H10722

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-10-23-96

Registery No.: H-10722

LOCALITY

State: Alaska

General Locality: Southwest Prince William Sound

Sublocality: Approaches to Icy Bay

1996

CHIEF OF PARTY
CAPT Dean R. Seidel, NOAA

DATE

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10722

HYDROGRAPHIC TITLE SHEET

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-10-23-96

State: Alaska

General locality: Southwest Prince William Sound

Locality: Approaches to Icy Bay

Scale: 1:10,000 Date of survey: September 19-28, 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), Ship Rainier

Chief of party: CAPT Dean R. Seidel, NOAA

Surveyed by: NOAA Ship RAINIER Personnel

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

Graphic record scaled by: RAINIER Personnel

Graphic record checked by: RAINIER Personnel

Evaluation by: L. Deodato Automated plot by: HP Design Jet 650C

Verification by: M. Bigelow, R. Mayor, E. Domingo, L. Deodato

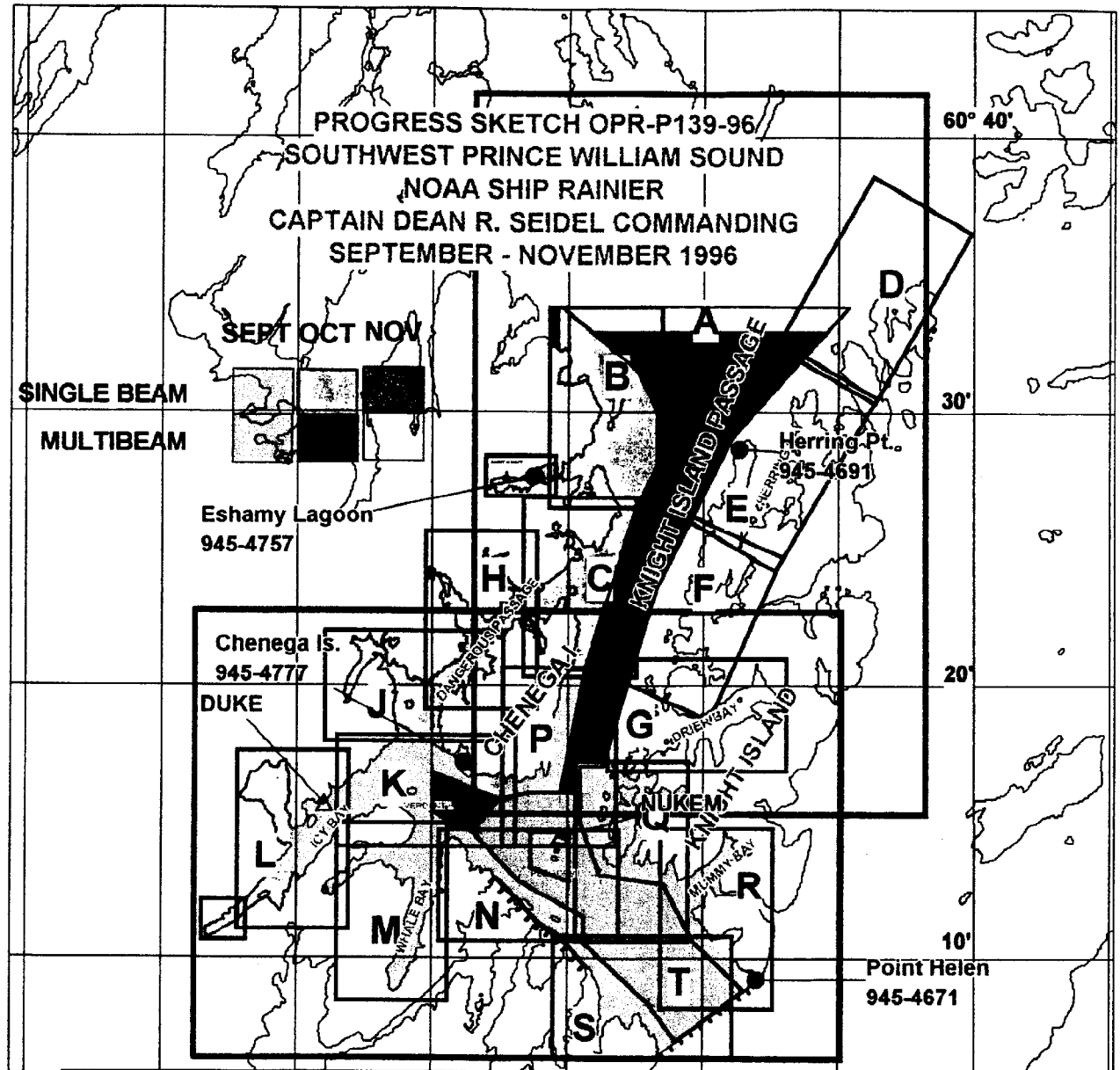
Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW and tenths

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 1/8/98 mcr

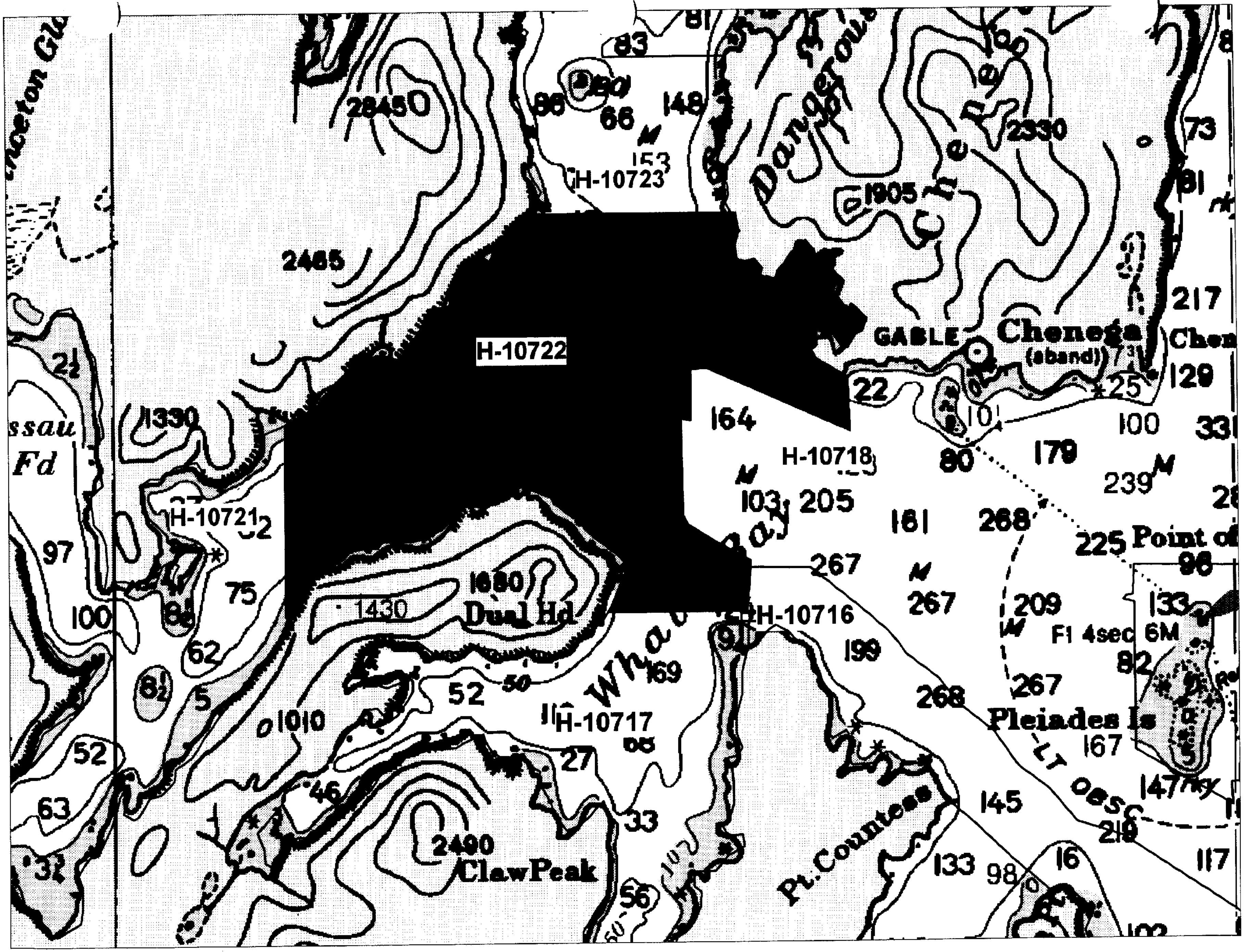
U.S. GOVERNMENT PRINTING OFFICE: 1986 - 652-007/41215



Sheet	Reg_No	Started	Percent	Completed	Submitted	SQNM
Q	H-10713	SEP 3	100%	SEP 24	OCT 25	10.4
R	H-10712	SEP 3	100%	SEP 12	OCT 11	5.8
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	100%	OCT 21		32.7
L	H-10721	SEP 23	100%	OCT 16	NOV 15	9.4
J	H-10723	SEP 28	100%	OCT 14		5.4
P	H-10719	SEP 21	100%	OCT 10	OCT 25	5.1
M	H-10717	SEP 18	100%	OCT 7	OCT 25	7.8
K	H-10722	SEP 19	100%	SEP 28	NOV 15	9.7
H	H-10725	OCT 3	100%	OCT 20		7.3
C	H-10726	OCT 8	100%	OCT 23		9.1
B	H-10730	OCT 18	100%	NOV 1		16.5
A	H-10729	OCT 17	100%	NOV 1		52.7

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	1783	4.2
LNM SSS	0	0.4	0
SQ NM	79.9	87.2	15.7
AWOIS Invest.	5	1	0
Other Invest.	14	27	0
LNM Multibeam	107.4	210.2	60.8


H-10722
H-10723
H-10718
H-10716
H-10717
H-10721
Chenega
(aband)
GABLE
Pleiades Is
Fl 4sec 6M
Point of
Dual Hd
Claw Peak
Pt. Countess
Fd

Descriptive Report to Accompany Hydrographic Survey H-10722

Field Number RA-10-23-96
Scale 1:10,000
September 1996
NOAA Ship RAINIER
Chief of Party: Captain Dean R. Seidel, NOAA

A. PROJECT ✓

This hydrographic survey was completed as specified by Project Instructions OPR-P139-RA dated August 23, 1996. Survey H-10722 corresponds to sheet K as defined in the sheet layout. This survey will provide data to supersede parts of two surveys performed in 1933 and 1957. Requests for hydrographic surveys and updated charts in this area have been received from the Defense Mapping Agency, the U.S. Coast Guard, the Southwest Alaska Pilot's Association, cruise ship lines, and local fishermen.

B. AREA SURVEYED ✓ See Eval Rpt., Section B

The survey area is the approaches to Icy Bay, including the part of Knight Island Passage west of Chenega Island. The survey's northern limit is latitude 60° 18' 02" N. The survey's southern limit is 60° 14' 30" N, the western limit is longitude 148° 17' 05" W and the eastern limit is 148° 06' 46" W. Data acquisition was conducted from September 19 to September 28, 1996 (DN 263-272).

C. SURVEY VESSELS ✓

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

Vessel	EDP #	Operations
RA-2	2122	Hydrography, Shoreline Verification
RA-3	2123	Hydrography
RA-4	2124	Hydrography, Shoreline Verification
RA-5	2125	Hydrography, Bottom Samples
RA-6	2126	Hydrography
RAINIER	2120	Sound Velocity casts

D. AUTOMATED DATA ACQUISITION AND PROCESSING

All data were acquired and processed using the Hydrographic Data Acquisition and Processing System (HDAPS.) A complete listing of software for HDAPS is included in Appendix VI.*

E. SONAR EQUIPMENT ✓

Neither Side Scan Sonar nor multi-beam echo sounder equipment were used on this survey. 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 new problems which affect survey data were encountered. All DSF-6000N soundings were acquired in meters using the High + Low, high frequency digitized setting.

* Filed with the hydrographic data.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Two sound velocity casts were acquired within the survey limits:

TABLE	DN	CAST POSITION	DEPTH (M)	APPLICABLE DN
6	264	60° 17' 00" N, 148° 10' 00"W	354.5	263 - 269
8	276	60° 17' 06" N, 148° 09' 54"W	358	270 - 272

The sound velocity casts were 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. 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".

A static transducer depth was determined using FPM Fig 2.2 for vessels 2122-2126 in the spring of 1996. 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. All offset tables* 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 included with project data for OPR-P139-RA. The launches are not equipped with heave, roll and pitch sensors.

Predicted tides for the project were provided on diskette by the Coastal and Estaurine Oceanography Branch (N/OES334) through N/CS31 for the Cordova, Alaska reference station (945-4050). HDAPS listings of the data used in generating tide corrector tables are included in Appendix V* of this report. Tidal correctors as provided in the project instructions for H-10722 are:

ZONE ID	ZONE NO.	TIME CORRECTION	HEIGHT CORRECTION
23	35	-0 hr 06 min	x0.95

Valdez, Alaska (945-4240) and Cordova, Alaska (945-4050) are the primary control stations for datum determination at all subordinate stations. RAINIER personnel installed Sutron 8200 GOES-transmitter equipped tide gages at Point Helen (945-4671) and Chenega Island (945-4777) on September 2, 1996.

Refer to the Field Tide Notes and supporting data in Appendix V* for individual gage performance and level closure information. This information has been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. A request for approved tides was forwarded to N/OES23 in accordance with FPM 4.2.3. Approved Tide Note dated January 16, 1997 is attached.

H. CONTROL STATIONS ✓ See Eval Rpt., Section 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. The control stations used for this survey are listed in Appendix III. See the OPR-P139-RA-96 Horizontal Control Report for more information. Control stations list is attached.

I. HYDROGRAPHIC POSITION CONTROL ✓ See Eval Rpt., Section I

All soundings were positioned using differential GPS. Primary control were two VHF differential reference stations; one at DUKE and one installed at NUKEM and repeated on a second VHF frequency by the ship.

* Filed with the hydrographic data.

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, Section J.

The shoreline manuscript from Coastal Mapping survey CM-92012 was supplied by N/CS341 in Standard Digital Data Exchange Format (SDDEF). The digital files from DM-10295 and DM-10296 were 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.

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

Shoreline manuscript and field features were compared to an enlargement of chart 16701, 15th edition, 1990 supplied by N/CS31, and to chart 16683, 8th edition, 1990. Charted shoreline features which were not found on the manuscript were verified by field positions when offshore of the NALL. The source of charted shoreline was not apparent from the N/CS31 source diagram, and the 1933 and 1957 hydrographic surveys did not portray most shoreline features, so survey shoreline was compared directly to the charted features.

Discrepancies between charted and field shoreline should thus be resolved in favor of the manuscript shoreline and field work as shown on the final field Detached Position and Bottom Sample plot. concur

K. CROSSLINES ✓

Crosslines agreed within 1 meter with mainscheme hydrography, except in areas of steep bathymetry. There was a total of 14.6 nautical miles of crosslines, comprising 8% of mainscheme hydrography.

L. JUNCTIONS ✓ See Eval Rpt, Section L.

This survey junctions with the following 1996 surveys: H-10723, 1:10,000 on the north, H-10721, 1:10,000 on the west, H-10718, 1:40,000, H-10717, 1:10,000 and H-10716, 1:10,000 on the south, and H-10719, 1:10,000 on the east. Soundings on these 1996 surveys were found to be in good agreement, except on at the extreme southeast corner of this survey where a 30 meter discrepancy exists with H-10717 due to the proximity of the northernmost line of that survey to the steep bathymetry. Comparisons with H-10716 in the same area are very good. Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after reduction to final vertical datum.

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

Prior surveys H-8389, 1:10,000, 1957 and H-5409, 1:20,000, 1933 cover this survey. H-8389 covers the entire survey area covered by H-5409, and is a much more thorough survey. The prior soundings agreed well with the present survey, except where shoaler depths were found during this survey with denser

(Do not concur) * 9
sounding coverage. Two shoaler prior depths, 44 fathoms at 60° 16' 00" N, 148° 13' 15"W and 3[illegible] fathoms at 60° 16' 00" N, 148° 12' 40"W, were disproved by 50-meter line spacing and should be superseded by soundings from this survey. (Concur) Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey. * Depths found by the present survey are 46 fathoms and 40 fathoms respectively.

N. ITEM INVESTIGATIONS ✓ None. *concur.*

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

Charts 16701, 1:81,436, 15th edition, 7/21/90 and 16683, 1:81,436, 8th edition, 8/11/90 are the largest scale charts covering the survey area. Comparison of soundings is described in Section M. Non-sounding features are discussed in Section J. Final sounding comparisons will be made at PHB after reduction to final vertical datum.

Dangers to Navigation ✓

A reef on the south shore of Icy Bay was reported to the Seventeenth Coast Guard District on October 11, 1996 as a danger to navigation. Copies of the correspondence can be found in Appendix I* of this report.
*Copies attached to this report.

P. ADEQUACY OF SURVEY ✓

Survey H-10722 is complete and adequate to supersede prior soundings and features in their common areas. *Concur*

Q. AIDS TO NAVIGATION ✓

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

R. STATISTICS ✓

NM Hydrography	296.2	Tide Stations	2
NM^2 Hydrography	9.7	Bottom Samples	32
Selected Soundings	~~12,585~~ 12,590	Detached Positions	20
Velocity Casts	2	AWOIS Items	0
		Dives	0

S. MISCELLANEOUS ✓

Bottom samples were collected and sent to the Smithsonian in accordance with Project Instructions. No unusual tidal currents or magnetic variations were found during this survey. Secchi disk observations were performed and indicate that water visibility was one to five meters, depending on the amount of ice and glacial sediment carried in the water column.

T. RECOMMENDATIONS ✓

The moraine connecting Verdant Island to the mainland, north and south, is a good anchorage for larger vessels, except in south weather. RAINIER used part of this anchorage, southwest of Verdant Island in 38 meters of water, without difficulty. Therefore, an anchorage symbol (Chart Number 1, symbol N-10) should be placed on the moraine at latitude 60° 15' 15" N, longitude 148° 12' 09" W. Concur

U. REFERRAL TO REPORTS ✓

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

Title	Date Sent	Office
OPR-P139-RA Horizontal Control Report	November, 1996	N/CS34
OPR-P139-RA 1996 Coast Pilot Report	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,

Guy T. Noll
Lieutenant, NOAA

Approved and Forwarded,

Dean R. Seidel
Captain, NOAA
Commanding Officer

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 10, 1996

ADVANCE INFORMATION

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

Dear Sir:

During the processing of hydrographic survey H-10722 in Knight Island Passage, Prince William Sound, one danger to navigation has been discovered. This danger affects the following charts:

Number	Edition	Date	Scale	Datum
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
16683	8th ED.	90/08	1:81,436	NAD83

It is recommended that this danger 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

ADVANCE
INFORMATION

DANGERS TO NAVIGATION

OPR-P139-RA SOUTHWEST PRINCE WILLIAM SOUND, AK

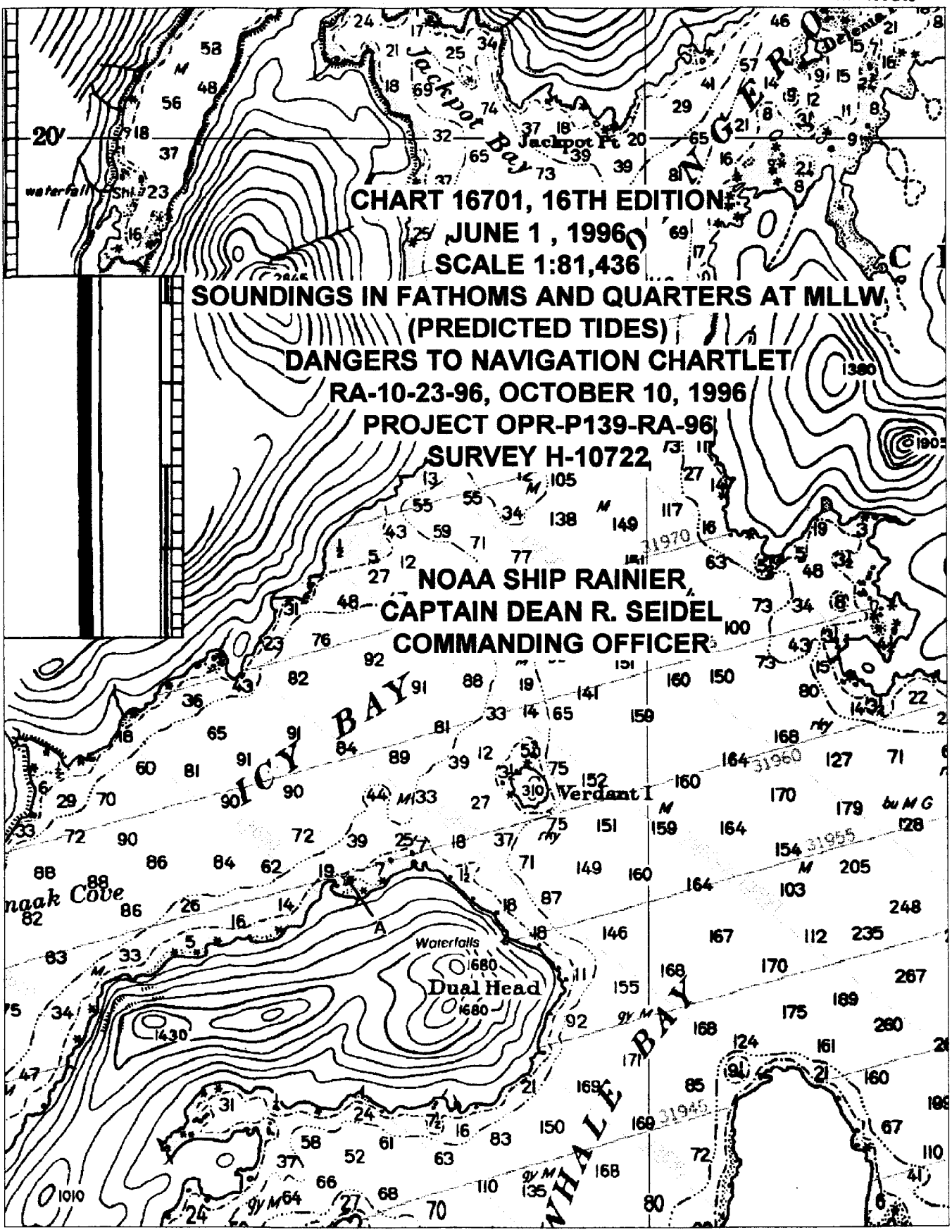
REGISTRY NUMBER: H-10722

AFFECTED CHARTS:

CHART	EDITION NUMBER	DATE	SCALE
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
16683	8 TH ED.	90/08	1:81,436

ITEM	FIX #	DANGER	CHART DEPTH	DEPTH (M)	LATITUDE (N)	LONGITUDE (W)
A	40494+0	REEF	UNCOVERS 4 FT	-1.1	060:15:31.937	148:13:37.828

ADVANCE
INFORMATION



Ra111525

ADVANCE INFORMATION

P 111525Z OCT 96
FM NOAAS RAINIER
TO CCGDSEVENTEEN JUNEAU AK
DMAHTCCNAVWARN WASHINGTON DC//MCNM//
INFO NOAAMOP SEATTLE WA
BT
UNCLAS

DANGER TO NAV #: RA-16-96

NOAA SHIP RAINIER HAS LOCATED 1 DANGER TO NAVIGATION IN SOUTHWEST PRINCE WILLIAM SOUND, AK (PROJECT: OPR-P139-RA) WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10722.

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

ALL CHART DATUM ARE NAD83.

ITEM	DANGER	DEPTH	LATITUDE (N)	LONGITUDE (W)	FIX NUMBER
A	REEF	UNCOVERS 4 FT	060:15:31.937	148:13:37.828	40494+0

THIS IS ADVANCE INFORMATION SUBJECT OT 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

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 HINCHENBROOKM 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

APPROVAL SHEET

for

H-10722

RA-10-23-96

Standard procedures were followed in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Survey 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-10722

LOCALITY: Approaches to Icy Bay, Southwest Prince William Sound, Alaska

TIME PERIOD: September 19 - 28, 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: PWS20, PWS31, PWS32, PWS33 & PWS35

Refer to attachment(s) for zoning information.

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

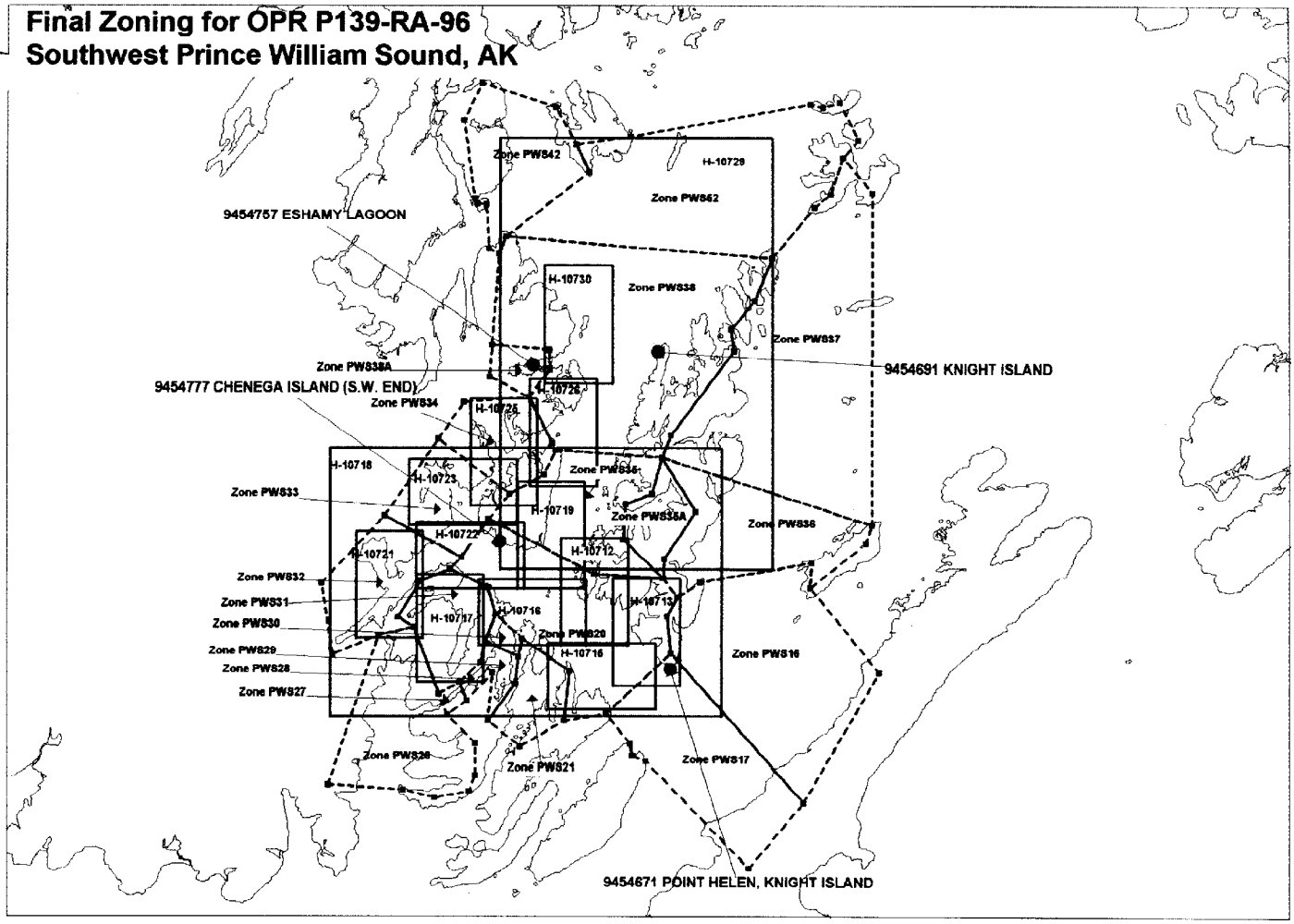
CHIEF, TIDAL ANALYSIS BRANCH

Final tide zone nodal point locations for OPR P139-RA-96.
Sheet H-10722

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 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			
Zone PWS33			

-148.347003 60.308763	9454777	Direct	0.98
-148.237563 60.386823	9454671	Direct	Direct
-148.094448 60.330586	9454240	Direct	0.95
-148.135913 60.305498			
-148.192103 60.266795			
-148.347003 60.308763			
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	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

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10722

Name on Survey	A ON CHART NO. 16701, 16700	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ALASKA (title)	X		X							1
CHENEGA ISLAND	X		X							2
DANGEROUS PASSAGE	X		X							3
DUAL HEAD	X		X							4
ICY BAY	X		X							5
PRINCE WILLIAM SOUND	X		X							6
(title)										7
VERDANT ISLAND	X		X							8
WHALE BAY	X		X							9
										10
										11
										12
										13
										14
										15
										16
										17
										18
					Approved					19
										20
					Chief Geographer					21
										22
					APR 10 1997					23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

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

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10722

RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	NA
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	NA

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	2					
ENVELOPES						
VOLUMES						
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List):	DM-10295, 10296, 10298 and 10299
PHOTOBATHYMETRIC MAPS (List):	NA
NOTES TO THE HYDROGRAPHER (List):	NA
SPECIAL REPORTS (List):	NA
NAUTICAL CHARTS (List):	16683 8th Ed., Aug 11, 1990, 16701 16th Ed., June 1, 1996

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			
OSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	82		82
COMPARISON WITH PRIOR SURVEYS AND CHARTS		12	12
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		12	12
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	82	24	106

Pre-processing Examination by Pacific Hydrographic Branch	*Beginning Date* 11/18/96	*Ending Date* 11/19/96
Verification of Field Data by M.Bigelow, R. Mayor, E. Domingo, L. Deodato	*Time (Hours)* 82	*Ending Date* 4/25/97
Verification Check by B. Olmstead	*Time (Hours)* 3	*Ending Date* 5/2/97
Evaluation and Analysis by L. Deodato	*Time (Hours)* 24	*Ending Date* 4/25/97
Inspection by B. Olmstead	*Time (Hours)* 8	*Ending Date* 5/8/97

EVALUATION REPORT

H-10722

A. PROJECT

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

B. AREA SURVEYED

Survey H-10722 was conducted in Alaska's southwest Prince William Sound, approaches to Icy Bay, including Knight Island Passage west of Chenega Island. The survey area is largely characterized by constant glacial activity and a large crescent shaped terminal moraine which exists between Verdant Island and Dangerous Passage. Depths along the terminal moraine between Verdant Island and latitude 60/17/30N range from 10-20 fathoms which rises up rapidly in surrounding depths of 80-100 fathoms. Although there are navigable routes into Icy Bay, extreme caution should be exercised when navigating this area. The terminal moraine is highly subjected to the effects of glacial debris in which water depths can change significantly and ice bergs are present year round. With the exception of that area defined by the terminal moraine, the bottom consists primarily of mud.

The hydrographer has determined the inshore limits of safe navigation by defining a Navigable Area Limit Line throughout the survey area. Charted features and soundings inshore of this limit line have not been specifically addressed during survey operations and should be retained as charted. A page-size plot of the charted area depicting the limits of supersession accompanies this report as Attachment 1.

The bottom consists mainly of gray mud. Depths range from 0.1 to 183 fathoms.

C. SURVEY VESSELS

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

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Survey data were processed using the same Hydrographic Data Acquisition/Processing System (HDAPS) software used by the hydrographer, the Hydrographic Processing System (HPS), AutoCad (Version 12.0) 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 sounding plot was created with .dbf (extension) and enhanced using the MicroStation system, are filed both in the MicroStation drawing format, .dgn (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 Hydrographic Survey Guideline No. 35 and No. 75.

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

E. SONAR EQUIPMENT

Sonar equipment was not used on survey H-10722.

F. SOUNDING EQUIPMENT

The hydrographer's report contains a discussion on sounding equipment.

G. CORRECTIONS TO SOUNDINGS

The sounding data have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for an actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with NOS specifications.

Predicted tides were used for reduction of soundings during field processing. During office processing, tide reductions were derived from approved hourly heights zoned direct from the following tide gages: Chenega Island, Southwest End, Alaska, gage 945-4777, Point Helen, Knight Island, Alaska, gage 945-4671, Herring Point, Knight Island Passage, Alaska, gage 945-4691, Valdez, Alaska, gage 945-4240.

H. CONTROL STATIONS

Section H and I of the hydrographer's report contain adequate discussions of horizontal control and hydrographic positioning.

The positions of horizontal control stations used during hydrographic operations are published values based on NAD 83. The geographic positions of all survey data are based on NAD 83. The smooth sheet is annotated with an NAD 27 adjustment tick based on values determined with the NGS program NADCON. Geographic positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections:

Latitude:	-2.294 seconds	(-70.983 meters)
Longitude:	7.354 seconds	(113.075 meters)

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

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 3.75 was computed for survey operations. The quality of several positions exceeds limits in terms of horizontal dilution of precision (HDOP). These positions are isolated and occur randomly throughout the survey area. A review of the data, however, suggests that none of these fixes are used to position dangers to navigation. The features or soundings located by these fixes are consistent with the surrounding information. These fixes are considered acceptable. DGPS performance checks were conducted in the field and found adequate.

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

Additional information concerning calibrations and system checks can be found in the hydrographer's report and in the separates related to horizontal position control and corrections to position data.

J. SHORELINE

Shoreline maps DM-10295-96, and DM-10298-99, Scale 1:20,000 were compiled on NAD83 and applied to this survey. These manuscripts were supplied in digital form by the Coastal Mapping Program were merged during MicroStation processing.

Changes to alongshore and offshore features shown on the shoreline manuscripts were verified and revised as warranted. There were no revisions to the mean high water line.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10722 junctions with the following surveys:

Survey	Year	Scale	Area
H-10716	1996	1:10,000	South
H-10717	1996	1:10,000	South
H-10718	1996	1:40,000	South
H-10719	1996	1:10,000	East
H-10721	1996	1:10,000	West
H-10723	1996	1:10,000	North

A formal junction could not be made with the above listed surveys as this work is in the preliminary stage of processing. Discussion of these junctional surveys will be made in the evaluation report for the above listed surveys. An "ADJOINS" note has been added to the present survey.

M. COMPARISON WITH PRIOR SURVEYS

H-5409 (1933) 1:20,000
H-8389 (1957) 1:10,000
H-8388 (1957) 1:10,000

Prior surveys H-8388, H-8389, and H-5409 cover the entire area of the present survey. Present survey depths are consistently deeper from 4-16 fathoms east of longitude 148/11/30W in depths over fifty fathoms, However, smaller differences are seen west of Verdant Island in depths greater than fifty fathoms, where present survey data is generally shoaler from 1-5 fathoms. The entire survey area in depths less than fifty fathoms reflects differences of 1-5 fathoms with no consistent pattern of shoaling or an increase in depth. However there are several shoaler depths found on the present survey not portrayed on the 1932 and 1957 prior work. The submerged terminal moraine located between Verdant Island and latitude 60/17/30N generally reveals no significant depth difference from the past thirty-nine years. The differences with the prior surveys may be attributed to the 1964 earthquake,

greater sounding coverage, improved positioning and sounding methods, and relative accuracy of the data acquisition techniques.

The charted 33 fathom depth at latitude 60/16/00N, longitude 148/12/40W originates from H-8389 and has been compiled incorrectly. The correct depth should be 39 fathoms. A depth of 40 fathoms is found on the present survey.

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

Survey H-10722 is adequate to supersede the prior surveys within the common area.

N. ITEM INVESTIGATIONS

There were no AWOIS items assigned to this survey.

O. COMPARISON WITH CHART

Survey H-10722 was compared with the following charts:

Chart	Edition	Date	Scale	Datum
16683	8th	August 11, 1990	1:81,436	NAD83
16701	15th	July 21, 1990	1:81,436	NAD83
16701	16th	June 1, 1996	1:81,436	NAD83

a. Hydrography

Charted hydrography originates with the previously discussed prior surveys. The prior surveys have been adequately addressed in section M and require no further discussion.

Survey H-10722 is adequate to supersede the charted data within the common area. See Attachment 1 for the area of supersession.

b. Dangers To Navigation

One danger to navigation, a reef on the south shore of Icy Bay, was discovered during survey operations and reported to the USCG on October 11, 1996. Copies of the report are attached. No additional dangers to navigation were found during office processing.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H-10722 is adequate to:

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

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

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

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

A holiday exists centered at latitude 60/17/33N, longitude 148/09/06W. Here, an additional inshoreline of hydrography should have been run with fifty meter line spacing.

Q. AIDS TO NAVIGATION

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

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

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

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

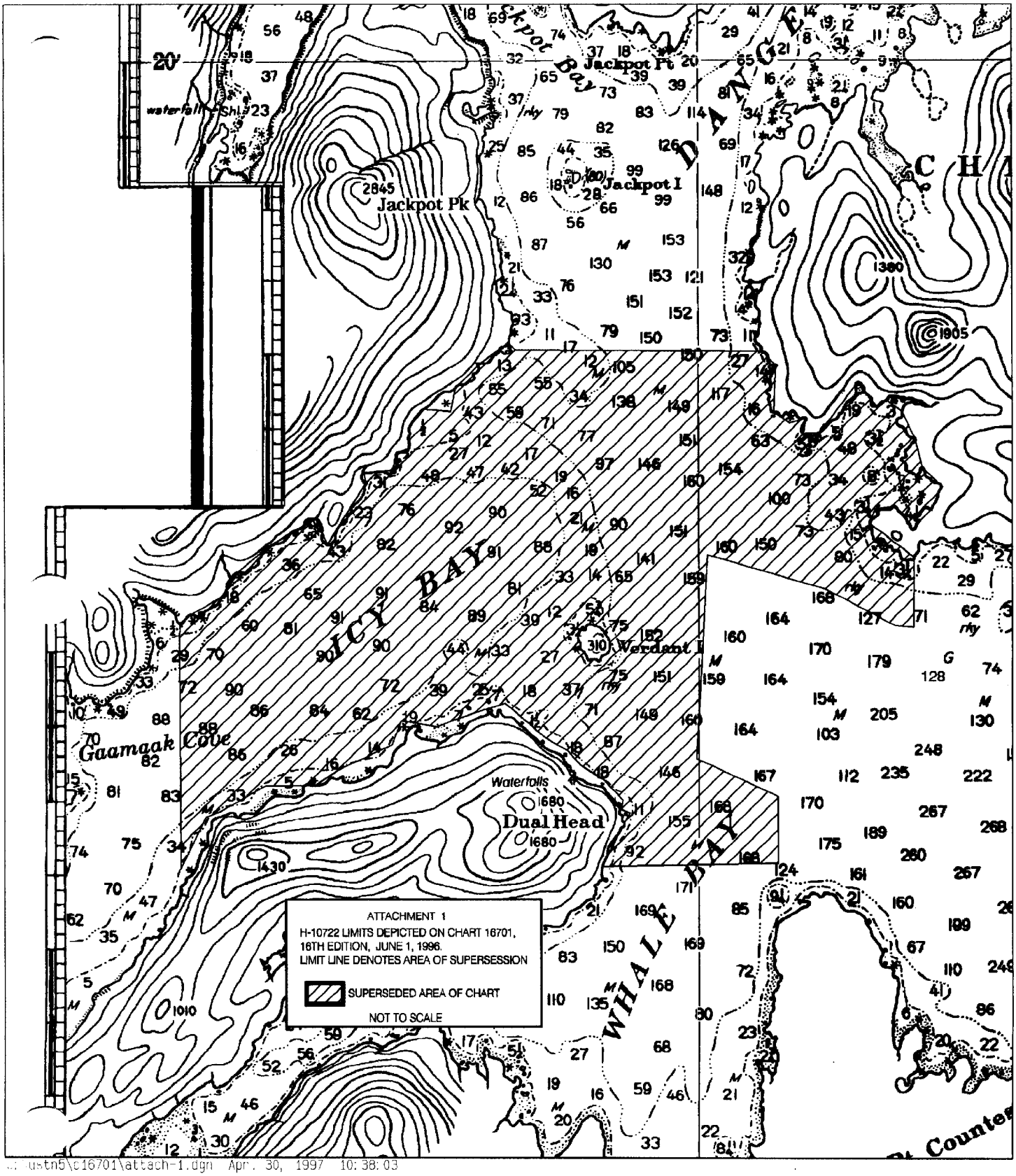
T. RECOMMENDATIONS

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

U. REFERRAL TO REPORTS

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

Leonardo T. Deodato
Cartographer



.: ustn5\c16701\attach-1.dgn Apr. 30, 1997 10:38:03

APPROVAL SHEET
H-10722

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Bruce A. Olmstead Date: 5/8/97
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 Timmons Date: 5/22/97
Kathy Timmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

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Final Approval

Approved:

Andrew A. Armstrong III Date: Feb 3, 1998 19 aaa
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10722

INSTRUCTIONS

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

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

CHART	DATE	CARTOGRAPHER	REMARKS
16683	8/25/97	C. Russ Davis	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. Full application of soundings and curves from smooth sheet
16701	5/22/97	Leo [illegible]	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via Full application of sndgs.
			Drawing No. & features from smooth sheet thru chart 16683.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.