

H10717

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-10-22-96
Registry No. H-10717

LOCALITY

State Alaska
General Locality Southwest Prince William Sound
Sublocality Whale Bay

19 96

CHIEF OF PARTY
CAPT Dean R. Seidel, NOAA

LIBRARY & ARCHIVES

DATE MAR 6 1998

HYDROGRAPHIC TITLE SHEET

H-10717

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-10-22-96

State Alaska

General locality Southwest Prince William Sound

Locality Whale Bay

Scale 1:10,000 Date of survey September 18-October 7, 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, LT S. Meador,
LTJG J. Crocker, CST J. Fleischmann, ST B. Roraback

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

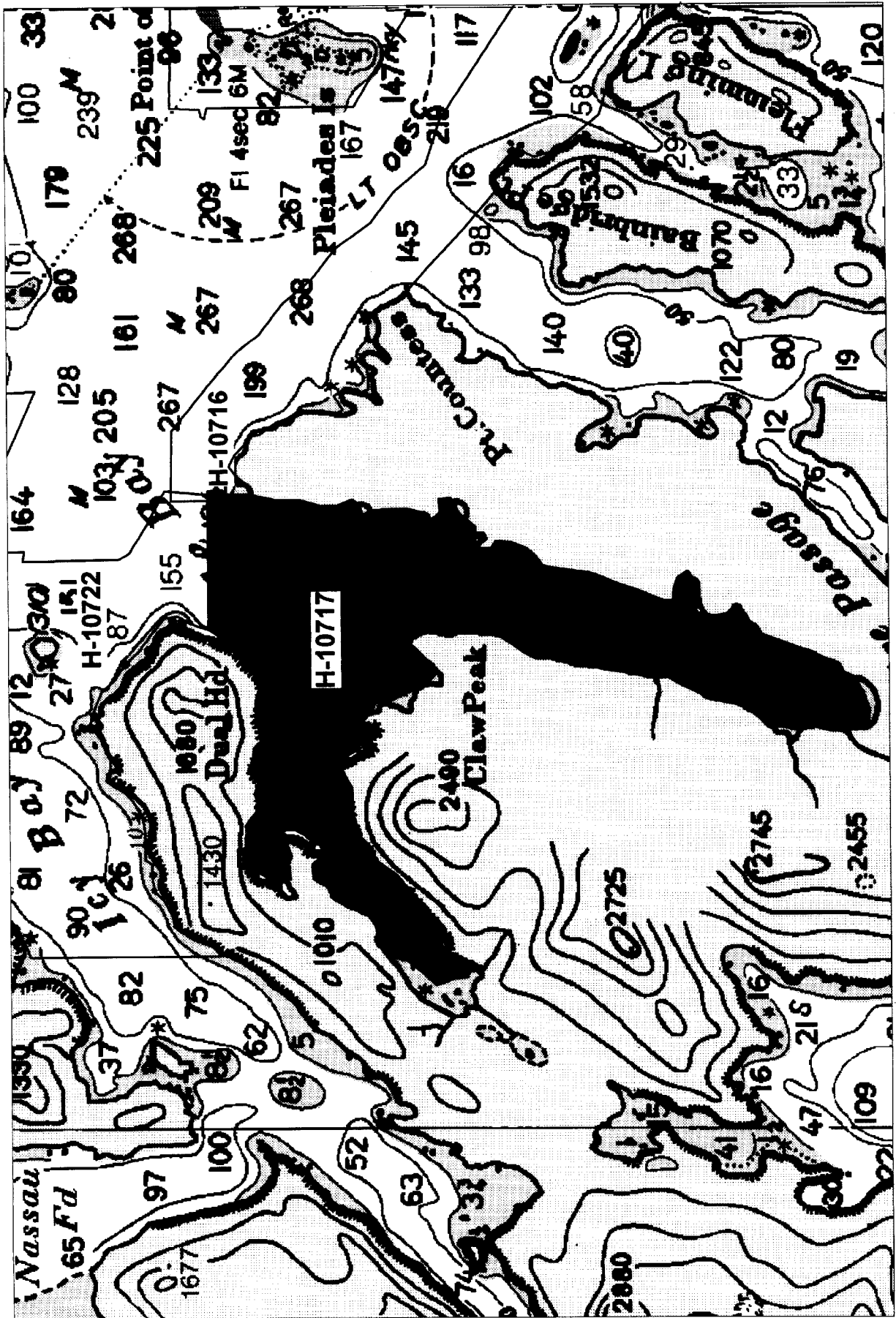
~~Produced by~~ R. Mayor, E. Domingo, J. Stringham

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

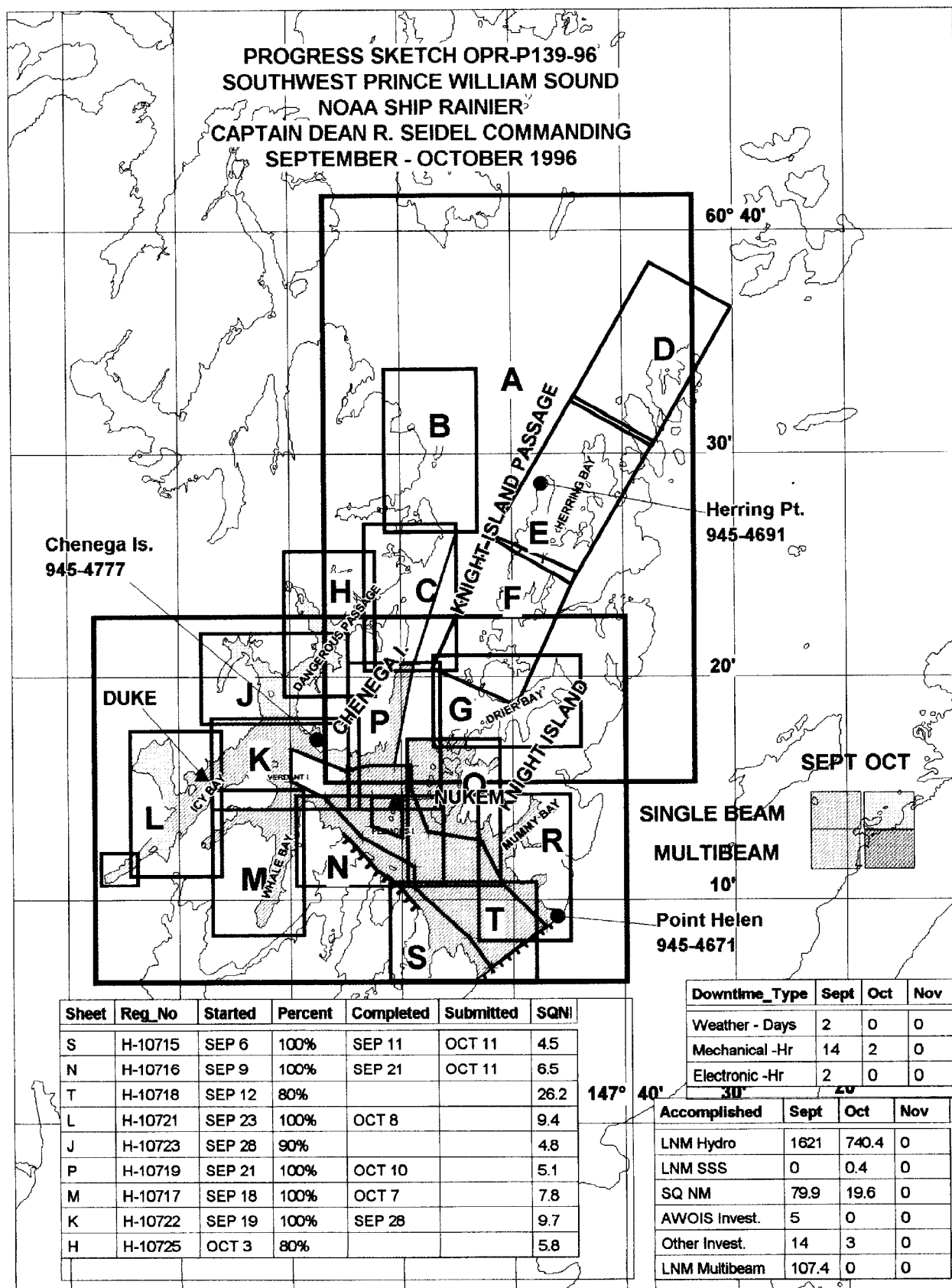
Soundings in fathoms ~~xxxx~~ at MLW MLLW and tenths

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

AWOIS/SURF 1/7/98 MCR



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



Descriptive Report to Accompany Hydrographic Survey H-10717

Field Number RA-10-22-96

Scale 1:10,000

September-October, 1996

NOAA Ship RAINIER

Chief of Party: Captain Dean R. Seidel, NOAA

A. PROJECT ✓

This basic hydrographic survey was completed in southwest Prince William Sound, Alaska as specified by Project Instructions OPR-P139-RA dated August 23, 1996. Survey H-10717 corresponds to sheet M as defined in the sheet layout included in the Project Instructions.

This survey provides contemporary hydrographic survey data for the Knight Island Passage area to update existing nautical charts derived from hydrographic surveys conducted forty years ago. Significant changes in depths and shoreline may have occurred in this area as a result of the 1964 earthquake. Requests for hydrographic surveys and updated charts have been received from the Defense Mapping Agency, the U.S. 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 Whale Bay, a large, well protected inlet west of Knight Island Passage. The survey's northern limit is ^{Lat.}60° 14' 32" N joining survey H-10722, and its southern limit is the shoreline of the eastern arm of the bay. Its western limit is the shoreline of the western arm of the bay, and its eastern limit is ^{Long.}148° 08' 52" W joining survey H-10716. Data acquisition was conducted from September 18, 1996 (DN 262) to October 7, 1996 (DN 281).

C. SURVEY VESSELS ✓

Data were acquired by RAINIER, and by RAINIER survey launches as noted below:

Vessel	EDP #	Operation
RAINIER	2120	Sound Velocity Cast
RA-2	2122	Hydrography Shoreline Verification
RA-3	2123	Hydrography Shoreline Verification
RA-4	2124	Hydrography Shoreline Verification

Vessel	EDP #	Operation
RA-5	2125	Hydrography Shoreline Verification Bottom Samples
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-10717. *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. All DSF-6000N soundings were acquired ^{in meters} using the High + Low, high frequency digitized setting. *Survey data was converted to fathoms during office processing and plotted on the smooth sheet.*

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
5	20	264	60° 13' 48" N 148° 10' 30" W	395	262-281

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 cast was taken inside the survey area.*

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.*Sounding Equipment Calibrations and Corrections".

** Filed with the hydrographic data.*

Static Draft ✓

A transducer depth was determined using FPM Fig 2.2 for vessels 2122-2126 in the spring of 1996. These values were entered into the offset tables 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-P139-RA. The data for vessels 2122-2126 were collected in Shilshole Bay, Washington in the Spring of 1996.

Offset Tables ✓

Offset tables contain offsets for the GPS antenna, 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-P139-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 for the Cordova, Alaska reference station (945-4050). Tidal correctors as provided in the project instructions for H-10717 are:

Zone	Time Correction	Height Correction
31	0 hr 0 min	X0.91

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 (945-4240) were used as the primary control stations for datum determination at all subordinate stations.

RAINIER personnel installed Sutron 8200 digital tide gages at Point Helen (945-4671) on September 2, 1996, and at Chenega Island (945-4777) on September 2, 1996. The Point Helen tide staff was connected to five bench marks during opening level runs, and the Chenega tide staff

* Filed with the hydrographic data.

was connected to six bench marks during the opening level runs. The station descriptions, field tide records, preliminary field tide notes and data (Appendix V)* have 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. ^{*list of*} The control stations used for this survey are ^{*included in this report*} listed in Appendix III. Third Order Class I station NUKEM was established on the small islet north of Pleiades light using GPS from First Order station ROCK. See the OPR-P139-RA-96 Horizontal Control Report for more information.

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

Method of Position Control ✓

All soundings and features were positioned using differential GPS. Serial numbers for vessel GPS equipment are annotated on the raw data printouts.* VHF differential reference stations were established at second order station DUKE and third order station NUKEM. No multi-path or other systemic error was indicated by program Monitor, version 3.0. The United States Coast Guard modulated radio reference station (i.e., DGPS beacon) at Cape Hinchinbrook was monitored and occasionally used for positioning when VHF correctors could not be received from stations DUKE or NUKEM.

Calibrations & Systems Check Methods ✓

Launch-to-launch DGPS performance checks were performed in accordance with Section 3.4.4 of the FPM. Two observations of position were made from two different DGPS base stations, NUKEM and DUKE or the US Coast Guard Beacon at CAPE HINCHINBROOK while the launches were rafted together with their GPS antennae within 2-3 meters of each other. RAINIER also used SHIPDIM, version 2.2R (April 1996) with a Trimble Centurion P-code receiver and an Ashtech sensor (both differentially-corrected) to monitor the performance of the USCG Beacon. NUKEM or DUKE were compared to CAPE HINCHINBROOK during 12-hour daily comparisons and occasional performance checks. Some outliers were noted, but none indicated systematic or continuous errors in the CAPE HINCHINBROOK beacon. The SHIPDIM OUTLIER.SUM results are included in the project data for OPR-P139-RA.

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

(DM-10295, DM-10298 & DM-10299)

Photogrammetric survey CM-92012, flown in 1992 and compiled at 1:20,000 in 1990 on NAD83, was provided in digital format through the Pacific Hydrographic Branch (N/CS34). The digital file was projected to the survey grid with OPR-P139-RA geodetic parameters using program SHORE version 2.0 (provided by N/CS32) and stored in HDAPS format. Shoreline was plotted at survey scale on boat sheets and processing sheets from HDAPS. Charted point features were manually transferred from 1:10,000 chart enlargement panels, which were also used for shoreline comparison.

* *Filed with the hydrographic data.*

Method of Shoreline Verification ✓

Limited shoreline verification was conducted in accordance with Project Instructions. For this survey, the general limit of safe navigation for a survey launch was 10-30 meters offshore of apparent low tide, or approximately 5-10 meters of depth at Mean Lower Low Water. This Navigational Area Limit Line (NALL) varied in distance from shore and depth of water based on the apparent usefulness of nearshore waters for navigation in the judgement of the hydrographer.

Detached positions and foul limit lines were acquired on manuscript features offshore of the NALL to verify positions and determine extent of rocks, reefs, and ledges which were not fully represented on the manuscript. Shoreline notes describing offshore features and the nature of the foreshore can be found in the detached position folder, and on the Detached Position and Bottom Sample final plot submitted with this survey. Features shown in pencil inshore of the NALL are the hydrographer's representation of the low water shoreline without hydrographic positioning. *These features inside the NALL area are charted rocks visually verified as ledges or extension of ledges and are shown on SS as such.* Field cartographic codes were assigned to detached positions based on predicted tides. 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 predicted MLLW.* All shoreline positions offshore of the NALL are plotted on the final field sheet and should supersede charted shoreline.

Charted Features ✓

Survey data was compared to a 1:10,000 enlargement of Chart 16702, 9th Edition, July 21, 1990, 1:40,000 (NAD 83). All charted soundings originated with hydrographic surveys of 1957. Charted rocks offshore of the NALL were either positioned hydrographically, identified as shoreline manuscript rocks, or disproved. Charted features which were well inshore of the NALL were not investigated and should therefore remain as charted. *Concur. However, in some cases these features may be superseded or revised based on the latest topographic information.* The following table summarizes the charted feature investigations:

<u>Latitude</u>	<u>Longitude</u>	<u>Depth(m)</u>	<u>Disposition</u>	<u>Fix Number</u>
60° 14' 08"N	148° 14' 34"W	0.0	Charted rock * (2)	30681 ✓
60° 14' 04"N	148° 15' 30"W	-0.4	Charted rock * (2)	30696 ✓
60° 14' 14"N	148° 15' 14"W	22	Charted rock disproval ✓	20788-95 ✓
				30701-06
60° 13' 38"N	148° 15' 37"W	0.6	Charted rock <i>call 1'</i>	30760 ✓
60° 13' 12"N	148° 15' 18"W	41	Charted rock disproval ✓	20818-33 ✓
60° 13' 25"N	148° 14' 06"W	0.4	Charted rock (part of ledge)	50431 ✓
60° 11' 54"N	148° 11' 22"W	7.2	Charted rock disproval ✓	20772-87 ✓
60° 12' 33"N	148° 11' 12"W	7.6	Charted rock disproval ✓	50439-46 ✓
60° 12' 26"N	148° 09' 18"W	-3.4	Charted rock (part of reef)	60040-41 ✓
60° 10' 27"N	148° 10' 48"W	-3.4	Charted rock "	50448-49 ✓
60° 13' 11"N	148° 12' 33"W	-2.7	Charted rock * (9)	50438 ✓
60° 13' 17"N	148° 12' 43"W	-2.2	Charted rock * (7)	50437 ✓

* The heights of rocks located offshore of the NALL line are shown in feet on the Smooth Sheet and have been corrected for approved tides. The heights of rocks inshore of the NALL line were not determined during this survey.

K. CROSSLINES ✓

Crosslines agreed within 1 meter with mainscheme hydrography. Total crossline mileage of 26.9 nautical miles amounted to 22.4% of total mainscheme hydrography.

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

This survey junctions with surveys H-10716, RA-10-21-96, 1:10,000, and H-10722, RA-10-23-96 at the northern limit. Soundings were found to be in good agreement. Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

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

Two prior surveys cover this project area: H-8311 (1:^{12,500}10,000, 1957) and H-8389 (1:10,000, 1957). Soundings were found to be in good agreement, but some shoreline features were either incorrectly positioned or not found. Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

N. ITEM INVESTIGATIONS ✓

No AWOIS items were assigned to this survey. ^{Concur.} Shoreline features originating with this survey are covered in Section J.

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

This survey was compared in the field to NOS Chart 16702, 9th Edition, July 21, 1990, 1:40,000 (NAD 83). In general, charted soundings were found to be in very good agreement with those from the current survey. Least depths from this survey were often shoaler than charted soundings due to the use of modern positioning equipment and increased sounding densities. This was particularly true in nearshore areas. In areas where charted soundings appeared shoaler than those from this survey, they generally differed by less than two meters. Differences probably arise from positioning errors from the prior surveys. Differences in soundings in deeper waters occasionally reached 3-5 meters, which is not unusual based on the survey methods of forty years ago. In addition, notes on the 1957 prior surveys indicated that variations of 3 to 5 fathoms between launch and ship soundings were not uncommon, indicating another potential source of errors in the charted soundings.

Due to the relatively comprehensive nature of the previous surveys, it would appear as if no major contouring or shoreline changes are required for the current chart. However, numerous new offshore features, foul area definitions, and shoaler depths were found by this survey and should be charted as such. ^{Concur.}

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

Dangers to Navigation ✓

(9)
Nine dangers to navigation within the limits of H-10717 were reported to the Seventeenth Coast Guard District on October 6, 1996 and October 20, 1996. Copies of the correspondence can be included in this report.
found in Appendix I.

P. ADEQUACY OF SURVEY ✓

Survey H-10717 is complete and adequate to supersede prior soundings and features. *CONCUR.*

Q. AIDS TO NAVIGATION ✓

No aids to navigation exist within the survey area. *CONCUR.*

R. STATISTICS ✓

NM Hydrography	279.5
Velocity Casts	1
Detached Positions	21
Selected Soundings	13339
Bottom Samples	27
Tide Stations	2
NM ² Hydrography	7.8
Dives	0

S. MISCELLANEOUS ✓

Bottom samples were collected and sent to the Smithsonian Institution in accordance with Project Instructions. No unusual tidal currents were found during the time of this survey. Secchi disk observations were performed during hydrographic data operations, and results will be forwarded upon completion of this project.

T. RECOMMENDATIONS ✓


The hydrographer recommends charting an anchor symbol (N-10) to identify the large vessel anchorage at approximate position ^{Lat.} 60° 13' N latitude, ^{Long.} 148° 12' W longitude. *CONCUR.*

U. REFERRAL TO REPORTS ✓


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

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
1996 Horizontal Control Report for OPR-P139-RA.	November, 1996	N/CS34
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,


Stephen Meador
Lieutenant, NOAA

Approved and Forwarded,


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	148:38:48.000	0	250	0.0	0.0		00/00/00	CAPE HINCHINBROOK USCG BEACON
7	B	061:03:24.000	146:41:49.000	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 98102-3767

NOAA Ship RAINIER

October 6, 1996

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

**ADVANCE
INFORMATION**

Dear Sir:

During the processing of hydrographic surveys H-10717 and H-10719 in Knight Island Passage, Prince William Sound, nine dangers to navigation have been discovered. These dangers affect the following charts:

For H-10717:

<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

For H-10719:

<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

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

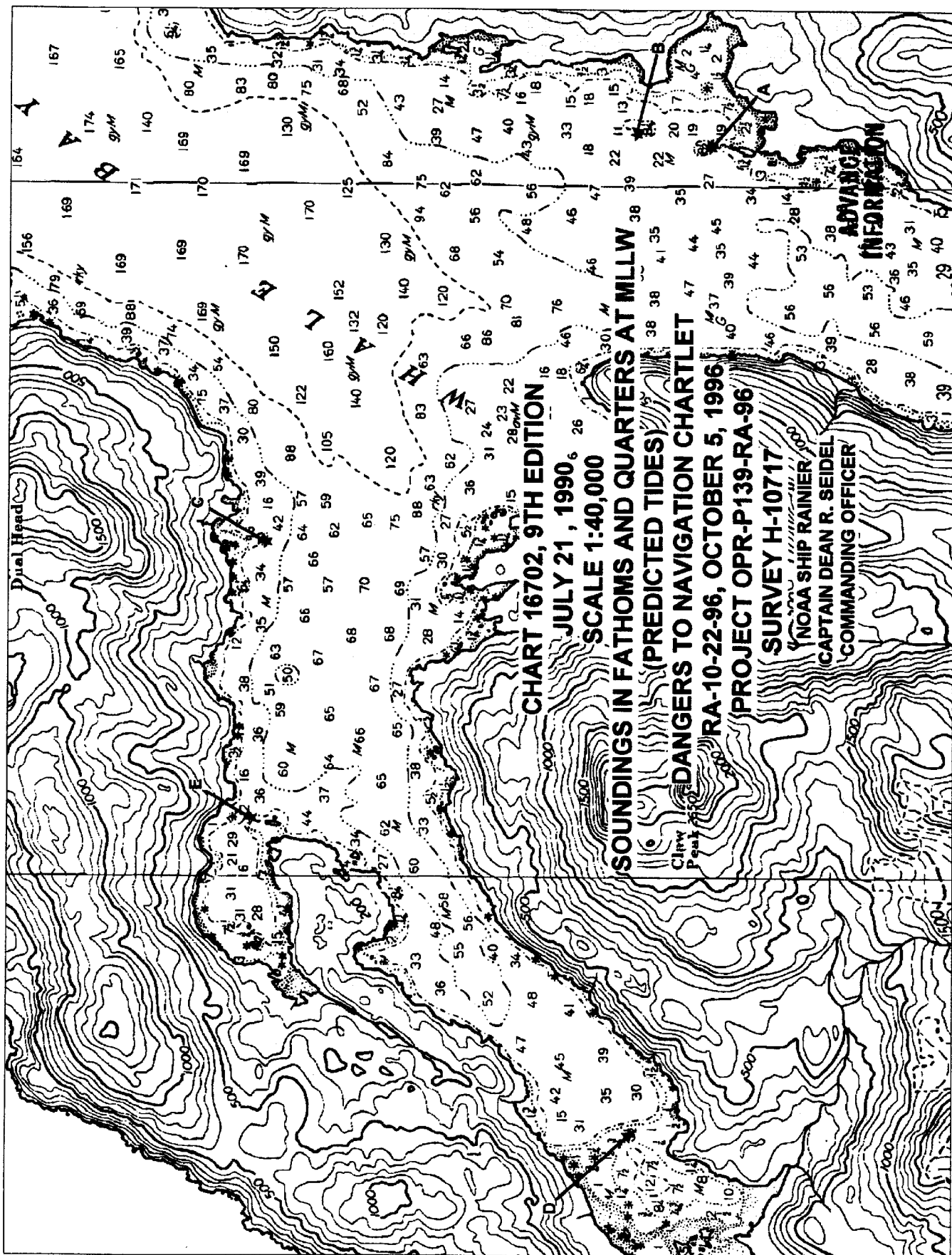
cc: DMA/HTC
PMC
N/CS262



DANGERS TO NAVIGATION**OPR-P139-RA****SOUTHWEST PRINCE WILLIAM SOUND, AK****REGISTRY NUMBER: H-10717****ADVANCE
INFORMATION****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

<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	30585+4	SHOAL	6 FM	11.4	060:12:25.892	148:09:43.510
B	30540+4	SHOAL	2 3/4 FM	5.3	060:12:42.075	148:09:37.479
C	50394+1	SHOAL	5 3/4 FM	10.7	060:14:01.250	148:12:35.063
D	30040+4	SHOAL	1 1/2 FM	2.7	060:12:42.472	148:16:51.215
E	50402+0	SHOAL	7 1/4 FM	13.5	060:14:04.074	148:14:34.862



dtom_m

**ADVANCE
INFORMATION**

P 061914Z OCT 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 5 DANGERS TO NAVIGATION IN
SOUTHWEST PRINCE WILLIAM SOUND, AK (PROJECT: OPR-P139-RA)
WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10717.

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

ALL CHART DATUM ARE NAD83.

ITEM	DANGER	DEPTH	LATITUDE (N)	LONGITUDE (W)	FIX NUMBER
A	SHOAL	6 FM	060:12:25.892	148:09:43.510	30585+4
B	SHOAL	2 3/4 FM	060:12:42.075	148:09:37.479	30540+4
C	SHOAL	5 3/4 FM	060:14:01.250	148:12:35.063	50394+1
D	SHOAL	1 1/2 FM	060:12:42.472	148:16:51.215	30040+4
E	SHOAL	7 1/4 FM	060:14:04.074	148:14:34.862	50402+0

THIS IS ADVANCE INFORMATION SUBJECT OF OFFICE REVIEW.

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



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

NOAA Ship RAINIER

October 20, 1996

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

**ADVANCE
INFORMATION**

Dear Sir:

During the processing of hydrographic surveys H-10717 and H-10721 in Knight Island Passage, Prince William Sound, four new, and four additional dangers to navigation have been discovered. These dangers affect the following charts:

For H-10717:

<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

For H-10721:

<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
16683	8th ED.	90/08	1:81,436	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

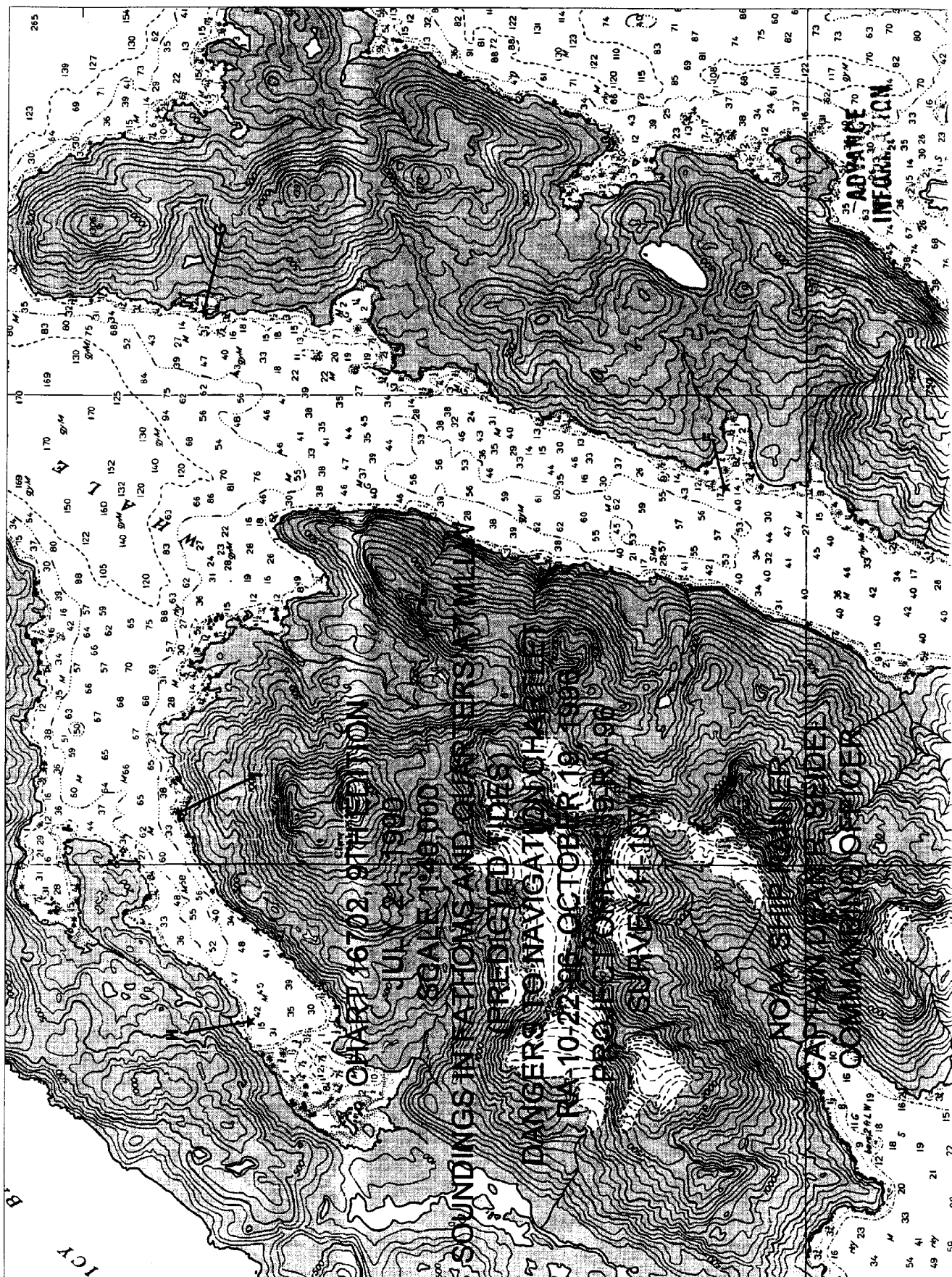
SOUTHWEST PRINCE WILLIAM SOUND, AK

REGISTRY NUMBER: H-10717**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

**ADVANCE
INFORMATION**

<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>
F	30435+0	ROCK	UNCOVERS 2 FT	-0.6	060:10:31.050	148:10:58.766
G	60028+0	ROCK	UNCOVERS 1 1/2 FT	-0.5	060:13:16.772	148:09:06.940
H	20572+0	ROCK	UNCOVERS 5 FT	-1.6	060:13:01.615	148:16:41.014
I	30709+0	ROCK	UNCOVERS 5 FT	-1.7	060:13:24.121	148:14:26.836



Ra201825

**ADVANCE
INFORMATION**

P 201825Z OCT 96
FM NOAAAS RAINIER
TO CCGDSEVENTEEN JUNEAU AK
DMAHTCCNAVWARN WASHINGTON DC//MCNM//
INFO NOAAAMOP SEATTLE WA
BT
UNCLAS

DANGER TO NAV #: RA-18-96

NOAA SHIP RAINIER HAS LOCATED 4 ADDITIONAL DANGERS TO NAVIGATION IN
SOUTHWEST PRINCE WILLIAM SOUND, AK (PROJECT: OPR-P139-RA)
WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10717.

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

ALL CHART DATUM ARE NAD83.

ITEM	DANGER	DEPTH	LATITUDE (N)	LONGITUDE (W)	FIX NUMBER
F	ROCK	UNCOVERS 2 FT	060:10:31.050	148:10:58.766	30435+0
G	ROCK	UNCOVERS 1 1/2 FT	060:13:16.772	148:09:06.940	60028+0
H	ROCK	UNCOVERS 5 FT	060:13:01.615	148:16:41.014	20572+0
I	ROCK	UNCOVERS 5 FT	060:13:24.121	148:14:26.836	30709+0

THIS IS ADVANCE INFORMATION SUBJECT OF OFFICE REVIEW.

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

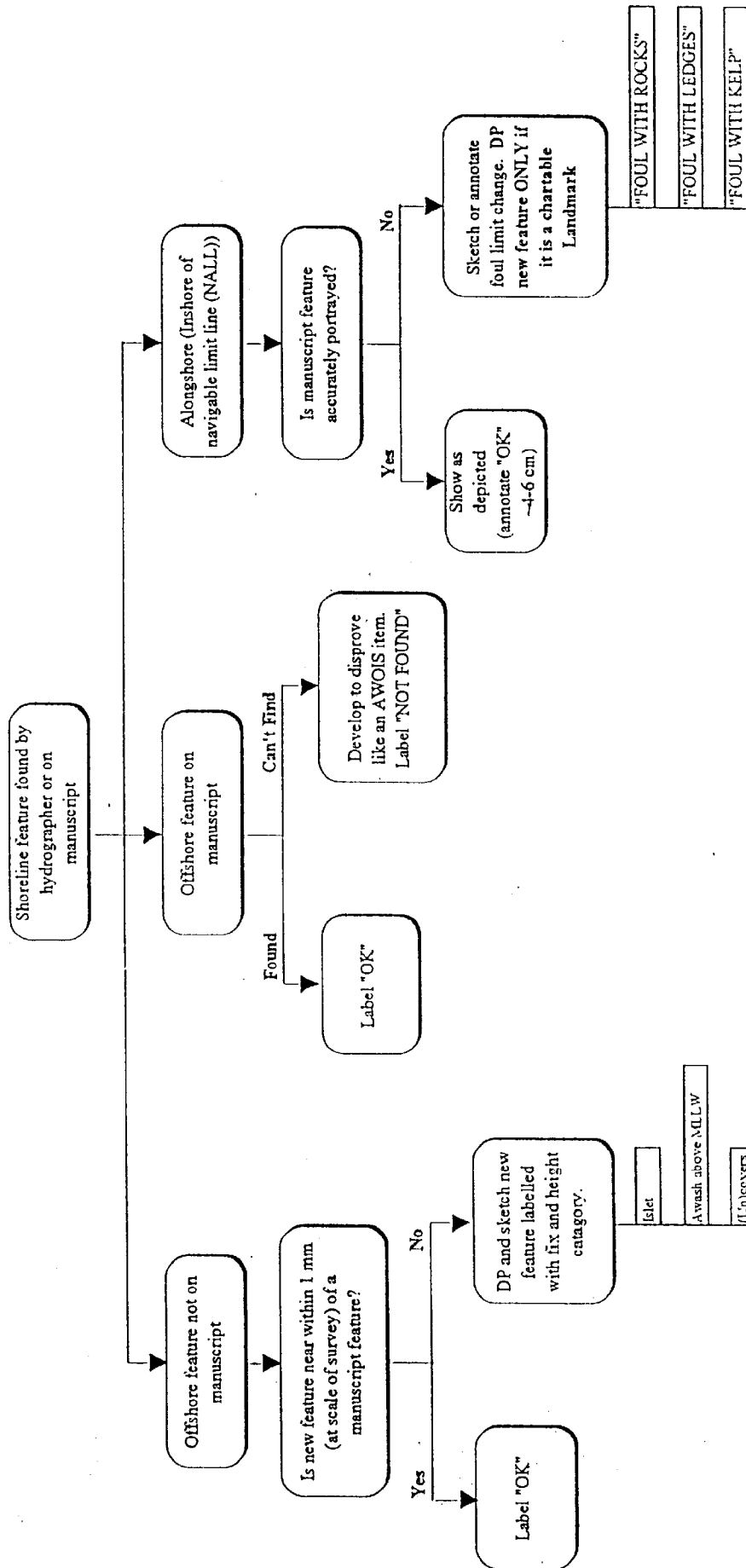
Limited Shoreline Verification: The New Rules

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-10717

RA-10-22-96

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-10717

LOCALITY: Whale Bay, Southwest Prince William Sound, Alaska

TIME PERIOD: September 18 - October 7, 1996

TIDE STATION USED: 945-4777 Chenega Island, Southwest End, AK
Lat. 60° 17.2'N Lon. 148° 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° 09.2'N Lon. 147° 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° 28.5'N Lon. 147° 47.5'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.362 meters

TIDE STATION USED: 945-4240 Valdez, AK
Lat. 61° 07.5'N Lon. 146° 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: PWS26, PWS27, PWS28, PWS29, PWS31 & PWS32

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-10717

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

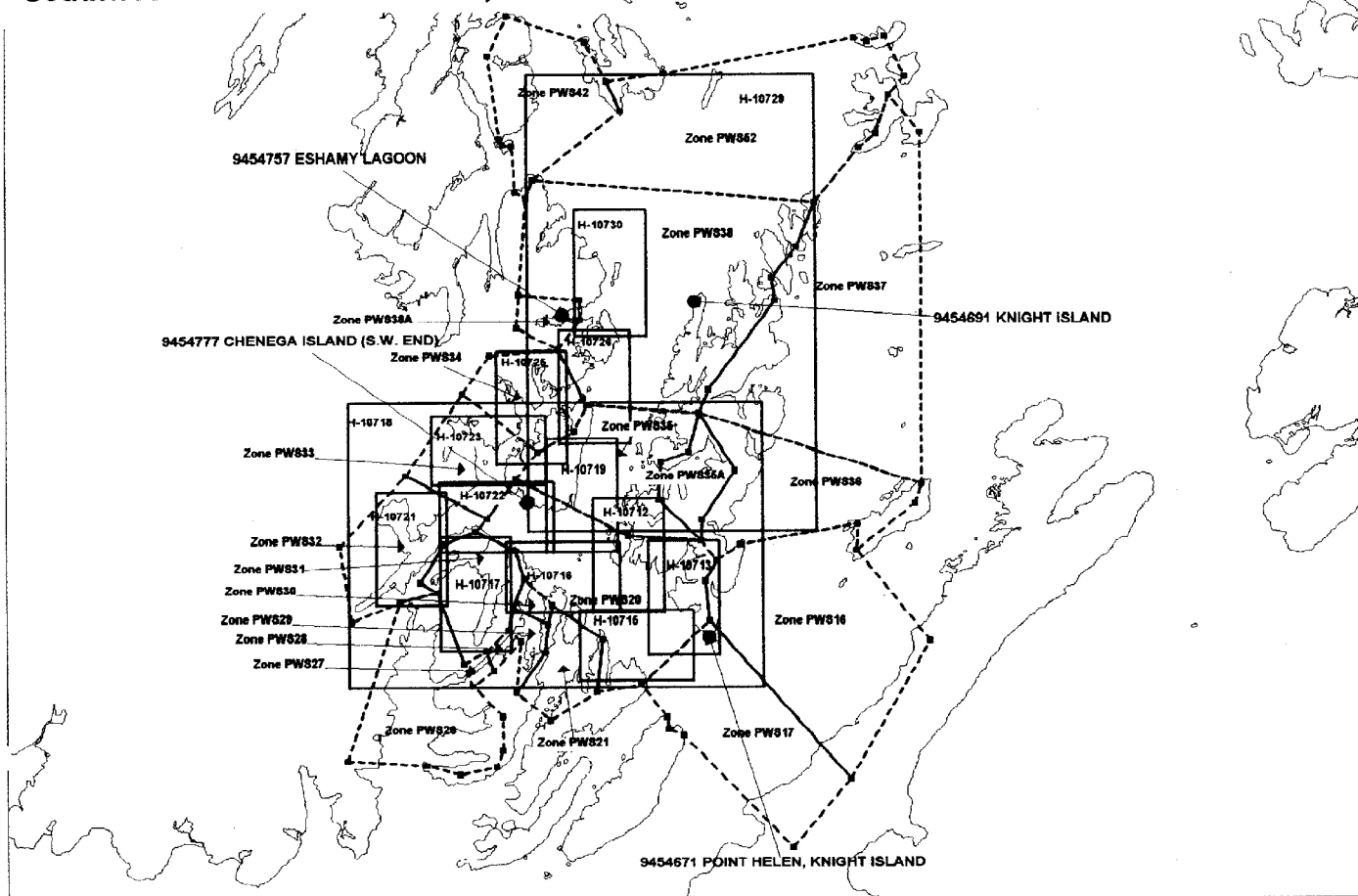
	Tide Station Order	AVG Time Correction	Range Correction
Zone PWS26			
-148.461495 60.035973	9454671	-12	0.93
-148.359804 60.187762	9454777	-12	0.91
-148.288442 60.196303	9454240	-12	0.88
-148.237061 60.127977			
-148.219934 60.106626			
-148.16348 60.07794			
-148.16348 60.045206			
-148.175266 60.029258			
-148.245981 60.022543			
-148.309962 60.030937			
-148.461495 60.035973			
Zone PWS27			
-148.237061 60.127977	9454671	-6	0.95
-148.19547 60.140053	9454777	-6	0.93
-148.180317 60.121587	9454240	-6	0.90
-148.219934 60.106626			
-148.237061 60.127977			
Zone PWS28			
-148.19547 60.140053	9454671	Direct	0.97
-148.151694 60.160197	9454777	Direct	0.95
-148.128122 60.149286	9454240	Direct	0.92
-148.180317 60.121587			
-148.19547 60.140053			
Zone PWS29			
-148.151694 60.160197	9454671	Direct	0.99
-148.143275 60.182021	9454777	Direct	0.97
-148.075927 60.166073	9454240	Direct	0.94
-148.082662 60.138374			
-148.13654 60.100603			
-148.128122 60.149286			
-148.151694 60.160197			
Zone PWS31			
-148.213991 60.255044	9454777	Direct	0.98
-148.274604 60.242454	9454671	Direct	Direct
-148.320064 60.206362	9454240	Direct	0.95
-148.288442 60.196303			
-148.237061 60.127977			
-148.19547 60.140053			
-148.151694 60.160197			

-148.143275 60.182021
-148.121387 60.20888
-148.138224 60.236579
-148.213991 60.255044

Zone PWS32

-148.192103 60.266795	9454777	Direct	0.97
-148.347003 60.308763	9454671	Direct	0.99
-148.474965 60.240775	9454240	Direct	0.94
-148.453077 60.168591			
-148.359804 60.187762			
-148.288442 60.196303			
-148.320064 60.206362			
-148.274604 60.242454			
-148.213991 60.255044			
-148.192103 60.266795			

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

GEOGRAPHIC NAMES

H-10717

Name on Survey	A ON CHART 16702	B ON PREVIOUS SURVEY NO. 16701	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RANDOM MCNALLY ATLAS	H U.S. LIGHT LIST	K
ALASKA (title)	X		X						1
ELESHANSKY COVE	X		X						2
PRINCE WILLIAM SOUND	X		X						3
(title)									4
WHALE BAY	X		X						5
									6
									7
									8
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Approved

Chris C. Long
Chief Geographer

DEC 4 1996

NOAA FORM 77-27(H) (9-83)		U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER H-10717		
HYDROGRAPHIC SURVEY STATISTICS						
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.						
RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION		
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS		
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS		
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-10295, DM-10298 & DM-10299				
PHOTOBATHYMETRIC MAPS (List):		NA				
NOTES TO THE HYDROGRAPHER (List):		NA				
SPECIAL REPORTS (List):		NA				
NAUTICAL CHARTS (List):		Chart 16702, 9th Ed., July 21, 1990				
OFFICE PROCESSING ACTIVITIES <i>The following statistics will be submitted with the cartographer's report on the survey</i>						
PROCESSING ACTIVITY				AMOUNTS		
				VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET						
POSITIONS REVISED						
SOUNDINGS REVISED (Selected)						13,337
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				189.5		189.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS					9.0	9.0
EVALUATION OF SIDE SCAN SONAR RECORDS						
EVALUATION OF WIRE DRAGS AND SWEEPS						
EVALUATION REPORT					17.0	17.0
GEOGRAPHIC NAMES						
OTHER*						
*USE OTHER SIDE OF FORM FOR REMARKS			TOTALS	189.5	26.0	215.5
Pre-processing Examination by Pacific Hydrographic Branch				Beginning Date 10/29/96	Ending Date 10/30/96	
Verification of Field Data by R. Mayor, E. Domingo, J. Stringham				Time (Hours) 189.5	Ending Date 8/8/97	
Verification Check by B. Olmstead				Time (Hours) 6	Ending Date 8/25/97	
Evaluation and Analysis by I. Almacén				Time (Hours) 26.0	Ending Date 8/8/97	
Inspection by B. Olmstead				Time (Hours) 11	Ending Date 9/19/97	

EVALUATION REPORT

H-10717

A. PROJECT

Project information is discussed in the hydrographer's report.

B. AREA SURVEYED

The survey area is discussed in the hydrographer's report and supplemented as follows:

The inshore areas around the bay are comprised of islets, scattered rocks, reefs and ledges with patches of gravel beaches. The bottom is generally made up of mud, sand and pebbles. Depths range from 0.1 to 183.0 fathoms.

The hydrographer has determined during this survey the inshore limits of safe navigation by defining a Navigable Area Limit Line (NALL) in accordance with Attachment 1 of the Project Instructions. Charted features and soundings inshore of this limit line have not been specifically addressed during survey operations. These features should be retained as charted, except in cases where the charted features were superseded or revised based on the latest shoreline manuscript information. A page-size chartlet of the survey area indicating the limits of supersession is included in this report as Attachment A.

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 Microstation 95.

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) and Point Helen, Knight Island, Alaska gage (945-4671). Tide data from Herring Point and Valdez tide stations was not used in the final reduction of soundings. Refer to the approved tide note attached to this report concerning recommended tidal zoning.

H. CONTROL STATIONS

Control stations are adequately discussed in the hydrographer's report.

The MicroStation 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: -2.343 seconds (-72.506 meters)
Longitude: 7.330 seconds (112.957 meters)

I. HYDROGRAPHIC POSITION CONTROL

Hydrographic position control is adequately discussed in the hydrographer's report. 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. Information concerning calibrations and systems checks can be found in the hydrographer's report and in the separates related to horizontal position control.

J SHORELINE

The "limited" shoreline verification procedure is adequately discussed in the hydrographer's report. The digitized shoreline file and the survey file were merged during MicroStation processing.

There are no significant differences noted in the mean high water line configuration between the present and the recently compiled shoreline maps of the survey area. However, a comparison with chart 16702 shows some changes in the high water line configuration around Whale Bay. These changes could be attributed to the effect of earthquake occurrences in the area, particularly in 1964, differences in the source data accuracy of mean high water determination and the probable discrepancies in the prior shoreline compilation to the chart.

K CROSSLINES

Crosslines are discussed in the hydrographer's report.

L JUNCTIONS

Survey H-10717 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10716	1996	1:10,000	Northeast
H-10722	1996	1:10,000	North

The junctions with surveys H-10716 and H-10722 are complete. The depth curves and soundings within the junction areas are in satisfactory agreement.

M COMPARISON WITH PRIOR SURVEYS

Survey H-10717 was compared with the following prior surveys.

H-8311 (1957), scale 1:12,500
H-8389 (1957), scale 1:10,000

Surveys H-8311 and H-8389 are the prior USC&GS hydrographic surveys of the area. Comparisons with these surveys are considered satisfactory. All depths originating from the prior surveys were adequately addressed during survey operations. A more thorough development by the present survey has resulted in the discovery of a few more shoal areas

not found in the earlier surveys. 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 area of Prince William Sound. However, in the deeper portion of the bay (>100 fathoms), the prior survey depths are consistently shoaler from 5.0 to 10.0 fathoms. Aside from the changes caused by earthquake occurrences in the area, the other differences noted could be due to the increased bottom coverage and the accuracy of positioning and sounding methods used during this latest survey.

H-10717 is adequate to supersede the prior surveys within the common area.

N. ITEM INVESTIGATIONS

There were no AWOIS item investigations assigned to this survey.

O. COMPARISON WITH CHART

Survey H-10717 was compared with the following edition of chart 16702.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16702	9th	July 21, 1990	1:40,000	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 require no further discussion.

The effects of the 1964 Prince William Sound Earthquake were considered in the comparison of this survey in accordance with Hydrographic Survey Guideline No.39. No reasonable adjustment value for prior soundings could be determined. However, based on the U.S.Coast Pilot Report (Vol. 9), the 1964 earthquake caused a bottom uplift of 4.9 feet at Chenega Island which is about four nautical miles northwest of the survey area.

Survey H-10717 is adequate to supersede charted hydrography within the common area of coverage. Considering the close proximity of the NALL line to the shore and the scale of the existing chart, the present survey is also considered adequate to supersede the area inshore of the NALL line, with the exception of the following charted features not shown on this survey.

<u>Charted Feature</u>	<u>Latitude (N)</u>	<u>Longitude (N)</u>
Rock Awash	60/08/47.0	148/12/51.0
Subm Rock	60/08/46.0	148/12/21.0

Rock Awash	60/09/43.0	148/11/22.0
Rock Awash	60/09/59.0	148/12/25.0
Rock Awash	60/10/04.0	148/10/58.0
Rock Awash	60/12/13.0	148/09/30.0
Rock Awash	60/12/32.5	148/16/31.0
Subm Rock	60/12/49.0	148/15/59.0
Rock Awash	60/13/02.0	148/15/36.0
Rock Awash	60/13/20.0	148/14/42.0
Rock Awash	60/13/40.0	148/15/31.0
Rock Awash	60/13/43.0	148/14/59.0
Rock Awash	60/14/20.0	148/11/27.0
Rock Awash	60/14/25.0	148/11/21.0

b. Dangers to Navigation

Nine (9) dangers to navigation were reported to the USCG, NIMA, N/CG261 and N/CS34 on October 6 and October 20, 1996. No additional dangers to navigation were identified during office processing. Copy of the report is attached.

P. ADEQUACY OF SURVEY

The hydrography on survey H-10717 is adequate to:

- a. delineate the bottom configuration, determine least depths, and draw the required depth curves;
- b. reveal there are no significant discrepancies or anomalies requiring further investigation; and
- c. show the survey was properly controlled and soundings are correctly plotted.

Hydrography on survey H-10717 was acquired in the field in metric units while the MicroStation 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-10717 adequately complies with the project instructions.

Q. AIDS TO NAVIGATION

There are no aids to navigation found within the area of the 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.

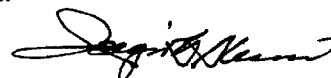
A new geographic name "ELESHANSKY COVE" was compiled on this survey. It replaces the presently charted name "MINKE COVE", based on the approved list of geographic names for survey H-10717 included in this report.

T. RECOMMENDATIONS

Survey H-10717 is a good hydrographic survey and no additional field work is required.

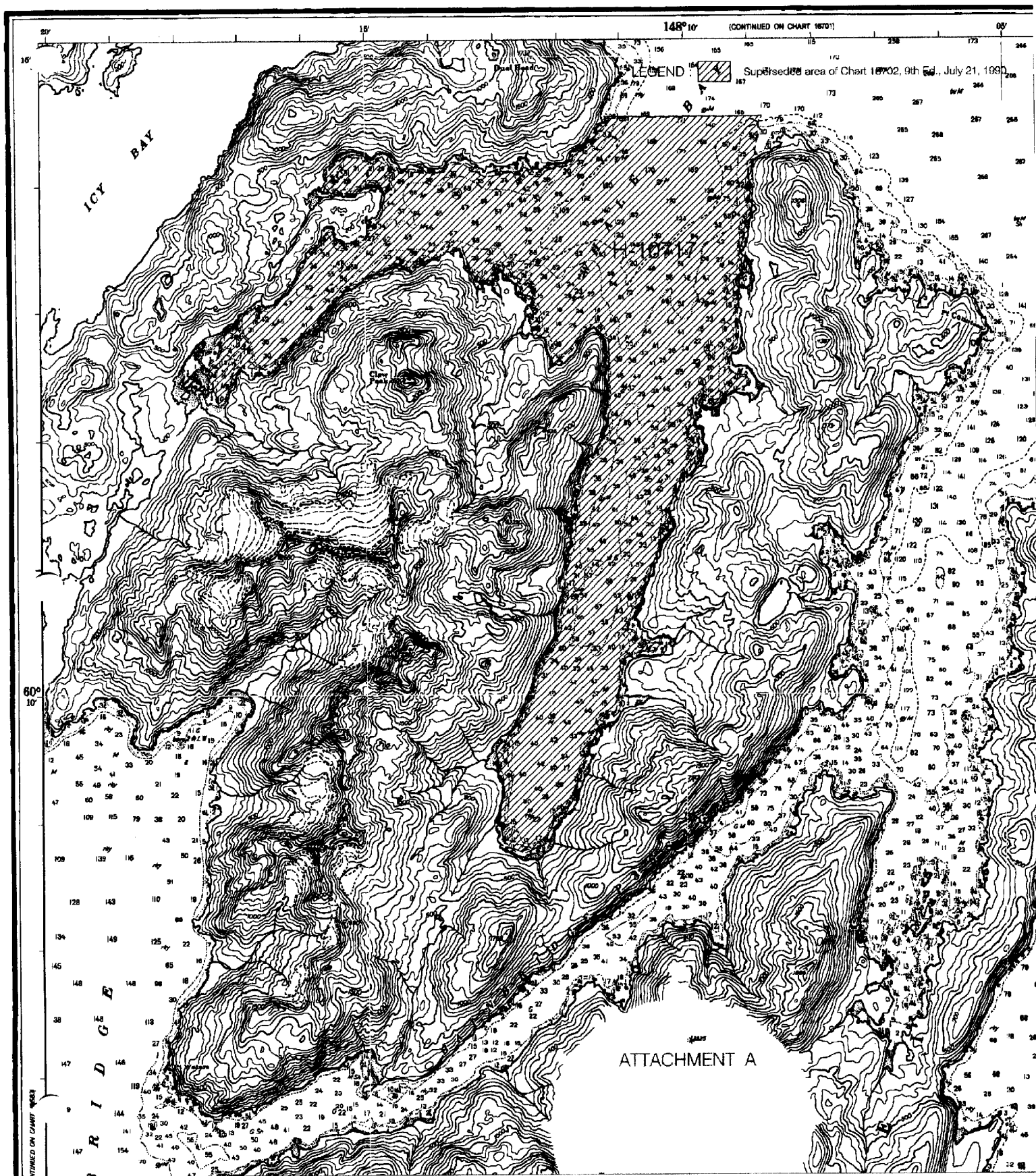
U. REFERRAL TO REPORTS

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



Isagani A. Almacén
Cartographer

High Water Consider Only Lowest Elevation and Treat Other Data as Mean Low Water



ATTACHMENT A

APPROVAL SHEET
H-10717

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

Bruce A. Olmstead
Senior Cartographer, Cartographic Section
Pacific Hydrographic Branch

Date: 9/19/97

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 Timmons

Kathy Timmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

Date: 9/23/97

Final Approval

Approved:

Andrew A. Armstrong III

Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

Date: Feb 2, 1998

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 4-10717

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED