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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: PACIFIC

ALTERNATE NAMES:

SUNNSIDE, MS 2803, PAT.  
PATENTED CLAIMS MS 2803  
SILVER MOUNTAIN  
O'BRIEN

YAVAPAI COUNTY MILS NUMBER: 852

LOCATION: TOWNSHIP 9 N RANGE 1 W SECTION 9 QUARTER W2  
LATITUDE: N 34DEG 07MIN 55SEC LONGITUDE: W 112DEG 22MIN 34SEC  
TOPO MAP NAME: MINNEHAHA - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

COPPER SULFIDE  
GOLD  
SILVER

BIBLIOGRAPHY:

ADMMR PACIFIC FILE  
LINDGREN, W. ORE DEPTS OF JEROME & BRADSHAW  
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WEED, W.H., 1913, THE COPPER HANDBOOK, W.H.  
WEED CO., HOUGHTON, MI., VOL. 11, PP 689-699  
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CLAIMS EXTEND INTO SEC. 8 & 17  
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CO., N.Y., N.Y., VOL. 13, P.380



ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

1. Information from: Peter J. Grant
2. Address: 15653 Libral, Detroit MI 48205
3. Phone: 313-839-7240
4. Mine or property name: Pacific
5. ADMMR Mine File: Silver Mountain
6. County: Yavapai
7. MILS Number: 852
8. Operational Status: \_\_\_\_\_
9. Summary of information received, comments, etc.:

Mr. Grant called requesting information on the Pacific Mine.

What very little we have is in the Silver Mountain mine file.

He is reaquiring ownership for the 140 patented acres the  
comprize the Pacific Mine MS2803.

Date: November 22nd, 1989

Ken A. Phillips

SILVER MOUNTAIN

YAVAPAI COUNTY

RRB WR 2/12/88: John L. Helbert, president, Arizona Mining & Minerals, 4323 N. 12th, Suite 101, Phoenix, Arizona 85014, phone 279-0791 reports that they have an option on the Boaz (file), the Pacific (Silver Mountain - file) T9N R1W, Sec 9 and the O'Brien in Yavapai County. The O'Brien is considered by the company to be an adjacent part of the Pacific. They are shipping in a thiourea plant to treat the ore. They will strt mining at the Boaz.

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MARION E. PRICE  
GEOLOGICAL ENGINEER  
R. P. E. - NEVADA - NO. 974  
1505 BENNETT ROAD  
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206 424-7735

August 29, 1976

Mr. Rex L. Zimmerman  
President, KCOZ, Inc.,  
5060 North 19th Ave., Suite 115  
Phoenix, Arizona 85015

Subject: Prefeasibility Study on the  
KCOZ, Inc. mining claims in the Tiger  
Mining District, Yavapai County, AZ:

Dear Mr. Zimmerman:

Transmitted herewith is my Prefeasibility Study on your KCOZ-Pacific Group of unpatented lode mining claims and fractions together with specific references to the adjoining mining properties, both patented and unpatented. You will find hereinafter that this early assessment of the proposed undertaking is greatly in excess of that which had been primarily envisioned by KCOZ, Inc., and you will note that the tenor of this document setting forth the initial findings is very bullish. I'm sure that it will become apparent to you immediately that the initial plans and projections of KCOZ, Inc. will need to be restructured, reoriented, and refinanced in light of the following:

First, the initial study area of ten (10) patented mining claims has been expanded so rapidly during the past four weeks that it now encompasses twenty-six (26) patented lode claims, fifty-nine (59) unpatented lode claims and fractions, and a State Section. In terms of area alone, the initial 200-plus acres has been expanded to a figure in excess of 2,200--an eleven-fold increase! It must be emphasized that you are not primarily interested in the concept of acreage per se, but it can be stated and emphasized also that most of the claims involved do encompass mineral deposits having economic potential;

Second, the aggregate of the mineral target areas has been expanded from the concept of a single large vein spanning a half-mile in strike length to a system of veins, cross-veins, and shear zones which aggregate over four (4) miles along strike. The initial concept of vertical extent has been expanded also, for the strongly mineralized outcrops are revealed by topography over a range of 1,000-feet and observed to be projecting downward strongly;

Third, the aggregate of the masses of these deposits is also

expanded in accordance with the observed increases of strike length and vertical extent, thus the tonnage of the target mass has escalated from a few million tons to a figure in the order of fifty-million tons and perhaps beyond. It is pointed out that this target tonnage is that quantity occurring within the mineralized structures themselves and within which the workable ore shoots will be found. Of especial importance to KOOZ, Inc. is the fact that this expanded target could sustain a much larger operation than originally contemplated, and this would permit the mining of a lower grade of ore; and

Fourth, the original concept of recoverable values consisting of copper, gold, and silver has been expanded to include iron, mica, and building stone from the patented claims as well. It is also considered likely that additional analytical work and metallurgical research will establish the presence of minor metals and metalloids which, in a large-scale operation, could also be extracted at a profit.

Last, perhaps least, but nevertheless a very important extralateral concept which is emerging is that of land use for purposes other than mining. Inasmuch as there are surface areas on both the patented and potentially patentable ground which would be in excess of those actually required in the conduct of a mining operation, it is indicated that they could be put to other good and profitable uses. The conduct of intensified growing is probably one of the most potentially profitable, for in an environment of hot sunny days and cool nights there are many things which can be grown successfully. Local use of the mica mentioned hereinbefore as a medium for this growing would be a 'natural', and the quality of the produce--especially root grown items--would be superlative. Equally as important as this production potential is the fact that a large captive market for quality foodstuffs and ornamentals is visible from the site!

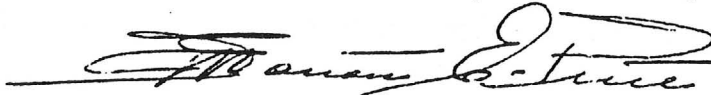
From the foregoing, it must become self-evident that KOOZ, Inc. now stands at the threshold of opportunity which greatly surpasses anything visualized hereinbefore in terms of both physical and fiscal dimensions. The major premise of this report,

August 29, 1976  
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therefore, is to assess these concepts for you and to assign preliminary values to them.

It is a pleasure to report to you that your initial activities have produced such a broad spectrum of early and favorable general results, and the time is now appropriate to begin the work of establishing specific dimensions and details. Because the task before you is a grand one, your effort and expense must be of commensurate magnitude. The more you develop these properties from this point onward, the greater your results are going to be. The greater your results, the more you will ultimately realize for these efforts whether from an outright sale or from your own operational activities. The details of the explorations, developments, and acquisitions as set forth hereinafter are drawn to guide you most effectively and efficiently in the conduct of this total endeavor.

Respectfully submitted:



Marion E. Price, P.E.  
Geological Engineer

MEP:p  
Enclosures

## I. PURPOSE OF REPORT:

The purpose of this report is twofold: First, it sets forth the details relating to the lode mining claims which are now held by KOOZ, Inc. under mineral lode location and projects the work and financial requirements which are necessary in order to establish the boundaries and validate these KOOZ-Pacific claims under the State and Federal laws relating to such mineral lode location; and

Second, the report also sets forth the available details on adjoining properties, both patented and unpatented, which are contiguous to the KOOZ holdings and which, in fact, are largely surrounded by claims of the KOOZ-Pacific Group.

Apropos these adjoining properties, there are four (4) Groups of claims, and of these three (3) are patented and one (1) is unpatented. Early investigations revealed that these claim Groups were available and subject to negotiation, and those endeavors are underway as of this writing.

## II. SCOPE OF REPORT:

This writer has been working intermittently on the west side of the Silver Mountain since February, 1975, and during that time he has observed the Pacific Mine area from atop the Mountain and particularly noted the high-iron content of the Pacific dump. Little else could be seen, however, because the brush cover is so dense. Mental note was made to investigate the site at some opportune time, and that day came on July 29th when the property was visited in company with Mr. Ike W. Fusisto, Vice President of KOOZ, Inc. This initial visit was very brief, for several other properties were also quickly examined during the same day. The main purpose of this visit was really to acquaint the writer with the exact location of the site and the condition of the roads leading to it.

Notwithstanding the brevity of this visit, two salient observations were made by both Mr. Kusisto and the writer: First,



the strength of the Pacific vein as it was observed in the road and bulldozer cuts was far in excess of anything which had been anticipated. The second observation was that there had been no apparent assessment work done on the unpatented claims surrounding the patented Pacific Group for some time. Inasmuch as work of a technical nature can be done on a given property for two (2) years and leave no visible traces on the ground, it was resolved to check the Yavapai County records immediately, and this was done on July 30th with the following results:

The Pacific claims, Nos. 1-36 which were located in April, 1970, had had no assessment work done and recorded since 1973.

In light of the foregoing, the writer returned to the Pacific Mine immediately and on the afternoon of July 30th began the task of locating the KOOZ-Pacific Group of claims. Thus July 30th is considered the date of actual beginning of the current work, and the ensuing four weeks have expanded this initial work to include the forty-five (45) claims and three (3) fractional claims. As of this writing, it is considered that KOOZ, Inc. has located a major portion of the ground which is highly desirable. This by no means precludes further locations, however, and reference to Claim Map "F" in the map pocket indicates the positions of additional possible locations.

A check of the State records indicated that the mineral resources of Section 16 could be acquired on a lease basis, and formal application has been made for a Prospecting Permit thereon. Any mineral discoveries made during the duration of the Permit may be formally leased from the State, and KOOZ' possession of this permit precludes its being acquired by outside interests.

### III. LAND STATUS:

Thus from the foregoing it is seen that the properties under consideration and controlled by KOOZ, Inc. as of this writing comprise 45-unpatented lode mining claims, 3-unpatented fractional mining claims, and a State Section of 640-acres. Brief reference

is also made to other claim Groups which immediately adjoin or are contiguous to the KOOZ-Pacific claims. A generalized listing of these properties is as follows:

(1) KOOZ-Pacific Group:			
(a) K-P Nos. 1-36	(Approx)	720-acres	
(b) K-P No. 37--To be located		-0-	
(c) K-P Nos. 38-46	"	139-	"
(d) K-P Fractions Nos. 1-3	"	20	"
(2) Patented Groups:			
(a) Pacific Group (Mineral Survey No. 2803)		203	"
(b) O'Brien " ( " " No. 2594)		140	"
(c) Consolidated ( " " No. 2274)		139	"
(3) McDonald Group (unpatented, 10-claims)		200	"
(4) State Section, Prospecting Permit		640	"
Total approximate acreage:		2,201	"

It is noted here that KOOZ-Pacific No. 37 is one of the claims definitely slated for location and that work is one of the recommendations hereinafter. To include this claim would increase the total approximate acreage to 2,221 acres, or an eleven-fold increase over the area of the original Pacific Group.

For purposes of specific reference, the patent plats of Mineral Surveys Nos. 2274, 2594, and 2803 have been included in the Map Section and are indexed as Maps "I", "J", and "K", respectively. A listing of the individual patented claims is also made hereinafter on the Map Index, Page ii, and a summation of the areas shown thereon is as follows:

(1) Pacific Group (MS 2803):	203.355-acres	
(2) O'Brien Group (MS 2594):	140.488	"
(3) Consolidated Group (MS 2274):	138.702	"
Total Patented Area:	482.945	"
(4) State Section 16:	640.	"
(5) Total unpatented(from above)	1,079	" (approx)

While the foregoing represents a careful analysis of the land status with respect to title (i.e., Patented, Unpatented, and State land), the ownerships involved may be summarized as



as follows:

- |  |                                 |
|--|---------------------------------|
| (1) All KOOZ-Pacific Claims & Fractions: | KOOZ, Inc.                      |
| (2) State Section 16, Prospecting Permit | KOOZ, Inc.                      |
| (3) Pacific Group:                       | Owner: Tom Beard                |
|  | Optionees: Worley Bros.         |
| (4) Consolidated Group:                  | Owner: Adelaide McDonald, et al |
| (5) O'Brien Group:                       | " " " " "                       |
| (6) McDonald Group:                      | " " " " "                       |

It is obvious immediately that this represents a very straightforward situation wherein negotiations can be carried on with a minimum number of people. Inasmuch as the Worley Brothers are the optionees on the Pacific Group and Adelaide McDonald is the spokeswoman for all the owners of the remaining properties, further negotiations need to be centered in only two quarters. As mentioned before, these negotiations are underway as of this writing.

#### LOCATION OF PROPERTIES:

The properties which have been named and catalogued hereinbefore are variously situate in Sections 4, 5, 8, 9, 16, 17, 18, 19 & 20, T 9 N, R 1 W, and Sections 24 and 25, T 9 N, R 2 W, G & SR, B&M, Tiger Mining District, Yavapai County, Arizona. These are collectively shown on Base Map "G" and Claim Map "H" hereinafter (Scales: 1"=500'). In terms of technical expose, it is extremely opportune to have three contiguous Groups of patented claims which are all referenced to the same point, viz., U.S.T.M. No. 2274. This Location Monument has been found during the course of this work as have a number of the patented claim corners and end centers which are referenced to it, and the survey data from Mineral Surveys Nos. 2274, 2594, and 2803 (per the Survey Flats included as Maps "I", "J", and "K") have been plotted to produce the Claim Map "H" and then transposed onto the topographic enlargement to yield Base Map "G".

All of the unpatented claims have been so-located that they

are contiguous to the claims of the patented Groups, and the unpatented claim corners tie to the patented corners in such a manner that there are a minimum of fractions between them. However in order to correlate the differences in bearings between the end lines of Mineral Surveys Nos. 2274 & 2594 (N 51°10' W) and Mineral Survey No. 2803 (N 57°20' W), fractional claims have been located as necessary, viz., KOOZ-Pacific Fractions Nos. 2 & 3. A preexisting Fractional claim lying between Mineral Surveys Nos. 2274 and 2803 has been located as KOOZ-Pacific Fraction No. 1, and as such it represents a very rare occasion where previous oversight has permitted this open ground to exist. Reference to Map "H" shows that to reconcile completely the differences in end line bearings would require additional fractional claims 4 through 8.

Reference to Map "H" also shows that the claims lying south of the patented claims of M.S. No. 2274 are so-located that their side lines are a full 1,500-feet long and their end lines 600-feet, and also that their end lines are parallel to the end lines of M.S. 2803 (N 57°20' W). Also shown is that the most recently-located claims of the KOOZ-Pacific Group which lie north of the Consolidated Group (M.S. 2274) are configured to their patented counterparts, thus no fractional claims are necessary to block the ground in completely. Reference to the patent plat for M.S. No. 2274 (Map "I") shows that some of these claims are less than 1500-feet in length. The reason for this is that the original layout of these claims was so arranged that the major outcrop of the big mineralized structure passes through each end line, thus the owner enjoys extralateral rights down-dip. This is a very important consideration, both technical and legal, and the the original locators did a very commendable job in this respect. Notwithstanding the short side lines of some of the claims (such as the Empire), it is nevertheless considered as a "claim" because its end lines are parallel. The fractional claims, on the other hand, have no such parallel end lines and do not enjoy the privileges of extralateral rights. This is the reason that the current work has been laid out using a minimum of fractional claims,

and the fractions which are used have been so-established as to have the least strategic impact with respect to extralateral rights.

#### ACCESS TO PROPERTY:

The Pacific Mine area is situate in the southwestern corner of the Bradshaw Mountains about 70-miles northwesterly from Phoenix, and especial care has been taken to provide both general and specific maps showing the access to the area. This access is not necessarily "difficult" in terms of really rough going, but it is, to say the least, 'uncomfortable'. This may well be a blessing in disguise, however, for there is no gainsaying that this property would not have been lying open for location if there had been facile ingress to it. Further, it was primarily the poor condition of the roads thereto and thereon which first suggested to both Mr. Kusisto and the writer that the assessment work had not been done for some time.

The status of these roads is primarily due to disuse and the ravages of time and weather. During the course of this work, for example, one heavy rain caused noticeable damage to the roads on the property. It is a generally happy note, however, that these roads can be restored and repaired to access status using two-wheel drive vehicles through the use of a small bulldozer (Caterpillar D-6 or smaller). In addition to this rehabilitation and repair of the existing roads, new roads and drillsites can be established as necessary throughout the property using this same machine. For areas whereto it may be impracticable to take a drill to do the necessary validation work, the dozer can do an acceptable job by dozing in the mineralized outcrops, especially the high-mica portions of the Geologic Section.

It is virtually self-evident that concerted activity in the area will beset assistance in the establishment and maintenance of good access roads to and through the area. It is but a matter of time until these roads are developed anyway, and the establishment of a sizeable tax base in the vicinity of the Pacific Mine

would abet and accelerate this cause immensely. Special reference is made to Map "C" showing the central 'throughway' between Prescott and Lake Pleasant via the Senator Highway and southward extensions thereof. This writer can recall when portions of US 89 weren't much better than the roads into the Pacific are today.

#### CLIMATE AND TOPOGRAPHY:

One of the things which has impressed this writer greatly during the current work is the variation in day and night temperatures. Though no readings were taken, the days are sweltering hot while the nights are very cool. Nights spent on the west side of Silver Mountain during the past winter were below freezing, but the days after sunup were delightfully warm. This criterion alone marks the area as one which has good potential for the production of both foodstuffs and ornamentals which could be grown under intensified conditions. Also suggestive of this natural growing capability is the luxuriant growth of heavy brush which blankets even the steepest slopes and bespeaks not only the generally optimum details of climate but also of the soils they grow in as well. This brush is both a curse and a blessing, and it is well-realized that its impenetrable expanse has been a strong deterrent to prior prospecting (and hence location) of the area which is now held by KCOZ, Inc.

Reference to the Base Map (Map "G") show that elevations within the area vary from about 4,500-feet in the draw below the Pacific Mine to a maximum of 5,904-feet on KCOZ-Pacific No. 4 at the crest of Silver Mountain. The brush of various kinds blankets this entire span of altitude except for the deepest canyons where some fairly large trees are found. Of especial interest are the alligator juniper, and one of the oldest living trees anywhere must be the one in the canyon about 200-yards above camp. During the course of the current work, Mr. Musisto and the writer examined one stump which appears to span Christianity. As with so many mining areas, it is obvious that

the real heavy timber was logged off long ago for mining uses and for fuel to fire steam boilers for power. The writer doubts that much of this timber was ever cut for purposes of producing charcoal.

#### GEOLOGY AND ORE DEPOSITS:

The rock mass of major consequence within the study area is a large block of Yavapai Schist which projects southwestward from the southern end of the Bradshaw Mountains. The trend of this mass is southwest-northeast, and the strike of the schistosity is in the same general direction. A general average of the dips observed is  $50^{\circ}$  to the northwest. It is considered likely that this block is surrounded on all sides by the Bradshaw Granite or some related crystalline rock, though this relationship has yet to be definitely established. The most important question in this connection is the down-dip projection of the mineralized schist into the major crystalline mass, and this relationship may be determined in part by geophysics and finally by deep drilling. For some time the writer has been looking at similar, though much smaller, masses of Yavapai Schist on the west side of Silver Mountain, and some of these do project deeply into the crystalline basement.

The Yavapai complex as observed on the KCOZ-Pacific and related properties consists of an indeterminate sequence of hornblend schist, phyllite, quartzite, and mica schist. These latter two are considered to have economic potential heretofore overlooked, for many of the micaceous masses are almost entirely fine-grained muscovite mica (sericite) and there are exposures of medium-bedded quartzite on some of the patented claims which could be quarried for a superior building stone.

Reference to Base Map "A", Claim Map "E", and the individual plats "I", "J", and "K" shows a varying alignment in the claims within the patented Groups as well as some variations in the lengths of the side lines (less than 1500-feet). The gist of these irregularities in orientation and length lies in the



variations of the trend of the large mineralized outcrop, and the original locators did a careful and commendable job to assure that this outcrop did indeed pass through the end line of each claim thus assuring extralateral rights downdip and to the northwest. Thus the strike (and variations in this strike) are immediately apparent and conformable to the orientations of the claims themselves.

One major exception to the general NE-SW trend of the schistosity and the long zones of mineralization exists within the Pacific patented Group, for here there is a rotational block of the Yavapai whose schistosity strikes east-west and dips  $60^{\circ}$  or more northerly. This block probably resulted during the initial deformation and tilting of the Schist, for it is a host to a very strong zone of cross-mineralization which connects the Pacific and the Consolidated lodes. This will be described in more detail hereinafter.

The other rock of major importance within the area and the one which has received most careful early consideration is the intrusive porphyry (probably a rhyolite porphyry) which, for the most part, has intruded the schist in such a manner that it is conformable to it. For this reason it will be considered hereinafter as a "sill" rather than the usual designation of a "dike". This rock is so intimately associated with the big mineralized structures that there can be little doubt that it, or at least some closely-related member, is the source rock for the mineralizing solutions. Further work may indicate that there is a diabase segregation from this mass which is the actual source rock, and this is the condition which has been observed before on the west side of Silver Mountain.

Wherever this sill is seen to occur (and it is generally traceable from the NE to the SW), it is immediately adjacent to or sandwiched between the strong crossan zones. At the Pacific, for example, there is a hanging wall zone of about 60-feet, the porphyry in widths upwards of 25-feet, and a footwall zone of varying width up to 40-feet. Pelic structures within the porphyry

show that it, too, is mineralized and can be expected to carry something in the way of metal values at depth.

In order to consider the scope of these large mineralized zones, it is considered necessary to segregate them and for that purpose they are named hereinafter for their claim Groups:

O'Brien Lode: This is the southwestward extent of the mineralized trend, and as of this writing only the northeastward portion has been observed. This lode is encompassed for purposes of definition by the patented lode claims of U.S. 2594 and the unpatented claims of the Mc Donald Group which are contiguous to them;

Consolidated Lode: This lode runs the entire length of the Consolidated Group (U.S. 2274) and projects northeastward into the MCCZ-Pacific Group on claim 33. It is also the lode projecting southwestward into the O'Brien Group as mentioned hereinbefore. The lowest elevation at which the Consolidated lode is visible is in the Silver Creek canyon above camp at about 4700-feet, and it crosses the sharp ridge of Silver Mountain at an elevation of 5790-feet, or a visible vertical extent slightly in excess of 1,000-feet;

Pacific Lode: The Pacific Lode occupies a structure which lies parallel to the Consolidated Lode and about a quarter-mile southeastward from it. The Pacific Lode is noticeably wider than the Consolidated Lode, but it does not have the lateral extent as shown by the Consolidated. The mineralized exposures which are lowest in elevation are shown in Silver Creek canyon below the camp at about 4550-feet, and they are still projecting downward strongly at this point;

Cross Lode: Mentioned hereinbefore is a rotational block of the Yavapai Schist wherein the strike is east-west and the dips are to the north. This block is host to a very strong mineralized cross-zone which connects the Pacific and the Consolidated lodes. This zone is about 1,000-feet long and the strong mineralization upwards of 200-feet wide at the widest point. Inasmuch as this area is one of positive relief, it is an ideal situation for open cut operation. Not all of this Cross Lode is covered by the patented ground, and the eastward portion has been claimed by MCCZ-Pacific claims Nos. 13 & 20. The northwestward projection is on MCCZ-Pacific No. 40, and in projecting between the Pacific and Consolidated it crosses the MCCZ-Pacific Fraction No. 1. This fact underscores the strategic importance of this Fraction, for it would be impossible to conduct an open cut operation on this Cross Lode without owning that particular parcel of ground.

Miscellaneous Lodes: A cataloging of these deposits has just

begun as of this writing, and much detailed work will be necessary before they are summarized and evaluated as to economic potentials.

In order to show the locations of the various lodes named and discussed hereinbefore, Map "I" has been prepared <sup>from</sup> Index Plats, and shown thereon are the Consolidated, Pacific, and Cross lodes. Also indicated is the area of the O'Brien lode which is to be the subject of further study.

Inasmuch as there is very little published information on the Pacific area, it will be the task of KCOZ, Inc. to amass all the data which will ultimately go into a full Feasibility Report. Included in this detailed work will be a survey of the unpatented claims which, together with the plats of the patented Groups, can be developed into a grid from which the geology, geophysical work, and detailed sampling can be done. This study will not only be very meaningful in itself, but it will also provide the data for exploration at depth, particularly drilling. It is pointed out here that every increment of work which is done hereinafter will add to the potential value of the property for whatever disposition is made of it, whether for outright sale or for KCOZ own operation.

Only a minimum of sampling has been done to date, and of these only the results of two are available. Others are being run, but the results are not yet received. Of the two which were taken and assayed, the results are as follows:

(1) Ore dump, Pacific Mine: Au-0.158; Ag-14.98; Cu-3.16%

(2) Ore dump, Buffalo Claim: Au-0.120; Ag-3.74; Cu-5.35%.

Values such as these were very mediocre to the "old timers" who dug this ore, but they could be high grade ore in a large operation of today. One very exciting aspect of the proposed KCOZ undertaking is that these values have been mined from structures which are shown at the surface to be strongly mineralized and which, by even conservative projections, indicate target tonnages in the range of 50,000,000-tons and beyond. To explore targets of this magnitude is an immense undertaking, but the rewards can be equally grand. Probably the most difficult single hurdle to



overcome is to present this program in a convincing manner. It is virtually incomprehensible to realize that geologic structures of these visible magnitudes and indicated tenor could be lying so quietly as to escape the attention of the major operators, and especially when it is considered that a large block of potentially productive mineral bearing ground adjacent to them was lying open for location.

As an epilogue to the foregoing, it is reminded that the major effort by KOOZ to date has been the location of that ground which was contiguous to and in a large measure surrounding the patented claims of the Pacific and Consolidated Groups. The geology which the writer has done and which has been presented hereinbefore has been done mostly while 'passing through' during the primary endeavor of securing the desirable open ground for KOOZ, Inc. Now that this task has been accomplished, KOOZ can proceed hereinafter on a step by step basis in accordance with the following recommendations:

#### RECOMMENDATIONS:

- (1) Monument and validate the KOOZ-Pacific unpatented lode mining claims Nos. 1-46 and KOOZ-Pacific Fractions Nos. 1-3. This will necessitate the following:
  - (a) Establishment of a small camp to accommodate an initial crew of 3 or 4-men;
  - (b) Bulldozer work to improve road from Fort Misery to the property, to improve the existing roads on the property, to cut new roads as necessary for drillsite access in order to drill validation holes, to level drillsites at the appropriate spots for the drilling of validation holes, and for the blazing of survey lines;
  - (c) Survey and monument the KOOZ-Pacific lode claims Nos. 1-46, inclusive, and KOOZ-Pacific Fractions Nos. 1-3, inclusive, and locate and file KOOZ-Pacific No. 37 which, as of this writing, is yet to be located. Once this survey has been completed and correlated with the patent surveys on the Pacific, Consolidated, and O'Brien Groups, they can serve as a grid for detailed geological, geophysical, and geochemical works;
  - (d) Do the validation drilling and/or bulldozer work in

accordance with Arizona law; and

- (e) File the Certificates of Location on all KCOZ-Pacific unpatented lode mining claims and fractions together with the necessary plats and affidavits on the drilling.
- (2) The foregoing represents the actions which must be taken by KCOZ, Inc. in order to establish a possessory title to the mineral resources within the claimed ground. Having established this base from which to expand, the next logical step is to proceed as expeditiously as possible with the acquisition of the patented and unpatented claim Groups which are listed in detail hereinbefore. Though these recommendations are listed in two different steps, it is only logical that negotiations can be carried on at the same time the claim validations are being accomplished; and
- (3) Having secured title commitments on all of the ground under consideration, to proceed immediately with the task of exploring those areas with a view of upgrading them to feasibility status.

Thus it is seen that the endeavors lying ahead can be encompassed in three general groups, viz: (1) Claim validation and filing of the KCOZ-Pacific claims; (2) Acquisition of the adjoining properties; and (3) the Exploration and Development of the whole. In terms of extrapolated endeavor, it will be noted that (1) hereinbefore is very straightforward in that its completion is largely a matter of complying with Federal and State laws relating to the location, monumenting, and validation work on a lode mining claim. The budget for this work is fairly well categorized, for finite increments of work are involved and each has an average going price. Regarding (2) hereinbefore, however, the parameters for property acquisition and the costs relating thereto are not so well defined, especially as to terms, times, and conditions of payment (whether from royalties or out of pocket). Another flexible condition regarding property acquisition relates to the down payment vs. end price, and here again the intervening duration will have a direct bearing. Normally a lesser down payment begets a larger end price and vice versa, and the scale of the intermediate payments will have a strong bearing on the negotiations also. What is also very important are

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the work commitments which would tend to be conducive to the generation of royalties and thus would constitute income to the owner. These activities would constitute the Exploration and Development of (3) hereinbefore.

From the concept of lode claim acquisition through location to negotiations for adjoining properties to exploration and development of the whole represents an exponentially-expanding tempo of endeavor, and the budgetary requirements are going to escalate more or less accordingly. In light of this fact and also in light of the many unknowns which are involved as of this writing, it is recommended that KOOZ, Inc. consider budgetary requirements as follows:

ESTIMATED BUDGET:

Phase 1:	Surveying, monumenting, validating, and filing KOOZ-Pacific unpatented lode mining claims Nos. 1-46 and KOOZ-Pacific Fractions Nos. 1-3, incl. at a nominal \$500 each for all necessary work requirements:	\$25,000.00
Phase 1:	Prospecting Permit on Section 16, together with all necessary work requirements: (Nominal, per year)	\$ 2,500.00
Phase 1: ..	(Continuing) Annual assessment work on 49-unpatented lode mining claims and fractions and payments and work requirements on Section 16: (Nominal, per year)	\$ 7,500.00
Phase 2:	Property acquisition: For purposes of initial estimating, a figure of \$750/per patented acre is suggested, for a nominal 500-acres: (Actual patented acreage-482.945)	\$375,000.00
Phase 3:	Nominal allowance of one-cent (\$.01) per ton for the exploration and development of a 50,000,000-ton (plus) target:	\$500,000.00
Total of Estimated Budget:		\$900,000.00 (Nominal)

EPILOGUE:

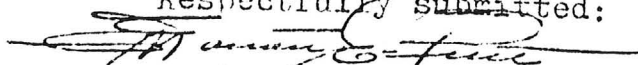
The foregoing figures are very concise, but they are no less realistic because of the brevity of the presentation. Actually

these figures have been condensed from more expansive Schedules which the writer is currently preparing, especially the one for Exploration and Development. Some appreciation for target magnitude is evinced when it is realized that a token figure of one penny per ton for the exploration of each projected ton of the target mass yields a gross Exploration and Development figure of one-half million dollars!

It is repeated again with no intention to be trite that one of the major tasks ahead of KCOZ, Inc. is that of convincing interested parties that this situation actually exists. Very little is written regarding the area, and probably few people have ever heard of it. Lindgren briefly mentions the Pacific Mine in U.S. G.S. Bulletin 782, and it is apparent from his text that he was quoting hearsay and did not visit the mine himself. Had he done so, it is considered inevitable that he would have expounded on the both the Pacific and the Consolidated, for these structures eclipse all that Lindgren did discuss except the United Verde itself. Private reports are scarce also, though one report on the Consolidated is in the possession of Adelaide McDonald, and a transcription of that report is appended hereto. This report is taken from an old original signed copy.

This report is also structured for the addition of suitable Appendices relating to Exploration, Development, and Land Use which are now in preparation. Additional work on the KCOZ-Pacific and related claims is going to yield quantities of additional information regarding the projection of potentials thereon, and it is the carefully considered professional opinion of this writer that most of this information will be positive and indicative of production potentials. KCOZ Inc. is urged to consider these latent potentials and to proceed as expeditiously as possible.

Respectfully submitted:

  
Marion E. Price, P.E.  
Geological Engineer

MEP:p  
Enclosures

## MAP INDEX

- Map A: Vicinity Map showing the approximate location of the Pacific Mine and its environs northwest of Phoenix and southwest of Prescott. Also shown (in dotted blue lines) is the general course of the existing road between the property and Lake Pleasant
- Map B: Mileage Chart showing mileages between major cities in Arizona.
- Map C: Section from U.S. Forest Service map of the Prescott National Forest showing the Crown King Ranger District and vicinity. At a scale of  $1/2" = 1\text{-mile}$ , this map precisely shows the portion of the Pacific patented lode mining claims which lie within the Forest Service boundary. It also shows the relationship of the Pacific Mine to the northeasterly-trending zone which strikes through the Crown King and continues beyond
- Map D: Land Status Map, State of Arizona, for that portion of Yavapai County which includes Township 9 North, Range 1 West. This map shows the status of the Surface Rights within the individual sections. It is noted that the patented mining ground represented by Mineral Surveys Nos. 2274, 2594, and 2803 are shown in red while the KOOZ-Pacific unpatented lode mining claims and fractions are shown in apricot. Also shown in shaded red is Section 16 wherein the State of Arizona owns the mineral rights and for which KOOZ, Inc. has applied for a formal Prospecting Permit. Also shown in green is the road leading southward from the Pacific Mine to the Maricopa County line at the northern extremity of Lake Pleasant. The distance from the Mine to the oiled road at Lake Pleasant is 25.5-miles, and from that point it is approximately 40-miles into Phoenix
- Map E: Map E is a sequel to Map D, and herein is shown the mineral status of the lands in question. Of particular significance here is the indication that Sections 8, 9, 17, 18, 19, and 20 wherein the bulk of the Kooz-Pacific lode mining claims and fractions are located are either within (1) the U.S. Forest Service or (2) the Bureau of Land Management and therefore open to mineral lode location. The minor exception to this is that Kooz-Pacific claims Nos. 13, 20, and 21 overlap slightly the northwest corner of State Section 21. This relationship is shown more clearly on Map D and on the Base Map (Scale  $1" = 500'$ ) in the map pocket
- Map F: Portion of Yavapai County showing projection of the Senator Highway southward past the Pacific Mine to Lake Pleasant



# MAP "G":

Base Map (in Map Pocket): (Scale: 1"=500')

The Base Map has been prepared by joining four (4) U.S.C.S. 7½-minute Quadrangle Sheets, viz., (1) Crown King, (2) Columbia, (3) Copperopolis, and (4) Minnehaha. The original scale of 1:24,000 has been carefully enlarged four diameters to a resultant mean scale of 1:6,000 (1" = 500') for that portion representing the general area of the Pacific Mine. Plotting on the Base Map has been done from U.S. Mineral Surveys Nos. 2274, 2594, and 2803. The details of these surveys and the claims involved are as follows:

Mineral Survey 2274 of June 13-16, 1906:			Map "I" in pocket
(1)	Eagle	20.541-acres	
(2)	Wellington	15.505 "	
(3)	Austin	20.543 "	
(4)	Little Pittsburg	20.641 "	
(5)	Buffalo	20.661 "	
(6)	Palestine	17.576 "	
(7)	Copper Ash	14.105 "	
(8)	Empire	9.130 "	Total: 138.702-acres

Mineral Survey 2594 of October 10-15, 1908:			Map "J" in pocket
(1)	Noonday	15.966-acres	
(2)	South Noonday	15.966 "	
(3)	Number Twelve	20.658 "	
(4)	Number Thirteen	20.658 "	
(5)	Comet	18.496 "	
(6)	Number Eleven	18.496 "	
(7)	Dudley	15.124 "	
(8)	Number Ten	15.124 "	Total: 140.488-acres

Surveyed for Patent but not Patented (M.S. 2594):		
(1)	Number Fourteen	17.941-acres
(2)	Four Hundred	17.941 "
		Total: 35.882-acres

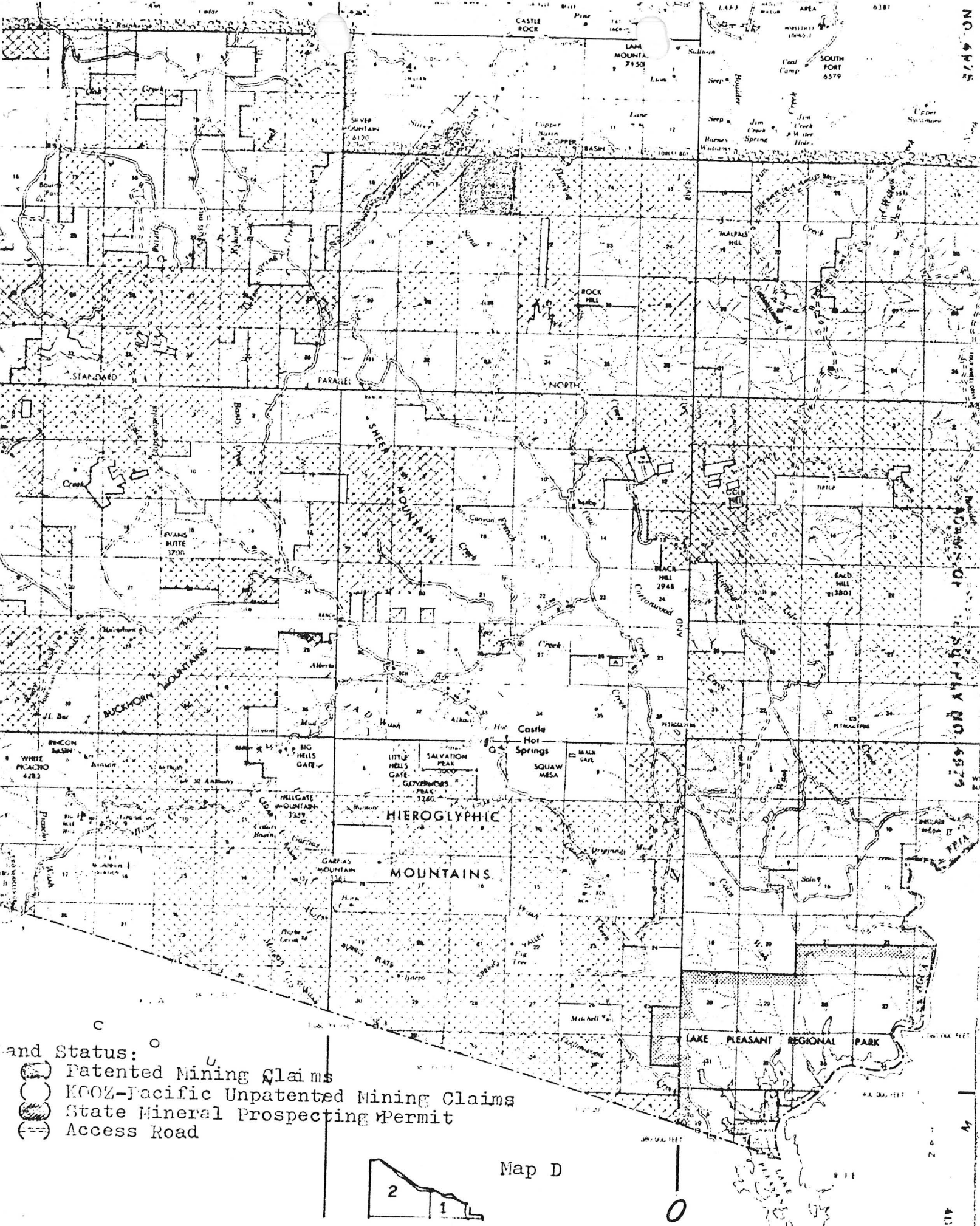
Mineral Survey 2803 of May 9-13, 1910:			Map "K" in pocket
(1)	Ashland	20.451-acres	
(2)	Oakland	20.661 "	
(3)	Sunnyside	20.661 "	
(4)	Alameda	20.661 "	
(5)	Azurite	20.661 "	
(6)	Yavapai	20.661 "	
(7)	Virginia	19.646 "	
(8)	Mars	19.646 "	
(9)	Jumbo	19.646 "	
(10)	Cuprite	20.661 "	Total: 203.355-acres

In addition to the foregoing, the Base Map also shows the following:

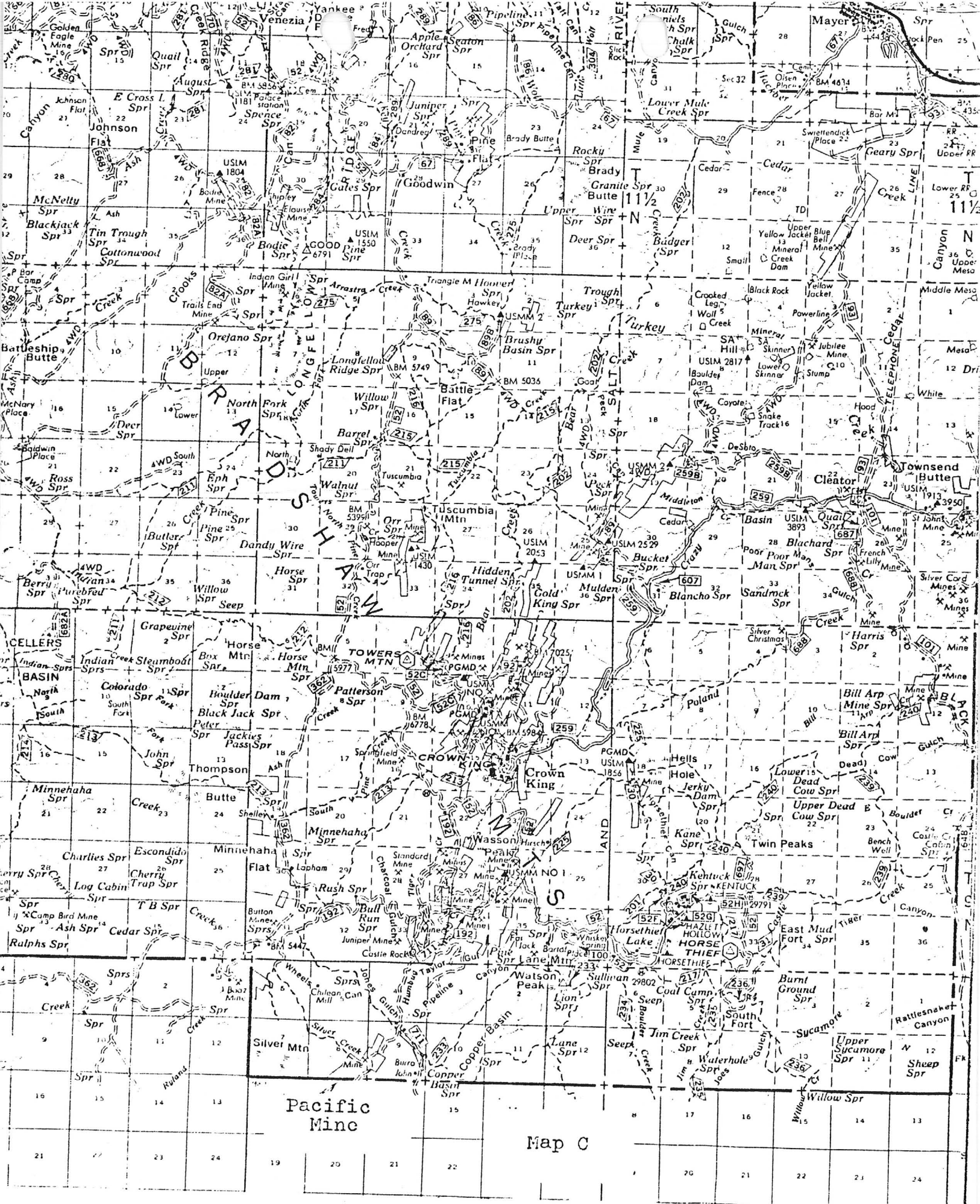
(a) State Section 16; (b) 10-unpatented F.X. O'Brien lode claims, and (c) Kooz-Pacific Nos. 1-47 (except No. 37) and Kooz-Pacific Fractions Nos. 1-3, inclusive.

MAP "H": Claim map, Scale 1" = 500', in map pocket  
 MAP "I" Lode Map, ii in map pocket









Pacific  
Mine

Map C



Map A

NOTICE: MAKE LOCAL INQUIRY OF ROAD  
CONDITIONS IN THIS AREA. MANY ROADS  
ARE NOT PASSABLE FOLLOWING  
SEVERE WEATHER CONDITIONS.

DANGER:  
DO NOT LEAVE RIGHT-OF-WAY  
ON MAIN TRAVELED ROADS  
USE ROADS OPEN TO PUBLIC ONLY.  
OBEY ALL WARNING SIGNS.





181	248	289	338	386	434	482	530	578	626	674	722	770	818	866	914	962	1010	1058	1106	1154	1202	1250	1298	1346	1394	1442	1490	1538	1586	1634	1682	1730	1778	1826	1874	1922	1970	2018	2066	2114	2162	2210	2258	2306	2354	2402	2450	2498	2546	2594	2642	2690	2738	2786	2834	2882	2930	2978	3026	3074	3122	3170	3218	3266	3314	3362	3410	3458	3506	3554	3602	3650	3698	3746	3794	3842	3890	3938	3986	4034	4082	4130	4178	4226	4274	4322	4370	4418	4466	4514	4562	4610	4658	4706	4754	4802	4850	4898	4946	4994	5042	5090	5138	5186	5234	5282	5330	5378	5426	5474	5522	5570	5618	5666	5714	5762	5810	5858	5906	5954	6002	6050	6098	6146	6194	6242	6290	6338	6386	6434	6482	6530	6578	6626	6674	6722	6770	6818	6866	6914	6962	7010	7058	7106	7154	7202	7250	7298	7346	7394	7442	7490	7538	7586	7634	7682	7730	7778	7826	7874	7922	7970	8018	8066	8114	8162	8210	8258	8306	8354	8402	8450	8498	8546	8594	8642	8690	8738	8786	8834	8882	8930	8978	9026	9074	9122	9170	9218	9266	9314	9362	9410	9458	9506	9554	9602	9650	9698	9746	9794	9842	9890	9938	9986	10034	10082	10130	10178	10226	10274	10322	10370	10418	10466	10514	10562	10610	10658	10706	10754	10802	10850	10898	10946	10994	11042	11090	11138	11186	11234	11282	11330	11378	11426	11474	11522	11570	11618	11666	11714	11762	11810	11858	11906	11954	12002	12050	12098	12146	12194	12242	12290	12338	12386	12434	12482	12530	12578	12626	12674	12722	12770	12818	12866	12914	12962	13010	13058	13106	13154	13202	13250	13298	13346	13394	13442	13490	13538	13586	13634	13682	13730	13778	13826	13874	13922	13970	14018	14066	14114	14162	14210	14258	14306	14354	14402	14450	14498	14546	14594	14642	14690	14738	14786	14834	14882	14930	14978	15026	15074	15122	15170	15218	15266	15314	15362	15410	15458	15506	15554	15602	15650	15698	15746	15794	15842	15890	15938	15986	16034	16082	16130	16178	16226	16274	16322	16370	16418	16466	16514	16562	16610	16658	16706	16754	16802	16850	16898	16946	16994	17042	17090	17138	17186	17234	17282	17330	17378	17426	17474	17522	17570	17618	17666	17714	17762	17810	17858	17906	17954	18002	18050	18098	18146	18194	18242	18290	18338	18386	18434	18482	18530	18578	18626	18674	18722	18770	18818	18866	18914	18962	19010	19058	19106	19154	19202	19250	19298	19346	19394	19442	19490	19538	19586	19634	19682	19730	19778	19826	19874	19922	19970	20018	20066	20114	20162	20210	20258	20306	20354	20402	20450	20498	20546	20594	20642	20690	20738	20786	20834	20882	20930	20978	21026	21074	21122	21170	21218	21266	21314	21362	21410	21458	21506	21554	21602	21650	21698	21746	21794	21842	21890	21938	21986	22034	22082	22130	22178	22226	22274	22322	22370	22418	22466	22514	22562	22610	22658	22706	22754	22802	22850	22898	22946	22994	23042	23090	23138	23186	23234	23282	23330	23378	23426	23474	23522	23570	23618	23666	23714	23762	23810	23858	23906	23954	24002	24050	24098	24146	24194	24242	24290	24338	24386	24434	24482	24530	24578	24626	24674	24722	24770	24818	24866	24914	24962	25010	25058	25106	25154	25202	25250	25298	25346	25394	25442	25490	25538	25586	25634	25682	25730	25778	25826	25874	25922	25970	26018	26066	26114	26162	26210	26258	26306	26354	26402	26450	26498	26546	26594	26642	26690	26738	26786	26834	26882	26930	26978	27026	27074	27122	27170	27218	27266	27314	27362	27410	27458	27506	27554	27602	27650	27698	27746	27794	27842	27890	27938	27986	28034	28082	28130	28178	28226	28274	28322	28370	28418	28466	28514	28562	28610	28658	28706	28754	28802	28850	28898	28946	28994	29042	29090	29138	29186	29234	29282	29330	29378	29426	29474	29522	29570	29618	29666	29714	29762	29810	29858	29906	29954	30002	30050	30098	30146	30194	30242	30290	30338	30386	30434	30482	30530	30578	30626	30674	30722	30770	30818	30866	30914	30962	31010	31058	31106	31154	31202	31250	31298	31346	31394	31442	31490	31538	31586	31634	31682	31730	31778	31826	31874	31922	31970	32018	32066	32114	32162	32210	32258	32306	32354	32402	32450	32498	32546	32594	32642	32690	32738	32786	32834	32882	32930	32978	33026	33074	33122	33170	33218	33266	33314	33362	33410	33458	33506	33554	33602	33650	33698	33746	33794	33842	33890	33938	33986	34034	34082	34130	34178	34226	34274	34322	34370	34418	34466	34514	34562	34610	34658	34706	34754	34802	34850	34898	34946	34994	35042	35090	35138	35186	35234	35282	35330	35378	35426	35474	35522	35570	35618	35666	35714	35762	35810	35858	35906	35954	36002	36050	36098	36146	36194	36242	36290	36338	36386	36434	36482	36530	36578	36626	36674	36722	36770	36818	36866	36914	36962	37010	37058	37106	37154	37202	37250	37298	37346	37394	37442	37490	37538	37586	37634	37682	37730	37778	37826	37874	37922	37970	38018	38066	38114	38162	38210	38258	38306	38354	38402	38450	38498	38546	38594	38642	38690	38738	38786	38834	38882	38930	38978	39026	39074	39122	39170	39218	39266	39314	39362	39410	39458	39506	39554	39602	39650	39698	39746	39794	39842	39890	39938	39986	40034	40082	40130	40178	40226	40274	40322	40370	40418	40466	40514	40562	40610	40658	40706	40754	40802	40850	40898	40946	40994	41042	41090	41138	41186	41234	41282	41330	41378	41426	41474	41522	41570	41618	41666	41714	41762	41810	41858	41906	41954	42002	42050	42098	42146	42194	42242	42290	42338	42386	42434	42482	42530	42578	42626	42674	42722	42770	42818	42866	42914	42962	43010	43058	43106	43154	43202	43250	43298	43346	43394	43442	43490	43538	43586	43634	43682	43730	43778	43826	43874	43922	43970	44018	44066	44114	44162	44210	44258	44306	44354	44402	44450	44498	44546	44594	44642	44690	44738	44786	44834	44882	44930	44978	45026	45074	45122	45170	45218	45266	45314	45362	45410	45458	45506	45554	45602	45650	45698	45746	45794	45842	45890	45938	45986	46034	46082	46130	46178	46226	46274	46322	46370	46418	46466	46514	46562	46610	46658	46706	46754	46802	46850	46898	46946	46994	47042	47090	47138	47186	47234	47282	47330	47378	47426	47474	47522	47570	47618	47666	47714	47762	47810	47858	47906	47954	48002	48050	48098	48146	48194	48242	48290	48338	48386	48434	48482	48530	48578	48626	48674	48722	48770	48818	48866	48914	48962	49010	49058	49106	49154	49202	49250	49298	49346	49394	49442	49490	49538	49586	49634	49682	49730	49778	49826	49874	49922	49970	50018	50066	50114	50162	50210	50258	50306	50354	50402	50450	50498	50546	50594	50642	50690	50738	50786	50834	50882	50930	50978	51026	51074	51122	51170	51218	51266	51314	51362	51410	51458	51506	51554	51602	51650	51698	51746	51794	51842	51890	51938	51986	52034	52082	52130	52178	52226	52274	52322	52370	52418	52466	52514	52562	52610	52658	52706	52754	52802	52850	52898	52946	52994	53042	53090	53138	53186	53234	53282	53330	53378	53426	53474	53522	53570	53618	53666	53714	53762	53810	53858	53906	53954	54002	54050	54098	54146	54194	54242	54290	54338	54386	54434	54482	54530	54578	54626	54674	54722	54770	54818	54866	54914	54962	55010	55058	55106	55154	55202	55250	55298	55346	55394	55442	55490	55538	55586	55634	55682	55730	55778	55826	55874	55922	55970	56018	56066	56114	56162	56210	56258	56306	56354	56402	56450	56498	56546	56594	56642	56690	56738	56786	56834	56882	56930	56978	57026	57074	57122	57170	57218	57266	57314	57362	57410	57458	57506	57554	57602	57650	57698	57746	57794	57842	57890	57938	57986	58034	58082	58130	58178	58226	58274	58322	58370	58418	58466	58514	58562	58610	58658	58706	58754	58802	58850	58898	58946	58994	59042	59090	59138	59186	59234	59282	59330	59378	59426	59474	59522	59570	59618	59666	59714	59762	59810	59858	59906	59954	60002	60
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Gentlemen:

At your request I hereby submit the following report on the Consolidated Union-Grand Copper Company mines.

This property is situated in Yavapai County, Arizona, about 8 miles from Crown King, a railroad station on the P. & E. Railway. There are some (9) claims or 180 acres of mineral bearing ground in this group, running for a distance of two miles along the gossan or iron capping. This iron capping shows continually for the above distance and is of great width, being in places over 200 feet wide. At many places along this wide two miles of iron capping is encountered copper in the form of blue and green carbonates, Malachite and Azurite and the different Sulphides of copper as Chalcocite, Bornite and Chalcopyrite, Sulphide of iron is also found contiguous to the copper ores, which is characteristic of the copper mines of Arizona such as the United Verde and the Copper Queen mines.

In several places where shafts of varying depths have been sunk in the iron capping the surface carbonate ores are beginning to change to the yellow sulphide of copper ore Chalcopyrite, which character of ore is producing three-fourths of the copper mined in Arizona/ At one place a tunnel has been run for a distance of 350 feet in the ledge manner and shows copper carbonate stains for the entire distance. A sample along 60 feet of this distance assayed 13% copper and 12.6 oz. in silver. Three winzes have been sunk in this tunnel and in all of them Sulphide ore Chalcopyrite is being found with the carbonate ores showing that but little depth at this place would no doubt encounter the permanent sulphide zone, which this exceptionally large iron capping covers and in my judgement 100 ft. in depth here would reach the permanent Chalcopyrite ore body and from the surface conditions I would expect to find it over fifty (50) feet in width.

At several other places along the two miles of ore cropping surface indications point to every expectation of encountering the permanent ore zone and water level with a reasonable depth.

The copper sulphides so far as found are of a concentrated form and free from iron sulfides carrying no copper.



The surface carbonate ores and also the sulphide ores found with depth, are identical to those found in the big copper mines of the West, such as the United Verde, Copper Queen and Cananea properties. The iron gossan is also alike in looks and composition to the capping rock of the above and other copper mines of the West but it is more extensive than most of them.

I took six assays along the ore outcrop and from some of the shafts and tunnels with the following results:

Marked	Gold Ounces Value	Silver Ounces Value	Copper Per Ct.	Copper Value	Total
1.	Trace	12.60 \$7.56	13.2	\$39.60	\$47.16
2.			36.8	110.40	110.40
3.	Trace	89.00 53.40	30.0	90.00	143.40
4.			19.4	58.20	58.20
5.			8.8	26.40	26.40
6.	Trace	1.50 .90	12.4	37.20	38.10

All of the above ores would pay to ship to the Bradshaw Mountain Copper Company's 600 ton smelter, now being erected near this property, and as the mine was being developed should be shipped and smelted at this plant until such time as sufficient ore was opened up as to justify the erection of a smelter on this property. As to the best place to quickly develop the permanent sulphide ore bodies of this property, I recommend the continuation of the shaft where #4 assay came from, as the bottom of this shaft is now in this rich class of yellow sulphide of copper ore, and it is apparently getting to be richer and more of it as the shaft attains depth, and with my experience with the big copper mines of the West and Mexico I believe the bottom of this shaft is just entering the permanent ore zone.

There are several other shafts and tunnels in ore but I consider this the most promising one for quick results.

This property is in the same mineral bearing belt as W.A. Clark's famous United Verde Copper mines, and the Bradshaws Mountain Copper Company mines only a few miles north of this property, with the same formation and character of ore, has been developed sufficiently to warrant the erection of a 600 ton Smelting Plant.

I believe the Consolidated Union-Grand Copper Company mines with judicious development would soon show us enough ore to warrant the erection of its own Smelting Plant and in time to be one of the great copper mines of Arizona which territory is now producing more copper than any other State or Territory in the United States.

C. W. Mitchell, E.M.

MARION E. PRICE  
GEOLOGICAL ENGINEER  
R. P. E. - NEVADA - NO. 974  
1505 BENNETT ROAD  
MOUNT VERNON, WASH. 98273  
208 424-7735

May 26, 1976

TO ALL WHOM IT MAY CONCERN:

The following is a resume of my educational qualifications plus a brief summary of my professional experiences as a private consultant and contractor since 1948. A selected list of personal references will be furnished upon request.

Full name: Marion Elmer Price

Address and telephone: As above

Age: 56; Born April 5, 1920 at Quail, Texas

Marital Status: Married; 7-children ages 14 to 23

Religion: Catholic; member Knights of Columbus

Personal: Height-5'9"; Weight-165; Hair and Eyes-Brown;  
Health-Excellent

Education: High School, Montrose, Colo; Graduated 1937

College: (1) Colorado A&M 1937-38; Pre-  
Engineering

(2) U.S. Naval Academy, Annapolis, Md.  
1941-44. Graduated 284 in class of  
914. Degree-Bachelor of Science

(3) Colorado School of Mines, Golden,  
Colo. Graduated 1948, Geological  
Engineer

Academic Honors: Tau Beta Pi (Engineering Honorary)

Military Service: 1937-38: Enlisted, Colo. Nat'l Guard and  
ROTC while attending Colorado A&M

1938-41: Enlisted, U.S. Marine Corps. Dis-  
charged June, 1941, to accept competitive  
appointment from Secretary of the Navy to  
the U.S. Naval Academy

1941-44: Midshipman, U.S. Navy

1944-46: Commissioned, U.S. Marine Corps  
on Guam, Okinawa, Japan, and China as a  
machine gun platoon leader, rifle platoon  
leader, rifle company executive officer,  
and 155-howitzer battery commander. Resigned  
permanent commission in 1946 and honorably  
discharged. Decorations: Silver Star, Navy  
Unit Citation, Presidential Unit Citation,  
and enlisted good conduct medal.



Language: Spanish--speak, read, write. Qualified for attache duty upon graduation from U.S. Naval Academy. Taught Spanish two semesters at Colorado School of Mines. Extensive work with Basque and Mexican miners;

Professional: Geological Engineer; Registered Professional Engineer No. 974 in Nevada. Private practice as a consulting geologist and mining contractor since 1948;

Experience: 1975-76: Consulting in Nevada, Utah, Arizona, and California on exploration projects. Currently assisting in setup and shakedown of 2,000 cu.yd. per day placer operation. Assisted in developing copper powder process and did plant design, layout, and supervised initial construction of same;

1973-74: Special projects engineer for firm of civil engineers. Major duties: Design, estimating, and supervising construction for municipal projects; special land-use studies; special design projects. Mining and geological work during this period included extensive fluorspar examinations and property acquisitions, feasibility study for hydrofluoric acid plant, line stone study, gold lode and placer examinations, and feasibility study on copper slurry leach operation with extensive byproduct recovery;

1970-72: Reconnaissance engineer for Canadian clients in both Canada and the U.S., part-time operational superintendent in charge of company personnel and contract drilling crews; feasibility study on limestone and burned lime operation; evaluation and application of air pollution control equipment;

1968-69: Extensive work in Colorado and New Mexico on base metal and fluorspar properties; feasibility study on lead-zinc-silver mine and mill; feasibility study for installation of a chemical smelter in Guanaquato, Gto., Mexico;

1961-67: Placer sampling and evaluation in northern British Columbia, diamond drilling for lode gold in British Columbia, 50-ton per day mercury operation in Nevada; extensive mercury examinations in Washington, Nevada, and California, extensive iron examinations in British Columbia, silica examinations in Alaska, British Columbia, Washington, Oregon, and Southern California both as lode occurrences and specialty sands.

Beginning in 1963 and continuing intermittently to the present, work with farmers in the Puget Sound and in the Columbia Basin on soils beneficiation using

natural-mined products as soil supplements and plant foods. Incidental to this work has been the design and installation of sprinkler irrigation systems, design and fabrication of special harvesting and processing equipment, and the actual field and warehouse operation of this equipment.

1960 only: Monolithic concrete pipe construction in Contra Costa, Sacramento, and San Joaquin Counties, California. Primary job was bidding ground conditions for pilepine construction; secondary duties included design and fabrication of special pipeline equipment and some supervision of pipeline crews;

1948-59: Consulting and contracting in the western U.S. and Mexico. Significant projects include the following:

- (1) 500-tpd underground tungsten mine;
- (2) 50-cu.yd./hr operational testing of gold placer using stationary trommel, sluices, jigs, and tables;
- (3) 20-cu.yd./hr operational testing of gold placer using portable trommel and sluices only;
- (4) Coowner and operator of 25-tpd gold mine and mill;
- (5) 50-tpd cinnabar flotation mill and concentrate retorts;
- (6) 75-tpd underground chrome mine and gravity concentrator;
- (7) Design and pilot testing for 500-tpd chrome mill;
- (8) Extensive iron explorations in Nevada;
- (9) Extensive DMEA contracting on sinking, drifting, and drilling;
- (10) Operated 10-stamp gold mill for operational sampling of gold mine;
- (11) 400-tpd gold cyanide operation with extensive diamond and rotary drilling;
- (12) Graphite explorations in California;
- (13) Manganese placer testing in Arizona;
- (14) Tungsten and gold placer sampling in California;
- (15) Corrosion consultant; one of the first to relate corrosion to geology and devise methods for predicting corrosivity as a function of environment.

## S U M M A R Y

The Pacific Mine is located in the Tiger Mining District (formerly known as the Silver Mountain Mining District), Yavapai County, Arizona. There are ten patented mining claims owned by Mr. Thomas Beard of Prescott, Arizona, and 36 unpatented mining claims owned by G. A. Russell of Russell Associates, Tucson, Arizona. These claims are, or were part of the original Pacific Mine holdings.

The old Pacific Mine workings consist of a two-compartment verticle shaft, 500+ ft deep, with over 1500 ft of development work consisting of latteral drifting from the shaft on five levels. Major workings are all trending along the strike to the northeast.

An intrusive porphyry dike, varying from 50 to 150 ft in width, cuts the Yavapai schists. Contained within the dike structure are three heavily mineralized vein-type structures, 9 feet, 14 feet and 25 feet wide. The porphyry dike itself is heavy in chalcopryrite below the 100 ft level.

Early day ore shipments from the Pacific Mine averaged over a reported 10% copper, silver averages were over one ounce to each percent of copper contained in the ore, gold values varied from 0.02 to 0.5 ounces per ton.

The old shaft is not accessible -- the collar has fallen in and the head frame is dry rotted and beyond repair.

3  
An examination by me of the underground workings (to the 400 ft level) in 1956 indicated a substantial blocked tonnage of commercial-grade ore. A possible  $\pm$  14,000 tons of material had been stoped above the 400 ft level, indicating that most of the ore shipped was from the development of headings and raises.

The resident engineer at the Pacific Mine while it was in operation was Mr. Val DeCamp, father of Rosemary DeCamp of television and movie fame.

C O N C L U S I O N S

The Pacific Mine has the potential of being a major producer.

East of Silver Creek, there is an old, established underground operation which could very possibly be converted to an open pit operation.

The area has a potential of an open pit operation west of Silver Creek.



## R E C O M M E N D A T I O N S

A geological survey should be made and the area mapped and gridded. I.P. and S.P. work should be done and, if the results warrant it, the large gossans or anomalous areas should be drilled.

The porphyry dike to the east of Silver Creek should be drilled to block out and determine the extent of this ore body.

L O C A T I O N   A N D   A C C E S S

The Pacific unpatented group of thirty six (36) lode mining claims held by Russell Associates and the ten (10) patented lode mining claims owned by Mr. Thomas Beard are located on Silver Creek in the Tiger Mining district of Yavapai County, Arizona.

The mining property is accessible by dirt road nine (9) miles through Crown King, Arizona or twenty (20) miles through Wagner, Arizona.

The area is of steep canyons and is densely covered with oak, manzanita, cat claw and laurel.

Water runs in Silver Creek about seven (7) months of the year. The Humbug Creek, located approximately one-half mile east of the property, has water running ten (10) months of the year.

Snowfall during the winter months is moderate and should not hinder any established mining operation.

## H I S T O R Y

The Pacific Mine was incorporated in 1907 with a capitalization of \$3,000,000, of which \$2,397,616 was sold on public issues at \$1.00 par.

At that time, the Pacific Mine included twenty (20) unpatented lode mining claims and ten (10) patented lode mining claims, for a total of approximately 600 acres.

The production record of this property is not available. The ore was shipped to the Mayer, Humbolt and Dewey areas via the old Crown King Railroad.

Shipping ore from this area from 1907 to the mid-1920's constituted a nine (9) mile wagon haul up the west slope of the Bradshaw Mountains to the Crown King Railroad siding at Crown King, Arizona. Because of this long haul, only the highest of ore grades could be shipped economically.

The results of over 1500 ft of development work was the source of most of the ore shipped from the Pacific Mine. An estimated 14,000 tons of stoped ore was mined.

The management (in the opinion of some of the old timers in the area) was following a program of developing the mine for a 600 ton-per-day operation in anticipation of a smelter to be built by Bradshaw Mountain Copper Company about four miles from the Pacific, near the head of Humbug Creek.

## G E O L O G Y

The Pacific holdings are on the last slope of Silver Mountain and extend to Humbug Creek on the east. The area is a rugged belt of an altered and structurally-faulted phase of Hornblendic Yavapai schists which is intruded by cherty dioritic porphyry dikes and structures of Jasper schists (Yavapai Iron Dikes). These dikes are traceable for over six miles.

A massive gossan, leached and honeycombed with Hematite, limonite, chalcopryrite, bornite, polybasite and some marmatite of zinc, Copper carbonate minerals are visible in much of the areas examined.

The massiveness of these gossans is not known as the underbrush is so dense in some areas visibility is nil -- but what is visible shows that the widths will run from 200 to 3000 ft with a length of at least three miles.

A massive porphyry dike, varying from 50 to 150 ft in width, is the predominant structure with development work east of Silver Creek having massive iron dikes bordering to the north and south.

Within this porphyry dike are three mineralized veins or structures ranging in widths of 9, 14 and 25 ft. The shaft on the Azurite claim was sunk on this structure.

To the west of Silver Creek, the massive gossans extend to the top of Silver Mountain. Along this structure is the O'Brian patented property. The O'Brian holdings have several drifts and

shafts which are accessible. Reports on this property bear out rumors of the Pacific property. Assays range from Au, nil; Ag, 4.3 oz; Cu, 4.1%; Au, .07 oz; Ag, 89.0 oz; Cu, 36.8%.

Some of these assays were cut on a 60 ft face of the structure.

To the southeast of Silver Creek is a shear zone which possibly has a bearing on the presence of the massive gossan beds.

The workings of the old Pacific shaft show that the oxide zone extends to 50 or 60 ft from the shaft collar, and that the porphyry dike carries commercial values across its widths. Little is known of mineral dissemination into the walls beyond this structure.



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- Russell, G. A., (no date), Tiger Mining District, Yavapai County, Arizona: Unpublished report.

A

302

ARIZONA

Mine credited with total production to date of \$700,000. • ARIZONA  
PACIFIC COPPER MINING CO.

Office: 415 Board of Trade Bldg., Kansas City, Mo. Mine office:  
Crown King, Yavapai County, Ariz. John Kelley, pres.; W. J. Morse, sec.  
Inc. Feb. 1907, in Arizona. Cap., \$3,000,000; shares \$1 par; non-  
assessable; issued, \$2,397,616.

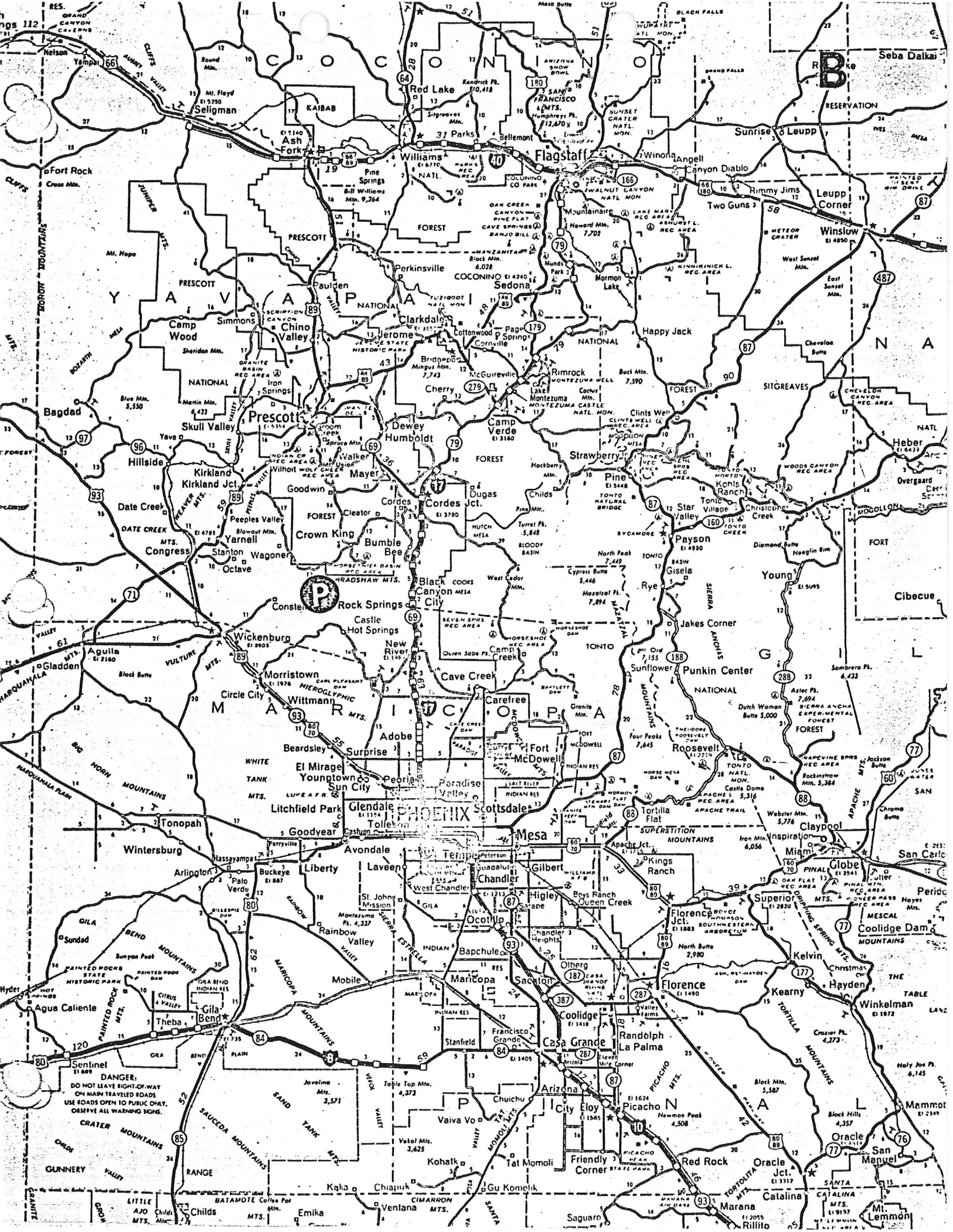
Property: 30 claims, 10 patented, 600 acres, including a mill and smelter  
site, 4 miles from Harrington and 9 miles from a railway, in the Silver  
Mountain district of the Bradshaw mountains. Claims show a hornblende  
phase of Yavapai schist, with an intrusive porphyry dike of 50 to 150' width,  
carrying contact deposits of 9', of 14' and of 25' estimated average width,  
traceable 3,000' with N.-E. strike. Gossans are much leached, carrying  
honeycombed hematite and limonite, with occasional copper carbonates.

Ores: malachite and azurite, succeeded at 50' by secondary chalcocite,  
bornite and chalcopyrite. The management estimates ore to range from  
3 to 15% in copper, with good value in silver and gold.

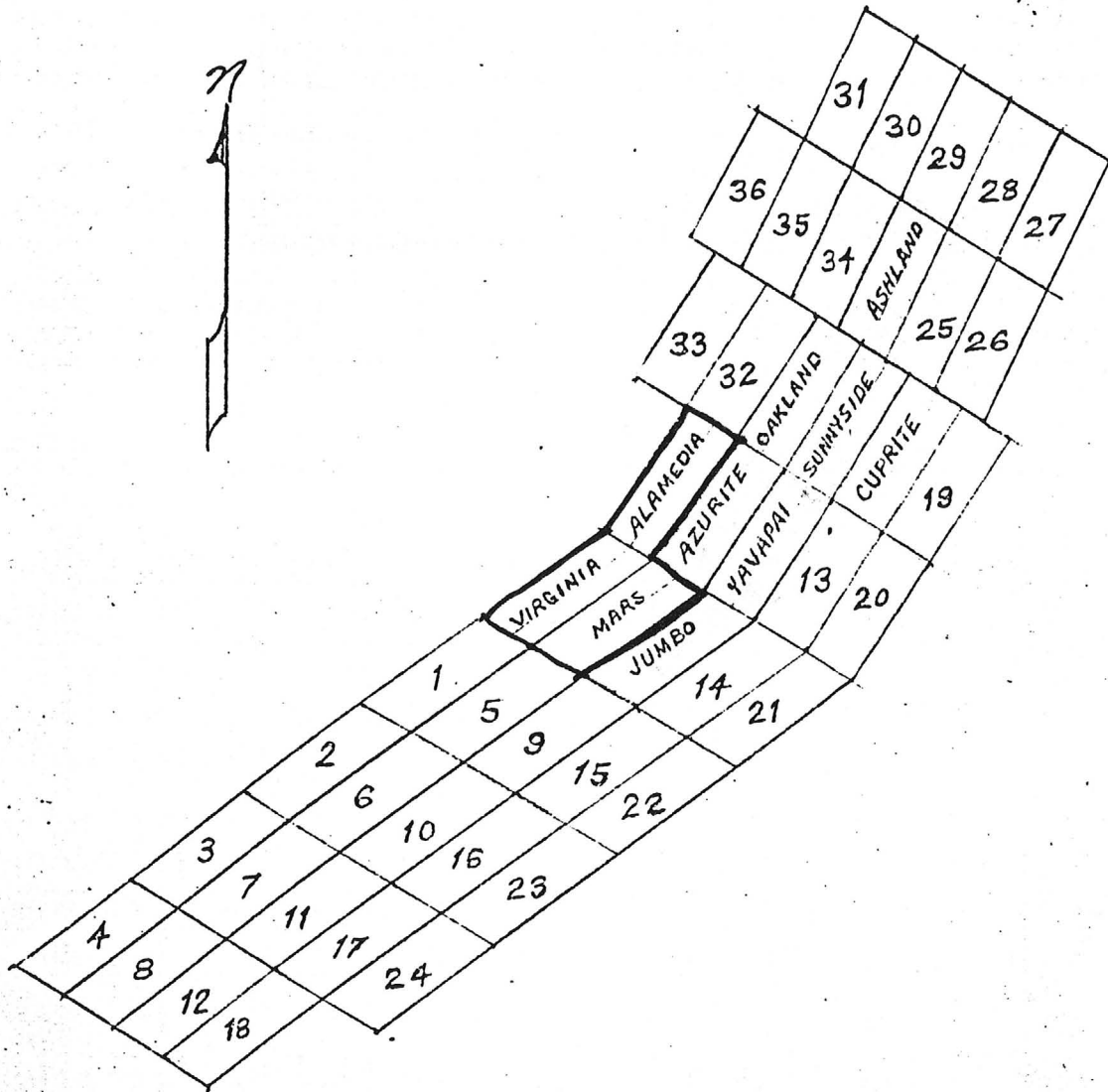
Development: consists of 1,500' of work, with a 500' shaft and several  
prospect workings.

Equipment: includes a 120 h. p. plant, with an 80 h. p. 3-cycle vertical  
engine, connected to a 4-drill Sullivan air compressor, a 20 k. w. triplex  
pump, and a 40 h. p. gasoline hoist. Presumably idle for several years.

*Mines Register Vol. XIV*



C



PACIFIC COPPER CLAIMS  
YAVAPAI, CO. ARIZONA  
April 1970

Russell Associates

Western Division

4426 EAST 14TH ST. TUCSON, ARIZ. 85711



BY: N. Jones

PACIFIC MINE

Tiger Mining District  
Yavapai County, Arizona

  
G. A. Russell  
Mine Consultant



GEOPHYSICAL SURVEY

Using

DUAL FREQUENCY INDUCED POLARIZATION, RESISTIVITY,  
SELF POTENTIAL AND MAGNETIC METHODS

At

THE PACIFIC MINE AREA,  
TIGER MINING DISTRICT  
YAVAPAI COUNTY, ARIZONA

September and November 1968

For

Mr. R. E. Davis, Jr.

By

Heinrichs Geoexploration Company  
P. O. Box 5671 Tucson, Arizona 85703  
Phone: 623-0578 Area Code: 602

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1. I. P. Location and Interpretation Plan	
2. 4 Sectional Data Sheets	

## INTRODUCTION

At the request of Mr. T. G. Melrose and on behalf of Mr. Ralph E. Davis, Jr. a combined induced polarization, resistivity, self potential, and vertical intensity magnetic survey was made near the Pacific Mine Area, Tiger Mining District, Yavapai County, Arizona. Specifically, these surveys were conducted on the claims listed below for the purpose of complying with current assesment work.

### List of Claims

Boronite	Pacific
Boronite Extn. 1	Pacific Extn. 1
Boronite Extn. 2	Pacific Extn. 2
Boronite Extn. 3	Pacific Extn. 3
Bumper	Alameda Extn. 1
Bumper Extn. 1	Alameda Extn. 2
Bumper Extn. 2	Ashland Extn. 1
Bumper Extn. 3	Elf
Eagle	Elf Extn. 1
Eagle Extn. 1	Harriett
Eagle Extn. 2	Harriett Extn. 1
Eagle Extn. 3	Harry
Augusta	Harry Extn. 1
Cuprite Extn. 1	Arizona
Cuprite Extn. 2	Davis Sr.
Davis Jr.	Davis Sr. Extn. 1
Davis Jr. Extn. 1	Harvey
Juniper	Joe

The field work covered by this report was completed in the interim from September 16 to October 7, 1968.

Geox standard duty equipment, Mark 7 sender, Mark 4B receiver, and 2 kilowatt generator were used obtaining data from a standard five electrode sending array as described in "Basis of the Induced Polarization Method" which is appended to this report. The frequencies employed were 3.0 and 0.05 Hz on all lines.

The data was obtained from four lines run on the common end lines of the above listed claims as shown on the plan map. Each line was completed with one five electrode spread utilizing dipole spacings of 500 feet. In addition each of these lines was surveyed with a Jalander, 10 gamma sensitivity, vertical intensisty magnetometer using 250 foot station intervals. The data is summarized on the plan map

and in detail on the enclosed sectional data sheets. Each sectional data sheet presents the I. P. survey results in contoured form as described in the appended "Basis of the Induced Polarization Method", plus superimposed self potential (S.P.) and magnetic profiles.

Geoex personnel who worked on this project are: Mr. Paul Head, geophysicist in charge; Mr. James Bauersachs, crew chief; Mr. Tony Silva, sender operator and Mr. Richard Martinez, field technician. Interpretation and compilation was done or supervised by Mr. Head, assisted by Geoex's Tucson staff under the overall direction of W. E. Heinrichs, Jr., professional engineer, President of GEOEX.

## CONCLUSIONS AND RECOMMENDATIONS

The lines are too widely spaced to permit reliable correlations between lines or other appropriate follow up consideration, though the anomalous I. P. effects on Lines 1 and 2 are similar. Of the four lines completed, Line 3, in the vicinity of the Pacific Mine shows well defined I. P. anomalism which may merit additional geophysical work.

It is recommended that consideration be given to optioning the claims containing and surrounding the Pacific Mine, followed by more detailed and extensive induced polarization work to better appraise and define the limits of mineralization prior to a preliminary program of core drilling.

Only the very weak questionable anomaly on Line 4 is within the claim group. It should be examined in greater detail with 200 foot dipole spreads; one centered at 1.0 NE on Line 4 and two other spreads spaced 300 feet on each side of Line 4.

The past history of the district indicates that copper mineralization and magnetite are often closely associated. Results of the present magnetic survey indicate at least partial suggestion or confirmation of this and therefore it is strongly recommended that a detailed magnetometer survey be included in any future geophysical program. A minimum coverage of 100 ft. stations on all claim lines is indicated and preferably a tighter grid of 100 ft. stations on lines spaced 200 ft. apart.

No drilling or heavy exploration work is recommended at this time as most of the more important anomalism detected may not be on the client's claim group.



## PROCEDURES

Magnetics is relatively fast, cheap, and almost always provides at least some added rock type differentiation, structure, and depth information. In this genetic geologic environment it can and has been demonstrated to be very economically diagnostic. Therefore, it was considered most desirable to make at least a minimum test of magnetic response over the claim area. I. P. of course gives results somewhat proportional to the volume content of all metallic lusted minerals including base metal sulfides such as chalcopyrite and chalcocite, the common economic minerals of copper. However, most copper deposits are associated with much pyrite (non-economic iron sulfide) which responds equally well as the copper sulfides. Therefore, it is essential to have enough coverage over a large enough area around a deposit, as well as over it, so that relative evaluations and background appraisals can be made in the light of geologic and sampling evidence available. Or, alternatively to intelligently propose and plan such work with maximum efficiency and effectiveness for assuring successful discovery.

The methods used here, as is the case for all exploration procedures except direct and representative sampling, do not yield precise answers, but serve to help make geology and sampling more definitive, positive, and direct. In this sense, these preliminary results are encouraging.

## INTERPRETATION

### Line 1, Spread 1, a = 500 feet

The isolated PFE and MCF anomaly between station 20 and 25 NW is the only frequency effect of importance on this line. It is very weak and has the appearance of being caused by mineralization in a steeply dipping, near surface tubular body.

The magnetic profile has about 600 gamma relief across the claim group but shows no definite correlation with the electrical survey.

### Line 2, Spread 1, a = 500 feet

A very weak frequency effect anomaly occurs between 15 and 20 NW, probably continuing beyond the end of the survey. A very weak questionable extension of this anomaly to the SE is related to a resistivity interface at 10 NW, which separates the higher resistivity rocks to the SE from the moderate resistivity rocks to the NW. A narrow high resistivity body is detected at about 12.5 SE.

The magnetic data on this line is highly erratic showing several sharp reversals with up to 800 gammas variation. There may be correlation of magnetic effects with the I. P. anomaly near 17.5 NW.

No S.P. correlation is noted.

### Line 3, Spread 1, a = 500 feet

The moderate I. P. anomaly indicated at 5.0 SE is very likely associated with the Pacific Mine mineralization 100 feet north of the line. This PFE anomaly lies in low resistivity media, flanked by narrow bands of high resistivity rocks and then by moderate resistivity rocks on both sides. This complexity precludes the use of MCF values to estimate quantities of sulphide or causing the polarization effects.

There is a strong magnetic effect at 15.0 SE, probably correlating with the high resistivity band SE of the PFE anomaly. No S. P. effects are correlated with the magnetics or the induced polarization anomaly.

Line 4, Spread 1, a = 500 feet

Beginning at 5.0 NW and continuing northwest an unknown distance very weak and questionable polarization effects are detected that are slightly higher than background. A resistive body flanks this anomalous area to the SE.

The magnetic profile is quite irregular and seems to have no correlation to the induced polarization anomaly. There is an undefined relation of the S.P. and magnetic profiles at station 0.0.

Respectfully submitted,

HEINRICHS GEOEXPLORATION COMPANY

*Paul A. Head*

Paul A. Head  
Geophysicist

Approved: *[Signature]*

Walter E. Heinrichs, Jr.  
President & General Manager



*[Handwritten signature]*



## BASIS OF THE INDUCED POLARIZATION METHOD

The induced polarization method is based on the electrical properties exhibited by electronic or metallic conductors embedded in an ionic or electrolytic conducting matrix. These properties are noticed in that the potential across a block of this dual conduction mode material will increase with time, approaching a constant value, when a constant current is made to flow through the block. This phenomenon occurs because at the boundaries between the two conductor types, electrolytic ions have to give up or take on electrons thereby requiring an additional force (overvoltage) over that which would be needed with only one mode of conduction; showing up as a building of potential across the block with time as more ions are backed up. This potential approaches a constant value when an equilibrium is established between the ions backed up at the boundaries and those flowing across the boundaries. Therefore, from the preceding discussion, it is seen that the gross effect is quite similar to the charging of a leaky capacitor and for most applications, it is proper to use this model as a guide. These capacitive-like properties are normally measured by one of three different field techniques.

In the time domain (pulse) method, a steady direct current is imposed in the ground for a few seconds and abruptly terminated so that the resulting capacitive-like voltage decay (discharge) curve can be measured or recorded. Usually, the voltage decay curve is integrated with respect to time to give the area under the decay curve in units of volt-seconds. This value is then normalized by the primary voltage measured while the steady current is on. The more area determined, the more capacitance or polarization the ground exhibits.

In the frequency domain (dual frequency) method, the percentage difference between the impedance (AC resistance) offered to a lower and higher frequency is measured. A capacitor offers a lower impedance to a higher frequency than it does to a lower frequency, therefore, the percentage difference between the impedances will increase with increased polarization.

A third technique is to measure the phase angle or delay between an introduced current wave-form and the received voltage wave. This phase delay also increases as polarization increases.

increased background frequency effect due to an electromagnetic inductive coupling interference phenomenon that must be corrected for. The MCF tends to correct any high resistivity increased background effects, but tends to amplify the electromagnetic frequency effects making a correction imperative.

FORMULAS:  $PFE = [\rho_{dc}/\rho_{ac} - 1] 100$

Where PFE is Percent Frequency Effect,  $\rho_{dc}$  is the apparent resistivity at the lower frequency and  $\rho_{ac}$  is the higher frequency apparent resistivity.

$$\rho = 2\pi VK_n/I$$

Where  $\rho$  is either  $\rho_{dc}$  or  $\rho_{ac}$  depending on frequency of the current  $I$  which is measured in amperes. The potential  $V$ , arising from  $I$ , is measured in volts.  $K_n$  is the geometric factor given by:

$$K_n = \frac{1}{2}an(n+1)(n+2) \quad (\text{Only for dipole-dipole arrays.})$$

Where "a" is the dipole spacing in feet and "n" is the number of dipoles separating the sending and receiving dipoles; this gives, for apparent resistivity:

$$\rho = [2\pi V/I][\frac{1}{2}an(n+1)(n+2)]$$

from which we see that  $\rho$  is in units of ohm-feet. However, the apparent resistivity usually is plotted:  $\rho/2\pi$

$$\rho/2\pi = VK_n/I = [V/I][\frac{1}{2}an(n+1)(n+2)]$$

$$MCF = 1000 \times PFE / [\rho_{dc}/2\pi]$$

Where MCF is the Metallic Conduction Factor and  $\rho_{dc}/2\pi$  is apparent "D.C." resistivity.

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References:

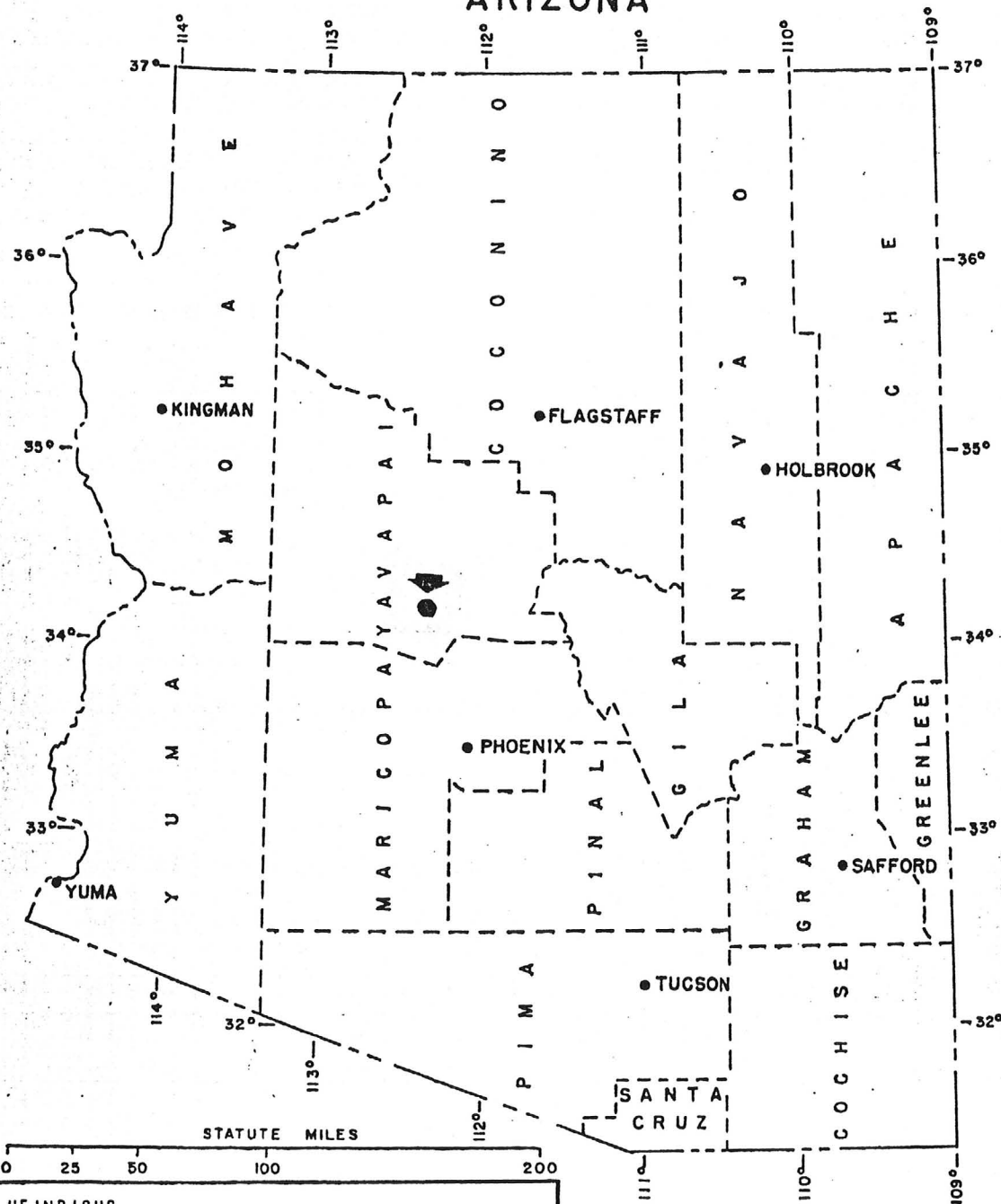
1. Wait, James R., "Overvoltage Research and Geophysical Applications", Pergamon Press, 1959.
2. "Mining Geophysics", Society of Exploration Geophysicists, Vol. I, Case Histories, October 1966.

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Published by W. E. Heinrichs, Jr., et al., Engineering and Mining Journal, September 1967.



# GENERAL LOCATION OF PACIFIC MINE AREA for MR. R. E. DAVIS ARIZONA



HEINRICHS  
**GEOEXPLORATION COMPANY**



GEOPHYSICAL  
ENGINEERS

BOX 5671 TUCSON, ARIZONA 85703  
PH: 602-823-0578 CABLE: GEOEX, TUCSON

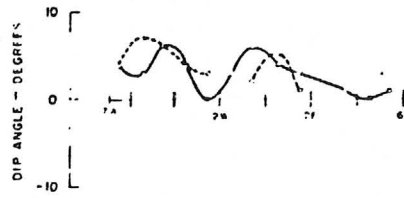
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VANCOUVER

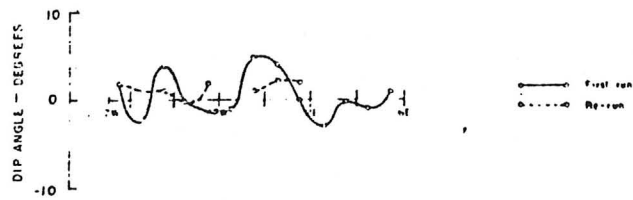
# PACIFIC MINE AREA

LINE 12 N  
CEM

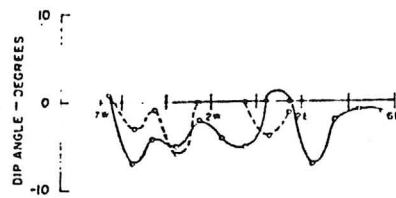
500 Hz  
a = 300'

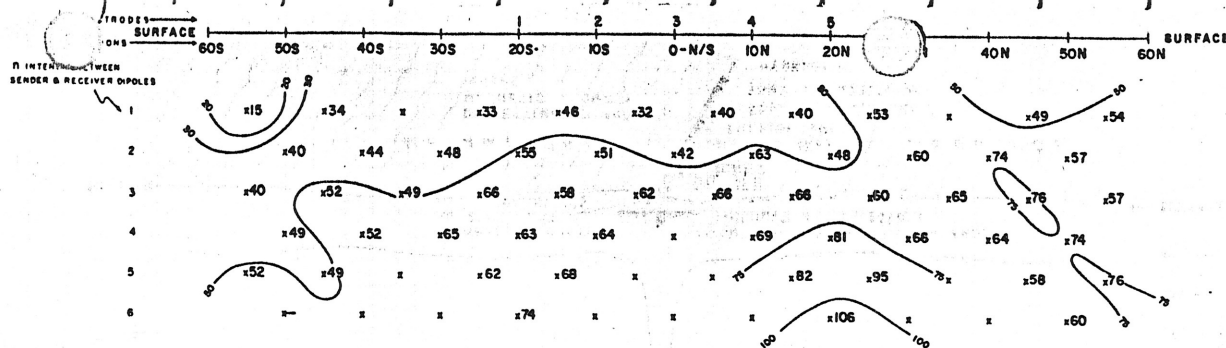


1030 Hz



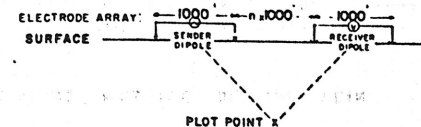
390 Hz



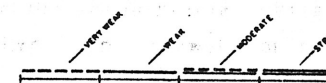


APPARENT RESISTIVITY (P) IN UNITS OF OHM FEET  
CONTOUR INTERVAL LOGARITHMIC  
SENDER FREQUENCY: 005 C/S

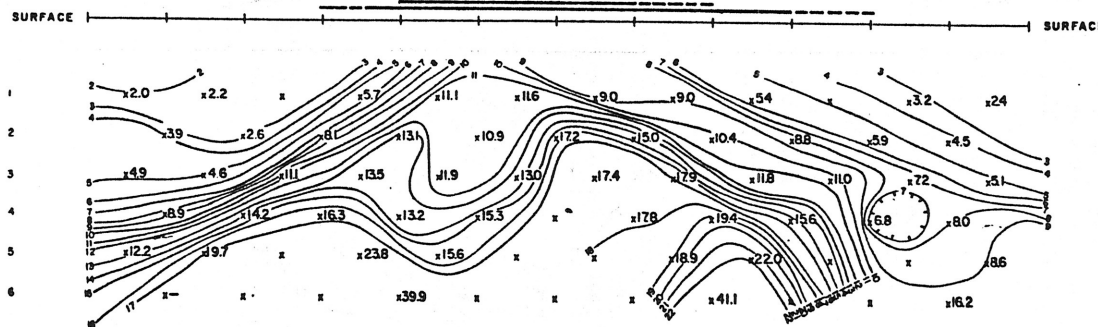
## EXPLANATION



RELATIVE ANOMALY STRENGTH



LOOKING WEST





GEOPHYSICAL SURVEY  
SILVER MOUNTAIN PROJECT  
YAVAPAI COUNTY, ARIZONA

February 1978

for

D. W. Litchfield & Associates  
220 SOUTH 2nd EAST, SUITE 300  
SALT LAKE CITY, UTAH 84111

—APPLIED GEOPHYSICS, INC.—

SALT LAKE CITY, UTAH



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III DESCRIPTION OF SURVEY . . . . .	1
IV INTERPRETATION . . . . .	4
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## ILLUSTRATIONS

	<u>Location</u>
Plate 1. Plan Map, South Area . . . . .	In Pocket
Plate 2. Plan Map, Pacific Mine Area . . . . .	" "
Plate 3. Profiles, South Area . . . . .	" "
Plate 4. Profiles, Pacific Mine Area . . . . .	" "
Plate 5. Profiles, MAXMIN II . . . . .	" "
Plate 6. Profiles, CEM Repeatability Test . . . . .	" "

## I INTRODUCTION

Dates of Survey: February 9 to 22, 1978

## II PURPOSE OF SURVEY

The purpose of the survey was to use electromagnetics (EM) and magnetics to provide information to guide a drilling program along a mapped sulfide vein.

## III DESCRIPTION OF SURVEY

The survey was conducted with VLF EM, moving coil EM, and magnetics over two areas of known mineralization. The two areas were selected by D. W. Litchfield and Associates and by consulting geologist of Geoplan, Inc. The Pacific Mine Area is over the Pacific Mine entrance (shown on Plate 2), and the south area is on a block of claims with a number of surface prospects and a short drift (shown on Plate 1). Surface mapped veins are present in both areas.

A preliminary geologic map of the survey area was provided by Geoplan, Inc.

DESCRIPTION OF SURVEY (cont)

Dense brush and severe weather conditions interfered with the survey and severely decreased the daily production rate.

The survey base lines were established by D.W. Litchfield and Associates. A traverse grid with a 400 foot line spacing beginning with Line 8N and ending with Line 24N was surveyed partially by Litchfield and Associates, in the Pacific Mine Area.

Traverse lines completed by Litchfield and Associates were Lines 12N, 16N and 20N. The traverse lines extended from 7E to 8W. Lines 8N and 24N were surveyed by Applied Geophysics with hand transit and chain to expedite the geophysical survey. Line 12N was corrected for station slope interval and completely brushed for access with the MAXMIN II EM system.

Litchfield and Associates established a base line in the South Area along Station 1E beginning with Line 0 and ending with Line 24N. The laterals were surveyed by Applied Geophysics with hand transit and chain. The laterals extended from 7E to 8W. Lines 8N and 16N were corrected for station slope interval.

SURVEY LINES

The VLF EM and magnetic surveys were conducted simultaneously at 50 foot intervals along all the survey lines.

DESCRIPTION OF SURVEY (cont)

The CEM (Crone Horizontal Shootback EM) survey was conducted on Line 12N, Pacific Mine Area.

The MAXMIN II EM survey was conducted on Line 12N, Pacific Mine Area, and lines 8N and 16N, South Area.

Because the known mineralization occurs in narrow veins, a spacing of 300 feet was selected. The survey lines are 1500 feet long.

GEOPHYSICAL EQUIPMENT AND METHODS USED

ELECTROMAGNETIC (EM):

CRONE RADEM VLF EM SERIAL Nos: 145 and 139

Due to periodic shut-downs of transmitter stations three transmitter stations were used during the survey; Annapolis, Maryland; Hawaii; and Cutler, Maine.

CRONE CEM SHOOTBACK UNIT:

The CEM was used in the horizontal shootback mode at 390, 1830 and 5010 Hz, with coil spacings of 300 and 400 feet. The readings were not sufficiently repeatable to provide useful information. Further investigation with the CEM system was abandoned in the interest of time. The data are shown on Plate 6, CEM repeatability test.

DESCRIPTION OF SURVEY (cont)

APEX PARAMETRICS MAXMIN II EM, SN 789:

This unit was used in the inline, maximum coupled horizontal loop mode at 444, 888, 1777 and 3555 Hz. The real (in phase) readings were corrected for error introduced by the slope-corrected station spacing.

MAGNETIC:

GEOMETRICS MODEL G-826 TOTAL FIELD MAGNETOMETER

The magnetometer was used on an 8-foot staff for Line 12N, Pacific Mine Area, and in the back pack mode for the remainder of the survey.

IV INTERPRETATION

PACIFIC MINE AREA

The Pacific Mine Area profiles are shown on Plate 4 and the interpreted anomalies are mapped on Plate 2, Plan Map Pacific Mine Area.

The VLF and Magnetics combination produced anomalies which relate well with the mapped geology.

The CEM results were not repeatable. The MAXMIN response was good and showed one good conductor which correlates with the VLF EM anomalies on Line 12N, Station 6W. The MAXMIN anomaly is located on Line 12N, Station 5W.

INTERPRETATION -- PACIFIC MINE AREA (cont)

VLF

The VLF EM shows lineations paralleling the mapped veins except in the area of the Pacific Mine.

The VLF EM shows lineations from the Pacific Mine shaft, Line 8N, Station .75W to Line 12N, Station 1E. The lineation breaks off at this point. Detailed lines may show what actually occurs in this area.

MAXMIN II

The MAXMIN II EM system survey was conducted across the Pacific Mine shaft. The MAXMIN shows a good conductor located on Line 12N, Station 5W. The real component drops rapidly, with the imaginary component leveling off at the zero line. The survey line is not long enough to allow the real component to return to the zero line. More MAXMIN lines are necessary in the area to properly evaluate the conductors.

CEM

The CEM was not sufficiently repeatable to produce reliable information.



INTERPRETATION -- PACIFIC MINE AREA (cont)

MAGNETICS

The magnetics have a very good correlation with the VLF EM anomalies. The magnetics show the extent, intensity and possible source of the anomaly. The magnetic profiles were not corrected for drift. All lines run with the magnetometer were tied, and a base tie line was run in the event that the magnetics should be contoured.

The magnetometer shows two mapped sulfide veins; one on Line 8N, Station 2.5W and 0.5W; the other on Line 16N, Stations 0 and 1.5E; Line 20N, Stations 0.5E and 1.5E.

SOUTH AREA

The South Area profiles are shown on Plate 3 and the interpreted anomalies are mapped on Plate 1, Plan Map South Area. The VLF and magnetic combination performed well in the South Area. The VLF defines the conductor and the magnetics discriminate between the possible causes. The MAXMIN identified two conductive veins.

VLF

The VLF EM shows anomalies along strike of the mapped vein. Several anomalies appear to be responding to topography, but upon examination of the geology, the anomalies along ridges define ridge-forming geologic members. Detail lines would give better resolution of conductors.

INTERPRETATION -- SOUTH AREA (cont)

MAXMIN II

The MAXMIN anomalies occur on Line 8N, Stations 3.5W, 1.5E and Line 16N, Stations 3W and 2.5E. The preceeding anomalies coincide with VLF anomalies along the same lines. There appear to be anomalies at the extremes of the survey grid but the grid is not long enough to determine their extent.

CEM

No CEM was run on the South Area in the interest of time.

Magnetics

The magnetics correlate very well with the VLF anomalies, showing structure and contact edges. The high response of the magnetics to the intrusives helps define the edges of the intrusives. An example is Line 0, Station 6W.

V SUMMARY AND CONCLUSIONS

The geophysical systems, except the CEM, used on the Pacific Mine South Areas show good response to the mapped mineralized veins. The VLF EM produced anomalies that correspond well with the mineralized veins, contacts and structure (faults, joints etc.) or extensions as mapped. The MAXMIN EM system used with the VLF EM discriminates between the contact and structural anomalies and also isolates the mineralized vein anomalies.

SUMMARY AND CONCLUSIONS (cont)

The magnetics help discriminate between intrusive contact anomalies and faults. An example of intrusive anomalies is located in the South Area, Line 20N, Station 8W. The VLF shows the edges of the intrusive. In the South Area the lineation of the VLF anomalies correlates with mapped veins and projects the veins through areas where they are not shown by surface mapping. The MAXMIN shows conductors on Line 8N, Stations 3W and 1.5E; and on Line 16N, Stations 3.5W and 2.5E.

The conductor on Line 16N, Station 2.5E, South Area, appears to be wider than the corresponding anomaly on Line 8N, Station 1.5E. The MAXMIN lines are too short to show the right and left margins. It appears that a conductor exists west of Station 6W. The imaginary line drops rapidly in response to a poor conductor.

In the Pacific Mine Area the VLF EM lineation appears to be broken or shifted between Line 12N and Line 16N just north of the Pacific Mine shaft. This area should be defined by detailed lines. The MAXMIN shows a conductor at Line 12N, Station 5W. As Line 12N was the only line in the Pacific Mine Area on which MAXMIN was run, it is not possible to determine lineation of conductors.

SUMMARY AND CONCLUSIONS (cont)

The VLF EM, MAXMIN and magnetics combination are clearly the most useful reconnaissance tools in this area. The VLF EM-magnetics combination can be used to discriminate between the anomalies. Line surveying should be done carefully enough to allow for slope corrections, anticipating the use of MAXMIN II.

Respectfully submitted,

Harold R. Dallon  
Geologist

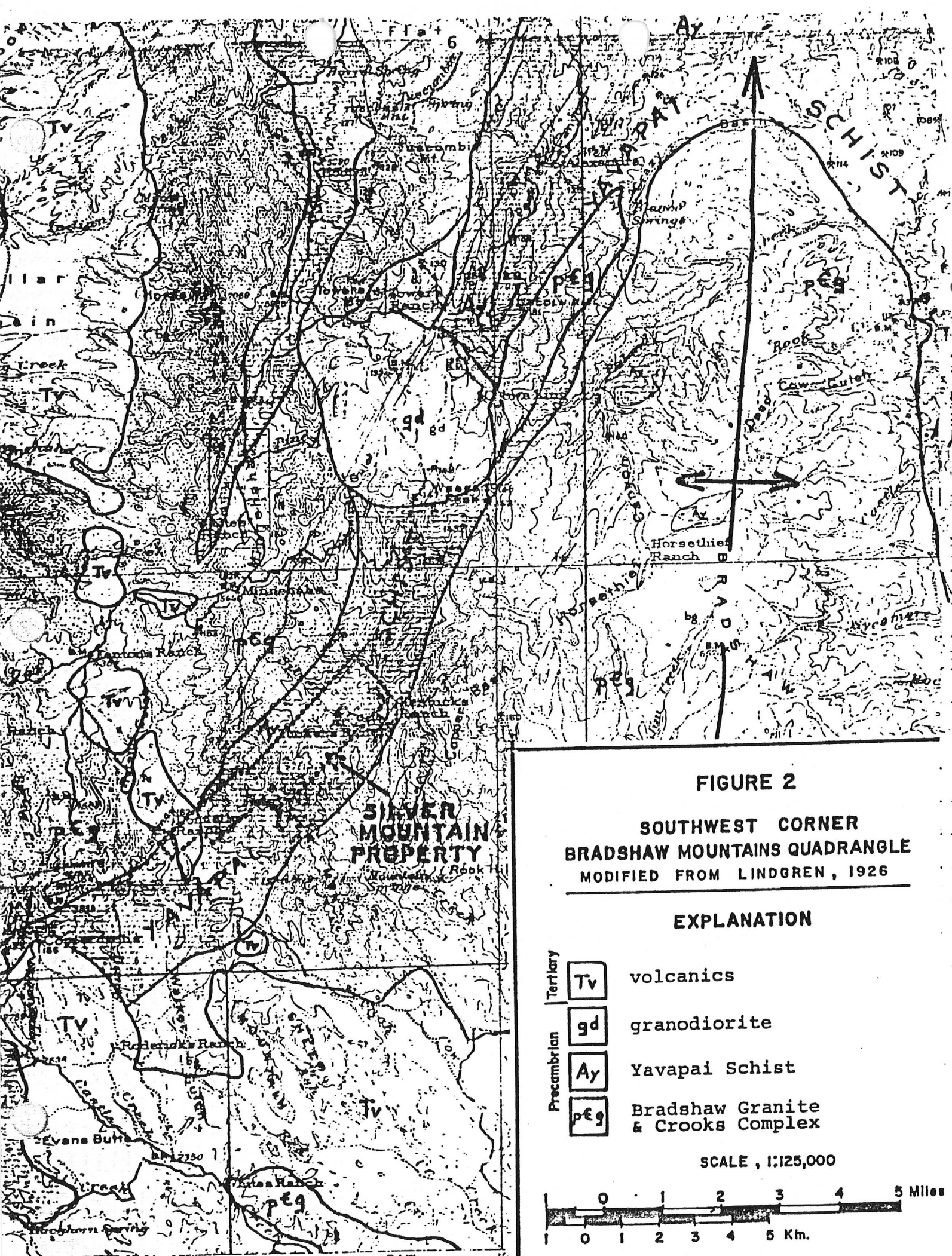


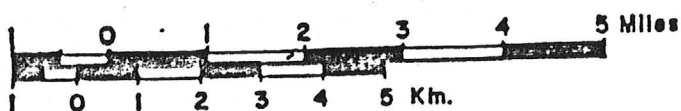
FIGURE 2

SOUTHWEST CORNER  
BRADSHAW MOUNTAINS QUADRANGLE  
MODIFIED FROM LINDGREN, 1926

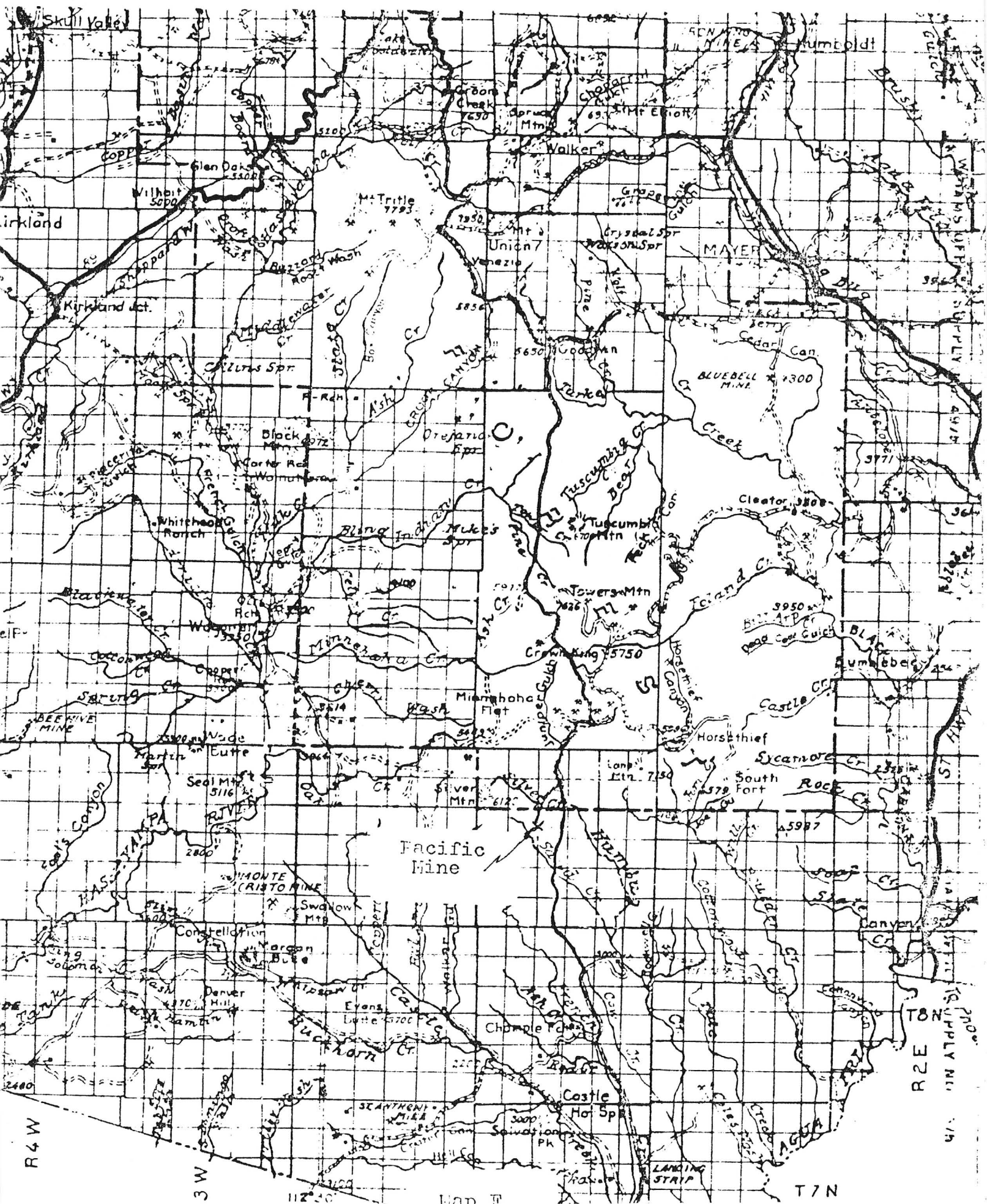
EXPLANATION

Tertiary	Tv	volcanics
	gd	granodiorite
Precambrian	Ay	Yavapai Schist
	peg	Bradshaw Granite & Crooks Complex

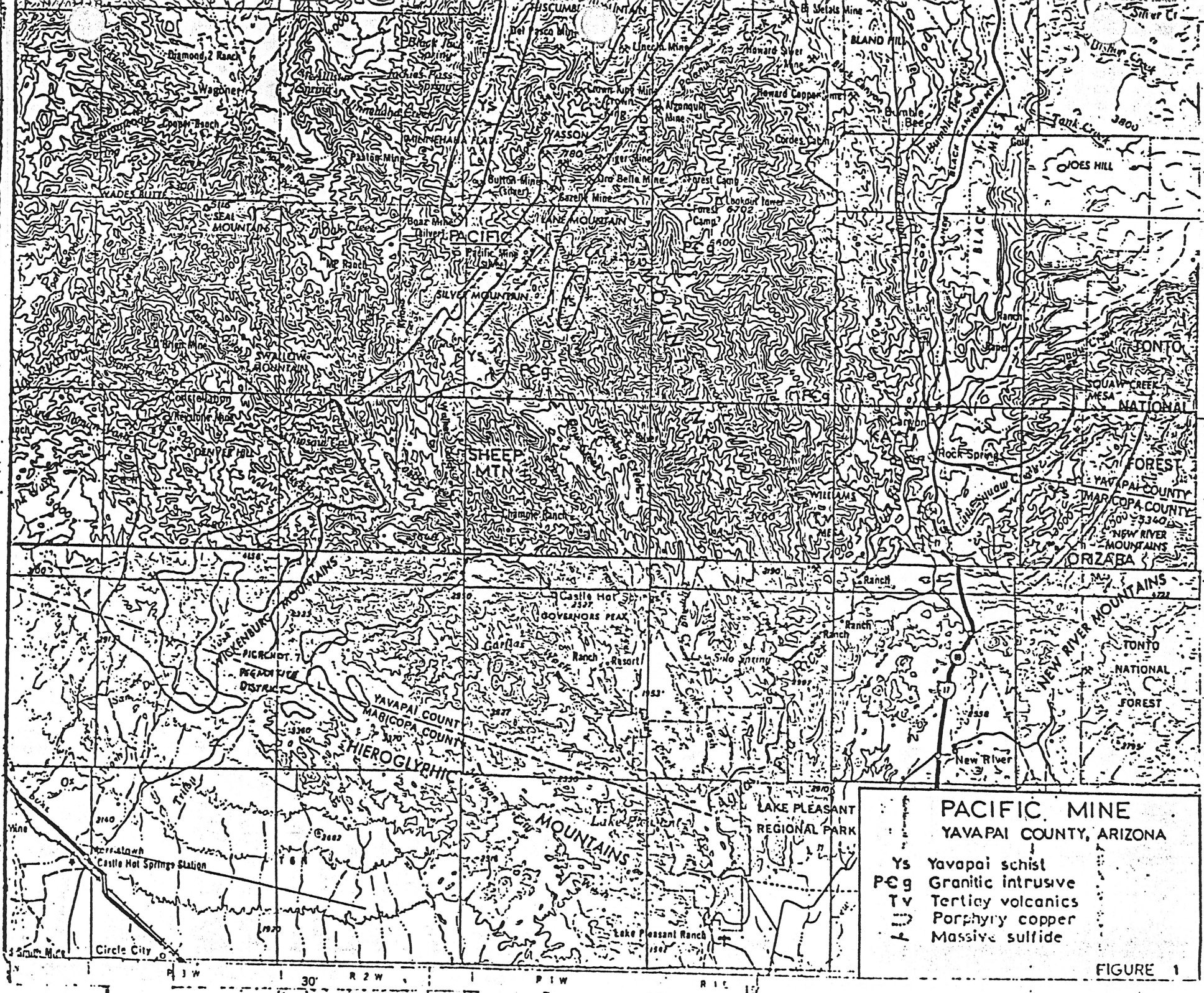
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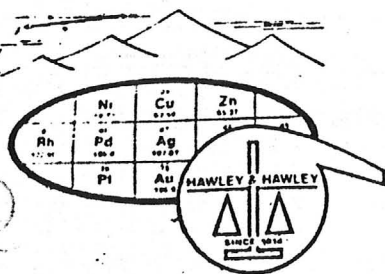












# SI LINE LABS, INC.

Hawley & Hawley, Assayers and Chemists Division  
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Tucson, Arizona 85703  
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Aug 07 REC'D

## REPORT OF ANALYSIS

Litchfield & Associates  
Salter Lane  
Glendale, Arizona 85301

Part II  
JOB NO. DSJ 087  
July 31, 1978  
H & H No. TIA001

### Analysis of 102 Pulp Samples

ITEM	SAMPLE NUMBER	Te (PPM)	Se (PPM)	Hg (PPM)	S (%)
1	P2A 020-025	< .1	<2.	.025	< .05
2	P2A 025-030	< .1	<2.	< .01	< .05
3	P2A 030-035	< .1	<2.	.025	< .05
4	P2A 035-040	< .1	<2.	< .01	< .05
5	P2A 040-045	< .1	<2.	.015	< .05
6	P2A 045-050	.1	<2.	.015	< .05
7	P2A 050-055	.2	<2.	< .01	< .05
8	P2A 055-060	.1	<2.	.015	< .05
9	P2A 060-065	.2	<2.	< .01	1.
10	P2A 065-070	.4	<2.	< .01	1.2
11	P2A 070-075	.3	<2.	< .01	.75
12	P2A 075-080	.2	<2.	.045	.3
13	P2A 080-085	.2	<2.	.045	1.3
14	P2A 085-090	.2	<2.	.015	1.25
15	P2A 090-095	.1	<2.	.025	.2
16	P2A 095-100	< .1	<2.	< .01	< .05
17	P2A 100-105	< .1	<2.	.025	< .05
18	P2A 105-110	< .1	<2.	.015	< .05
19	P2A 110-115	< .1	<2.	.015	< .05
20	P2A 115-120	< .1	<2.	.04	< .05
21	P2A 120-125	< .1	<2.	.015	< .05
22	P2A 125-130	< .1	<2.	.035	< .05
23	P2A 130-135	< .1	<2.	.015	< .05
24	P2A 135-140	< .1	<2.	.035	< .05
25	P2A 140-145	< .1	<2.	.045	.3

Yes  
Yes

ITEM	SAMPLE NUMBER	Te (PPM)	Se (PPM)	Hs (PPM)	S (%)
26	P2A 145-150	. 2	<2.	. 19	1. 1
27	P2A 150-155	. 1	<2.	. 035	<. 05
28	P2A 155-160	. 1	<2.	. 015	. 25
29	P2A 160-165	. 1	<2.	. 055	. 3
30	P2A 165-170	. 2	<2.	. 055	3. 2
31	P2A 170-175	. 2	<2.	. 025	1. 6
32	P2A 175-180	. 1	<2.	<. 01	1. 3
33	P2A 180-185	<. 1	<2.	. 025	. 4
34	P2A 185-190	. 1	<2.	<. 01	. 8
35	P2A 190-195	<. 1	<2.	<. 01	. 1
36	P2A 195-200	<. 1	<2.	<. 01	. 1
37	P2A 200-205	<. 1	<2.	. 035	<. 05
38	P2A 205-210	<. 1	<2.	<. 01	<. 05
39	P2A 210-215	<. 1	<2.	. 015	. 1
40	P2A 215-220	<. 1	<2.	<. 01	. 05
41	P2A 220-225	<. 1	<2.	. 015	<. 05
42	P2A 225-230	<. 1	<2.	. 015	<. 05
43	P2A 230-235	<. 1	<2.	<. 01	<. 05
44	P2A 235-240	<. 1	<2.	<. 01	<. 05
45	P2A 240-245	<. 1	<2.	<. 01	. 07
46	P2A 245-250	<. 1	<2.	<. 01	<. 05
47	P2A 250-255	<. 1	<2.	<. 01	<. 05
48	P2A 255-260	<. 1	<2.	. 01	<. 05
49	P2A 260-265	<. 1	<2.	. 01	<. 05
50	P2A 265-270	. 1	<2.	. 03	<. 05
51	P2A 270-275	. 1	<2.	<. 01	. 3
52	P2A 275-280	<. 1	<2.	. 01	<. 05
53	P2A 280-285	<. 1	<2.	. 02	<. 05
54	P2A 285-290	<. 1	<2.	. 01	<. 05
55	P2A 290-295	<. 1	<2.	. 02	<. 05
56	P2A 295-300	<. 1	<2.	. 01	<. 05
57	P2A 300-305	<. 1	<2.	. 015	<. 05
58	P2A 305-310	<. 1	<2.	. 03	<. 05
59	P2A 310-315	<. 1	<2.	. 055	<. 05
60	P2A 315-320	<. 1	<2.	. 055	. 13

ITEM	SAMPLE NUMBER	Te (PPM)	Se (PPM)	Hg (PPM)	S (%)
61	P2A 320-325	< 1	< 2	.04	.07
62	P2A 325-330	< 1	< 2	.03	< .05
63	P2A 330-335	< 1	< 2	.02	< .05
64	P2A 335-340	< 1	< 2	.03	< .05
65	P2A 340-345	< 1	< 2	.015	.05
66	P2A 345-350	< 1	< 2	.01	< .05
67	P2A 350-355	< 1	< 2	.025	< .05
68	P2A 355-360	< 1	< 2	.04	< .05
69	P2A 360-365	< 1	< 2	.04	< .05
70	P2A 365-370	< 1	< 2	.045	< .05
71	P2A 370-375	< 1	< 2	.035	< .05
72	P2A 375-380	< 1	< 2	.04	< .05
73	P2A 380-385	< 1	< 2	.045	.08
74	P2A 385-390	< 1	< 2	.03	.08
75	P2A 390-395	< 1	< 2	.03	< .05
76	P2A 395-400	< 1	< 2	.04	.08
77	P2A 400-405	< 1	< 2	.04	< .05
78	P2A 405-410	< 1	< 2	.025	< .05
79	P3-10	< 1	< 2	.04	< .05
80	P3-18-20	< 1	< 2	.03	< .05
81	P3-030	< 1	< 2	.04	1.4
82	P3-040	< 1	< 2	.045	.1
83	P3-050	< 1	< 2	.04	1.8
84	P3-060	< 1	< 2	.02	1.4
85	P3-070	< 1	< 2	.01	< .05
86	P3-080	.2	< 2	.01	1.6
87	P3-090	< 1	< 2	.04	4.3
88	P3D-100	< 1	< 2	.04	1.6
89	P3D-110	< 1	< 2	.04	.15
90	P3D-120	< 1	< 2	.02	.07
91	P3D-130	< 1	< 2	.04	< .05
92	P3D-135-136	< 1	< 2	.02	< .05
93	P3D-140	< 1	< 2	.02	< .05
94	P3D-150	< 1	< 2	.02	.5
95	P3D-160	.2	< 2	.03	.15

ITEM	SAMPLE NUMBER	Te (PPM)	Se (PPM)	Hg (PPM)	S (%)
96	P3D-170	.1	<2.	.02	1.2
97	P3D-180	.2	<2.	.01	3.
98	P3D-190	.2	<2.	.02	1.2
99	P3D-200	.4	<2.	.015	3.5
100	P3D-210	.4	<2.	.06	4.2
101	P3D-220	.3	<2.	.075	3.1
102	P3D-230	.2	<2.	.155	.7

*Edwin V. Post*  
for William L. Lehmbeck  
Manager