ at ~~MHW~~ MLLW and tenths

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.

*SURF/AWOL 12/3/97 mcr*

PROGRESS SKETCH OPR-P139-96  
 SOUTHWEST PRINCE WILLIAM SOUND  
 NOAA SHIP RAINIER  
 CAPTAIN DEAN R. SEIDEL COMMANDING  
 SEPTEMBER - OCTOBER 1996

Chenega Is.  
 945-4777



60° 40'

30'

Herring Pt.  
 945-4691

20'

SEPT OCT

SINGLE BEAM

MULTIBEAM

10'

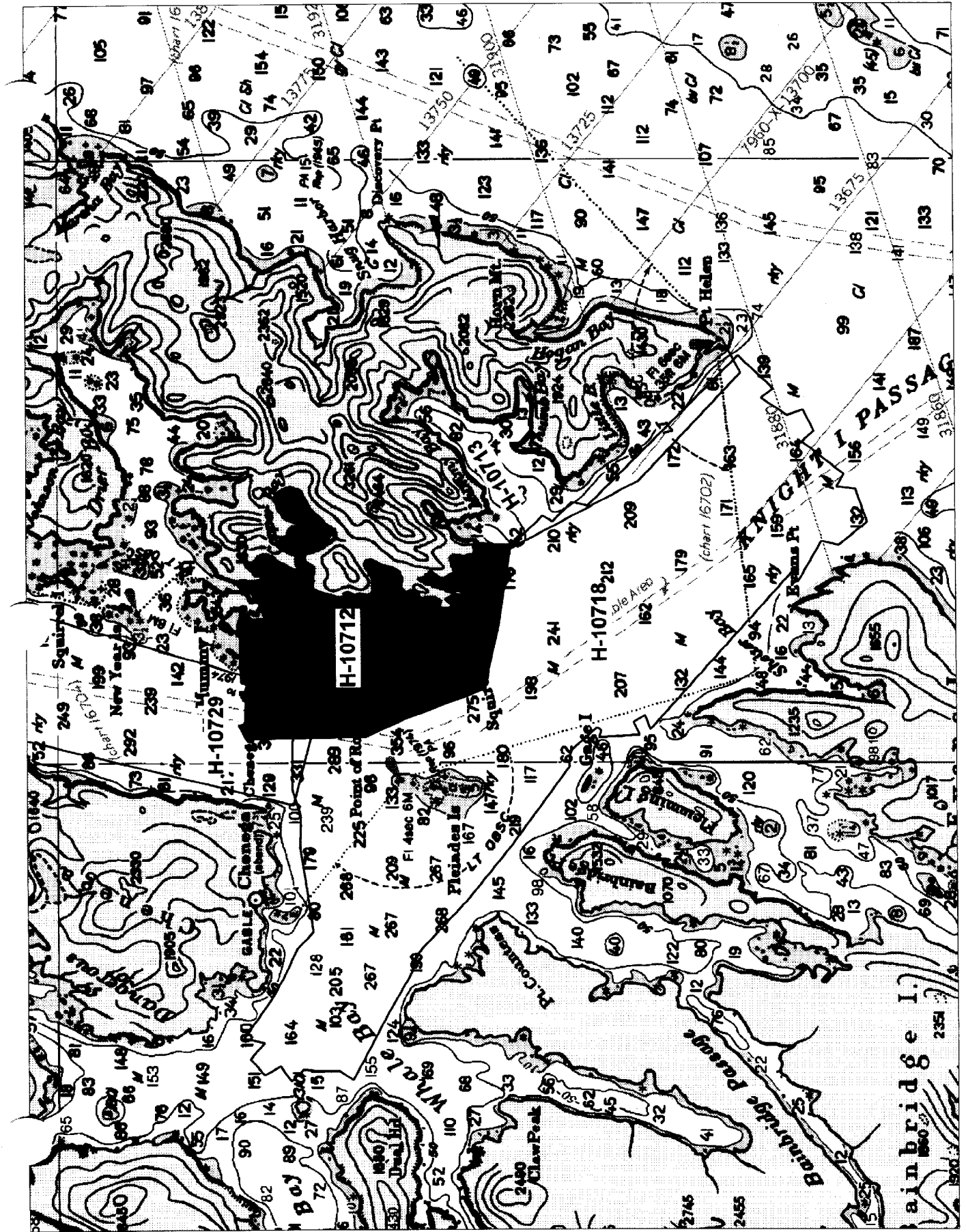
Point Helen  
 945-4671

Sheet	Reg_No	Started	Percent	Completed	Submitted	SQNI
S	H-10715	SEP 6	100%	SEP 11	OCT 11	4.5
N	H-10716	SEP 9	100%	SEP 21	OCT 11	6.5
T	H-10718	SEP 12	80%			26.2
L	H-10721	SEP 23	100%	OCT 8		9.4
J	H-10723	SEP 28	90%			4.8
P	H-10719	SEP 21	100%	OCT 10		5.1
M	H-10717	SEP 18	100%	OCT 7		7.8
K	H-10722	SEP 19	100%	SEP 28		9.7
H	H-10725	OCT 3	80%			5.8

147° 40'

Downtime_Type	Sept	Oct	Nov
Weather - Days	2	0	0
Mechanical -Hr	14	2	0
Electronic -Hr	2	0	0

Accomplished	Sept	Oct	Nov
LNM Hydro	1621	740.4	0
LNM SSS	0	0.4	0
SQ NM	799	196	0
AWOIS Invest.	5	0	0
Other Invest.	14	3	0
LNM Multibeam	107.4	0	0



# Descriptive Report to Accompany Hydrographic Survey H-10712

Field Number RA-10-18-96

Scale 1:10,000

September 1996

NOAA Ship RAINIER

Chief of Party: Captain Dean R. Seidel, NOAA

## A. PROJECT ✓

This basic hydrographic survey was completed in the southern portion of Knight Island Passage, Alaska, as specified by Project Instructions OPR-P139-RA dated August 23, 1996. Survey H-10712 corresponds to sheet Q as defined in the sheet layout included in the Project Instructions.

This survey will provide contemporary hydrographic survey data for updating National Ocean Service charts of Prince William Sound. Requests for hydrographic surveys and updated charts have been received from the Defense Mapping Agency, United States Coast Guard, the Southwest Alaska Pilot's Association, cruise ship lines, and local fisherman.

## B. AREA SURVEYED (See EVAL RPT., Sec B)

The survey area is located in the southern portion of Knight Island Passage, Squire Island and vicinity. The survey's northern limit is 60° 17' 00" N. The eastern limit is Knight Island, extending south along longitude 147° 53' 00" W to latitude 60° 12' 37.5" N. The southern limit of the survey extends from latitude 60° 12' 37.5" N, longitude 147° 53' 00" W to latitude 60° 13' 00" N, longitude 147° 57' 39". The western limit is defined by latitude 60° 13' 00" N, longitude 147° 57' 39" W, through latitude 60° 14' 58" N, longitude 147° 59' 11" W to latitude 60° 17' 00" N, longitude 147° 59' 11" W. Data acquisition was conducted from September 3, 1996 (DN 247) to September 24, 1996 (DN 268).

## C. SURVEY VESSELS ✓

Data were acquired by RAINIER survey launches as noted below. No unusual vessel configurations or problems exist for this survey.

Vessel	EDP #	Operation
RA-2	2122	Hydrography Shoreline Verification Detached Positions
RA-3	2123	Hydrography Shoreline Verification Detached Positions

Vessel	EDP #	Operation
RA-4	2124	Hydrography Detached Positions
RA-5	2125	Hydrography Bottom Samples Sound Velocity Casts
RA-6	2126	Hydrography Shoreline Verification

#### D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

All data were acquired and processed with HDAPS. A complete listing of software for HDAPS is included in Appendix VI. \*

#### E. SONAR EQUIPMENT ✓

Sonar equipment was not used on H-10712. *Concur.*

#### F. SOUNDING EQUIPMENT ✓

The Raytheon DSF-6000N is a dual frequency (100 kHz, 24 kHz), paper trace echo sounder. Serial numbers are included on the headers of the daily Raw Master Printouts. \*No problems which affect survey data were encountered.

#### G. CORRECTIONS TO ECHO SOUNDINGS ✓

Correctors for the velocity of sound through water were determined from the cast listed below:

Velocity Table #	Cast #	DN	Cast Position	Deepest Depth (m)	Applicable DN
2	2	248	60° 14' 12" N 147° 59' 24" W	756.8	247-251
3	3	255	60° 15' 59" N 147° 52' 50" W	169.9	250-268 Copper Bay
4	4	256	60° 14' 30" N 147° 59' 18" W	765.2	252-268

*casts #2 & #4 were taken outside of the survey limits.*

The sound velocity cast was acquired with SBE SEACAT Profiler (S/N 219), calibrated January 16, 1996. Velocity correctors were computed using the PC programs SEACAT and VELOCITY, version 2.11 (1995), in accordance with Hydrographic Survey Guideline (HSG) No. 69. Sound Velocity Table No. 3 was used for data acquisition inside Copper Bay.

A printout of the Sound Velocity Corrector Table used in the HDAPS Post Survey program is included in the "Separates to be Included with Survey Data, IV<sup>\*</sup> Sounding Equipment Calibrations and Corrections".

#### Static Draft ✓

A transducer depth was determined using Field Procedures Manual (FPM) Fig 2.2 for vessels 2122-2126 in the spring of 1996. These values were entered into the offset tables<sup>\*</sup> for each survey platform.

#### Settlement and Squat ✓

Correctors were computed in accordance with Hydrographic Manual Section 4.9.4.2., using FPM Fig. 2.3, and are included with project data for OPR-O136-RA. The data for vessels 2122-2126 were collected in Shilshole Bay, Washington in the Spring of 1996.

#### Offset Tables ✓

Offset tables<sup>\*</sup> contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 2-6 correspond to the last digit of the vessel number. The offset tables are contained in the "Separates to be Included with Survey Data".

#### Heave ✓

The launches are not equipped with heave, roll and pitch sensors.

#### Bar Check and Lead Lines ✓

Bar check lines were calibrated by RAINIER personnel during Spring 1996. Calibration forms are included with project data for OPR-P180-RA. Bar checks were performed periodically and served as a functional check of the DSF-6000N.

#### Tide Correctors ✓

Predicted tides for the project were provided on diskette by N/OES334 through N/CS31 for the Cordova, Alaska reference station (945-4050). Tidal correctors as provided in the project instructions for H-10712 are:

Zone	Time Correction	Height Correction
PWS20	-0 hr 12 mins	x0.93

HDAPS listings of the data used in generating tide corrector tables are included in Appendix V\* of this report.

Cordova, Alaska (945-4050) and Valdez, Alaska (945-4240) were used as the primary control stations for datum determination at all subordinate stations. RAINIER personnel installed Sutron 8200 GOES-transmitter equipped tide gages at Point Helen (945-4671) and Chenega Island (945-4777) on September 2, 1996. Five new bench marks were installed at Point Helen, and the gage was not running well during this survey, so the hydrographer recommends using Chenega for datum recovery for this survey. Refer to the Field Tide Notes and supporting data in Appendix V\* for individual gage performance and level closure information. This information has been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. A request for approved tides was forwarded to N/OES23 in accordance with FPM 4.2.3. *Approved Tide Note dated January 16, 1997 is attached.*

#### H. CONTROL STATIONS (See EVAL RPT., Sec. H)

The horizontal datum for this project is NAD 83. One new station, NUKEM, was established on the northernmost rock of the Pleiades Islands using static GPS observations from station ROCK, with a check to station DUKE. <sup>list of</sup> The control stations used for this survey <sup>is attached to this report.</sup> are listed in Appendix H. See the OPR-P139-RA-96 Horizontal Control Report for more information.

#### I. HYDROGRAPHIC POSITION CONTROL (See EVAL RPT., Sec. I)

All soundings were positioned using differential GPS. Primary control was a VHF differential reference station installed at NUKEM and repeated on a second VHF frequency by the ship. Launch-to-launch DGPS performance checks were performed in accordance with Section 3.4.4 of the FPM using either the Cape Hinchinbrook DGPS beacon, the Potato Point DGPS beacon, or station DUKE, as the alternate source of differential corrections. The performance check results are included in the project data for OPR-P139-RA.

RAINIER used SHIPDIM, version 2.2R (April 1996), modified for use with the Trimble Centurion P-code receiver. The stations at NUKEM and HINCHINBROOK provided input for daily comparisons. Some outliers were noted, but none indicated systematic or continuous errors in the HINCHINBROOK beacon. The SHIPDIM OUTLIER.SUM results are included in the project data for OPR-P182-RA.

#### Problems ✓

None.

#### J. SHORELINE (See EVAL RPT., Sec. J)

The shoreline manuscript from Coastal Mapping survey CM-92012, <sup>(DM-10296 & DM-10299)</sup> was supplied by N/CS341 in Standard Digital Data Exchange Format (SDDEF). The digital file was projected to the survey grid with OPR-P139-RA-96 geodetic parameters using program Shore version 2.0, provided by N/CS32, and plotted on the survey using HDAPS.



## Method of Shoreline Verification ✓

Limited shoreline verification was conducted in accordance with the Project Instructions. For this survey the general limit of safe navigation of a survey launch was a safe maneuvering distance offshore of apparent low tide, or approximately 3 to 5 meters of depth at Mean Lower Low Water. This safe navigation limit varied from 5 meters offshore of bedrock features to 50 meters offshore of shallow, gently sloping beaches. This Navigational Area Limit Line (NALL) varied in distance from shore and depth of water based on the apparent usefulness of the nearshore waters for navigation in the judgement of the hydrographer. Rocks inshore of the NALL were not positioned hydrographically; refer to the hydrographer's notes on the final Detached Position and Bottom Sample Plot for chart compilation guidance near shore. See the Shoreline Flow Chart and Limited Shoreline Verification "New Rules" memoranda <sup>attached to this report</sup> in Appendix XII for more information regarding the NALL.

The manuscript high water line was the seaward extent of flora in most areas of the survey, with a sand, gravel, and rock beach or bedrock fronting this foliage. Detached positions and foul limit lines were acquired on manuscript features offshore of the NALL line to verify positions and determine extent of reefs, kelp, and connecting ledges which were not fully represented on the manuscript.

Located in the detached position folders and portrayed on the Detached Position and Bottom Sample final plot submitted with this survey are shoreline notes describing offshore features and the nature of the foreshore. Field cartographic codes were assigned to detached positions; until their heights can be reduced in final processing, rocks have been assigned code 089 if near vertical datum and code 165 if submerged. Heights\* are recorded in meters and decimeters and are corrected to MLLW using predicted tides. All shoreline positions offshore of the NALL are plotted on the final field sheet. *The heights of rocks plotting offshore of the NALL line are shown in feet on the smooth sheet and have been corrected for approved tides. Heights of rocks located within the foul areas and inshore of the NALL line were not determined during survey operations.*

A manuscript rock\* at latitude 60° 15' 52.5" N, longitude 147° 56' 20" W was searched for visually and developed with ten meter lines on DN255/fixes 30871-30884 and not found. *This rock was searched for but not found and therefore it should be deleted.*

A manuscript rock\* at latitude 60° 15' 41.9" N, longitude 147° 56' 17.5" W was searched for visually and developed with ten meter lines on DN255/fixes 30853-30870 and disproved with detached position DN255/fix 30796. *This rock was searched for during this survey but not found and it should be deleted.*

\* These rocks plot in ten fathoms of water and fall in the vicinity of foul areas and submerged pinnacle rocks as found by the present survey.

**K. CROSSLINES** ✓ *It is likely these features were mis-identified as rocks during photo compilation and were actually kelp patches.*

Crosslines agreed within 1 meter with mainscheme hydrography. Crossline mileage was 21.3 nautical miles or 9.8 % of total mainscheme hydrography.

## L. JUNCTIONS (See EVAL RPT., Sec. L)

This survey junctions along the southeastern limit with survey H-10713, RA-10-19-96, 1:10,000 and survey H-10718, RA-40-2-96, 1:40,000 along the south and east limit. ✓ Soundings were found to be in good agreement. *and H-10729 along the NW corner of the survey.*

Final comparison will be made at the Pacific Hydrographic Branch (PHB).

### M. COMPARISON WITH PRIOR SURVEYS (See EIAL RPT., Sec. M)

Prior survey H-3027 (1:20,000, 192<sup>0</sup>9, unnamed Alaskan datum, NAD 27 registration added) is the only survey that covers this survey area. Prior survey soundings were found to be in fair agreement with those from the current survey. Least depths from the current survey were shoaler due to the use of modern positioning and sounding equipment. Areas in which prior survey soundings vary widely from the current survey have been adequately sounded and probably arise from positioning and scaling errors from the older surveys, as well as their low sounding density. Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

### ITEM INVESTIGATIONS ✓

#### Summary of AWOIS Items Assigned to this survey:

<u>Number</u>	<u>Short Description</u>	<u>Search Used</u>	<u>Results</u>	<u>Day/Fix Number</u>
✓52320	Sounding	Echo sounder, dive	Verified	263/40965
✓52321	Sounding	Echo sounder, pole	Verified	263/40964
✓52322	Rock	Echo sounder, dive	Verified	263/40968
✓52325	Rock	Echo sounder, visual	Disproved	249/40422-40460

#### Detailed Investigation Reports: ✓

ITEM NO.: AWOIS 52320 ✓  
Sounding

CHART NO.: 16704 (1:20,000)  
EDITION: 11th Edition  
CHART DATE: April 21, 1990

CHART NO.: 16701 (1:81,436)  
EDITION: 15th Edition  
CHART DATE: July 21, 1990

CHART NO.: 16700 (1:200,000)  
EDITION: 24th Edition  
CHART DATE: January 11, 1992

#### DESCRIPTION AND SOURCE OF ITEM:

NOAA Ship DAVIDSON reported a 4.5 fathom shoal without a fix while exiting the passage between Squire Island and Mummy Island. The shoal, reported in CL1073/74, was assumed to be the charted 8 fathom shoal at latitude 60° 16' 42.96" N, longitude 147° 56' 45.77" located by survey H-3027/1929 (position converted to NAD 83 using a corrector applied to survey datum based on the geographic position of the know station).

#### SOURCE POSITION:

latitude	60° 16' 45" N	60° 16' 42.96" N
longitude	147° 56' 38" W (NAD 27)	147° 56' 45.77" W (NAD 83)

SURVEY REQUIREMENTS: Echo sounder and/or side scan sonar over a search radius of 300 meters.

**METHOD OF INVESTIGATION:** Fifty meter splits were run over the prescribed search radius. Twenty-five and ten meter (DN 251, fixes 60064-60087) developments were conducted in shoal areas in depths less than 20 meters. A dive determined least depth was conducted on DN 263, fix 40965. (*Lat 60/16/43.1 N, Long 147/56/40.6 W*)

**RESULTS OF INVESTIGATION:** A least depth of 6.2 meters (3 1/4 fathom) was determined on a sloping ridge of bedrock by a dive conducted in 10 meter visibility over a 50 meter search radius for a duration of 10 minutes.

**COMPARISON WITH PRIOR SURVEYS:** The closest determined sounding on H-3027 is 48 feet (16.6 meters).

**COMPARISON WITH THE CHART AND CHARTING RECOMMENDATIONS:**

Chart 16704: The shoal is charted as a 8 fathom sounding with note "Shoaling to 4 1/2 fathoms rep 1972". Revise the 8 fathom sounding to a 3 1/4 fathom sounding at latitude 60° 16' 43.132" N, longitude 147° 56' 40.620" W and delete note. *Concur. Chart the area based on the present survey.*

Chart 16701: The shoal is charted as a 8 fathom sounding with note "Shl to 4 1/2 fathoms rep 1972". Revise the 8 fathom sounding to a 3 1/4 fathom sounding at latitude 60° 16' 43.132" N, longitude 147° 56' 40.620" W and delete note. *Concur. Chart the area based on the present survey.*

Chart 16700: Charted note "Shoaling to 4 1/2 fathoms rep 1972". Revise blue tint to include latitude 60° 16' 43.132" N, longitude 147° 56' 40.620" W and delete note. *Concur. Chart the area based on the present survey.*

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**ITEM NO.:** AWOIS 52321 ✓  
Sounding

**CHART NO.:** 16704 (1:20,000)  
**EDITION:** 11th Edition  
**CHART DATE:** April 21, 1990

**CHART NO.:** 16701 (1:81,436)  
**EDITION:** 15th Edition  
**CHART DATE:** July 21, 1990

**CHART NO.:** 16700 (1:200,000)  
**EDITION:** 24th Edition  
**CHART DATE:** January 11, 1992

**DESCRIPTION AND SOURCE OF ITEM:**

A May 1989 danger to navigation report (CL542/89), generated by NOAA Ship RAINIER, reported a 3/4 fathom shoal (position approximate) while conducting a reconnaissance survey. The position was referenced to the charted shoreline and depth at MLLW was based on predicted tides.

**SOURCE POSITION:**

latitude 60° 16' 24" N 60° 16' 21.97" N  
longitude 147° 56' 57" W (NAD 27) 147° 57' 04.48" W (NAD 83)

**SURVEY REQUIREMENTS:** Echo sounder and/or side scan sonar over a search radius of 400 meters.

**METHOD OF INVESTIGATION:** Fifty meter splits were run over the prescribed search radius. Twenty-five and ten meter (DN 251, fixes 60000-60063 and DN 260, fixes 31072-31085) developments were conducted in shoal areas in depths less than 20 meters. A pole least depth was determined on DN 263, fix 40964. (60/16/22.9, 147/57/41.3)

**RESULTS OF INVESTIGATION:** A pole least depth of -0.2 meters was determined.

*Rocks shown on the smooth sheet as \* (1)*

**COMPARISON WITH PRIOR SURVEYS:** The least depth in the search radius on prior survey H-3027 was 252 feet (77 meters).

**COMPARISON WITH THE CHART AND CHARTING RECOMMENDATIONS:**

Chart 16704: The shoal is charted as a  $\frac{3}{4}$  fathom sounding, position approximate (PA). Revise  $\frac{3}{4}$  fathom sounding to a rock <sup>swath</sup> (uncover) at latitude  $60^{\circ} 16' 21.979''$  N, longitude  $147^{\circ} 57' 01.278''$  W, delete PA. *Concur. Chart rock as ⚓*

Chart 16701: The shoal is charted as a  $\frac{3}{4}$  fathom sounding, position approximate (PA). Revise  $\frac{3}{4}$  fathom sounding to a rock <sup>swath</sup> (uncover) at latitude  $60^{\circ} 16' 21.979''$  N, longitude  $147^{\circ} 57' 01.278''$  W, delete PA. *Concur. Chart rock as ⚓*

Chart 16700: The shoal is charted as a  $\frac{3}{4}$  fathom sounding, position approximate (PA). Revise  $\frac{3}{4}$  fathom sounding to a rock <sup>swath</sup> (uncover) at latitude  $60^{\circ} 16' 21.979''$  N, longitude  $147^{\circ} 57' 01.278''$  W, delete PA. *Concur. Chart rock as ⚓*

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**ITEM NO.:** AWOIS 52322 ✓  
Rock

**CHART NO.:** 16704 (1:20,000)  
**EDITION:** 11th Edition  
**CHART DATE:** April 21, 1990

**CHART NO.:** 16701 (1:81,436)  
**EDITION:** 15th Edition  
**CHART DATE:** July 21, 1990

**DESCRIPTION AND SOURCE OF ITEM:**

A July 7, 1989 danger to navigation report (CL542/89), generated by NOAA Ship FAIRWEATHER reported a rock awash. The rock's position was taken with sextant and radar and considered approximate.

**SOURCE POSITION:**

latitude  $60^{\circ} 16' 16.6''$  N  $60^{\circ} 16' 34.00''$  N  
longitude  $147^{\circ} 53' 53.4''$  W (NAD 27)  $147^{\circ} 53' 31.48''$  W (NAD 83)

**SURVEY REQUIREMENTS:** Echo sounder and/or side scan sonar over a search radius of 150 meters.

**METHOD OF INVESTIGATION:** Twenty-five meter developments were run over the prescribed search radius. Ten meter (DN 254, fixes 60555-60566) developments were conducted in shoal areas in depths less than 20 meters. A dive least depth was determined on DN 263, fix 40968). (60/16/34.3, 147/53/36.2)

**RESULTS OF INVESTIGATION:** A least depth of 1.8<sup>2</sup> meters was determined by dive.  
*Shown as O<sup>o</sup>Rk on the smooth sheet.*

**COMPARISON WITH PRIOR SURVEYS:** No feature is identified on H-3027, the nearest depth is 50 feet.

**COMPARISON WITH THE CHART AND CHARTING RECOMMENDATIONS:**

16704: The rock is charted as a rock awash, position approximate (PA). Revise to a submerged rock, depth ½ fathom, at latitude 60° 16' 34.272" N, longitude 147° 53' 36.228" W, delete PA. *Concur. Chart rock as ½ Rk*

16701: The rock is charted as a rock awash, position approximate (PA). Revise to a submerged rock, depth ½ fathom, at latitude 60° 16' 34.272" N, longitude 147° 53' 36.228" W, delete PA. *Concur. Chart rock as ½ Rk*

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**ITEM NO.:** AWOIS 52325 ✓  
Rock

**CHART NO.:** 16704 (1:20,000)  
**EDITION:** 11th Edition  
**CHART DATE:** April 21, 1990

**CHART NO.:** 16701 (1:81,436)  
**EDITION:** 15th Edition  
**CHART DATE:** July 21, 1990

**CHART NO.:** 16700 (1:200,000)  
**EDITION:** 24th Edition  
**CHART DATE:** January 11, 1992

**CHART NO.:** 16702 (1:40,000)  
**EDITION:** 9th Edition  
**CHART DATE:** July 21, 1990

**DESCRIPTION AND SOURCE OF ITEM:**

Unidentified dashed line feature, 100 meters in diameter, shown on T-9142/1955. Chart correction to add rock awash, position approximate, derived from feature shown on T-9142.

**SOURCE POSITION:**

latitude	60° 13' 19" N	60° 13' 16.91" N
longitude	147° 57' 22" W (NAD 27)	147° 57' 29.44" W (NAD 83)

**SURVEY REQUIREMENTS:** Echo sounder, visual search, and/or side scan sonar over a search radius of 200 meters.

**METHOD OF INVESTIGATION:** Fifty meter splits over prescribed search radius (DN249, fixes 40422-40460).

**RESULTS OF INVESTIGATION:** The least depth determined was 40 meters with no indication of shoaling. A new, 0.6 meter ( $\frac{1}{4}$  fathom) rock, located at latitude  $60^{\circ} 13' 13.991''$  N, longitude  $147^{\circ} 56' 42.175''$  W (DN 255, fix 30985) could be the T-9142 rock in question charted with an incorrect longitude. *Concur. Rock was shown on Smooth Sheet as covered 2 ft @ MLLW. Chart as wash (#) at chart datum.*

**COMPARISON WITH PRIOR SURVEYS:** No features shown in the search area, site seaward of 600 foot contour.

**COMPARISON WITH THE CHART AND CHARTING RECOMMENDATIONS:**

Chart 16704: Remove charted rock, dotted curve, and PA. *Concur. Chart the area based on the present survey. Rock does not plot on Chart 16704.*

Chart 16702: Remove charted rock, dotted curve, and PA. *Concur. Chart the area based on the present survey.*

Chart 16701: Remove charted rock, dotted curve, and PA. *Concur. Chart the area based on the present survey.*

Chart 16700: Retain charted rock to reflect a generalized portrayal of additional rocks in this area at this scale. *Do not concur. Rock not charted on 16700. Chart newly located rock based on the present survey.*

**O. COMPARISON WITH THE CHART (See EVAL RPT., Sec. O)**

**Charted Features ✓**

This survey was compared in the field to features portrayed on chart 16704, 11th Edition, April 21, 1990, 1:20,000 scale, (NAD 83), chart 16702, 9th Edition, July 21, 1990, 1:40,000 scale, (NAD 83), chart 16701, 15th Edition, July 21, 1990, 1:81,436 scale, (NAD 83), chart 16700, 24th Edition, January 11, 1992, 1:200,000 scale, (NAD 83). In addition, enlargements of charts 16704 and 16702 were used to compare features and soundings (converted to meters) on the boat sheet. Charted rocks offshore of the navigational area limit line were either identified as shoreline manuscript rocks or positioned as new rocks. Soundings and heights are referenced to MLLW using predicted tides. *Soundings and heights on the smooth sheet have been corrected for approved tides.*

A group of nine charted rocks at latitude  $60^{\circ} 16' 00''$  N, longitude  $147^{\circ} 56' 15''$  W was found to be an area foul with rocks (DN 253, fixes 60393-60418). *Concur. Chart the area based on the latest survey.*

*from H-3027*  
Two charted rocks at latitude  $60^{\circ} 15' 21''$  N, longitude  $147^{\circ} 57' 43.5''$  W were not found using ten meter developments (DN 256, fixes 21068-21088) and visual search with five meter water visibility. *Delete the two (2) charted rocks and chart the area based on the present survey.*

*from H-3027*  
Two charted rocks at latitude  $60^{\circ} 15' 25''$  N, longitude  $147^{\circ} 57' 37''$  W were not found using ten meter developments (DN 255, fixes 30933-30956) and visual search with five meter water visibility. *Delete the two (2) charted rocks and chart the area based on the present survey.*

A 4.3 meter ( $2\frac{1}{4}$  fathom) depth <sup>RK</sup> was determined by dive on DN 263, fix 40963 at latitude  $60^{\circ} 15' 22.192''$  N, longitude  $147^{\circ} 58' 04.023''$  W. This depth was located between charted depths of 27 fathoms (49 meters) and 19 fathoms (35 meters) and reported as a danger to navigation. *(DTON, Hem L)*  
*Chart the  $2\frac{1}{4}$  fathom depth <sup>RK</sup> at Lat  $60/15/22.2$ , Long  $147/58/04.0$ .*

A charted bare rock at latitude 60° 15' 15" N, longitude 147° 57' 51" W was searched for using ten meter developments (DN 260, fixes 31038-31049) and determined to be covered rock of depth 1.0 meters at latitude 60° 15' 13.762" N, longitude 147° 57' 49.441" W (DN 260, fix 31046+2).  
*Chart this feature as submerged rock. Chart as ~~BR~~.*

Four charted rocks at latitude 60° 15' 06" N, longitude 147° 57' 10" W were not found using twenty-five meter developments (DN 249, fixes 20280-20285) and visual search in general depths of 50 meters with five meter water visibility. *Delete the four (4) rocks and chart the area based on the present survey.*

A charted rock at latitude 60° 14' 57" N, longitude 147° 57' 39" W was searched for using ten meter developments (DN 256, fixes 21248-21261) and determined by detached position (DN 260, fix 31033) to be a rock with least depth 0.0 meters at latitude 60° 14' 56.922" N, longitude 147° 57' 41.139" W. *Delete charted rock. Chart submerged rock at Lat 60/14/56.922, longitude 147/57/41.139. (#)*

A charted rock at latitude 60° 14' 45" N, longitude 147° 57' 56" W was not observed visually during shoreline verification or main scheme splits (DN 248, fixes 40092-40093 and DN 250, fixes 50058-50059) and the rock was not observed on the echogram. *No rock was found at the charted location, however, a submerged rock was found about 120m SW at Lat 60/14/40.5, longitude 147/57/56.6 (See DTN, Item N) (12Rk)*

The following charted rocks were not found using ten meter developments (DN 256, fixes 21099-21134 and 21262-21277) and visual search with five meter water visibility.

- latitude 60° 14' 54" N, longitude 147° 57' 48" W
- latitude 60° 14' 53" N, longitude 147° 57' 55.5" W
- latitude 60° 14' 48" N, longitude 147° 58' 00" W
- latitude 60° 14' 43" N, longitude 147° 57' 42" W
- latitude 60° 14' 42" N, longitude 147° 57' 45" W

*Delete these charted rocks and chart the area based on the present survey. (See EML RPT., Sec. 0)*

The following are new features found during this survey.

Feature	M/FM Depth	Latitude	Longitude	DN/Fix	Depth Type	Chart
Rock	0.9/1.4	60° 13' 29.300" N	147° 54' 13.894" W	263/40972	Dive	# Cov 2'
Rock	1.9/2.1 2.1/1.8	60° 16' 25.180" N	147° 53' 49.197" W	263/40967	Dive	1 Rk
Rock	0.7/0.6	60° 16' 19.472" N	147° 53' 50.288" W	268/40993	Dive	# Cov 2'
Rock	0.8/0.7	60° 15' 54.440" N	147° 53' 58.893" W	268/40994	Dive	# Cov 2'
Rock	-0.8/-0.4	60° 16' 14.002" N	147° 55' 28.159" W	260/21373	Visual Est.	*(2)
Rock	-0.3/-0.2	60° 16' 15.907" N	147° 55' 29.696" W	260/21374	Visual Est.	*(1)
Rock*	1.9/1.0	60° 14' 54.913" N	147° 57' 34.407" W	255/30791	Echo Sdg.	1 Rk
Reef	-1.1/0.6	60° 14' 53.989" N	147° 57' 35.435" W	255/30790	Echo Sdg.	rock (4) Reef
Rock	0.6/0.3	60° 13' 13.991" N	147° 56' 42.175" W	255/30985	Visual Est.	Cov 2'
Rock	-0.6/-0.3	60° 13' 24.056" N	147° 57' 07.802" W	255/31013	Visual Est.	*(2)
Rock	2.3/1.2	60° 13' 26.959" N	147° 57' 11.338" W	255/31016	Echo Sdg.	1/4 Rk

*chart the features listed above based on the present survey.*

\* Not shown (Compiled rock nearby)

A charted rock at latitude 60° 14' 37.5" N, longitude 147° 57' 27" W was not found using ten meter developments (DN 256, fixes 21230-21245) and visual search with five meter water visibility. *Delete rock from the chart.*

Two areas, centered at latitude 60° 16' 45" N, longitude 147° 55' 18" W (DN 252, fixes 30608-30612 and 30615-30617) and latitude 60° 16' 48.5" N, longitude 147° 55' 31" W (DN 252, fixes 30613-30614) were found to be foul with rocks. *Chart these areas based on the present Survey.*

An 8.4 meter <sup>2</sup> <sup>rocky</sup> shoal at latitude 60° 14' 36.246" N, longitude 147° 53' 59.743" W (DN 263, fix 40970) was determined by dive. *Chart shoal depth of 4 1/2 fathoms at survey location. (See DTN Item B)*

A 0.6 meter (1/4 fathom) at latitude 60° 13' 13.991" N, longitude 147° 56' 42.175" W (DN 255, fix 30985) was found between charted 7 fathom and 14 fathom. *(See AWOTS 52325)*

Additional non-sounding features are discussed in Section J. Final comparisons will be made at PHB after application of real tide correctors.

**Dangers to Navigation** ✓ *See Eval Rpt, Section O.*  
(17)

Seventeen dangers to navigation within the limits of H-10712 were reported to the Seventeenth Coast Guard District, September 26, 1996.

#### **P. ADEQUACY OF SURVEY** ✓

Survey H-10712 is complete and adequate to supersede prior soundings and features in their common areas. *Concur.*

#### **Q. AIDS TO NAVIGATION** ✓

There were no aids to navigation on H-10712. *Concur*

#### **R. STATISTICS** ✓

NM Hydrography	313.7
Velocity Casts	3
Detached Positions	21
Selected Soundings	15495
Bottom Samples	49
Tide Stations	2
NM <sup>2</sup> Hydrography	12.2
Dives	10

#### **S. MISCELLANEOUS** ✓

Bottom samples were collected and sent to the Smithsonian Institution in accordance with Project Instructions. Strong tidal currents were found but not measured at the entrance to Copper Bay.



Secchi disk observations were performed during hydrographic data operations, and results will be forwarded upon completion of this project. General water visibility was 5 to 10 meters.

**T. RECOMMENDATIONS** ✓

Due to the extent of changes in the hydrography found during this survey the hydrographer recommends accelerating the recompilation schedule of charts 16704 and 16702. *concur.*

**REFERRAL TO REPORTS** ✓

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

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Fall 1996 Horizontal Control Report for OPR-P139-RA.	November, 1996	N/CS34
Fall 1996 Coast Pilot Report for OPR-P139-RA.	November, 1996	N/CS26
Project related data for OPR-P139-RA.	Incremental	N/CS34
Secchi Disk Observations for OPR-P139-RA	November, 1996	N/CS31

Respectfully Submitted,

*Steven P. LaBossiere*

Steven P. LaBossiere  
Lieutenant, NOAA

Approved and Forwarded,

*Dean R. Seidel*

Dean R. Seidel  
Captain, NOAA  
Commanding Officer

CONTROL STATIONS as of 15 Oct 1996 ✓

No	Type	Latitude	Longitude	H	Cart	Freq	Vel Code	MM/DD/YY	Station Name
1	G	060:14:26.408	148:00:42.205	18	250	0.0	0.0	09/03/96	NUKEM
2	G	060:15:37.435	148:18:06.007	18	250	0.0	0.0	10/07/96	DUKE
3	L	060:09:11.260	147:45:58.680	27	257	0.0	0.0	10/07/96	PT. HELEN LIGHT LL#25925
4	L	060:18:46.233	147:55:04.532	23	257	0.0	0.0	10/07/96	NEW YEAR ISLAND LIGHT LL#25915
5	L	060:14:22.912	148:00:37.765	26	257	0.0	0.0	10/07/96	PLEIADES LIGHT LL#25920
6	B	060:14:18.000	147:38:48.000	0	250	0.0	0.0	00/00/00	CAPE HINCHINBROOK USCG BEACON
7	B	061:03:24.000	146:41:48.000	0	250	0.0	0.0	00/00/00	POTATO POINT USCG BEACON



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
Office of NOAA Corps Operations  
Pacific Marine Center  
1801 Fairview Avenue East  
Seattle, Washington 98102-3062

NOAA Ship RAINIER

September 26, 1996

**ADVANCE  
INFORMATION**

Commander  
Seventeenth Coast Guard District  
Post Office Box 3-5000  
Juneau, Alaska 99802

Dear Sir:

During the processing of hydrographic surveys H-10712 and H-10716 in Knight Island Passage, Prince William Sound, twenty-four dangers to navigation have been discovered. These dangers affect the following charts:

<u>Number</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16700	24th ED.	92/01	1:200,000	NAD83
16701	16th ED.	96/06	1:81,436	NAD83
16702	9th ED.	90/07	1:40,000	NAD83
16704	11th ED.	90/04	1:20,000	NAD83

It is recommended that these dangers to navigation be included in the Local Notice to Mariners.

Questions concerning this report should be directed to the Pacific Hydrographic Branch at (206) 526-6835.

Sincerely,

Dean R. Seidel  
Captain, NOAA  
Commanding Officer  
NOAA Ship RAINIER

Enclosure

cc: DMA/HTC  
PMC  
N/CS262



**DANGERS TO NAVIGATION**

**OPR-P139-RA**

**SOUTHWEST PRINCE WILLIAM SOUND**

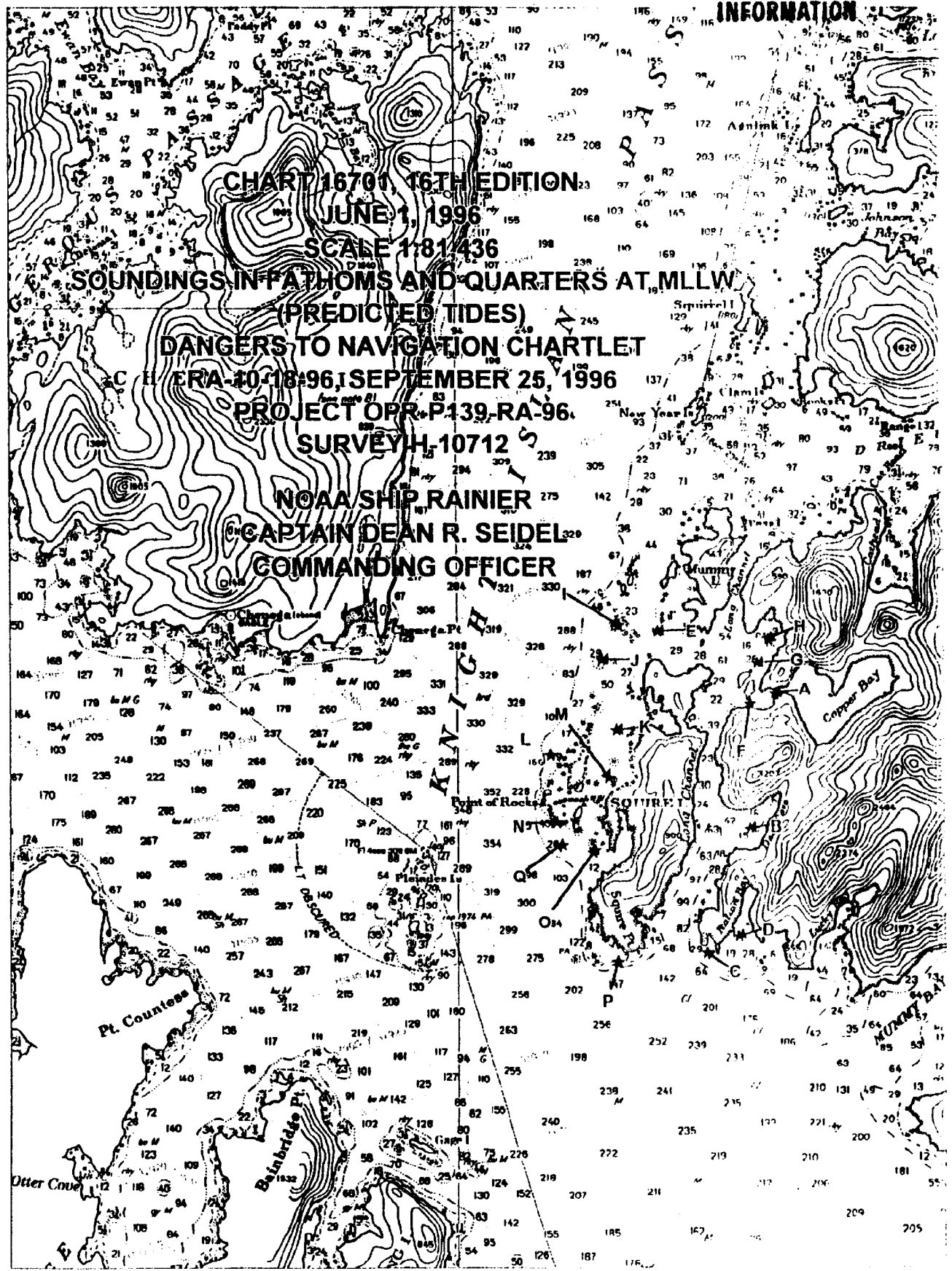
**REGISTRY NUMBER: H-10712**

**AFFECTED CHARTS:**

<u>CHART</u>	<u>EDITION NUMBER</u>	<u>DATE</u>	<u>SCALE</u>
16700	24 TH ED.	92/01	1:200,000
16701	16 TH ED.	96/06	1:81,436
16702	9 TH ED.	90/07	1:40,000
16704	11 TH ED.	90/04	1:20,000

<u>ITEM</u>	<u>FIX #</u>	<u>DANGER</u>	<u>CHART DEPTH</u>	<u>DEPTH (M)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
A	60532+4	ROCK	COVERS 1 FM	2	060:16:00.597	147:53:28.383
B	40970+0	SHOAL	4 1/2 FM	8.4	060:14:36.246	147:53:59.743
C	60475+4	ROCK	COVERS 1/2 FM	1.2	060:13:19.433	147:54:53.473
D	40972+0	ROCK	COVERS 1/4 FM	0.9	060:13:29.300	147:54:13.894
E	40966+0	ROCK	COVERS 1 3/4 FM	3.3	060:16:39.568	147:55:53.052
F	40994+0	ROCK	COVERS 1/4 FM	0.8	060:15:54.440	147:53:58.893
G	40993+0	ROCK	COVERS 1/4 FM	0.7	060:16:19.472	147:53:50.288
H	40968+0	ROCK	COVERS 1/2 FM	1.3	060:16:34.272	147:53:36.228
I	40965+0	SHOAL	3 1/4 FM	6.2	060:16:43.132	147:56:40.620
J	40964+0	ROCK	AWASH	-0.2	060:16:21.979	147:57:01.278
K	30803+1	ROCK	AWASH	-0.1	060:15:37.989	147:56:43.344
L	40963+0	SHOAL	2 1/4 FM	4.3	060:15:22.192	147:58:04.023
M	60279+4	ROCK	COVERS 1 3/4 FM	3.3	060:15:08.027	147:56:52.938
N	50055+5	ROCK	COVERS 1 FM	2.2	060:14:40.489	147:57:56.615
O	40962+0	SHOAL	5 1/4 FM	9.6	060:14:23.143	147:57:10.043
P	30985+0	ROCK	COVERS 1/4 FM	0.6	060:13:13.991	147:56:42.175
Q	40997+3	SHOAL	4 1/4 FM	8	060:14:26.328	147:57:50.137

**ADVANCE  
INFORMATION**



**CHART 16701, 16TH EDITION  
JUNE 1, 1996**

**SCALE 1:81,436**

**SOUNDINGS IN FATHOMS AND QUARTERS AT MLLW  
(PREDICTED TIDES)**

**DANGERS TO NAVIGATION CHARTLET**

**ERA-10-18-96, SEPTEMBER 25, 1996**

**PROJECT OPR-P139-RA-96**

**SURVEY H-10712**

**NOAA SHIP RAINIER  
CAPTAIN DEAN R. SEIDEL  
COMMANDING OFFICER**

P 261414Z SEP 96  
 FM NOAA S RAINIER  
 TO CCGDSEVENTEEN JUNEAU AK  
 DMAHTCCNAVWARN WASHINGTON DC//MCNM//  
 INFO NOAA MOP SEATTLE WA  
 BT  
 UNCLAS

DANGER TO NAV #: RA-13-96

NOAA SHIP RAINIER HAS LOCATED 17 DANGERS TO NAVIGATION IN  
 SOUTHWEST PRINCE WILLIAM SOUND (PROJECT: OPR-P139-RA)  
 WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10712.

THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN  
 LOCAL NOTICE TO MARINERS:

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

AFFECTED CHARTS:

CHART	EDITION NUMBER	DATE	SCALE
16700	24TH ED.	92/01	1:200,000
16701	16TH ED.	96/06	1:81,436
16702	9TH ED.	90/07	1:40,000
16704	11TH ED.	90/04	1:20,000

ALL CHART DATUM ARE NAD83.

ITEM	DANGER	DEPTH	LATITUDE (N)	LONGITUDE (W)	FIX NUMBER
A	ROCK COVERS	1 FM	060:16:00.597	147:53:28.383	60532+4
B	SHOAL	4 1/2 FM	060:14:36.246	147:53:59.743	40970+0
C	ROCK COVERS	1/2 FM	060:13:19.433	147:54:53.473	60475+4
D	ROCK COVERS	1/4 FM	060:13:29.300	147:54:13.894	40972+0
E	ROCK COVERS	1 3/4 FM	060:16:39.568	147:55:53.052	40966+0
F	ROCK COVERS	1/4 FM	060:15:54.440	147:53:58.893	40994+0
G	ROCK COVERS	1/4 FM	060:16:19.472	147:53:50.288	40993+0
H	ROCK COVERS	1/2 FM	060:16:34.272	147:53:36.228	40968+0
I	SHOAL	3 1/4 FM	060:16:43.132	147:56:40.620	40965+0
J	ROCK	AWASH	060:16:21.979	147:57:01.278	40964+0
K	ROCK	AWASH	060:15:37.989	147:56:43.344	30803+1
L	SHOAL	2 1/4 FM	060:15:22.192	147:58:04.023	40963+0
M	ROCK COVERS	1 3/4 FM	060:15:08.027	147:56:52.938	60279+4
N	ROCK COVERS	1 FM	060:14:40.489	147:57:56.615	50055+5
O	SHOAL	5 1/4 FM	060:14:23.143	147:57:10.043	40962+0
P	ROCK COVERS	1/4 FM	060:13:13.991	147:56:42.175	30985+0
Q	SHOAL	4 1/4 FM	060:14:26.328	147:57:50.137	40997+3

THIS IS ADVANCE INFORMATION SUBJECT OF OFFICE REVIEW.

Dton\_q

QUESTIONS CONCERNING THIS MESSAGE SHOULD BE DIRECTED  
TO THE CHIEF, PACIFIC HYDROGRAPHIC BRANCH AT (206) 526-6835.  
A LETTER WITH ATTACHED CHARTLET WILL BE MAILED TO CONFIRM

THIS MESSAGE.

BT  
NNNN



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL OCEAN SERVICE  
OFFICE OF COAST SURVEY  
Pacific Hydrographic Branch  
Seattle, Washington 98115-0070

June 5, 1997

Commander (OAN)  
Seventeenth Coast Guard District  
P.O. Box 25517  
Juneau, AK 99802

Dear Sir:

During office review of hydrographic survey H-10712, Alaska, Southwest Alaska Peninsula, Squire Island and Vicinity, additional dangers to navigation have been identified and are considered potential dangers to navigation affecting the following chart:

Chart	Edition/Date	Scale	Datum
16702	9th/Jul. 21, 1990	1:40,000	NAD 83
16704	11th/Apr. 21, 1990	1:20,000	NAD 83

The attached information is provided for publication in the Local Notice to Mariners.

Questions concerning this report should be directed to the Pacific Hydrographic Branch at (206) 526-6835.

Sincerely,

Kathryn Timmons  
Commander, NOAA  
Chief, Pacific Hydrographic Branch

Enclosures

cc: NIMA  
N/CS261





REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10712

Survey Title: State: ALASKA  
Locality: SOUTHWEST ALASKA PENINSULA  
Sublocality: SQUIRE ISLAND AND VICINITY

Project Number: OPR-P139-RA, NOAA Ship RAINIER

Survey Date: September 3-24, 1996

Features are reduced to Mean Lower Low Water (MLLW) using approved tides and are positioned on NAD 83.

Chart affected: 16702, 9th Edition/July 21, 1990, scale 1:40,000, NAD 83  
16704, 11th Edition/Apr.21, 1990, scale 1:20,000, NAD 83

<u>DANGER TO NAVIGATION</u>	<u>LATITUDE(N)</u>	<u>LONGITUDE(W)</u>
Shoal, covers 6 1/4 fathoms	60/13/18.0	147/54/22.3
Shoal, covers 7 1/2 fathoms	60/14/30.6	147/54/10.3
Shoal, covers 7 1/4 fathoms	60/14/47.2	147/54/47.6
Shoal, covers 10 fathoms	60/14/55.1	147/54/45.9
Shoal, covers 6 3/4 fathoms	60/15/45.1	147/54/57.9
Shoal, covers 3 1/2 fathoms	60/15/54.8	147/54/57.2
Shoal, covers 4 1/4 fathoms	60/16/31.5	147/53/46.6
Shoal, covers 4 fathoms	60/16/27.2	147/55/01.4
Shoal, covers 4 3/4 fathoms	60/16/54.5	147/56/24.6
Shoal, covers 5 fathoms	60/16/11.7	147/56/58.9
Shoal, covers 1 1/2 fathoms	60/15/32.8	147/57/42.4
Shoal, covers 12 fathoms	60/16/02.9	147/54/33.0
Rock Awash	60/16/33.5	147/55/15.5
Rock Awash	60/16/34.0	147/55/24.5
Rock Awash	60/15/49.0	147/57/18.0
Rock Awash	60/15/46.0	147/57/20.0

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch at (206)526-6835.

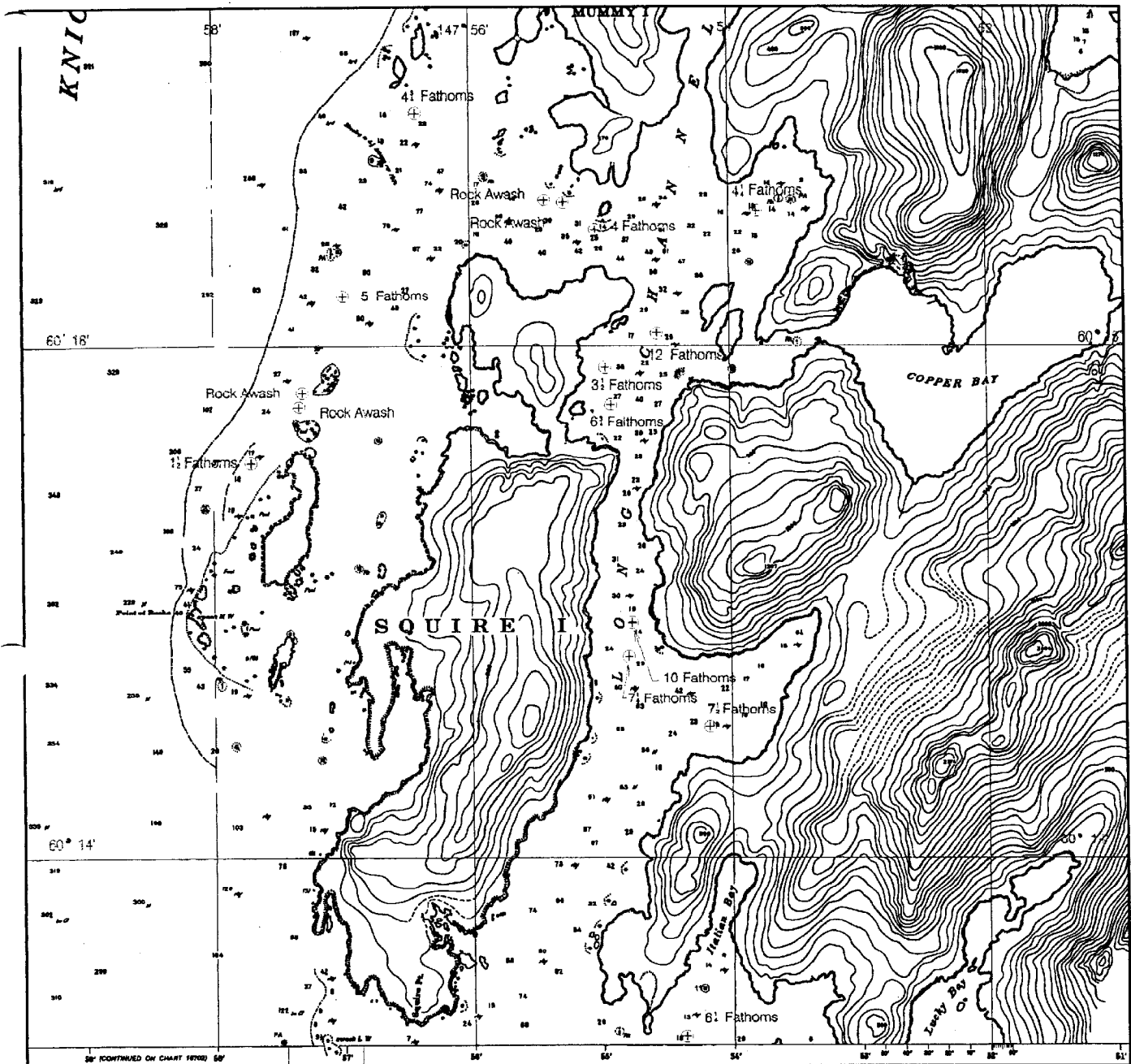


Chart 16704

11th Edition, April 21, 1990, scale 1:20,000

Revision in Red from Survey H-10712 (1996)

(NOT DRAWN TO SCALE)

Published at Washington, D.C.  
 U.S. DEPARTMENT OF COMMERCE  
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
 NATIONAL OCEAN SERVICE

H-10712

Contact: Pacific Hydrographic Branch  
 Seattle, WA 98115  
 (206) 526-6836

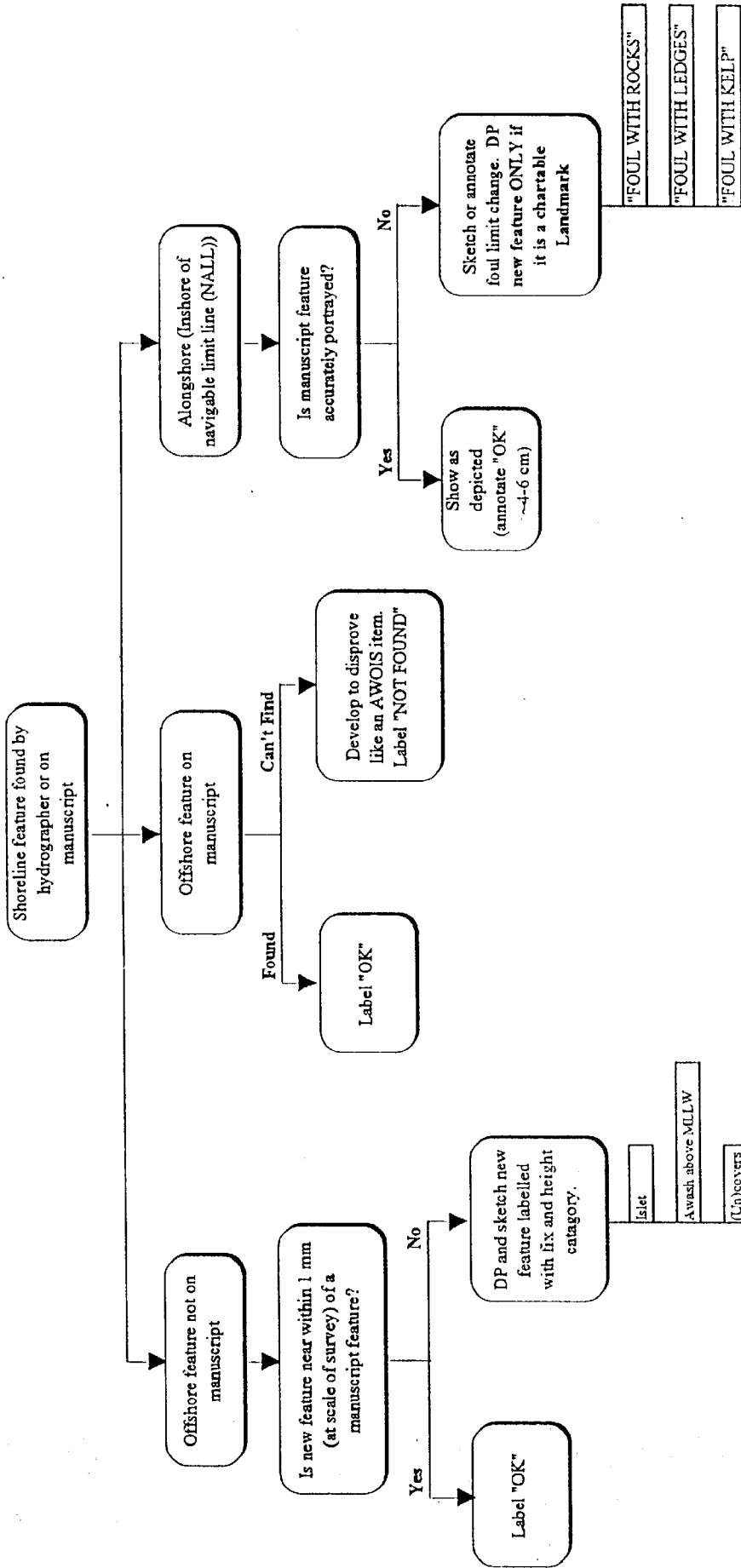
## Limited Shoreline Verification: The New Rules

First, understand that the fundamental difference between last year and this year is that the amount of shoreline we must verify is determined by US, not strictly specified in the Project Instructions.

Procedures:

- 1) Determine distance from shore that is the MINIMUM working distance necessary for the survey. Take into account likely vessel traffic, bathymetry, complexity of the shoreline from prior surveys and the chart, and weather (sea) conditions experienced in the area. Use greater distances if shallow depths prevail, or if swell is severe. Even in steep foreshore bathymetry, do not go closer than 3 launch lengths (30 meters), unless vessel usage indicates that the area is used (e.g. a landing ramp is on shore, or an extremely narrow passage is used by fishing vessels to reach a certain bay.)
- 2) Draw the inshore limit determined in (1) on the boat sheet. Collecting data along this line may or may not be feasible, due to tides and project logistics, but the boat sheet line may be used to delimit mainscheme and development hydrography until such a "buffer" line is or may be needed.
- 3) Search for and develop all features seaward of the line drawn in (2). Use low water for this search, if possible. Combining this search with the acquisition of the data along the "buffer" line may be possible in areas which are not too complex. Detached positions are required only if a feature is found offshore of the NALL line and either more than 1 mm away from any manuscript feature or is mis-represented by the manuscript. If a charted or manuscript feature located offshore of the line is NOT found, a full disapproval is required.
- 4) Annotate the field copies of the boat sheet (which by definition includes the charted, manuscript, and significant prior survey features) showing that the shoreline features offshore of the NALL each have a full disposition. These copies are bound and used to create the final field sheet, and submitted as official survey records.

# Shoreline Decision Tree



APPROVAL SHEET

for

H-10712

RA-10-18-96

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

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



Dean R. Seidel  
Captain, NOAA  
Commanding Officer



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Office of Ocean and Earth Sciences  
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: January 16, 1997

HYDROGRAPHIC BRANCH: Pacific  
HYDROGRAPHIC PROJECT: OPR-P139-RA  
HYDROGRAPHIC SHEET: H-10712

LOCALITY: Squire Island and Vicinity, Southwest Prince William  
Sound, Alaska

TIME PERIOD: September 3 - 24, 1996

TIDE STATION USED: 945-4777 Chenega Island, Southwest End, AK  
Lat.  $60^{\circ} 17.2' N$  Lon.  $148^{\circ} 07.2' W$   
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.300 meters

TIDE STATION USED: 945-4671 Point Helen, Knight Island, AK  
Lat.  $60^{\circ} 09.2' N$  Lon.  $147^{\circ} 46.0' W$   
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.240 meters

TIDE STATION USED: 945-4691 Herring Point, Knight Island Passage,  
AK  
Lat.  $60^{\circ} 28.5' N$  Lon.  $147^{\circ} 47.5' W$   
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.362 meters

TIDE STATION USED: 945-4240 Valdez, AK  
Lat.  $61^{\circ} 07.5' N$  Lon.  $146^{\circ} 21.7' W$   
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.389 meters

REMARKS: RECOMMENDED ZONING

Use zones identified as: PWS20, PWS35 & PWS35A  
Refer to attachment(s) for zoning information.

Note: Provided time series data are tabulated in metric units  
(meters) and on Greenwich Mean Time.

  
CHIEF, TIDAL ANALYSIS BRANCH

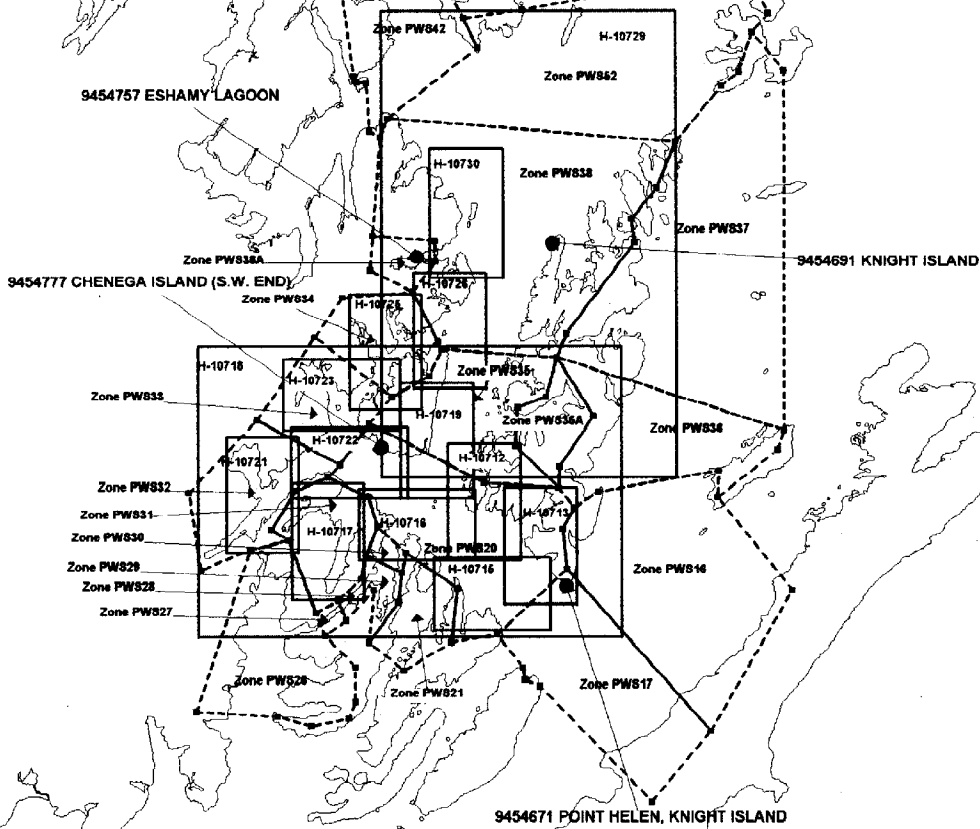


Final tide zone nodal point locations for OPR P139-RA-96.  
 Sheet H-10712

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 PWS20				
-148.121387	60.20888	9454777	Direct	Direct
-148.138224	60.236579	9454671	Direct	1.03
-148.213991	60.255044	9454240	Direct	0.97
-148.192103	60.266795			
-148.135913	60.305498			
-147.921026	60.250008			
-147.781279	60.245812			
-147.752622	60.226545			
-147.77381	60.206587			
-147.766071	60.169257			
-147.897377	60.108049			
-147.983011	60.100932			
-147.971537	60.150964			
-148.067509	60.184539			
-148.121387	60.20888			
Zone PWS35				
-148.094448	60.330586	9454777	Direct	1.01
-148.023732	60.350731	9454691	Direct	0.99
-148.00016	60.375912	9454240	Direct	0.98
-147.78401	60.368002			
-147.804609	60.330991			
-147.858271	60.320562			
-147.862937	60.284639			
-147.781279	60.245812			
-147.921026	60.250008			
-148.135913	60.305498			
-148.094448	60.330586			
Zone PWS35A				
-147.78401	60.368002	9454777	Direct	1.03
-147.804609	60.330991	9454691	Direct	1.01
-147.858271	60.320562	9454240	Direct	Direct
-147.862937	60.284639			
-147.781279	60.245812			
-147.779595	60.265117			
-147.715614	60.31296			
-147.78401	60.368002			

**Final Zoning for OPR P139-RA-96  
Southwest Prince William Sound, AK**



ZONE	TG1	TC1	RR1	TG2	TC2	RR2	TG3	TC3	RR3
PWS16	9454671	0	1.01	9454777	0	0.99	9454240	0	0.96
PWS17	9454671	0	1.00	9454777	0	0.98	9454240	0	0.95
PWS20	9454777	0	1.00	9454671	0	1.03	9454240	0	0.97
PWS21	9454671	-6	1.01	9454777	-6	0.99	9454240	-6	0.96
PWS26	9454671	-12	0.93	9454777	-12	0.91	9454240	-12	0.88
PWS27	9454671	-6	0.95	9454777	-6	0.93	9454240	-6	0.90
PWS28	9454671	0	0.97	9454777	0	0.95	9454240	0	0.92
PWS29	9454671	0	0.99	9454777	0	0.97	9454240	0	0.94
PWS30	9454671	0	1.00	9454777	0	0.98	9454240	0	0.95
PWS31	9454777	0	0.98	9454671	0	1.00	9454240	0	0.95
PWS32	9454777	0	0.97	9454671	0	0.99	9454240	0	0.94
PWS33	9454777	0	0.98	9454671	0	1.00	9454240	0	0.95
PWS34	9454777	0	1.00	9454691	0	0.98	9454240	0	0.97
PWS35	9454777	0	1.01	9454691	0	0.99	9454240	0	0.98
PWS36	9454671	0	1.03	9454691	0	0.98	9454240	0	0.97
PWS37	9454691	0	0.99	9454671	0	1.04	9454240	0	0.98
PWS38	9454691	0	1.00	9454777	0	1.02	9454240	0	0.99
PWS42	9454691	0	1.01	9454777	0	1.02	9454240	0	0.99
PWS52	9454691	0	0.99	9454777	0	1.01	9454240	0	0.98
PWS35A	9454777	0	1.03	9454691	0	1.01	9454240	0	1.00
PWS38A	9454757	0	1.00	9454691	0	0.95	9454777	0	0.97



H-10712

GEOGRAPHIC NAMES

Name on Survey	A ON PART NO. 16704 B ON PREVIOUS SURVEY NO. 16702, 16701 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										
	A	B	C	D	E	F	G	H	K		
ALASKA (title)	X		X							1	
COPPER BAY	X		X							2	
DEER COVE	X		X							3	
ITALIAN BAY	X		X							4	
KNIGHT ISLAND	X		X							5	
KNIGHT ISLAND PASSAGE	X		X							6	
LONG CHANNEL	X		X							7	
MUMMY ISLAND	X		X							8	
POINT OF ROCKS	X		X							9	
PRINCE WILLIAM SOUND	X		X							10	
(title)										11	
SQUIRE ISLAND	X		X							12	
SQUIRE POINT	X		X							13	
										14	
										15	
										16	
										17	
										18	
										19	
										20	
										21	
										22	
										23	
										24	
										25	

Approved:

*Chris C. Long*  
Chief Geographer

MAR 10 1997

**HYDROGRAPHIC SURVEY STATISTICS**

H-10712

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	2					
ENVELOPES						
VOLUMES						
CAHIERS						
BOXES						

**SHORELINE DATA**

SHORELINE MAPS (List):	DM-10296 & DM-10299
PHOTOBATHYMETRIC MAPS (List):	NA
NOTES TO THE HYDROGRAPHER (List):	NA
SPECIAL REPORTS (List):	NA
NAUTICAL CHARTS (List):	Chart 16702, 9th Ed., 7/21/90; Chart 16704, 11th Ed., 4/21/90

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 <del>REVISED</del> (Selected)			15,495	
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	146.0		146.0	
COMPARISON WITH PRIOR SURVEYS AND CHARTS		16.0	16.0	
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT		19.0	19.0	
GEOGRAPHIC NAMES				
OTHER*				
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	146.0	35.0	181.0

Pre-processing Examination by <b>Pacific Hydrographic Branch</b>	Beginning Date 11/14/96	Ending Date 11/19/96
Verification of Field Data by <b>E. Domingo, D. Doles, R. Mayor, J. Stringham</b>	Time (Hours) 146.0	Ending Date 5/9/97
Verification Check by <b>B. Olmstead</b>	Time (Hours) 8	Ending Date 5/23/97
Evaluation and Analysis by <b>I. Almacen</b>	Time (Hours) 35.0	Ending Date 5/15/97
Inspection by <b>B. Olmstead</b>	Time (Hours) 14	Ending Date 5/27/97

## EVALUATION REPORT

H-10712

### A. PROJECT

Project information is discussed in the hydrographer's report.

### B. AREA SURVEYED

This basic hydrographic survey was conducted in Alaska around the southwest portion of Prince William Sound. It covers the areas along the west coast of Knight Island, the vicinity of Squire Island and the southeastern section of Knight Island Passage. The inshore areas around Knight Island and Squire Island are generally comprised of ledges, islets, reefs and numerous scattered rocks.

During this survey, the hydrographer has determined the inshore limits of safe navigation by defining a Navigable Area Limit Line (NALL) within the area of the survey. Charted features and soundings inshore of this limit line have not been specifically addressed during survey operations and should be retained as charted. Page-size chartlets of the survey area indicating the limits of supersession are included in this report as Attachment A and B.

The bottom is generally made up of pebble, gravel, sand and mud mixed with broken shells. Depths range from 0.1 to 320.0 fathoms.

### C. SURVEY VESSELS

Survey vessel information is found in the hydrographer's report.

### D. AUTOMATED DATA ACQUISITION AND PROCESSING

Survey data were processed using the same Hydrographic Data Acquisition/Processing System (HDAPS) software used by the hydrographer, the Hydrographic Processing System (HPS) and AutoCad, Version 12.

At the time of the survey certification the format for transmission of digital data had not been formally approved. In the interim, digital data for this survey exists in the standard HPS format which is a database format using the .dbf extension. In addition, the plot is filed both in the AutoCad drawing format, i.e., .dwg (extension); and in the more universally recognized graphics transfer format, .dxf (extension). Copies of these files will be retained at PHB until data transfer protocols are developed and approved.

The drawing files necessarily contain information which 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 Hydrographic Survey Guideline No. 75 and No. 35.

The field sheet parameters have been revised to center the hydrography on the office plot. Data is plotted using a Modified Transverse Mercator projection and are depicted on a single sheet.

#### **E. SONAR EQUIPMENT**

Side scan sonar was not used during this survey.

#### **F. SOUNDING EQUIPMENT**

Sounding equipment is discussed in the hydrographer's report.

#### **G. CORRECTIONS TO SOUNDINGS**

The sounding data have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with present NOS specifications. Actual tide reduction is derived from Chenega Island, Southwest End, Alaska gage (945-4777), Point Helen, Knight Island, Alaska gage (945-4671), Herring Point, Knight Island, Alaska gage (945-4691), and Valdez, Alaska gage (945-4240). Refer to the approved tide note attached to this report concerning recommended tidal zoning.

#### **H. CONTROL STATIONS**

A list of Differential Global Positioning System (DGPS) reference stations used during this survey is attached to this report.

The positions of DGPS reference stations used during hydrographic operations are published values based on NAD 83. The geographic positions of all survey data are also based on NAD 83. The AutoCAD generated smooth sheet is annotated with an NAD 27 adjustment tick based on values determined with NGS program NADCON.

Data based on NAD 27 may be referenced to this survey by applying the following corrections:

Latitude: -2.060 seconds (-63.750 meters)  
Longitude: 7.445 seconds (114.560 meters)

## **I. HYDROGRAPHIC POSITION CONTROL**

Differential GPS (DGPS) was used to control this survey. NAD 83 is used as the horizontal datum for plotting and position computations. A horizontal dilution of precision (HDOP) limits of 3.75 was computed for survey operations. The maximum HDOP allowable limit has not been exceeded during this survey and the quality of data obtained is considered good. The reference site confirmation test using the program SHIPDIM and the daily DGPS performance checks conducted in the field were adequate.

## **J. SHORELINE**

Shoreline maps DM-10296 and DM-10299 are the photogrammetric source for this survey. The digitized shoreline file and the survey file were merged during Microstation processing. The "limited" shoreline verification procedures was applied to this survey in accordance with the Project Instructions (Attachment 1) and the RAINIER limited shoreline verification guidelines (copy attached). The inshore limit of safe navigation (Navigable Area Limit Line, NALL) was determined by the field hydrographer based on depth, bottom bathymetry, dangers to navigation, marine traffic, and area usage within the survey boundaries. Features falling offshore of this limit have been adequately investigated, located and depicted on the AutoCad generated smooth sheet based on the latest survey information. A discussion concerning the disproval of two shoreline manuscript features searched for on this survey is included in the hydrographer's report.

There are no significant differences in the mean high water line configuration between the present and the previously compiled shoreline maps DM-10296 and DM-10299. However, a comparison with Charts 16702 and 16704 show several significant changes within the survey area. A considerable shift and change in the mean high water line configuration were noted around the point of land west of the entrance to Italian Bay in the vicinity of latitude 60/13/30N, longitude 147/54/45W. There is also a shoreline shift of about 120 meters inland noted in the vicinity of latitude 60/15/15N, longitude 147/54/35W. Another area of significant change is noted at latitude 60/16/45N, longitude 147/54/30W, where the charted shoreline is shown 150 meters inshore of the contemporary photogrammetric manuscript. Several minor differences with shoreline configuration and portrayal as shown on the chart are noted throughout the survey area. Aside from the natural changes caused by frequent earthquakes in this area of Prince William Sound since the last USC&GS topographic surveys, a part of these changes noted could also be attributed to the differences in the source data accuracy of the MHWL determination and an error in the shoreline compilation to the chart.

## **K. CROSSLINES**

Crosslines are discussed in the hydrographer's report.

## L. JUNCTIONS

Survey H-10712 junctions with the following surveys.

Survey	Year	Scale	Area
H-10713	1996	1:10,000	East
H-10718	1996	1:40,000	Southwest
H-10729	1996	1:40,000	Northwest

The junctions with surveys H-10713, H-10718 and H-10729 are complete. Surveys H-10718 and H-10729 are multi-beam surveys covering the deep middle portion of Knight Island Passage. The depth curves and soundings within the junction areas are in satisfactory agreement.

## M. COMPARISON WITH PRIOR SURVEYS

Survey H-10712 was compared with the following prior surveys.

H-3027 (1909), scale 1:20,000

Survey H-3027 covers the area of the present survey except Italian Bay, and those areas around the inshore portion of Squire Island and the entrance to and inside Copper Bay. No prior survey work has ever been undertaken around these particular areas of Southwest Prince William Sound. Comparisons with this prior survey is considered satisfactory. All depths originating from the prior surveys were adequately addressed during survey operations. A more thorough development of the area has resulted in the discovery of a few more shoal areas not found during the 1909 survey. The present depths were found to be generally shoaler by about 1.0 to 5.0 fathoms which seems to indicate an uplifting trend common around this portion of Prince William Sound. The differences noted in this survey can be attributed to the effect of frequent earthquake occurrences in the area, increased bottom coverage and the application of more accurate positioning and sounding methods presently available in the field.

Several rocks depicted on prior survey H-3027 and currently charted, were searched for during survey operations and not found. However, the present survey did find rocks in nearby proximity to the prior features. It is likely that the charted rocks were either positioned in error (source data accuracy) or compiled in error associated with datum transformations. Additional information can be found in the hydrographer's report, section O.

H-10712 is adequate to supersede the prior survey within the common area.

T-9142 (1955)      1:10,000

T-9538 (1954) 1:10,000

These topographic maps depict the mean high water line, ledges, reefs, isolated rocks and islets within the common area of coverage of the present survey. Most of these features were either depicted on the latest shoreline maps or adequately defined and developed during survey operations. However, several of the prior topographic rocks fall inside the NALL line and should be retained as charted.

H-10712 is adequate to supersede the prior topographic surveys within the common area.

#### N. ITEM INVESTIGATIONS

AWOIS items 52320, 52321, 52322 and 52325 were investigated during this survey. Discussion and disposition of each of these items are included in the hydrographer's report.

#### O. COMPARISON WITH CHART

Survey H-10712 was compared with the following charts.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16702	9th	July 21, 1990	1:40,000	NAD83
16704	11th	April 21, 1990	1:20,000	NAD83

##### a. Hydrography

Charted hydrography originates with the previously mentioned prior hydrographic and topographic surveys. These prior surveys have been adequately addressed in the preceding section of this report and requires no further discussion.

The charted rocks listed in section O of the hydrographer's report were searched for but not found during survey operations. However, the present hydrography shows the existence of some new rocky and shallow areas within the vicinity of these charted features. Although these charted rocks may have been erroneously positioned or compiled, it is likely that they were charted primarily to depict the locations of the foul areas and the outer limits of the unsurveyed portion of the chart.

A 7-fathom depth was erroneously compiled on charted 16704 at latitude 60/15/34N, longitude 147/57/58W, and should be deleted.

In accordance with Hydrographic Survey Guideline No.39, the effects of the 1964 Prince William Sound Earthquake were considered in the comparison of this survey. No reasonable adjustment value for prior soundings could be determined. However, a bottom uplift of 4.9 feet is known to have occurred around Chenega Island, approximately two

nautical miles west of the survey area.

Survey H-10712 is adequate to supersede charted hydrography within the common area of coverage.

**b. Dangers to Navigation**

Seventeen (17) dangers to navigation were reported by the ship to the USCG, NIMA, N/CG261 and N/CS34 on September 26, 1996. An additional sixteen (16) dangers to navigation were identified during office processing. Copies of both reports are attached.

**P. ADEQUACY OF SURVEY**

The hydrography on survey H-10712 is adequate to:

- a. delineate the bottom configuration, determine least depths, and draw the standard 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.

Hydrography on survey H-10712 was acquired in the field in metric units while the AutoCAD generated smooth sheet for this survey was compiled in fathoms to conform to the sounding unit of the existing NOS nautical charts of the area.

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

Survey H-10712 adequately complies with the project instructions.

**Q. AIDS TO NAVIGATION**

There are no fixed and floating aids to navigation within the limits of this survey.

There are no prominent features of landmark value located within the survey area.

**R. STATISTICS**

Statistics are itemized in the hydrographer's report.

**S. MISCELLANEOUS**



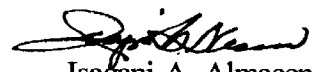
Miscellaneous information concerning this survey is discussed in the hydrographer's report. No additional miscellaneous items were noted during office processing.

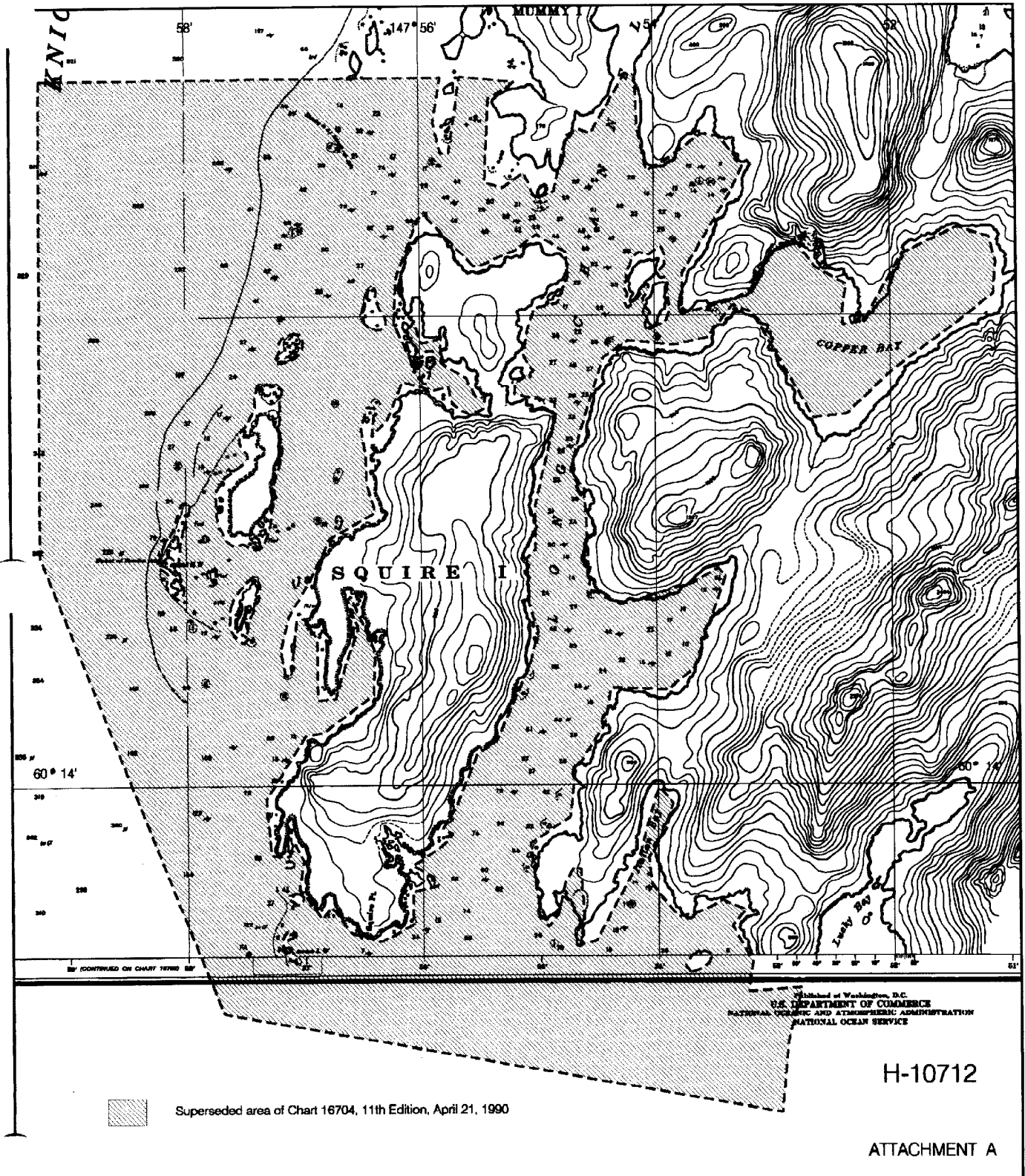
**T. RECOMMENDATIONS**

Survey H-10712 is a good hydrographic survey and no additional field work is required.

**U. REFERRAL TO REPORTS**

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

  
Isagani A. Almacén  
Cartographer



Superseded area of Chart 16704, 11th Edition, April 21, 1990

Washington, D.C.  
U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE

H-10712

ATTACHMENT A



APPROVAL SHEET  
H-10712

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

Bruce A. Olmstead Date: 6/6/97  
Bruce A. Olmstead  
Senior Cartographer, Cartographic Section  
Pacific Hydrographic Branch

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

Kathy Turmons Date: 6/17/97  
Kathy Turmons  
Commander, NOAA  
Chief, Pacific Hydrographic Branch

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Final Approval

Approved:

Andrew A. Armstrong III Date: Feb 2, 1998  
Andrew A. Armstrong III  
Captain, NOAA  
Chief, Hydrographic Surveys Division

