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PROSPECTS

in
the

LOS ANGELES AREA

By

E. H. Wiener

August, 1926

CONTENTS

LIST OF MAPS ACCOMPANYING THE DON LUIS PROSPECT BOOK

A GENERAL NOTE ON PROSPECTING

The principle followed almost throughout in laying out the following prospects is that the ore in the Don Luis area has made in the beds at a definite favorable horizon, along certain definite zones of fracturing. Prospects are designed to explore these intersections at new locations. Obviously, the locus of the intersection of two planes, that of the fracture and that of the bed, is a line; the intersection then of the favorable horizon with the different fractures will be a series of lines, or with a fracture zone, a broad band. Some third factor, e.g., an east-west fracture, is needed in order to select a particular point to prospect on these lines or bands. The weakness of a prospecting campaign throughout the Cole and Don Luis areas lies in the rarity of such third factors. Thus, the Nighthawk sulphide orebody at the Boras line, between the 900 and 700 levels, occurred apparently without any such third factor. It follows from this that when the prospects described below have reached their objectives, probably in many cases without finding ore, an intensive <u>local</u> search for ore must in each case be made. The ore locus is an inclined line or band; this locus, the intersection of the northeast ore-fracture in question with the favorable beds, must be followed above and, in some cases, below the level on which the prospect was run either by in-

clined raises or winzes along the fractures and in the favorable beds, or by crosscutting on the level, to attain the same object. (See Plate IV of the Report, which gives a picture of the ore-locus.)

The following prospects are grouped by fracture zones, and the numbering does not indicate their relative merits, nor the order in which the prospects should be driven.

NOTE --- All structure sections in this report are taken looking northeast or northwest.

PLATE I

To face page 2,

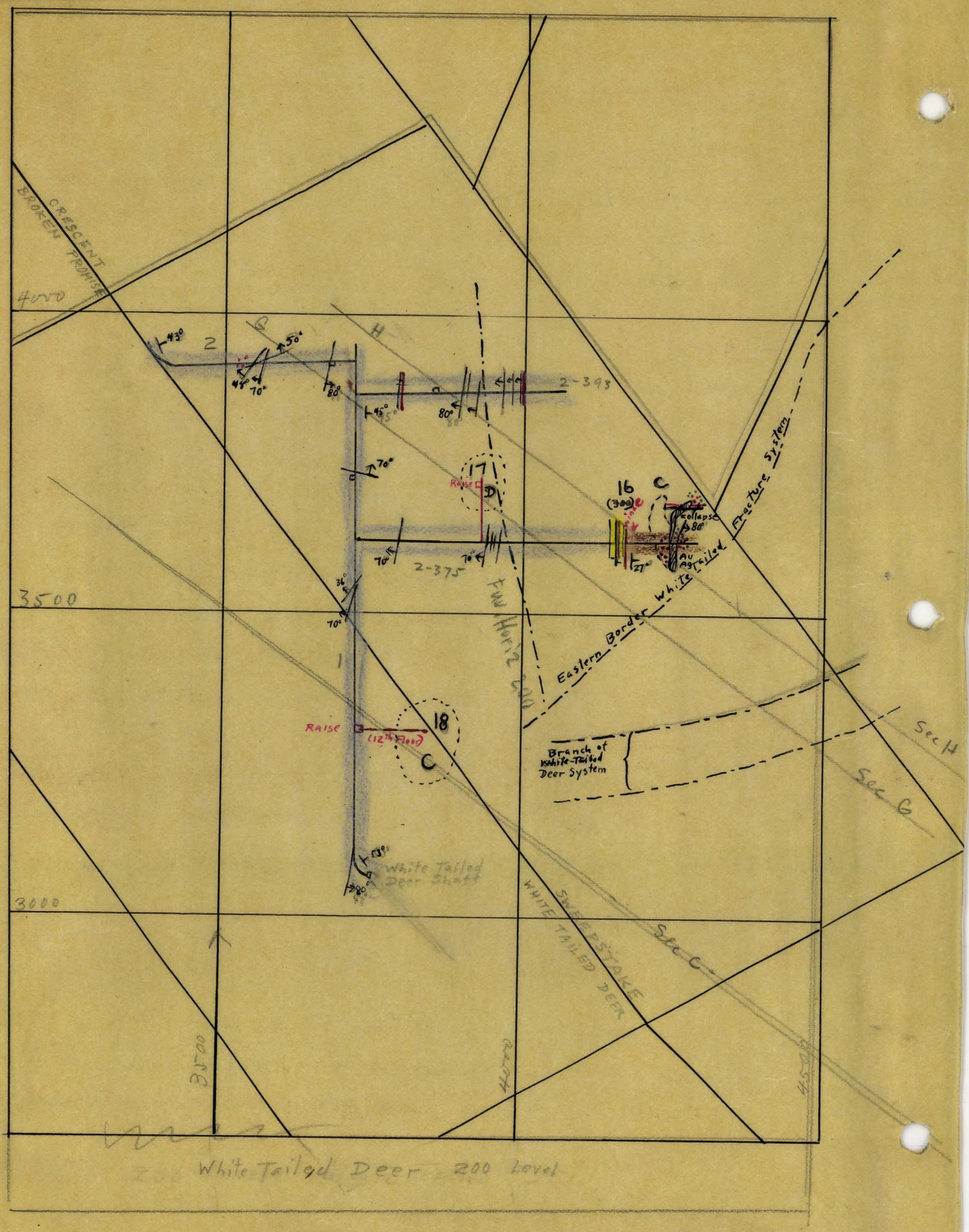
White Tailed Deer 100 Level

1"=200'

Projected from Surface

Favorable Horizon 10V

PLATE X 2 To face page 2



100 Level - White Tailed Deer.

All of the workings lie within the White Tailed Deer fracture system. Following the favorable Abrigo horizon south and east of the shaft beneath some promising surface showings appears the only hopeful course on this level. Prospect No. 19.

200 Level - White Tailed Deer.

The present workings lie entirely within the White Tailed Deer fracture system, and largely in the favorable horizon, but, except for the "Gold Stope", no ore was found on this level. There seem to be two possibilities on the level itself. Prospect No. 17 is intended to explore the north-south fractures shown in 2-393 and 2-375 crosscuts at a possible intersection with an east-west fissure which cuts across the north end of the "Gold Stope". This horizon in the Abrigo is mineralized on the 15th and 16th floors, and the beds dip down toward the objective of the prospect.

Prospect No. 18 is intended to explore the favorable horizon below the mineralized northeast breaks in 2 drift, on the 100 level. A strong flexing of the beds on the 100 level is somewhat encouraging.

300 Level - White Tailed Deer.

While the favorable beds dip out of the Sweepstake claim into C.& A. ground between the 400 and 500 levels, a considerable area of good ground remains on the 300. On the

200, at the "Gold Stope", some ore was mined. This ore, as elsewhere, is probably connected with northeast fracturing, and may also be connected with a vertical east-west mineralized fracture which crosses the north end of the stope. Broken fragments of limestone, silica and hematite cemented by calcite at this locality may represent oxidation collapse. It is desirable to prospect this country below in the favorable Abrigo horizon. The 300 seems the appropriate level for this, but it is difficult and expensive to reach. Two alternatives suggest themselves:

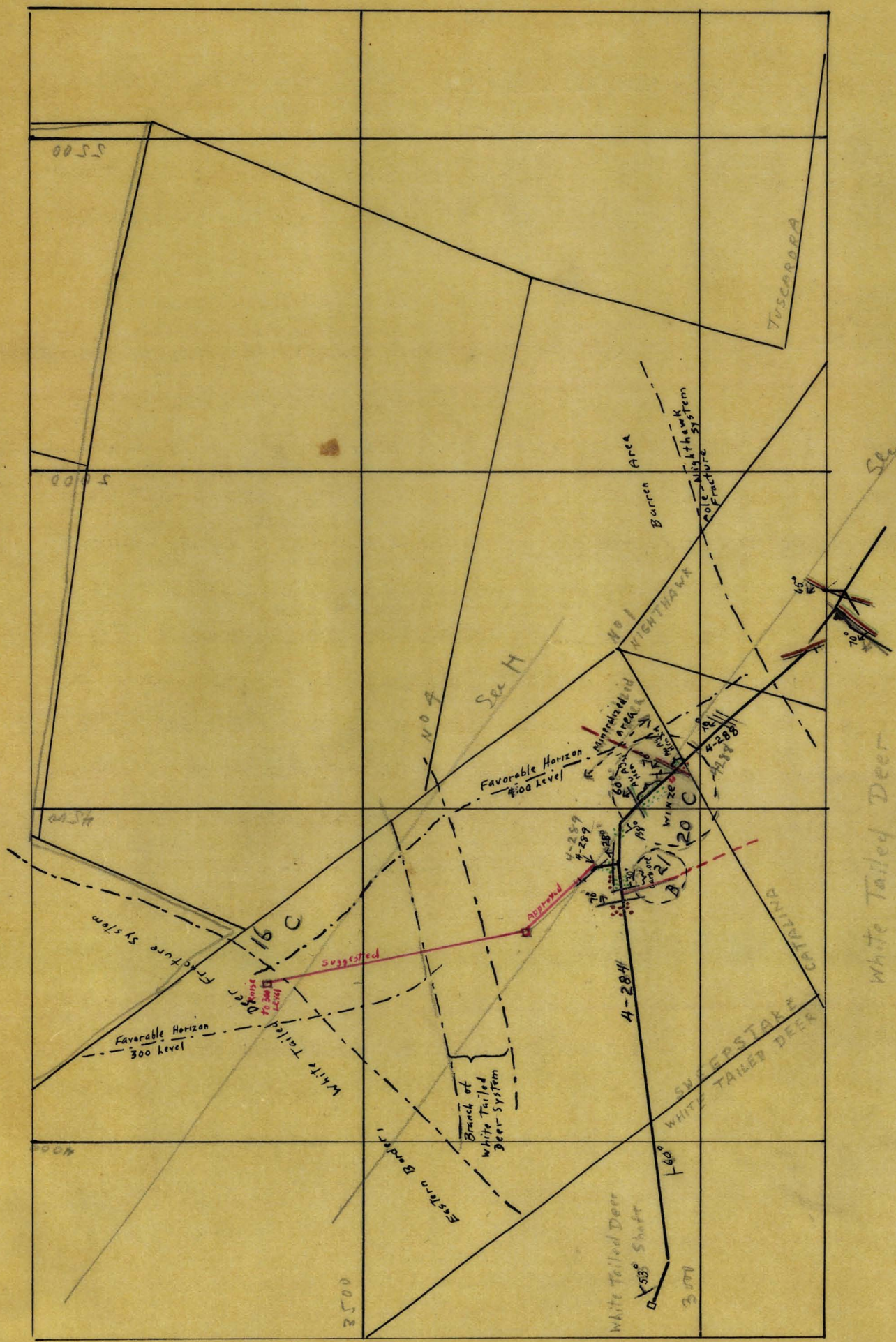
1. To sink a winze at the point indicated on Plate 2; on the 300, crosscut east and west across the White Tailed Deer Fracture System, following any well-mineralized breaks northeast and southwest; extend the east crosscut 160 feet east from the bottom of the winze to the Parting quartzite. This work will cover two possibilities with regard to ore here: (a) Two shoots occur along the northeast fractures, one in the Parting quartzite horizon, and one in the favorable Abrigo horizon. (b) Ore occurs only in the Parting quartzite horizon. This method involves hoisting 100 feet and tramming 1000 feet from the collar of the winze.

2. On the 400, to drift 300 feet past the proposed raise from the 500, to a point having the same coordinates as the above winze; raise to the 300 and on that level do the same work described under 1. This would involve a tram of 1240 feet on the 400 from the bottom of the raise.

The second alternative risks about 400 feet of extra

PLATE ~~II~~ 3

Inset p 3



drift on the prospect; in addition, the ground between the 200 and the 300 is of more interest than that between the 300 and the 400; the winze would open up this ground; further raising would be required with the second alternative. Prospect 16.

400 Level - White Tailed Deer.

The main drift on this level crosses the Barren Area and connects with the Nighthawk 400 near the western edge of the Cole-Nighthawk Fracture System. A bed of carbonate ore was cut in 4-284 drift just west of the turn, and around this turn the drift passed through a mineralized area containing silica, hematite, iron and copper staining and carrying some gold and silver. Two copper-stained northeast breaks traverse this area. This material may point to ore below; one explanation would be that it represents the gossan over ore of which the small ore bed found west of the turn is the upper or western edge. Prospect No. 20 calls for a winze down the better-looking of the two breaks. This was suggested by Ransome. At 30 feet down, if no ore is encountered along this break, drift northwest 75 feet beneath the mineralized area to reach the second copper fissure exposed on the 400. Should no ore be found beneath the mineralized area, the possibility remains that this area lies to the side of, or even below, ore. In that case either a raise may be put up in the area from 4-280 drift or the southern of the two copper breaks may be followed about 100 feet northeast, where it should meet the northern break in the best horizon. This work was suggested by Triechka.

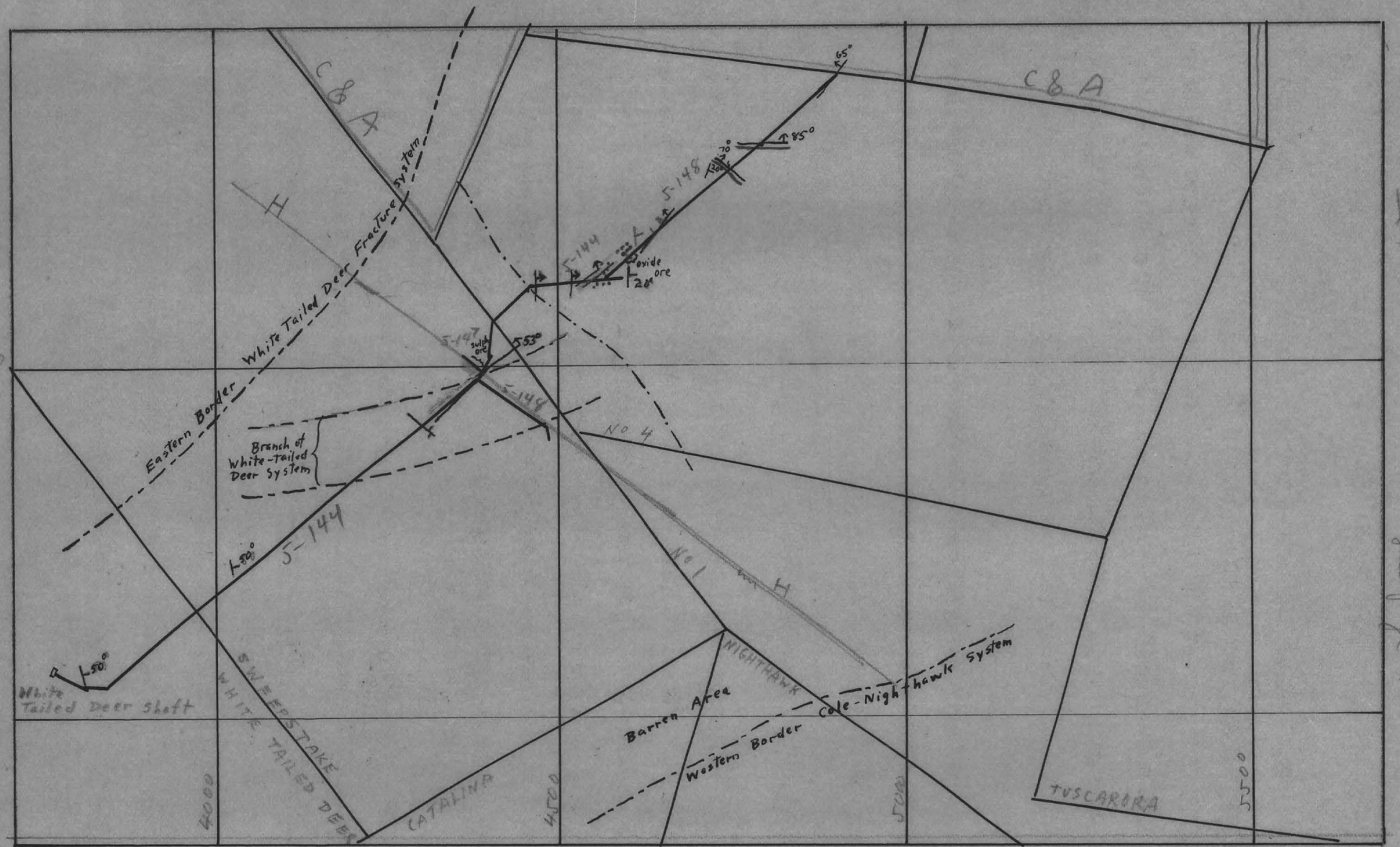


PLATE 4
C&A
C&A
H
White Tailed Deer Fracture System
Eastern Border
Branch of White-Tailed Deer System
5-144
5-148
5-149
Switch ore
Oxide ore
65°
85°
55°
50°
50°
3500
3000
No 4
No 1
WHITE TAILED DEER
SWEEPSTAKE
CATALINA
NIGHTHAWK
Barren Area
Western Border
Cole-Nighthawk System
TUSCARORA
4000
4500
5000
5500
White Tailed Deer 500 Level

The bed of carbonate ore in the main drift (4-234) west of the turn is now being followed northwest. It should also be followed southeast 60 feet to its intersection with the copper-stained break exposed just southeast of the turn. (Prospect 21.) If ore is found here, continue the drift southeast to the intersection of the ore bed with the second, or southerly copper fissure.

As this country lies in the Barren Area, little hope is held out for a large orebody, but a moderate sized one is probably nearby.

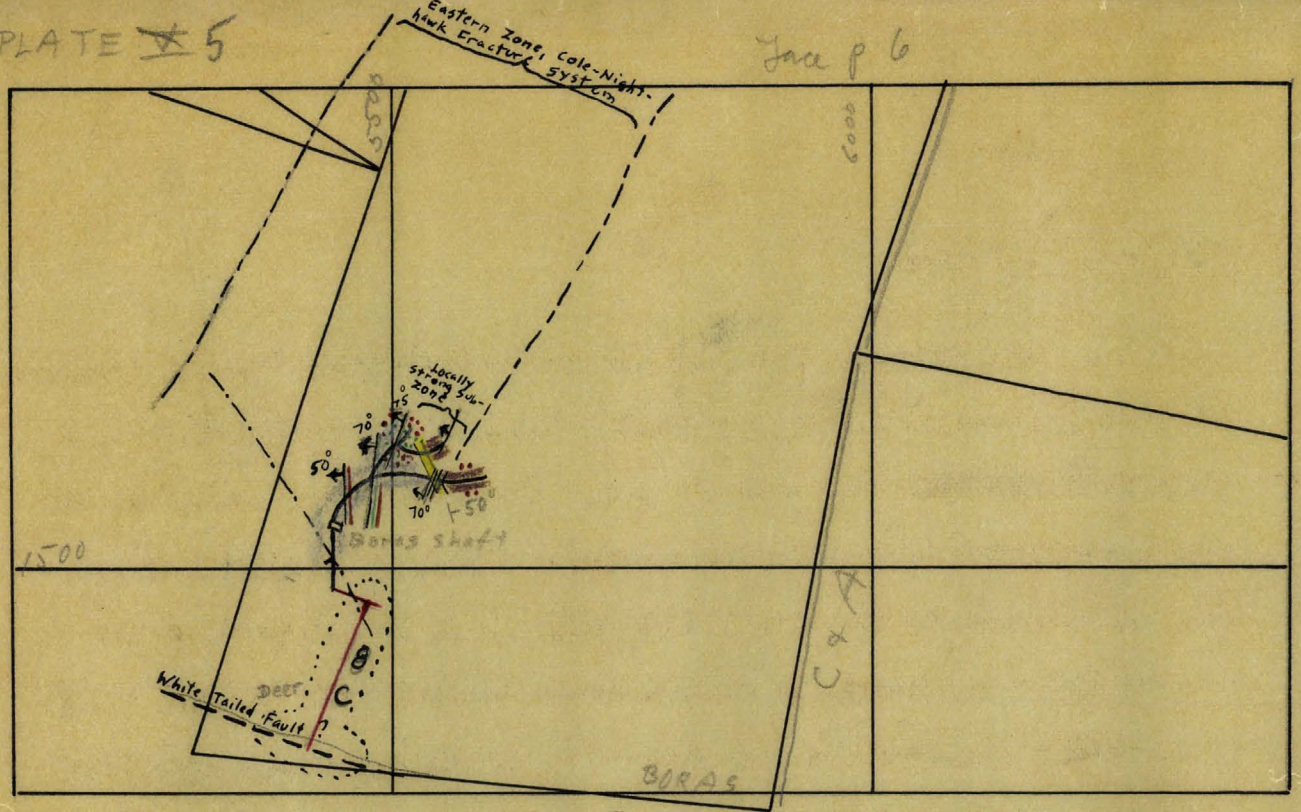
<u>800 Level</u> - White Tailed Deer.

The main drift on this level runs in the Barren Area, but close to the eastern border of the White Tailed Deer Fracture System. A branch of this system trending about north 60 east is probably associated with the sulphide ore found in the main drift and in the intermediate 35 feet above. While the present break is probably post-ore, since the ore in the hangingwall lies 40 feet below that in the footwall, it was, like most post-ore faults in the district, also pre-ore, as is shown by the abundant pyrite along sheeting sheeting sympathetic with the fault at the last turn in the main drift going northeast.

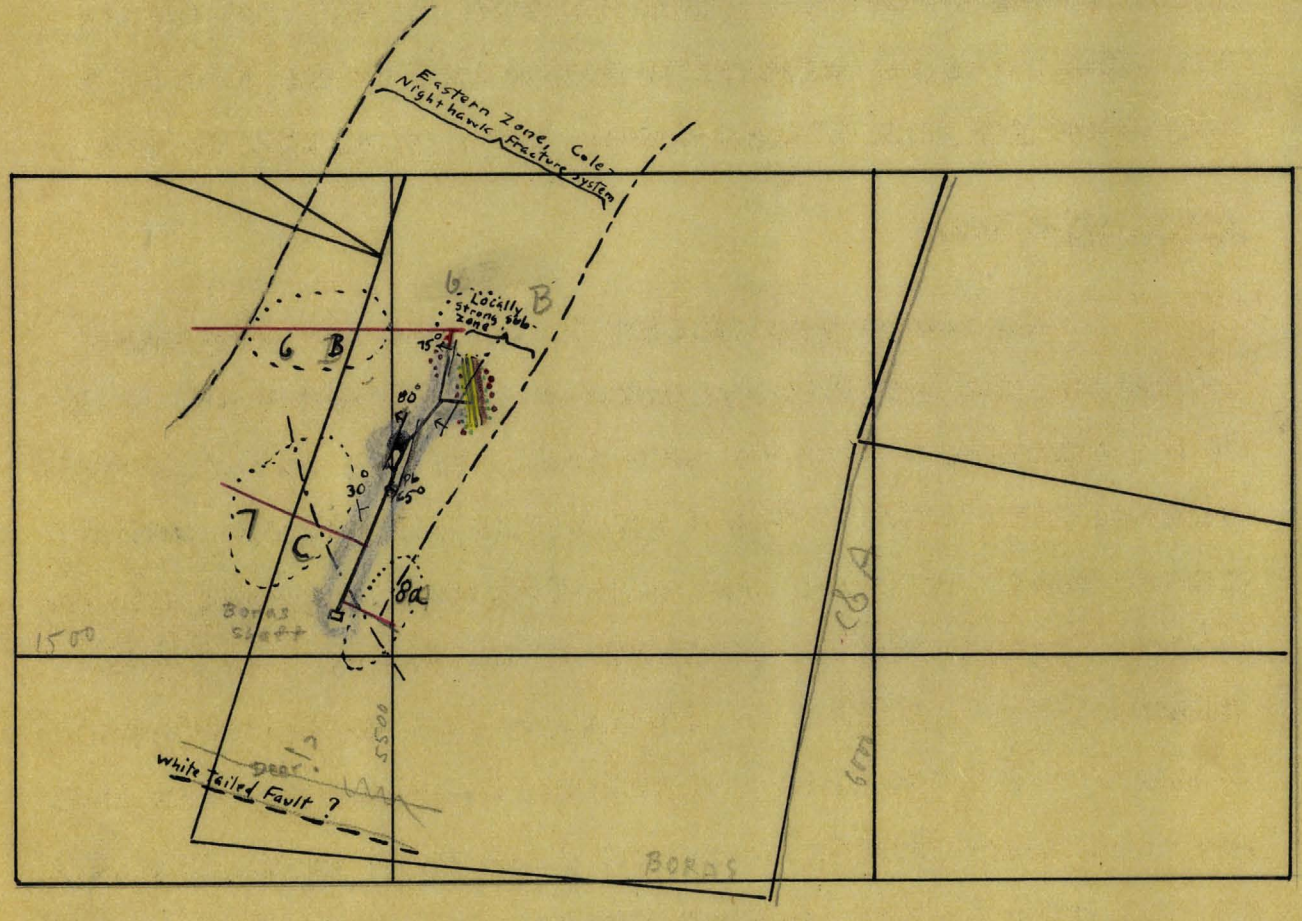
No prospects have been laid out on this level. When the oxide ore in the main drift northeast of the last turn is developed, it should first be followed north to intersect the pyrite sheeting, as suggested by Ransome.

PLATE ~~X~~ 5

Jaa p 6



200 Boras



~~200~~ 300 Boras

200 level - Boras.

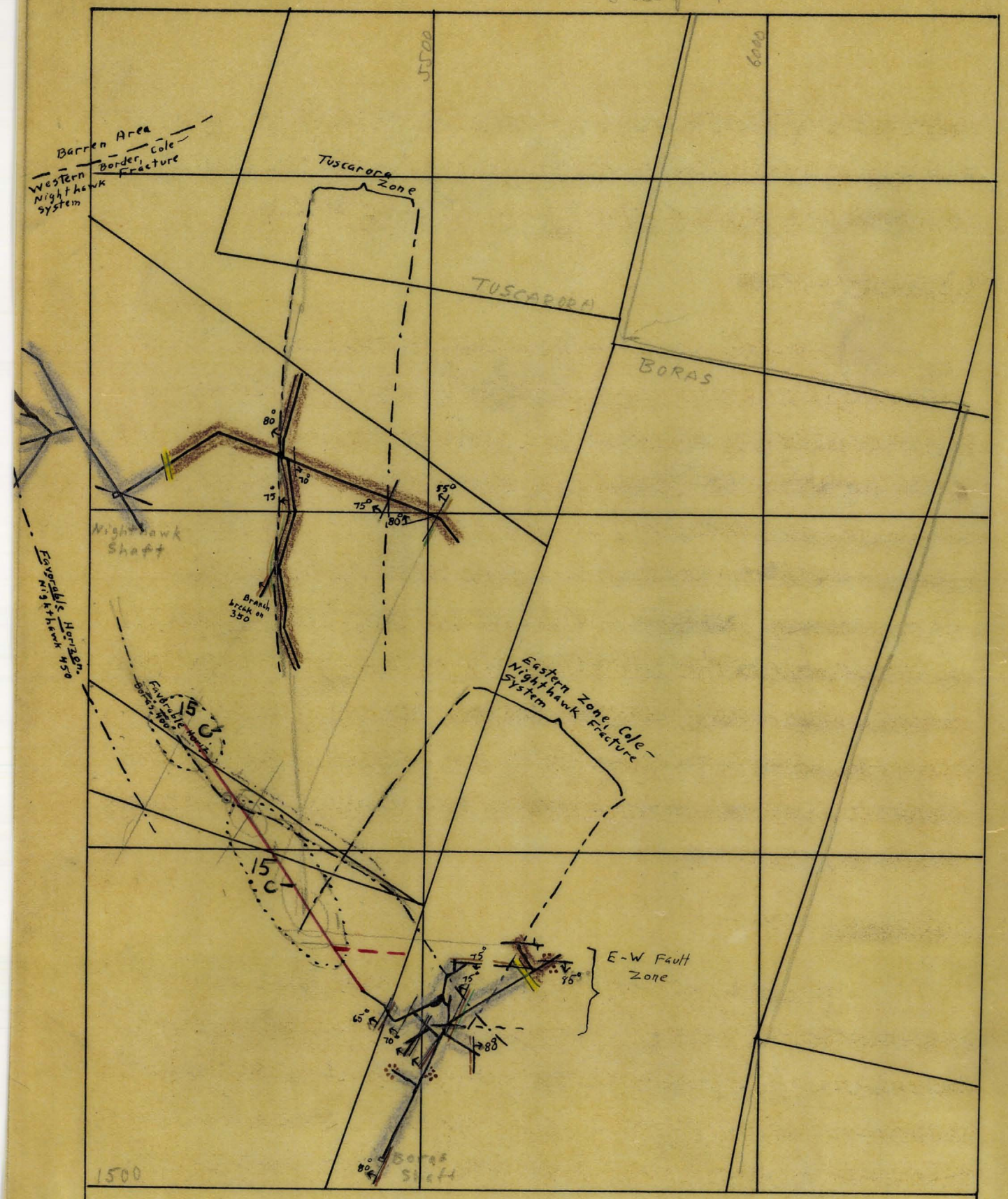
The Eastern Zone of the Cole-Nighthawk System crosses the level at the Parting quartzite horizon. The quartzite is copper-stained but carries no ore. The favorable Abrigo horizon crosses the shaft on this level. Prospect No.8 is designed to explore the favorable horizon in the Eastern Zone and as close as possible to the White Tailed Deer Fault, which is probably pre-ore and may act as a localizer. The 200 level has been selected for this because the favorable horizon is closer to the White Tailed Deer fault on the 200 than on the 300. The principal unfavorable factor here is the fact that only about 170 feet of back exists, and some of this is wash.

300 level - Boras

The 300 is very similar to the 200, and like the latter does not sufficiently crosscut the Eastern Zone. No.7 is a crosscut west from the main drift, to cut, at the favorable horizon, the northeast breaks which made a little ore to the north. No.8 A is contingent on No.8 on the 200 proving encouraging. It crosscuts the remainder of the Eastern Zone, east of the main drift. No.6 is intended to pick up the east-west fracture zone which localized to Boras 500 orebody. This zone was still fairly strong on the 400 (best shown on the 900, 700 and 600 levels). The prospect follows the east-west fault zone west across the Eastern Zone in the hope of finding an orebody

PLATE ~~V~~ 6

Face p 7



~~NH~~ 400 Nighthawk & Boras

similar to the 500 body, which was produced under the same conditions. The chances are poorer than on the 500 because the east-west zone is dying out on the upper levels.

400 level - Borne

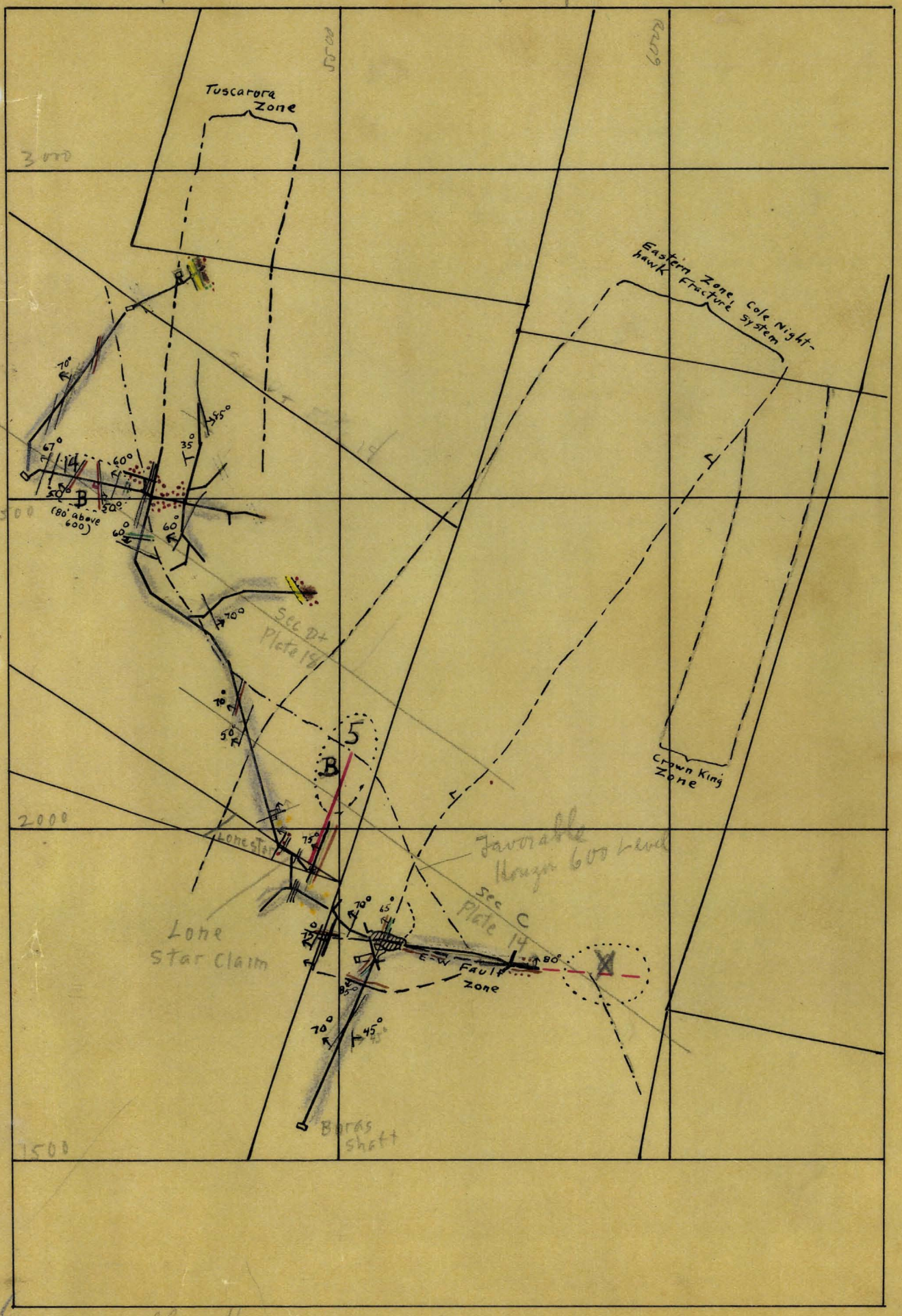
Prospect No.15 on this level is intended to explore the favorable horizon between the Borne and Nighthawk shafts. It will cross the Tuscarora Zone provided the latter continues this far south, and in addition should prospect a fairly strong northeast zone shown at the eastern end of the east drift on the Nighthawk 450 (60 feet above the Borne 400 level), and another break, probably a branch of the Tuscarora, exposed on the Nighthawk 350 at the eastern end of the drift. Both these carry copper in the Martin limestone. The prospect is a rather long shot, but it is essential to get into this country. The surface is covered by wash here so that reliance must be placed on underground leads.

600 level - Borne

No prospects are suggested for this level at the present time. Should prospect No.4 on the 700 open up ore at the junction of the Crown King Fracture Zone with the east-west fault zone, the east drift on the 600 may be extended east about 100 feet to crosscut this zone along the fault and reach the favorable horizon on the south side of the fault. (Point X on Plate 7.)

PLATE ~~VII~~ 1

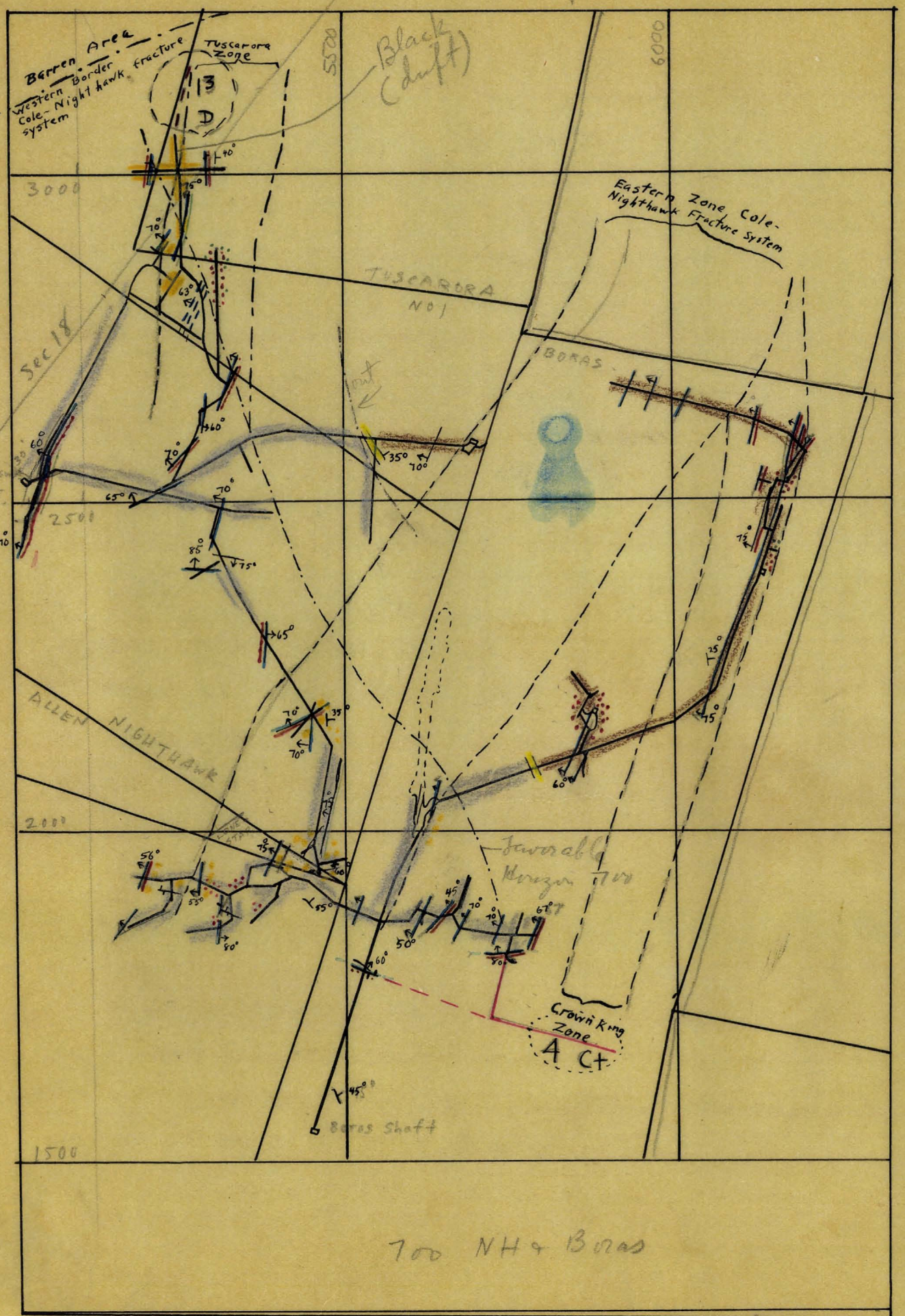
Face p 8



Favorable Horizon 600 Level

PLATE ~~VIII~~ 8

Face p 9



Favorable Horizon 700. Black duft, not a fault, in NW corner

600 Level - Nighthawk.

This level is crossed by the Tuscarora Zone and the Eastern Zone of the Cole-Nighthawk System. Prospect No.5 calls for the testing of the Eastern Zone in the favorable horizon at a point northeast of the Lone Star ore. Prospect No.14 is designed to test a strongly mineralized and persistent break (exposed near the station on the 700), at the favorable horizon. An east-west break exposed at the 450 station is a possible localizer. Any ore found here may prove to be too close to the Nighthawk shaft for mining at present.

700 Level - Nighthawk.

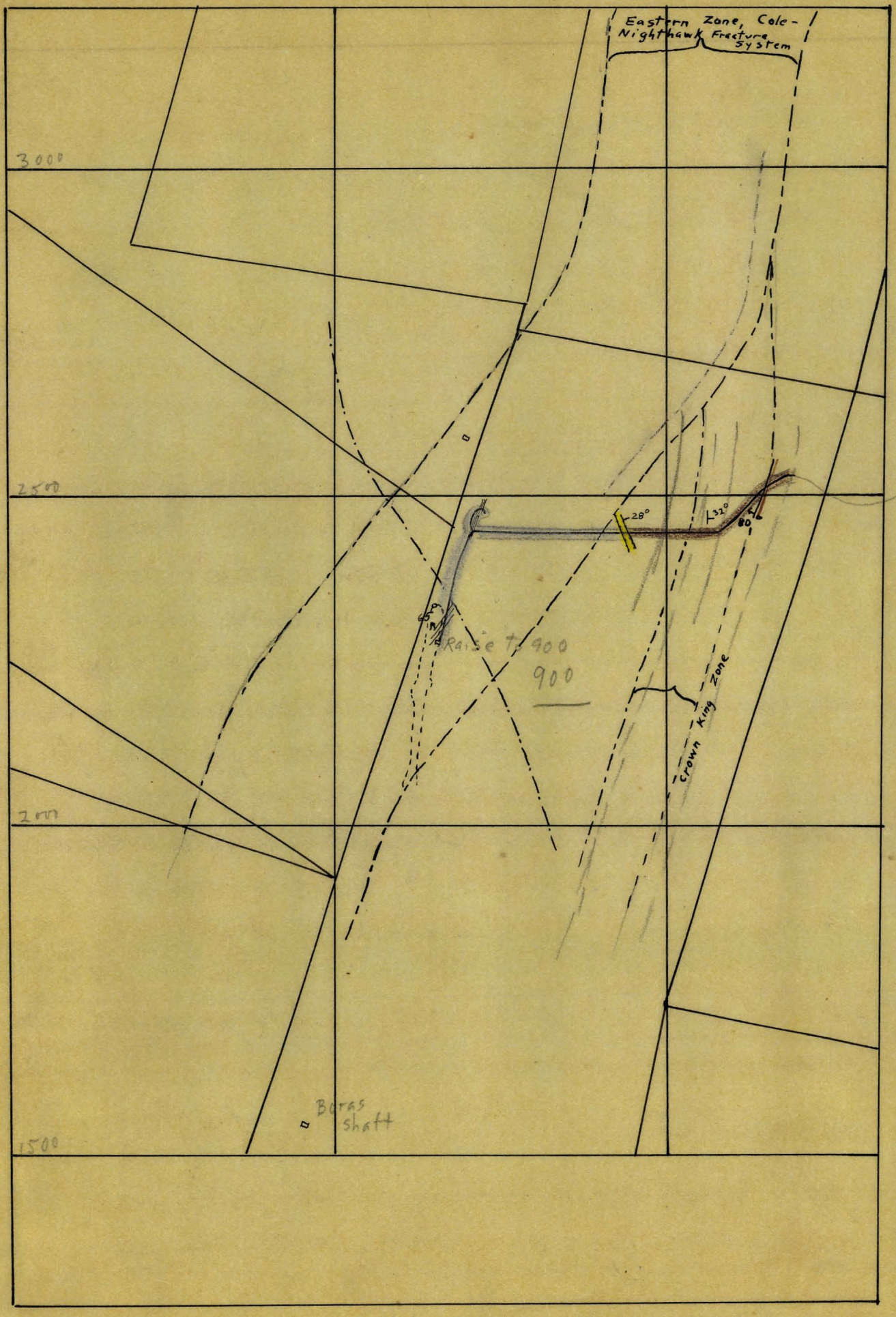
Two ore zones cross this level at the favorable horizon, the Tuscarora and the Eastern zone. The Eastern zone seems to have been amply prospected; the Tuscarora should be prospected to the north of the present workings to determine the north limit of the sulphide ore discovered in the SW corner of the Tuscarora claim, and the rake of this ore.

700 Level - Borax.

Two fracture zones cross the favorable horizon on this level: the Eastern zone and the Crown King zone. The Eastern zone is discussed above. The Crown King zone is well-exposed in the workings at the north end of the Borax claim, where it is in the Kaolin and carried a little ore. Prospect

PLATE ~~II~~ 9

Face p 10



Fault, E end of drift
Raise to 900

800

No.4 is designed to explore this zone at its intersection with the E-W fault zone which localized the Boras 800 orebody. This prospect should probably wait until the more northerly prospects on the Crown King zone. No.1 on the 1100, No.2 on the 1000, and No.3 on the 900, have demonstrated further the importance of the Crown King zone.

800 Level - Boras

Workings on the 800 level in Copper Queen ground consist of the two drifts driven from the foot of the incline sunk from the 700 level, on the Boras claim. A little patchy ore, fringes of the Nighthawk sulphide ore between the 800 and 900 levels, was found in the incline. The favorable Abrigo horizon crosses the north-south drift on the 800 about half way to the turn, but in barren ground between the Eastern and Crown King fracture zones. Driving east 60 feet from the dump raise to the 900, then following the best beds about 400 feet southeast to the Crown King Zone would be the logical prospect here, but had best wait until the more convenient 900 prospect, No.3, explores this country. The east-west drift on the 800 cut the Crown King Zone, but in the Martin, and in the massive shale, a very poor rock for fissures.

900 Level - Boras.

Three fracture zones are available for exploration in the favorable Abrigo horizon on this level. They are the

Tuscarora, the Western Zone of the Cole-Nighthawk, and the Crown King Zone.

Western Zone

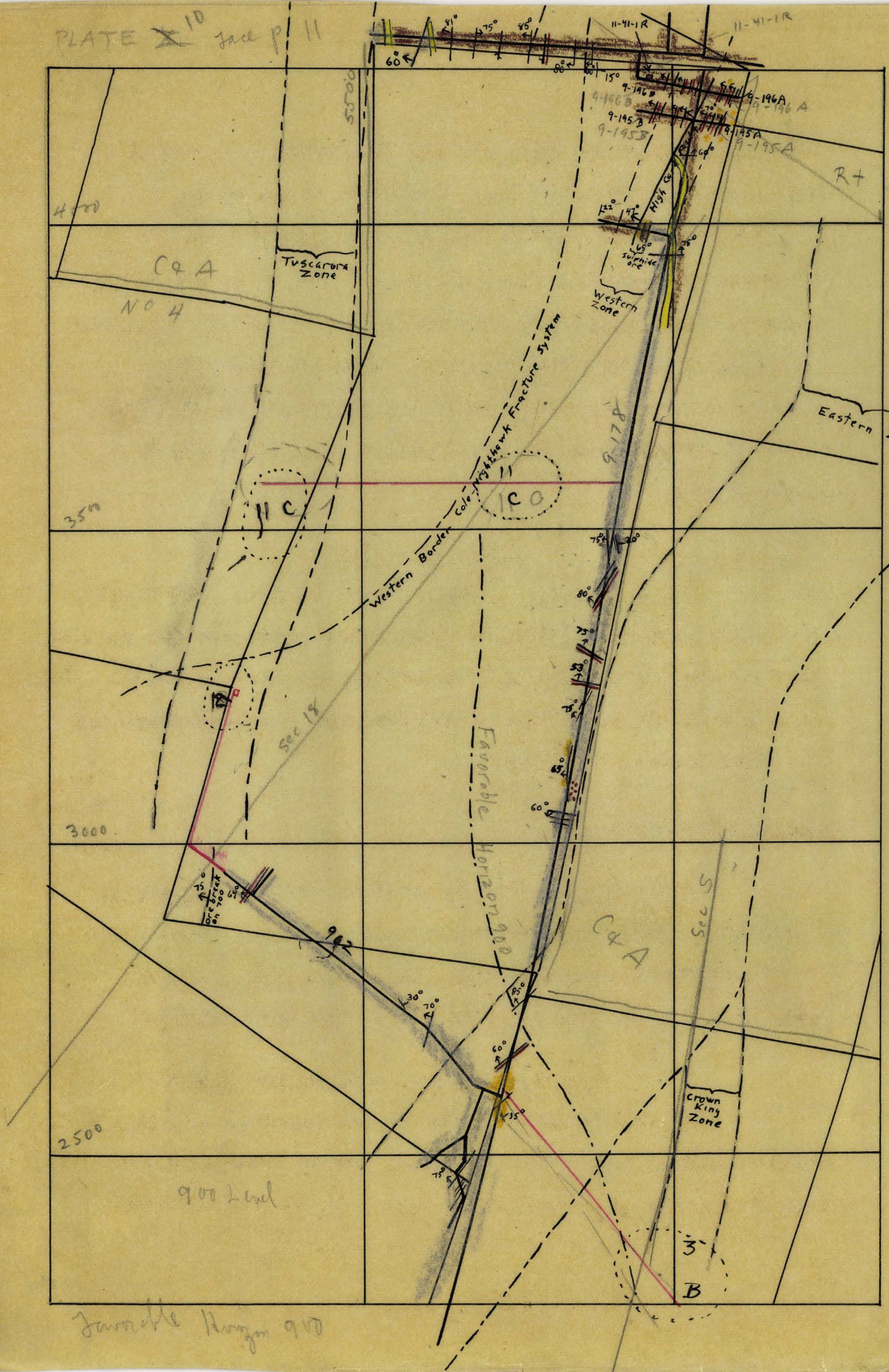
The crosscut (Prospect No.11) now being run along 3590 east-west coordinate appears well-placed to pick up the Western Zone at the best Abrigo horizon. If the High Card fault extends this far south, the drift may be in the Martin or very high in the Abrigo west of the fault, but it appears likely that either the fault dies out this far south or its displacement is very small since it has not been found in the southern workings.

Tuscarora Zone

It is advisable that the drift be continued west past the Western Zone to cut the Tuscarora Zone. Due to the step-faulting shown in the C.& A. drift north of the Tuscarora claim, it is difficult to predict the position of the best horizon along the Tuscarora Zone. It will probably be necessary to drift south along the zone to get into the best horizon. There is a chance here to pick up the downward extension of the sulphide ore found in the southwest corner of the Tuscarora claim on the Nighthawk 700, or as is more likely, another lens in the same horizon.

Prospect No.12 calls for extending 902 drift about 60 feet west to pick up the break associated with the 700 ore above (probably in the Tuscarora Zone) and to drift north along this break or zone. A raise is called for to pick up the down-

PLATE X[10] Face p 11



Favorable Horizon 900

ward extension of the sulphide ore discovered on the 700 at the north end of the level. The north drift on the 700 should be extended north before this prospect is run, to determine whether this ore has a rake downward to the north. Since the beds are nearly parallel to the Tuscarora Zone, the ore may have no rake but lie flat. This prospect will in part serve as extraction workings for the sulphide ore, and hence is justified provided the ore is found to have a rake down to the north.

Crown King Zone

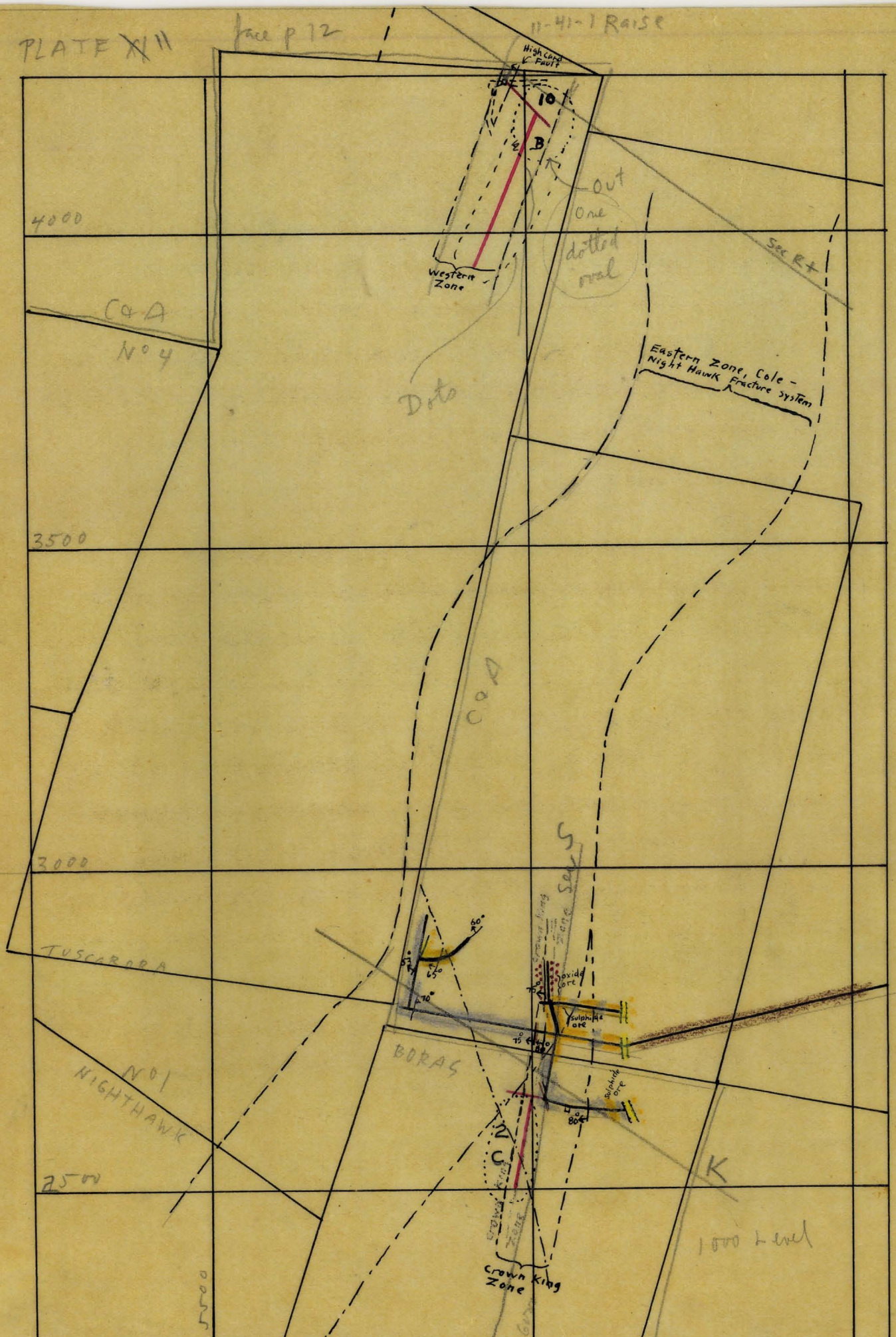
Prospect No.3. A drift driven NE from 9-178 drift, at a point near the Nighthawk winze, will determine the eastern limit of the Nighthawk sulphide orebody and test, at their intersection with the Crown King fracture zone, the same limestone beds that carried this orebody.

1000 Level - Boras

Ore-bearing northeast fracture zones cross the favorable Abrigo horizon in two places on this level: the Western zone in the northern half of the Tuscarora claim, and the Crown King Zone at the northern end of the Boras claim.

Western Zone in the Tuscarora Claim

The Western Zone enters Copper Queen ground in the northern end of the Tuscarora claim. It is accompanied by the High Card fault, a flat-dipping normal fault with a strati-



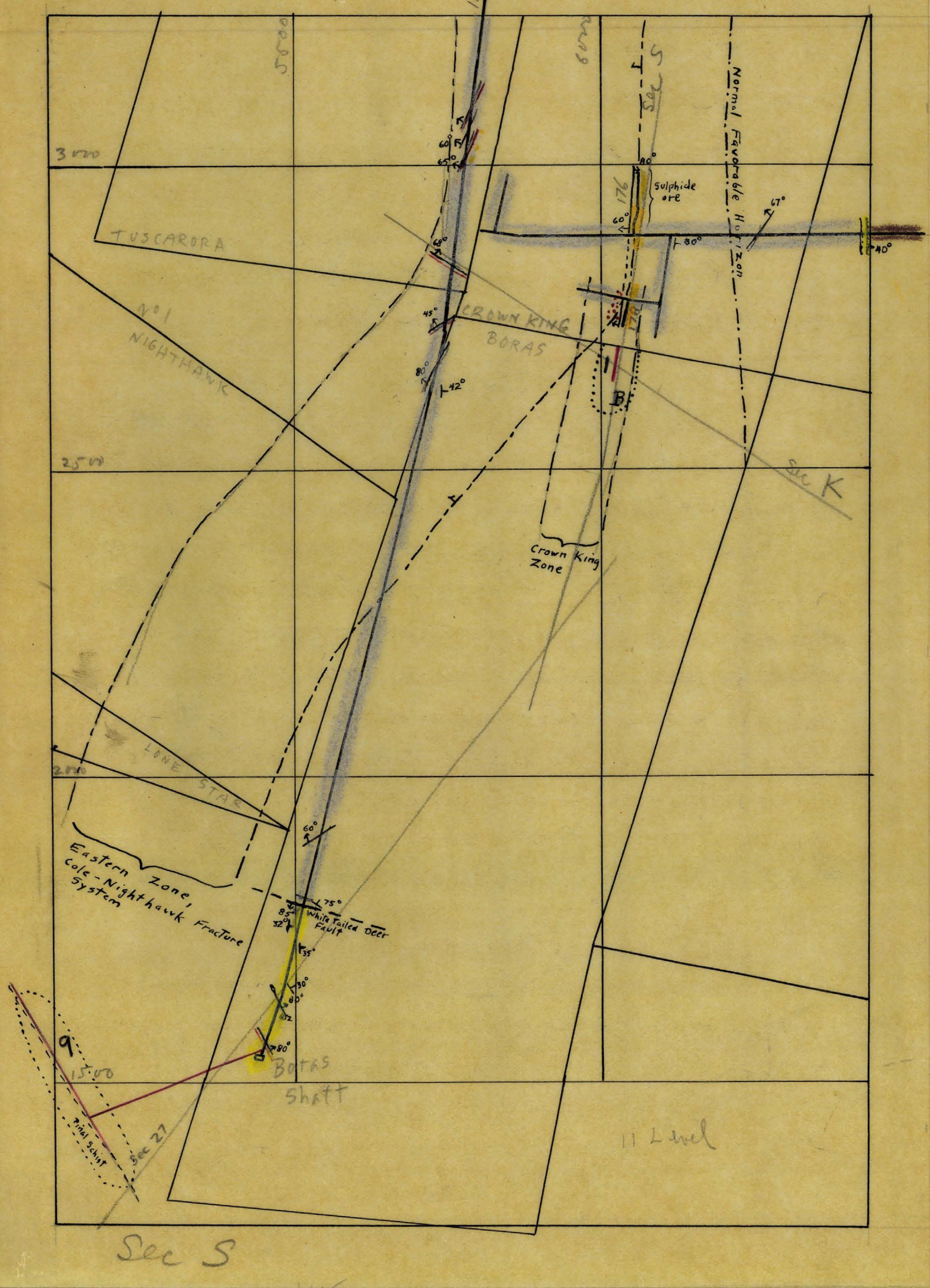
Prospect 10 - dotted oval. Corrected area from small circle to long oval

graphic displacement of about 100 feet. Prospect No.10 to be driven from 11-41-1 raise, at the 1000 level elevation, is designed to explore the favorable Abrigo horizon in the footwall of this fault, beneath the ore-bearing breaks shown in 9-196 A crosscut and 9-195 A crosscut and the crosscut on 4000 E-W coordinate on the 900. The hanging wall of the High Card fault is too high in the Abrigo on the 1000 level to warrant exploration.

Crown King Zone in the Borax Claim

This zone is exposed along the eastern side of the Borax claim on the 700, 800, 1000 (Cole) and 1100 (Cole) levels. The drift and crosscut in the northern end of the Borax claim on the 1000 level are just east of the Crown King Zone and too high in the Abrigo. However, the crosscut found a little sulphide ore. Prospect No.2 covers, extending the crosscut west to pick up the main Crown King Zone, then following this zone south to intersect the favorable beds, which carried ore along the same zone on the Cole 1100 in the Crown King claim. If Prospect No.1 finds the extension of this C.& A. orebody, there is a chance that this prospect may also pick it up; but even if Prospect No.1 fails to find the 1100 orebody, No.2 should be run on the chance of finding another ore lens on the same zone and in the same horizon.

PLATE ~~XII~~ 12 Jane p 13



1100 level - Drifts.

The main drift on this level enters the Cole-Nighthawk fracture system 800 feet north of the shaft and continues within the system to the north end of the workings. The favorable Abrigo horizon is not entered by this drift until it reaches the northern quarter of the Tuscarora claim.

Eastern Zone

The Western Zone of the Cole-Nighthawk system has been prospected to some extent from a small intermediate at the 1070 level where the short south drift has picked up a north-east fissure carrying a little pyritic ore along the fissure and in adjoining beds. It was not determined whether this intermediate lies in the footwall or the hanging wall of the High Card fault, and hence its exact position in the Abrigo is unknown. A short drift should be driven west from the top of the raise, on this intermediate, to pick up the High Card fault in case it lies to the west, and also possibly to pick up the chalcocite break followed south on the intermediate 66 feet below the 900. (This drift is not described under the Prospects.)

The Eastern Zone

This zone apparently crosses the main drift at a point just north of the 3000 east-west coordinate. The fracturing is strong but carries only iron staining and a little pyrite. Its intersection on this level with the favorable horizon would

be out in the Crown King claim to the northeast. The intersection is so close to the C.&A. line anywhere below the 900 level that there seems no use in prospecting it.

The Crown King Zone

This is clearly connected with the sulphide ore found on the 1100 Cole in 176 drift, and with that found on the 1000 just above it. The 1100 ore is at the favorable horizon; its size is unknown but it carries 7% copper; the 1000 ore above it is lean and spotty.

In 178 crosscut, the C.& A. have pyrite with bunches of bornite and chalcopyrite. This is probably the lower fringe of the ore in 176, which should rake very gently up and to the south. 178 is almost at the Queen line now. Prospect No.1 calls for continuing this crosscut to the south and raising at a favorable point to reach the main oreshoot above, should it continue this far. This prospect may await the development of the Cole ore to determine the shape of the orebody, but as this may take time and the C.& A. are in position to do the work now for the Queen, and as the work called for is slight, it may be best to do it now.

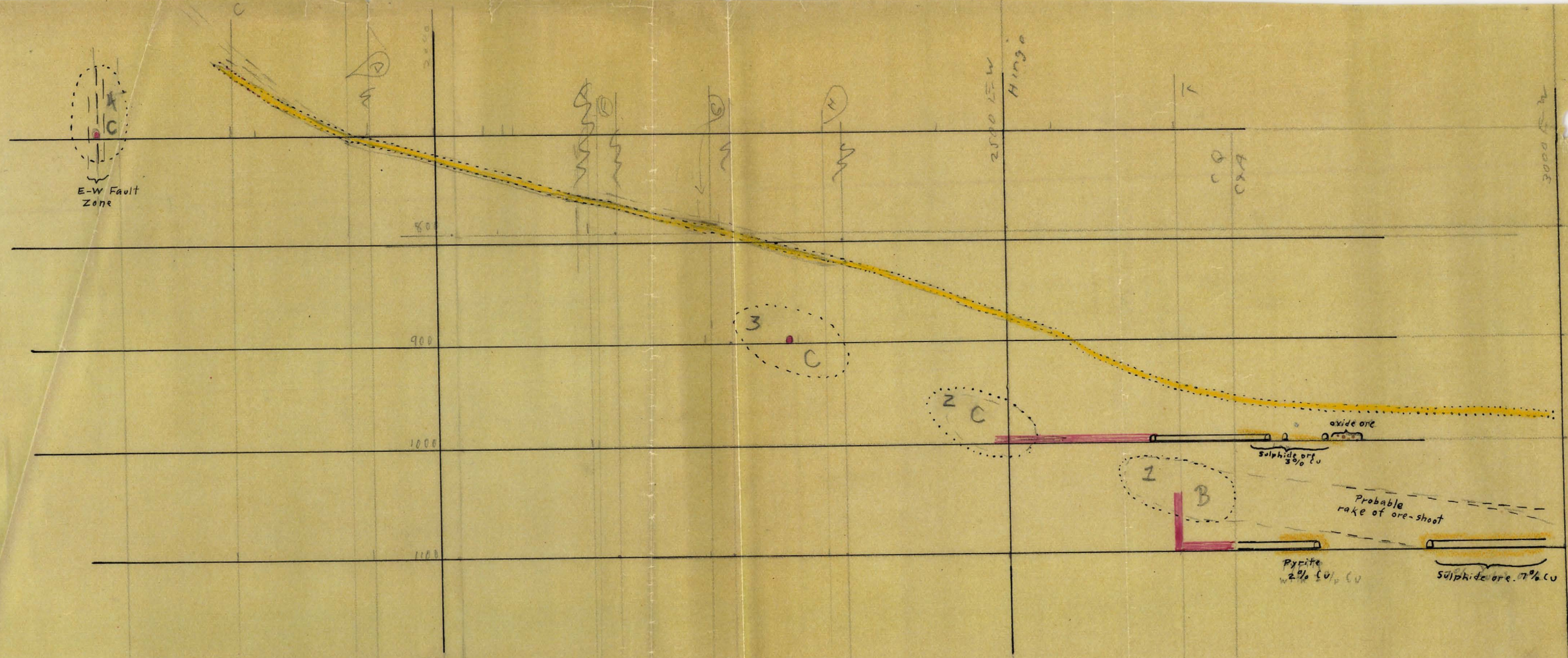
Bolsa-Schist Contact

The southern portion of the main Borax 1100 drift is in Bolsa quartzite, apparently well toward its base. As the Eastern Zone of the Cole-Nighthawk system would pass into the quartzite but a short distance west of the shaft, we are in

position here to prospect at moderate expense the Bolsa-schist contact at a place which should be favorable. A risk involved is that the White Tailed Deer fault is post-ore. It showed copper-staining where crossed in the shaft; galena, zinc-blende and copper-staining occur along it on the 900. Known post-ore faults of this displacement are rare or absent in the district. The risk, therefore, appears not too great. Prospect No.9 calls for crosscutting the Bolsa quartzite from the shaft to reach the Schist contact in the shortest distance and then drifting along the contact northwest to reach the Eastern Zone. If the contact is mineralized where first reached, drifting southeast along it as well as NW may be desirable.

PROSPECTS IN THE GROUP KING FRACTURE ZONE

Nos. 1, 2, 3, 4.

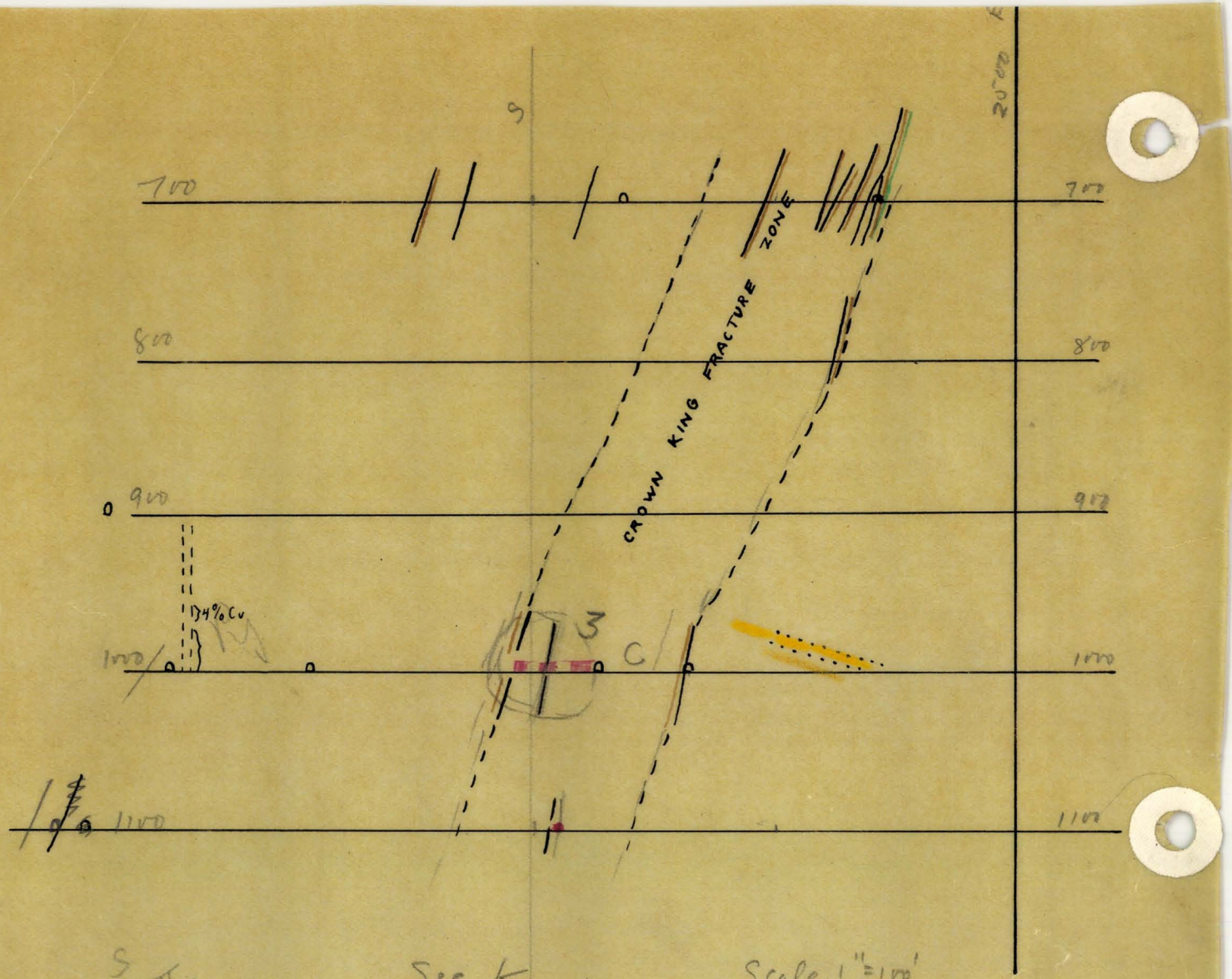


Sec 5

Scale 1" = 100'
Reduce to 2/3

Combine Sections 5 & K as Plate XIII

Trace p 16



with see S as plate XIII

See K

Scale 1"=100'

Reduce to 200

No. 1

1. Level: 1100 Borne

2. Object: To explore by drift and raise in Copper Queen ground the Crown King Zone, which has made ore to the north in C.& A. ground, and to attempt to pick up the southern extension of this ore.

3. Location and Footage: Continue crosscut 176 about 50 feet south into Copper Queen ground; raise about 80 feet to pick up ore-shoot. Exact length of drift and position and height of raise will depend on attitude of orebody disclosed by drift and by C.& A. development.

4. Favorable Factors:

a. Work is along fracture which has produced ore close by.

b. Work will reach the same horizon which produced the ore.

5. Unfavorable Factors:

a. The C.& A. ore has now been developed over a length of 110 feet and may pinch out to the south.

b. 176 crosscut is in pyrite containing only 2% copper. (Probably however below main ore-shoot.)

c. The Crown King Zone may be unfavorable after diverging from the Eastern Zone.

6. Rating: B

7. Remarks: See chapter on 1100 level.

8. Map References: Plates 12 and 13 ;. Atlas Sections 24, 25, 26, I, J, L.

No. 2

1. Level: 1000 Borax. (From Cole 1000)

2. Object: To explore the Crown King Zone on this level; to find either the southern extension of the orebody on the Cole 1100 level, or a new lens along the same zone and at the same horizon.

3. Location and Footage: Extend the E-W crosscut at the north end of the Borax claim west of the N-S drift to cut the Crown King Zone. Drive south along the best break about 150 feet to reach the favorable horizon.

4. Favorable Factors: Work is along fracture which produced ore close by and will test the horizon which made the best ore.

5. Unfavorable Factors:

a. Chances are slim that the 1100 C.& A. ore will extend this far south.

b. The 800 was unproductive above this work (in the Martin, however).

c. The Crown King zone is unproven this far south.

6. Rating: C

7. Remarks: As the object of this prospect is to open up the favorable horizons on the Borax claim where it is intersected by the Crown King Zone, in the hope of finding new ore lenses, and not primarily to find the southern extension of the C.& A. 1100 ore, there is no need of waiting until the C.& A. fully develop their 1100 orebody.

8. Map References: Plates 11 and 13; Atlas Sections 24, 25, 26; I, J, L.

No. 3

1. Level: 900 Boras.

2. Object: To explore the favorable Abrigo horizon in the Crown King Fracture Zone.

3. Location and Footage: From point 9-178 drift (the main drift), opposite the Nighthawk winze drift southeast along the ore beds. Continue the drift after the ore gives out along the same beds about 350 feet from 9-178 drift to intersect the Crown King Fracture Zone.

4. Favorable Factors: The prospect cuts the Crown King Zone at the favorable horizon.

5. Unfavorable Factors: There is no known east-west break or other localizer beside the fracture zone and the favorable beds.

6. Rating: C

7. Remarks: This prospect may well wait on 1 and 2, since these are closer to known ore.

8. Map References: Plates 10 and 13; Atlas Sections 25, 26, 27; G, G+, H, H+.

No. 4

1. Level: 700 Boras.

2. Object: To explore the Crown King Zone at its junction with the east-west fault zone which localized the Boras 600 ore.

3. Location and Footage: From the turn at the south end of the crosscut which runs south from the drift along the 1850 E-W coordinate, drive S 12 W to cut the east-west fault zone. Drive east along this zone about 150 feet to prospect the Crown King system. Total footage about 250 feet.

4. Favorable Factors:

a. The east-west zone is a known localizer.

b. The Crown King system made ore just north of the Boras claim, and fractures connected with it show copper stain in the Martin along the 700 level drift running parallel to the Boras east side-line. (Plate 8)

5. Unfavorable Factors:

a. An east-west break just north of the start of the prospect failed to make ore in the best horizon.

b. The east-west break above, on the 600, carries no ore (but does carry limonite and manganese).

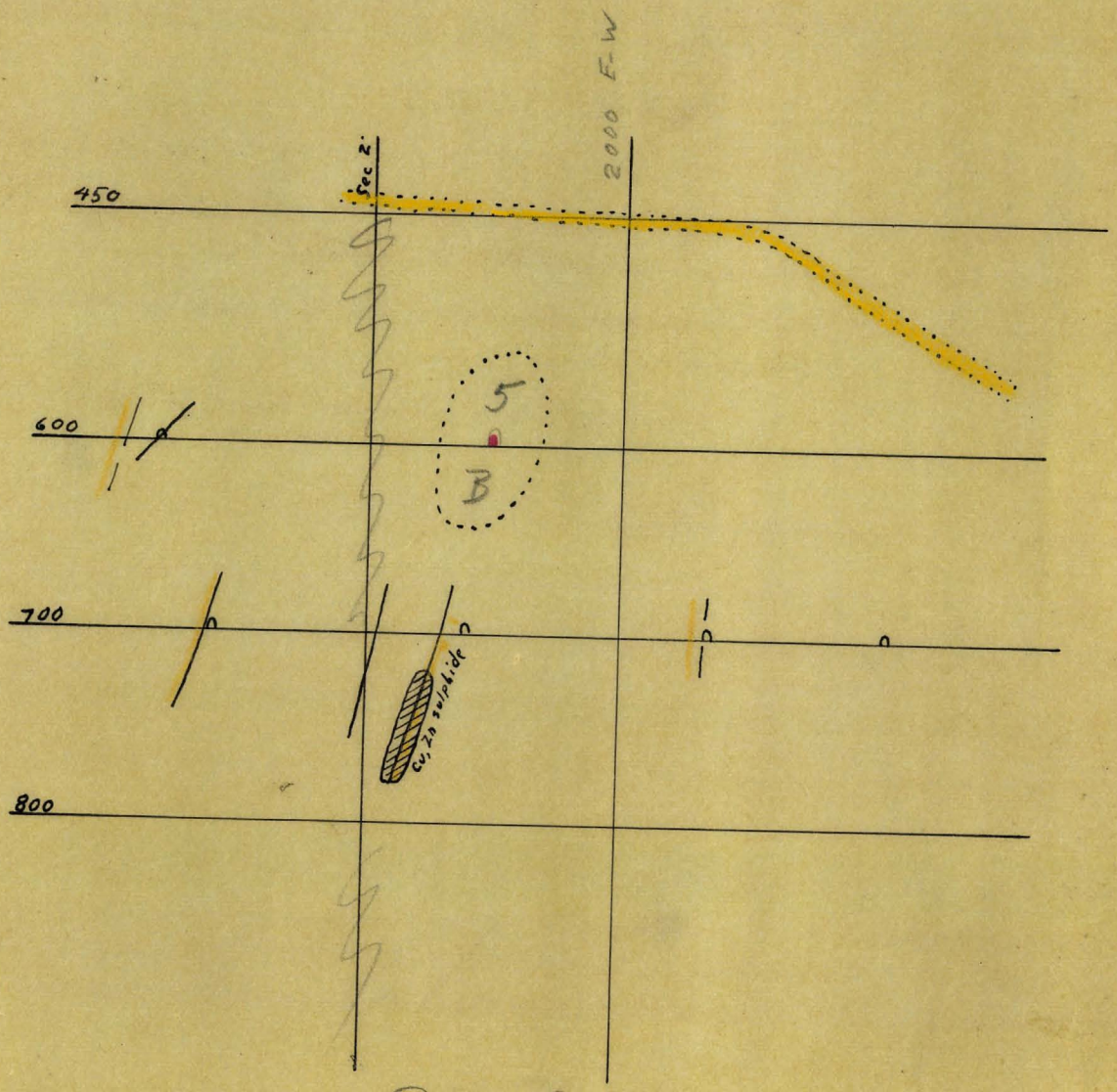
6. Rating: C+

7. Remarks: The fact that the massive shale exposed in the main drift NE of the incline shows no breaks of the Crown King system is not necessarily discouraging as regards the continuation of the zone to the south. At the north end of the Boras claim, many breaks show in the Martin on the 700 above this shale; on the 800, in the shale, only one break comes down, but on the 1000 and 1100 in the Abrigo, the zone is very strong again.

8. Map References: Plates 8, 13. Atlas Sections 26, 27; A, A+, B, B+.

PROSPECTS IN THE RACINE ZONE

Nos. 5, 6, 7, 8A, 8, 9



Sec C

Plate XIV

Face p 21

No. 8

1. Level: 600 Nighthawk.

2. Object: To prospect the Eastern Zone at the favorable Abrigo horizon and between the 900 Nighthawk and the Lone Star orebodies.

3. Location and Footage: From the southeast end of the Nighthawk 600 main drift, drive N 17 E along the copper-bearing break about 180 feet to reach the favorable horizon.

4. Favorable Factors:

a. The zone is known to be ore-producing.

b. The fissure to be followed ends ore below the 700 in a less favorable horizon.

c. An east-west break heading into this country is a possible localizer.

5. Unfavorable Factors: The east-west break is weaker in the direction of the prospect.

6. Rating: B

7. Remarks: A possible extension of this prospect would be to continue the drift to and past and Parting quartzite and test this horizon in the Eastern Zone.

8. Map References: Plates 7 , 14 ; Atlas Section 24.

No. 6

1. Level: 300 Boras.

2. Object: To pick up the east-west break which localised the Boras 300 ore, to find the influence of this break upon the Parting quartzite ore locus; and possibly to test this break on this level at the favorable Abrigo horizon. All of this in the Eastern Zone.

3. Location and Footage: Extend the main drift about 20 feet to the northeast. If the east-west break is found, crosscut for a short distance east and west of the Parting quartzite along the break. If the drift along the east-west break below, on the 400, mentioned in Prospect No.15, proves encouraging, and if Prospect No.7 shows some of the Eastern Zone to lie west of the main drift on the 300, drive west along the east-west break to reach the favorable horizon.

4. Favorable Factor: For the first part of the prospect: This seems to be a very favorable place to try out the Parting Quartzite locus, as there are three localisers here, the Parting quartzite horizon, the east-west break, and the Eastern Zone.

5. Unfavorable Factors:

a. The Parting quartzite has never produced a large orebody.

b. The east-west break may die out on this level.

6. Rating: B, for both parts.

7. Map References: Plate 5; Atlas Sections A-, 24, 25, 26.

No. 7

1. Level: 300 Boras.

2. Object: To complete the prospecting of the Eastern Zone at the favorable horizon on this level.

3. Location and Footage: At a point in the main drift 80 feet north of the shaft, drive west perpendicular to the drift about 60 feet.

4. Favorable Factors: The zone is known to be ore-bearing.

5. Unfavorable Factor: The main drift lies in the zone and produced practically no ore.

6. Rating: C.

7. Remarks:

8. Map References: Plate 5; Atlas Section 26.

No. 8A

1. Level: 300 Horns.

2. Object: To explore the Eastern Zone at the favorable Abrigo horizon.

3. Location and Footage: From shaft station, drive S 65 E about 75 feet.

4. See Prospect No. 8 for analysis.

5. Rating: Contingent on No. 8.

6. Remarks: This prospect is contingent on No. 8 proving encouraging.

7. Map References: Plate 5; Atlas section 27.

No. 8

1. Level: 800 Borne.

2. Object: To prospect the Eastern Zone, which carried ore in the Martin in the old incline shaft, at the favorable Abrigo horizon, and to test this zone at its intersection with the White Tailed Deer fault.

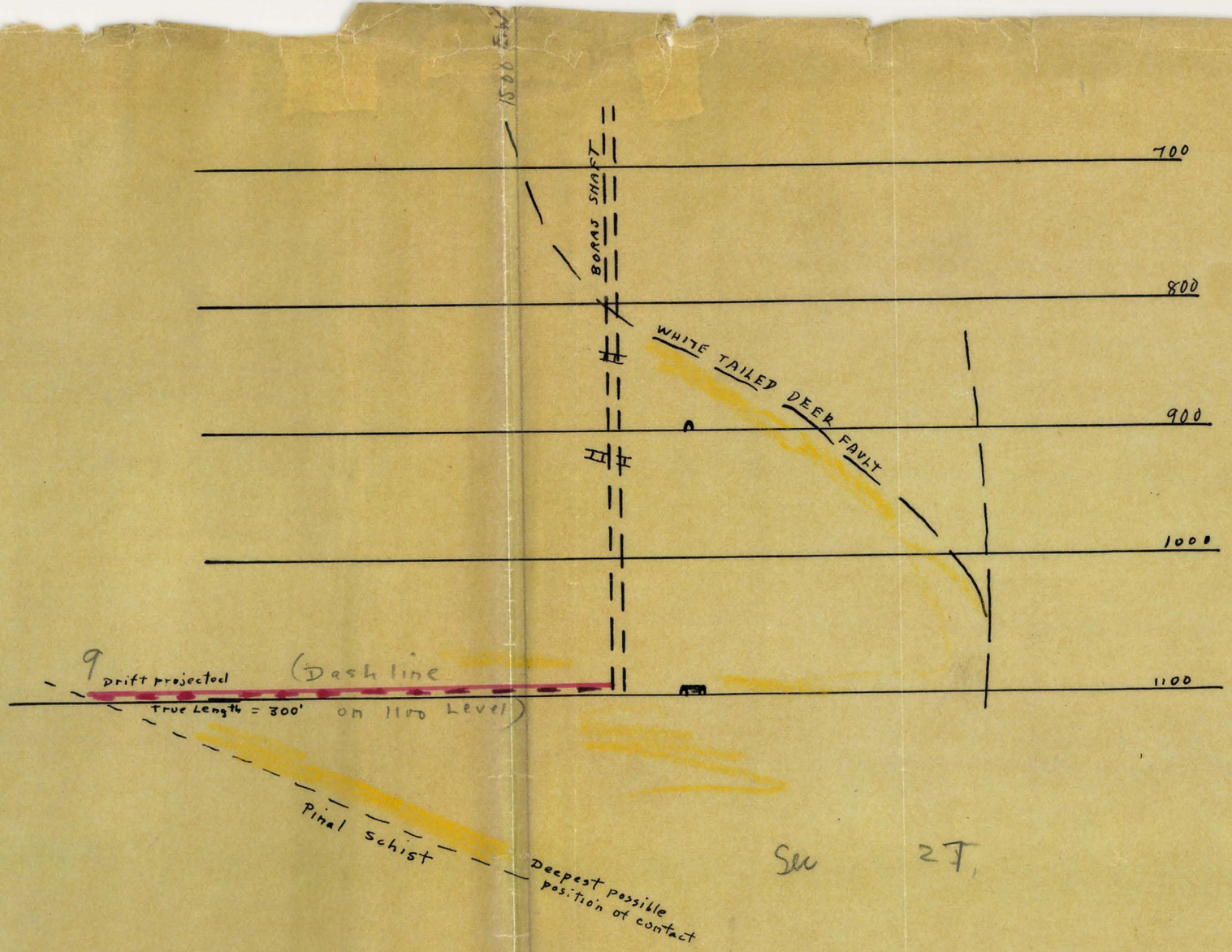
3. Location and Footage: From face of south drift (south of shaft), crosscut S 62 E to intersect the Eastern Zone. Follow the best break southwest to the White Tailed Deer fault.

4. Favorable Factors: The break exposed in the old incline shaft had ore directly on it in the Martin and is connected with the Borne 800 orebody. No work has been done south of the Borne shaft on this break.

5. Unfavorable Factor: The 800 drift is close to the Eastern Zone at the favorable horizon and shows no ore.

6. Rating: C

7. Map References: Plate 5; Atlas section 27; Atlas Plan of 800, Incline Shaft.



See 27,

Plate XV

save p 26

No. 9

1. Level: 1100 Boras.

2. Object: To test the Bolsa-Schist contact in the Eastern Zone.

3. Location and Footage: Drive S 67 W from the west side of the Boras 1100 station. Keep drift, without too much turning, perpendicular to the strike of the Bolsa quartzite. Maximum distance to schist contact 300 feet. On reaching the contact, drift northwest along it about 300 feet to crosscut the Eastern Zone.

4. Remarks: No statement of conditions or rating is possible. Prospect is justified only because it affords a chance to try out an untested ore locus at a supposedly favorable place. If the schist contact is reached close to the shaft, the chances for ore are increased, as the White Tailed Deer fault, another possible localizer, may then reach the contact in the Eastern Zone.

5. Map References: Plates 12, 15.

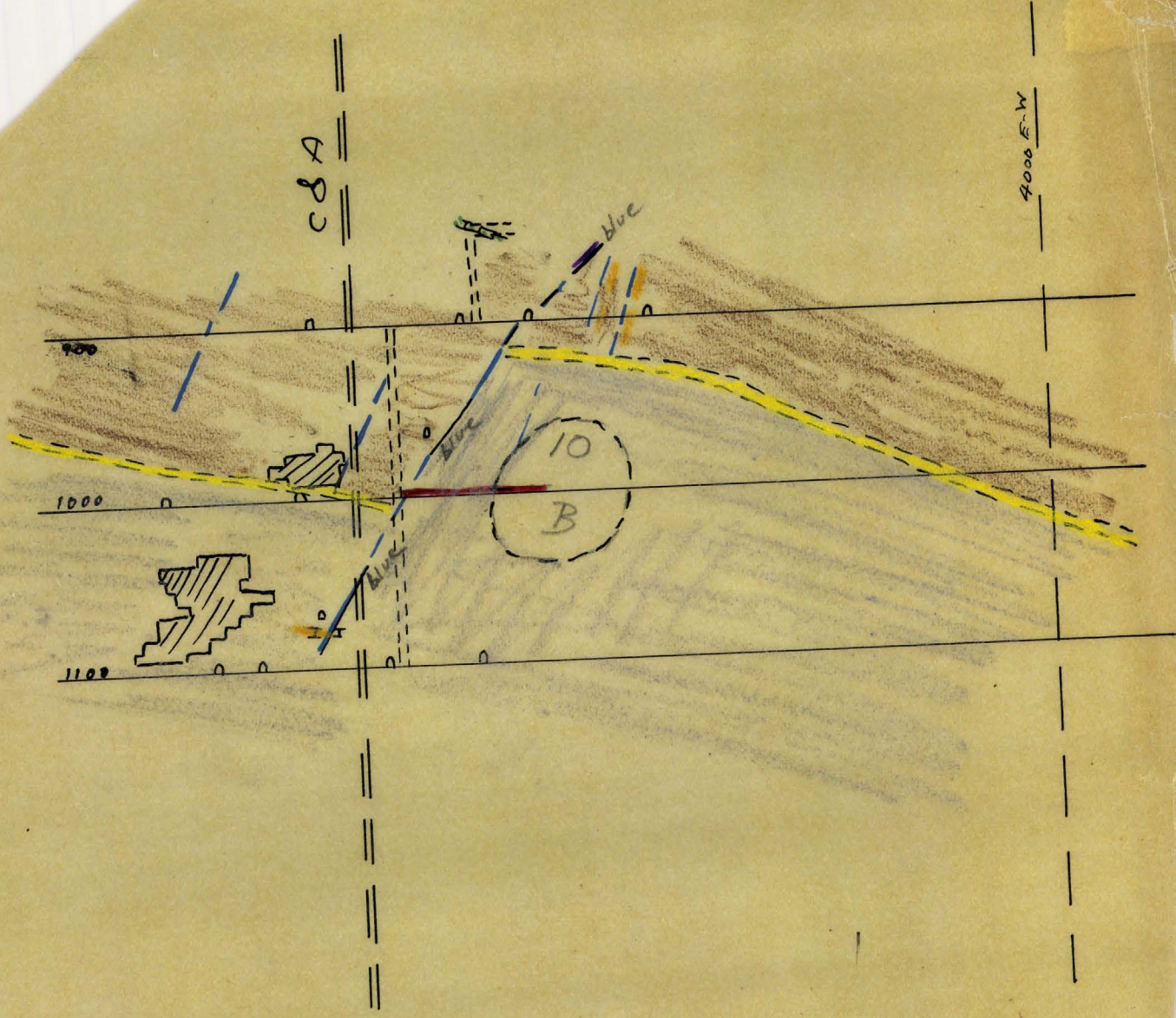
PROSPECTS IN THE WESTERN ZONE

OF THE

COLE-NIGHTHAWK FRACTURE SYSTEM

Nos. 10, 11.

PLATE XVI
Face p 28



See R +

No. 10

1. Level: 1000 Level from 11-41-1 raise. (1100).

2. Object: To explore the favorable Abrigo horizon beneath the ore-bearing breaks shown in 9-195A crosscut, Boras 900.

3. Location and Footage: Drive S 45 E on the 1000 level for a distance of about 100 feet from the raise to crosscut the Western zone. Drive SW along the zone to a point beneath the ore in the crosscut, near 4000 E-W coordinate, 900 level. Connection may be made with the 1100 level by a raise, to shorten tram and improve ventilation.

4. Favorable Factors:

a. Important Cole orebodies, some in the Abrigo have made along this fracture zone.

5. Unfavorable Factor: The intermediate 30 feet above the 1100 shows only spotty ore, probably in the favorable horizon (exact position unknown).

6. Rating: B

7. Remarks: The intermediate 66 feet below the 900 from 11-41-1 raise might be used for this prospect but is probably too high. If used, drift S 16 E from the east end of the east-west drift 60 feet to reach the fracture zone.

8. Map References: Plates 10, 11, 16; Atlas Sec.17.

No. 11

1. Level: 900 Borax.

2. Object: To prospect the favorable Abrigo horizon in the Western Zone. To prospect the Tuscarora Zone in the favorable horizon.

3. Location and Footage: Crosscut now running along 3590 E-W coordinate. The Western Zone should be encountered at about 100 feet in; continue past this a total of about 460 feet to the Tuscarora Zone.

4. Favorable Factor: The prospect reaches the intersection of known ore-bearing zones with the favorable horizon.

5. Unfavorable Factors:

a. The ore produced by the Western Zone to the north is spotty.

b. The Western Zone may give out to the south.

6. Rating: Both parts, C.

7. Remarks: The High Card fault may be encountered at about 150 feet in, and this may throw the drift into lower Martin. The ore in crosscut near the 4000 E-W coordinate was in the footwall of the High Card fault, so this may not affect prospecting the Western Zone, but the Tuscarora Zone may be encountered too high in the Abrigo, so that it may be necessary to drift south along the zone to regain the favorable horizon.

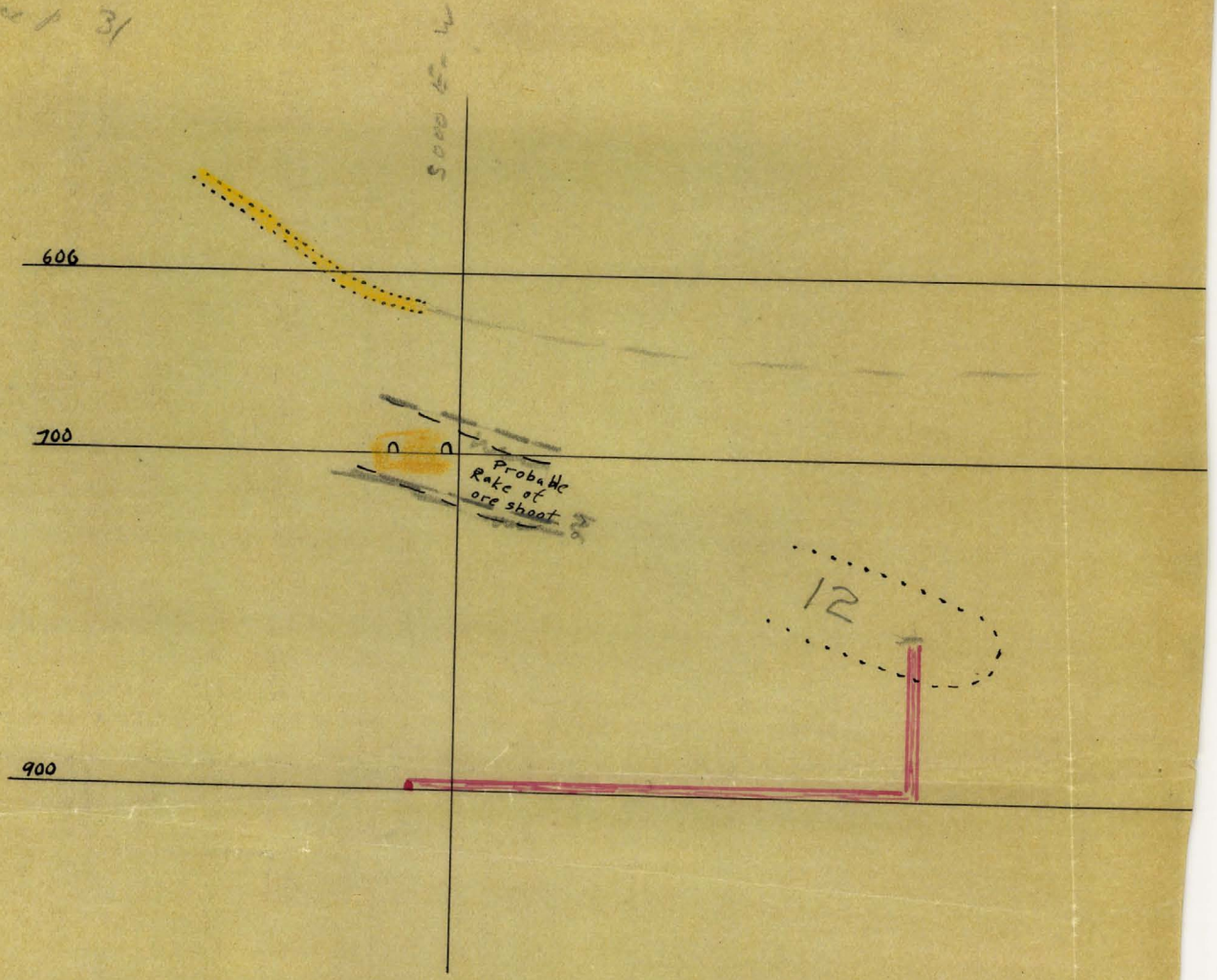
8. Map References: Plate 10; Atlas Sections 16,17, F.

PROSPECTS IN THE TUSCARORA ZONE

Nos. 12, 13, 14, 15

PLATE XVII

Fuse 31



Sec ~~27~~ 18

Section along Fuse Zone ~~118~~

No. 12

1. Level: 900 Boras.

2. Object: To explore the break (Tuscarora?) connected with the 700 sulphide ore in the SW corner of the Tuscarora claim. To pick up the downward extension of this orebody, or other lenses in the same horizon.

3. Location and Footage: Continue 902 drift NW about 60 feet to reach the break. Drift north along the break about 250 feet; here put up a raise, its height depending on the rake of the 700 orebody. Drift along the break from the top of the raise.

4. Favorable Factors: The break made ore on the 700, and the prospect should reach the same horizon on the same zone.

5. Unfavorable Factors: The rake of the 700 ore may be very flat so that the prospect may be too low to pick up an extension of the ore.

6. Rating: Contingent. See remarks.

7. Remarks: This prospect should await the driving of the north drift on the 700 level through the sulphide ore on that level, in order to determine the size and rake of the orebody. The observed rake of the ore on the 700 level will guide the choice of the exact position of the raise called for by this prospect. If the ore rakes distinctly down to the north, the prospect deserves a B rating. One advantage of this prospect is that the drift can serve as an extraction drift for the ore below the 700. If the break is found by the extension of 902 drift, it should probably be followed north past the proposed raise to the 1000, and eventually connected with the drift from prospect No.11 coming south, along the Tuscarora. It might also be well to definitely determine the rake of the 700 ore by a short inclined winze from the 700 in the ore.

8. Map References: Plates 10, 8, 17; Atlas Sections 17, H4, I, J, K.

No. 13

1. Level: 700 Nighthawk.

2. Object: To test the Parting quartzite horizon in the Tuscarora Zone.

3. Location and Footage: Continue the north drift after it passes out of the sulphide ore, NE to the Parting quartzite. Drift both ways along the quartzite to test the Tuscarora Zone.

4, 5. Unfavorable factor is that Parting quartzite has never made sizable orebody.

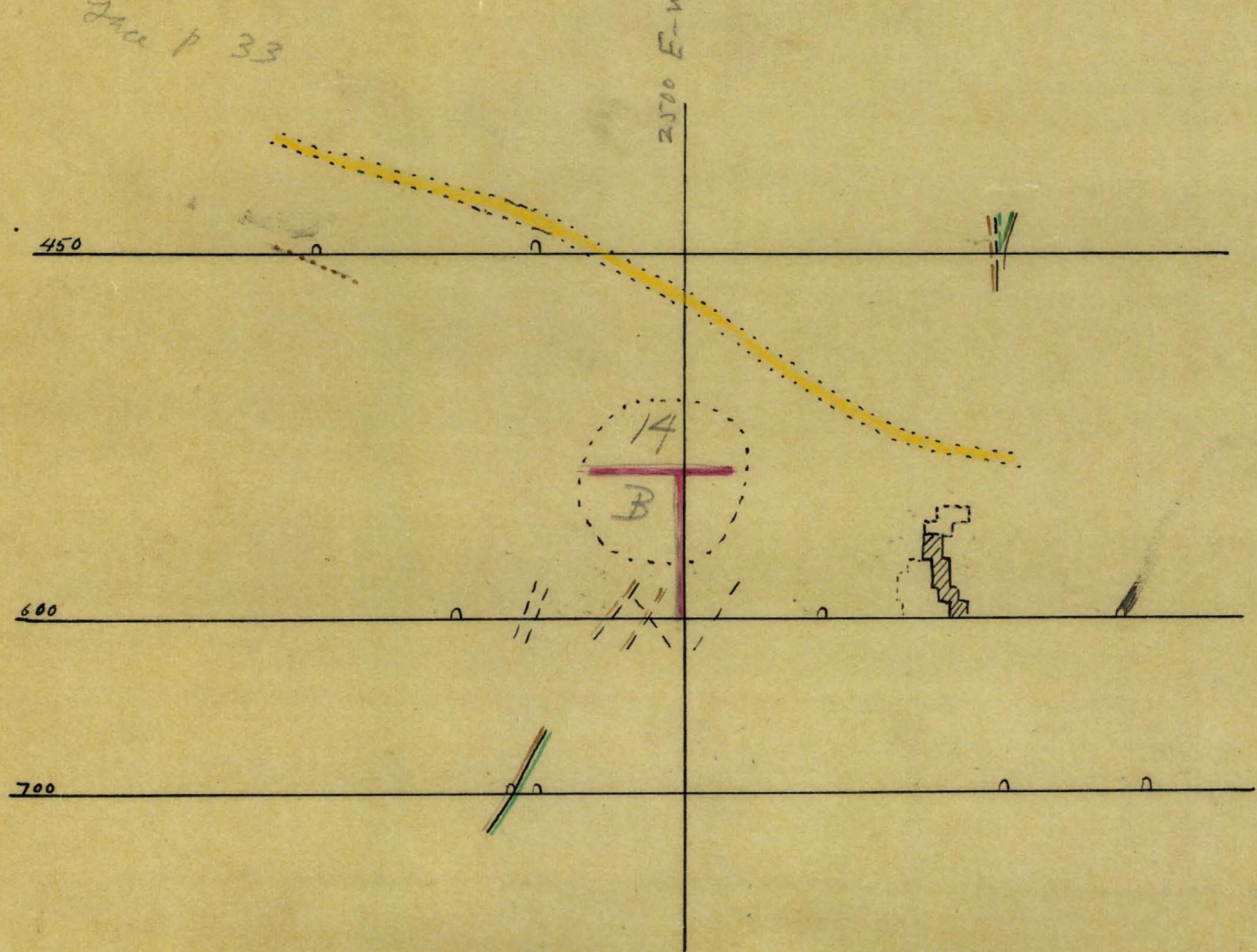
6. Rating: D.

7. Remarks: The sulphide ore may possibly continue north to the Parting quartzite, in which case the prospect becomes of no significance. This prospect is designed to test the Parting quartzite horizon at a point which should be perhaps the most favorable in the entire area. If the quartzite horizon carries ore, continue the drift well into the Martin in the hope of picking up another ore horizon along the Tuscarora Zone.

8. Map References: Plate 8 ; Atlas Section 18.

PLATE XVIII

face p 33



sec (D+)

No. 14

1. Level: Nighthawk 600.

2. Object: To explore the northeast break exposed at the station on the 700 and in drift leading E from shaft on the 600, at the favorable horizon.

3. Location and Footage: Put up raise from the east drift, 600 level, 85 feet east of the turn near the shaft. Raise 80 feet and crosscut east and west to pick up the fracture zone. Then drift south along the zone.

4. Favorable Factors:

a. The break or zone of breaks is mineralized and probably helped make the ore to the NE. The prospect should cut it at the favorable horizon.

b. A strong east-west iron-stained break exposed at the 450 station may localize ore here.

5. Unfavorable Factors:

a. The break is not so well mineralized on the 600 as on the 700.

6. Rating: B.

7. Remarks: Any ore found here may be too close to the Nighthawk shaft to be mined at present.

8. Map References: Plates 17, 18; Atlas Sections 18, 19.

No. 18

1. Level: Boras 400.

2. Object: To prospect the Tuscarora Zone to the south of the region where it made ore on the Nighthawk 600. At the same time to crosscut a strong strip of the Cole-Nighthawk system exposed in the east drift, Nighthawk 450 level, and at the east end of the Nighthawk 350 drift.

3. Location and Footage: From the face of the west drift, 400 Boras level, drive N 36 W. At about 60 feet the east-west zone which localized the Boras 500 orebody may be encountered. If so, it may be well to drive east along this zone for about 50 feet, in order to look for a small extension of the 500 orebody westward along the east-west zone, at its intersection with fractures which made the Lone Star ore. Continue the main NW drift of this prospect a total distance of about 500 feet. For the first 300 feet the drift will probably be below the best horizon, so that drifting from the main drift on favorable breaks should be north rather than south.

4. Favorable Factors:

a. The work prospects possible extensions of two strong fracture zones.

b. An east-west break may be met with at the western end of the proposed drift.

5. Unfavorable Factors: Nothing is known of the extension of the Tuscarora Zone south of a point 300 feet north of the prospect.

6. Rating: C -

7. Remarks: A general prospect, necessarily a long shot, since it is feeling out into unknown ground.

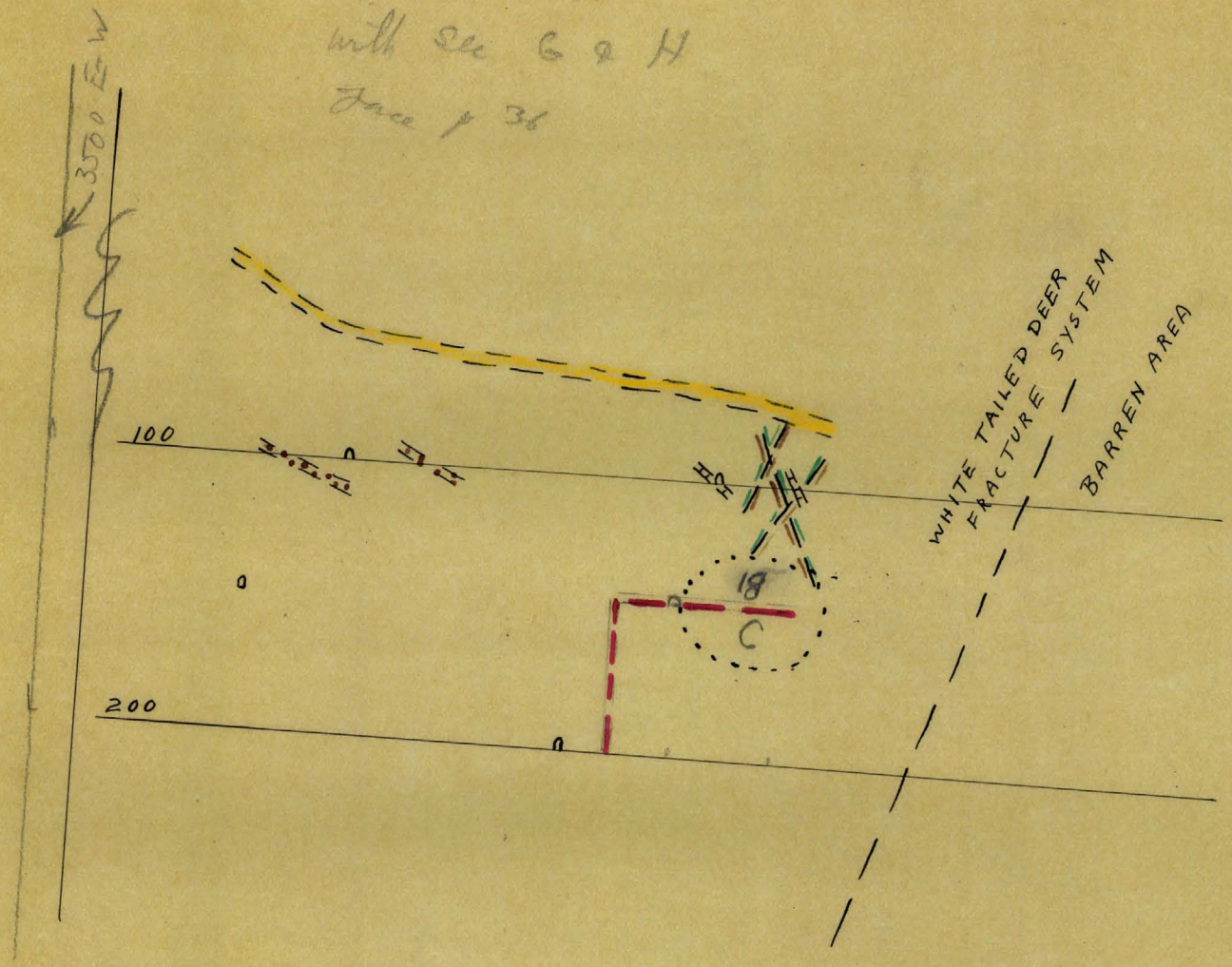
8. Map References: Plate 6; Atlas Sections 19, 20, 21, 22; C, C+, D, D+, E, E+.

PROSPECTS IN THE WHITE PAINED SHALE

FRACTURE SYSTEM

Nos. 16, 17, 18, 19

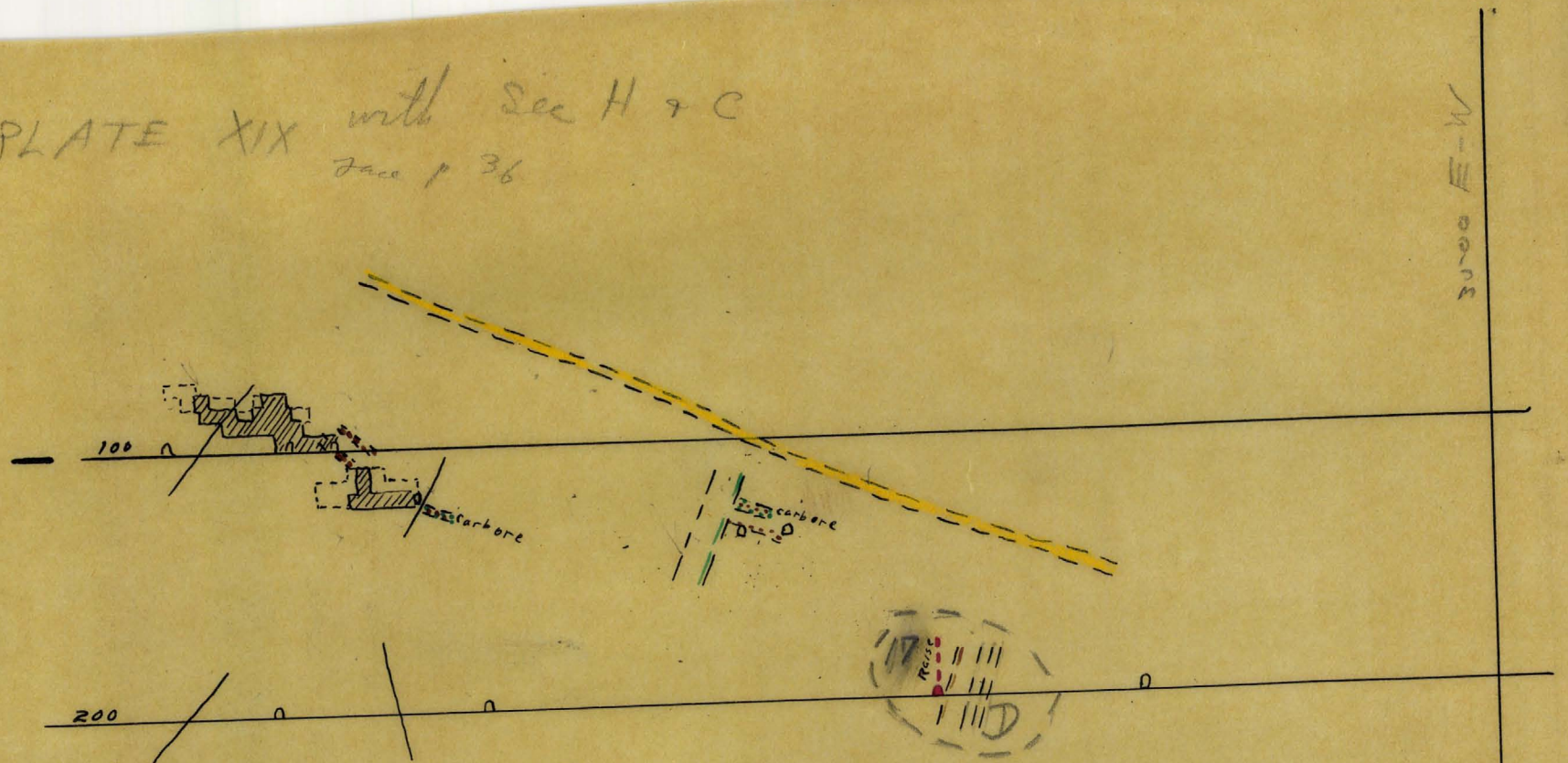
PLATE XIX
with Sec G & H
Face p 38



Sec C

PLATE XIX with Sec H + C

Face p 36

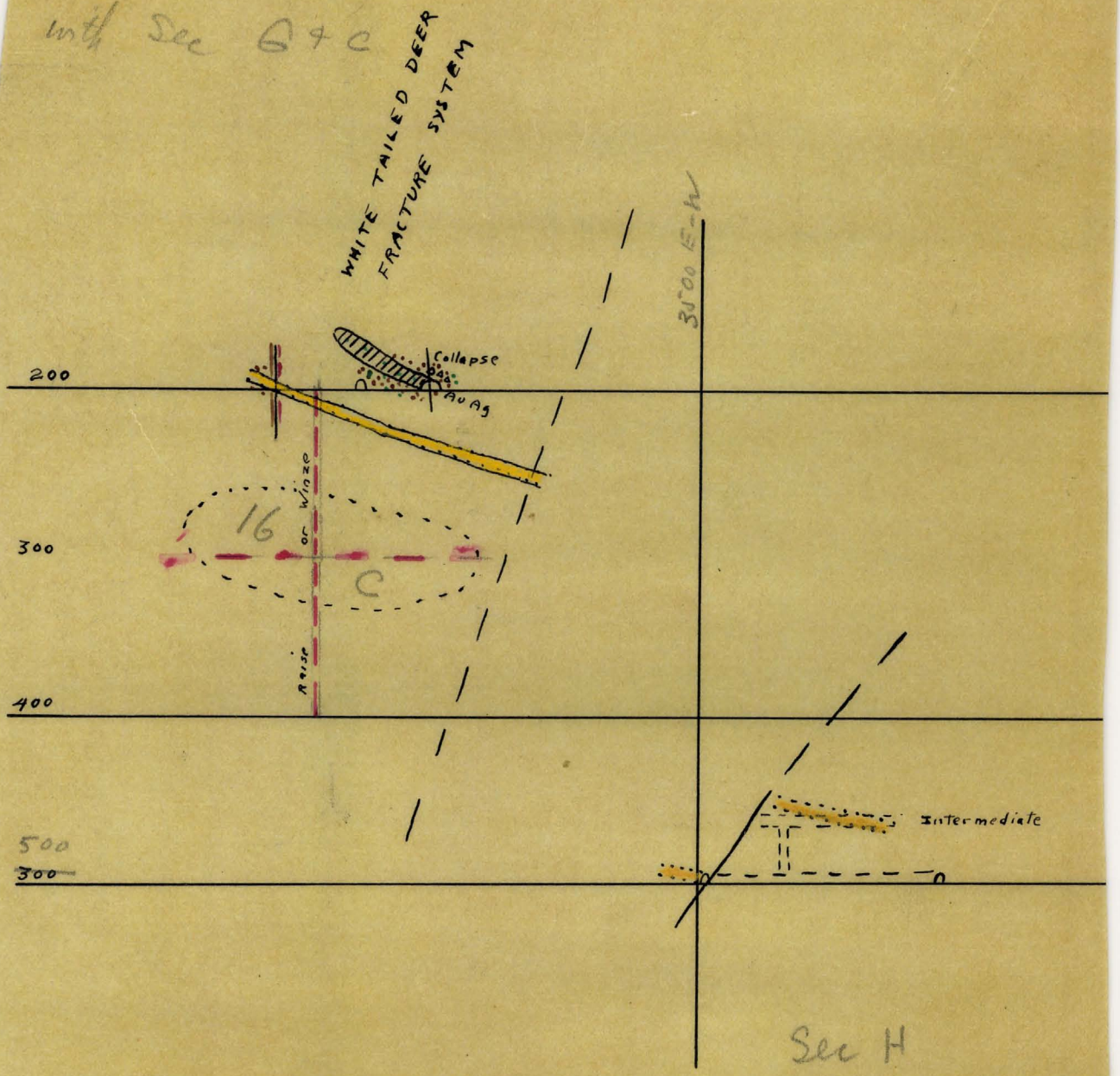


Sec G

PLATE XIX

See p 36

With Sec 6 + C



No. 16

1. Level: White Tailed Deer 200.

2. Object: To explore the White Tailed Deer Fracture System in the favorable horizon on the 300 level.

3. Location and Footage:

Option 1. At a point in 2-375 drift, 200 level, 455 feet east of its junction with 1 drift, sink a winze to the 300 level. On this level crosscut east and west across the White Tailed Deer fracture system, following any strong breaks northeast and southwest; extend the east crosscut 160 east from the bottom of the winze to reach the Parting Quartzite ore horizon.

Option 2. The continuation of 4-280 crosscut on the 400 level has been authorized; this is to connect with a raise from the 300 whose approximate coordinates will be lat. 3260, dep. 4310. Continue 4-280 past the raise 300 feet to a point whose coordinates are lat. 3640, dep. 4235. Raise here 100 feet to the 300 level. Exploration on the 300 same as in option 1.

4. Favorable Factors:

a. Gold and silver ore with some copper on the 200 level along the Parting Quartzite shows a possible relation to steeply dipping fractures within the White Tailed Deer Fracture System.

b. Collapse of the limestone and silica on the 200 may point toward oxidized ore below.

5. Unfavorable Factors:

a. This portion of the White Tailed Deer Fracture System has produced only the small orebody has produced only the small orebody on the 200.

b. The favorable Abrigo ground is limited in area below the 200 level, as the favorable beds dip into C.& A. ground.

6. Rating: C

7. Remarks: For a discussion of the two options here, see chapter on the 300 level.

8. Map References: Plates 2., 19; Atlas Sections 11, 12.

No. 17

1. Level: White Tailed Deer 200.

2. Object: To explore the E-W fracturing shown in 2-393 and 2-375 drifts, 200 level, at a possible intersection with the E-W fracture shown in the "Gold Stope".

3. Location and Footage: At a point in 2-375 drift 210 feet east from its junction with 1 drift, drive E about 85 feet. Raise here a maximum of 30 feet.

4. Favorable Factors:

a. The E-W fracture crossing the E end of the "Gold Stope" may have localized this ore.

b. E-W fractures on the 16th floor west of drift 1 are probably connected with the ore there.

c. Mineralized beds dip down into this country on the 12th floor (but somewhat above the horizon to be reached by the prospect drift). A bed of carbonate ore on the 16th floor dips down toward the prospect, but 250 feet away. It is in the horizon of the prospect.

5. Unfavorable Factors:

a. No ore has been found on these E-W fractures, and they are sparsely mineralized.

b. The E-W fracturing is not strong.

c. Not enough room for a large orebody, as shown by the work on the 200 and on the 12th floor, east of drift 1.

6. Rating: D.

7. Remarks: This prospect, while dubious, seems necessary before quitting the 200 level to completely prospect the favorable beds there.

8. Map References: Plates 2, 19; Atlas Sec. 10.

No. 18

1. Level: White Tailed Deer 200.

2. Object: To explore the favorable horizon below the copper-bearing NE breaks in E drift, 100 level.

3. Location and Footage: At a point in 1 drift, 200 level, 215 feet north of the turn near the station (coordinates lat. 3310, dep. 3725), raise to 12th floor and drive F 100 feet.

4. Favorable Factors:

a. The fracture zone is strong and well mineralised on the 100.

b. The beds on the 100 are strongly flexed and carry mineralization.

5. Unfavorable Factor: This series of breaks has not been known to carry ore.

6. Rating: C.

7. Remarks: The probable size of any ore found here is small.

8. Map Reference: Plates 12, 19; Atlas, Sec. 11.

No. 19

1. Level: White Tailed Deer 100.

2. Object: To explore the favorable horizon beneath the surface showings, including shallow shafts, southeast of the White Tailed Deer shaft.

3. Location and Footage: From the 100 level station, White Tailed Deer shaft, drive S 35°E. The length cannot be stated, but to get under the furthest surface showing would require 500 feet of drifting. Minimum length of drift 200 feet (to reach the nearest good surface showing).

4. Favorable Factors: A strong, manganese break on the surface should be encountered on the 100 level at 165 feet, and at 120 feet the extension of the northeast fracture zone exposed in X drift may be met. This may give an intersection of mineralized fractures in the favorable horizon.

5. Unfavorable Factors:

a. Only about 130 feet of back.

b. The surface mantle of wash makes underground work more or less blind.

c. No known ore on this fracture zone.

6. Rating: C.

7. Remarks: The shallow shafts above this country should be examined and any breaks mapped to aid in planning the underground work. These shafts show manganese, hematite and copper-staining on their dumps, but it is important to determine whether this represents a general geosanized area or simply mineralization along several breaks.

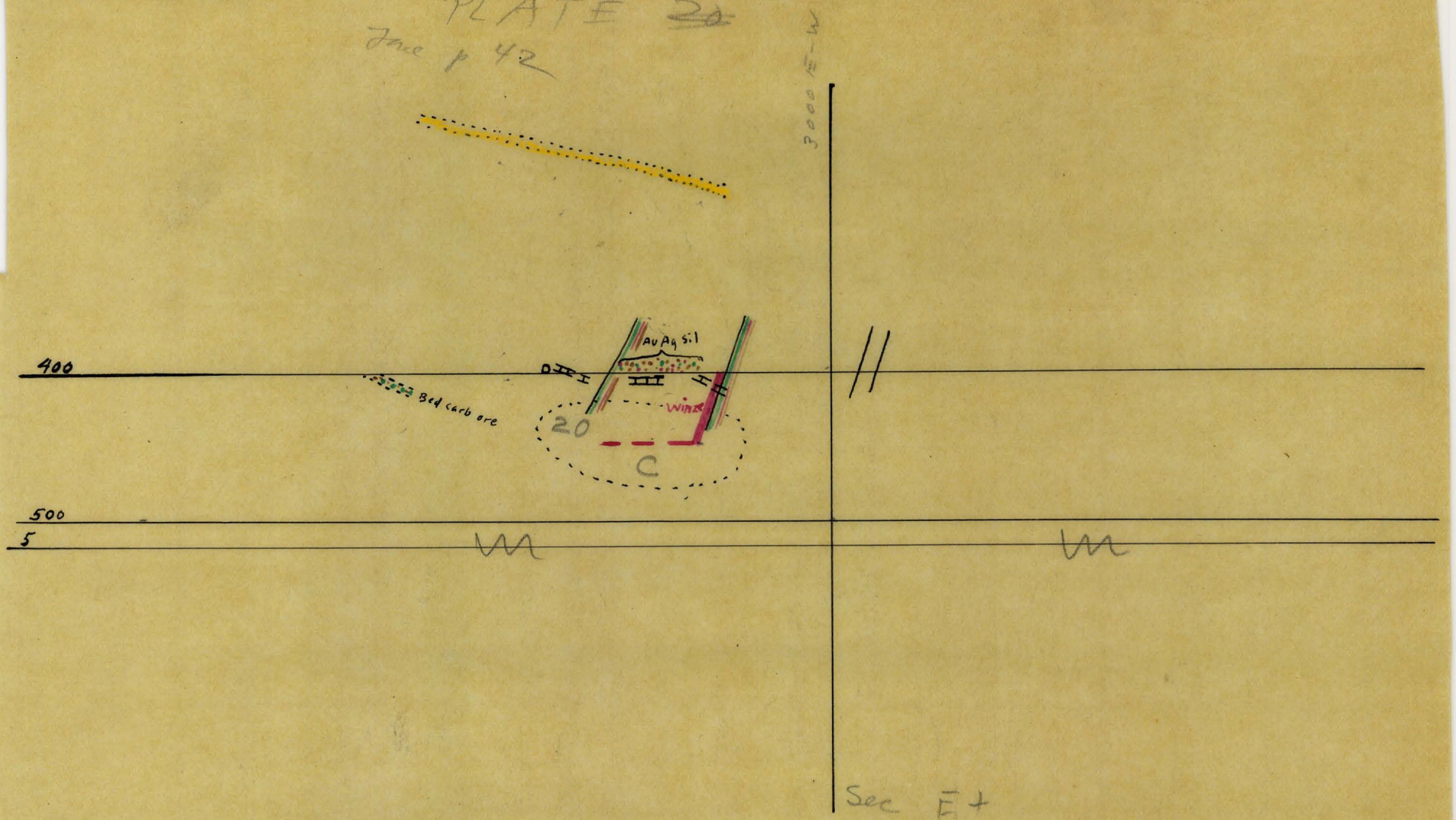
8. Map References: Plate 1; Atlas Sections 12, 13, 14.

MISCELLANEOUS PROSPECTS

Sec. 20, 21

PLATE ~~XX~~ 20

Face p 42



No. 20

1. Level: White Tailed Deer 400

2. Object: To find the ore, if any, connected with the gold-silver-silica mineralization in 4-284 drift, 400 level.

3. Location and Footage: Sink winze on copper-bearing fracture crossing main drift 100 feet southeast of the turn (coordinates 4545 N-S, 3045 E-W). If mineralization in main drift is a gossan for ore connected with the oxide ore bed exposed in 4-284 drift at 4-289 crosscut, this ore should be reached 50 feet down in the winze. If no ore is found, drift 75 feet NW from the winze at 50 feet down, to pass beneath the best of the mineralized area in the main 400 drift, to reach the second (northerly) copper-stained fracture exposed in the main drift above.

4. Favorable Factors:

a. The bed of carbonate ore exposed in 4-284 drift at 4-289 crosscut dips down under the mineralized area; it is possible that the latter is the capping of an orebody below, at the intersection of the carbonate ore bed with the NE fractures carrying copper exposed in 4-285 drift.

b. There is a "roll" of the beds here, i.e., a wrinkling of the general monoclinal structure.

5. Unfavorable Factors: The prospect is in the Barren Area, with sparse surface showings.

6. Remarks: This prospect should be run on its own merits regardless of the fact that it is in the Barren Area.

7. Rating: C

8. Map References: Plates 31, 20; Atlas Sec. 15.

No. 21

1. Level: White Tailed Deer 400.

2. Object: To explore the bed of carbonate ore exposed in 4-284 drift at 4-289 crosscut, at the intersection of the ore bed with a copper-bearing fracture.

3. Location and Footage: Drive SE from 4-284 drift along carbonate ore bed about 60 feet to meet the copper-fracture exposed around the turn in 4-288 drift.

4. Favorable Factor: The prospect starts in ore and should cut a strong NE break at its intersection with the ore bed.

5. Unfavorable Factor: The prospect is in the Barren Area, which has not hitherto produced any sizable ore.

6. Rating: B

7. Remarks: If the ore in the beds continues SE for 100 feet or so, it is probable that the mineralized area in 4-288 drift is the capping of a connected orebody in the same beds, beneath 4-288 drift. Prospect No. 20 should, therefore, be started upon No. 21 turning out successfully.

8. Map References: Plate 3.

VAIL HAMPTON PROSPECTS

Nos. 22, 23, 24, 25

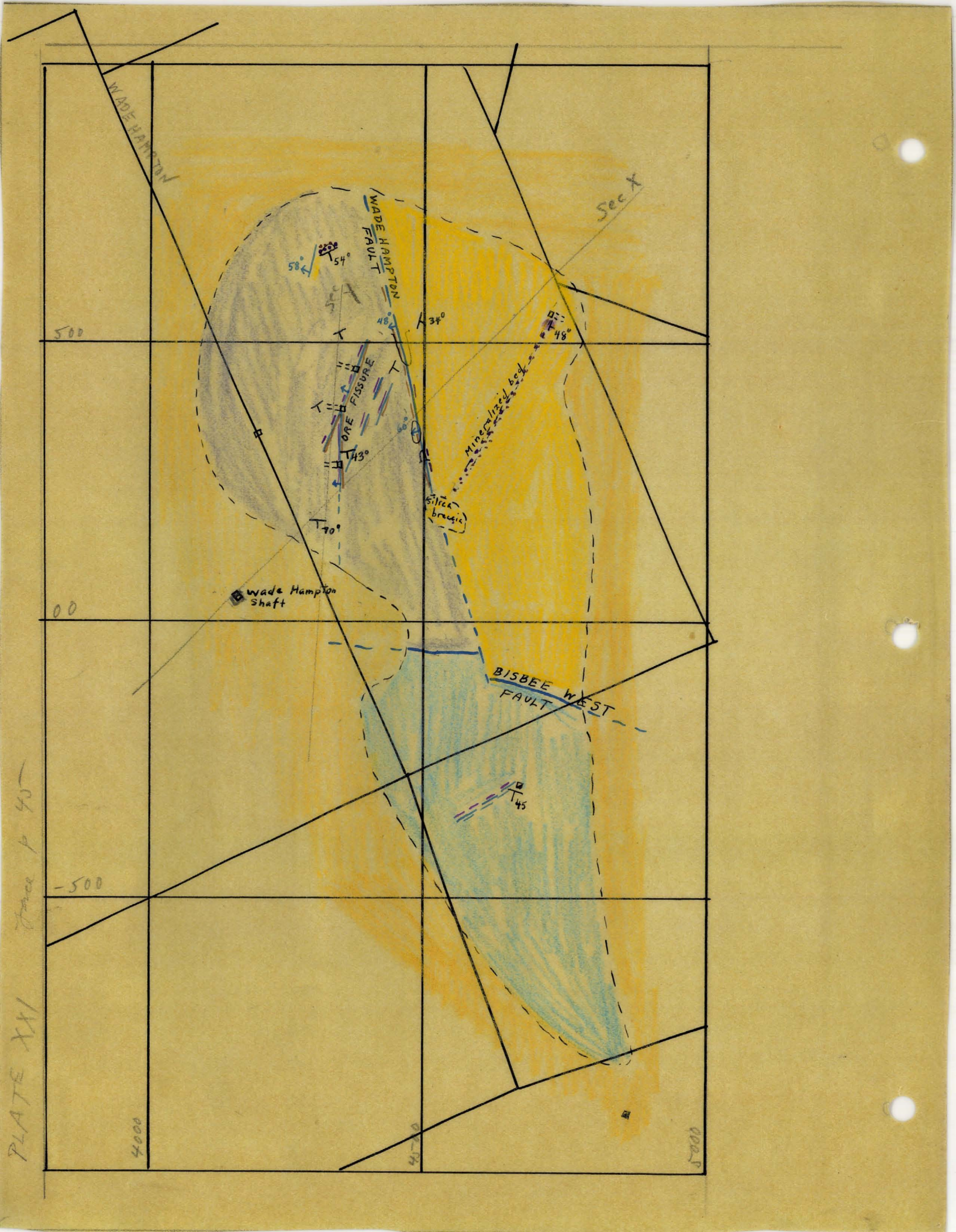

WADE HAMPTON
WADE HAMPTON FAULT
Sec X
58°
54°
48°
34°
48°
500
ORE FISSURE
60°
43°
Mineralized beds
Silica breccia
70°
Wade Hampton Shaft
00
BISBEE WEST FAULT
45
-500
4000
4000
5000

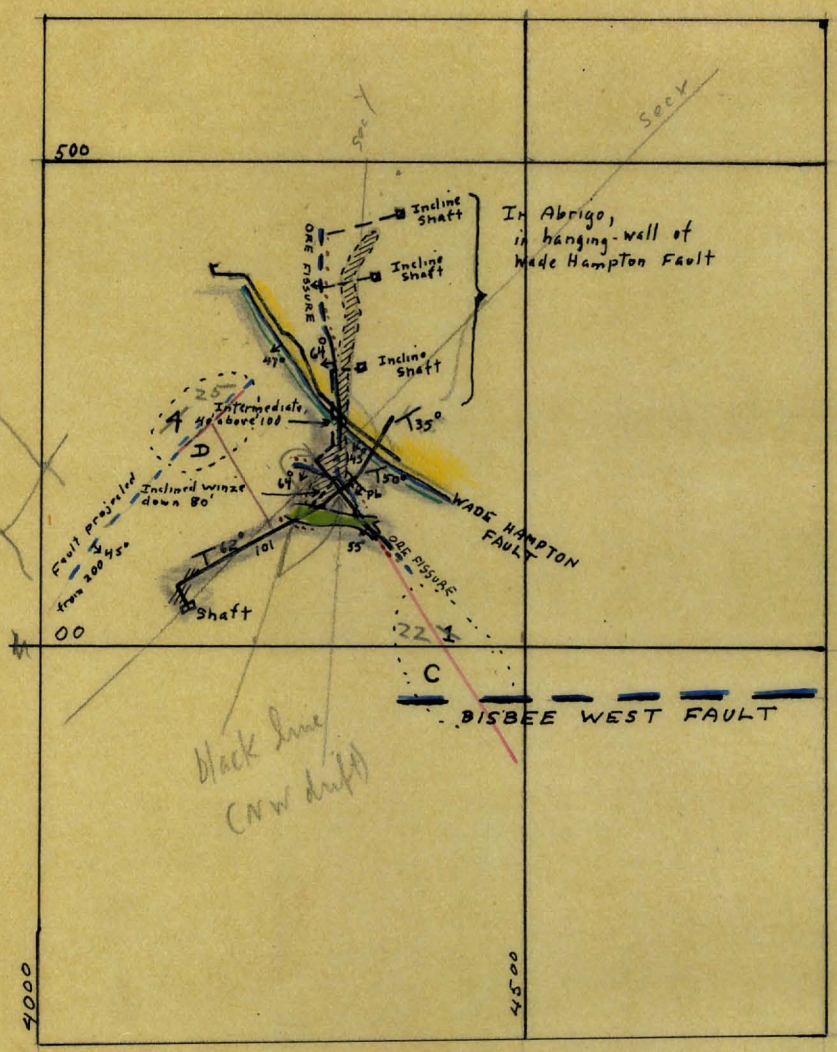
PLATE XXII

Face p 45

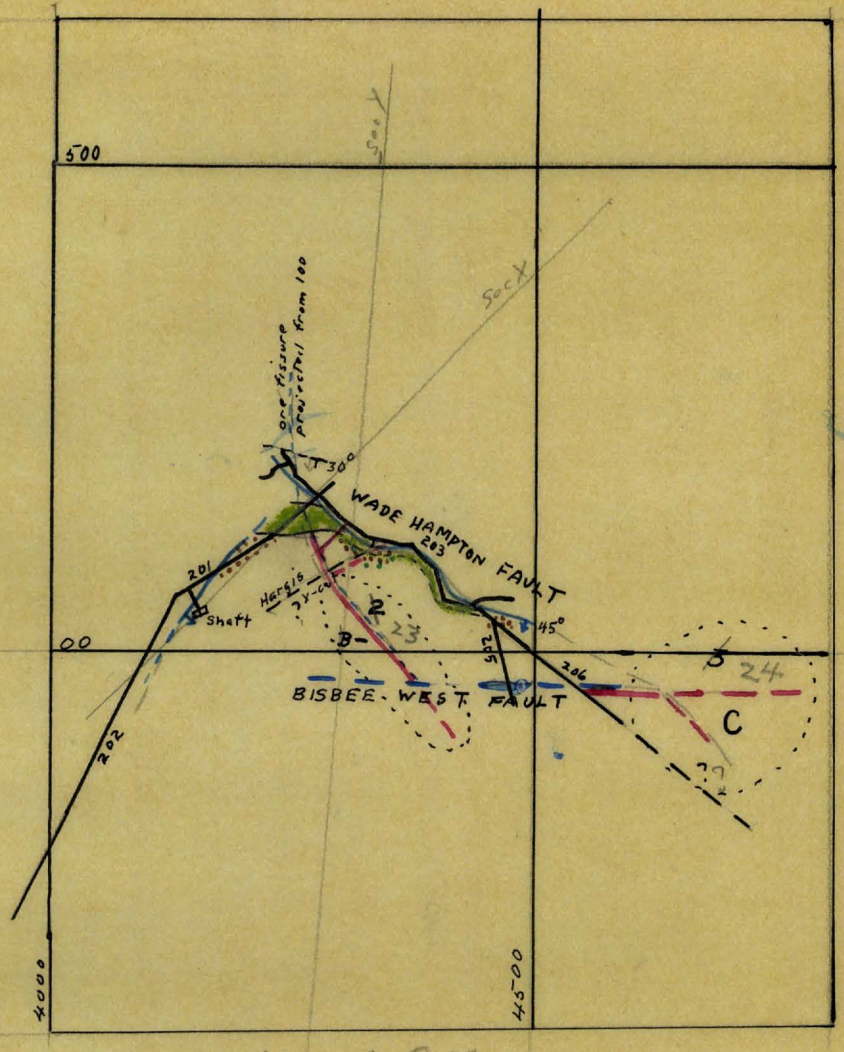
Quartzitic Bed

Sec X

PLATE ~~XXIV~~ 24



100 Level



200 Level (From Company Maps)

Put in Shaft NW drift at pt shown

WADE HAMPTON MINE

This property produced lead ore, carbonate and sulphide, mostly the former, with some oxidized copper ore. Most of the mining was along a roughly E-W fissure in the hangingwall of the Wade Hampton fault. This ore-fissure was mined from two inclined shafts, from the main 100 level, and from a winze below the 100 level. The ore had a distinct rake down to the south, corresponding to the intersection of the southerly dipping beds with the plane of the fissure. The rake is about 25° S at the northern end of the ore shoot, but steepens to 45° S at the southern end.

100 Level

Drifting now being done by lessees should continue southeast in the crosscut from 101 drift at 200 feet northeast of the shaft, in order to determine the persistence of the ore-fissure to the southeast, and if possible to follow it across the Bisbee West fault into the Escabrosa. This ore-fissure seems to persist past the andesite in the crosscut, and carries a little galena. Prospect No.24.

Prospect No.25 is designed to explore the upper Abrigo beds north of the Wade Hampton shaft in untested country along the projection of what appears to be a strong mineralized fault exposed on the 200.

200 level

Although the ore-fissure shows plainly at the bottom of the winze below the 100 level, only 35 feet above the 200, and carried ore there, it does not appear to have been picked up on the 200. The andesite dike, if post-fissure, would have obscured the fissure in 201 drift on the 200; a crosscut supposedly run by Ruggis from 203 drift 80 feet southeast of its junction with 201, should have crossed the fissure. Prospect No.23 is intended to pick up this break on the 200 and to follow it across the projected rake of the oreshoot, to the intersection of the fissure with the Bisbee West fault.

Prospect No.24 is intended to explore the Wade Hampton fault in the Escabrosa, south of the Bisbee West fault. The Wade Hampton fault was well mineralized north of the Bisbee West fault, and may well be south of it (surface covered by wash). While it is probable that the limestone south of the Bisbee West fault on the 200 level will be too high stratigraphically (Escabrosa), nevertheless this horizon is well adapted to give favorable indications of ore below, and therefore the projected work on the 200 is worth doing before the expense of opening up the caved lower levels, and the damaged Wade Hampton shaft, is undertaken. While the 200 is caved at the station, the cave is at a fault and the chances are good that the rest of the level is undamaged.

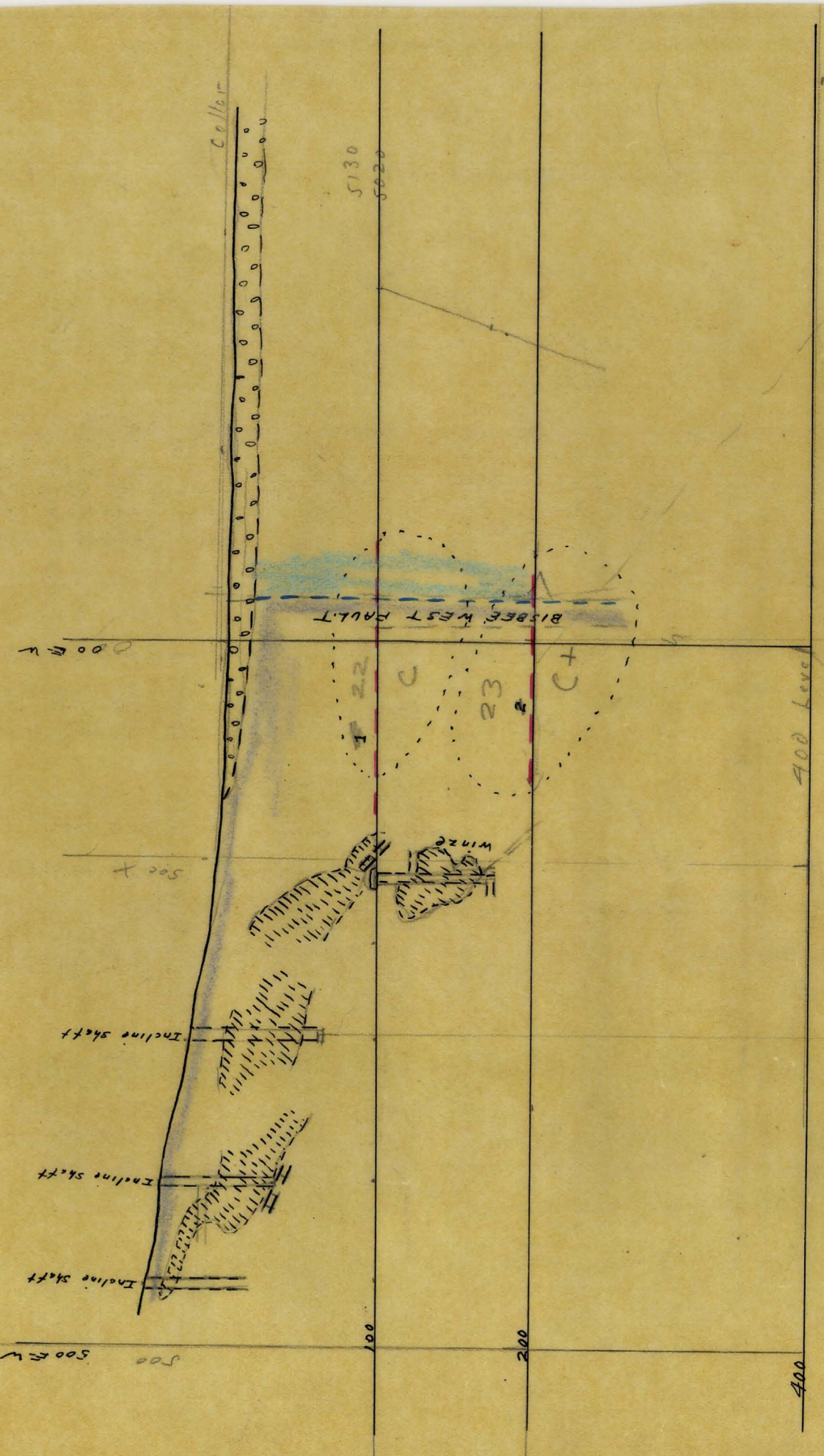


PLATE XXIII

Face p 46

No. 22 (Wade Hampton)

1. Level: 100

2. Object: To explore the ore-fissure to the southeast of 101 drift; especially its intersection with the Bisbee West fault, should the fissure persist that far; to follow it if possible into the Escabrosa limestone south of the Bisbee West fault.

3. Location and Footage: Continue driving the drift along the ore-fissure now being driven by lessees southeast from a point in 101 drift 200 feet northeast of the shaft station. The Bisbee West fault should be crossed about 240 feet southeast of 101 drift. If the ore-fissure quits at the Bisbee West fault, drive east on the latter to pick up the fissure.

4. Favorable Factors:

a. Work is along a known ore-bearing fissure.

b. The drift should reach beds in the Abrigo which in the White Tailed Deer-Horse country carried ore.

5. Unfavorable Factors:

a. The drift is above the rake of the mined-out orebody.

b. The persistence to the southeast of the fissure is not proved on the surface.

c. Any work along the fissure south of the Bisbee West fault may be too high stratigraphically.

6. Rating: C

7. Remarks: This work should preferably be done before Prospect No.23 on the 200, as it should furnish information concerning the persistence of the ore-fissure to the southeast, and can be more cheaply run than No.23.

8. Map References: Plates 23, 24.

No. 23 (Wade Hampton)

1. Level: 200

2. Object: To pick up the ore-fissure on the 200 level and to follow it through the rake of the Wade Hampton oreshoot to the Bisbee West fault and, if possible, across this fault into the Escabrosa limestone.

3. Location and Footage: Hargis supposedly drove a crosscut southwest from 203 drift, on the 200, at a point 80 feet southeast from the junction of 203 and 201 drifts. This crosscut should have crossed the ore-fissure at about 50 feet from 203 drift. If this crosscut was run and is now open, a search for the fissure should be made. It may be inconspicuous at this place. If the crosscut was not run or is caved, drive a crosscut southwest from 203 drift at a point 40 feet southeast of the junction of 203 and 201 drifts. In either case, if the fissure is found, drive southeast along it 120 to 150 feet to the Bisbee West fault; should the fissure quit at the fault, drive east along the fault to pick up the fissure.

4. Favorable Factors:

a. The prospect cuts across the projection of a known oreshoot in the same beds which carried the ore.

5. Unfavorable Factor: If the Hargis crosscut was run, the ore-fissure was either inconspicuous or missing there.

6. Rating: C+

7. Remarks: This prospect should await the completion of No.22.

8. Map References: Plates 23, 24.

No. 24 (Wade Hampton)

1. Level: 200.

2. Object: To prospect the Wade Hampton fault at its intersection with the Bisbee West fault, and to the south of the Bisbee West fault in the Escabrosa limestone.

3. Location and Footage: The actual length and direction of 206 drift are uncertain. The last measurement gives the drift as shown on Plate 14 in solid lines, but a note on a geological map extends it 200 feet further southeast. If so, it may have cut the Wade Hampton fault; if this is the case, the fault should be followed southeast. If 206 did not cut the Wade Hampton fault, the Bisbee West fault should be located in it, probably about 110 feet southeast of the junction of 206 and 205 drifts, and followed east to the Wade Hampton fault, which should then be followed south.

4. Favorable Factors: The Wade Hampton is well mineralized where it separates Abrigo from Bolsa quartzite, and may also be mineralized in the Escabrosa.

5. Unfavorable Factors: The lack of known crossbreaks or other localizers on which to concentrate work in the Escabrosa.

6. Rating: C

7. Remarks: This prospect is of general interest in that it opens up Strip 3, the limestone strip south of the Bisbee West fault.

8. Map Reference: Plate 24.

No. 25 (Wade Hampton)

1. Level: 100

2. Object: To test, in the favorable beds, the strong fault, apparently mineralized, exposed in 201 drift and at the station, 200 level.

3. Location and Footage: At a point in 101 drift, 100 level, 110 feet northeast of the station, drift N 30° W about 130 feet to the fault. Drive NE and SW along the fault to pick up if possible its intersection with a branch of the ore-fissure.

4. Favorable Factors: The strike of the beds is such that the horizon which made ore along the ore-fissure should be encountered.

5. Unfavorable Factors: The surface indications, while largely obscured by talus, are not encouraging.

6. Rating: D

7. Remarks: This is a last hope prospect for the 100 level, but seems called for because of the chance of exploring the intersection of a strong fracture with the favorable beds in an untested region.

8. Map Reference: Plate 24.

PROSPECTS IN THE CONTACT AREA

Nos. 26, 27

PLATE XXV 25


Shaft
Ca
Schist
yellow
Sunny Slope
Family
5300
5400
5500
5600
Contact
Loyalty
Sec 2
(Red)
Top Ch
Top OC
Blue
No 1
yellow
Uncolored
Ce
Cn
Iron Mt Fault
blue
Uncolored
DH 2
Iron Mt
Happy Home
5200
Court
500
1000
Sec

THE CONTACT AREA

The Bisbee West fault separates this area into two blocks, a Naco-Escabrosa block, south of the fault, and a Bolsa schist block, north of the fault. A small faulted segment of middle Abrigo lies along the Bisbee West fault near the top of Contact Hill. A shaft was sunk to a depth of about 100 feet in this Abrigo fragment and a little copper ore (oxidized) was mined along a N-S fracture which cuts across the Abrigo and persists north into the Bolsa quartzite, where it is visible on the surface. Conditions do not appear to justify further work here at this time.

The most promising surface showings on the Contact area lie about 1000 feet SE of the shaft, on the Iron Mountain and Happy Home claims. A fault, called the Iron Mountain fault, striking about N 30° E and apparently dipping steeply west, crosses these claims. It has a displacement of about 375 feet and separates Escabrosa, on the hangingwall, from Naco, on the footwall. It is, therefore, probably a steep reverse fault. It carries moderately abundant manganese and hematite, and is crossed obliquely by a number of steeply dipping manganese sheeting zones. The testing of this area by drilling is advisable during the present diamond drilling campaign. Two holes have been laid out. No.26 is a short hole to determine the dip of the fault and to explore it at the Escabrosa Martin contact. No.27, a longer hole, is

designed to test the fault zone in the upper Abrigo horizon. The angle at which No.27 should be driven will depend upon information relative to the dip of the fault and the position of the limestone horizons to be secured in Prospect 26.

The possible size of the limestone block south of the Bisbee West fault makes this work desirable, for if ore were discovered here, work in the remainder of the block beneath the wash would be justified.

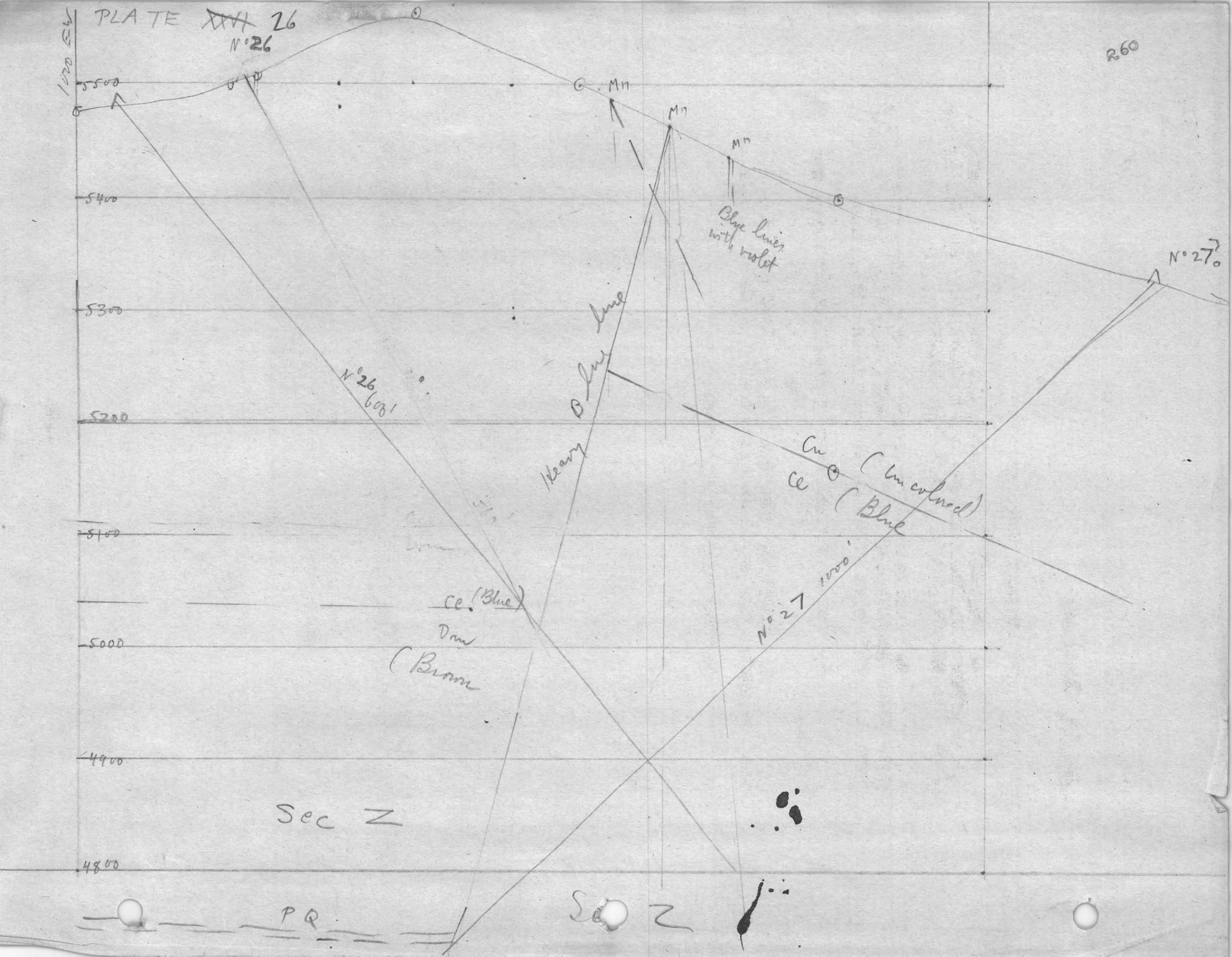


PLATE XXVI 26
N°26
R60
5500
5400
5300
5200
5100
5000
4900
4800
Mn
Mn
Mn
Blue lines with violet
N°27
N°26 Coal
Heavy Blue Line
Cu (Uncoloured)
Ce (Blue
N°27 1000'
Ce. (Blue)
Dun
(Brown
Sec Z
P Q
Sec Z

No. 26 (Contact)

1. Level: Surface.

2. Object: To explore the Iron Mountain fault at the Escabrosa Martin contact, and to determine the dip of the fault for use in placing drill hole No.27.

3. Location and Footage: From a point on the surface whose coordinates are: Lat. 975, dep. 520, drill a hole bearing S 63° at an angle of 51° from the horizontal.

4. For a discussion of probabilities here, see No. 27.

5. Remarks: The results obtained from this hole will determine the angle at which No.27 should be driven.

6. Map References: Plates 25, 26.

No. 27 (Contact)

1. Level: Surface.

2. Object: To explore the Iron Mountain fault in the upper Abrigo horizon on the hangingwall, and at the Martin Escabrosa contact on the footwall.

3. Location and Footage: The footage will depend upon the dip of the fault as disclosed by No.26. Location of collar of hole, unless the dip of the fault and the position of the beds differ radically from the way they are shown on Section 2, will be at a point whose coordinates are lat.850, dep. 1350. The bearing of the hole is N 62°E. The angle will depend upon the dip of the fault and the position of the limestone horizons as indicated by hole No.26. The hole should be so pointed as to cross the fault about 50 feet below the Parting quartzite.

4. Favorable Factors:

a. The ore on the Contact claim occurs in the Abrigo.

b. Similar manganese zones have carried ore in the White Tailed Deer-Boras country.

c. Both the hangingwall and footwall of the fault will be tested at horizons which have elsewhere been favorable.

5. Unfavorable Factors:

a. The proper horizon in which to search is unknown.

b. There is no definite point along the fracture zone for which to head.

6. Rating: C

7. Remarks: An accurate topographical map of the surface should be made, the geology plotted upon it and Section 2 corrected accordingly. It is inaccurate because no such map was available.

8. Map References: Plates 25, 26.

ORE FRINGE AROUND HILL SACRAMENTO

MAIN FRACTURE SYSTEM

COLE-NIGHTHAWK FRACTURE SYSTEM

WHITE TAILED DEER FRACTURE SYSTEM

SECTION

Wolverine Shaft

OUTSIDE OWNED COPPER QUEEN

TUSCARORA ZONE AT DEPTH

70°

Western Zone

WESTERN ZONE

EASTERN ZONE

Cole Shaft

White Tailed Deer Shaft

Nighthawk Shaft

CROWN KING ZONE

D U WHITE TAILED DEER FAULT

Boras Shaft

FAVORABLE AREA CROWN KING ZONE AT DEPTH

PLAN 1" = 500'

HORST- LOWER ABRIGO, BOLSA QUARTZITE AND PINAL SCHIST

LITTLE CHANCE FOR ORE

N

-250'

HORIZONTAL TREND OF ORE BODY

65°

-25°

FRACTURE

30°

BED

PLAN

-250'

1"=500'

WHITE TAILED DEER FRACTURE SYSTEM

COLE-NIGHTHAWK FRACTURE SYSTEM

ESCABROSA

MARTIN

ABRIGO

BOLSA QUARTZITE

100

5000'

4000'

TUSCARORA ZONE

EASTERN ZONE

STOPE

700

900

WOLVERINE

WHITE TAILED DEER

NIGHTHAWK

BORAS

SECTION

1" = 500

REPORT

on the

BOB LEWIS AREA

Bisbee, Arizona

By

E. E. Wieber

August, 1926

CONTENTS

MAPS ACCOMPANYING REPORT ON THE DON LUIS AREA

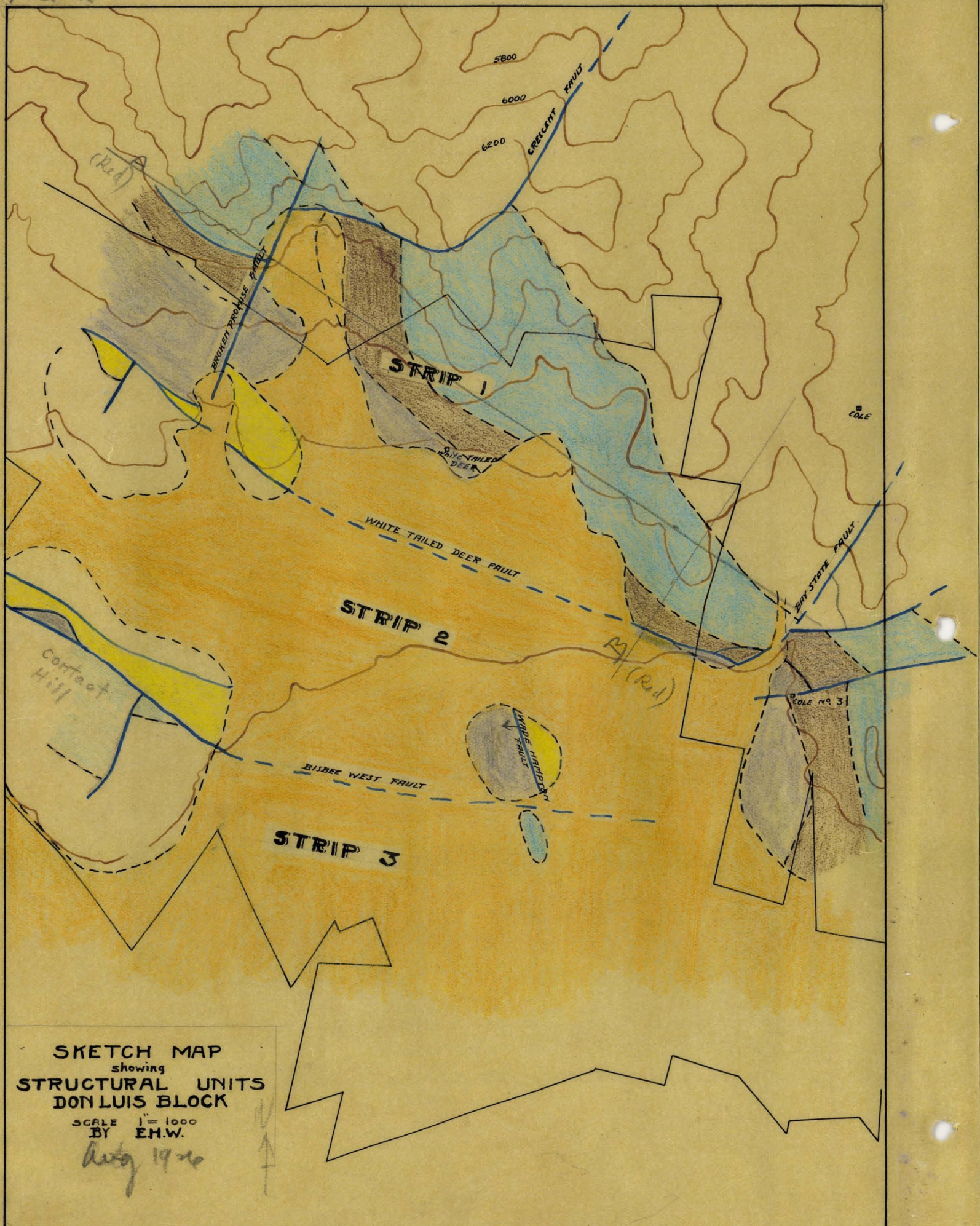
Relation of this Report
to that of
Dr. F. L. Ransome
(dated Sept. 6, 1923)

Dr. Ransome, in 1923, spent two weeks in this area in connection with the present campaign of geological work of the Copper Queen Company and wrote a report of his results. In that report, he recommended detailed studies, including the construction of numerous sections.

The present report represents the carrying out of Dr. Ransome's suggestions, with such additional work as became desirable as the studies progressed. Throughout, the information and ideas collected through several years of work by Carl Trischka, have been freely used and have been found to be very valuable.

The writer spent five months in the area.

Plate I



SKETCH MAP
showing
STRUCTURAL UNITS
DON LUIS BLOCK
SCALE 1" = 1000
BY E.H.W.
Aug 1926

AREA COVERED BY THIS REPORT

The Don Luis area, defined with respect to Copper Queen holdings, comprises those claims surrounding the White Tailed Deer, Nighthawk and Burns shafts south of the C & A ground, and extending south past the Contact and Wade Hampton shafts well into the San Pedro Valley.

Geologically, it is made up of three distinct units, in the form of east-west strips. These will be called strips 1, 2 and 3. Refer to Plate 1.

Strip 1

In this, the northern strip, the normal Paleozoic series is exposed, from Bolsa quartzite to lower Naco limestone. The block is bounded on the south by the White Tailed Deer fault; on the west, by the Broken Promise and Crescent faults; on the east, by the Bay State fault. On the north, the limestone series extends out of the Don Luis area into C & A ground. Strip 1 has produced all of the ore of the Don Luis area except the small amounts mined at the Wade Hampton and Contact shafts.

Strip 2

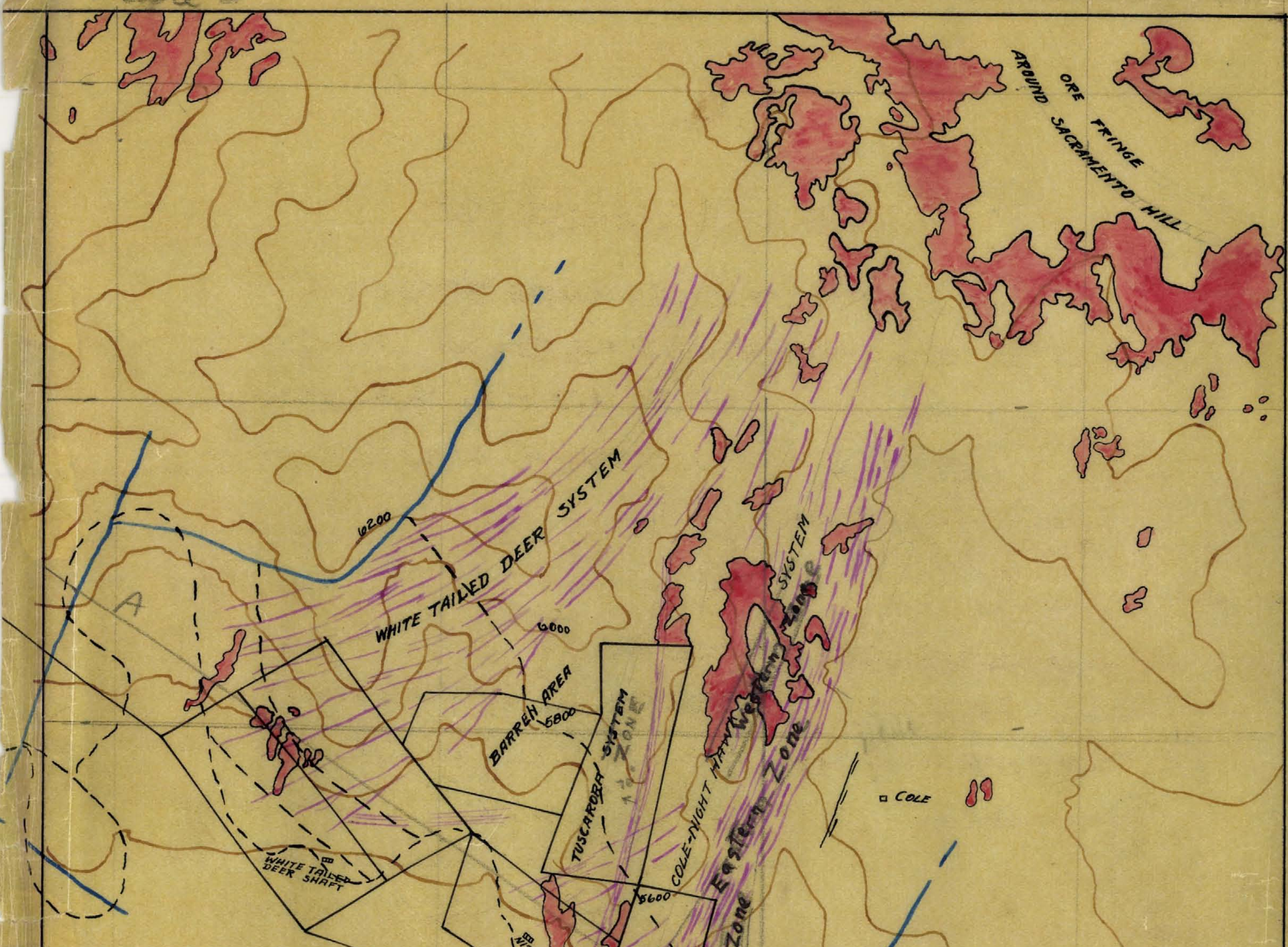
The Central strip is bounded on the north by the White Tailed Deer fault; on the south by the Bisbee West fault; its eastern and western borders are ill-defined. It is almost entirely covered by wash; most exposures are Bolsa quartzite

and schist, rocks which have not yet been proved productive. The Wade Hampton fault divides the strip into two units, an east and a west block; a fault parallel to the Bisbee West fault further divides the west block. Other faults probably occur. The only point of interest in this strip is the upper Abrigo at the Wade Hampton shaft. This has furnished the Wade Hampton ore.

Strip 3

This consists of Escabrosa and Naco limestone south of the Bisbee West fault. It is entirely untested and largely covered by wash.

Plate II



SKETCH MAP
showing
FRACTURE SYSTEMS
and
HORIZONTAL PROJECTION
of
ORE BODIES

Lone Star Area
Bisbee, Ariz

Scale 1" = 1000'
By E.H.W.
Aug 1926

Make to size and letter size
Take a little off the right side

Put on names of claims shown here (from surface map)

STRIP 1. THE NORTHERN STRIP

This strip contains the workings tributary to the White Tailed Deer, Nighthawk and Boras shafts. The following discussion of ore guides refers to this strip alone, since it is here only that enough ore has been discovered to enable us to set up reliable guides.

ORE GUIDES

1. Northeast-Southwest Fracture Systems

Definitions: By fracture zone is meant a well-defined group of parallel fractures continuous along the strike for many times its width. A fracture system is a group of parallel fracture zones; or concentration into zones may be lacking and the system is simply a broad area in which the dominant fractures are markedly parallel.

Northeast-southwest fracture zones are the major ore-controls in the northern Don Luis area. Starting in the vicinity of the Lovell and Oliver shafts, a fracture system 2500 feet wide extends southwestward. About 800 feet north of the Tuscarora north end-line, in C & A ground, the system splits. One branch retains the direction of the main system (south 20° west), passes slightly west of the Cole shaft and through the Boras and Nighthawk shafts, and disappears under the wash to the south. This is the COLE-NIGHTHAWK FRACTURE SYSTEM. The other branch turns south 45° west at the fork, and passing through the Wolverine No.2 and White Tailed Deer shafts, also

disappears under the wash to the southwest. This is the WHITE TAILED IRIS FRACTURE SYSTEM. Thus, while in C & A ground the northeast fracturing constitutes a single broad system, in Don Luis ground it diverges into two separate systems separated by an area about 1000 feet in width and unfractured except for one narrow but strongly defined zone, the TUSCARORA ZONE.

The dip of the northeast fractures throughout the area is consistently to the west, and ranges from 65 to 75 degrees.

All ore in Strip 1 of the Don Luis area has been found in one or the other of these fracture systems.

Nature of the Fracturing

The fracturing ranges in character from faults of distinct displacement to mere sheeting; most of the fractures have no displacement. Given fractures are seldom continuous along strike or dip for more than 500 feet, but if one fracture gives out, another comes in to take its place. Thus the systems and zones are continuous in strike and dip, even though individual fractures are not.

The Surface Mineralization along the Fractures

Nearly all the northeast-southwest fractures are mineralized on the surface at some point along their strike. The outcrop minerals consist of manganese oxide, hematite, silica breccia, unbrecciated silica, calcite and sparse copper stain.

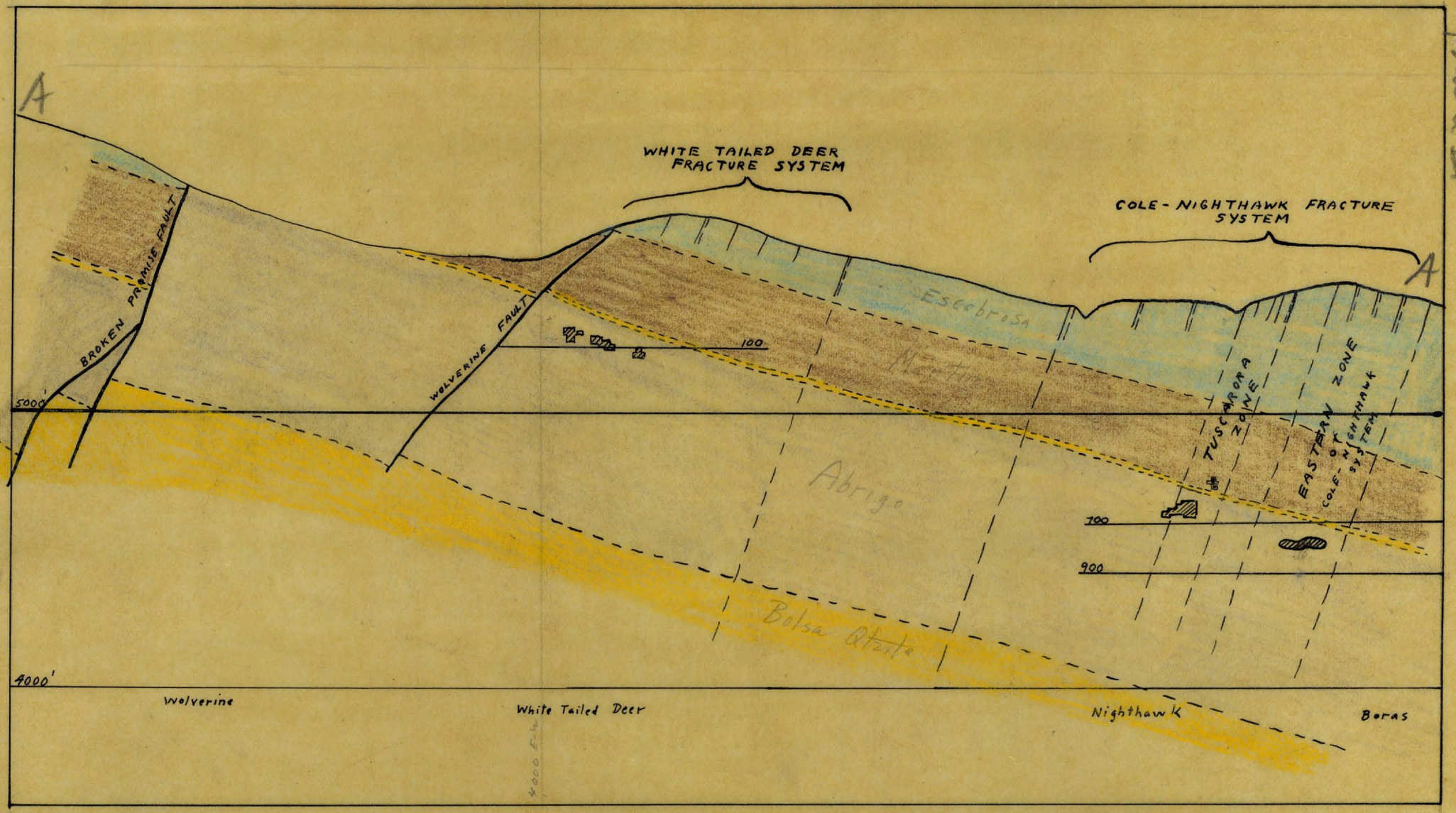


Plate III

~~Plate~~

(For location of section see plate I and II.)

Vertical section looking northeast through San Luis area Bisbee dist.
By E.H.W.
Aug 1926.

in varying proportions. The calcite and hematite are closely confined to the actual fissures. The silica and manganese more often spread out from the fracture along selective beds, the silica usually favoring the cherty horizons; the manganese, the coarsely crystalline. Iron staining of the walls and narrow veinlets of calcite are often the only evidences of mineralization for long distances along fractures which may elsewhere carry abundant manganese.

In general, the largest ore in explored ground has been found beneath fractures carrying the largest surface exposures.

The Main Fracture System. North of the Fork

The main fracture system produced a number of scattered orebodies in C & A ground, and has not been completely explored.

The Cole-Nighthawk Fracture System

This system maintains an average width of 600 feet over most of its length, but spreads to a maximum width of 1500 feet as it approaches the White Tailed Deer fault near the valley wash. The system contains two zones, the Eastern and the Western zone.

The Eastern Zone

This has been the most productive of all the zones. It has produced:

1. The main Cole orebody.

2. The Nighthawk sulphide orebody at the Boras line.

3. The oxide ore near (north of) the Boras shaft.

4. The oxide-sulphide ore on and near the Lone Star claim.

The Crown King Zone

This zone is an offshoot to the south from the Eastern zone. See Plate II. It produced the sulphide ore on the Cole 1100 and 1000 levels just north of the Boras claim. It is well shown in the north part of the Boras claim on the 900 level, in the Martin limestone. See Sheets 12, 14, 15, 16, Atlas.

The Western Zone

While a concentration of fracturing at the eastern edge of the Cole-Nighthawk fracture system formed the Eastern Zone, a definite but less marked concentration at the western edge produced the Western zone. This zone is fairly distinct east of the Tuscarora claim on the surface and in the northern portion of the claim on the 900 level, but fans out to the south as it approaches the White Tailed Deer fault. It has produced the C & A ore north of the Tuscarora claim, and the spotty ore in the northern part of that claim, on the 900 and intermediates. The Western Zone contains a fault with a displacement of about 100 feet, the High Card fault, which continues northeast into C & A ground, but seems to die out to the southwest somewhere in the Tuscarora claim. Part of its movement may be post-ore;

for on the 900 the ore ends abruptly against it.

The Tuscarora Zone

The Tuscarora Zone, which is the narrow, strongly defined zone cutting through the barren area, has a strike more nearly north and south than the systems lying to the east and west of it. It is, therefore, an independent zone or system; it enters and crosses the [illegible] portion of the Cole-Nighthawk system in Don Luis ground, but retains its identity throughout. Its narrowness and intense Mineralization, together with its length, make it a striking surface feature and an ideal ore guide. It has produced the oxide-sulphide ore northeast and east of the Nighthawk shaft, on the 700 and 600 levels.

The White Tailed Deer Fracture System

This system is broad, and it lacks the concentration into definite zones characteristic of the Cole-Nighthawk fracture system. This may not mean less ore than the latter, but it does mean greater difficulty in the search for ore. One very definite feature of the White Tailed Deer system is the Wolverine fault, a flat dipping fault with a displacement of about 40 feet. The Wolverine ore occurs along this break and on a steeper sympathetic break in its hanging wall. This is the only approach to a zone in the system, and lies, for the most part, outside of Copper Queen ground. The rest of the system in Copper Queen ground contains no distinct zones and

has likewise failed to produce continuous orebodies. The orebodies it has produced are those above, on and just below the 100 level, north of the White Tailed Deer shaft. (See Plate III.)

Diverging from the White Tailed Deer system as an offshoot into the Barren area, is a narrow E 70°E zone. Thus far it has produced only the sulphide ore above the White Tailed Deer 500 level.

The Barren Area

The Barren Area, outside of the Tuscarora Zone and the east-west branch of the White Tailed Deer system described above, is nearly devoid of surface showings. The long drift connecting the White Tailed Deer and Nighthawk shafts on the 400 level crosses this area. The drift also cuts the horizon which, as will be pointed out later, is the favorable ore-carrier, and runs along this horizon for about 300 feet. A three-foot bed of carbonate ore and a silicified area which may point to ore were discovered. Only two notable northeast fractures cross the entire drift within the barren area, and these occur close to the above showings. Such indications within the Barren area should be prospected, but strictly on their own merits. Long, general prospects do not appear justified within this area.

2. East-West Fracture Zones

The East-west fracture zones are much less prominent than the northeast-southwest systems; they make ore only at intersections with northeast breaks, while orebodies occur on the northeast breaks without any east-west intersections. Where seen on the surface, the east-west breaks are rarely mineralised.

The most striking example of the localisation of ore at the intersection of a northeast-southwest zone with an east-west zone is the orebody north of the Borax shaft, between the 600 and 400 levels. As both sets of breaks are steeply dipping, the orebody takes the form of a squat chimney. (See sections A-, 25, 26, Atlas.)

The carbonate and enriched sulphide ore on the Nighthawk 700 and 600 levels, northeast and east of the shaft, seems connected with an east-west break carrying pyrite exposed on the 700 level. (See Sheet 12, Atlas) Another east-west break possibly connected with this ore can be seen at the shaft station on the 450 (Nighthawk) level.

The Lone Star ore, between the 700 and 600 levels, may be connected with an east-west break shown on the 700 level, on the Lone Star claim.

The vein-like orebody mined from the old inclined shaft northeast of the Borax shaft seems to have been localised by an east-west break. (See Sheet 9, Atlas.)

No known east-west fracture zone was connected with

the Nighthawk sulphide orebody at the Boree line.

In the White Tailed Deer fracture system east-west fracturing is rare. In the "Gold Stope" on the 200 level, White Tailed Deer, an east-west mineralised break may be connected with the small orebody found there.

3. Limestone Formations

Abrigo

The more important orebodies in the White Tailed Deer, Nighthawk and Boree mines show a remarkable preference for a particular horizon in the upper Abrigo. Averaging the position of the centers of all Abrigo orebodies so-far discovered, except the Lone Star ore, which was abnormally low and is of minor importance, gives a depth in the Abrigo below the Parting quartzite of 83 feet. The highest was 50 feet, the lowest 150 feet, below the quartzite.

At a much lower horizon along the Wolverine fault, occurs the Wolverine ore, but as this ore is restricted to the immediate vicinity of the fault and is clearly very closely connected with it, the horizon it occurs in has less significance.

The position described above, about 85 feet below the Parting quartzite, is hereafter referred to as the "Favorable Abrigo Horizon", or simply as the "Favorable Horizon".

Parting Quartzite

The Parting quartzite horizon is frequently mineralized and on the White Tailed Deer 200 and Boras 300 levels produced small orebodies. So far it has failed to produce an orebody of importance, and therefore is decidedly poorer prospecting ground than the upper Abrigo.

Martin

The Martin proved the best formation in the Cole mine, but ore-bearing horizons in it as definite as that in the upper Abrigo have not been established. In Don Luis ground, two strong fracture zones, the Tuscarora and the Crown King, have been well prospected in this formation, the former on the Nighthawk 450, and the latter on the Boras 700 and 800 levels; the Western zone is now being tested in the Martin at the northern end of the Tuscarora claim. Only spotty ore closely associated with fissures has thus far been found at any of these places. We cannot yet say that the Martin is unproductive in Don Luis ground, but its favorability remains to be proved.

4. Flexures in the Beds

The Lone Star orebody seems to be the only one connected with any marked distortion of the bedding. On the 700 level the beds show a very marked flexure, involving a steepening of the dip to vertical and a marked change in strike, forming a small anticline and adjacent syncline.

In general, abrupt flexures in the beds afford passage for the mineralizing media just as does fracturing, and where such flexing is crossed by promising fractures is a logical place to hunt for ore. For example, the Lone Star orebody mentioned above occurs well below the normal Abrigo favorable horizon, and seems to have preferred the well-flexed lower beds to the normal horizon.

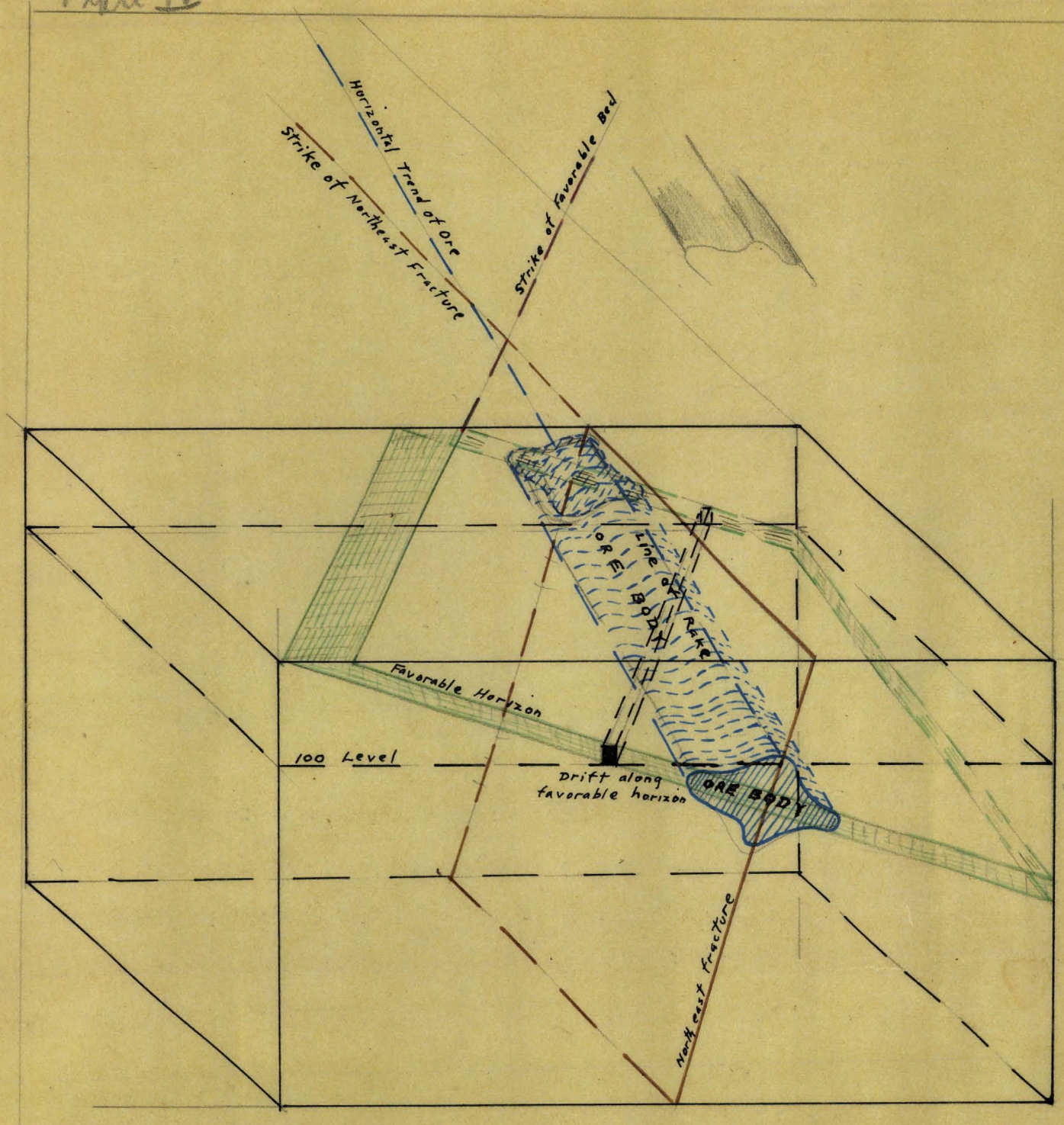
6. Goessanized Beds and Bedding Slips

A guide seemingly of value in the oxidized zone consists of goessanized beds and bedding slips. These often represent former sulphides that made out along selective beds from particular orebodies. Where these beds were especially favorable the distance may be 100 feet. Whether to prospect up or down the beds must be decided from other evidence.

The Shape of the Orebodies

The shape of the orebodies depends on the relative influence of fractures and bedding in localizing the ore. Were the fracture the sole ore locus, the orebody would be a vein deposit along the fracture. This is nearly the case in beds unreceptive to mineralization in this area. A good example is the vein stoped in the upper Martin from the old incline shaft northeast of the Borax shaft. As shown in the sketch, the ore opened out into the bedding as soon as the fracture

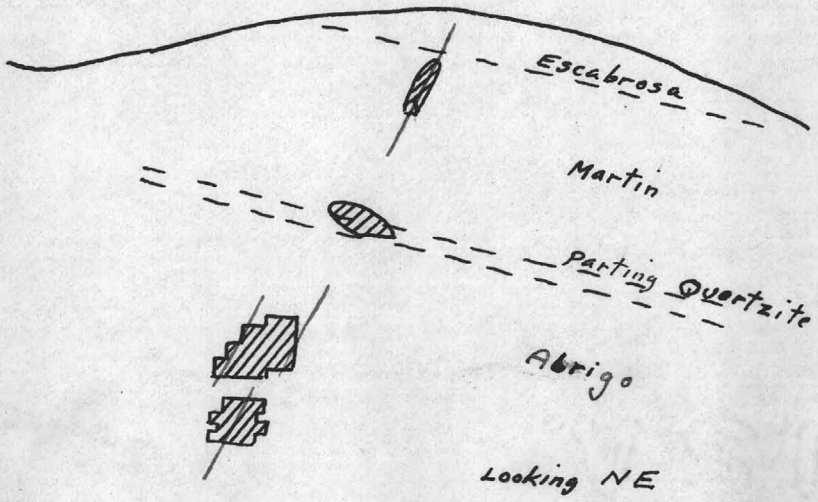
Plate IV



STEREOGRAM SHOWING SHAPE OF OREBODY
formed by Intersection of Favorable Bed
with Steep-Dipping Fracture

Reduce size slightly to fit letter size paper

reached the favorable horizon.

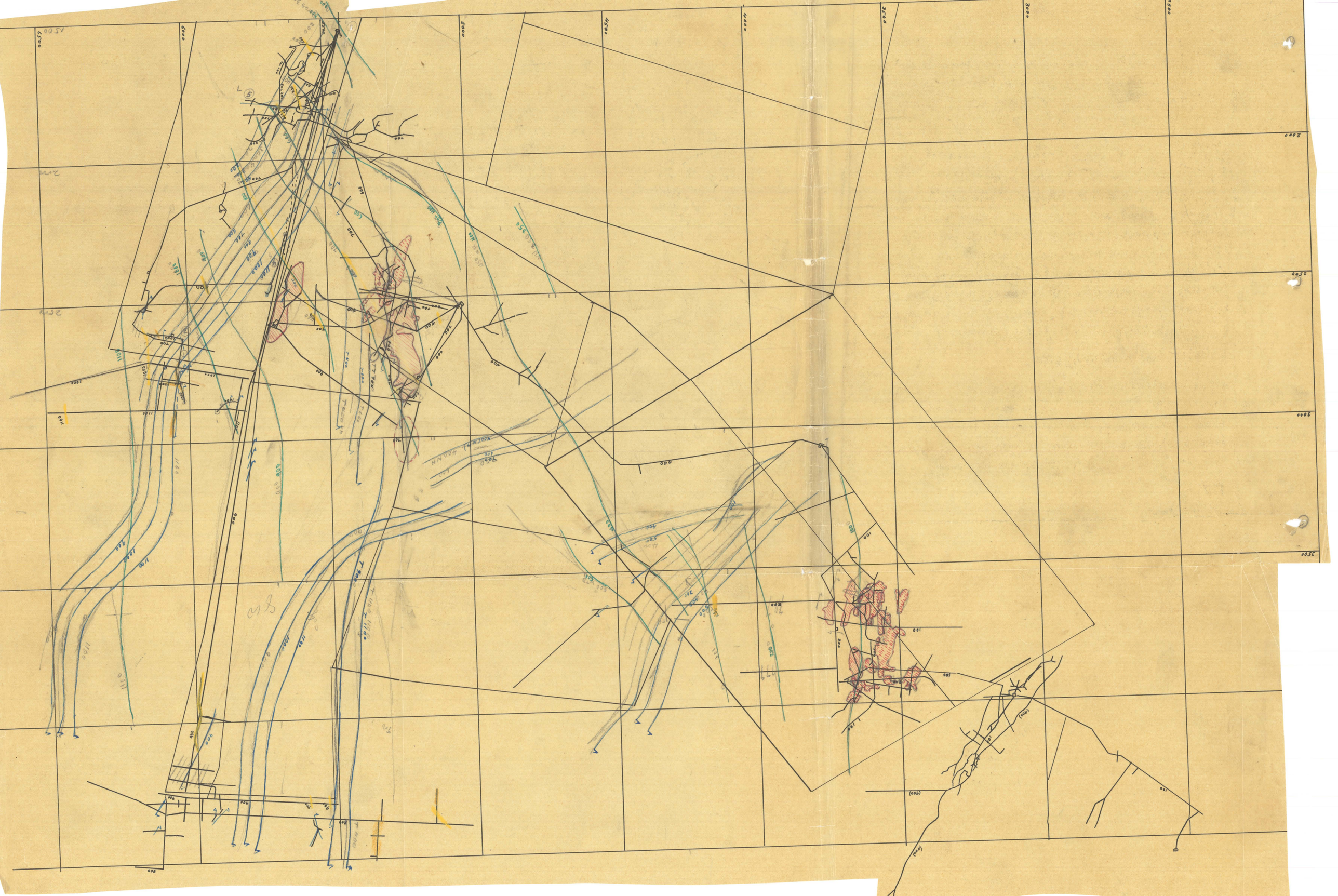


The opposite case is where the limestone beds are the sole ore locus. Here the orebody would be simply a mineralized bed.

Most of the Don Luis orebodies, as pointed out by Ransome and Trischka, lie between these two extremes; that is, they are replacements of beds along their intersections with steep-dipping northeast fractures. (Plate IV) This gives them a roughly cylindrical structure, and their major dimension is an inclined line marking the intersection of the replaced bed with the fracture. Their rake, then, is the trace of the replaced bed upon the plane of the fracture which localized the ore. The horizontal trend of the orebody will lie between the strike of the bed and that of the fracture. Since the beds strike northwest and the fractures strike northeast, the horizontal trend of the orebodies along their intersections lies between the two directions, or roughly north and south. As

the beds dip northeast and the fractures northwest, the rake of their line of intersection, and hence of the orebodies, is down toward the north.

The intersection of northeast fractures with east-west fractures may be the dominant localizer of ore. In this case, the orebody is pipe-like or chimney-like in shape, the center line of the pipe being the line of intersection of the northeast with the east-west plane of fracturing. An example of this is the ore north of the Beras shaft, between the 600 and 400 levels, where the Eastern Zone of the Cole-Nighthawk system intersects a strong east-west system connected with the White Tailed Deer fault.



CHANCES FOR FURTHER ORE

General

The possibility of finding something sizable seems to be restricted to three areas, on three different fracture zones. These areas are: 1. The Crown King zone in the Boras claim; 2., the Western zone in the Tuscarora claim and 3., the Tuscarora zone along the west side-line of the Tuscarora claim.

Crown King Zone in the Boras Claim

The Crown King Zone has not been explored in the favorable Abrigo horizon here. The C & A have opened up what appears to be a good-sized body of sulphide ore carrying 7% copper ore on their 1100 level just north of Copper Queen ground. Chances appear favorable for picking up the extension of this orebody in the northern portion of the Boras claim, or similar bodies in the same zone to the south at successively higher levels. Individual prospects in this zone are described as Nos. 1, 2, 3, 4, of the Prospect Book.

Western Zone in the Tuscarora Claim

This has made some spotty ore in the Martin and upper Abrigo at the north end of the Tuscarora claim. The zone appears to die out in the general fanning out of the Gale-Hightbawk system toward its southern end, as it was not picked up

in drift 902 on the Borax 900, unless represented by the single break now being followed by the crosscut NE from 902 drift. Prospect No.11 on the 900 is designed to pick up this zone in the favorable Abrigo horizon on that level. If this zone does give out within the Tuscarora claim, prospecting on the 1000 in the northern half of the Tuscarora claim, where the zone is still strong, would still be worth while. Prospect No.10 calls for this.

Tuscarora Zone along the West Side-Line of the Tuscarora Claim

The Tuscarora zone has produced the largest orebody of the area, the body of oxide-sulphide ore northeast and east of the Nighthawk shaft. About 800 feet remains to be prospected along this zone north of this orebody, and the most northerly working, on the 700 level, is in sulphide ore. As the beds strike nearly parallel to the Tuscarora zone here, any orebodies in the unprospected 800 may lie flat along the zone; for this reason, prospecting should be confined to the 700, 800 and 900 levels in the order named before any work is done on the zone from the 1100.

Chances for Smaller Orebodies

Southwest of a Line between the Borax and Nighthawk, and between the Nighthawk and White Tailed Deer Shafts

Practically no work has been done southwest of a line joining the Borax and Nighthawk shafts, southwest of a line between the Nighthawk and White Tailed Deer Shafts, nor between the Borax shaft and the White Tailed Deer fault. The favorable ground is limited here by the beds outcropping at the surface

a short distance southwest of the above lines, or butting against the White Tailed Deer fault. This reduces the ore chances for the area. Prospects Nos. 15 and 8 describe the work outlined here.

White Tailed Deer 400 and 500 Levels

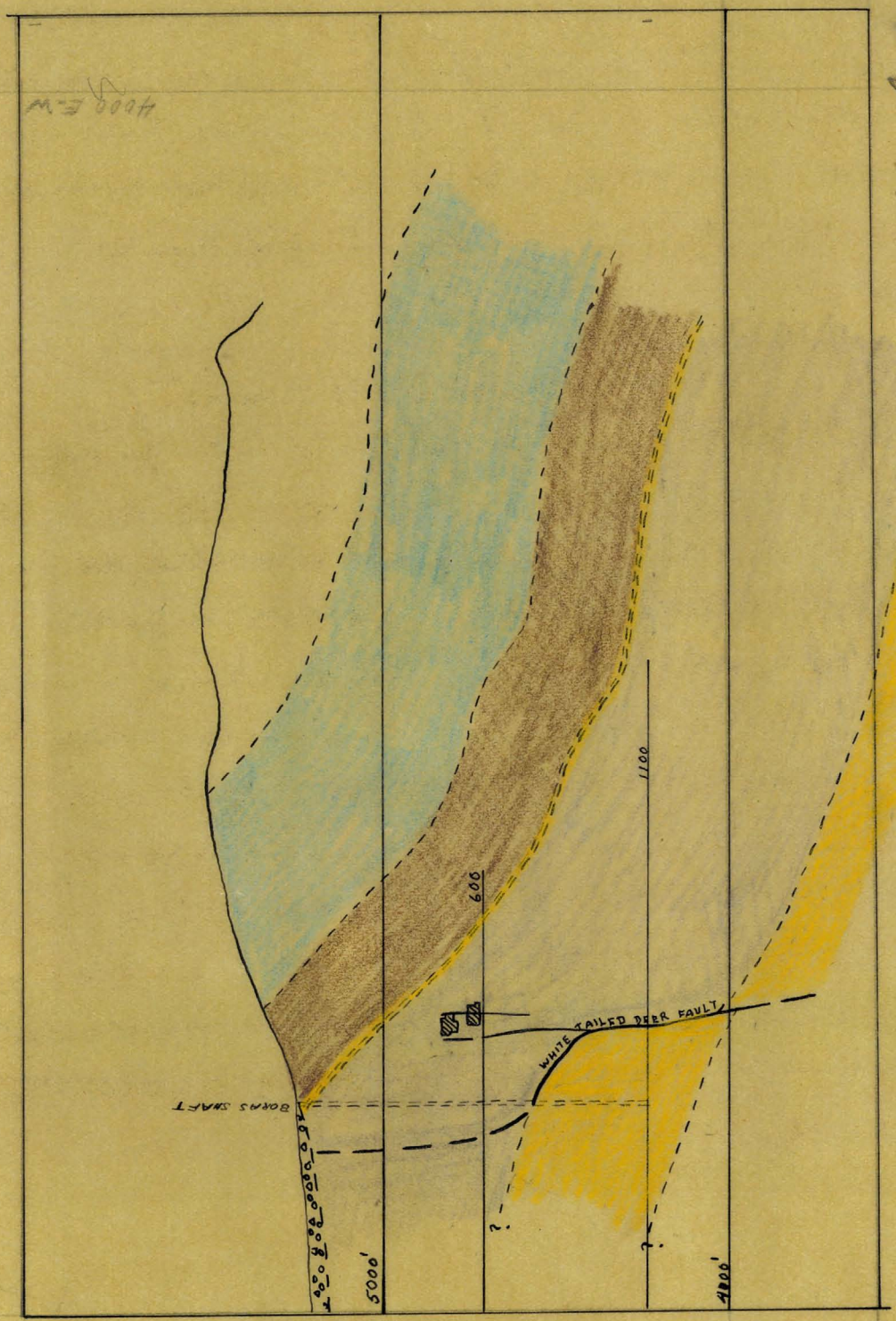
Chances look favorable for the finding of one or more isolated orebodies on or near the 400 level near the turn in the main drift. The prospect now being run north along the bed of carbonate ore may possibly show the connection of this ore with the upward extension of the ore on the 500 intermediate below; the N 60°E break associated with the 500 ore should be met in this prospect about 220 feet in from the main drift, 400 level. Another orebody, or possibly a connected one, may be under or near the silicified area in the main drift.

The sulphide ore above the 500 will doubtless develope into a fairsized orebody, and a further chance for an orebody occurs 300 feet northeast, on the 500, where a bed of good carbonate ore crosses the main drift.

New Ore Horizons

The finding of new ore-horizons would, of course, greatly increase the possible ore areas, but prospecting in the Martin or lower in the Abrigo has so far been far from encouraging. The logical places to test these horizons are their intersections with the strongest fracture zones. Prospects 6 and 15 have this in mind. Chances for ore in the

Plate VI



Vertical Section
Looking Northwest
Through the Boras Shaft
Aug 1926.

(For location of section
See Plate I and II)

Escabrosa appear poor, as the entire formation is exposed on the surface in Don Luis ground. The C & A, on the Cole 500 level, have a drift through the entire thickness of the Escabrosa, parallel and close to, the north end-line of the Tuscarora claim. They found nothing but one small bed of oxide ore about 50 feet up in the Escabrosa. The Escabrosa, then, looks even less promising than the Martin in Don Luis ground.

The Bolsa-Schist Contact

Change of formations, especially where the upper formation serves as a barrier to solutions, as at the top of the Bolsa quartzite, might conceivably make a favorable ore locus. Where the Bolsa-Schist contact can be cheaply prospected in areas favored by other ore guides, such prospecting would be in order. Few such places exist in the district, because in most places the Bolsa-Schist contact lies at considerable depth below present workings. A drill hole in the Lowell area is designed to test this contact on a proved ore-bearing fracture zone. A similar opportunity presents itself on the Boras 1100 where the contact can be tested for 300 feet across the strike of the Eastern zone, Cole-Nighthawk system, by a maximum of about 600 feet of work. See Prospect No.9.

STRIP 2. THE CENTRAL STRIP

As this strip is upthrust with respect to Strips 1 and 3, the lower formations, Bolsa quartzite and lower Abrigo, together with Final schist, form the rocks exposed at the surface. One locality, the Wade Hampton mine, shows upper Abrigo and contains limited promise for further ore.

THE WADE HAMPTON MINE

Here the Wade Hampton fault separates Bolsa quartzite from upper Abrigo. Lead and copper were mined along the fault itself, but principally along a roughly parallel fissure in the Abrigo hanging wall about 150 feet west of the main fault. The Abrigo dips south, so that the rake of the ore was down to the south. A dike of andesite ascended along the Wade Hampton fault, but left it at the 200 level and came up vertically, perhaps to the surface. (The place of the possible outcrop is covered by wash.) See Section X , Atlas. This dike, as suggested by Trischka, is probably post-ore. The ore fissure appears to have been lost in this dike where the dike was cut on the 200 level, and hope for ore here rests on the chance of discovering this fissure on the 200, southeast of the dike. See Prospect No.23. Some possibility for more ore lies in prospecting the upper Abrigo north of the shaft on the 100 level, although surface showings are poor where the limestone here is not covered by wash. See Prospect No.26.

STRIP 3. THE SOUTHERN STRIP

This strip, lying south of the Bisbee West fault, shows on the surface Escabrosa and lower Naco limestone. Except for a small area southeast of the Wade Hampton shaft, and for the Contact hill, it is covered by wash. The Contact hill, the largest exposure, shows considerable fracturing and mineralization, chiefly manganese; the area southeast of the Wade Hampton carries at least one fairly strong manganese break. The strip, therefore, is by no means hopeless. Two places of attack are indicated--the Wade Hampton mine and Contact hill. Prospects Nos. 22 and 24 are designed to feel out into this strip from the Wade Hampton. Drilling seems to be the best recourse at the Contact, since the parallel manganese fissures dip in a manner that permits effective testing by drilling. See Prospects Nos. 26 and 27. Strip 3 probably carries a large block of limestone beneath the wash and the exposed areas carry showings too promising to be ignored. Because it is separated from the main downfaulted block of the district by Strip 2, the upthrust block of Bolsa quartzite and schist, the risk is much greater than within the downfaulted block. The Copper Queen has the strip fully covered by claims close to the Bisbee West fault, where the best showings exist except for one re-entrant, the small group southeast of the Happy Home and Court claims. Before exploration is seriously undertaken here, this group ought to be acquired or optioned.

#1

SUGGESTIONS FOR OPERATION.

Considering the smallness of the probable areas of further ore, and the history of the Cole mine north of the Don Luis area, where a great deal of development produced only moderately large, widely scattered orebodies, the Don Luis area does not give promise of developing ore in sufficient quantity to warrant its operation by the company. The formation of two strong leasing companies similar to the present Nighthawk company, for the Boras and White Tailed Deer mines respectively, and the turning over of the entire mines to these three companies, seems the best solution. Ample capital is essential for these companies, as some bold prospecting is called for. It might be necessary for the Copper Queen to assume part of the risk of development by running some of the larger, more general prospects on contract.. Also, some company work may be necessary in order to render the less promising mines, such as the Wade Hampton, attractive to leasers. The scheme of development should be under Copper Queen direction, particularly as regards preventing the leasers from dissipationg their capital in useless prospects.

Further shaft sinking appears unnecessary in the Don Luis area unless drilling beneath the Contact showings proves encouraging. The White Tailed Deer 500 level is below the favorable Abrigo horizon except in the No.4 claim, and any ore found at the favorable horizon in this claim, below the 500, should be thoroughly explored through a winze before driving a new level from the shaft. Any ore found below the 700 level of the Nighthawk can be worked either from the Boras shaft or the Nighthawk winze. The Boras shaft need not be deepened, as the entire 1100 level lies below the favorable Abrigo horizon.

atlas?
mining maps?
list of plates & tables
in a large way under the
work?

Plate I

WHITE TAILED DEER FRACTURE SYSTEM

BARREN AREA

TUSCARORA ZONE

COLE-NIGHTHAWK FRACTURE SYSTEM

WESTERN ZONE

EASTERN ZONE

CROWN KING ZONE

BRANCH OF WHITE TAILED DEER SYSTEM

Eastern Border White Tailed Deer System

Western Border Cole-Nighthawk System

Eastern Border Cole-Nighthawk System

Favorable Horizon

White Tailed Deer

Nighthawk

Boras

FAULT

Ore abnormally low in Abrigo

Ore slightly than normal in Abrigo

200

500

700

900

1000

600

Composite map showing Fracture Zones Favorable Abrigo Horizon and Ore Bodies in the Show Fig area Bisbee Ariz By E.H.W. Aug 1926 Scale 1" = 200'

1" = 200'

Title Scale Plan plate

TUSCARORA ZONE

5500E

6000E

EASTERN ZONE, COLE-NIGHTHAWK FRACTURE SYSTEM

POSSIBLE PROSPECT

70°

14 B

80' above 600' Lev.

67°

56°

60°

35°

185°

NIGHTHAWK SHAFT

PROSPECT: PROPOSED RAISE

60°

60°

2500N

Parting Quartzite

170°

FAVORABLE HORIZON

SECTION A-A'

10°

50°

5 B

PROSPECT

600' LEVEL

CROWN KING ZONE

2000N

15°

70°

65°

STOPE

75°

E-W FAULT

80°

POSSIBLE PROSPECT

85°

10°

45°

SECTION B-B'

NIGHTHAWK-BORAS 600' LEVEL
1" = 100'

BORAS SHAFT

2500N

450 NIGHTHAWK

TUSCARORA ZONE

14 B

STOPE

600

700

SECTION A-A'
1" = 100'

2000N

450 BORAS

600

5 B

700

STOPE
Cu, Zn Sulphide

800

SECTION B-B'
1" = 100'