10038

Diagram No. 8551-4

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. DA-10-3-82

Office No. H-10038

LOCALITY

State Alaska

General Locality Orca Inlet

Locality Vicinity of Cordova

1982

CHIEF OF PARTY
CDR J.M. Wintermyre

LIBRARY & ARCHIVES

DATE August 9, 1984

☆U.S. GOV. PRINTING OFFICE: 1980—766-230

10038

16710
16709
16700
16013 NC

to sign off see Record of Application

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10038

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.

DA-10-3-82

State Alaska

General locality Orca Inlet

Locality Vicinity of Cordova

Scale 1:10,000 Date of survey Aug. 2 - Sept. 8, 1982

Instructions dated February 19, 1982 Project No. OPR-P132-DA-82

Vessel NOAA Ship DAVIDSON launches 3131, 3132, 3133

Chief of party CDR J. M. Wintermyre

Surveyed by CDR J. Wintermyre, LCDR D. MacFarland, LT D. Dreves, LTJG N. Bogue, ENS J. Duggan, ENS E. Hawk, ENS J. Waddell

Soundings taken by echo sounder, hand lead, ~~pole~~ Ross Fineline Fathometer, leadline

Graphic record scaled by Ship's Personnel

Graphic record checked by Ship's Personnel

Verified by ~~Processed by~~ I. Almacen Automated plot by PMC Xynetics Plotter

Evaluated ~~Verified~~ by K. M. Scott

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

REMARKS: Revisions and marginal notes in black by evaluator.

STANDARDS CK'D 8-14-84

Q.Lay

✓ AWOIS + SURF RWD 9/84

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

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

PROGRESS SKETCH

OPR-P132-DA-82

ORCA INLET, ALASKA

SCALE: CHART 16700

NOAA SHIP DAVIDSON (S-331)

CDR. JAMES M. WINTERMYRE, Comdg.

JUNE.-SEPT., 1982

JUN	JUL	AUG	SEPT	STATISTICS
0	1401	3078	3.5	L. N. M. SOUNDING LINE
0	6.3	5.5	0.2	SQ. N.M. SOUNDING
21	5	0	0	TRIANGULATION STA RECOVERED
0	1	0	0	TRIANGULATION STA ESTABLISHED
1	1	0	0	TIDE GAGE
0	14	40	0	BOTTOM SAMPLES
0	0/6	4	0	NANSEN CAST/SOUND VEL. SYSTEM
3/5	0	0	0	BENCH MARKS RECOV./ESTAB.
0	0	2	0	DIVE INVESTIGATIONS

SHEPARD PT.

BOMB PT

(H-10029)

DA 10-2-82

CORDOVA

(H-10038)

DA 10-3-82

EYAK RIVER

60°30'

HAWKINS ISLAND

ORCA INLET

BIG P.

HENEY RANGE

T.G. 945-4125

PT. WHITSHED

60°30'

T.G. 945-4149

SHEET "C"

PT. BENTINCK

EGG ISLANDS

HINCHINBROOK

60°20'

GULF OF ALASKA

SHEET "D"

SHEET "E"

SHEET "F"

146°00'

145°40'

DESCRIPTIVE REPORT
H-10038
OPR-P132-DA-82
ORCA INLET ALASKA

A. PROJECT

Survey H-10038 (DA-10-3-82) is a basic hydrographic survey of Orca Inlet and Cordova, Alaska. Operations were conducted in accordance with Project Instructions OPR-P132-DA-82 dated 19 February 82, Change No. 1 dated 4 May 82 and Change No. 2 dated 13 July 82. Operations began ~~23 June~~ 2 August 82 and terminated on ~~10~~ 8 September 82.

B. AREA SURVEYED

The survey area is in Orca Inlet near Cordova, AK. Its southern limit is latitude 60/32/09N and western limit is longitude 145/51/03W. To the north the survey limit is at latitude 60/34/18N where H-10038 junctions with H-10029. To the east and west between the aforementioned latitudes the inshore limit is the ~~MLLW~~ MHW line.

The bottom is generally flat or gently sloping, except alongside deep channels on the east and west sides of the inlet. The composition of the bottom is predominantly fine, unconsolidated gray-black sand. Sand waves occur in the survey area.

C. SOUNDING VESSELS

Sounding vessels were launches DA-1 (3131) and DA-2 (3132). DA-1 raw data records were annotated in red ink. Blue ink was used for DA-2.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Both launches were equipped with Ross 5000 Fineline Fathometers. Serial numbers of the sounding equipment are listed below:

Launch	Fathometer	Digitizer	Transceiver	Julian Day
DA-1 (3131)	1077	1081	1081	245
DA-2 (3132)	1080	1080	1077	222-234
	1080	1040	1036	235-244

Daily stylus belt tension checks and phase calibrations were conducted on the Ross fathometers in accordance with the PMC

OPORDER. Fathometers were monitored continuously during survey operations and the phase checked frequently at the 50-foot calibration mark. The fathogram initial was maintained at zero. Blanking was usually kept at 3 feet.

Fathograms were scanned and the analog record compared to digitized depths. Digitizer errors, missed depths, and peak/deep insertions were identified and corrected according to the fathogram. Changes were entered on the edited master tape or via the electronic corrector tape, and noted on the raw data printout and fathogram. Leadlines were used for soundings along pier faces.

Soundings on the final field sheet have been corrected for transducer draft, velocity of sound and predicted tides. Bar checks were made prior to each day's data acquisition, and (time and weather permitting) at the conclusion of each day. Corrections for settlement and squat were applied to the final field sheet depths. Settlement and squat tests were conducted on 12 May 1982 in the Bay of Pillars, Alaska.

Five velocity casts were conducted with the Grundy portable sound velocity sensor to determine velocity correctors. Velocity corrections applied to soundings on the final field sheet were determined from a mean of the observations. Additional information concerning reduction of field soundings is contained in the appended Corrections to Echo Soundings Report.

Predicted tides for H-10038 were obtained from published daily predictions for Cordova, AK. Predicted tides were corrected to UTC and applied at 0.2 foot intervals for boatsheet, preliminary, and final field sheet plotting. Tidal conditions recorded at the Cordova tide station should be applied to smooth sheet depths.

E. HYDROGRAPHIC SHEETS

Field sheets were prepared at 1:10,000 scale using the DAVIDSON's PDP 8/e, Complot plotter, and standard NOS software. All field records were submitted to PMC Processing Division for verification and smooth plotting.

Blowups of the near-shore portion of H-10038 were prepared at 1:1,000 scale for clarity. Shoreline features were scaled from 1:10,000 T-sheets and are provided for orientation only.

Mylar overlays were used for plotting channel lines to relieve congestion and to facilitate interpretations of

sounding data on the final plot. Channel lines should not be smooth plotted.

F. CONTROL STATIONS

Published postions for all existing stations were used to control hydrography. One temporary station (Alder, temp.) was established; third-order, class I accuracy requirements were exceeded. The Horizontal Control Report contains additional information. See Eval Rpt Sect. 2

A list of stations, signal numbers and locations is appended to the Electronic Control Report.

G. HYDROGRAPHIC POSITION CONTROL

Sounding line position control was accomplished by range-range and range-azimuth techniques. Motorola Miniranger III microwave ranging equipment was used for the range-range work. Minirangers were used with Wild T-2 theodolites for range-azimuth work. The serial numbers on Miniranger (MR) consoles, receiver-transmitter (RT) units and transponder codes used are listed below:

Launch	MR Console S/N	RT Unit S/N*	Julian Day
DA-1 (3131)	710	M409	245
DA-2 (3132)	713166	1545	222-232
	707	SM314	233-244

Transponders

Code	S/N*	Julian Day	Code	S/N*	Julian Day
1	1606	222-236	5	B1413	228-245
2	1572	222-233	6	911723	228-238
3	4950	222-245	7	B1215	232-235
4	3376	222-245			

* Serial numbers refer to the serial number of the electronic component ("grey-box") inside the units, not to the PMC inventory numbers.

A table summarizing dates, locations and types of control stations is appended to this report.

Range-range station configurations were selected to provide unobstructed lines of sight to the survey area, as well as minimum 30^{o} range arc intersection angles. Hydrography in areas where range-range control was unacceptable was controlled using range-azimuth methods.

Miniranger system checks were performed at least twice daily, in most instances using the baseline transit method documented in the PMC OPORDERS, Appendix S.

Miniranger baseline calibrations were performed on JD's 177, 200 and 247, over known ranges determined with electronic distance measuring equipment (HP 3808). Baseline correctors are listed in the appended Miniranger Corrector Abstract.

Correctors determined prior to the start of survey operations were used for reductions of boat sheet and preliminary plot soundings. Positions on the final field sheet incorporate mean corrector values derived from the two calibrations bracketing the survey period, i.e. JD 177 and JD 200; JD 200 and JD 247. Corrector tapes submitted to PMC include the meaned correctors.

Miniranger signal strengths during survey operations were good. Minimum acceptable signal strengths were established for each of seven transponder codes based on the latest Miniranger baseline calibration preceding hydrography. Minimums were not violated. Values are listed in the Electronic Control Report.

H. SHORELINE

The final field sheet shoreline was obtained from shoreline manuscripts TP-12651 (1:10,000), TP-12652 1:10,000), TP-12653 (1:10,000) and TP-12807 (1:20,000). Shoreline was compiled by photogrammetric methods from aerial photography flown in August 1964, May 1965 and July 1966, and from shoreline revision photography flown in July 1981.

See Eval Rpt Sect. 2

Discrepancies between actual and manuscript shorelines were detected during field operations when soundings south of Mud Bay plotted 10-20m inland. The soundings that plotted on the land were checked by rerunning with a different Miniranger control pair. When soundings again plotted inside the charted shoreline, a series of sextant fixes were used to establish the actual shoreline. Shoreline thus established conformed with the sounding data. Shoreline in this area is generally obscured in the aerial photos by overhanging trees and may have been misinterpreted during the preparation of the shoreline manuscripts.

I. CROSSLINES

Crosslines comprise 8.9% of the total sounding mileage, excluding channel developments and shorelines. All crosslines were examined, and agreement with mainscheme lines was good, particularly in areas where the bottom was relatively flat. On the basis of 50 comparisons made between mainscheme soundings and crossline soundings the following results were noted:

56% agreed exactly; 84% agreed within 1 foot, 96% agreed within 2 feet. Discrepancies occurred in areas of steep bottom profile along the margins of channels where small horizontal displacement can produce large variations in depth.

J. JUNCTIONS

H-10038 junctions with H-10029 (1982) at 60/34/18N, just south of Grass Island. An overlap of one sounding line was made between sheets DA-10-2-82 (H-10029) and DA-10-3-82 (H-10038) since different sounding vessels were used north and south to the junctions. One ~~to~~ three foot differences in depth were observed at the junction of DA-10-3-82 with DA-10-2-82. Sand waves were observed in the junction zone. It is believed that all discrepancies at the junction are consequences of these sand waves.

K. COMPARISON WITH PRIOR SURVEYS

Two Presurvey Review (PSR) items and three prior surveys lie within the boundaries of H-10038. PSR Item Number 5 (NOS Wreck and Obstruction Information System dated April 17, 1982) consists of two wrecks. The first wreck is a 25 foot fishing boat and the second wreck is a 40 foot by 60 foot barge. The wrecks are charted at 60/33/08.85 N, 145/45/34.53 W: Identification of the item was determined by visual inspection. Both wrecks are behind a new bulkhead located in the vicinity of 60/38/10.0 N, 145/45/40.0 W and lie in a new land fill area.

Awois #50382

See Eval Rpt Sect. 6

The wrecks will be covered by 15 feet of dirt, thus the symbol for wreckage should be deleted from chart 16710. It is recommended that the area behind the jetty be charted as land fill area. concur

PSR Item Number 6 titled obstruction is charted as a stump at 60/33/46.0N, 145/47/30.0W. The NOS Wreck and Obstruction Information System dated April 27, 1982 positions the stump at 60/33/46.8N, 145/47/30.0W. This is a discrepancy with the charted position. The stump was first located during survey H-8853 (1964-65)-OPR-452. Item 6 was again located and determined to be at 60/33/46.6N, 145/47/29.9W using a three point sextant fix and check fix (see Sounding Volume 1, Vessel 3133, JD 232, Fix Number 602). The stump is .75 foot in diameter and projects 1 foot above the surrounding sand. By hand level, the stump was 6 feet above the water at 172800Z or 8.4 feet MLLW. Since the size of the stump is small and only projects from the sand 1 foot, and the surrounding sand bares at low water, it poses no hazard to safe navigation and should be deleted from the chart. do not concur Chart from present survey.

50170

Selected soundings from several prior surveys were inked

on the field sheet as indicated below.

Survey	Scale	Year	Color
H-3955	1:20000	1916	Green
H-8852	1:5000	1965	Red
H-8853	1:10000	1964-65	Blue

This survey is in poor agreement with H-3955 (1916). Approximately 90% of the selected soundings differ by four feet or more. Sounding differences ranged from +4 feet to -27 feet. On the western half of the preliminary plot, deeper soundings were recorded in the shoal area, while predominately shoaler soundings were found one half mile south of Mud Bay. The change in bathymetry is probably a result of the 1964 Alaskan Earthquake. See Eval Rpt Sect 6

Prior survey H-8852 (1965) is in very good agreement with H-10038. The transferred soundings, which are plotted along the southern shoreline between Flemming Creek and Odiak Slough, generally differ by two feet or less. The only exception is a 44 foot depth from H-8852, located at 60/33/48.0N, 145/45/01.5W which differs by +7 feet with the H-10038 51 foot contour. See Eval Rpt Sect 6

H-10038 is in fairly good agreement with H-8853 (1964-65). An average difference of three to four feet was observed when compared to the prior survey. Large differences occur on the mid-inlet shoal marked by buoy "OI" where deeper soundings with differences of 10 to 11 feet were recorded. Deeper soundings with differences of two to three feet occur on the shoal southeast of Mud Bay. The deeper soundings from this survey are probably a result of increased erosion after the 1964 earthquake. See Eval Rpt Sect 6

Sand waves were detected southeast of Hawkins Island between Mud Bay and Grass Island, while running hydrography. Data tapes generated during operations in these areas were edited to reflect the shoalest depths observed. A dive investigation of sand waves was conducted in Odiak Channel. The distance between crests was found to be approximately 15 meters.

L. COMPARISON WITH THE CHART

The 1:10000 scale final field sheet for H-10038 was overlaid on a 1:10000 blowup of Chart 16710 (Channel Island to Cordova, 1:30000, 12 Edition, August 11, 1979) for comparison purposes. The survey is in fairly good agreement with the chart. An average difference of two to three feet was observed. In most cases, survey depths were found to be deeper than chart depths. Larger differences occur on the southern end of the See Eval Rpt Sect 7

mid-inlet shoal east of Grass Island, which range from three to five feet. Survey depths on the shoal south of Mud Bay are also deeper, by two to three feet. The general trend has been a gradual deepening of the entire survey area, probably a result of the large dynamic sediment transport resulting after the land uplift during the 1964 earthquake. See Eval Rpt Sect 6

A discussion of shoreline features has been made in the Shoreline Verification Report, OPR-P132-DA-82, Orca Inlet, Alaska. Also, complete descriptions and position information on wrecks, rocks, pilings, buoys, and etc. are contained in Sounding Volumes 1 and 2. A discussion of charted features investigated during the survey with recommendations for the resolution of discrepancies is appended to the Descriptive Report.

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior surveys for charting.

N. AIDS TO NAVIGATION

The positions of all fixed and floating aids to navigation in the survey area were determined. Fixed aids were located to third-order, class I accuracy standards, and are discussed in the Horizontal Control Report. Floating aids were located by Hydrographic methods.

Fixed Aids

Spike Island Light — Light List No. 3419
(FL. W., 6s)
60/30/02.7N 145/46/07.0 W → 6.8

The observed position agrees with the charted position and the position given in the Light List.

Cordova Boat Harbor Light 2 — Light List No. 3420
(Fl. R., 4s)
60/32/50.7 N 145/45/59.8 W → 3

The observed position agrees with the charted position and the position given in the Light List.

Odiak Pharos Light — Light List No. 3420.50
(F. W., Private aid)
60/32/16.2 N 145/45/41.4 W → 2

The observed position agrees with the position given in the Light List. The light is privately maintained and should be charted as such. It shows a fixed white light.

Floating Aids

Channel Junction Lighted Bell Buoy 01 (RB "0I" I QK F1, Bell)
60/34/01.2 N 145/45/28.2 W
Light List No. 3418
Pos. No. 7010, JD 246

The observed position agrees with the charted position and the position given in the Light List.

Odiak Slough Buoy 2 (Red, spherical)
60/32/24.9N 145/46/16.8 W
Light List No. 3420
Pos. No. 6083, JD 251

Odiak Slough Buoy 4 (Red, spherical)
60/32/21.7 N 145/45/53.8 W
Light List No. 3420
Pos. No. 6082A, JD 251

Buoys "2" and "4" are privately maintained and are in an area that bares at low water. They should not be charted.
do not concur Chart from present survey

No additional aids to navigation are recommended.

A cable area is charted west from Cordova, thence northward past Grass Island and up Western Channel. Contact was made with the local power company and with the FAA to confirm the existence of a cable in the area. Neither were aware of any cables in Orca Inlet. The source information concerning the route should be checked and the possibility of deleting the cable area from the chart considered. Vessels routinely anchor in that portion of the cable route west of Spike Island.

The Alaska State Ferry system uses the Cordova Ocean Dock, charted at 60°33' 30" N., 145°45'12" W. It approaches Cordova from Prince William Sound via Western Channel, between Observation Island and Knot Point.

O. STATISTICS

Number of Positions:	1009
Total nautical miles of sounding lines:	142.67
Square miles:	3.8
Velocity Casts:	5
Bottom Samples:	21

P. MISCELLANEOUS

Sand waves were encountered in several areas of H-10038. The handling of these features was discussed with PMC, and permission was granted to represent only the wave crests

(shoalest feature) on the sounding plot. Two means of accomplishing this were proposed and pursued: (1) non-crest soundings could be withheld from the plot via "9999" corrector tape entries, or (2) by "shifting" crest depths to the regular sounding intervals. The first approach was considered acceptable, even though it violates the PMC OPORDER. The second approach was deemed acceptable because of the transient nature of the waves. Both methods were used during field processing.

Q. RECOMMENDATIONS

It is recommended that this survey be released as soon as possible due to the dynamic nature of the bottom topography.

R. AUTOMATED DATA PROCESSING

The following programs were used on the DAVIDSON's PDP 8/e Hydroplot system to prepare field sheets and to collect and process the data:

Program	Version
RK 112 Range-Range Real Time HYDROPLOT	3/19/81
FA 181 Range-Azimuth Logger	2/23/78
RK 201 Grid, Signal and Lattice Plot	4/18/75
RK 211 Range-Range Non-Real Time Plot	2/02/81
RK 212 Visual Station Table Load	4/01/74
RK 300 Utility Computations	10/21/80
RK 330 Reformat and Data Check	5/04/76
RK 407 Geodetic Inverse/Direct Computation	9/25/78
RK 409 Geodetic Utility Package	9/20/78
AM 500 Predicted Tide Generator	11/10/72
AM 602 Elinore (Line Oriented Editor)	5/20/75

Geodetic computations were made using the geodetic and triangulation programs written for the HP-9815 calculator.

S. REFERRAL TO REPORTS

Horizontal Control Report
Field Tide Note
Electronic Control Report
Corrections of Echo Soundings Report
Field Geographic Names
Coast Pilot Report
Shoreline Verification Report
Marine Mammals Report

Respectfully submitted,

Eric G. Hawk

Eric G. Hawk
ENS, NOAA

Approved and forwarded.

James M. Wintermyre

James M. Wintermyre, CDR, NOAA
Commanding Officer
NOAA Ship DAVIDSON

ADDENDUM TO SECTION L: COMPARISON WITH THE CHART
H-10038
OPR-P132-DA-82
ORCA INLET, ALASKA

1. Position No. 6022 (Sounding Volume #1, p. 9, JD 224) was determined for the westernmost piling in a group of uncharted piles at 60°33'51.8" N, 145°44'33.8" W. The piles bare ~~5.8~~ 9.0 feet (at MLLW) and should be charted. concur Chart from H-10038

2. Position Nos. 6020 and 6021 (Sounding Volume #1, p. 8, JD 224) were determined for the uncharted wrecks of two fishing boats at 60°33'36.0" N, 145°44'44.8" W and 60°33'35.6" N, 145°44'42.2" W, respectively. The wrecks should be charted. concur Chart from present survey

3. Position Nos. 6028 and 6029 (Sounding Volume #1, p. 11, JD 232) were determined for two uncharted pilings at 60°33'24.8" N, 145°45'17.8" W and 60°33'25.5" N, 145°45'14.8" W, respectively. The pilings are covered by ~~2.1~~ 2.9 feet and ~~2.4~~ 3.2 feet of water, respectively, at MLLW. The area between the pilings and the nearby small boat moorage float (charted) is foul with pilings and access to the float requires local knowledge. The highest piling in the foul area bares ~~2.6~~ 3.0 feet at MLLW. The pilings should be charted. The foul area is clearly demarcated on the chart with dashed lines and is presently charted as "ruins". The descriptive "foul with pilings" is more accurate and should be substituted in future editions. subm concur Chart from present survey

4. Position Nos. 6009 and 6010 (Sounding Volume #1, p. 6, JD 224) were determined for two uncharted pilings at 60°33'11.8" N, 145°45'28.8" W and 60°33'12.1" N, 145°45'27.0" W, respectively. They are located between the Morpac Cannery and the north end of the landfill bulkhead. The pilings bare ~~3.7~~ 4.9 feet at MLLW and should be charted. concur Chart from present survey

5. The piling charted at 60°33'15.0" N, 145°45'27.5" W was searched for at a negative tide. No trace of the piling was observed. The feature should be deleted from the chart. concur

6. The wrecks located at 60°33'09" N, 145°45'34.5" W (PSR item 5), the dolphin charted at 60°33'08" N, 145°45'34.2" W and the rock charted at 60°33'07" N, 145°45'27" W lie inside a landfill area. They are no longer accessible by sea and consequently pose no hazard to navigation. They should be deleted from the chart and the area charted as "landfill." concur

7. The rock charted at 60°32'37" N, 145°45'53" W was not observed. The area where it is charted has been extensively dredged during enlarging operations at the Cordova Boat Harbor. The rock should be deleted from the chart and the shoreline revised (see Shoreline Verification Report). concur

8. Position No. 4499 was determined for the southernmost and smallest of two rocks charted immediately off the southwest tip of Spike Island, at 60°32'54.7 N, 145°46'24.8" W. The rocks charted at 60°32'50.0" N, 145°46'26.8" W and 60°32'56" N, 145°46'27" W were observed and their

positions were verified from the field-edited data. They should be retained as charted. Chart from H-10038

9. The dolphins charted at 60°32'16" N, 145°45'40" W were investigated at low tide. They were not observed and should be deleted from the chart. The obstruction charted at 60°32'15"N, 145°46'01" W should be deleted. The area is being used as a sanitary landfill and should be labelled as "dump." Concur

10. Position No. 4441 was determined on JD 231 for the rock charted at 60°34'18.5" N, 145°47'02.5" W about 200 m west southwest of Grass Island. The charted position is accurate and should be retained. cov 2ft MLLW concur

11. The rock charted at 60°34'17.4" N, 145°47'05" W about 100 m south southwest of Position No. 4441 was investigated on JD 231. It is not an isolated feature and should be represented as a rock ledge extending from the larger of the two small islands immediately southwest of its charted position (see Position Nos. 4446-4447, Raw Data Printout). concur rock located is seaward extension of ledge and has been transferred to H-10038 Chart from present survey

12. Position Nos. 4746, 4747, 4742 (JD 232) and 4219 (JD 228) were determined for 4 rocks charted just south of the largest island in the entrance to Shipyard Bay. The newly determined positions agree closely (within 5 - 10 m) with charted positions except for the northernmost rock charted at 60°34'06" N, 145°47'39.5" W. The latter should be charted at its newly determined position (No. 4219) 60°34'07.0" N, 145°47'39.2" W about 30 m northeast of its charted location. See also Position Nos. 6072-6075 (~~not plotted~~), Sounding Volume #1, p. 24. concur Chart from this survey

13. Position No. 4214 at 60°33'52.8" N, 145°47'51.8" W (JD 228) and Position No. 4737 at 60°33'52.8" N, 145°47'51.9" W (JD 232) were determined for a rock feature off a point of land about 0.7 nm southwest of Grass Island and about 0.3 nm northeast of triangulation station Across 1933, Hawkins Island. The 23' x 30' feature (elevation 8 feet) rises steeply from the bottom and lies about 30 feet off the mainland separated from it by deep water. The feature should be charted. concur Chart from present survey

14. The presence of the rocks charted at 60°33'42.4" N, 145°48'12" W and 60°33'44.7" N, 145°48'09.3" W, about 150 - 250 m north northwest of station Across 1933, was confirmed. Field-edited positions were visually verified. The features should be retained as charted. concur Chart from H-10038

15. Positions were determined for previously charted and uncharted rocks along the shoreline north of Mud Bay. Position No. 4736 at 60°33'05.5" N, 145°49'48.8" W (JD 232) and Position No. 4744 at 60°33'05.3" N, 145°49'45.7" W (JD 234) agreed with charted rocks. Position Nos. 4775-4777 (JD 234) were determined for small uncharted rocks at 60°33'05.5" N, 145°49'43.4" W; 60°33'06.2 N, 145°49'38.6" W; and 60°33'06.0" N, 145°49'40.3" W, respectively. A 5' x 15' rock bares 7.9 feet at MLLW, (Position No. 4736); a 3' x 10' rock bares 1.7 feet at MLLW (Position No. 4774); a 6' x 7' rock bares 2.4 feet at MLLW (Position No. 4775); a 5' x 8' rock bares 3.9 feet a MLLW (Position No. 4776). The rocks should be charted. Pos 4774 was rejected by DAVIDSON concur Chart from present survey

16. Three features on the east side of Mud Bay were investigated on JD 250. The rocks charted at 60°33'08.2" N, 145°49'54.0" W, and 60°33'11.7" N, 145°49'55.0" W were investigated on JD 250. No rocks were observed at the charted locations and the surrounding areas were bare mud. ~~Do not~~ concur The rocks should be deleted from the chart. The rock charted at 60°33'10.8" N, 145°49'54.6" W, transferred from the shoreline manuscript, was also investigated. It is an extension of the shoreline and should be charted as such. ~~Rocks transferred from Blueprint 118503~~ Chart from present survey

17. The charted rocks in the vicinity of 60°33'05" N, 145°50'15" W extending westward approximately halfway across the entrance to Mud Bay from the south end of the island approximately centrally located in the Bay, was investigated on JD 234. Position No. 4804 was determined for the highest point on the reef (see also Position No. 6076, Sounding Volume #1, p. 24). The charted position, 60°33'05" N, 145°50'21.5" W lies about 30 m northeast of the newly determined position; the charted elevation (8.0 feet) differs slightly from the newly determined elevation (~~10.6~~ 11.4 feet). The chart should be revised accordingly. The nearby rocks for which elevations were not determined should be retained as charted to indicate the area is foul and strewn with boulders. concur Chart from H-10038

18. The shoreline west of Mud Bay to the survey limit at 145°51'00" N was investigated on JD 250. Slight discrepancies with the charted features were observed. Parts of the shoreline in this area were found to be misrepresented on the manuscript (see Shoreline Verification Report). The rocks charted in that area are in reasonable agreement (10 - 20 m) with the newly determined positions (Position Nos. 6077 - 6079, Sounding Volume #1, p. 25). The rock at Position No. 6077 bares 4.0 ~~2.6~~ feet at MLLW; the rock at Position No. 6078 bares ~~5.3~~ 5.7 feet at MLLW; the rock at Position No. 6079 bares ~~4.5~~ 4.9 feet at MLLW. The rock charted at 60°32'51.5" N, 145°50'~~26~~.5" W was not observed and should be deleted from the chart. concur Chart from present survey

FIELD TIDE NOTE
OPR-P132-DA-82
H-10029
H-10038
ORCA INLET, ALASKA

Field reduction of soundings for H-10029 and H-10038 is based on daily predicted tides for Cordova, Alaska (Reference Station 945-4050).

Program AM500, "Predicted Tides Generator" (11/10/72 version) was used to produce ASCII and BINARY Predicted Tide Tapes. Soundings on the final field sheet are corrected for predicted tides at 0.2 foot intervals.

The Cordova (primary) tide reference station (945-4050) was the control tide gage. It is located on the SE corner of the Ocean (Ferry) Dock approximately 0.8 miles north of Cordova. Two gages, Leupold-Stevens (L&S) analog to digital recording gage and a Metercraft gas purged (bubbler-type) backup gage operated continuously.

The Cordova tide station is maintained by a contract observer. Pacific Tide Party (PTP) personnel contacted the observer and inspected the station on 8 July 82. During the inspection they adjusted the memory spring on the L&S gage (see PTP Tide Station Report, Cordova, 8-6-82.) PTP and DAVIDSON divers cleaned and inspected the staff and floatwell.

Leveling

The staff was leveled by DAVIDSON personnel to three benchmarks, including the primary benchmark, to third-order class 1 accuracy on 2 July 82 (JD 182) prior to the start of hydrography. The staff was re-leveled by DAVIDSON and PTP personnel to second-order class 1 accuracy on JD's 194-195. The staff was leveled on JD 251 after completing hydrographic survey operations. There was no evidence of staff movement. Elevations of all benchmarks leveled to agreed within 0.005 m. of historic values.

Zoning

Recorded water levels from the Cordova reference station are representative throughout the survey area and should be applied directly.

Supplemental Tide Data

Two additional bubbler-type tide stations were established in

anticipation of hydrography which was not performed. Boswell Rock was an alternate site for tide support for offshore work, and Shag Rock was to support operations in Orca Inlet, south of Cordova. Data from these stations are provided for informational and historic purposes only, and have no application to H-10029 or H-10038 soundings.

Station	Location	Period of Operation	Gage S/N
Boswell Rock (945-4149)	60/24/48N 146/06/12W	15 July - 2 Sept 82 (JD 196 - JD 245)	64A11030
Gage Installed:	29 June 82 (JD 180)		
Gage removed:	3 Sept 82 (JD 246)		
Shag Rock (945-4125)	60/27/54N 145/59/18W	15 July - 2 Sept 82 (JD 196 - JD 245)	67A10292
Gage Installed:	1 July 82 (JD 182)		
Gage removed:	3 Sept 82 (JD 246)		

Gages were operated on GMT and inspected every two to three days by DAVIDSON personnel. When abstracting hourly heights of tide, time errors were distributed linearly throughout the period between observations.

Both gages exhibited an unusual flattening of the tide curve at the low portion of the tidal cycle. Since the orifices were not set in tide pools and the gages otherwise appeared to work properly, the flattening is probably real, and a function of the geometry of the tidal basin.

Boswell Rock (945-4149)

Egg Island and Point Bentinck were identified by the Project Instructions as two sites for a tide station to control offshore hydrography. Neither site was suited for an installation, since each is adjacent to channels where strong currents occur, are bordered by broad flat sandy beaches, and are heavily fished up to the shoreline by gill-netters.

Verbal permission to use Boswell Rock as an alternate was issued through PMC, and benchmarks were stamped with the station number (945-4149) prescribed for Point Bentinck. CHANGE NO. 2, issued after the station was installed, formally authorized the use of Boswell Rock as an alternate site, and assigned the Egg Island station number. The discrepancy was reported and authorization to use 945-4149 was granted via the 121521Z August 1982 CPM radio message. An ammendment to CHANGE NO. 2 was not issued.

Boswell Rock is located approximately 6.8 n.mi. WSW of Point Whitshed, 4.5 n.mi. SW of Mummy Island Light, and 1.5n.mi. NW of Point Bentinck, on the west side of the entrance to Boswell Bay. The station was installed on the SE tip of the island. The staff was mounted on a large and stable round top boulder and guyed in place with wire secured to eyebolts. The orifice

was placed in the channel south of Boswell Rock. The gage was set well up on Boswell Rock and was protected from the elements by a rock wall and boulders on three sides. The gage provided continuous data and kept accurate time.

The Boswell Rock staff was leveled to five newly established benchmarks to third-order class 1 accuracy requirements on JD 182 prior to the start of survey operations. It was leveled again on JD 245 at the end of survey operations. The JD 245 difference in elevation between benchmarks 4149-C and 4149-D did not agree with the JD 182 value. The leg was re-observed on JD 250, and those results confirmed the JD 245 elevation difference. Since there is no indication of mark disturbance it is presumed that compensating errors occurred during the JD 182 observations. An observation across approximately 120 m of open water was required to tie 4149-C to 4149-D and probably contributed to the discrepancy.

Based on 25 staff-gage comparisons a marigram reading of 4.4 feet corresponds to 0.0 feet on the tide staff. An erroneous computation for the staff-to-gage comparison on 15 July 82 (2120A) was not included in the staff-gage comparison.

Shag Rock (945-4125)

Shag Rock is located approximately 2.9 n.mi. WNW of Point Whitshed, 0.6 n. mi. ENE of Mummy Island Light, and 7.7 n.mi. SW of Cordova. The Shag Rock gage was mounted on a small rock ledge near the highest point of the rock, partially protected from the elements. The tide staff was mounted against the W side of the rock facing a heavily transited shallow channel into Orca Inlet. The staff was braced with lumber and guyed in place with wires secured to eyebolts set in bedrock. The gage continuously provided good data except for one period when it was over-dampened. Dampening was relieved and the gage was restored to proper operating condition. The gage kept excellent time.

The Shag Rock staff was leveled before and after survey operations, on JD's 182 and 245. Elevations determined for the benchmarks from the opening and closing level runs agreed within 0.001 m. of each other and historic data. Maintenance was performed on Benchmark No. 1 1964 to replace cement which had weathered away from the disk. The disk was not loose.

Based on 25 observations, a marigram reading of 4.7 feet corresponds to 0.0 feet on the tide staff. Over dampening caused an erroneous staff-to-gage comparison on 2 August 1982 (1945Z). The observation was not included in the analyses. Divers removing the Shag Rock orifice anchor and tubing found approximately one-half of one foot of loose sand covering them. The

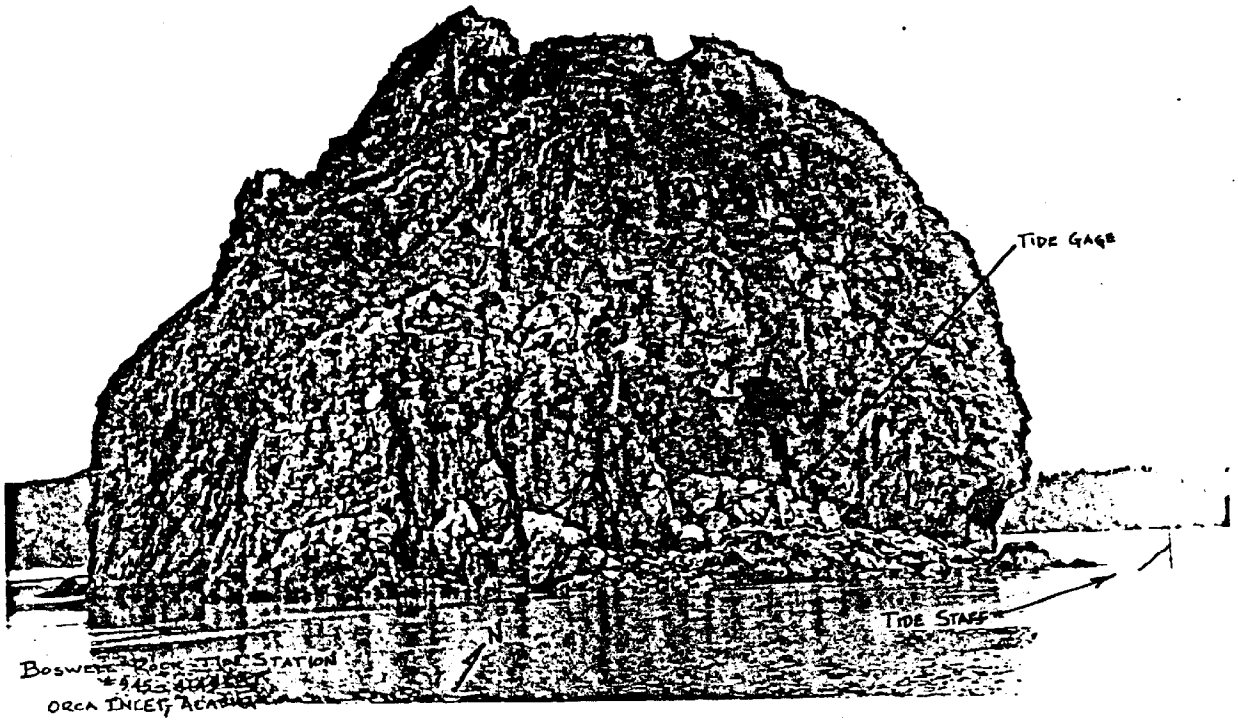
final staff-to-gage comparison (taken the day before orifice removal) was higher than previously recorded values, but no other indications of a blocked orifice were evident. Future installations at the site must take into account the shifting nature of the sandy bottom when installing the orifice. The orifice should be mounted on a stake driven into the bottom and inspected by divers at 2 to 4 week intervals.

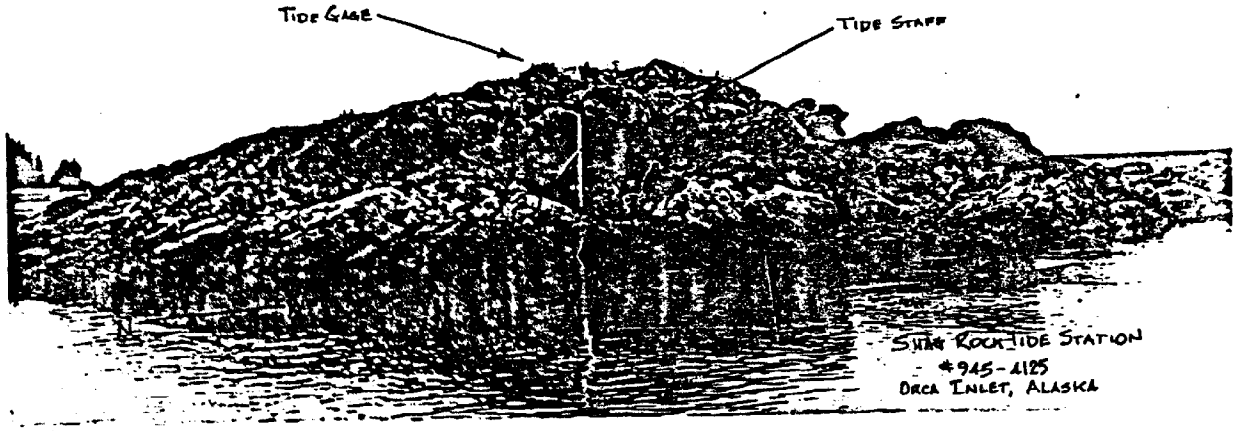
Respectfully submitted,

Donald A. Dever
for Eric G. Hawk
Ens. NOAA

Approved and forwarded,

James M. Wintermyre, CDR, NOAA
Commanding Officer
NOAA Ship DAVIDSON S331


TIDE GAGE
TIDE STAFF
BOSWELL ROCK TIDE STATION
#945-4125
ORCA INLET, ALASKA


TIDE GAGE
TIDE STAFF
SHAG ROCK TIDE STATION
#945-4125
ORCA INLET, ALASKA

March 14, 1983

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 945-4050, Cordova, AK

Period: August 10 - September 2, 1982

HYDROGRAPHIC SHEET: H-10038

OPR: P132

Locality: ORCA Inlet, Alaska

Plane of reference (mean lower low water): 5.95 feet

Height of Mean High Water above Plane of Reference is 11.6 feet

REMARKS: Recommended Zoning
Zone Direct

James C. Hubbard
Chief, Datums and Information Branch

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10038

Name on Survey	A ON CHART NO. 16710	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 T-Sheet	
ALASKA, ORCA INLET VICINITY OF CORDOVA										
ALASKA (Title)										1
CORDOVA	X								X	2
GRASS ISLAND	X								X	3
HAWKINS ISLAND	X								X	4
MUD BAY	X								X	5
ODIAK SLOUGH									X	6
ORCA INLET	X								X	7
SHIPYARD BAY	X								X	8
SPIKE ISLAND	X								X	9
SADDLE POINT										10
										11
										12
										13
										14
										15
										16
										17
					Approved:					18
										19
					Charles E. Harrington					20
					Chief Geographer- N/CG2x5					21
					11 OCT. 1983					22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

OPR-P132-DA-82
ORCA INLET, ALASKA
DA-10-3-82 (H-10038)

VELOCITY TAPE PRINTOUT

TABLE 1:
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000990 0 0012

TABLE 2:
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OPR-P132-DA-82
DA-10-3-82
TC/TI TAPE PRINTOUT

LAUNCH DA-2 (3132)

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233016 0 0012
234827 0 0019
235158 0 0012
235621 0 0019
235907 0 0012
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003808 0 0019
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190931 0 0017
191407 0 0000 0002 228 313200 000000
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195143 0 0017 0001 229 313200 000000
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205953 0 0012
210955 0 0019
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230004 0 0012
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230709 0 0012
231106 0 0019
231256 0 0012
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005924 0 0019
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010300 0 0000
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OPR-P 132-DA-82
DA-10-3-82 (H-10038)
TC/TI TAPE PRINTOUT

LAUNCH DA-1 (3131)
184318 0 0015 0001 245 313100 000000 ✓
195900 0 0015

SKIFF (3133)
172000 0 0000 0002 224 313300 000000 ✓
002100 0 0000 0002 251 213300 000000
003530 0 0000

ELECTRONIC COMPUTER ABSTRACT

TRSSTL : 3131 SHEET : DA-10-3-32

TIME	DAY	PATTERN 1	PATTERN 2
184318	245	-00004	-00004
192432	245	-00004	-00004

RANGE-AZIMUTH CORRECTOR ABSTRACT

VESSEL : 7132 SHEET : DA-10-7-82

TIME	DAY	PATTERN 1	PATTERN 2
201330	237	+00002	NO CORRECTION

ELECTRONIC CORRECTOR ABSTRACT

PASSPI : 3132 SHEET : PA-10-7-82

TIME	DAY	PATTERN 1	PATTERN 2
220400	214	+00002	+00001
200810	222	+00002	+00002
215350		-00004	+00002
232214	222	-00001	+00002
000007	223	-00002	+00002
180111	223	-00002	+00003
215451	223	-00002	+00003
184913	228	-00004	+00002
204901		+00002	+00002
230740		+00002	+00004
001817	229	-00001	-00004
182905	229	-00001	+00004
184407		+00004	-00001
185247		-00001	-00002
195143	229	+00002	-00001
200134		+00002	+00002
202601		+00002	+00004
211419		-00001	-00004
222726		+00004	-00001
225842		-00001	-00002
232704		+00002	-00001
233320		+00004	-00001
000142	230	+00004	-00001
184256	231	+00004	+00004
195952		+00002	-00001
201936		+00004	-00001
234756		+00004	+00002
000002	232	+00004	+00002
195014	232	+00001	+00002
211203		+00002	+00004
214504		+00002	+00074
230150		-00001	-00074
002407	233	+00004	+00002
193601	234	+00004	+00000
000021	235	+00004	+00000
013438		+00000	-00002
002058	272	+00000	+00004

OPR-P132-DA-82
~~DA-10-2-82(H-10029)~~, DA-10-3-82(H-10038]
SIGNAL TAPE PRINTOUT

~~001~~	~~1~~	~~60~~	~~39~~	~~08527~~	~~145~~	~~40~~	~~35743~~	~~250~~	~~0012~~	~~000000~~ ~~BLUFF 2 No. 1, 1964~~
002	7	60	37	42203	145	42	36457	250	0002	000000 NORTH I. ROCK LT 10, 1964
003	1	60	38	24083	145	43	08650	250	0002	000000 ~~ROOT 2 No. 1, 1964~~
~~004~~	~~5~~	~~60~~	~~36~~	~~58671~~	~~145~~	~~45~~	~~34479~~	~~250~~	~~0005~~	~~000000 WEST CHANNEL LT 2, 1982~~
005	7	60	36	23632	145	41	35703	250	0002	000000 POINT 2 No. 2, 1964
006	5	60	35	35917	145	45	40803	250	0006	000000 AZIMUTH MARK 1900
~~007~~	~~6~~	~~60~~	~~36~~	~~14795~~	~~145~~	~~44~~	~~18732~~	~~250~~	~~0000~~	~~000000 SAW 2 No. 2, 1964~~
~~008~~	~~0~~	~~60~~	~~38~~	~~24371~~	~~145~~	~~43~~	~~07492~~	~~250~~	~~0002~~	~~000000 ROOT 2, 1964~~
009	7	60	35	04453	145	42	31461	252	0002	000000 ALDER (Temp. Pt.)
010	0	60	34	20754	145	46	47581	250	0011	000000 GRASS 1899
011	5	60	33	02644	145	46	08588	250	0011	000000 NARD 1933
012	1	60	35	44411	145	43	59218	250	0010	000000 NIBSY 1899
013	5	60	31	42349	145	47	38614	250	0003	000000 MAUD 2, 1964
014	0	60	33	08701	145	49	20647	250	0008	000000 STUMP 2 USGS 1952
015	7	60	29	41029	145	54	43547	250	0014	000000 TRADE 1899
016	1	60	37	58819	145	44	58321	250	0004	000000 ORCA BAY LT 9, 1982
017	1	60	33	37678	145	48	16647	139	0004	000000 ACROSS 1933
018	1	60	31	35651	145	55	10210	139	0003	000000 TREAT 1899
019	4	60	32	22603	145	45	35154	139	0000	000000 CORDOVA RADIO MAST 1955
020	6	60	32	58803	145	45	33249	139	0000	000000 CORDOVA RCA TOWER, 1979
021	7	60	33	02610	145	46	06059	139	0000	000000 SPIKE ISLAND LT 1982
022	6	60	32	50673	145	45	59480	250	0004	000000 CORDOVA HARBOR LT 2 1982
~~024~~	~~1~~	~~60~~	~~33~~	~~22330~~	~~145~~	~~45~~	~~21940~~	~~252~~	~~0000~~	~~000000~~ GRAVEL PT NRT RADIO MAST
025	1	60	28	03415	145	57	26507	139	0030	000000 ~~PILING~~
026	1	60	32	16189	145	45	41253	139	0009	000000 ODIAK PHAROS LIGHT, 1982

NOAA FORM 75-44
(11-72)

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

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

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
DAVIDSON LAUNCH DA-2 (3132)	OPR-P132-DA-82	1982	DA 10-3-82	DJ	2-SEPT-82

SERIAL NO.	DATE JD	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
4313	229	60/32/33.60	145/46/59.49	—	10 LB	2 cm		gy	fne S		DJ
4314	"	60/33/11.67	145/46/58.35	17.3	"	"		gy	fne S		DJ
4315	"	60/33/31.94	145/47/38.20	27.2	"	"		gy	fne S	SHELL fragment	DJ
4316	"	60/33/50.66	145/46/56.71	21.7	"	"		gy	fne S		DJ

Use more than one line per sample if necessary.

☆ U.S. G.P.O. 1972-769-565/530 REG. #6

NOAA FORM 75-44
(11-72)

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

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
LAUNCH 3132 (DA-2)	OPR-P132-DA-82	1982	DA 10-3-82	DML	2-SEPT-82

SERIAL NO.	DATE JD	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms) FEET	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
4193	223	60/34/69.61	145/44/58.56	52.7	10 LB	2 cm		gy,bk	fne S	worm tubes	
4194	"	60/34/10.38	145/45/38.30	21.6	"	"		gy,bk	fne S	LOOSE CONSISTENCY	
4195	"	60/34/10.31	145/46/18.19	17.0	"	"		gy,bk	fne S	" "	
4200	"	60/33/49.98	145/46/19.39	21.1	"	"		gy,bk	fne S	" "	
4201	"	60/33/51.16	145/46/40.94	19.5	"	"		gy,bk	fne S	" "	
4202	"	60/33/49.99	145/45/00.40	49.6	"	"		gy	fne S	" "	
4203	"	60/33/31.20	145/45/41.04	36.6	"	"		gy	fne S		
4204	"	60/33/31.05	145/46/19.24	22.9	"	"		gy	fne S		
4207	"	60/33/11.28	145/46/18.27	36.1	"	"		gy	fne S		
4208	"	60/33/12.14	145/45/40.52	29.0	"	"		gy	M, fne S		
4306	229	60/32/31.85	145/49/39.23	2.1	"	"		gy,bk	fne S	LOOSE CONSISTENCY	EH
4307	"	60/32/12.49	145/48/58.52	4.7	"	"		gy,bk	fne S	SMALL SHELL FRAGMENTS	E.H
4308	"	60/32/13.86	145/47/37.27	9.5	"	"		gy,bk	M	soft	E.H
4309	"	60/32/32.90	145/48/18.27	9.0	"	"		gy,bk	fne S	LOOSE	E.H
4310	"	60/32/52.40	145/48/57.89	22.2	"	"		gy,bk	fne S	soft	E.H.
4311	"	60/33/12.28	145/48/18.69	41.5	"	"		gy,bk	fne S, M	soft	E.H.
4312	"	60/32/52.63	145/47/37.54	7.1	"	"		gy	fne S	soft	

Use more than one line per sample if necessary.

☆ U.S. G.P.O. 1972-769-565/530 REG. #6

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)

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

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
NOAA Ship DAVIDSON	Alaska	Orca Inlet	9/10/82

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
P132-DA-82	-	H-10038	NA 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
	Spike Island Light (L.L. No. 3419)	60/33	02.6 ~~57~~ 60	145/46	06. ~~958~~ 820		F-2-6-L 7/08/82	16709 16710
	Cordova Boat Harbor Light 2 (L.L. No. 3420)	60/32	50.6 ~~73~~ 59	145/45	59. ~~480~~ 343		F-2-6-L 7/08/82	16709 16710
	Odiak Pharos Light (L.L. No. 3420.50, priv. mntd.)	60/32	16.1 ~~89~~ 69	145/45	41. ~~353~~ 237		F-3-6-1 8/22/82	16709 16710
	See L-973(84)							

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)

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

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
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P132-DA-82	-	H-10038	NA 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Radio Mast	KLAM (1450 kHz) radio tower (Cordova Radio Mast)	60/32	16.189	145/45	41.353		F-3-6-L 8/22/82	16709 16710
Tower	Tapered 50 ft. steel tower, alternating 8 ft. bands of red and white (Cordova RCA Tower)	60/32	58.893	145/45	33.209		Triang. rec. 6/27/82	16709 16710
	See L-9774(83)							

SURVEY APPROVAL SHEET

A. Amount and degree of personal supervision of field work and frequency of record and sheet inspection:

Work was under direct supervision of FOO. Records were inspected at random and the sheets daily by me, to provide recommendations where needed.

B. State whether the survey is complete and adequate, or if additional field work is recommended:

Survey is complete and adequate to supersede previous surveys. The small boat harbor at Cordova was being enlarged while we were there and should be surveyed next year if construction is completed.

C. Cite additional information or references that may be of assistance for verifying and reviewing the survey:

D. Signed statement of approval of the field sheet and all accompanying records:

Date: 12/17/82

Approved and forwarded by:

J. M. Wintermyre
CDR, NOAA
Commanding Officer

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10038

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS. 4, ARC, 4 EXCESS	8
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	1

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

SHORELINE DATA

SHORELINE MAPS(List): Blueprints 118505, 118506, 118507, 118512

PHOTOBATHYMETRIC MAPS(List):

NOTES TO THE HYDROGRAPHER(List):

SPECIAL REPORTS(List): Corrections to Echo Soundings, Elec. Cont. Rep., Shoreline Verif.

NAUTICAL CHARTS(List): 16710, 12th Ed., Aug. 11, 1979

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			945
POSITIONS REVISED		850	
SOUNDINGS REVISED		165	
CONTROL STATIONS REVISED		16	
	TIME - HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	0	0	0
VERIFICATION OF CONTROL	03	01	4
VERIFICATION OF POSITIONS	80	18	98
VERIFICATION OF SOUNDINGS	100	7	107
VERIFICATION OF JUNCTIONS	01	01	2
APPLICATION OF PHOTOBATHYMETRY	00	00	0
SHORELINE APPLICATION/VERIFICATION	31	04	35
COMPILATION OF SMOOTH SHEET	15	11	26
COMPARISON WITH PRIOR SURVEYS AND CHARTS	02	03	5
EVALUATION OF SIDESCAN SONAR RECORDS	00	00	0
EVALUATION OF WIRE DRAGS AND SWEEPS	00	00	0
EVALUATION REPORT	03	05	8
OTHER Rework	13	02	15
Digitization	13		13
TOTALS	261	52	313

	Beginning Date / Time (Hours)	Ending Date
Pre-processing Examination by		
Verification of Field Data by: I. Almacen	Beginning: 4/8/83	Ending Date: 5/25/84
Verification Checks by: S. Otsubo, J. Green	Time (Hours): 39	Ending Date: 6/21/84
Evaluation and Analysis by: K. M. Scott	Beginning: 4/17/84	Ending Date: 6/12/84
Inspection by	Time (Hours)	Ending Date

PACIFIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO: H-10038 FIELD NO: DA-10-3-82

Alaska, Orca Inlet, Vicinity of Cordova

SURVEYED: August 2 - September 8, 1982

SCALE: 1:10,000 PROJECT NO: OPR-P132-DA-82

SOUNDINGS: Ross Fineline Fathometer
Leadline and Sounding Poles

CONTROL: Mini-Ranger
Range-Range
Range/Azimuth

Chief of Party.....CDR J. M. Wintermyre

Surveyed by.....CDR J. M. Wintermyre
LCDR D. MacFarland
LT D. Dreves
LTJG N. Bogue
ENS E. Hawk
ENS J. Waddell
ENS J. Duggan

Automated Plot by.....PMC Xynetics Plotter

Verified by.....I. Almacen

Evaluated by.....K. M. Scott

1. INTRODUCTION

H-10038 is a basic hydrographic survey with field work accomplished by NOAA Ship DAVIDSON in accordance with Project Instructions OPR-P132-DA-82, Orca Inlet, Alaska, dated February 19, 1982, Change No. 1 dated May 4, 1982, and Change No. 2 dated July 13, 1982.

Orca Inlet is the transit channel for Cordova and Orca, Alaska. The fishing industry and increased tourism has focused on the importance for updated information in the area. This passage is characterized by strong tide and current action which combined with a predominately fine sand floor causes a constantly shifting profile and concern for those users.

Three subplans, Ferry Pier and Ocean Dock, Morpac Cannery and Municipal Pier and Canneries, have been plotted on this smooth sheet for more detailed sounding information. Soundings plotted along pier faces are displaced and have not been automated.

Predicted tides based on the Cordova, Alaska (945-4050) gage were utilized during shipboard processing. Tide correctors used for the reduction of final soundings reflect the approved hourly heights from the same gage.

The Electronic Control correctors were revised during verification to reflect the appropriate baseline correctors for station pairs. Corrections to the table are annotated in black.

Projection parameters used to plot the field sheets have been changed to meet smooth sheet specifications and center the hydrography.

2. CONTROL AND SHORELINE

Geodetic positions for control stations used to compute the survey are published and preliminary adjusted positions referenced to the North American 1927 datum.

The following revision prints of registered shoreline manuscripts (1:10,000) provide topographic information.

Blueprint	T-Sheet	Dates of Photography/Field Edit	Revision Photography
118505	12651	Aug '64/Sep '65 - May '66	July '81
118506	12652	Aug '64-Jul '66/Sep '65-May '66	July '81
118507	12653	Aug '64-Jul '66/Sep '65-May '66	July-August '81
1:10,000 Enlargement			
118512	12807	Aug '64-May '65/June '65	July-August '81

The shoreline south and west of latitude 60°33'00"N, longitude 145°50'30W has been dashed in red to indicate the approximate high water line delimited by detached positions. Shoreline in the vicinity of Cordova has also been inked in red to indicate changes to two breakwaters which occurred subsequent to the revision photography.

The high water line on the eastern side of Mud Bay at latitude 60°33'11"N, longitude 148°49'55"W is shown on the smooth sheet in dashed red, per the statement in item 16, Addendum to Section L, of the Descriptive Report.

3. HYDROGRAPHY

Soundings at line crossings are in good agreement. Discrepancies exist in areas where the slope of the bottom cannot adequately be portrayed at the scale of the survey.

The bottom configuration, development of shoal soundings, determination of least depths, and delineation of standard depth curves are adequate. The three-foot supplemental curve was added for further delineation. Where the slope precluded showing all depth curves, an effort was made to follow standard cartographic convention showing the shoalest and deepest curves.

4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, revised through Change No. 3.

5. JUNCTIONS

H-10029 (1982) joins this survey to the north. Soundings have been transferred and junction curves inked in agreement.

Junction has also been accomplished with FE-252 (1983), Cordova Small Boat Harbor. Soundings and depth curves are in agreement.

6. COMPARISON WITH PRIOR SURVEYS

H-3955 (1916) 1:20,000

H-3955 east of longitude 145°49'30"W has been superseded by H-8853. West of that longitude, the present survey soundings are as much as 20 feet less deep, narrowing the channel to approximately 300m from the previous 600m.

H-8852 (1965) 1:5,000
H-8853 (1964-65) 1:10,000

Comparisons with these prior surveys show cultural changes in the vicinity of Cordova. Soundings agree well with the following exceptions:

The channel leading to Cordova is generally deeper, as much as 18 feet at latitude 60°34'20"N, longitude 145°44'32"W.

There has been a shoaling of up to 6 feet south and east of Grass Island.

Orca Inlet lying west of the channel and north of latitude 60°33'00"N is deeper by as much as ten feet, whereas that area south of latitude 60°33'00"N is less deep by one to five feet.

These changes are apparently attributable to the filling and scouring of the mud and sand bottom.

There are two presurvey review items originating from prior surveys. Both are adequately addressed in the Descriptive Report, section K.

H-10038 is adequate to supersede all prior survey data within the common area.

7. COMPARISON WITH CHART

16710 (12th Ed., August 11, 1979)

a. Hydrography - Charted information, with the exception of the channel buoy RB "01", originates with the previously discussed prior surveys. (See Section 6 of this report.)

A letter from the DAVIDSON, copy attached, provides additional information on an area of piling centered at latitude 60°33'24"N, longitude 145°45'17"W. This

information has been considered in compiling the smooth sheet, the area is depicted as an area foul with submerged piles.

H-10038 is adequate to supersede charted hydrography within the common area.

There have been no dangers to navigation identified or reports submitted by the ship or PMC Nautical Chart Branch for this survey.

b. Controlling Depths - There are no controlling depths within the limits of the survey.

c. Aids to Navigation - The channel buoy RB "01" portrayed on H-10038 is maintained by the Coast Guard. The buoy is charted at the southern limit of the twelve foot curve defining the shoal to the south of Odiak Channel. It now plots in 16 feet of water but continues to adequately mark the shoal. All other aids also adequately serve the purpose intended.

8. COMPLIANCE WITH INSTRUCTIONS

H-10038 adequately complies with the project instructions as amended and noted in section 1 of this report.

9. ADDITIONAL FIELD WORK

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

Respectfully submitted,

for

Karol M. Scott
Cartographer
May 30, 1984

This survey has been verified and evaluated. I have examined the survey and it meets Charting and Geodetic Services survey standards and requirements for use in nautical charting except as noted in the Evaluation Report. The survey is recommended for approval.

James S. Green
Supervisory Cartographer

March 14, 1983

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 945-4050, Cordova, AK

Period: August 10 - September 2, 1982

HYDROGRAPHIC SHEET: H-10038

OPR: P132

Locality: ORCA Inlet, Alaska

Plane of reference (mean lower low water): 5.95 feet

Height of Mean High Water above Plane of Reference is 11.6 feet

REMARKS: Recommended Zoning
Zone Direct

Chief, Datums and Information Branch

RECEIVED
DEC 6 - 1983
PACIFIC MARINE CENTER

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Ship DAVIDSON
1801 Fairbiew Ave E
Seattle, WA. 98102

December 2, 1983

TO: N/MOP - Charles K. Townsend
Director, Pacific Marine Center

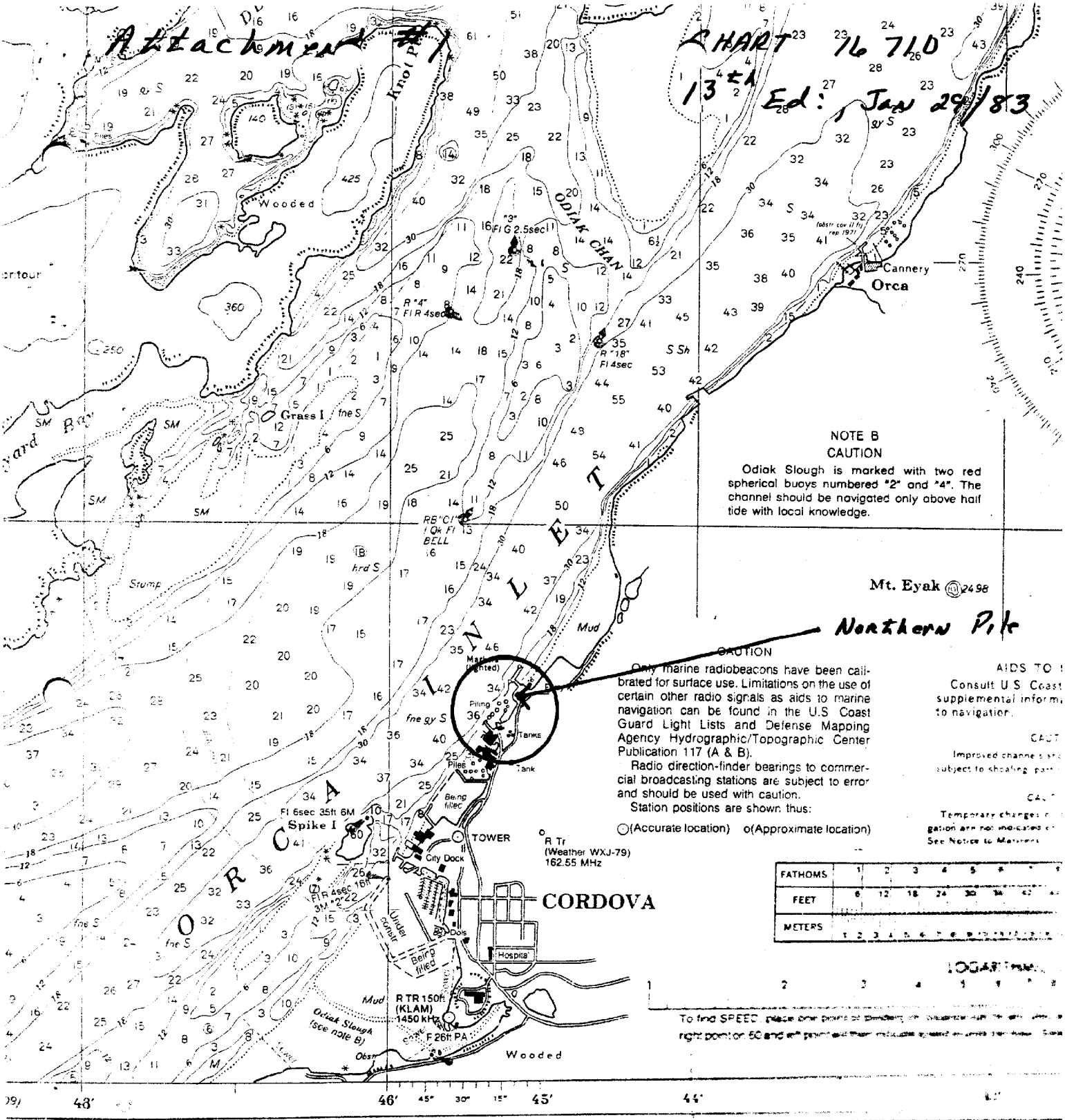
FROM: S331 - James M. Wintermyre
Commanding Officer, NOAA Ship DAVIDSON

SUBJECT: Change to Chart 16710 and Hydrographic Survey H-10038

During OPR-P132-DA-83, Orca Inlet, Alaska, the area south of the Ocean Pier in Cordova, Alaska was found to be incorrectly depicted as Piling on Chart 16710: 13th Edition, January 29, 1983 and Hydrographic Survey H-10038 (see attachments number 1 and 2). The area was investigated on 12 July 1983 and found to contain numerous piles, which were remnants of an old railroad pier. Ship's personnel were informed by the Master of the fishing vessel GEORGE A that approximately six years ago the piles were cut off 1/2 foot above the ground. They are presently being extruded by the mud since they were found to be two feet above the bare mud flat. The piles uncover 2 1/2 feet above MLLW and extend from the wharf located at latitude 60° 33' 22.0"N, longitude 145° 45' 17.5"W to latitude 60° 33' 19.5 22.0"N, longitude 145° 45' ~~17.5~~ 16.7"W, which is the location of the most northerly pile within the area (see attachment number 1 and 4).

Due to the large number of piles located within the area, I recommend that the cartographic symbol be changed to Ruins and the limit lines be depicted in a similar fashion as found on Chart 16710: 12 th Edition, August 11, 1979 (see attachment number 3). The encompassing limit line would include the piles, located during OPR-P132-DA-82, west of the piles from the old railroad pier.

Attachments



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

Channel Is

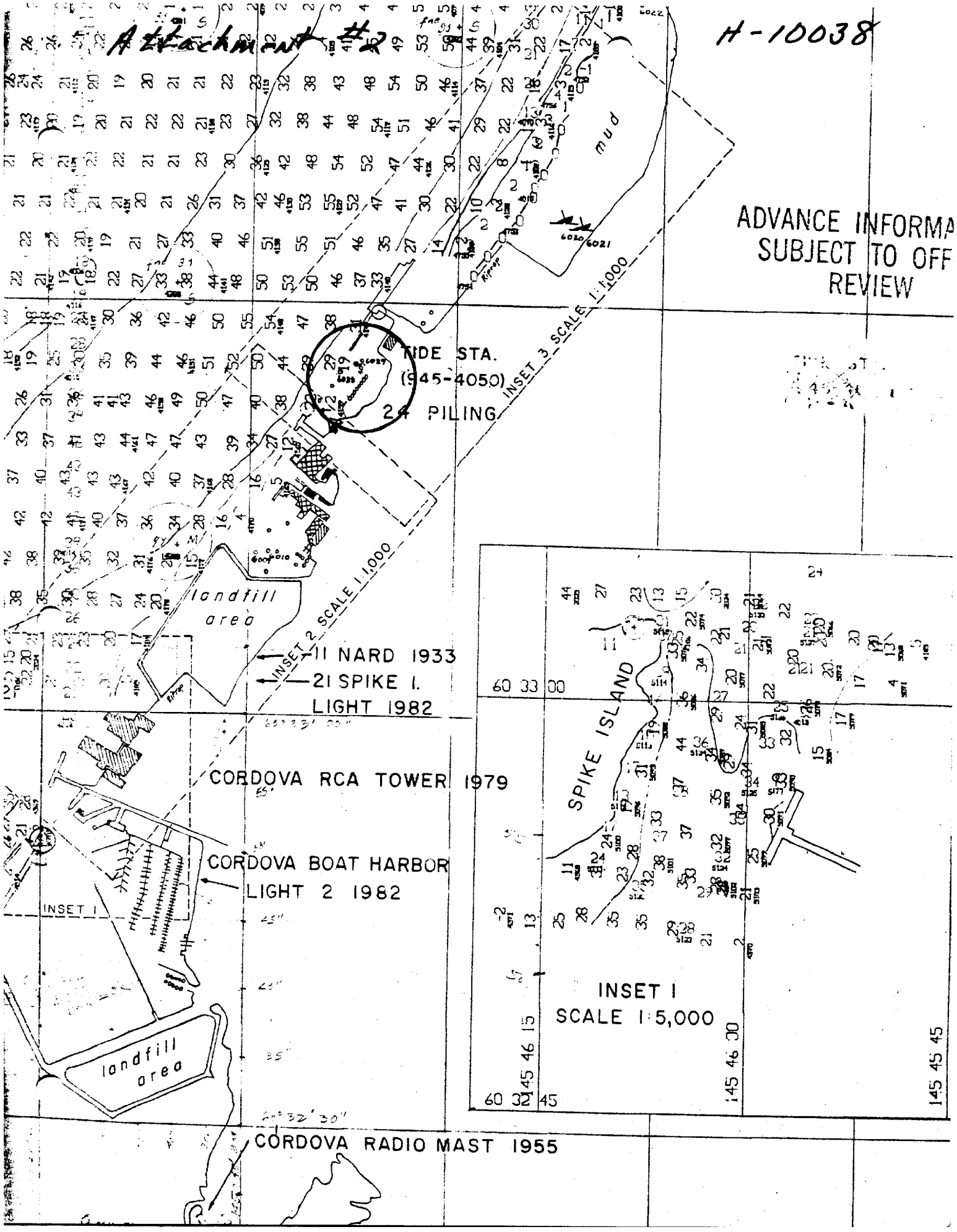
Nautical Miles

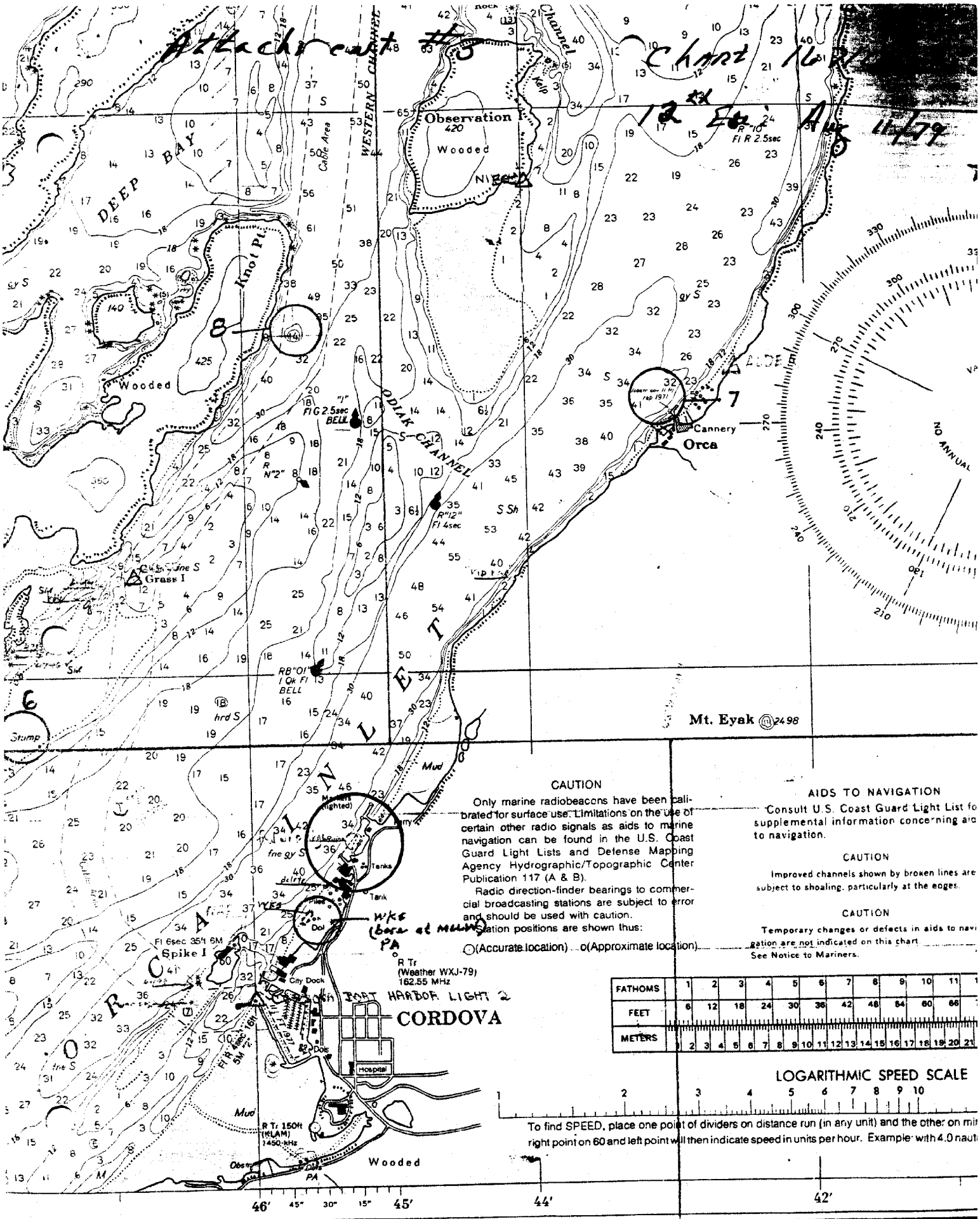
Yards

Attachment #2

H-10038

ADVANCE INFORMA
SUBJECT TO OFF
REVIEW





CAUTION

Only marine radiobeacons have been calibrated for surface use. Limitations on the use of certain other radio signals as aids to marine navigation can be found in the U.S. Coast Guard Light Lists and Defense Mapping Agency Hydrographic/Topographic Center Publication 117 (A & B).

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) ..o(Approximate location)

AIDS TO NAVIGATION

Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.

CAUTION

Improved channels shown by broken lines are subject to shoaling, particularly at the edges.

CAUTION

Temporary changes or defects in aids to navigation are not indicated on this chart. See Notice to Mariners.

FATHOMS	1	2	3	4	5	6	7	8	9	10	11	1							
FEET	6	12	18	24	30	36	42	48	54	60	66								
METERS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

LOGARITHMIC SPEED SCALE

1 2 3 4 5 6 7 8 9 10

To find SPEED, place one point of dividers on distance run (in any unit) and the other on mi right point on 60 and left point will then indicate speed in units per hour. Example: with 4.0 naut

Published at Washington, D. C.

E00

GEODETIC CALIBRATION SUMMARY
12-JUL-83 ~~02:05:00~~ SD 193

INPUT STATION TABLE NAME: STATIO
ANTENNA ANGLE = 0.00 ANTENNA DISTANCE = 0.00
ANTENNA HEIGHT = 0.00 OBSERVER HEIGHT = 0.00
NAV TYPE ? (R/H): R
SLAVE 1 = 012 SLAVE 2 = 016
AUTO PATTERN INPUT ? (Y/N): N
AUTO HEADING INPUT ? (Y/N): N
CALIBRATION METHOD ? (A/R): A
HEADING = 0.00

LEFT OBJECT = 001 CENTER OBJECT = 022 RIGHT OBJECT = 023	LEFT ANGLE = 015/41/30.000 RIGHT ANGLE = 042/38/00.000			LEFT OBJECT = 027 CENTER OBJECT = 022 RIGHT OBJECT = 023	LEFT ANGLE = 048/33/50.000 RIGHT ANGLE = 042/38/00.000		
FIX:	24667.37	14336.48	060/33/25.247N	145/45/14.917W			
CHECK FIX:	24670.60	14340.57	060/33/25.381N	145/45/14.054W			
INVERSE DISTANCE:	4.27						
MEAN FIX:	24668.94	14338.53	060/33/25.314N	145/45/14.886W			
OBSERVED PATTERNS:	0.00	0.00					
CORRECTION:	24668.94	14338.53					

1) Northern limit of

2) Numerous piles one 2 ft @ 1925?

SD 193 - the piles ~~of~~ were ~~remnants~~ remnants of an old railroad pier. The piles had been cut off 6 years ago ½ feet above the ground. The piles are pushing up out of the mud. The piles are on line with the fix and small pier.

STATION #	STATION NAME
001	STUMP 2 USGS 1952
022	ACROSS 1933
023	GRASS 1899
027	NAD 1933

Attachment number 4

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10038

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

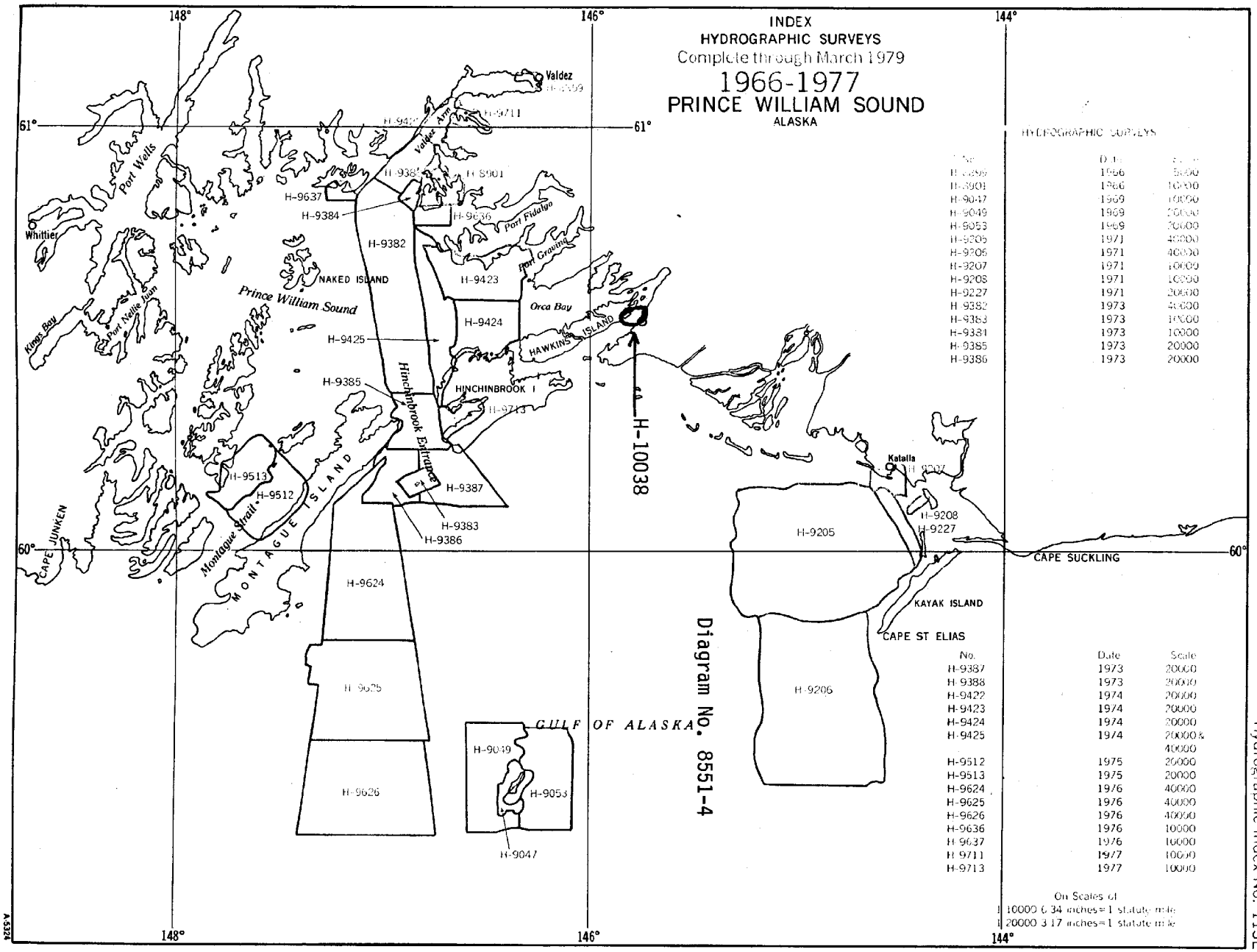
Chief, Nautical Chart Branch 6/26/84 (Date)

CLEARANCE: SIGNATURE AND DATE:

N/MOP2:LWMordock 7/2/84

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

Director, Pacific Marine Center 7/11/84 (Date)



DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Washington, D.C.

Hydrographic Index No. 113E

FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10038

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
16710	12/17/86	Robert J. Hous[illegible]	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 15
16709	8-23-91	W. J. Ohm[illegible]	Full ~~Part Before~~ After Verification Review Inspection Signed Via
		D. C. Harpine	Drawing No. 16
16700	8-26-91	W. J. Ohm[illegible]	Full ~~Part Before~~ After Verification Review Inspection Signed Via
	9-11-91	D. Harpine	Drawing No. 26
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
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			Full Part Before After Verification Review Inspection Signed Via
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			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.