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November 20, 1984

You may not have received a copy of the enclosed White Hills field trip notes during the field trip. In case you didn't I am sending along a copy now.

M.R. Wolfhard

M.R. Wolfhard

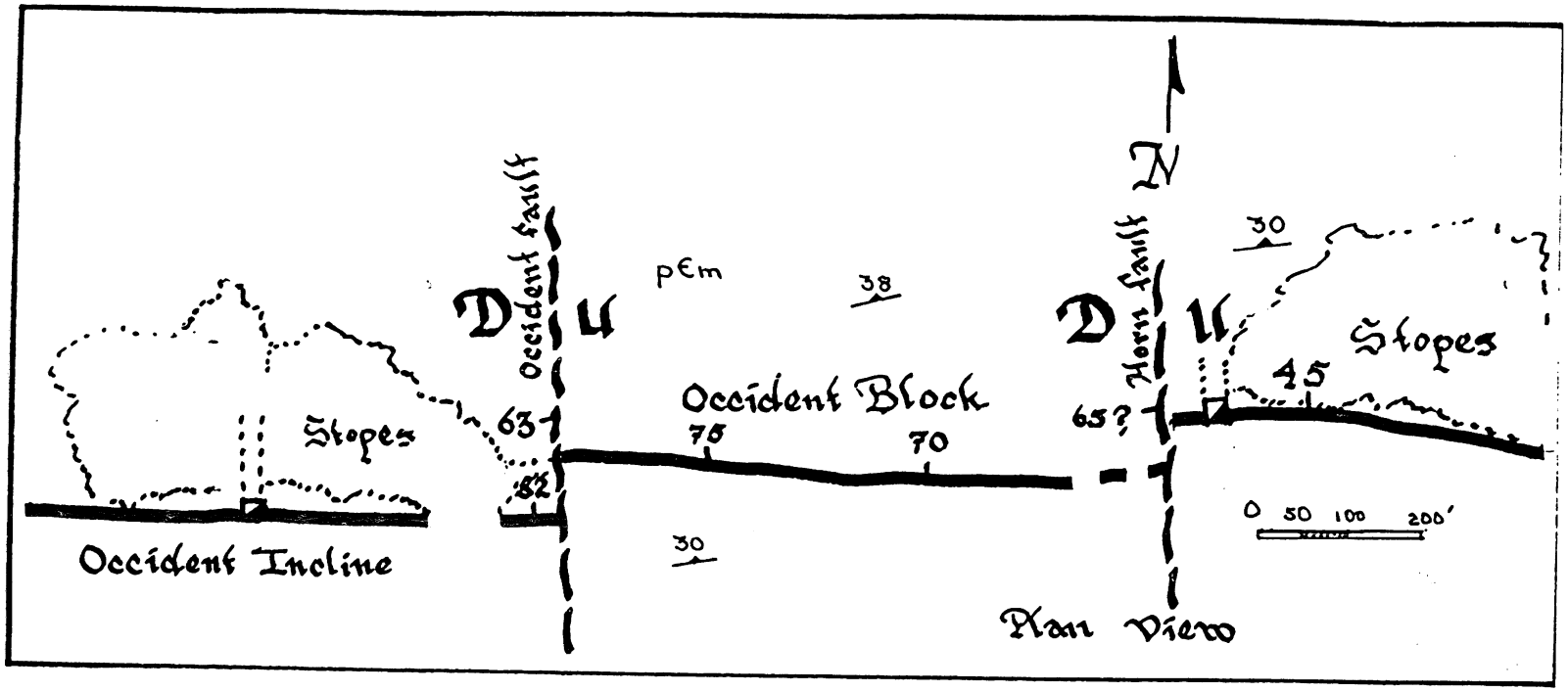
The White Hills Mines
Indian Secret Mining District
Mohave County, Arizona

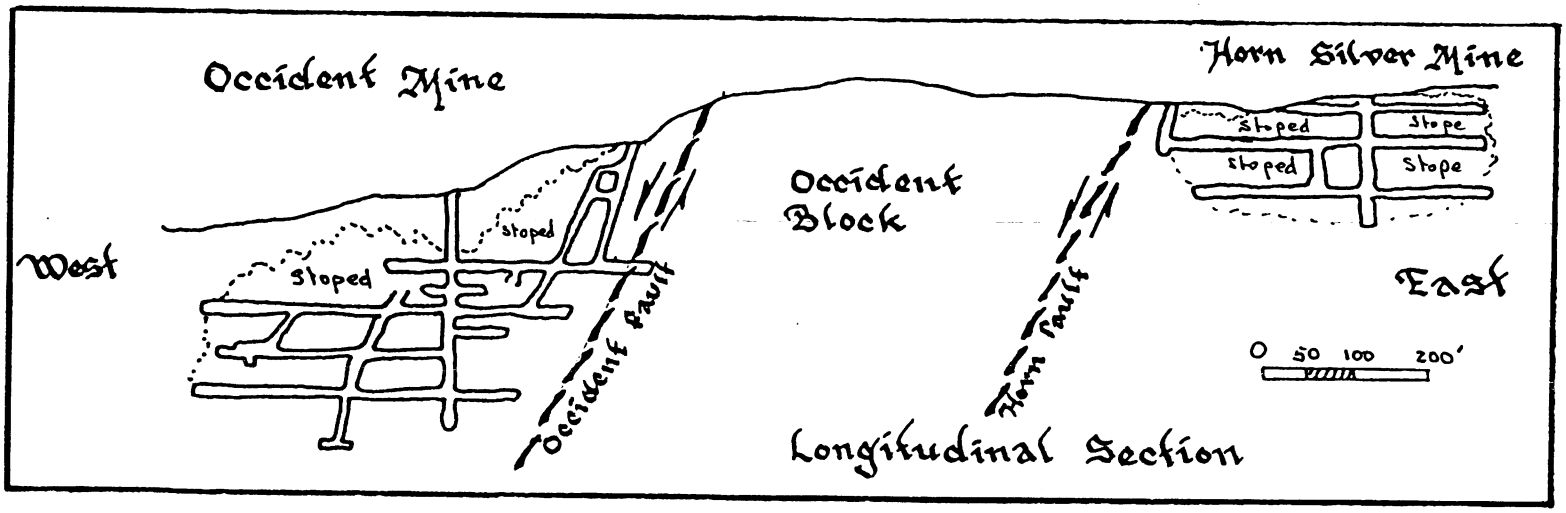
HISTORY

The Hualapai and Paiute indians had long used the iron and manganese oxides associated with the White Hills veins as paints and to adorn their faces. The district was "discovered" in 1892 when an indian named Hualapai Jeff showed some rich silver ore from the tribe's secret place to Henry Shaffer, who was mining and prospecting in the Gold Basin area. Shaffer staked the ground, called it Shaffer's Treasure, and began mining. Some of his ore ran 1,000 oz. of silver per ton, and when word of the rich find leaked out, a mining boom ensued. The White Hills Mining Company was formed by R.T. Root and D.H. Moffat, two Denver based mining men. They sold the property in 1895 to an English company that erected a 40-stamp mill, built roads, installed an elaborate water supply system (the hand-built reservoir south of Shaffer's Treasure is still extant) that included 7 miles of 7 inch wooden pipe line, and built an electric light system. The district produced steadily for a 10 to 12 year period. It was worked by lease miners who would follow the rich ore-shoots until they either pinched out or were faulted off (as at the Occident/Horn Silver area), then would go to another vein with ore in sight and work there. A thorough and systematic exploration program has never been implemented on the property. In 1909 a disastrous flood practically wiped out the town of 1,000 to 2,000 inhabitants, and the camp never recovered from this catastrophe.

GEOLOGY

The host rocks are migmatite gneisses and granites, with local amphibolite pods. The schistosity strikes app. N 35°E with a gentle (15° to 20°) dip to the northwest. To the east, these rocks appear to be overlain by a grey, vesicular hornblende andesite or latite, which is capped by a black vesicular olivine basalt flow. The migmatites are cut by numerous veins which strike approximately WNW and dip to the north at 25° to 75°. These veins vary from one to three feet in width and consist of iron- and manganese-stained quartz and clay gouge (shear zones). The ore is cerargyrite (AgCl), occuring as vug-fillings in the quart veins and as fracture fill in shear zones. Assays in excess of 1,000 oz. per ton have been reported, but the average grade was probably 25 oz. or less. Most of the dumps have been reworked (they were much





Occident Mine & Horn Silver Mine area. The block of ground between these producers has not been adequately tested.

After Schrader, 1908, p. 135

more extensive), and are said to have averaged 6 to 7 oz.

There are local values in gold on the property. The EMMA veins were said to be particularly auriferous, and we have assays from the Hulda/Review area of 0.68 oz/ton over narrow intervals. Total production from the district is probably 6 to 8 million ounces of silver and 5,000 oz (or less) of gold.

STRUCTURE

The veins are offset by high angle post mineral normal faults trending N-S and N65°W. There are two vein sets: an (older?) low angle (20° to 30°) set that appears to have been truncated (at least in the GAR area) by a higher angle (60° to 75°) set. Good production has been realized from both vein types, although the low angle veins appear to have carried richer ore. There are also numerous low angle bedding plane faults that are difficult to delineate except where they cut high angle structures (Wootsie Tootsie area).

DISCUSSION

The following points are significant:

1) Oxidation and enrichment occurs throughout the veins in the district. The ore is always cerargyrite (AgCl), and no sulphides (except for very minor pyrite in the Review area) have been found. The Occident and Norma mines have been developed in excess of 500 feet deep, always in oxide ore.

2) Many of the veins appear to be listric structures: ie, they flatten with depth. A particularly good example of this can be seen at the Africa shaft.

3) Many of the veins are shear zones with minor listric type structures displayed within the shears.

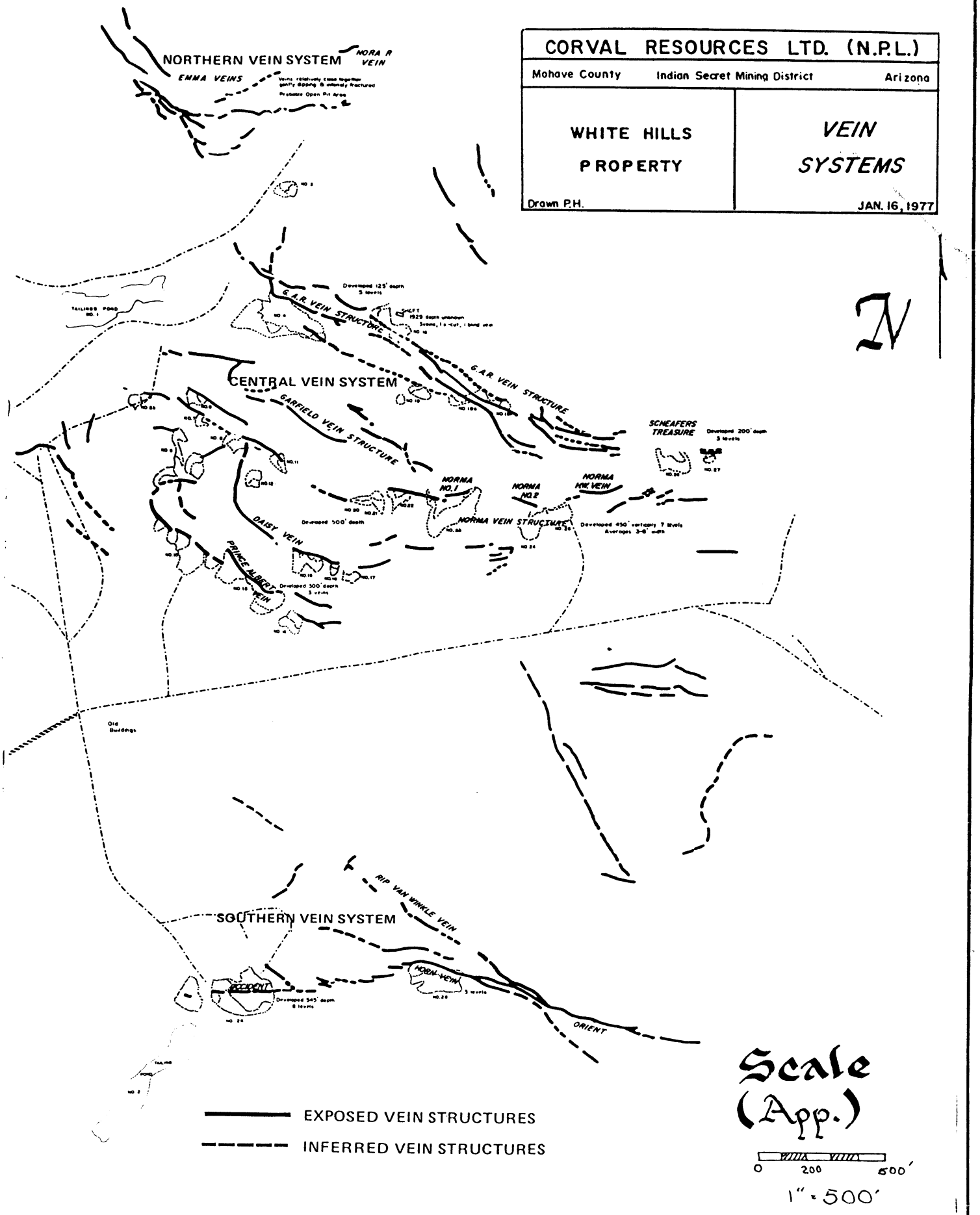
4) The White Hills do not appear to be bounded on the west by a normal basin and range fault. Depth to the basement in the center of the valley over a mile west of the camp is probably 800 ft. or less.

5) There are reports that a deep hole three to four miles west of the White Hills passed through three or more parallel horizontal structures.

6) There are no intrusive rocks nearby to credit as a source of mineralization, although Gulf is said to have drilled a small porphyry copper deposit 7 or 8 miles west of the area.

We see then, that there are many characteristics present that suggest that this is an extensional terrane. Accordingly, the following scenario may explain the mineralization at White Hills:

1) Upper plate movement over the lower plate boudin at White Hills resulted in the formation of high angle fractures in the lower plate subdetachment zone.


CORVAL RESOURCES LTD. (N.P.L.)
Mohave County
Indian Secret Mining District
Arizona
WHITE HILLS PROPERTY
VEIN SYSTEMS
Drawn P.H.
JAN. 16, 1977
NORTHERN VEIN SYSTEM
NORA R VEIN
EMMA VEINS
CENTRAL VEIN SYSTEM
G.A.R. VEIN STRUCTURE
GARFIELD VEIN STRUCTURE
SCHEAFERS TREASURE
NORMA NO.1
NORMA NO.2
NORMA HK VEIN
NORMA VEIN STRUCTURE
DAISY VEIN
PRINCE ALBERT VEIN
SOUTHERN VEIN SYSTEM
RIP VAN WINKLE VEIN
ORIENT
EXPOSED VEIN STRUCTURES
INFERRED VEIN STRUCTURES
Scale (App.)
0
200
500'
1" = 500'

2) These structures flattened with continued movement of the upper plate and were cut by subsequent high angle fractures.

3) Silver, carried as a chloride complex by meteoric water circulating through the upper plate (and derived from an admittedly nebulons source), was deposited in both vein sets.

4) Because the low angle sets are older they have been subjected to greater enrichment.

5) The upper plate is eroded and the volcanic rocks extruded.

After that, its only a matter of time before Hualapai Jeff sells the tribal secrets to the white man and the hunt is on.

Granted, there may be problems with extensional direction, Ag/Au ratios, MAGMA CHEMistry and so forth. Those who wish to express their opinions concerning these matters should feel free to contact me.

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