

U. S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

AUG. 12 1918

FIELD NOTES

JAN. 7. 1919

OF

HOMESTEAD ENTRY SURVEY NO. 510

SITUATED IN THE TUSAYAN NATIONAL FOREST

ADMINISTRATIVE DISTRICT NO. 3

In Section 29 , un surveyed, Township 30 N., Range 5 E.
In Section 30 , un surveyed , Township 30 N., Range 5 E.

of the

Gila and Salt River Base and Meridian.

State of

ARIZONA

Applicant for listing Martin Buggeln

Residence Grand Canyon, Arizona.

Application No. 510 , dated November 24, , 1915

List No. 3-3753 , dated February 1, , 1916

Applicant for survey James L. Tucker,

Residence Grand Canyon, Arizona

H. E. No. 030603 , dated July 5 , 1916

Office
Land District Phoenix, Arizona.

Survey executed by R. P. A. Johnson Surveyor -Draftsman

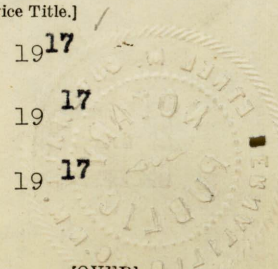
[Forest Service Title.]

Under special instructions dated March 10, , 1917

Survey commenced October 8 , 1917

Survey completed October 9 , 1917

Under Acts of June 11, 1906 and March 4, 1917.



OATH OF ASSISTANTS

We hereby certify that we assisted

R. P. Johnson
Surveyor Draftsman
[Forest Service Title.]

in surveying all those

parts or portions of Homestead Entry Survey No. *510*, in the State of *Arizona* which are represented in the following field notes as having been surveyed by him and under his direction; and that said survey has been in all respects, to the best of our knowledge and belief, well and faithfully surveyed, and the corner monuments established, according to the instructions furnished by the United States Surveyor General for *Arizona*

Note: It would have been very expensive and inconvenient to appear before an officer to administer oaths to Assistants; hence they were taken by the Surveyor.

Chas L Robinson

Chainman

Joe Harrell

Chainman

Subscribed and sworn to before me this *tenth* day of *October*, 19*17*.

R. P. Johnson

Surveyor Draftsman

OATH OF SURVEYOR

I, *R. P. Johnson, Surveyor Draftsman*
[Forest Service Title.]

do solemnly swear that, in strict conformity with the special instructions of the United States Surveyor General for *Arizona*, dated *March 10*, 19*17*, and the laws of the United States, I have well, faithfully, and truly, in my own proper person, surveyed a tract of land *embraced in*

last patent, No. *3-3753*, dated *February 11*, 19*16*, for *June 11*, 19*06*, the same to be known as Homestead Entry Survey No. *510*, situated within the *Yusayan* National Forest, in *unsurveyed* Section *29*, Township *30N*, Range *5E*, and *unsurveyed* Section *30*, Township *30N*, Range *5E*,

of the *Gila and Salt River Base and* meridian, *Arizona*, and the related retracements and resurveys and section subdivisions, which are represented in the following field notes as having been surveyed by me; and I further solemnly swear that all the corners of said survey have been established and perpetuated in strict accordance with the stated special instructions, and in the specific manner described in the field notes, and that the following are the original field notes of such survey.

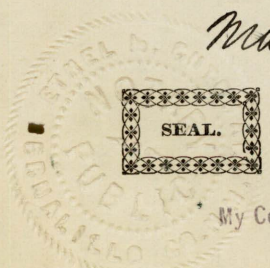
R. P. Johnson

Surveyor Draftsman
[Forest Service Title.]

Subscribed and sworn to before me this *twenty-second* day of *March*, 19*18*.

Ethel M. Gutschell

Notary Public



TUSAYAN NATIONAL FOREST

STATE OF ARIZONA

1.

Chains Applicant for listing, Martin Buggeln; Application
 No. 510, dated November 24, 1915; List No. 3-3753,
 dated February 1, 1916; H. E. 030603 made in the
 Phoenix Land Office on July 5, 1916 by James L.
 Tucker.

Surveyed under special instructions from the Surveyor
 General for Arizona, dated March 10, 1917, and de-
 signated as Homestead Entry Survey No. 510.

Situated in unsurveyed T. 30 N., R. 5 E., in what will
 probably be, when surveyed, sections 29 and 30, Gila
 and Salt River Base and Meridian, Tusayan National
 Forest, Arizona.

Surveyed under the Acts of June 11, 1906 and March 4,
 1917.

Survey commenced October 8, 1917, and executed with a
 Buff and Buff transit equipped with Smith solar
 attachment.

I test the adjustments of the transit and make necessary
 corrections.

All distances are horizontal and were reduced from
 measurements made directly on the slope with a 500
 link steel tape. The slope angles were determined
 with a clinometer.

October 8, 1917.

I observe the altitude of the sun for azimuth at
 Cor. No. 4 hereinafter described. The reading on
 the reference object is set at zero and the sun was
 observed in the upper left and lower right quadrants
 of the field. My watch is set for local mean time.

Lat. 35° 57' 14" N., Long. 111° 53' 13" W., from
 Forest Service Base Map.

TUSAYAN NATIONAL FOREST

2.

STATE OF ARIZONA

Chains	Telescope	Time	Horizontal Angle	Vertical Angle
	Direct	3h. 57m. 20s.	69° 28' 00"	16° 29' 30"
	Reversed	3h. 58m. 00s.	69° 05' 00"	16° 51' 00"
Bearing of reference object N. 0° 13' 32" E.				

October 9, 1917.

I again observe altitude of sun at Cor. No. 1 hereinafter described. The reading on the meridian brought by sustained angulation from Cor. No. 4 is set at zero and sun was observed in lower left and upper right quadrants of the field.

Lat. 35° 57' 40" N., Long. 111° 53' 37" W from Forest Service Base Map.

Telescope	Time	Horizontal Angle	Vertical Angle
Direct	9h. 05m. 40s.	49° 45' 00"	33° 52' 00"
Reversed	9h. 06m. 30s.	50° 10' 30"	33° 27' 00"
Difference in meridian			0° 00' 41"

This checks within less than one minute the meridian previously established and to which the courses of this survey are referred.

October 8, 1917 BOUNDARIES OF CLAIM.

Beginning at cor. No. 1.

Identical with Cor. H-6 of the list survey, marked and witnessed as described by the Forest Service. I destroy all trace of this list. cor. and in its place establish Cor. No. 1 of this survey, as follows:
Deposit a sandstone 6 x 4 x 3 ins., marked with a + 14 ins. in the ground, over which set a sandstone 24 x 8 x 6 ins., chiseled + for the point and 1 - H E S 510 on SE. face; raise a mound of stone 3 ft. base, 2 ft. high SE. of cor., whence:

Chains

A pinon, 10 ins. dia., bears S. 40° 12' W., 82

lks. dist., scribed 1 - H E S 510 + B T.

A pinon, 16 ins. dia., bears N. 38° 48' W., 77

lks. dist., scribed 1 - H E S 510 + B T.

1/4 sec. cor. bet. secs. 25 and 30, T. 30 N.,

Rs. 4 and 5 E.; also Cor. No. 1 of H. E. S.

398, which is a limestone 12 x 10 x 6 ins.

above ground, marked and witnessed as de-

scribed by Surveyor General bears S. 87° 28'

W., 75.79 chs. dist., by traverse which ap-

pears at the end of these notes.

Mag. Va. at 8h. a.m., 14° 45' E. Mean Mag. Va. 14° 42'

E.

Lat. 35° 57' 40" N. Long. 111° 53' 37" W., from

Forest Service Base Map.

Thence S. 87° 20' E.

Descend East slope 30 ft. in timber to flat.

1.60 Foot descent. Leave timber, enter open flat.

8.60 Road, bears N. 72° E. and S. 72° W.

12.80 Road, bears N. 75° 30' E. and S. 75° 30' W. Enter

13.85 Fence, bears N. 75° 30' E. and S. 75° 30' W. Enter cultivated land:

28.00 Fence, bears N. 15° W. and S. 15° E.

28.75 Road, bears N. 15° W. and S. 15° E.

30.21 Cor. H-7 of the list survey, marked and witnessed as described by the Forest Service. I destroy all trace

of this list cor. and in its place I establish Cor.

No. 2 of this survey as follows:

Deposit a sandstone 5 x 5 x 2 ins., marked with a +

14 ins. in the ground, over which set a sandstone

24 x 9 x 4 ins., chiseled + for the point and 2-

H E S 510 on S. face; raise a mound of stone, 3

ft. base, 2 ft. high SE. of cor., whence:

A yellow pine, 16 ins. dia., bears S. 41° 00'

Chains, W. 1/4 Sec. 12, T. 18 N., R. 10 W., 24 lks. dist., scribed 2 - H E S 510 + B T.
 A pinon, 10 ins. dia., bears S. 33° 45' E., 8
 lks. dist., scribed 2 - H E S 510 + B T.

Thence S. 43° 15' E.
 Descend 10 ft. in timber to draw.
 9.00 Draw, 2 chs. wide, course SE. Ascend 10 ft. in timber.
 18.20 - Road, bears N. 60° W. and S. 60° E. Leave timber. Des-
 cend 10 ft. in open.
 19.00 Fence, bears N. 60° W. and S. 60° E.
 34.20 Arroyo, 20 lks. wide, 5 ft. high, course SE. Continue
 along arroyo.
 39.20 Leave arroyo.
 47.50 Fence, bears N. 30° W. and S. 20° E.
 49.10 Road, bears N. 30° W. and S. 20° E. Leave open and
 ascend 15 ft. in timber to cor.
 55.07 Cor. H-8 of the list survey, marked and witnessed as
 described by the Forest Service. I destroy all trace
 of this list cor. and in its place establish cor. No.
 3 of this survey; as follows:
 Deposit broken glass 14 ins. in the ground, over which
 set a sandstone 24 x 18 x 8 ins., chiseled + for the
 point and 3 - H E S 510 on NW. face; raise a mound of
 sandstone 3 ft. base, 2 ft. high NW. of cor., whence:
 A yellow pine, 20 ins. dia., bears S. 14° 55' E.,
 42 lks. dist., scribed 3 H E S 510 + B T.
 A yellow pine, 22 ins. dia., bears S. 38° 57' W.,
 120 lks. dist., scribed 3 - H E S 510 + B T.

Thence N. 87° 43' W.
 Descend 15 ft. to arroyo in timber.
 2.86 Road, bears N. 20° W. and S. 20° E. Leave timber.
 Enter open.
 3.02 Fence, bears N. 20° W. and S. 20° E.

Chains	
4.51	Arroyo, 20 lks. wide, banks 5 ft. high, course S. 35° E.
	Ascend 15 ft. to bench.
11.50	Top bench, bears NW. and SE. Thence over level land in
	scattering timber.
39.27	Cor. H-9 of the list survey, marked and witnessed as
	described by the Forest Service. I destroy all trace
	of this list cor. and in its place establish cor. No.
	4 of this survey as follows:
	Deposit broken glass 14 ins. in the ground, over which
	set a sandstone 24 x 8 x 6 ins., chiseled + for the
	point and 4 - H E S 510 on NNE. face; and dig pits
	24 x 24 x 12 ins. crosswise on claim lines, 7 ft.
	dist., and raise a mound of earth 4 ft. base, 2 ft.
	high NNE. of cor., whence:
	A juniper, 18 ins. dia., bears S. 11° 33' W.
	249 lks. dist., scribed 4 H E S 510 + B T.
	A juniper, 10 ins. dia., bears N. 1° 53' W.,
	248 lks. dist., scribed 4 - H E S 510 + B T.
	Thence N. 42° 50' W.
	Over level land in open.
21.00	Leave open, enter timber.
26.00	Leave bench and descend 15 ft. to cor.
27.86	Cor. H-10 of the list survey, marked and witnessed as
	described by the Forest Service. I destroy all trace
	of this list cor. and in its place establish cor. No.
	5 of this survey as follows:
	Deposit broken glass 14 ins. in the ground, over
	which set a sandstone 24 x 10 x 10 ins. chiseled
	+ for the point and 5 - H E S 510 on NNE. face:
	and raise a mound of stone 3 ft. base, 2 ft. high
	NNE. of cor., whence:

6.

TRENTUSAYAN NATIONAL FOREST

STATE OF ARIZONA

Chains

A pinon, 6 ins. dia., bears S. 19° 33' W., 176
lks. dist., scribed 5 - H E S 510 + B T.

A pinon, 6 ins. dia., bears S. 65° 17' W., 189
lks. dist., scribed 5-H E S 510 + B T.

Thence N. 89° 21' W.

Across open level draw.

2.52 Fence, bears NNW. and SSE.

7.43 Arroyo, 5 lks. wide, banks 1 ft. high, course N. 83° E.

9.60 Cor. H-1 of the list survey, marked and witnessed as
described by the Forest Service. I destroy all trace
of this list cor. and in its place establish Cor. No.
6 of this survey as follows:

Deposit a sandstone 5 x 4 x 2 ins. marked with a +
14 ins. in the ground, over which set a sandstone
24 x 8 x 5 ins., chiseled + for the point and 6
H E S 510 on NE. face; raise a mound of stone 3 ft.
base, 2 ft. high NE. of cor., whence:

A pinon, 10 ins. dia., bears S. 8° 49' E., 179
lks. dist., scribed 6-H E S 510 + B T.

A pinon, 14 ins. dia., bears N. 69° 57' W., 173
lks. dist., scribed 6 - H E S 510 + B T.

October 8, 1917.

October 9, 1917.

Thence N. 1° 06' E.

Ascend 15 ft. in scattered timber to bench.

5.00 Top ascent. Descend 15 ft. to cor.

9.10 Fence, bears N. 66° W. and S. 66° E.

9.41 Cor. H-2 of the list survey, marked and witnessed as
described by the Forest Service. I destroy all trace

Chains

of this list cor. and in its place establish cor. No. 7 of this survey as follows:

Deposit a sandstone 3 x 2 x 2 ins. marked with a + 14 ins. in the ground, over which set a sandstone 24 x 16 x 8 ins., chiseled + for the point and 7 - H E S 510 on SE. face; and raise a mound of stone 3 ft. base, 2 ft. high SE. of cor., whence:

A yellow pine, 7 ins. dia., bears S. 7° 45' E.,

210 lks. dist., scribed 7 - H E S 510 + B T.

A juniper, 10 ins. dia., bears N. 86° 20' E.,

340 lks. dist., scribed 7 - H E S 510 + B T.

Thence S. 89° 45' E.

In open over level land.

3.70 Fence, bears N. 33° W. and S. 33° E. Enter scattering timber and ascend 10 ft. to cor.

8.98 Fence, bears S. 44° W. and N. 44° E.

10.46 Cor. H-3 of the list survey, marked and witnessed as

described by the Forest Service. I destroy all trace of this list cor. and in its place establish cor.

No. 8 of this survey as follows:

Deposit broken glass 14 ins. in the ground, over which set a sandstone 24 x 16 x 4 ins. chiseled + for the point and 8 - H E S 510 on SE. face; and raise a mound of stone 3 ft. base, 2 ft. high SE. of cor., whence:

A pinon, 18 ins. dia., bears N. 76° 33' W., 37

lks. dist., scribed 8 H E S 510 + B T.

A pinon, 14 ins. dia., bears S. 4° 05' E., 12

lks. dist., scribed 8 H E S 510 + B T.

Thence N. 2° 39' E.

Over level land in timber.

Chains

1.59

Fence, bears N. 44° E. and S. 44° W.

3.87

South end dam, bears N. 30° W.

4.50

Fence, bears N. 54° W. and S. 54° E. Leave timber.

Descend 5 ft. to cor.

5.05

Cor. H-4 of the list survey, marked and witnessed as

described by the Forest Service. I destroy all trace

of this list cor. and in its place establish cor. No.

9 of this survey as follows:

Deposit a sandstone 5 x 5 x 4 ins., marked with a +

14 ins. in the ground, over which set a sandstone

24 x 12 x 8 ins., chiseled + for the point and 9 -

H E S 510 on NE. face; and raise a mound of stone 3 ft base, 2 ft. high NE. of cor., whence:

A pinon, 14 ins. dia., bears S. 15° 40' E., 233

lks. dist., scribed 9 - H E S 510 + B T.

A juniper, 10 ins. dia., bears N. 56° 21' E., 99

lks. dist., scribed 9 - H E S 510 + B T.

Thence N. 89° 52' W.

Over level land in open.

.98

Fence, bears N. 54° W. and S. 54° E.

10.00

Fence, bears S. 30° E. and N. 30° W.

11.00

Cor. H-5 of the list survey, marked and witnessed as

described by the Forest Service. I destroy all trace

of this list cor. and in its place establish cor. No.

10 of this survey as follows:

Deposit broken glass 16 ins. in the ground, over which

set a sandstone 26 x 6 x 6 ins. chiseled + for the

point and 10 - H E S 510 on NE. face; and raise a

mound of stone 3 ft. base, 2 ft. high NE. of cor.,

whence:

A pinon, 8 ins. dia., bears N. 20° 20' W., 139

lks. dist., scribed 10 - H E S 510 + B T.

HOMESTEAD ENTRY SURVEY NO. 510

TUSAYAN NATIONAL FOREST

STATE OF ARIZONA

Chains 16 ins. dia., bears N. 54° 56' E., 130
lks. dist., scribed 10- H E S 510 + B T.

Thence N. 90° 12' E.
Over open level land.

1.01 Fence, bears N. 75° E. and S. 75° W.

1.27 Road, bears N. 75° 30' E. and S. 75° 30' W.

1.41 Leave open and ascend 30 ft. in timber to cor.

4.97 Cor. No. 1, the place of beginning.

AREA

Total Area - - - - - 146.31 acres

IMPROVEMENTS

The improvements made upon this claim and belonging
to the claimant consist of the following:

A frame dwelling 20 x 12 ft., the long side of which
bears NE. and SW. and W. cor. of which bears S. 86°
40' E., 57 lks. dist. from cor. No. 8.

Value - - - - - \$150.00

A frame barn 25 x 15 ft., the long side of which bears
NW. and SE., and W. cor. of which bears S. 51° 33'
E.

Value - - - - - \$125.00

There is approximately three miles of wire fence,
the greater portion of which is off the claim.

Value - - - - - \$500.00

DESCRIPTION

This claim is approximately 4 miles S. of rim of
Grand Canyon and lies along a long open draw and
extends upon low bench in the western portion. The

Chains general slope is to SE. and elevation is approximately 6,900 ft. Timber consists of mixed stand of pinon, juniper, and yellow pine and occurs in patches in west portion and along east line. Only a small portion of it is of any commercial value. Water for stock and domestic purposes can be obtained from stock tank adjoining claim. There is no water for irrigation. The soil is a sandy loam of good depth and under favorable conditions will produce good crops. There is approximately 13 acres in cultivation. I saw no indications of mineral upon this claim.

CONFLICTS AND ADJOINING CLAIMS

There are no conflicting or adjoining claims. H. E. S. No. 398 of Ralph J. Berry lies west, approximately 3/4 of a mile. Grand Canyon, the nearest post office and railroad center is 15 miles distant by good road.

TRAVERSE

Cor.	Course	Dist.	N	S	E	W
1-2	S. 87° 20' E.	30.21		1.41	30.18	
2-3	S. 43° 15' E.	55.07		40.11	37.73	
3-4	N. 87° 43' W.	39.27	1.56			39.24
4-5	N. 42° 50' W.	27.86	20.43			18.94
5-6	N. 89° 21' W.	9.60	.11			9.60
6-7	N. 1° 06' E.	9.41	9.41		.18	
7-8	S. 89° 45' E.	10.46		.05	10.46	
8-9	N. 2° 39' E.	5.05	5.04		.23	
9-10	N. 89° 52' W.	11.00	.03			11.00
10-1	N. 0° 12' E.	4.97	4.97		.02	
		202.90	41.55	41.57	78.80	78.78
				41.55	78.78	
Error in lat. and dep.				.02	.02	

Closing error 1:7174

175

TUSAYAN NATIONAL FOREST

STATE OF ARIZONA.

Chains

TIE from Cor. No. 1 to 1/4 Cor. Bet. Secs.
25 and 30, T. 30 N., Rs. 4 and 5 E.

Cor.	Course	Dist.	N	S	E	W
1-10	S. 0° 12' W.	4.97		4.97		.02
10-Tp	N. 89° 05' W.	9.63	.15			9.63
Tp-Tp	N. 73° 29' W.	2.33	.66			2.23
Tp-Tp	S. 79° 13' W.	2.14		.40		2.10
Tp-Tp	N. 87° 29' W.	11.76	.52			11.75
Tp-Tp	N. 84° 33' W.	4.69	.45			4.67
Tp-Tp	S. 84° 45' W.	2.48		.23		2.47
Tp-Tp	S. 80° 14' W.	3.51		.60		3.46
Tp-Tp	N. 84° 38' W.	36.89	3.45			36.73
Tp-1/4 cor	S. 48° 08' W.	3.57		2.38		2.66
			5.23	8.58		75.72
				5.23		
				3.35		

S. 87° 28' W.

$\text{Log } 75.72 = 1.8792106$
 $\text{Log } 3.35 = 10.5250448$
 $\text{Log tan } 87^\circ 28' = 1.3541658$

$\text{Log } 75.72 = 1.8792106$
 $\text{Log sin } 87^\circ 28' = 9.9995753$
 $\text{Log } 75.794 = 1.8796353$

Survey completed October 9, 1917.

R. P. A. Johnson

Surveyor - Draftsman

Chains

Chains

TIE from Cor. No. 1 to 1/A Cor. Bot. Secn.
S3 and S0, T. 30 N., R. 4 and 5 E.

W	E	N	Dist.	Course	Cor.
0.00	4.97	4.97	4.97	S. 0° 12' W.	1-10
9.63		9.63	9.63	N. 89° 06' W.	10-10
2.33		2.33	2.33	N. 73° 39' W.	11-10
3.10	4.0	2.14	2.14	S. 79° 13' W.	12-10
11.78		11.78	11.78	N. 87° 39' W.	13-10
4.67		4.63	4.63	N. 84° 38' W.	14-10
2.47	2.5	2.43	2.43	N. 84° 48' W.	15-10
3.48	3.60	3.31	3.31	S. 80° 14' W.	16-10
35.73		35.89	35.89	N. 84° 38' W.	17-10
2.66	2.38	2.37	2.37	N. 48° 09' W.	18-10

Log 75.73 = 1.872310
 Log 2.33 = 1.368443
 Log tan 87° 38' = 1.364168

Log 75.73 = 1.872310
 Log sin 87° 38' = 0.993273
 Log 75.73 = 1.872310

Survey completed October 9, 1917.

Surveyor - Draftsman

Chains

Direct Solar at Cor. No. 4, October 8, 1917.

Lat. 35° 57' 14" N., Long. 111° 53' 13" W. Elevation

6900 ft.

Telescope	Time	Horizontal Angle	Vertical Angle	Pos. of sun
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Direct	3h.57m.20s.	69°28'00"	16°29'30"	+
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Reverse	3h.58m.00s.	69°05'00"	16°51'00"	+
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2	7h.55m.20s.	138°33'00"	33°20'30"	
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Mean	3h.57m.40s	69°16'30"	16°40'15"	
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Refr. 2'32"

16°37'43"

Decl. 5° 56' 50" S.

sin 5° 56' 50"

$$\cos Q = \frac{\sin 5^\circ 56' 50'' - \tan 35^\circ 57' 14'' \times \tan 16^\circ 37' 43''}{\cos 35^\circ 57' 14'' \times \cos 16^\circ 37' 43''}$$

log sin 5° 56' 50" = - 9.0154114

log cos 35° 57' 14" = + 9.9082114

log cos 16° 37' 43" = + 9.9814470
 $\frac{9.1257530}{9.9814470} = \log .13358$

log tan 35° 57' 14" = 9.8605258

log tan 16° 37' 43" = $\frac{9.4751723}{9.3356981} = \log .21662$

Cos Q = .35020

Q = 69° 30' 02"

Bearing of reference object N. 0° 13' 32" E.

Direct Solar at Cor. No. 1, October 9, 1917.

Lat. 35° 57' 40" N., Long. 111° 53' 37" W. Elevation 6900

ft.

Telescope	Time	Horizontal Angle	Vertical Angle	Pos. of sun
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Direct	9h.05m.40s.	49°45'00"	33°52'00"	+
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Reverse	9h.06m.30s.	50°10'30"	33°27'00"	+
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2	18h.12m.10s.	99°55'30"	67°19'00"	
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Mean	9h.06m.05s.	49°57'45"	33°39'30"	
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refr. 1'10"

33°38'20"

Decl. 6° 13' S.

TUSAYAN NATIONAL FOREST

STATE OF ARIZONA

Chains

$$\cos Q = \frac{\tan 35^\circ 57' 40'' \times \tan 33^\circ 38' 20''}{\cos 35^\circ 57' 40'' \times \cos 33^\circ 38' 20''}$$

$$\log \sin 6^\circ 13' = -9.0345825$$

$$\log \cos 35^\circ 57' 40'' = +9.9081717$$

$$\log \cos 33^\circ 38' 20'' = +9.9204079$$

$$\log \cos 33^\circ 38' 20'' = \frac{9.2060029}{9.2060029} = \log 1.16070$$

$$\log \tan 35^\circ 57' 40'' = 9.8606410$$

$$\log \tan 33^\circ 38' 20'' = \frac{9.8230679}{9.6837089} = \log 1.48274$$

$$\cos Q = .64344$$

$$Q = 49^\circ 57' 04''$$

Difference in meridian $0^\circ 00' 41''$.

$$\cos Q = \frac{\cos 35^\circ 57' 40'' \times \cos 33^\circ 38' 20''}{\cos 35^\circ 57' 40'' \times \cos 33^\circ 38' 20''}$$

$$\log \sin 6^\circ 13' = -9.0345825$$

$$\log \cos 35^\circ 57' 40'' = +9.9081717$$

$$\log \cos 33^\circ 38' 20'' = +9.9204079$$

$$\log \cos 33^\circ 38' 20'' = \frac{9.2060029}{9.2060029} = \log 1.16070$$

$$\log \tan 35^\circ 57' 40'' = 9.8606410$$

$$\log \tan 33^\circ 38' 20'' = \frac{9.8230679}{9.6837089} = \log 1.48274$$

$$\cos Q = .64344$$

$$Q = 49^\circ 57' 04''$$

Bearing of reference object N. $0^\circ 13' 32''$ E.

Direct Solar at Cor. No. 1, October 9, 1917.

Lat. $32^\circ 37' 40''$ N., Long. $111^\circ 53' 57''$ W., Elevation 6900

ft.

Pos. of sun	Vertical Angle	Horizontal Angle	Time	Telescope
+	$33^\circ 38' 00''$	$49^\circ 57' 00''$	9h.05m.40s.	Direct
-	$33^\circ 37' 00''$	$50^\circ 10' 30''$	9h.06m.30s.	Reverse
<hr/>				
	$57^\circ 12' 00''$	$99^\circ 53' 30''$	9h.12m.10s.	S
	$33^\circ 39' 30''$	$49^\circ 57' 45''$	9h.05m.05s.	Mean
	$33^\circ 38' 30''$			refr. 1.10"

Decl. $6^\circ 13' 32''$ S.

DIRECTIONS.—1. Carry out calculations to two decimals only.
2. In balancing Latitudes and Departures do not obliterate or change the original figures. Put the corrected figure or figures above in red ink. Do not change the footing of the original figures, but put below them the corrected footing in red ink. The corrections for balancing fallings should be proportional to the lengths of the lines.
3. In calculations of fallings take result to nearest link. In calculations of N. and S. areas drop all after second decimal. Surveyors are required to use the Standard Field Tables issued by the G. L. O.
4. Only three copies of this tabulation are necessary, for the District Office, the Surveyor General, and the Commissioner.

TABLING AND CALCULATIONS OF HOMESTEAD ENTRY SURVEY NO. 510, STATE OF ARIZONA.

CORNERS.	BEARING.	DISTANCE.	LATITUDES.		DEPARTURES.		DOUBLE M. D.	N. AREAS.	S. AREAS.
			NORTH.	SOUTH.	EAST.	WEST.			
1-2	S. 87°20' E	30.21		1 41	30 18		30 22	42 61	
2-3	S. 43°15' E	55.07		40 11	37 73		98 12	3934 61	
3-4	N. 87°43' W	39.27	57 56			39 24	96 59		151 65
4-5	N. 42°50' W	27.86	20 43			18 94	38 40		784 51
5-6	N. 89°21' W	9.60	11			9 60	9 86		1 08
6-7	N. 1°06' E	9.41	9 41		18		44		4 14
7-8	S. 89°45' E	10.46		05	10 46		11 08		55
8-9	N. 2°39' E	5.05	5 04		23		21 77	109 72	
9-10	N. 89°52' W	11.00	03			11 00	11 00	33	
10-1	N. 0°12' E	4.97	4 97		02		10	10	
		202.90	41 55	41 57	78 80	78 78		1051 53	3977 77
			41 56	41 56	78 79	78 79			1051 53
		Closing error 1:7174						20 / 2926 24	146 31
									Acres
									0.07

APPROVAL

Office of the United States Surveyor General,

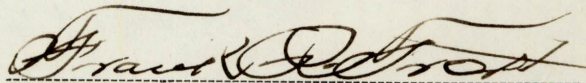
Phoenix, Arizona, April 30 , 1919

The foregoing field notes of Homestead Entry Survey No.

510

executed by **R.P.A. Johnson, Surveyor-Draftsman,**
under his special instructions, dated **March 10** , 1917, having
been critically examined, and the necessary corrections and explanations
made, the said field notes, and the surveys they describe, are hereby
approved.

[Forest Service Title.]



U. S. Surveyor General.

I certify that the foregoing transcript of the field notes of the
above-described survey in the State of **Arizona** , has been
correctly copied from the original notes on file in this office.

Frank P. Trott

U. S. Surveyor General.