6728b 6730a&b
6729 6731a&b
6732

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

DESCRIPTIVE REPORT

7 Topographic
~~Hydrographic~~

Sheets No. T-6728b; T-6729
T-6730 a & b
T-6731 a & b; T-6732

U. S. COAST & GEODETIC SURVEY
LIBRARY AND ARCHIVES
OCT 7 1940
Acc. No.

State WASHINGTON

LOCALITY

WILLAPA BAY

1939

CHIEF OF PARTY

W. M. Scaife, H. & G. E.

U. S. GOVERNMENT PRINTING OFFICE

6730a&b
6731a&b
6732
6728b
6729

315.05

DESCRIPTIVE REPORT

To accompany

TOPOGRAPHIC SHEETS

T-6728b; T-6729; T-6730a; T-6730b; T-6731a; T-6731b; T-6732

WILLAPA BAY, WASHINGTON

1939

PROJECT HT-232 Instructions dated: March 11, 1939

Washington- Oregon Shore Party

W. M. Scaife, H. & G. E.

Chief of Party

GENERAL NOTES FOR ALL SHEETS

LIMITS:

These topographic sheets cover the northern part of Willapa, Bay, Washington, from a point about two miles south of Sandy Point north and east to Willapa, Washington, and the north shore of Willapa Bay from Cape Shaalwater east to Willapa, Washington.

GENERAL DESCRIPTION OF THE COAST:

Cape Shoalwater, the north coast of the entrance to Willapa Bay, is tree covered from Willapa Bay Lighthouse east, while the western extremity is low and flat, consisting of sand and sand dunes, some of latter being covered with grass.

North Cove is a large bight to east of Cape Shoalwater, and at present is bare mud and sand at low tide, except for some narrow drainage lines, and in the Cove there are extensive areas now covered with marsh grass. To south of North Cove are three sand islands, which are low and flat, and are of a changeable nature, both as to shape and position.

Toke Point is a long, narrow, peninsula, extending from the north shore of the Bay in a southeasterly direction, the eastern end being about 5 miles east of Cape Shoalwater, and is low and flat, the trees and houses along the length of the peninsula make it conspicious.

To the eastward of Toke Point the country is hilly and tree covered, and the shoreline is backed by bluffs in many places. There is a prominent section of reddish colored bluff about 1½ miles west of Hawks Point.

From the southern limit of these sheets, along the east shore of the bay north, the shoreline is generally backed by cliffs of soft sandstone, broken in places by small rivers.

Sandy Point is a low, flat point, now grassy, and backed by tree covered hills. Goose Point is a flat-top, tree covered knoll on the south bank of the mouth of the Palix River.

The Palix River is wide at it's mouth, but one mile above it's mouth it becomes a meandering stream through flat marshy ground on the floor of a wide valley through hilly and tree covered country. The Niawakium River branches north and east from the Palix River about ½ mile above it's mouth, and is similar in aspect to the Palix River.

Stony Point is a narrow, low, tree covered ridge, with bluffs along the shoreline, and terminating at it's west extremity in an area of rocks and boulders, mostly bare at high tide and extending west about 200 meters from the bluff line.

The Ellen Sands is a large area of sand flat, mostly bare at low tide, and contains three low, flat, sand islands.

Willapa River leads east from the northeast arm of Willapa Bay, and is a narrow river flowing through a wide valley between tree covered hills. The floor of the valley is flat and marshy, except in areas of towns.

South Bend, Washington, is situated on the south bank of the Willapa River, about 3 miles above it's mouth, and is the county seat of Pacific County.

Raymond, Washington is situated on both banks of the Willapa River about 3 miles east of South Bend, [illegible] In Raymond the Willapa River forks, the fork leading east is known as the North Fork and the fork leading south is known as the South Fork.

LANDMARKS:

See form 567, transmitted separately and with the Hydrographic Sheets of Willapa Bay.

CHARACTER OF CONTROL USED:

Control for these sheets is from the 1939 triangulation of this party, and is on the NA 1927 datum (1939 field comp.). For supplemental control used on part of Sheet T-6732, see part of report dealing with that individual sheet. Re-computation of scheme at end of field season changed the pos. of stations by small amounts. Sheets plotted with original field comp. Changes run 0.2 to 0.3Met on the average and are not plottable.

SURVEY METHODS:

Standard survey methods were used. Traverses were run only in places where it was not possible to do graphic triangulation or obtain 3-point fixes.

GEOGRAPHIC NAMES:

See report for the individual sheets.

The remainder of this report will deal with the individual sheets.

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 EE

REGISTER NO. T-6728 b T-6728 b

State Washington

General locality Willapa Bay

Locality Palix River to Stony Point

Scale 1-10,000 Date of survey September, 1939

Vessel Washington-Oregon Shore Party

Chief of Party W. M. Scaife

Surveyed by Clifton J. Wagner

Inked by Clifton J. Wagner

Heights in feet above -- to ground to tops of trees

Contour Approximate contour Form line interval -- feet

Instructions dated March 11, 1939

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1928

Sheet T-6728 b (1939)

LIMITS:

This sheet covers the area of Willapa Bay from the point to north of the Palix River, north to a point one mile northeast of Stony Point. Westward the sheet covers the three islands of The Ellen Sands.

CLOSING ERRORS OF TRAVERSES RUN AND HOW ADJUSTED:

No traverses were run on this sheet.

COMPARISON WITH PREVIOUS SURVEYS:

Comparison with Sheet T-1263 (1871): This survey agrees very well with the shoreline as shown on Topographic sheet T-1263, only small differences being noted, due to erosion of the soft sandstone cliffs.

In the vicinity of the Bone River (Querquellin River on T-1263), the highway fill and bridge have changed the shoreline slightly.

The islands of The Ellen Sands have shifted position and shape. Pine Island (on T-1263) is now about 1/4 mile north of where shown on T-1263. (1871)

JUNCTIONS WITH ADJACENT SURVEYS:

This sheet joins Sheet T-6729 (1939) on it's southern limits and Sheet T-6731 (1939) on it's northern limits, and the junctions are satisfactory.

COMPARISON WITH THE PUBLISHED CHART: (Chart 6185)

No comparison with the charted shoreline is made as no photostat on same scale is on hand.

The islands on Ellen Sands are now of a different shape and in a different position than that shown on Chart 6185.

The highway and bridge at the mouth of the Bone River is not shown on Chart 6185

LIST OF NEW GEOGRAPHIC NAMES:

No change in the Geographic Names as shown on Chart 6185 is recommended.

LIST OF PLANETABLE POSITIONS:

See cards, form 524, for recoverable objects. To Wash. 9/11/40

CHANGES IN SHORELINE:

The changes in shoreline are believed due to erosion of the soft sandstone cliffs, or growth of marsh grass. The changes in the shape and position of the islands of Ellen Sands is due to shifting sand.

(T-6728 b)

CHARACTER OF THE MARSHES:

The marsh at the mouth of the Bone River is awash at high tide, with grass showing above water.

The marsh on both sides of the small stream to south of the Bone River is thick marsh grass on stiff mud, and has a definite berm or edge visible at high water.

The marsh area to northeast of Stony Point is clumps of marsh grass at outer edge and becomes denser toward shoreline, and is mostly covered at high tide.

BRIDGES:

The highway bridge over the mouth of the Bone River is a fixed span, of wooden construction, and has a horizontal clearance for boats of 9 meters, and a vertical clearance at mean high tide of 15 feet.

STATISTICS:

Statute miles of Shoreline	=	9.5
Statute miles of Roads	=	0.4

Respectfully submitted,

Clifton J. Wagner,
Jr. H. & G. E.

Approved and forwarded:

A. M. Sobiralski
Officer in Charge,
Seattle Processing Office.

	Remarks.	Decisions
1		466239 U.S.G.B
2		"
3		ors.
4		466239
5		466239
6		U.S.G.B.
7		466239
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

GEOGRAPHIC NAMES

Survey No. T6728b

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Bone River										1
Ellen Island ~~Island~~ Sands										2
Pacific County										3
Pine Island										4
Stony Point										5
Willapa Bay										6
Wilson Point										7
										8
										9
										10
										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 2/18/41

M 234 VR

DIVISION OF CHARTS

SURVEYS SECTION

REVIEW OF TOPOGRAPHIC SURVEY NO. T-6728b (1939) FIELD NO. EE

Washington - Willapa Bay, Palix River to Stony Point
Surveyed in September 1939, Scale 1:10,000
Instructions dated March 11, 1939

Plane Table Survey — Aluminum Mounted

Chief of Party - W. M. Scaife
Surveyed by - Clifton J. Wagner
Inked by - Clifton J. Wagner
Reviewed by - Harold F. Stegman, March 12, 1941
Inspected by - H. R. Edmonston

1. Junctions with Contemporary Topographic Surveys

   a. The junction of T-6728b (1939) with T-6731a (1939) on the north is satisfactory.

   b. The junction of T-6728b (1939) with T-6729 (1939) on the south is satisfactory.

2. Comparison with Prior Surveys

   a. H-334 (1852) and H-335 (1852); scales 1:221,360 and 1:20,000

   These early hydrographic surveys both contain topography covering the entire area of the present survey. H-334 is a reconnaissance survey on a very small scale. H-335 indicates considerable differences in the shoreline near the mouth of the Bone River and in the position of the Ellen Sands. The present survey supersedes these early surveys.

   b. T-1263 (1871) and T-1264 (1871); scale 1:10,000

   These two surveys taken together cover the entire area of the present survey. T-1263 is in very good agreement with the present survey except at the mouth of Bone River (Querquellin River on T-1263) where slight changes have taken place. The off-lying islands of the Ellen Sands have shifted about 1 mile in a northeasterly direction from their location on T-1264. The position of Pine Island, Lat. 46° 40.1', Longitude 123° 57.3' on the present survey is about 400 meters north of its location on T-1264. The present survey supersedes these surveys.

c. T-3224 (1911) and T-3921 (1922); scale 1:20,000

T-3224 covers the present survey in the area of the Ellen Sands and Pine Island. The Ellen Sands have shifted eastward. The amount of this change varies from 200 meters at the southern end to 400 meters at the northern end in Lat. 46° 40.5', Long. 123° 57.7' on the present survey. Pine Island has shifted northward about 250 meters to Lat. 46° 40.1', Long. 123° 57.4' on the present survey. T-3921 shows these same changes but the amounts are smaller, being in proportion to the elapsed time between the surveys. The small island shown in Lat. 46° 39', Long. 123° 58' on the present survey is not shown on either of these surveys. The present survey supersedes these surveys.

3. Comparison with Chart 6185 (Latest Print dated May 9, 1940)

a. Topography

Topography shown on the chart originates with surveys discussed in the preceding paragraphs.

It is noted that the charted form lines, which originate with T-1263 (1871) are in fair to poor agreement with the contours shown on the Corps of Engineers Tactical Map, South Bend Quadrangle, published in 1940.

b. Aids to Navigation

The aids to navigation on this survey were considered in the reviews of H-6518 (1939) and H-6519 (1939). The Bay Center Channel Rear Range Beacon was established subsequent to the date of the present survey.

c. Magnetic Meridians

Magnetic meridians were determined at three stations. A tabulation of the values, together with such corrections as were applied, is given in the Descriptive Report, page 27.

4. Condition of Survey

a. The inking of the topographic details is satisfactory.

b. The Descriptive Report is clear and comprehensive and satisfactorily covers all matters of importance.

5. Compliance with Instructions for the Project

The plan, character, and extent of the survey satisfy the instructions for the project.

6. Additional Field Work Recommended

This is an excellent survey and no additional field work is required.

7. Superseded Surveys

H- 334 (1852)	In	part,	topography	only	
H- 335 (1852)	"	"	"	"	
T-1263 (1871)	"	"			
T-1264 (1871)	"	"			
T-3224 (1911)	"	"			
T-3921 (1922)	"	"			

Examined and approved:

Thos. B. Reed,
Chief, Surveys Section

Chief, Division of Charts

Chief, Section of Hydrography

Chief, Division of Coastal Surveys

Applied to new compilation of chart 6185. May 21, 1941. J.H.S.

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 F

REGISTER NO. T-6729 T6729

State Washington

General locality Willapa Bay

Locality Palix River and south.

Scale 1-10,000 Date of survey September, 1939

Vessel Washington-Oregon Shore Party

Chief of Party W. M. Scaife

Surveyed by Clifton J. Wagner and R. A. Wheeler

Inked by Clifton J. Wagner

Heights in feet above -- to ground to tops of trees

Contour Approximate contour Form line interval --- feet

Instructions dated March 11, 1939

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1938

SHEET T-6729

LIMITS:

This sheet covers the area of Willapa Bay, east shore, from a point* about two mile southeast of Sandy Point, north to, and including the Palix River.

*Ramsey Point on T-6726 (1939) HPS

TRAVERSES RUN AND HOW ADJUSTED:

From Cougar 2 1938 to Rhodes 1939 the traversing was done by Mr. R. A. Wheeler, and no note could be found on sheet as to closure or adjustment.. It is believed that the closure was within prescribed limits and the adjustment was by straight line.

Traverse from Rhodes 1939 to Goose 4 1939, closure 3 meters, straight line adjustment.

From River 1939 a traverse was run to topo. station Spit, on the Palix River, and not closed. From set-ups on this traverse, resection cuts were taken to "Center insulator, power pole, Palix River 1939" and to topo. stations Rose and Bros. These cuts gave sufficient angle of intersection to check the set-ups, as the azimuth was carried by carefully plumbing table over set-ups, and using skip-stations to give as long sights as possible.

COMPARISON WITH PREVIOUS SURVEYS:

Comparison with Sheet T-1292 (1872): This survey agrees fairly well with the shoreline as shown on T-1292(1872) except as noted:

Note by Mr. R. A. Wheeler: From Cougar 2 1938 to Rhodes 1939 the shoreline has receded in places to a maximum of 50 meters along the cliffs, due to erosion of the soft sandstone cliffs. The large sand area at Sandy Point, shown on T-1292, has eroded away, and the marsh area has filled in to become solid ground. The present shoreline, shown on T-6729, is now about the same position as the outer edge of the marsh shown on T-1292.

For a distance of about ½ mile north of Rhodes 1939, the shoreline has changed, due to accretions of sand, and is now about 50 meters west of that shown on T-1292. From north end of the sand beach to Goose Point, the shoreline of the two surveys agrees very well.*

*Shoreline has receded 10 to 20 meters in this area. HPS

In the vicinity of Bay Center, the differences in shoreline between the two surveys are mainly due to construction work.

The large flat area to southeast of Bay Center has been diked, and is now grazing land.

East of the bridge over the Palix River there is little difference between the shoreline as shown on T-1292 and T-6729. There have been diking operations on the south bank of the Palix River, and this survey does not cover the island as shown on T-1292.

On the north bank of the Niawakium River (new name) and west of the highway bridge, the first bight as shown on T-1292 has filled in and is now marsh.

In the vicinity of Wilson 1939 (not the same station as Wilson on T-1292), the bluff has eroded away to a depth of 10 meters.

COMPARISON WITH THE PUBLISHED CHART: (Chart 6185)

The wharf extending east and north of Bay Center is no longer in existance, only a few piles remain.* *Not shown on latest print dated May 9, 1940

The small wharf charted on west shore of the Palix River, about 1/4 mile south of bay center is no longer in existance.

The highway bridge over the Niawakium River is not charted.

JUNCTIONS WITH ADJACENT SURVEYS:

This sheet joins T-6726 b to south, and T-6728 b to north, with satisfactory junctions.

LIST OF GEOGRAPHIC NAMES:

The river entering the Palix River from the north, about ½ mile above it's mouth, is now charted as "Querquellin River" and it is recommended that the name "Niawakium River" be applied to the feature. The State Highway sign at the bridge over the river carries the name "Niawakium River" and Mr. L. D. Williams, Manager of Port of Willapa Harbor, and associates refer to this river by the recommended name. This name "Querquellin River", is applied on Sheet T-1263 (1871) to the stream to the north of the river in which the name is charted. The name "Querquellin" is apparantly not used locally. See also Chart 6185 of June 1937 & Sept 1938 GN Notes L.H.

The rest of the charted names are complete and correct.

LIST OF PLANETABLE POSITIONS:

See cards, form 524, for recoverable objects. Notes added on survey.

CHANGES IN SHORELINE:

The changes in shoreline are believed to be due to erosion and accretion, and not to submergence or emergence.

CHARACTER OF MARSHES:

The marsh areas are shown by appropriate symbol, and are generally thick grass areas on a firm mud bottom. The mud is barely covered at high tide.

BRIDGES:

The Palix River highway bridge, horizontal clearance, 20 meters, vertical clearance at mean high water, 15 feet, is a fixed timber span, trestle type.

(T-6729)

The Niawakium River highway bridge, a fixed timber span, trestle type, has a horizontal clearance of 18 meters, and a vertical clearance at mean high water, of 15 feet.

25 USE bridge list gives vert. clearance of 21.25'@MLLW (or 12.8'@MHW) and 9.25'@HW

STATESTICS:

Statute miles of Shoreline = 19.7
Statute miles of roads = 2.7

Respectfully submitted,

Clifton J. Wagner

Clifton J. Wagner,
Jr. H. & G. E.

Approved and forwarded:

A. M. Sobieralski

Officer in Charge,
Seattle Processing Office.

	Remarks.	Decisions
1		466239
2		"
3	Do not ink pending U.S.G.B. decision	"
4		O.K.
5		" U.S.G.B
6		465239
7		U.S.G.B
8	Approved on survey T-6726b (1939)	
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

M 234

GEOGRAPHIC NAMES

Survey No. T6729

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H		
Bay Center										1
Goose Point										2
Niawiakum ~~Niawakum~~ River			Decision		5-14-41					3
Pacific County										4
Palix River										5
Sandy Point										6
Willapa Bay										7
RAMSEY POINT										8
										9
										10
										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 2/18/41

M 234

CHART DIVISION

SURVEYS SECTION

REVIEW OF TOPOGRAPHIC SURVEY NO. T-6729 (1939) FIELD NO. F

Washington - Willapa Bay, Ramsey Point to Niawakium River
Surveyed in September 1939, Scale 1:10,000
Instructions dated March 11, 1939 (W. M. Scaife)

Plane Table Survey — Aluminum Mounted

Chief of Party - W. M. Scaife
Surveyed by - Clifton J. Wagner and R. A. Wheeler
Inked by - Clifton J. Wagner
Reviewed by - Harold F. Stegman, March 19, 1941
Inspected by - H. R. Edmonston

1. Junctions with Contemporary Topographic Surveys

   a. The junction of T-6729 (1939) with T-6728b (1939) on the north is satisfactory.

   b. The junction of T-6729 (1939) with T-6726b (1939) on the south is satisfactory.

2. Comparison with Prior Surveys

   a. H-334 (1852), H-335 (1852), and H-498 (1855); Scales 1:221,360; 1:20,000, and 1:18,818

      These early hydrographic surveys taken together contain topography covering the entire area of the present survey. H-334 is a small scale reconnaissance survey. The general features as shown on H-335 and H-498 are in agreement with the present survey except in the vicinity of Sandy Point where the low sandy point shown on the early surveys has receded 500 to 600 meters. The present survey supersedes these surveys.

   b. T-1264 (1871) and T-1292 (1872); scale 1:10,000

      These two surveys taken together cover the entire area of the present survey. The shoreline of Willapa Bay has receded generally from 20 to 60 meters except at Sandy Point where the low lying shoreline as shown on the present survey is about 250 meters inshore of the high water line shown on T-1292. Other differences are noted in the Descriptive Report, pages 2, 6, and 7. The present survey supersedes these surveys.

c. T-3224 (1911) and T-3921 (1922); scale 1:20,000

Each of these surveys shows about one mile of shoreline within the area of the present survey, in the vicinity of Bay Center. Minor changes in shoreline and in cultural features have taken place since the dates of these surveys. The present survey supersedes these surveys.

3. Comparison with Chart 6185 (Latest Print dated 5-9-40)

a. Topography

Topography shown on the chart originates principally with surveys discussed in the preceding paragraphs. Roads and streets, particularly in the vicinity of Bay Center, should be charted from the U. S. Engineers' Tactical Map, South Bend Quadrangle, which has been compiled from air photographs taken in 1938.

b. Aids to Navigation

The aids to navigation on T-6729 (1939) were considered in the review of H-6518 (1939).

c. Cable Areas

The cable area in the Palix River at Lat. 41° 36.8', Long. 123° 54.6' is charted from Chart Letter 251 of 1934. Signals Bus and Sig are cable signs at this submerged cable crossing.

d. Magnetic Meridians

The magnetic meridians were determined at three stations. A tabulation of the values, including the instrumental corrections which were applied, is given in the Descriptive Report, page 26.

4. Condition of Survey

Satisfactory.

5. Compliance with Instructions for the Project

The character and extent of the survey satisfy the instructions for the project.

6. Additional Field Work Recommended

This is a satisfactory survey and no additional field work is required.

7. Superseded Surveys

H- 334	(1852)	In part, topography only
H- 335	(1852)	" " " "
H- 498	(1855)	" " " "
T-1264	(1871)	" "
T-1292	(1872)	" "
T-3224	(1911)	" "
T-3921	(1922)	" "

Examined and approved:

Thos. B. Reed,
Chief, Surveys Section

Chief, Division of Charts

Chief, Section of Hydrography

Chief, Division of Coastal Surveys

Applied to new compilation of chart 6185, May 21, 1941. G.H.S.

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 G

REGISTER NO. T-6730 a T6730a

State Washington

General locality Willapa Bay

Locality Cape Shoalwater

Scale 1-10,000 Date of survey August, 1939

Vessel Washington-Oregon Shore Party

Chief of Party W. M. Scaife

Surveyed by Clifton J. Wagner

Inked by Clifton J. Wagner

Heights in feet above -- to ground to tops of trees

Contour Approximate contour Form line interval -- feet

Instructions dated March 11, 19 39

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1936

SHEET T-6730 a

LIMITS:

This sheet covers the area of Willapa Bay in the vicinity of Cape Shoalwater and North Cove.

TRAVERSES RUN AND HOW ADJUSTED:

Traverse from Beach 2 1922 to Willapa Bay Lighthouse 1911, a distance of 2.3 miles, closure 7 meters, adjusted by str. line adjustment.

Traverse from flagstaff, C. G. L. S. Sta. 1939 to Willapa Bay Lighthouse 1911, a distance of 1.3 miles, closure of 1 meter, and not adjusted.

COMPARISON WITH PREVIOUS SURVEYS:

Topo. Sheet No. 3921 (1922), and Topo. Sheet No. 4253 (1926), and Topo. Sheet No. 3224 (1911) are all on the scale 1-20,000, and no detailed comparison is made. In general there appears to have been a considerable change in the shoreline of Cape Shoalwater, the present shoreline being a large distance north of where shown on above sheets. The islands to south of North Cove show a considerable change in position and shape.

Comparison with Sheet T-1262 (1871): Accretions to the sand beach to north of Willapa Bay Lighthouse has moved the shoreline west from 0 meters in Lat. 46° 43.5' To a distance of about 250 meters at Lat. 46° 44.7'.

From Lat. 46° 43.5' to south and east around the end of Cape Shoalwater, the shoreline has receded north a distance of over a mile in places.

The islands to South of North Cove have changed position and shape.

COMPARISON WITH THE PUBLISHED CHART: (Chart 6185)

The islands to south of North Cove are now of a different shape than charted.

JUNCTIONS WITH ADJACENT SURVEYS:

This sheet joins on the east with T-6730 b, junction satisfactory.

LIST OF GEOGRAPHIC NAMES:

The Geographic Names as shown on Chart 6185 are complete and correct.

(Sheet T-6730 a)

LIST OF PLANETABLE POSITIONS:

See Cards, form 524, for recoverable objects.

CHANGES IN SHORELINE:

The changes in shoreline are believed due to accretions and erosion, and not due to emergence or submergence.

CHARACTER OF MARSHES:

The marsh areas, shown by appropriate symbols, are areas of thick marsh grass on stiff mud, the mud being barely covered at high tide.

STATISTICS:

Statute miles of Shoreline = 17.3

Respectfully submitted,

Clifton J. Wagner,
Jr. H. & G. Engr.

Approved and forwarded.

C.M. Bohnenkamp

Officer in Charge,
Seattle Processing Office

	Remarks	Decisions
1		467240
2		"
3		✓
4		466240 U.S. G.B
5	village, 1930 pop. 75	467240
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

GEOGRAPHIC NAMES

Survey No. T6730a

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Cape Shoalwater										1
North Cove										2
Pacific County										3
Willapa Bay										4
North Cove										5
										6
										7
										8
										9
										10
										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 12/20/40

M 234

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 GG

REGISTER NO. T-6730 b T6730 b

State Washington

General locality Willapa Bay

Locality Toke Point to Hawks Point

Scale 1-10,000 Date of survey August, 1939

Vessel Washington-Oregon Shore Party

Chief of Party W. M. Scaife

Surveyed by Clifton J. Wagner

Inked by Clifton J. Wagner

Heights in feet above -- to ground to tops of trees

Contour Approximate contour Form line interval -- feet

Instructions dated March 11, 1939

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1938

LIMITS:

This sheet covers the area on north shore of Willapa Bay, including Toke Point and east to Hawks Point.

TRAVERSES RUN AND HOW ADJUSTED?

Traverse from Jim (USE) 1939 to "Red tank on scaffold 1939", a distance of 1.3 miles, closure 1 meter, not adjusted.

Traverse from topo. station But, west a distance of 1.2 miles and not closed or adjusted.

Traverse from topo. station Tot, west a distance of 1 mile and not closed or adjusted.

Traverse from topo. station Cedar, north up the Cedar River a distance of 3/4 mile and not closed or adjusted.

COMPARISON WITH PREVIOUS SURVEYS:

Topo. Sheets Nos. 3921 (1922), 3224 (1911) and 4253 (1926) are on scale of 1-20,000, and no comparison is made.

Comparison with Sheet 1262 (1871): The south shore of Toke Point has eroded away and is now north of where shown on T-1262 (1871), and accretions to the eastern tip of Toke Point moved the shoreline eastward. Elsewhere on the sheet growth of marsh grass has changed the shoreline, but the areas where the shoreline is backed by cliffs agree very well on the two surveys.

COMPARISON WITH THE PUBLISHED CHART: (Chart 6185)

As no photostat to scale of sheets is on hand no detailed comparison is attemped. In general,changes in the shoreline due to growth of marsh grass and accretions and erosion make the shoreline as charted slightly in error, in places.

JUNCTIONS WITH ADJACENT SURVEYS:

This sheet joins T-6730 a to west and T-6731 a to the west. Junctions are satisfactory.

LIST OF GEOGRAPHIC NAMES:

Geographic Names,as charted, are correct and complete.

(Sheet T-6730 b)

LIST OF PLANETABLE POSITIONS:

See cards, form 524, for recoverable objects.

CHANGES IN SHORELINE:

The changes in shoreline are believed due to erosion, accretions, and growth of marsh grass, and not due to submergence or emergence of the coast.

CHARACTER OF MARSHES:

The marsh areas are shown by appropriate symbols, and are areas of thick marsh grass on firm mud. The mud is barely covered at mean high water, except at the eastern extremity of the point to north of Toke Point, where the outer end of the marsh is covered a depth of about 1 foot at MHW.

STATISTICS:

Statute Miles of Shoreline = 15.1
Statute Miles of Roads = 0.1

Respectfully submitted,

Clifton J. Wagner

Clifton J. Wagner,
Jr. H. & G. Engr.

Approved and forwarded:

J. M. Bohnenkamp

Officer in Charge,
Seattle Processing Office.

	Remarks	Decisions
1		467239
2		✓
3		467239
4		"
5		466240 U.S.G.B
6	For title	467239
7	From 1940 U.S.E. "South Bend" quad.	"
8	" " "	"
9	" " "	"
10	" " "	"
11	" " "	"
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

M 234

GEOGRAPHIC NAMES

Survey No. T6730b

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H		
Cedar River										1
Pacific County										2
Tokeland										3
Toke Point										4
Willapa Bay										5
Hawk Pt.										6
Teal Slough										7
Kindred Slough										8
Norris Slough										9
Kindred I.										10
Freshwater Cr.										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 12/20/40

M 234

DIVISION OF CHARTS

Section of Field Records

REVIEW OF TOPOGRAPHIC SURVEY NO. 6730a and b (1939) Field Nos. G and GG
Washington - Willapa Bay, Cape Shoalwater to Hawk Point
Surveyed August, 1939
Scale 1:10,000
Instructions dated March 11, 1939 (W. M. Scaife)

Plane Table Survey — Aluminum Mounted

Chief of Party - W. M. Scaife.
Surveyed by - Clifton J. Wagner.
Inked by - Clifton J. Wagner.
Reviewed by - Harold W. Murray - December 13, 1940.
Inspected by - H. R. Edmonston.

1. Junctions with Surveys.

   a. The junction of T-6730a (1939) with T-6730b (1939) is satisfactory.

   b. The junction of T-6730b (1939) with T-6731a (1939) at Hawk Point is satisfactory.

   c. The present survey, T-6730a, joins T-3921 (1922) to the north of Cape Shoalwater. For charting purposes, a break in the shoreline is necessary because the present survey shoreline is moved about 240m. further offshore.

2. Comparison with Prior Surveys.

   a. H-334 (1852) and H-335 (1852); scales 1:221,360 and 1:10,000.

   These early hydrographic surveys both contain topography covering the entire area of the present survey. H-334 is a reconnaissance survey on a very small scale. H-335 indicates considerable differences in the low lying shoreline area between Cape Shoalwater and Toke Point. The present survey supersedes these early surveys.

   b. T-1262 (1871), T-1263 (1871) and T-1264 (1871); scale 1:10,000.

   These 1871 surveys taken together cover the entire area of the present survey. The general features are in agreement except in the area westward of Toke Point where general changes have occurred in the low areas. These changes attain a maximum off Cape Shoalwater where the present survey T-6730a indicates a recession in shoreline of approximately one mile. Additional differences are noted in the Descriptive Report. The present survey supersedes these surveys.

c. T-3224 (1911) and T-3921 (1922); scale 1:20,000.

Each of these surveys covers the present survey in the area westward of Toke Point and Hawk Point respectively. Agreement of details are similar to those in the preceding surveys. The changes, however, are less marked. On T-3921 and T-6730a, Cape Shoalwater has receded about 250m. Differences are also noted in shapes and number of the islands south of North Cove. Additional comparative details are given in the Descriptive Report. The present survey supersedes these surveys.

3. Comparison with Chart 6185 (New Print dated May 9, 1940).

a. Topography.

Topography shown on the chart originates principally with surveys discussed in the preceding paragraphs except the low lying shoreline and islands from Toke Point to and around Cape Shoalwater which was revised from the Army Engineers' survey of 1938, Bp. 31905. The present survey supersedes this information. Several landmarks in the vicinity of Cape Shoalwater are no longer in existence (Chart Letter 367 of 1940).

b. Aids to Navigation.

(1) The aids to navigation on T-6730b (1939) were considered in the review of H-6519 (1939).

(2) The aids on T-6730a mark features surveyed by the Army Engineers. The buoys were plotted from fixes furnished by the Army Engineers (see D. R. page 29). They differ from 60 to 170m. with the charted positions but satisfactorily mark the features intended.

c. Magnetic Meridians.

The magnetic meridians were determined at a number of stations. A tabulation of the values including such instrumental corrections as were necessary are given in the Descriptive Report, pages 27 and 28.

4. Condition of Survey.

a. The inking of the topographic details is satisfactory.

b. The Descriptive Report is clear and comprehensive and satisfactorily covers all matters of importance.

5. Compliance with Instructions for the Project.

The plan, character and extent of the survey satisfy the instructions for the project.

6. Additional Field Work Recommended.

This is an excellent survey and no additional field work is required. Mention is made of the fact that a discrepancy of about 240 m. exists in the shoreline between the junctions of T-6730a and T-3921 (1922) to the northward of Cape Shoalwater. This difference is due to a natural extension of the shoreline in an offshore direction subsequent to the 1922 survey.

7. Superseded Surveys.

H-334	(1852)	In part, topography only
H-335	(1852)	In part, topography only
T-1262	(1871)	In part
T-1263	(1871)	In part
T-1264	(1871)	In part
T-3224	(1911)	In part
T-3921	(1922)	In part

Examined and approved:

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

Chief, Division of Charts.

Chief, Section of Hydrography.

Chief, Division of Coastal Surveys.

Applied to new compilation of Chart 6185. May 21, 1941. J.H.S.

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 H

REGISTER NO. T-6731 a T6731a

State Washington

General locality Willapa Bay

Locality northeast arm of Willapa Bay

Scale 1-10,000 Date of survey September, 1939

Vessel Washington-Oregon Shore Party

Chief of Party W. M. Scaife

Surveyed by Clifton J. Wagner

Inked by Clifton J. Wagner

Heights in feet above -- to ground to tops of trees

Contour Approximate contour Form line interval -- feet

Instructions dated March 11, 19 39

Remarks:

U. S. GOVERNMENT PRINTING OFFICE, 1939

SHEET T-6731 a

LIMITS:

This sheet covers the shoreline on both shores of the northeast arm of Willapa Bay, from the longitude of Hawks Point to the longitude of Range Point.

TRAVERSES RUN AND HOW ADJUSTED:

Three-point fixes, with check cuts to fourth and fifth objects, were used extensively. A combination of traverse and fixes was used in the shoreline from Muddy 1939 to the mouth of North River.

The insert was traversed from it's east end to it's west end, and closed on one of the North River-beacons. This section closed without appreciable error and was not adjusted.

COMPARISON WITH PREVIOUS SURVEYS:

Comparison with Sheet T-1263 (1871): The shoreline of the 1939 survey agrees very well with that shown on T-1263, the main differences being due to growth of marsh grass, and in the area to east of Heron 1939, diking of the large flat caused some change in shoreline. (φ 46°-42' λ 123°-52'

Shoreline has receded 10 to 20 meters from Heron to Range Pt.

The delineation of the cliffs is different, due to the attempt in 1939 to show by symbol only the cliffs that were bare. Most of the shoreline had the appearance in 1939 of a steep bank, covered with brush and trees.

JUNCTION WITH ADJACENT SURVEYS:

This sheet joins Sheet T-6730 b & T-6728(b) to the west, and Sheet T-6731 b to the east. All junctions satisfactory.

COMPARISON WITH THE PUBLISHED CHART: (Chart 6185)

The piles charted in Lat. 46° 41'; Long. 123° 54' are no longer in existance.

LIST OF PLANETABLE POSITIONS:

See cards, form 524, for recoverable objects.

CHANGES IN SHORELINE;

The changes in shoreline are believed due to growth of marsh grass, erosion or accretions, and not due to emergence or submergence.

LIST OF GEOGRAPHIC NAMES:

The small river leading east from a point just S of the mouth of North River is locally known as SMITH CREEK and the name is well established.

Penciled as Smith's creek on H-335 (1852)

(Sheet T-6731 a)

CHARACTER OF MARSHES:

The marsh area to north of Hawks Point, and outside the shore line is patches of marsh grass, and is generally completely covered at mean high water.

The marsh area to west of the mouth of the North River is thick marsh grass on firm mud, and is not covered at mean high water, innumerable rivulets carry water throughout the area, however. The outer edge is a definite line, but is shown on the topographic sheet with a dashed line as no rod-readings were obtained. Due to darkness, the last set-up could not be made and it was not considered of sufficient importance to warrant the time necessary to delineate this section more accurately. Due to distance from base, it would have required a whole day to get this. Rod-readings were obtained at end of line of piles to east of this area and a set-up marked near the south limits and by these points the sketching was done.

The marsh area on the east shore in the vicinity of topo. station Log and outside the shore line, is scattered patches of marsh grass, mostly covered at mean high water.

The marsh along and outside the shoreline to east of topo. station Lū is scattered patches of marsh grass and is submerged at mean high water.

On the south shore, east of Bruce 1922, and outside the shoreline, the marsh is scattered clumps of marsh grass at the outer edge, becoming thicker toward the shoreline to become solid marsh at the shoreline. This section of marsh is covered on it's outer limits at mean high water.

East of Heron 1939, the shoreline is bordered by a band of marsh grass, the outer limits of which are covered at mean high water.

STATISTICS:

Statute miles of Shoreline = 11.7

Respectfully submitted,

Clifton J. Wagner,
Jr. H. & G. Engr.

Approved and forwarded:

Officer in Charge,
Seattle Processing Office.

	Remarks	Decisions
1		467 239
2		467 238
3		O.K.
4		466238
5		467 238
6		U.S.G.B
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

M 234

GEOGRAPHIC NAMES

Survey No. T8731a

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Hawks Point										1
North River										2
Pacific County										3
Range Point										4
Smith Creek										5
Willapa Bay										6
										7
										8
										9
		L. L. Heck 2/15/41								10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25
										26
										27

M 234

DIVISION OF CHARTS

SURVEYS SECTION

REVIEW OF TOPOGRAPHIC SURVEY NO. 6731a and b (1939) FIELD NOS. H and HH

Washington - Willapa Bay, Hawk Point and Bruce Point to South Bend
Surveyed in September and October 1939, Scale 1:10,000
Instructions dated March 11, 1939 (W. M. Scaife)

Plane Table Survey — Aluminum Mounted

Chief of Party - W. M. Scaife
Surveyed by - C. J. Wagner
Inked by - C. J. Wagner
Reviewed by - H. F. Stegman, April 2, 1941
Inspected by - H. R. Edmonston

1. Junctions with Contemporary Topographic Surveys

   a. The junctions of T-6731a (1939) with T-6730b (1939) and T-6728b (1939) on the west are satisfactory.

   b. The junctions of T-6731b (1939) with T-6731a (1939) on the west and T-6732 (1939) on the east are satisfactory.

2. Comparison with Prior Surveys

   a. H-334 (1852) and H-335 (1852); Scales 1:221,360 and 1:20,000

   Each of these early hydrographic surveys contain topography covering practically the entire area of the present survey. H-334 is a reconnaissance survey on a very small scale. The shoreline on H-335 is in fair to good agreement with the present survey but is shown as a steep bluff at most points while the present survey shows only isolated areas of bluffs. The present survey supersedes these early surveys.

   b. T-1263 (1871) and T-1342b (1873); scale 1:10,000

   These two surveys taken together cover the area of the present survey west of Long. 123° 48.3'. The shoreline is in good agreement with the present survey at most points. Minor changes noted are due to the growth of marsh grass and to diking along the banks of Willapa River. The greatest change in shoreline is in the area just west of the mouth of North River in Lat. 46° 45', Long. 123° 53.3' where the shoreline has advanced 200 to 300 meters. At Lat. 46° 42', Long. 123° 51'

to 123° 52' the shoreline has receded from 10 to 20 meters and the mouth of Stuart's Slough (on T-1342b) has been partly closed by dikes. The present survey supersedes these surveys.

c. H-2105 (1891) and H-2106 (1891); Scale 1:10,000

These two hydrographic surveys taken together contain topography in the area of the present survey east of Long. 123° 48.3'. The shoreline is in substantial agreement with that shown on the present survey except where the construction of dikes and wharves has caused minor changes. The outlet of Mailboat Slough in Lat. 46° 40.4', Long. 123° 47.5' has been closed by a pile dike as shown on T-6731b (1939). The present survey supersedes these surveys.

3. Comparison with Chart 6185 (Latest Print dated May 9, 1940)

a. Topography

Topography shown on the chart originates principally with surveys discussed in preceding paragraphs. Topography along the Willapa River east of Long. 123° 50' was revised from blueprints 19734-19742 of 1925. The present survey supersedes this information.

b. Aids to Navigation

Aids to navigation were considered in the review of H-6520 (1939) and H-6521 (1939).

c. Magnetic Meridians

The magnetic meridians were determined at six points. The values obtained, together with the corrections which were applied, are given in the Descriptive Report, page 26.

4. Condition of Survey

Satisfactory.

5. Compliance with Instructions for the Project

Satisfactory.

6. Additional Field Work Recommended

This survey is satisfactory and no additional field work is required. Air photographs taken September 22, 1939, covering the area of this survey east of Long. 123° 52' have been compiled as Chart Correction Sheet 194, January 1941. This sheet is filed as Bp. 35061 and is to be used to supplement the topography shown on T-6731a and b (1939) for charting.

7. Superseded Surveys

H- 334	(1852)	in part, topography only
H- 335	(1852)	" " " "
T-1263	(1871)	" "
T-1342b	(1873)	" "
H-2105	(1891)	" " , topography only
H-2106	(1891)	" " " "

Examined and approved:

Thos. B. Reed,
Chief, Surveys Section

Chief, Division of Charts

Chief, Section of Hydrography

Chief, Division of Coastal Surveys

Applied to new compilation & chart 6185, May 21, 1941. G.H.S.

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 HH

REGISTER NO. T-6731 b T6731 b

State Washington

General locality Willapa Bay

Locality Willapa River

Scale 1-10,000 Date of survey September & October, 1939

Vessel Washington-Oregon Shore Party

Chief of Party W. M. Scaife

Surveyed by Clifton J. Wagner

Inked by Clifton J. Wagner

Heights in feet above -- to ground to tops of trees

Contour Approximate contour Form line interval -- feet

Instructions dated March 11, 1939

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1938

SHEET T-6731 b

LIMITS:

This sheet covers the area of Willapa River from the Longitude of Range Point east to the east limits of the City of South Bend, Washington.

TRAVERSES RUN AND HOW ADJUSTED:

No traverses were run on this sheet.

COMPARISON WITH PREVIOUS SURVEYS:

Comparison with sheet T-1342 b (1873): This survey agrees very well with the shoreline as shown on T-1342 (1873), differences being due to construction work in vicinity of South Bend, Washington.

COMPARISON WITH THE PUBLISHED CHART: (Chart 6185)

Most of the large flat to southeast of Range Point has been diked and is now grazing land.

On north side of the ship channel, north of Range Point, the mud flats contain many scattered tufts of marsh grass (see section on marshes).

The two rows of piles charted across the Willapa River channel from South Bend should be removed and charted as shown on topo. sheet as one boom area, the western row of piles is no longer in existence.

JUNCTIONS WITH ADJACENT SURVEYS:

This sheet joins sheet T-6731 a on the west and sheet T-6732 on the east. All junctions satisfactory.

LIST OF GEOGRAPHIC NAMES:

No new Geographic Names are recommended for the area covered by this sheet.

The names N Pacific City and Sea Haven on the chart: While there is no development to suggest the names, the plats are still on file at Pacific County Courthouse, and since the use of the names do not obliterate anydetail on the chart, it is reccommended that the names be retained.

LIST OF PLANETABLE POSITIONS:

See cards, form 524, for recoverable objects.

(Sheet T-6731 b)

CHANGES IN SHORELINE:

Changes in shoreline, are slight, and are due to growth of marsh grass and construction work.

CHARACTER OF MARSHES:

The marsh area, outside the shoreline, to north of the mouth of the Willapa River is scattered patches of marsh grass on hummocks of firm mud in an area of soft mud. Where shown by broken horizontal lines the grass is completely submerged at mean high water, and where shown by solid horizontal lines, the grass shows above water at mean high water.

The large flat area to the northeast of the Willapa River is covered with marsh grass and contains innumerable rivulets and sloughs which carry water throughout the area. The surface of the flat is about ½ foot above mean high water, but has the appearance of a marsh and therefore is shown as marsh. The area directly across the river from South Bend, adjacent to the shoreline, (shown on Chart 6185 as firm ground) is actually about 1 foot higher than the rest of the flat, but the appearance is so similar to the rest of the flat that it is shown as marsh.

DIKES:

The dike from Range 1939 to Potter 1939 is in good condition.

The dike as charted on Chart 6185 along the shoreline directly across the Willapa River from South Bend, is not visible as a dike at present, from it's charted north end to topo. station Not,* where the river bends east. From this latter point the dike is very low and flat and broken* through in places, and is not shown on topo. sheet.

*φ-46°-40' λ-123°-48'

From topo. station Nat φ-46°-40.6 λ-123°-48.1 there is a well defined dike along the west shore of Mailboat Slough to topo. station Boy. This dike is broken through in many places and though it was located in the field was not inked on sheet. If it is desireable to chart the sections of the dike they are clearly visible in the air-photographs transmitted with the sheets.

STATISTICS:

Statute miles of Shoreline	=	19.1
Statute miles of Roads	=	1.2

Respectfully submitted,

Clifton J. Wagner

Clifton J. Wagner,
Jr. H. & G. Engr.

Approved and forwarded:

A. M. Bobieralski
Officer in Charge,
Seattle Processing Office

Photos filed under Acc No 1034
additional details compiled from
Photos are shown on BP ~~Chart letter 1941~~
Air Photo Unit Correction sheet E No 194 and on BP 35061

	Remarks	Decisions
1		466238
2		O.K
3		466238
4	For title only	U.S.G.B
5		467238 U.S.G.B
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

M 234

GEOGRAPHIC NAMES

Survey No. T6731 b

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Mailboat Slough										1
Pacific County										2
South Bend										3
Willapa Bay										4
Willapa River										5
										6
										7
										8
										9
										10
										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 2/25/41

M 234

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 I

REGISTER NO. T-6732 T6732

State Washington

General locality Willapa Bay

Locality Willapa River

Scale 1-10,000 Date of survey October, 1939

Vessel Washington-Oregon Shore Party

Chief of Party W. M. Scaife

Surveyed by Clifton J. Wagner

Inked by Clifton J. Wagner

Heights in feet above -- to ground to tops of trees

Contour Approximate contour Form line interval -- feet

Instructions dated March 11, 1939

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1929

SHEET T-6732

LIMITS:

This sheet covers the area along the Willapa River from the east limits of South Bend, Wash. to Willapa, Wash., along the North Fork, and south on the South Fork to end of charted soundings. ϕ-46°-40'

CHARACTER OF CONTROL USED:

From the western limits of this sheet to Raymond, Washington, the control is from the 1939 scheme of triangulation of this party, based on NA 1927 datum (1939 field computations).

From Raymond, Washington, east to Willapa, Washington, and south along the South Fork, the control is from traverses by the 29th Engineers, U S Army, and the stations used are plotted on the sheet in blue triangles. A number of prints, showing the positions as obtained on the traverses, are transmitted with this report.* The traverse stations were adjusted to the datum of the 1939 field computations through the position of WI-1 (USE) 1939, which is common to both the traverse and the 1939 triangulation of this party.

* See note page 24 of this report.

TRAVRESES RUN AND HOW ADJUSTED:

No traverses were run in area west of WI-1 (USE)1939. ϕ-46°-41' λ-123°-45'

Due to the six month limit on employment of hands by this party, the sub-party engaged on the triangulation control for this sheet had to be dis-banded when it had reached the line SNAG-WI-1(USE). As weather conditions were becoming more unfavorable for topography with each day passing, it was considered more important to continue the topography to completion and not stop to continue the control. Accordingly, traverses were run from WI-1 (USE) 1939 east to the traverse station S.C. T 14 N R 8 W $\frac{28|27}{33|34}$ (USE), with a tie to traverse station MCS 2 BM Z 64 (USE), and down the South Fork to traverse station P.P. 4-2 (USE). After the topography was completed it was possible to continue the triangulation and locate many objects which were located on the traverses. The adjustment of the traverses was delayed until these stations were computed.

ϕ-46°-40' λ-123°-40'

ϕ-46°-40' λ-123°-44'

The closures for the topographic traverses are given, for the complete traverses: From WI-1(USE)1939 to the S.C. T14N R8W $\frac{28|27}{33|34}$ above noted, a distance of 7.7 miles, closure of 20 meters. The tie to MCS 2 (BM Z 64) was 13 meters, (distance of 3.2 miles,) and in same direction as at the S.C. The traverse from a set-up on the above traverse to P.P. 4-2 (USE) was 2 miles in length and closure was 3 meters.

The adjustment of these traverses approximated the straight line adjustment, but objects located by both the triangulation and traverse were used to cut down the lengths of the

sections and a straight line adjustment used for the sections. The sections used are as follows: From WI-1 (USE) 1939 to Topo Flag 1939; from Topo Flag 1939 to Power Line Tower 1939; from Power Line Tower 1939 to MCS 2 (BM Z 64) (USE); from MCS 2 (BM Z 64)(USE) to the S. C. (above noted). From beginning to end of this traverse, the position of the detail as adjusted does not differ, from what would have been obtained by a srtaight line adjustment from beginning to end, by a plottable amount.

The traverse down the South Fork was adjusted in the following sections: From Topo Flag 1939 to Old Burner 1939; and from Old Burner 1939 to P.P. 4-2 (USE). This adjustment was made in this way as it was found the error of the traverse was not accumulative, and there was a change in azimuth errors on the traverse. As shown on the sheet is believed the most accurate positions for the detail and signals.

The spur traverse up the Ellis Slough was adjusted to the triangulation positions of Mill No. 2, stack 1939 and tank between Case Mill and Mill No. 2 1939. The position of these two objects as located on the traverse differed from the triangulation positions in the same direction and distance as the closure at MCS 2 (BM Z 64) (USE).

After adjusting topo. stations about every $\frac{1}{2}$ mile along the traverses, the intermediate stations were adjusted by tracing transfer between adjusted stations. After adjusting the stations the detail was transferred and inked on the sheet. The pencilled detail, done in the field, was not erased until the inking was complete. While this affected the appearance and blackness of the inking, it was thought desireable to do it that way, and be more certain of not overlooking some detail in tracing the sheet.

COMPARISON WITH PREVIOUS SURVEYS:

Comparison was made with the shoreline as shown on Hydrographic Sheet H-2105 (1891), as the topographic sheet photostat does not seem to be on hand.* The comparison was made as to relation of the river banks and not as to Geographic position.

*This shoreline and topography originates with H-2105 (1891)

The two surveys agree very well, the major differences being due to construction work. The last half mile south on the South Fork appears to be out in azimuth in relation to the rest of the South Fork, the relative difference in the position of the south end of the surveyed area differing by about 50 meters.

Pos. error in H-2105 noted in review. H.R.S.

JUNCTIONS WITH ADJACENT SHEETS:

On the west this sheet joins Sheet T-6731 b, with satisfactory junction.

(Sheet T-6732)

COMPARISON WITH THE PUBLISHED CHART: (Chart 6185)

The drawbridge over the North Fork, the west of two drawbridges, is no longer in existance, and there is no pier in the center of the river.

The bridge shown on chart as crossing Ellis Slough, is no longer in existance.

LIST OF GEOGRAPHIC NAMES:

The stream entering the North Fork at the north limits of Willapa is locally known as Wilson Creek, and it is recommended this name be applied to this feature.

The name "ELK CREEK", charted in lat. 46° 41½'; Long. 123° 43' should be removed from chart as there is no creek in the area. There is a dike surrounding the point in which the name appears on the chart.

CHANGES IN SHORELINE:

The changes in shoreline are mostly due to construction work.

CHARACTER OF MARSHES:

The area to west of the bridge over the North Fork, and north of the river is thick grass on firm ground, filled over sand. This area is flooded only a highest tides, but has many rivulets and sloughs carrying water to most parts of the area.

See Bp 35061 for marsh areas, and supplemental topographic detail in the area of T-6732

The area shown in marsh symbols on the south bank of the North Fork, just east of the highway bridge is thick marsh grass on firm ground, and is flooded only by highest tides. In the area te east of the Power Line Tower 1939, there is much debris and ruins of old mills. As the ruins are flat on ground, they are not indicated on sheet.

φ-46°-41.5'
λ-123°-43.5'

φ-46°-41.4'
λ-123°-42.8'

From topo. station Hoe, to Willapa there is marsh on both banks of the North Fork, and this marsh is generally thick grass or covered with trees and brush. The area to north of the mouth of Ellis Slough is grassy, with scattered trees and dead snags. To the east of the mouth of Ellis Slough, the marsh areas shown with tree symbols are thickly covered with trees and these trees grow adjacent to water line, overhanging the bank in places. These areas are usually flooded at the highest tides, but many sloughs and rivulets carry water through the area at mean high water.

Along the South Fork, the marsh areas are on both banks of the river, and are grassy, with scattered trees and brush where shown by symbols. These areas are barely bare at mean high water. In the area around the Old Burner 1939, there is much debris remaining from burning of mill.

φ-46°-41.1'
λ-123°-44.3'

(Sheet T-6732)

BRIDGES:

The highway bridge over the North Fork at Raymond, is locally known as the Riverdale Bridge. The bridge is a swing draw bridge, with horizontal clearance of 38 meters. The opening to north of the center pier is used for navigation and the south side is blocked by piles and logs.

The Northern Pacific Railway Bridge crosses the South Fork, 1/4 mile above it's mouth, and is a swing draw bridge. The horizontal clearance is 39 meters. The channel is to west of the center pier, to the east of the center pier being blocked by piles and logs. There is a fixed foot bridge from the center pier to the east bridgehead, that is directly under the main span when closed.

The South Fork highway bridge crosses the South Fork about $\frac{1}{2}$ mile up-stream from the Northern Pacific Ry. bridge, and is a swing drawbridge, clearance (horizontal) to northeast of the center pier is38 meters, there being no passage for boats to the southeast of the center pier.

The Chicago, Milwaukee, St. Paul and Pacific Railway bridge crosses Ellis Slough near it's mouth, and is a fixed span, covered, with a horizontal clearance of 26 meters, and a vertical clearance at MHW. of about 20 feet.

The bridge over Wilson Creek near it's mouth is a fixed span, horizontal clearance of 34 meters (limited by the banks of the creek), and a vertical clearance at mean high water of about 15 feet.

The bridge over the South Fork, in Willapa, is a fixed span, with a horizontal clearance of 27 meters, and a vertical clearance of about 15 feet.

STATISTICS:

Statute miles of Shoreline	=	29.0
Statute miles of Railroads	=	2.3
Statute miles of Roads	=	2.0

Respectfully submitted,

Clifton J. Wagner
Clifton J. Wagner,
Jr. H. & G. Engr.

Approved and forwarded:

A. M. Sobieralski
Officer in Charge,
Seattle Processing Office.

T-6732

The following stations, from the 29th Engineer Traverse data, were used for topographic control east of Raymond, Washington. The corrections applied to bring the traverse stations to the datum of the 1939 field computations, are those differences at WI-1 (USE). These stations are plotted on the Topo. sheet (T-6732) as blue triangles.

Station	latitude longitude	from USE photostats dm dp	correction (meters)	As plotted on T-6732. dm dp
M C S 2	46 40	1244.5	-1.3	1243.2
BM Z 64 (C.& G.S.)	123 42	558.7	2.0	560.7
S.C. (Trav.3A)				
28/27 T 14 N	46 39	1691.1	-1.3	1689.8
33/34 R 8 W	123 40	482.8	2.0	484.8
P. P. 4-2	46 39	1642.2	-1.3	1640.9
(Trav. 8-4)	123 43	1081.8	2.0	1083.8

Other P. P.'s were touched on, during topography, in the vicinity of Raymond, Washington, but as they were close to objects located by triangulation, they were not needed nor shown on the sheet. These points were rather indefinite and recovery of the point described could not be certain.

Shown on sheet by blue triangles.

	Remarks	Decisions
1		466237
2		466237
3		"
4		"
5		466236
6		467238 U.S.G.B
7		466236
8		466237
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

M 234

GEOGRAPHIC NAMES

Survey No. T6732

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Ellis Slough										1
North Fork										2
Raymond										3
South Fork										4
Willapa										5
Willapa River										6
Wilson Creek										7
Skidmore Slough										8
										9
										10
										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 2/25/41

M 234

THE FOLLOWING STATIONS OF THE 29th TOPOGRAPHICAL BATTALION'S TRAVERSE WERE TIED IN BY THE 1939 TRIANGULATION ON WILLAPA BAY, WASHINGTON AND THE DIFFERENCES IN POSITION ARE AS SHOWN BELOW, BASED ON THE 1939 FIELD COMPUTATIONS:

Station	latitude longitude	from USE photostats dm dp	1939 triang. dm dp	difference (meters)
M C S No. 1	46 40	1849.5	1848.2	-1.3
WI-1 (USE)	123 45	176.0	178.0	2.0
Bruce 2 1922	46 40	1333.4	1330.4	-3.0
	123 54	1101.5	1103.7	2.2
M C S No. 16	46 39	1836.0	1833.0	-3.0
SB 2	123 55	83.5	85.3	1.8
M C S No. 11	46 31	440.0	436.5	-3.5
BM L 62	123 53	257.2	259.5	2.3
M C S NO. 12	46 33	53.1	49.7	-3.4
BM K 62	123 53	800.7	802.4	1.7
M C S No. 7	46 25	1641.2	1636.7	-4.5
BM Q 62	123 51	1164.3	1166.4	2.1

For the stations used to control the Topographic Survey east of Raymond, Washington, the corrections for station WI-1 (USE) were applied to the stations on the traverse, and for the stations used to control the Topographic Survey on the Naselle River, the corrections for station BM Q 62 were applied to the stations on the traverse.

Position of WI-1 (USE) and Bruce 2 are from original field computations and the re-computations at end of field season changed the plotted positions by small amounts. The topographic sheets are based on original field computations and <u>not</u> the re-computation.

23

c/o Port of Grays Harbor, P.O. Box 1100, Aberdeen, Wash.

February 17, 1940

To: The Director,
U.S. Coast and Geodetic Survey,
Washington, D.C.

From: Clifton J. Wagner,
Jr. H.& G.E.

Subject: Air Photographs, Willapa Bay.

There are being forwarded herewith, 54 prints of aerial photography in vicinity of Willapa River, Willapa Bay, Washington. These prints are intended to be a part of data pertaining to Topographic Surveys T-6731 a; T-6731 b; and T-6732. The above mentioned sheets are not ready to forward, as the hydrographic sheets have not been completed.

There are also inclosed descriptions of Recoverable topographic stations for Topographic sheets T-6728 b; T-6729; T-6730 a&b; T-6731 a&b and T-6732. The stations for the latter three sheets are indicated on the aerial photographs with the objects located by traingulation, and are believed sufficient to control the prints.

This data is forwarded in advance of the Topo. sheets as it is believed advantageous to have them inspected by the Office in time for any questions that may be raised to be settled before the Alaska season.

Clifton J. Wagner
Jr. H.& G. E.
Chief of Party

Photographs filed under acc. No 1034 Index 46
additional details from photos compiled
and shown on ~~B.P.~~ ~~Chart letter~~ ~~1944~~
Air Photo Unit Correction Sheet No 194
Filed as also on B.P. No 35061

Air Photographs to accompany Topographic Sheets T-6731 a; T-6731 b; and T-6732, 1939, Willapa Bay, Washington.

On Sept. 22, 1939, the U.S. Army Air Corps made aerial photographs of the northeast arm of Willapa Bay, Washington, from about 1 mile west of Range Point, east to an including Willapa, covering the towns of South Bend, and Raymond. 54 prints, Nos. 1-52 incl. (with Nos. 13 & 16 duplicated,) single lens, on scale of approximately 1-12,000, were obtained during the past field season and points located by topography are indicated on the pictures. It is believed that sufficient control is indicated to control the pictures. While it is not known whether or not these will be used in charting, it is believed the pictures will be valuable for spotting control on any aerial photographs the Coast and Geodetic Survey may take of Willapa Bay.

These photographs are intended as a part of data dealing with Topo. Sheets T-6731 a; T-6731 b, and T-6732, and on form 524 are all of the points indicated on the pictures except those located by triangulation.

Additional control points may be obtained from the 29th Topographical Battalion traverse data if desired. Each point has a sketch on the photostat for air-photo identification.

See Note on preceding page!

ADDITIONAL NOTE TO ACCOMPANY TOPOGRAPHIC SHEETS
T-6728b; T-6729; T-6730 a & b; T-6731 a & b; T-6732

The following old triangulation stations were plotted on the topographic sheets for use as control if they could be recovered. Beach 2 1922 was the only one recovered. The datum difference was obtained from the difference in the Geographic Positions as shown on photostats sent from the Office and the 1939 field computations of the station heading each group.

1. name	latitude longitude	1911 dm dp	1939 dm dp
Willapa Bay L.H.1911	46 42	194.8	159.0
	124 04	390.9	361.3

Above corrections used for stations: Tokeland Beach E. Base 1911, Tokeland Beach W. Base 1911, George 1911, Cove 1911, Beach 1911 and Cape 1911. (None of these stations could be recovered.)

2. name	latitude	1922-26 dm dp		1939dm dp
Fisher 2 1922	46 42	440.2		403.7
	123 58	234.4		205.4

For plotting and using Beach 2 1922 (recovered) the following corrections were applied:

Beach 2 1922	46 44	1331.9	-36.0	1295.9
	124 05	278.6	-29.0	249.6

The following stations could not be recovered: Clam 2 1926, Inspector 1922, Clam 1922, Bea 1922, Wharf 1922, Stump 1922.

MAGNETIC MERIDIANS ON TOPOGRAPHIC SHEETS

Place	Date 1939	Time	Obs. Var. ° '	Var. Corrt'd. for declinitoire error (plus 52') ° '	Var. Corrt'd for index Co. for Compass Decl. #21
Sheet T-6730a					
400 m WSW of Beach 2 1922	Aug. 1	11:30am	22 09	23 01	
350 m. SW of C G L S Sta 1939	Aug. 2	10:15am	22 46	23 38	
Short (Topo)	Aug. 7	1:50 pm	22 20	23 12	
Sheet T-6730 b					
Cedar (Topo)	Aug. 17	1:30 pm	22 31	23 23	
Cor (Topo)	Aug. 16	3:15 pm	22 20	23 12	
Fisher 2 1922	Aug. 10	1:20 pm	22 13	23 05	
Sheet T-6731 a					
Sandy 2 (USE)	Sept. 20	1:40 pm	23 27	24 19	
Stewart (USE)	Sept. 20	4:15 pm	23 01	23 53	
Muddy 1939	Sept. 12	11:10 am	22 20	23 12	
Sheet T-6731 b					
Bad (Topo)	Sept. 21	3:10 pm	22 42	23 34	
Cutoff"D"(USE)	Oct. 3	3:09 pm	22 09	23 01	
Opera 2 (USE)	Oct. 9	11:20 am	24 20	25 12	
Sheet T-6729					
60 m. W. of Tree (Topo)	July 21	9:00 am	23 42 (#223) (-05')	23 37	
Slevoigh 1939	Aug,23	8:45 am	22 24	23 16	
River 1939	Aug. 23	4:25 pm	22 24	23 16	

(Continued on second page)

MAGNETIC MERIDIANS (Continued from first page)

Sheet T-6728 b

Palix 1939	Aug. 29	11:40 am	22 27	23 19
Dot (Topo)	Sept. 6	11:45 am	22 27	23 19
Ellen 3 1939	Sept. 6	1:10 pm	22 24	23 16

Sheet T-6732

Cut(USE)	Oct. 10	3:08 pm	22 13	23 05
Dav (USE)	Oct, 11	12:45 pm	21 32	22 24
WI-1(USE)	Oct. 12	12:35 pm	22 16	23 08

The Declinitoire with Alidade No. H-193 was used for all of the above meridians except the first one listed for Sheet T-6729, and the declinitoire with Alidade No. H-223 was used for this one only.

The Declinitoires with insts. Nos. H-193 and H-223 were compared with Compass Declinometer No. 21 at station POTTER 1939 on November 21, 1939 by R. A. Wheeler, and the computations made by C. J. Wagner. The correction to No. H-193 was found to be plus 52', and the correction to No. H-223 was found to be minus 05'. These corrections have been applied to above observations, and it will be noted that the correction for index correction has not been applied, as this party has not been notified as to the latest value of the index correction.

APPROVAL BY CHIEF OF PARTY

Topographic Sheets T-6728b: T-6729; T-6730 a & b; T-6731 a & b and T-6732 have been inspected and approved by me. No additional work is considered necessary.

The field work was done under the very infrequent supervision of W. M. Scaife, Chief of Party, who has been detached from the party as of January 4, 1940. The office work was done by Clifton J. Wagner, without supervision being exercised.

Ira T. Sanders,
Chief of Party.

ADDITIONAL NOTES BY SEATTLE PROCESSING OFFICE

Sheet T-6730a:

There are four buoys plotted from sextant positions supplied by the local (Willapa) office of U.S.E.D. The data is given below. The date and time is not known. At the same time positions were also suppled for buoys N"20", Fl R "22", N"24", C"9", C"9A", C"11" and N"22A". These latter buoys are also located and plotted by our party on Hydrographic Sheet H-6519. The Army Engineer's positions agree with our positions for these points within tolerances that must be allowed for floating objects, so we infer that the same reliance may be placed on their positions of buoys, which follow:

C"7"	Jim	82°	28'
	Flag		
	Willapa B. Lighthouse	21°	45'
Fl R "16"	Jim	84°	09'
	Flag		
	Willapa B. Lighthouse	33°	35'
Fl R "14"	Jim	18°	38'
	Snipe		
	Willapa B. Lighthouse	59°	49'
N"14A"	Jim	60°	15'
	Snipe		
	Willapa B. Lighthouse	68°	11'

A. M. Sobieralski,
Officer in Charge,
Seattle Processing Office.

DESCRIPTIVE REPORT

to accompany

T-6728b; T-6729; T-6730a & b; T-6731a & b; T-6732

COMMENTS BY OFFICER IN CHARGE, SEATTLE PROCESSING OFFICE

The location of all rodded points is shown, giving the shoreline a broken appearance. This is in accordance with paragraph 3 (e) of Field Memorandum No. 1, dated Feb. 12, 1935, which states:

"When plane table control surveys are made in an area for which the detailed topography is to be supplied by air photographs, the shore line or similar detail located by the plane table should be broken and a dot made at rodded points to indicate clearly the precise position as distinguished from sketching."

A. M. Sobieralski

A. M. Sobieralski,
Officer in Charge,
Seattle Processing Office.

FORM M-238

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
DESCRIPTIVE REPORT
PHOTOSTAT OF
~~No. T~~

T6728 b
T6729
T6730 a & b
T6731 a & b
T6732

received Sept. 25, 1940
registered Sept. 27, 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		HBC	
25	✓		
26			
30			
40			
62			
63			
82			
83			
88			
90			

RETURN TO

82	T. B. Reed

✓ HBC

CHART DIVISION

SURVEYS SECTION

REVIEW OF TOPOGRAPHIC SURVEY NO. 6732 (1939) FIELD NO. I

Washington - Willapa River, Willapa to South Bend
Surveyed in October 1939, Scale 1:10,000
Instructions dated March 11, 1939 (W. M. Scaife)

Plane Table Survey — Aluminum Mounted

Chief of Party - W. M. Scaife
Surveyed by - Clifton J. Wagner
Inked by - Clifton J. Wagner
Reviewed by - Harold F. Stegman, April 7, 1941
Inspected by - H. R. Edmonston

1. Junctions with Surveys

   a. The junction of T-6732 (1939) with T-6731b (1939) on the west is satisfactory.

   b. There is no contemporary topographic survey which joins T-6732 (1939) at its eastern limit. However, air photo correction sheet 194 (Bp. 35061) contains topography extending beyond the eastern limit of T-6732 and makes a satisfactory junction with T-6732 at Lat. 46° 40.5', Long. 123° 40'.

2. Comparison with Prior Surveys

   a. H-2105 (1891), scale 1:10,000

   This hydrographic survey contains topography covering the entire area of the present survey. The agreement of topographic detail is good except for changes due to construction. However, H-2105 was apparently subject to an azimuth error due to weak methods of control. West of Lat. 46° 41', Long. 123° 45' agreement in position between the two surveys is good, but along the North Fork eastward of this point the error in H-2105 increases rapidly. In the vicinity of Willapa, Lat. 46° 40', Long. 123° 40' the maximum position error is about 360 meters in a southwesterly direction. A similar error exists in the position of the South Fork on H-2105. It is in the same direction and is a maximum of about 100 meters at the limit of the survey in Lat. 46° 40', Long. 123° 43.5'. The present survey supersedes this survey.

3. Comparison with Chart 6185 (Latest Print dated 5-9-40)

a. Topography

Topography on the chart originates principally with H-2105, discussed in paragraph 2 above, supplemented by U. S. Army Engineers' blueprints to 1938. The cut-off channel in Lat. 46° 40.7', Long. 123° 46.2' is from Chart Letter 529 (1936). The present survey supersedes this information.

b. Aids to Navigation

(1) Black buoys S"5A" and S"7" charted near Lat. 46° 41', Long. 123° 46' are not shown on the present survey. They are shown on U. S. Army Engineers' Bp. 35,004, of 1940.

(2) The pile charted in Lat. 46° 40.6', Long. 123° 46.4' is not shown on the present survey.

c. Magnetic Meridians

The magnetic meridians were determined at three points. The values obtained, with the instrumental corrections which were applied, are given in the Descriptive Report, page 27.

4. Condition of Survey

Satisfactory.

5. Compliance with Instructions for the Project

Satisfactory.

6. Additional Field Work Recommended

This survey is satisfactory and no additional field work is required. Air photographs taken September 22, 1939, covering the area of this survey have been compiled as Chart Correction Sheet 194, January 1941. This sheet is filed as Bp. 35,061 and is to be used to supplement the topography shown on T-6732 (1939) for charting. Additional information for the charting of cable and pipe-line areas can be obtained from U. S. Engineers' Bps. 34,998-05 of 1940.

7. Superseded Surveys

H-2105 (1891) in part, topography only.

Examined and approved:

Thos. B. Reed,
Chief, Surveys Section

Chief, Division of Charts

Chief, Section of Hydrography

Chief, Division of Coastal Surveys

Applied to new compilation of chart 6185. May 21, 1941 - G.H.S.