8116

Diag. Cht. No. 6380-2.

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. PA-1254 *Office No.* H-8116

LOCALITY

State Washington

General locality San Juan Islands

Locality Spieden Channel

19~~4~~ 54

CHIEF OF PARTY

J. C. Partington

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DATE May 6, 1957

B-1870-1 (1)

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8116

Form 537
(Ed. June 1946)

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-8116

Field No. PA-1254

State Washington

General locality San Juan Islands

Locality Spieden Channel

Scale 1:10,000 Date of survey 24 June to 13 September 1954

~~Instructions dated~~ Supplemental Instructions dated 11 March 1953, 8 May 1953, 20 January 1954 and 16 February 1954

Vessel PATTON and PATTON's Launch No. 87

Chief of party J. C. Partington

Surveyed by J. C. Partington, F. X. Popper and R. F. Lanier

Soundings taken by ~~fathometer, graphic recorder, hand lead, wire~~ 808A Depth Recorders Nos. 51 and 74, hand lead and wire (bottom samples).

Fathograms scaled by Robert Outzen and Pedro T. Pediangco

Fathograms checked by F. X. Popper, R. F. Lanier, D. Doe, R. Outzen & P.T.Pediangco

Protracted by C. R. Lehman S.P.C.

Soundings penciled by C. R. Lehman

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW and are true depths

REMARKS:

U. S. GOVERNMENT PRINTING OFFICE 693019

DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC REPORT NO. H-8116 (PA-1254)

SPIEDEN CHANNEL, WASHINGTON

SCALE 1:10,000 DATE 1954

U.S.C.& G.S.S. PATTON, J. C. PARTINGTON, COMDG.

# # #

A. PROJECT:

This survey was accomplished under Supplemental Instructions for Project CS-241, issued by the Director and dated 11 March 1953, 8 May 1953, 20 January 1954, and 16 February 1954.

B. SURVEY LIMITS AND DATES:

This survey includes all of Spieden Channel and extends east to Longitude 123° 06', west to the Canadian Boundary, south to Latitude 48° 36'.2 N., and north to 48° 40' N., except that all of Reid Harbor is included.

Junction was made on the south with H-8086 (1953-55), a 1:10,000 survey of the west coast of San Juan Island and with H-8117 (1954), a 1:5,000 scale survey of Roche Harbor and on the east with H-8115 (1954), a 1:10,000 scale survey of the north end of San Juan Channel. Field work commenced on 24 June and was completed on 13 September 1954.

C. VESSEL AND EQUIPMENT:

Almost 90% of the hydrography was done by Launch No. 87, a 30-foot, diesel powered motorsailer operating from the PATTON. Slightly over 10% of the hydrography was done by the PATTON. Both the PATTON and the launch used 808A type depth recorders; No. 51 in the launch and No. 74 in the PATTON. The depth recorders were supplemented by hand lead soundings on shoals and in kelp. Bottom samples were taken by wire with a hand sounding machine mounted on the launch, and in deeper areas by the PATTON using an electric wire sounding machine.

D. TIDE AND CURRENT STATIONS:

The records from the standard tide gage located at the oceanographic laboratory near Friday Harbor were used for the reduction of soundings for the first three days of work after which records from the portable tide gage established at Roche Harbor were used.

One 100-hour current station was observed on this sheet. It was located in Spieden Channel. A current pole and a Price Current meter were used.

E. SMOOTH SHEET:

The smooth sheet will be constructed and plotted by personnel of the Seattle Processing Office.

F. CONTROL STATIONS:

A second order scheme of triangulation was established in this area by J. J. Gilbert in 1894 and additional stations were established in 1942 by C. M. Durgin. The remainder of the signals necessary for hydrography were located by photogrammetric means on manuscripts T-5588,* T-5589,* T-5590* and T-5591*; about a mile of traverse was run with a plane table to locate signals on the northwest corner of Henry Island where photograph coverage was poor. (5 signals located by hydrographic methods, transferred from H-8086 (1953-55))

Graphic Control, PA-54-B & PA-54-D (destroyed after transfer of information to hydro sheets)

* (1949-54)

G. SHORELINE AND TOPOGRAPHY:

The shoreline and topography of the area has already been compiled from air photographs of the area which were field inspected by personnel of the Portland Photogrammetric Office.

See Review

The shoreline is abrupt and rocky, therefore in most places it was not possible to establish the low water line by hydrography.

H. SOUNDINGS:

Soundings were taken with 808A type depth recorders (Nos. 51 & 74) operated on the fathom scale. Hand lead soundings were taken in critical areas on shoals and in kelp. Wire soundings were taken for obtaining bottom samples.

Velocity corrections to fathometer soundings were computed from serial temperatures and salinity observations taken throughout the area.

Phase or scale comparisons of the fathometer were taken in as good weather and on as flat a bottom as could be obtained.

I. CONTROL OF HYDROGRAPHY:

The hydrography is controlled by three-point sextant fixes on signals ashore. No unusual or substandard methods were used for this purpose.

J. ADEQUACY OF SURVEY:

This survey is adequate and complete and should supersede previous surveys of this area.

See Review

K. CROSSLINES:

The crosslines on this sheet constitute 10% of the total miles of sounding for normal spacing of lines. Crossings are satisfactory.

L. COMPARISON WITH PRIOR SURVEYS:

Previous surveys of this area were made in 1894 at a scale of 1:10,000. The area covered by this survey includes part of H-2214, H-2215 and H-2216. Sounding lines on previous surveys were more widely spaced and developments were not as complete. While the new survey is more detailed and complete, the old survey agrees remarkably well with the modern survey, especially when one considers how few soundings were actually taken. Several additional shoals were found and lesser depths were determined on some other shoals, but not in depths that were a danger to surface navigation.

The old survey shows 6½ feet (5 feet plus 1½ foot correction) and Chart 6379 shows 1½ fathoms on Danger Shoal. The shoalest sounding that was determined on this survey after two developments was 1.8 fathoms. The difference of course, could be caused by a small boulder on the bottom which this survey did not find. The kelp is very dense in this area. 1-fm. sdg. carried forward

The old survey showed 4-3/4 fathoms and Chart 6379 showed 5 fathoms in Latitude 48° 38'.76 N, Longitude 123° 08'.36 W. The preliminary review of CS-241 questioned this sounding. A thorough development was made of the area and no 5-fathom shoal was found. The depth in that vicinity is around 30 fathoms. It is recommended that the 5-fathom sounding be deleted from the chart. See also Review

The old survey shows a 10-1/4 fathom sounding and Chart 6379 shows a 10½ fathom sounding at Latitude 48° 38'.15N, and Longitude 123° 09'.14W. The preliminary review questions this sounding.* Numerous 10 fathom soundings were obtained there and very close to that spot a shoal sounding of 10½ fathoms was obtained. pos. 15-16aa

Both the old survey and Chart 6379 show a 13 fathom spot about 1/5 of a mile east of the largest of the Cactus Islands in Latitude 48° 39.08 N and Longitude 123° 07.10 W. This sounding is questioned in the preliminary review.* A thorough development was made and a least depth of 7.8 fathoms was obtained. pos. 90-91aa & pos 105-106aa

The old survey and the chart both show a 1½ fathom sounding on the south side of Johns Island in Latitude 48° 38'.52N and Longitude 123° 08'.40W. This sounding is questioned in the preliminary review.* While no intensive development of this spot was made, one sounding line passes about 60 meters west of it and another about 20 meters east of it and there is no indication of such a shoal. Some irregular bottom shown on fgm. "0⁶ Rk" carried forward

In Latitude 48° 38'.93N and Longitude 123° 08'.10W, both the old survey and the chart show a reef. The preliminary survey questions something in that area, presumably the existence of the reef. The reef is there.

* The preliminary review noted these as "....undeveloped or questionable shoals...."

M. COMPARISON WITH CHART:

This subject is covered in Section L. Some additional shoals were located and considerably shoaler depths were found on a number of the deeper shoals.

N. DANGERS AND SHOALS:

There are no "newly found" dangers to navigation to report in this survey.

SHOALS:

1. A 7.6 fathom sounding was obtained by fathometer on a charted 13 fathom shoal in Latitude 48° 39'.08N and Longitude 123° 07'.10W; Position 105aa plus 30 seconds.

2. A 27 fathom shoal was found in Latitude 48° 37'.45N and Longitude 123° 12'.20W; Position 66s plus 30 seconds.

3. A 17 fathom shoal was found in Latitude 48° 38' .70N and Longitude 123° 06'.65W; Position 126aa.

4. A 13 fathom shoal was found in Latitude 48° 38'.64N and Longitude 123° 06'.16W; Position 160aa plus 15 seconds.

O. COAST PILOT: Referred to Coast Pilot Section, 1/16/58

There are strong variable currents throughout the area. A 100-hour current station was observed near the middle and east end of Spieden Channel and although the observations were taken during the period of neap tides, velocities up to 5 knots were measured. The current runs parallel to the direction of the channel.

The current is as strong in New Channel and north of the Cactus Islands.

While making this survey both the ship and the launch anchored in Roche Harbor. Roche Harbor is a well protected anchorage and as the bottom is mud, it is an excellent holding ground.

P. AIDS TO NAVIGATION:

There are no fixed aids to navigation within the limits of this survey.

There are two floating aids to navigation within the limits of this survey.

Danger Shoal Lighted Bell Buoy is located in Latitude 48° 38'.35N and Longitude 123° 10'.86W in 7 fathoms of water; Position Number 1ℓ; the date the buoy was located was 28 July 1954.

Black Can Buoy Number 1 is located in Latitude 48° 37'.49N and Longitude 123° 09'.76W in 8 fathoms of water; Position 1d; the buoy was located on 11 July 1954.

The ferry route through these islands goes through Wasp Passage to Friday Harvor and then through San Juan Channel to Sydney on Vancouver Island.

Q. LANDMARKS FOR CHARTS:

There are no landmarks for charts in this area which have not already been charted.

R. GEOGRAPHIC NAMES:

There are no new geographic names to be reported within the limits of this survey.

S. SILTED AREAS:

No information available on this subject.

Z. TABULATION OF APPLICABLE DATA:

The following listed Special Reports are pertinent to this survey and report:

1. Descriptive Report to Accompany Topographic Sheets PA-54-A, PA-54-B, PA-54-C, PA-54-D
2. Temperature and Salinity Observations
3. Triangulation Report

The following applicable data are attached to this report:

1. Table of Statistics
2. Tide Note
3. Abstract of bar checks and computations of index error and phase comparison note
4. Abstract of Velocity Corrections

Respectfully submitted,

Francis X. Popper
Francis X. Popper
LCDR USC&GS

Approved and Forwarded:

J. C. Partington
J. C. Partington
CDR USC&GS
Cmdg., Ship PATTON

ABSTRACT OF BAR CHECKS, SHEET PA-1254

Date	Day	2 fms	4	5	7
24 June	a	+0.3			
25 "	b	+0.2			
		+0.3			
26 "	c	+0.3			
		+0.3			
11 July	d	+0.3			
		+0.4			
12 "	e	+0.5			
		+0.4			
13 "	f	+0.3			
		+0.4			
14 "	g	+0.4			
		+0.5			
24 "	h	+0.3		+0.4	+0.4
		+0.5		+0.4	+0.5
25 "	j	+0.4		+0.5	+0.5
		+0.5		+0.2	+0.4
26 "	k	+0.3		+0.5	+0.5
28 "	l	+0.4		+0.5	+0.5
		+0.4		+0.5	+0.5
3 Aug.	m	+0.5		+0.4	+0.4
		+0.4		+0.3	+0.4
		22) +8.3		9) +3.7	9) +4.1

Date	Day	2	4	5	7
4 Aug.	n	+0.3		+0.2	+0.4
		+0.4		+0.4	+0.5
5 "	p	+0.3		+0.2	+0.4
		+0.4		+0.2	+0.4
7 "	q	+0.4		+0.4	+0.5
		+0.4		+0.4	+0.5
8 "	r	+0.5		+0.4	+0.5
		+0.5		+0.3	+0.5
9 "	s	+0.5		0.3	0.5
		0.4		0.3	0.5
10 "	t	0.5		0.3	0.5
		0.4		0.3	0.5
23 "	v	+0.4	0.4		0.4
25 "	w	0.5	0.4		
		0.4	0.4		0.3
27 "	x	0.4	0.4		0.4
		0.4	0.4		0.4
28 "	y	0.5	0.4		0.4
		0.4	0.3		0.3
8 Sept.	z	0.4	0.4		0.5
		0.4	0.4		0.4
9 "	aa	0.4	0.4		0.4
		0.4	0.4		0.4
10 "	ba	0.4	0.4		0.4
		0.4	0.4	~~0.5~~	0.5
13 "	ca	0.5	0.4		0.4
		26) 11.0	14) 5.5	12) 3.7	25) 10.9
		8.3		3.7	4.1
		48) 19.3	14) 5.5	21) 7.4	34) 15.0
	Mn	+0.4	+0.4	+0.35	+0.44

Mn = +0.4 fms.

Phase Corr'n

Fath. #74 (Ship)

A = 0.0 fm
B = +0.7 fm
C = +0.6 fm
D = -1.9 fm
E = -1.4 fm

Fath #51

A = 0.0 fm
B = +0.8 fm
C = +1.0 fm
D = +0.8 fm

From Vol. 14, Page 63, PA-1254

STATISTICS FOR HYDROGRAPHIC SHRVEY H-8116 (PA-1254)

USC&GSS PATTON - CS-241

Date 1954	Day Letter	Vol. No.	Handlead & Wire Sndgs.	Number of Positions	Statute Miles of Soundings
24 June	a	1	--	16	3.3
25 "	b	1	--	55	7.5
26 "	c	1	--	49	6.1
11 July	d	1 & 2	3	315	26.1
12 "	e	2	3	320	41.4
13 "	f	3 & 4	--	348	35.4
14 "	g	4 & 5	2	188	18.4
24 "	h	5 & 6	1	122	16.0
25 "	j	6 & 7	2	305	28.7
26 July	k	7	1	75	7.7
27 "	A	7 & 8	1	238	49.3
28 "	l	8 & 9	1	210	15.4
3 Aug.	m	9 & 10	2	256	15.8
4 "	n	10 & 11	2	261	24.7
5 "	p	11	2	290	21.0
6 "	B	12	1	26	5.0
7 "	q	12 & 13	5	299	25.5
8 "	r	13 & 14	2	292	27.9
9 "	s	14	8	258	25.1
10 "	t	14 & 15	-	257	20.2
11 "	C	15 & 16	14	126	16.5
11 "	u	17	7	7	0.0
23 "	v	17	4	44	2.5
25 "	w	17	3	200	19.8
27 "	x	17 & 18	2	286	31.2
28 "	y	18 & 19	2	282	24.9
8 Sept.	z	19 & 20	2	254	24.1
9 "	aa	20 & 21	4	256	22.2
10 "	ba	21	8	104	7.5
13 "	ca	21	3	56	2.8
				5795	572.0

$$27 \times \frac{1230}{1853} \times 1.32 = 23.6 \text{ sq. stat. miles}$$

LIST OF HYDROGRAPHIC SIGNALS H-8116 (PA-1254)

SPIEDEN CHANNEL, SAN JUAN ISLANDS, WASHINGTON

Hydrographic Name	Source
Abe	~~T-5590-N~~ PA-54-B
Ace	T-5588-S (1949-54)
Act	"
Add	"
Ann	"
Ant	Tri.Sta.ANT 1894
Azo	~~T-5588-S~~ PA-54-B
Bag	T-5588-S
Bah	"
Bar	Tri.Sta.BARREN 1894
Bat	Tri.Sta.BATTLESHIP 1894
Bed	T-5588-S
Bib	"
Box	PA-54-D
Bro	H-8086 (1953-55)
Cab	T-5588-S
Cac	Tri.Sta.CACTUS$_2$ 1942
Cam	T-5591-N (1949-54)
Car	T-5588-S
Cor	Page 21, Vol.12, H-8116 & PA-54-D
Caw	T-5588-S
Cry	"
Cur	PA-54-D
Dave	Tri.Sta.DAVE 1942
Daw	T-5588-S
Day	"
Deb	T-5591-N
Dim	T-5588-S
Dog	"
Dud	PA-54-D
Dim	PA-54-B
Dog	" " "
Ear	T-5591-N
Eat	T-5588-S
Ebb	"
Egg	"
Eel	PA-54-D
Elm	T-5588-S
Erg	H-8086 (1953-55)
Far	T-5588-S
Fat	T-5591-N
Fed	T-5588-S
Few	T-5588-S
Fig	"
Fix	H-8086 (1953-55)
Flat	Tri.Sta.FLAT$_2$ 1942
Fry	PA-54-D
Fig	PA-54-B
Gad	T-5590-N (1949-54)
Gag	T-5588-S
Gal	"
Gem	T-5588-S
Gro	Tri.Sta.GROOVE 1942
Gum	T-5588-S
Gus	PA-54-D
Hat	T-5588-S
Hem	T-5590-N
Hen	Tri.Sta. HENRY$_2$ 1942
Hex	PA-54-D
How	T-5588-S
Hug	"
Ice	T-5588-S
Ida	"
Irk	PA-54-D
Its	T-5590-N
Ivy	T-5588-S
Jap	T-5590-N
Jar	T-5588-S
Jaw	PA-54-D
Job	T-5588-S
Joe	Tri.Sta.JOE 1942
John	Tri. Sta. JOHN 1894
Joy	T-5588-S
Ked	T-5590-N
Kelp	Tri. Sta. KELP 1894
Ken	T-5588-S
Key	T-5588-S
Kid	PA-54-D
Kim	T-5588-S
Lad	T-5588-S
Lan	T-5588-S
Leg	PA-54-D
Leo	T-5588-S
Let	"
Lip	T-5590-N
Liz	T-5588-S
Mag	T-5588-S
Mal	T-5590-N
Man	PA-54-D
Mar	T-5588-S
Mos	Tri. Sta. MOSQUITO 1894
Maw	T-5588-S
Mum	T-5588-S
Nat	T-5590-S
Nay	T-5588-S
New	T-5590-N
Nil	T-5588-S

LIST OF HYDROGRAPHIC SIGNALS H-8116 (PA-1254) Contin.

Hydrpgraphic Name	Source
Nip	T-5588-S
Nit	"
Nix	"
Nod	PA-54-D
Non	PA-54-B
Oak	T-5589-S (1949-54)
Obi	"
Off	T-5588-S
Oil	PA-54-D
Out	T-5588-S
Owl	T-5588-S
Pad	T-5589-S
Pal	"
Pas	Tri. Sta. PASTURE 1894
Peg	PA-54-D
Pie	T-5588-S
Pit	Tri. Sta. PITCH 1894
Pro	T-5588-S
Pug	T-5588-S
Pup	T-5588-S
Quo	T-5588-S
Rag	T-5588-S
Ram	"
Rev	T-5589-S
Rig	T-5588-S
Rim	T-5588-S
Rip	Tri.Sta. RIPPLE 1894
Rum	T-5588-S
Roche	Tri. Sta ROCHE 1942
Sag	T-5588-S
Sal	T-5588-S
Sam	T-5589-S
Sen	Tri.Sta. SENTINEL$_2$ 1942
She	Tri.Sta. SHEEP$_2$ 1942
Sky	T-5588-S
Sly	"
Spi	Tri.Sta.SPIEDEN 1894
Sto	Tri.Sta.STONEY 1940
Sub	T-5588-S
Tap	T-5588-S
Tan	"
Thy	T-5589-S
Try	"
Tub	"
Twist	Tri.Sta. TWIST 1894
Use	T-5588-S
Val	"
Van	"
Vet	"
Vim	"
Vine	Tri.Sta. VINE 1894
Wad	T-5588-S
Wag	T-5588-S
Wax	"
Yak	T-5588-S
Yam	"
Yet	"
Zag	T-5588-S
Zoo	"
Can, Dot	H-8086 (1953-55)

TIDAL NOTE

to accompany

Hydrographic Sheet, Field No. PA-1254, Office No. H-8116

Two tide gages were used to reduce soundings on this hydrographic sheet. The standard automatic tide gage at Friday Harbor, Washington was used to reduce soundings on the first three days of hydrography, the portable tide gage at Roche Harbor, Washington was used to reduce soundings for the remainder of the hydrography.

FRIDAY HARBOR TIDE GAGE

Location:

Oceanographic Laboratories, University of Washington located at Friday Harbor, Washington.

Latitude: 48° 32.8' N. Longitude: 123° 00.4' W.

Plane of reference:

Mean lower low water. This value corresponds to 3.6 feet on the tide staff as furnished by the Washington office.

Hourly heights of the tide were furnished by the Washington office.

ROCHE HARBOR PORTABLE TIDE GAGE

Location:

At the east face of wharf owned by Roche Harbor Lime and Cement Company, Roche Harbor, Washington.

Latitude: 48° 36.55' N. Longitude: 123° 09.90' W.

Plane of reference:

Mean lower low water. This value corresponds to 3.8 feet on the tide staff as furnished by letter from the Washington office.

ABSTRACT OF VELOCITY CORRECTIONS

U.S.C.& G.S.S. PATTON - J. C. PARTINGTON, COMDG.

LOCALITY: SPIEDEN CHANNEL

SAN JUAN ISLANDS, WASHINGTON

HIDROGRAPHIC SURVEY NO. PA-1254

FOR USE BETWEEN 24 JUNE AND 13 SEPTEMBER 1954

SHIP PATTON AND LAUNCH NO. 87

MEAN OF VELOCITY CORRECTIONS NOS. 7 AND 8

0.0 Fms		to 5.0 Fms
+0.1 "	from 5.1 Fms	" 13.0 "
+0.2 "	" 13.1 "	" 22.0 "
+0.3 "	" 22.1 "	" 31.0 "
+0.4 "	" 31.1 "	" 53.0 "
+0.6 "	" 53.1 "	" 71.0 "
+0.8 "	" 71.1 "	" 95.5 "
+1.0 "	" 95.6 "	" 121.5 "
+1.2 "	" 121.6 "	" 149.0 "
1.4 "	149.1 "	176.5 "
1.86 "	177 "	5' over

PROCESSING OFFICE NOTES H-8116
(PA-1254)

SMOOTH SHEET

The smooth sheet was hand constructed and checked in the Seattle Hydrographic Processing Unit, using standard methods.

CONTROL STATIONS

Three additional signals in the entrance to Roche Harbor, not shown on boat sheet, were transferred from PA-54-B. Other control as noted in hydrographers report.

SHORELINE AND TOPOGRAPHY

Shoreline and topography was transferred from photo-manuscripts T-5588s, T-5589s, T-5590n, and T-5591n, except for some rock and reefs located by hydrography. See Review

ADEQUACY OF SURVEY

The survey appears to be complete and adequate for charting. Junctions with H-8115 (1954) and H-8117 (1954) are satisfactory. The junction with H-8086 (1953) is satisfactory in depths less than 120 fms.* The trouble appears in the "D" scale soundings on H-8086. The depth curves, except for the above noted discrepancy, at the junctions can be adequately drawn.

* H-8086 not yet verified, but junction appears adequate. WE 4/16/58

The sixty fathom curve was penciled on the smooth sheet. Due to the steepness of the shore many of the inshore curves were omitted.

COMPARISON WITH PRIOR SURVEYS

Notes by the hydrographer under this heading are adequate. Smooth sheet values have been added in ink. See Review

COMPARISON WITH CHART

Comparison was made with chart 6379 corrected to ~~4 August 1956.~~ 18 Nov. 1957

In addition to the notes under "Comparison with Prior Surveys", several differences were noted.

	Lat. & Long.	Charted depth:	Smooth Sheet Depth:
1.	48° 37'.58 123 10 .57	~~4 3/4~~ 4 1/4 fms	4.4 fms
2.	48° 37'.48 123 09 .68	~~2~~ 1 3/4 fms	1.8 fms

		Chart:	H-8116:
3.	~~48° 37'.5~~ 49 ~~123 09 .63~~	~~2 1/4 fms~~ ~~1½~~	~~1.1~~ ~~1.6 fms (at 48°37.50' 123°09.59')~~
4.	48° 38'.68 3 123 10 .15/8	~~19~~ 17 fms	17 fms ✓
5.	48° 39'.62 ✓ 123 09 .52	~~1/2~~ ¼ fm	0.4 fm (at 48°39'.64 123°09.51)
6.	48° 38'.956 123 06 .356	~~38~~ 28 fms	28 fms ✓
7.	48° 38'.60 4 ✓ 123 06 ~~.20~~ .16 ✓	~~24~~ 13 fms	13 fms ✓

One other difference on a shoal where the shoaler sounding was on the chart was noted at Lat. 48° 39'.17, Long. 123° 07'.73 The charted depth is 3 3/4 fms and the smooth sheet is 4 fms. A thorough search of the area was made with 4 fms the shoalest sounding found. ~~4 fms sounding recommended.~~ 3.7 fms. carried forward.

DANGERS AND SHOALS

Several shoal soundings, not charted, are recommended for charting.

1.	48° 38'.34 ✓ 123 09 .58 ✓	8.5 fms ✓	pos. 186 g [8½ now charted]
2.	48° 38'.60 ✓ 123 09 .80	8.9 fms ✓	pos. 78-79 r [8¾ now charted]
3.	48° 39'.14 ✓ 123 07 .40	~~7.1~~ fms	pos. 85-86 aa {incorrectly reduced in sounding volume: actual sdg. of 17.1 fms. was not plotted.

A rock at Lat. 48° 37'.25, Long. 123° 06'.10, is shown on the chart and photo-topo as a 3 foot high water rock. The hydrographer located a rock at this spot and took a hand lead sounding which calls the rock uncovered 6 feet at MLLW. No mention is made of a high water rock. See positions 26c and 126d. See Review

Respectfully submitted,

William M. Martin

WILLIAM M. MARTIN
Supervisory Cartographer, C&GS

APPROVED AND FORWARDED:

Curtis Le Fever

CURTIS LE FEVER, Captain, C&GS
Seattle District Officer

GEOGRAPHIC NAMES

Survey No. H-8116

No. 1.

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Washington			(for title)						BGN	1
San Juan Islands			"	"						2
San Juan Island										3
Limestone Point										4
Spieden Channel										5
Lonesome Cove		(hydro type)								6
Davison Head										7
Barren Island										8
Posey Island										9
Pearl Island										10
Roche Harbor										11
Roche Harbor		(village; one tide station)								12
Henry Island										13
McCracken Point										14
Battleship Island									BGN	15
Center Reef										16
Sentinel Island		(not Sentinal)								17
Danger Shoal										18
Spieden Island										19
New Channel										20
Green Point										21
Spieden Bluff										22
Flattop Island										23
Cactus Islands										24
Gull Reef										25
Ripple Island										26
Johns Island										27

M 234

GEOGRAPHIC NAMES

Survey No. H-8116

No. 2

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Johns Pass										1
Reid Harbor										2
Cemetery Island										3
Gossip Island										4
Stuart Island										5
Haro Strait									BGN	6
										7
			Names approved 6-5-57							8
							L. Heck			9
Friday Harbor			(location of one tide station, off sheet)							10
										11
			See chart No. 6379 for best placement of names on sheet No. 1, and 6300 for names on this page.							12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25
										26
										27

M 234

RHC

Form 712
(11-30-55)

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Chart Division: R. H. Carstens 19 June 1957

Plane of reference approved in
21 volumes of sounding records for

HYDROGRAPHIC SHEET 8116

Locality San Juan Islands, Washington

Chief of Party: J. C. Partington in 1954

Plane of reference is mean lower low water, reading

3.8 ft. on tide staff at Roche Harbor

8.4 ft. below B.M. 1 (1954)

Height of mean high water above plane of reference is 6.9 feet.

Condition of records satisfactory except as noted below:

William Shafer
Signature

Chief, Tides Branch

Comm-DC 34330

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. ..8116..

Records accompanying survey:

Boat sheets .1...; sounding vols. .21..; wire drag vols. .....;

bomb vols. .....; graphic recorder rolls 8-Envelopes

special reports, etc. 1-Smooth sheet, 1-Descriptive report,....

1-Special report (Temperature and Salinity) filed under........
Special Report 1954 No. 156.

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

Number of positions on sheet		5,795
Number of positions checked		369
Number of positions revised		15
Number of soundings revised (refers to depth only)		100 *
Number of soundings erroneously spaced		10
Number of signals erroneously plotted or transferred		0
Topographic details	Time	60
Junctions	Time	16
Verification of soundings from graphic record	Time	40

Verification by. F.P. SAULSBURY ....Total time .514.. Date 11-14-57

Reviewed by .. [signature] .... Time 119 hrs. Date 1/20/58

* Includes minor changes in kelp areas, soundings scanned from wrong phase and busts in reduction of soundings averaging 1 per volume for first ten volumes inspected.

M-2232-1

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-8116 FIELD NO. PA-1254

Washington - San Juan Islands - Spieden Channel

Surveyed: 24 June 13 September 1954 Scale 1:10,000

Project No. CS-241

Soundings:

808A depth recorder

hand lead

wire

Control:

Three-point sextant fixes on shore signals

Chief of Party - J. C. Partington
Surveyed by - J. C. Partington, F. X. Popper, R. F. Lanier
Protracted by-C. R. Lehman (Seattle P. O.)
Soundings plotted by - C. R. Lehman
Verified and inked by - F. Saulsbury
Reviewed by- L. V. Evans III Date: Jan. 22, 1958
Inspected by - R. H. Carstens

1. Shoreline and Control

The shoreline originates with reviewed photogrammetric surveys T-5588, T-5589 and T-5590 and unreviewed photogrammetric survey T-5591, all of 1949-54. Although T-5591 has been reviewed no reviewed print has been available during the processing of this survey. Several minor corrections to the shoreline were taken from graphic control sheet PA-54-B (1954).

The sources of control are given in the Descriptive Report.

The elevation of Gull Reef is five feet at mean high water from T-5588(s)

2. Sounding Line Crossings

Depths are in good agreement at crossings.

3. Depth Curves and Bottom Configuration

The usual depth curves are well defined except that the steep, rocky foreshore prevented development of the mean low-water line and parts of the other inshore curves.

This is an inshore survey of an area of rather deep channels and passages between the steep slopes of many islands, pinnacle rocks and shoals.

4. Junctions with Contemporary Surveys

A satisfactory junction was effected to the east with H-8115 (1954). Junctions to the south with H-8117 (1954) and H-8086 (1953-55) will be discussed in the reviews of those surveys. Contemporary surveys to the north have not been registered at this time. On the west, the limits of this survey are the project limits at the Canadian Boundary; depths are in harmony with charted depths along that limit.

5. Comparison with Prior Surveys

A) H-405 (1853) 1:200,000

This reconnaissance survey shows nothing of interest for modern charts, and is entirely superseded by the present survey in the common area.

B) H-2113 (1891) 1:20,000
H-2214 (1894) 1:10,000
H-2215 (1894) 1:10,000
H-2216 (1894) 1:10,000

These surveys comprise the principal previous coverage of the area of H-8116. A comparison between the present and prior surveys shows bottom changes only in Reid Harbor (lat. 48°40', long. 123°11') a small cove where present depths are generally 1 to 3 feet deeper than prior depths. The apparent bottom change is probably the result of scouring of the mud and sand bottom.

Throughout the rest of the area of H-8116 no bottom changes are revealed. The present survey is more intensive, particularly in the deeper areas, and depicts the bottom in greater detail, showing a number of knolls and rises not previously found. However, the prior soundings generally differ little with present depths. Such differences as appear are mainly traceable to minor differences in position on the steep island slopes, where small displacements in position result in appreciable differences in depths. Present depths supersede such depths without further, individual discussion.

Attention is called to the following specific items:

(1) The 33-fm. sounding charted in lat. 48°38.43', long. 123°06.73' from H-2214 should be disregarded. That sounding is discredited by the development of the present survey in depths of 43-45 fms. and is considered to be 10-fathoms in error.

(2) The 5-fm. sounding charted in lat. 48°38.75', long. 123°08.35', and the 37-fm. sounding charted in lat. 48° 38.8', long. 123°08.31' from the same sounding line on H-2214, should be disregarded. These soundings are disproved in their charted positions by the intensive development of the present survey. It is noted that a 10° change in one angle at the end of the line (position of the 5-fm. sounding) would move both of these soundings to areas of comparable depths on both the present and prior surveys.

(3) The 5 3/4-fm. sounding charted in lat. 48°39.14', long. 123°08.58 from H-2215 is discredited in its charted position by the development of the present survey and should be disregarded. It is considered to be out of position and should fall on the 5.7-fm shoal found 80 meters eastward on the present survey.

(4) The 54, 56, 38 and 26-fm. soundings charted in lat. 48°39.06' long. 123°09.24' to lat. 48°39.39', long 123°09.12' from H-2215 should be disregarded. Those soundings were incorrectly plotted on H-2215; in their corrected positions they are in harmony with depths on the present survey.

.19' Jma 7/30/58

(5) The 68-fm. sounding charted in lat. 48°38.44' long. 123°11.09' from H-2215 should be disregarded. It is discredited in its charted position by the hydrography of the present survey, and is considered to have been incorrectly located on the steep slope. ✓

(6) The 5½-fm. sounding charted in lat. 48°37.49', long. 123°09.04' from H-2215 is discredited in its charted position by 8-11-fm. depths on the present survey and should be disregarded. ✓

(7) In lat. 48°37.48', long. 123°09.20' to lat. 48°37.54', long. 123°09.17', the charted 14 and 15-fm. soundings and the uncharted 16 and 24-fm. soundings are discredited, in their positions on H-2215, by the present hydrography. ✓ These soundings should be about 40-50m. south of their prior position, in an area of comparable depths on the present survey.

.40' Jma.

(8) The 6 3/4-fm. sounding charted in lat. 48°37.43', long. 123°06.75' from H-2214 was plotted out of position on that survey. Plotted about 50 meters farther inshore in accordance with the recorded information, the 6 3/4 fms. falls in present depths of about 11 fms. The prior sounding, 7 fms. 3 ft, unreduced, was probably erroneously recorded for 11 fms. 3 ft. and should be disregarded.

Several soundings have been carried forward where needed as the least depths yet found on rocky shoals, or to show projecting ledges not otherwise completely defined. With those additions the present survey supersedes these prior surveys for charting their common areas.

C) H-4607 (1926) 1:20,000

The few soundings from this prior survey which fall in the area of H-8116 are in harmony with present depths. The present survey supersedes this prior survey for charting their common area.

6. Comparison with Chart 6379 (print date 11/18/57)
Chart 6380 (" " " 11/25/57)

A) Hydrography

Most of the charted hydrography originated with the prior surveys previously discussed and needs no further consideration.

A number of critical soundings have been charted through preliminary application of the present survey before verification. Only minor changes have been made in verification and review, with the following exception:

(1) The 7-fm. sounding charted in lat. 48°39.14', long. 123°07.4', from the penciled smooth sheet was found to have been incorrectly reduced. It was actually a 17-fm. sounding. The "7" should be expunged from the charts.

(2) The 3/4-fm. sounding charted in lat. 48° 37.33', long. 123°08.38' from the penciled smooth sheet has been revised to 1.3 fms.

The present survey is adequate to supersede the charted information.

B) Topography

Attention is called to the changes made by the hydrographer to preliminary rock information charted from advance prints of the photogrammetric surveys. The following important revisions are noted:

(1) The bare rock charted in lat. 48°37.25', long. 123°06.10' from advance print of T-5591 was revised by the hydrographer to a rock awash, bare 6 ft. at mean lower low water.

(2) The 3 rocks awash charted in the vicinity of lat. 48°37.2, long. 123°10.8' and the rock awash charted in lat. 48°36.97', long. 123°10.98' from the advance print of T-5590 do not exist and should be expunged from the charts.

C) Aids to Navigation

Danger Shoal Lighted Bell buoy was found to be located in substantial agreement with its charted position and adequately marks the feature intended.

The black can buoy "1" charted in lat. 48°37.52', long. 123°09.71', was found to be about 60 m. southwest of its charted position. The charted position adequately marks the feature intended.

7. Condition of Survey

A) The field records and Descriptive Report are complete and comprehensive.

B) The smooth sheet plotting was satisfactory.

C) Errors of 3- to 10-fms. in the reduction of soundings averaged about one per volume for the first ten volumes of soundings. Several sections of lines were found to be scanned from the wrong phase on the fathograms and were revised in the Washington Office.

8. Compliance with Project Instructions

This survey adequately complies with the project instructions.

9. Additional Field Work Recommended

This is a good basic survey. However, verification or disproval of the 0.6-fm. sounding carried forward from H-2214 in lat. 48°39.53', long. 123°08.4' is desirable.

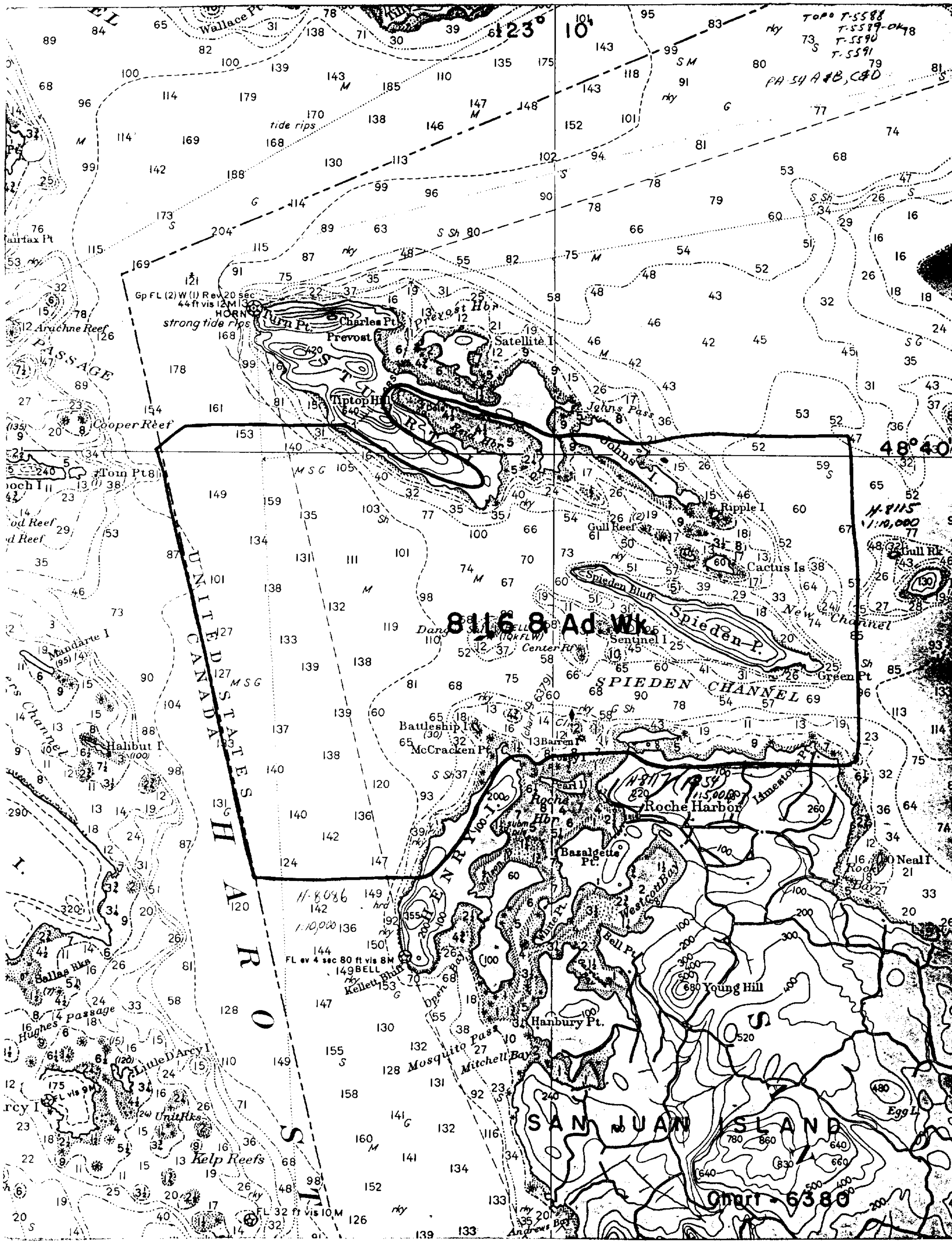
Examined and approved:

Max G. Ricketts
Chief, Nautical Chart Branch

Charles A. Schanck
Chief, Division of Charts

Karl B. Jeffers 2/20/58
Chief, Hydrography Branch

Samuel B. Grenell
Chief, Division of Coastal Survey


Topo T-5588
T-5589-OK
T-5590
T-5591
PH-54 A&B, C&D
123°
10'
48°40'
8116 8 Ad. Wk.
H-8115
1:10,000
H-8117 (1954)
1:15,000
H-8086
1:10,000
Chart - 6380
Wallace Pt
tide rips
strong tide rips
Turn Pt.
Charles Pt
Prevost
Prevost Hbr
Satellite I.
Tiptop Hill
Stuart I.
Reid Hbr
Johns Pass
Johns I.
Ripple I
Gull Reef
Cactus Is
Gull Rk
Spieden Bluff
Spieden P.
Sentinel I
Center Rf
New Channel
Green Pt
SPIEDEN CHANNEL
Battleship I
McCracken Pt
Barren I
Pearl I
Roche Hbr
Roche Harbor
Henry I.
Bazalgette Pt.
Westcott Bay
Bell Pt
Limestone Pt
Young Hill
Kellett Bluff
Open Bay
Hanbury Pt.
Mosquito Pass
Mitchell Bay
SAN JUAN ISLAND
Andrews Bay
Neal I
Roche Bay
Egg L
UNITED STATES
CANADA
HARO STRAIT
Arachne Reef
PASSAGE
Cooper Reef
Tom Pt
Fairfax Pt
Mandarte I
Halibut I
Sallas Rks
Hughes Passage
Little D'Arcy I
D'Arcy I
Unit Rks
Kelp Reefs
Gp FL (2) W (1) Rev 20 sec
44 ft vis 12 M
HORN
FL ev 4 sec 80 ft vis 8 M
FL 32 ft vis 10 M
BELL

NAUTICAL CHARTS BRANCH

SURVEY NO. H-8116

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
6/19/57	6379	J.T. McGann	Before ~~After~~ Verification and Review Partially applied.
8-7-57	6300	Earl M. Brogy	~~Before~~ [illegible] Verification and Review Cert changes thru cht 6380 & 6379
8-8-57	6380	Chas R. Wittman	Before ~~After~~ Verification and Review thru cht 6379
7/30/58	6380	John M. McAlinden	Des. Report ~~Before~~ After Verification and Review Examined smooth sheet and made some corrections JMM
8-17-58	6300	R.K. de Lander	Des Report ~~Before~~ After Verification and Review. Appd thru Cht 6380 dwg #22
2/3/60	6379	M. Rogers	~~Before~~ After Verification and Review (Completely appld)
2/25/60	6380	M. Rogers	Completely appld thru cht. 6379 ~~Before~~ After Verification and Review
12/16/60	6300	M. Rogers	Fully appld ~~Before~~ After Verification and Review thru dg. #24, chart 6380
6/16/79	18433	Stephen M. Hill	FULLY Applied ~~Before~~ After Verification and Review
		7-13-79 - RJS	Fully Applied ~~Before~~ After Verification and Review
5/14/79	18432	Costa	Fully applied after Verification & Review

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.

8116
Additional work

Diag. Cht. No. 6380-2.

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Special Investigation

Field No. ..... Office No. H-8116 AD.WK. (1958)

LOCALITY

State Washington

General locality San Juan Islands

Locality Johns Island

19 58

CHIEF OF PARTY

F. N. Natella

LIBRARY & ARCHIVES

DATE November 14, 1958

8-1870-1 (1)

8116
Additional work

No signatures required on Director's

DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

POST-OFFICE ADDRESS:
TELEGRAPH ADDRESS:
EXPRESS ADDRESS:

USC&GS SHIP BOWIE
705 Federal Office Bldg.
Seattle 4, Washington

5 November 1958

To: The Director
Coast and Geodetic Survey
Department of Commerce Bldg.
Washington 25, D. C.

Subject: Hydrographic Investigation of Shoal Sounding, Project: CS-241.

Reference: Supplemental Instructions, Project CS-241, SAN JUAN ISLANDS, dated 15 August 1958.

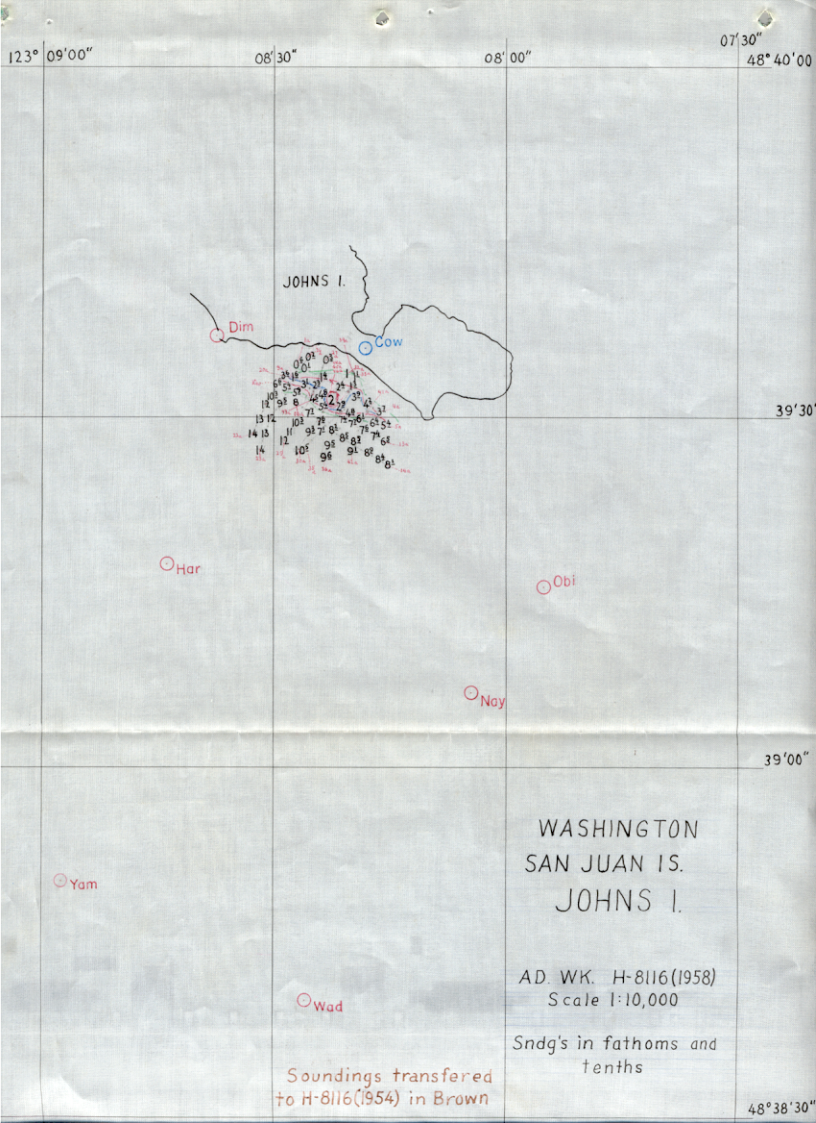
The investigation of the 1/2 fathom sounding on Chart 6379 called for in paragraph 7 of Reference Instructions was made on 20 October 1958. A limited but well controlled hydrographic survey of the immediate area was made. Enough white washes of the 1954 survey were recovered and brightened to adequately control the sounding lines.

The results of this investigation are enclosed. The "boat sheet" and signals were pricked through from the print of the 1954 smooth sheet. Signal names correspond to the original ones. Predicted tides as referred to Friday Harbor were used to reduce the soundings.* The least depth found (reduced) was 2.0 fathoms. The surface was calm and smooth. Besides a system of closely spaced lines the launch was allowed to drift over the area.- with the fathometer operating continuously - and detached positions taken where the bottom was plainly visible. The bottom could be seen only in the immediate area of the shoalest sounding.

It is felt that the existence of the 1/2 fathom sounding has been definitely disproved and should be stricken from the charts.

*actual tides used in final reduction.

Fred Natella
Fred Natella
CDR, C&GS
Commanding Ship BOWIE


123° 09'00"
08'30"
08'00"
07'30"
48° 40'00
39'30"
39'00"
48°38'30"
JOHNS I.
Dim
Cow
Har
Obi
Nay
Yam
Wad
WASHINGTON
SAN JUAN IS.
JOHNS I.
AD. WK. H-8116(1958)
Scale 1:10,000
Sndg's in fathoms and tenths
Soundings transfered to H-8116(1954) in Brown

R4C

Form 712
(11-30-55)

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Chart Division: R. H. Carstens 12 January 1959

Plane of reference approved in
1 volumes of sounding records for

HYDROGRAPHIC SHEET 8116 Ad. Wk.

Locality Johns Island, San Juan Islands, Washington

Chief of Party:

Plane of reference is mean lower low water

ft. on tide staff at

ft. below B.M.

Height of mean high water above plane of reference is 6.9 feet.

Condition of records satisfactory except as noted below:

William Hoffmeister
Signature

Chief, Tides Branch

Comm-DC 34330

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. 8116 Ad. Wk.

Records accompanying survey:

Boat sheets 1...; sounding vols. ....1; wire drag vols. .....;

bomb vols. .....; graphic recorder rolls 1-Envelope

special reports, etc. 1-Descriptive report and 1-Print H-8116...

.....

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

Number of positions on sheet		46
Number of positions checked		46
Number of positions ~~revised~~ plotted		46
Number of soundings revised (refers to depth only)		0
Number of soundings ~~erroneously~~ spaced		All
Number of signals erroneously plotted or transferred		0
Topographic details	Time	½
Junctions	Time	2
Verification of soundings from graphic record	Time	1

Verification by Chester F. Kupiec Total time 10 hrs Date 2-5-59

Reviewed by [signature] CCC Time 2 Date 2/18/59

0≤ fath sndg transfered in in red violet from H-2214(1894) Disproved.

2 fath sndg from Ad. Wk H-8116(1958) shown on H-8116(1954) in Brown.

0⁶ removed from sheet; sdgs from Add. Wk. shown in brown.

M-2232-1

H-8116 Additional Work 1958

1. This additional work was specified in the Supplemental Instructions for Project CS-241 dated 15 August 1958.

2. The 1958 work was the development of the vicinity of a 1/2-fm. sounding, charted in lat. 48° 39.53', long. 123° 08.4' from H-2214 (1894). This sounding was neither confirmed nor conclusively disproved by the original hydrography of H-8116 (1954).

3. The area in question was well developed by sounding lines and fathometer drift-sounding. The bottom was visible at the location of the least depth of 2 fms. obtained by this investigation.

4. The existence of the 1/2-fm. sounding at this location is considered adequately disproved. The sounding should be deleted from the charts.

5. This 1958 work has not been charted.

6. The additional work is plotted on a cloth tracing attached to the Descriptive Report. Supplementary soundings have been added in color to smooth sheet H-8116.

Reviewed by

L. V. Evans III

Inspected by

R. H. Carstens

NAUTICAL CHARTS BRANCH

SURVEY NO. 8116 Ad. WK.

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
6/26/59	6380	M. Rogers	~~Before~~ After Verification and Review Replaced ½ fm depth with a 2 fm depth.
2/3/60	6379	M. Rogers	~~Before~~ After Verification and Review (Completely appld)
2/25/60	6380	M. Rogers	Completely applied from chart 6379 ~~Before~~ After Verification and Review
12/16/60	6300	M. Rogers	Fully applied ~~Before~~ After Verification and Review Chan Dig #24 ch 6380
5-29-79	18433	Stephen Hill	Fully applied 5-29-79 RCS ~~Before~~ After Verification and Review
—		7-13-79 RCS	Fully Applied ~~Before~~ After Verification and Review
5/14/79	18432	Corrected	~~Before~~ After Verification and Review
			Fully Applied Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review

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.