

# 3946

Diag. Cht. No. 8201-2

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

## DESCRIPTIVE REPORT

Type of Survey ..... HYDROGRAPHIC

Field No. .... Office No. H-3946

### LOCALITY

State ..... ALASKA

General locality ..... NEAR WRANGELL, ALASKA

Locality ..... DRY STRAIT, YOUNG ROCK, CRAIG POINT,

BABBLER POINT, EASTERN PASS

1916

CHIEF OF PARTY

L. O. Colbert

LIBRARY & ARCHIVES

DATE ..... MARCH 30, 1917

# 3946

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. (6) 3946

State AK, Alaska

General locality Near Wrangell, Alaska

Locality Dry Strait - Young Mr. Craig Pt. - Babbler Pt. Eastern Pass.

Chief of party L.O. Colbert

Surveyed by L.O. Colbert

Date of survey July 15- Oct 14, 1916

Scale 1/20,000

Soundings in Feet

Plane of reference Mean lower low water

Protracted by H.P.W. Soundings in pencil by A.J.

Inked by H.P.W. Verified by A. Shalowitz

Records accompanying sheet (check those forwarded):

Des. report, \_\_\_\_\_ Tide books, \_\_\_\_\_ Marigrams, \_\_\_\_\_ Boat sheets,  
 \_\_\_\_\_ Sounding books, 5 Wire-drag books, \_\_\_\_\_ Photographs.  
 Data from other sources affecting sheet \_\_\_\_\_

Remarks:

DEPARTMENT OF COMMERCE

U.S. COAST AND GEODETIC SURVEY

E. Lester Jones,

Superintendent.

DESCRIPTIVE REPORT

to accompany

WIRE DRAG SHEET No. 3946

of

STIKINE STRAIT, SOUTHEAST ALASKA.

by

WIRE DRAG PARTY No.4.

1916

L.O.Colbert,

Chief of Party

Scale.

1 : 20,000.

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY.

E. Lester Jones, Superintendent.

DESCRIPTIVE REPORT to accompany WIRE DRAG SHEET No. 3946  
of  
STIKINE STRAIT, SOUTHEAST ALASKA. by WIRE DRAG PARTY No. 4. 1916.

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Limits of sheet:-

This sheet covers an extensive wire drag area, being a clean sweep of the large body of water formed by the junction of Sumner Strait, Dry Strait, Stikine River Mouth, Eastern Passage, Zimovia Strait and Stikine Strait. Vank and Sokolof Islands were completely surrounded by the survey.

Starting at the eastern end of Sumner Strait at an approximate line extending from Point Craig to the southern point at the entrance to Blind Slough, the survey sweeps past the southern end of Rynda, Greys and Kahdin Islands, continues along the southern edge of the shoals at the mouth of the Stikine River and reaches into Eastern Passage to a north and south line crossing the latter and about three-quarters of a mile east of Babblers Point.

In Zimovia Strait the work extended as far south as Chichagof Pass to an east and west line crossing Zimovia Strait and about three-quarters of a mile north of Young Rock.

The Survey extended south into Stikine Strait to an approximate east and west line crossing the Strait from High Point, where it joins the limits of the work from the southward by Wire Drag Party No. 3.

Distance off shore:-

In general the drag was run to within 300 meters of the shore except for cases where the latter was bounded by shoals or off lying rocks or reced<sub>ed</sub> into small bays.

Along Zarembo Island a fairly uniform line was run of about 300 meters off shore. This was also the case while working off Vank and Sokolof Islands, except for the channel between the two where the drag went to within 150 meters of the shore.

Passing Blind Slough, Mitkoff Island, a much wider berth was necessary to avoid the charted shoal waters at it's entrance.

Following along the shore of Woronkofski Island a distance of about 300 meters was kept off the shore, except for a stretch of about two miles of shoreline southeast of Woronkofski Point, where owing to the chartered shoals, the drag in places was kept a half mile off shore. Since Wire Drag Party No. 4. did not do the topography on Woronkofski Island, the shoreline was not at hand for tracing to this sheet. It may be obtained, however, from the topographic surveys of Wire Drag Party No. 3 of 1916.

Along the Wrangell Island coast the drag was run to within 300 to 400 meters off shore with few exceptions, one of which was in the case of Polk Point, Eastern Passage, where to avoid the charted rocks and shoals the drag in one place was run with<sup>in</sup> a maximum distance of 800 meters off shore.

In all cases care was taken to get as near to the shore with the drag as was possible and practical, so that the work was considered complete in this respect, and for the most part precludes any necessity of supplemental inshore hydrography for launches or small craft.

Currents and their effect on the Drag:-

The tidal currents over this area were governed very strongly by the current from the Stikine River. This was very appreciably noticed at the current station established between Point Crag and Station Island, in Sumner Strait. Here observations were taken from 5:00 P.M. on Sept. 5, 1916 to 9:50 A.M. on Sept. 7, 1917, during which time, with only one exception the current had a constant set ~~at~~ in a true westerly direction. The strong current of the Stikine River more than counteracted the set of the flood current, making the current to appear to be that of an ebb all the time. It is very important to note that during the interval mentioned, neap tides were occurring. In the case of spring tides the effect of the River current would not be at all the same, but there would probably be a very strong flood ~~time~~ during the flood tide.

*current*

Currents and their Effect on the Drag:- Continued;

Stating from memory of the spring tides, I believe that the current diagram as given on chart 8200, of January 6, 1916, is a close estimate of the set and drift of the current off Point Craig, namely, ebbing from 1.5 to 3 knots per hour in a west northwest direction (true), and flooding about 1.2 knots per hour in an east southeast direction (true).

Under the above conditions it is very easy to see what effect an ebb tide would have on the drag. First care had to be used in estimating how far up i into the current the drag had to be set in order to overlap previous work; second, only short drags could be handled when circling the smaller islands, as the effect of the eddies inshore often caused the launch to have an unfavorable tide while the other had a favorable one, making only a short drag manageable; and third, when using the long drag it was found practical to drag only with the current during the period of the strong tides.

Shoals:-

(1) A pinnacle rock with six feet (6') over it at mean lower low water, was located between Lesnoi and Kahdin Islands. The rock is of small extent, unmarked by kelp, and is located on the following bearings;

(a) Eastern tangent of Kahdin Island bears  $30^{\circ}$  (true).

(b) Center of Simlnof Island bears  $102^{\circ}.5$  (true), 5710 meters distant.

(c) Center of Five Mile Island bears  $219^{\circ}$  (true), 5120 meters distant.

Geographical position as taken from Wire Drag Smooth Sheet No 6

Latitude  $56^{\circ}-30'-12''$  North.

Longitude  $132^{\circ}-27'-35''$  West.

\*  
Note:- This rock was found to be about midway between 12 and 24 fathoms as marked on chart 8200, January 6, 1916.

(2) A rocky shoal having soft bottom in places, with a least depth of 25 feet at mean lower low water, was found between Lesnoi and Kahdin Islands. It is unmarked by kelp and located on the following bearings;

(a) The southernmost tangent of Greys Island bears  $269^{\circ}.5$  (true).

(b) West tangent of Lesnoi Island bears  $229^{\circ}$  (true).

(c) Southernmost tangent to Kahdin Island bears  $89^{\circ}$  (true).

Shoals:- Continued;

(2) Continued,

This shoal is on the line between the southern tangent of Kahdin Island and Greys Islands. It is 370 meters from the mean high water mark of the southern side of Kahdin Island.

The geographical position as taken from Wire Drag Smooth Sheet No. 6 ;

Latitude  $56^{\circ} 30' - 35''$  North.

Longitude  $132^{\circ} - 28' - 22''$  West.

This shoal has various depths of from 25 to 50 feet at mean lower low water, when it drops off into deeper water ( probably 10 to 15 fathoms, judging from the depths given on chart 8200, January 6, 1916.), and the shoal is about one-fourth mile in extent running northwest and southeast (true) and about 300 meters running northeast and southwest (true). At the 25 foot sounding the bottom was rocky, but all the rest consisted of soft bottom with numerous snags, probably brought down originally from the Stikine River by floods.

(3) A pinnacle rock was located about one mile west of Sokolef Island with a least depth of 12 feet at mean lower low water, and unmarked by kelp. The following bearings and distances located this rock;

(a) Center of Two Tree Island bears  $151^{\circ}$  (true), 1770 meters distant.

(b) Point Craig Beacon, Zarembo Island, bears  $224^{\circ}$  (true), 7700 meters distant.

Geographical position as taken from Wire Drag Smooth Sheet No. 6 ;

Latitude  $56^{\circ} - 30' - 22''$  North.

Longitude  $132^{\circ} - 38' - 53''$  West.

The rock is surrounded by a depth of five fathoms, from which it slopes into deeper water. The nearest sounding as contained on chart 8160 is 52 fathoms. A drag drawing 10 feet was taken over this pinnacle.

(4) A pinnacle rock with a least depth of 9 feet at mean lower low water, was located 189 meters northwest of Two Tree Island, with no record of kelp given. This pinnacle is at the end of a rocky ledge leading out from Two Tree Island with a depth on it of about 6 fathoms.

Geographical position as taken from Wire Drag Smooth sheet No. 6 is;

Latitude  $56^{\circ} - 29' - 23''$  North.

Longitude  $132^{\circ} - 38' - 12''$  West

Shoals:-

(4) Continued:

The shoal is located on the following bearings and distances;  
(center)

(a) Two Tree Island bears  $65^{\circ}$  (true), 185 meters distant.

(5) Two hundred and sixty (260) meters off the north end of Vank Island and 330 meters due south (true) of the center of Two Tree Island, there was located a rocky shoal with a least depth of 23 feet at mean lower low water. This shoal probably continues out from a point on the north shore of Vank Island, because another shoal with a least depth of 29 feet was located 370 meters (true) east of this sounding, and 110 meters off Vank Island. There was no kelp marking these shoals. An effective depth of 18 feet was afterward dragged over the 23 foot shoal.

(6) A pinnacle rock with a least depth of 33 feet at mean lower low water, was found about one-fourth of a mile west of Sokolof Island, with no sign of kelp marking it.

The following bearings and distances locate this pinnacle;

(a) Center of Two Tree Island bears  $250^{\circ}$  (true), 940 meters distant.

(b) Southwesterly tangent of Sokolof Island bears  $127^{\circ}$  (true).

Geographical position as taken from Wire Drag Smooth Sheet No. 6 is;

Latitude  $56^{\circ} - 29' - 44''$  North.

Longitude  $132^{\circ} - 37' - 09''$  West.

The rock is 410 meters off the mean high water mark of Sokolof Island.

An effective depth of 30 feet was afterward dragged over this shoal.

This pinnacle is surrounded by depths of from 10 to 15 fathoms, however, about 100 meters north of it was located a sounding of forty (40) feet.

(7) In the eastern end of the passage between Sokolof and Vank Islands and one-third of a mile south of the southeast end of Sokolof Island, was located a rocky shoal with a least depth of 28 feet at mean lower low water. This shoal has no kelp on it and is very close to the center of the passage at a point marked 23 fathoms on ~~the~~ chart 8200, January 6, 1916.

The following bearings and distances locate the shoal;

(a) Center of Two Tree Island bears  $291^{\circ}$  (true), 3940 meters distant.

(b) Eastern tangent Vank Island bears  $182^{\circ}$  (true).

(c) Eastern Tangent Sokolof bears  $34^{\circ}$  (true).



Shoals:-

(7) Continued:-

Geographical position as taken from Wire Drag Smooth Sheet No. 6

Latitude  $56^{\circ} - 28' - 48''$  North

Longitude  $132^{\circ} - 34' - 28''$  West

This shoal is only about one hundred and fifty meters in diameter.

(8) A rocky shoal of 41 feet at mean lower low water was located one-fourth of a mile off the southwest side of Vank Island. This shoal runs about one-fourth of a mile in an east and west direction and about 200 meters north and south. No indications of kelp were given in the records.

The 41 foot sounding on this shoal is located on the following bearings;

(a) Light on southwest end of Vank Island bears  $113^{\circ}$  (true), 1400 meters distant.

(b) Point Craig Beacon, Zarembo Island, bears  $273^{\circ} - 30'$  (true), 6860 meters distant.

(c) 480 meters off the mean High Water mark of Vank Island.

Geographical Position;\*

Latitude  $56^{\circ} - 27' - 10''$  North.

Longitude  $132^{\circ} - 37' - 23''$  West.

An effective depth of 31 feet was afterwards dragged over this shoal.

(9) A rocky shoal in Zimovia Strait with a least depth of 25 feet at mean lower low water was located 2700 meters distant and bearing  $133^{\circ}$  (true) from East Point, Weronkofski Island. This shoal had no kelp on it and is only a short distance inshore from the sounding of 43 fathoms as given on chart 8200 January 6, 1916.

The Geographical Position is;

Latitude  $56^{\circ} - 22' - 01''$  North.

Longitude  $132^{\circ} - 22' - 12''$  West.

Shoals:- Continued;

(10) A Pinnacle rock with a least depth of 45 feet over it at mean lower low water, was located about 400 meters north of Woronkofski Point, Woronkofski Island. No indications of kelp were seen. This pinnacle is surrounded by deep water, an effective depth of 55 feet having been dragged between it and the shore. At no subsequent time was the small area surrounding this pinnacle dragged over, thus leaving a small split within the limits of the completed area.

The following bearings and distances locate the Pinnacle;

- (a) Light on southeast end of Vank Island bears  $276^{\circ}$  (true) ~~670~~ meters distant. 670
- (b) East tangent of Five Mile Island bears  $343^{\circ}$  (true), ~~3100~~ meters distant. 3100

Since the shoreline of Woronkofski Island is not at hand, but as before mentioned on plane table sheet by Wire Drag Party No. 3. in 1916, the distance of this pinnacle off Woronkofski Island can only be estimated at 400 meters.

Geographical Position:-

Latitude  $56^{\circ} - 26' - 28''$  North  
Longitude  $132^{\circ} - 29' - 40''$  West

(11) In addition to the shoals and pinnacles located by the wire drag, there are also a number of detached soundings on this sheet, which were located between the dragged area and the shore as follows:-

- (a) 200 meters east of the east side of Vank Island, a pinnacle rock with a least depth of 22 feet at mean lower low water was located. This pinnacle is surrounded by six and eight fathoms of water, and has no signs of kelp.

Geographical Position:-

Latitude  $56^{\circ} - 27' - 33''$  North.  
Longitude  $132^{\circ} - 34' - 21''$  West.

- (b) A rocky shoal likely running out from shore, 130 meters from the Mean High Water Mark of the southwest side of Lesnoi Island, was located with a least depth of 44 feet at mean lower low water; no signs of kelp were found.

Geographical Position:-

Latitude  $56^{\circ} - 29' - 45''$  North.  
Longitude  $132^{\circ} - 29' - 20''$  West

Shoals:- Continued:-

(11) Continued:-

(c) A rocky shoal running north northwest (true) 20 meters out from the west end of the dock at the Alaska Packers Cannery at Highfield Point, Eastern Passage, was located with a least depth of 12 feet at mean lower low water.

Supplementary Sheet to accompany this Sheet:-

A small sheet of hydrography consisting of one days soundings, starting at Highfield Point and working near Polk Point. These soundings would have interfered with the drag work if plotted on this sheet, so a separate sheet was plotted to avoid confusion of drag and sounding lines.

Sounding Lines Plotted on this Sheet:-

The limits of the Stikine River shoal were sounded before the drag survey of this vicinity was made. For the purpose of showing the completeness of the drag survey in this vicinity it was thought advisable to plot these sounding lines on the drag smooth sheet, since they did not to any extent cut into the dragged area. It will be noticed that on two or three occasions the soundings of these lines seem to be very near the effective depth dragged over the same area. The drag was kept as close as close as possible to the shoal at all times in order that no area of deep water would be left unfinished. From the data at hand it is believed that the flats off this river are advancing in such a manner as to cut down the width of Effective Depth of the Drag:- (channel into Eastern Passage. However, this is referred to the Office for confirmation or re-

In general it was attempted to drag at least 50 feet effective (jection. depth over the area of this sheet. This was accomplished in the most cases and over about ninety percent of the area. Shoaler hook ups were never made as a rule except when dragging near shoals.

Adjoining Sheets:-

At the western end of this sheet, in Sumner Strait, the work is overlapped by the drag survey of sheet No. 5. done by Wire Drag Party No. 4 in 1916.

In Eastern Passage the work of this sheet was overlapped by sheet "7 a," and in Zimovia Strait by sheet "7 b" of this party.

Wire Drag Party No. 3, it is understood, overlapped the limits of this sheet in Stikine Strait.

Tide Reducers for this Survey:-

The effective depths and soundings of this sheet were reduced by tide reducers as taken from the tide gauge at Wrangell, established by Wire Drag Party No. 3.

Control of the Survey:-

The signals used for the control of this Drag Survey were located in the most cases by triangulation in 1916. Those in Sumner Strait and Eastern Passage were located by Wire Drag Party No. 4, while those in Zimovia Strait and Stikine Strait were located by Wire Drag Party No. 3.

The Topography as transferred onto the smooth sheet and the topographic signals were located by Wire Drag Party No. 4 in 1916.

There were only a few signals located by the hydrographic party and these were used but little.

In case of the triangulation, there were three separate schemes, however, they joined up so well that it was not thought necessary to make an adjustment before using them together.

The Scale of this Sheet is 1 : 20,000.

Conclusion:-

The work of this sheet was done using the greatest care to leave no unfinished areas so far as practical. Short drags were used to circle the islands and dip into the bays and indentations as far as possible. In this way the party was quite successful in doing the work very thoroughly.

In one case, however, the shoreline was given a wider berth possibly than was necessary, had time permitted the use of a shoaler drag. This was off the north end of Woronkofski Island, southeast of Woronkofski Point. This area is cut up badly by shoals and fish traps extending out from shore, so it is probably of no great importance that this area be dragged.

Coast Pilot Notes:-

The power schooner King and Winge, 143 gross tons, chartered by this party, anchored in the following places during the progress of this survey.

(A) " Horse Fly Bay " (local name) is the small bight in the southern end of Vank Island, a light being on the east point to the entrance to same. Here the schooner found good holding ground at the entrance to the Bay. Care had to be taken not to get into the head, as it shoals very quickly. This anchorage is not recommended.

(B) Off the point on Mitkoff Island just west of the Wilson Islands extends a fish trap. Approximately 300 meters and about south of the southern end of this trap, fairly good holding grounds were found in five fathoms of water.

Coast Pilot Notes:- Continued:-

(C) In the small bay at the north end of Vank Island, at a position approximately on line between the east and west points of this bay, and midway, fairly good anchorage can be had in six and a half fathoms of water. Smaller launches may go in closer.

(D) In the west end of the channel between Greys and Kynda Islands, anchorage in seven fathoms may be obtained, tho the tide thru here is very strong.

It is probably of some interest to state that the passage between Vank and Sokolof Islands is almost exclusively used by small vessels when going from Wrangell village to Wrangell Narrows. At times some of the larger vessels, such as the City of Seattle, use this passage. For this reason it is of great importance that the shoals found by this survey be widely published.

Blind Slough:-

This body of water was not investigated except by the plane table sub-party of Wire Drag Party No. 4, and it is likely some report of value can be obtained from the Descriptive Report of plane table survey in this vicinity in 1916.

Respectfully submitted,

Approved



Assistant, C. & G. Survey.  
Compiler.



Assistant, C. & G. Survey.  
Chief of Party.

STATISTICS of SHEET 3946 WIRE DRAG WORK:-

Day.	No. Angles	No. (stat.) Miles.	No. Soundings Retained
A	479	12.4	1
B	162	8.0	1
C	320	7.6	6
D	498	14.7	7
E	496	12.7	2
F	368	8.1	1
G	227	11.5	
H	311	12.4	1
J	152	8.5	
K	321	10.8	
L	213	5.4	5
M	422	12.7	5
N	329	11.6	1
O	250	12.6	
P	372	11.9	2
Q	78	5.8	3
R	84	2.8	
S	324	6.2	10
T	328	6.9	
U	116	2.9	5
V	<u>74</u>	<u>1.9</u>	<u>3</u>
	5923	187.4	52

AREA in square statute miles;

74 Sq. Miles.

STATISTICS of HYDROGRAPHIC SOUNDING WORK:

Supplementary to wire drag sheet No. \_\_\_\_\_

Day.	No. Angles.	No. Statute miles
a	156	9.4
b	226	13.2
c	146	4.9
d	<u>286</u>	<u>23.1</u>
	814	50.6

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DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

VBC  
Aug. 31, 1917

U.S.N.  
S.P.A.  
HCP

HYDROGRAPHIC SHEET 3946.

Summer Strait and vicinity of Wrangell, Alaska, by  
party of L.O. Colbert in 1916.

TIDES.

	St. John Harbor	Wrangell
	Feet.	Feet.
Mean lower low water, or plane of reference on staff	4.2	4.6
Mean range of tide	12.5	13.8

LIBRARY

Place with descriptive report  
of hydrographic sheet No.

*SLD*  
Drawing Section.



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

May 17, 1921.

Verification of Hydrographic Sheet No. 3921.

By A.L. Shalowitz, Hydrographic & Topographic Draftsman.

The wire drag records for this sheet were generally well kept. There were instances where a little more care could have been exercised in the recording as for instance the recording of the proper signals. This was the case from 29 G to 40 G of the end launch. The records show that  $\Delta$  Grey was used for the right object. This would have thrown the position of the end launch far to the eastward making almost an impossible condition. From the boat sheet it was discovered that  $\odot$  Rex was used in the plotting instead of  $\Delta$  Grey. After a consultation with Captain Colbert who was in charge of the field work it was decided that  $\odot$  Rex was actually used in the field and not  $\Delta$  Grey. Then again there was no stamp at the beginning of "A" day to indicate the length of drag used. Reference had to be made to another sheet from which this was a continuation. From 18 D to 37 D some of the computed distances were greater than the maximum length of drag plus the towline length. The difference was so great as to make it practically impossible. A note should have been made by the field party relating thereto. As there was a considerable overlap on the far buoy side of the drag, the line of the drag for "A" day which adjoins, was accepted even though it gives a certain area dragged to a shoaler depth. This was done to be on the side of safety. At position 50 T no time was given for the end of the hook-up and so it had to be considered to have entirely taken place at 1:37 the time of start. Whenever there were different lengths of sections used no note was made to indicate where the different lengths were.

The sounding records were fair. There were various instances where there was a confusion in time and also in signals. These should have been adjusted by the officer in immediate charge of the hydrography.

The plotting of the sheet was generally good, although at times the plotter was somewhat careless and did not pay very much attention to the boat sheet. A closer observance of the

boat sheet would have eliminated many errors. Where the records were not strictly adhered to in the plotting as in the use of signals a note to that effect should have been made in the record by the plotter, instead of leaving the verifier to figure out what he had done. From position 54 A to 60 A the plotter got confused with his positions and used the plotted point for one position with the computed distance and buoy angles for the following positions. This changed the entire line of the end launch. On the guide launch side the overlap was so great that it was not deemed necessary to change them. The drag strip from 1 E to 9 E with an effective depth of 21 feet was shown on the smooth sheet in blue. This should have been in yellow.

In plotting the end launch positions from 15 G to 36 G three positions were omitted on the smooth sheet. When the positions were numbered the numbers were three positions below what they should have been. This caused the tide curves to connect different positions with regards to time since the plotter was guided by corresponding numbers instead of by corresponding times. As the difference was very great it was changed by the verifier.

The depth change from 38 N to 42 N was very poorly plotted and the entire line had to be changed.

The strip from 18 L to 37 L was carelessly plotted. The tide curves did not join corresponding positions. These were all changed.

On "J" day there were changes in the tide curves from that shown on the smooth sheet due to the office corrections to the tide reducers. As these changes could not affect the Area and Depth sheet, where only changes of five feet are shown over 50 feet, they were not changed on the smooth sheet in ink but are shown only in pencil. To change these on the smooth sheet would have taken considerable time, and it was not considered worth while.

The wire drag work in general was very carefully executed and the area was well covered. There was plenty of overlap in all cases except one. This occurs about 1400 meters south of Ⓞ Ka and at the junction of 1 J and 8 L (end launch). The overlap here is insufficient. A few small splits were disclosed and are noted below. These are really of minor importance.

At 72-0 there was no distance angle taken to the far buoy. It was therefore impossible to plot the position and the line was ended at 71-0. Since the drag hung up at 15 N and a 45 ft. spot found, the drag work on "O" day should have extended well beyond this shoal spot in order to verify that 45 is the least depth. Ending the line at 71-0 discloses a small split at the junction of the bights of the drag. But even if 72-0 is retained there would still be a split, the only difference being that around the 45 ft. spot the overlap would be greater.

The verification disclosed a small split at 26-P. In all probability this has been covered by the movement of the drag from 26 P to 30 P, but even then the overlap would be very small, hence it is shown on the A & D sheet as a split.

A small split off the north end of Vank Island and between 15 U and 16 U was disclosed. A least sounding of 23 ft. was obtained near this spot, but there is no proof that there is no shoaler water here. It is possible, however, that the bight of the drag, hooked up to 18 ft., between 15 U and 16 U passed over this area even though the far buoy did not.

The hydrography which was done in connection with this sheet was adequate for the purpose for which it was intended -- to determine the limits of the Stikine River flats. Practically all the soundings had to be changed owing to the changed tide reduction.

The smooth sheet shows two positions for  $\Delta$  Lithograph. This was due to an adjustment in the position which was located by two schemes of triangulation. This is according to information from Captain Colbert. The verifier did not go into the field computations as it would have taken too much time and moreover it would not have made very much difference which location was used as the overlap on most of the lines were sufficiently large as not to affect the effective dragged area.

The verification of this sheet was delayed considerably by the many changes which had to be made on account of the changed tide reducers.

*A. L. Shalowitz*

A. L. Shalowitz.  
H. & T. Draftsman.

E.P.E.

ADDRESS THE DIRECTOR

U. S. COAST AND GEODETIC SURVEY

AND REFER TO NO. 9-1211

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

SECTION OF FIELD RECORDS.

REPORT ON WIRE DRAG SHEET No. 3946.

Surveyed in 1916.

Chief of Party: L. O. Colbert.

Surveyed by L. O. Colbert. Instructions dated Feb. 26, 1916.

Protracted and inked by N. P. White.

Verified and area and depth sheet by A. L. Shalowitz.

1. The extent of the drag work was such as to fulfill the requirements of the specific instructions.
2. The least water was found on all shoals discovered except the 45' spot north of Woronkofaki Island. This spot was not re-dragged. See descriptive report and verification report. There is not sufficient justification, however, for any additional work around here.
3. The overlaps are ample except in the one instance as noted in the verification report.
4. The supplemental hydrography developing the Stikine River Flats should be applied to the charts.
5. The splits disclosed on this sheet are of small extent and are really of no consequence, so that for all practical purposes it may be considered that within the geographic limits of this survey, the area has been covered by the drag operations and no further dragging is required. See special diagram No. 8200 for limits of this survey.
6. Reviewed by A. L. Shalowitz, June, 1922.