H10751

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-10-12-97

Registry No. H-10751

LOCALITY

State Alaska

General Locality Frederick Sound

Sublocality Le Conte Bay and Approaches

1997

CHIEF OF PARTY
CAPT Alan D. Anderson, NOAA

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10751

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-10-12-97

State: Alaska

General locality: Frederick Sound

Locality: Le Conte Bay and Approaches

Scale: 1:10,000 Date of survey: May 20 to June 27, 1997

Instructions dated: 2/4/97, Change #1 4/3/97 Project No.: OPR-0170-RA

Vessel: NOAA Ship RAINIER Launches (2121),(2122),(2123),(2124),(2125),(2126)

Chief of party: CAPT Alan D. Anderson, NOAA

Surveyed by: CAPT A.Anderson,LCDR D.Kruth, LT G.Noll,LT S.LaBossiere,LT S.Lemke,LT K.Bailey
LT D.Baird,SST J.Jacobson,ST S.Baum,ST N.Quanbeck, ST K.Callahan

Soundings taken by echo sounder, ~~hand lead, pole~~ DSF-6000N & Knudsen 320M
Side Scan Sonar EG&G Models 260, 272

Graphic record scaled by: RAINIER Personnel

Graphic record checked by: RAINIER Personnel

Evaluation by: R. Davies ~~Protracted by~~ Automated plot by: HP Design Jet 750C

Verification by: R. Davies

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

REMARKS: Time in UTC, revisions and marginal notes in black were generated during office of 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 and SURF - RWD 5/98

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174

Descriptive Report to Accompany Hydrographic Survey H-10751

Field Number RA-10-12-97
Scale 1:10,000
May-June 1997
NOAA Ship RAINIER
Chief of Party: Captain Alan D. Anderson, NOAA

A. PROJECT ✓

This hydrographic survey was completed as specified by Project Instructions OPR-O170-RA dated February 4, 1997 and Change number 1 dated April 3, 1997. Survey H-10751 corresponds to sheet A as defined in the sheet layout. This survey will provide contemporary hydrographic survey data as part of a continuing program to improve chart coverage of the Inside Passage in southeast Alaska. A 1:25,000 scale chart, 17377, is planned for Southern Frederick Sound. Requests for hydrographic surveys and updated charts in this area have been received from the United States Coast Guard (USCG), Southeastern Alaska Pilot's Association (SEAPA), the Alaska Department of Transportation, and the Alaska Department of Fish and Game in support of cruise line, logging, and commercial fishing activities.

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

The survey area is Le Conte Bay and its approaches. The survey's southern limit is latitude 56° 43' ~~40~~ 53"N. The survey's western limit is 134° 37' ~~30~~ 56"W. The Le Conte Bay fiord (near LeConte Glacier) binds the survey area to the east and to the north. Data acquisition was conducted from May 20 to May 29 (DN 140-149), and June 25-27, 1997 (DN 176-178). The final field sheet is plotted as two panels. The smooth sheet has been combined into one sheet.

C. SURVEY VESSELS ✓

Data were acquired by RAINIER and her survey launches as noted on the survey information list. (attached)

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

All data were acquired and preliminary processing was accomplished using the Hydrographic Data Acquisition and Processing System (HDAPS). Using exported HDAPS data in MapInfo facilitated the charted and prior survey comparisons. Final Detached Positions and soundings based on predicted tides were saved in MapInfo 4.1 format and submitted on magnetic media* A complete listing of software for HDAPS is included in Appendix VI.*

E. SONAR EQUIPMENT ✓

Side scan sonar (SSS) operations were conducted in the entrance channel. An EG&G model 260 slant-range corrected SSS recorder (S/N 0012106) and an EG&G 272-T-dual channel towfish (S/N 016989) were used. The towfish was operated on the 100 kHz frequency.

Two hundred percent SSS collection was conducted over the entrance channel** to Le Conte Bay. The SSS towfish was towed with a 70 meter EG&G lightweight tow cable on launch 2123 and a 40-meter cable on launch 2125. The towfish was deployed manually from the port or starboard quarter and attached to the aft fall shackle by line on 2125. The cable was lead over the stern railing and towed directly astern of the survey launch. The length of tow cable deployed was determined by noting the measured markings on the towfish cable as these markings met the stern railing. The SSS towfish was adjusted to maintain a height off the bottom of 8 to 20 percent of the range scale. The 100-meter and 150-meter range scales were used. SSS operations were conducted at or less than 5 knots for the 100-meter range scale and 4.5 knots for the 150-meter range scale.

* Filed with the hydrographic data.

** Refer to subsequent page for specific area of side scan operations.

Degraded sonograms were rejected and rerun. A swath plot depicting SSS bottom coverage indicates that 200% SSS coverage was completed over the sill formed by the glacier's moraine. The recorder gain setting was adjusted for the best return for changing bottom conditions. Rub tests were conducted prior to operating the SSS and confidence checks were made daily and annotated on the sonogram.

* Two hundred side scan coverage was accomplished beginning 600 meters north of Cosmos Island and extending 1.5 nautical miles northwest. Specific side scan work was conducted in depths from 2-11 fathoms and extends from longitude 132/38/30W to longitude 132/37/00W.

Side scan sonograms were manually scanned for significant contacts in accordance with section 7.3.2 of the project instructions. Significant contacts were identified and entered into a HDAPS contact table. Using the HDAPS sifter program to determine significance of the contacts in relationship to sounding least depths in by area, a number of the contacts were developed further with echosounder to determine the contacts least depth. Scour marks and drag marks of icebergs show substantial short-term movement of boulders in this area. Multi-beam echo sounder equipment was not used on this survey. Concur

@ Several contacts were not investigated using a full echo-sounder (100%) bottom coverage.

F. SOUNDING EQUIPMENT

The Raytheon DSF-6000N is a dual frequency (100 kHz, 24 kHz), paper trace echo sounder. The Knudsen 320M is a dual frequency, thermal depth sounder using the same transducer frequencies. Serial numbers are included on the headers of the daily Raw Master Printouts. No new problems, which affect survey data, were encountered. All soundings were acquired in meters using the High + Low, high frequency digitized setting.

G. CORRECTIONS TO ECHO SOUNDINGS

Four sound velocity casts were acquired within the survey limits. Refer to the survey information summary. (attached)

The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 219), calibrated December 15, 1996. Velocity correctors were computed using the PC programs SEACAT and VELOCITY, version 3.3 (1997), in accordance with Field Procedure Manual (FPM) Section 2.4.3. A printout of the Sound Velocity Corrector Tables 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 2121, 2122, 2123, and 2125 in the spring of 1997. The static draft and offsets for RAINIER, 2120, were collected in 1995. 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-O170-RA. The data for vessels 2121, 2122, and 2123 were collected in Shilshole Bay, Washington in March 1997. The data for 2124 and 2126 were collected in 1996. The data for vessel 2125 were collected in Young Bay, Alaska in March 1997. All offset tables* contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 1-6 correspond to the last digit of the vessel number. The offset tables are included with project data for OPR-O170-RA. The launches are not equipped with heave, roll and pitch sensors.

The Coastal and Estuarine Oceanography Branch (N/OES334) through N/CS31 provided predicted tides for the project on diskette for the Ketchikan, Alaska reference station (945-0460). HDAPS listings of the data used in generating tidal corrector tables are included in Appendix V* of this report. Tidal correctors as provided in the project instructions for H-10751 are listed in the survey information summary. (attached)

Ketchikan, Alaska (945-0460) is the primary control station for datum determination at all subordinate stations. RAINIER personnel installed a Sutron 8200 tide gage at Cosmos Point (945-1335) and in Le Conte Bay (945-1422) on May 19, 1997. The Cosmos Point gage was removed on May 29, 1997 and the Le Conte Bay gage was removed on June 28, 1997.

Refer to the Field Tide Notes and supporting data in Appendix V* for individual gage performance and level closure information. This information and the boundaries of the survey have been forwarded to N/OES212 in accordance with the project instructions. A request for approved tides was forwarded to N/OES23 on July 21, 1997 in accordance with FPM 4.2.3. Approved Tide note dated Nov. 10, 1997 is attached.

* Filed with the hydrographic data

H. CONTROL STATIONS See Evac Report, section H

The horizontal datum for this project is NAD 83. Station CAMP, located on Camp Island, within the bounds of this survey, was destroyed. CAMP RM1 was positioned from BLUFF 3 and COSMOS. The control stations used for this survey are listed in ~~Appendix III~~ this report. See the OPR-O170-RA-97 Horizontal Control Report for more information.

I. HYDROGRAPHIC POSITION CONTROL See Evac Report, section I

All soundings were positioned using differential GPS. Primary control was a VHF differential "flyaway" reference station, on CAMP RM1. The US Coast Guard Beacons at GUSTAVUS and ANNETTE ISLAND were used when not using the flyaway. 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, CAMP RM1 or GUSTAVUS 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. A few positions were acquired with ANNETTE ISLAND* early in the project, and the station was not monitored or checked with SHIPDIM. CAMP RM1 was compared to GUSTAVUS during periodic daily comparisons and occasional performance checks. Some outliers were noted, but none indicated systematic or continuous errors in the GUSTAVUS beacon. The SHIPDIM OUTLIER.SUM results are included on a floppy in the project data for OPR-O170-RA. * was not used for positions on this survey.

J. SHORELINE See Evac Report, section J

No modern photogrammetric shoreline manuscript* was supplied for this survey. Digitized blueprints were used per project instructions for OPR-O170-RA-97 and are hereafter referred to as the manuscript shoreline. Extensive shoreline verification was conducted due to the lack of accurate shoreline manuscripts in the project area. This included basic shoreline verification and static GPS observations along the shoreline. The average shift to make shoreline fit was 1.3" N and 10.2"W. * Shoreline has been shown in brown on the Smooth Sheet from BP 16067T and BP 16067B for orientation.

Shoreline manuscript and field features were compared to an enlargement of chart 17360, which is included in the submittal. Generally, the charted features are not at large enough scale to match the shoreline as observed. Discrepancies between charted and field shoreline should be resolved in favor of the manuscript shoreline and fieldwork as shown on the submitted MapInfo digital files. Shoreline verification data was analyzed during office processing and shown on the Smooth Sheet as warranted.

The following table summarizes new shoreline features not shown on the chart or manuscript: DP's on ledge heights were taken while positioned seaward of the feature. High points have been added to these features as shown on the Smooth Sheet and are listed below.

Feature	Depth (Meters)	Fix Number	Latitude (N)	Longitude (W)	Height in Feet *	CHART
Rock	1.3 exposed	20217	56/44/23.96	132/33/07.90	(5)	Rock *
Rock	0.3 exposed	20218	56/44/27.33	132/33/11.44	(1)	Rock ±
Rock	1.1 submerged	20219	56/44/39.18	132/33/55.87	0.6 RK	½ RK
Rock	0.9 submerged	20220	56/44/41.90	132/34/29.03	0.5 RK	½ RK
Rock	0.5 submerged	20221	56/44/44.26	132/34/58.27	covered	Rock ±
Ledge	2.4 exposed	40218	56/44/53.42	132/31/38.20	(8)	Ledge
Ledge	0.6 submerged	40219	56/44/57.44	132/31/55.17	awash	Ledge
Ledge	1.3 exposed	40222	56/45/24.85	132/32/11.22	(5)	Ledge
Ledge	1.3 submerged	40223	56/45/18.07	132/34/55.70	0.7	
Ledge	3.2 exposed	20734	56/45/23.73	132/32/06.56	(11)	Ledge
Ledge	1.3 exposed	10411	56/44/56.64	132/29/24.07	(4)	Ledge
Ledge	0.8 exposed	10412	56/45/02.24	132/29/17.95	(3)	Ledge
Ledge	1.4 exposed	10413	56/45/15.64	132/29/15.58	(5)	Ledge

* based on application of approved tides.

					height in ft.*	chart
Ledge	1.4 exposed	10414	56/45/30.67	132/29/18.22	(5)	Ledge
Ledge	1.1 exposed	10415	56/45/57.37	132/29/38.12	(4)	Ledge
Ledge	2.1 exposed	10417	56/47/06.09	132/27/56.48	(7)	Ledge
Ledge	1.4 exposed	20523	56/45/02.94	132/31/14.11	(4)	Ledge
Ledge	1.1 exposed	20524	56/45/26.44	132/31/06.27	(3)	Ledge
Ledge	5.3 exposed	20526	56/45/53.40	132/31/13.99	(16)	Ledge
Ledge	5.3 exposed	20527	56/46/04.84	132/31/11.87	(16)	Ledge
Ledge	4.3 exposed	20530	56/47/00.24	132/30/11.31	(14)	Ledge
Rock	0.5 exposed	20531	56/47/02.91	132/30/11.80	(1)	Ledge
Ledge	5.3 exposed	20532	56/47/02.75	132/30/06.00	(17)	Ledge
Rock	3.5 exposed	40917	56/47/10.17	132/27/24.89	(12)	Rock
Rock	4.4 exposed	40918	56/43/57.77	132/31/31.23	(15)	Rock
Rock	2.6 exposed	41544	56/46/25.14	132/26/53.86	(9)	Rock
Ledge	0.3 submerged	60164	56/46/14.03	132/28/50.73	Awash	Ledge
Ledge	0.5 submerged	60165	56/46/30.67	132/26/41.05	Awash	Ledge
Ledge	0.5 submerged	60166	56/46/31.58	132/26/40.37	Awash	Ledge
Ledge	0.5 submerged	60167	56/46/38.51	132/26/22.98	Awash	Ledge
Ledge	2.4 exposed	60168	56/46/49.43	132/26/03.54	(8)	Ledge
Ledge	2.4 exposed	60169	56/46/51.25	132/26/01.87	(8)	Ledge
Ledge	4.6 exposed	60170	56/47/30.45	132/25/52.09	(15)	Ledge
Rock	1.5 exposed	60172	56/48/09.07	132/27/28.10	(5)	Rock
Ledge	2.7 exposed	60173	56/47/55.23	132/27/25.30	(9)	Ledge
Ledge	2.2 exposed	60174	56/47/49.80	132/27/23.92	(8)	Ledge
Ledge	2.3 exposed	60175	56/47/52.15	132/27/26.17	(8)	Ledge
Ledge	2.8 exposed	60176	56/47/42.27	132/27/18.73	(10)	Ledge
Ledge	3.4 exposed	60177	56/47/35.81	132/27/18.35	(11)	Ledge
Ledge	3.4 exposed	60178	56/47/30.33	132/27/19.05	(11)	Ledge
Ledge	2.6 exposed	60179	56/47/08.46	132/27/13.94	(9)	Ledge

* based on application of approved tides.

A new foul limit defined shoreward of the positions 56° 45' 29.57"N, 132° 31' 07.88"W, (fix 20525), and 56° 45' 31.11"N, 132° 31' 09.79"W, (fix 30356). chart foul area and rock (* (2)).

One manuscript rock at position 56° 46' 32.1"N, 132° 26' 36.15"W, was not found. A 10-minute search at low water was conducted over a 100 m area from the portrayed rock, with water visibility less than 2 meters. 25 m line spacing was also conducted over the area with no evidence of shoaling. The hydrographer recommends removing the manuscript rock. A Ledge was found near this position, chart ledge at position 60165, lat. 56/46/30.67 N, 132/26/41.05 W.

K. CROSSLINES ✓

Crosslines agreed within 1 meter with mainscheme hydrography, except in areas of steep bathymetry. There was a total of 25.3 nautical miles of crosslines, comprising 13.7 % of mainscheme hydrography.

L. JUNCTIONS See Ecsa Report, section L

This survey junctions H-10256, 1987, 1:40,000, to the west, and covers most of the 1:5,000 inset from that survey of the entrance channel. Soundings on this survey were found to be in good agreement based on predicted tides. Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after reduction to final vertical datum.

M. COMPARISON WITH PRIOR SURVEYS See Final Report, section M

Prior surveys H-1804, 1:80,000, 1887, H-1806, 1:80,000, 1887, H-10256, 1987, 1:40,000, and T-3686, 1:20,000, 1917 were compared with this survey. Based on predicted tides, the area outside of the bay agreed well with the prior survey results. The inside area had little information on the prior. A number of 1 to 4-meter boulders* were found in the entrance channel to Le Conte Bay. Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

* The notation "Bks" has been added to the Smooth Sheet in several areas where the side scan records depict these features.

N. ITEM INVESTIGATIONS ✓

* Several AWOIS items previously addressed on H10256 fall on the west side of the present survey. Present survey limits were extended by the Chief of Party during field operations.

* No AWOIS or Pre-Survey Items were within the survey limits. Concur

O. COMPARISON WITH THE CHART See Final Report, section O

Chart 17360, 1:217,828, 24th Edition, 7/9/94 is the largest scale chart covering the survey area. Comparison of soundings is described in Section M. The reef on the north side of the entrance channel is not adequately charted at 1:217,000 scale. Final sounding comparisons will be made at PHB after reduction to final vertical datum.

Dangers to Navigation ✓

One danger to navigation was reported to the Seventeenth Coast Guard District by the hydrographer.

One additional danger was reported to the Coast Guard, letter dated 2-5-98. Both reports are attached to this report.

P. ADEQUACY OF SURVEY ✓

Survey H-10751 is complete and adequate to supersede prior soundings and features in their common areas, and to depict bathymetry and foreshore features on the navigable sections of Le Conte Bay. It was not possible to meet standard line spacing in some areas of the survey i.e. near the glacier, because of the heavy ice pack. Concur

Q. AIDS TO NAVIGATION ✓

Concur

No aids to navigation were located within the survey boundaries. The US Coast Guard 17th District may install a fixed aid near the north shore of the entrance channel.

R. STATISTICS ✓

There were 20,082 selected soundings on this survey. Refer to the survey information summary, (attached) A for the balance of the statistical information.

S. MISCELLANEOUS ✓

Bottom samples were collected and sent to the Smithsonian outside the bay at spacing specified in the Project Instructions, but equipment failure prevented sampling at the requisite density inside the bay. Strong tidal currents were observed at the entrance to Le Conte Bay, between the Camp Island shoal and the reef north of the channel. Currents were observed to attain 6-8 knots. No unusual magnetic variations were found during this survey. Secchi disk observations were not performed on this survey because of the high concentrations of ice and glacial silt in the water.

As mentioned in section E., large icebergs were observed piling up on the banks and shoals and due to the strong current and iceberg interaction, many of the boulders mentioned in Section M are probably shifting position. Heavy concentrations of floating ice were observed through out the entire period of data

collection. The heavy ice pack, due in part to the spring thaw, hampered the ability to complete the necessary line spacing in all areas and to finish the survey near the glacier. It is not currently possible to survey or navigate the area left unsurveyed, however the glacier face is receding rapidly. As the glacier recedes, the upper inlet should be surveyed. When such survey is necessary, it should be performed in the fall when the ice pack is less. Concur

The following note should be added to the chart, "The entrance to Le Conte Bay is guarded north of Camp Island by a shallow entrance moraine covered with numerous boulders. This area has high currents and floating and grounded icebergs. The mariner should exercise caution and navigate the entrance at high water, slack current. Concur

T. RECOMMENDATIONS ✓

The hydrographer concurs with creating a 1:25,000 scale chart of Southern Frederick Sound. It is also recommended that the area in the vicinity of Coney Island be resurveyed at 1:10,000 to comply with the current practice of surveying an area at twice the scale of the chart.

U. REFERRAL TO REPORTS ✓

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

Title	Date Sent	Office
OPR-O170-RA Horizontal Control Report	August 1997	N/CS34
OPR-O170-RA 1997 Coast Pilot Report	August 1997	N/CS26
Project related data for OPR-O170-RA	August 1997	N/CS34

Respectfully Submitted,

Steven A. Lemke
Lieutenant, NOAA

Approved and Forwarded,

Alan D. Anderson
Captain, NOAA
Commanding Officer

Survey Information Summary

Project: OPR-O170-97 **Project Name:** LECONTE BAY

Instructions Dated: 2/4/97 **Project Change Info:**

Sheet Letter: A **Registry Number:** H-10751

Sheet Number: RA-10-12-97

Survey Title: LECONTE BAY AND APPROACHES

Data Acquisition Dates: **From:** 20-May-97 140 **To:** 27-Jun-97 178

Vessel Usage Summary

VESNO	MS	SPLITS	DEV	XL	S/L	DP	BS	DIVE
2121	15	6	1	4		2		
2122	2	3	3			3		
2123	3	2	2	2		3		
2124	7	9	4	2		4		
2125	3	1	1	1			2	
2126	6	4	2			1		

Sound Velocity Cast Information

Launch Table #	Ship Table #	Cast DN	Max Depth	Position	Applicable DN
1		141	341.7	56/47/36 132/26/44	140-150
2		142	110	56/44/30 132/32/00	140-150
3		178	353.1	56/47/25 132/26/48	151-178

Tide Zone Information

Zone #	Time Corr.	Height Corr.
SEA74	000 hr 24 min	X1.04
SEA75	000 hr 30 min	X1.04

Tide Gage Information

Tide Gage #	Gage Name	Installed	Removed
945-1422	LECONTE BAY	5/19/97	6/28/97
945-1335	COSMOS POINT	5/19/97	5/29/97
945-0460	KETCHIKAN	1/1/97	12/31/99

Statistics Summary

Type	Total:
BS	22
DEV	96.63
DP	71
MS	185.54
SPLIT	118.65
SSS1	11.39
XL	25.33

Percent XL: 13.7%

SQNM: 9.51

✓

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HDAPS Pre-Survey Program Version: 7.14        PRE-SURVEY: CONTROL STATION TABLE               13:21:01    7 A

Station No  ?
No  Type          Lat             Lon      H Cart    Freq    Vel Code  MM/DD/YY         Station Name

~~1       F 058:31:42.000 134:56:00.000    0    0      0.0       0      03/01/92  POUNDSTONE LIGHTLIST~~
~~2       F 058:31:42.860 134:56:03.600    0    0      0.0       0      03/01/92  POUNDSTONE HDAPS~~
~~3       F 058:30:16.042 134:52:09.349    2  250      0.0       0      03/20/96  GULL~~
~~4       F 058:17:04.466 134:44:25.552    0    0      0.0       0      04/05/97  COLT ISLAND LT LL#23792~~
~~5       F 058:10:55.499 134:42:02.205    0    0      0.0       0      04/05/97  GEORGE RK LT LL#23775~~
6       F 058:25:06.000 135:41:48.000    0  250      0.0       0      03/01/97  GUSTAVUS DGPR ID#892
~~7       F 058:12:16.067 134:38:44.450    6  250      0.0       0      03/01/97  SKULL DGPS~~
~~8       F 058:09:29.640 134:10:36.025    0    0      0.0       0      03/01/97  PT. ARDEN LT LL#23655~~
~~9       F 058:07:12.193 134:04:56.697    0  250      0.0       0      03/01/97  CIRCLE DGPS~~
10      F 056:44:16.476 132:33:58.946    0  250      0.0       0      03/01/92  CAMP RM 1
          000:00:00.000 000:00:00.000    0    0      0.0       0      03/01/92
          000:00:00.000 000:00:00.000    0    0      0.0       0      03/01/92
          000:00:00.000 000:00:00.000    0    0      0.0       0      03/01/92
          000:00:00.000 000:00:00.000    0    0      0.0       0      03/01/92
          000:00:00.000 000:00:00.000    0    0      0.0       0      03/01/92
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          000:00:00.000 000:00:00.000    0    0      0.0       0      03/01/92
          000:00:00.000 000:00:00.000    0    0      0.0       0      03/01/92
          000:00:00.000 000:00:00.000    0    0      0.0       0      03/01/92
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          000:00:00.000 000:00:00.000    0    0      0.0       0      03/01/92
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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
August 28, 1997

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

ADVANCE INFORMATION

Dear Sir:

The following danger to navigation should be included in the Local Notice to Mariners. No indication of ~~(disproved)~~ the feature appears on the chart. It was positioned by the NOAA Ship RAINIER while conducting a hydrographic survey of LeConte Bay, Alaska. It extends inshore to the north as shown on the attached chartlet.

FEATURE	DEPTH	LATITUDE (N)	LONGITUDE (W)	POSITION
REEF	EXPOSED 1 ¼ fm	56:45:18.4	132:34:53.9	20547

The above information affects chart 17360, 24TH ED., 94/07, 1:217,828, NAD 83. The height of the reef is referenced to the chart datum of Mean Lower Low Water with predicted tides.

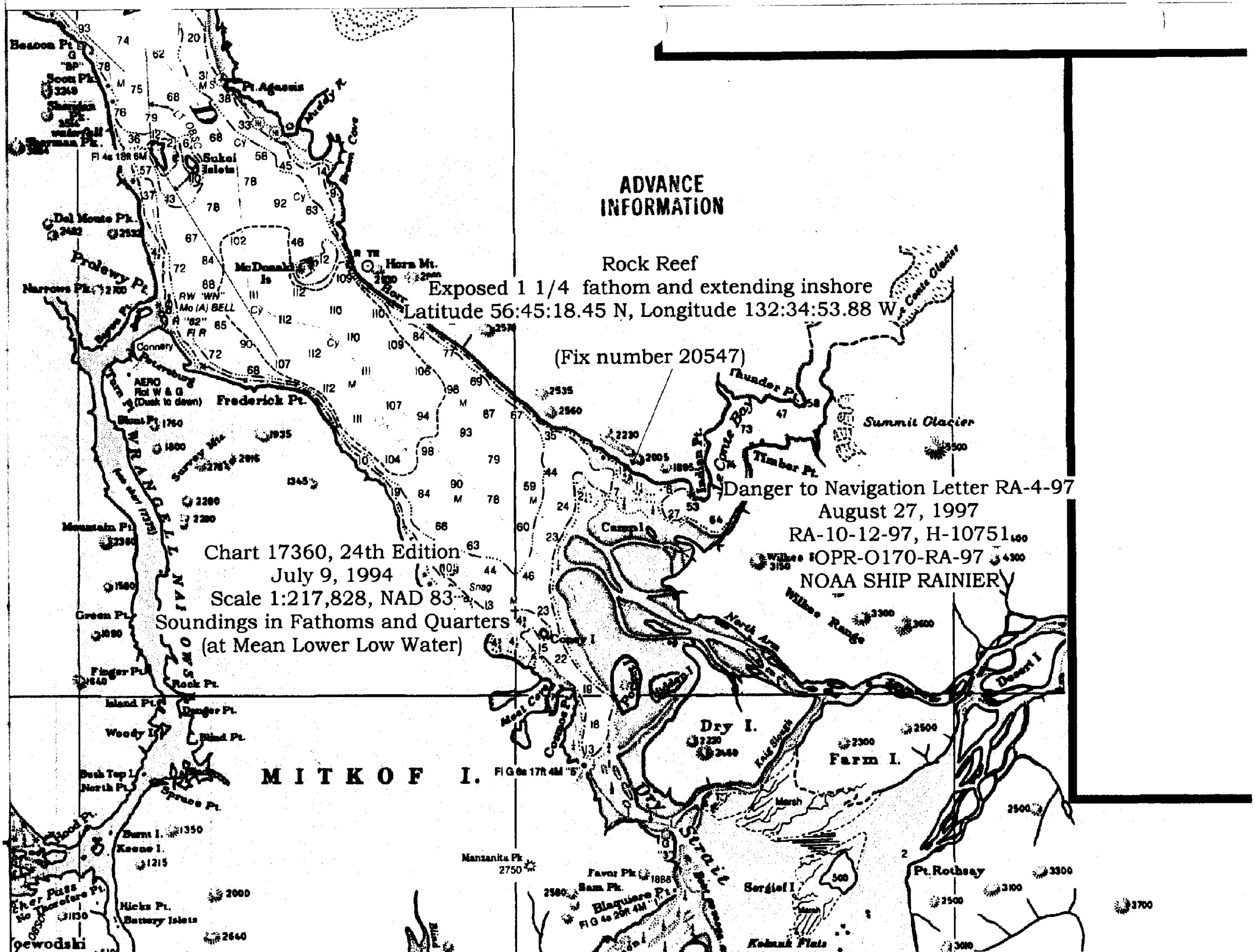
This is advance information subject to office review. Questions concerning this letter should be directed to the Chief, Pacific Hydrographic Branch, (206) 526-6835. Refer to survey project OPR-O170-RA-97 and Danger to Navigation message RA-4-97.

Sincerely,

Alan D. Anderson
Captain, NOAA
Commanding Officer

Attachment

cc: NIMA
PMC
N/CS261
N/CS34


ADVANCE
INFORMATION
Rock Reef
Exposed 1 1/4 fathom and extending inshore
Latitude 56:45:18.45 N, Longitude 132:34:53.88 W
(Fix number 20547)
Danger to Navigation Letter RA-4-97
August 27, 1997
RA-10-12-97, H-10751
OPR-O170-RA-97
NOAA SHIP RAINIER
Chart 17360, 24th Edition
July 9, 1994
Scale 1:217,828, NAD 83
Soundings in Fathoms and Quarters
(at Mean Lower Low Water)
MITKOF I.
Dry I.
Farm I.
Frederick Pt.
Prolewy Pt.
Horn Mt.
Summit Glacier
Thunder Pt.
Timber Pt.
Wilkes Range
North Arm
Pt. Rothsay
Sukoi Islets
Pt. Agassiz
Beacon Pt.
Scott Pt.
Sherman Pt.
Del Monte Pt.
Narrows Pk.
Mountain Pt.
Green Pt.
Finger Pt.
Island Pt.
Woody I.
Rock Pt.
Danger Pt.
Blind Pt.
Spruce Pt.
Burnt I.
Keene I.
Hicks Pt.
Battery Islets
Manzanita Pk
Favor Pk
Sam Pk.
Blaquiere Pt.
Sergief I.
Kohmuk Flats
Camp I.
Coney I.
Dry Strait

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
Seattle, Washington 98115-0070

February 12, 1998

ADVANCE INFORMATION

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

Dear Sir:

During office review of hydrographic survey H-10751, Alaska, Frederick Sound, Le Conte Bay and Approaches, an erroneous charted 5 fathom depth was found on Chart 17360, 30th Ed. March 1, 1997. Soundings from the present survey H-10751(1997), are between 73 to 75 fathoms.

It is recommended that the enclosed Report of 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) 526-6853.

Sincerely,

Kathy A. Timmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

Enclosure

cc: NIMA
NCS/261

REPORT OF DANGERS TO NAVIGATION

ADVANCE INFORMATION

Hydrographic Survey Registry Number: H-10751

Survey Title: State: ALASKA
Locality: FREDERICK SOUND
Sublocality: LE CONTE BAY AND APPROACHES

Project Number: OPR-O170-RA, NOAA Ship Rainier

Survey Date: MAY 20 - JUNE 27, 1997

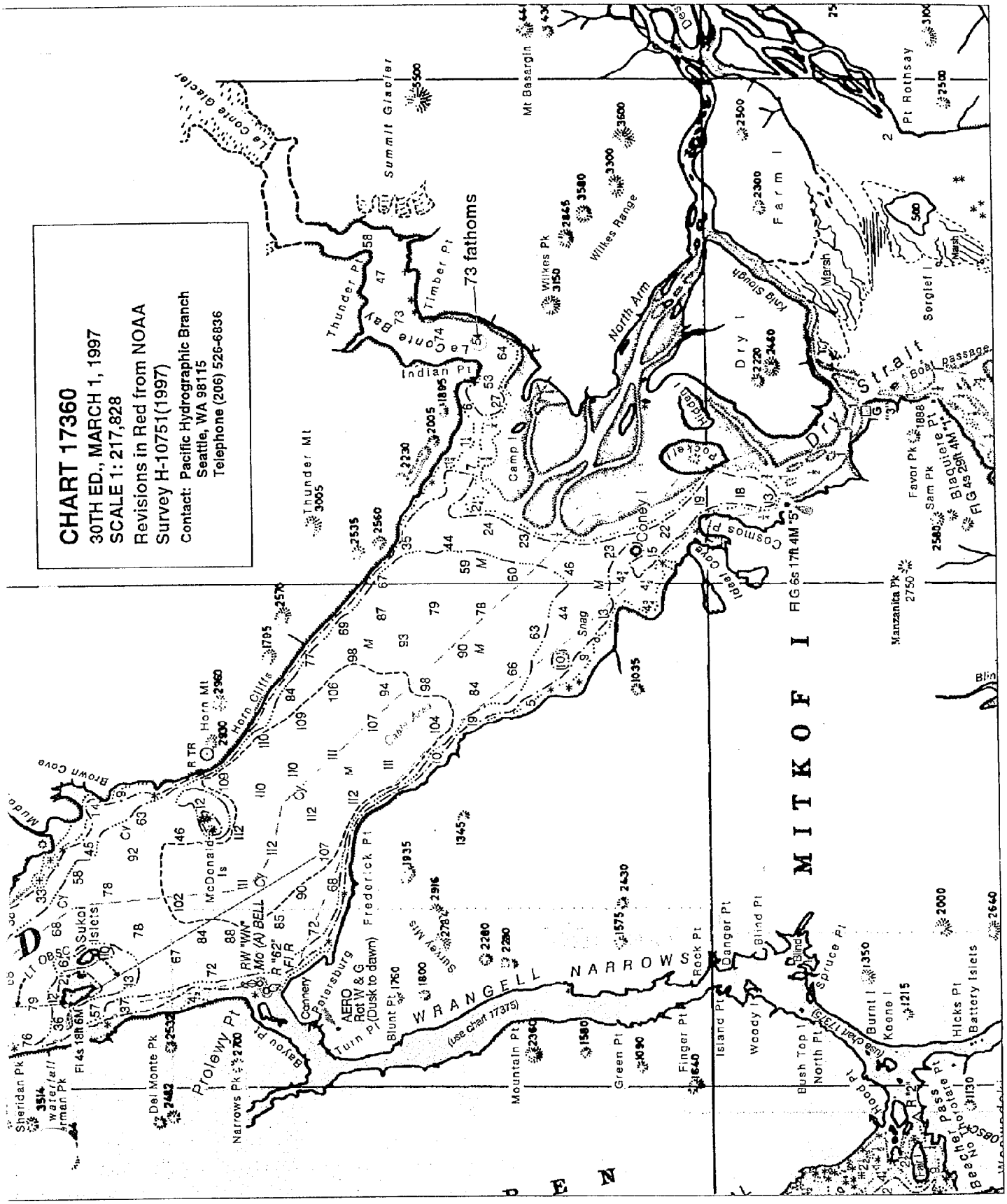
Soundings are reduced to Mean Lower Low Water using approved tides and are positioned on NAD 83.

Chart affected: 17360 30TH Edition/March 1, 1997, scale 1:217,828, NAD 83

DANGER TO NAVIGATION	LATITUDE(N)	LONGITUDE(W)
Erroneous 5 fathom depth	56/44/56.76	132/30/23.04
Survey depth of 73 fathoms	56/44/56.76	132/30/23.04

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

ADVANCE INFORMATION



APPROVAL SHEET

for

H-10751

RA-10-12-97

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.

Alan D. Anderson
Captain, NOAA
Commanding Officer

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 10, 1997

HYDROGRAPHIC BRANCH: Pacific

HYDROGRAPHIC PROJECT: OPR-O170-RA
HYDROGRAPHIC SHEET: H-10751

LOCALITY: Le Conte Bay, AK. (Sheet A)

TIME PERIOD: May 20 - June 27, 1997

TIDE STATION USED: 945-1335 Cosmos Point, AK.
Lat. 56° 39.8'N Lon. 132° 37.0'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.580 meters

TIDE STATION USED: 945-1422 LeConte Bay, AK.
Lat. 56° 47.3'N Lon. 132° 30.1'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.568 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SEA74, SEA75 & SEA76
Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (Meters), relative to MLLW and on Greenwich Mean Time.

CHIEF, TIDAL ANALYSIS BRANCH

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10751

Name on Survey	A ON CHART NO. 17560	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									1
CAMP ISLAND	X		X							2
FREDERICK SOUND (title)	X									3
FREDERICK SOUND	X		X							4
INDIAN POINT	X									5
LE CONTE BAY	X		X							6
LE CONTE GLACIER	X		X							7
THUNDER POINT	X		X							8
TIMBER POINT	X									9
										10
										11
-										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

APPROVED

FEB 2 1998

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27(H) (9-83) | U.S. DEPARTMENT OF COMMERCE | REGISTRY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

H-10751

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	3					
ENVELOPES						
VOLUMES						
CAHIERS						
BOXES				1		

SHORELINE DATA

SHORELINE MAPS (List): BP 160677 AND BP 160678 (CRS 000497, CRS 00597)

PHOTOBATHYMETRIC MAPS (List): NA

NOTES TO THE HYDROGRAPHER (List): NA

SPECIAL REPORTS (List): NA

NAUTICAL CHARTS (List): CHART 17360 30TH ED MARCH 1, 1997

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	157.5		157.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		10	10
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	157.5	10	167.5

Pre-processing Examination by M. Bigelow	*Beginning Date* 9/2/97	*Ending Date* 9/12/97
Verification of Field Data by R. Davies, R. Mayor	*Time (Hours)* 157.5	*Ending Date* 3/19/98
Verification Check by B. Olmstead	*Time (Hours)* 5	*Ending Date* 4/7/98
Evaluation and Analysis by R. Davies	*Time (Hours)* 10	*Ending Date* 3/24/98
Inspection by B. Olmstead	*Time (Hours)* 8	*Ending Date* 4/13/98

EVALUATION REPORT

H-10751

A. PROJECT

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

B. AREA SURVEYED

Survey H-10751 was conducted in Frederick Sound, Alaska. Specifically, the area is Le Conte Bay and it's approaches. This area is a boulder-strewn bottom that is associated with a glacial moraine from Le Conte Glacier.

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 mud, sand and shells. Depths range from 0 to 180 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) and MicroStation 95.

Digital data for this survey exists in the standard HPS format, that is a database format using the .dbf extension. In addition, the smooth sheet drawing is filed in the MicroStation format, i.e., dgn (extension). Copies of these files will be forwarded to the Hydrographic Surveys Division and a backup copy will be retained at PHB. Database records forwarded are in the Internal Data Format (IDF) and are in compliance with specifications in existence at the time of survey processing.

The drawing files necessarily contain information that is not part of the HPS data set such as geographic name 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 Guidelines 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

Side Scan Sonar was used on survey H-10751. Refer to section E of the hydrographer's report for set-up and operations. The evaluation report, section P discusses deficiencies requiring development of significant side scans sonar contacts.

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: Cosmos Point and Le Conte Bay, Alaska, gages 945-1335 and 945-1422.

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:	-1.208 seconds	(-37.359 meters)
Longitude:	6.113 seconds	(103.711 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. 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. 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.

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

DGPS performance checks were conducted in the field and found adequate. It was noted that Annette Island was used to collect a few positions early in the project without being monitored or checked with SHIPDIM. However, this station was not used to conduct hydrography on the present survey. 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 in brown shown on the smooth sheet is for orientation only, and originates with

Blueprints 160677 and 160678 (CRS 000497 and CRS 00597, USGS Quads). Shoreline from the two Quads were scanned into digital format and warped to best fit the charted CHAPP file. The USGS Quads shoreline was then digitized. This digitized file and the survey file were then merged during MicroStation processing.

There are numerous shoreline changes shown in dashed red on survey H-10751. These revisions are listed below and are considered adequate to supersede the photogrammetrically delineated shoreline.

Centered At	
Latitude(N)	Longitude(W)
56/45/00	132/31/15
56/45/21	132/31/11
56/45/36	132/31/14
56/46/39	132/30/54
56/46/54	132/30/24
56/47/09	132/27/15
56/47/21	132/27/17
56/47/33	132/27/20
56/46/12	132/29/00
56/44/45	132/29/27
56/48/47	132/26/30

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10751 junctions with the following survey:

Survey	Year	Scale	Area
H-10256	1987	1:40,000	To the West

The junction with survey H-10256 was not formally completed since this survey has been previously processed and forwarded for charting. The junction was made using a copy. Refer to section M of the Evaluation Report for additional information. There is good agreement between depth curves and sounding within the common area. An adjoins has been shown on the survey.

M. COMPARISON WITH PRIOR SURVEYS

H-1804(1887)	1:80,000
H-1806(1887)	1:80,000

Sounding agreement between the entrance of Le Conte Bay and Timber Point is good with the present survey depths shoaler between 1 and 8 fathoms. These differences are likely attributed to glacial activity and greater sounding coverage. Sounding agreement is poor north of Thunder Point, with differences of up to 90 fathoms. These differences may be attributed to greater sounding coverage, improved positioning and sounding methods and relative accuracy of the data acquisition techniques. However, there are a few differences where the prior survey depths are 33-90 fathoms shoaler. There were no indications of these depths found on the present survey and are likely attributed to poor positioning and or erroneous leadline values. These prior soundings are listed below.

Survey H-10751 is adequate to supersede the prior surveys within the common area.

Prior Depth	Latitude(N)	Longitude(W)	Present Depth
40 fathoms	56/45/05	132/30/04	75 fathoms
43 fathoms	56/45/43	132/29/47	75 fathoms
58 fathoms	56/47/17	132/26/24	150 fathoms

H-10256(1987) 1:40,000

The overlap with the present survey is three nautical miles and extends from the vicinity of Indian Point to approximately longitude 132/37/24W. Comparison with the 1987 survey reveals present survey depths are consistently shoaler from .3 - .5 fathoms. The present survey work provides a much more detailed ensonification of the bottom and should supersede the prior survey in the common area with the exception of the following item.

A rock, uncovers 8 ft at MLLW was brought forward to survey H-10751 from prior survey H-10256 at latitude 56/45/19N, longitude 132/34/54W.

Except for the one rock mention above, survey H-10751 is adequate to supersede the prior survey within the common area.

T-3686(1917) 1:20,000

This prior shoreline map covers the western portion of the present survey at the entrance of Le Conte Bay and extends to Indian Point and Camp Island. Comparison with the USGS Quads in this area reveals the same general shoreline configuration. However the shoreline on the 1917 topographic survey appears displaced by several hundred meters within the common area.

N. ITEM INVESTIGATIONS

There were no AWOIS items assigned to this survey.

O. COMPARISON WITH CHART

Survey H-10751 was compared with the following chart:

Chart	Edition	Date	Scale	Datum
17360	30th	March 1, 1997	1:217,828	NAD83

a. Hydrography

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

Survey H-10751 is adequate to supersede charted hydrography within the charted area.

b. Dangers To Navigation

One danger to navigation, a rock reef west of Indian Point on the northern approach to Le Conte Bay, was discovered during survey operations and reported to the USCG on August 28, 1997. An additional danger to navigation was found during office processing, regarding an

erroneous charted 5 fathoms depth. This was reported to the USCG, NIMA and N/CS 261 on February 12, 1998. Copies of both reports are attached.

P. ADEQUACY OF SURVEY

Except as noted below, hydrography contained on survey H-10751 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-10751 was acquired in the field in metric units while the smooth sheet for this survey was compiled in fathoms to conform to the sounding unit of the existing NOS nautical charts in 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 with the exception of the following. In the event that the field units submission of survey data will exceed four weeks from the completion of field work, the Chief of Party will submit a written explanation for the delay indication the anticipated transmittal date to the Chief of the appropriate processing section. Marine Center ships will forward their explanation through the Marine Center Director. Field work for survey H-10751 was completed on June 27, 1997 but not transmitted for office processing until September 2, 1997.

The determination of least depths from significant side scan sonar contacts requires either a diver investigation, other visual means and or a full echo-sounder investigation with both narrow and wide beams operating. There were several side scan sonar contacts that were not investigated during this survey. These were located between latitude 56/44/30Nto 56/45/30N and longitude 132/33/25W to 132/36/00W. Estimated heights from these contacts were compared to surrounding depths and found to be consistent except for the following.

Estimated Depth	Latitude(N)	Longitude(W)
1.0 *Rk*	56/44/40	132/33/40
1.8 *Rk*	56/44/43.5	132/33/53
3.8 *Rk*	56/44/43.5	132/33/33

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. It is recommended that more extensive side scan sonar coverage be conducted both east and west of the existing terminal moraine and approaches into Le Conte Bay. As mentioned in the hydrographer's report standard line spacing for hydrography was not accomplished north of Thunder Point, latitude 56/47/00N. It is recommended that additional work be done in this area as a low priority basis when the ice pack is greatly reduced.

U. REFERRAL TO REPORTS

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

Charles R. Davies
Cartographer

APPROVAL SHEET
H-10751

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: 5/20/98
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.

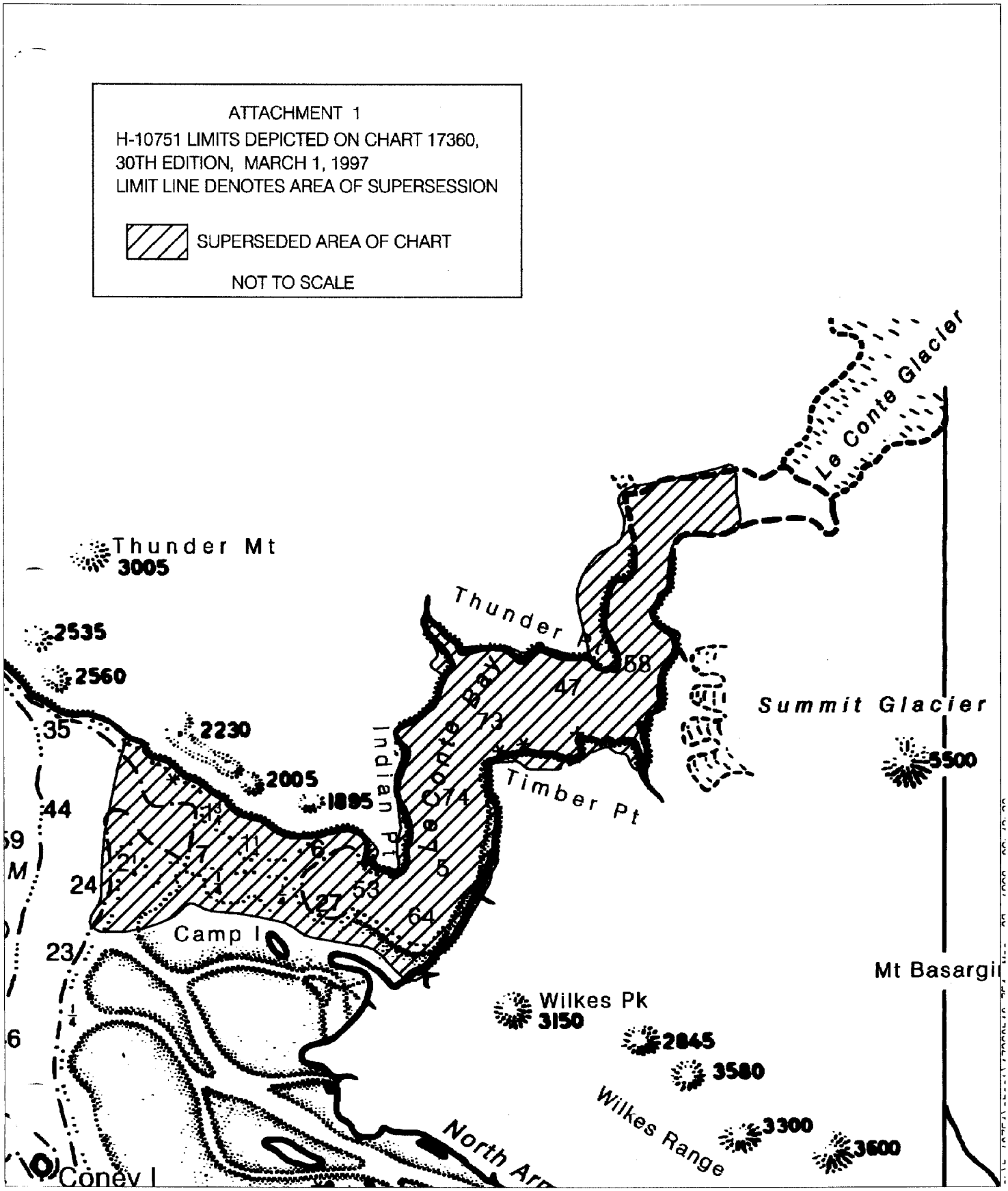
Kathy Timmons Date: 5/20/98
Kathy Timmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

****

Final Approval

Approved:

Andrew A. Armstrong III Date: May 20, 1998
Andrew A. Armstrong III
Captain, NOAA
Chief Hydrographic Surveys Division


ATTACHMENT 1
H-10751 LIMITS DEPICTED ON CHART 17360,
30TH EDITION, MARCH 1, 1997
LIMIT LINE DENOTES AREA OF SUPERSESSION
SUPERSEDED AREA OF CHART
NOT TO SCALE
Le Conte Glacier
Thunder Mt
3005
2535
2560
2230
2005
1895
35
44
24
23
Indian Pt
Le Conte Bay
Thunder Arm
Timber Pt
Summit Glacier
5500
Camp I
Mt Basargi
Wilkes Pk
3150
2845
3580
3300
3600
Wilkes Range
Coney I

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-10751

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
17377	3/20/98	Russ Davies	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via Full application of
			Drawing No. sndgs., curves and features from smooth sheet.
17377	10/21/98	Mark D. [illegible]	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via Full application of
			Drawing No. sndgs, curves and features from
			Smooth Sheet
17360	2/16/99	L. Bennett	Full Part Before After Marine Center Approval Signed Via Applied soundings
			Drawing No. tints & curves thru chart 17377.
			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
			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
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.