

9515

Drag. Cht. No. 6002-2.

Form 504

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Topographic

Field No. Ph-62 Office No. T-9515

LOCALITY

State Washington

General locality Grays Harbor

Locality Copalis Beach

1950-55

CHIEF OF PARTY

C. W. Clark, Chief of Field Party

J. C. Sammons, Balto. Photo. Office

LIBRARY & ARCHIVES

DATE May 11, 1961

COMM-DC 61300

9515

DATA RECORD

T-9515

Project No. (II): Ph-62(49)

Quadrangle Name (IV):

Field Office (II): Copalis Beach, Washington

Chief of Party: Charles W. Clark

Photogrammetric Office (III): Baltimore, Md.

Officer-in-Charge: Jack C. Sammons

Instructions dated (II) (III): 20 March 1951

Supplement 1 dated: 15 February 1952

Letter No. 73-aal dated: 24 May 1951

Copy filed in Division of
Photogrammetry (IV)

Method of Compilation (III): Air Photographic (Multiplex and Kelsh)

Manuscript Scale (III): 1:20,000

Stereoscopic Plotting Instrument Scale (III): 1:10,000

Scale Factor (III): 1.000

SEP 9 1953

Date received in Washington Office (IV):

Date reported to Nautical Chart Branch (IV):

Applied to Chart No.

Date:

Date registered (IV):

22 Oct 1953

Publication Scale (IV):

Publication date (IV):

Geographic Datum (III): NA 1927

Vertical Datum (III):

Mean sea level except as follows:
Elevations shown as (25) refer to mean high water
Elevations shown as (5) refer to sounding datum
i.e., mean low water or mean lower low water

Reference Station (III): SAMPSON, 1927

Lat.: 47° 02' 29.633"

Long.: 124° 09' 53.824"

Adjusted
~~Coordinates~~

Plane Coordinates (IV):

State: Washington

Zone: ~~Y-1000~~
Saint

Y=

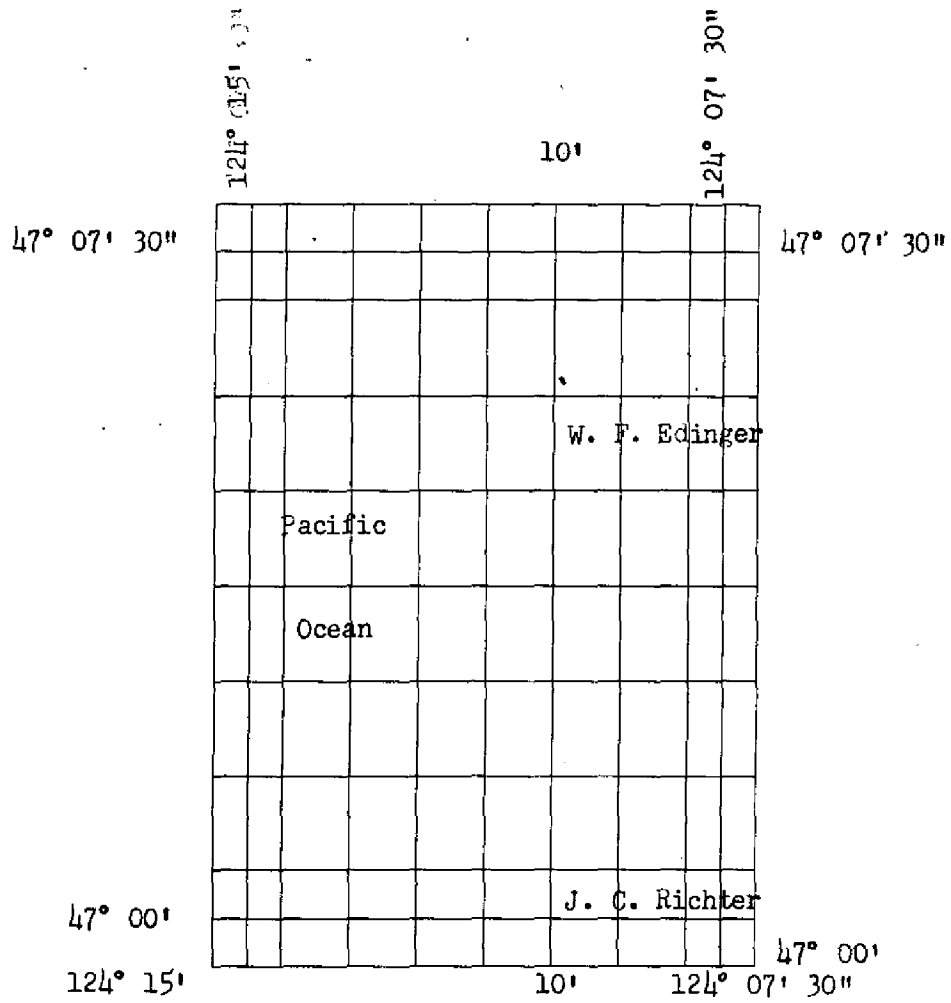
X=

Roman numerals indicate whether the item is to be entered by (II) Field Party, (III) Photogrammetric Office,
or (IV) Washington Office.

When entering names of personnel on this record give the surname and initials, not initials only.

T 9515

2



Areas contoured by various personnel
(Show name within area)
(II) (III)

DATA RECORD
T-9515

3

Field Inspection by (II): K. Huey

Date: 9/1/51

Planetable contouring by (II):

Date:

Completion Surveys by (II):

CHARLES H BISHOP

Date:

AUG 1955

Mean High Water Location (III) (State date and method of location):

* July 11, 1950 - Photogrammetric

* Revised by planetable during field edit 1955

Projection and Grids ruled by (IV): Jack Allen

Date: Nov. 15, 1951

Projection and Grids checked by (IV): H. D. Wolfe

Date: Nov. 16, 1951

Control plotted by (III): B. Wilson

Date: Oct. 20, 1952

Control checked by (III): D. M. Brant

Date: Oct. 24, 1952

~~Radial Plot~~ or Stereoscopic

Control extension by (III): E. L. Rolle

Date: Dec. 15, 1952

Stereoscopic Instrument compilation (III):

Planimetry) J. O. Richter
Contours) W. F. Edinger

Date: Feb. 11, 1953

Date: Jan. 8, 1953

Manuscript delineated by (III): C. A. Lipscomb

Date: May 7, 1953

Photogrammetric Office Review by (III): A. K. Heywood

Date: June 22, 1953

Elevations on Manuscript

checked by (II) (III):

A. K. Heywood

Date: June 22, 1953

Camera (kind or source) (III):

| Number | Date | PHOTOGRAPHS (III) Time (PST) | Scale | Stage of Tide |
|----------------|---------|---------------------------------|----------|----------------|
| 50-0-1516 thru | | | | |
| 50-0-1518 | 7/11/50 | 12:49 | 1:24,000 | 4.7 above MILW |
| 50-0-1570 thru | | | | |
| 50-0-1577 | 7/11/50 | 13:24 | 1:24,000 | 4.2 above MLLW |

Tide (III)
From Predicted Tide Tables

Reference Station: ABERDEEN, GRAYS HARBOR

Subordinate Station:

Subordinate Station:

Washington Office Review by (IV):

Final Drafting by (IV):

Drafting verified for reproduction by (IV):

Proof Edit by (IV):

Land Area (Sq. Statute Miles) (III): 17

Shoreline (More than 200 meters to opposite shore) (III): 13

Shoreline (Less than 200 meters to opposite shore) (III): 11

Control Leveling - Miles (II): 26

Number of Triangulation Stations searched for (II): 13

Recovered: 2

Identified: 1

Number of BMs searched for (II): 2

Recovered: 0

Identified: 0

Number of Recoverable Photo Stations established (III): 10

Number of Temporary Photo Hydro Stations established (III): 0

Traverse stations established and identified: 2

Remarks:

Diurnal

| Ratio of Ranges | Mean Range | Spring Range |
|--------------------|---------------|-----------------|
| - | 7.8 | 9.9 |
| .9 | 6.5 | 8.6 |
| | | |

Date:

AUGUST, 1957

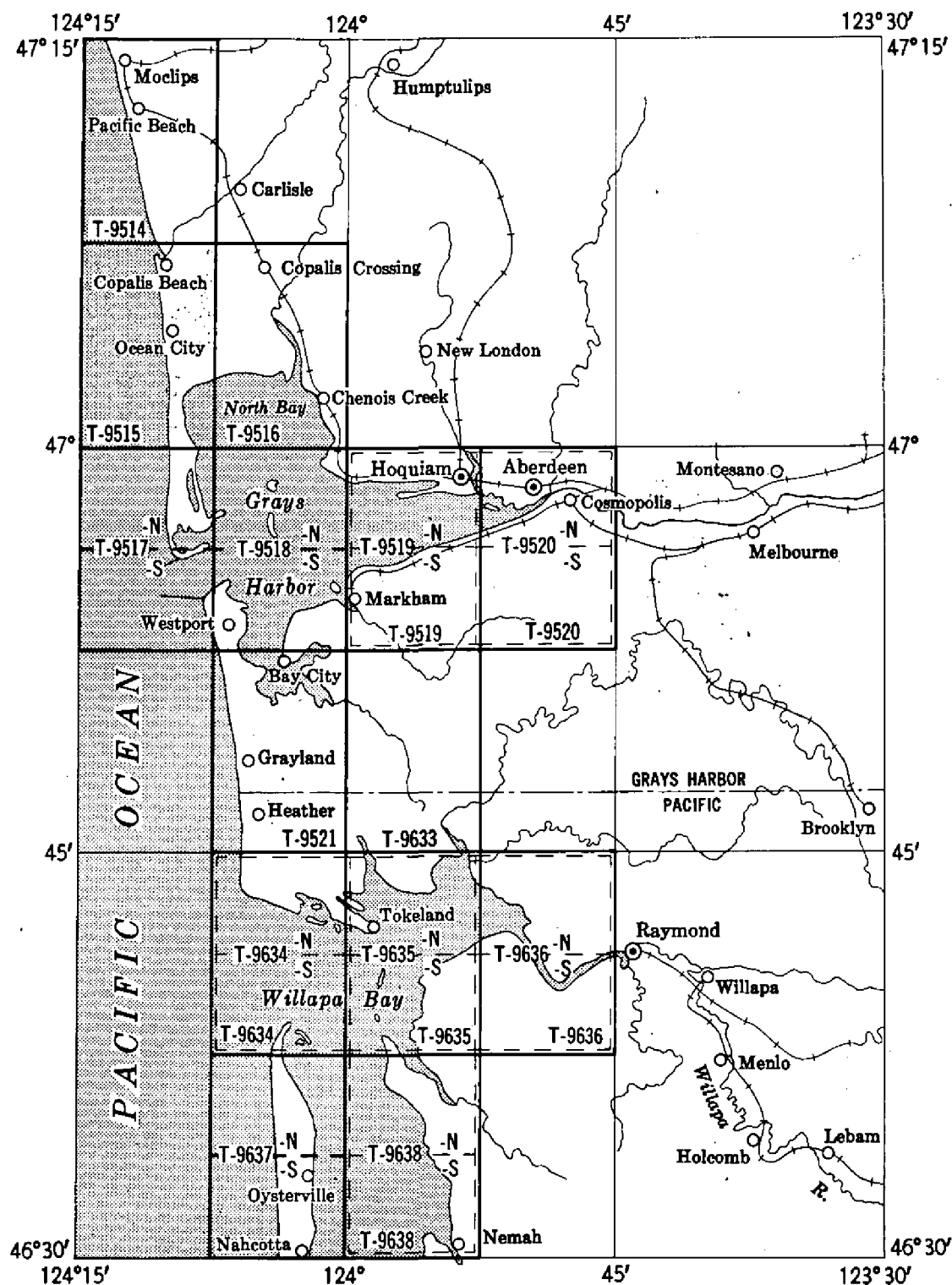
Date:

Date:

Date:

WASHINGTON, Grays Harbor - Willapa Bay

Compilation scales 1:10,000 and 1:20,000



TOPOGRAPHIC MAPS: T-9514, T-9515, T-9516 T-9519, T-9520, T-9521, T-9633 to T-9636 and T-9638, (scale 1:20,000),
T-9517-N, T-9517-S, T-9518-N, T-9518-S, T-9637-N, T-9637-S, (scale 1:10,000),

SHORELINE SURVEYS: T-9519-N, T-9519-S, T-9520-N, T-9634-N, T-9634-S,
T-9635-N, T-9635-S, T-9636-N, T-9636-S, T-9638-N, T-9638-S, scale 1:10,000,

Summary

To Accompany Descriptive Report T-9515

Topographic map T-9515 is one of 14 similar maps in project PH-62. It covers the western portion of North Bay and the Copalis Beach area along the Pacific Ocean.

This is a multiplex project in advance of hydrographic surveys to be made in the same area.

The field operations preceding compilation included complete field inspection. The establishment of some additional horizontal control and the determination of elevations required to control a multiplex project vertically.

The multiplex compilation was at a scale of 1:20,000; the manuscript consists of one vinylite sheet $7\frac{1}{2}'$ in latitude by $7\frac{1}{2}'$ in longitude.

The entire map was field edited. It is to be published by the Geological Survey at a scale of 1:62,500 as a standard topographic quadrangle.

The registered copies under T-9515 will include a cronar film positive.

FIELD INSPECTION REPORT
For
Quadrangles Nos. T-9514, T-9515, T-9516 and T-9517
Project Ph-62(49)

2: Areal Description

The area covered by these quadrangles extends along the coast of Washington from a point near the southern boundary of the Quinault Indian Reservation, at the mouth of the Moclips River, to and including the west portion of the entrance to Grays Harbor. It extends inshore for four miles at the extreme northern edge of Quadrangle T-9514, seven miles at the southern edge of Quadrangle T-9516, and about $\frac{1}{2}$ mile at the south edge of T-9517. The entire area lies within the limits of Grays Harbor County.

There are no large towns in the area and whatever commerce there is, is carried on with the towns of Aberdeen and Hoquiam to the east and south. The small settlements of Moclips, Pacific Beach, Copalis Beach, and Ocean City cater mostly to the tourist trade, attracted to the area to dig Pacific Ocean razor clams.

There are several small shingle mills in the area but except for the lumber mill at Aloha, there is no large industry. Logging is confined to small "Gippo" outfits and whatever timber is hauled through the area originates to the east and north of this project.

The area has been extensively logged and second growth deciduous scrub has added considerably to the difficulties encountered while leveling to establish vertical control points for stereoscopic mapping.

The country itself, topographically speaking, is of a rolling nature, generally about the same elevation on the few hills, which prevented any scheme of triangulation to establish elevations by trigonometric leveling. In addition, the present practice of the Forest Service of requiring loggers to leave seed patches of old timber on the tops of the hills to assist in reseeding, made the observation of any points on the hills impossible without building, a process for which this party was not equipped.

The weather is worthy of mention in considering the time necessary to complete the work on these quadrangles. Rainfall in the coastal areas of this county is well in excess of 100 inches a year, occurring mostly between September and May. This rain is not to be confused with the tropical variety in which several inches may fall in a comparatively short time, but is a gently sifting, thoroughly saturating mist which interferes with work, rather than stopping it completely. Between the months of May and September there is no rain

and the country dries out to an extent that work of any type in the wooded areas is prohibited by the Forest Service because of fire hazard. This party found it necessary to cease operations several times and call parties out of the field when the humidity dropped below the danger point.

In the northern portion of Quadrangle T-9514, the area has been extensively logged in past years and the land has been left to grow up in scrub deciduous trees and brush interspersed with fallen logs and stumps, some as high as twenty feet.

The trails which show on the photographs - few as they are - are impassable to trucks, except heavy logging vehicles, being for the most part tractor trails or abandoned railroad grades on which trestles or bridges have fallen into ruin. It was necessary to pack into many of the vertical control points in the northern portion of the sheet from Rayonier Logging Railroad which skirts the southern boundary of the Quinault Reservation.

This railroad is a typical logging railroad, traveling over the line of least resistance, up hill and down with little regard for grade to reach its objective. The grade which the train is required to take evidently is limited by the load which it carries rather than by the safety factor of operation. It is single track from its beginning at Moclips to the end at Camp Six and is poorly maintained, by normal standards, but well maintained by comparison with others in the vicinity.

From a point two miles east of Moclips, packing along the railroad grade offered the only access to the area south of the railroad and east of Highway 9C.

In the south part of the quadrangle, south, west, and north of State Highway 9C and east of the coast, access was by following abandoned railroad grades and tractor roads into an area similar to that described above.

In quadrangle T-9515 the same abandoned railroad grade, passable by truck for about three miles south of Highway 9C into Copalis Beach, was used for access. The grade beyond this point is grown up with deciduous brush.

Quadrangle T-9516 is traversed diagonally by ^{*}State Highway 9C. From the highway to the west and from the railroad grade mentioned above to the east, access was had to all points. To the east of the highway, conditions similar to those encountered in the eastern portion of Quadrangle T-9514 exist.

X THIS HWY. HAS BEEN
RE-ROUTED.

AKJ
7

Quadrangle T-9517 was comparatively easy of access, as the beach at low tide and the old road down the east side of Point Brown were easily traveled.

From Moclips, in the northwestern corner of Quadrangle T-9514, to the north part of North Bay in Quadrangle T-9515, State Highway 9C parallels the coast. A branch at Pacific Beach (also State Highway 9C) runs southeast through Copalis Crossing where a road takes off to the west (also State Highway 9C) to join with the coastal branch of 9C at Copalis Beach. From Copalis Crossing this branch of 9C goes southeast to intersect U.S. Highway 101 about 6 miles north of Hoquiam, Washington. The coastal branch of 9C turns east and south along the shores of North Bay to the mouth of the Humptulips River, where there is another connecting link between the two highways. Then the coastal branch turns south running along the shore of North Bay, and east along the shore of Grays Harbor to the town of Hoquiam.

Langley Hill in the northwest corner of T-9516 and Saddle Hill, midway in the eastern edge of the same sheet are the principal hills in the area.

Drainage is provided by the Moclips River, the Humptulips River, the Copalis River, Connor Creek, Grass Creek, Chenois Creek, Campbell Slough, and their tributary branches.

North Bay, a shallow bay on the north side of Grays Harbor, bounded by Point Brown on the west and by Point New on the east, is cut by various low water sloughs but is generally used only by very small and shallow draft boats.

In the southeast portion of the bay Neds Rock is a prominent topographic feature. It is a clay and sandstone pinnacle about 70 feet high and about 60 feet in diameter which lies about one half mile off shore and shows prominently in all directions.

The Northern Pacific Railway, Moclips Branch, runs from Moclips southeast along Highway 9C to the shores of North Bay near the mouth of the Humptulips River and then follows the shore of Grays Harbor to Hoquiam.

The Rayonier Company Logging Railroad runs east out of Moclips for about seven miles to Logging Camp Six where it turns north out of the project, and south to a dead end.

Various old logging railroad grades run throughout the area, the principal of which starts at an old log dump near the mouth of Campbell Slough and runs north and west into T-9514. In some cases these grades are passable but in most the small deciduous brush has grown over the road bed obstructing passage. Where trestles and bridges over the various drains have fallen into disrepair, even foot traffic is difficult.

Generally, the area, although comparatively high and well drained, is interspersed with marsh areas, probably caused by fallen timber or by beaver dams which block the drainage. In logged over areas downed timber and second growth deciduous trees slowed progress.

The populated areas are confined to the narrow strips bordering the highways.

Photograph coverage on the 1:24000 contact prints was adequate and complete but control difficulties necessitated the coverage of part of the area on 1:14000 photographs taken June 16, 1951. Due to the need for control to hold the cross flight north of Copalis Beach, two traverses not included in the original instructions were run.

Concerning the interpretation of vegetation, a densely wooded area of deciduous trees has a lighter grey and a more uniform tone than a correspondingly heavy growth of conifers. Deciduous trees, mostly about 40 feet high abound in the areas which have been extensively logged and along drainage. Conifers are generally found in isolated groups where logging has not been as extensive or where the conifers are replacing the deciduous in areas where the logging has been recent. A mottled area of light grey with dark streaks indicates mixture and where a solid light grey indicates a brushy area. White streaks indicate snags killed either by fire or by excessive moisture, or downed timber not moved out to the mills. A light grey regular pebbled effect generally indicates a marsh area grown over with deciduous trees about 20 feet high.

Along the coast white indicates the sand beach and the dark mottled areas adjacent indicate grass growing along the low dunes. Along the shores of North Bay, marshy areas extend outside the high water line and are indicated by a darker tone. Offshore mud flats are apparent by a change in tone.

Various natural features have been delineated on the field photographs a sufficient number of times so that compilers should be able to interpret any unnoted feature.

3. Horizontal Control

(a) Stations which were established by traverse and which were identified for control are listed below by sheet number. Where the stations were monumented four letter names were used. Unmarked stations were given a two letter and numeral designation, i.e., T B 2 indicates Traverse B, Station 2.

Quadrangle T-9514

On Traverse A running from PIER RM 1, 1927
east along the Rayonier Logging Company
Railroad to Logging Camp 6.

| | |
|-------------------|-------------------|
| TA 7 (temp) 1951 | ROAD 1951 |
| TA 12 (temp) 1951 | RAIL 1951 |
| TA 17 (temp) 1951 | TA 30 (temp) 1951 |
| TA 18 (temp) 1951 | TA 31 (temp) 1951 |
| TA 22 (temp) 1951 | TA 32 (temp) 1951 |
| TA 25 (temp) 1951 | TA 33 (temp) 1951 |
| TA 34 (temp) 1951 | |

Quadrangle T-9515

On traverse "F" running west along Highway
9C from TB 7 (about one mile west of LANGLEY
1911) to Copalis Beach and then south toward
Ocean City.

| | |
|--|--------------------|
| TF 14 (temp) 1951 | TF 17A (temp) 1951 |
| KENN 1951 (Established but not identified) | |

Quadrangle T-9516

On Traverse B running west from LANGLEY
1911 to a point about one mile from the
station, on Highway 9C.

TB 7 (temp) 1951

On Traverse C running east along Highway
9C from LANGLEY 1911 to Copalis Crossing.

TC 12 (temp) 1951

On Traverse D running east and north along the
south bank of the Humptulips River from COVE
USGS (PTS 8) 1937 USE.

| | |
|-------------------|-------------------|
| TD 1 (temp) 1951 | TD 10 (temp) 1951 |
| TD 5A (temp) 1951 | TD 18 (temp) 1951 |
| TD 9 (temp) 1951 | TD 26 (temp) 1951 |

On Traverse E running north, southeast and north from BURROWS 1939 along Highway 9C and logging road.

| | |
|-------------------|--------------------|
| TE 2 (temp) 1951 | TE 32 (temp) 1951 |
| TE 16A(temp) 1951 | TE 35A (temp) 1951 |
| TE 19A(temp) 1951 | TE 38 (temp) 1951 |
| TE 24 (temp) 1951 | TE 42 (temp) 1951 |
| TE 27 (temp) 1951 | TE 43 (temp) 1951 |

On Traverse F, lying east of the limits of Quadrangle T-9516 and north of the limits of Quadrangle T-9519, and running from PTS 15 USGS north along Highway 101 for about 4 miles.

| | |
|-----------------------|-------------------|
| P.T.S. 15 (USGS) 1911 | TG 3 (temp) 1951 |
| TG 11 (temp) 1951 | TG 15 (temp) 1951 |
| TG 7 (temp) 1951 | |

The following stations were established by third order triangulation:

Grays Harbor Bar Range Rear Light
Grays Harbor Bar Range Front Light
DAMON

In addition to the above, Point Granville Loran Mast 1951 was located by traverse from GRENVILLE 1927.

(b) No datum adjustments were made by this party. All positions are on North American 1927 Datum.

(c) Stations not established by the Coast and Geodetic Survey are:

P.T.S. 8 (USGS) - COVE
P.T.S. 15 (USGS) —
P.T.S. 12 (USGS)

Positions are listed in U.S.G.S. Bulletin 644. Positions corrected to January 18, 1952 on N.A. 1927 datum were obtained from the U.S. Geological Survey, Sacramento, California. The accuracy is not stated but it is assumed to be third-order. These stations also are listed with slightly different positions in U.S. Engineer Publications on Horizontal and Vertical Control.

(d) All stations required by the original project instructions dated 20 March 1951 and by amended instructions dated 17 August 1951 and 24 May 1951 were recovered or established and were identified.

(e) All Coast and Geodetic Survey Stations within the project limits were searched for.

The following Coast and Geodetic Survey Stations were not recovered:

T-9514

BABE 1927
HIGHLANDS 1927
MOCLIPS 1914
WRECK 1927
COPALIS 1913
HEAD 1927
PIER 1927
HOTEL 1927

T-9515

BACK 1927
CONNOR 1927
DUNE 1927
HUT 1927
TANK 1927
WALK 1940
OYHUT 1909

T-9516

CAMPBELL 1940 *
DOLPHIN 1940
HOGAN 1940
HUMP 1910

* CAMPBELL, 1940 was recovered and identified. Later it was searched for and not recovered.

T-9517

Front Range Light 1927
Rear Range Light 1927
GROIN 1909
LOOKOUT 1939
MIKE 1927
GRAYS HARBOR WEST BASE 1909
Outer Channel Rear Range
Tower 1926
Tank on south jetty west of
Station LOOKOUT, 1939

4. Vertical Control

(a) List of Bench Marks Recovered:

| <u>Quadrangle</u> | <u>B.M.</u> | <u>Established by</u> | <u>Accuracy</u> |
|-------------------|-------------------------|-----------------------|-----------------|
| T-9514 | Point Grenville Tidal 2 | USC&GS | TIDAL |
| T-9514 | " " " 3 | " | " |
| T-9514 | " " " 4 | " | " |
| T-9515 | None | | |
| T-9516 | COVE (PTS 8) 1911 | USGS | ThirdOrder |
| T-9516 | P.T.S. 12 | USGS | Third-Order |
| T-9517 | None | | |

Elevations of all Bench Marks, except Tidal Bench Marks are above mean sea level and are based on the 1929 General Adjustment. Datum adjustments were made on the Point Grenville Tidal Bench Marks reducing the elevation to half tide level using the published value of 4.65 feet.

No bench marks were established by this party.

(b) Trunk line levels along the highways and railroads in this area were run using Geodetic Level G 45 with topographic rods, carrying the elevations to .001 feet. Closure in loops from the Tidal Bench Marks at Point Grenville to Triangulation station and Bench Mark MILE 1940 was adequate. These trunk level lines were used as a base for trigonometric leveling in this area. Trigonometric levels were run using Kern Theodolite P-36563 and Wild Theodolite 18986. It should be noted that the zero for the vertical circle of the Kern is at the nadir while the zero for the vertical circle for the Wild is at the zenith. The instrument used on the various lines is noted at the top of the page in the level book.

All lines started and closed on points established by trunk line levels or on fly level points which were established and adjusted in accordance with the project instructions. By using the sum of the circle right and circle left readings in the formula " $\sin \frac{\text{Sum circle right and circle left angles} \times \text{distance}}{2} = \text{diff. elev.}$ "

very good closures were secured under adverse conditions through heavy underbrush, fallen trees, etc.

Elevations were established within the squares which were blocked off in green on the 1:24000 contact prints and in yellow on the 1:40000 reflight photographs where the two overlapped and where the points were not identical, on points which were level for a distance of about five meters in all directions. These points were numbered consecutively on the photographs, the points shown at the intersection of the crossed lines in brown being the center of the level spot.

QUADRANGLE T-9514

As no bench marks were recovered within the limits of this quadrangle, it was necessary to run very good trunk levels along the railroad and the highways to establish adequate control for verticals. A line was run from the Point Grenville Tidal B.M.s south along the beach to Moclips; then along the Northern Pacific Railway to the southeast portion of the sheet to a tie to PTS 8 (USGS) in T-9516. Another line was run south out of Moclips, along the beach to Copalis Beach, in T-9515, and tied across to the highway to Copalis Crossing to intersect the previously mentioned line to COVE P.T.S. 8 USGS. In addition, during the

running of the control traverse east from PIER RM 1 to Logging Camp Six, a double run level line was run along the Rayonier Co. Railroad for a distance of about seven miles. All levels within the vertical control scheme were run using Geodetic level G 45.

The leveling mentioned above was used as a basis for trigonometric leveling within the limits of the quad and in the area to the east.

The topography of the quadrangle is rolling and the hills are generally of the same height. The routes to the various points often were grown up with trees or were impassable to light trucks. In many cases, clearing of brush and small trees was necessary to gain access to the desired level points. Most roads, although showing up well on the photographs were passable only to heavy logging trucks or tractors and not to the light equipment available on this party. Abandoned railroad grades, showing as possible roads on the photographs, were found in many cases to be impassable because of the rotting of bridges or trestles.

A complete abstract of the points established in this quadrangle showing page, volume, photo and elevation was made from records contained in Wye Level Volumes 4 to 11 incl.

Quadrangle T-9515

The aforementioned trunk level line was extended south along State Highway 9C to the shore of North Bay, then east along the highway to enter T-9516. This line, with the line previously run east from Copalis Beach to Copalis Crossing furnished the basic vertical control in this quadrangle.

An abandoned railroad grade furnished access to the northeast portion of the quadrangle. The highway to the western portion, and the old road to Point Brown to the southern portion. Not too much difficulty was encountered in leveling in this quadrangle.

A complete abstract of these points showing page, volume, photograph, and elevation was made from notes contained in Wye Leveling Volume 12.

Quadrangle T-9516

The trunk line running south through Copalis Crossing and COVE PTS 8 USGS was continued southeast along the railroad to the shores of North Bay and then east along the shore of Grays Harbor to triangulation station MILE 1940 which also is a bench mark. A tie was made from this line to B.M.A. 26, 1927. In addition, the line mentioned in T-9515 was continued from the

north side of North Bay to connect with the line along the railroad at the Humptulips River. These lines established basic control in the north, south and northeast portion of the sheet. The area bounded by these lines, except for the usual difficulties with brush and with heavy woods was comparatively easy of access. The area northeast of Highway 9C and east of the quadrangle limit presented a greater problem. The lack of passable roads and the coming of the rainy season made work in this area extremely difficult. Most of the lines had to be cleared and it was not unusual for progress to be limited to a mile a day.

A complete abstract of these level points showing volume, page, photograph, and elevation was made from notes contained in Wye Leveling Volumes 7, 13, 14, 15, 16, and 17.

QUADRANGLE T-9517

The portion of the quadrangle north of the entrance to Grays Harbor was reached from T.B.M.s set in T-9515 and tied to triangulation station DAMON 1951, the elevation for which was determined by trigonometric leveling from bench marks on the south side of the entrance. The tie was within the limits prescribed by the instructions. No vertical control points were required in the area south of the entrance.

A complete abstract of these level points showing volume page, photograph, and elevation was made from notes contained in Wye Leveling Volume 15.

(c) The first and last designated level points for each sheet are as follows:

Quadrangle T-9514 -- 1401 to 1493 incl.
Quadrangle T-9515 -- 1501 to 1530 incl.
Quadrangle T-9516 -- 1601 to 1652 incl.
Quadrangle T-9517 -- 1701 to 1711 incl.

5. Contours and Drainage

Contouring is inapplicable.

All drainage was investigated in the field and verified under the stereoscope. In heavily wooded or particularly inaccessible areas, drainage was not followed but was classified where seen by the field inspector. Small intermittent drains in heavily wooded areas were omitted because of lack of importance.

6. Woodland Cover

Woodland cover was classified in accordance with instructions contained in the Topographic Manual Part II, Chapters 5 and 7. The area covered by this report is largely wooded. All virgin timber has been cut and the second growth is in the process of being cut or has been cut and the area has been allowed to reseed itself. In cut over areas, deciduous brush has sprung up to a height of about 20 feet. Smaller brush has grown in the more recently logged areas. In marshy areas, deciduous trees have grown to a height of about 20 feet. Where second growth timber still remains, heights of 60 to 80 feet are common.

7. Shoreline

The shoreline was inspected in accordance with "Supplemental Instructions - Shoreline Inspection" dated 18 March 1944, by walking. The heavy swells on the ocean side and the extensive mud flats in North Bay prevented the use of a boat.

The datum plane of the photographs is such that no absolute low waterline is visible, although the flights on the east edge of the area were taken just preceeding the higher low-water for the day.

In Quadrangle T-9514, the beach was walked by a two man party. It is low and sandy in the vicinity of the Moclips River but rises to the south. Clay bluffs front the ocean from just south of Pacific Beach to just north of the mouth of the Copalis River. Near triangulation station BLUFF 1927, these bluffs reach a height of 75 to 100 feet. Except as noted above, there is a broad sandy beach between the high-water line and the bluffs.

Back from the high-water line, logs and debris have formed the storm high-water line.

In T-9515 the shore is composed of low sand dunes which lie between the high-water line and the wooded dunes. Paralleling the coast, and in the northern portion of this quadrangle, Connor creek runs between the grassy dunes and the wooded dunes to the east. This creek is scouring its way north along the coast, the mouth having moved northward perceptible since work first started in this area. The movement northward should be given special attention during field edit although there is a movement afoot to stabilize the mouth of the creek before it works

far enough north to interfere with the commercial enterprises at Copalis Beach. In the area just south of Ocean City, oil drilling is in progress and this area also should be given special attention by the editor.

The same conditions described above prevail in Quadrangle T-9517, on the ocean side. On the tip of Point Brown, the name given to the whole peninsula but more properly to the southwestern point, a large rock jetty has been built to stabilize the entrance to Grays Harbor. The shore to the north of the jetty is building out. The jetty itself is in good shape, although the trestle supporting the railroad used to carry rock for the jetty is in ruins and in some places has disappeared. On the eastern portion of the south end of Point Brown, Point Damon, considerable erosion has taken place, which will be described in the report for T-9518.

North of this point, within the limits of T-9517, mud flats exposed at lower stages of the tide, extend well outside the high-water line. The shoreline falls outside the storm high-water line only a short distance, and farther north in the bay, the two are identical. In the north part of the bay, the storm high and the normal high-water line are the same. Mud flats extending from the shore are cut by the various river channels. The same conditions exist in T-9515 and in T-9516. Grass in the water extends from the shore in some places and has been noted on the field photographs.

8. Offshore Features

In T-9514, the only offshore feature is a group of rocks off Copalis Head, called Copalis Rocks. The largest of these is known specifically as Copalis Rock.

T-9515 is devoid of offshore features as far as this party was able to ascertain.

In T-9516, in North Bay, at the mouths of the various sloughs, creeks, and rivers, numerous old piling, largely in ruins abound. These line the sides of the creeks and channels and are seen on the mud flats at low tide. They evidently were used at one time for mooring log booms, but since the construction of the jetties, so it is said locally, the bay has become so shallow that passage is limited to the very shallow draft boats and all the logs are now hauled out by truck.

North Bay has some commercial oyster beds but they are rapidly being covered with silt.

In T-9517, a U.S. Coast Guard telephone line parallels the road to Point Brown. Somewhat short of the high-water line,

this line leaves the poles and travels underground to the north side of the entrance where it goes under water to the south side of the entrance at Point Chehalis. An attempt was made to secure information from the Westport Coast Guard Station relative to the exact point where this line enters the water but they were unable to furnish any data on the north end of the cable, although the south end is readily discernable.

The mud flats in North Bay have been mentioned in the previous item.

9. Landmarks and Aids

(a) Landmarks to be charted or deleted are listed on Form 567.

(b) There are no interior landmarks within the limits of this report.

(c) There are no aeronautical aids.

(d) Two fixed aids to navigation are within the area covered by this report. They are Grays Harbor Bar Range Front Light (No. 1444) and Grays Harbor Bar Range Rear Light (No. 1445). Both are located by triangulation in 1951. North of the area Point Grenville Loran station mast was located by traverse.

10. Boundaries, Monuments, and Lines

See "Special Report on Boundaries and Land Lines Project Ph. -62(49)".

The only boundary which falls within the limits of this report is that of the Quinault Indian Reservation. This boundary exists in a seemingly intangible manner. Various attempts have been made to find some concrete evidence of the location but with very little success. Rayonier Timber Co. Inc., one of the largest operators in the area furnished approximately the location of "Five Mile Post" (the point where the boundary turns to the northeast) but a determined search revealed no trace of a mark. A tree believed to mark the point where the logging road enters the reservation was located photogrammetrically.

There are no incorporated towns in the area.

Political subdivisions of Grays Harbor County are not required by the project instructions.

Twelve section corners were recovered and identified. All recovered corners are apparently remarked corners. The county officials, the engineering department of Rayonier Inc., and the Forest Service were questioned concerning additional corners but without success.

Section corners have suffered from logging operations, many witness trees have been cut, and those remaining have been so scarred as to confuse the recovery of the original corner.

Three corners were tied by angle and distance to temporary points established while running control traverses through the area. Identification by photogrammetric means was impossible. One other corner was recovered but because of heavy woods and a lack of an azimuth could not be identified.

In this connection, it is believed that the field editor can make a more comprehensive search for section corners rather than the field inspector since he will have the advantage of the location of the plotted position of the section corner with reference to detail on the manuscript. This has been proven in the area covered by Ph-26(47) where many additional corners were recovered by the field edit unit. Geographic positions are listed for several corners in U.S.G.S. publications.

Traverse notes relative to the location of section corners have been made on the backs of the pricking cards for the corners. Notes concerning posts on line are on the backs of the photographs on which the posts are noted.

11. Other Control

Recoverable topographic stations were established to provide a spacing of control stations of about two miles along the shore. Form 524 has been submitted for all recoverable topographic stations.

A thorough search was made for topographic stations established in 1940. Six were recovered and identified. Form 524 filled out as prescribed by the instructions have been submitted for these stations.

Recoverable Topographic Stations not listed on Form 567 are as follows:

| <u>T-9514</u> | <u>T-9515</u> | <u>T-9516</u> | <u>T-9517</u> |
|---------------|---------------|---------------|---------------|
| RONN 1951 | TIT 1940 | None | GO 1940 |
| RAIL 1951 | US 1940 | | DO 1940 |
| ROAD 1951 | KENN 1951 | | |
| LYLE 1951 | HOLE 1951 | | |
| GARY 1951 | DUG 1940 | | |
| | NA 1940 | | |
| | CONN 1951 | | |

12. Other Interior Features

All roads have been classified in accordance with instructions contained in the Topographic Manual, Part II, Chapter V and VII.

Buildings to be shown on the manuscript have been classified in accordance with instructions contained in Photogrammetry Instructions 29, dated 10-1-48 and in the Topographic Manual Part II, Chapters V and VII. All buildings of minor importance have been deleted with a green X. Field inspection on the 1:24,000 contact prints was very difficult because of the small scale and it is believed that a better job could have been done as regards the deletion of unnecessary buildings if the work had been on the 1:10,000 ratio prints.

All public buildings have been classified and named.

All bridges over navigable waters have been investigated. The vertical and horizontal clearances and the date and the time of the measurement are recorded on the field photographs.

The north end of a submerged telephone cable is located on the north side of the entrance to Grays Harbor and was discussed in a previous item.

13. Geographic Names

See Special Report on Geographic Names - Project Ph-62(49).

Approved:

Charles W. Clark
Charles W. Clark
Chief of Party

Respectfully submitted:

John H. Winniford
John H. Winniford
Cartographic Survey Aid

PHOTOGRAMMETRIC PLOT REPORT
Project Ph-62

21. AREA COVERED

T-9515, T-9516, T-9517 and T-9518.

22. METHOD

Horizontal control was bridged by multiplex at a scale of 1:10,000 using the 1:24,000 scale photography. One model 51-0-7261 - 7262, which covers a portion of T-9518, was set at a scale of 1:17,000 as an aid in determining scale. Pass points were transferred to the 1:10,000 manuscripts by graphic intersections. The 1:10,000 scale models were set in this area holding to horizontal and pass points.

All bridging, preparatory to the instrument compilation, was done on the 1:10,000 manuscripts. See sketch, attached, showing identified control, photo centers and strips bridged.

23. ADEQUACY OF CONTROL

Control complied with project instructions and was adequate.

All horizontal points were held within 0.5 mm except as noted and reported to Chief, Division of Photogrammetry (memo dated 19 Jan. and 19 May 1953, attached). Average adjustment between pass points in adjoining strips, where necessary, was less than 0.5 mm.

24. SUPPLEMENTAL DATA

Inapplicable.

25. PHOTOGRAPHY

Coverage and overlap were adequate. Quality of diapositives was considered only fair. Some, specifically 50-0-1570 thru 1575 on T-9515 and 50-0-1679 thru 1686 on T-9516, were poor. Only an examination of the photographic negatives would reveal whether or not the fault lay in the printing of the diapositives as the contact prints also lack snap. One serious deficiency, unquestionably in the photography, is glare in one corner of each of the photographs of many of the strips. This is very pronounced and causes an area in each of the models to be washed out.

26. ACCURACY

It is believed that these quadrangles will comply with the horizontal accuracy requirements of the Coast and Geodetic Survey.

Respectfully submitted



Henry P. Eichert
Supervisory Carto.

FACTOR DISTANCE
FROM GRID OR PROJECTION LINE
IN METERS
FORWARD (BACK)

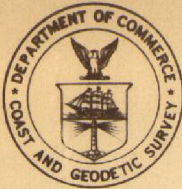
521.3 (1002.7)

CHECKED BY: B. Wilson

DATE 20 Oct. 1952

SCALE FACTOR 1.000

[illegible]



150 YEARS OF SERVICE
1807 - 1957

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Baltimore District Office
518 East 32nd St., Baltimore 18, Maryland

31 July, 1957

To: Chief, Division of Photogrammetry,
Coast and Geodetic Survey,
Washington 25, D. C.

Subject: * PTS 12, USGS, 1911, Project Ph-62

In the Photogrammetric Plot Report bound with Descriptive Report for T-9515 the subject station was erroneously reported as held during multiplex bridging operations.

This station was not submitted by the field inspector as horizontal control but was identified on field ratio print No. 50-0-1680 as a bench point. The horizontal position as furnished by the U. S. G. S. is not in agreement with our compilation.

Two Coast and Geodetic Survey control points, one nearby and the other in the preceeding model were held in our bridge.

William F. Deane
William F. Deane
Comdr. C&GS
Baltimore District Office

* THE B.M. POSITION AND A STATION
DO NOT PLOT AT SAME POINT.
A STATION G.P.S ARE APPARANTLY IN
ERROR. A STATION IS NOT
PLOTED ON MANUSCRIPT

AKA
5

Balto. Photo. Office
518 East 32nd St., Baltimore 18, Maryland

19 January 1953

To: Chief, Division of Photogrammetry,
U. S. Coast and Geodetic Survey,
Washington 25, D. C.

Subject: Horizontal Control-Project Ph-62

The substitute station for MINARD, 1940, could not be held with control stations SAMPSON, 1927, KURTZ, 1940 and MARSH, 1911, during multiplex bridging in the area of Survey T-9517, Project Ph-62, Grays Harbor, Washington. The Multiplex position for the substitute station fell 3.2 mm. south-east of its geographic position.

All possible sources of error were checked but none could be found. The area in the vicinity of the station afforded little choice to the field party for selection of a well defined point other than the windfall which was identified. The discrepancy may be mis-identification due to topographic changes occurring between time of photography and field inspection.

Jack C. Sammons,
Capt. U.S.C. & G. S.
Officer in Charge

k

Balto. Photo. Office
518 East 32nd St., Baltimore 18, Maryland

19 May 1953

To: Chief, Division of Photogrammetry,
U. S. Coast and Geodetic Survey,
Washington 25, D. C.

Subject: Horizontal Control - Project Ph-62

Horizontal control stations identified by the field party for control of Surveys T-9518, T-9519, and T-9520 in Project Ph-62, Grays Harbor - Willapa Bay, Washington which could not be held with other stations in bridging are as follows:

| | |
|--|-------------------|
| GRAYS HARBOR E. BASE 2, 1940 (Sub. Pts. 1 & 2) | 1.8 mm. east. |
| MARKHAM, 1940 (Sub. Pts. 1 & 2) | 8.0 mm. north |
| POLKA, 1940 (Sub. Pt.) | 1.2 mm. southwest |
| TS-4 (USE), 1937 (Sub. Pts. 1 & 2) | 6.8 mm. east |
| T-61, 1937 (USE)(Sub. Pts. 1 & 2) | 1.5 mm. south |

The first three listed stations are believed to be misidentified. The sub points for station TS-4 (USE), 1937 as identified by the field party were each in error the same distance and direction indicating a possible error in the geographic position. This same fact is also true of station T-61, 1937 (USE). It is noted that the CSI card submitted by the field party lists station as T-61, 1934(USE).

The geographic positions for stations TS-4(USE)1937 and T-61, 1937 (USE) are listed in publication "Horizontal And Vertical Control" by the Corps of Engineers 1943, on page A-5 of Montesano Quadrangle and page A-5 of Aberdeen Quadrangle.

A satisfactory bridge was obtained by disregarding the above listed stations and holding to other identified control; and reidentification of misidentified stations is not required to complete the surveys.

Verification of the published geographic positions of the two engineers stations is requested.

Jack C. Sammons,
Capt. U.S.C. & G. S.
Officer in Charge

COMPILATION REPORT
T-9515

31. DELINEATION

All topography except shoreline and most alongshore details was plotted with the Kelsh instrument. Detail points were plotted at the time of the instrument compilation for use in delineating these other details graphically.

Refer to item 25 of the photogrammetric plot report.

Field inspection in many cases was ambiguous, which rendered compilation difficult and resulted in many items on the discrepancy overlay for Field Edit verification:

Field Photo. No. 1575 shows "glade land" while Photo. No. 1574 denotes the same area to be "sand and grass".

Field Photo. No. 1576, denotes a "marsh" area west of Road 5, while Field Photo. No. 1575 disagrees and calls the area "I.P.".

Field Photo. 1572, shows a Road 4 in the town of Ocean City, while on Photo. No. 1573 the same road is classified as Road 7.

Other disagreements were between "I.P.s" and "sloughs", "grass in water" and "marsh".

32. CONTROL

Refer to photogrammetric plot report, item 23.

Vertical control was adequate.

33. SUPPLEMENTAL DATA

Land Plats:

1 - Township No. 18N R. 12 W. Will. Mer., dated Jan. 5, 1860.

1 - Township No. 19N R. 12 W. Will. Mer., dated Mar. 8, 1892.

34. CONTOURS AND DRAINAGE

Contouring was accomplished by the Kelsh Plotter while the horizontal bridging was done by multiplex. The multiplex diapositives were poor, the Kelsh plates were somewhat better. The topography adjacent to the shoreline was of very low relief and difficult to contour. This area should be checked by the Field Editors.

35. SHORELINE AND ALONGSHORE DETAILS

No low water line was shown.

Shoreline inspection was adequate.

35. SHORELINE AND ALONGSHORE DETAILS (CONT'D)

Special attention is called to item No. 7 of the Field Inspection Report which refers to the migration of the mouth of Connor Creek northward.

36. OFFSHORE DETAILS

None.

37. LANDMARKS AND AIDS

One landmark, TANK, 1951, is within the limits of this survey.

38. CONTROL FOR FUTURE SURVEYS

Forms 524 are submitted with this report for ten recoverable topographic stations for which positions have been established. Among these is TANK, 1951, a landmark and section monuments T 19N R 12W, $\frac{1}{4}$ Cor. 22/27 and T 19N R 12W $\frac{1}{4}$ Cor. Sec. 22/23. Four of these topographic stations were previously established by planetable methods. New positions have been determined for all four stations.

Positions for all stations were determined by multiplex methods except Topo Sta. KENN, which was established by theodolite cuts. A list of recoverable topographic stations useful for hydrography will be found under item 49, Notes for the Hydrographer.

39. JUNCTIONS

Junctions have been made as follows:

To the north with T-9514.
To the east with T-9516.
To the south with T-9517.
To the west is the Pacific Ocean.

40. HORIZONTAL AND VERTICAL ACCURACY

Refer to item 34 of this report.

41. BOUNDARIES

Landlines have been constructed using all available data.

Note item 10, Field Inspection Report as to Field Edit giving a more comprehensive search for section corners.

The following section corners were identified by the Field Inspection Party:

T-19N R 12W $\frac{1}{4}$ Cor. Sec. 22/27.
T-19N R 12W $\frac{1}{4}$ Cor. Sec. 22/23.
T-18N R 12W Sec. Cor. 15, 14, 22, 23.
T-19N R 12W Sec. Cor. 22, 23, 27, 26.
T-19N R 12W $\frac{1}{4}$ Cor. Sec. 21/22.

The following section corner established by the 29th Engineers was plotted in the Baltimore office from a photostat copy of 29th Engineers data.

T-19N R 12W $\frac{1}{4}$ Sec. Cor. Sec. 27/28.

42. to 45: Inapplicable.

46. COMPARISON WITH EXISTING MAPS

Comparison was made between this survey and AMS sheet 1178, 11 Series V791, Moclips quadrangle, scale 1:50,000.

47. COMPARISON WITH NAUTICAL CHARTS

Chart No. 6002, scale 1:180,789 at Lat. 47° 00' published July 1942 (10th Edition) 4/21/52 and Chart 6195, scale 1:40,000 published July 1949 (52nd Edition) 10/2/50.

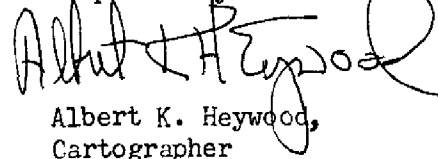
Items to be applied to Nautical Charts immediately:

None.


Items to be carried forward:

None.

Respectfully submitted


Albert K. Heywood,
Cartographer

Approved and Forwarded


Mack C. Sammons,
Capt. U.S.C. & G. S.
Officer in Charge

48.

GEOGRAPHIC NAME LIST

Connor Creek
Copalis Beach
Copalis Beach (town)
Copalis River

North Bay

Ocean City
Oyhut
Oyhut Channel

Pacific Ocean

Sampson

Wash 9C

according to the project names report, Copalis Beach is now the most generally used name for the small town, especially since it has moved to south side of river. It is also the P.O. name (there is a Copalis stop on the r.r. to eastward)

Names approved 3-9-54, on basis of project names report.
L. Heck

49. NOTES FOR THE HYDROGRAPHER

The following is a list of recoverable topographic stations which may be used for hydrography.

- * TIT, 1951
- * US, 1951
- * DUC, 1951
- * NA, 1951
- KENN, 1951
- HOLE, 1951
- CONN, 1951
- TANK, 1951

* These stations were previously established by planetable in 1940. New Positions have been plotted and reported on Forms 524.

PHOTOGRAMMETRIC OFFICE REVIEW

T- 9515

1. Projection and grids AKH 2. Title AKH 3. Manuscript numbers AKH 4. Manuscript size AKH

CONTROL STATIONS

5. Horizontal control stations of third-order or higher accuracy AKH 6. Recoverable horizontal stations of less than third-order accuracy (topographic stations) AKH 7. Photo hydro stations AKH 8. Bench marks AKH 9. Plotting of sextant fixes AKH 10. Photogrammetric plot report AKH 11. Detail points AKH

ALONGSHORE AREAS

(Nautical Chart Data)

12. Shoreline AKH 13. Low-water line AKH 14. Rocks, shoals, etc. AKH 15. Bridges AKH 16. Aids to navigation AKH 17. Landmarks AKH 18. Other alongshore physical features AKH 19. Other along-shore cultural features AKH

PHYSICAL FEATURES

20. Water features AKH 21. Natural ground cover AKH 22. Planetable contours AKH 23. Stereoscopic instrument contours AKH 24. Contours in general AKH 25. Spot elevations AKH 26. Other physical features AKH

CULTURAL FEATURES

27. Roads AKH 28. Buildings AKH 29. Railroads AKH 30. Other cultural features AKH

BOUNDARIES

31. Boundary lines AKH 32. Public land lines AKH

MISCELLANEOUS

33. Geographic names AKH 34. Junctions AKH 35. Legibility of the manuscript AKH 36. Discrepancy overlay AKH 37. Descriptive Report AKH 38. Field inspection photographs AKH 39. Forms AKH 40. AKH

Reviewer

Supervisor, Review Section or Unit

41. Remarks (see attached sheet)

FIELD COMPLETION ADDITIONS AND CORRECTIONS TO THE MANUSCRIPT

42. Additions and corrections furnished by the field completion survey have been applied to the manuscript. The manuscript is now complete except as noted under item 43.

Albert K. Heywood
 Compiler

Henry P. Esch
 Supervisor

43. Remarks:

FIELD EDIT REPORT

Project Ph-62

Quadrangle T-9515

51. Methods - Field Edit in this area was done in Accordance with Letter: Instructions for Field Edit, Project Ph-62, dated 1 June 1955.

All houses and roads were edited. Deletions and additions have been made on Field Edit Sheet No. 1. New woods roads worthy of being mapped have been located by planetable on the same sheet.

Contours have been checked by use of the planetable where practicable. Additional checking was done by use of Wallace and Tiernan Surveying Altimeters using the leapfrog method. In the area between the forks of Connor Creek the forty foot contour has been left for expression even though no elevation as great as forty feet was found. The same holds true for the area immediately north of Connor Creek and for the forty-foot contour along the east side of Highway 9-C just south of Copalis Beach.

All but three section corners on this sheet have been located by one of the following methods:

- a. Recovered and located on Field Edit Sheet No. 1 by planetable.
- b. Recovered and identified on photograph by field edit unit.
- c. Identification transferred from photographs belonging to Rayonier Incorporated to Coast and Geodetic Survey Photographs.
- d. Combination of "a" and either "b" or "c".

See Field Edit Sheet No. 2 for a tabulation of section corners and how they were located.

Several section corner identifications have been transferred from identifications made in the field by engineers of Rayonier Incorporated on photographs flown for them by Carl M. Berry, Seattle, Washington in September 1950. The contact scale of these photographs is 1:12,000 and they are much clearer and show much more detail than Coast and Geodetic Survey photographs taken in July 1950. The Rayonier Engineers contend that the accuracy of their identification is within five feet. Five of their identifications were checked in the field by the field edit unit. No radical errors in identification were found. As the two sets of photographs were taken only two months apart, the transfer of points was not too

difficult. See Photograph Nos. 1571, 1572, 1573, 1574 and notes on Field Edit Sheet No. 2.

It was noted that the north-south section lines are apparently too far to the west on the manuscript and a planetable traverse was run from Triangulation Station SAMPSON 1927 to Triangulation Station KURTZ 1940, including Section Corners 15, 14, 22, 23 and 14, 13, 24, 23 T18N R12W in the line. The planetable location of these corners are approximately 90 feet east and 200 feet southeast respectively of the manuscript location. Other corners located by planetable, but not in this traverse, were found to be east and south of the section lines on the manuscript. These are:

Section Corner 22, 23, 27, 26 T18N R12W (110 feet E, 10 feet S)
 Section Corner 10, 11, 15, 14 T18N R12W (80 feet E, 160 feet S)
 Section Corner 11, 12, 14, 15 T18N R12W (150 feet E, 100 feet S)

The notes to the field editor on the discrepancy print have been either answered on that print or cross-referenced to the proper field edit sheet of photograph upon which the query is answered.

A legend describing colored inks and symbols used during field edit is in the lower left hand corner of Field Edit Sheet No. 1

Field edit information has been noted on the discrepancy prints, Field Edit Sheet No. 1, Field Edit Sheet No. 2 and the following photographs:

1:10,000 scale

| <u>Photo No.</u> | <u>Type of Information</u> |
|------------------|--|
| 1570 | Azimuth Mark KENN, section corners |
| 1571 thru 1574 | Section corners |
| 1576 | Shoreline corrections |
| 1577 | Shoreline corrections, re-identification of Topographic Station NA (1940) 1951 |

1:20,000 scale

| | |
|-------|---|
| 1517 | Additional field inspection |
| ✓1570 | New topographic stations |
| ✓1571 | Additional field inspection in Copalis Beach |
| ✓1572 | Additional topographic station, additional field inspection along beach |
| ✓1574 | Additional field inspection along beach |
| ✓1575 | Shoreline corrections, North Bay |
| ✓1576 | Additional field inspection |

52. Adequacy of Compilation - In consideration of the fact that

original field inspection was incomplete and somewhat confusing in certain areas, it is believed that the compilation of this map was well done. However, changes noted below should be made:

a. A separation between sand beach areas and shifting sand dune areas should be made. See 1:20,000 scale photograph Nos. 1517, 1572, 1574 and 1576.

b. The shoreline as ^{originally} mapped appears to be the storm high water line rather than the mean high water line. This is true for the entire stretch of ocean beach and also sections of the North Bay shoreline. See Field Edit Sheet No. 1 for location of the mean high water line along the ocean beach by planetable and Photograph Nos. 1576, 1577 (1:10,000 scale) and 1575 (1:20,000 scale) for shoreline corrections around North Bay.

c. Identification of Topographic Station TIT (1940) 1951 was verified. A corrected description is submitted.

d. Identification in 1951 of Topographic Station NA (1940) 1951 was in error and therefore the station is incorrectly located on the manuscript. It was re-identified on Photograph No. 1577 by the field edit unit and should be re-located on the manuscript. Form 524, Description of Topographic Station and Form 157, Control Station Identification are submitted.

e. The underground mark and reference marks at Triangulation Station KENN 1951-1953 were recovered. The surface mark has been destroyed. Form 526, Recovery Note, Triangulation Station is submitted.

f. The following objects were identified during field edit for location by photogrammetric means as additional topographic stations:

| <u>Station</u> | <u>Identified on Photo</u> |
|--------------------------------|----------------------------|
| Water Tank, white elevated | 1570 (1:10,000) |
| Water Tank, unpainted elevated | 1570 (1:10,000) |
| Azimuth Mark KENN 1951-1952 | 1570 (1:10,000) |
| Water Tank, yellow elevated | 1572 (1:20,000) |

g. Note new location of the mouth of Connor Creek on Field Edit Sheet No. 1. It has been somewhat stabilized by use of piling where it turns toward the ocean. There is no bulkhead or similar structure. The piling is not of a nature to be mapped.

h. Oil drilling operations just north of Station SAMPSON have ceased. Two wells have been capped and two storage tanks remain. Buildings have been deleted. Otherwise, there is no change in compilation.

1. The bridge over the Copalis River at Copalis Beach is correctly compiled without a clearance. The channel is congested with piling and snags and only skiffs with outboard motors navigate it.

53. Map Accuracy - No horizontal accuracy test by traverse was made.

Two standard accuracy tests were run with the planetable in the locations indicated on the discrepancy print. The initial and closing points of the test in the vicinity of Ocean City are intersections of side roads with Highway 9-C. Horizontal closure was 2.5 feet; vertical closure was 0.5 foot. All points tested were within one-half of one 20-foot contour interval or better. See Vertical Accuracy Test, Summary and Abstract, Page 38. The initial and closing points of the test approximately two miles east of Copalis beach are a road intersection and Spot Elevation 71 respectively. The horizontal closure was approximately seventy-five feet, which was adjusted back through the line; the vertical closure was 0.2 foot. There were twenty-five setups in the line and sights varied from forty-six feet to four hundred sixty nine feet. All points tested were within one-half of one 40 foot contour interval or better. See Vertical Accuracy Test, Summary and Abstract, Page 37.

Of 109 other points checked by planetable, 103 (95%) were within $\frac{1}{2}$ contour interval or better, four points were between $\frac{1}{2}$ and full interval and two points were in error more than one full interval. Of 52 points checked with Wallace and Tiernan Surveying Altimeters, 48 (92%) were within $\frac{1}{2}$ contour interval or better and four were in error between one-half and one contour interval.

It is noted that there is a tendency for heavily wooded areas to be over-contoured. A specific instance is the 245 foot top south of the county road at the northeast corner of the sheet. The elevation determined during field edit was 210 feet.

There are areas on the sheet that were not checked because they are not easily accessible and vegetation is dense. The extra time and expense would be too great.

See Form 187, Vertical Accuracy Test, Summary and Abstract, submitted with this report.

54. Recommendations - It is believed that more thorough and more careful field inspection would improve the quality of similar maps, especially in the shoreline areas. Tree heights determined during interior inspection would probably be an aid to the Kelsh operator when contouring.

55. Examination of Proof Copy - The following named persons have agreed to examine a proof copy of the map for possible errors:

Mr. Myron Savage
Rayonier Incorporated
8th & Levee Streets
Hoquiam, Washington


Mr. Arnold Lock
Copalis Beach, Washington

Mr. Savage is an engineer with Rayonier Incorporated and is well acquainted with the area.


Mr. Lock has been a resident in the area for over 30 years and a fire warden for a large part of that time.

An effort was made to ascertain whether or not the names Lang Lake, Cranberry Creek and Cedar Creek, all found on AMS Sheet 1178, 11 Series V791, Moclips Quadrangle, scale 1:50,000, should be on the map. None of them are in present usage. Some of the long time residents of the area have never heard of them, though others have in the past. It is recommended that these names not be used on the map.

Approved and forwarded,


Fred Natella
Comdr., C&G Survey
Chief of Party

Respectfully submitted,


for Charles H. Bishop
Cartographer
C&GS

Review Report T-9515

Topographic Map

26 August 1957

61. General Statement

See Summary Report

62. Comparison with Registered Topographic Surveys

| | | |
|-------|-----------|------|
| H-334 | 1:221,360 | 1852 |
| 1781 | 1:20,000 | 1887 |
| 4305 | 1:20,000 | 1927 |
| 6811 | 1:10,000 | 1940 |
| 6812 | 1:10,000 | 1940 |

Manuscript T-9515 supercedes all the above surveys in common areas as source material for charts.

63. Comparison with Maps of other Agencies

| | |
|----------------|-------------------------|
| U.S.G.S. | Ocosta Quadrangle 1913 |
| Scale 1:62,500 | Contour Interval 25' |
| A.M.S. | Moclips Quadrangle 1939 |
| Scale 1:50,000 | Contour Interval 20' |

64. Comparison with Contemporary Hydrographic Surveys

None

65. Comparison with Nautical Charts

| | | |
|------------|-----------|---------|
| Chart 6195 | 1:40,000 | 5/27/57 |
| Chart 6002 | 1:180,789 | 4/8/57 |

66. Adequacy of Results and Future Surveys

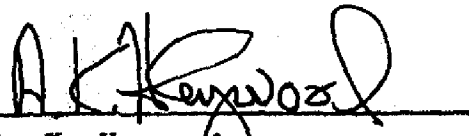
This map complies with all instructions and meets the National Standards of Map Accuracy. See Field Edit Report item 53.

It is of adequate accuracy for use as a base for future hydrographic surveys.


67. Land Lines

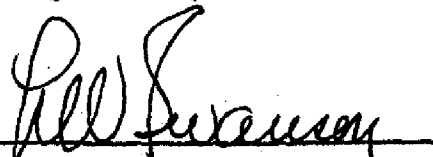
Sixteen section corners were located by field edit either by planetable or transfer from Rayonier photos. Seven corners were located by both methods. The transfer of identification from Rayonier photos did not always agree with the planetable location. In all cases the planetable location was shown.

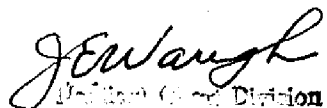
Reviewed By:

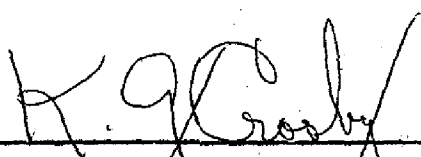

A. K. Heywood

Approved:


Chief, Review Branch
Photogrammetry Division


Chief, Photogrammetry Div.
4 May 59


Chief, Nautical Chart Branch
Charts Division
5/18/61


Chief, Coastal Surveys Div.
Assistant Director for Oceanography
5/26/61

NAUTICAL CHARTS BRANCH

SURVEY NO. T-9515

Record of Application to Charts

[illegible]

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.