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A Brief Report on the Geology of the Houston
Mountain Claims

by

Ulrich Kretschmar, M.Sc.
and
Dianne Kretschmar, B.Sc.

June, 1969.

1. Introduction

A brief examination of a series of trenches (at an elevation of about 3200 ft. above sea level and about 120 ft. above the town of Houston) on the south side of Houston Mountain (microwave mountain) was carried out in order to examine the stratigraphy of the volcanic rocks and the relationship of chalcopyrite and bornite (?) mineralization on some trenches of the volcanic rocks.

2. General Geology

Houston Mountain is underlain by Jurassic volcanic rocks of the Hazelton group. Hazelton rocks are classed as mainly andesite, agglomerate, water-lain tuff (fluff) and minor ~~basalt~~ basalt and rhyolite on Geological Survey of Canada Map 671A, but have not been subdivided. No mineral deposits are known within 10 miles of the area examined.

4. Geology of the Claim Area

a. General

The claims are underlain by medium to coarse grained pyroclastics fragmental and extrusive rocks. They are crystal-lithic rocks and appear to vary in composition from andesitic to dacitic to rhyolitic. The rocks are composed of various proportions of quartz and feldspar phenocrysts and angular lithic fragments of varying compositions in a very fine grained green to red colored, siliceous to chloritic groundmass. No amygdules or flow structures were observed. The rocks appear essentially fresh, unaltered and unmetamorphosed. Very little secondary or deuteric alteration has taken place, although occasionally large zoned feldspar (plagioclase ?) phenocrysts have their centers altered to a felted chloritic mass. Minor epidote was also observed. No systematic differences in size and composition of lithic fragments or phenocrysts were observed.

b. Description of the major rock units

Unit 1: Basaltic Porphyritic fragmental dacite.

Large portions of the area to the west of the mineralized zone are underlain by this unit. It outcrops massively and weathers white. Its colour varies from light greenish grey to reddish to dark reddish grey. The rock contains angular to rounded dark green, purple or grey lithic fragments. They average 2-3 mm. in size, but are unsorted and range up to 1.5 cm in length. The predominantly pink (K feldspar)

SAMPLE 30

- dark reddish purple color

-3-

- dense matrix H ~ 5.5

- white field of phenos + dk. red-purple frags.

- < feld + lithic frags than unit III

- cal. staining

SAMPLE 32

- dense whitish grey siliceous rk.

quartzite?

- weathers brown

Nvm

phenocrysts are euhedral laths, often slightly rounded. Occasionally large zoned (plagioclase ?) phenocrysts with their centers chloritized are also found. These average 1-2 mm in size, but range up to 5 mm. The clear to white quartz phenocrysts are 1-3 mm in size and have a rounded shape.

The phenocrysts are set in a fine grained greenish chloritic groundmass, which locally may be slightly more siliceous and purple.

The composition of the rock is as follows:

Estimated Mode	Vol. %
Quartz phenocrysts	5 - 10
K Feldspar (minor plag.)	20 - 30
Lithic fragments	30
Groundmass	30

At the eastern contact, unit 1 is gradational into unit 2. This gradation is marked by increase in K feldspar phenocrysts and decrease in lithic fragments. Towards the west, there is a slight increase in quartz phenocrysts and the percent of small white feldspar phenocrysts increase relative to the pink. Locally unit 1 may become finer grained and more siliceous.

Unit 2: Porphyritic rhyolite.

This rhyolite is purple to reddish grey to dark grey, hard, very fine grained and fractures subconchoidally. Pink euhedral to subhedral

feldspar phenocrysts comprise 10-20 % of the rock and average 2-3 mm in size.

Outcrops are massive and irregularly jointed. Weathered surfaces are hackly and are covered with rusty brown fine grained siderite and limonite.

Calcite veinlets and very fine grained quartz veinlets were observed in some places.

Near the western contact, a few lithic fragments appear in dark grey rhyolite. At the eastern contact, the rhyolite becomes purple or reddish in color. The variation associated with the mineralization in this unit is described below, in section 5.(p.).

Unit 3: Porphyritic fragmental andesite.

This reddish purple or maroon andesite also has pink feldspar phenocrysts and dark purple to black lithic fragments. It differs from unit 1 because: 1. it does not contain quartz phenocrysts, and 2. its color is generally purple and the groundmass is slightly more basic than that of unit 1. The rock is quite variable in composition as the modal estimate below indicates:

Estimated Mode	Vol %
Pink feldspar	20 - 40 %
Lithic fragments	10 - 40 %
Matrix (groundmass)	20 - 50

At the south-east corner of the map area, unit 3 becomes more siliceous, lithic fragments become fewer and a contact with another unit may be near.

d. Structure

Very little structural information was obtained because of limited outcrop. The rocks seem to be undeformed and to trend in a northeasterly direction. Unit 2 appears to pinch and swell near the mineralization. Strike and dip of the beds could not be determined, but nearby they strike about north and dip between 30 and 60° to the east. Information from the drill holes does not provide a unique solution, but is consistent with a steep easterly dip of the beds.

5. Description of the Mineralization

Mineralization is sparse and consists mainly of chalcopyrite. Minor galena (cubic cleavage) and a very small amount of bornite were identified. Secondary sooty chalcocite may occur, but it is difficult to distinguish from massive pyrolusite. Tetrahedrite and pyrite were not found. The sulfides are finely disseminated or occur in narrow veinlets. Potentially economic mineralization is confined to unit 2 (see map) and to a light grey, very siliceous and apparently fractured zone within this rhyolite. In this zone feldspar phenocrysts are variously altered, but recognisable. This may be a shear zone but it is more likely to be

a leached zone. Malachite and azurite occur on weathered surfaces and along fractures in the mineralized zone. and a short but fairly thick two ft. wide zone of malachite and azurite impregnated rhyolite was found ten ft. north of drill hole 1. Pyrolusite dendrites and film and Fe stain coat fractures in the mineralized zone but smaller amounts of these oxides are found throughout the rhyolite unit.

The maximum size of the mineralized zone in outcrop is about 200 ft. long and 25 ft. wide.

6. Assessment and Recommendations

The only interesting aspect of this showing is that the mineralization is confined to a narrow rhyolitic unit between more basic units. Only extensive trenching and drilling along strike would turn up more mineralization, should it be present.

In our opinion, the apparently limited extent of this mineralization, sub-economic assay values and reportedly poor geotechnical results suggest that further work is not warranted.

Ulrich Kretschmar

Dianne Kretschmar

June, 1969

SAMPLE NOS.

1, 2, 3, 4, 5, 6, 22, 33, 34, 35

UNIT 1

color - lt. greenish ^{grey} to ~~purplish~~ reddish to dark reddish grey

✓ dark green to ~~reddish~~ ~~dark reddish~~ purple - grey lithic frags.

pink feld. phenos.

clear qtz phenos.

hardness - ~~8~~ variable in comp. of matrix
usually < 5.5

outcrop - massive

weathered surface - white

phenos. ~~resistant~~ + lithic frag. resistant

comp. - matrix

greenish colored - chloritic

purplish - more siliceous

- fine gr.

phenos. - ~~pink~~ pink K feld. - subhedral ^{lithic} to rounded

- some large zoned phenos. ~~at~~ center chloritized

- 1-5 mm. (av. 1-2 mm.)

- qtz - clear to white

- rounded

- 1-3 mm.

lithic frags

- dk. green, fine gr.

- purple fine gr.

- light cherty frags. - rounded

- few purple fragmental frags

- up to 1.5 cm. - av. 2-3 mm. - unsorted

mode - 5-10% qtz phenos.

20-30% K feld "

30% lithic

30% matrix

Some cal veinlets + stringers

Variation in comp.

contact to E - increase in K feld phenos, decrease in lithic frags
- gradational to siliceous unit \bar{c} K feld phenos.

towards W - increase in qtz. phenos
- feld. phenos both pink + white \bar{c} white > pink

locally \bar{c} becomes finer gr. + more siliceous - ~~pa~~ \rightarrow reddish
+ less chlorite in matrix - feld. white - less lithic
frags.

mineral

Sample #33 Trench VII

- disseminated + gn. along calcite fractures
- disseminated + minor bn.

sample #35 - Some malachite stain but NVM except v. rare \bar{c} qtz

SAMPLE Nos.

7, 8, 9, 10, 11, 12, 13, 14, 15, 19, 20, 21, 24, 25, 27

color - purple ^{reddish grey} to dark grey matrix
pink feldspar phenocrysts.

UNIT 2

hardness - v. hard, difficult to break
sub conchoidal fract. - breaks like chert

outcrop - massive, jointed

weathered surface - hacky

= rusty limonite on fractures

Comp. - matrix - siliceous, v. fine gr., dense

phenocrysts - pink feld.

- altered

- cubical to subhedral

mode - feld - 10-20%

matrix - 80-90%

some cal. veinlets & v. fine qtz. veinlets

contacts - to W - dark grey colour

few lithic frags

~~decayed~~ field.

to E. - matrix more purple ~~grey~~ or reddish - 7, 8

Mineral.

sample #20

- lt grey ^{siliceous} matrix (bleached) - pink feld. phenos. - altered

- malachite, azurite Mn stain
epq - in veinlets + dissem. grains

barite, qn ~~and~~ - veinlets + grains

sample #11

- lt grey, bleached matrix - no feld. phenos.

epq - veinlets + dissem. grains

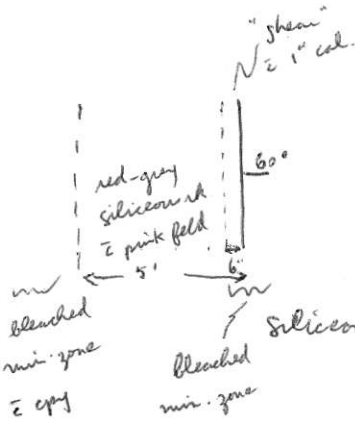
qn - " " "

white cleavage

11 cont - malachite, azurite + MnO₂ stain + Fe

sample #12

- lt. grey matrix (bleached) - remnants of pink feld phenos
- v. siliceous
- ~~azurite~~ azurite, malachite, Fe + Mn stain
- siderite? + calcite veinlets throughout
- some larger cal. veinlets - one along fract.
- or shear 1" wide - 100/60NE



- dissem. cpy, gr. + some veinlets
- 6" from one side of mineralized zone - back into reddish grey
- Silicon rk. = pink feld. phenos

sample #15

- lt. ^{pinkish} grey matrix (bleached)
- thick ox. zone "1" - mainly malachite + some azurite + siderite
- 2' wide strike "235"
- min. - cpy, chalcocite? - dark lead grey, metallic luster, soft
- wall rk. - altered + fractured
- reddish grey siliceous matrix = few pink feld remnants

gr?

STRUCT.

8, 9 - "sheared" or altered

10 - sheared, becoming bleached

SAMPLE NOS. 16, 17, 18, 26, 23, 28, 29, 31

- highly feldspathic fragmental lithic volcanic

color - reddish purple or maroon
pink feld phenos
dk purple to blk. lithic frags

UNIT 3

Andesitic unit.

hardness ~ 5.5

outcrop - massive

weathered surface - reddish purple
- pink feld. stands out

comp. - matrix - fine gr., dense, quite siliceous
phenos. - pink feld - euhedral laths to rounded & fragmental

lithic frags - subrounded red cherty frags
- black, soft
- angular ~~more~~ purplish
- some qtz frags

mode - 20-40% feld phenos.
10-40% ~~10-20%~~ lithic frags. } feld > lithics
20-50% matrix

- calcite veinlets at 16, 23

contact on W.

lithic frags. ~~for~~ best contact quite sharp
matrix may be slightly more siliceous + dense

thin siliceous

low few qtz, phenos.

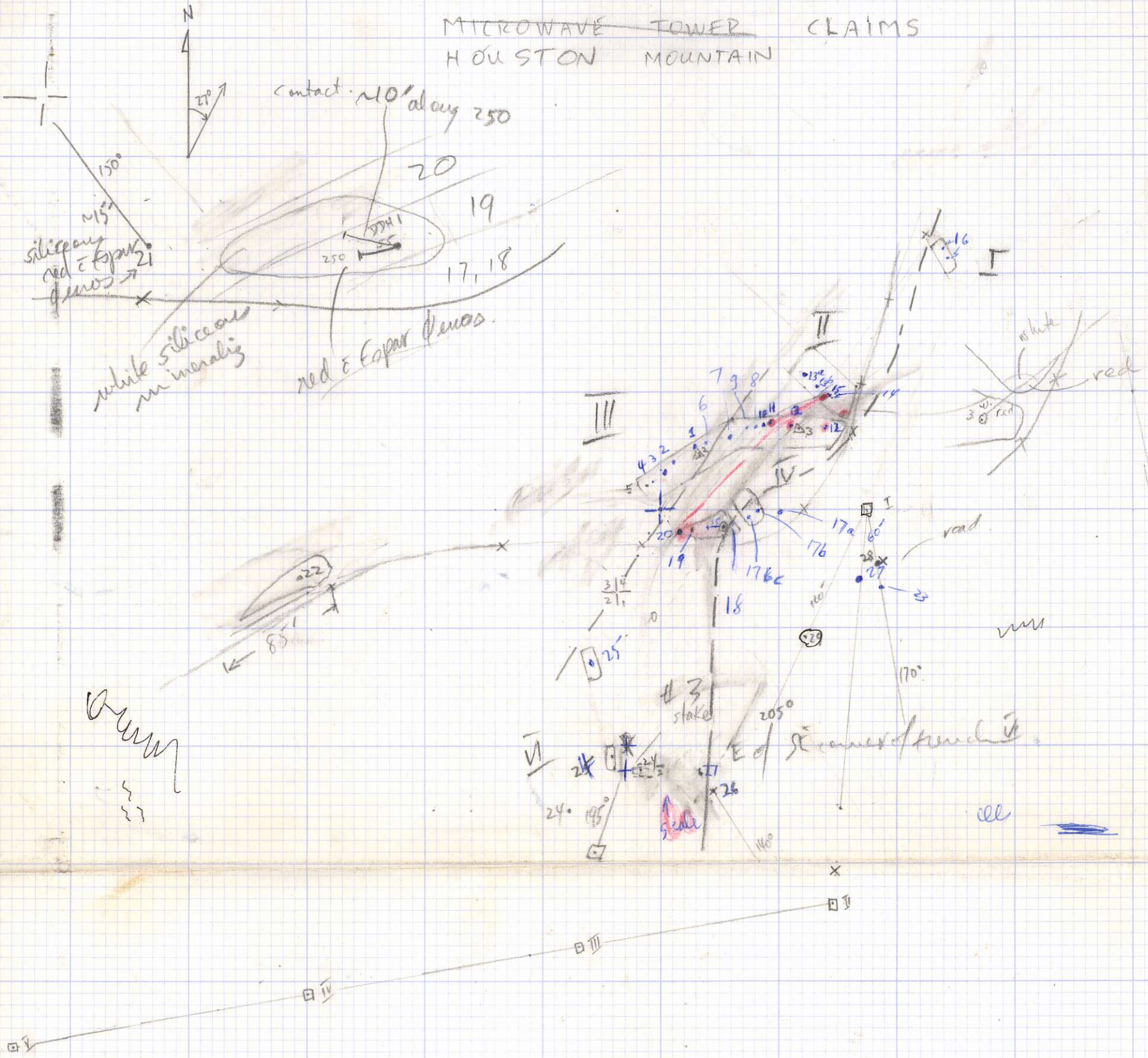
NUM

- may be local columnar chgs. to greenish (eg. 31)

matrix
 20-40% - lithic frags
 10-15% - siliceous matrix
 50-60% - fine gr. lens, quite siliceous
 - dark soft
 - some of frags
 - irregular near granitic
 - some of frags
 - lithic frags - a subrounded red chert frags
 - phenos - pink field - included letters to rounded + fragments
 - matrix
 - surface - reddish purple
 - contact - massive

GEOLOGY OF

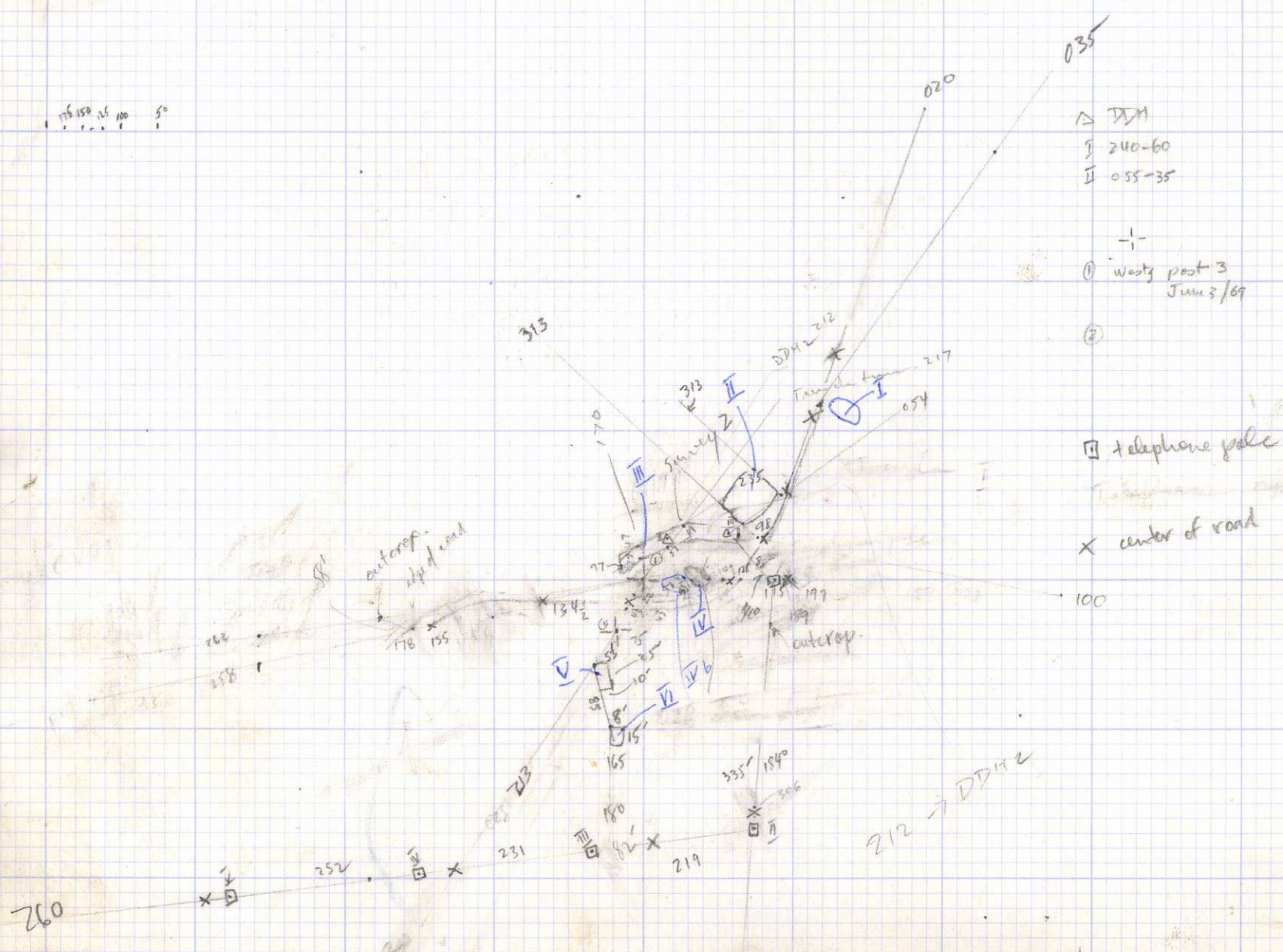
MICROWAVE TOWER CLAIMS
HOUSTON MOUNTAIN



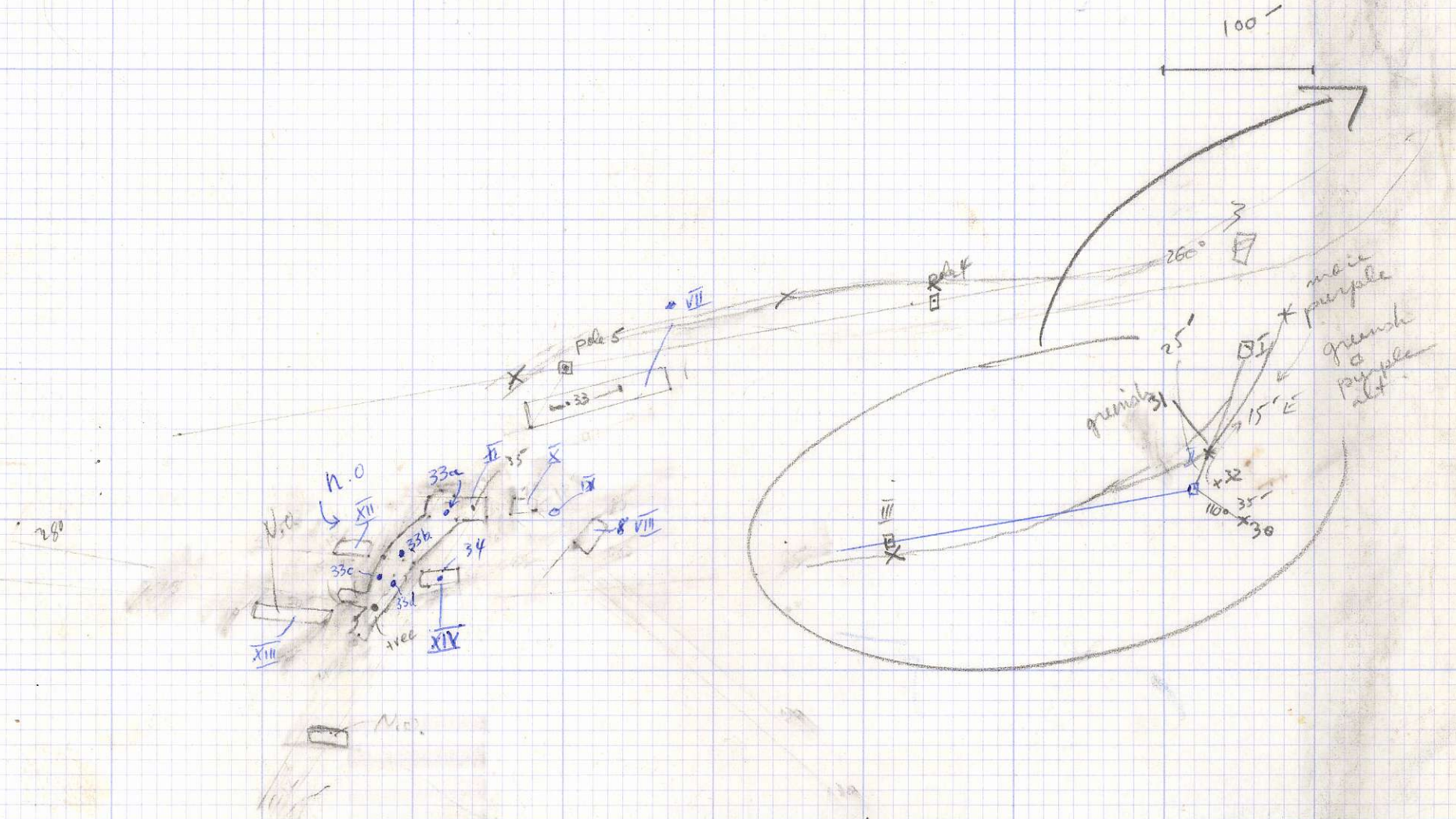


200'

175 150 125 100 50



100'



llh

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- < fld + lith. frags than unit II
- cal. stony

SAMPLE 32

- dense whitish grey siliceous sh. - rhyolite?
 - weathers brown
- NVA

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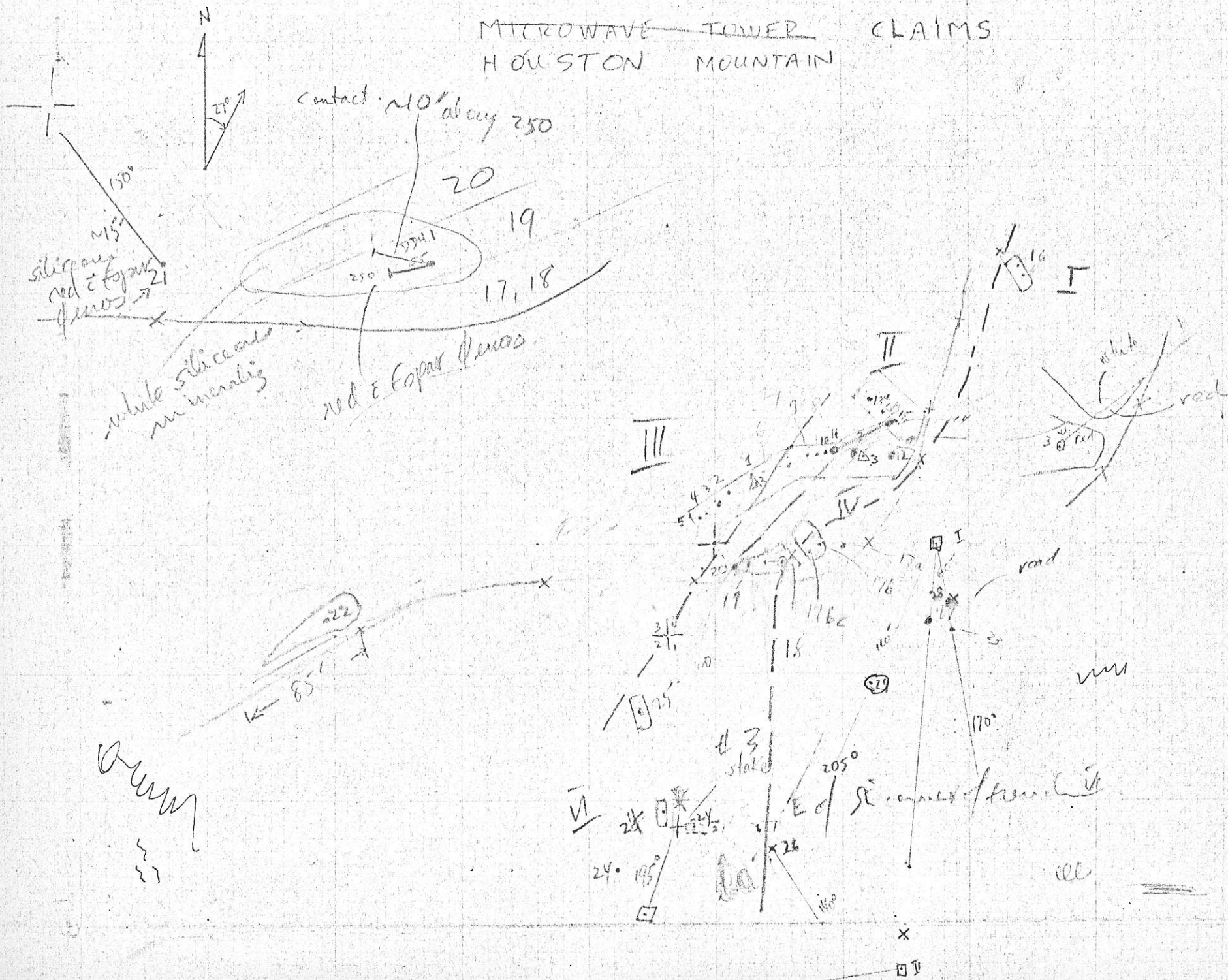
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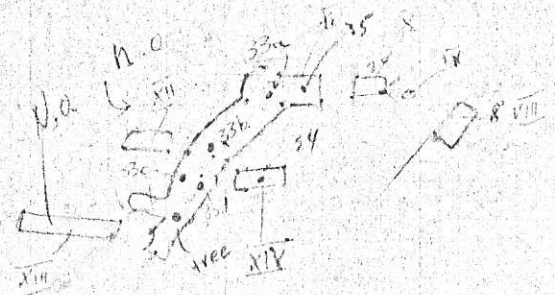
June, 1969

GEOLOGY OF

MICROWAVE TOWER CLAIMS
HOUSTON MOUNTAIN



280



N.O.

111'

7

2.2

100'

pole 5

VII

XIV

260°

25'

greenish 31

31

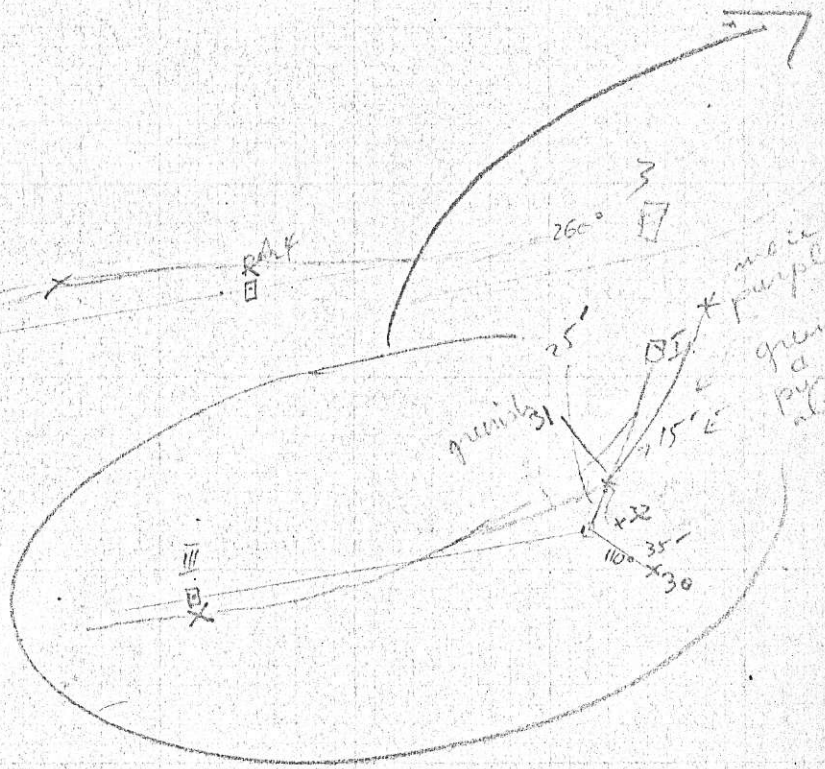
32

35

10°

30

more purple
greenish a purple
alt



111



200'

△ D.M.
I 240-60
II 055-35

① Warty post 3
June 5/69

②

□ telephone pole

x center of road

100

260

252

231

219

212 → D.D.H.2

262
158

178
155

313

313

DDH-212

217

054

97

134 1/2

15

10

8

15

180

12

355

1840

058

177

189

197

199

outcrop
hydrant

summit 2

outcrop

212 → D.D.H.2

175 150 125 100 50