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4-679  
(April 1933)

# FIELD NOTES

OF THE SURVEY OF THE

RETRACEMENT AND DEPENDENT RESURVEY OF THE OREGON AND WASHINGTON

STATE BOUNDARY FROM 51 MILE 48 CHAIN MONUMENT TO 46 MILE

MONUMENT, INDEPENDENT RESURVEY OF THE SOUTH BOUNDARY,

DEPENDENT RESURVEY OF THE WEST BOUNDARY,

and the

SUBDIVISIONAL LINES OF TOWNSHIP 6 NORTH, RANGE 39 EAST.

Of the WILLAMETTE Meridian,

In the State of OREGON

EXECUTED BY

OTIS O. GOULD

U. S. TRANSITMAN

Under special instructions dated April 11, 19 29, which provided

for the surveys included under Group No. 135, bearing the approval of the

Commissioner of the General Land Office under date of May 13, 1929

and assignment instructions dated May 19, 19 32.

Survey commenced Aug. 1, 19 32.

Survey completed Sept. 13, 19 32.



# INDEX DIAGRAM.

Township 6 North, Range 39 East.

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Retracements indexed in Red.

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## Township 6 North, Range 39 East.

The retracement and dependent resurvey of the Oregon and Washington state boundary through range 39 east, the retracement and resurvey of the west boundary, independent resurvey of the south boundary and subdivisional lines of fractional township 6 north, range 39 east, were executed with a Burt solar compass made by W. and L. E. Gurley, serial No. 20, U. S. G. S., constructed in accordance with the standard specifications of the General Land Office. The horizontal circle has a diameter of  $5\frac{3}{4}$  ins., with opposite double verniers reading to single minutes; the sight vanes have a length of 8 ins. and a spread of 14 ins. The instrument is equipped with a Burt solar attachment; radius of latitude arc 5.4 ins., and decl. arc  $4\frac{3}{4}$  ins., each with verniers reading to single minutes.

The observations in camp; on Polaris for the establishment of the meridian; and the altitude observations on the sun on the meridian to verify the latitude and the reading of my watch, were executed with a light mountain solar transit made by Buff and Buff, serial No. 9987, constructed in accordance with the standard specifications of the General Land Office. The horizontal circle has a diameter of  $4\frac{1}{2}$  inches, with two double opposite verniers reading to single minutes; the vertical circle has a diameter of 4 ins., with one double vernier reading to single minutes; the telescope has fixed stadia wires, ratio 1:132, with focal constant of 1.2 lks. The instrument is equipped with improved Smith solar attachment: radius of latitude arc  $2\frac{1}{2}$  ins., and of decl. arc  $3\frac{1}{2}$  ins., each with verniers reading to single minutes. The instruments were in good condition, having been placed in satisfactory adjustment prior to the beginning of the survey, and tested and found free from appreciable error, were approved by the district cadastral engineer on May 19, 1932. I examined all the instrumental adjustments before making the field tests hereinafter recorded.

The direction of all lines was determined by solar compass method. The measurements were made with a Lallie steel tape, 5 chs. in length, graduated every link for the first 100 lks., and the balance at intervals of 10 lks. The tape was tested by comparison with a Lufkin standard 1 ch. steel tape and found correct. The measurements were made on the slope, and the vertical angle of each interval was ascertained by a clinometer in good adjustment: the horizontal equivalents are entered in the field note record.

The data furnished with the special instructions gives the geographic position for the SW. cor. of T. 5 N., R. 39 E., as follows: latitude  $45^{\circ}52'N.$ , and longitude  $118^{\circ}00'W.$

July 23, 1932, in camp located near the center of sec. 25, at 11h 35m 07s p. m., l.m.t., or 11h 26m 40s p. m. by my watch, which reads correct 120th meridian time as determined by radio signal I observe Polaris at eastern elongation, making two sights each with the telescope in direct and reversed positions, and place a tack at the mean point, on a peg driven firmly in the ground 10 chs. N. July 24, after sunrise, I lay off the azimuth of Polaris  $1^{\circ}31'44''$ , and make a meridian mark on a second peg, 26.68 lks. (17.61 ft.) to the west of the mean point in the line determined by the observation; I verify the angle by a vernier reading of the instrument.

In order to verify the latitude of this station and the reading of my watch, I make a meridian observation of the sun, first setting on the lower limb and noting the transit of the west limb, then after reversal of the instrument, setting on the upper limb and noting the transit of the east limb, as follows:

Mean observed altitude	-----	63° 50' 30"
Reduced latitude	-----	45° 58' 03"
Mean watch time of observation	-----	11h 57m 52s
Watch slow of L. m. t.	-----	8m 27s



Township 6 North, Range 39 East.

Same, by reference to radio time signals and calculated difference in longitude ----- 8m 27s.

Every 30 minutes from 6 to 10.30 a. m. and from 1.30 to 6 p. m., I make proper settings on the arcs of the solar attachment and ascertain that the resulting orientation of the instrument, when compared with the meridian established by Polaris observation, has a maximum error less than 1' 30".

I repeat the tests of the arcs daily by noon observation and verify the meridional indications at frequent intervals throughout the survey.

The observed magnetic declination is 21° 50' E.

Chains Resurvey of Part of the Oregon and Washington Boundary

"Dependent resurvey, reestablishment of the surveys executed by Daniel G. Major, Astronomer and Surveyor, in 1864"

Retracement

From the 51 mile 48 ch. monument, on the Oregon and Washington boundary.

West, retracing the Oregon and Washington boundary.

1.13 Fall 2 lks. S. of the  $\frac{1}{4}$  sec. cor. of sec. 14, T. 6 N., R. 39 E., established under group No. 130, Washington.

41.13 Fall 77 lks. S. of the cor. of secs. 14 and 15, T. 6 N., R. 39 E., established under group No. 130, Washington.

78.90 Fall 146 lks. S. of the 50 mile 52 chain monument.

This line is N. 88° 56' W., 78.91 chs.

From the monument,

West, retracing the Oregon and Washington boundary.

2.23 Fall 1 lk. S. of the  $\frac{1}{4}$  sec. cor. of sec. 15, T. 6 N., R. 39 E., established under group No. 130, Washington.

42.23 Fall 14 lks. S. of the cor. of secs. 15 and 16, T. 6 N., R. 39 E., established under group No. 130, Washington.

82.23 Fall 27 lks. S. of the  $\frac{1}{4}$  sec. cor. of sec. 16, T. 6 N., R. 39 E., established under group No. 130, Washington.

122.23 Fall 39 lks. S. of the cor. of secs. 16 and 17, T. 6 N., R. 39 E., established under group No. 130, Washington.

155.17 Fall 50 lks. S. of the 48 mile 40 chain monument.

This line is N. 89° 49' W., 155.17 chs.

From the monument,

West, retracing the Oregon and Washington boundary.

7.06 Fall 2 lks. S. of the  $\frac{1}{4}$  sec. cor. of sec. 17, T. 6 N., R. 39 E., established under group No. 130, Washington.

44.50 Fall 14 lks. S. of the 47 mile 60 chain monument.

This line is N. 89° 49' W., 44.50 chs.

From the monument,



## Resurvey of the West Boundary of T. 6 N., R. 39 E.

Chains	"Reestablishment of the surveys executed by Geo. Williams, U. S. Deputy Surveyor, in 1872,"
	Random Line.
	I commence the retracement at the old cor. of Tps. 6 N., Rs. 38 and 39 E.
	North, retracing bet. secs. 31 and 36.
40.00	Find no trace of the $\frac{1}{4}$ sec. cor. Set temp.
80.00	Find no trace of the cor. of secs. 25, 30, 31, and 36. Set temp.
	North, retracing bet. secs. 25 and 30.
40.00	Find no trace of the $\frac{1}{4}$ sec. cor. Set temp.
80.00	Find no trace of the cor. of secs. 19, 24, 25, and 30. Set temp.
	North, retracing bet. secs. 19 and 24.
40.00	Find no trace of the $\frac{1}{4}$ sec. cor. Set temp.
80.00	Find no trace of the cor. of secs. 13, 18, 19, and 24. Set temp.
	North, retracing bet. secs. 13 and 18.
40.00	Find no trace of the $\frac{1}{4}$ sec. cor. Set temp.
43.97	Intersect the Oregon and Washington bdy. Find no trace of the old closing cor. of Tps. 6 N., Rs. 38 and 39 E.
	From this point the proportionate point for the closing cor. of Tps. 6 N., Rs. 38 and 39 E., bears N.89°49'W., 21.11 chs. dist.
	The line bet. the old cor. of Tps. 6 N., Rs. 38 and 39 E., and the proportionate point for the closing cor. of Tps. 6 N., Rs. 38 and 39 E., is therefore N.4°15'W., 284.82 chs. The proportionate length of the E. bdys. of secs. 36, 25, and 24 is 77.98 chs., and the proportionate length of the E. bdy. of sec. 13 is 50.88 chs.
	----- True Line.
	Thence from the cor. of T. 6 N., R. 39 E. only., hereinbefore described.
	North, on the W. bdy. of sec. 31.
1.95	The old Tp. cor. of Tps. 6 N., Rs. 38 and 39 E., which is determined from traces of old rotted stake and evidence of original mound and pits.
	This cor. will hereafter refer to T. 6 N., R. 38 E., and T. 5 N., R. 39 E.
	At true point for cor.
	Set an iron post, 3 ft. long, 3 ins. diam., 27 ins. in the ground, for cor. of T. 6 N., R. 38 E., and T. 5 N., R. 39 E., with brass cap marked.



Resurvey of the West Boundary of T. 6 N., R. 39 E.

Chains

T6N	R38E	T6N
S36	R39E	S31
S 6		
T5N		
R39E		

1932

from which

A spruce, 9 ins. diam., bears N.45°W., 18 lks. dist., marked T 6 N R 38 E S 36 B T.

Thence continuing my measurements.

N.4°15'W., resurveying the W. bdy. of sec. 31.

Desc. 690 ft. over broken NW. slope, through timber and dense brush.

19.80 Spring branch, 2 lks. wide, course NW.; thence along W. slope.

32.50 Small spur, slopes NW.; continue to desc. 220 ft. over N. slope.

40.11 Mid point on W. bdy. of sec. 31, later determined.

Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground to solid rock, and in a mound of stone to top, for  $\frac{1}{4}$  sec. cor. of sec. 31 only, with brass cap marked

$\frac{1}{4}$  S31

1932

from which

A fir, 10 ins. diam., bears N.35°E., 61 lks. dist., marked  $\frac{1}{4}$  S 31 B T.

A fir, 18 ins. diam., bears S.23°E., 34 lks. dist., marked  $\frac{1}{4}$  S 31 B T.

40.94 Proportionate point,

Set an iron post, 3 ft. long, 1 in. diam., 20 ins. in the ground to solid rock, and in a mound of stone to top, for  $\frac{1}{4}$  sec. cor. of sec. 36 only, with brass cap marked

$\frac{1}{4}$  S36

1932

from which

A fir, 10 ins. diam., bears S.74°W., 24 lks. dist., marked  $\frac{1}{4}$  S 36 B T.

A fir, 14 ins. diam., bears N.30°W., 18 lks. dist., marked  $\frac{1}{4}$  S 36 B T.

Continue to desc. 40 ft. over N. slope.

48.00 Ravine, course NW.; asc. 430 ft. over SW. slope.

62.00 Spur, slopes NW.; desc. 550 ft. over NE. slope.

79.93 Proportionate point,



## Subdivision of T. 6 N., R. 39 E.

## Chains

To complete the survey of sec. 18, I go to the closing cor. of Tps. 6 N., Rs. 38 and 39 E., and run

S. 89° 49' E., along the Oregon and Washington boundary

5.76 40.00 chs. in departure west of the closing cor. of secs. 17 and 18.

Set an iron post, 3 ft. long, 1 in. diam., 27 ins. in the ground, for  $\frac{1}{4}$  sec. cor. of sec. 18 only, with brass cap marked

W N  
 $\frac{1}{4}$  S 18

1932

from which

A fir, 14 ins. diam., bears S. 37° E., 23 lks. dist., marked  $\frac{1}{4}$  S 18 B T.

A fir, 14 ins. diam., bears S. 59° W., 48 lks. dist., marked  $\frac{1}{4}$  S 18 B T.

#### FINAL TEST OF SOLAR ATTACHMENT.

Sept. 13, 1932: in camp located near the cor. of secs. 4, 5, 8, and 9, T. 5 N., R. 39 E., in latitude 45° 56' N., longitude 117° 57' 30" W., at 7h 0m a.m., app. t., I set off 45° 56' N., on the lat. arc; 3° 47' N., on the decl. arc; and orient the instrument with the solar; the line of sight agrees with the meridian established by Polaris observation.

At 4h 0m p. m., app. t., I set off 45° 56' N., on the lat. arc; 3° 37' N., on the decl. arc; and repeat the test of the solar; the line of sight agrees with the meridian established by Polaris observation.

#### GENERAL DESCRIPTION.

Fractional township 6 north, range 39 east, is located entirely within the Umatilla National Forest. The general elevation of the township is about 5000 ft. above sea level; the summit of the main divide or along the Skyline Road is about 1,000 ft. higher. The elevation of the Round Butte Trail and of Paradise Ridge is about the same as along the Skyline Road. The northwest cor. of the township is set at an elevation of about 3,000 ft. above sea level and is the lowest elevation in the township. Most of this township is very rough and stony. The soil is of a sandy loam composition and in most parts is very rocky. The timber in most parts of this township is of a second growth variety. Very few trees are found with a diameter of over 3 feet. In some places the trees even have a stunted look and it is doubtful if they will ever grow very large. This timber is all too far from market to have any commercial value at this time.

This township has no large streams but is well watered by many small streams in all parts. This township is located so near the highest part of the mountains that it drains in every direction.

The most important development at the present time is the Skyline Road, extending NE. and SW., through the central part of this township. A new road is under construction that turns off the Skyline Road in sec. 28, loops through sec. 29, 32, and 31, and will eventually join a road in Mill Creek leading to Walla Walla, Wash. There are also several good trails; Round Butte Trail in the northeastern part, Paradise Ridge Trail, in the north-



Township 6 North, Range 39 East.

central part, and a trail leading to the Price Guard Station in sec. 32. This Guard Station is located on the headwaters of the South Fork of the Walla Walla River in the southern part of sec. 32. Price Guard Station is located in one of the most beautiful spots in the Blue Mountain Range.

The western part of this township comes within the watershed of the city of Walla Walla, Wash., and no one is allowed to enter without a permit. Several thousand head of sheep are grazed annually during the summer months in the eastern part of this fractional township.

The average of a considerable number of readings over all parts of the township gives a value of 21°45'E., for the mean magnetic declination. There is a range of over 10° in local attraction.

1932

from which

A fir, 14 ins. diam., bears S. 37° E., 23 lks. dist., marked 1/2 S 18 B T.  
A fir, 14 ins. diam., bears S. 52° W., 48 lks. dist., marked 1/2 S 18 B T.

FINAL TEST OF SOLAR ATTACHMENT.

Sept. 13, 1932: in camp located near the cor. of sec. 4, S. 8, and T. 5 N., R. 39 E., in latitude 45° 55' N., longitude 117° 30' W., at 7:00 a.m., app. 1 set of instrument with the solar; the line of sight agrees with the meridian established by Polaris observation.  
At 4:00 p.m., app. 1 set off 45° 55' N., on the lat. arc; 3° 37' N., on the decl. arc; and repeat the test of the solar; the line of sight agrees with the meridian established by Polaris observation.

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4-680  
(August, 1926)

FIELD ASSISTANTS.

NAMES.	CAPACITY.
Leonel R. Davidson	1st Chainman.
Richard Ganong	2nd Chainman.
Earl Gould	Cornerman.
Harold Gould	Axeman.
Norman Prendergast	Axeman.
Willis Powers	Axeman.
Glenn H. Johnson	2nd Chainman.



CERTIFICATE OF UNITED STATES SURVEYOR.

I, Otis O. Gould <sup>U. S. Transitman</sup> ~~U. S. Surveyor~~, hereby certify upon honor that, in pursuance of special instructions received from the District Cadastral Engineer for Oregon bearing date of the 11th day of April, 1929, I have well, faithfully, and truly in my own proper person, and in strict conformity with said instructions, the Manual of Surveying Instructions, and the laws of the United States, surveyed all those parts or portions of the retracement and dependent resurvey of part of the Oregon and Washington boundary, the independent resurvey of the south boundary, the dependent resurvey of the west boundary and the subdivisional lines of township 6 north, range 39 east. of the Willamette Meridian, in the State of Oregon, which are represented in the foregoing field notes as having been executed by me, and under my direction; and that all the corners of said survey have been established and perpetuated in strict accordance with the Manual of Surveying Instructions, and the special written instructions of the District Cadastral Engineer for Oregon and in the specific manner described in the field notes, and that the foregoing are the original field notes of such survey.

Portland, Ore.  
Mar. 15, 1933.

Otis O. Gould  
U. S. Surveyor

APPROVAL.

OFFICE OF U. S. SUPERVISOR OF SURVEYS,

DENVER, COLORADO MAR 30 1936, 19

The foregoing field notes of the retracement and Dependent Resurvey of the Oregon and Washington State Boundary from 51 Mile 48 Chain Monument to 46 Mile Monument; Independent Resurvey of the South Boundary; Dependent Resurvey of the West Boundary, and the survey of the Subdivisional Lines of Township No. 6 North, Range No. 39 East, of the Willamette Meridian, Oregon,

executed by Otis O. Gould, U. S. Transitman, under his special instructions dated April 11, 1929, having been critically examined, and the necessary corrections and explanations made, the said field notes, and the surveys they describe, are hereby approved.

Grant H. Johnson  
U. S. Supervisor of Surveys.

~~I certify that the foregoing transcript of the field notes of the above-described surveys in~~  
~~has been correctly copied from the original notes on file in this office.~~

~~U. S. Supervisor of Surveys.~~