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M E M O R A N D U M

TO: Ben F. Dickerson, III, and Carole A. O'Brien

FROM: R.W. Hodder and D.C. White

DATE: November 15, 1986

SUBJECT: Review of underground exposures, compilations, and plans at U.V.X., as followup to our memo of May 31, 1986.

Introduction: The purpose of this memo is to consolidate observations and interpretations since our May 31, 1986 memo, and to plan continued action consistent with the objects of assessing the Gold Stope and Verde areas relative to postulated tonnage and grade (tables 1 and 2, attached).

Since May, the activity which bears on the objectives is as follows:

1) The 901-W crosscut has been reopened through the hanging wall cherts of the Gold Stope area, the stope itself, and now about 120 feet into the altered footwall diorite.

2) Continued compilation of old records has established a three-fold classification of ores produced from the U.V.X., 1915 - 1938.

3) The mine model is sufficiently complete to aid geologic understanding and exploration planning.

4) Petrographic studies by optical microscopy and X-Ray diffraction have been completed.

5) Recommendations of May 31, 1986 have been reviewed in light of physical progress over the past 5 months and recast to optimize time and expense in sampling the Verde area.

6) Paul Handverger's drill target at depth across the Verde Fault has again been considered with regard to its technical feasibility.

Observations on each of these activities follows:

1) The 901-W Crosscut

Photographs, metal profiles, and lithologic observations have already been forwarded (D.C. White, Sept. 15, 1986 memo). We reinspected the cherts hanging wall to the Gold Stope and have these additional observations:

a) The environment was one of extremely high energy as noted by White. The apparent stratigraphy exhibits just as many sedimentary features as it does volcanic. It is clearly a volcaniclastic sequence revealing pulses of volcanic activity and cycles of erosion and deposition, all on steep, submarine slopes.

b) The unmined hanging wall exhibits double grading indicating mass flowage which probably broke up chert beds in unstable areas. This is typical of submarine slumps and is essentially the massive, coarse-grained base (A) the somewhat sorted and stratified (B) and fine laminated (E) portions of a Bauma-like turbidite sequence.

c) The interpretation is that much of the brecciation is part of the development of the sequence, not a later superimposed hard rock tectonism. Certain breccias, however, reveal the jigsaw puzzle type brecciation which we still feel is hydrothermal fracturing. Likely, hydrothermal activity, both quiescent and explosive, and mass flowage erosion, were concurrent. While previous emphasis was on volcanic ore controls, the stratigraphic controls now must be given at least equal consideration.

d) Extrapolating the hanging wall observations back to the gob-filled area, combined with the drill core from DDH-901-1,2, it seems that the Gold Stope must have been a very coarse clastic chert breccia with relatively few fine grained beds.

e) The nature of the Gold Stope chert breccias, including the number of double-graded cycles, bears a telling similarity to that of the Verde area as revealed in DDH-806-1 core. This is encouraging.

f) The hanging wall fringe of the Gold Stope as exposed in the 901-W X-cut should be the starting point for studies of mineability in this area and such studies need to be commenced soon.

forget

g) Since the Gold Stope area is known to be similar to the Verde area in grade, whole rock chemistry, petrology, and stratigraphy, consideration may be given to taking a bulk sample from the Gold Stope area rather than the Verde area.

Forget! This type of bulk sample

2) Tri-modal ore classification

The findings from historical production records reveal a concise tri-modal breakdown of ore types by silica percentage, each with a distinctive copper and gold content (D.C. White, Sept. 26, 1986 memo). This clarifies the previous distinction between copper sulfide ores and gold-only ores and reveals the importance of the intermediate copper-gold "siliceous ore".

3) U.V.X. Mine model

White has constructed a three-dimensional model, 1" = 40', of the mine workings from the 1300 sill to the 600 sill. It encompasses all the known areas of chert occurrences and hence all areas of potential gold exploration. It is color-coded by rock type, and stopes are coded by ore type. This, in combination with the ore type classification scheme, and thoughts from Paul A. Lindberg on the mode of diorite intrusion,

allow new speculations on metal distribution:

a) The 1204 complex of ore bodies is a major siliceous ore system, perhaps always independent from the main ore body area. The Verde target area lies on the north flank of this system in a favorable stratigraphic position.

b) The model shows the limits of exploration potential down-stratigraphy into siliceous ore stopes, up-stratigraphy into diorite, and along strike and down-dip into diorite. The up-dip cutoff is the Tertiary erosion surface just above the 700 level. The potential of the Verde area in terms of tons and grade remain unchanged from our previous estimates.

c) The diorite may have wedged off the Gold Stope gold-only ore from an original setting contiguous with the Verde area. Alternatively, the Verde area could have been overlain by the diorite (if it is more extrusive than intrusive) through which fluids continued to rise to deposit the gold-only cherts of the Gold Stope.

4) Petrographic studies

Optical study of thin and polished sections has revealed that native gold and electrum occur within quartz and hematite grains and at boundaries of these grains in areas of silicification after carbonate. X-Ray diffraction study of the fine-grained tops of the chert breccia cycles indicates no clays. Rather, they are thin laminated, very fine grained quartz and iron oxides (mainly hematite and goethite/limonite).

5) Exploration of the Verde area

In light of the time and cost of the 901-W X-cut it is considered prudent to drill test as much of the target area as soon as possible (e.g., before tunnelling all the way to it for bulk sampling). If the X-cut can reach anywhere in the vicinity of the Morgan winze, a sizeable drill station should be established there. It should have adequate tail room for horizontal to steep up-holes to the south, southwest and west. Three fences of holes totalling approximately 3,000 feet (nine holes of a little over 300 feet average length) would serve to guide any detailed evaluation drilling and to optimize positioning of a raise. The duration of such drilling, at 150 feet per week, would be about 20 weeks. Drilling proposals are reviewed by White (June 5, 1986 memo) and more detailed cross sections in the actual planes of the drill fences will be forthcoming.

In the event that traversing the diorite on the 950 level becomes prohibitive, an alternative equally desireable from a drilling standpoint is to utilize the 806 X-cut on the 800 level. This would have to be reopened at least 400 feet west, beyond the existing 806-1 drill station,

via tunnels all negotiable on foot now. Partial caves would have to be cleared. New drift would then head south to the target cherts, a distance equivalent to what is now planned to reach the Morgan Winze area on the 950 level.

The value in adequately testing the Verde area has to be kept in mind. From table 2 (May 31, 1986 memo, and reattached here), it is clear that the Verde area harbors the vast majority of the potentially economic tons of gold-only ore anywhere on the property. It is also the most likely area to have higher grade cores of mineralization equivalent to those known mined from the Gold Stope.

6) Paul Handverger's drill hole

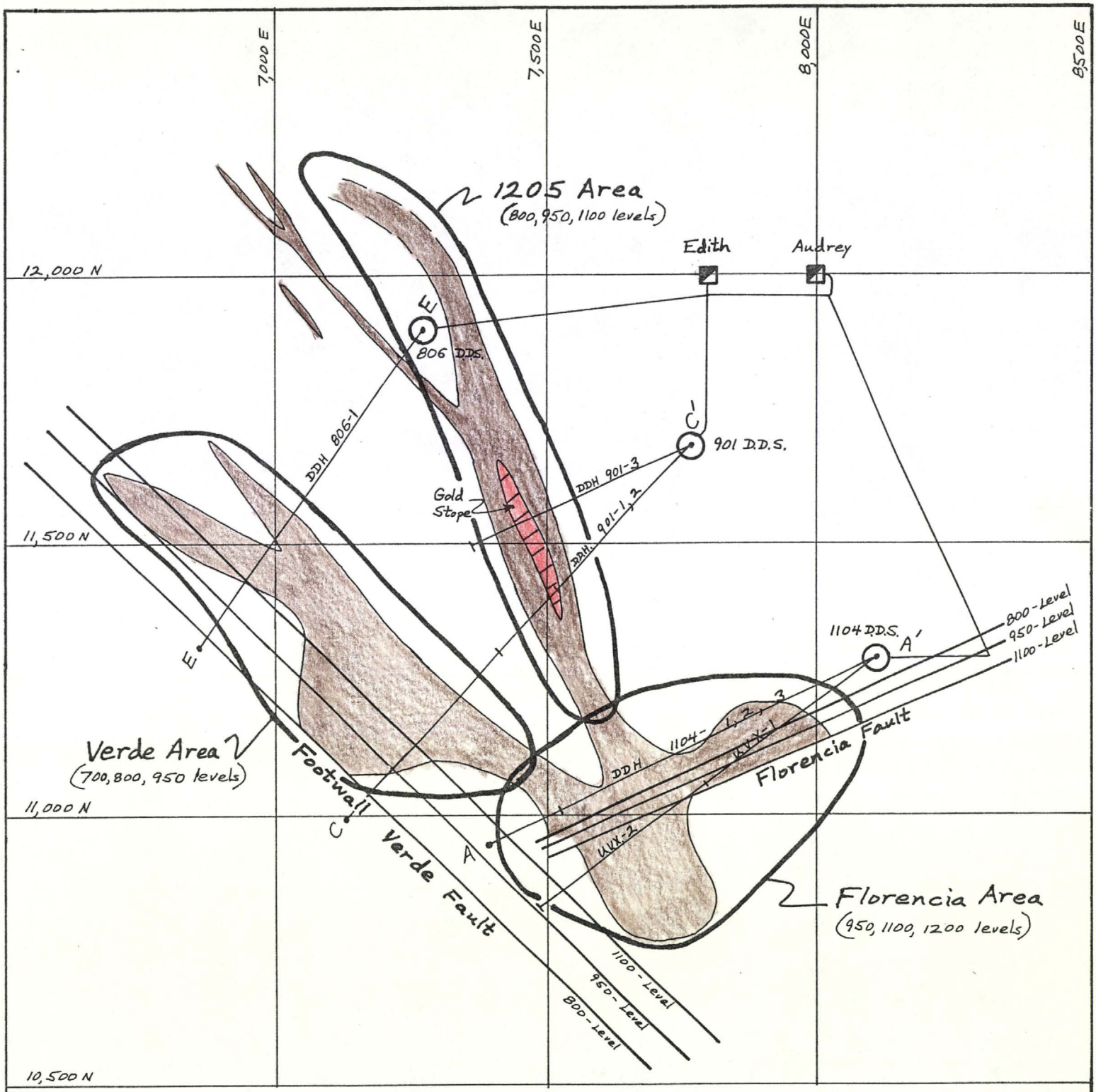
The technical feasiblity of drilling Paul Handverger's deep (1700 level) footwall, base metal target has again been considered.

The situation is:

a) The specified target is not drillable from any presently accessible workings.

b) The only possible drill stations are the 1125 drift on the 1100 level and, as shown by the mine model and X-section PH-3 (White, Sept. 20, 1985) the 901-S on the 950 level. The latter is the far easier drift to clean up (station could be about 100 to 200 feet south of present 901 D.D.S.) but requires a slightly longer hole (about 1,000 feet compared to 750 feet from the 1125 drift).

c) The likelihood of successfully reaching Handverger's target is low. There are quite a few workings from the 1300 sill through the 1500 sill, including the 1407 and 1507 stopes, that may be intercepted. That interval includes the Verde fault as well. Blocky, cave-prone ground would be the rule. Casing and size reduction at each void or cave would be necessary. The chances of encountering more hazards than available casing sizes is great!



U.V.X. GOLD PROJECT

Sketch map showing:
chert bodies/target areas, key cross sections, diamond drill stations.

N

1" = 250'

Figure 1

D.C. White & R.W. Hodder - Feb. 1986

U.V.X. DRILLHOLE SUMMARY

D.D.H	Collar location (UVX grid) N	E	Elev.	Orientation at collar Bearing	Inclination	E.O.H. Inclination	Length of hole	Chert Intercepts	Avg. core recovery in chert (%)	Remarks
UVX-1				S52°W	+14°	Not surveyed	393	150-274	80	P.D. hole; aborted in Florencia fault.
UVX-2					+6°		686	176-321 482-640	80 80	P.D. hole
1104-1	11,310	8,140	4,024		+5°	+4°	567	192-331 362-413	90 100	"Florencia area"
1104-2				S63°W	+15°	+21°	730	209-350 521-642 712-E.O.H.	90 80 30	
1104-3					-11°	-15°	440	207-335 420-422	80 40	
901-1				S42°W	+11°	+8°	358	329-E.O.H.	80	Aborted with drilling problems in HW up-dip from Gold Stope
901-2	11,690	7,750	4,180	S40°W	-20°	Not surveyed	421	244-249	30	Intercepted up-dip pinch-out of "1205-vein" cherts
901-3				S65°W	+18°	+7°	367	272-326	70	Up-dip from Gold Stope; clipped fractured back of 903 level drift
806-1	11,890	7,335	4,335	S33.5°W	-4°	-12°	633	84-108 481-615	100 60	Verde area; clipped 903-N drift

NOTES: Two P.D. holes drilled by Connors; commenced UVX-1 Dec. 18, 1982, completed UVX-2 June 9, 1983. Five DMEA holes drilled with pneumatic Longyear 34; two DMEA holes, 901-1 & 2, drilled with electric-hydraulic LM-37. DMEA drilling done between Aug. 12, 1985 (collaring of 1104-1) and Jan. 29, 1986 (completion of 806-1). Each hole commenced HQ or NQ and reduced core size as needed to case off bad ground or allow power for drilling chert in long holes. Core recovery averaged 90%; usually over 90% in HW stratigraphy; about 80% in FW rocks; chert recovery as noted in chart.

Compiled by Don White
March, 1986

TABLE 1

U.V.X. GOLD PROJECT - DRILLING/ASSAY SUMMARY

Area/DDH	Thickness (ft)	Grade (oz/t) Au	Ag	Length/Height (ft)	Tons(K)[1]	Contained oz. Au(K)	REMARKS
Florencia area							
UVX-1	20	.20	1.5				Phelps Dodge Corp holes from 1104 D.D.S; intercepts closer to Florencia fault and main massive sulfide body than DMEA drilling
UVX-2	35	.18	.4				
1104-1	15	.11	.5				
1104-2	14	.14	.4				Other mineralization deep in hole relates to Verde area
1104-3	19	.12	.3				
TOTAL	21	.16	.6	150/200	52	8	Not counting areas south of Florencia fault which are mineralized but likely caved into main orebody's void. Could be reached by cleanup of 200' old drifts.
1205/Gold stope area							
901-1	6	.15	.6				Aborted in hanging wall, drilling difficulties
901-2	-	-	-				No significant gold; drilled beneath host lithology
901-3	7	.18	3.1				Possibly lower grade than reality because of poor core recovery (20%) in 10' over back of 903 sublevel drift.
Compilation from old data	20	.30	1.5	Irregular	20	6	Could be reached by cleanup of 200' old drifts.
Verde area							
806-1	64	.11	1.4	500/200	530	58	Within which are higher grade zones such as 13 ft. averaging 0.24 oz/t Au, 2.2 oz/t Ag.
U.V.X. TOTAL[2]	-	.12	1.3	---	588	70	Plus 750,000 contained ounces Ag.

(1) Tonnage factor = 12 cu. ft. per ton

(2) All three areas weighted by tons; based upon two P.D. drill holes, seven DMEA drill holes, old data in proximity to the gold stope, and estimates of deposit dimensions based upon compilation of old mine geology data. Grade could be increased by a factor of two if only higher grade intercepts ($\geq$ 0.2 oz/t Au) are used but tonnage would be cut by at least half.

TABLE 2

M E M O

TO: Ben F. Dickerson, III, Carole A. O'Brien

FROM: R.W. Hodder and D.C. White

DATE: May 31, 1986

SUBJECT: Summary of drilling from underground at UVX and some thoughts on further work

INTRODUCTION

Nine holes have been drilled from underground at the UVX, 2 by Phelps Dodge and 7 by DMEA, in an evaluation of gold potential (Table 1). Results from the drilling are generally comparable to the forecast made by compilation of assays on mine plans (Table 2) for 3 areas in the mine, the Florencia area, the 1205/gold stope area, and the Verda area and aggregate a possible 500,000 tons of 0.12 oz Au/ton. This is being considered as a possible auriferous silica flux rock and there are plans underway to take a large sample on the 950 level in the Verde area.

The purpose of this memo is to raise points relevant to the proposed sampling in the Verde area, to design this work for the greatest accumulation of information and to sharpen our definition of the target.

CONSIDERATION IN PLANNING

1, The last drill hole of the current program, DDH 806-1, encountered 64 feet of 0.11 oz Au/ton and 1.4 oz Ag/ton in a brecciated chert between the Verde fault and the diorite sill. This is the widest intercept in the least disturbed area traversed by any of the 9 drill holes and it bears out the estimates from the compilation of old mine plans. This 64 foot interval contains 13 feet of 0.24 oz Au/ton plus 2.2 oz Ag/ton which is also a direct confirmation of the old mine plans.

Hence, DDH 806-1 raises the possiblity of both a larger, lower grade target, and a smaller higher grade target. This is comparable to the Gold Stope, a comparison heightened by noting that the higher grade intercept in DDH 806-1 is in the hanging wall of the chert, above and peripheral to massive base metal sulphide pods, much like the position of the Gold Stope (level plans 800, 903, 950). We, therefore, recommend doing some additional work in conjunction with bulk sampling on the 950 level in order to check out the higher grade target as well as the lower grade larger tonnage.

of course!

2, Enroute westward on the 950 level we recommend a comprehensive sampling of the chert in the Gold Stope area and making access to the Gold Stope along 905-S if at all possible. We still have limited information on the Gold Stope area and should not miss this opportunity to map and sample there.

depends on conditions

3, The large sample at the Verde area should be taken by joining 901-W to 902-W, and by raising from 902-W to 903-N. This would give lateral and vertical dimensions to the sample. It would also give access, hopefully, to the lateral drives along the chert in the 902-W and 903-N which would allow evaluation of both low grade and higher grade targets through direct sampling and short drill holes.

4, Concurrent with this sampling we should refine our economic target so that we know that is needed in tonnage and grade for both the larger tonnage flux ore and the smaller tonnage gold ore. We know how well the drilling has checked the compilations of old mine data. Hence, we have a reasonable idea of how well a bulk sample will compare to both old records and recent drilling. Are the indicated tonnages and grades marketable?

5, The geologic target can now be advanced with a petrographic study of core from DDH 806-1, looking specifically for gold, associated minerals, alteration, and any other aspects useful in defining the nature of this gold occurrence. At present we have not seen the gold and do not know how it occurs. This work can be done as a specific project by a graduate student at the University of Western Ontario at a cost of less than $1,000.

U.V.X. DRILLHOLE SUMMARY

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TABLE 2

M E M O

TO: Ben F. Dickerson, III, and Carole A. O'Brien; cc R.W. Hodder

FROM: Don White

DATE: September 15, 1986

SUBJECT: UVX Gold Stope exposures in 901-W crosscut; rock types, assays, and photographs.

We have now reached the diorite footwall to the Gold Stope via the 901-W X-cut through the 905-1 stope. The plans we found in the U.V.X. vault have been reasonably accurate as far as location of timbering and extent of stoping (figure 1). A key failing of the old maps, however, was that they did not indicate that the 901-W X-cut was apparently never made continuous at a point just E of the Gold Stope. Our best guess now, after completing that linkage, is that they had an elevation matchup problem for tunnels driven from east and west and that they chose not to correct it (just like they did for the 1101 - 1102 drift mismatch on the 1100 level). Instead, they must have used the 925 drift to enter the Gold Stope on the 950 level and to tram ore to the "silica chute."

The Gold Stope, as exposed in the 901-W X-cut, is 40 feet or seven sets thick. It was completely backfilled with gob derived from the diorite footwall and from development waste higher in the stope (X-cuts and drifts on intermediate levels). The gob is very heterogeneous from set to set (as seen in figure 4). Both diorite gob and clay-rich development waste are virtually barren ($\leq$ 0.02 oz/t Au).

The exposures of chert in the hanging wall of the Gold Stope are terrific for exhibiting the lithology and structure of the hydrothermal breccias, siliceous sinters, and tuffy, argillic sediments that alternately emanated from the Gold Stope vent system. Soft-sediment deformation in the form of slumps and buried clasts are clearly displayed. Graded bedding in chert breccias shows that eruptive activity took place on the ocean floor. Clast-to-matrix ratios tell much about the intensity of eruptive activity and rate of vent-slope erosion.

Matrix and clast composition clearly distinguishable by color seem to be fair indicators of gold grade. Yellow and red (iron oxide facies) chert breccia of heterogeneous clast types seems to be a sure carrier as evidenced in the crosscut and by our drilling in the Florencia, Gold Stope and Verde areas. Another sure grade indicator is the percentage clay interbedded with the chert breccia. High clay zones are poor in gold. Clay zones are up to three feet thick between chert breccias. Clay zones are true interbeds as oppossed to tectonic gouge. They invariably have gradational lower contacts and sharp upper contacts. This is compatible with their representing the waning phase of otherwise explosive, gaseous, precious-metal-rich episodes. During such interludes tuffs are spread over the vent slopes and reworked until the next explosive eruption yields another sharp change to chert breccia.

The limited exposure of diorite in the footwall supports another theory I have. That is that the diorite was not a pluton at all but rather a fairly

massive, homogeneous flow of andesitic composition. It was already there when the Gold Stope cherts were deposited. The hydrothermal fluids associated with chert deposition heavily altered the diorite footwall as well.

With this order of events one can better understand an otherwise shocking announcement I found in the 1928 extraction summary for the mine. It lists the 905-N drift area (right where we are now) as producing "diorite ore." I explain that as hydrothermally impregnated gold in diorite immediately footwall to the Gold Stope cherts. Indeed the 905-N drift from which it is reported, runs right along that contact. Grades for the diorite we newly exposed in the 901-W X-cut at the 905-N drift intersection are only 0.01 to 0.03 oz/t Au but we ought to be aware that "diorite ore" may exist elsewhere.

Very interesting

I have compiled a schematic section along the 901-W X-cut (figure 2) to show sample locations, precious-metal profiles, and the location of the subsequent photos (figures 3 through 12). The geochem profile and captioned photos need no further explanation.

DW:sk

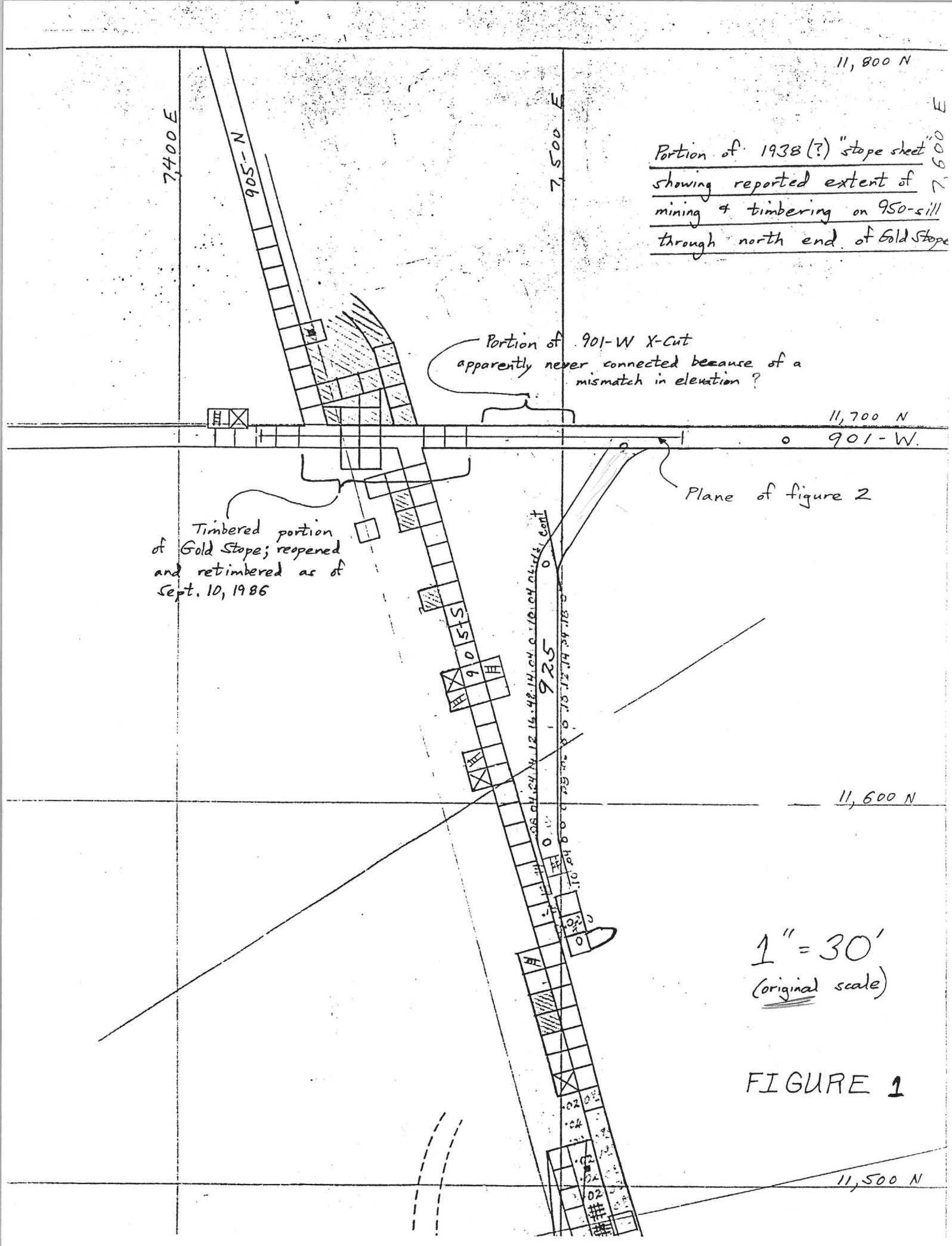
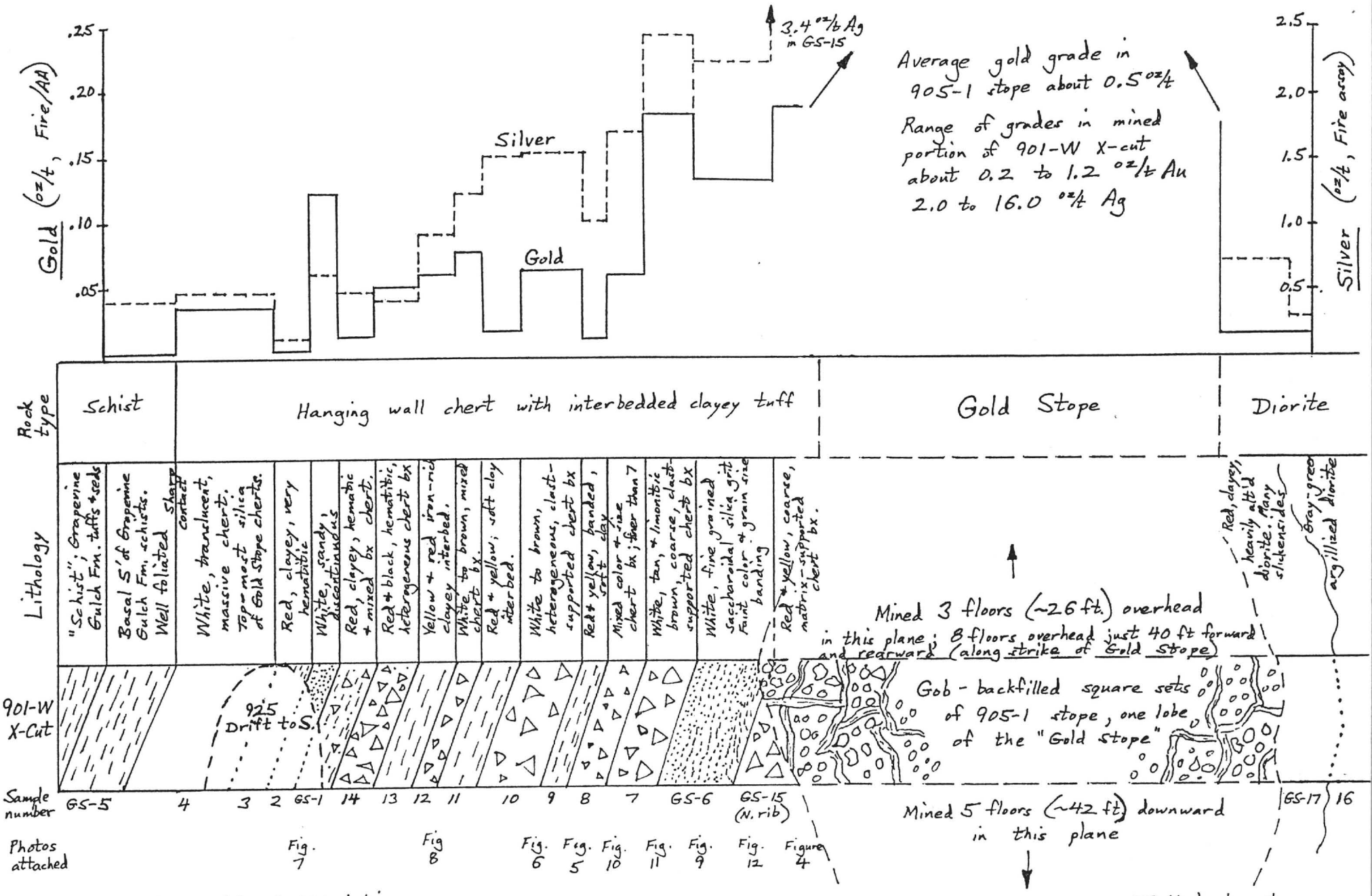

11,800 N
7,400 E
905-N
7,500 E
7,600 E
Portion of 1938 (?) "stope sheet" showing reported extent of mining & timbering on 950-sill through north end of Gold Stope
Portion of 901-W X-Cut apparently never connected because of a mismatch in elevation ?
11,700 N
901-W.
Plane of figure 2
Timbered portion of Gold Stope; reopened and retimbered as of Sept. 10, 1986
925
11,600 N
1" = 30'
(original scale)
11,500 N

FIGURE 1



U.V.X. Gold Stope assays, rock types, & photo index

Schematic view looking south at S. rib of 901-W X-cut

Don White Sept. 15 1986

1" = 10'

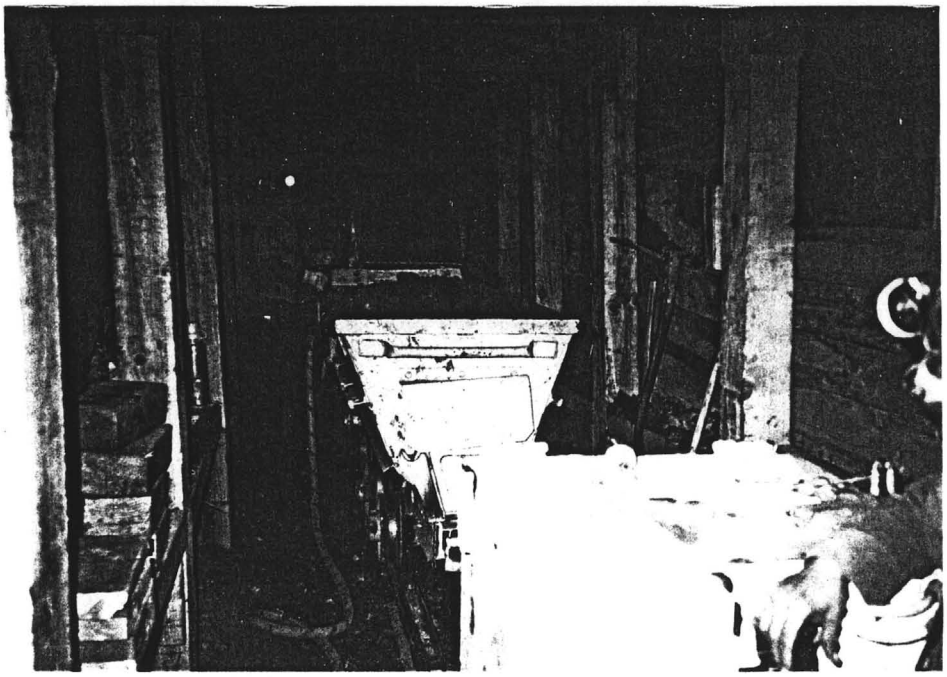


FIGURE 3: Timber sets in place through the U.V.X. Gold Stope, 901-W crosscut, Sept. 2, 1986. Pneumatic mucker removing gob from stope in background.

FIGURE 4: Gob-filled square sets (portions of five sets visible) in working face of 901-W crosscut within U.V.X. Gold Stope. Note contrasting waste-rock types filling each set.

FIGURE 5:

Heterogeneous clast-type matrix-supported, chert breccia in south rib of 901-W crosscut, about 20 feet east of Gold Stope hanging wall

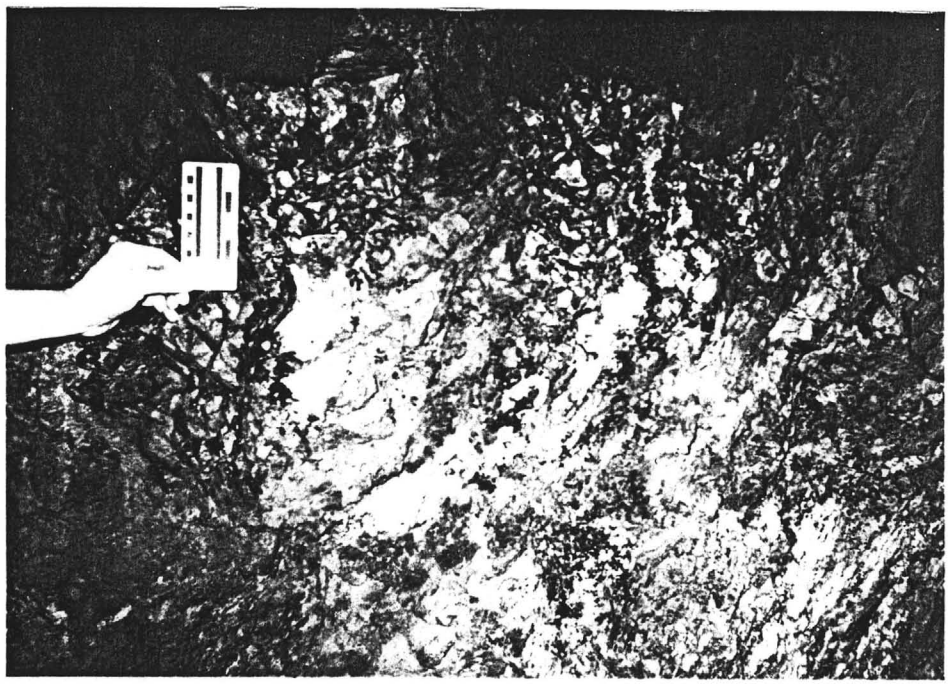


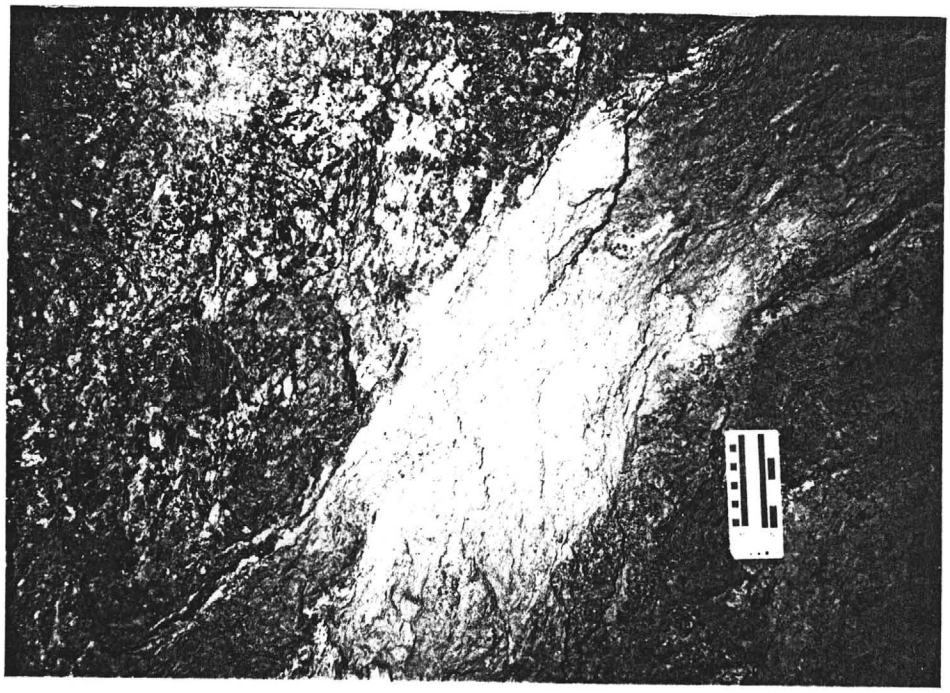
FIGURE 6: Similar to figure 5, showing clasts from less than 1/10 inch to more than 1 foot in diameter. Note angularity and iron staining (ferrous and ferric).

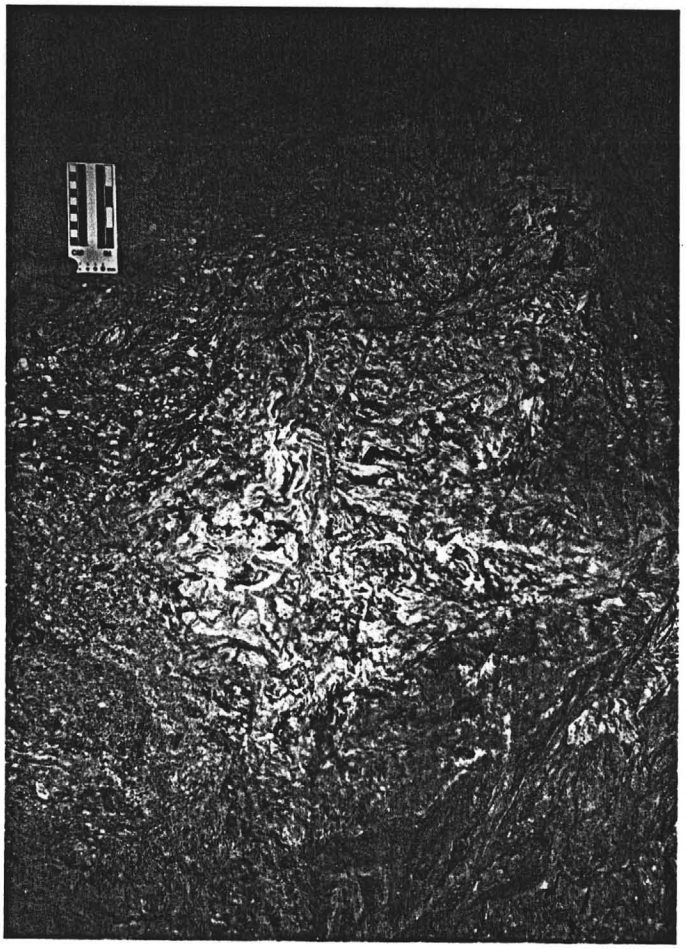
FIGURES 7 and 8:

Two of the several clay-rich, gold-lean interbeds within the Gold Stope hanging wall cherts.

Grades are only 0.01 to 0.02 oz/t Au in clayey material compared to 0.1 oz/t in adjacent brecciated chert. Clay zones have gradational bottom contacts relative to the sharp upper contacts shown here.

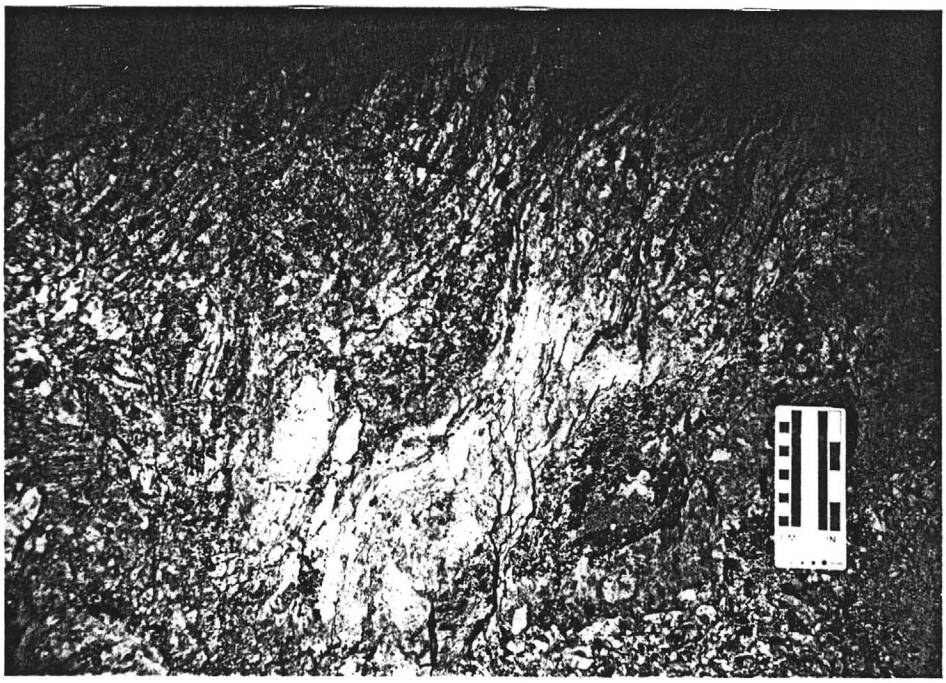
Both views are looking South at the S rib of the 901-W X-cut within 40 feet E of the Gold Stope. Bedding dips 55° to 70° E.

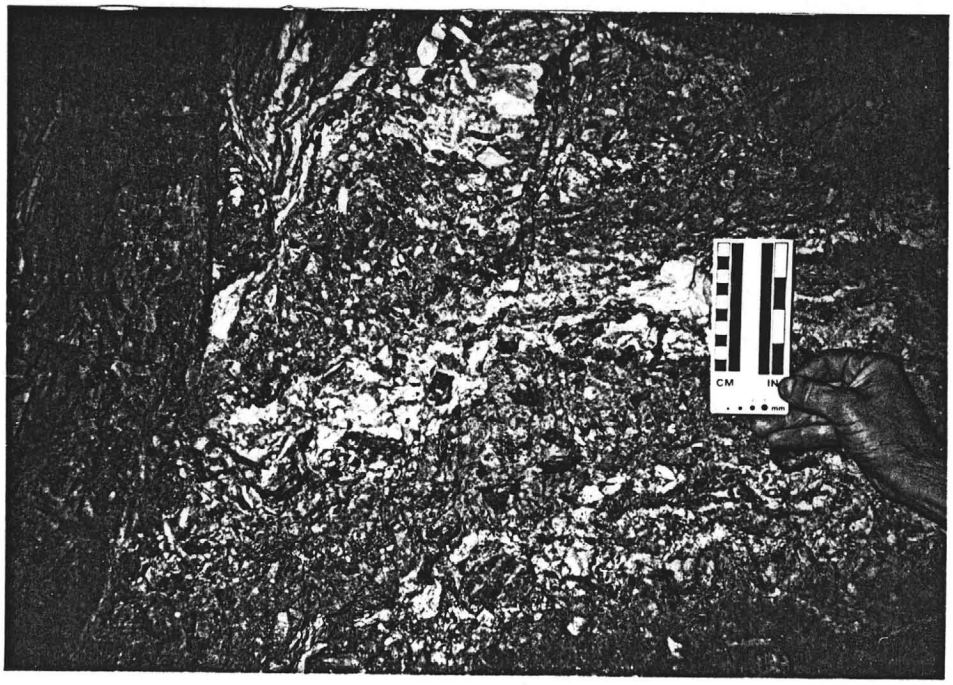




FIGURES 9 and 10:

Note extreme structural complexity of the chert breccias in the hanging wall of the Gold Stope (as seen in S. rib of 901-W- X-cut). Some of the complexity is attributed to regional folding but most of it results from the unusually high energy environment of deposition on the flanks of a hydrothermal vent. Large and small clasts of varied composition (all angular) and finer grain debris, all slumped on steep vent slopes. Subsequent explosive activity shattered and impregnated the cherts with more silica and precious metals. Crosscutting and conformable alteration features are common.





FIGURES 11 and 12:

Matrix-supported, heterogeneous clast type chert breccias in the immediate hanging wall of the Gold Stope, on the 901-W crosscut. Gold grades here are about 0.15 oz/t in the light colored areas to 0.20 oz/t in the red and yellow areas.

REPORT ON THE GOLD POTENTIAL OF THE UNITED VERDE EXTENSION MINE, JEROME, ARIZONA

By Paul A. Handverger
September 15, 1984

INTRODUCTION

The United Verde Extension (UVX) mine, a property owned by Verde Exploration, Ltd., at Jerome, in Yavapai County, Arizona, has the potential to become a moderate- to high grade, low-tonnage gold mine. The UVX mine, which was a high-grade copper mine, produced 3,878,825 tons of ore averaging 10.23 percent copper, 0.039 ounce per ton gold and 1.71 ounces per ton silver. From 1915 to 1938, the UVX mine produced 152,756 ounces of gold. The Verde Mining District produced 1,296,473 ounces of gold.

153,000 oz
663 mm oz Ag

A study of the old records, stope maps, samples, and other data coupled with new geologic concepts indicates a potential for 800,000 to 1,000,000 tons of gold ore averaging better than a quarter ounce gold per ton in the upper UVX mine workings. Recent underground drilling by Phelps Dodge Corporation confirms the occurrence of gold mineralization over minable widths. Additional underground development of drilling and drifting is required to determine the actual grade and tonnage.

GENERAL GEOLOGY

The Verde massive sulfide district of central Arizona, occurs in the oldest Precambrian rock series of the southwestern United States. This series consists of volcanic rocks that have been strongly folded and weakly metamorphosed. The Verde district massive sulfides are related spatially and temporally to quartz-rich rocks that formed from the igneous activity of a differentiating magmatic cycle. Facies variations of the volcanic and sedimentary rocks occur vertically and laterally in the district, and the facies around the UVX massive sulfide orebody indicate that this area was a center of complex igneous activity. Additional orebodies should occur in the Verde District, and various exploration programs have been conducted over the past three decades. Targets have been developed and mineralization indications have been located that require additional exploration.

GOLD PRODUCTION

The following discussion of a gold bearing zone in the upper levels of the UVX mine is excerpted from the Arizona Bureau of Mines Bulletin 145 on "Some Arizona Ore Deposits (Jerome District)", by L. E. Reber, Jr., in 1938:

> The Gold Stope orebody was a tabular veinlike body along the diorite contact, bottoming in a trough in the diorite, and in part limited by massive quartz. The typical ore was fine-grained friable quartz sand with almost no residual iron oxide. The maximum length was about 350 feet, the width from 5 to 20 feet, and the vertical extent above and below the 950 level from an elevation of about 4060 feet to about 4250 feet. It may have averaged $10 per ton (0.29 ounce per ton gold at $35.00 per ounce gold) in gold, with some relatively high-grade sections. Evidentially, the local conditions were exceptionally favorable to concentration of gold.

Plate 7, a composite of the Gold Stope in the UVX mine, is shown averaging 0.416 ounce per ton gold from 667 assays.

In 1926, Waldemar Lindgren wrote a private report on the UVX mine which described the Gold Stope:

> From the main orebody extend two fractured and schistose veins, irregular in strike and mineralization; the converging of these veins has evidently caused the favorable locus for deposition. One of these, striking N. 50° W. may be termed the Maintop vein; the other, striking N. 20° W. may be called the Gold Stope vein. During the early exploration work these veins were the "leaders" which eventually led to the discovery of the main mass.

See page 6 of this report which documents that the Gold Stope vein and the Maintop vein are the same geologic feature.

Lindgren described in detail the Gold Stope vein:

> The Gold Stope vein is clearly shown on the 800 foot level projecting from the main orebody a distance of 1,500 feet north northwest. It is indicated by schist, jaspery quartz, and gossan. No orebodies occur though to the west and southwest on the Edith shaft there is some indication of

APPENDIX A to Paul Handverger's 9-15-84 report

HEADFRAME

A type, steel, 42 feet high, 48 inch sheave wheel

HOIST

Single drum electric hoist, 440 volt, 112 horsepower
1917 original construction, 305 feet/minute
Model D Lilly controller
6 foot drum diameter, 42 inch face, post brake

ROPE

Improved plow-steel grade, 7/8 inch diameter, 1400 feet long

6x19 lang lay, hemp core, 1.29 lbs./ft., 8500 lbs. capacity

CAGE

Cage weighs 2480 lbs., Capacity of 4300 lbs.

MISCELLANEOUS ELEVATION DATA

EDITH COLLAR .....4908.40 — Note, this has been corrected
950 LEVEL.....4176.63
1100 LEVEL.....4020.38
1300 LEVEL(WATER LEVEL).....3807.40

mineralization. The vein ranges up to 50 feet wide. It occurs in greenstone schist. Seven hundred feet north northwest of the Edith shaft is a winze with copper stains and there is also some disseminated mineralization of oxidized copper ores in the vicinity. The outlook for finding orebodies of value is small. At the Morgan winze sunk to the 1,100 foot level there is some mineralization with quartz and native copper but the outlook in this vicinity also is poor. This is probably a branch of the Gold Stope vein.

On the 950 and 1,100 foot levels the vein is very clearly indicated. It dips steeply to the east and follows a belt of schist. Gossan and quartz are present all along from near the main orebody to a point southwest of the Edith shaft. From then on north northwest the explorations have been continued in Jerome Verde ground for 700 feet but without results except some schist, occasional quartz streaks and copper stains.

On the 950 foot level, for 250 feet south from a point 400 feet southwest of the Edith shaft, extend the gold stopes. These continue for several sets above the 950 and about halfways down to the 1,100. They are three sets wide or in places 20 feet and contain sugary crushed quartz without such limonite. The ore yields from $3 to $10 (0.14 to 0.48 ounce gold per ton at $20.67 per ounce gold) in gold and 0 to 4 ounces of silver. There are no copper stains. Evidently this is a thoroughly leached and crushed gossan in which secondary enrichment of gold has taken place. On the 1,100 foot level the same vein shows with little or no ore and little gold. The vein here distinctly joins the main orebody.

On the 1,300 foot level the vein turns to a steep westerly dip and breaks across the diorite to join orebodies projecting from the main body between the two veins. The vein is narrow and contains chalcocite and oxidized ore. On this level the vein extends for about 500 feet north of the main orebody.

> The Gold Stope vein does not continue on the lower levels though the belt of schist which it follows in the upper levels still persists downward.

Lindgren goes on to describe the Maintop vein:

> From the main mass of gossan, that is quartz, brecciated and stained with limonite, a branch extends out northwest for several hundred feet, containing several masses of rich residual chalcocite ore....On the 950 foot level the continuation of the Main Top vein is clearly shown; it follows a schist belt and dips about 60° northeast. The Main Top stopes below is indicated by a 100 foot long quartz lens containing $3 to $4 (0.145 to 0.194 ounce per ton gold at $20.67 per ounce gold) in gold and silver.

The production from the Maintop orebody was 10,000 tons of copper ore that produced 1,500,000 pounds of copper and 500 ounces of gold.

A 1925 UVX report indicates 3,050 tons of gold ore produced 885 ounces of gold (0.29 ounces per ton) and 6,405 ounces of silver (2.10 ounces per ton) with reserves of 14,750 tons of similar grade material. It is assumed that this was eventually mined.

A 1938 UVX report states that 18,196 tons of 1.08 ounces per ton gold ore was mined the previous year producing 19,652 ounces of gold. The final ore reserves calculated by the UVX engineering department on August 31, 1938 (three months after the mine closed) are as follows:

6,000 tons of 0.40 ounce/ton gold
4,000 tons of 0.15 ounce/ton gold

We interpret that the low reserves are due to the lack of exploration and development work in the latter years (per comm.) from R. L. D'Arcy, 1963). The report continues:

> In addition, probably 100,000 tons of low grade siliceous material is in the quartz zone on the 950 and 800 levels. Some of this will be gold ore (0.10 ounce per ton) with no copper and the balance low grade copper ore (1% to 2%). Copper reserves of the upper levels in the Florencia are 10,000 tons of 6 to 10 percent and 10,000 tons of 4 to 6 percent copper on the 800 level.

GOLD GEOLOGY

A study of the gold assays from the UVX mine maps of the dry and generally stable upper level workings above the 1300 level in and around the rock unit mapped as "gossan" was made in 1980. All the available assays were recorded, grouped, averaged and plotted on a set of cross sections (Plates 2-7). The results show widespread high-grade gold above the 1300 level.

In 1920, UVX geologist, J. L. Fearing Jr., collected a suite of 50 rocks from the "gossan" zone above the main orebody on the 1200 level (Plate 8). This suite was assayed in 1981 for gold and silver. The results (Table 1) showed promising values indicating that gold occurs in the "gossan". The two highest gold assays from the 1200 level suite are samples #3 (0.204 ounce per ton) and #30 (> 0.29 ounce per ton) which are located along the north border of the "gossan" (Plate 8).

The "gossan" is not a true gossan. It is a folded series of silicified felsic tuffs with an interbedded quartz-rich unit inferred to be a gold-bearing exhalite bed. Petrographic study of thin sections indicates the drill holes collared in a series of felsic crystal tuffs, fragmental tuffs, and quartz eye tuffs. The mineralized exhalite occurs next in the holes and this unit is inferred to be stratigraphically above the tuffs intersected initially in the hole. The exhalite is overlain by a series of fine-grained felsic tuffs and chlorite schist. These units were deposited over the top of the UVX sulfide as a final event in that particular volcanogenic cycle of mineralization. The gold was deposited simultaneously with the host rock silica or jasperoid. The gold deposition is inferred to have been followed by structual activity which fragmented the unit and hydrothermal activity that formed quartz micro-veinlets visible only in thin section. The heat source for the quartz vein may have been the diorite which is postulated to have intruded very shortly after the massive sulfide was deposited. Most of the micro-veinlets seen in thin section are indicated as slightly coarser quartz cutting across the fine-grained quartz matrix. These micro-veinlets appear to be more abundant in the higher grade gold zones. There is one thin section specimen (UVX-2-541.5) that has a "dog tooth" quartz vein. The thin sections in the gold rich zone are badly plucked and gold bearing minerals were not seen. A polished section study will be necessary to identify the gold mineralogy. The thin section specimens from the mineralized zone are locally strongly oxidized with paragenetic relations indicating that the silicic matrix was first shattered, and then invaded by quartz in veinlets and flooding by iron oxides.

Using the exhalative model, the gold should be restricted to a particular unit within the sequence. The two high gold values from the 1200 level gossan suite (#3 and #30) are assumed to occur in the gold-rich unit. The two intersections with the highest grade assays in the Phelps Dodge drill hole assays (Table 2) occur within the stratagraphic projection of the highest grade samples on the 1200 level (Plate 9). It is concluded that the

gold mineralization is restricted to this one particular unit. Phelps Dodge drill hole UVX-1 intersected 5 feet of 0.54 ounce per ton gold (245-250 feet) or 10 feet of 0.35 ounce per ton gold (240-250 feet). Phelps Dodge drill hole UVX-2 obtained 5 feet of 0.33 ounce per ton gold (277-282 feet), or 11 feet of 0.258 ounce per ton gold (271-282 feet), or 24 feet of 0.19 ounce per ton gold (271-295 feet). Both holes are relatively flat and were drilled in the same vertical plane. The drill holes first intersect and then parallel the postulated high grade gold bearing unit (samples #8 is 0.158 ounce per ton and #9 is 0.082 ounce per ton of the 1200 level suite (Plate 8). Drill hole UVX-2 which was much longer than hole UVX-1 grazed the folded projection of the gold bearing unit at 497 through 507 feet where 10 feet of 0.126 ounce per ton gold was intercepted. Additional gold intercepts were made at 520-525 feet (0.146 ounce per ton gold) and 560-565 feet (0.215 ounce per ton gold).

The geochemical amounts of tin (240-2200 ppm) that are associated with the highest grade gold may be geologically useful in identifying this bed elsewhere in future UVX exploration. The occurrence of tin, which is a geochemical associate of molybdenum, may be significant. In the newest Canadian gold camp, Hemlo, the gold bearing units are associated with molybdenum.

The gold mineralized zone can be stratigraphically projected to the northwest into the Gold Stope, to the Maintop vein (Plate 10) and on to the northwest which would geologically explain these high-grade zones as a continuation of the mineralized exhalative unit. There is evidence in the 1200 level "gossan" suite for a low grade silver (1-2 ounces per ton) zone stratigraphically below the gold zone (Plate 8). Exploration for additional gold should be conducted any place that the upper portion of the main UVX jasperiod exhalite occurs. One place that is accessible to low cost, short (200-300 feet) drill holes is from the currently open 1101 drift on the 1100 level (Plate 10). Additional short drilling from the Phelps Dodge 1100 level drill station is needed to test the vertical and horizontal continuity, grade and thickness of the gold intersected by the first two holes. There are hundreds of feet of strike length of potentially economic gold bearing exhalite that requires exploration (Plate 1). There is a zone on the west side of the gabbro that has a high-grade gold potential (Plates 3 and 4).

PHYSICAL FACILITIES

The small mines division of Phelps Dodge had an exploration lease from Verde Exploration on September 14, 1981 through June 23, 1983. The concrete lined Edith Shaft was opened during 1982 to the ~~1100~~ 1200 level. A steel headframe was erected to replace the former wooden headframe. A hoist was installed in a steel building with all the necessary power, water and sewer utilities. A description of this equipment is presented in Appendix A. This equipment is still on site and is available for use as long as Phelps Dodge leaves the equipment in place. Phelps Dodge retains

ownership of the hoist and of the headframe and will make available an operator for interested parties to examine the reopened 950 and 1100 levels. The MSHA and State mine inspector's examinations of the equipment, shaft and levels have met all standards of health and safety. A second concrete lined shaft, the Audrey shaft, is open to the 1300 level and is in satisfactory shape to reopen with the installation of a headframe, manway ladders, and a hoisting system.

OWNERSHIP

The UVX mine property is available for leasing to parties interested in the gold potential of the upper workings. This includes approximately 90 acres of patented mineral rights with adequate water rights and about 50 patented acres of surface rights around the UVX massive sulfides. This includes the nonexclusive use of the two concrete-lined shafts (see Appendix B). Access to the property is by paved road off of U.S. Highway 89A just outside the town limits of Jerome. The Santa Fe Railroad has a depot at Clarkdale about five miles away with a spur track contiguous to Verde Exploration's 3500 acres of patented land.

Verde Exploration, Ltd. is a public corporation with the office of Paul A. Handverger, vice president and geologist at 2160 Old Jerome Highway, Clarkdale, Arizona 86324 (602-634-8466). The corporate headquarters is located at Room 4201, 40 Wall Streeet, New York, New York, 10005 (212-425-0333).

CONCLUSIONS

The UVX mine has the potential to develop up to a million tons of quarter ounce gold ore in the old UVX Mine. The development costs should be low with most of the underground access to the potential gold zones already in place. A few hundred feet of new drifting and reopening old drifts and a few thousand feet of underground drilling will be required to explore the gold zone. The depth potential for ore is untested and unknown.

Speculation only

Say: 750' drift at 200 = $150,000
5,000' d.d.h. at $15.00 = 90,000
$240,000
50% for "other" 120,000
$360,000

18 mo(?) Av. $20,000

TABLE 1.

GEOCHEMICAL ANALYSES FROM THE UVX 1200 LEVEL
1920 "GOSSAN" SUITE, JEROME, ARIZONA

SAMPLE NO.	GOLD (ppm)	GOLD (O/T)	SILVER (ppm)	SILVER (O/T)	ARSENIC (ppm)	COPPER (ppm)	Bi (ppm)	Mn (ppm)
UVX 1	.23	.007	23.0	.67	13000		ND	
UVX 2	.73	.021	3.8	.11	300		ND	
UVX 3	7.00	.204	18.0	.53	230		ND	
UVX 4	.33	.010	6.8	.20	220		ND	
UVX 5	.45	.013	8.0	.23	90		ND	
UVX 6	.04	.001	8.6	.25	300		ND	
UVX 7	.23	.007	6.4	.19	50		17	
UVX 8	5.40	.158	4.6	.13	120		26	
UVX 9	2.80	.082	24.0	.70	150		ND	
UVX 10	.17	.005	8.6	.25	320		DN	
UVX 11	.11	.003	15.0	.44	350		DN	
UVX 12	.40	.012	15.0	.44	120		ND	
UVX 13	.90	.026	30.0	.88	1250		ND	
UVX 14	.54	.016	31.0	.90	50		ND	
UVX 15	.28	.008	40.0	1.17	580		ND	
UVX 16	.04	.001	13.0	.38	2100		ND	
UVX 17	.94	.027	15.0	.44	1100		ND	
UVX 18	.10	.003	12.0	.35	920		ND	
UVX 19	1.80	.053	15.0	.44	1400		7	
UVX 20	.40	.012	16.0	.47	130		ND	
UVX 21	3.20	.093	12.0	.35			ND	
UVX 22	.12	.004	8.6	.25			ND	
UVX 23	.23	.007	18.0	.53	340		ND	
UVX 24	.16	.005	42.0	1.23	550		ND	
UVX 25	ND	.000	8.6	.25	180		ND	
UVX 26	.43	.013	16.0	.47	1300		ND	
UVX 27	1.30	.038	26.0	.76	80		ND	
UVX 28	.83	.024	26.0	.76	350		ND	
UVX 29	2.10	.061	17.0	.50	30		ND	
UVX 30	10.00*	.292	19.0	.55	210		ND	
UVX 31A	1.80	.053	16.0	.47	120	295	ND	ND
UVX 31B	.60	.018	23.0	.67	470	379	57	960
UVX 32	.47	.014	15.0	.44	1450	2200	ND	ND
UVX 33	.37	.011	14.0	.41	50	2400	ND	ND
UVX 34	.55	.016	12.0	.35	100	199	ND	ND
UVX 35	1.00	.029	29.0	.85	180	1800	41	ND
UVX 36	.84	.025	6.6	.19	250	301	39	ND
UVX 37	.15	.004	12.0	.35	210	2700	50	4400
UVX 38	.12	.004	23.0	.67	600	631	ND	1700
UVX 39	1.40	.041	50.0	1.46	190	342	ND	ND
UVX 40	.07	.002	8.6	.25	420	400	ND	ND
UVX 41	.22	.006	9.6	.28	70	2400	ND	ND
UVX 42	.21	.006	13.0	.38	20	210	ND	759
UVX 43	.38	.011	20.0	.58	220	1300	ND	ND
UVX 44	1.00	.029	45.0	1.31	160	128	ND	ND
UVX 45	.28	.008	60.0	1.75	170	2900	ND	ND
UVX 46	.43	.013	65.0	1.90	7000	746	26	585
UVX 47	1.40	.041	50.0	1.46	1150	320	ND	ND
UVX 48	.27	.008	60.0	1.75	2000	627	ND	1100
UVX 49	.39	.011	14.0	.41	50	2300	ND	ND
CRM 1	.94	.027	20.0	.58	450	2000	ND	ND
AVERAGES	1.06	.032	21.0	.61	840	1170	5	453

*= >10 ppm

PHELPS DODGE ASSAY DATA FROM UVX MINE DRILL HOLES, 1983 PROGRAM

DH UVX-1 FOOTAGE	AU O/T	AG O/T	DH UVX-2 FOOTAGE	AU O/T	AG O/T	SN PPM	DH UVX-2 FOOTAGE	AU O/T	AG O/T
150-155	.006	.26	0-10	<.006	ND		424-434	ND	.07
155-160	.006	.22	10-20	<.006	.19		434-445	ND	.06
160-165	.012	.16	20-30	<.006	.13		445-462		
165-170	.055	.16	30-40	<.006	.06		462-467	.01	.08
170-175	.038	.25	40-50	<.006	.07		467-472	.008	.12
175-180	.050	.21	50-60	<.006	.07		472-482	.016	.16
180-185	.038	.20	60-70	<.006	.17		482-497	.06	3.5
185-190	.053	.08	70-80	<.006	.05		497-498	.146	.68
190-195	.093	.88	80-90	<.006	.05		498-502	.098	1.12
195-200	.058	.17	90-100	<.006	ND		502-507	.144	1.05
200-205	.026	.17	100-110	<.006	.07		507-512	.032	.98
205-210	.032	.14	110-120	<.006	.21		512-516	.082	1.27
210-215	.018	.23	120-130	<.006	.19		516-520	.018	.91
215-220	.006	.20	130-140	<.006	.15		520-525	.146	1.42
220-225	.070	.72	140-150	<.006	.21		525-530	.018	1.43
225-230	.020	.65	150-160	<.006	.23		530-536	.071	1.96
230-235	.012	.52	160-170	.006	.42		536-538	.024	1.01
235-240	.009	.40	170-180	.035	.20	16	538-542	.012	.97
240-245	.160	.14	180-190	.044	.26	23	542-545	.014	.92
245-250	.540	1.89	190-200	.032	.20	19	545-550	.064	
250-255	.029	2.32	200-210	.040	.18	27	550-555	.03	
255-260	.055	1.79	210-220	.050	.13	19	555-560	.025	
260-265	.012	1.38	220-230	.038	.13	15	560-565	.215	
265-270	.009	.59	230-240	.026	.14	19	565-567	.013	
270-275	.006	.31	240-250	.038	.14		567-572	.005	2.08
275-280	<.006	.38	250-255	.012	.23	28	572-581	<.005	1.62
280-285	<.006	.39	255-261	.044	.28	44	581-583	.02	1.28
285-290	<.006	.20	261-265	.038	.46	25	583-588	.01	1.13
290-295	<.006	.30	265-268	.015	.42	21	588-595	<.005	.56
295-300	<.006	.40	268-271	.070	.87	520	595-602	<.005	.7
300-305	<.006	.26	271-277	.200	.48	800	602-607	.01	.71
305-310	<.006	.41	277-279	.520	.52	2200	607-615	.04	.64
310-315	<.006	.26	279-282	.200	.33	1450	615-617	.065	.62
315-320	<.006	.28	282-288	.140	.36	240	617-626	.08	.52
320-325	<.006	.26	288-295	.226	.29	480	626-628	.09	.55
325-330	<.006	.22	295-303	.079	.26	19	628-632	.03	.63
330-335	<.006	.26	303-320	.015	.25	ND	632-639	.16	.52
335-340	<.006	.29	320-325	.003	.26	ND	639-642	.085	.9
340-345	<.006	.34	325-335	ND	.31	ND	642-647	.09	.17
345-350	<.006	.26	335-346	.012	ND	ND	647-657	<.005	.68
350-355	<.006	.23	346-356	ND	ND	ND	657-667	<.005	.24
355-360	<.006	.40	356-365	ND	ND	ND	667-679	<.005	.01
360-365	<.006	.19	365-372	ND	.15	ND	679-686	<.005	<.01
365-370	<.006	.17	372-382	ND	.16	ND			
370-375	<.006	.17	382-392	ND	.08	ND			
375-380	.009	.07	392-396	ND	ND	ND			
380-385	<.006	.06	396-400	ND	ND	ND			
385-390	<.006	.08	400-410	ND	.28	ND			
390-393	<.006	.06	410-424	.003	ND				

APPENDIX A

HEADFRAME
A type, steel, 42 feet high, 48 inch sheave wheel

HOIST
Single drum electric hoist, 440 volt, 112 horsepower
1917 original construction, 305 feet/minute
Model D Lilly controller
6 foot drum diameter, 42 inch face, post brake

ROPE
Improved plow-steel grade, 7/8 inch diameter, 1400 feet long

6x19 lang lay, hemp core, 1.29 lbs./ft., 8500 lbs. capacity

CAGE
Cage weighs 2480 lbs., Capacity of 4300 lbs.

MISCELLANEOUS ELEVATION DATA

EDITH COLLAR 4573.17
950 LEVEL.....4176.63
1100 LEVEL.....4020.38
1300 LEVEL(WATER LEVEL).....3807.40