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P. O. Box 3605  
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Tucson, Arizona 85722

November 27, 1970

Dr. T. F. O'Neill  
Kaiser Exploration and Mining Company  
Oakland Office

Subject: Demetrie Porphyry  
Copper Prospect, Pima Mining  
District, Pima County, Ariz.

Dear Sir:

#### INTRODUCTION

The following report describes the salient features of the subject property, located about 30 miles south of Tucson in the Twin Buttes area, and slightly east of Duval's operations. To protect our immediate property interest, Holt, Inc., of Tucson has applied to the Arizona state land department for prospecting permits on 1½ sections.

#### SUMMARY AND RECOMMENDATIONS

Briefly stated, the subject prospect is an alluvial-covered area adjacent to a small hill which, on its eastern flank, contains a small area of intense pervasive alteration with leached capping of classic "live limonite" (indigenous limonite derived from chalcocite-pyrite). Although old drill holes encircle this vicinity, there is an undrilled alluvial portion which contains the direct projection of the strongly altered area. This undrilled area is sufficiently large (about 4,000 x 2,000 feet) to contain an ore body.

I recommend immediate company action to acquire proper land control, with the intention of following up by at least three drill holes.

Please give prompt reply by telephone on the following initial requests:

1. I wish legal consultation with Victor Verity on a matter which could affect the attitude of the state land commissioner in his decision to either grant or deny the prospecting permits for which we have applied.
2. I wish to instruct Holt, Inc., to initiate land status determination in an adjoining section to the north, with the intention of staking any available adjacent vacant federal land (there was a narrow unclaimed strip in 1967).

Initial land acquisition will cost about \$4,000, largely in prospecting permit fees and claim staking (if any federal land is open). It is premature to give a drilling-cost estimate without obtaining bids, but a rough estimate suggests about \$18,000 for 1,800 feet of core drilling and 450 feet of rotary. An additional \$6,000 would be used for supervision, administration, sampling and assaying.

The above rough drilling estimate would be the maximum for an initial phase. In actual practice, the drill hole would be dug with a rotary bit to bedrock, and about 10 feet of core taken without setting casing. Bedrock would be evaluated and if the leached capping was favorable, casing would then be set and drilling continued by coring. Thus, bedrock would be explored by a form of "scout drilling," and extensive caving would be done only on the basis of favorable leached capping.

The over-all exploration objective is relatively uncomplicated, and fairly inexpensive. The target is a worthy one, and I strongly recommend it. We may, out of deference to Duval's surface control, wish to offer to joint venture with them. I would appreciate your thoughts on this.

#### GEOLOGY

Since this is a preliminary report, I will not attempt to elaborate details of either regional or local geology. The principal rock types in the vicinity are shown on the general geological map, Attachment A.

Attachment A also shows the location of the nearby Sierrita - Esperanza ore bodies operated by Duval and the Twin Buttes deposits recently opened by Anaconda. The Demetrie prospect is roughly half way between these two major deposits.

Regional mapping southwest of Esperanza has disclosed recurrent small mineralized zones, and mineralized faults, which suggest a district control of ore deposits by a structural zone which strikes approximately N 70° E. This northeasterly trend is further accentuated in a small way by northeast fractures in the Esperanza ore body and on the mineralized outcrop of the Demetrie prospect. In detail, however, the altered zones are irregular in shape. The pronounced northwest elongation of the Anaconda deposit is caused by selective mineralization of the Paleozoic sediments which are the principal hosts of that deposit.

In the Demetrie area proper, the only rocks anticipated are:

1. Cretaceous - Tertiary arkose, siltstone, and pebble conglomerate which probably correlate with a formation locally known as the ox frame argillite;
2. Porphyry - monzonite or quartz monzonite;
3. Laramide granite;
4. Siltstone and arkose of the Cretaceous amole group may be present.

DEMETRIE PROSPECT

Attachment B indicates the approximate target area which has never been tested by drilling. The ridge of the amole group to the north is essentially unmineralized, and elsewhere old drill holes by Duval and AMAX encircle the prospective area. Information on these old holes is sketchy, but apparently all penetrated weak alterations with a little pyrite. The summation of available data, taken from a brief report by Harrison Schmitt, is given in Attachment D. Copper content was very low, although chalcopyrite was recognized. Drill Hole 43 was collared on a small hill which contains strong alteration and "live" limonite on its northeastern slope, but this drill hole does not constitute a test of this capping since it was drilled beyond the limits of intense mineralization.

A rough field sketch for a few geochemical samples is given by Attachment C. The zone of better mineralization, as shown on that sketch, encompasses both clastic rocks and narrow porphyry dikes. Sericite is strongly developed and rock textures are essentially obliterated. The zone is characterized by a breccia texture although the fragments are not rotated. Indigenous "live" limonite is found largely in the open spaces between the breccia fragments and to a lesser extent as discrete grains and veinlets throughout the rock. Molybdenum content is only slightly anomalous, and I would have preferred to have found a higher content. However, this by itself does not condemn the prospect. Copper content is typical for strongly leached capping in which there are no visible oxidized copper minerals.

One interpretation of the breccia texture of the strongly altered zone is that it represents a "shatter" zone which is often found peripheral to a breccia pipe. If this interpretation is correct, it affords a reasonable explanation for the rather abrupt termination of strong mineralization, and the weak alteration and low sulphide content encountered by Duval's Drill Hole 43. On Attachment B, I have shown three proposed drill sites which should determine whether or not there is a significant extent from the altered outcrop eastward under alluvium. The location of these holes is provisional, and their final placement along with other factors related to drilling can be discussed in more detail if the project is approved.

LAND STATUS

The principal prospective area occupies the northern half of Section 13 (refer to Attachment A, General Geology). Holt, Inc., as our agent acting under my instruction, has applied for a state prospecting permit for all of Section 13, and (for additional protection) the western half of Section 18. The state land commissioner has the discretion to deny such permit, and did so to a former application in 1965 (reasons unknown). Duval has been granted a surface lease, on the basis of drilling results which they interpreted to indicate a general non-mineral (more precisely, non-commercial) aspect of Section 13 and the western half of Section 18. I have no way of knowing what attitude the land commission will take in view of this past decision, but we may be forced to argue our case. Victor Verity, of all mining lawyers, in my opinion is most likely to correctly guess the current attitude which the land

November 27, 1970

commission will take, whether we may be required to document our reasons for present interest, and the appropriate timing for such documentation. I have requested in a previous section of this report that his opinion immediately be solicited. Appropriate action should then be taken.

A check of land status in 1967 showed that Banner Mining Company controlled the northern 3/4 of Section 12, which adjoins Section 13 on the north. Duval owned surface and mineral rights in the SW 1/4 of the SW 1/4 in Section 12, north of Section 13. The surface of the SE 1/4 of the SW 1/4, Sec. 12, and the S 1/2 of the SE 1/4, Sec. 12, is controlled by the Boyd Land and Cattle Company (Anaconda), but the mineral rights at that time belonged to the Federal government. Thus, most of the south half of the south half of Section 12 may be open for federal claim location. I have recommended in an earlier section of this report that Holt, Inc., immediately investigate the current land status of this narrow strip, adjoining the prospective area on the north. If the land is open, Holt, as our agent, should stake claims in this area. If held by individuals, we should know who these are, and initiate preliminary negotiations for option. Urgency in this matter is important, for we know that "leaks" of undisclosed source imminute from the state land department, to promoters who practice "nuisance" type of land acquisition peripheral to suspected areas of "hot" land interest. The investigation will of necessity be of record and also on-site inspection. Consulting costs should not be, however, particularly high.

If the prospecting permits are granted, usually about five weeks following application, a fee of \$2.00 per area will be required, for a total of \$2,020. There will be a \$30 filling fee plus Holt charges. Land investigation in Section 12 plus claim staking (discovery points only initially) ought not to exceed \$1,500. Initial land acquisition will, therefore, be about \$4,500. Due to Duval's commercial surface use lease, we will probably be required to post a bond of about \$10,000 per section, or a total of \$15,000 for the 1½ sections (the bond may not be required, and the amount is an estimate by Holt, Inc.).

Very truly yours,

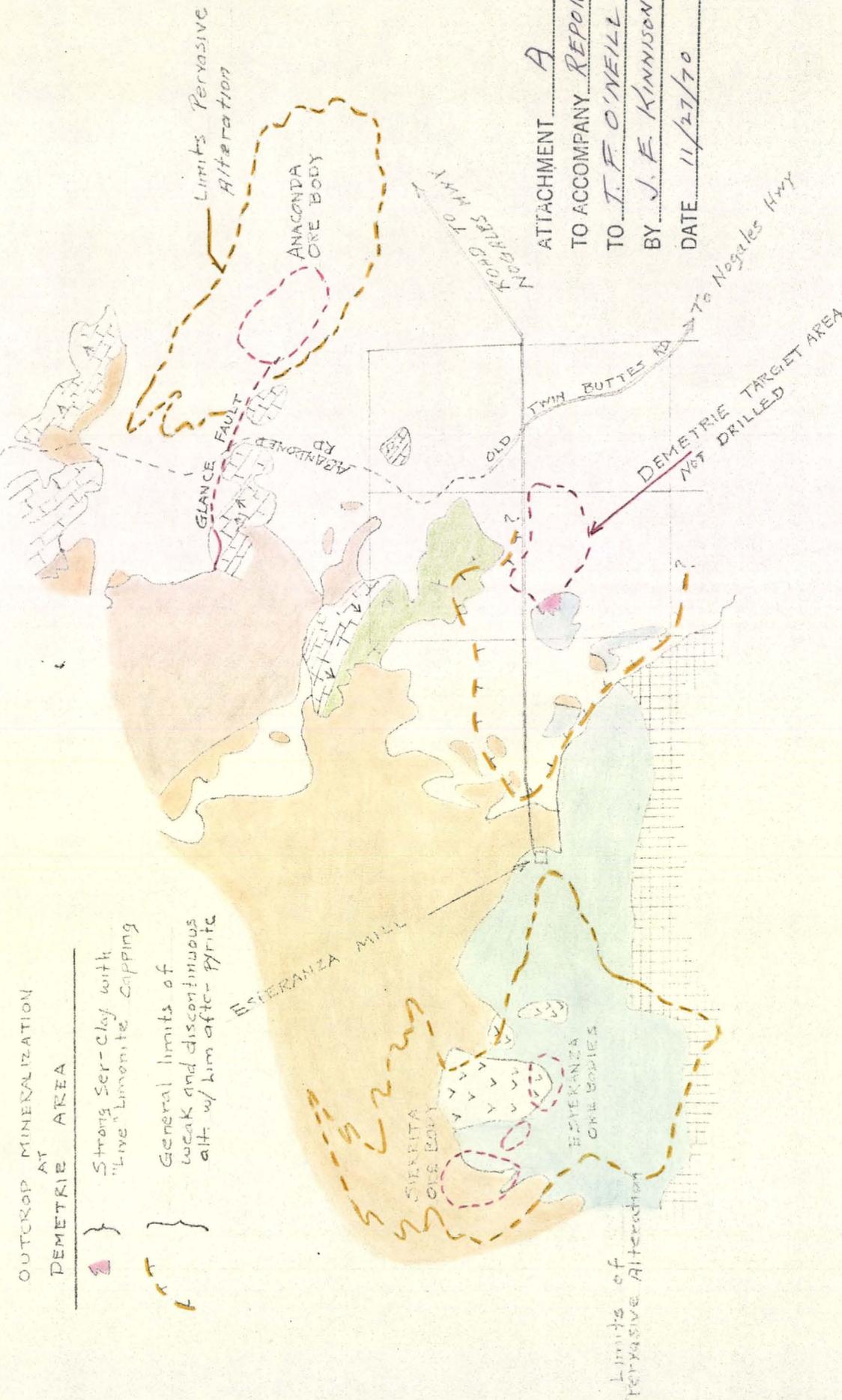
John E. Kinnison  
Regional Geologist

JEK/bl  
Attachs.

OUTCROP MINERALIZATION  
AT  
DEMETRIE AREA

 Strong Ser-clay with  
"Live" Limonite capping

 General limits of  
weak and discontinuous  
alt w/ lim after pyrite



ATTACHMENT A  
TO ACCOMPANY REPORT  
TO T. F. O'NEILL  
BY J. E. KINNISON  
DATE 11/27/70

GENERAL GEOLOGY  
DEMETRIE PROSPECT  
TWIN BUTTES AREA  
PIMA COUNTY, ARIZONA

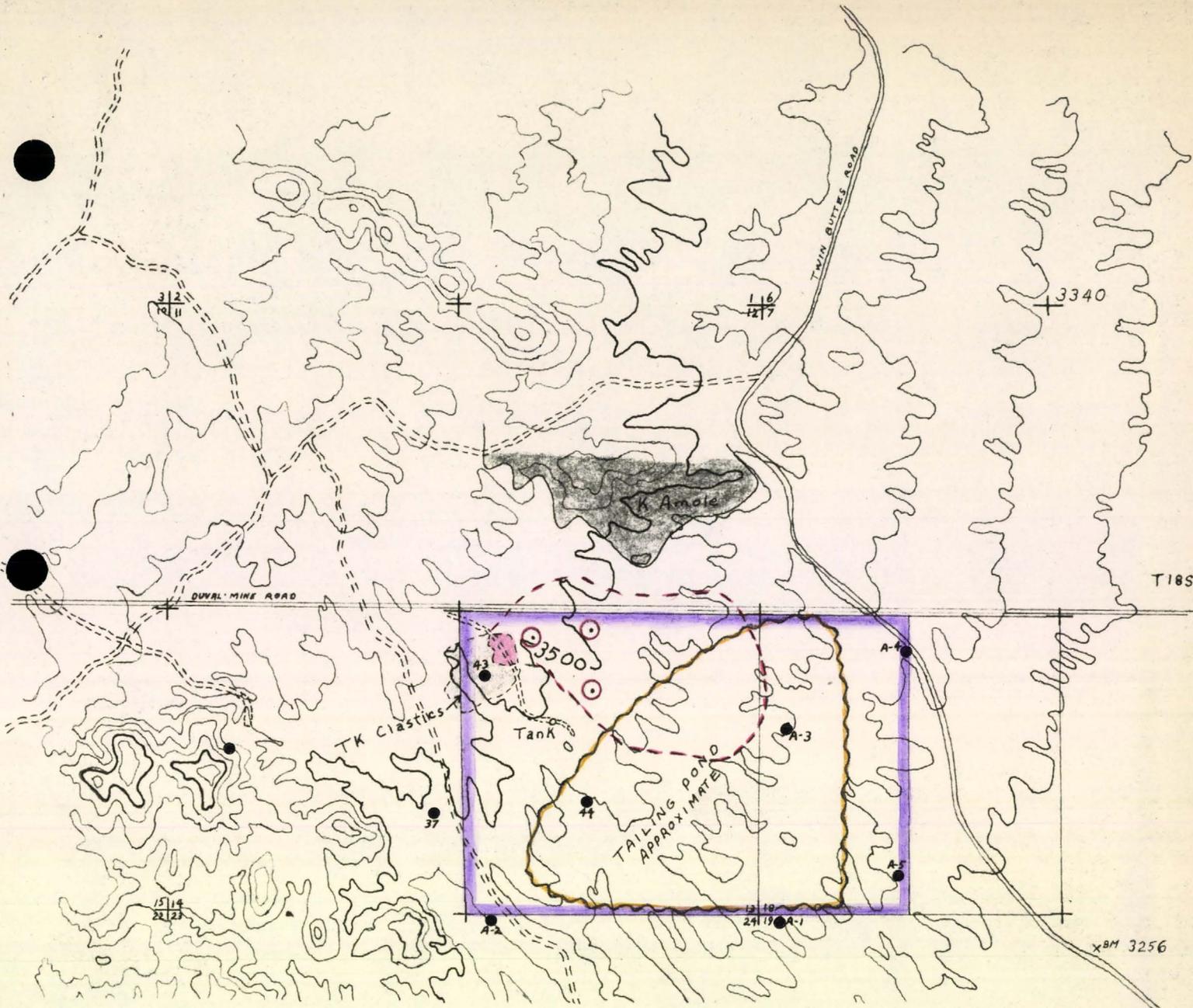
Scale: 1 inch = 1 mile

LAYERED ROCKS

-  Tertiary Silver Bell Formation
-  T-X Clastics
-  Cretaceous Amole group
-  Paleozoic Sediments
-  Pre-Cambrian granite

LARAMIDE INTRUSIVES

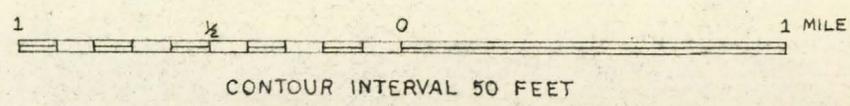
-  Monzonite
-  Granite



- Old drill holes
- ⊙ Proposed initial new holes
- ┌ State Land:  
└ Prospecting permit applied for

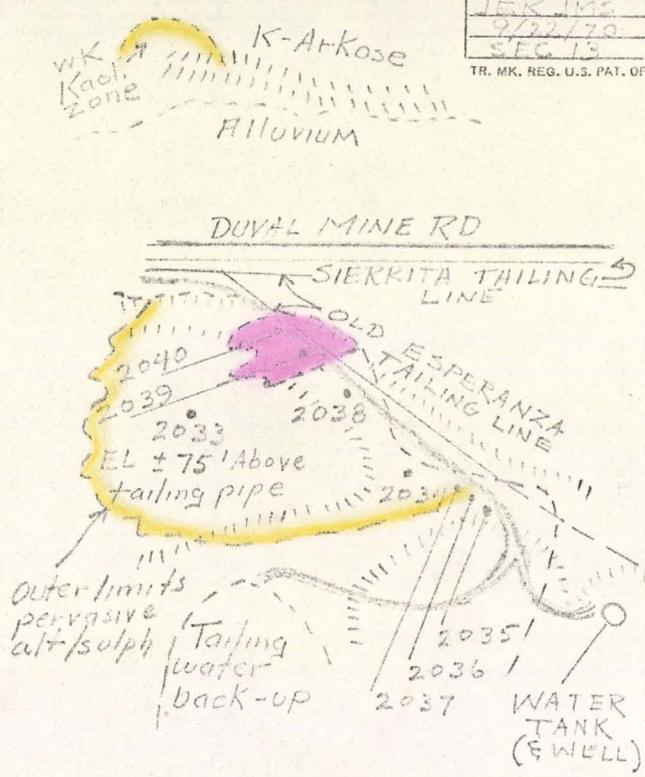
R12E | R13E ATTACHMENT B  
 TO ACCOMPANY REPORT  
 TO T. F. O'NEILL  
 BY J. E. KINNISON  
 DATE 11/27/70

DEMETRIE PROSPECT  
 PROPOSED EXPLORATION

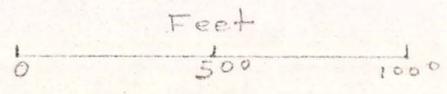


ORIGINAL COPY, 1910 BY J. C. PARKER

FIELD CHK  
JFK JMS  
9/27/70  
SEG 15  
TR. MK. REG. U.S. PAT. OFF.



ATTACHMENT C  
 TO ACCOMPANY REPORT  
 TO T. F. O'NEILL  
 BY J. E. KINNISON  
 DATE 11/27/70



NOTE  
 Sample area - Karkose  
 of granite lenses on SE  
 and porphyry dikes on NW.  
 FIELD SKETCH  
 DEMETRIE PROSPECT  
 DISTANCES & DIRECTIONS

LEFAX, PHILADELPHIA 7, PA., MADE IN U.S.A.

AREA OF "Good" LIVE  
LIMONITE IN RED

Samples

- 2033 - Fine - gr. sericitic. Siltstone? 1/2% total former sulph., after py.  
Cu: 22 ppm Mo: < 2 ppm
- 2034 - Local patch, fn. -gr. sericitic, 1/2 - 1-1/2% total former sulph. prob. after py. Hem floods rock.  
Cu: 42 ppm Mo: 5 ppm
- 2035 - Diorite, strongly weathered. Rd. cut. No mineralization.  
Cu: 76 ppm Mo: < 2 ppm
- 2036 - Arkosic cgl. wk. sericite. 1/2% lim. after py. Rd. cut.  
Cu: 32 ppm Mo: < 2 ppm
- 2037 - Laramide gr. - typical facies. Fresh. Rd. cut.  
Cu: 96 ppm Mo: < 2 ppm
- 2038 - Granite (?) St. alt. spotty "live lime." Suggestion of "shatter bx." - poorly developed. So. edge of best exposure on rd. cut.  
Cu: 116 ppm Mo: < 2 ppm
- 2039 - Porphyry (?) - could be gr. Strong sericite, coarse flakes. "Live lim" lining in generally open cavities. 3% total former sulph.  
Cu: 150 ppm Mo: 5 ppm
- 2040 - Best "live lim," in porphyry, st. ser., coarse flakes. BX texture. Most "live lim" in open spaces between BX frags. Some drusy qtz. 3-4% total former sulph.  
Cu: 288 ppm Mo: 7 ppm