

29/4/56

Center tree on south slope of hill directly behind tree on slope forward

Place about 30 yds south of gum tree on south east side of gully. Pile of rocks under range finder

930 yds 13.8°

single tree on slope forward
585 yds 11.0°

Base of Small gum with crumpled trunk on west side of gully well down slope of hill

598 yds 13.0°

this line 82° E of mag. N. tree near top slope of hill
1 photo to east, west & center on forward slope of hill

crest of hill
gum tree

Single tree west fence post sharp pointed on forward slope

600 yds 13.0°
642 yds 13.0°

Pile of rocks under range finder

this line 85° E of Mag. North.
2 photo to W + 1 photo to east

685 yds 10.6°

no rock on top of hill

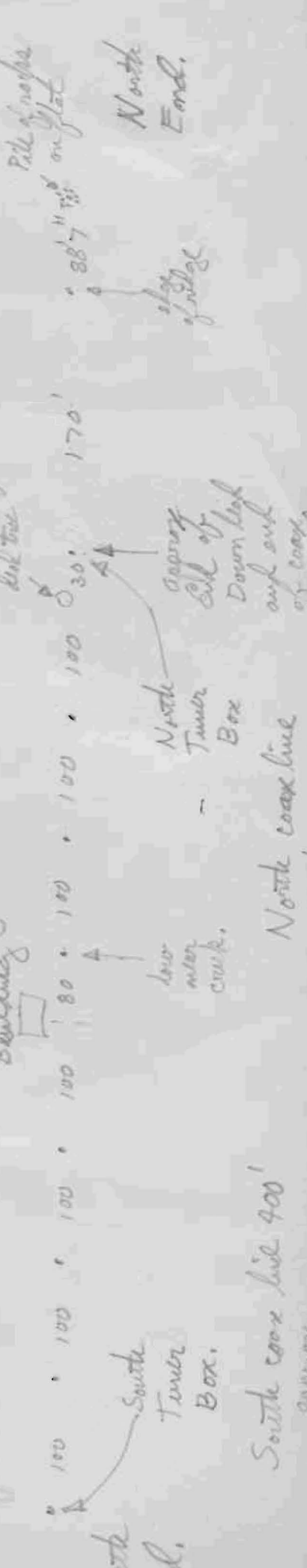
this line 90° E of mag. North.
1 photo to north.
385 yds 0°

3 July 1956

1 at in foundations of building about 20 ft north of pair of pags of 1/7/56 and a few feet west of line laid out along ground. Also used theodolite to find exact location under existing position of center span insulators. Pags were driven. By measurement on ground it was found that north span is 116 ft too far west and south span 297 ft 3 inches too far east.

5 July Put up building on foundations and spent an hour looking for empty cable spool which was lost on 23/6/56 southwest of post A down slope. No success. Probably in clump grass which will have to be burned off before spool can be seen.

7 July Took down north span. Removed 125 ft length from east end and inserted it in west end such that center of working length moved 116 ft east. Thus center of antenna now over correct place on ground. Before putting back up the feed line was attached and 280 feet run out. This reached below top of small plateau under antenna but not down to dead tree of 1/7/56. As a temporary fastening it was attached to another stump about 30 ft north and 20 feet east of dead tree. Arrangement on ground now about as follows.



South coax line 400'

28/4/56

Separate
Spherical
Tree

below
saddle.

880 yds 11.50 a.l.
91° W of Mag North

peg on north slope of creek

547 yds 13.0 a.l.
81° E of Mag. N.

pile of rocks on south of creek,

522 yds 13.0 a.l.

78° E of Mag. North

rock. B

peg 12 yds east of rock.

Hill in here

128 yds 0.6 a.l.
17° E of Mag. N.

F
1220 ft

198 yds 0.5 a.l.
155° E of Mag. North.

Tree hollow
on east, burnt
on inside &
marked by
bat-dropp

Small
Tree
30' N
of sand
pencil post

740 yds 11.6°
97° W of Mag. N.

E 620 yds
82° E of Mag. N.

12.1°
A

29-4-56

B

A



D 6

00

(B to D) 1290 yds 16° el.
89° E of Mag. N.

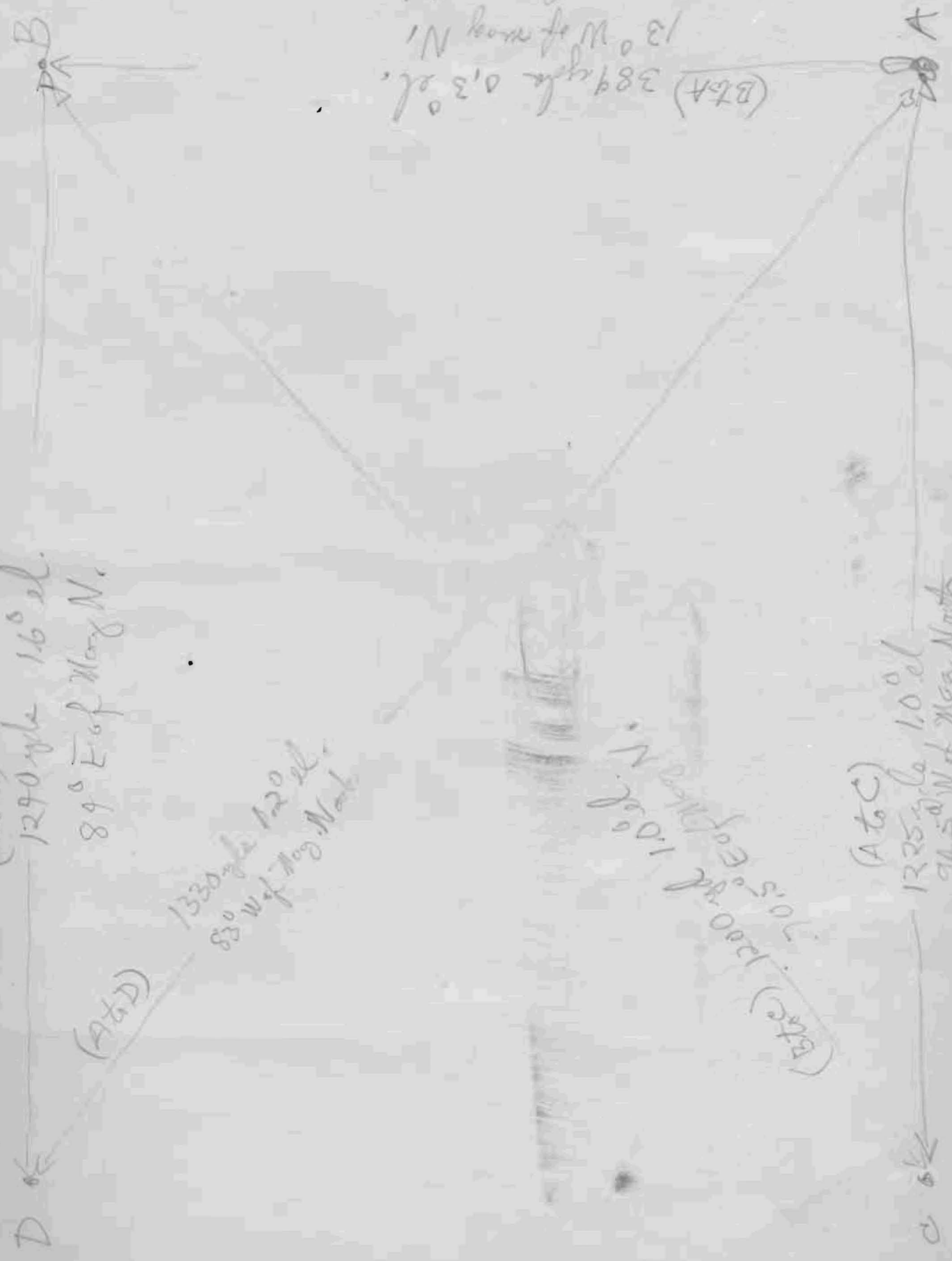
(A to D) 1330 yds 120° el.
83° W of Mag. North

(B to C) 1200 yds 10° el.
70.5° E of Mag. N.

(A to C) 1225 yds 10° el.
94.5° W of Mag. North

(B to A) 389 yds 0.3° el.
13° W of mag N.

(A to B) 388 yds - 0.8° el approx
13° W of mag N.



MM
500 + D 842 mgh ± 11.0°

This is 801 yards corrected. Now 801 + 507 = 1308 which agrees well with 13

23/6/56

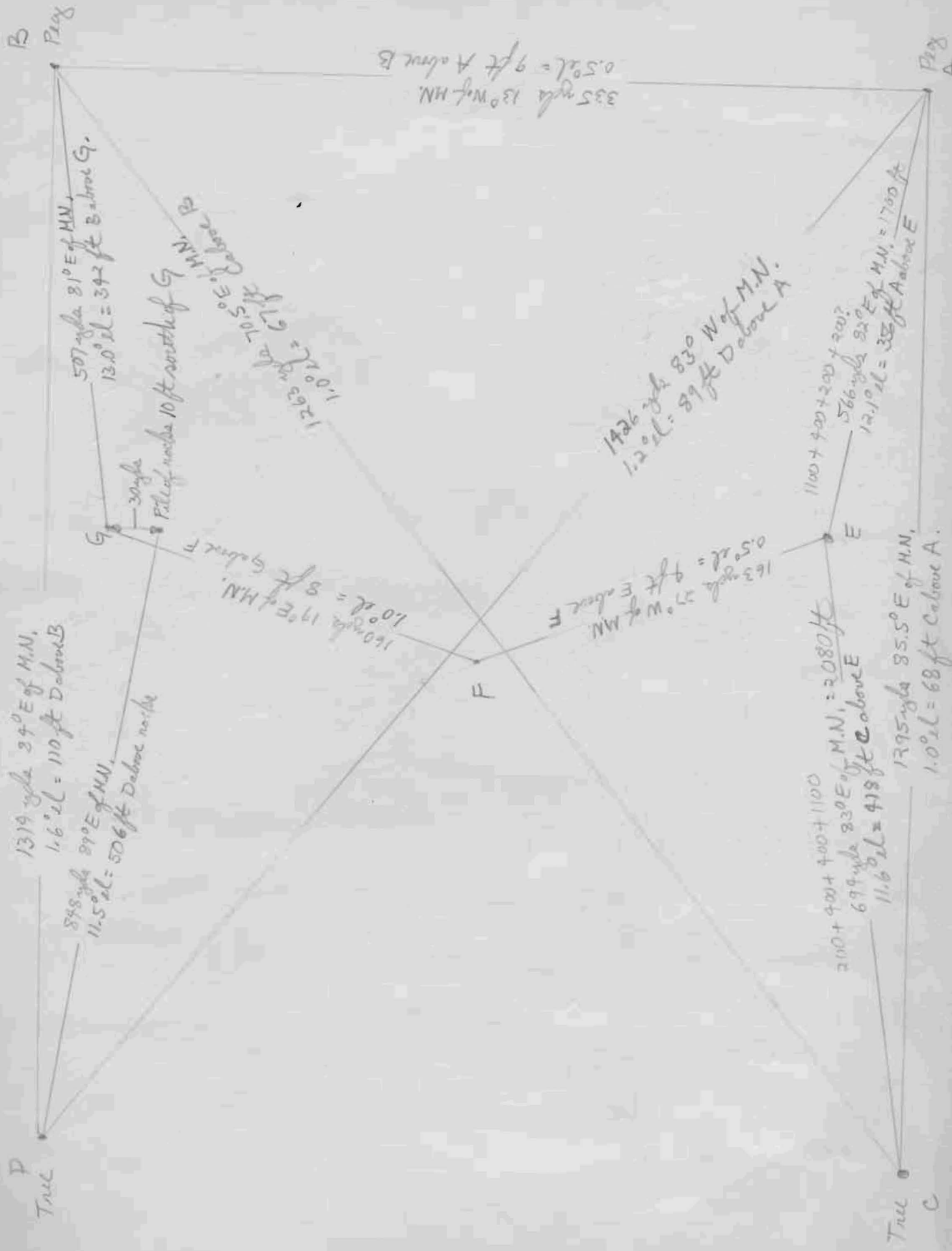
The south span was hung between part of A and a lock tree about 50 ft north and 10 ft east of one marker on 23/4/56. Thus the actual span would have a length

measured by range finder of about 3875 feet. The wire had to hang this span ~~was~~ ^{west} 200, 400, 400, 1100, 1100, 900, 200 = 3800 ft. about 15 ft was coiled around lock tree at west end and 125 ft coiled about part at east end. Thus the actual span would have a wire length of about 3660 ft. This is about 215 ft less than measured length on 14/1/56 changed cable to 200, 100, 400, 1100, 1100, 400, 400. 12 ft coiled about tree + 28 ft coiled on pier

By similar reasoning the north span has a measured length of 3942 ft. The correction will be about -222 ft. The wire length will be about 3720 ft. It seems the wire calculations should be 400, 400, 400, 1100, 1100, 200, 200 = 3800 ft. This will allow about 40 ft to be coiled at each end.

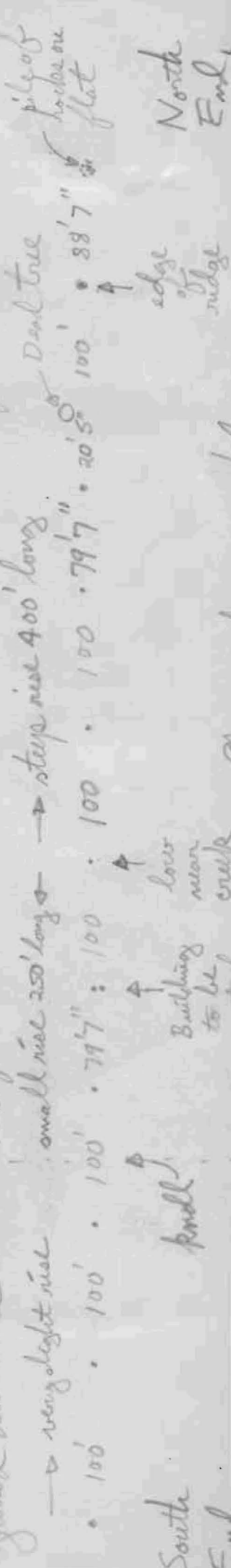
2/5/56

Computed data of 28+29/7/56



30/6/56 Put up north span between tree at D and post at B. The cable lengths are 200, 400, 900, 1100, 1400, 200, 125, 35. about 20 feet are coiled around tree at D and about 30 ft around post at B, Thus the span has a wire length of 3910 ft. This is 32 ft shorter than measured length of 3942 ft. Due to complexity of fittings at post and the cable was not drawn up to 800 pounds but only about 750 pounds. Probably another five feet should be taken in to get tension up to 800 pounds, On 7/1/56 changed cable to 125, 200, 900, 1100, 1400, 200, 35 with same amount coiled up. On 12/1/57 changed back to arrangement of 30/6/56

1/7/56 Laid out a base line along west side of creek on a direction 6° west of magnetic north. This makes base line at right angles to antennas which are 89° E of magnetic north. A pair of stakes were placed near where house is to be and distance measured along ground from this pair to a place estimated to be underneath the wire. These distances were found to be 379 ft 7 inches south and 588 ft 7 inches north. Total ground distance thus 968 ft 2 inches. Straight line distance probably about 950 ft



obsolete

25/4/56

Reduction of data of 24/4/56

South Position

$$\text{East range} = 685 - 52 = 633 \text{ yds}$$

$$\text{Elevation} = 10.6^\circ, \sin 10.6^\circ = .184$$

$$\text{Rock on crest of hill} = 633 \cdot .184 \cdot 3 = 349 \text{ ft high.}$$

$$\text{West range} = 642 - 54 = 588 \text{ yds}$$

$$\text{Elevation} = 13.0^\circ, \sin 13.0^\circ = .225$$

$$\text{Base of fence post} = 588 \cdot .225 \cdot 3 = 396 \text{ ft high.}$$

$$\text{West range} = 600 - 53 = 547 \text{ yds}$$

$$\text{Elevation} = 13.0^\circ, \sin 13.0^\circ = .225$$

$$\text{Base of single tree} = 547 \cdot .225 \cdot 3 = 370 \text{ ft high}$$

$$\text{North range} = 385 - 53 = 332 \text{ yds}$$

$$\text{Azimuth} 9 + 10 = 19^\circ \text{ east of north, } \sin 19^\circ = .324$$

$$\text{North position} = 332 \cdot .324 \cdot 3 = 323 \text{ ft east of south position.}$$

North Position

$$\text{East range} = 548 - 52 = 496 \text{ yds.}$$

$$\text{Elevation} = 13.0^\circ, \sin 13.0^\circ = .225 \quad (\text{ridge about } 500 \text{ yds } \times \text{ } 350 \text{ ft high})$$

$$\text{Base of gum tree} = 496 \cdot .225 \cdot 3 = 335 \text{ ft high}$$

$$\text{West range} = 585 - 52 = 533 \text{ yds.}$$

$$\text{Elevation} = 11.0^\circ, \sin 11.0^\circ = .191$$

$$\text{Base of single tree} = 533 \cdot .191 \cdot 3 = 306 \text{ ft high}$$

$$\text{West range} = 930 - 19 = 911 \text{ yds}$$

$$\text{Elevation} = 13.8^\circ, \sin 13.8^\circ = .238$$

$$\text{Base of antler tree} = 911 \cdot .238 \cdot 3 = 651 \text{ ft high}$$

Obsolete

25/4/56

Cable Span & Sag.

$w =$ Wire rope $46.7^{\#}/1000\text{ft}$, Center Load $10^{\#}$
Equivalent extra span = $10/46.7 = 214\text{ft}$.

Assume new south position 250' east of old one.
East range now $633 \times 3 - 250 = 1650\text{ft}$.

$L_a =$ Apparent full span $1650 \times 2 + 214 = 3514\text{ft}$.

$T_e =$ Assume cable tension $900^{\#}$

$$\text{Sag} = D_a = w L_a^2 / 8 T_e = 46.7 \cdot 3.51^2 / 8 \cdot 900 = .080 \\ = 80\text{ft}.$$

Height of wire = $350 - 80 = 270\text{ft}$ at center.

West range now $588 \times 3 + 250 = 2014\text{ft}$.

$L_a =$ Apparent full span = $2014 \times 2 + 214 = 4242\text{ft}$.

$D_a = \text{Sag} = w L_a^2 / 8 T_e = 46.7 \cdot 4.24^2 / 8 \cdot 900 = 117\text{ft}$.

Height of support required = $270 + 117 = 387\text{ft}$.

$L =$ Total span = $1650 + 2014 = 3664\text{ft} = 1.12\text{km}$

(over)

Assume new north point 73 ft west of old one.

East range now $520 \times 3 + 73 = 1633$ ft.

Sag same 80' as south position.

West range now $911 \times 3 - 73 = 2660$ ft.

L_a = Apparent full span = $2660 \times 2 + 219 = 5539$ ft.

D_a = Sag = $w L_a^2 / 8 T_c = 46.7 \cdot 5.53^2 / 8 \cdot 400 = 198$ ft.

Height of support required $270 + 198 = 468$ ft.

Apparently some place about $\frac{1}{3}$ way up from single gum tree to center tree on ridge is proper place. Say 700 yds + 400 ft high.

L = Total span = $1633 + 2100$ approx = 3733 approx ft.

23/9/58

If more wires are to be strung across valley to north it will be necessary to shift center of antenna system 400 ft to west. This is because east ridge runs off in a direction somewhat west of north. New location 400 west will be better as it gets out of mud near creek and away from rocks under present north antenna. Much labor to plow in feed wires.

slight
obscure ridge
creek

single tree beyond fence
880 yds

fence post in front
of tree 835 yds

grass in bottom

bend in far side of
creek 690 yds.

445 yds clump of grass

468 yds - flat rock

383 yds - clump of grass

317 yds - clump of grass

corner post
in fence

base

272 yds

19/6/56

Cable Span and Sag.

Assume initial tension 800# ; Cable 39.7#/1000ft

Assume load at down lead 10#

Equivalent extra span $10/39.7 = 252$ ft due to load.

Apparent span $L_a = 252$ plus twice distance from end to load.

$$\text{Sag} = D_a = w L_a^2 / 8 T_e = 39.7 L_a^2 / 8 \cdot 800 = .00620 L_a^2$$

South Position

East range $566 \times 3 = 1698$ ft, $L_a = 252 + 2 \times 1698 = 3698$ ft

Sag = 82.5 ft.

West range $694 \times 3 = 2082$ ft, $L_a = 252 + 2 \times 2082 = 4416$ ft

Sag = 121.0 ft.

West end should be 38.5 ft above east end.

The second dead tree just south of live one should be OK.

North Position

East range $507 \times 3 = 1521$ ft, $L_a = 252 + 2 \times 1521 = 3294$ ft.

Sag = 67.3 ft.

West range $801 \times 3 = 2403$ ft, $L_a = 252 + 2 \times 2403 = 5058$ ft.

Sag = 159.0 ft.

West end should be 91.7 ft above east end.

A new post 100 yds in front of present tree should be OK.

Then sag will be only 123.7 ft or west end to be 56.4 ft above east end and 54 ft below present tree at D.