

10090

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-20-4-83
Office No..... H-10090

LOCALITY

State Alaska
General Locality Orca Inlet
Locality Saddle Point to Boswell Rock

19 83-84

CHIEF OF PARTY

CDR J. Wintermyre and CDR T.W. Richards

LIBRARY & ARCHIVES

DATE September 20, 1985

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

10090

Area 6
CHTS

16709 }
16710 } TO SIGN OFF SEE
16700 } "RECORD OF APPLICATION TO CHARTS"

16013-12

531 }
500 } TO SIGN OFF SEE
50 } "RECORD OF APPLICATION TO CHARTS"

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTER NO.
HYDROGRAPHIC TITLE SHEET		H-10090

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 20-4-83
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State Alaska

General locality Orca Inlet

Locality Saddle Point to Boswell Rock

Scale 1:20,000 Date of survey June 7-July 24, 1983
June 13-28, 1984

Instructions dated May 11, 1983 Project No. OPR-P132-DA-83

Vessel NOAA Ship DAVIDSON, Launch's 3131, 3132, 3134, 3135

Chief of party CDR J.M. Wintermyre, CDR T. Richards

Surveyed by LT G. Wheaton, LT M. Koehr, ENS E. Hawk, ENS A. Allen, ENS J. Waddell

Soundings taken by echo sounder, ~~handbook~~ Ross Model 5000, Fathometer

Graphic record scaled by Ship's Personnel

Graphic record checked by Ship's Personnel

Verification by Matthew G. Sanders Automated plot by PMC Xynetics Plotter

Evaluation by Gordon E. Kay

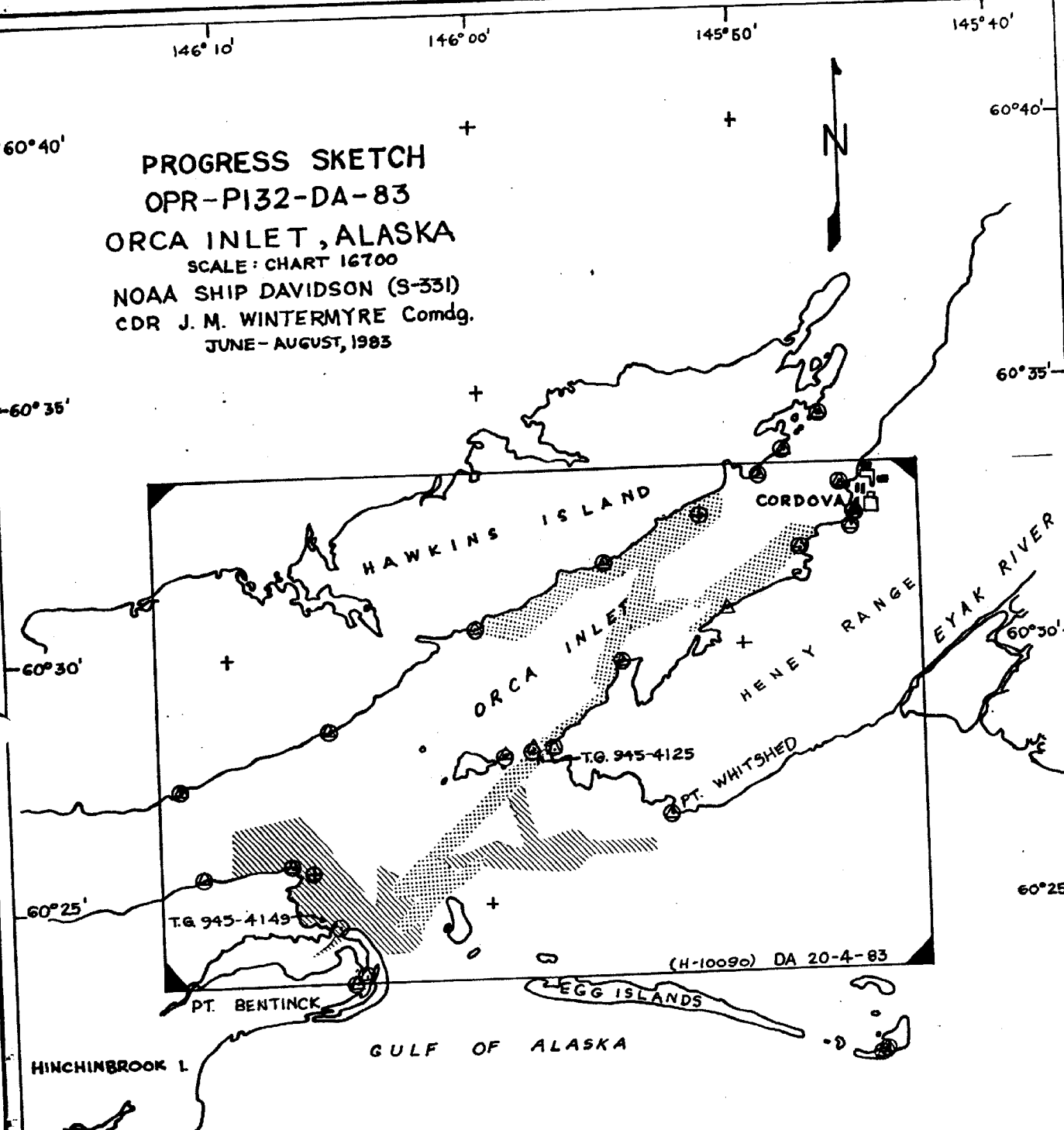
Soundings in fathoms feet at ~~NEW~~ MLLW and tenths of Fathom

REMARKS: Notations in black were made during Evaluation of H-10090 at the Pacific Marine Center, Seattle, Washington. Separates are filed in the back of the accordian folder.

Surf and ALOIS check 10/31/88 MCR

SA 5-1-97

PROGRESS SKETCH
OPR-P132-DA-83
ORCA INLET, ALASKA
 SCALE: CHART 16700
 NOAA SHIP DAVIDSON (S-331)
 CDR J. M. WINTERMYRE Comdg.
 JUNE - AUGUST, 1983



JUN		JUL		STATISTICS
408.5	73			L. N. M. SOUNDING LINE
10.2	3			SQ. N. M. SOUNDING
20	0			TRIANGULATION STA. RECOVERED
4	0			TRIANGULATION STA. ESTABLISHED
15	8			L. N. M. SHORELINE VERIFICATION
6	3			SOUND VELOCITY CAST
13	12			BOTTOM SAMPLES
2	0			TIDE GAGES ESTABLISHED
8	0			BENCH MARKS RECOVERED/ESTAB.
1	2			DIVE INVESTIGATIONS
0.1	0.2			SQ. N. M. WIRE SWEEP

(H-10090) DA 20-4-83

145°50'

145°40'

DESCRIPTIVE REPORT
H-10090
OPR-P132-DA-83
Orca Inlet, Alaska

A. PROJECT

Survey operations were conducted in accordance with Project Instructions OPR-P132-DA-83, dated 11 May 1983, Change No. 1 dated 17 May 1983, Change No. 2 dated 11 July 1983, and Change No. 3 dated 27 July 1983. Registry No. H-10090 was assigned 13 June 1983. ✓

B. AREA SURVEYED

The area surveyed covered the southern section of Orca Inlet from the southernmost point of Mud Bay south to Point Bentinck. The northern limit junctioned with field survey H-10038, western and eastern limits are Hawkins Island and Heney Range, respectively, and the southern limit was Hinchinbrook Island. Fine sand and mud dominated the character of the bottom in the survey area. There are numerous mud and sand flats bordered by shallow channels. Scouring caused by tidal currents frequently results in deep water adjacent to rocks and islands. Operations commenced on ~~3 July~~ 1983 and were completed on ~~4 August~~ 1983. ✓

C. SOUNDING VESSELS

Additional work JUNE 13 to 18, 1984
Sounding vessels were survey launches DA-1 (#3131) and DA-2 (#3132). For ease of identification, raw data records were annotated in red ink for DA-1 and blue ink for DA-2. No unusual sounding configurations were used and no problems with the launches were encountered. ✓

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

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

<u>LAUNCH</u>	<u>FATHOMETER S/N</u>	<u>DIGITIZER S/N</u>	<u>TRANSCIVER S/N</u>	<u>JD</u>
DA-1	1048	1081	1081	158-193
	1077	1081	1081	205
DA-2	1080	1048	1036	159-201

 ✓

Daily stylus belt tension checks and phase calibrations were conducted in accordance with Appendix B of the PMC OORDER.

Fathometers were monitored continuously during survey operations and the fathogram initial was maintained at zero. Fathograms were scanned

and the analog record compared to digitized depths. Digitizer errors, missed depths, and peak/deep insertions were identified, and modifications were made to the data according to the fathogram trace. Changes were entered on the edited master tape or via the corrector tape, and noted on the raw data printout and fathogram. The method of handling "sand-waves" is synonymous to the technique used for field survey H-10038. This method was discussed and approved by CPM3 via telephone on 10 August 1982. A letter, dated 18 August 1982, is appended to this report. ✓

Soundings on the final field sheet have been corrected for transducer draft, sound velocity, and predicted tides. Bar checks were generally made twice daily. A transducer depth correction (TRA) of 0.3 fathoms was applied during the data acquisition portion of the survey. At the conclusion of data acquisition new TRA values were determined for each launch from bar check data. A 0.4 fathom TRA was applied to uncorrected depths resulting in the depths shown on the final field sheet. ✓

The DAVIDSON conducted 9 sound velocity casts in the survey area to determine velocity correctors. Significant differences were noted between the profiles of these 9 casts. To meet hydrographic standards of ± 4 meters/sec. (Hydrographic Manual 4.9.5 para. 4), four separate sound velocity profiles were developed and applied to the sounding data. For further information, consult the Corrections to Echo Soundings report. ✓

Cordova, Alaska, served as the reference station (945-4050) for predicted tides. Tide stations were installed at Shag Rock, Orca Inlet (945-4125) and Boswell Rock, Orca Inlet (945-4149). Additional tide gage information and leveling results can be found in the Field Tide Note. ✓

E. HYDROGRAPHIC SHEETS

Field sheets were prepared at a scale of 1:20,000 using the DAVIDSON's PDP/8e DP-3 plotter, and standard NOS software. Field sheet DA-20-4-83 covers southern Orca Inlet where it functions with field survey H-10038 at latitude 60/32/54N south to about latitude 60/23/48N. ✓

Sounding overprints were omitted on the final field sheets by using the manual override control of the complot pen for legibility. ✓

Sounding lines in channels were run in accordance with section 4.3.5.4 of the Hydrographic Manual. Crosslines and shorelines were run to define the channel limits. Mainscheme lines were then run at 50 meter spacing approximately parallel to the channel axis. To avoid overprinting this data on the 1:20,000 scale sheets, overlays were constructed for each of the two final sounding plots and position plots. ✓

The overlay plots were drawn on the HYDROPLOT equipment located in the training trailer at PMC, while the main sheets were plotted on DAVIDSON equipment before the mid-life upgrade. The different ✓

fix number	Latitude	Longitude
6601	60° 24' 53.82"	146° 05' 33.13"
6602	60° 24' 52.60"	146° 05' 33.48"
6603	60° 24' 53.66"	146° 05' 47.27"
6637	60° 24' 31.24"	146° 05' 47.37"

computers caused the grids on the overlay plots to be misaligned slightly from the main sheets; however, the hydrographic signals are aligned properly. The signals, then, were used to align the two sheets for drawing contours. ✓

Three developments were completed in the southwest portion of Orca Inlet to locate the least depths in shoal areas. To avoid congestion, only the least depths obtained from the investigations are shown on the final field sheet. Development No. 1, at 1:10,000 scale, is located north of Pt. Bentinck, and develops the area surrounding four rocks (fix numbers 6601-6603, 6637). A sand bar nearby is also shown on Development No. 1. No least depth was obtained on this shoal as per section 4.5.9.2 of the Hydrographic Manual; three 0.7 fathom soundings were recorded on the HYDROPLOT system in the immediate vicinity and one is shown on the final field sheet. Development No. 2 (1:2,500 scale) was run to locate the least depth on a long, narrow rock ridge east of Shirttail Point. A diver-verified least depth of 0.85 fathoms is shown on the final field sheet (fix number 7064). Development No. 3 (1:2,500 scale) was run to locate the least depth on a broad gravel bar northeast of Point Bentinck. A 3.0 fathom depth was measured by divers, but a 2.7 fathom sounding was obtained using the HYDROPLOT system. This depth was transferred to the final field sheet. The expanse of the bar made it difficult for divers to locate its shoalest point. *at Latitude: 60° 25' 48.1" N*
Longitude: 146° 06' 53.10" W

Four enlargements were made which more clearly show congested non-sounding features and are plotted on the position plot for DA-20-4a-83. Enlargement No. 1 is a 1:1,000 scale enlargement depicting an area of piles in ruins and a wreck. PSR item #3 is located in the midst of these piles. Enlargement No. 2, 1:2,500 scale, shows a group of piles (fix numbers 2061-2067), and an engine part (number 2068) located south of Big Pt. Enlargement No. 3 (1:2,500 scale) is an area of several rocks not previously charted located northeast of Bluff Point. Enlargement No. 4 is a 1:2,500 scale enlargement of four piles found in Three Mile Bay. *Reduced for Smooth Grids at Latitude 60° 24' 45" N, Longitude 146° 04' 13" W*
See Descriptive Report Station K for Description

All data collected will be submitted to the Pacific Marine Center, Nautical Chart Branch (MOP 21) for verification and smooth plotting. ✓

F. CONTROL STATIONS

Visual signals and electronic control apparatus were set up on monumented horizontal control stations. Field work consisted of updating geographic positions for all recovered stations within the project area based on the positions of BEACH 1899 and WHITSHED 2 1916 located at the southern end of Orca Inlet. New stations were established at TRAVEL 3, SHAG, TEMP 3, USCE 20, and USCE using Third-Order Class I methods. Stations USCE 20 and USCE were used for DAVIDSON'S Cordova small boat harbor survey, H-10038. For further information, consult the Horizontal Control Report for OPR-P132-DA-83. ✓

G. HYDROGRAPHIC POSITION CONTROL

Sounding line position control was accomplished by range-range or range azimuth techniques using Motorola Miniranger III and Wild T-2 theodolites. The Miniranger transponder codes and serial numbers, stations and days of operation, correctors, and signal numbers can be found in the appended Electronic Control Report. ✓

Range-range station configurations were selected to provide unobstructed lines of sight to the survey area, as well as minimum 30° and maximum 150° arc intersection angles. Range-azimuth control was used only where satisfactory range-range control was not possible. ✓

Miniranger system checks were performed using the dynamic calibration method, static calibration method, or by crossing the baseline. ✓

Miniranger baseline calibrations were performed on 4 June 1983 and 25 July 1983 over distances measured with an HP-3808 EDM. All calibrations were performed in the survey area. A discussion of the Baseline Calibration can be found in the Electronic Control Report. ✓

H. SHORELINE

^{T-12807} ^{T-12653} ^{T-12489} ^{T-12668} ^{T-12667}
(Shoreline manuscripts/BP No. 118503, BP No. 118509, BP No. 118508, BP No. 118512, and BP No. 118507 (all 1:20,000 except BP No. 118507, which is 1:10,000) were the source of shoreline information. The shoreline is generally well depicted except for the non-sounding features, which are discussed in Section L of this report. Shoreline details have been verified and transferred to the final field sheets. ✓

Four channels in Orca Inlet were partially surveyed, but operations were suspended by the Commanding Officer since these are rarely used and not marked in any way. In these channels, the zero fathom curve was not totally developed. ✓

The first such channel runs along the southern shore of Hawkins Island from the point of departure from the main channel and meandering to its outlet near station GIRL 1899. This channel was surveyed to near station NAT 1899. Skiffs from the DAVIDSON passed through this channel on a few occasions, grounding several times during each transit. ✓

A second side channel is located on the south side of Orca Inlet from the junction with H-10038 and ends near station TRAVEL 3. This broad channel was surveyed as far as TRAVEL 3, although it is navigated only as far as Three Mile Bay, where a small harbor for fishing vessels is located. ✓

The third seldom navigated area extends north from the Strawberry Channel to station GIRL 1899, then west to station KITTY 1899. This channel widens into the Hawkins Island Cut-Off, a wide yet shallow water- ✓

way navigable by none other than very shallow draft vessels at the highest tides. During the time the DAVIDSON operated in Orca Inlet, no vessels other than those from the DAVIDSON, which were grounded on the sand flats often, were observed in this area. ✓

The fourth channel extends from north of Strawberry Channel and meanders north northeast toward Little Mummy Island before ending. It was surveyed as far north as 60/25/47N, 146/04/08W. This channel is not used by local mariners. ✓
29

The main channel through Orca Inlet from near station STUMP 2 USGS 1952 to Point Bentinck and north of the Egg Islands was completely surveyed, except that the zero fathom curve was not established along the entire length of the channel due to the steepness of the channel sides and the priority of collecting soundings within the navigable portion of the channel rather than in the mudflats. ✓

I. CROSSLINE

Crosslines comprise 17.3% of the total sounding line mileage. All crosslines were scanned and agreement with mainscheme soundings was good. Specific comparisons were made in accordance with the Hydrographic Manual 1.1.2 Part B.II.1. Results of 24 randomly selected crossline and mainscheme sounding comparisons are as follows: 75% of the crossings agree within .2 fathoms, 17% of the crossings agree within .5 fathoms, and 8% of the crossings agree within 1.5 fathoms. Inspection of the fathograms shows abrupt changes in depths in two cases where the soundings disagree. These are located at 60/32/47N, 146/51/16W and 60/32/54N, 145/50/45W along the south shore of Hawkins Island. Scouring along the rocky shoreline is believed to be the cause of this abrupt depth change. ✓

J. JUNCTION

Survey H-10090 junctions with H-10038, 1982 (1:10,000). Comparisons were made between 19 randomly selected soundings from H-10038 in the junction zone using suggested criteria in Section 1.1.2 Part B.II.1 of the Hydrographic Manual. Good agreement was noted in the junction zone except for three discrepancies. These were noted as one-third fathom differences at: 1) 60/32/10N, 145/48/07W; 2) 60/32/16N, 145/48/30W; and 3) 60/32/34N, 145/50/51W. These variances could have resulted from a change in sounding units, survey H-10038 being in feet. ✓

K. COMPARISONS WITH PRIOR SURVEYS

PSR items assigned from the Automated Wreck and Obstruction Information System were investigated with the following results:

PSR item #1 at 60/29/40N, 145/55/18W is a reported wreck 500 meters west of station TRADE 1899. The item was searched for visually and at low tide when the mud flat was exposed at the reported position. ✓

AW015
#50303

Position No. 2108 was taken in the area visually inspected to confirm the presence of searchers in the area in question. Small metal fragments 2 to 3 inches in height were seen in the vicinity of position No. 2108. Wire sweeps were conducted in the channel seaward to verify that the wreck did not wash into the channel. Wire-drag operations were conducted at low tide using electronic navigation control. A total of 8 wire sweeps were made in the channel in front of the PSR item. Wire sweeps, each covering approximate widths of 15 to 20 meters, were made starting about 50 to 70 meters offshore of the MLLW line, and working shoreward until shoaling prevented further sweeps. Each sweep was run twice from opposite directions. Parallel sweep lines (15 meters apart) overlapped by about 3 to 5 meters to ensure complete bottom coverage. Results of the wire-drag were negative -- no obstructions were found. Diver inspection showed the bottom to be a gentle sloping sandy bottom with "sandwaves." Further information concerning equipment used can be found in the raw data records for JD 181 for vessel #3131 (DA-1). This PSR item does not exist and its charted symbol should be removed from the chart. *concur*

*ALWIS ✓
#J0171*

PSR item #2 at 60/29/48N, 145/54/30W is a reported pile charted 300 meters east of station TRADE 1899. The item was searched for visually at low tide when the mud flat was exposed at the reported position. Position No. 2106 was taken in the area visually inspected to confirm the presence of searchers in the area in question. The reported pile was not seen during visual inspection. Wire sweeps were conducted in the channel seaward of the charted position to check for any changes in the location of the pile. The technique used for wire-drag was similar to that used for PSR item #1. The electronic station values for the beginning and ending of each line can be found on page 46 of sounding volume #1. The reported pile was not found during wire-drag operations. Diver investigation showed the bottom to be a gentle sloping sandy bottom with "sandwaves." Further information concerning equipment used can be found in the raw data records for JD 180 for vessel #3131 (DA-1). This PSR item does not exist and should be removed from the chart. *concur*

*ALWIS ✓
#J0172*

PSR item #3 at 60/28/42N, 145/56/24W is a reported pile 1500 meters northeast of station GRAVEL POINT NRT RADIO MAST 1964. The item was investigated similarly to PSR items #1 and #2, except that electronic navigation control was not used to steer lines. The PSR item is visible, the tallest and most prominent pile amongst the most seaward remnant piles. Position No.'s 2089, 2090, 2091, 2092 in sounding volume #1 define the limits of the ruins. A standard wire sweep seaward of the area was done on JD 182 to ensure no further piles existed. A radial sweep of 270° and 360° was then done 50 meters off of PSR item #3. The effective width of the bottom sweep was 25 to 30 meters. A final sweep was run using a 150 meter cable covering a line swath from 45 to 75 meters parallel to the MLLW line. The only snag was a metal pipe, fix #2153, which should be charted. The pile symbol should be removed and the entire area as defined by the above fixes should be denoted with dashed lines with the inscription "ruins."

*Fix #2153 (o) HLLW
concur. Also entire area foul with pipe ruins*

AW015
#50173

PSR item #4 at 60°27'24N, 145°58'42W is a reported broken pile located 1700 meters southwest of station GRAVEL POINT NRT RADIO MAST 1964. The item was searched for visually and found at low tide. Position No. 2107, sounding volume #1, was taken on the pile's position and was found to bare 3.51 feet at MLLW. It is recommended that this item be charted at latitude $60^{\circ}27'24.17''N$, longitude $145^{\circ}58'38.18''W$. *Concur*
ATC (2) MLLW

Prior surveys H-3954 (1916) and H-3955 (1916) were compared with H-10090 to determine general changes in the positions of the channels through Orca Inlet and north of the Egg Islands. Minor differences north of Gravel Point and more substantial changes south of Gravel Point are noted as follows:

- H-3955 shows a 1 to 2 fathom channel from near present buoy #10 east to station TRAVEL 3, 1983 and then a 3 to 5 fathom channel northeast to offshore of Saddle Point. The entire area is now about two fathoms shoaler, making the portion from buoy #10 to TRAVEL 3, 1983 non-existent. ✓
- A side channel from Big Point to station NAT 1899 is no longer navigable. ✓
- The main channel in the vicinity of buoys #12 and #14 is now wider than shown on H-3955. ✓
- Considerable shoaling has occurred in the main navigation channel west of Big Point. ✓

Comparisons made with prior survey H-3954 (1916) show: ✓

- The mouth of the side channel leading from Strawberry Channel to Little Mummy Island has shifted about 1200 meters to the south based on the current survey data. ✓
- The main navigation channel ran east of Shag Rock on H-3954, while the channel currently flows 400 meters to the west, on the west side of Shag Rock. ✓
- The northwest margin of the main channel south of Pinnacle Rock is now about 200 meters south of the channel edge shown on H-3954. ✓
- North of Pinnacle Rock, the entire channel has shifted 100 to 150 meters northwest of the channel shown on H-3954. ✓
- In the portion of the channel that runs east-west north of the Egg Islands that was surveyed on H-10090, the present channel is about 200 meters north of the H-3954 position in the vicinity of barrels #1 and #2; east of barrel #3, H-3954 shows depth of 1 to 2 feet but no distinguishable channel in the location of the present channel. ✓

Comparisons between present and prior survey soundings were made by coinciding latitude and longitude and then comparing sounding trends. All soundings were compared using standards set in the Hydrographic Manual Section 1.1.2.b.II.1. Twenty-four sounding comparisons were made with H-3955 (1916), fourteen comparisons with H-3954 (1916), and fifteen comparisons with H-3969 (1916). Soundings from H-10090 were found to be 1 to 2 fathoms shoaler than the prior surveys. These discrepancies are most likely the result of the 1964 earthquake. Two large discrepancies between H-10090 and H-3954 were noted at 60/24/40N, 146/03/23W and 60/24/30N, 146/04/22W. The bottom topography in this area appears to have shifted considerably since the 1916 survey, probably due to wave and current actions. Comparisons with H-8853 (1965) at fifteen randomly selected points showed good agreement in all areas.

See Evaluation Report, section b

L. COMPARISON WITH THE CHART

The largest scale chart of the survey area is Chart No. 16709, 18th edition, June 1980, scale 1:80,000. The other chart used for comparison was Chart No. 16700, 22nd edition, January 1983, scale 1:200,000. ✓

Although chart 16709 agrees generally well with the results of H-10090, several differences were found and are listed below: ✓

- From Gravel Point to the vicinity of buoy #11, the west margin of the main navigation channel is up to 100 meters further west than is shown on chart 16709. ✓
- The channel from station TREAT 1899 to NAT 1899 is 100 to 200 meters wider than shown on chart 16709. The deepest part of the channel has shifted 200 to 300 meters further offshore of Hawkins Island in the southern half of this channel and about 50 meters closer to shore in the northern part. ✓
- The main channel south of Pinnacle Rock has broadened such that the northern edge is about 400 meters north of the mean lower low water line as shown on the chart. ✓
- A long, narrow sand bar extends into Strawberry Channel where it junctions with the dead end channel which leads to Little Mummy Island. This spit extends about 1400 meters south of where it is shown on the chart. ✓
- The channel north of the Egg Islands that was surveyed for H-10090 appears to agree well with the charted channel limits except that the north margin near barrels #1 and #2 is 200 to 400 meters south of the charted mean lower low water line. ✓

A total of fifty randomly selected soundings from charts 16709 and 16700 were compared with H-10090. Shoaling of 0.5 to 1.5 fathoms ✓

was observed to have occurred in the area north of 60/31/00N and south of 60/26/00N. Agreement between these latitudes was generally good. Shoaling greater than that previously noted was found in the following areas: 1) 60/24/44N, 146/03/44W; 2) 60/24/57N, 146/05/16W; and 3) 60/25/30N, 146/06/48W. The changed bottom topography noted in this area is believed to be the result of current and wave action. The more general shoaling trends noted throughout much of the survey area *Occur* are probably due to the 1964 earthquake.

Recommendations concerning the disposition of non-sounding features investigated throughout the survey area are listed in an addendum to this report. ✓

Several rocks shown on the current edition of chart 16709 were not found by visual reconnaissance at low tide in exposed mud. It is the recommendation of the hydrographer that these rocks remain charted until the DAVIDSON returns to the area during the 1984 field season and can obtain a fix and check fix in the vicinity of each charted rock in question to either prove or disprove its existence. The following list shows each of the rocks not found, how and when it was investigated, and source information. In cases where no source information is available, it is requested that this data be forwarded in time for next season's field work.

The 1984 Work descriptions are included in the Addendum. Conclusions are summarized in the Evaluation Report, section 7

<i>Description Report</i>	Latitude/Longitude	JD	Time spent in search (hrs)	BP#	Photo #	Shown on BP?	Source Requested?
<i>Ref: 9-1</i>	60/31/56N 145/47/33W	160	2	118507	4539	no	yes
		165					
<i>9-2</i>	60/28/06N 146/00/28W	173	1/2	118508	3940	no	yes
<i>9-3</i>	60/27/58N 146/01/18W	174	1/2	118508	3940	no	yes
<i>9-4</i>	60/29/34N 145/55/23W	179	1/2	118509	7093	no	yes
<i>9-5</i>	60/29/33N 145/55/30W	179	1/2	118509	7093	no	yes
<i>9-6</i>	60/29/38N 145/55/23W	179	1/2	118509	7093	yes	no
<i>9-7</i>	60/25/39N 146/03/11W	192	1 1/2	118508	3940	no	yes
<i>9-8</i>	60/28/13N 146/02/53W	193	1	118508	3940	no	yes
<i>9-9</i>	60/26/57N 146/02/58W	196	2	118508	3940	no	yes
<i>9-10</i>	60/27/00N 146/02/50W	196	2	118508	3940	no	yes
<i>9-11</i>	60/28/21N 145/57/07W	196	1	118509	3954	no	yes
<i>9-12</i>	60/29/54N 145/55/18W	205	1	118509	7093	yes	no
<i>9-13</i>	60/29/26N 145/55/00W	205	1/2	118509	7093	yes	no
<i>9-14</i>	60/27/58N 145/58/17W	205	1/2	118509	7114	no	yes
<i>9-15</i>	60/31/24N 145/50/31W ✓	165	1/2	118512	7030	no	yes

Shaglock

✓ Admended by the ship during the 1984 field season

Sounding volumes, raw data printouts, and fathograms used for determining these items as potential or actual hazards to navigation will be needed to enable shipboard personnel to either prove or disprove the existence of these rocks during the 1984 field season. ✓

A Danger to Navigation report was sent to the U.S. Coast Guard, 17th District, on 15 August 1983. A copy of this letter is attached to this report.

M. ADEQUACY OF SURVEY

This survey is complete within its boundaries to supercede prior surveys for charting with the exception of the disposition of the fifteen rocks described in section L of this report, which will be resolved during the 1984 field season. *The 15 rocks are summarized in the Evaluation Report Section 7. The Results have been incorporated in the Smith Chart*

N. AIDS TO NAVIGATION

Hydrographic methods were used to position the following seasonal floating aids to navigation.

BUOY NO.	BUOY TYPE	FIX	JD	LAT. (N)	LONG. (W)
16	red nun	2026	165	60/32/42.6 80	145/50/24.7 164
12	red nun	2027	165	60/32/19.7 366	145/51/32.1 808
15	black can	2028	165	60/32/16.61	145/52/29.3 422
14	red nun	2029	165	60/31/41.64	145/52/28.1 100
13	black can	2030	165	60/31/36.6 82	145/53/05.5 241
11	black can	2031	165	60/30/59.2 830	145/54/02.4 139
2	red/white barrel	2070	172	60/25/56.9 0 57.0 5	145/59/52.5 3
1	red/white barrel	2071	172	60/25/52.3 519	146/01/36.9 87
RB	red/white barrel	2072	172	60/26/53.8 83	146/00/31.1 84
unmarked 1	black can	2073	172	60/27/15.0 76	145/59/00.4 852
	red/white barrel	2074	172	60/27/13.0 2	145/58/52.3 20
unmarked 3	black can	2075	172	60/27/31.76	145/58/47.8 29
4	black can	2076	172	60/28/02.4 86	145/58/27.2 312
5	red nun	2077	172	60/28/11.8 691	145/57/53.4 89
9	black can	2078	172	60/28/25.4 13	145/57/14.3 309
10	black can	2080	172	60/29/59.0 84	145/54/45.5 83
7	red nun	2081	172	60/30/40.17	145/54/08.8 279
3	black can	2085	174	60/29/09.6 27	145/55/39.9 282
4	red/white barrel	2109	179	60/25/49.9 991	145/58/20.6 877
5	red/white barrel	6614	181	60/26/02.62	145/57/12.2 76
6	red/white barrel	6615	181	60/26/09.2 31	145/56/25.11
	red/white barrel	6616	181	60/26/12.02	145/55/21.8 78

BUOY NO.	BUOY TYPE	FIX	JD	LAT.(N)	LONG.(W)
7	red/white barrel	6617	181	60/26/13.371	145/54/08.07
3	red/white barrel	6630	191	60/26/20.20	145/57/52.3840
2	red/white barrel	6635	192	60/26/42.67	145/58/21.289

These buoys are placed seasonally to aid local mariners around sand-flats. The black cans and red nuns are maintained by the Coast Guard from May until September, at which time they are removed. The barrel buoys are put in place by Bob Dundas and Marty DeVille--local residents--and are left until the winter's ice removes them. Their phone numbers are 907/424-7306 and 907/424-3310. These buoys do not occur on chart 16709 nor in the light list. Due to their temporary status, they should not appear on the chart. ✓

Mummy Island Light #5 (Light List #3406) was located by DAVIDSON personnel in 1982 and its position is included on the Signal List attached to this report. ✓

O. STATISTICS

Number of positions:	3084 2481
Total nautical miles of sounding lines:	481.83
Square miles of sounding lines:	13.20
Bottom samples:	13
Sound velocity determinations:	9
Tide stations occupied:	3
Dive investigations:	9

P. MISCELLANEOUS

Problems were encountered on different occasions with the loading and operation of the geodetic calibration program RK 561 in both launches. The PDP/8e computer's circuitry and memory were examined by ship's ETs. Eventually, the problem was eliminated. The only consequence of this difficulty was lost time in calibrating shore stations. ✓

No current measurement observations were conducted during this project; however, observations were made during OPR-P132-DA-2. See Current Measurement Observation Report for H-10038 for further information. ✓

The buoyed channel located from 60/27/15N, 145/59/00W to 60/26/22N, 145/57/58W was found to be used by local mariners at high tides. It is suggested that this channel be charted with corresponding depths from field survey H-10090. ✓

The geographic name Little Mummy ^{island} I. was incorrectly assigned to an island located southwest of Mummy Island at 60/27/30N, 146/01/45W. ✓

on BP-118508 (see attachment #1). Little Mummy ^{Island} I. is northwest of Mummy Island located at 60/28/05N, 146/02/30W. The error was found when the CORDOVA (B-6) QUAD, ALASKA (see attachment #2) was compared to BP-118508. The position of Little Mummy I. was confirmed by Mr. Charles E. Harrington, Chief Geographer (N/CG2X5) via telephone (443-8360) on 9 November 1983. Little Mummy ^{Island} I. has been correctly labeled on H-10090. ✓

Q. RECOMMENDATIONS

The number of changes to the current edition of chart 16709 found during the course of this survey is too lengthy to be handled by a list in the Notice to Mariners. For this reason, it is recommended by the hydrographer that a chartlet be published in Notice to Mariners depicting the newly identified dangers to navigation and areas of significant shoaling. A memo to N/MOP with our recommendations is attached to this report. ✓

A Hydrographic Survey Guideline dealing with the disproval of previously charted items should be prepared and distributed to hydrographic field units. ✓

It is recommended that fixes be taken at the site of the rocks shown on the chart but not found by field personnel to verify that these rocks are not present. This work should be conducted during DAVIDSON's 1984 field season. ✓

LORAN-C data were not collected during this project, as the survey launches are not equipped with LORAN-C equipment. ✓

The shoreline revision photography flown July 27-28, August 4, 1981, and August 27, 1981 should be incorporated with the latest hydrographic survey to revise chart 16709. ✓

R. AUTOMATED DATA PROCESSING

The following programs were used during this survey:

<u>Program Number</u>	<u>Program Name</u>	<u>Version Date</u>
RK 112	Range-Range Real Time HYDROPLOT	03/19/81
RK 116	Range-Azimuth Real Time Plot	08/24/81
RK 201	Grid, Signal and Lattice Plot	04/18/75
RK 211	Range-Range Non-Real Time Plot	02/02/81
RK 215	Visual Non-Real Time Plot	02/11/81
RK 216	Range-Azimuth Non-Real Time Plot	02/09/81
RK 300	Utility Computations	10/21/81
RK 330	Reformat and Data Check	05/04/76
RK 407	Geodetic Inverse/Direct Computations	09/25/78
AM 500	Predicted Tide Generator	11/10/72
RK 561	Geodetic Calibration	02/19/75
AM 602	Elinore (Line Oriented Editor)	05/20/75

 ✓

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

S. REFERRAL TO REPORTS

	<u>Date Submitted</u>	
Horizontal Control Report	12 August 1983	
Field Tide Note	03 November 1983	✓
Electronic Control Report	04 November 1983	
Corrections to Echo Soundings Report		
Field Geographic Names		
Coast Pilot Report		

Respectfully submitted,

for
S. Wheaton
James E. Waddell, Jr.
ENS, NOAA

Approved and forwarded,

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

*These features are shown on the Sound
Sheet and should be charted*

ADDENDUM

The following list addresses recommended disposition of non-sounding features investigated within the limits of H-10090:

- ✓ An uncharted pile at 60/31/41.¹⁸72N, 145/47/54.⁸²93W, (Pos. No. 2015, JD 160), bares ~~20.32~~₁₂ feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted pile at 60/31/39.³⁹38N, 145/47/49.³⁹51W, (Pos. No. 2016, JD 160), bares ~~18.24~~₉ feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted pile at 60/31/38.³37N, 145/47/45.⁰⁸20W, (Pos. No. 2017, JD 160), bares ~~16.60~~₈ feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted pile at 60/31/36.³87N, 145/47/40.²³35W, (Pos. No. 2018, JD 160), bares ~~22.12~~_{13.0} feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted pile at 60/31/29.⁶⁰05N, 145/47/38.⁴¹52W, (Pos. No. 2019, JD 160), bares ~~17.80~~₈ feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted pile at 60/31/33.⁴⁶51N, 145/47/47.⁸³04W, (Pos. No. 2020, JD 160), bares ~~16.16~~₆ feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted pile at 60/31/36.⁴⁶71N, 145/47/51.⁴⁴57W, (Pos. No. 2021, JD 160), bares ~~21.08~~₁₀ feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted rock at 60/32/39.²⁹36N, 145/46/07.74W, (Pos. No. 2035, JD 168), bares ~~4.53~~₃ feet at MLLW, and should be charted. —*
- ✓ An uncharted obstruction (engine part) at 60/32/27.^{26.99}00N, 145/46/16.⁶86W, (Pos. No. 2036, JD 168), bares ~~4.25~~₂ feet at MLLW, and should be charted.
- ✓ An uncharted obstruction (engine part) at 60/32/20.⁸59N, 145/46/20.¹80W, (Pos. No. 2037, JD 168), bares ~~1.75~~_{2.0} feet at MLLW, and should be charted.
- ✓ An uncharted obstruction (engine part) at 60/32/21.⁰01N, 145/46/20.¹60W, (Pos. No. 2038, JK 168), bares ~~1.02~~_{2.0} feet at MLLW, and should be charted.
- ✓ An uncharted obstruction (engine part) at 60/32/16.⁴⁹50N, 145/46/20.²91W, (Pos. No. 2039, JD 168), bares ~~1.80~~_{2.0} feet at MLLW, and should be charted.
- ✓ An uncharted obstruction (engine part) at 60/32/18.⁵58N, 145/46/13.⁴68W, (Pos. No. 2040, JD 168), bares ~~1.12~~_{2.0} feet at MLLW, and should be charted.
- ✓ An uncharted obstruction (engine part) at 60/32/22.⁶27N, 145/46/12.⁸78W, (Pos. No. 2041, JD 168), bares ~~1.15~~_{2.0} feet at MLLW, and should be charted.
- ✓ An uncharted wrecked boat at 60/32/00.¹08N, 145/47/08.^{07.96}08W, (Pos. No. (2) AT MLLW, JD 168), is 10.97 meters in length. The fix was taken from the stern and an azimuth of 115/12/00 was taken from station ACROSS 1933 to define its northeastern orientation. It should be charted.

*These features are shown on the Smooth
Shepard and should be charted*

- ✓ An uncharted pile at 60/31/26.⁶⁷~~57~~N, 145/47/34.⁷²~~48~~W, (Pos. No. 2043, JD 168), bares ~~29.25~~²¹ feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted pile at 60/31/26.³⁷~~28~~N, 145/47/34.⁶³~~71~~W, (Pos. No. 2045, JD 169), bares ~~24.80~~¹² feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted pile at 60/31/26.³¹~~19~~N, 145/47/34.⁸⁰~~96~~W, (Pos. No. 2046, JD 169), bares ~~20.32~~⁸ feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted pile at 60/31/26.¹⁴~~60~~N, 145/47/35.³⁹~~47~~W, (Pos. No. 2047, JD 169), bares ~~28.29~~¹⁴ feet at ~~MLLW~~^{MHW}, and should be charted.
- ✓ An uncharted rock at 60/30/40.⁴⁰~~38~~N, 145/50/45.⁶⁵~~37~~W, (Pos. No. 2048, JD 169), bares ~~2.57~~⁴ feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/30/40.⁶~~14~~N, 145/50/46.^{45.80}~~02~~W, (Pos. No. 2049, JD 169), bares ~~2.57~~^{5.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/30/40.⁶~~04~~N, 145/50/46.^{44.82}~~04~~W, (Pos. No. 2050, JD 169), bares ~~9.73~~^{11.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/30/40.⁵~~37~~N, 145/50/45.⁰⁷~~29~~W, (Pos. No. 2051, JD 169), bares ~~3.17~~^{5.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/30/41.⁹~~47~~N, 145/50/42.^{41.81}~~07~~W, (Pos. No. 2052, JD 169), bares ~~5.79~~^{8.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/30/42.³~~17~~N, 145/50/37.^{36.79}~~01~~W, (Pos. No. 2053, JD 169), bares ~~4.48~~^{7.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/29/45.76N, 145/53/59.⁰⁶~~71~~W, (Pos. No. 2056, JD 171), bares ~~9.77~~^{9.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/29/43.47N, 145/54/24.^{23.26}~~11~~W, (Pos. No. 2057, JD 171), bares ~~1.04~~^{6.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/29/46.30N, 145/54/14.¹⁷~~92~~W, (Pos. No. 2058, JD 171), bares ~~6.44~~^{6.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/29/47.39N, 145/54/13.⁸⁴~~99~~W, (Pos. No. 2059, JD 171), bares ~~5.78~~^{6.0} feet at MLLW, and should be charted.
- ✓ An uncharted pile at 60/29/31.⁷⁷~~86~~N, 145/54/55.32W, (Pos. No. 2060, JD 171), bares ~~12.15~~ feet at MLLW, and should be charted.
- ✓ An uncharted pile at 60/29/31.⁷⁹~~88~~N, 145/54/54.77W, (Pos. No. 2061, JD 171), bares ~~9.89~~^{10.0} feet at MLLW, and should be charted.
- ✓ An uncharted pile at 60/29/31.⁶⁸~~77~~N, 145/54/54.64W, (Pos. No. 2062, JD 171), bares ~~11.20~~ feet at MLLW, and should be charted.
- ✓ An uncharted pile at 60/29/31.⁶⁶~~75~~N, 145/54/54.29W, (Pos. No. 2063, JD 171), bares ~~8.91~~^{9.0} feet at MLLW, and should be charted.

These features are shown on the smooth sheet and should be charted

✓ An uncharted pile at 60/29/31.⁴6N, 145/54/54.8¹W, (Pos. No. 2064, JD 171), bares 11.²⁰ feet at MLLW, and should be charted.

✓ An uncharted pile at 60/29/31.⁷⁶8N, 145/54/55.32W, (Pos. No. 2065, JD 171), bares 12.¹⁹ feet at MLLW, and should be charted.

✓ An uncharted pile at 60/29/31.⁵82N, 145/54/55.11W, (Pos. No. 2066, JD 171), bares 9.²³ feet at MLLW, and should be charted.

✓ An uncharted pile at 60/29/31.⁵²8N, 145/54/54.75W, (Pos. No. 2067, JD 171), bares 8.⁹¹ feet at MLLW, and should be charted.

✓ An uncharted obstruction (engine part) at 60/28/28.^{29 31.65}44N, 145/57/26.5^{4 54 1}W, (Pos. No. 2068, JD 171), bares 11.59 feet at MLLW, and should be charted.

✓ An uncharted pile at 60/29/04.4⁹7N, 145/55/54.4¹W, (Pos. No. 2079, JD 172), bares 5.²⁰ feet at MLLW, and should be charted.

✓ An uncharted ^{mLR}wrecked boat at 60/28/40.6⁹6N, 145/56/18.1²W, (Pos. No. 2096, JD 174), is 18.⁴⁴ feet at MLLW. It is 18.50 meters in length and an azimuth of 85/40/36 was taken from station SHAG, 1983 to define its eastern orientation. It should be charted.

✓ An uncharted rock at 60/27/48.3³8N, 145/57/47.4⁵7W, (Pos. No. 2097, JD 174), bares 8.⁷⁸ feet at MLLW, and should be charted.

✓ An uncharted rock at 60/27/48.8³8N, 145/57/44.1²⁰W, (Pos. No. 2098, JD 174), bares 8.⁷⁸ feet at MLLW, and should be charted.

✓ An uncharted pile at 60/32/10.75N, 145/51/47.^{3.98}08W, (Pos. No. 2105, JD 179), bares 3.⁷² feet at MLLW, and should be charted.

✓ An uncharted pile at 60/27/24.1⁶7N, 145/58/38.1²⁴W, (Pos. No. 2107, JD 179), bares 3.⁵¹ feet at MLLW, and should be charted.

✓ An uncharted rock at 60/25/54.9^{5.04}3N, 146/08/13.3⁴⁵W, (Pos. No. 2110, JD 179), bares 8.⁵¹ feet at MLLW, and should be charted.

✓ An uncharted rock at 60/25/54.4⁵⁴5N, 146/07/28.9^{4.62}7W, (Pos. No. 2111, JD 179), bares 10.³¹ feet at MLLW, and should be charted.

✓ An uncharted obstruction (metal pipe) at 60/28/41.9³2N, 145/56/24.0²1W, (Pos. No. 2153, JD 182), is covered 9.⁴⁰ feet at MLLW, and should be charted.

✓ An uncharted rock at 60/24/53.8²1N, 146/05/33.0¹³8W, (Pos. No. 6601, JD 180), bares 0.⁴ feet at MLLW, and should be charted.

✓ An uncharted rock at 60/24/52.5⁶⁰9N, 146/05/33.3⁴⁰6W, (Pos. No. 6602, JD 180), bares 7.⁸ feet at MLLW, and should be charted.

✓ An uncharted rock at 60/24/53.6⁶7N, 146/05/47.3²⁷2W, (Pos. No. 6603, JD 180), bares 2.¹ feet at MLLW, and should be charted.

These features are shown on the smooth sheet and should be charted

- ✓ An uncharted rock at 60/26/39.⁸⁵~~80~~N, 146/01/^{44.99}~~45~~.01W, (Pos. No. 6604, JD 180), bares ~~7.8~~^{8.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/27/41.59N, 145/59/29.1⁴~~1~~W, (Pos. No. 6605, JD 181), bares ~~7.0~~^{8.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/27/41.32N, 145/59/21.¹⁰~~48~~W, (Pos. No. 6606, JD 181), bares ~~4.1~~^{4.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/27/41.80N, 145/59/23.4⁵~~2~~W, (Pos. No. 6607, JD 181), bares ~~3.1~~^{4.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/27/46.3⁸~~6~~N, 145/59/23.⁷⁴~~88~~W, (Pos. No. 6608, JD 181), bares ~~4.1~~^{4.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/27/41.⁷⁹~~80~~N, 145/59/29.6⁸~~5~~W, (Pos. No. 6609, JD 181), bares ~~9.1~~^{10.0} feet at MLLW, and should be charted.
- ✓ An uncharted pile at 60/28/45.03N, 145/56/13.2⁸~~7~~W, (Pos. No. 6621, JD 182), bares ~~5.0~~^{6.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/27/33.9³~~2~~N, 145/59/55.2²~~4~~W, (Pos. No. 6623, JD 182), bares ~~1.91~~^{3.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/27/29.46N, 146/00/11.³⁷~~40~~W, (Pos. No. 6624, JD 182), bares ~~4.9~~^{5.0} feet at MLLW, and should be charted.
- ✓ An uncharted pile at 60/27/16.3⁷~~8~~N, 146/00/06.15W, (Pos. No. 6627, JD 182), bares ~~3.8~~^{3.0} feet at MLLW, and should be charted.
- ✓ An uncharted pile at 60/27/21.1³~~2~~N, 145/58/43.3⁵~~2~~W, (Pos. No. 6631, JD 192) covers ~~1.16~~⁰ feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/28/11.64N, 146/02/26.11W, (Pos. No. 6634, JD 192), bares ~~12.2~~^{3.0} feet at ~~MLLW~~^{MLW}, and should be charted. (sketch)
- ✓ An uncharted obstruction (machinery part) at 60/28/42.5⁶⁰~~50~~N, 145/56/20.4⁸~~7~~W, (Pos. No. 6636, JD 193) bares ~~0.8~~^{1.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/24/54.2⁴~~7~~N, 146/05/47.¹³~~64~~W, (Pos. No. 6637, JD 193), bares ~~2.0~~^{1.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/27/56.97N, 146/03/23.57W, (Pos. No. 6638, JD 193), bares ~~7.0~~^{8.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/28/13.61N, 146/02/28.80W, (Pos. No. 6639, JD 193), bares ~~7.1~~^{8.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/25/13.0⁵~~8~~N, 146/07/21.86W, (Pos. No. 6640, JD 193), bares ~~10.35~~^{11.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/24/51.0⁰~~7~~N, 146/06/03.⁷¹~~69~~W, (Pos. No. 6641, JD 196), covers ~~0.8~~^{0.0} feet at MLLW, and should be charted.

*The features are shown on the
Smooth Sheet and should be charted*

- ✓ An uncharted rock at 60/26/47.25N, 146/03/02.94W, (Pos. No. 6642, JD 196), bares ~~3.1~~^{3.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/25/51.6⁶N, 146/07/16.9⁹W, (Pos. No. 6645, JD 205), bares ~~2.3~~^{3.0} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/25/55.04N, 146/07/23.2⁶W, (Pos. No. 6646, JD 205), covers ~~0.8~~^{0.8} feet at MLLW, and should be charted.
- ✓ An uncharted rock at 60/25/47.8⁷⁰N, 146/07/12.0⁸W, (Pos. No. 6647, JD 205), bares ~~2.9~~^{3.0} feet at MLLW, and should be charted.
- ✓ An uncharted pile at 60/28/41.5³N, 145/56/17.87W, (Pos. No. 2093, JD 174), bares ~~11.58~~^{11.5} feet at MLLW, and should be charted.
- ✓ An uncharted pile at 60/28/42.4⁵¹N, 145/56/16.7⁰W, (Pos. No. 2094, JD 174), bares ~~9.15~~^{9.1} feet at MLLW, and should be charted.
- ✓ An uncharted pile at 60/28/43.0⁷N, 145/56/14.7⁵W, (Pos. No. 2095, JD 174), bares ~~9.13~~^{9.1} feet at MLLW, and should be charted.



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

NOAA Ship DAVIDSON S331
1801-Fairview-Avenue East
Seattle, Washington 98102

Ref: S331/101-3M
Ser 8-17

15 August 1983

Commander (OAN)
17th U.S. Coast Guard District
P.O. Box 3-5000
Juneau, Alaska 99802

This is to confirm our R032230Z August, 1983 message. It is requested the following be published in the Local Notice to Mariners.

The following Dangers to Navigation were located during a hydrographic survey in the vicinity of Orca Inlet which is located on the south side of Hawkins Island. A description and position of the Dangers are listed below:

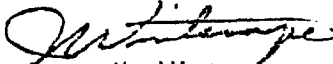
- Position # 2105 1) A broken pile bares ⁵4.3 feet at MLLW, located at Lat. 60°32'10.8"N, Long. 145°51'44.0"W, is 2.1 n. mi. bearing 103°T from Saddle Pt. ⁷⁶⁵
- " #2079 2) A broken pile, projecting 2½ feet from the bottom, bares ^{6.0}5.8 feet at MLLW, located at Lat. 60°29'04.6"N, Long. 145°55'54.4"W is 2.15 n.mi. bearing 053°T from Mummy Island Light 5.
- " #2107 3) A pile, projecting 3½ feet from the bottom, covers 0.2 feet at MLLW located at Lat. 60°27'21.1"N, Long. 145°58'43.3"W, is 0.5 n. mi. bearing 143°T from Mummy Island Light 5. ^{38.24}
- " #2153 4) A metal pipe, projecting 1½ feet from the bottom, covers ^{3 (1.3 ft)}8.8 feet at MLLW, located at Lat. 60°28'41.9"N, Long. 145°56'24.1"W, is 1.7 n. mi. bearing 057°T from Mummy Island Light 5.
- " #6636 5) A 4 X 6 foot Machinery Structure projecting 3 feet from the bottom bares 1.8 feet at MLLW, located at Lat. 60°28'42.6"N, Long. 145°56'20.5"W, is 1.75 n.mi. bearing 058°T from Mummy Island Light 5.
- 6) The charted pile located at Lat. 60°28'42.0"N, Long. 145°56'24.0"W, is incorrectly shown. The pile lies within a group of broken piles which are 2 to 6 feet high and bare at MLLW. The SW corner of the pile group is located at Lat. 60°28'42.1"N, Long. 145°56'21.4"W and the NW corner is at Lat. 60°28'42.3"N, Long. 145°56'19.7"W and extends south easterly towards the shoreline.
- " #2093 7) A broken pile bares 11.0 feet at MLLW, located at Lat. 60°28'41.5"N, Long. 145°56'17.9"W, is 1.77 n.mi. bearing 059°T from Mummy Island Light 5.



- Position # 2094 8) ✓ A broken pile bares ~~8.5~~^{9.0} feet at MLLW, located at Lat. 60°28'42.5"N, Long. 145°56'16.7"W, is 1.79 n.mi. bearing 059°T from Mummy Island Light 5.
- " # 2095 9) ✓ A broken pile bares ~~8.5~~^{9.0} feet at MLLW, located at Lat. 60°28'43.0"N, Long. 145°56'14.8"W, is 1.81 n.mi. bearing 059°T from Mummy Island Light 5.
- " # 6601 10) ✓ A rock bares 1.0 feet at MLLW, located at Lat. 60°24'53.8"N, Long. 146°05'33.1"W, is 0.33 n.mi. bearing 074°T from Boswell Rk.
- " # 6602 11) ✓ A rock bares ~~8.4~~ feet at MLLW, located at Lat. 60°24'52.5"N, Long. 146°05'33.2"W, is 0.33 n.mi. bearing 077°T from Boswell Rk.
- " # 6603 12) ✓ A rock bares ~~3.3~~ feet at MLLW, located at Lat. 60°24'53.7"N, Long. 146°05'47.4"W, is 0.22 n.mi. bearing 067°T from Boswell Rk.
- " # 6603 13) ✓ A rock covers 2.6 feet at MLLW, located at Lat. 60°24'54.2"N, Long. 146°05'47.7"W, is 0.22 n.mi. bearing 062°T from Boswell Rk.
- " # 6641 14) ✓ A rock awash at MLLW, located at Lat. 60°24'51.0"N, Long. 146°06'03.7"W, is 0.1 n.mi. bearing 048°T from Boswell Rk.
- " # 6645 15) ✓ A rock bares ~~2.9~~^{3.0} feet at MLLW, located at Lat. 60°25'51.7"N, Long. 146°07'17.0"W, is 1.2 n.mi. bearing 334°T from Boswell Rk.
- " # 6644 16) ✓ A rock covers ~~1.2~~^{0.0} feet at MLLW, located at Lat. 60°25'55.0"N, Long. 146°07'23.2"W, is 1.25 n.mi. bearing 332°T from Boswell Rk.
- " # 6647 17) ✓ A rock bares ~~2.3~~^{3.0} feet at MLLW, located at Lat. 60°25'47.7"N, Long. 146°07'12.0"W, is 1.1 n.mi. bearing 334°T from Boswell Rk.
- " # 7064 18) ✓ A rock covers ~~3.8~~^{0 (0' Rk)} feet at MLLW, located at Lat. 60°25'48.8"N, Long. 146°06'53.1"W, is 1.07 n.mi. bearing 343°T from Boswell Rk.
- 19) ✓ The channel east of Hinchbrook Island starting at Lat. 60°24'48.0"N, Long. 146°04'55.0"W and extends northwesterly to Lat. 60°25'33.0"N, Long. 146°06'48.0"W with charted soundings which range from 7 to 10 fm now has depths which range from 1 to 3 fm at MLLW.
- 20) ✓ A ½ fm shoal at MLLW, located at Lat. 60°24'45.0"N, Long. 146°03'43.0"W is 1.2 n.mi. bearing 092°T from Boswell Rk, exists where a 12 fm sounding is charted.

The Dangers affect Charts 16700 and 16709.

JMW:jaf


 James M. Wintermyre
 CDR, NOAA
 Commanding Officer

FIELD TIDE NOTE
OPR-P132-DA-83
ORCA INLET, ALASKA

Predicted tides for Cordova, AK (Reference Station 945-4050) were used to reduce survey sounding data for OPR-P132-DA-83, the Basic Hydrographic Survey of Orca Inlet, to the Mean Lower Low Water (MLLW) chart datum.

ASCII and BINARY predicted tides tapes based on daily tidal predictions for Cordova were generated on the shipboard PDP8/e computer system using standard NOS software. Version 11/10/72 of AM500, "Predicted Tides Generator," was used to create paper tapes for field and processing use.

Height correction factors were applied to daily Cordova tidal predictions (times were applied direct on Cordova). Tide tapes incorporating the different height correction factors were applied to field sheets and final sounding plots in accordance with the zoning diagram outlined in the Project Instructions.

A correction factor of 0.94 was applied to Orca Inlet sounding data gathered on JD 159-182 and JD 205 for the area between one and six nautical miles SW of Spike Island.

A factor of 0.90 was applied to soundings from the area between six and seventeen nautical miles SW of Spike Island, bordered on the north and south by Hawkins Island and Mummy Island, respectively. Hydrography in this area was run on JD 191-201.

A factor of 0.86 was applied to soundings from the area bordered by Mummy Island on the north, Egg Island on the south, and Point Whitshed and Cape Hinchinbrook on the east and west, respectively. Hydrography in this area was run on JD 191-193.

Soundings in the Cordova Small Boat Harbor and along pier faces at St. Elias Ocean Products and North Pacific Processors were obtained by lead line, dead reckoning, and range azimuth methods. Soundings were reduced to MLLW using predicted tides based direct on Cordova. Velocity corrections were applied to echo soundings in the Small Boat Harbor.

CORDOVA (945-4050)

The Cordova tide station was the primary reference station used to control sounding data in Orca Inlet. The tide station

is located in a small building on the SE corner of the Municipal (Ferry) Dock approximately 0.8 n.mi. north of the city of Cordova. A Leupold-Stevens (L&S) analog to digital recording (ADR) tide gage operated continuously during the survey. DAVIDSON personnel inspected the station on 10 June 1983 and found the backup gage (Metercraft gas-purged type, S/N 7603715164) inoperative. It was replaced the same day with Bristol gage S/N 71A21485. A 3-hour gage acceptance test was performed on the Bristol gage on 13 June 1983. DAVIDSON divers inspected and cleaned the floatwell, orifice, and staff on 16 June 1983 (see attachment 1). LT. A. Snella, Chief, Pacific Tides Party (PTP) inspected the station on 27 June 1983, repaired the Metercraft gage and replaced the Bristol gage with the former.

The Cordova tide station is maintained by a contract observer, Mr. Jim Cunningham (P.O. Box 1139, Cordova, AK, 99574).

Levels were run from the Cordova tide staff to six permanent bench marks, including the primary bench mark, before and after hydrography. Third-order Class I results agreed favorably with DAVIDSON and PTP historic levels. Elevation differences between bench marks determined during the open and closing level runs of 5 June 1983 and 25 July 1983, respectively, differed by 0.005 m or less. There was no evidence of staff or crustal movement. It is recommended that a new primary bench mark be designated. To level to the present primary mark (BM No. 9, 1964) it is necessary to set up on a shakey (and usually congested) pier.

SHAG ROCK (945-4125)

The Shag Rock tide station was installed on 3 June 1983 to control hydrography in Orca Inlet south of Cordova and north of 60°23.5'N, as per Project Instructions. 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 step near the highest point of the rock, partially protected from the elements. The tide staff was mounted against the west 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 first gage installed at the site (S/N 67A16205) on 3 June 1983 failed to pass the acceptance test (5 June 1983). Oil was subsequently discovered in the constant pressure regulator. Replacement gage S/N 68A14940, installed on 6 June 1983, provided continuous good data through the remainder of the survey period. The gage required only infrequent time adjustments. On the basis of 26 staff to gage comparisons throughout the survey period including a mean value for the

3-hour gage acceptance test (7 June 1983), a marigram reading of 6.5 feet \pm 0.1 (standard deviation) corresponds to a staff value of 0.0 feet.

Third-order Class I levels run before and after hydrography, on 3 June 1983 and 25 July 1983, respectively, were in excellent agreement with historic values. Elevation differences determined between bench marks on opening and closing level runs agreed exactly. There was no indication of staff or crustal movement.

The orifice for the Shag Rock gage was secured to the top of a 4.5 foot length of $\frac{1}{2}$ -inch iron rod driven about three feet into the sandy channel bottom. This was done to prevent the orifice from being covered by shifting sands. There was no evidence of the latter or of orifice movement. However, an unexplained anomaly was noted on the marigram between 0945-1430 UTC, 11 June 1983 (see Attachment 2). Staff-to-gage differences before and after the event are not significantly different, and gage performance appeared normal.

As per Change No. 3 to the Project Instructions, the requirement for leveling to five permanent bench marks was waived for the Shag Rock station in consideration of the small size of the rock and the close proximity of the existing bench marks. Accordingly, levels were run from the staff to the three historic marks and no additional marks were established.

BOSWELL ROCK (945-4149)

A tide station was established at Boswell Rock to control hydrography in Orca Inlet south of 60°28.0'N as per Project Instructions. Boswell Rock is located approximately 6.8 n.mi. WSW of Point Whitshed, 4.5 n.mi. SW of Mummy Island Light, and 1.5 n.mi. NW of Point Bentinck on the west side of the entrance to Boswell Bay. The staff was installed on the SE tip of the island, mounted on a large and stable round-top boulder and gaged in place with wire secured to eyebolts set in the rock. The orifice was placed in the channel south of Boswell Rock, secured to a 15-lb. concrete anchor. The gage was set in the approximate center of the island, about ten feet above the Mean High Water (MHW) line and was well protected from the elements by a rock wall and boulders on three sides.

Gage S/N 68A14940 was installed on Boswell Rock on 4 June 1983. It was removed and reinstalled at Shag Rock on 6 June 1983 where it operated satisfactorily through the remainder of the survey. The Boswell replacement gage S/N 64A11033 passed a 3-hour acceptance test on 8 June 1983. This gage had previously been installed at Shag Rock, had malfunctioned and been repaired aboard ship (oil was found in the constant

pressure regulator). The gage operated satisfactorily through 13 June 1983. Based on 18 staff to gage comparisons, including three hours of comparisons at 12-minute intervals, a reading of 8.6 feet \pm 0.1 corresponds to staff zero. On 13 June a shift in the staff to gage difference was noted. Five subsequent comparisons made between 13-18 June 1983 resulted in a mean value of 9.0 feet \pm 0.1 equivalent to staff zero. The gage was replaced on the assumption it was malfunctioning. In reality, the orifice was probably disturbed by a fishing boat dragging anchor (see Attachment 3). Replacement gage S/N 64A11032 operated satisfactorily through completion of the survey with the exception that another abrupt shift in the mean staff to gage difference occurred on 9 July 1983. Based on 12 observations between 18 June-5 July 1983, a marigram value of 9.6 feet \pm 0.05 corresponds to staff zero; based on 11 observations between 9 July-25 July 1983, a marigram value of 9.0 feet \pm 0.1 feet corresponds to staff zero. The shift is attributed to a pen malfunction (see Attachment 4) as the gage appeared to function properly before and after the event. Another anomaly was noted on the Boswell Rock marigram (see Attachment 5). A curious rippling or undulating effect was observed, particularly at low tides, that persisted from 16 July 1983 (1900 UTC) to 18 July 1983 (0200 UTC). The effect was not seen before or after the stated times, and staff to gage differences before and after the event appeared normal.

Time constraints and adverse sea conditions precluded diver inspection of the gage orifices immediately prior to their removal. The Shag Rock orifice was not located; divers following the orifice tubing back from the gage reported the weighted tubing was deeply buried under sand. High current and poor visibility caused a cessation of the orifice recovery effort; the tubing was cut and the orifice abandoned. At Boswell Rock, the orifice was simply lifted from the bottom by hauling up on the tubing from a boat. The orifice came free from the anchor while lifting it off the bottom (apparently the wires securing it to the anchor had rusted through). It is possible that the wires had previously rusted through and the orifice was swaying with the currents, causing the anomalous rippling effect on the marigram. It is recommended that in future hydrographic operations involving temporary tide gage installations, visual inspections of anchored orifices be made by divers prior to orifice removal. Additional diver inspections could be made throughout the survey if marigrams exhibited unusual or anomalous features.

Opening levels were run at Boswell Rock on 4 June 1983 between the staff and five permanent tidal bench marks established by DAVIDSON in 1982. Levels closed within Third-order Class I standards but did not agree with the previous year's closing elevation differences for the leg between bench marks 4149C

and 4149D. The discrepancy probably arises from compensating misreads during the 1982 season (observations over approximately 100 m of open water are necessary to tie bench mark 4149C to 4149D). Elevation differences for the C-D leg determined on three independent level runs (4 June, 18 June, 25 July) agreed within 0.002 m. Elevation differences between the remaining bench marks on opening and closing level runs agreed within 0.004 m of each other and 1982 results. There was no evidence of staff or crustal movement.

The following table summarizes tide gage distribution during OPR-P132-DA-83:

<u>Site and Reference Station Number</u>	<u>Location</u>	<u>Gage S/N</u>	<u>Period of Operation</u>
Shag Rock (945-4125)	60°27.9'N 145°59.3'W	67A16205 64A11033 68A14940	3-6 June 1983 6 June 1983 6 June-25 July 1983
Boswell Rock (945-4149)	60°24.8'N 146°06.2'W	68A14940 64A11033 64A11032	4-6 June 1983 7-18 June 1983 18 June-25 July 1983

Gage Problems

The DAVIDSON carried to Alaska six Bristol bubbler-type tide recording gages from Pacific Marine Center; five had varying amounts of oil in their constant pressure regulator. PTP was informed and immediately sent four replacement gages. Three of the latter also had oil in their constant pressure regulator, though they had apparently been examined prior to shipment. The following gages were received from PTP in oil-damaged condition: 73A231, 68A9335, 67A16209, 64A11033, 67A16205, 67A10294, 67A10292, 64A11032. As per PTP suggestions, several of the gages were repaired aboard DAVIDSON for immediate and backup use; the remainder were returned to PTP on 21 June 1983.

All gages were operated by DAVIDSON personnel and annotated in Universal Coordinated Time (UTC) except the contract-observer maintained Cordova gages which were kept on Alaska Standard Time (AST).

When abstracting hourly heights of tides from the marigrams, time errors were distributed linearly throughout the period between observations.

As observed during the 1982 field season, the marigrams from Shag Rock and Boswell Rock exhibited a characteristic flattening at the lower portion of the tidal cycle (see Attachments 6 and 7). The effect was not noticeable at high water. The orifices at both sites were set in channels with relatively unrestricted tidal flow. Since the gages appeared to function properly, the flattening effect is probably real and a function of the morphology of the tidal basin. The effect is probably only significant at low water when the extensive mud flats largely expose with consequent restriction to narrow channels of the tidal flow into and out of the basin. The flattening effect is more pronounced the lower the stage of the tide. When greater than 7-8 feet of water covered the orifices, the effect was not noticeable. At higher tides the mud flats cover and the restrictive effects of channels on tidal flats are minimized, hence the upper portion of the tide curves appear normal.

The times of tidal extrema were compared for Shag Rock and Boswell Rock to determine if any differences existed. Thirty-three differences were taken between actual times of high and low tides at each station, from the scaled and abstracted hourly heights of tides (NOAA Form 77-29) for each station between 9 June-11 July 1983. The mean difference between 17 times of low tides at Shag Rock and Boswell Rock was 3.4 ± 7.2 minutes, i.e. low tides at Boswell generally occur slightly earlier than at Shag. The mean difference between 16 times of high tides at Shag Rock and Boswell Rock was 3.4 ± 7.7 minutes, i.e. high tides at Boswell generally occur slightly earlier than at Shag. The closer proximity of Boswell Rock to the Gulf of Alaska and relatively unimpeded tidal flow into Orca Inlet through Strawberry Channel may account for the slight time differences.

Respectfully submitted,

Approved and forwarded,

Eric G. Hawk

for
Eric G. Hawk
ENS, NOAA

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

DATE: 5/8/84

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Pacific

OPR: P132

Hydrographic Sheet: H-10090

Locality: ORCA Inlet, Alaska

Time Period: June 4 - July 25, 1983

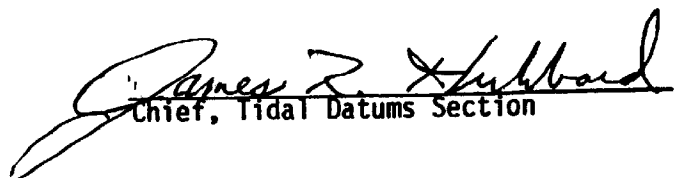
Tide Station Used: 945-4050, Cordova, AK
945-4125, Shag Rock, AK
945-4149, Boswell Rock, AK

Plane of Reference (Mean Lower Low Water): 945-4050 = 5.95 Ft.
945-4125 = 0.22 Ft.
945-4149 = 1.40 Ft.

Height of Mean High Water Above Plane of Reference: 945-4050 = 11.6 Ft.
945-4125 = 11.1 Ft.
945-4149 = 10.2 Ft.

Remarks: Recommended Zoning:

1. West of longitude $146^{\circ}03.0'$ zone direct on 945-4149, Boswell Rock, AK.
2. East of $146^{\circ}03.0'$ to $146^{\circ}00.0'$ zone on 945-4149 and apply x1.06 range ratio.
3. East of $146^{\circ}00.0'$ to $145^{\circ}55.0'$ zone direct on 945-4125, Shag Rock, AK.
4. East of $145^{\circ}55.0'$ zone direct on 945-4050, Cordova, AK.


Chief, Tidal Datums Section

DATE: 12/18/84

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Pacific

OPR: P132

Hydrographic Sheet: H-10090

Locality: Orca Inlet, Alaska

Time Period: June 13-18, 1984

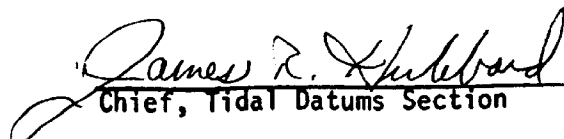
Tide Station Used: 945-4125 Shag Rock, AK

Plane of Reference (Mean Lower Low Water): 945-4125 = 0.19 ft.

Height of Mean High Water Above Plane of Reference: 945-4125 = 10.8 ft.

Remarks: Recommended Zoning:

1. West of longitude $146^{\circ}03.0'$ zone on 945-4125 and apply $\times 0.93$ range ratio to all heights.
2. East of longitude $146^{\circ}03.0'$ to $145^{\circ}55.0'$ zone direct zone on 945-4125.
3. East of $145^{\circ}55.0'$ apply -10 minute time correction and $\times 0.95$ range ratio to all heights.


Chief, Tidal Datums Section

GEOGRAPHIC NAMES

H-10090

Name on Survey	<p> <i>A</i> OF CHART NO. 16709 <i>B</i> ON PREVIOUS SURVEY NO. T-12677 <i>C</i> ON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION <i>D</i> ON LOCAL MAPS <i>E</i> P.O. GUIDE OR MAP ATLAS <i>F</i> RAND McNALLY <i>G</i> U.S. LIGHT LIST <i>H</i> Other </p>										
	A	B	C	D	E	F	G	H	I	J	
Alaska	X										1
Boswell Rock	X										2
Government Rock	X										3
Gravel Point	X										4
Hartney Bay	X										5
Hawkins Island	X										6
Hinchinbrook Island	X										7
Little Mummy Island											8
Mummy Island											9
Orca Inlet	X										10
Pinnacle Rock	X										11
Saddle Point	X										12
Shag Rock	X										13
Shirt Tail Point			X								14
Strawberry Channel									X		15
Three Mile Bay	X										16
Twin Rocks	X										17
											18
											19
											20
											21
											22
											23
											24
											25

SURVEY APPROVAL SHEET

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

Direct supervision of the field work was done by the Field Operations Officer. I checked the records on a random basis and checked the field sheets and progress daily.

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

The survey is complete and adequate to supercede any previous surveys for charting, particularly since this is the first post-earthquake survey in the area. Additional work is recommended to dispose of the fifteen (15) rocks described in Section L. The method used is not adequate to positively eliminate them from the chart. This should be cleared up in the 1984 field season.

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

Comparison with prior surveys and the chart are not very meaningful on this survey since the prior surveys and charted data are based on pre-earthquake data. The random comparison of soundings from prior surveys and the chart is also a meaningless task. It does not reflect the overall comparisons of depth trends, bottom topography changes and shoreline features.

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

Date: 11/30/83

Approved and forwarded by:

James M. Wintermyre

J. M. Wintermyre

CDR, NOAA

Commanding Officer

OPR-P132-DA-83
 DA-20-4-84(H-10090)
 SIGNAL TAPE PRINTOUT

001	0	60	33	08704	145	49	20530	250	0008	000000	STUMP 2 USGS 1952
002	6	60	32	50673	145	45	59480	139	0004	000000	CORDOVA BOAT HBR LT 2,1982
003	4	60	32	22665	145	45	35622	139	0000	000000	CORDOVA RADIO MAST 1955
005	7	60	31	42472	145	47	38535	250	0003	000000	MAUD 2 1964
006	7	60	29	41064	145	54	43537	250	0014	000000	TRADE 1899
007	0	60	31	35647	145	55	10879	250	0003	000000	TREAT 1899
008	0	60	30	22931	146	00	05850	250	0004	000000	NAT 1899
009	0	60	28	28622	146	05	57741	250	0004	000000	JOE 1899
010	0	60	27	21014	146	11	31662	250	0006	000000	DAVE 1899
011	6	60	25	41752	146	11	00298	139	0002	000000	KITTY 1899
012	5	60	25	55650	146	07	28872	250	0010	000000	GIRL 1899
013	1	60	23	40793	146	05	16974	139	0050	000000	RNG HINCHINBROOK HBK 1972
014	1	60	23	44367	146	05	06094	139	0010	000000	BEACH 1899
015	1	60	27	45673	145	59	19661	250	0000	000000	MUMMY ISLAND LT. 5, 1982
016	0	60	26	42223	145	52	57822	250	0007	000000	WHITSHED 2 1916
021	2	60	28	03409	145	57	26488	139	0000	000000	GRAVEL PT NRT R MAST 1964
022	0	60	33	37668	145	48	16487	250	0012	000000	ACROSS 1933
023	2	60	34	20737	145	46	47512	139	0004	000000	GRASS 1899
024	7	60	30	40347	145	50	43420	139	0005	000000	TRAVEL 3, 1983
025	7	60	27	58997	145	58	13721	250	0004	000000	SHAG, 1983
026	5	60	24	21973	146	05	48468	254	0004	000000	TEMP 3
027	5	60	33	02578	145	46	08437	139	0011	000000	NARD 1933

NOAA FORM 76-40
(6-74)
Replaces C&GS Form 567.

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

<input type="checkbox"/> TO BE CHARTED <input checked="" type="checkbox"/> TO BE REVISED <input type="checkbox"/> TO BE DELETED		REPORTING UNIT (If field Party, Ship or Office) NOAA Ship DAVIDSON	STATE ALASKA	LOCALITY OAKA INLET	DATE 6/83	ORIGINATING ACTIVITY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> COMPILATION ACTIVITY <input type="checkbox"/> FINAL REVIEWER <input type="checkbox"/> QUALITY CONTROL & REVIEW GRP. <input type="checkbox"/> COAST PILOT BRANCH (See reverse for responsible personnel)	
The following objects HAVE <input checked="" type="checkbox"/> BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS. OPR PROJECT NO. OPR-1132-DA-83		DATUM N.A. 1927				METHOD AND DATE OF LOCATION (See instructions on reverse side)	CHARTS AFFECTED 16700 16709
CHARTING NAME	DESCRIPTION <small>Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.</small>	POSITION			OFFICE	FIELD	
		LATITUDE D.M. Meters	LONGITUDE D.P. Meters				
NRT	GEORGE POINT NRT RADIO MAST	60 28	145 57	26.488		F-3-6-L 17 JUNE 83	16700 16709
AERONAUTICAL RADIO BEACON	RUN MICHENBROOK HBR	60 23	146 05	17.003		F-3-6-L 24 JUNE 83	16700 16709

/SIN

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	MARK P. KOEHN, LT, NOAA
POSITIONS DETERMINED AND/OR VERIFIED	MARK P. KOEHN, LT, NOAA
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	
<p>INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION' (Consult Photogrammetric Instructions No. 64.)</p>	
<p>OFFICE</p> <p>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</p>	<p>FIELD (Cont'd)</p> <p>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</p> <p>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</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75</p> <p>**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>
<p>FIELD</p> <p>I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection</p> <p>A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>FIELD</p> <p>I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: P - Photogrammetric Vis - Visually 5 - Field Identified 6 - Theodolite 7 - Planetable 8 - Sextant</p> <p>A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>
<p>ORIGINATOR</p> <p><input type="checkbox"/> PHOTO FIELD PARTY</p> <p><input checked="" type="checkbox"/> HYDROGRAPHIC PARTY</p> <p><input type="checkbox"/> GEODETIC PARTY</p> <p><input type="checkbox"/> OTHER (Specify)</p>	<p>FIELD ACTIVITY REPRESENTATIVE</p>
<p>REVIEWER</p> <p><input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE</p>	<p>OFFICE ACTIVITY REPRESENTATIVE</p>

RECEIVED

NOV 1 1983

PACIFIC MARINE CENTER



National Oceanic and Atmospheric Administration

National Ocean Service

Pacific Marine Center

NOAA Ship DAVIDSON

RLS

November 1, 1983

Mark

TO: N/MOP - Charles K. Townsend *OK*

Copy to CO Davidson

FROM: *James M. Wintermyer*
Commanding Officer
NOAA Ship DAVIDSON

*done
11/2/83*

SUBJECT: Data Submission

The submission date for the Orca Inlet data had been extended to November 11, 1983. We can meet this date; however, there is a problem in my reviewing the report and final sheets since I will be in Reedsport until approximately November 22, 1983. I don't feel comfortable with shipping this data back and forth for review. Therefore, I request the submission date be extended to December 1, 1983.



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

National Ocean Service
Pacific Marine Center
NOAA Ship DAVIDSON

October 19, 1983

TO: N/MOP - Charles K. Townsend

FROM: Commanding Officer *W*
NOAA Ship DAVIDSON

SUBJECT: Extension of Processing Time for Orca Inlet, Alaska, Project
(OPR-P132-DA-83)

I request two weeks additional processing time to complete the Orca Inlet Project (OPR-P132-DA-83). Completion of the Final Field Sheet has been delayed due to hardware problems during the initial setup of the HYDROPLOT system and BS³ as a result of the DAVIDSON mid-life upgrade. In addition, part of the processing time in the first two weeks was directed toward completing the Final Field Sheet for the San Andreas Fault Project.

FILE COPY

CODE	SURNAME	DATE	CODE	SURNAME	DATE

X.O. DDM
F.O.O.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102

August 18, 1982

CPM3x2/WAW

TO: Commanding Officer *CA*
NOAA Ship DAVIDSON
FROM: *Ned C. Austin*
CPM3 - Ned C. Austin
SUBJECT: OPR-P132-DA-82, Orca Inlet, Alaska

As discussed during telecons on August 10 and 12, 1982, permission is granted to use 1-9999 entries on the corrector tapes to delete the overprint deeps in areas of high sand wave concentrations contained on H-10029, DA-10-2-82.

As an alternative, the times of the sand wave peaks may be adjusted to coincide with the times of the recorded sounding intervals. Although this procedure may exceed time tolerances for scaling peaks and deeps as specified in Table 4-14 of the Hydrographic Manual, it is justified since sand waves are generally migratory in nature.

Either of the above methods are acceptable; however, it is important that the least depths of the sand waves be accurately scaled and legibly portrayed on the final field sheet with appropriate annotation, and the method used to depict these features should be discussed in the descriptive report.



ADDENDUM TO
OPR-P132-DA-84
Orca Inlet, ALASKA
H-10090

1984 Survey Work

*See Evaluation Report
Section 7.*

There were fifteen non-sounding features in Orca Inlet that remained unresolved from OPR-P132-DA-83. Eleven were investigated during OPR-P132-DA-84 (see attachment A, portion of OPR-P132-DA-83's descriptive report). The DAVIDSON was unable to undertake wire-drag searches for the remaining four items due to lack of time. Method used in investigation was to compute sextant angles observable at the feature site and to reproduce them in the field. The visual hydrographic signals used for this positioning were the same as those used in OPR-P132-DA-83 and are described in H-10090's descriptive report. The following is a list of the features and their dispositions.

Items will be discussed as numerically portrayed on Attachment A and visually portrayed on Attachment B.

- ✓ Item #1-Rock awash @ MLLW. Found to be in charted position. Sounding Volume page 3.
- ✓ Item #2-Not found. Requires wire-drag investigation.
- ✓ Item #3-Not found. Area of exposed mudflat 200 meters in radius around the charted position was searched thoroughly at low water. Sextant fix taken at site. Sounding Volume page 3. Recommend deletion from chart.
- ✓ Item #4-Rock uncovers 2.6 ft @ MLLW. Found in charted position. Sounding Volume page 3.
- ✓ Item #5-Rock uncovers 5.6 ft @ MLLW. Found in charted position. Sounding Volume page 4.
- ✓ Item #6-Rock uncovers 6.4 ft @ MLLW. Found in charted position. Sounding Volume page 4.
- ✓ Item #7-Rock uncovers 7.0 ft @ MLLW. Found in charted position. Sounding Volume page 4.
- ✓ Item #8-Rock uncovers 4.8 ft @ MLLW. Found in charted position. Rock feature described as oriented east-west and is 1 meter by 1/2 meter in dimension.
- ✓ Item #9-Not found. Area of exposed mudflat 100 meters in radius around the charted position was searched thoroughly at low water. Sextant fix taken at site. Sounding Volume page 7. Recommend deletion from chart.
- ✓ Item #10-Not found. Area of exposed mudflat 100 meters radius around the charted position was searched thoroughly

at low water. Sextant fix taken at site. Sounding Volume page 7. Recommend deletion from chart.

- ✓ Item #11-Rock feature uncovers 6.3 ft @ MLLW. Found in charted position. Feature measures 6 meters east-west and 4 meters north-south. Sounding Volume page 9.
- ✓ Item #12-Rock feature uncovers 8.2 ft @ MLLW. Found in charted position. Feature oriented north-south and measures 18.1 meters in that direction, 9 meters east-west. Sounding Volume page 8.
- ✓ Item #13-Not found. Requires wire-drag investigation.
- ✓ Item #14-Not found. Requires wire-drag investigation.
- ✓ Item #15-Not found. Requires wire drag investigation.

Predicted tidal heights for the reduction of these non-sounding features to MLLW were from Cordova, Alaska 945-4050 with a 0.90 correction factor applied. Tide times were directly those of Cordova.

A bubbler tide gage was installed at Shag Rock (945-4125) from 12 June (JD 164) to 13 August (JD 226) to acquire real time tides during the investigation. A request for Approved Tide Data is submitted with this report (Attachment C).

Respectfully submitted,


Andrew J. Allen, LT(Jg) NOAA

Approved and forwarded,


Thomas W. Richards, CDR NOAA

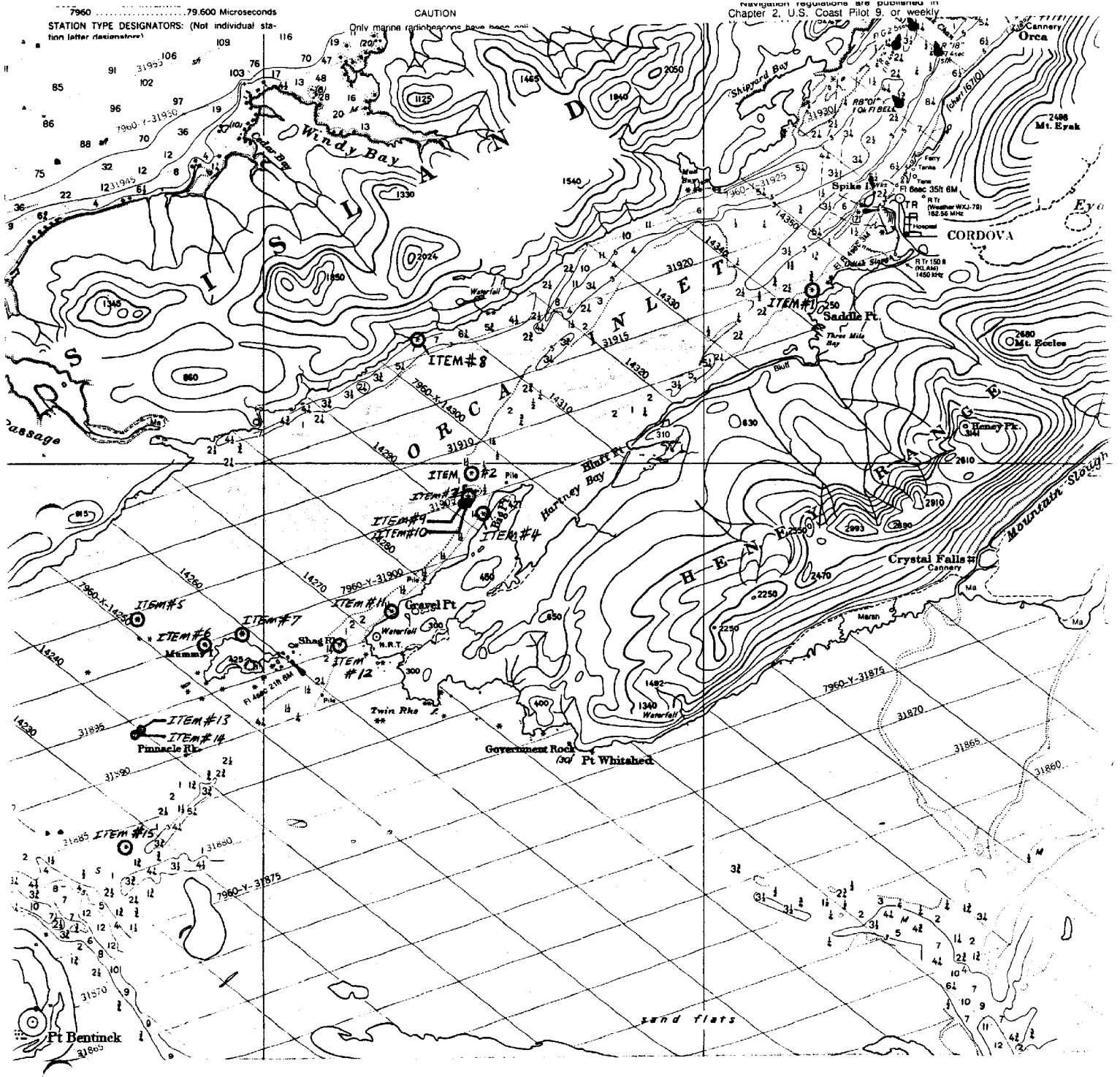
was observed to have occurred in the area north of 60/31/00N and south of 60/26/00N. Agreement between these latitudes was generally good. Shoaling greater than that previously noted was found in the following areas: 1) 60/24/44N, 146/03/44W; 2) 60/24/57N, 146/05/16W; and 3) 60/25/30N, 146/06/48W. The changed bottom topography noted in this area is believed to be the result of current and wave action. The more general shoaling trends noted throughout much of the survey area are probably due to the 1964 earthquake.

Recommendations concerning the disposition of non-sounding features investigated throughout the survey area are listed in an addendum to this report.

Several rocks shown on the current edition of chart 16709 were not found by visual reconnaissance at low tide in exposed mud. It is the recommendation of the hydrographer that these rocks remain charted until the DAVIDSON returns to the area during the 1984 field season and can obtain a fix and check fix in the vicinity of each charted rock in question to either prove or disprove its existence. The following list shows each of the rocks not found, how and when it was investigated, and source information. In cases where no source information is available, it is requested that this data be forwarded in time for next season's field work.

Latitude/Longitude	JD	Time spent in search (hrs)	BP#	Photo #	Shown on BP?	Source Requested?
① 60/31/56N 145/47/33W ✓	160 165	2	118507	4539	no	yes
② 60/28/06N 146/00/28W ✓	173	1/2	118508	3940	no	yes
③ 60/27/58N 146/01/18W ✓	174	1/2	118508	3940	no	yes
④ 60/29/34N 145/55/23W ✓	179	1/2	118509	7093	no	yes
⑤ 60/29/33N 145/55/30W ✓	179	1/2	118509	7093	no	yes
⑥ 60/29/38N 145/55/23W ✓	179	1/2	118509	7093	yes	no
⑦ 60/25/39N 146/03/11W ✓	192	1½	118508	3940	no	yes
⑧ 60/28/13N 146/02/53W ✓	193	1	118508	3940	no	yes
⑨ 60/26/57N 146/02/58W ✓	196	2	118508	3940	no	yes
⑩ 60/27/00N 146/02/50W ✓	196	2	118508	3940	no	yes
⑪ 60/28/21N 145/57/07W ✓	196	1	118509	3954	no	yes
⑫ 60/29/54N 145/55/18W ✓	205	1	118509	7093	yes	no
⑬ 60/29/26N 145/55/00W ✓	205	1/2	118509	7093	yes	no
⑭ 60/27/58N 145/58/17W ✓	205	1/2	118509	7114	no	yes
⑮ 60/31/24N 145/50/31W ✓ 56/30	165	1/2	118512	7030	no	yes

Sounding volumes, raw data printouts, and fathograms used for determining these items as potential or actual hazards to navigation will be needed to enable shipboard personnel to either prove or disprove the existence of these rocks during the 1984 field season.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Ship
1801 Fairview Avenue East
Seattle, Washington 98112

N/OMS12 - Chief, Tides and Water Levels Branch

Thomas W. Richards
FROM: Thomas W. Richards, CDR NOAA
Commanding Officer, NOAA Ship

TO: Request for Approved Tide Data

Please provide the Nautical Chart Branch (N/MOP21), Pacific Marine Center, the following tide data:

1. Approved Tide Note (Form 712)
2. Approved Hourly Heights for Days of Hydrography
3. Hourly Heights on Magnetic Tape

These data are required for the processing of hydrographic survey:

Registry No.: H-10090
Project Instructions: OPR-P132-DA-84
Location: ORCA INLET, ALASKA

The final Progress Sketch and Abstract of Times of Hydrography/Shoreline Verification (check one):

- are included with this request.
- have been forwarded with the final tide record package for this survey mailed on 9/04/84
- are included with this request. The final tide record package for this survey will be forwarded at the end of this month.

Tide data are required within 90 days of receipt of this request. If this schedule cannot be met, please advise the Chief of the Hydrographic Section, N/MOP211, telephone FTS 392-6853.



**U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

National Ocean Service
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

December 22, 1983

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

Dear Sir:

Three uncharted rocks were noted during preliminary office review of hydrographic survey H-10090, Saddle Point to Boswell Rock, Orca Inlet, Alaska, and are considered dangers to navigation. Questions concerning the survey may be directed to Capt. Ned C. Austin, Chief, Nautical Chart Branch, telephone (206) 527-6835.

The following statements are recommended for inclusion in the Local Notice to Mariners:

"An uncharted rock uncovered ⁸ 7 ft. at MLLW (~~based on predicted tides~~) is at latitude 60°27'57"N, longitude 146°03'24"W, bearing 276 degrees true, 2.0 nautical miles from Mummy Island Light 5 (chart 16709).

"An uncharted ~~rock~~ ^{islet Boes} uncovered ^{4.0} 13.6 ft. at ^{MHW} ~~MLLW~~ (based on predicted tides) is at latitude 60°27'20"N, longitude 146°02'01"W, bearing 253 degrees true, 1.4 nautical miles from Mummy Island Light 5 (chart 16709).

"An uncharted rock uncovered 3.1 ft. at MLLW (~~based on predicted tides~~) is at latitude 60°26'47"N, longitude 146°03'03"W, bearing 242 degrees true, 2.05 nautical miles from Mummy Island Light 5 (chart 16709)."

Sincerely,

for Charles K. Townsend
Rear Admiral, NOAA
Director, Pacific Marine Center

bc: N/CG222 (w/attachment)





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

NOAA Ship DAVIDSON S331
1801 Fairview Avenue East
Seattle, Washington 98102

Ref: S331/101-3A
Ser 11-7

DATE : 17 November 1983

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

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

SUBJECT: Notice to Mariners Chartlet of Orca Inlet between
Mud Bay and Pt. Bentinck

During OPR-P132, numerous changes to Chart 16709 were found between Mud Bay and Pt. Bentinck in Orca Inlet south of Cordova. It is recommended that a Notice to Mariners Chartlet be issued by the Chart Information Section in Rockville, based on the Final Field Sheet for H-10090. The changes would be more efficiently handled in this manner than by a lengthy itemized Notice to Mariners.

The sheet should be submitted by 1 December 1983.

JMW:jaf



Attachment #1

BP-118508

Y = 2,370,000 FT.

ORCA

INL

29'

sand

LOST 1899

28'

wooded

MUMMY ISLAND

K 1916

rocky

Little Mummy I

rocky

Y = 2,360,000 FT

65L(i) 3469

65L(i) 3575

27'

Pinnacle Rock

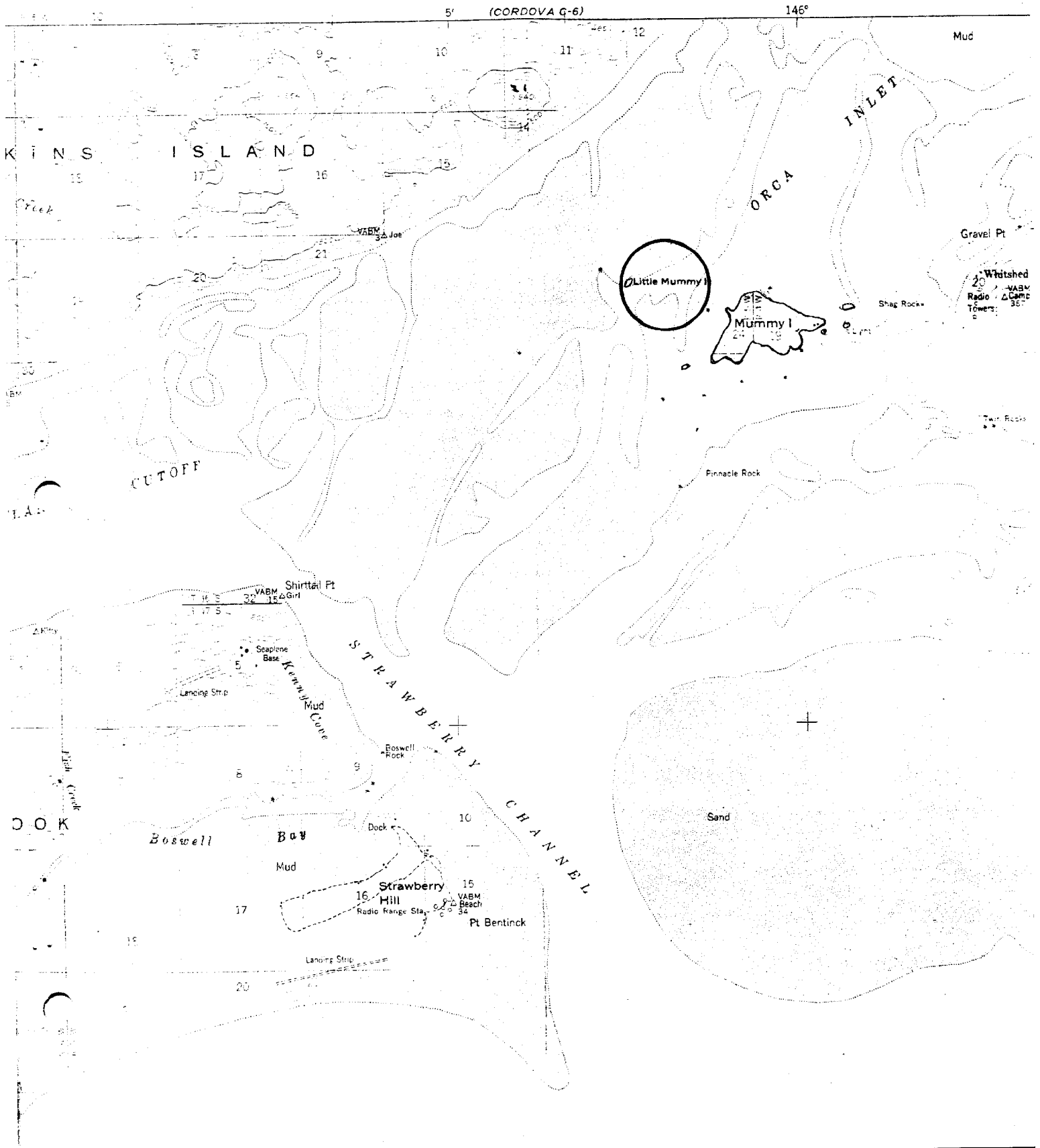
PINNACLE ROCK, 1899

NS 7-12668

ROCKS

Attachment #2

CORDOVA (A-6) QUAD
ALASKA
1:63360 Series (T-100)



HYDROGRAPHIC SURVEY STATISTICS

H-1009D

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS. ARC, EXCESS	
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	
DESCRI- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS
ACCORDIAN FILES			PRINTOUTS
ENVELOPES			ABSTRACTS/ SOURCE DOCUMENTS
VOLUMES			
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			2481
POSITIONS REVISED	27		27
SOUNDINGS REVISED	121		121
CONTROL STATIONS REVISED			
	TIME - HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL	13		13
VERIFICATION OF POSITIONS	198		198
VERIFICATION OF SOUNDINGS	313		313
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	104.5		104.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS		28.	28
EVALUATION OF SIDESCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		24	24
OTHER		21	21
<i>DIGITIZATION</i>			<i>15</i>
TOTALS	<i>650.5</i>	<i>73</i>	<i>738.5</i>

Pre-processing Examination by	Beginning Date	Ending Date
Verification of Field Data by <i>M. SAMUELS</i>	<i>3/18/84</i>	<i>6/26/85</i>
Verification Check by <i>B. A. WITSTAND, S. A. D'AMICO, W. S. GREEN</i>	Time(Hours) <i>35</i>	Ending Date <i>8/14/85</i>
Evaluation and Analysis by <i>G. E. KAY</i>	Time(Hours) Begin Date <i>7/5/85</i>	Ending Date <i>8/14/85</i>
Inspection by <i>D. J. Hill</i>	Time(Hours) <i>4</i>	Ending Date <i>8/19/85</i>

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10090

1. INTRODUCTION

H-10090 was accomplished by the NOAA Ship DAVIDSON in accordance with the following project instructions:

OPR-P132-DA-83, Orca Inlet, Alaska, dated May 11, 1983
Change No. 1, dated May 17, 1983
Change No. 2, dated July 11, 1983
Change No. 3, dated July 27, 1983

This two year (1983-84) basic survey is of Orca Inlet situated between Hinchinbrook Island and extending northeast to Cordova, Alaska. The second year Descriptive Report is an addendum to that of 1983.

Predicted tides are based on Cordova, Alaska (945-4050). Time and range adjustments were utilized during shipboard processing. Tide correctors used for the reduction of final soundings are computed from approved hourly heights from Shag Rock (945-4125) and Boswell Rock (945-4149), Alaska. During 1983 field season both stations were used but the 1984 field work was accomplished using only Shag Rock.

During office processing the plotting parameters were changed to center the hydrography on the smooth sheet and to change the projection to polyconic.

The revised data is listed in the smooth position/sounding printout.

2. CONTROL AND SHORELINE

Hydrographic control and positioning is adequately discussed in the Descriptive Report (sections F and G), Horizontal Control Report for OPR-P132-DA-83 and Electronic Control Report for OPR-P132-DA-83.

The smooth sheet was plotted using published, preliminary adjusted field and field positions on the North American 1927 datum.

The following reviewed shoreline manuscripts are applicable to this survey.

	<u>T-12667</u>	<u>T-12668</u>	<u>T-12807</u>	<u>T-12653</u>
<u>Blue Print Number</u>	118508	118509	118512	118507
<u>Date of Photography</u>	May 1965	May 1965	Aug. 1964, May 1965	Aug. 1964, July 1966
<u>Photo Revised</u>	July 1981	July 1981	July- August 1981	July-Aug. 1981
<u>Date of Field Edit</u>	Cancelled	Cancelled	June 1965 (Partial)	Sept. 1965, May 1966
<u>Scale</u>	1:20,000	1:20,000	1:20,000	1:10,000
<u>Class</u>	III	III	III	I

Shoreline and some geographic names are not shown on the smooth sheet in an effort to expedite office processing.

3. HYDROGRAPHY

Soundings at line crossings are in good agreement.

Delineation of the bottom configuration, development of shoal soundings, determination of least depths, and delineation of standard depth curves are adequate.

4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change 3, except as noted in the Preprocessing Examination Report, dated December 15, 1983.

5. JUNCTIONS

H-10090 junctions with the following survey:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Note</u>	<u>Color</u>	<u>Junctions</u>
H-10038	1982	1:10,000	Adjoins	Violet	Northeast

A 10.1 fathom sounding and a rock baring 6 feet at MLLW were transferred from H-10038.

H-10038 has been verified and forwarded for charting. Junction comparisons were made using a copy. Soundings are in agreement. Depth curves should be adjusted on H-10038 to conform with those on H-10090.

The eastern limit of H-10040 was compared to Chart 16709, 18th Edition, with a significant change noted. Present survey indicates a channel extending eastward whereas the chart contains only a mud flat. This produces depth curves that are not in harmony.

The western and southern limits were compared to the above chart and were found to contain significant change producing depth curves that are not in harmony with one another.

Contemporary survey coverage is not planned to extend past the western limit of H-10040 into Hawk Island Cutoff. The southern and eastern extreme of H-10040 will in the future junction with planned contemporary survey coverage.

6. COMPARISON WITH PRIOR SURVEYS

H-3954 (1916) 1:10,000

H-3955 (1916) 1:20,000

During the evaluation of H-10090, considerable attention was directed to the hydrographer's comment that the "Comparison with prior survey and the chart are not very meaningful...since the prior surveys and chart are based on pre-earthquake (1964) data." The comment initiated a study on the area uplift, as guided by Hydrographic Survey Guideline No. 39.

A review of "The Prince William Sound, Alaska, Earthquake of 1964 and Aftershocks", Volume I, Page 229, Figure 161, and Volume III, Page 32, table 2 (attached) was accomplished. These references indicate that the area southwest of Cordova, Alaska, including Orca Inlet, experienced an uplift of 6 feet from the 1964 earthquake. The 6-foot curves on both prior surveys were compared to the zero curve on the present survey and a generally good agreement was indicated. Other deeper depths, when compared to prior depths also, support the reported 6-foot uplift. As a result of this uplift, together with the shifting, sedimentary nature of the bottom, there has been some movement of channel boundaries. Most of these changes are addressed by the hydrographer.

H-10090 is adequate to supersede the prior surveys within their common areas.

7. COMPARISON WITH CHART

Chart 16709, 18th Edition, dated 6/80; scale 1: 80,000
Chart 16700, 22nd Edition, dated 1/83; scale 1;200,000

a. Hydrography - Most charted information originates with the prior surveys discussed in section 6 of this report. Other soundings and charted features originate with miscellaneous sources not readily ascertainable. For detailed comparison see section L of the Descriptive Report.

The following AWOIS items are located within the limits of H-10090:

<u>AWOIS Number</u>	<u>Feature</u>	<u>Pre-Survey Review Item</u>	<u>Source</u>
50171	Obstruction	#2	BP65871/64
50172	Obstruction	#3	BP65871/64
50173	Obstruction	#4	BP65871/64
50383	Obstruction	#1	BP65871/64

For discussion and deposition of AWOIS items, refer to Descriptive Report section K.

Fifteen charted rocks, not located in 1983, were investigated in 1984. The following summary was compiled to simplify the confusing cross-references used by the hydrographer from one year to the next.

A = Descriptive Reference Number (1983)
 B = Addendum Item number (1984)
 C = Hydrographic File Position Number

The following charted rocks were searched for at low water at the following locations with the specified search radii and were determined not to exist. These features should be deleted from the chart.

<u>A</u>	<u>B</u>	<u>C</u>	<u>Search Distance</u>	<u>Latitude North</u>	<u>Longitude West</u>
9-4	10	1004	100 meters	60°29'33.22"	145°55'29.57"
9-5	9	1003	100 meters	60°29'33.94"	145°55'23.59"
9-6	3	1001	200 meters	60°29'34.54"	145°55'27.41"

Detached positions were obtained on the following features. The location and description of the charted features in the vicinity should be revised accordingly.

<u>A</u>	<u>B</u>	<u>C</u>	<u>Feature</u>	<u>Latitude North</u>	<u>Longitude West</u>
9-1	1	1000	Islet (3)	60°31'58.43"	145°47'33.07"
9-11	11	1006	Rock (13)	60°28'21.10"	145°57'04.72"
9-14	12	1005	Islet (4)	60°27'57.74"	145°58'14.04"
9-15	8	1002	Islet (8)	60°31'24.98"	145°56'32.76"

The following rocks were only visually sighted and verified, these features should continue to be charted from their source.

<u>A</u>	<u>B</u>	<u>Feature</u>	<u>Latitude North</u>	<u>Longitude West</u>
9-2	7	Rock	60°28'06"	146°00'28"
9-3	6	Rock	60°27'58"	146°01'18"
9-8	5	Rock	60°28'13"	146°02'53"
9-13	4	Rock	60°29'26"	145°55'00"

The following charted rocks were investigated but not located and as recommended by the hydrographer require a wire drag investigation. These

features should continue to be charted from their source until their existence is either verified or disproved.

<u>A</u>	<u>B</u>	<u>Feature</u>	<u>Latitude North</u>	<u>Longitude West</u>
9-7	15	Rock	60°25'39"	146°03'11"
9-9	14	Rock	60°26'57"	146°02'58"
9-10	13	Rock	60°27'00"	146°02'50"
9-12	2	Rock	60°29'54"	145°55'18"

Geographic names appearing on the smooth sheet originate with Chart 16709, 18th Edition, T-12667, and USGS Quadrangle Cordova B-6, (see Form 76-155 attached to the report).

H-10090 is adequate to supersede charted hydrography within the common area, and with the exceptions of the four rocks noted above (9-7, 9-9, 9-10, 9-12) is adequate to supersede the charted features within the common area.

The following Dangers to Navigation Reports (copies appended) have been submitted:

<u>Originator</u>	<u>Date</u>	<u>Coast Guard District</u>
NOAA Ship DAVIDSON	August 15, 1983	17th District
Pacific Marine Center	December 22, 1983	17th District

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

c. Aids to Navigation - There is one fixed and 25 floating aids within the limits of this survey. The fixed charted aid to navigation, Mummy Island Light #5 (LL #3406), has been located and adequately serves its intended purpose.

The floating aids located during this survey are temporary in status and are positioned each spring either by the U.S. Coast Guard, or by local residents. See Descriptive Report paragraph N for a tabulation of floating aids. It is recommended that the charts be revised to indicate the presence of numerous aids marking channels and to describe in a note their seasonal placement.

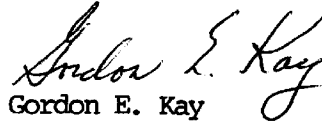
All of these mentioned aids have been shown on the smooth sheet and existed at the time of this survey.

8. COMPLIANCE WITH INSTRUCTIONS


H-10090 adequately complies with the project instructions as amended and noted in Section 1 of this report.

9. ADDITIONAL FIELD WORK

This is an excellent basic survey. Additional field work is recommended on a time availability basis to either verify or disprove the four rocks listed in section 7 of this report.


Gordon E. Kay
Cartographer

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. The survey is recommended for approval.


Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10090

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.

Dennis Hill 8-23-85
for Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

L. W. Mordock 8/23/85

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.

Robert L. Saufat 8/23/85
Director, Pacific Marine Center (Date)

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

Hydrographic Index No. 113E

