



CONTACT INFORMATION  
Mining Records Curator  
Arizona Geological Survey  
3550 N. Central Ave, 2nd floor  
Phoenix, AZ, 85012  
602-771-1601  
<http://www.azgs.az.gov>  
[inquiries@azgs.az.gov](mailto:inquiries@azgs.az.gov)

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## HEINRICHS GEOEXPLORATION COMPANY

P.O. BOX 5964, TUCSON, ARIZONA 85703, 806 WEST GRANT ROAD, PHONE: (602) 623-0578

May 13, 1977

Federal Gold and Silver, Inc.  
c/o David Coon  
3874 So. 5200 West  
Salt Lake City, UT 84120

Re: Cobre Grande Claims  
Graham County, AZ  
GEOEX #1173

### Letter Report

Gentlemen:

In response to your phone calls, first from Roger B. Felt and later David Coon on the evening of 29 April 1977, it was agreed that you would be flying down from Salt Lake the next morning (Saturday 30 April), that I would drive over from Tucson and meet you at the Desert Carousel Motel in Pima, Arizona, on or about noon Saturday and together we would spend the rest of that day examining the property and Mr. Kitchen's two man crew shaft sinking operation which was under way at the time, reportedly located on Claim 129 near the southwest corner of Section 34, T.7S., R.22E.

The Cobre Grande claims lie entirely within the Crook National Forest and are ultimately reached by a four wheel drive road partly following the upper reaches of Underwood and Eureka Canyon sand washes, off of the U.S. 70 - Arivaipa - Klondyke County road. Location is T.7&8S., R.22E and is covered by the U.S. Geological Survey, 15 minute, Jackson Mountain, Arizona, Quadrangle map. The claims cover a contiguous block approximately 12,000 feet wide, striking N.60°E., and embracing all of those two sections, and all of Sections 33 and 34, most of Sections 3 and 35, about half of Sections 2, 4 and 27 and part of Section 10, all contiguous sections in the two townships.

Mileage from Pima is roughly 30-35 miles and requires from 1 to 1 1/2 hours travel time one way. Elevation varies from 4426 feet at the N.W. corner of Sec. 28 to 6688 feet at the top of Cedar Mountain which is just south of claim 185. Cover is mostly scrub brush, cactus, grass and sparse Juniper and Piñon.

General impression of alteration and/or mineralization intensity is weak, both as noted en route driving to and from the claims and in briefly looking over the main northwestern portion of the claims area. Very few prospect pits are shown on the U.S.G.S. Quad sheets, and none were personally noted.

Rocks observed are typical of the large, usually relatively unmineralized, granitic-gneissic masses commonly mapped as older Precambrian in age as indicated on the Arizona Bureau of Mines County geology map series. No specific evidence of any sort suggesting probable exceptions to this unmineralized generalization were encountered. The most interesting geologic features were a number of near vertical standing prominent slickenside faces, in one case represented by a shiny specularite surface on a 3 foot by 10 foot slab of hematite, or hematitic solidified gangue material, several inches thick.

The only rank speculation one might offer, is to wonder what may be concealed beneath any major flat or overthrust faulting. The answer to that of course is almost anything, but no specific evidence of such is interpreted at this point. Such faulting is common in Arizona and conceivably could relate partly to some of the vague structural impressions gained by driving through the area, but many other equally or more plausible causes and effects could also be involved.

Primary structure in the local vicinity about the shaft collar, is a sill-suggestive contact of (darker) diorite or diabase rock, underlying lighter and slightly more altered, coarse pegmatitic, to finer, even-textured aplitic gneissic granite or granite gneiss.

This contact and the principal joints or bedding and/or stratification of the overlying gneiss, dip conformably in a northerly direction at roughly something between 10° and 45°. A several tens of feet thick, rehealed zone of brecciation and a scattered swarm or small stockwork of irregular sized and spaced siliceous dikes appears along the contact zone and extends to an unknown depth into the diorite.

Association of weak but persistent sulfide is noted in the diorite. Sulfide deposition appears to be younger than the silica deposition, but contemporaneous sulfide and silica is also possible. Regardless of the relative sulfide-silica ages, the sulfide was almost entirely confined to thin fracture coatings and with minor or no dissemination. If there is any significant dissemination, it must be quite fine grained and would be suspected as being a normal constituent (indigenous) of the rock, rather than introduced as a result of mineralization processes likely related to anything economic. Conceivably the fracture coated sulfide could bear more

potential economic significance if its ultimate source and/or a major concentration increase could be postulated.

The only quantitative suggestion along that line is the reference made by Joel O. Palmer in his October 1974 report that copper and silver mineralization is much more abundant in core holes #1 and #2 than in holes #3 and #4. If such a difference is real and were to continue to increase in an easterly direction, then there is the technical possibility for improved economic potential in that direction. Whether such improved potential could improve enough to actually become economic is the bigger question. The granite-gneiss shear zone contact, which reportedly follows Bellows and Tripp Canyon, was not examined, but may have been partly seen from the ridge east of the shaft site without noting any surface effects, at least observable from a distance, which might have indicated anything of interest in that area. However, considering the time and effort already expended on the property, such technically favorable possibilities as this should not be glossed over entirely without at least some due consideration. Even though the economic probabilities are considered extremely remote, perhaps one or two more days of surface geological and geochemical reconnaissance should be done before actual final abandonment is decided.

Reportedly the shaft that was being sunk by Mr. Kitchen at the time of this visit was 85 feet deep. A brief "Boatswain's Chair" inspection to the bottom revealed no significant changes with depth, except as would be expected, the freshness (of the rock and the sulfide) did increase for about the first 50 feet down. Otherwise, no significant quantity or quality changes were evident with increased depth.

A bluish-gray, sub-metallic tarnished looking material, coats some of the dioritic rock and is suspected as being one of the manganese minerals. A few very sparse blebs of chalcopyrite, covellite and malachite were seen, but much of the material which looks a little like chalcopyrite is actually mostly tarnished pyrite. Correlation with this observation is generally supported by the mostly very weak copper assays reported to date.

An illustration (Fig.3) prepared by Sanders Associates, Inc. diagramming holes 2, 3 and 4 drilled in 1973, suggests a zone of non-correlatable, intense mafic (dark) dike intrusions, roughly 200 to 250 feet thick. An alternate probability suggests simpler variations, more characteristic of the variations likely present in the original sediments before metamorphism. There appears to be at least some introduced later stage (?) silica, pyrite, manganese, etc. at least near or along the one formational contact observed in detail at the shaft area. It is also possible that the diorite mass

represents an intrusive sill, but the mafic dike correlation between holes 3 and 4 as indicated by Sanders Associates, Inc. seems very unlikely. More probable is that this portion of the diorite section has simply been eroded away at hole #4 position.

A series of intrusive quartz and diabase dikes of probable Laramide Age were thought to be associated with the mineralization observed by Richard Kennedy of GEO UPDATE in his report transmitted with a letter to Mr. Douglas M. Todd on 3 June 1969. Such is a common situation in Arizona mineralization and could be the case here, but it was not specifically noted in this examination. The only definite diabase noted seemed to be directly associated with the pegmatitic facies of the gneiss and none of it was either clearly intrusive or mineralized. On the other hand mineralized intrusive diabase could exist somewhere on the claims and was simply not seen during the four hour inspection trip covered by this report.

The 3 June 1969 report by Mr. Kennedy also refers to clear indications of an intrusive body in the GEO UPDATE aerial magnetometer data. Referring to the GEO UPDATE total intensity contour map, variations over 1000 gammas are apparently indicated over the claims. A general suite of representative rock samples were collected during this examination and all of the diorite samples tested were weakly magnetic. This suggests that most of the magnetic variations recorded by the aerial survey were probably caused by magnetite variations of the dioritic masses versus the topography and versus the granitic masses, and/or possibly variations within the diorite itself. Technically this could still be intrusive related in that the diorite may represent an intrusive sill, but that alone has no specifically known potential economic connotation at this stage.

Mining Geophysical Surveys report by James B. Fink, dated 27 April 1972, indicates that good factual induced polarization field data was obtained in that survey, was properly interpreted, and we concur completely with the generally negative conclusions made.

References have been noted in several instances regarding the regional setting of the Cobre Grande claims in relation to various geological lineations, trends and so forth. No direct or indirect economic situation in connection with any of these is considered pertinent to your immediate appraisal considerations. Such correlations involve many complex and highly technical factors most often grossly misunderstood, and rarely properly appreciated, or correctly applied. The most common and casual usage is to localize very broad areas of interest for more detailed or specific examination. In the general evaluation of a particular property, such as in your case, these references are quantitatively useless and usually represent pure folklore, highly promotional motives, or simply speculative nonsense.

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Similar comment applies to relating your particular property potential to its proximity to Phelps Dodge and Kennecott properties near Safford or to the Arivaipa, Klondyke and Copper Creek districts to the west. Obviously, there may be various technical and theoretical relationships, but unless we can assign some specific quantitative significance to the relationship which may be of immediate appraisal importance, such considerations are totally academic.

Questions were raised by you regarding satellite or remote sensing (ERTS etc.) data availability and its practical worth in connection with present evaluation of the claims. Such data is available in several formats and is being used routinely by many explorationist groups, usually in conjunction with large multi-faceted programs and research. However, the odds that such information, relative to economic evaluation of your claims, would provide any guidance which would warrant immediate follow-up recommendations for early economic potential, is nil or very slim at best. Nonetheless, for the benefit of your complete satisfaction, we would be glad to investigate the matter for you if you requested us to do so. A minimum of several hundred dollars in cost and several weeks in time would be required at least initially.

If additional and more quantitative appraisal work is still desired, then it should initially consist of a small (two to three field weeks or so) program of combined photo-geologic mapping and rock geochemical prospecting reconnaissance, done by an experienced field-explorationist and one helper. If such work proved completely negative, then the only things left to do at that point would be more ground geophysics (mainly I.P. - resistivity) and/or drilling, especially east of the previous drilling and the shaft area. Except for the one or two day geo-reconnaissance of this eastern portion of the claim group, (as previously discussed in connection with comments regarding the prior drill results made by Joel Palmer), none of the work mentioned above is recommended now.

If nothing further is decided to be done at all, then consider running one last composite semi-quantitative exploration spectrographic analysis of about 30 elements on the suite of rocks which were collected during this examination - simply as a logical minimum "tie-off" gesture in view of the total expenditures made to date. Assuming no encouraging analyses result, no further efforts are recommended and immediate steps to abandon the property should then be taken.

Respectfully submitted,  
Heinrichs GEOExploration Co.

Walter E. Heinrichs, Jr.  
P.E. & C.P.G.S. #688



WEH:mt