

4159

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G. & G. SURV  
L. & A.  
APR 4 - 1921  
Aut. No.

Form 504  
DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

State: *N. E. Alaska*

11-5613

DESCRIPTIVE REPORT.

W. D. Sheet No. *4159*

LOCALITY:

*Dixon Entrance -  
Capn Chacon and  
Nichols Bay*

*1920*

CHIEF OF PARTY:

*T. J. Maher*

4159

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The finished Hydrographic Sheet is to be accompanied by the following title sheet, filled in as completely as possible, when the sheet is forwarded to the Office.

U. S. Coast and Geodetic Survey.

Register No. ~~4161~~ <sup>4159</sup> (WIRE DRAG)

State Alaska, SE . . . . .

General locality Dixon Entrance . . . . .

Locality Cape Chacon and Nichols Bay . . . . .

Chief of party T. J. Maher, H. & G. E. . . . . .

Surveyed by F. L. Peacock, G. L. Bean . . . . .

Date of survey July, August, 1920 . . . . .

Scale 1:20,000 . . . . .

Soundings in . . . . .

Plane of reference M.L.L.W. Staff in Nichols Bay . . . . .

Protracted by C. E. C. . . . . Soundings in pencil by - . . . .

Inked by C. E. C. . . . . Verified by G. L. B. *RLG* . . . .

Records accompanying sheet (check those forwarded):

Des. report, 3 Tide books, \_\_\_\_\_ Marigrams, x Boat sheets,

\_\_\_\_\_ Sounding books, 8 Wire-drag books, \_\_\_\_\_ Photographs.

Data from other sources affecting sheet Hydrographic Sheet #2 A

Remarks:

DIRECTOR  
HYDROGRAPHIC  
SALES  
GEODESY

DEPARTMENT OF COMMERCE  
U.S. Coast and Geodetic Survey  
Col. E. Lester Jones, Director.

APR 4 11 21 AM '21

DESCRIPTIVE REPORT

to accompany  
Wire Drag Sheet

Cape Chacon and Vicinity  
Prince of Wales Island, S.W. Alaska

T. J. MAHER,  
H. & G. Engr.,  
Chief of Party.

## DESCRIPTIVE REPORT

### WIRE DRAG

Cape Chacon and Vicinity, Prince of Wales Id. S.E. Alaska.

**LIMITS.** - From Cape Chacon northward one dragged strip about 1/2 mile wide extends about 3 miles. The shore edge of this strip is about 1 mile offshore at the north end and four tenths of a mile offshore at the Cape.

At the Cape the dragged area extends about 2 miles to the southward and from this point extends westward to Lat.  $54^{\circ} 39'$  N. and Long.  $132^{\circ} 06'$  W. Thence to Lat.  $54^{\circ} 40'$  N. and  $132^{\circ} 10'$  W. Nearly all of the area between this limit and the shore was dragged and a line run into the entrance of Nichols Bay to within fourtenths of a mile of the anchorage.

**EQUIPMENT AND ORGANIZATION.** - Guide Launch: DELTA, G. L. Bean, H. & G. Engr. in Charge, right angle and plotting, except a few days with Capt. T. J. Maher, H. & G. Engr., in Charge, E. C. Bennett left angle and recording.

End Launch: #117, F. L. Peacock, H. & G. Engr., in Charge, right angle and plotting, C. E. Christopherson, left angle and recording part of the time.

Tender: Gasoline launch #38.

Ground wire: Usual 7 strand steel wire.

Buoys: Metal.

Floats: Wood.

The drag was set out and taken in entirely from the guide launch with a hand power wooden reel.

The drag was controlled from the guide launch by wig-wag signals in Morse Code and the positions were plotted on both launches.

Both steam launches were found to lack sufficient power to handle the drag properly when a strong current was encountered.

The gasoline tender #38 could not be depended upon and it was found necessary to do without a tender the greater part of the time.

The ground wire was old and caused considerable trouble by stranding and parting. The upright wire was also old and nearly all of the uprights had to be spliced, making it difficult to change the hook up. They were also badly worn and often parted.

**METHOD.** - The launch Delta was fitted with a trough fore-and-aft and a wooden hand power reel mounted in the after part. It was necessary to build a platform over the stern to give enough stowage room for buoys and to handle

the drag. The usual form of bridle was used without trip lines. It was necessary to make the hook up before leaving for the working grounds, as there was not sufficient room aboard the launch. All the wire was carried on one reel with no separate drum for the tow line so that in order to change the length of the drag all the wire had to be taken off the reel. No change of hook up could be made while the drag was out because, first, the tender was usually broken down or there was no tender at all. Secondly, the water was often too rough and, last, because many of the uprights were spliced and would not easily clear the leaders.

It was possible to drag only with the tide but so many tide rips and eddies were encountered that no certain course could be followed, in consequence of which splits were constantly being made and it was a very difficult proposition to cover these splits. It required much time to learn in which direction the tide might be expected to run and in some localities this could never be prophesied accurately. Heavy tide rips occurred at certain stages of the tide even in the calmest weather, and even a light breeze could make the water too rough for drag work. Often a heavy swell was running in calm weather. This swell would part the uprights, often causing more damage than a choppy sea would do.

It was extremely difficult to obtain sounding after the drag had grounded due to the strong currents and tide rips. If the drag grounded, it usually parted or the buoys were towed under by the tide. The tender #58 was often broken down, and if available, could not be handled well, so that it was necessary to drop one end of the drag and sound with either the guide launch or end launch. This caused much delay and expense as the end dropped usually become tangled and difficult to get up. It became the practice, when the drag grounded, to get the drag clear by the easiest method and proceed with the work, leaving the shoal to be investigated later by a hydrographic party. Consequently very few soundings were taken by the wire drag party.

At first a 3000-foot drag with 300 and 400-foot sections was used, but this was more than could be handled and was cut down to 2200 ft. A 1200-foot drag with 200-foot sections was used to drag the entrance to Nichols Bay.

A length of upright sufficient to give an effective depth of 40 feet or over was used except in the entrance to Nichols Bay where an effective depth of 20 feet or over was obtained.

After the spring tides, floating kelp caused considerable trouble, and during the latter part of July and August, fog often delayed the work. Fishing gear delayed the work on two occasions. A tide staff in Nichols Bay was observed every half hour.

CONTROL. - The usual three-point position with sextant angles was used; each launch plotting its end of the drag.

A 54-meter tow line was used.

The signals used were located by a topographic party and a few were located by triangulation. Some of the original triangulation signals were used. Most of the signals were whitewashes, but several were tripod or banner signals and a few were natural objects.

**DANGERS:** Due to bad equipment and the lack of a good tender, hookups could not be made on the working ground so that little could be done in the way of developing shoals. Following is a list of dangers in this area.

Two hundred meters S.E. x S. (true) from Cape Chacon is a rock awash at extreme low water. Lat.  $54^{\circ} 41' 512$  m. N. Long.  $132^{\circ} 00' 909$  m. W. There is a deep water around this rock. It was dragged to within 100 meters on the east and west and 300 meters to the south. It was not dragged between it and the Cape. ✓

Nunez Rocks lie about 1-1/2 miles south (true) of Pt. Nunez, Lat.  $54^{\circ} 39' 1140$  m. N. Long.  $132^{\circ} 05' 380$  m.W. They are generally covered at high water, altho, marked by very large breakers except in the calmest of weather. At low water they are 100 meters or more across. Around these rocks is a shoal area. On the west it was dragged to 150 meters of the rocks, on the south to within 225 meters, on the east to within 400 meters, and on the north to within 380 meters, 470 meters S.E. x S (true) from Nunez Rocks is a rock with 9 feet over it at M.L.L.W. This rock breaks heavily at times. Its. Lat. is  $54^{\circ} 38' 768$  m. N. Long.  $132^{\circ} 05' 195$  m. W. ✓

Four hundred fifty meters ~~west~~<sup>east</sup> of Pt. Nunez and 150 meters offshore is a rock awash at low water. Lat.  $54^{\circ} 40' 1785$  m. N. Long.  $132^{\circ} 05' 188$  m. W. ✓

Five hundred thirty meters south of the western side of the north entrance to Nichols Bay is a shoal, marked by kelp with 15 feet on it at M.L.L.W. Lat.  $54^{\circ} 41' 1325$  m. N. Long.  $132^{\circ} 05' 301$  m. W. (in H. 4166)

A little over 2 miles N.N.E. (true) of Cape Chacon is a large shoal about 1200 meters offshore. It is marked by kelp which is generally towed under by the strong tide. This shoal was developed closely by a hydrographic party and the least water found was 12 feet. (M.L.L.W.) It lies in Lat.  $54^{\circ} 43' 874$  m. N. Long.  $131^{\circ} 59' 378$  m. W. H. 4160

**CURRENTS.** - It is difficult to set down definite information concerning the direction and force of the tides in the vicinity of Cape Chacon and Nunez Rocks. They are strongly affected by storms, and being open to sea, heavy swells which follow southerly storms. The tidal currents are strong, reaching in many places an estimated velocity of from 2 to 3 knots. To give accurate data would require lengthy observations and a great deal of study. Following is general information observed while dragging.

Flood Tide. - The general direction of the flood tide is to the eastward and to the east and northeast of Cape Chacon. A larger eddie is formed around Nunez Rocks which turns toward Pt. Nunez, then westward past Bert Miller Cut Off, Pt. Nunez, Cape Chacon and northeast of Cape Chacon and south of Stone Rock.

Between the rock off Cape Chacon and the Cape the tide was observed to be running always to the westward, altho, not very strong on the last half of the flood. An estimated maximum of three to four knots was observed here. From the Cape it runs to the westward close inshore to the entrance of Nichols Bay. North of Cape Chacon an eddy run to the southward close inshore.

Ebb Tide. - The general direction of the ebb tide is to the westward. From Cape Chacon it runs in the direction of Nunez Rocks, probably forced to the southward by the current which comes from the north entrance of Nichols Bay, close inshore, as far eastward as the Cape and then turns to the southward. The current coming from the south entrance of Nichols Bay runs S.E. until met by the main current around Pt. Nunez and then turns to the westward.

West of Nunez Rocks the current runs nearly west but is affected by small eddies and the current coming from Bert Miller Cut Off.

SMOOTH SHEET. - The smooth sheet is plotted a 1:20000 projection. Many of the strips run together and are very irregular, so that it was very difficult to plot clearly. To avoid more confusion the effective depths are omitted. An effective depth of 40 feet or over was maintained except in the entrance to Nichols Bay where the effective depth is 20 feet or over.

To plot this, the position taken were plotted; this gave two lines - say A & B. "A" line was assumed correct; a line parallel to this and distant from it the full length of the drag was plotted; this gave a line "B". This line "B" was assumed correct; another line, parallel to "B" and distant from it the full length of the drag, was then plotted; this gave a line "A". Line "A" and "B" are assumed as the limits of the dragged area, the distance between "A" and "B" is 165 (max) meters less than the width of the drag. As different signals were used on the end and guide launches, the probability is that one of the lines is correct but which is not known, therefore, the full amount of the error is thrown on each line; this procedure may produce inaccurate results but only in case both lines are incorrect; this section is marked lightly with green pencil. If a wire drag party again operated in this section, (one that has a good outfit) it is suggested that the drag be towed over that section.

LIMITS. - About one mile W.S.W. (true) from the S.W. extremity of Bean Island and 1000 meters offshore is a large split 1300 meters long and 200 meters broad at the widest part.

Two and 3/4 miles W.N.W. (true) from Nunez Rocks and 1650 meters offshore is a split about 250 meters long and 150 meters wide.

Two and 1/4 miles W. x N. (true) from Nunez Rocks and 2300 meters offshore is a split 1200 meters long and 140 meters broad at the widest part.

N.W. x W. (true) from Nunez Rocks, distant 1000 meters is a split about 450 meters long and 275 meters broad.

S. x W. (true) from Cape Chacon, distant 2800 meters is a split 1080 meters long and 120 meters broad at the widest part.

W. x S. (true) from Cape Chacon, distant 1900 meters and 1200 meters offshore is a split 600 meters long and 70 meters broad at the widest part.

S.E. (true) from Cape Chacon, distant 2650 meters and 2200 meters offshore is a tiny split 100 meters long and 30 meters wide. This split did not show until the smooth sheet was plotted.

On the strip covering the entrance to Nichols Bay are two small splits - one on either side of the range. The first is 1430 meters S.E. x S. (true) from the east side of the north entrance to Nichols Bay. It is 240 meters long and 60 meters wide at the broadest part. The second is 1370 meters S.E. x S. (true) from the east side of the north entrance to Nichols Bay. It is 125 meters long and 20 meters wide.

Most of these splits occur on the outskirts of the work and more pressing work, lack of equipment, and weather conditions prevented their being covered.

TRAFFIC. - These waters are used principally by small freighters, lumber schooners, large fishermen and large pleasure crafts. Small fishermen with local knowledge are numerous. Off the entrance to Nichols Bay is a halibut bank where set lines are used. On two occasions the drag fouled these lines and caused considerable trouble.

ANCHORAGES. - In calm or moderate weather, vessels up to 18 feet draft may enter the north entrance to Nichols Bay. Good anchorages in 15 fathoms of water, soft bottom, is found in the first bight of Nichols Bay. The second bight, which is larger, is also used by larger vessels.

In entering Nichols Bay, keep the low wooded shoulder on the east side of the head of the bay on range with the entrance. This shoulder is difficult to describe and a navigator with no local knowledge might not recognize it. The course is N. 42-1/2° W. (true). This course should be held from a distance of 1-1/4 miles (Statute) from the entrance to avoid a shoal marked by kelp on the western side. Pass 60 to 70 meters off the eastern side of the entrance and favor the eastern side as far as the first bight where well protected anchorage is found.

Small craft can find protected anchorages in two small

*J. J. M.*

bights on the east side of the south entrance and in the three larger bights forming the main part of the bay.

WIRE DRAG STATISTICS

Date	: Letter:	Angles		: Miles of:
	: day :	Delta :	#117 :	drag line: *
1920	:	:	:	:
July 4	: a :	:	16 :	:
" 5	: b :	34 :	80 :	2.6
" 6	: c :	58 :	88 :	3.7
" 7	: d :	104 :	132 :	6.
" 9	: e :	38 :	56 :	2.
" 10	: f :	60 :	68 :	3.5
" 13	: g :	56 :	74 :	4.1
" 14	: h :	4 :	- :	-
" 15	: j :	48 :	60 :	2.7
" 16	: k :	14 :	24 :	-
" 17	: l :	24 :	28 :	-
" 23	: m :	58 :	74 :	4.5
" 24	: n :	62 :	98 :	2.8
" 26	: p :	134 :	152 :	3.5
" 27	: q :	114 :	114 :	3.5
" 28	: r :	96 :	98 :	2.9
" 29	: s :	146 :	156 :	5.0
" 30	: t :	94 :	96 :	3.3
" 31	: u :	174 :	134 :	3.4
Aug. 2	: w :	86 :	100 :	4.5
" 7	: x :	64 :	66 :	1.8
" 9	: y :	124 :	190 :	4.5
" 10	: z :	12 :	16 :	.7
" 13	: aa :	128 :	200 :	8.5
" 14	: bb :	22 :	40 :	.7
" 21	: cc :	12 :	18 :	.5
Sep. 23	: dd :	116 :	102 :	3.9
" 25	: ee :	48 :	44 :	1.5
Totals	:	1930 :	2314 :	78.1

Area covered - 16.2 sq. miles (Statute)

TO THE DIRECTOR, Coast and Geodetic Survey,  
Washington, D. C.

Approved.

T. J. LAHER,  
Chief of Party.

Respectfully submitted,

*GEO. H. BEAM*

GEO. H. BEAM,  
E. & C. Engr., Str. WAIKOLA.

AND REFER TO No. 41/VFB

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

May 9, 1921.



Division of Hydrography and Topography:

Division of Charts:

Tidal reductions are approved in  
8 volumes of sounding records for

HYDROGRAPHIC SHEET 4159

Dixon Entrance, S.E. Alaska  
T. J. Maher in 1920

Plane of reference is  
Mean lower low water, reading

- \*10.6 ft. on tide staff at Nichols Bay (July 3 to Aug. 3)
- \*10.9 ft. " " " " " " (August 3 to Sept.1)
- \*11.2 ft. " " " " " " (Sept. 1 to 25)

\* Tide staff slipped

Condition of records: Satisfactory.

A handwritten signature in dark ink, appearing to read "G. W. Rude".

Chief, Division of Tides and Currents.

Hyd. Sheet No. 4159

On this work soundings are few and splits numerous, due to the adverse natural conditions and the inadequate and defective equipment of the drag party. (See Descriptive Report)

In the verification of the sheet a few additional splits showed up.

At a point about 685 me. S x S.E. from  $\Delta$  Surf the N buoy grounded at an effective depth of about forty eight feet. The only sounding obtained was a no bottom sounding at one hundred and nine feet, which is evidently not the shoalest depth. The hydrographic sheet (H. 4160) shows ten fathoms a little further south.

Soundings should have been entered in a separate sounding volume instead of being scattered through the drag records.

It is apparent that Mr. Christopherson has taken pains to do a neat and careful job in the plotting of the smooth sheet. However the curves showing tide changes had to be entirely revised. A tide curve had been shown at every fifth position of the guide launch whether there was any change in tide or not, and at points where the tide actually changed, no curve was shown. In order to simplify these as much as possible, tide changes were plotted only every five feet for effective depths over fifty feet and every foot for effective depths under fifty feet. Effective depths had been intentionally left off by the field party and had to be added to the sheet in the office. During the latter part of the work the upright at "N" buoy was kept two feet higher than the rest of the drag, making it necessary to show two effective depths on the sheet. Soundings had not been plotted on the sheet.

R. L. Johnston

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

SECTION OF FIELD RECORDS

REPORT ON WIRE DRAG SHEET No. 4159.

Surveyed in 1920.

Chief of Party: T. J. Maher.

Surveyed by T. J. Maher, G. L. Bean  
and

Protracted by C. E. Christopherson.

F. L. Peacock.

Verified by R. L. Johnston.

1. The records depart from the requirements of the General Instructions in that the soundings were not recorded in a sounding record separate from the wire drag record. The soundings were not plotted on the sheet, which increased the probability of their being overlooked in the final plotting in the office. The rubber stamps provided for tabulating data should have been used. The recording was carelessly done with soft pencil.
2. The plan and character of the work fulfill the requirements of the General Instructions.
3. The plan and extent of the survey satisfies the specific instructions except that there are some splits that should be dragged and the work should be carried closer inshore and nearer to Nunez Rocks. The instructions called for a maximum effective depth of 45 feet whereas most of the dragging done was from 50 to 65 feet. This uncalled for depth no doubt added to the difficulties under which the work was carried on.
4. The field plotting was carefully done but the tide curves were shown at every fifth position whether the tide changed or not. It was necessary for the office draftsman to change these curves to conform to the tidal changes.
5. When opportunity offers to do more dragging in this locality the areas noted in paragraph 3 should be dragged. Also the 8 fathom spot noted in paragraph 6.
6. The sheet contained a rock awash symbol s.s.e. of Nunez Rocks and the descriptive report stated that there is a rock at that spot with 9 feet at m.l.l.w. on it. The sounding records locate a 9 ft. rock 50 meters north of this spot. It is uncertain if the two are identical. If so then the rock awash symbol is an error. At <sup>7</sup>/<sub>T</sub> the drag grounded (effective depth of drag 48 feet). The

only sounding recorded is  $\frac{9}{109}$  although hydrographic sheet 4160 shows 10 fathoms close by. 8 fathoms should be charted.

7. As indicated in the descriptive report the difficulties attending wire drag operations in this locality are very great and the defective equipment increased them. The excessive depths at which the drag was set did not help matters. Whatever shortcomings the survey possesses are due to those causes.
8. The character of surveying and field drafting are fair.
9. Reviewed by E. P. Ellis, September, 1921.