10370

Diagram 8202-3

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-5-1-91

Registery No. ... H-10370

LOCALITY

State ... Alaska

General Locality ... Cross Sound

Sublocality ... Elfin Cove

19 91

CHIEF OF PARTY
CAPT T.W. Richards

LIBRARY & ARCHIVES

DATE ... May 26, 1992

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

10370

REF: L-537(92)
PRODUCTS
17302
16760
17300
16016 N/C

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10370

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-5-1-91

State: Alaska

General locality: Cross Sound

Locality: Elfin Cove

Scale: 1:5000 Date of survey: March 24 - May 1, 1991

Instructions dated: February 21, 1991 Project No.: OPR-0106-RA

Vessel: RA-3, RA-4, RA-5, RA-6

Chief of party: CAPT Thomas W. Richards, NOAA

Surveyed by: LT G. Glang, LTJG D. Simmons, LTJG S. Lemke, LTJG Nelson

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

Graphic record scaled by: RAINIER Personnel

Graphic record checked by: RAINIER Personnel

Verification by: ~~Protracted by~~ B. Brown Automated plot by: PHS Xynetics Plotter

Evaluation by: ~~Verification by~~ C.R. Davies

Soundings in Meters ~~fathoms feet~~ at ~~MLW~~ MLLW

REMARKS: Time in UTC. Revisions and marginal notes in black were generated during office processing. Some separates are filed with the hydrographic data, as a result page numbering may be interrupted or non-sequential.

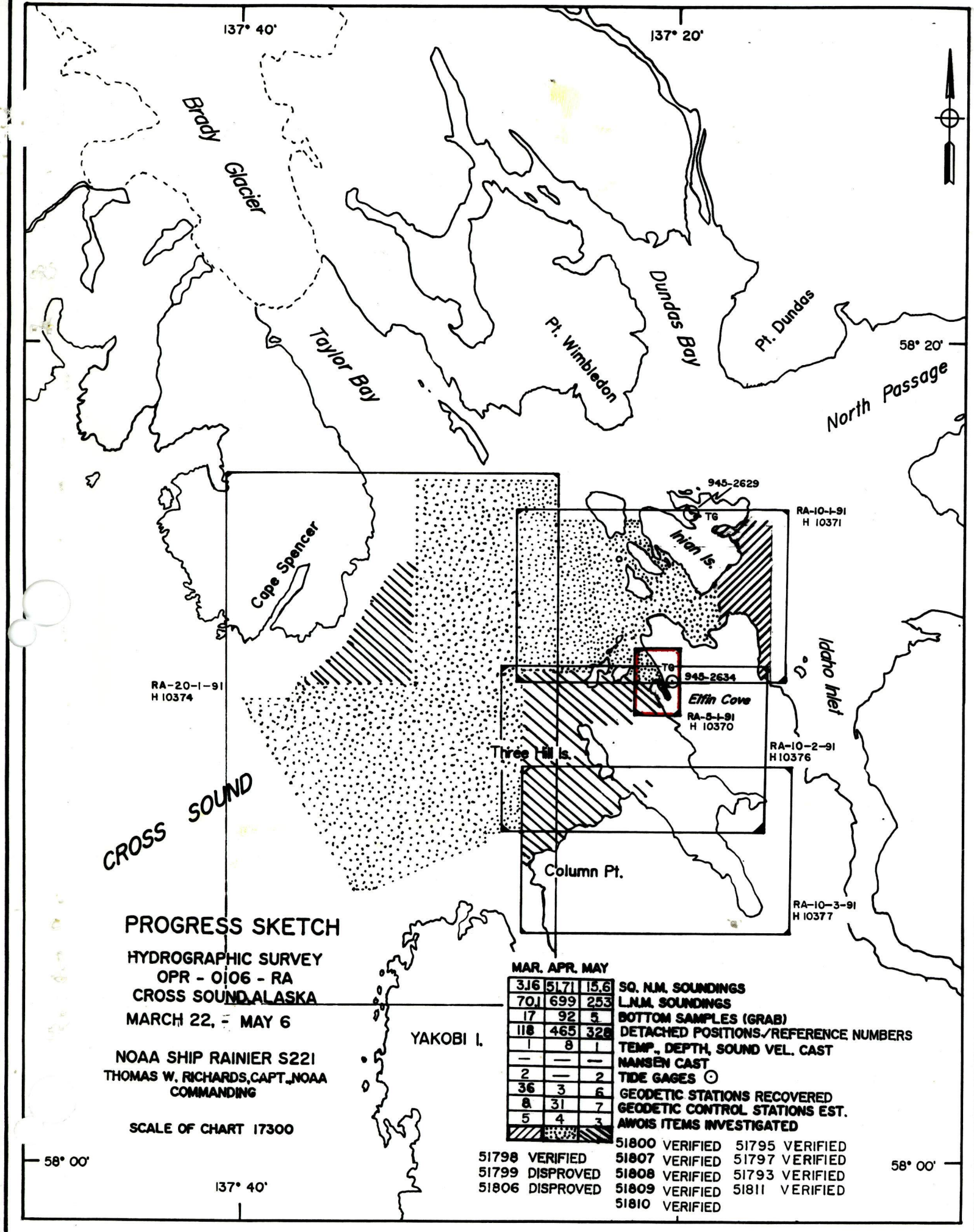
Surf and AWOIS chk
5/27/92 MCR

JC JAN 29 1997

RWW 9/30/93

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

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



MAR.	APR.	MAY	
3.16	51.71	15.6	SQ. N.M. SOUNDINGS
70.1	699	253	L.N.M. SOUNDINGS
17	92	5	BOTTOM SAMPLES (GRAB)
118	465	328	DETACHED POSITIONS/REFERENCE NUMBERS
1	8	1	TEMP., DEPTH, SOUND VEL. CAST
—	—	—	NANSEN CAST
2	—	2	TIDE GAGES ⊙
36	3	6	GEODETIC STATIONS RECOVERED
8	31	7	GEODETIC CONTROL STATIONS EST.
5	4	3	AWOIS ITEMS INVESTIGATED

51798 VERIFIED
51799 DISPROVED
51806 DISPROVED

51800 VERIFIED 51795 VERIFIED
51807 VERIFIED 51797 VERIFIED
51808 VERIFIED 51793 VERIFIED
51809 VERIFIED 51811 VERIFIED
51810 VERIFIED

Descriptive Report to Accompany Hydrographic Survey H-10370

Field Number RA-5-1-91
Scale 1:5,000
March-May 1991

NOAA Ship RAINIER
Chief of Party: Captain Thomas W. Richards

A. PROJECT

This basic hydrographic survey was completed in Cross Sound, southeastern Alaska, as specified by Project Instructions OPR-O106-RA dated February 21, 1991. This survey is designated Sheet C on the sheet layout dated June 1, 1990.

This survey is one in a series that will provide contemporary hydrographic data for updating existing nautical charts and planned larger scale chart coverage of the Cross Sound area. There have been numerous reports of shoals, rocks, and inaccurately charted depths and landmarks from the Southeastern Alaska Pilots' Association and NOAA field personnel. Troller fisherman have requested a detailed survey to aid in preventing the loss of trolling gear. In 1959, the U.S. Coast and Geodetic Survey Ship PATTON reported that survey investigations in several areas revealed depths significantly shoaler than those charted.

B. AREA SURVEYED

The survey is located in southeastern Alaska, 60 NM west of Juneau, and encompasses Elfin Cove. The north-south boundaries are 58°12'07"N and 58°11'03"N, respectively. The eastern limit is 136°20'15"W and the western limit is 136° 22'02"W. Data acquisition was conducted from March 24 through May 1, 1991 (DN 083 to 121).

C. SURVEY VESSELS

All data were acquired by NOAA Ship RAINIER and the four automated survey launches, shown below:

Vessel	EDP No.	Operation
RAINIER	2120	Velocity Casts
RA-3	2123	Hydrography Shoreline Verification
RA-4	2124	Hydrography Shoreline Verification
RA-5	2125	Hydrography Shoreline Verification Bottom Samples

RA-6 2126 Hydrography
Dive Operations

In addition to the survey vessels listed above, two 17' Boston Whalers, a 19' Mon Ark, and a 12' Zodiac were used to support operations for horizontal control, tide station installation and maintenance, range/azimuth hydrography, and diving.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Data acquisition and processing were accomplished with Hewlett-Packard (HP) 340M workstations and the following HDAPS programs:

Program Name	Version	Date Installed
SURVEY	5.00 (5.11)	20 Mar 1991 (19 Apr 1991)
POSTSUR	5.00 (5.10)	20 Mar 1991 (19 Apr 1991)
PLOTALL	1.80 (5.91)	20 Mar 1991 (19 Apr 1991)
POINT	1.30	20 Mar 1991
BACKUP	2.00	20 Mar 1991
CONVERT	2.40	20 Mar 1991
PRINTOUT	2.30	20 Mar 1991
DIAGNOSTIC	2.70	20 Mar 1991
INVERSE	1.30	20 Mar 1991
INSTALL	2.00	20 Mar 1991
BASELINE	1.10	20 Mar 1991
QUICK	1.10	20 Mar 1991
LISTAWOIS	1.20	20 Mar 1991
LOADNEW	1.30	20 Mar 1991
REJECT	1.00	20 Mar 1991
CARTO	1.20	20 Mar 1991
Vers	NA	20 Mar 1991
BACKOLD	1.10	20 Mar 1991
NEWCONT	1.10	20 Mar 1991
DISC_UTIL	1.00	20 Mar 1991
MB	0.00	20 Mar 1991
HJ	0.00	20 Mar 1991
AUTOST	1.00 (1.10)	20 Mar 1991 (19 Apr 1991)
GLOBAL	1.10	20 Mar 1991
MAKEFIX	1.00	20 Mar 1991
BIGABST	1.01 (1.11)	20 Mar 1991 (19 Apr 1991)
REAPPLY	1.01 (1.30)	20 Mar 1991 (19 Apr 1991)
PREDICT	1.10	20 Mar 1991
READPROJS	1.04 (1.06)	20 Mar 1991 (19 Apr 1991)
SOFTCHECK	1.00 (1.10)	20 Mar 1991 (19 Apr 1991)
HPRAZ	1.10 (1.21)	20 Mar 1991 (19 Apr 1991)
FILESYS	2.10 (2.11)	20 Mar 1991 (19 Apr 1991)
DP	1.10	20 Mar 1991
MANU_DATA	1.10	20 Mar 1991
RAMSAVER	1.00	20 Mar 1991
GRAPHEDIT	NA	20 Mar 1991
EXCESS	NA	20 Mar 1991

The HDAPS REAPPLY program (ver 1.30) was modified by RAINIER in consultation with the HDAPS office on May 20, 1991. After running REAPPLY, most soundings on contemporary survey H-10374 did not have sound velocity correctors applied. Part of the problem may have been that a few soundings were greater than the last depth corrector in Velocity Table 2.* In addition to modifying the program, the table was extended to 350m. Although the soundings from this survey appear to have all of the sound velocity correctors applied, the original version of REAPPLY should be examined thoroughly by the HDAPS office. REAPPLY program has been modified since this survey.

Velocity corrections were determined using:

Program Name	Version	Date Installed
VELOCITY	1.11	09 Mar 1990

The new HDAPS EXCESS and HPRAZ programs were used in processing and range/azimuth hydrography respectively. The range/azimuth program, HPRAZ, worked well and was used for all range/azimuth hydrography. The PC-DAS system was not used in this project. EXCESS worked well and saved considerable time in processing the surveys. There will be a written evaluation of EXCESS in June, 1991.

E. SONAR EQUIPMENT ✓

Side scan sonar was not used during this survey.

F. SOUNDING EQUIPMENT ✓

All survey launches were equipped with the Raytheon DSF-6000N echo sounders shown below. The echo sounders were operated in the HIGH + LOW (HIGH DIGITIZED) function, using manual gain controls on both high and low frequencies to obtain the best analog trace. Soundings were recorded in meters and tenths of meters. Six-meter bar checks were conducted and recorded daily, using both the LOW and the HIGH + LOW (HIGH DIGITIZED) functions. The echo sounders were operated in accordance with the Provisional Instructions "Raytheon DSF-6000N Echo-Sounder Operating and Processing Instructions", dated July 5, 1983, and the Field Procedures Manual for Hydrographic Surveying (FPM).

Raytheon DSF-6000N Echo Sounders

Vessel	Serial No.	DN
2123	A117N	083-112
2124	B046N	092-101
	A103N	112, 113-121
	~~B046N~~	~~121~~
2125	B048N	107-113
2126	A114N	106-111

* Filed with the hydrographic data.

The echo sounders were continuously monitored during data acquisition. All sounding data were scanned at least two times, to ensure all significant peaks were inserted, and to verify the digitized depths. While running over steep or irregular areas, the echo sounders sometimes failed to track properly. Running at minimum speeds usually alleviated this problem, but marginal analog traces could not always be avoided.

Diver obtained depths were determined with a 3D Instruments pneumatic depth gage S/N 8504192N.

G. CORRECTIONS TO ECHO SOUNDINGS

Corrections to echo soundings were determined for static draft, heave, velocity of sound through water, settlement and squat, and predicted tides. Sounding correctors apply to both narrow and wide beams of the DSF-6000N echo sounder. Supporting data and computations for all corrections to echo soundings, except heave, are included in the Spring 1991 Correctors to Echo Sounding Data Package for OPR-O106-RA.

Sound Velocity

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

	Cast No.	Deepest Depth (m)	DN	Geographic Position	DAYS
TABLE #1	1	128.1	086	58°13'34"N, 136°16'22"W	81-88
TABLE #2	2	250.9	097	58°14'00"N, 136°24'00"W	91-102
	~~5~~	~~78.3~~	~~107~~	~~58°11'44"N, 136°21'53"W~~	
TABLE #3	4A	296.9	109	58°07'06"N, 136°34'12"W	105-127
	~~4B~~	~~52.5~~	~~109~~	~~58°07'06"N, 136°34'12"W~~	
	~~5A~~	~~102.4~~	~~116~~	~~58°10'39"N, 136°21'31"W~~	
	~~5B~~	~~111.3~~	~~116~~	~~58°10'39"N, 136°21'31"W~~	
	~~6~~	~~205~~.3	~~124~~	~~58°09'14"N, 136°26'20"W~~	

Sound velocity casts numbered 1, 2, 3, 4A, 5A, and 6 were acquired with an SBE SEACAT Profiler, S/N 281, which was calibrated at the Northwest Regional Calibration Center (NRCC) in Bellevue, WA, on January 21, 1991. Sound velocity casts numbered 4B and 5B were acquired with an AML SVP, S/N 3042, which was calibrated at NRCC on March 11, 1991. As a system check, Cast Nos. 4A (SEACAT) and No. 4B (AML) were performed on the same day, as were Nos. 5A (SEACAT) and 5B (AML). The casts showed excellent agreement both times; therefore, Cast Nos. 4B and 5B were not applied to echosoundings. Cast Nos. 1, 2, and 4A were used to generate Sound Velocity Corrector Tables No. 1, 2, and 3

respectively. Cast Nos. 3, 5A, and 6 showed no significant change in water column characteristics and weren't used to generate correctors.

Velocity correctors were computed using the PC program VELOCITY in accordance with Hydrographic Survey Guideline (HSG) #69. A printout of the Sound Velocity Corrector Tables used in the HDAPS Post Survey program are included in the Spring 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Static Draft ✓

For all launches, the distance from the transducer face to the gunwhale was measured with a large metal square. Static draft measurements were then determined by dropping a leadline from the gunwhale to the water and subtracting this distance from the distance measured with the square. The measurements from the gunwhale to the waterline were conducted with the fuel tanks averaging 3/4 full and three people aboard. A transducer depth of 0.6 meter was determined for all launches on March 23-25, 1991. This transducer depth agrees with the launches' historical records.

Settlement and Squat ✓

Settlement and squat correctors were determined for Vesnos 2123, 2124, 2125, and 2126 in Shilshole Bay, WA, on February 25, 26, and March 12, 1991. All tests were conducted over a hard bottom in depths well exceeding 7 times the vessels' drafts. Both sea and wind were calm. Observations were made through a Zeiss Ni2 leveling instrument (S/N 103453) to a rod held vertically on deck, directly over the transducer. Correctors were computed in accordance with Hydrographic Manual 4.9.4.2, using FPM Fig. 2.2 and 2.3, and are included in the Spring 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Heave ✓

Corrections for heave were applied while scanning echograms. The scanning technique used in comparing the analog trace with the digital record eliminated significant fluctuations resulting from sea action.

Pneumatic Depth Gage ✓

The Pneumatic Depth gage was calibrated March 3, 1991, by the Pacific Operations Group (N/OMA1214). In addition, field systems checks were performed via comparison with diver depth gages each time the pneumatic gage was used. Calibration data and correctors applied to the pneumatic depth gage are included in the Spring 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Bar Check Lines ✓

Bar check lines were calibrated by RAINIER personnel during January 1991 at PMC. Calibration forms are included in the Spring 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Tide Correctors ✓

Tidal zoning and correctors applicable to predicted tides for the Sitka, Alaska, reference station (945-1600) were provided on the Tidal Zoning Chart accompanying the Project Instructions and are shown below:

	Zone	Time Correctors	Range Ratio
3.	West from a line defined by the points, 58°18'13"N, 136°22'25"W, 58°12'55"N, 136°21'40"W to a line defined by the points, 58°14'40"N, 136°34'15"W 58°07'18"N, 136°26'45"W	Direct	x1.13

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

Tide gages were installed and maintained by RAINIER personnel at stations in Inian Cove (945-2629) and in Elfin Cove (945-2634). The tide station descriptions, field tide records, and Field Tide Notes have been forwarded to N/OMA1212 in accordance with HGS 50 and FPM 4.3. Requests for approved tides have been forwarded to N/OMA12. Copies of the Field Tide Notes and the request for approved tides are included in Appendix V. ✳

H. CONTROL STATIONS ✓

Geographic positions for all control stations are based on the North American Datum of 1983 (NAD83) and the Geodetic Reference System 1980 Ellipsoid.

A listing of the geodetic stations used to control this survey is included in this report.

Positions for all existing stations are from the NGS data base. All existing stations were recovered in accordance with methods stated in Section 5.2.4 of the Field Procedures Manual. New stations were positioned via traverse methods and Global Positioning System (GPS) to meet third-order class I standards. Further information can be found in the Spring 1991 Horizontal Control Report for OPR-0106-RA.

I. HYDROGRAPHIC POSITION CONTROL ✓

Method of Sounding Position Control ✓

Soundings were located using the Motorola Mini Ranger Falcon 484 microwave positioning system in multiple-range and manual range/azimuth modes.

Accuracy Requirements/Problems ✓

Accuracy requirements specified in the Hydrographic Manual and in FPM 3.1.3.1 were generally met. Under some wind and sea conditions null zones were experienced. When this problem was supected, the R/T mast height or shore transponder height was adjusted to improve control. When maximum residuals exceeded the specified limits, OIC's deselected

✳ Filed with the hydrographic data

the station(s) with the highest residual value and were able to continue hydrography. On occasion, ECR's and maximum residuals persistently exceeded the specified limits. When this happened, the data was generally rejected and re-run with different control.

Hydrography collected close inshore was frequently conducted with one or more LOP's blocked, resulting in high ECR's and/or maximum residuals. In these cases, OIC's generally annotated the raw master printout (RMPO). If the data plotted on track and sounding intervals appeared correct, the data was retained. Some data was acquired with only two LOP's because stations were blocked or deselected. In these cases, if the systems check at day's start included additional LOP's and acceptable maximum residuals, and ECR's were acceptable throughout the data collection period, no further system checks were performed at day's end.

Equipment ✓

A Wild T-2 theodolite was used for manual range/azimuth observations in conjunction with Motorola Mini Ranger (M/R) or Hewlett-Packard electronic distance measuring instrument (EDMI) ranges. Serial numbers for all positioning equipment are annotated on the RMPO for each day of hydrography. A complete list of all electronic equipment serial numbers is included in the Spring 1991 Electronic Control Data Package.

Calibrations & Systems Check Methods ✓

Baseline calibrations were conducted in accordance with FPM 3.1.2.1 and 3.1.3.2. On February 5-6 (DN035-DN036), and on March 6 (DN065) calibrations were conducted at the SANDPOINT BASELINE over a known distance of 1058.1876 m. Two shore transponders (codes A&E) were returned to PMC for repairs during this project. Replacement transponders were calibrated on April 14 (DN104) and again on April 26 (DN116) over a measured range of approximately 1265m from VESNO 2123 (in davits) at the U.S. Coast Guard Pier in Juneau to the Union Oil dock across the harbor. The range was measured by EDMI and was checked frequently during the calibrations. The calibrations on April 26 were conducted in order to improve the quality of the data for the replacement codes because of unusually high minimum acceptable signal strengths (MASS) found during the April 14 calibrations. The high MASS problem was later resolved by increasing the allocated space on floppy disk media to allow more ranges to be processed by the HDAPS baseline program. Calibration data and a description of the baseline is included in the Spring 1991 Electronic Control Data Package.

In accordance with FPM 3.1.3.3, formal system checks were not documented for multiple LOP hydrography. Data collected with two LOP's was always bracketed by multiple LOP data acquired with ECR and maximum residuals within acceptable limits, which served as critical system checks. Critical system checks for range-azimuth hydrography were by one of three methods: 1) a multiple LOP system check by observing the range-azimuth M/R code in conjunction with two or more M/R codes (this was the preferred method); 2) a M/R to EDMI distance comparison in which the average of 10 M/R ranges (corrected) are compared to the average of 10 EDMI observations (the EDMI was set up next to the M/R and the retro prism was placed on the R/T to minimize the difference in measured distances); 3) a M/R to computed distance comparison in which the distance between two known geographic positions (one being the shore transponder location) was computed, using the HDAPS inverse utility, and compared to the average of 10 M/R observed distances (corrected for antenna offset from the geographic position). In addition, azimuth checks for range-azimuth hydrography were performed by sighting on another third-order control

station. The check was considered satisfactory if the azimuth difference was less than 30 seconds of arc.

Other Factors ✓

Antenna offset and layback correctors were applied via HDAPS tables.

J. SHORELINE See Evac Report, section 2

One shoreline map (T-sheet) was used to transfer shoreline detail to the final field sheet. Elfin Cove shoreline originates from a 1:5,000-scale enlargement of TP-01331 (1:10,000; NAD83). Aerial photography was flown in June 1985, and the T-Sheet was compiled in December 1988. Final Review was in January 1989.

Shoreline verification was conducted near lower low water in accordance with FPM 7.1.

The large number of new features found during this survey indicate that T-sheet photography was flown during a stage of tide higher than MLLW. Some T-sheet rocks were found to be isolated boulders, reefs, islets or high points within foul areas or ledges in the intertidal zone, and posed no danger to navigation. No significant or prominent alongshore rocks were found at those T-sheet rock locations. Alongshore T-sheet rocks were retained and shown on the final field sheet, to represent the nature of the area.

Detached positons (DPs) were recorded on the master printouts or in the sounding volume and corresponding 1:5,000 scale photocopies of the T-sheet, which are included with the master printouts. A detailed 1:5,000-scale paper plot showing all DPs and notes relating to each feature is included with the sheets submitted with this survey. The HDAPS DP Program requires that cartographic codes be assigned to all DPs. These cartographic codes were not plotted because the majority of DPs describe features that are offset slightly from the DP. Position numbers for all DPs are plotted on the DP overlay. Sequential reference numbers were used in place of DPs where shoreline features coincided with those depicted on the T-sheets. All reference data were recorded in the sounding volume. Heights are recorded in meters and are corrected to predicted MLLW. Kelp symbols are shown on the FFS in areas where kelp was visible.

Disprovals ✓

The vicinity of a charted rock at 58°11'49"N, 136°20'51"W was inspected (Pos.No. 6005) at predicted lower low water, and the rock was not seen. Water visibilty was 1 to 2 meters. The area searched, both visually and with echo sounder for 15 minutes, was within a 25 m radius of the described T-sheet rock position, and extended 50 meters to each side along the shoreline.

Recommendation: The hydrographer recommends that shoreline detail from this survey be used to supersede prior shoreline information. Do not concur, several rocks were transferred from prior survey H-6336, see Evac Report, section 6.

New Features ✓

The following are significant new features found during shoreline verification. These features are located in navigable areas and were not depicted on the T-sheet. All new features are shown on the FFS.

Position No. 2004 describes a rock that bares 0.9 7 m at MLLW at 58°11'35.56"N, 136° 6°20'38 7.56"W. The item is not depicted on the T-sheet and does not appear on any prior survey.

Position Nos. 2023, 2024, 2025, and 2026 describe rocks closely situated that bare 2.6 5, 1.0 0.8m, 2.2m, and 0.7 5m at MLLW, respectively in the vicinity of 58°11'30"N, 136°20'34"W. One rock is depicted on survey H-6336 (1:5,000; 1938) with a dashed boundary line behind it denoting rocks in this area. The items are not depicted on the T-sheet.

Position No. 2021 describes a rock that ~~bares 1.6 m~~ covers 0.1m at MLLW at 58°11'29"N, 136°20'30"W. The item is not depicted on the T-sheet.

Some of the shoreline changes reflected on the FFS may be explained by the six years that have elapsed since the photos were taken. Also, Elfin Cove is populated year round, and experiences frequent cultural changes. Many natural features were not shown, however, probably because they were covered at the stage of tide when the photographs were taken.

Recommendation: The hydrographer recommends that shoreline detail as shown on ~~FFS~~ smooth sheet be used to supersede prior shoreline information. Concur

K. CROSSLINES ✓

A total of 7.0 nautical miles of crosslines were run perpendicular to mainscheme lines, representing 17.8% of the mainscheme hydrography. Crossline soundings agree to within one meter with mainscheme soundings, except in areas of steep bottom topography where agreement is within 4 meters. The vessel acquiring crossline data did not always collect the corresponding mainscheme data. Agreement between soundings acquired by different echo sounders in a common area is as stated above.

L. JUNCTIONS ✓

The survey junctions with contemporary survey H-10371 (1:10,000; 1991) to the north at 58°12'07"N and to the west at 136°22'02"W, and will junction with survey H-10376 (incomplete, 1:10,000; 199~~1~~2) to the west at 136°22'02"W, and to the south at 58°11'03"N . No irregularities were found when comparing soundings and depth contours. Agreement between overlapping soundings is excellent, with all junction soundings agreeing to within two meters.

M. COMPARISON WITH PRIOR SURVEYS See Form Report, section 6

This survey was compared to the following prior surveys:

H-2559 (1:10,000; 1901):

A 1:10,000-scale copy of H-2559 was compared to this survey. The general agreement of depths and contours is good, although some soundings were illegible, particularly at the inshore areas. Those soundings that were legible in the deeper areas agreed to within 4 meters.

H-6336 (1:5,000; 1938):

A 1:5,000 scale copy of H-6336 was compared to this survey. The overall agreement is within 4 m. Soundings in Elfin Cove and approaches on the present survey are consistently 1 m (1/2 fathom) shoaler than depths found on H-6336. Significant changes in cultural details are also apparent on the present survey.

Recommendation: The hydrographer recommends the soundings and least depths acquired from this survey be used to supersede those of H-6336 within their common areas. Do not concur
Ten rocks were brought forward from survey H-6336 to survey H-10370.

N. COMPARISON WITH THE CHART See Final Report, section 7

This survey was compared to a 1:5,000-scale enlargement of the Elfin Cove inset from NOS chart 17302, 15th Edition, May 20/89, 1:80,000 (NAD83), and with a 1:10,000-scale enlargement of the surveyed area extending beyond the limits of the Elfin Cove inset.

Comparison of Sounding Features ✓

Overall agreement between this survey and the chart is good outside of Elfin Cove, with agreement to within 3 meters. Inside Elfin Cove, however, agreement is only fair, with depths from the present survey consistently 1 m (1/2 fm) shoaler. Other discrepancies were found near shoal areas, where the present survey revealed depths shoaler than charted. The most probable cause for these discrepancies is wide line spacing on the prior survey and isostatic rebound. Additional causes may also be the techniques used for positioning and sounding during the prior survey, and the irregularity of the bottom. Significant discrepancies include:

A charted depth of 6 fm (11.0 m) outside of Elfin Cove at 58°11'51.5"N, 136°21'16.8"W corresponds to an ~~8.0~~ 7.8 m depth (Pos.No. 4079+3) from this survey at 58°11'51.3"N, 136°21'16.5"W. The depth from this survey was developed using 5 m line spacing.

A charted depth of 1 3/4 fm (3.2 m) outside Elfin Cove at 58°11'55.1"N, 136°21'18.5"W corresponds to a depth of 2.6 9 m (Pos.No. 8000) at 58°11'54.3"N, 136°21'18.6"W, determined by dive investigation.

Two shoal areas and features were determined by divers least depth:

0.~~3~~ 4 m at 58°11'43.5"N, 136°20'48.4"W (Pos No. 8003) (subm pile)
4.~~6~~ 8 m at 58°11'44.2"N, 136°20'48.9"W (Pos No. 8004) (obstr, concrete block)

Each echo sounder depth considered for a dive operation was assigned a dive site number; these numbers, along with the least depths originally investigated, appear on the dive investigation forms. The forms contain detailed descriptions and sketches of each feature and are included within the accordion files submitted with this survey. In cases where the echo sounder depth was shoaler than the divers' least depth, both depths were retained and are shown on the final field sheet.

Recommendation: The hydrographer recommends sounding data from this survey be used to update the chart. Concur, see Final Report, section 7.a.

Comparison of Non-Sounding Features ✓

Comparison of charted shoreline with this survey is discussed in Section J.

AWOIS Items

Six AWOIS items were assigned on this survey. The areas were thoroughly investigated by visual observations with the following results:

AWOIS No. 51800: A submerged rock covered by two feet of water was reported in Elfin Cove about 50 yards SE of Elfin Cove Light. RAINIER's investigation for this survey revealed a rock, described by Pos. No. 2107 and Ref. No. 5-6, with a depth 1.4m at MLLW at 58°11'40.4"N 136°20'56.8"W. The rock is marked by a pipe structure which was once Daybeacon #3. The daybeacon was apparently struck by a log being towed into Elfin Cove, according to a local fisherman, and as a result the pipe is listing and sans daymark. A floating aid, Buoy #3, is now chained to the pipe, but the hydrographer expects that Daybeacon #3 will eventually be reinstalled and repositioned by the Coast Guard.

Recommendation: The hydrographer recommends retaining the charted danger curve and concur rock notation as shown on the ~~Final Field Sheet~~ CHART. See Evaluation Report, section 7.2.

AWOIS No. 51807: An unidentified obstruction was observed on aerial photographs taken in 1985. RAINIER's investigation on DN 084 revealed a section of floating pier beached near the HWL at 58°11'17.5"N 136°20'24.3"W, and a piling also near the HWL at 058°11'17.8"N, 136°20'24.0"W (DN 084, Pos. No's. 2015 and 2016, respectively). The exact position of the obstruction, as listed in the AWOIS description, was bare when investigated. Water visibility was 3 m. The hydrographer searched this area extensively at a stage of tide near MLLW, and found no other obstructions in the water or on land.

Recommendation: The hydrographer recommends that AWOIS listing No. 51807 be updated. The item is not a danger and should not be charted. Remove charted obstn from the chart, as they fall on the HWL.

AWOIS No. 51808: An unidentified obstruction was observed on aerial photographs taken in 1985. RAINIER's investigation for this survey found no obstruction within the search radius. On DN 084, an investigation was made at a stage of tide near MLLW, and the position given in the AWOIS description plotted near the LWL. A thorough visual and echosounder search was made in the subject area. Visibility was clear to the bottom throughout. Several old boats are beached in the area, misidentified as marine railways on T Sheet (see Ref.No. 3-1), but are not permanent, according to the owner.
AWOIS 51808 located at lat. 58/11/20.9 N, long. 136/20/16.0 W

Recommendation: The hydrogapher recommends that AWOIS No. 51808 be updated, and data acquired from this survey be used to update the chart. Remove charted obstns from the chart.

AWOIS Nos. 51809 and 51810: Two unidentified obstructions were observed on aerial photgraphs taken in 1985. RAINIER's investigation for this survey revealed three 20 m logs (Pos.No's. 2019, 2020, and Ref.No. 3-9) used as a marine railway, but mistakely depicted as piers on the T Sheet. On DN 084, a search was made at a stage of tide near MLLW. An assortment of debris was found on the beach, including a large wooden barge, currently being dismantled, which was not there in 1985, according to its owner. Two photographs were taken on DN 108 at a similarly low stage of tide, and are included in the sounding volume. AWOIS 51809 located at lat. 58/11/23.1 N, long. 136/20/16.0 W
AWOIS 51810 located at lat. 58/11/26.1 N, long. 136/20/17.7 W

Recommendation: The hydrographer recommends that data acquired from this survey be used to update the chart in the vicinity of AWOIS NO.51809 and 51810. Remove obstn from chart. Chart obstn (grid) at lat. 58/11/24.5N, long 136/20/24W and foul limit at lat. 58/11/26N, long. 136/20/27W.

AWOIS No. 51811: A line of six piles situated along the east side of a floating pier was depicted on a 1939 Corps of Engineers Condition Survey (BP 46378/39). On DN 087, the hydrographer searched both sides of the subject pier at a stage of tide near MLLW, and saw what appeared to be one submerged remnant of a pile. On DN 106, two divers searched along the entire length of the pier and discovered one submerged remnant of a pile at 58°11'43.5"N 136°20'48.4"W (Pos.No. 8003), with a least depth of 0.3m. Also found was a concrete block at 58°11'44.2"N 136°20'48.9"W (Pos.No. 8004) that was 2 feet square by 3 feet high, with a least depth of 4.8m. Both obstructions were located close alongside the pier. None of the other five reported piles were found. Pos.No. 8002 marks the center of the AWOIS search. Water visibility was 15 feet.

A complete description of the dive for AWOIS No. 51811 is included with the survey data.

Recommendation: The hydrographer recommends that the one identified submerged pile be retained, and the concrete block be marked as an underwater obstruction. Data from this survey should be used to update the AWOIS listing and the chart. Remove 6 piles and chart one subm pile and one obstn. See smooth sheet for depiction.

Dangers to Navigation ✓

Five dangers to navigation within the limits of this survey were reported by radio message and hard copy to the Seventeenth Coast Guard District and DMAHTC. Copies of the correspondence are appended to this report. Position numbers associated with each reported danger are included on the copy of the radio message. Attached to this report. Also two additional letters describing 4 additional dangers were reported to the Coast Guard, DMA and N/CG221. See Attached letters.

O. ADEQUACY OF SURVEY ✓

This survey is complete and adequate to supersede the areas common to the prior surveys listed in Section 6.10 of the Project Instructions. with the transfer of the rocks and submdol from prior survey H-6336, this survey is complete.

P. AIDS TO NAVIGATION ✓

Five fixed aids to navigation lie within the limits of the survey. Field positions were reported to the U.S. Coast Guard in accordance with the Project Instructions Section 4.2.1.2 (See Appendix VI).

Navigational Aid Light List No.	Published Position*	Charted Position**	Field Position
Elfin Cove Outer Light Fl 4S, #24250	58°11.8'N 136°21.1'W	58°11'49.0"N 136°21'04.2"W	58°11'48.9"N 136°21'04.2"W
Elfin Cove Entrance Light #2, Fl R 4S, #24245	58°11.7'N 136°21.1'W	58°11'41.0"N 136°21'06.3"W	58°11'41.1"N 136°21'06.4"W
Elfin Cove Daybeacon 5 #24260	58°11.7'N 136°20.9'W	58°11'39.8"N 136°20'57.0"W	58°11'39.6"N 136°21'56.5"W

Elfin Cove Daybeacon 6 #24265	58°11.6'N 136°20.9'W	58°11'37.4"N 136°20'57.0"W	58°11'37.6"N 136°20'56.4"N
Elfin Cove Daybeacon 7 #24270	58°11.6'N 136°20.7'W	58°11'33.6"N 136°20'45.0"W	58°11'33.6"N 136°20'44.5"W

One floating aid to navigation, Buoy 3, marks a rock about 50 yards southeast of Elfin Cove Light. The buoy, a green can buoy, was positioned by hydrographic methods by VESNO 2124 (DN 086, Pos.No. 2107). The field position was checked against published and charted positions. The comparisons are shown below: See Evac Report, section 7.d.

Navigational Aid Light List No.	Published Position*	Charted Position	Field Position of Buoy 3
Elfin Cove Daybeacon 3 #24255	58°11.7'N 136°21.0'W	58°11'41.0"N 136°20'59.9"W	58°11'41.0"N 136°20'59".4"

*Source: United States Coast Guard Light List (NAD83), Volume VI, 1990.

The light characteristics given above were observed in the field and agree with the charted and Light List characteristics. The bell was heard and verified in the field. The buoy adequately serves the apparent purpose for which it was established. Concur, see Evac Report section 7.d.

There are no bridges, or ferry routes within the limits of the survey. There is one overhead cable (Pos. No. 2012) at the south end of Elfin Cove, and several plastic water pipelines (Ref. No. 3-18) that run south from the inner harbor pier to residences on the lower end of the cove. These pipelines are not secured to the bottom and are visible in areas along the eastern shore near lower low water.

Recommendation: The hydrographer recommends that the compiler determine the status of this navigation aid at the time of chart compilation. Concur

Q. STATISTICS ✓

Vessel:	2123	2124	2125	2126	Total
# of Pos	394	197	375	53	1019
NM Hydro	14.1	7.81	22.2	2.1	46.2

NM^2 Hydrography	0.93	Velocity Casts	1
Detached Positions	101	Tide Stations	2
Bottom Samples	25	Current/Magnetic Stations	0

Reference No's. 48

R. MISCELLANEOUS ✓

All bottom samples were submitted to the Smithsonian Institution.

Loran C comparisons were sent to DMAHTC and the U.S. Coast Guard, in accordance with Project Instructions.

A Corps of Engineers (COE) engineering survey (NFS-1308-85, 1:600, 1985) is included in the accordian files with data for the present survey. The COE plans to accomplish a survey in the summer of 1991 in advance of dredging the channel into Elfin Cove.

Recommendation: Contact Ms. Deb Reidell (907-753-2822) for copies of the latest COE dredging surveys. Concur, See Evac Rpt, section 7.C.

S. RECOMMENDATIONS ✓

None.

T. REFERRAL TO REPORTS ✓

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

Title	Date Sent to N/CG245
Spring, 1991 Horizontal Control Report for OPR-O106-RA	June, 1991
Spring 1991 Electronic Control Data Package for OPR-O106-RA	May, 1991
Spring 1991 Corrections to Echo Soundings Data Package for OPR-O106-RA	May, 1991
Spring 1991 Coast Pilot Report for OPR-O106-RA	June, 1991

Respectfully Submitted,

Eric P. Nelson

Eric P. Nelson
Lieutenant(jg), NOAA

Approved and Forwarded,

Thomas W. Richards

Thomas W. Richards
Captain, NOAA
Commanding Officer

CONTROL STATIONS

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	STATION NAME	SIGNAL NOS.	QUAD NOS.
100	F	058:15:48.046	136:07:57.536	10	250	0.0	0.0	3	03/21/91	YAK	100	
101	F	058:13:12.460	136:09:58.937	8	250	0.0	0.0	4	04/30/91	GULL TP	101	
102	F	058:14:40.410	136:17:15.657	2	250	0.0	0.0		03/21/91	INIANA	102	
103	F	058:13:46.951	136:18:52.808	7	250	0.0	0.0	A	04/30/91	FAKE	103	
104	F	058:19:03.968	136:15:34.968	14	250	0.0	0.0	2	03/21/91	AID	104	
105	F	058:12:57.823	136:18:41.194	6	250	0.0	0.0	1	04/24/91	HAM 2	105	
106	F	058:11:41.367	136:21:06.313	7	250	0.0	0.0	A	03/24/91	FINN,1938	106	581362
107	F	058:11:29.612	136:20:36.949	6	250	0.0	0.0	A	04/22/91	CHICH,1938	107	581362
108	F	058:11:18.689	136:20:21.268	6	250	0.0	0.0	A	03/24/91	KOFF NO 1,1938	108	581362
109	F	058:13:22.558	136:21:22.945	19	250	0.0	0.0	5	03/25/91	HAIR	109	581362
110	F	058:13:47.701	136:21:19.437	17	250	0.0	0.0	C	04/04/91	EYE	110	
111	F	058:15:14.570	136:17:41.249	5	250	0.0	0.0	B	04/06/91	OCTA	111	
112	F	058:11:41.776	136:20:55.983	3	250	0.0	0.0	A	03/27/91	WHARF,1991	112	581362
113	F	058:12:43.819	136:22:51.081	10	250	0.0	0.0	5	04/06/91	ADZE,1901	113	581362
114	F	058:09:58.431	136:21:33.556	6	250	0.0	0.0		00/00/00	ALTHORP ROCK LT,1922	114	
115	F	058:20:02.107	136:18:17.253	10	250	0.0	0.0		00/00/00	BAN	115	
116	F	058:12:07.020	136:22:15.121	10	250	0.0	0.0	E	04/16/91	BEER,1938	116	581362
117	F	058:09:16.155	136:19:07.423	4	250	0.0	0.0	A	05/06/91	BOW	117	
118	F	058:20:28.510	136:21:34.266	8	250	0.0	0.0		00/00/00	CAB	118	
119	F	058:15:02.304	136:21:18.505	6	250	0.0	0.0	E	04/22/91	CANAL	119	
120	F	058:11:56.358	136:38:25.437	32	250	0.0	0.0		00/00/00	CAPE SPENCER LT	120	
121	F	058:11:34.714	136:20:47.949	7	250	0.0	0.0	A	03/28/91	COVE,1991	121	581362
122	F	058:21:04.689	136:17:37.122	2	250	0.0	0.0		00/00/00	DEED	122	
123	F	058:21:37.838	136:22:33.519	0	250	0.0	0.0		00/00/00	DELTA	123	
124	F	058:11:41.037	136:21:06.205	7	250	0.0	0.0		00/00/00	ELFIN COVE LT	124	
125	F	058:16:11.116	136:24:18.155	12	250	0.0	0.0	3	04/05/91	EX	125	
126	F	058:12:42.391	136:22:52.644	18	250	0.0	0.0		00/00/00	GEORGE ISLAND LT 2,126 1991		581362
127	F	058:16:10.954	136:20:03.361	0	250	0.0	0.0		00/00/00	GLORIA	127	
128	F	058:11:43.986	136:22:37.906	9	250	0.0	0.0	1	04/09/91	GRAN,1938	128	581362
129	F	058:12:08.803	136:21:21.384	5	250	0.0	0.0	A	04/22/91	HOLE,1938	129	581362
130	F	058:14:18.493	136:20:16.427	6	250	0.0	0.0	E	04/24/91	LAV	130	
131	F	058:11:39.817	136:21:29.942	17	250	0.0	0.0	B	04/10/91	NITE,1938	131	581362
132	F	058:13:23.996	136:21:15.011	23	250	0.0	0.0		00/00/00	PT LAVINIA LT	132	
133	F	058:15:15.230	136:23:02.253	15	250	0.0	0.0	C	04/05/91	SUR	133	
134	F	058:07:28.079	136:18:51.765	1	250	0.0	0.0		00/00/00	TOWN	134	
206	Z	058:11:41.367	136:21:06.313	7	250	0.0	0.0		03/26/91	FINN(R/AZ)	206	581362
207	Z	058:11:29.612	136:20:36.949	6	250	0.0	0.0		03/26/91	CHICH(R/AZ)	207	581362
208	Z	058:11:18.689	136:20:21.268	6	250	0.0	0.0		03/27/91	KOFF NO1(R/AZ)	208	581362
212	Z	058:11:41.776	136:20:55.983	5	250	0.0	0.0		03/26/91	WHARF(R/AZ)	212	581362
221	Z	058:11:34.714	136:20:47.949	7	250	0.0	0.0		03/28/91	COVE (R/AZ)	221	581362
135	F	058:11:51.574	136:38:27.410	18	250	0.0	0.0	2	04/05/91	CAPE,1925	135	581363
136	F	058:11:49.673	136:20:50.459	6	250	0.0	0.0	B	04/09/91	SKY,1991	136	581362
236	Z	058:11:49.673	136:20:50.459	6	250	0.0	0.0		04/05/91	SKY R/AZ	236	581362
230	Z	058:14:18.493	136:20:16.427	6	250	0.0	0.0		04/05/91	LAV R/AZ	230	
137	F	058:12:36.119	136:21:49.902	15	250	0.0	0.0	2	05/05/91	DUNK NO 2	137	581362
211	Z	058:15:14.570	136:17:41.249	5	250	0.0	0.0		04/06/91	OCTA R/AZ	211	
205	Z	058:12:57.823	136:18:41.194	6	250	0.0	0.0		04/05/91	HAM 2 R/AZ	205	
209	Z	058:13:22.558	136:21:22.945	19	250	0.0	0.0		04/05/91	HAIR R/AZ	209	
138	F	058:13:08.135	136:20:01.278	6	250	0.0	0.0	B	04/07/91	MINK	138	
200	Z	058:15:48.046	136:07:57.536	8	250	0.0	0.0		04/06/91	YAK R/AZ	200	
201	Z	058:13:12.460	136:09:58.937	8	250	0.0	0.0		04/06/91	GULL TP R/AZ	201	
213	Z	058:12:43.819	136:22:51.081	10	250	0.0	0.0		04/09/91	ADZE R/AZ	213	
219	Z	058:15:02.304	136:21:18.505	6	250	0.0	0.0		04/09/91	CANAL R/AZ	219	
233	Z	058:15:15.230	136:23:02.253	15	250	0.0	0.0		04/09/91	SUR R/AZ	233	
139	F	058:09:58.282	136:21:33.918	9	250	0.0	0.0	4	05/01/91	DALI	139	581362
143	F	058:14:46.129	136:20:46.891	5	250	0.0	0.0		04/21/91	ODIN	143	
141	F	058:14:14.253	136:21:47.079	6	250	0.0	0.0	2	05/05/91	URSA	141	
270	Z	058:15:04.561	136:21:48.250	5	250	0.0	0.0		04/21/91	EMBO R/AZ	270	
251	Z	058:13:00.397	136:21:31.694	6	250	0.0	0.0		04/21/91	AREA R/AZ	251	
142	F	058:08:31.134	136:20:53.813	6	250	0.0	0.0	C	05/04/91	EMBO	170	
170	F	058:15:04.561	136:21:48.250	5	250	0.0	0.0	E	04/22/91	ZEN	142	
140	F	058:12:42.391	136:22:52.644	18	250	0.0	0.0		04/22/91	GEORGE IS LT	140	
240	Z	058:12:42.391	136:22:52.644	18	250	0.0	0.0		04/22/91	HOBBIT HOLE TP	144	
144	F	058:14:51.870	136:20:37.104	5	250	0.0	0.0	E	04/22/91	GEORGE IS LT R/AZ	240	581362
151	F	058:13:00.397	136:21:31.694	6	250	0.0	0.0	E	05/02/91	AREA	151	
145	F	058:14:26.204	136:20:47.645	4	250	0.0	0.0	2	05/06/91	WHOA	145	
245	Z	058:14:26.204	136:20:47.645	4	250	0.0	0.0		04/22/91	WHOA R/AZ	245	
243	Z	058:14:46.129	136:20:46.891	5	259	0.0	0.0		04/22/91	ODIN R/AZ	243	
241	Z	058:14:14.253	136:21:47.079	6	250	0.0	0.0		04/23/91	HOLE R/AZ	229	581362
229	Z	058:12:08.803	136:21:21.384	5	250	0.0	0.0		04/22/91	GRAN R/AZ	228	581362
228	Z	058:11:43.986	136:22:37.906	9	250	0.0	0.0		04/23/91	RUDE 2 NO	152 NO	
152	F	058:09:57.989	136:23:25.066	6	250	0.0	0.0	A	05/01/91	RAIN	153	
153	F	058:08:18.190	136:25:21.164	27	250	0.0	0.0	1	05/02/91	CAPE SPENCER LT R/AZ	220	
220	Z	058:11:56.358	136:38:25.437	37	250	0.0	0.0		05/02/91	DREAD	154	
154	F	058:09:12.753	136:23:04.546	23	250	0.0	0.0	E	05/03/91	WEST	155	
155	F	058:11:38.436	136:23:48.166	0	250	0.0	0.0		00/00/00	DALE	156	
156	F	058:11:51.099	136:23:28.690	0	250	0.0	0.0		00/00/00	LLAMA	157	
157	F	058:07:39.976	136:17:50.319	6	250	0.0	0.0	A	05/04/91	DUNK NO 2 R/AZ	237	
237	Z	058:12:36.119	136:21:49.902	15	250	0.0	0.0		05/05/91	FAKE R/AZ	203	
203	Z	058:13:46.951	136:18:52.808	7	250	0.0	0.0		00/00/00	MINK R/AZ	238	
204	Z	058:19:03.968	136:15:34.968	10	250	0.0	0.0		00/00/00	HOBBIT HOLE TP R/AZ	244	
238	Z	058:13:08.135	136:20:01.278	6	250	0.0	0.0		00/00/00			
244	Z	058:14:51.870	136:20:37.104	5	250	0.0	0.0		00/00/00			

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS
NOAA Ship RAINIER S221
1801 Fairview Avenue East
Seattle, Washington 98102-3767

June 3, 1991

ADVANCE INFORMATION

Director
DMAHTC
Attn: MCNA
6500 Brooks Lane
Washington, D.C. 20315-0030

Dear Sir:

While conducting hydrographic survey operations in Cross Sound, Alaska, NOAA Ship RAINIER discovered 6 dangers to navigation. They have been reported to DMAHTCNAVWARN and the Seventeenth Coast Guard District. A copy of the correspondence describing the dangers is enclosed.

Sincerely,

Thomas W. Richards
Captain, NOAA
Commanding Officer

Enclosures

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS
NOAA Ship RAINIER S221
1801 Fairview Avenue East
Seattle, Washington
98102-3767

June 3, 1991

ADVANCE INFORMATION

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

Dear Sir:

Attached is a confirmation copy of the radio message sent to your office regarding the dangers to navigation which I recommend for inclusion in the Local Notice to Mariners for the Seventeenth Coast Guard District. A copy of the two chartlets showing the areas in which the dangers exist are also attached.

Sincerely,

Thomas W. Richards
Captain, NOAA
Commanding Officer

Enclosures

cc: DMAHTC
N/CG221
PMC

ADVANCE INFORMATION

› 022000Z JUN 91
FM NOAAS RAINIER
TO CGGDSEVENTEEN JUNEAU AK
)MAHTCNAVWARN WASHINGTON DC//MCNM//
INFO NOAAMOP SEATTLE WA
ACCT CM-VCAA
BT
UNCLAS
NOAA SHIP RAINIER HAS FOUND 6 DANGERS TO NAVIGATION IN CROSS SOUND, ALASKA (PROJECT OPR-0106-RA) WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10370 (ELFIN COVE AND VICINITY). THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL NOTICE TO MARINERS:

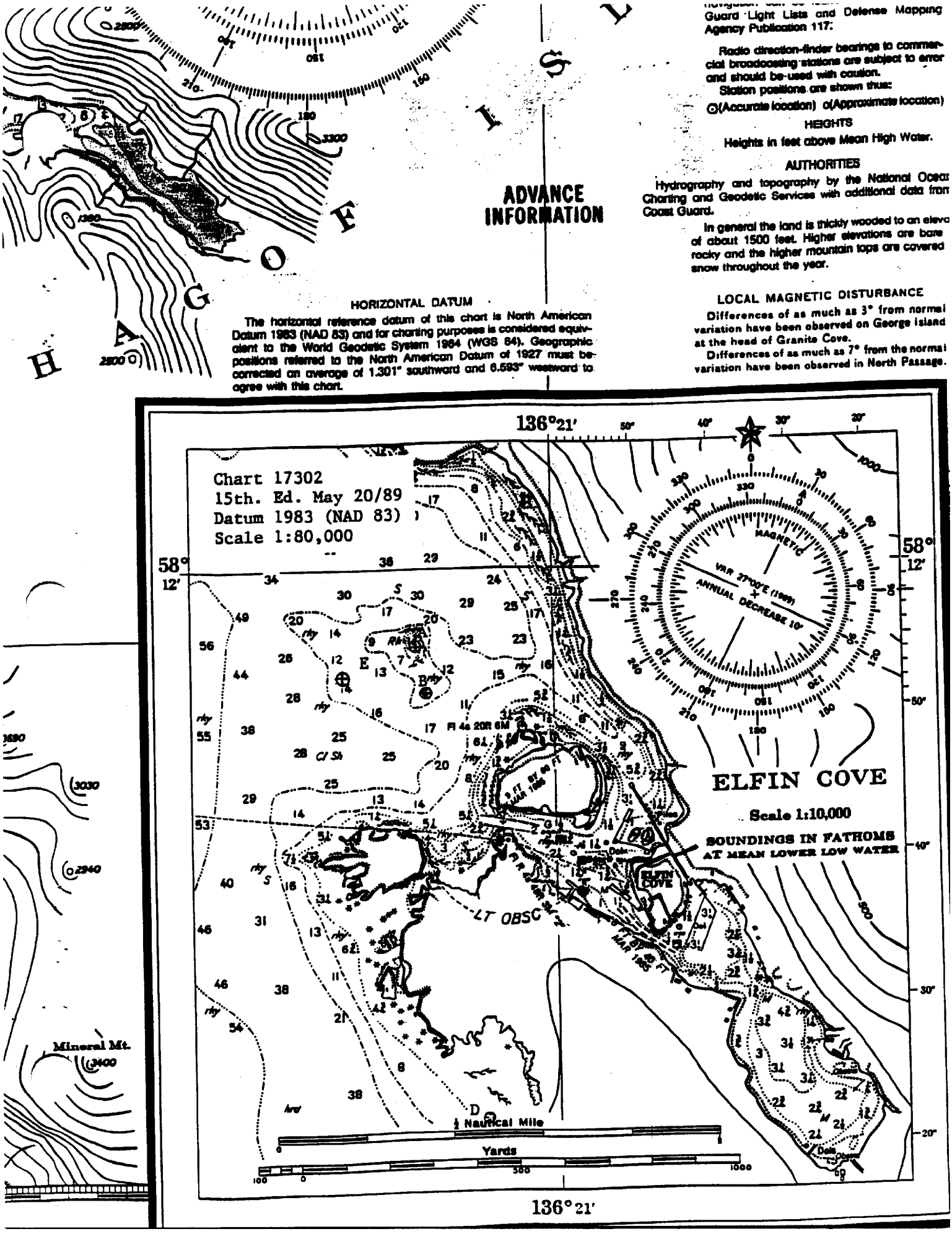
CHART AFFECTED: 17302 15TH ED MAY 20/89 1:80,000 NAD83

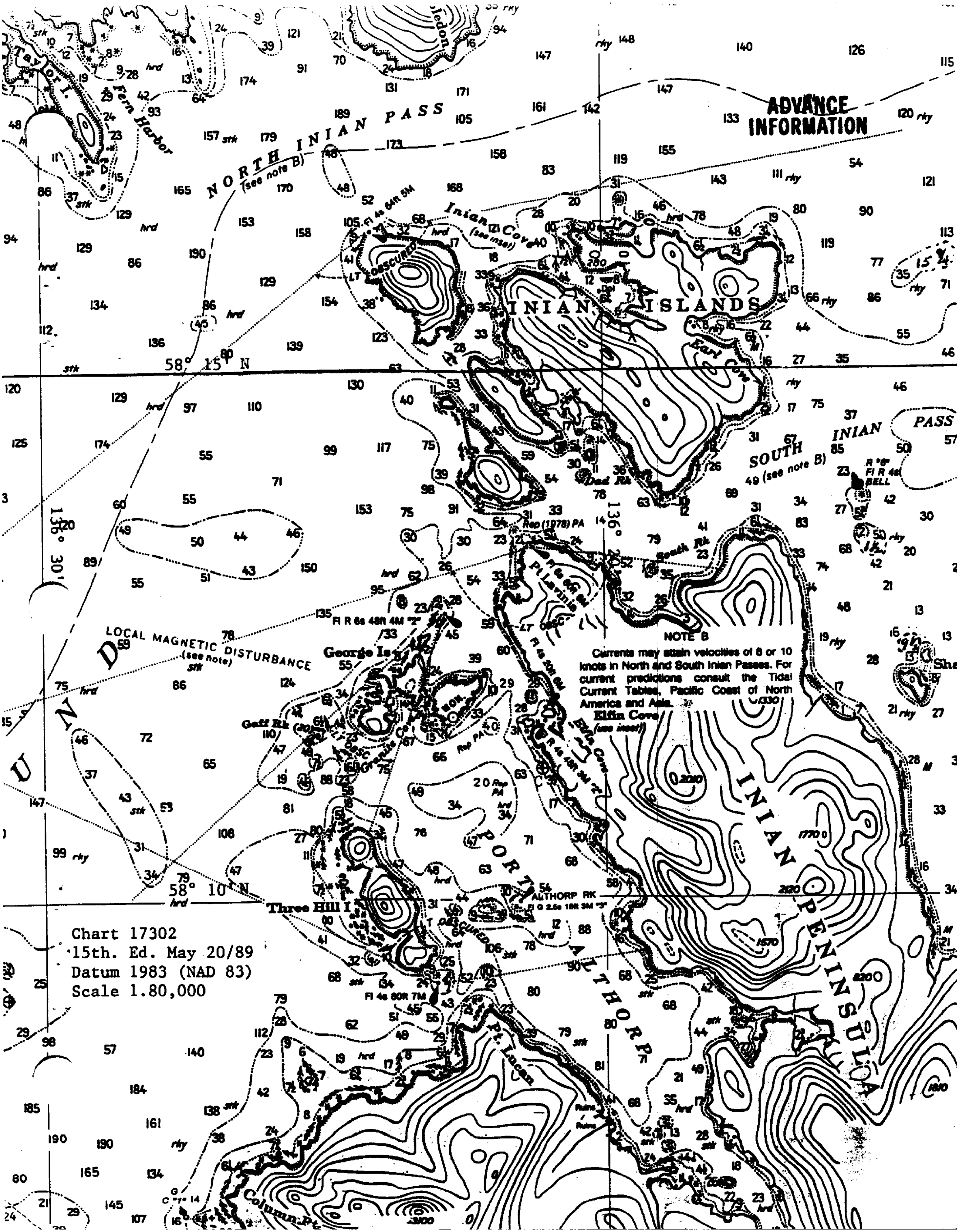
DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES. Unchanged, retained as submitted

ITEM	DANGER	CHART	DEPTH	DATUM	LATITUDE	LONGITUDE	Fix #
A.	SHOAL COV	17302	1 1/4FM	NAD83	58-11-54.34N	136-21-18.62W	8000+0
B.	SHOAL COV	17302	4 1/4FM	NAD83	58-11-51.39N	136-21-16.51W	4079+3
C.	ROCK UNCOV	17302	1FT	NAD83	58-11-12.62N	136-21-04.85W	6197+0
D.	ROCK COV	17302	3/4FM	NAD83	58-11-21.75N	136-21-08.81W	6117+0
E.	SHOAL COV	17302	10 3/4FM	NAD83	58-11-52.82N	136-21-26.76W	6045+1
F.	DEPTHS IN ELFIN COVE (CHART 17302, ELFIN COVE INSET) AND APPROACHES ARE GENERALLY 1/2FM SHOALER THAN CHARTED.						

THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW. QUESTIONS CONCERNING THIS MESSAGE SHOULD BE DIRECTED TO THE CHIEF, PACIFIC HYDROGRAPHIC SECTION AT (206)526-6835. A LETTER WITH ATTACHED CHARTLET IS BEING MAILED TO CONFIRM THIS MESSAGE.
BT

TOD 030317Z JUN 91
TPOST
MC


ADVANCE INFORMATION
HORIZONTAL DATUM
The horizontal reference datum of this chart is North American Datum 1983 (NAD 83) and for charting purposes is considered equivalent to the World Geodetic System 1984 (WGS 84). Geographic positions referred to the North American Datum of 1927 must be corrected an average of 1.301" southward and 6.593" westward to agree with this chart.
Guard Light Lists and Defense Mapping Agency Publication 117.
Radio direction-finder bearings to commercial broadcasting stations are subject to error and should be used with caution.
Station positions are shown thus:
⊙(Accurate location) ○(Approximate location)
HEIGHTS
Heights in feet above Mean High Water.
AUTHORITIES
Hydrography and topography by the National Ocean Charting and Geodetic Services with additional data from Coast Guard.
In general the land is thickly wooded to an elevation of about 1500 feet. Higher elevations are bare rocky and the higher mountain tops are covered snow throughout the year.
LOCAL MAGNETIC DISTURBANCE
Differences of as much as 3° from normal variation have been observed on George Island at the head of Granite Cove.
Differences of as much as 7° from the normal variation have been observed in North Passage.
Chart 17302
15th. Ed. May 20/89
Datum 1983 (NAD 83)
Scale 1:80,000
136°21'
58°12'
ELFIN COVE
Scale 1:10,000
SOUNDINGS IN FATHOMS
AT MEAN LOWER LOW WATER
MAGNETIC
VAR 27°00'E (1989)
ANNUAL DECREASE 10'
LT OBSC
Fl 4s 20ft 6M
½ Nautical Mile
Yards
Mineral Mt.
3400
3030
2940
2800


ADVANCE INFORMATION
NORTH INIAN PASS (see note B)
Taylor I.
Fern Harbor
Inian Cove (see inset)
INIAN ISLANDS
Earl Cove
SOUTH INIAN PASS 49 (see note B)
Dad Rk
South Rk
Pt Lavinia
58° 15' N
136° 30'
136°
LOCAL MAGNETIC DISTURBANCE (see note)
George Is
Gaff Rk
NOTE B
Currents may attain velocities of 8 or 10 knots in North and South Inian Passes. For current predictions consult the Tidal Current Tables, Pacific Coast of North America and Asia.
Elfin Cove (see inset)
INIAN PENINSULA
PORT ALTHORP
ALTHORP RK
Three Hill I
58° 10' N
Pt. Lucan
Column Pt
Chart 17302
15th. Ed. May 20/89
Datum 1983 (NAD 83)
Scale 1.80,000

P 022000Z JUN 91
FM NOAAS RAINIER
TO CGGDSEVENTEEN JUNEAU AK
DMAHTCNAVWARN WASHINGTON DC//MCNM//
INFO NOAAMOP SEATTLE WA
ACCT CM-VCAA
BT

ADVANCE INFORMATION

UNCLAS
NOAA SHIP RAINIER HAS FOUND 6 DANGERS TO NAVIGATION IN CROSS SOUND, ALASKA (PROJECT OPR-0106-RA) WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10370 (ELFIN COVE AND VICINITY). THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL NOTICE TO MARINERS:

CHART AFFECTED: 17302 15TH ED MAY 20/89 1:80,000 NAD83

Unchanged, retained as submitted.

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

ITEM	DANGER	CHART	DEPTH	DATUM	LATITUDE	LONGITUDE
A.	SHOAL COV	17302	1 1/4FM	NAD83	58-11-54.34N	136-21-18.62W
B.	SHOAL COV	17302	4 1/4FM	NAD83	58-11-51.39N	136-21-16.51W
C.	ROCK UNCOV	17302	1FT	NAD83	58-11-12.62N	136-21-04.85W
D.	ROCK COV	17302	3/4FM	NAD83	58-11-21.75N	136-21-08.81W
E.	SHOAL COV	17302	10 3/4FM	NAD83	58-11-52.82N	136-21-26.76W
F.	DEPTHS IN ELFIN COVE (CHART 17302, ELFIN COVE INSET) AND APPROACHES ARE GENERALLY 1/2FM SHOALER THAN CHARTED.					

THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW. QUESTIONS CONCERNING THIS MESSAGE SHOULD BE DIRECTED TO THE CHIEF, PACIFIC HYDROGRAPHIC SECTION AT (206)526-6835. A LETTER WITH ATTACHED CHARTLET IS BEING MAILED TO CONFIRM THIS MESSAGE.
BT

Copies of this message sent to: Samps

PMC1	[ ]	PMC1X1	[ ]	PMC1X2	[X]	PMC1X3	[ ]	PMC1X4	[ ]
PMCX2	[ ]	PMCX3	[ ]	PMCX4	[ ]	PMCX5	[ ]	PMC2	[ ]
PMC3	[ ]	NCX1	[ ]	NC3	[ ]	N/CG224	[ ]	N/CG241	[ ]

FILE COPY

Pacific Hydrographic Section
7600 Sand Point Way NE
Seattle, WA 98115-0070

June 4, 1991

Commander (OAN)
Seventeenth Coast Guard District
P.O.Box 3 - 5000
Juneau, Alaska 99802-1217

Dear Sir:

During office processing of hydrographic survey H-10370, Alaska, Cross Sound, Elfin Cove, one danger to navigation affecting chart 17302 (15th ed., May 20, 1989: NAD 83) was found.

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 Section at (206) 526-6853.

Sincerely,

Pamela R. Chelgren-Koterba
Commander, NOAA
Chief, Pacific Hydrographic Section

Enlcosure

cc: DMA/TC
    N/CG221

FILE COPY

CODE	SURNAME	DATE	CODE	SURNAME	DATE
N/CG241	Davies	6-4-91			
N/CG241	Green / JCG	6/4/91			
CG2451	[illegible]	6-4-91			

NOAA FORM 61-2

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10370
Survey Title: State: Alaska
Locality: Cross Sound
Sublocality: Elfin Cove
Project Number: OPR-0106-RA, NOAA Ship RAINIER

The following item was discovered during office processing of hydrographic survey H-10370.

Object discovered: One rock corrected to predicted tides

Affected nautical chart unchanged, retained as submitted.

CHART NUMBER	EDITION NO.	EDITION DATE	REPORTED DEPTH	CHARTED HORIZ DATUM	GEOGRAPHIC POSITION LATITUDE(N)	GEOGRAPHIC POSITION LONGITUDE(W)
17302	15th	5/20/89	RK uncov 5.0 ft	NAD 83	58°11'41.44"	136°21'09.35"

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.

FILE COPY

CODE	SURNAME	DATE	CODE	SURNAME	DATE

NOAA FORM 61-2

*U.S. GOVERNMENT PRINTING OFFICE: 1987-756-853

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Seattle, Washington 98115-0070

March 23, 1992

Commander (OAN)
Seventeenth Coast Guard District
P.O. Box 25517
Juneau, AK 99802-5517

Dear Sir:

During office review of hydrographic survey H-10370, Alaska, Cross Sound, Elfin Cove, two rocks and one shoal sounding were found and are considered potential dangers to navigation affecting the following chart.

Chart	Edition/date	Datum
17302	15th ed., 5/20/89	NAD 83

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 Section at (206) 526-6853.

Sincerely,

Douglas G. Hennick

Douglas G. Hennick
Commander, NOAA
Chief, Pacific Hydrographic Section

Enlcosure

cc: DMA/TC
N/CG221

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10370
Survey Title: State: Alaska
Locality: Cross Sound
Sublocality: Elfin Cove
Project Number: OPR-O106-RA, NOAA Ship Rainier

The following items were discovered during office processing of hydrographic survey H-10370.

Objects discovered: Two rocks and one shoal sounding corrected to MLLW.

Affected nautical chart

CHART	EDITION		REPORTED	HORIZ	GEOGRAPHIC POSITION	
NUMBER	NO.	DATE	DEPTH	DATUM	LATITUDE(N)	LONGITUDE(W)
17302	15th	05/20/89	0.5fm (0.9m)	NAD 83	58/11/25.04	136/20/28.80
17302	15th	05/20/89	rock awash	NAD 83	58/11/37.11	136/21/29.81
17302	15th	05/20/89	rock awash	NAD 83	58/12/02.57	136/21/04.84

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [X] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
NOAA Ship RAINIER	ALASKA	ELFIN COVE	5/29/91

The following objects HAVE [XX] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-0106-RA	N/A	RA-5-1-91	NAD83

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° /	// D.M. Meters	POSITION LONGITUDE ° /	// D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
L.L.24245	ENTRANCE LIGHT 2	58 11	41.049	136 21	06.378		F-2-6-L 3/27/91	17302 17300 16760
L.L.24250	OUTER LIGHT	58 11	48.882	136 21	04.243		F-2-6-L 3/27/91	17302 17300 16760
L.L.24260	DAYBEACON 5	58 11	39.554	136 21	56.542		F-2-6-L 3/27/91	17302 17300 16760

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	Captain Thomas W. Richards, NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED		FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NOAA FORM [illegible] (8-74)

SUPERSEDES NOAA FORM [illegible]0 (2-71) WHICH IS OBSOLETE, AND EXISTING STOCK SHOULD [illegible]STROYED UPON RECEIPT OF REVISION.

☆ U.S.GPO:1975-0-665-080/1155

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS
Office of NOAA Corps Operations
NOAA Ship RAINIER
1801 Fairview Avenue East
Seattle, Washington 98102-3767

10 May 1991

Commander (OAN)
Seventeenth U.S. Coast Guard District
P.O. Box 3-5000
Juneau, Alaska 99802

Dear Sir:

In conjunction with survey operations in Cross Sound, Alaska, personnel from NOAA Ship RAINIER have determined the positions of Althorp Rock Light 3, Cape Spencer Light, Elfin Cove Daybeacon 5, Elfin Cove Entrance Light 2, Elfin Cove Outer Light, George Island Light 2, North Inian Pass Light, Point Lavinia Light and Three Hill Island Light. All positions meet Third-order, Class I specifications and are based on the North American Datum of 1983 and the GRS Ellipsoid of 1980. The positions listed below are field positions and are not adjusted:

Navigation Aid	Latitude(N)	Longitude(W)	1990 Light List No.
ALTHORP ROCK LIGHT 3	58°09'58.431"	136°21'33.556"	24275
CAPE SPENCER LIGHT	58°11'56.358"	136°38'25.437"	24240
ELFIN COVE DAY-BEACON 5	58°11'39.554"	136°20'56.542"	24260
ELFIN COVE ENTRANCE LIGHT 2	58°11'41.049"	136°21'06.378"	24245
ELFIN COVE OUTER LIGHT	58°11'48.882"	136°21'04.243"	24250
GEORGE ISLAND LIGHT 2	58°12'42.425"	136°22'52.678"	24230
NORTH INIAN PASS LIGHT	58°16'19.815"	136°24'07.799"	24235
POINT LAVINIA LIGHT	58°13'23.996"	136°21'15.011"	24225
THREE HILL ISLAND LIGHT	58°09'12.879"	136°23'03.432"	24280

Questions concerning these data may be directed to: Commanding Officer, NOAA Ship RAINIER, 1801 Fairview Avenue East, Seattle, Washington 98102-3767, telephone (206) 553-4794.

Sincerely,

Thomas W. Richards
Captain, NOAA
Commanding Officer

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS
NOAA Ship RAINIER S221
1801 Fairview Avenue East
Seattle, Washington 98102

April 4, 1992

MEMORANDUM FOR: Commander Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section

FROM: Captain Thomas W. Richards, NOAA
Commanding Officer, NOAA Ship RAINIER

SUBJECT: Chart Letter for Dolphin Disproval in Elfin Cove, Alaska

NOAA Ship RAINIER conducted a dive search for a dolphin charted at 058°11'41.00"N 136°20'54.00"W (Chart 17302, 15th Edition, May 20, 1989). No dolphin was found within 50 meters of this position.

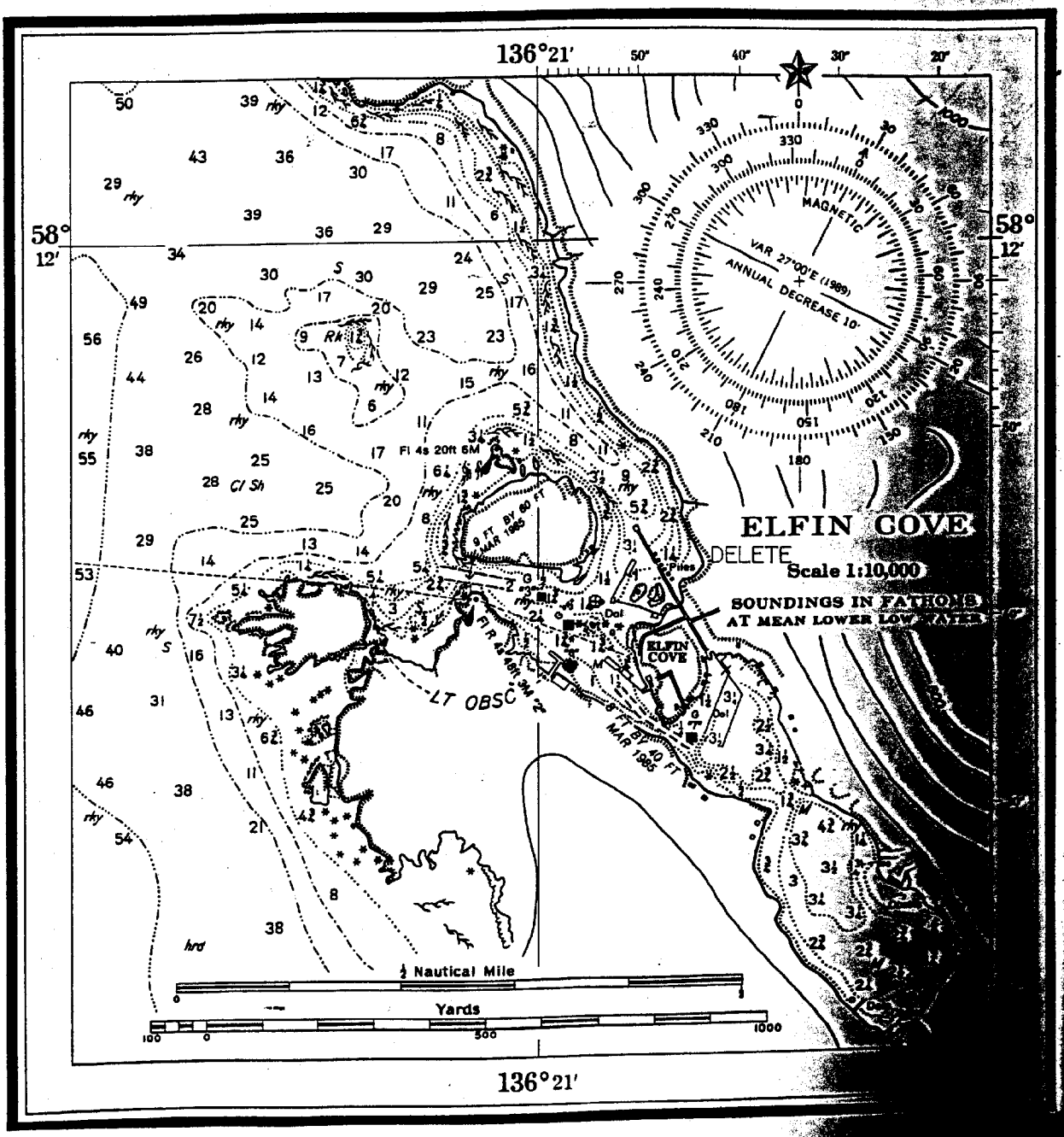
The dolphin's position was first scaled from the chart and its position relative to stations FINN and CHICH determined using the HDAPS' program INVERSE. This program computes the forward azimuth and distance to a position relative to two horizontal control stations (attachment 1). The actual azimuth and range observed during the search were used to compute the geographical position that is shown on the attached chartlet. This positon (attachment 2) was computed using MTEN's geodetic program DIRECT.

The range and azimuth were measured by a T-2 theodolite and miniranger placed on station FINN. The theodolite initial angle was turned to station CHICH with a check angle to Daymark #5. Hydrographic survey launch RA-4 was positioned over the charted position using the calculated range and bearing. A buoy was anchored at this position. Two divers descended the buoy's tether and conducted a 50 meter radial search around the anchor using a 50 meter length of nylon webbing. Water visibility was 30 feet (9.1 meters). The field records are included as attachment 3.

The bottom is flat and gently sloping to the north. The sediment is predominantly sand and shell with low lying kelp in the area.

I have reviewed the data disproving this charted dolphin and recommend that this feature be removed from the chart.

Survey data (attachments) filed w/ survey H-10570


136°21'
58°
12'
ELFIN COVE
DELETE
Scale 1:10,000
SOUNDINGS IN FATHOMS
AT MEAN LOWER LOW WATER
MAGNETIC
VAR 27°00'E (1989)
ANNUAL DECREASE 10'
LT OBSC
Fl 4s 20ft 6M
ELFIN COVE
½ Nautical Mile
Yards
136°21'

APPROVAL SHEET

for

H-10370

Standard procedures were followed in accordance with the Hydrographic Manual (Fourth Edition), the Hydrographic Survey Guidelines, and 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.

Thomas W. Richards
Captain, NOAA
Commanding Officer

ORIGINAL

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: August 28, 1991

MARINE CENTER: Pacific

OPR: O106-RA

HYDROGRAPHIC SHEET: H-10370

LOCALITY: Elfin Cove, Cross Sound, Alaska

TIME PERIOD: March 24, 1991 - May 1, 1991

TIDE STATIONS USED: 945-2634 (945-2635) Elfin Cove, Alaska
Lat. 58° 11.6'N Lon. 136° 20.8'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 10.53 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 10.0 ft.

REMARKS: RECOMMENDED ZONING

Times and heights are direct on Elfin Cove.

Notes: Elfin Cove station # is 945-2634, however, the data is in file # 945-2635.
Times are tabulated in Greenwich Mean Time.

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-10370

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 17302	B ON PREVIOUS SURVEY NO.	C TP-01331	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
ALTHORP, PORT	X		X							2
CHICHAGOF ISLAND	X		X							3
CROSS SOUND (title)	X		X							4
ELFIN COVE	X		X							5
ELFIN COVE (locale)	X		X							6
INIAN PENINSULA	X		X							7
										8
										9
										10
										11
										12
										13
										14
										15
				Approved:						16
				Charles E. Harrington						17
				Chief Geographer - N/CG2x5						18
										19
				DEC 10 1991						20
										21
										22
										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-10370

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	8
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	1

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	1					
ENVELOPES						
VOLUMES	1					
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List):

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List):

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			925
OSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	99		99
VERIFICATION OF SOUNDINGS	137		137
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	36		36
COMPARISON WITH PRIOR SURVEYS AND CHARTS		10	10
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		29	29
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	272	39	311

Pre-processing Examination by M. Brown	*Beginning Date* 5/30/91	*Ending Date* 6/17/91
Verification of Field Data by B. Brown	*Time (Hours)* 272	*Ending Date* 2/11/92
Verification Check by J. Stringham	*Time (Hours)* 43	*Ending Date* 2/11/92
Evaluation and Analysis by C.R. Davies	*Time (Hours)* 39	*Ending Date* 3/23/92
Inspection by D. Hill	*Time (Hours)* 4	*Ending Date* 5-7-92

EVALUATION REPORT

H-10370

1. INTRODUCTION

Survey H-10370 is a basic hydrographic survey accomplished by the NOAA Ship RAINIER under the following Project Instructions.

OPR-O106-RA, dated February 21, 1991

This survey occurred in Alaska and covers an area in Cross Sound, centered around Elfin Cove. The surveyed area extends from latitude 58/11/08N to latitude 58/12/08N and from longitude 136/20/19W to longitude 136/22/05W. Shoreline along the mainland and offshore islands are characterized by rocks, rock ledges and a few submerged rocks near shore. There are also numerous cultural features such as piers, piles and dolphins, inside and surrounding Elfin Cove. The bottom consists of mud, shells and pebbles. Depths range from zero to 127 meters.

Predicted tides for Sitka, Alaska, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Elfin Cove, Alaska, gage 945-2634, were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. The TRA, sound velocity and electronic control correctors are adequate. An accompanying computer printout contains the parameters and the correctors.

A digital file has been generated for this survey as required by the specifications contained in Hydrographic Survey Guideline No. 52, Standard Digital Data Exchange Format, April 15, 1986. Certain descriptive information, however, may not be in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete depiction of survey data.

2. CONTROL AND SHORELINE

Sections H and I of the hydrographer's report and the Spring 1991 Horizontal and Electronic Control Reports for OPR-O106-RA, contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are 1991 field and published values based on NAD 83. These values were used during office processing for the computation of positions. The smooth sheet and accompanying overlays are annotated with NAD 27 adjustment ticks 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: -1.337 seconds (-41.376 meters)
Longitude: 6.615 seconds (108.056 meters)

The year of establishment of control stations shown on the smooth sheet originates with NGS listing and the previously mentioned horizontal control reports.

The quality of several positions exceeds limits in terms of error circle radius and residual or have angles of intersection less than 30 degrees or more than 150 degrees. A review of the data, however, indicates that none of these fixes are used to position dangers to navigation. The features or soundings located by these fixes are consistent with surroundings. These fixes are considered acceptable.

The following features were transferred from the final field sheet without supporting positional information.

Feature	Latitude(N)	Longitude(W)
piles (4)	58/11/36.5	136/20/37.5
rocks (3)	58/11/19	136/21/02

The following shoreline map applies to this survey.

	Photo Date	Class
TP-01331	June 1985	III

The following shoreline changes were determined hydrographically and are considered adequate to supersede the common photogrammetrically delineated shoreline.

Feature	Latitude(N)	Longitude(W)
pier	58/11/30	136/20/38
pier	58/11/41	136/20/53
bulkhead	58/11/37.5	136/20/42

The following shoreline changes were transferred from the final field sheet without supporting positional information. These revisions are considered adequate to supersede the common photogrammetrically delineated shoreline.

	Latitude(N)	Longitude(W)
HWL	58/12/08	136/21/09
HWL	58/12/01	136/20/59

3. HYDROGRAPHY

Except as noted below and elsewhere in this report, hydrography is adequate to:

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

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

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

Because of the steep sloping shoreline, the zero meter depth curve was not always adequately drawn and developed.

Channels must be developed with a series of crosslines and channel lines. A recommendation for charting the controlling depth is also required. These requirements were not completed for the two charted channels on survey H-10370.

Keel line and alongside the pier soundings were not acquired for the two major piers in Elfin Cove. Sounding lines should be run close to and along the outer faces of wharfs and in docks and slips within the project limits. In addition, soundings shall be taken along the most likely keel line of vessels berthing there. Several depths alongside wharf and pier faces should be measured by leadline or by sounding pole. (HM 4.5.12)

4. CONDITION OF SURVEY

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 1990 edition.

5. JUNCTIONS

Survey H-10370 junctions with the following surveys.

Survey	Year	Scale	Area
H-10371	1991	10000	North
H-10376	1992	10000	South

The junction with survey H-10371 was not formally completed since this survey is in preliminary office processing. Soundings have been transferred from survey H-10371 to better portray the bottom in the common area. The junction with survey H-10376 was not formally completed since this survey is incomplete. The junction with survey H-10370 will be addressed in the evaluation reports for surveys H-10371 and H-10376.

6. COMPARISON WITH PRIOR SURVEYS

H-2559(1901) 1:20000
H-6336(1938) 1:5000

Surveys H-2559 and H-6336 cover the entire area of the present survey. Generally, the soundings agree between 0 to 4 meters, with extreme cases of 12 meters. Survey H-10370 tends to be shoaler than the prior surveys on all accounts. This area has experienced earthquakes, possible isostatic rebound and natural accretion and erosional processes. These processes, the different horizontal datums and the relative accuracy of the data acquisition techniques probably account for the differences between the soundings of the three surveys.

In accordance with Hydrographic Survey Guideline No. 39, the effects of the 1964 Prince William Sound earthquake were considered in the comparison of these surveys. No reasonable adjustment value for prior soundings could be determined.

Several rocks and one dolphin originating from survey H-6336 were not found or disproven during this survey. These features, listed below, have been brought forward onto this survey.

Feature	Latitude(N)	Longitude(W) (NAD 83)
rock awash	58/11/47.3	136/21/6.6
rock awash	58/11/40.8	136/21/7.6
rock awash	58/11/37.3	136/21/28.6
rock awash	58/11/37.3	136/21/26.1
rock awash	58/11/36.8	136/21/26.6
rock awash	58/11/32.8	136/21/23.6
rock awash	58/11/27.3	136/21/16.6
rock awash	58/11/29.8	136/21/19.6
rock awash	58/11/29.5	136/21/20.6
rock awash	58/11/27.8	136/21/17.6

The dolphin at latitude 58/11/40.8N, longitude 136/20/53.6W, was disproved by an investigation after the completion of the survey. The NOAA Ship RAINIER forwarded the results of this investigation as a letter, which is attached. The data accompaning this letter is filed with the survey records. The dolphin should be removed from the charts.

With the transfer of the features noted above, this survey H-10370 is adequate to supersede the prior surveys within the common area.

There are no AWOIS items originating from the prior surveys applicable to the present survey.

7. COMPARISON WITH CHART

Chart 17302, 15th edition, dated May 20, 1989; scale 1:80000

a. Hydrography

Charted hydrography originates with surveys H-2559 and H-6336 and miscellaneous sources and requires no further discussion, except for the following.

Several charted features were not found or investigated during this survey, or not investigated adequately for disproval. These features, listed below, should be retained at their presently charted positions and depicted as shown below.

Feature	Latitude(N)	Longitude(W)	
8 FT BY 40 FT MAR 1985	58/11/35	136/20/48	
9 FT BY 60 FT MAR 1985	58/11/42	136/21/07	
sub dol	58/11/19	136/20/29	
rock	58/11/34	136/21/24	
rock	58/11/28	136/21/20	
rock	58/11/27.5	136/21/18	
rock	58/11/27	136/21/07	
pier ruins	58/11/27	136/20/27	
piers & ruins	58/11/36	136/20/37	(vicinity)

Except for the features previously noted in this section, survey H-10370 is adequate to supersede charted hydrography within the common area.

b. AWOIS

All AWOIS items originate with miscellaneous sources. Refer to the hydrographer's report for discussion and disposition of these features.

c. Controlling Depths

The investigation of the charted channel with the note, "9 FT BY 60 FT MAR 1985", at latitude 58/11/42N, longitude 136/21/07W, is inadequate. This survey shows an observed depth of 10 feet (3 meters) in the area referenced by the note. However, shallower depths may exist. It is recommended that this note remain as charted. The Corps of Engineers surveys of this channel should be referenced for the least depth and orientation. See section R of the hydrographer's report.

The investigation of the charted channel with the note, "8 FT BY 40 FT MAR 1985", at latitude 58/11/35N, longitude 136/20/48W, is inadequate. This survey shows a depth of 8 feet (2.4 meters) in the area referenced by the note. However, shallower depths may exist. The charted note should be retained. The Corps of Engineers surveys of this channel should be referenced for the least depth. See section R of the hydrographer's report.

d. Aids to Navigation

There are four fixed aids to navigation within the survey limits. These aids were located and serve their intended purpose.

One fixed aid, Elfin Cove Daybeacon 3, Light List Number 24255, charted at latitude 58/11/41N, longitude 136/21/00W, was destroyed prior to this survey. A buoy identified as "3" was located attached to a pipe, the remains of the daybeacon, at latitude 58/11/41"N, longitude 136/20/59W. The buoy "3", after consulting with the U.S. Coast Guard, has been removed and replaced with a new daybeacon. The pipe which marks a submerged dangerous rock is shown on the smooth sheet. Contact should be made with the U.S. Coast Guard for the position of this daybeacon. This is AWOIS item 51800.

e. Geographic Names

Names appearing on the smooth sheet and in the survey title have been approved by the Chief Geographer.

f. Dangers to Navigation

The hydrographer reported five shoals and two rocks to the USCG. A copy of the message is attached. Four additional dangers were discovered during office processing and were reported to the Coast Guard, DMATC and N/CG221, see attached letters.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10370 adequately complies with the Project Instructions except where noted in this report.

9. ADDITIONAL FIELD WORK

This is an adequate hydrographic survey. Additional field work is recommended to resolve items mention in sections 6 and 7 of this report.

for Charles R. Davies
Cartographer

APPROVAL SHEET
H-10370

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 digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts have been made and are included with the survey records. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Dennis Hill Date: 5-7-92

Dennis J. Hill
Chief, Hydrographic Processing Unit
Pacific Hydrographic Section

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.

Douglas G. Hennick Date: 5/8/92

Commander Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section

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Final Approval

Approved:

J. Austin Yeager Date: 9/28/93

J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

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-10370

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
17300	10-11-91	Russ Davies	~~Full~~ Part Before ~~After~~ Marine Center Approval Signed Via Partial application
			Drawing No. of sndgs. from final field sheet. A 27 FA sndg.
			at 58° 11' 09" N, 136° 21' 45" W.
17302	9-11-92	Russ Davies	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via Full application of
			Drawing No. sndgs from smooth sheet
			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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			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED

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-10370

INSTRUCTIONS

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CHART	DATE	CARTOGRAPHER	REMARKS
17300	10-11-91	Russ Davies	~~Full~~ Part Before ~~After~~ Marine Center Approval Signed Via partial application
			Drawing No. of sndgs. from final field sheet. A 27 FA sndg.
			at 58° 11' 09" N, 136° 21' 45" W.
			Full ~~Part Before After~~ Marine Center Approval Signed Via
17300	3-8-93	Eric Johnson	Drawing No. 29
16760	3-30-93	AMcGarrigan	Full ~~Part Before After~~ Marine Center Approval Signed Via
			Drawing No. 15
			applied through Chart 17300 draw #29
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.