6685a

Form 504
Rev. April 1935
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Topographic
~~*Hydrographic*~~ } *Sheet No.* T-6685a

State Washington

LOCALITY

Skagit Bay

East Side Whidbey Island

1939.

CHIEF OF PARTY

Robert W. Knox

U. S. GOVERNMENT PRINTING OFFICE

Applied to Chan. 6450 Feb. 17/40 B.R.
" " " 6300 Mar. 20/41 "
" " " 6376 Aug 1944 JJV

Form 537a

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO.

TOPOGRAPHIC TITLE SHEET

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

Field Letter B

T6685a

REGISTER NO. T-6685a

State Washington

General locality Skagit Bay

Locality East Side Whidbey Island

Scale 1:10,000 Date of survey June, 1939.

Vessel U.S.C. & G.S.S. EXPLORER

Chief of Party Robert W. Knox

Surveyed by Joseph E. Waugh, Jr.

Inked by Joseph E. Waugh, Jr.

Heights in feet above M.H.W. to ground Heights of trees above ground in parentheses near ground elevations.

~~Contour Approximate contour~~ Form line interval 100 feet

Instructions dated April 12, 1939.

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1926

DESCRIPTIVE REPORT

TO ACCOMPANY

TOPOGRAPHIC SHEET T-6685a

EAST SIDE WHIDBEY ISLAND, SKAGIT BAY,

WASHINGTON

PROJECT NO. HT-233

1 9 3 9

- o -

Robert W. Knox, Chief of Party, C. & G. S.

DESCRIPTIVE REPORT

TOPOGRAPHIC SHEET T-6685a

EAST SIDE WHIDBEY ISLAND, SKAGIT BAY,

WASHINGTON.

INSTRUCTIONS:

The topography on sheet T-6685a, is a part of Project HT-233, the instructions for which were dated April 12, 1939, and were interpretated by letter on June 24, 1939.

LIMITS AND SCALE:

This sheet was surveyed on a scale of 1:10,000. It covers the shore line along the west side of Skagit Bay from Latitude 48°17.89', Longitude 122°30.28', to Latitude 48°20.89', Longitude 122°33.85'.

CONTROL AND SURVEY METHODS:

The control consisted of ten second order triangulation stations both main scheme and intersection. The triangulation was executed in part this season. The old stations recovered were from Jack Senior's work in 1934 and Herman P. Odessey's work in 1924. All of the triangulation is based on the North American 1927 datum. It was not considered necessary to establish any recoverable plane table stations, the triangulation stations being numerous enough.

The usual plane table survey methods were used. The plane table positions were obtained by three point fixes and resection methods. There are four traverses on the sheet. The first is north from triangulation station "GREY 1934", to topographic station "NED". The position of topographic station "NED", was determined on sheet T-6684b by cuts. This signal was plotted on this sheet by D.M. and D.P. The traverse closed less than two meters in azimuth and exact in distance. The second traverse begins at triangulation station "WHAD 1939", and extends to triangulation station "TAD 1939". This traverse closed three meters out in azimuth and exact in distance. The third traverse extends from triangulation station "TAD 1939" to triangulation station "FROST 1939". This traverse closed three meters out in azimuth and exact in distance. Proper adjustments on all traverses were made in the field.

The dirt road shown back of signal "TOT", was roded in from traverse points. This is the fourth traverse. This traverse was run from a three point fix on the beach to the 135 ft. elevation and return. It closed to two meters. Proper adjustments were made.

No other detail back of the shore line was rodded in. The limits of all fields are sketched. All off-lying features were rodded in.

FORM LINES:

The elevations shown on this sheet are ground elevations. Where the elevations to the tops of trees were determined the estimated heights of the trees are shown in parentheses near the elevation concerned. The amounts deducted for heights are based on several actual measurements of the heights of trees in this area. The five elevations on the ridge line are on trees that are considerable higher than the majority of the trees in this area. These elevations were determined from the launch with a sextant when going to and from work. The elevation of 385 feet in the northwest corner of the sheet was determined by cuts and elevation angles on sheet T-6684b. It fell off this sheet and was therefore plotted on T-6685a. The 110 foot elevation near signal "BIM", and the 212 foot elevation near signal "RK", were also determined with the sextant. Proper corrections were applied in all cases.

All other elevations were determined by an elevation angle or depression angle on the feature concerned. Proper corrections were applied including the height of instrument which was determined in all cases by computing it from the actual stange of the tide. Those elevations where positions were determined by cuts are a result of three or more closely agreeing elevations determined independently when each cut was taken.

All elevations are referred to mean high water unless otherwise indicated directly on the sheet.

GENERAL DESCRIPTION OF TOPOGRAPHIC FEATURES:

This area, except in the places indicated, has trees and brush growing down to the high water line. In most of these places the limbs hang out over the high water line. The beach is mostly gravel except in those places indicated. In those places there are large boulders projecting above the gravel beach. There is a bluff varying in height from twenty feet to one hundred and twenty five feet running just back of the high water line. It is only shown on the sheet in those places where the trees recede back from the beach. At the place where the dirt road joins the beach the bluff recedes back to the first bend west of the beach. From off-shore the land gives the appearance of a sharp rise just back of the high water line and then a gentle uniform rise to the ridge line. The four places marked field or cultivated field on the high water line are

the only places where clearings are visible from the water. There are numerous clearings back of the beach that cannot be seen from the water and it was impossible for the topographer to locate them. For this reason the inshore limits of the wood-line is not to be taken as the limits of any field or clearing. The clearing just off the dirt road was sketched in.

The ridge line gives the appearance of being wooded. From Latitude 48°20' north the trees are large second growth timber. From Latitude 48°20' south to where the form lines bend sharply east the timber is small and bushy with snags and dead trees projecting well up on the sky line. The southern part of the sheet gives the appearance of being covered with larger second growth timber.

The hachures indicate sandy bluffs along the high water line that are not covered by vegetation and show bare from the water.

No evidence was found of any recent changes in the shore line except around the point at triangulation station "WHAD 1939". The high water line in this vicinity is probably subject to change during storms as it is loose gravel with no rocks to hold it. The concrete block, in which the old triangulation station was set, was found lying loose on the beach.

No low water line was rodded in as it could easily be determined by the hydrographer.

MARSHES:

No marshes are located in this area.

MAGNETIC MERIDIANS:

The magnetic meridians were determined at three places on this sheet. No declinometer observations were taken at any of the triangulation stations on this sheet. A table is given below showing the results found. Attention is called to the divergence at triangulation station "WHAD-1939". This was noticed at the time and checked the following day.

Standardization of declinatoire No. 246 was made at Seattle (Lincoln Park) on May 3, 1939 at 14:41. The ~~error~~ Correction found was +10'. (No diurnal variation correction applied.)

DECLINATOIRE OBSERVATIONS

Station	Date	Time	Value(scaled)
GREY	June 1, 1939	10:25	+23° 23'
FROST ~~PORT~~	June 6, 1939	11:48	+23° 34'
WHAD	June 2, 1939	14:26	+20° 43'

These values do not include duirnal variation or the declinatoire error.

COMPARISON WITH PREVIOUS WORK:

A comparison between sheet T-2856, and this sheet was made in the field. The two surveys are in fair agreement. There are two places where there is ~~considerable~~ change in the topography.

1. Around triangulation station "WHAD", the shore line has receded.

2. Between triangulation station "NUTS", and signal "Tum", the shore line has receded and there is a small bight in the shore line at this place. The old survey shows a rounding point.

TOPOGRAPHIC SIGNALS:

The following is a list of topographic signals and of the triangulation stations outside of the high water line. The topographic signals are not recoverable.

Hydrographic name	Description
Bol	Whitewashed boulder, 1 ft.
BH	Banner.
Bim	Banner.
Bum	Banner.
Cush	Cloth in tree.
Dat	Cloth on stump.
Fal	Cloth in tree.
Har	Whitewashed face of 20 ft. rock.
Hou	Whitewashed east face of shack.
Mas	Cloth on limb of dead tree.
Mix	Cloth in tree.
Ned	Cloth in overhanging tree.
Ner	Banner.
Not	Whitewashed end of stump.
Nox	Whitewashed rock.
Over	Cloth in overhanging tree.
Plug	Banner.
Rk	Whitewashed rock.
Sep	Banner.

Hydrographic name	Description
Sha	Whitewashed east face of shack.
Sla	Cloth banner.
Slow	Whitewashed boulder.
Stu	Stump.
Toi	Center line of outhouse.
Toe	Cloth on stump.
Tre	Banner.
Tum	Whitewashed rock.
Up.	Banner.

Triangulation station	Description
Grey - 1934	On top of rock awash at high water.
Nuts - 1939	On top of rock awash at high water.
Biological Pile, (U.S.E.) - 1939	Pile driven in mud flat.
Frost - 1939	On top of rock awash at high water.
Lean - 1939	Pile driven in mud flat.
Tad - 1939	On top of rock awash at high water.
Whad - 1939	In concrete post set on high water line.

JUNCTIONS:

This survey joins sheet T6684a on the south and sheet T-6684b ✓ on the north.

~~The penciled form lines shown in latitude 48°18' are transferred from sheet T-6684a.~~ The 385 foot elevation on the north end of this sheet was determined when sheet T-6684b was surveyed but since it

fell off that sheet it is shown on this one.

A satisfactory junction was obtained with both sheets.

LANDMARKS:

There are no prominent landmarks on this sheet.

AIDS TO NAVIGATION:

There are no aids to navigation on this sheet.

GEOGRAPHIC NAMES:

All geographic names shown on this sheet are from Charts Nos. 6300, 6380, 6450. They are known locally and should be retained.

NAME	SOURCE	RECOMMENDATION
Skagit Bay	Charts Nos. 6300,6380 & 6450.	Be retained.
Whidbey Id.	Charts Nos. 6300 & 6380.	Be retained.

Your attention is invited to the spelling of Whidbey. The man whom the island was named after spelled his name Whidbey. It is so shown on the charts. However, the Highway Department of the State of Washington spells the name Whidby on all highway signs. It is recommended that the spelling of the name as it now appears on the coast survey Charts be retained.

COAST PILOT:

The Coast Pilot notes are the subject of a separate report by the Commanding Officer.

STATISTICS:

Statute miles of shoreline	4.8
Square statute miles of area	2.0

Respectfully submitted,

Joseph E. Waugh Jr.

Joseph E. Waugh, Jr.,
Aid, C. & G. S.

APPROVED AND FORWARDED:

Robert W. Knox,
Chief of Party, C. & G. S.

	Remarks	Decisions
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2		482226
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M 234

GEOGRAPHIC NAMES

Survey No.

T6685a

Name on Survey	A. On Chart No.	B. On previous survey No.	C. On U.S. quadrangle Maps	D. From local information	E. On local Maps	F. P.O. Guide or Map	G. Rand McNally Atlas	H. U.S. Light List	K	
Skagit Bay										1
Whidbey Island										2
										3
										4
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Names underlined in red approved by L. Heck on 4/24/40

M 234 √R.

FORM M-238

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
DESCRIPTIVE REPORT
PHOTOSTAT OF

~~North~~

No. T T6685a

received March 18, 1940
registered April 9, 1940
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
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RETURN TO

82	T.B.Reed

✓ JBR

DIVISION OF CHARTS

Section of Field Records

REVIEW OF TOPOGRAPHIC SURVEY NO. 6685a (1939) FIELD NO. B

Washington; Skagit Bay; East Side Whidbey Island
Surveyed in June 1939, Scale 1:10,000
Instructions dated April 12, 1939 (EXPLORER)

Plane Table Survey — Aluminum Mounted

Chief of Party - R. W. Knox.
Surveyed and inked by - J. E. Waugh, Jr.
Reviewed by - J. A. McCormick, November 6, 1940.
Inspected by - H. R. Edmonston.

1. Junctions with Contemporary Surveys.

Satisfactory junctions were made with T-6684a (1939) on the south and T-6684b (1939) on the north.

2. Comparison with Prior Surveys.

T-2856 (1907) 1:20,000.

The descriptive report, page 4, points out two instances of shoreline recession, each approximating 100 meters, in the period between old and new surveys. Otherwise the surveys are in fair agreement as regards shoreline. T-2856 shows none of the rock detail of the present survey and the old form lining is very sketchy. The present survey superseded T-2856 in the common area.

3. Comparison with Chart 6380 (New Print of April 13, 1940)

Within the area of the present survey, charted topography is from the survey discussed in the preceding paragraph.

4. Condition of Survey.

Satisfactory.

5. Compliance with Instructions for the Project.

Satisfactory.

6. Additional Field Work Recommended.

None.

7. Superseded Surveys.

T-2856 in part.

Examined and approved:

Thos. B. Reed,
Chief, Section of Field Records.

Chief, Division of Charts.

Chief, Section of Field Work.

Chief, Division of H. & T.

6685b

Form 504
Rev. April 1935
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Topographic }
~~*Hydrographic*~~ } *Sheet No.* 6685b

State Washington

LOCALITY

South part of the Delta of the
North Fork Skagit River, Skagit Bay

1939.

CHIEF OF PARTY

Robert W. Knox

Applied to chart 6380 Feb. 19/40 B.R.
" " " 6300 Mar. 20/41 "
" " " 6376 Aug 1944 JAW

Form 537a

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO.

TOPOGRAPHIC TITLE SHEET

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

Field Letter C

REGISTER NO. 6685b

T6685 b

State Washington

General locality Skagit Bay

Locality The North Fork Delta of South Part of the Delta of the North Fork - Skagit River

Scale 1:10,000 Date of survey August, 19 39.

Vessel U.S.C. & G.S.S. EXPLORER

Chief of Party Robert W. Knox

Surveyed by Joseph E. Waugh, Jr.

Inked by Joseph E. Waugh, Jr.

Heights in feet above M.H.W. to ground Heights of trees above ground in parenthes near ground elevations.

~~contour Approximate contour~~ Form line interval 100 feet

Instructions dated April 12, 19 39.

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1928

DESCRIPTIVE REPORT

TO ACCOMPANY

TOPOGRAPHIC SHEET T-6685b

SOUTH PART OF THE DELTA OF THE NORTH FORK

SKAGIT RIVER

WASHINGTON

PROJECT NO. HT-233

1 9 5 9

- o -

Robert W. Knox, Chief of Party, C. & G. S.

DESCRIPTIVE REPORT

TOPOGRAPHIC SHEET T-6685b

SOUTH PART OF THE DELTA OF THE NORTH FORK

SKAGIT RIVER

INSTRUCTIONS:

The topography on sheet T-6685b, is a part of Project HT-233, the instructions for which were dated April 12, 1939, and were interpretated by letter of June 24, 1939.

LIMITS AND SCALE:

This sheet was surveyed on a scale of 1:10,000. It covers the marsh area from Latitude 48°20.2', Longitude 122° 26.26' to Latitude 48° 22.1', Longitude 122° 29.9', and Latitude 48° 22.4' Longitude 122° 29.2'. It covers the North Fork of the Skagit River from the above point to the highway draw bridge in Latitude 48°21.9', Longitude 122°24.9'.

CONTROL AND SURVEY METHODS:

The control consisted of twelve second order triangulation stations both main scheme and intersection. The triangulation was executed in part this season. The old stations recovered were from Jack Senior's work in 1934, H. P. Odessey's work in 1924, and R. B. Derickson's work in 1907. Signal "Tres" was located by a four point fix taken with the ~~four~~ seven inch ~~transit~~ theodolite on triangulation stations.

The usual plane table survey methods were used. The plane table positions were obtained by three point fix and resection methods.

The north fork of the Skagit River in the vicinity of Latitude 48°21.55', Longitude 122°27.55', eastward to the highway bridge was rodded in from traverse set-ups. This traverse was checked with a three point fix in Latitude 48°21.73', Longitude 122°26.83', and at the thirty-five foot elevation in Latitude 48°21.56', Longitude 122°26.05'. The error in azimuth in checking in on the fixes, was 3 meters, 3 meters, and 2.5 meters. No error was found in the distances. Field adjustments were made.

No effort was made to obtain features back of the high water line that could not be rodded in from the shore line set-ups.

There are several shacks on the marsh at Hawk Point and on the west side of the bank in Latitude 48°21.7' to 48°21.9', Longitude

122°28.15' to 122°28.35'. They were not rodded as they are of a temporary nature. They are all set on floats so that at times of extreme high water they would not be destroyed.

The inshore side of all wooded areas are not indicated as they were not located.

The end of the dike on the south side of the river in Longitude 122°25.42', is not located or shown on the sheet. Due to the heavy growth of trees down to the high water line it was impractical to locate this feature.

FORM LINES:

The elevations shown on this sheet are ground elevations. Where elevations of the tops of trees were determined the estimated heights of the trees are shown in parenthesis near the elevation concerned. The amounts deducted for heights are based on several actual measurements of the heights of trees in this area.

GENERAL DESCRIPTION OF TOPOGRAPHIC FEATURES:

This area from the seaward is low and flat with hills and woods in the background.

The dikes along the river are covered with small willows and in places this brush extends down to the high water line. This is the condition from triangulation station"DIKEN", to the eastward and northward along the slough back of "DIKEN". There is heavy brush between the dike and the river bank in front of the cultivated field in Latitude 48°21.6', Longitude 122°27.8'. The trees hang down over the high water line beyond the bluff to the east of this field. From this point on to the eastward up the river the brush extends from the dike down to the high water line except in the places indicated clear on the sheet. Willows grow along both sides of the bank of the marsh in the vicinity of Latitude 48°22.0', Longitude 122°28.5'.

The river bank east of Latitude 48°21.55', Longitude 122°27.5', where shown as a thin line is definite but the land back of the bank is soft and marshy and is flooded at flood stage. It is shown as a marsh for this reason.

There are clumps of trees shown but their limits back from the high water line are approximate only.

There are bluffs back of the places where a heavy shore line is shown. Hachures are used to indicate that part of the bluffs showing bare and are not covered by trees and brush.

No evidence was found of any recent changes in the shore line except at the sharp bend of the river in longitude 122°28'. There is evidence that the southern and western bank is cutting away at this point.

The dotted lines indicate area that is bare at the lower waters.

There is a highway bridge across the north fork of the Skagit River. It is of the swing type. Four long blasts is the signal for opening the bridge. The south side of the channel is filled up. The bridge has a horizontal clearance of eighty feet. The vertical clearance is eighteen feet above high water or twenty-three feet above mean lower low water when the bridge is closed. (These heights determined by actual measurement at 14;00 o'clock, August 21, 1939.) Bridge list gives vertical clearances of 7 ft. at H.W. and 17 ft. at L.W. Discrepancy not important as the bridge opens.

MARSHES:

Most of this sheet is covered by marshes. That part shown by a broken line is covered at high water. On the outside the marsh floods back almost to the dike.

Those marshes shown as a solid line cover at the extreme high tides on the outside and at flood stage of the river up the river. Your attention is invited to the drains. They are shown as a solid line back from the mouth. This is true as they are easily tracable in the marsh but near the mouth they are partially filled with mud and sand. The grass thins out making their course indistinct at the mouth. The outside of the marsh where no line is shown is indistinct and the edge of the grass is indicated although the general level of the mud flat is all about the same. The grass is short and stands vertically when covered by water.

The grass on the higher marshes is tall and along the river bank and on the marshes north of the river is thick.

MAGNETIC MERIDIANS:

The magnetic meridian was determined at two places on this sheet. "DELTA ROCK 3", was also occupied with the declinometer.

Standardization of Declinatorie No. 246 was made at Seattle

(Lincoln Park) on May 3, 1939 at 14:41. The ~~error~~ Correction found was +10' (no diurnal variation correction applied).

DECLINATOIRE OBSERVATIONS

Station	Date	Time	Value scaled
Delta Rock 3	Aug. 8, 1939	9:05	23°~~25~~ 36'
Diken	Aug. 22,1939	11:00	23°28'

DECLINOMETER OBSERVATIONS

Station	Date	Time	Value scaled
Delta Rock 3	May 30, 1939	12:42	23°28.5'
		12:54	23°27.3'
		12:15	23°29.2'
		12:29	23°26.8'

These values do not include diurnal variation or the declinatoire error.

COMPARISON WITH PREVIOUS WORK:

This sheet has been compared with sheet T-2156. On a whole the two surveys are in fair agreement. Your attention is invited to the following major differences:

1. The north ~~e~~we astern end of the marsh has built out farther.
2. The dike north of Craft Island shown on the old survey has been destroyed.
3. The southeastern end of the dike has been built out farther onto the marsh.
4. The northern end of the dike has been moved to the eastward.
5. The river as a whole west of signal "Lay", is wider than shown on the old survey.
6. The slough back of signal "Ork" is considerably narrower than shown.
7. No evidence of the suken rock (shown on Sheet T-2156 but not charted) off the mouth of this slough was seen by the topographer.
8. The south bank of the river around signals "Baa", "Ta", and "Fer" shows signs of erosion.

TOPOGRAPHIC SIGNALS:

The following is a list of topographic signals on this sheet. They are not recoverable.

NAME	DESCRIPTION
Aam	Banner on dead bush.
Aba	Whitewashed stump.
Baa	Banner.
Bud	Banner.
Cole	Whitewashed stump.
Coll	Cloth on bush.
Dab	Whitewashed stick.
Ean	Whitewashed pile.
Fan	Cloth in overhanging brush.
Fer	Whitewashed stump.
Fri	Whitewashed stump.
Gad	Whitewashed pile.
Hat	Whitewashed pile.
Idas	Whitewashed frame.
Jade	Whitewashed pile.
Jas	Banner.
Jiv	Whitewash.
Key	Whitewashed pile.
Kil	Whitewashed stump.
Lay	Cloth in brush.
Maba	Cloth in bush.
Mac	Whitewashed stump.
Naga	Whitewash.
Nar	Whitewashed log.
Ork	Cloth on pile.
Paca	Banner on bush.
Qua	Whitewashed stake.
Rab	Banner in bush.
Sat	Whitewashed stump.
Seed	Banner on end of fence.
Ta	Whitewashed stump.
Tent	Cloth on stump.
Tres	Banner
Unit	Whitewashed root.
Up	Cloth in tree.
Vice	White splintered stump.
Wasp	Whitewashed pile.
Well	Cloth on pile.
Wup	Whitewashed pile.
Yin	Box on pile.

Form No. 524 is submitted on two Biological Survey Marks. They are shown on the sheet as No. 3 and No. 5. They were not used in hydrography.

The following is a list of the triangulation stations:

Name	Description
Diken - 1939	On top of dike.
Delta Rock, 3 - 1939	On top of ninety foot rock.
Maupin - 1924	On top of dike.

The other stations on this sheet have been described in reports for the sheets covering the area where they are located.

JUNCTION:

This sheet does not join any modern survey on the east end.

It joins sheets T-6689a and T-6687 on the northwest end. A satisfactory junction was obtained with each sheet.

~~The pencil line shown at the junction with sheet T6689a indicates the dike as transferred from that sheet. It is shown on this sheet to give the inshore side of the marsh.~~

LANDMARKS:

There are no prominent landmarks on this sheet.

AIDS TO NAVIGATION:

There are no aids to navigation on this sheet.

GEOGRAPHIC NAMES:

NAME	SOURCE	RECOMMENDATION
Skagit Bay	Charts Nos. 6300,6380, 6450	Be retained.
North Fork Skagit River	Charts Nos. 6300, 6380	Be retained.
Hawk Point	Local information	Be charted.

NAME	SOURCE	RECOMMENDATION
Craft Island	Local information	Be charted.

Hawk Point and Craft Island are the local names for these features and are well known.

COAST PILOT:

This is the subject of a separate report by the Commanding Officer. 125

STATISTICS:

Statute miles of shoreline	32.75
Statute miles of dikes	6.3
Area in square statute miles	7.0

Respecfully submitted,

Joseph E. Waugh, Jr.

Joseph E. Waugh, Jr.,
Aid, C. & G. S.

APPROVED AND FORWARDED:

Robert W. Knox

Robert W. Knox,
Chief of Party, C. & G. S.

Topo only

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 24A
Rev. Oct., 1932

LIST OF DIRECTIONS

Station Tres State Wash

Chief of party RWK Date 7-26-39 Computed by RWK

Observer RWK Instrument 248 Checked by RWK.

OBSERVED STATION	Observed direction	Eccentric reduction	Sea level reduction*	Corrected direction with zero initial	Adjusted direction*
	° ′ ″	′ ″	″	° ′ ″	′ ″
Maupin	0 00 00.00			0 00 00.00	
Dal	117 15 01				
Whoel	150 43 38				
Inness	194 48 54				
Delta Rock 3	213 19 54				

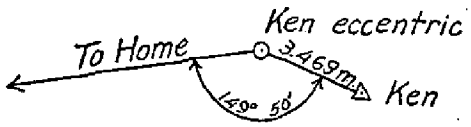
*These columns are for office use and should be left blank in the field.

Station: Ken | *State:* Maryland

Chief of party: C. V. H. | *Date:* 1917 | *Computed by:* O. P. S.

Observer: C. V. H. | *Instrument:* No. 168 | *Checked by:* W. F. R.

OBSERVED STATION	Observed direction	Eccentric reduction	Sea level reduction	Corrected direction with zero initial	Adjusted direction
	° ′ ″	′ ″	″	° ′ ″	′ ″
Chevy	0 00 00.00	− 7.31		0 00 00.00	
Tank west of △ Dulce	29 03 37.0	−1 09.8		29 02 34.5	
Ken (center), 3.469 meters	176 42				
Forest Glen standpipe	313 24 53.0	+3 01.2		313 28 01.5	
Home	326 31 30.21	+ 31.33		326 32 09.45	
Bureau of Standards, wireless pole	352 17 20.8	+ 5.7		352 17 33.8	
Reno	357 28 48.63	− 1.16		357 28 54.78	
Reference mark, 16.32 m	358 31 20				



This form, with the first three and fifth columns properly filled out and checked, must be furnished by field parties. *To be acceptable it must contain every direction observed at the station.*

It should be used for observations with both repeating and direction theodolites.

The directions at only one station should be placed on a page.

If a repeating theodolite is used, do not abstract the angles in tertiary triangulation. The local adjustment corrections (to close horizon only) are to be written in the Horizontal Angle Record, and the List of Directions is to be made from that record directly.

Choose as an initial for Form 24A some station involved in the local adjustment, and preferably one which has been used as an initial for a round of directions on objects not in the main scheme. Use but one initial at a station. Call the direction of the initial 0° 00′ 00.″ 00, and by applying the corrected angles to this, fill in opposite each station its direction reckoned *clockwise* around the whole circumference regardless of the direction of graduation of the instrument. The clockwise reckoning is necessary for uniformity and to make the directions comparable with azimuths.

If a station has been occupied eccentrically, reduce to the center and enter in this form, in ink, the resulting corrections to the observed directions in the column provided for them. If an eccentric reduction is necessary, but not made in the field, leave the column blank. If the station was occupied centrally, and no eccentric reduction is required, put dashes in the column to show that no corrections are necessary.

Directions in the main scheme should be entered to hundredths of seconds in first-order triangulation; otherwise to tenths only. Points observed upon but once, direct and reverse, should be carried to tenths in first-order and second-order triangulation, and to even seconds only in third-order triangulation. In general, but two uncertain figures should be given.

It is recommended that the following simple plan of observing be used with a repeating instrument: Measure each single angle in the scheme at each station and the outside angle necessary to close the horizon. *Measure no sum angles.* Follow each measurement of every angle immediately by a measurement of its explement. Six repetitions are to constitute a measurement. The local adjustment will consist simply of the distribution of the error of closure of the horizon.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 25
Ed. Jan., 1929

11—9121
U. S. GOVERNMENT PRINTING OFFICE, 1929

COMPUTATION OF TRIANGLES

State: Washington

	NO.	STATION	OBSERVED ANGLE	CORR'N	SPHER'L ANGLE	SPHER'L EXCESS	PLANE ANGLE AND DISTANCE	LOGARITHM
		2-3						3.686 916
	C	1 Tres	62 36 16					0.051 660
23'2		2 Whad	93 53 54					9.998 994
94		3 Delta Rk 3	(23 29 50)					9.600 651
		1-3	178 11 8 12 0					3.737 570
		1-2						3.339 227
		2-3						3.436 582
		1 Tres	146 40 06					0.260 044
07		2 Delta Rk 3	07 16 59					9.103 021
25		3 Maupin	26 02 55					9.642 600
		1-3	179 18 12 0					2.799 647
		1-2						3.339 226
		2-3						3.779 782
		1 Tres	150 43 38					0.310 720
	28	2 Maupin	26 20 20					9.647 069
	3°	3 Whad	(02 56 02)					8.709 131
		1-3	178 19 6 0					3.737 571
		1-2						2.799 633
			comp Rust					comp Rust
		2-3						
		1						
		2						
		3						
		1-3						
		1-2						

Do not write in this margin

Topo only

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 25
Ed. Jan., 1929

COMPUTATION OF TRIANGLES

State: Washington

11—9121
U. S. GOVERNMENT PRINTING OFFICE: 1929

NO.	STATION	OBSERVED ANGLE	CORR'N	SPHER'L ANGLE	SPHER'L EXCESS	PLANE ANGLE AND DISTANCE	LOGARITHM
	2-3						3.501 844
	1 Tres	33 28 37					0.258 375
	2 Dol	(108 20 48)					9.977 344
	3 Whad	38 10 35					9.791 048
	1-3	179 58 120					3.737 563
	1-2						3.551 267
	2-3						3.589 707
	1 Tres	117 15 01					0.051 091
	2 Maupin	54 27 35					9.910 468
	3 Dol	(08 17 24)					9.158 912
	1-3	179 59 60					3.551 266
	1-2						2.799 710
		comp Rock.					comp Rock
	2-3						
	1						
	2						
	3						
	1-3						
	1-2						
	2-3						
	1						
	2						
	3						
	1-3						
	1-2						

Do not write in this margin

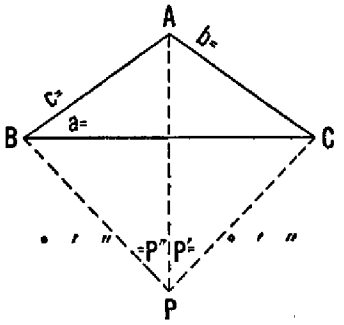
0 TRES

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 655
Ed. Sept., 1929

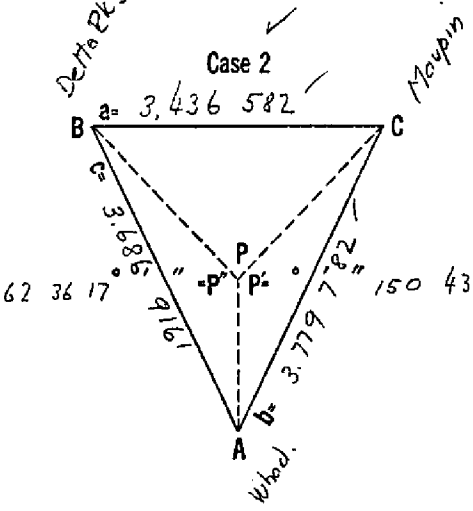
Topo only

COMPUTATION OF THREE-POINT PROBLEM

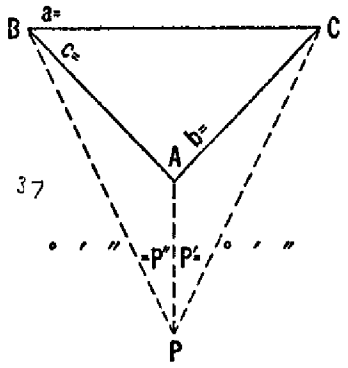
Case 1



Case 2



Case 3



Cases 1 and 2

P′	150	43	37
P″	62	36	16
A	26	25	52
Sum	239	45	46
½ Sum	119	52	53

S = 180° − ½ sum = 60 07 07

Case 3

P′
P″
Sum
A

S = ½ (A − sum) =

Log c =	3.686 916
Log sin P′ =	9.689 280 p
Colog b =	6.220 218
Colog sin P″ =	0.051 669 p
Sum = log tan Z =	9.648 074 p
Z =	23 58 30.7
Z + 45° =	68 58 30.7
Log cot (Z + 45°) =	9.584 742 p
Log tan S =	10.240 639
Sum = log tan ϵ =	9.825 381 (sign +)
ϵ	33 46 47
S	60 07 07

(Tan ϵ+)				(Tan ϵ−)
S + ϵ = angle ABP	93	53	54	S − ϵ = angle ABP
S − ϵ = angle ACP	26	20	20	S + ϵ = angle ACP

BPA	APC	PCB
ABP	PCA	CBP
PAB	CAP	BPC

(For explanation of this form see Special Publication No. 138, pages 191 and 192, or Special Publication No. 145, pages 98–100)

U. S. GOVERNMENT PRINTING OFFICE: 1929
11—9912

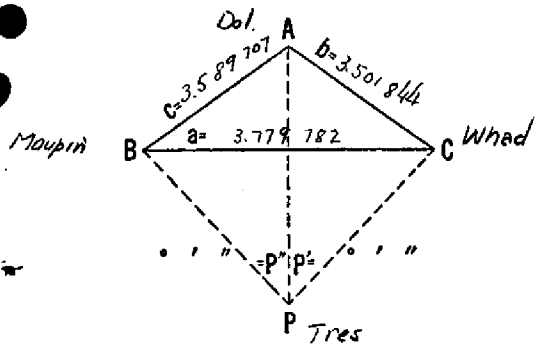
Comp Rec'd.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 655
Ed. Sept., 1929

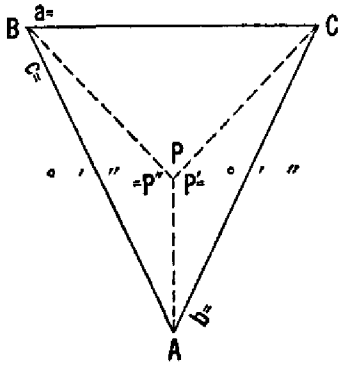
Topo only
⊙ TRES

COMPUTATION OF THREE-POINT PROBLEM

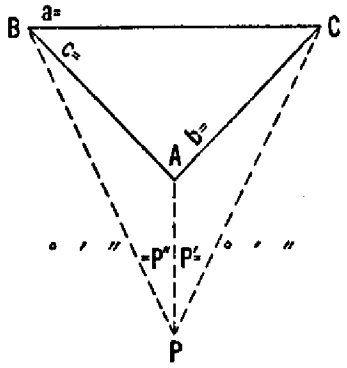
Case 1



Case 2



Case 3



Cases 1 and 2

P′	33	28	37
P″	117	15	01
A	116	38	12
Sum	266	81	50
½ Sum	133	40	55
S=180°−½ sum=	46	19	05

Case 3

P′
P″
Sum
A
A−sum
S=½ (A−sum)=

Log c =	3.589 707
Log sin P′ =	9.741 625
Colog b =	6.498 156
Colog sin P″ =	0.051 091
Sum=log tan Z=	9.880 579 p
Z=	37 13 11.7
Z+45°=	82 13 11.7
Log cot (Z+45°) =	9.135 542
Log tan S=	10.019 988
Sum=log tan ϵ=	9.155 530 (sign +)
ϵ	8 08 30
S	46 19 05

(Tan ϵ+)				(Tan ϵ−)
S+ϵ=angle ABP	54	27	35	S−ϵ=angle ABP
S−ϵ=angle ACP	38	10	35	S+ϵ=angle ACP

BPA	APC	PCB
ABP	PCA	CBP
PAB	CAP	BPC

(For explanation of this form see Special Publication No. 138, pages 191 and 192, or Special Publication No. 145, pages 98–100)

U. S. GOVERNMENT PRINTING OFFICE: 1929
11—9912

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 27
Ed. April, 1929

POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

			°	′	″
α	2	to 3	223	45	46
2d ∠		&	+ 23	29	50
α	2	to 1	247	15	36
Δα				03	03
			180	00	00.0
α′	1	to 2	67	18	39
			62	36	16

			°	′	″
α	3	to 2	43	47	48
3d ∠		&	− 93	53	54
α	3	to 1	309	53	54
Δα				01	01
			180	00	00.0
α′	1	to 3	129	54	55

First Angle of Triangle

	°	′	″			°	′	″
φ	48	19	16.269	2 Whael	λ	122	30	55.991
Δφ		01	08.317		Δλ		04	04.738
φ′	48	20	24.586	1 Tres	λ′	122	26	51.253

	°	′	″			°	′	″
φ	48	21	09.945	3 Delta Rt 3	λ	122	28	12.612
Δφ			45.359	2183.9	Δλ		01	21.358
φ′	48	20	24.585	1 Tres	λ′	122	26	51.254

	Logarithms	Values in seconds (1093.9 759.4 1)
s	3.737 570	
Cos α	9.587 206	
B	8.510 212	
h	1.834988	1st term −68.″3893
s²	7.475 14	
Sin² α	9.92971	
C	1.454 12	
	8.858 97	2d term +0.0723
h²		
D	2.3899	
		3d term + −
		−Δφ −68.3170

	°	′	″	+001
½(φ+φ′)	48	19	50.5	

	Logarithms	Values in seconds
s	3.737 570	(180.2) 1055.4
Sin α	9.964 857	
A′	8.508 905	
Sec φ′	0.177 370	
Δλ	2.388 702	−244.″7384
Sin ½(φ+φ′)	9.873 317	
−Δα	2.262 019	182.8

	Logarithms	Values in seconds
s	3.339 227	
Cos α	9.807 148	
B	8.510 209	
h	1.656 584	1st term +45.″3507
s²	6.678 45	
Sin² α	9.769 79	
C	1.454 60	
	7.902 84	2d term +0.0080
h²		
D	2.3898	
		3d term + −
		−Δφ +45.3587

	°	′	″
½(φ+φ′)	48	20	47.2

	Logarithms	Values in seconds
s	3.339 227	
Sin α	9.884 899	
A′	8.508 905	
Sec φ′	0.177 370	
Δλ	1.910 401	−81.″3579
Sin ½(φ+φ′)	9.873 423	
−Δα	1.783 824	60.8

11—0362 U. S. GOVERNMENT PRINTING OFFICE: 1930

Comp Rect.

	Remarks	Decisions
1		483224
2		"
3		"
4		"
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27		

M 234

GEOGRAPHIC NAMES

Survey No. T6685 b

Name on Survey	A, On Chart No.	B, On previous survey No.	C, On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Skagit Bay										1
Hawk Point										2
Craft Island										3
North Fork Skagit River										4
										5
										6
										7
		Heck = 4/22/40								8
										9
										10
										11
										12
										13
										14
										15
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										26
										27

M 234 VR

FORM M-238

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
DESCRIPTIVE REPORT
PHOTOSTAT OF

~~No. H~~
No. T T6685b

received March 18, 1940
registered April 9, 1940
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	✓	HH	Pages 2, 3 and 7
26			
30			
40			
62			
63			
82			
83			
88			
90			

RETURN TO

82	T. B. Reed

✓ JOSR

DIVISION OF CHARTS

Section of Field Records

REVIEW OF TOPOGRAPHIC SURVEY NO. 6685b (1939) FIELD NO. C

Washington; Skagit Bay; North Fork Delta of Skagit River
Surveyed in August 1939, Scale 1:10,000
Instructions dated April 12, 1939 (EXPLORER)

Plane Table Survey — Aluminum Mounted

Chief of Party - R. W. Knox.
Surveyed and inked by - J. E. Waugh, Jr.
Reviewed by - J. A. McCormick, Nov. 7, 1940.
Inspected by - H. R. Edmonston.

1. Junctions with Contemporary Surveys.

Satisfactory junctions were made with T-6687 (1939) on the west and T-6689a (1939) on the north. New surveys on the southeast have been deferred but will be a part of the air photographic project contemplated for this entire area sometime in the future.

2. Comparison with Prior Surveys.

T-2156 (1889) 1:20,000.

The descriptive report, page 4, lists principal differences between T-2156 and the present survey. In general, the two surveys are in better agreement than ordinarily would be expected in an area of marshes and earthen dikes over a period of 50 years. The sunken rock (not charted) in lat. 48°21.8' long. 122°25.2' on T-2156 was not verified on the present survey or on H-6475 (1939). It is very likely that the sunken rock symbol was used on the old survey simply to indicate a shoal depth and as H-6475 shows considerable deepening in the vicinity the rock symbol has not been carried forward. The present survey supersedes T-2156 in the common area.

3. Comparison with Chart 6380 (New Print of April 13, 1940)

Topography charted in this area is from T-2156 (1889), discussed in the preceding paragraph.

4. Condition of Survey.

Satisfactory.

5. Compliance with Instructions for the Project.

Satisfactory.

6. Additional Field Work Recommended.

None.

7. Superseded Surveys.

T-2156 in part.

Examined and approved:

Thos. B. Reed,
Chief, Section of Field Records.

Chief, Division of Charts.

Chief, Section of Field Work.

Chief, Division of H. & T.