

7628

Diag'd. on diag. ch. No. 8551-2

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey **HYDROGRAPHIC**

Field No. **DER 4147** Office No. **H-7628**

LOCALITY

State **ALASKA**

General locality **PRINCE WILLIAM SOUND**

Locality **ORCA BAY**

1947

CHIEF OF PARTY

H. Arnold Karo

LIBRARY & ARCHIVES

DATE **MAR 18 1948**

8-1870-1 (11)

8292
7628

MAR 18 1948

Form 537
(Ed. June 1946)

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

H7628

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. **H7628**

Field No. **DER 4147**

State **Alaska** ✓

General locality **Prince William Sound** ✓

Locality **Orca Bay** ✓

Scale **1:40,000** Date of survey **16 June--4 Oct. 1947** ✓

Instructions dated **Project CS-277, 9 Feb. 1942, Supp. 5 Jan. 1943 and 6 Mar. 1947**

Vessel **Ship DERICKSON**

Chief of party **H. Arnold Karo** ✓

Surveyed by **E. H. Kirsch** ✓

Soundings taken by ~~fathometer~~ **graphic recorder, knobbed, No. 57 and 808 No. 66**

Fathograms scaled by **W. A. Kirsch and N. E. Taylor**

Fathograms checked by **W. A. Kirsch and N. E. Taylor**

Protracted by **L. W. Eason**

Soundings penciled by **L. W. Eason**

Soundings in fathoms ~~100~~ at ~~MLLW~~ **MLLW** ✓

REMARKS: **Smooth Sheet and Plotting by Seattle Processing Office.**

Descriptive Report
 H-7628 (1947)
 Hydrographic Sheet DER 4147

1 November 1947

A. This survey was executed in accordance with instructions for project CS-277 dated 9 February 1942 and supplemental instructions for the same project dated 5 January 1943 and 6 March 1947. ✓

B. There is no index of hydrographic sheets. Hydrography was started on 3 July 1947 and finished on 4 October 1947. The north edge of this survey joins the following surveys: ✓

Sheet H-2658	1:20,000	1903	Ritter	✓
Sheet H-3815, Scale, 1:20,000		year 1915	Rude	✓
Sheet H-3816, Scale, 1:20,000		year 1915	Rude	✓
Sheet H-3553, Scale, 1:20,000		year 1913	Rude	✓

The west edge:

Sheet H 3675, Scale, 1:80,000	year 1914	Patton	✓
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The south and east edge:

Sheet H- 3186, Scale, 1:20,000	year 1910	Rude	✓
Sheet H- 2503, Scale, 1:40,000	year 1900	Ritter	✓
Sheet H- 2501, Scale, 1:40,000	year 1900	Ritter	✓
Sheet H- 2970, Scale, 1:15,000	year 1908	Rude	✓

The long interval of time between the start and finish of work on this sheet is explained by the fact that sounding lines were executed while enroute to and from the working grounds while basing out of Cordova, Alaska. ✓

C. The Ship DERICKSON was used for the survey of sheet DER 4147 and all fathometer soundings were taken with NMC recording fathometer No. 57 or with 808 recorder No. 66. In completing a U turn with rudder hard over the Ship DERICKSON will set 200 meters in the direction of the turn. ✓

D. All soundings were reduced from records of the tide station operating at Cordova, Alaska, Lat. $60^{\circ} 32.7'$ N and Long $145^{\circ} 46.4'$ W. No time or range corrections were used. ✓

E.

E. The following triangulation stations were recovered and used during this survey:

Pt. Johnstone ₂	1933	Cut	1913	✓
Red Head	1900	Spruce	1900	
Knowles Head	1900 ₂	Peak 103	1901	
Sheep	1900	Pillar	1902 N.D.	
Surf	1913			

The following triangulation stations were established by H. Arnold Karo, in 1947.

Chief of Party

Gravina Point Light 1947

Goose Island Light 1947

Computations
filed in Library
under

The following hydrographic signals were located with theodolite cuts and triangulation computations by H. Arnold Karo, 1947:

Chief of party

○ Fib, ○ Ute, and ○ Tri (N.d.) - N.M.)

Acc. No. G-7471
(Vol. 1) 1947

The following hydrographic signals were located with sextant cuts by H. Arnold Karo, 1947; and are recorded in Vol. 1, of the present survey.

Chief of party

○ Dog	○ Map	} n.d. ○ Hang is a white wash in the general vicinity of Δ Hang 1902 n.d.	✓
○ Gam	○ Hang		N.M.
○ Mar			

The navigation buoys at Lat. $60^{\circ} 32.2' N$ Long. $146^{\circ} 23.4' W$ and Lat. $60^{\circ} 35.9' N$ Long. $145^{\circ} 59.9' W$ were located with sextant cuts but were not used as hydrographic signals.

H-7628

G. No shore line is shown on sheet DER 4147. This is considered an off-shore sheet and no shore line was located in this area in 1947.

There was no low water line development. ✓

H. All soundings were obtained with echo sounding equipment. There were no unusual corrections. Wire soundings were recorded when obtaining bottom samples. Bar checks to fifteen fathoms were recorded to determine the instrumental error of 808 recorder No. 66. ✓

I. The usual 3 point fix method of horizontal control was used throughout the survey. ✓

J. The survey is complete and adequate to supersede prior surveys for charting. All surveys mentioned in paragraph B were well overlapped and in general the old surveys appear to be a few fathoms too deep. ✓

Review,
par. 5

H-7628

It is recommended that sheet DER 4147 be extended to a greater overlap into the old surveys in the area southwest of Sheep Point as the bottom in this area is extremely lumpy.

Review, par. 9

Paragraph 4 of Supplemental Instructions - Project CS-277, dated January 5, 1943, refers to notes prepared by the chart Division noting questionable soundings, sunken rocks and other features to be investigated during the execution of Project CS-277. Item No. 15 of these notes refers to a rock visible at low water and located approximately 0.75 mile west of Sheep Point.

^P Rock deleted from chart (Chart Letter 395, 1948)

On 3 October 1947 this rock was searched for with a motor whale boat equipped with an 808 recorder. The area was searched for an hour and a half by running lines on ranges over the suspected area. This investigation failed to prove the existence of the rock. It is recommended that the necessary control be established in this area and that a system of lines be run to conduct a thorough hydrographic investigation of this area.

Included in Supplemental Instruc.
Proj. CS-277 dated 5 Febr 1948

On the inshore line of sheet DER-4147, off Gravina Point a ^{H-7628} ~~34~~ ¹⁵ fathom sounding was obtained (~~boat sheet reduction~~). It appears that the only previous hydrographic survey of this area is 2501, at 1:40,000, by Ritter in 1900. It may be considered desirable to execute additional hydrography in this area.

Review,
par. 9

K. Approximately 8% of the mileage is cross lines and the crossings are in agreement. ✓

L. Processing office will compare with prior surveys. Review, par. 5

M. Processing office will compare with chart. Review, par. 6

N. Item 10 of the notes prepared by the chart Division and referred to in paragraph III under J of this report, refers to a reported 38 fathom spot in Lat. $60^{\circ} 33.3' N$ Long. $146^{\circ} 37.4' W$. The report no doubt refers to the 28 fathom spot (boat sheet reduction) which was found in Lat. $60^{\circ} 31.7' N$ Long. $146^{\circ} 40.8' W$. ✓
Review, par. 6 A

No uncharted dangers were found. ✓

O. Coast Pilot information will be submitted in a Coast Pilot report at the end of the season. ✓

P. Bell Buoy No. "2", Lat. $60^{\circ} 32.2' N$, Long. $146^{\circ} 23.2' W$ which guards Middle Ground Shoal and Bell Buoy No. "1", Lat. $60^{\circ} 35.9' N$ Long. $145^{\circ} 59.9' W$ which guards Sheep Point were located with sextant cuts. ✓
Both Buoys lighted E.H.K.

Q. There are no special landmarks for charts. ✓

R. No new ^{hydro} geographic names. ✓

S. No special silted areas. The bottom of the entire Bay is covered with a layer of thick ~~blue~~ ^{gray} clay as shown by the bottom samples. ✓

Approved by

H. Arnold Karo
H. Arnold Karo, Chief of Party
Lt. Comdr., C&GS

Submitted by

E. H. Kirsch
E. H. Kirsch
Lt. Comdr., C&GS

MEAN LOWER LOW WATER is 8.4 ft. on the tide staff at the tide station in Cordova, Alaska, Lat. $60^{\circ} 32.7$ N Long. $145^{\circ} 46.4$ W. The records from this tide station were used for tidal corrections to all sounding on this survey with no correction for time or range.

16 June to 25 Sept. 1947

Calibrated Velocity 800 fms/sec.

0.0 to 9.5 is 0.0 fms.

9.6 to 101.0 is + 0.2

101.1 to 178.0 is + 0.0

178.1 to - - - is + 0.5

16 June to 25 Sept. 1947

Calibrated Velocity 820 fms/sec.

0.0 to 6.0	is	0.0
6.1 to 21.5	is	- 0.2
21.6 to 30.0	is	- 0.4
30.1 to 38.0	is	- 0.6
38.1 to 45.5	is	- 0.8
45.6 to 54.0	is	- 1.0
54.1 to 61.5	is	- 1.2
61.6 to 70.0	is	- 1.4
70.1 to 77.5	is	- 1.6
77.6 to 85.5	is	- 1.8
85.6 to 94.5	is	- 2.0
94.6 to 101.0	is	- 2.2
101.1 to 118.0	is	- 2.5
118.1 to 139.0	is	- 3.0
139.1 to 163.0	is	- 3.5
163.1 to 187.0	is	- 4.0
187.1 to 211.0	is	- 4.5
211.1 to - - -	is	- 5.0

25 Sept. to 4 Oct. 1947

Calibrated Velocity 300 fms/sec.

0.0 to 12.0 is 0.0 fms.

12.1 to 27.5 is + 0.2

27.6 to 58.0 is + 0.4

58.1 to 101.0 is + 0.6

101.1 to 196.0 is + 0.5

196.1 to - - - is + 1.0

25 Sept. to 4 Oct. 1947

Calibrated Velocity 820 fms/sec

0.0 to 24.0	is - 0.2
24.1 to 37.0	is - 0.4
37.1 to 48.0	is - 0.6
48.1 to 57.0	is - 0.8
57.1 to 66.5	is - 1.0
66.6 to 75.5	is - 1.2
75.6 to 84.5	is - 1.4
84.6 to 93.0	is - 1.6
93.1 to 101.0	is - 1.8
101.1 to 114.0	is - 2.0
114.1 to 135.0	is - 2.5
135.1 to 159.0	is - 3.0
159.1 to 182.0	is - 3.5
182.1 to 207.0	is - 4.0
207.1 to - - -	is - 4.5

H-7628
DE 4147

List of Signals:

Triangulation:

Peak 103 - 1901
Goose Island Lt. - 1947
Knowles Head - 1902, r 1947
Red Head 2 - 1913
Pillar - 1902
Gravina Rock - 1913
Cask - 1913
Cut - 1913
Surf - 1913
Sheep - 1900
Spruce - 1900
Pt. Johnstone Lt. - 1947
Gravina Pt. Lt. - 1947
Feb. - 1947
Ute - 1947
Tri - 1947

Hydrographic:

Cuts indexed in Sounding Records.

Hang

Dog

Gain

Near

Neap

H-7628 (1947)
DE^R4147

Orca Bay, Prince William Sound

Processing Office Notes

Smooth Sheet:

Hand made on K & E Paper N-124-H.

The Sheet is simple and clear and needs no comment. ✓

Crossings:

Very good. Only one discrepancy was noted at Lat. 60° 35.2' Long. 146° 43.0' where line 14-15 W with depth of 123.7 fms. crosses line 35-36 C with depth of 131 fms. on a moderate slope. Unimportant considering depth & slope. ✓

Comparison with Chart:

See section of Chart 8551 attached.

The Principal differences are:

- (1) The bank with least depth of 28.5 fms. at Lat. 60° 31.7' Long. 146° 40.0' about two miles Southwest of the reported 38 fm. sounding. | area previously unsurveyed
- (2) The 50 fathom curve four miles South Southwest of Knowles Head has been shifted nearly a mile to Eastward. | Review, par. 5 (2)
- (3) The projecting 20 fathom curve a mile Southwest of Gravina Point. | Review, pars. 4 & 9
- (4) The filling of the large blank area on the Chart at Lat. 60° 35' Long. 146° 40'. | previously unsurveyed

Depth Curve:

The 60 fathom curve was added to outline the bank at Lat. 60° 31.7' Long. 146° 40.5' and other features. (70, 80 and 90 -ft. curves added in Wash. Office)

H-7628
 Statistics for Hydrographic Sheet DER 4147

<u>Day Letter</u>	<u>Date</u>	<u>No. of Wire Sdgs.</u>	<u>No. of Pos.</u>	<u>Statute Miles</u>	<u>Vol. No.</u>
A	16 June 1947	- -	19	- -	1
B	23 July 1947	- -	71	48.3	1
C	7 July 1947	- -	38	26.5	1
D	19 July 1947	1	61	41.0	1
E	21 July 1947	- -	61	42.3	1
F	4 August 1947	- -	38	26.8	1 & 2
G	6 August 1947	- -	41	26.4	2
H	15 August 1947	- -	41	27.9	2
J	18 August 1947	1	81	54.0	2
K	24 August 1947	- -	36	27.6	2
L	25 August 1947	- -	39	26.1	2
M	2 September 1947	- -	42	31.2	2 & 3
N	14 September 1947	- -	40	28.8	3
P	16 September 1947	- -	94	65.4	3
Q	22 September 1947	- -	38	26.0	3
R	25 September 1947	1	31	20.0	3
S	26 September 1947	- -	55 148	37.1 98.9	3 & 4
T	27 September 1947	- -	170	104.9	4
U	2 October 1947	5	128	82.1	4
V	3 October 1947	- -	157	104.2	5
W	4 October 1947	<u>9</u>	<u>168</u>	<u>100.0</u>	5
TOTALS		17	149 1542	946.6 1008.4	

H-7628
DE 4147

Orca Bay, Prince William Sound

List of Geographic Names penciled on Smooth Sheet

Prince William Sound

Orca Bay

Knowles Head

Point Johnstone

Tidal Note

M-7628
DE 4147

Orca Bay, Prince William Sound

Lat. 60° 32.7' N.
Long. 145° 46.4' W.

Staff reading of MLLW—8.4 feet.

The records of this tide station were used for tidal corrections to all soundings of this Survey with no correction for time or range.

Respectfully submitted,

Edgar E. Smith
Cartographic Engineer
Seattle Processing Office

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. **H7628.**

Records accompanying survey:

Boat sheets 1....; sounding vols. .5....; wire drag vols. .0....;
bomb vols. .0....; graphic recorder rolls .1....;
special reports, etc.
.....

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

Number of positions on sheet		1542
Number of positions checked		277
Number of positions revised		7
Number of soundings revised (refers to depth only)		66
Number of soundings erroneously spaced		31
Number of signals erroneously plotted or transferred		—
Topographic details	Time	—
Junctions	Time	—
Verification of soundings from graphic record	Time	10hr

Verification by *William Neugebauer* Total time *113 hrs* Date *8/16/48*

Reviewed by *J. A. Dinsmore* Time *41 hrs* Date *1/5/49*

GEOGRAPHIC NAMES

Survey No.

H7628

Name on Survey

	A	B	C	D	E	F	G	H	K	
	On Chart No.	On previous survey No.	On U. S. quadrangle Maps	From local information	On local Maps	P. O. Guide or Map	Rand McNally Atlas	U. S. Light List		
<u>Alaska</u>										1
<u>Prince William Sound</u>									USGB	2
<u>Orca Bay</u>			(location of tide staff)						"	3
<u>Johnstone Point</u>										4
<u>Knowles Head</u>										5
<u>Middle Ground Shoal</u>									USGB	6
										7
										8
										9
										10
										11
										12
										13
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										25
										26
										27

Names underlined in red are approved. 3/19/48 L.Heck

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-7628

FIELD NO. DER-4147

Alaska, Prince William Sound, Orca Bay
Surveyed in - June - October 1947 Scale 1:40,000
Project No. CS-277

Soundings:

Control:

N.M.C. and 808 Fathometers

Sextant fixes on shore signals

Chief of Party - H. A. Karo
Surveyed by - E. H. Kirsch
Protracted by - L. W. Eason
Soundings plotted by - L. W. Eason
Verified and inked by - W. E. Hemple
Reviewed by - T. A. Dinsmore, January 5, 1949
Inspected by - R. H. Carstens

1. Shoreline and Signals

No contemporary shoreline is available for this area.

The origin of the signals is adequately covered in the Descriptive Report.

2. Sounding Line Crossings

Depths at crossings are in very good agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves are adequately delineated. The 60, 70, 80 and 90-fm. curves have been added to define more clearly the configuration of the bottom.

The bottom for the most part is smooth and covered by a layer of gray clay. Considerable irregularity occurs over a small area at the northeastern extremity of the survey, and a prominent shoal with a least depth of 28 fms. rises from greater depths in lat. $60^{\circ} 31.70'$, long. $146^{\circ} 40.44'$.

4. Adjoining Surveys

The Project Instructions do not contemplate junctional surveys in this area except at the extreme northwest. The junctional survey here is not registered in this office at the present time. Charted depths at the limits of the present survey are in harmony with present depths. It is noted that about one mile southeast of Gravina Point a present depth of 18 fms. falls about 400 meters offshore from a 21-fm. depth charted from H-2501 (1900).

5. Comparison with Prior Surveys

H-2501 (1900) 1:40,000	H-3553 (1913) 1:20,000
H-2503 (1900) 1:40,000	H-3675 (1914) 1:80,000
H-2658 (1903) 1:20,000	H-3815 (1915) 1:20,000
H-2970 (1908) 1:15,000	<u>H-3816 (1915) 1:20,000</u>
<u>H-3186 (1910) 1:20,000</u>	

These prior surveys cover only portions of the present survey. Much of the present survey area had not been previously surveyed. A comparison with the prior soundings indicates that no important changes in bottom have occurred. In depths of 50-100 fms., present depths are generally 1-3 fms. less than prior depths. The sparse development of the earlier surveys failed to reveal many of the shoaler depths appearing on the present survey, particularly in the vicinity of lat. $60^{\circ} 36'$, long. $146^{\circ} 06'$, and in the area immediately southeastward from Gravina Point.

Discrepancies of note are as follows:

- (1) The two 39-fm. soundings (charted) falling in present depths of 54 fms. in lat. $60^{\circ} 35.85'$, long. $146^{\circ} 06.30'$, and lat. $60^{\circ} 35.70'$, long. $146^{\circ} 04.50'$, respectively, should be disregarded. Originating with two 354-ft. (59 fms.) soundings on H-3553, these prior soundings were erroneously charted as 39 fms.
- (2) A group of soundings (12 of which are charted) ranging in depth from 28-113 fms. in the vicinity of lat. $60^{\circ} 37'$, long. $146^{\circ} 43'$, should be disregarded. Originating with H-2658, these prior soundings fall in present depths which are deeper by as much as 50 fms. The prior soundings are on offshore portions of sounding lines which are controlled by very weak fixes. Depths on a crossline in this vicinity of H-2658, together with the depths on H-3675 with which it junctions on the west, clearly indicate that these soundings are misplotted and should actually fall a considerable distance eastward where comparable depths were obtained on the present survey. The present depths are adequate to supersede the prior depths.

- (3) The 12-fm. sounding (charted) falling in present depths of 25 fms. in lat. 60° 32.50', long. 146° 22.40', should be disregarded. Originating with H-2503, this prior sounding is considered to be displaced in position and should actually fall about 200 meters southward on the steep slope of Middle Ground Shoal.

The present survey is adequate to supersede the prior surveys within the common area.

6. Comparison with Chart 8520 (Latest print date 1/13/47)

A. Hydrography

Charted hydrography originates principally with the previously discussed surveys which need no further consideration.

The 38-fm. sounding P.D. (charted) falling in present depths of 62 fms. in lat. 60° 33.30', long. 146° 37.10', should be disregarded. The 38 originates with Chart Letter 162 (1939) which reported a 38-fm. depth about 4½ miles northward from Johnstone Point. The 38 was probably obtained in the vicinity of lat. 60° 31.70', long. 146° 40.40', where comparable depths occur on the present survey.

B. Aids to Navigation

Aids on the present survey are in substantial agreement with charted aids and adequately mark the features intended.

7. Condition of Survey

The sounding records and Descriptive Report are complete and comprehensive.

The smooth plotting was adequate.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

9. Additional Field Work

This is an excellent basic survey and no additional field work is required within the limits of the present survey.

However, attention is directed to a recommendation by the hydrographer (Descriptive Report, page 2, par. J.) that the project limits be extended to include the area of uneven bottom between the northeastern limits of the present survey and Sheep Point. *Accomplished. See Review H-7725 (1948).*

He further suggests (Descriptive Report, page 3, par. J.) the desirability of additional inshore hydrography southeast of Gravina Point where the present survey reveals much shoaler depths than appear on H-2501 (1900).

*Noted
K.G.C.*

Because of the character of the bottom and the inadequate development provided on H-2501 (1900) in the subject areas, the reviewer concurs in the above recommendations.

Examined and approved:

H. R. Edmonston

H. R. Edmonston
Chief, Nautical Chart Branch

Casper M. Durgin

Casper M. Durgin
Chief, Division of Charts

K. G. Crosby

K. G. Crosby
Chief, Section of Hydrography

C. K. Green

C. K. Green
Chief, Division of Coastal Surveys

NAUTICAL CHARTS BRANCH

SURVEY NO. H7628

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
2 June 48	8520	Trichals	Before After Verification and Review
2/19/51	8520	Burgoyne	After Partially applied Fully Applied after verification + review
7/22/48	8551	J. G. Moran	Before After Verification and Review
			Partially applied.
12/26/51	8551	Pisegani	Before After Verification and Review fully appld. ^{37th}
6/26/52	8519	"	" " " " (same Ch. 8520)
1/23/53	8502	H. W. Burgoyne	Before After Verification and Review ^{Applied thru. buss drwg. #7 Ch 8551}
			Before After Verification and Review
			Before After Verification and Review
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M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.