

BOOK 3966

FIELD NOTES

OF THE RESURVEY OF THE

West and South Boundaries of Section 15, Township 5 North,

Range 10 West,

3966

Of the Navajo Meridian,

In the State of ARIZONA

EXECUTED BY

Benjamin J. Kinsey,

U. S. Surveyor

3966

In the capacity of U. S. Surveyor, under Special Instructions dated March 13, 1933, issued by the District Cadastral Engineer to govern surveys included in Group No. 183, which were approved by the Commissioner of the General Land Office, May 1, 1933, and Assignment Instructions dated April 13, 1933.

Survey commenced May 7, 1933

Survey completed May 18, 1933

BOOK 3966

INDEX DIAGRAM.

Township 5 North, Range 10 West

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The resurvey was executed with Young and Sons transit No. 8540. The horizontal circle has a diameter of 5 ins. and two double opposite verniers reading to single minutes; the diameter of the vertical circle is 5 ins., with one double vernier reading to single minutes; the telescope has fixed stadia wires, ratio 1:132, with a focal constant of 1:2 lks. The instrument is equipped with the improved Smith solar attachment; radius of latitude arc $2\frac{1}{8}$ ins., and of declination arc $3\frac{1}{8}$ ins., each with verniers reading to single minutes. The instrument was in good condition and, having been placed in satisfactory adjustment prior to beginning the survey and tested and found free from appreciable error, was approved by the district cadastral engineer on April 13, 1933.

The direction of the subdivisional lines were determined by solar transit 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 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 give the geographic position for the S. E. Cor. of T. 5 N., R. 10 W. as follows; latitude $36^{\circ} 06' 13''$ N., and longitude $109^{\circ} 29' 49''$ W.

May 7, 1933, at station in Chin Lee, Arizona, in SW $\frac{1}{4}$ sec. 16, T. 5 N., R. 10 W., Navajo Base Line; in latitude $36^{\circ} 09' N.$, approximate longitude $109^{\circ} 33' 33'' W.$, at 4h. 41m., a.m., l.m.t., observe Polaris at eastern elongation, making four observations, two each with the telescope in direct and reversed positions, marking the line thus determined with a tack set in top of a stake about 4 chs. S.

Azimuth of Polaris at eastern elongation: $1^{\circ} 18'$.

At daylight lay off azimuth of Polaris $1^{\circ} 18'$ to the west and mark the meridian thus determined by a tack set in top of a stake about 5 chs. S.

At 9h. 00m., a.m., app.t., set off $36^{\circ} 09' N.$, on the lat. arc, $16^{\circ} 49\frac{1}{2}' N.$ on decl. arc, and determine a meridian with the solar which agrees with the true meridian.

At 12h. 00m., app. noon, with lat. arc unchanged, observe the sun on the meridian; the resultant reading of the decl. arc is $16^{\circ} 51' N.$, which agrees with the computed declination of the sun.

At 3h. 00m., p.m., app. t., with lat. arc unchanged, set off $16^{\circ} 54' N.$, on decl. arc and determine a meridian with the solar which agrees with the true meridian.

As all of the solar observations taken during the usual hours of solar agree within $1'$ of the true meridian, I conclude that the instrument is in satisfactory adjustment.

Resurvey of subdivisions of T. 5 N., R. 10 W.

Chains

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

From the corner of secs. 15, 16, 21 and 22,
North on a random line bet. secs. 15 and 16.

40.00 A point 3.97 chs. W. of $\frac{1}{4}$ sec. cor.

81.19 A point 3.39 chs. W. of cor. of secs. 9, 10, 15, and 16.

From the cor. of secs. 15, 16, 21 and 22,

East on a random line bet. secs. 15 and 22.

40.00 No trace of $\frac{1}{4}$ sec. cor. found.

80.00 A point 1.74 chs. S. of cor. of secs. 14, 15, 22, and 23.

The original corner of secs. 15, 16, 21, and 22, is a sandstone 16x14x4 ins., partly buried under a mound of stone and earth. Three notches remain on one edge; no other marks were found. Alongside of old cor.,

Set an iron post 3 ft. long, 1 in. diam., (2 in. post not available), 16 ins. in the ground to bedrock, deposit a stone marked with a cross (X) at base of post, and in a mound of stone to top, for the cor. of secs. 15, 16, 21, and 22, with brass cap marked

T 5 N R 10 W

S16 | S15

S21 | S22

1933

N, 5° 40' E., on true line, bet. secs. 15 and 16. Over rolling land, through scattering undergrowth. Desc. 30 ft. over NE slope to wash.

1.20 Telephone line from Chin Lee to Thunderbird Ranch, bears NW and SE.

2.40 Wash, 10 lks. wide, course N.W. Asc. 50 ft. over SW slope.

8.00 Top of asc., spur slopes NW. Desc. 60 ft. over NE slope.

11.00 Foot of slope; across bottom land.

13.00 Road, brs. SW to Chin Lee, and NE to Thunderbird Ranch.

21.00 Rio de Chelly, 3 chs. wide, with stream of water 4 ins. deep, course W.

26.00 Leave bottom; asc. 40 ft. over S.W. slope.

38.00 Spur slopes SW; across top of same.

40.20 The original $\frac{1}{4}$ sec. cor. of secs. 15 and 16, which is a sandstone 16 x 14 x 3 ins., faintly marked $\frac{1}{4}$ on W. face, set in a loose mound of stone and earth. Alongside original cor.

Set an iron post 3 ft. long, 1 in. diam., 15 ins. in the ground, deposit a stone marked with a cross (X) at base of post and in a mound of stone to top, for the $\frac{1}{4}$ sec. cor., with brass cap marked

$\frac{1}{4}$
S16 | S15

1933

From which

Resurvey of subdivisions of T. 5 N., R. 10 W.

Chains

North water tank at Chin Lee bears S. 62 $\frac{1}{2}$ ° W.
 South water tank at Chin Lee bears S. 61° 32' W.
 School building at Chin Lee bears S. 71° 05' W.
 Presbyterian Church steeple bears S. 79° W.
 Catholic Church steeple at Chin Lee brs. S. 81 $\frac{1}{2}$ ° W.
 N. end of old trading post brs. S. 87° 35' W.
 Smokestack of power house at Chin Lee brs. S. 63° 25' W.
 E. edge of Garcia's trading post store brs. S. 35° 15' W.
 Windmill at Thunderbird Ranch brs. S. 23° 25' E.
 S. end of Black Mesa, upper level, brs. S. 87 $\frac{1}{2}$ ° W.
 N. end of Black Mesa, upper level, brs. N. 47° 10' W.

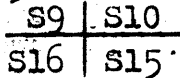
N. 0° 48' W., on true line bet. secs. 15 and 16.
 Over rolling sandy land, through scattering undergrowth.
 Desc. 52 ft. over rolling NW slope.
 13.85 Wash, 100 lks. wide, course SW; Asc. 70 ft. over SE slope.

17.30 Spur, slopes SW. Over rolling W. slope.

41.19 The original cor. of secs. 9, 10, 15, and 16, which is a sandstone 28 x 14 x 2 ins., still standing upright, marked three notches on E. face, but notches on S. face have worn off. This was the best marked original cor. found. Alongside old cor.

Set an iron post 3 ft. long, 1 in. diam., (2 in. post not available), 26 ins. in the ground, for cor. of secs. 9, 10, 15, and 16, with brass cap marked

T. 5 N. R. 10 W.



1933

From which

Smokestack of power house at Chin Lee bears S. 33° 04' W.
 Left edge of Presbyterian church steeple bears S. 36° 55' W.
 Chin Lee school bears S. 39° 10' W.
 N. edge of old trading post bears S. 60° 08' W.
 S. 34° 33' W. to N. water tank on hill behind Chin Lee.
 S. 34° 10' W. to S. water tank on hill behind Chin Lee.
 N. end of Black Mesa, upper level, bears N. 48° 02' W.
 Catholic Church steeple bears S. 56° 20' W.

Land, rolling.
 Soil, sandy 4th rate.
 Timber, none.
 Undergrowth, greasewood, and other brushes common to this region.

 From the cor. of secs. 15, 16, 21, and 22,
 N. 88° 45' E.; on true line, bet. secs. 15 and 22.
 Over rolling land, through scattering undergrowth.
 Desc: 20 ft. over NE slope.

1.10 Telephone line, bears NW and SE.
 2.00 Wash, 20 lks. wide, course NW. Asc. 65 ft. over SW slope.
 5.00 Spur, 2 chs. wide, slopes NW. Desc. 90 ft. over NE slope.
 10.00 Foot of slope and road, brs. NW to Chin Lee, and SE to Thunderbird Ranch. Across level bottom land.
 31.20 Wire fence, brs. N. 5° E: and S. 5° W.
 39.68 Wire fence, brs. N. and S.
 40.01 Proportionate point, set an iron post 3 ft. long, 1 in. diam., 26 ins. in the ground, for the $\frac{1}{4}$ sec. cor., with brass cap marked

Resurvey of subdivisions of T. 5 N., R. 10 W.

Chains

 $\frac{1}{4}$ S 15

S 22

1933

From which

E. edge of the Thunderbird Trading post store bears
S. $43\frac{1}{2}^{\circ}$ W., 16.42 chs. dist.

A windmill at Thunderbird Ranch bears S. 56° W.

A peak about the center of Black Mesa, bears N. 61° W.,
vertical angle is plus $1^{\circ} 05'$.

Mound of stone established near mouth of the Canyon de
Chelly bears N: $22^{\circ} 28'$ W.

- 47.00 Leave level land, asc. gradual SW. slope.
50.00 Spur, slopes S. Desc. gradual SE slope
55.00 Across level bottomland.
58.00 Trail, bears NE and SW. This is the exact distance as
recorded in the original notes on this line to this old
trail.
62.10 Road, bears NE and SW.
65.00 Wash, 30 lks. wide, course SW.
66.00 Leave level land, asc. 55 ft. over sandstone ledges,
bear NE and SW.
68.00 Across bare surface rock; asc. 29 ft. over same to cor.
80.02 The original cor. of secs. 14, 15, 22, and 23, which is
a mound of stone, in center of which find a sandstone
8 x 14 x 3 ins. with two notches on same; the record
cor. calls for a sandstone 16 x 14 x 3 ins., but no
doubt the original stone has been broken in several
pieces and the piece found is all that now remains of
cor. The location of this monument agrees closely
with record dist. to old trail on line bet. secs. 22
and 23. Alongside of broken stone
- Set an iron post 3 ft. long, 1 in. diam., on bedrock,
above six inch cross chiseled in same, and in a mound
of stone to top, for the cor. of secs. 14, 15, 22, and
23, with brass cap marked

T 5 N R 10 W

S15 | S14

S22 | S23

1933

From which

Windmill at Thunderbird Ranch bears S. $78^{\circ} 40'$ W.

S. water tank at Chin Lee bears N. $83^{\circ} 58'$ W.

N. water tank at Chin Lee bears N. $83^{\circ} 08'$ W.

Power house smokestack bears N. $81^{\circ} 40'$ W.

N. end of old trading post bears N. $77\frac{1}{2}^{\circ}$ W.

Steeple of Presbyterian church bears N. 75° W.

West end of Garcia's Trading post store bears N. $82^{\circ} 32'$ W.

S. end of Black Mesa bears S. $89^{\circ} 20'$ W., upper level.

N. end of Black Mesa bears N. $47^{\circ} 48'$ W.

Land, rolling and broken.

Soil, sandy and rocky, 4th rate.

Timber, a few small cedar, on E. quarter mile.

Undergrowth, greasebrush.

Tie to approximate mouth of Canyon de Chelly.

From the original $\frac{1}{4}$ sec. cor. of secs. 15 and 16, S. $71^{\circ} 15'$ E. 25.00 chs. to low bluff on N. side of the Rio de Chelly. At this point cut an 8 inch cross in bedrock, alongside the letters WP; raise a mound of stone 4 ft. base, 3 ft. high, two ft. north of this cross.

From cross,
Garcia's trading post store bears S. 67° W.

There is a small stone house about 5 chs. west of this point. From this point, general line of cliffs on S. of Canyon bears SE; on the opposite side, generally NE.

After carefully determining the south and west boundaries of section 15, T. 5 N., R. 10 W., and the mouth of the Canyon de Chelly, and inspecting the adjacent areas, it was concluded that the remonumentation of the above lines would fully comply with the special instructions.

The remonumentation of the line bet. secs. 14 and 15, could only be accomplished after long and expensive retracements. This conclusion was reached after retracing the line bet. secs. 14 and 15, as well as the line bet. secs. 10 and 15, and the line bet. secs. 10 and 11. From data acquired on said retracements it could be plainly seen that there is quite an error existing in the 2d meridional range of secs. north of the cor. of secs. 14, 15, 22, and 23.

The solution of the error in connection with this range might require many miles of retracement, and the actual remonumentation of the line bet. secs. 14 and 15, when finally accomplished, would serve no useful purpose at present, in view of the location of said line, which is well up in the rough country east of the mouth of the Canyon de Chelly.

The restored $\frac{1}{4}$ sec. cor. of secs. 15 and 22 is a short distance from the Thunderbird Ranch and on the only logical route to the mouth of Canyon de Chelly.

Final Test of Solar Attachment.

May 18, 1933, at station hereinbefore described, at 9 a.m., app. t., set off $36^{\circ} 09'$ N. on lat. arc and $19^{\circ} 34'$ on decl. arc, and determine a meridian with the solar attachment, which agrees with the true meridian.

At 12h 00m., app. noon, with lat. arc unchanged, observe sun on the meridian; resultant reading of the decl. arc is $19^{\circ} 35'$ N., which agrees with the computed decl. of the sun.

At 3h 00m., p.m., app. t., with lat. arc unchanged, set off $19^{\circ} 37'$ N. on decl. arc and determine a meridian with the solar which agrees with the true meridian.

CERTIFICATE OF UNITED STATES SURVEYOR

I, Benjamin J. Kinsey, U. S. Surveyor, hereby certify upon honor that, in pursuance of special instructions received from the District Cadastral Engineer for Arizona bearing date of the 13th day of March, 1933, 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 these parcels of land~~ resurveyed the west and south boundaries of section 15, Township No. 5 North, Range No. 10 West,

of the Navajo Meridian, in the State of Arizona, 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 ^{re} 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 Arizona and in the specific manner described in the field notes, and that the foregoing are the original field notes of such ^{re} survey.

Flagstaff, Arizona, May 20, 1933.

Benjamin J. Kinsey U. S. Surveyor.

APPROVAL

OFFICE OF U. S. SUPERVISOR OF SURVEYS,

Denver, Colorado, June 23, 1933.

The foregoing field notes of the ~~survey~~ resurvey of the west and south boundaries of section 15, Township No. 5 North, Range No. 10 West, of the Navajo Meridian, in the State of Arizona,

executed by Benjamin J. Kinsey, U.S. Surveyor, under his special instructions dated March 13, 1933, 19, having been critically examined, and the necessary corrections and explanations made, the said field notes, and the ^{re} surveys they describe, are hereby approved.

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.