

WIRE DRAG 6819

WIRE DRAG
6819

Form 504	
U. S. COAST AND GEODETIC SURVEY	
DEPARTMENT OF COMMERCE	
DESCRIPTIVE REPORT	
Type of Survey	Hydrographic - Wire Drag
Field No.	2142 WD
Office No.	H-6819
LOCALITY	
State	Washington
General locality	Strait of Juan de Fuca
Locality	Hein Bank ^{and} Middle Bank & vicinity
1942-43	
CHIEF OF PARTY	
J. H. Peters	
LIBRARY & ARCHIVES	
DATE	

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO.
H6819
WIRE DRAG

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

Field No. 2142 WD

REGISTER NO. H-6819

State Washington

General locality Strait of Juan de Fuca

Locality Main Bank ^{and} Middle Bank and Vicinity

Scale 1:20,000 Date of survey Dec. 1942 - Jan., 1943

Vessel EXPLORER

Chief of Party J. H. Peters

Surveyed by S. B. Grenell, H. S. Cole, H. B. Brown, G. R. Shelton

Protracted by P. M. Fisher

Soundings penciled by P. M. Fisher

Soundings in ^{feet} ~~fathoms~~ XXXX Drag depths in feet

Plane of reference MLW

Subdivision of wire dragged areas by P. M. Fisher

Inked by R. D. Goodrich

Verified by R. D. Goodrich

Instructions dated Sept. 22, 1939, Aug. 29, 1942, 19

Remarks: smooth sheet and plotting by Seattle Processing Office.



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DESCRIPTIVE REPORT

WIRE DRAG SHEET 2142

HEIN BANK:

All work on this sheet was done with the standard wire drag using launches No's. 1 and 4 from the Ship EXPLORER, with motorwhaleboat No. 5a for a tender. The dragging was started on the north side of the shoal with special attention to covering the "reported" shoal soundings (1 3/4 and 3 2/5 fathoms) with a deep drag. These reported shoals were covered by two strips - the deeper of which were 48' and 40' respectively.

There were several groundings north and east of the buoy, but these were in approximately the depths charted and were later cleared by shoaler drags and require no special comment.

The "reported" shoal sounding of 3, 4 1/2, and 5 fathoms southeast of the buoy were cleared by a drag strip of 40 feet with no indication of grounding.

There is an area of small kelp patches about ⁵⁰⁰⁻⁶⁰⁰ 300 meters S and S by W of the buoy where considerable investigation was made with the hand lead before dragging. These soundings are recorded on "e" day. The drag grounded near this point twice on "e" day, but no shoal sounding could be secured. It is recommended that a depth two feet shoaler than the shoalest drag ground (34') be charted at the recorded position of the ground.

H.L. sdgs of 33' & 35' considered adequate

Another area of small kelp patches ⁵⁴⁰ 270 meters SE of the buoy was also investigated by handlead and a least depth of 5 5/6 fathoms found. A 34' foot drag later hung in this vicinity on what felt like wreckage to the hand lead. No sounding shoaler than the drag was secured. The area was later cleared at 25 feet.

The critical depth found on this bank was a sounding ("m" day) of 2 1/6 fathoms on the charted 2 1/4 fathoms just southeast of the buoy. This sounding was on a visible pinnacle and was later cleared by a drag of 12 1/2 feet.

The main difficulty in dragging this bank was the current which reached velocities of 3 and 4 knots over the shoaler areas. This made it very difficult to secure good hand lead soundings on the places where the drag grounded. Also, these grounds were generally on small, rocky pinnacles surrounded by flat sand areas considerably deeper than the drag setting, thus raising the doubt that the soundings obtained were the

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least depth on the pinnacle. It was impossible in many cases to secure soundings as shoal as the effective depth even when the ground wire was "followed" by the hand lead.

In view of the above, it is recommended that depths of 1 foot less than the effective depth of the drag at the ground be charted, except in special cases noted heretofore, and in the case of the 13' sounding on the visible rock cleared at 12 ~~1~~2 feet. *Groundings shown on smooth sheet are actual effective depths*

MIDDLE BANK:

Three strips were taken over this bank at approximately 55' effective depth. There were no grounds. The westerly strip on "h" day was dragged against a stiff easterly current, and the launch was unable to hold the drag against the current - hence the incomplete coverage of the west side of the shoal.

The apparent split on "k" day is not actually a split, because there was a tension on the drag at all times, and the current swept the bight to the south on the reverse at positions 5-6 so the complete area between beginning and ending is covered. See note on boat sheet.

Small split still considered to remain

CHARTED 8 FATHOM BANK:

$\phi 48^{\circ} 26.77'$, $\lambda 123^{\circ} 07.74'$ *9 E. fms.*
The charted 8 fathoms SW of Pile Point was cleared at 59' effective *8 fms. 389*
depth - disproving the charted 8 fathoms. This area was later developed *disproved.*
by ship and launch on sheet 2142. No special comment is needed. *Details in*
review of
H-6818 (1942)

S. B. Grenell, Lieut. Comdr.,
U.S. Coast and Geodetic Survey.

Approved:


J. H. Peters, Comdg.,
U.S.C. & G.S.S. EXPLORER.

C O P Y

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FIELD NOTES ON TIDE REDUCERS

Tide observations in conjunction with the winter season's work (1942-43) of the Ship EXPLORER were made at Richardson, Lopez Island, and Kanaka Bay, San Juan Island. A portable type tide gage was operated at Richardson from December 4, 1942 to February 27, 1943. At Kanaka Bay a tide staff was established on December 10, 1942 and was observed only while work was being done in the area in which the station was considered needed. The staff at Kanaka Bay was destroyed by storm during the period January 12 to February 3, 1943, and was not replaced.

Wire drag work done on sheet ^{H-6819} 2142 at the 8 fathom bank off File Point, Middle Bank, and all ship and launch ~~work~~ development on this same sheet will be reduced according to the staff at Kanaka Bay up to the time the staff was destroyed January 12, 1943. Work done at these places after February 12, 1943 to February 27, 1943 is to be reduced to the Richardson gage, the difference between Richardson and Kanaka Bay being so small that the results did not warrant re-establishment of the staff at Kanaka Bay. A comparison of the two stations shows a difference of time of approximately 10 minutes and little or no difference in the range.

Other work on this project not listed above as being reduced to Kanaka Bay tides are reduced to Richardson tides.

Richardson staff reading of M.L.L.W. 0.24 feet
Latitude, approximate. 48° 27'
Longitude, approximate 122° 54'

(Signed) J. H. Peters, Comdg.,
U.S.G. & G.S.S. EXPLORER

WIRE DRAW
#6819

POST-OFFICE ADDRESS:

TELEGRAPH ADDRESS:

G O P Y

EXPRESS ADDRESS:

Reference 36-mlh

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
WASHINGTON

April 27, 1943

To: Officer in Charge
Seattle Processing Office
1500 Westlake Avenue No.,
Seattle, Washington

From: The Director
U. S. Coast and Geodetic Survey

Subject: Tide Reducers - Project CS 241.

Reference is made to your letter of April 21, 1943, requesting verification of tide reducers from field tabulations of tide records for Richardson, Washington for 1942 and 1943.

An examination of the original tide records for Richardson shows that due to the relatively high elevation of the zero of the tide staff, the field party found it necessary to increase staff readings by two feet to accommodate them to the height scale of the marigrams. In subsequent field tabulations of hourly heights two different datums were used, accounting for the difference of two feet in the planes of reference for different dates.

Tabulated heights for December 1942, with the exception of December 11th, were referred to the zero of the marigrams which corresponds to an elevation of 2.24 feet below mean lower low water. Tabulated heights for January and February 1943 and for the single date of December 11, 1942 were referred to the zero of the tide staff which corresponds to an elevation of 0.24 foot below mean lower low water. The reducers determined by the field party have been verified from office tabulations and are returned herewith.

(Signed) J. H. Hawley
Acting Director

Enclosure

G O P Y

WIRE DRAG
H6819

LIST OF SIGNALS - H-6819

TRIANGULATION STATIONS:

LINE KILN 1942

EDWARDS 2 1942

PILE POINT 1894

SAN JUAN 1867

House near Ficketts Monument 1943
(4th order)

CATTLE POINT L.H. 1940

SMITH I. L.H. 1867

DISCOVERY I. L.H. 1942

TOPOGRAPHIC SIGNALS

Tank T-6907 (1942-43)

Bald T-6907 "

Hum T-6906 "

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TIDAL NOTE - H-6819

Strait of Juan de Fuca, Washington

Richardson, Lopez Island, Washington
Portable Automatic Gage:

Latitude 48° 27' Longitude 122° 54'

Staff reading of M.L.L.W. 0.24 ft.
(See copy of letter attached)

Kauka Bay, San Juan Island, Washington
Staff:

Latitude 48° 29' Longitude 123° 05'

Staff reading of M.L.L.W.

WIRE DRAG
H-6818

GUIDE LAUNCH BOAT SHEET

(1942-43)

The party had a sounding sheet 2142 (H-6818) and a wire drag sheet 2142 WD (H-6819). The guide launch used a boat sheet of H-6818 for the drag work of H-6819. H-6818 is in process and the Guide Launch boat sheet will be retained until plotting has been completed.

boat sheet was available at time of verification

STATISTICS

Statute miles of drag strip	31.5
Number of positions	291
Area, square statute miles.	12.25

Edgar E. Smith
 Edgar E. Smith
 Assoc. Cartographic Engr.

Approved and forwarded:

F. H. Hardy

F. H. Hardy
Officer in Charge
Seattle Processing Office

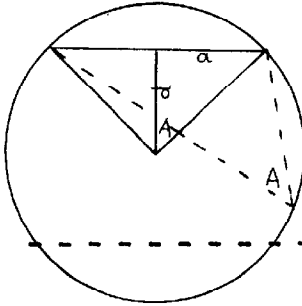
~~6738~~

6819

WIRE DRAW

CIRCLES FOR HEIN BANK SHEET

Computed distances in meters from the foot of the perpendicular bisector to the center of the arc of equal angles.



$$d = \frac{a}{\tan A}$$

	Cattle Pt. to Smith Id. L. H.	Cattle Pt. to Discovery Id. L. H.
Distance - Meters	17,117.9	19,655.1
a = Half Distance	8,559	9,827.6
Log half distance	3.932 4230	3.992 4475

Angle	d (Meters)	d (Meters)
55°	5993.1	
56	5773.1	
57	5558.3	
58	5348.3	
59	5142.8	
60	4941.6	5674.0
61	4744.3	5447.5
62	4550.9	5225.4
63	4361.0	5007.4
64	4174.5	4793.2
65	3991.1	4582.7
66	3810.7	4375.5
67	3633.1	4171.6
68	3458.1	3970.6
69	3285.5	3772.5
70	3115.2	3578.9
71	2947.1	3383.9
72	2781.0	3193.2
107 & 73	2616.8	3004.6
106 & 74	2454.2	2818.0
105 & 75	2293.4	2633.3
104 & 76	2134.0	2450.3
103 & 77	1976.0	2268.9
102 & 78	1819.3	2088.9
101 & 79	1663.7	1910.3
100 & 80	1509.2	1732.9
99 & 81	1355.6	1556.5

~~6738~~

6819

~~6738~~
6819
WIRE DATA

	Cattle Pt. to Smith Id. L. H.	Cattle Pt. to Discovery Id. L. H.
Angle	d (Meters)	d (Meters)
98 & 82°	1202.9	1381.2
97 & 83	1050.9	1206.7
96 & 84	899.6	1032.9
95 & 85	748.8	859.8
94 & 86	598.5	687.2
93 & 87	448.6	515.0
92 & 88	298.9	343.2
91 & 89	149.4	171.5
90	0	0

~~6738~~

POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

α	to 3	β	γ	δ	ϵ	ζ	η	θ	ι
1	2	3	4	5	6	7	8	9	0
α	β	γ	δ	ϵ	ζ	η	θ	ι	κ
180	00	00.0	180	00	00.0				

FIRST ANGLE OF TRIANGLE

ϕ	λ	Δ	σ	τ
19	19	19	19	19
48	48	48	48	48
27	27	27	27	27

VALUES IN SECONDS

ϕ	λ	Δ	σ	τ
19	19	19	19	19
48	48	48	48	48
27	27	27	27	27

α	to 3	β	γ	δ	ϵ	ζ	η	θ	ι
1	2	3	4	5	6	7	8	9	0
α	β	γ	δ	ϵ	ζ	η	θ	ι	κ
180	00	00.0	180	00	00.0				

VALUES IN SECONDS

ϕ	λ	Δ	σ	τ
19	19	19	19	19
48	48	48	48	48
27	27	27	27	27

55 4.223343 06
 $\sin \alpha = 0.9999992421$
 $\cos \alpha = 0.0000007579$
 $\tan \alpha = 131.0808498$
 $\sin \delta = 0.9999992421$
 $\cos \delta = 0.0000007579$
 $\tan \delta = 131.0808498$
 $\sin \epsilon = 0.9999992421$
 $\cos \epsilon = 0.0000007579$
 $\tan \epsilon = 131.0808498$
 $\sin \zeta = 0.9999992421$
 $\cos \zeta = 0.0000007579$
 $\tan \zeta = 131.0808498$
 $\sin \eta = 0.9999992421$
 $\cos \eta = 0.0000007579$
 $\tan \eta = 131.0808498$
 $\sin \theta = 0.9999992421$
 $\cos \theta = 0.0000007579$
 $\tan \theta = 131.0808498$
 $\sin \iota = 0.9999992421$
 $\cos \iota = 0.0000007579$
 $\tan \iota = 131.0808498$
 $\sin \kappa = 0.9999992421$
 $\cos \kappa = 0.0000007579$
 $\tan \kappa = 131.0808498$

Surveys Section (Chart Division)

HYDROGRAPHIC SURVEY NO. **H6819**
WIRE DRAG

Records accompanying survey:

Boat sheets ¹ additional with 6818; sounding vols. 0...; wire drag vols. 5. (1 is Tender record for 6820)
 bomb vols. 0....; graphic recorder rolls ...0.;
 special reports, etc. A.&D. Sheet, Tracing, (Folders on Tidal data & Fath corrections filed with 6818) Tracing,

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

Number of positions on sheet	.....	292
Number of positions checked	.....	38
Number of positions revised	.....	9
Number of soundings recorded	.....	21
Number of soundings revised (refers to depth only)	.....	1
Number of soundings erroneously spaced	.....	—
Number of signals erroneously plotted or transferred	.....
Topographic details	Time	2 hrs.
Junctions	Time	0
Verification of soundings from graphic record	Time	0

Verification by R. D. Goodrich.... Total time 58 hrs. Date 1/30/46

Review by R. H. Carstens.... Time 28 hr Date March 4, 1946

H. 819
WIRE DRAU

Remarks

Decisions

	Remarks	Decisions
1		
2		
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GEOGRAPHIC NAMES

Survey No. H 819

WIRE DRAW

Name on Survey	Source											
	A	B	C	D	E	F	G	H	K			
<u>Washington</u>											Use 8	1
<u>Straight of Juan de Fuca</u>											"	2
<u>Hein Bank</u>												3
<u>Middle Bank</u>												4
												5
												6
												7
												8
												9
<u>Richardson</u>												10
<u>Kanaka Bay</u>												11
												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25
												26
												27

Names underlined in red approved
by L. Heck on 2/25/46

location of t/sp.

RQC
RHE

TIDE NOTE FOR HYDROGRAPHIC SHEET

July 22, 1943

~~Division of Hydrography and Topography:~~

✓ Division of Charts: Attention: H. R. EDMONSTON

Plane of reference approved in
5 volumes of sounding ^{wire drag} records for

HYDROGRAPHIC SHEET 6819

Locality Strait of Juan de Fuca, Hein Bank, Middle Bank & Vicinity, Wash.

Chief of Party: J. H. Peters 1942-1943
Plane of reference is mean lower low water reading
0.2 ft. on tide staff at Richardson
15.3 ft. below B. M. 1
-0.4 ft. on tide staff at Kanaka Bay
13.7 ft. below B. M. 1

Height of mean high water above plane of reference is 6.6
ft. at Richardson; 6.4 ft. at Kanaka Bay.

Condition of records satisfactory except as noted below:

Hau

Acting Chief, Division of Tides and Currents.

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
DESCRIPTIVE REPORT
PHOTOSTAT OF

No. H **H6819**
No. T **182**

{ received July 18, 1943
registered July 19, 1943
verified
reviewed
approved

This is forwarded in order that your attention may be directed to the matters as indicated below. Please initial in column 3 as an acknowledgement that your attention has been thus directed. The complete original records are available if desired. If you cannot give this your immediate attention, please initial, note, and forward to the next section marked, calling for the records at your convenience.

ROUTE		Initial	Attention called to
20			
22			
24			
25			
26			
30			
40			
62			
63			
82			
✓ 83	Pg 182	SBL	
88			
90			

RETURN TO

82	R.W.Kno x
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DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. 6819 W.D.

FIELD NO. 2142 W.D.

Washington, Strait of Juan de Fuca, Hein Bank and Middle Bank
Surveyed in Dec. 1942 - Jan. 1943 Scale 1:20,000
Project No. CS-241

Soundings:

Control:

Hand lead

Sextant fixes on shore signals

Chief of Party - J. H. Peters
Surveyed by - S. B. Grenell, H. S. Cole, E. B. Brown and G. R. Shelton
Protracted by - P. M. Fisher
Soundings plotted by - P. M. Fisher
Verified and inked by - R. D. Goodrich
Reviewed by - R. H. Carstens, Feb. 25, 1946
Inspected by - H. W. Murray

1. Shoreline and Signals

The shoreline and signals originate with T-6906 and T-6907 of 1942-43.

The computations for circles of equal angles are contained in the descriptive report.

2. Adjoining Surveys

There are no adjoining wire drag surveys in this area.

3. Comparison with Hydrographic Surveys

H-2211 (1894)	1:40,000
H-4607 (1926)	1:20,000
H-6653 (1940-43)	1:40,000
H-6738 (1942-43)	1:20,000
H-6818 (1942-43)	1:20,000

The 2-2/6-fm. sounding on H-6738 (1942-43) in lat. $48^{\circ} 20.83'$, long. $123^{\circ} 02.66'$, carried forward from H-2212a (1904), was cleared by an effective depth of 25 feet and therefore is considered disproved. The sounding probably should fall on the present 2-1/6-fm. rock 100

meters to the north.

The 8-fm. sounding in lat. $48^{\circ} 26.77'$, long. $123^{\circ} 07.74'$ on H-4607 was cleared by an effective depth of 59 ft. and is considered dis- proved. Additional details are given in the review of H-6818, item 5c (2).

Except for the above 2-2/6-fm. and the 8-fm. soundings, the depths on these hydrographic surveys are in harmony with the effective depths of the present survey.

4. Comparison with Chart 6382 (Latest print date August 4, 1945)

The charted depths originate with the surveys considered in paragraph 3 above and need no further consideration.

The present survey positions of aids to navigation are in satisfactory agreement with the charted positions.

5. Condition of Survey

The descriptive report and sounding records are complete and comprehensive.

The plotting was satisfactorily accomplished.

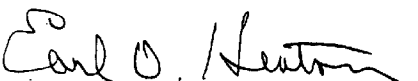
6. Compliance with Instructions for the Project

The survey complies with the instructions except for the deficiencies noted in the following paragraph.

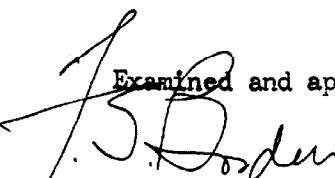
7. Additional Field Work Recommended

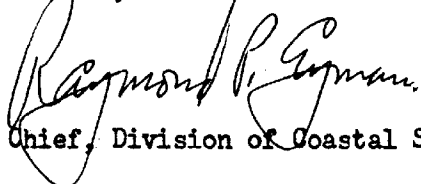
As a matter of record it is noted that there are two splits on Hein Bank, and an area of insufficient overlap in lat. $48^{\circ} 20.22'$, long. $123^{\circ} 04.25'$. There is also a split and an area of insufficient overlap on Middle Bank in the vicinity of lat. $48^{\circ} 25.0'$, long. $123^{\circ} 05.6'$. No additional field work is recommended.


Chief, Nautical Chart Branch


Chief, Section of Hydrography

Examined and approved:


Chief, Chart Division


Chief, Division of Coastal Surveys

NAUTICAL CHARTS BRANCH

SURVEY NO. 68194B

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
<i>4/5/46</i>	<i>6380</i>	<i>A. F. Stegman</i>	Before After Verification and Review <i>completely applied</i>
<i>4/5/46</i>	<i>6382</i>	<i>A. F. Stegman</i>	Before After Verification and Review " "
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
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			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.

NAUTICAL CHARTS BRANCH

SURVEY NO. 6819

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
4/10/47	6300	H. E. MacEwen	Before After Verification and Review No Cor.
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
6380			Before After Verification and Review <i>See 2nd page after tide note</i>
6382			Before After Verification and Review
4. 10. 80	NEW CHART 18434	P. SHUMAR	FULLY APPLIED AFTER VERIF. & 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.

Partially applied before review 12/2/43 JHE.

Sdg. added to chart 6380

$5\frac{5}{6}$ in Hein Bank at $48^{\circ}-20.6$; $123^{\circ}-03.0$

Partially applied, before review, to ch. 6382 JAM. 12/18/43.

Examined - no correction before review to Ch. 6300 by P.H. Andros
per BR 4/19/45.