

8853

Diag. Cht. No. 8551-3.

FORM C&GS-504

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. PF-10-1-64 Office No. H*-8853

LOCALITY

State Alaska

General locality Orca Inlet

Locality Cordova to Shepard Pt.

1965

CHIEF OF PARTY

J. B. Watkins, Jr.

LIBRARY & ARCHIVES

DATE October 2, 1968

8853

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER No. H-8853

Field No. PF-10-1-64

State ALASKA

General locality ORCA INLET

Locality CORDOVA TO SHEPARD PT.

Scale 1:10,000 Date of survey Sept. 2, '64 to Sept. 5, '64
29 Apr. '65 to 31 Aug., '65

Instructions dated July 2, 1964 and supp. instr. dtd Feb. 10, 1965

Vessel USC&GSS PATHFINDER, USC&GSS HODGSON

Chief of party H.J. Seaborg, John B. Watkins, Jr

Ens. Rodger K. Woodruff, LT(jg) William Newton, III
Surveyed by Lt. Archibald J. Patrick, LT(jg) William J. Cooke, F.I. Rosario

Soundings taken by fathometer, ~~graph recorder and lead wire~~

Fathograms scaled by Personnel of Ships PATHFINDER, HODGSON

Fathograms checked by Personnel of Ships PATHFINDER, HODGSON

Protracted by LT(jg) George M. Ensign, Robert R. Jones & Vincent F. Flor

Soundings penciled by Vincent F. Flor

Soundings in ~~FATHOMS~~ feet at ~~MLW~~ MLLW

REMARKS:

.....
.....
.....
.....
.....

J.J.G.

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SURVEY H-8853

SCALE 1:10,000

1965

USC&GS SHIP HODGSON, CSS-27

CDR. J. B. WATKINS, JR., COMDG.

A. PROJECT

This survey was accomplished as part of Project OPR-452 in accordance with instructions dated July 2, 1964 (S-2-PF) and supplemental instructions dated February 10, 1965 (S-2-HO).

B. AREA SURVEYED

The area surveyed includes the portion of Orca Inlet from Lat. 60° 31' 30" N to Lat. 60° 38' 00" N, bounded by Long. 145° 40' 30" W on the east and Long. 145° 49' 30" W on the west. This includes the portion of Orca Inlet from 1½ miles south of the city of Cordova to Shepard Pt. at the northern limit. The survey was conducted from September 2, 1964 to September 5, 1964 by the PATH-FINDER and from May 10, 1965 to August 28, 1965 by the HODGSON.

Junctions with Prior Surveys:

H-7709	June - September 1948
H-5035	October 1-2, 1930
H-2970	1908
H-4915	May 1929

Junctions with Contemporary Surveys:

H-8854	(scale 1:20000) 1964 at it's northern limits from Lat. 60° 35' 45" N to Lat. 60° 38' 00" N.
H-8852	(HO-05-1-65)
	(a) From Lat. 60° 32' 15"N to 60° 33' 30"N and Long. 145° 45' 30"W to Long. 145° 47' 00"W.
	(b) From Lat. 60° 34' 30"N to Lat. 60° 38' 30"N and from Long. 145° 42' 30"W to Long. 145° 44' 00"W.
	(c) From Lat. 60° 37' 40"N to Lat. 60° 38' 00"N and from Long. 145° 40' 30"W to Long. 145° 41' 00"W.

C. SOUNDING VESSELS

Soundings were obtained with PATHFINDER #2 Launch (day letters - purple lower case) and #3 Launch (day letters - green lower case) and Motor Launch #1192 (day letters - purple lower case).

D. SOUNDING EQUIPMENT

PATHFINDER Launch #2 used a DE-723C fathometer serial No. 557. PATHFINDER Launch #3 used a DE-723 fathometer Serial No. 140. HODGSON Launch 1192 used a DE-723C fathometer Serial No. 534.

Echo (velocity) corrections were determined from bar checks and temperature and salinity observations.

E. SMOOTH SHEET

The smooth sheet projection was made by machine at the Pacific Marine Center and ruled by one of the officers of the ship.

F. CONTROL

Control is based on recovered triangulation stations, for which data is published, photo-identified stations, topographic and hydrographic stations.

All hydrography was controlled by visual fixes using the above mentioned types of signals.

G. SHORELINE

The shoreline was transferred to the smooth sheet from 1:10000 scale blue-line prints, T-12651, T-12648, T-12652, T-12653 and T-12649. The shoreline along the western side of Observation Island was left off because of discrepancies between sounding lines on the boat sheet and the high water line on the manuscript. This was also true at the shoreline around station GRASS, signal DIF and station ACROSS. This shoreline will be available after accomplishment of field edit to be done during the 1966 season. *Complete on smooth sheet and reviewed topo. sheets*

H. CROSSLINES

Crosslines consisted of 5% of the regular system of sounding lines. Discrepancies in two crosslines between Lat. 60° 36' 30"N and Lat. 60° 37' 00"N were attributed to differences in equipment and tide predictions between the 1964 PATHFINDER work and the 1965 HODGSON work. *Crossings adequate on smooth sheet*

I. JUNCTIONS

Junction with prior survey H-7709, 1948 of the same area indicates discrepancies over the entire area from 5 to 14 feet. The new survey indicating shoaler water. This is attributed to upheaval from the earthquake of March 1964 and the use of predicted tides for soundings on the boat sheet.

Junctions with survey H-8854 (HO-20-1-65) indicates discrepancies in the area of Lat. 60° 37' 45"N, Long. 145° 42' 40"W and Lat. 60° 37' 15"N, Long. 145° 45' 30"W. (Refer to Descriptive Report for Sheet HO-20-1-65).

*Smooth sheet
junctions adequate*
H-8854

J. COMPARISON WITH PRIOR SURVEYS

Pre-Survey Review Item:

- (2) 10 foot sounding at Lat. 60° 36' 54" N, Long. 145° ^{3' 30"} 48' 78"W and possible shoaling to 4 and 5 feet between North Rock and North Island.

The survey indicates that there is 11 feet of water in the area indicated on the Pre-Survey Review. There is no indication of shoaling between North Rock and North Island.

An examination of the boat sheet also indicates better than 30 feet in the undeveloped area indicated at Lat. 60° ~~38'~~ 30"N., Long. 145° ^{46'} 45"W. _{46.85}

32.87

K. COMPARISON WITH THE CHART

The largest scale chart of this area is 8525. This chart has been revised on the basis of the survey so agreement is good.

L. ADEQUACY OF SURVEY

The survey is considered adequate in all areas, although the area percentage of crosslines (5%) was below the desired 8 to 10%.

M. AIDS TO NAVIGATION

A comparison was made with the latest light list and also with the largest scale chart of the area. The aids to navigation were found to be adequate and served the purpose for which they were intended. *The buoys marking the Coliak Channel should be moved.*

N. STATISTICS

Number of Positions Launch #2	557
" " " " #3	399
" " " " #1192	<u>3559</u>
TOTAL NO. OF POSITIONS	4515
Miles hydro run Launch #2	82.6
" " " " #3	69.3
" " " " #1192	<u>577.2</u>
	729.1 mi.
Total Area Sq. Miles	8.5 sq. mi.
Number of Tide Stations	1
Number of Bottom Samples	61
Number of Ser. Temperature and Salinity Observations	1

O. MISCELLANEOUS

None

P. RECOMMENDATIONS

None

Q. REFERENCES TO REPORTS

Cordova Tide Station Report and Leveling Records - 1965

Coast Pilot Report - HODGSON 1965

Corrections to Echo Soundings - HODGSON 1965

Observed Temperatures for Velocity Corrections - HODGSON 1965

Respectfully submitted,

George M. Ensign

George M. Ensign
LT(jg), C&GS, ESSA

USC&GSS PATHFINDER
OSS-30
H.J. Seaborg, Comdg.

VELOCITY CORRECTIONS
Cordova, Alaska

To be applied to all hydrography accomplished in the
Cordova area on OPR-452 from 2 September 1964 through
5 September 1964.

Correction to Depth

0.0 feet	16 feet
+0.2	36
0.4	56
0.6	76
1.0	140

The above data was obtained from the following Oceanographic Station:

5 September 1964

60°35.5'N.
145°42.0'W.

USC&GSS HODGSON (CSS-27)
JOHN B. WATKINS, JR., COMDG.

VELOCITY CORRECTIONS
CORDOVA, ALASKA

To be applied to all hydrography accomplished in the
Cordova area on Project OPR-452 from 29 April 1965
through 31 August 1965.

Correction to Depth

+0.2 feet	0-10 feet
0.3	30
0.4	50
0.4	70
0.4	90

The above data was obtained from the following sources:

Oceanographic Station #2
24 June 1965
Lat. 60°37' 50"N.
Long. 145°044' 45"W.

Bathymograph cast of September 3, 1965,
BT # 12244

LIST OF STATIONS

<u>Name Used In Hydrographic Survey</u>	<u>Origin Of Station</u>
ABE	T-12806
APE	T-12652
ARD <i>NAR 1933</i>	Δ NARD, 1933
ART	T-12651
BAG	T-12806
BOB	T-12649
BUNCO	Δ BUNCO, 1899
BOX	Vol. III, pg. 26
CAT	Δ CORDOVA RADIO MAST, 1955
CAN	Δ CRCA CANNERY, SOUTH BLDG., WEST GABLE, 1955
COO	T-12651
COR	T-12806 CORDOVA LT. 1
CRO <i>Ros 1933</i>	Δ ACROSS 1933
DAY	T-12806
DIF	T-12651
DOC	DOC 1964 (Hydro)
DOG	T-12806
DOP	DOP 1964 (Hydro)
EAT	T-12806
EMO	T-12651
FED	T-12652
FEZ	T-12806
FIX	T-12648
GAS	T-12648
GIN	T-12651

GUM	T-12806
GREY	GREY 1964 (Hydro)
HAT	T-12651
HEX	T-12806
HUM	T-12651
ICE	T-12805
IVY	T-12651
JAW	T-12651
JOE	T-12806
JOK	T-12651
KID	T-12805
LEG	T-12649
LEO	T-12652
LIT	CHANNEL ISLAND LIGHT 1964
LIZ	T-12651
LOW	T-12805
MAR	Vol. 1, pg. 25
MAU	MAUD 2, 1964
MAY	T-12651
MAX	T-12805
MIC	ATOMIC, 1964
NIB	Δ NIBSY, 1899
OFF	T-12805
OLD	OLD 1964 (Hydro)
ORD	Δ CORD, 1933
PAD	T-12805
PAT	T-12652

PIE	T-12651
POI <i>or POINT</i>	△ POINT 1900
RAS <i>GRA "h" day</i>	△ GRASS, 1899
RED	△ CORDOVA BOAT HARBOR LIGHT ₂ 1964
ROB	T-12651
ROC	△ NORTH ISLAND ROCK LIGHT 1964
ROO	△ ROOT 2, 1964
<u>RUTH</u>	RUTH T-12651, Vol. 18, pg.50
SAM	T-12804
SAN	SAN 1964 (Hydro)
SAW	SAW 1964
SHI	△ SHINGLE 3, 1964
SKI	T-12651
SLY	T-12804
STU	△ STUMP 2, 1964
TIN	T-12651
TOR	TOR 1964 (Hydro)
WEE	Sextant cut, Vol. 10, pg.21
WIN	WINDY 1964
YAK	△ EYAK, 1933
ZOO	T-12648

TIDE NOTE

REGISTER NO. H-8853
FIELD NO. PF-10-1-64

TIDE STATION USED IN THIS SURVEY:

CORDOVA $60^{\circ} 33' 25.5''$ N. $145^{\circ} 45' 16''$ W.

TIME MERIDIAN 150° W

HEIGHT MLLW ON STAFF 5.9 Feet

The Cordova tide gage was used as the reference station on all hydrography on the sheet.

All hourly heights were scaled and curves drawn from values furnished for these dates by the Washington office.

GEOGRAPHIC NAMES PENCILED ON H-8853

CORDOVA

DEEP BAY

GRASS I.

HAWKINS ISLAND

KNOT PT.

NORTH I.

NORTH ROCK

OBSERVATION I.

ODIAK CHANNEL

ORCA

ORCA CHANNEL

ORCA INLET

SALMO PT.

SHEPARD PT.

SHIPYARD BAY

APPROVAL SHEET

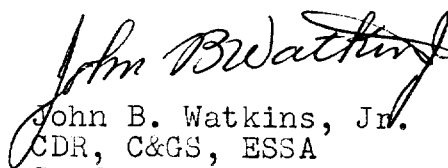
PROJECT OPR-452

ORCA INLET, CORDOVA

HYDROGRAPHIC SURVEY NO. H-8853

Hydrographic survey H-8853 has been approved up to the commencement of smooth sheet plotting. The boat sheet and other records were examined at regular intervals.

The survey is considered complete and adequate and no additional field work is recommended.


John B. Watkins, Jr.
CDR, C&GS, ESSA
Comdg., Ship HODGSON

TIDE NOTE FOR HYDROGRAPHIC SHEET

October 24, 1966

~~Nautical Chart Division~~ Pacific Marine Center

Plane of reference approved in
15 volumes of sounding records for

HYDROGRAPHIC SHEET 8853

Locality: Orca Inlet, Alaska

Chief of Party: H. J. Seaborg, 1964
J. B. Watkins, 1965

Plane of reference is mean lower low water

Tide Station Used (Form C&GS-681):

Cordova

Height of Mean High Water above Plane of Reference is as follows:

11.5 feet

Remarks


Chief, Tides and Currents Branch

E. Smooth Sheet: (See Desc. Report)

One hundred percent of the positions and soundings were plotted by the Seattle Hydrographic Data Processing.

F. Control: (See Desc. Report)

Hydro signal RUTH was erroneously plotted on the manuscript T-12651 as per sextant cut on page 51, Vol. 18 of the Record Book. Apparently, this signal was not checked and the personnel of the ship transferred it to the boat sheet. This signal has been corrected on the Smooth Sheet and all the fixes using this signal have been rectified. Therefore, this signal should be Manuscript T-12651 and the Boat sheet should be corrected for the correct location of this signal.

There are also a few signals written in pencil that were added to the "List of Stations" in the Descriptive Report.

G. Shoreline: (See Desc. Report).

The shoreline was inked after it has been checked from the 1966 advance

24
copies of T-12648, T-12649, T-12651, T-12652, and T-12653. However, a portion of the shoreline called "Fleming Spit" bordered by lat. $60^{\circ} 33' 30''$ and lat. $60^{\circ} 34' 00''$ and long. $145^{\circ} 44' 00''$ and long. $145^{\circ} 45' 00''$ was left in pencil. This was traced from the advance copy of T-12806 with a scale of 1:5,000 and was reduced to 1:10,000 to fit H-8853. This portion does not agree with that on T-12652.

(See enclosed tracings ^{and} that portion of T-12806).

K. Comparison with the Chart: (See Desc. Report)

The 6 feet and 5 feet soundings as shown on chart 8525 located at lat. $60^{\circ} 37.0'$ and long. $145^{\circ} 43.2'$ and lat. $60^{\circ} 36.98'$ and long. $145^{\circ} 42.9'$ respectively is attributed to the use of predicted tides for soundings on the Boat Sheet. Therefore, those shoal soundings in that area should be deleted and be replaced by 9 feet and 8 feet respectively.

There are two newly found rocks

on the Smooth Sheet located at Lat. $60^{\circ} 36.85'$
and Long. $145^{\circ} 43.34'$. These rocks are just
about a mm. apart on the Smooth Sheet
with an elevation of 2 ft and 1 ft. respectively
(Rocks awash). See pos. 1f and 2f, page 37, Vol. 7.
However, they are represented by only
one rock on chart 8525 with an elevation
of 3 ft. MLLW.

OTHER NOTES:

Comparison of Elevation of following Rocks:

1. North Rock — 6 feet MHW on Smooth Sheet
15 feet MLLW on T-12652 (Add.)
MHW
2. Topo Rk, about 10 mn. NE of North Rk:
8 feet MLLW on SS. ✓
5 feet " " T-12652 ×
3. South Rock — ¹³ 11 feet MLLW on SS ^{about the same}
Awash MHW " T-12652
4. Topo Rock — (Lat. $60^{\circ} 35.62'$) = 9 ft. MLLW on SS
(Long $145^{\circ} 46.1'$) = 8 ft. " " T-12652
T-12651

Thru cursory examination of bathograms,

This line of soundings, 9bb to 14bb, does not appear →
to be unreasonable in position altho there is an
apparent 2 ft. difference in depth compared to
close adjacent lines. The 14 ft shallowest depth
is the shallowest depth obtained on the feature
and is added to the smooth sheet by the reviewer.

JHB 2-25-69

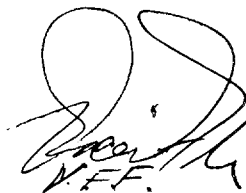
sand ridges are found at the bottom in some areas.

Lines covering pos. 9bb thru 14bb, vol. 16, pages 7 & 8 were not plotted because the sheet sounding of 14 feet between pos. 11bb and 12bb does not agree with any of the adjacent soundings and it is possible that these lines do not belong to this area. (See 5 attached overlay sheets).

Geographic Names:

listed alphabetically as follows:

- | | |
|-----------------------|-------------------|
| 1. CHANNEL ISLANDS | 10. ORCA |
| 2. CORDOVA | 11. ORCA BAY |
| 3. DEEP BAY | 12. ORCA CHANNEL |
| 4. HAWKINS ISLAND | 13. ORCA INLET |
| 5. KNOT POINT | 14. SALMON POINT |
| 6. NORTH ISLAND | 15. SHEPARD POINT |
| 7. NORTH ROCK | 16. SHIPYARD BAY |
| 8. OBSERVATION ISLAND | 17. SOUTH ROCK |
| 9. ODIAK CHANNEL | 18. THE NARROWS |


J.W.F.

GEOGRAPHIC NAMES

Survey No. H-8853

Name on Survey	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">On Chart No.</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">On previous survey No.</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">On U. S. quadrangle Maps</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">From local information</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">On local Maps</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">P. O. Guide or Map</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Rand McNally Atlas</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">U. S. Light List</div> </div>										
	A	B	C	D	E	F	G	H	K		
Channel Islands											1
Cordova											2
Deep Bay											3
Hawkins Island											4
Knot Point											5
Nelson Bay											6
North Island											7
North Rock											8
Observation Island											9
Odiak Channel											10
Odiak Slough											11
Orca											12
Orca Channel											13
Orca Inlet											14
Saddle Point											15
Salmo Point											16
Shipyard Bay											17
South Rock											18
Spike Island											19
The Narrows											20
											21
											22
											23
											24
											25
											26
											27

Names approved
Oct. 29, 1968
Frank W. Fickett

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. H-8853

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		1	BOAT SHEETS <i>Ashyrd 1/29/70</i>		1	
DESCRIPTIVE REPORT		1	OVERLAYS			
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	1					
VOLUMES	20					
BOXES						
T-SHEET PRINTS (List) <i>T-12651 T-12652 T-12649</i> <i>T-12648 T-12653</i>						
SPECIAL REPORTS (List)						

OFFICE PROCESSING ACTIVITIES

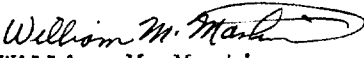
The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				4515
POSITIONS CHECKED		1563		
POSITIONS REVISED		160		
DEPTH SOUNDINGS REVISED		369		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		197		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS				
JUNCTIONS		18		
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS		315		
SPECIAL ADJUSTMENTS <i>stylus Arm adj. 11/3/69</i> <i>phase change a, b, c, d, e</i>		53		
ALL OTHER WORK		313		
TOTALS		689	388	689
PRE-VERIFICATION BY	BEGINNING DATE		ENDING DATE	
VERIFICATION BY <i>Clarence R. Lehman</i>	BEGINNING DATE <i>Nov. 14th 1967</i>		ENDING DATE <i>March 18th 1968</i>	
REVIEW BY <i>D. H. Benson</i>	BEGINNING DATE <i>Jan 24, 1969</i>		ENDING DATE <i>May 19, 1969</i>	


Approval Sheet

The smooth sheet has been inspected, is complete, and meets the requirements of the ~~General Instructions for automated surveys~~ and Hydrographic Manual. (Note: All exceptions are listed in the verifier,s report).

Examined and approved.


William M. Martin
Supervisory Carto. Tech.

Approved and Forwarded.


John R. Plagmier CDR. USESSA
Acting Chief Processing Division, PMC

OFFICE OF HYDROGRAPHY AND OCEANOGRAPHY
MARINE CHART DIVISION
HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-8853

FIELD NO. PF-10-1-64

Alaska, Orca Inlet, Cordova

SURVEYED: September 2, 1964, through September 5, 1964
April 29, 1965, through August 31, 1965

SCALE: 1:10,000

PROJECT NO.: OPR-452

SOUNDINGS: DE-723 Fathometers CONTROL: Sextant Angles
on Shore Signals

Chief of Party.....	H. J. Seaborg
.....	J. B. Watkins, Jr.
Surveyed by.....	R. K. Woodruff
.....	W. Newton III
.....	A. J. Patrick
.....	W. J. Cooke
.....	F. I. Rosario
Protracted by.....	G. M. Ensign
.....	R. R. Jones
.....	V. F. Flor (Seattle)
Soundings Plotted by.....	V. F. Flor
Verified and Inked by.....	C. R. Lehman (Seattle)
Reviewed by.....	D. H. Benson
.....	Date: May 19, 1969
Inspected by.....	R. H. Carstens

1. Description of the Area

The area surveyed covers the northern half of Orca Inlet from Orca Bay to a mile and a half south of the town of Cordova. This is the deep-water part of Orca Inlet, used by ocean-going vessels. The east channel closely follows the east shoreline and has a controlling depth of 30 feet about $\frac{1}{4}$ mile north of the cannery at Orca. There is also a channel to the westward of Observation Island, but on courses to Cordova using the west channel there is a controlling depth of 17 feet on the middle ground opposite Cordova. Shoal areas and a few islands and rocks awash are found in the central portion of the inlet.

2.

2. Control and Shoreline

Sounding lines were controlled by sextant fixes. The hydrographic signals other than triangulation stations were located on contemporary topographic surveys except for signals "RUTH" and "WEE" which were located by sextant cuts. The signals are listed in the Descriptive Report.

The topographic surveys T-12648, 12649, 12651, 12652, 12653, 12804, 12805, and 12806 of 1964-66 after review were compared with the shoreline details on H-8853. Some changes were necessary to H-8853, particularly the west side of Observation Island, and also at Grass Island. Minor differences were not corrected.

The 15-ft. elevation on North Rock on T-12652 is apparently in error. The present survey hydrographic records indicate the elevation to be 6-ft, which is more in accord with prior data regarding this feature. Similarly the "awash at MHW", note for North Island Rock, appears to be faulty on T-12649 and the present survey value of uncovering 9-ft. at MLLW is in better agreement with prior data.

3. Hydrography

A. Depths at crossings are in good agreement.

B. The usual depth curves were adequately drawn. In many places the shoreline is very steep, and the low-water line and six-foot depth curve are too close to shore to show on the smooth sheet.

C. The development of the bottom configuration and determination of least depths are adequate except that in the vicinity of North Rock, continuity of the deep on the east side of the islet was not determined.

4. Condition of the Survey

The field plotting, records, and reports are adequate and conform to the requirements of the Hydrographic Manual.

The verifier found that peaks and deeps at uneven intervals on the fathogram were not always scanned. Additional soundings were scanned during verification. The stylus arm length was incorrect on 3 days of the 1964 work. The verifier applied corrections of 2-2½% to soundings of these days.

3.

There are five or six signals for which more than one name has been recorded in the sounding volumes.

5. Junctions

An adequate junction was made with H-8854 (1965) to the north. In addition, three areas within H-8853 were developed on a scale of 1:5,000 on H-8852 (1965) and adequate junctions with H-8853 were made on the larger scale survey. There is no contemporary survey to the southwest.

6. Comparison With Prior Surveys

- A. H-2328 (1897-1906)
H-2502 (1900)
H-2940 (1908-15)
H-2970 (1908)

H-2328 (1897-1906) and H-2502 (1900) are reconnaissance surveys covering most of the area of the present survey. There were not enough sounding lines to fully develop the depth curves. In general, the depths were greater on the old surveys, particularly in the deeper parts of the channels by as much as 15 feet.

A comparison between the present survey and H-2940 (1908-15) and H-2970 (1908) indicate depths on the present survey to be about 6 feet shoaler north of 60°35' and indeed, the depth curves can almost be superimposed taking this difference into account. South of 60°35' the changes in position of the shoals in the middle of the inlet are very obvious. The six-foot shoal which in 1908 was at lat. 60°33!9, long. 145°46!0 has moved northeastward to lat. 60°34!4, long. 145°45!12 and now has a least depth of two feet. The position it formerly occupied now has 18 feet of water. This is the shoal which is encroaching on the Odiak Channel which now has a controlling depth of about 14 feet.

The present survey supersedes the above listed surveys in the common area.

B. H-3955 (1916) 1:20,000

H-3955 (1916) is the latest C&GS survey made of the Orca Inlet area south of Cordova. This is a generally

4.

shoal area of sand bars (mostly bare at mean lower low water) with a few meandering channels of deeper water through the shoals. In none of the channels is it possible to draw more than 5 feet at some point, so their use is limited to small craft. The present survey overlaps the northeastern part of H-3955. The channels in the overlap area agree in position but the depths are much less on the present survey. For instance, at lat. $60^{\circ}33'02''$, long. $145^{\circ}49'15''$, H-3955 shows a depth of 78 feet as contrasted with 49 feet at the same location on H-8853.

The present survey supersedes H-3955 in the common area.

C. H-4915 (1929) Rec.
H-5035 (1930)
H-7709 (1948)

Since a comparison of H-4915 and H-5035 with H-7709 was made in the review of the latter survey, the present survey will be compared solely with H-7709.

In general, the area north of $60^{\circ}35'$ is 6 to 8 feet shoaler on the present survey. This appears to be the result of earthquake movement of 1964, as the islets and rocks awash appear to have been uplifted by about this amount. For instance, North Rock, which is bare at 2 feet at mean high water on H-7709, is bare 6 feet at MHW on the present survey and South Rock, which bares 8 feet at mean lower low water on H-7709, bares 13 feet at MLLW on H-8853. The 12-ft. shoal 300 meters southeast of North Rock on H-7709 is a 6-ft. shoal on H-8853.

Southward of lat. $60^{\circ}35'$ the character of the bottom is different, the main changes apparently being due to horizontal movement of sand and gravel and filling in of deeper channels. The most notable change is the movement of the prior, middle ground shoal in lat. $60^{\circ}34'35''$, long. $145^{\circ}45'13''$ in a northeasterly direction, about 200 meters. The 12-ft. depth curve of this shoal now cuts the former Odiak Channel in half so that the buoys no longer mark the best water in the channel.

On H-7709 a peak at a depth of 24 feet in lat. $60^{\circ}35'12''$, long. $145^{\circ}45'65''$ is verified in position by a 14-foot depth on H-8853.

5.

The present survey supersedes H-7709 in the common area.

D. H-8206 (1969)

The middle-ground shoal has moved eastward about 120 meters since 1959 and the present 12-ft. depth curve cuts into the Odiak Channel where 15 to 18 ft. depths were available on H-8206. In the deep water channel, between lighted buoy R-6 at lat. $60^{\circ}34'25$, long. $145^{\circ}45'0$, and the eastern shore 80 feet depths on H-8206 are now replaced with depths of 53 feet on the present survey.

The present survey supersedes H-8206 (1959) completely.

7. Comparison With Charts 8525, 8th Edition, Revised 11/14/66
8520, 13th Edition, Revised 03/7/66

Chart 8525 covers all but a small part of H-8853 south of $60^{\circ}32'2$.

A. Hydrography

H-8853 (1965) has been applied to the chart through Bp-68579, a print of the boat sheet, which used predicted tides for reducing soundings instead of actual tides. Also scattered soundings from older surveys were retained on the chart.

The use of actual tides during verification and some corrections for other conditions has changed some depths and depth curves considerably and a complete application of H-8853 should now be made to the chart. For instance, the 6-ft. shoal charted to the south and east of North Rock is much less extensive than charted, and the low water curve charted at lat. $60^{\circ}34'4$, long. $145^{\circ}45'1$ shows on the smooth sheet as 2-ft. shoal.

The chart shows a rock awash symbol just northeast of lighted Bell Buoy #5 at lat. $60^{\circ}36'9$, long. $145^{\circ}41'35$. This was charted from incomplete manuscript T-12652. Evidently the compiler of the topo sheet mistook the buoy for a rock awash. The rock is not shown on the final T-12652 compilation, and it is not mentioned by the hydrographic party. The rock should be deleted from the chart.

6.

✓ The two rock awash symbols near lat. $60^{\circ}36'1$, long. $145^{\circ}46'6$ on the west side of Deep Bay were charted from Bp-68579, a print of the boat sheet of H-8853. These rocks do not appear on T-12651 either on the incomplete copy or the final copy. An examination of photographs of the area show no indication of rocks in the area. No mention of the rocks is made in the sounding volumes. It is recommended that these two rocks awash be deleted from the chart. ✓ Ch 8551

✓ At lat. $60^{\circ}34'8$, long. $145^{\circ}47'65$ the present survey shows a beached barge which should be charted. ✓

The rocks charted at lat. $60^{\circ}34'28$, long. $145^{\circ}47'2$ and at lat. $60^{\circ}34'0$, long. $145^{\circ}47'65$ as rocks awash should be charted now as bare rocks, with additional rocks awash northward of the northerly pair. Again, this change supports the uplift theory from the earthquake movement.

The shoreline of the island at lat. $60^{\circ}34'2$, long. $145^{\circ}47'7$ and the rocks awash south of it should be revised from T-12651.

✓ At lat. $60^{\circ}33'9$, long. $145^{\circ}44'5$ the present survey shows a barge on shore, which is not shown on the chart.

The stump shown on the present survey at lat. $60^{\circ}33'78$, long. $145^{\circ}47'5$ is not charted.

The present survey obtained good coverage of bottom samples, which should be charted in preference to those already charted from older surveys.

B. Controlling Depths

The legend "12 FT 1966" in the boat basin at Cordova is from U.S. Corps of Engineers condition survey of May-June 1966 (Bp-70581-87) subsequent to the present survey.

C. Aids to Navigation

The charted positions of aids to navigation mark the features intended except for those marking the Odiac Channel, BELL R"2" and RBCAN. These should be moved northeastward to mark the best water.

7.

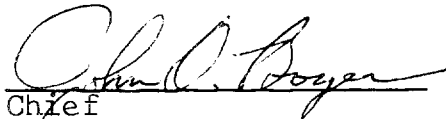
8. Compliance With Instructions

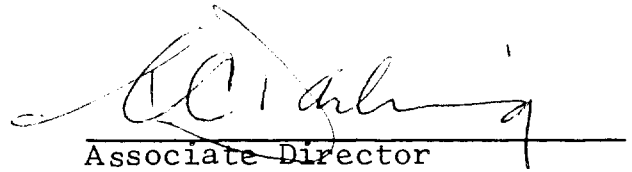
The survey adequately complies with the instructions except that there appears to be some question as to the accuracy of the high water line in places, such as the west side of Observation Island, where deep shadows on the photographs obscured the shoreline.

9. Additional Field Work

This is a good basic survey and no additional field work is necessary.

Examined and Approved:


Chief
Marine Chart Division

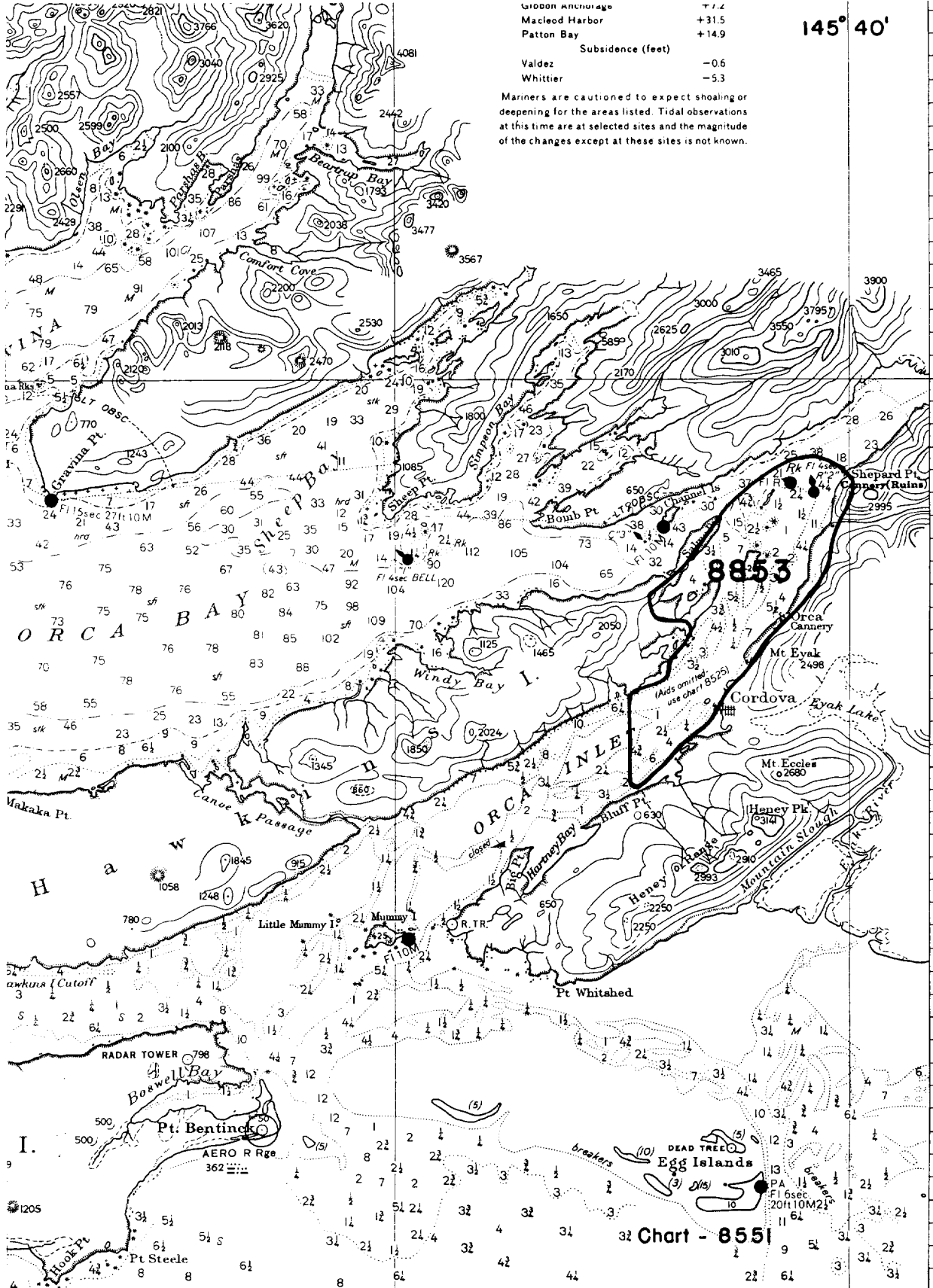

Associate Director
Hydrography and Oceanography

INFORMATION FOR FUTURE PRE-SURVEY REVIEWS

The middle ground shoal about $1\frac{1}{2}$ miles south of Observation Island seems to be migrating towards Observation Island and squeezing the Odiak Channel between them. The controlling depth in Odiak Channel according to the current survey is now 13 feet, continuing changes can be expected in this area.

The 14-foot sounding at lat. $60^{\circ}35'2''$, long. $145^{\circ}45'65''$ rises sharply from depths of 40 feet, and its least depth should be verified by drifting and handlead soundings.

The hydrography around North Rock is not developed on the east side sufficiently to show all the depth curves.



Gordon Anchorage	+1.4
Macleod Harbor	+31.5
Patton Bay	+14.9
Subsidence (feet)	
Valdez	-0.6
Whittier	-5.3

145° 40'

Mariners are cautioned to expect shoaling or deepening for the areas listed. Tidal observations at this time are at selected sites and the magnitude of the changes except at these sites is not known.

60°

30'

Chart - 8551

