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C. & G. SURVEY,
LIBRARY AND ARCHIVES
JUL 14 1912
Acc. No

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Department of Commerce and Labor
COAST AND GEODETIC SURVEY

Superintendent.

State: *Wash*

DESCRIPTIVE REPORT.

Sheet No.

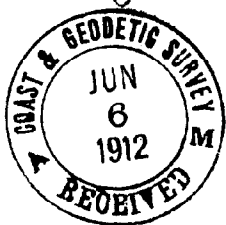
LOCALITY:

*Port Townsend Bay - Speed
Trial Course*

1902

CHIEF OF PARTY:

J. F. Pratt



Superintendent.

Port Townsend Bay Washington
Speed Trial Course for Submarines

Report

C. & G. SURVEY,
LIBRARY AND ARCHIVES
JUN 14 1912
Acc. No

Inconformity with your instruc-

tions of May ^{1st} 3rd, 1912, steps were immediately taken to proceed to Port Townsend Bay, for the purpose of verifying these ranges.

As Mr. Trueblood had not arrived in Seattle, I instructed the Commanding Officer of the S. S. McArthur to procure the necessary signal material and fuel for the work and to proceed to the working ground with the vessel and field party under his command and under my personal supervision.

The McArthur with all on board sailed from West Seattle, Washington at 1 P. M. May 8th, and arrived in Port Townsend Bay, early enough to view that day, the ranges and make plans for the field work, which was carried on during the 9th, 10th, and the forenoon of the 11th, during which time eight signals were erected and occupied. One of which S. W. Base was in order to see over trees, a tripod and scaffold signal.

This trial course is laid out to be on a line connecting a range mark on a cannery wharf a little to the eastward from the Rail Road Station in Port Townsend and a range mark on the Chemical Works at the southerly end of Port Townsend Bay.

The northerly end of the trial course is abreast two range beacons on Wala Point. This Wala Point range, called North Range was used for the initial, both in distance and direction. The course extends toward the South end of the Bay one nautical mile, and is subdivided into quarter knots. See accompanying diagram graphically showing arrangement of beacons

distances and errors.

With the exception of North Range all the front beacons have been built on two piles ^{in the water} at each front, while the rear ones are built at high water mark along the shore.

The two north range beacons and the remaining four rear ones are tall poles from six to eight inches diameter at their bases planted in the ground. All these range beacons both front and rear are painted with white and red bands and surmounted with white triangular shaped gratings whose faces are parallel with the trial course. See accompanying five photographs which illustrates their construction and appearance.

Signals, called auxiliary ("aux") were built exactly on ^{line} ~~time~~, between North Front Range and North Rear Range and exactly eight feet from each of their centers. Auxiliary signals were also built on line of each of the remaining rear ranges and exactly eight feet in front of them.

All these carefully centered and plumbed auxiliary stations were occupied and formed the framework to carry the positions of the ranges.

None of the ranges marks were moved by the McArthur's party. It will be seen that the distances between front and back ranges are very short.

All of the beacons were observed upon as near the ground as possible and the lack of those out in the water being exactly plumb and remaining plumb all summer will undoubtedly be greater than their present discrepancies with the exception of ^{the} Front ~~and the~~ first quarter mile which appears to be of little import. The half mile Front Beacon being only about $1\frac{1}{2}$ inch too far north and the one mile Front Beacon being only about $7/8$ inch too far south, to make the lines parallel, in both instances being less than the uncertainty of being plumb.

Very respectfully,


Inspector, U. S. Coast and Geodetic Survey.

To the Superintendent,

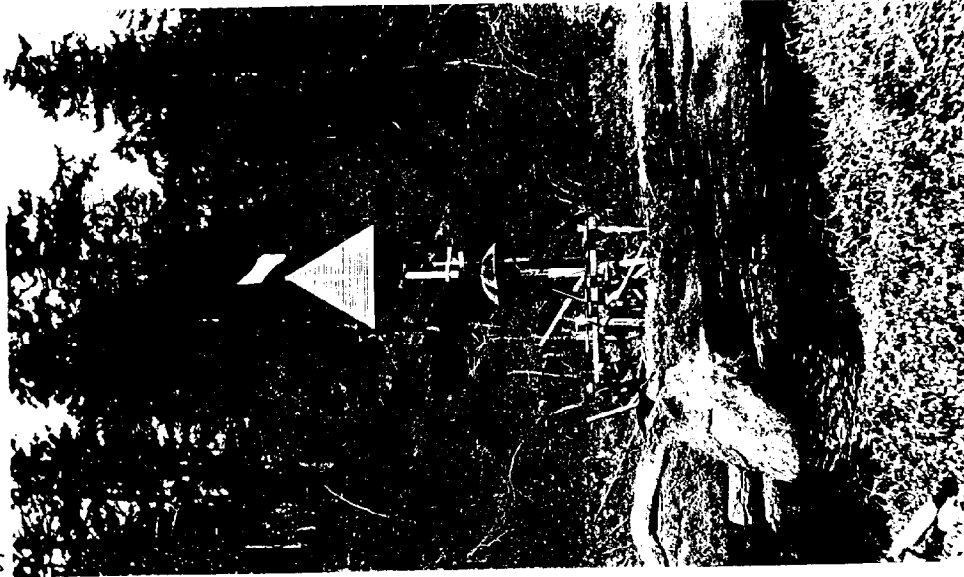
U. S. Coast and Geodetic Survey,

Washington, D. C.

Seattle, Washington,

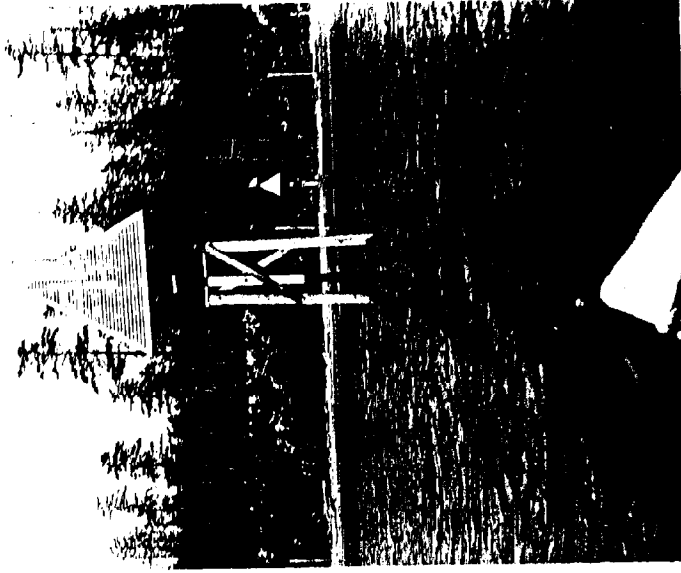
May 31st, 1912.

Port Townsend Speed Trial Course



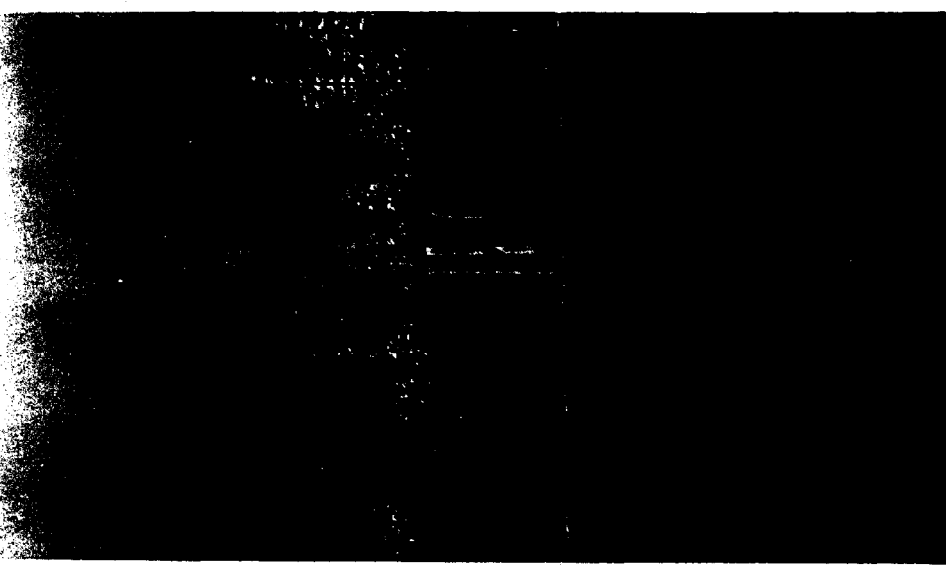
No 1 North Rear Ramp

Port Townsend Speed Trial Course



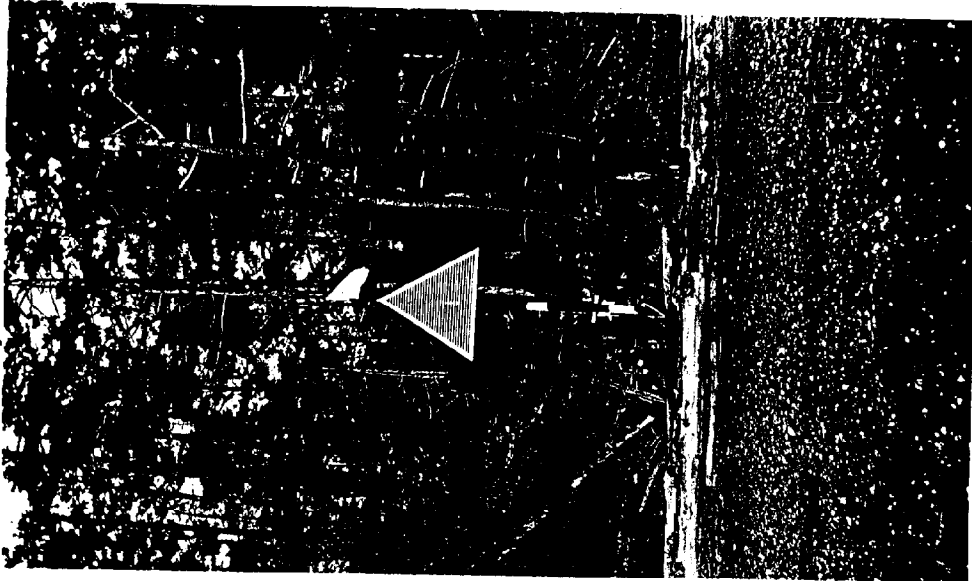
No 2 Front South Ramp

Port-Johnson Speed Trail Course



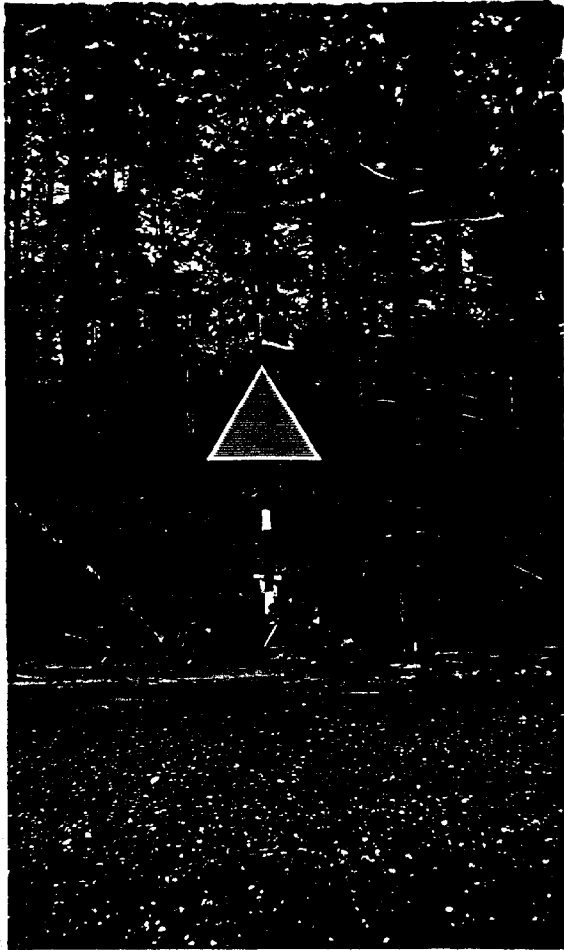
No. 2 Duplexville S. Forest Range

Port-Johnson Speed Trail Course



No. 3. Rear South Range

Post-Township Speed Trial Course



No. 3 Duplicate Rear South Range

STATISTICS OF FIELD WORK.

Statistics of field work executed by *C. J. Quillian*
 Supervised by *J. F. Pratt*

Date and place of beginning field work *Port Townsend W* *1912*
 Date and place of closing field work *Port Townsend W* *May 8*
May 11

RECONNAISSANCE:

Area of, in square statute miles
 Lines of intervisibility determined as per sketch submitted
 Number of points selected for scheme

BASE LINES:

Primary, length of
 Secondary, length of
 Beach measurements, length of
 Number of days employed in measurements of base
 Number of days employed in remeasurements

TRIANGULATION: *Port Townsend Speed Trial Course*

Area of, in square statute miles
 Signal poles erected, number of *7*
 Observing tripods and scaffolds built, number of *1*
 Observing tripods and scaffolds built, heights of *25*
 Days occupied in opening and verifying lines of sight, number of *0*
 Stations occupied for horizontal measures, number of *8*
 Stations occupied for vertical measures, number of *0*
 Geographic positions determined, number of *17*
 Elevations determined trigonometrically, number of *0*

LEVELING:

Elevations determined by leveling, number of
 Lines of leveling, length of

LATITUDE, LONGITUDE, AND AZIMUTH WORK:

Latitude stations occupied, number of
 Pairs of stars observed for latitude, number of
 Average number of observations on a pair
 Longitude stations, telegraphic, number of
 Longitude stations, telegraphic, number of nights on which signals were exchanged
 Longitude stations, chronometric, etc., number of
 Azimuth stations, number of
 Number of nights of observations for azimuth
 Number of stars observed for azimuth

GRAVITY DETERMINATIONS:

Number of pendulum stations occupied

MAGNETIC WORK:

Land stations occupied for magnetic declination, number of
Land stations occupied for magnetic dip, number of
Land stations occupied for magnetic intensity, number of
Sea stations occupied for magnetic declination, number of
Sea stations occupied for magnetic dip, number of
Sea stations occupied for magnetic intensity, number of
Sea stations at which ship was completely swung, number of
Magnetic observatory operated for declination variations, number of days
Magnetic observatory operated for horizontal intensity variations, number of days
Magnetic observatory operated for vertical intensity variations, number of days
Magnetic observatory, absolute observations, number of days
Magnetic observatory, seismological observations, number of days
Magnetic observatory, atmospheric electricity observations, number of days
Magnetic observatory, meteorological observations, number of days

TOPOGRAPHY:

Area surveyed in square statute miles
Length of general coast-line in statute miles
Length of shore-line of rivers in statute miles
Length of shore-line of creeks in statute miles
Length of shore-line of ponds in statute miles
Length of roads in statute miles
Topographic sheets finished, number of
Topographic sheets, scales of
Topographic sheets, limits and localities of :
.....
.....
.....

HYDROGRAPHY:

Area sounded in square statute miles
Number of miles (statute) run while sounding
Number of positions determined (double angles)
Number of soundings
Number of tidal stations established
Number of specimens of bottom preserved
Current stations, number of
Hydrographic sheets finished, number of
Hydrographic sheets, scales of
Hydrographic sheets, limits and localities of :
.....
.....

PHYSICAL HYDROGRAPHY:

Number of soundings on cross-sections

Current stations, number of

Deep-sea current stations, number of

Deep-sea surface current observations, number of

Deep-sea subsurface current observations, number of

Number of observations of density of water

Number of observations of temperature of water

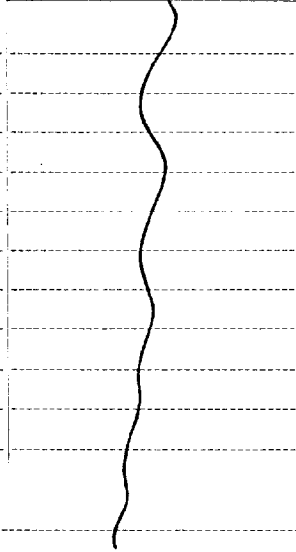
Tidal stations established, number of

Miles (statute) run in deep-sea sounding

Number of deep-sea soundings

Number of specimens of bottom preserved

Locality of work; results, how shown, etc.:



UNFINISHED FIELD RECORDS AND SHEETS (detailed statement required by Circular No. 26):

Means of transportation (if vessel, give name):

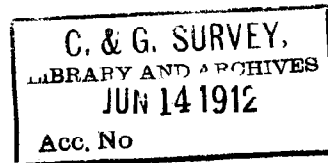
U.S.S. Mac Arthur

POST-OFFICE ADDRESS:

TELEGRAPH ADDRESS:

EXPRESS OFFICE:

Department of Commerce and Labor
COAST AND GEODETIC SURVEY



May 23, 1912.

Capt. J. F. Pratt,
Inspector, C. & G. S.,
Seattle, Wash.,

Sir,

I am transmitting to you herewith the original records and duplicate copies of the computation of the Verification of the Navy Speed Trial Course at Port Townsend, Wash.

Your orders to execute the work were received on the afternoon of May 7. The vessel coaled and took on supplies and sailed at 1 P.M., May 8, with the Inspector on board. Field work was done May 9, 10 & 11, and the vessel returned to Seattle on the afternoon of May 11.

Several days have elapsed in computing the work and making least square adjustments, which were simple, but made so seldom in the field that some time was lost from unfamiliarity

The accompanying description by Mr. A.M. Sobieralski, Asst C. & G. Survey, gives in detail the method of computation, and the sketch graphically shows the errors of the course. The errors are tabulated below.

The steering range or course to be followed by the vessels consists of a front and rear mark. It is inclined to the line of the North Range marks at an angle of 51.3 seconds of arc. this error is inappreciable, the error in distance ^{on the course}

from this ^{Course}~~course~~ is less than one millimeter.

The distance from the North Range to the South Range is 1853.41 meters, being 0.16 meter longer than the nautical mile. The South Range is not exactly parallel to the North Range, the error being 33.9 seconds of arc, and causing an error in the length of the course on the steering range of 0.178 meter, which is added to the error in distance and makes the course over the steering range to be 1853.59 meters long, or 1.000083 nautical mile.

The respective fractions of a nautical mile indicated by the ranges when the work was finished are as follows,

1st quarter		0.2544611 nautical mile		
2nd	" or 1/2m	0.5010095	"	"
3rd	" or 3/4m	0.7500175	"	"
4th	" or 1m	1.000083	"	"

If it is desired that each range be parallel to the North Range, the FRONT RANGES on the quarter, half, three-quarters and South Range should be shifted as follows;

Quarter (1st S. of N. Range)	toward N. Range	0.974 meter	
Half (2 " " ")	from N. Range	0.039 "	1/2 inch
3-quar (3 " " ")	toward N. Range	0.044 "	
Mile (4 " " ")	toward N. Range	0.023 "	7/8 inch

If the front ranges are shifted as above, the distances on the course would be as follows;

1/4 mile	463.32 meters or	0.250004 naut. mile
1/2 "	926.73 "	0.501181 " "
3/4 "	1389.68 "	0.749361 " "
1 "	1853.41 "	1.000083 ⁰ " "

The base used was Kala 2 (W. H. Burger 1906) to Port Townsend S. W. Base both stations being recovered.

For closing triangles and for determining the parallelism of ranges, auxiliary stations were established exactly on the range and exactly 8 feet from the center of the range ~~poles~~ and occupied. The sketch shows the method of determining the parallelism of ranges.

Observations were made by myself and Mr. Sobieralski. Computations and sketches by the Junior officers of the ship under supervision of Mr. Sobieralski.

Respectfully,
H. G. Quillen
Asst. C. & G. Survey,
Commanding.

Respectfully forwarded
for the Department for information
J. J. M. A. B.
Sobieralski C. & G. S.