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SX-1.1.5

SUMMARY LOGS

SAN XAVIER RESERVATION

TRACTS 1, 2, & 3

August 29, 1967

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

September 5, 1967

TO: T. A. SNEDDEN

FROM: J. E. KINNISON

SAN XAVIER, TRACT II
DRILL LOGS

The following data are presented in response to Mr. Peel's request for conclusions for the summary drill hole logs on Tract II. I did not provide conclusions originally because I thought that the logs themselves would be self-explanatory in this regard.

The exploration drill holes fall basically into three groups, representing three general objectives:

a) Those drill holes which lie on a direct projection of the Mission altered zone.

b) Those drill holes which are nearby the altered outcrops (described in logs X-101S and X-104), and located generally to the east, northeast, and southeast thereof.

c) Those holes drilled to explore the gap between objectives A) and B) above, and other miscellaneous outlying holes.

I trust the following will satisfy Mr. Peel's need for specific conclusions.

CONCLUSIONS

Of those holes drilled to fulfill the objective of group A above, the following sub-groups apply as indicated:

1) The following drill holes penetrated significant primary copper minerals of ore grade, in relatively shallow altered limestone and argillite:

X-254
X-202
X-211
X-246
X-245
X-215
~~X-229~~
~~X-221~~
~~X-233~~
X-224

CONCLUSIONS (cont'd)

2) The following drill holes penetrated a thin, but significant chalcocite blanket in argillite and porphyry, partly oxidized:

X-242
X-212
X-251
X-255
X-220
X-256
X-213
X-253
X-258

3) The following drill holes penetrated deep ore grade primary copper minerals, principally in altered limestone. The drill holes are widely spaced, and the significance of these intercepts in terms of ore is problematical.

X-213 (also see No. 2 above)
X-217
X-224 (also see No. 1 above)
X-231
X-250

4) The following drill holes penetrated altered pre-ore rocks which contained little or no ore grade copper intercepts. They do, however, represent a part of the Mission altered zone as it extends northerly on to the Reservation.

X-259
X-201
X-218
X-234
X-227
X-257
X-262
X-261
X-219
X-223
X-235
X-241
X-264
X-263
X-252
X-239
X-216
X-260
X-221
X-233

CONCLUSIONS (cont'd)

5) Drill hole X-236 penetrated essentially unaltered pre-ore rock. It lies beyond the limit of the altered zone and porphyry copper deposit of Mission and its extension into southern Tract II.

Those holes drilled to fulfill the objective of group B above, are readily divisible into the following sub-groups:

1) The following drill holes penetrated leached capping with significant ore grade secondary copper sulphide minerals in the form of a chalcocite blanket, partly oxidized. Some primary sulphide ore grade streaks also were intercepted.

X-238
X-244
~~X-247~~
X-237

2) The following drill holes penetrated altered rock which contains principally iron sulphide, and is peripheral to sub-group 1 above:

X-228
X-208
X-229
X-230
X-232
X-247
X-240
X-243
X-209
X-206

3) The following holes penetrated unaltered or very weakly altered pre-ore rock peripheral to sub-group 2 above. These holes lie beyond the porphyry copper deposit delineated by drilling in the central portion of Tracts I and II.

X-205
X-210
X-207

Of those holes drilled to fulfill the objectives listed under group "C" above, the following sub-groups are pertinent:

CONCLUSIONS (cont'd)

1) The following holes penetrated post-ore rocks only, located geographically between exploration objectives as enumerated in A and B above. As a group, and considered with other factors, there is no reason to expect a porphyry copper ore deposit beneath these holes.

X-226
X-204
X-203
X-249
X-248

2) The following two holes penetrated unaltered or very insignificantly altered pre-ore rocks. These are beyond the margin of any porphyry copper deposit:

X-225
X-222

3) Drill hole X-214 penetrated only post-ore rock. Considered with the results from other drill holes, there is no reason to expect an ore deposit beneath this hole.

John E. Kinnison

JEK:mc
cc: JHCourtright
RBMeen
TASnedden - Orig. + 4 extra copies

SX1.1.5

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

August 29, 1967

Personal/Confidential

To: J. H. Courtright

From: J. E. Kinnison

A Glossary of Technical Terms
San Xavier Indian Reservation
Pima County, Arizona

The following glossary of technical terms, as applied especially to mining, of the distribution of rocks and minerals in the ground, is necessarily brief. This has been prepared at the request of Mr. T. A. Snedden and Mr. R. B. Meen, following a joint conference with four Asarco tax lawyers in regard to the pending suit against the Internal Revenue Service.

This glossary will be longer than I originally anticipated, although for a glossary of technical terms it is, I believe, short. The following terms represent those which I consider to be a "must" for a knowledgeable presentation of the legal case by our company lawyers. This glossary may not agree in certain details with other glossaries on the same or similar subjects. It is, however, designed specifically for the use stated above, and is intended to be applied for that use only. You will note that my definition of terms goes beyond the short and "easy" definitive style of a dictionary and most glossaries. This is done purposefully so that the terms may be clear beyond doubt. Thus, this glossary is somewhat a primer, or simple textbook of ore deposits and mining exploration.

The glossary follows. The drill hole logs will be bound together with a glossary for each set.

John E. Kinnison

JEK:bam
cc: TASnedden
RBMeen
5-extra

CPPollock

TECHNICAL GLOSSARY
SAN XAVIER INDIAN RESERVATION
PIMA COUNTY, ARIZONA

General Ore Terms, Porphyry Copper Deposits

Disseminated mineral deposits. The word "disseminated" as applied to mineral deposits means any mineral deposit in which the potentially or actual ore constituting minerals are dispersed as individual grains or seams or as blotches or kernels. The general aspect, over-all, is that the valuable minerals are dispersed throughout the deposit; that is, disseminated.

Porphyry Copper Deposit. The word porphyry copper deposit has a subjective aspect of different characteristics which varies slightly among mining people according to their own experience or their own views formed from reading and observation. As used here for the San Xavier Indian Reservation, and in general throughout Company correspondence and reports, it has a rather broad genetic meaning.

> One definition is: "Copper deposit in which the Copper-bearing minerals occur in disseminated grains (or in veinlets) throughout a great volume of rock. The rock need not be a porphyry. Characteristic: large tonnage and relatively low grade." [1]

It is, however, a disseminated mineral deposit in which copper is generally the principal metallic mineral mined and recovered. By-product minerals may be and usually are present. The porphyry copper deposits of the southwest and elsewhere are invariably associated with the intrusion nearby, at a former time in our earth's history, of a molton rock mass which crystallized to form what is known as a "porphyry." Generally there are several, or multiple, periods of intrusion of liquid rock into the crust of the earth, each closely following one another in time and space. Other features are also found useful in defining a copper porphyry deposit. These will not be enumerated here, but suffice it to say some of them will be defined in following. The Mission Mine and its surrounding metallized area is a porphyry copper mineral deposit and the Mission Mine itself is a porphyry copper ore deposit. At the beginning of exploration on San Xavier we had reason to believe that a trend northwest onto the reservation might prevail, and the search was there for another porphyry copper deposit.

Mineral deposits. Any concentration of a naturally occurring aggregate of minerals within the outer mantle or crust of the earth. These may be segregated for practical purposes

1. Hugh E. McKinstry, late Professor at Harvard, respected expert among mining people, gives this capsule definition. 1948, Prentice Hall, Mining Geology, p650.

on the basis of metallic mineral deposits, iron mineral deposits, and non-metallic mineral deposits.

Ore deposits. An ore deposit is a mineral deposit which may be mined and treated in a mill or other machine or device, and refined to the final metallic elements, then in their pure state. When these pay all the costs of beneficiation previously enumerated, and give a return on the invested capital, the mineral deposit may be properly classified as an ore deposit. It takes many more drill holes or other excavations to establish the continuity and quality of an ore deposit than it does to define the presence of a mineral deposit. A mineral deposit, per se, does not require a relationship to profitable extraction. The technical meaning of the word ore, and ore deposit, derive from their relationship to profitable extraction.

"Ore grade". An "ore grade" intercept in a drill hole or a value which is "ore grade," however determined or from whatever kind of sample taken, would be a grade which, if other economic factors were similar to operating mines, would be classified as "ore." Example: A drill hole penetrates 80' of rock which assays 0.80% copper. This is a grade of copper -- that is to say, a concentration thereof -- which in most open pit mines would constitute profitable minerals to be extracted and would be classified as ore. On the contrary, an intercept of 0.10% copper in a drill hole would not be ore in any mine under any foreseeable future circumstances. Most copper mining companies in the southwest region of Arizona are operating at a limiting point of about 0.4% copper. Rock containing less than that amount is not treated, whereas rock containing greater than that amount is put through the beneficiation circuits such as a mill or precipitation plant. Some companies may operate with a slightly higher limiting factor and others with a slightly lower limiting factor. This depends entirely upon the economics of the individual mine. The deviations from 0.4% copper are slight. One exception to this is where molybdenum makes up a significantly large percentage of the metallic minerals recovered. There is no molybdenum on the San Xavier Indian Reservation in any appreciable quantity. Nor is there any gold or silver in appreciable quantity. These three metals, just enumerated, constitute the principal by-products of many porphyry copper mines.

Rock And Mineral Terms

Rock. This term, as used professionally, has two specific connotations. It is not to be confused with a stone which lies loose on the ground. One use is that of a specific type of the earth's crust. In this usage the word "rock" may be defined as an aggregate of minerals which occurs naturally in the crust of the earth, and which may be differentiated because of a difference in appearance, chemical composition, mineral composition, origin,

or other distinguishing feature. The second connotation of the word "rock" implies a mass of rock large enough to be correlated from one place to another. An example would be a lava, which after solidification from its molten state, forms a tabular mass at the surface of the earth. It may be subsequently dissected by weathering or other phenomena, into isolated masses which are nevertheless all a part of the same "rock unit."

Formation. A rock unit large enough to constitute a significant part of the earth's crust and large enough to be plotted on a map. This term is most often reserved to the layered sequences of strata which have a significant lateral extent.

Pre-ore. All rock units or formations which were present before ore deposition at Mission, and also before the deposition of the San Xavier mineral deposits, are related to the term "pre-ore." I consider both the Mission and San Xavier mineral deposits to be approximately the same age, and to have formed at approximately the same time in the history of the earth.

Post-ore. Following deposition of the San Xavier deposits, younger rocks covered this region. These include, for example, sand, gravel, and lava.

Mineral. A mineral is a natural and distinct substance of the earth, and generally has a crystalline structure.

Ore mineral. This is a mineral which contains a valuable metallic element, such as copper. Many minerals may contain minute quantities of a valuable metallic mineral, in such small amounts that the valuable element cannot be recovered. Sometimes a mineral with similar characteristics to an ore mineral may be conveniently classified in a group of ore minerals. This is so if such a mineral habitually is associated with a natural ore mineral. Example: The mineral chalcopyrite, which contains copper, is almost always associated with pyrite. Pyrite contains iron and sulphur in chemical combination whereas chalcopyrite contains copper, iron, and sulphur in chemical combination.

Sulphide. A metallic element in combination with sulphur is referred to as a sulphide. The sulphide minerals were the first to form on the San Xavier Reservation mineral deposits.

Oxide (Oxidized). The sulphide minerals undergo a chemical process, in the near-surface part of the earth, caused by reaction with water and oxygen which enter the ground from the atmosphere. The result is that the sulphide minerals are oxidized to form other minerals generally known as "oxides." Part of the potential copper ore deposits on the San Xavier Reservation consist of oxidized copper minerals.

Leached, leached capping. The chemical process of oxidation removes some copper in a water solution, and this percolates downward. The impoverished region caused by this process lies above those sulphides which have not been oxidized. This region thus forms a "cap," from which copper has been removed, or "leached." This zone of leaching is referred to as the "leached capping."

Primary mineral deposit. This is a concentration of metallic sulphides, and was formed in the pre-ore rocks by hot solutions containing copper, iron, and sulphur. Minute amounts of other metals are present. The minerals formed by this process and deposited in the pre-ore rock are the primary minerals of the deposit. If the mineral deposit is also an ore deposit, as defined in the foregoing, these are also the primary ore minerals.

Secondary minerals. The minerals formed through the processes of oxidation and leaching are generally referred to as "secondary," as opposed to primary.

Chalcocite blanket. This is a term universally used where chalcocite, a secondary sulphide of copper, forms in a roughly horizontal or "blanket-like" zone. The process of secondary chalcocite formation involves: (1) the leaching of copper in the oxidized zone and the formation of a leaching capping, and; (2) the formation of an enriched copper zone, containing the mineral chalcocite, by the copper-bearing waters which percolate downward from a leached zone above.

Alteration. During the formation of a porphyry copper deposit, two events are notable. The sulphides of copper and iron are disseminated throughout the rock over a large area; also, the rock is subjected to chemical solutions and the rock minerals are changed to other minerals. This change known as "alteration," affects essentially the same space (area of the ground) as that in which the sulphide minerals are deposited. Thus, alteration has two related parts: The formation of sulphide minerals and the reformation of rock minerals.

Specific Rock Units

Preface

The following specific rock units are used in the logs being prepared at this time, for the San Xavier Indian Reservation. The definition I give them are brief, arbitrary, and will apply only to the San Xavier.

Arkose. (Pre-ore). Arkose on the San Xavier is part of the well known arkosic strata of southeastern Arizona, such as at Bisbee. These strata were deposited in a shallow sea as sandy grains that were compacted into hard rock.

Argillite. (Pre-ore). Argillite on the San Xavier is a sedimentary rock--that is, an accumulation of material eroded from a land mass and deposited in a shallow sea at a prior time in the earth's history. The argillite rock, when taken as an entire unit, may be considered to be a layered formation. It is formed from compacted silt grains.

Limestone. (Pre-ore). Limestones on the San Xavier are a layered strata, which are part of the well known limestone strata in southern Arizona. They formed at a prior time in the earth's history, as a chemical precipitant of calcium carbonate in a shallow sea.

Igneous. (Pre-ore). An igneous rock is one that solidified from a mass that was once molten. There are two fundemental types--one which breaks through the earth's crust to form a lava flow, and another type which intrudes the rocks of crust and solidifies there without reaching the surface.

(Monzonite) Porphyry. (Pre-ore). The rock generally termed "porphyry" is an intrusive rock of the type generally associated with porphyry copper deposits. The technical term "monzonite" relates to the mineral composition of the rock, whereas the technical and miner's use of the word "porphyry" derives from its characteristic texture of large crystals engulfed in a matrix of crystals too small to be seen by the eye. Please note that the word "porphyry" should not be confused with the word "porphyry copper deposit."

Granite. (Pre-ore). Granite is rock made of minerals which are large and generally about the same size. Granite also has a specific mineral composition, and is high in silica content.

Basalt. (Post-ore). Basalt is a lava flow which has solidified to a dark hard rock. It has a specific mineral composition, and is low in silica content.

Alluvium. (Post-ore). The San Xavier Reservation largely is covered with loosely consolidated sand and gravel. The alluvium has been deposited from erosion of granite of the Sierrita Mountains. It comprises approximately 90% of the surface of the San Xavier tracts 1, 2, and 3. Depth from surface through alluvium to bedrock varies from 0 to 220 feet, and averages about 150 feet.

Conglomerate. (Post-ore). As used herein, this term implies silt, sand, gravel, and boulders--frequently in crudely stratified layers. It is a fairly hard rock, and formed at a time in the earth's history prior to deposition to the overlying alluvium. During the formation of this conglomerate, lava flows, from time to time, interrupted its accumulation. Thus, lavas and conglomerates are found to be layered one with the other.

General Terms

Outcrop. That part of a stratum or other rock which appears at the surface.

Bedrock. The solid rock underlying alluvium such as gravel, sand, clay, soil, etc.

Fault. From time to time during the history of the earth, the outer crust has been in a state of stress. When the crust yields under stress, and the rock of the crust fractures or cleaves, one side of the fracture will move relatively to the other. The zone between will be made of crushed rock. These fractured surfaces generally form a plane surface (relatively uncurved). If a fault is made of several strands or surfaces, and has a distinct width, it is then better called a fault "zone."

Rotary Drill. The rotary drill is a machine equipped with a column of pipe which rotates to bore a hole in the ground. A "rolling bit" at the bottom of the pipe column breaks off small chips as the drill hole is bored into the ground, and these rock chips are carried to the surface by circulating drill fluid. The types of rock penetrated, and other information can be obtained from the rock chips as they are collected. In use, this term has been converted also into a verb--that is, "to rotary drill." In the San Xavier logs, the verb form is used.

Diamond Drill. The diamond drill is a machine for boring a hole into the earth and removing also a cylindrical sample of rock, this sample being cut with a special "diamond drill" bit and special tube for collecting the sample (core). The diamond drill uses a rotating column of pipe similar to the rotary drill. In use, the term has been converted to a verb, as in, "to diamond drill." In the logs, I have used it as a verb.

SUMMARY LOGS

TRACT I

AUGUST 29, 1967

Located 2000 feet south of an altered outcrop which protruded from the surrounding alluvium as a small hill. The alteration and leached capping indicated the outcrop might be part of a porphyry copper deposit. The drill penetration would test the lateral extent and quality of mineralization.

Rotary drilled alluvium to a depth of 76 feet. Diamond drilled post ore conglomerate to bedrock at 129 feet. Diamond drilled from bedrock in igneous rock with weak alteration and some iron oxide to total depth of hole at 134 feet.

Conclusion: The alteration is weak. This hole is near the margin of an altered zone; probably the same altered zone as that which crops out in the hill noted above.

Located 3000 feet southwest of the hill described under X-101S.

Rotary drilled alluvium to a depth of 120 feet. Diamond drilled post ore conglomerate to bedrock at a depth of 126 feet. Bedrock is arkose, unaltered; diamond drilled to 129 feet total depth.

Conclusion: The traces of alteration are insignificant. The hole is beyond the margin of any porphyry copper deposit.

Rotary drilled alluvium to bedrock, at 90 feet. Diamond drilled to total depth at 150 feet. Rock is arkose, unaltered.

Conclusion: The bedrock is not altered and is beyond the margin of any porphyry copper deposit.

Located adjacent to a small outcrop 1000 feet north of the altered hill described under X-101S. The leached capping and alteration seen at this small outcrop indicated it probably to be part of a porphyry copper deposit.

Rotary drilled to depth of 20'. The first 12 feet was alluvium, and from bedrock to 20 feet was leached, altered arkose. Diamond drilled from 20 feet to 550 feet in arkose and porphyry. Strongly altered and oxidized to 160 feet, with weak secondary copper to a depth of 215 feet. Below 215 feet there is an increase in alteration with occasional intercepts of ore-grade copper sulfide.

Conclusion: Copper is present in the oxidized zone, and also in streaks of ore-grade copper sulfide at depth. The strong alteration of rock minerals and the presence of porphyry rock are factors which would favor a prediction that a porphyry copper deposit of minable size is nearby.

Located 2500 feet west of the altered outcrop described under X-104.

Rotary drilled alluvium to bedrock at a depth of 128 feet. Diamond drilled to 137 feet total depth. Bedrock is post ore basalt.

Conclusion: Pre-ore rocks, and also mineralization (if present) lie beneath post-ore basalt, and possibly also beneath post-ore conglomerate.

Alluvium was rotary drilled to a depth of 122 feet at bedrock. Diamond drilled post ore conglomerate to 163 feet. Rotary drilling continued from 163 feet to 216 feet total depth, encountering basalt at 194 feet.

Conclusion: Post-ore basalt and conglomerate form a thick layered sequence. Pre-ore rock will be deep.

Rotary drilled to adpth of 139 feet, of which the upper 117 feet is alluvium. Bedrock at 117 feet, is weakly altered igneous rock. Diamond drilled to 150 feet total depth in same rock.

Conclusion: The weak alteration indicates only slight dissemination of iron sulphide below.

Rotary drilled to 115 feet. The bedrock below the alluvium was encountered at 80 feet. Bedrock is arkose, weakly altered, with diffused iron oxide.

Conclusion: This drill hole is beyond the margin of any porphyry copper deposit.

Rotary drilled alluvium to 150 feet depth. Diamond drilled to 178 feet total depth. Post-ore conglomerate drilled to a depth of 175 feet at bedrock. Bedrock is post-ore basalt.

Conclusion: Pre-ore rock lies at an unknown depth beneath basalt.

Rotary drilled to 149 feet. Alluvium was rotary drilled to 132 feet where bedrock was encountered. Diamond drilled into bedrock to 154 feet total depth. Bedrock is post-ore basalt.

Conclusion: Pre-ore rock lies at an unknown depth beneath basalt.

X-111S

Located between X-107S and X-101S

Rotary drilled to 139 feet. Alluvium was drilled to 132 feet. At this depth bedrock was encountered. Diamond drilled to 147 feet. Bedrock is an igneous porphyry rock moderately stained with iron oxide.

Conclusion: Nature of alteration and leached capping indicates only iron sulfide at depth.

Rotary drilled alluvium to 55 feet where bedrock was encountered, rotary drilled in bedrock to a depth of 69 feet. Diamond drilled to 76 feet. Bedrock is arkose with weak alteration and no copper minerals.

Conclusion: The nature of the leached capping and weak alteration indicates the hole located near the margin of the altered zone described under X-101S.

Located south of altered outcrop near X-104.

Rotary drilled alluvium to 40 feet at bedrock. Diamond drill to 525 feet total depth. Bedrock is arkose, oxidized to a depth of 141 feet. There are traces of iron sulfide and secondary copper minerals to 220 feet. Streaks of ore-grade copper appear below 354 feet and increase in value with depth.

Conclusion: This hole appears to have penetrated a porphyry copper deposit, in arkose rock.

Rotary drilled to 151 feet. Alluvium was drilled to 116 feet where bedrock was encountered. Diamond drilled to 447 feet total depth. Bedrock is an arkose, oxidized and stained with iron oxide to 188 feet. There are ore-grade secondary copper sulphides from 151 feet to 244 feet. Copper sulphide and iron sulfide are present below 244 feet to total depth.

Conclusion: This drill hole is very significant. It penetrated an enriched secondary chalcocite zone and strongly altered rock.

Rotary drilled to 164 feet, alluvium to a depth of 139 feet. Below this is bedrock, which is post-ore basalt.

Conclusion: Pre-ore rock lies at an unknown depth below basalt, and probably also below other post-ore rock.

Rotary drilled to 140 feet at bedrock; continued in alluvium and post-ore conglomerate to 223 feet. From 223 to 470 feet alternately rotary and diamond drilled to 470 feet in post-ore conglomerate, passing into basalt at 430 feet. Diamond drilled to 484 feet total depth in post-ore basalt.

Conclusion: Pre-ore rock lies deep below post-ore rocks.

Rotary drilled alluvium to 51 feet. Diamond drilled post-ore conglomerate to bedrock at 66 feet at bedrock. Diamond drilled rock to a total depth of 220 feet. Bedrock is an arkose, altered and leached. From 141 to 169 feet the arkose is mixed with porphyry rock. There are weak iron sulfides throughout and traces of copper minerals.

Conclusion: This hole penetrated a leached capping over disseminated iron sulphides. This may be an iron bearing margin of a porphyry copper deposit.

Rotary drilled 85 feet. Alluvium to 81 feet, bedrock below. Diamond drilled to 220 feet. Bedrock is arkose with moderate oxidation and iron oxide staining to 168 feet. Weak iron sulphide throughout and weak copper minerals in places.

Conclusion: Alteration is similar, but less intense, than that penetrated by X-117.

Rotary drilled to 181 feet. Alluvium exists to a depth 137 feet where bedrock is encountered. Bedrock is an arkose with no visible mineralization. The hole was alternately rotary and diamond drilled to a total depth of 547 feet. A post-ore basalt is encountered from 406 feet to 525. Below this there is arkose. This hole was re-entered and diamond drilled to 990 feet. The arkose continues to the bottom with some leaching evident and very weak copper mineralization.

Conclusion: Pre-ore rock lies at 525 feet below post-ore rock and alluvium. The pre-ore rock is sparsely mineralized. This hole lies beyond the margin of a porphyry copper deposit.

Rotary drilled to 53 feet. Alluvium exists to 50 feet where bedrock is encountered. Diamond drilled to 587 feet. Bedrock is arkose. There is some porphyry rock mixed with the arkose from 527 feet to 575 feet. There is some oxidation and a leached capping over a secondary chalcocite zone of ore-grade in the upper section. Ore-grade copper sulphides are present in streaks through out the hole.

Conclusion: This hole is significant. It penetrated a porphyry copper deposit similar to X-117.

Rotary drilled alluvium to 91 feet. Diamond drilled to 256 feet total depth. Post ore conglomerate exists to 139 feet where bedrock is encountered. Bedrock is altered arkose, leached to 168 feet, and with iron sulphide beneath.

Conclusion: This is part of the porphyry copper deposit intersected in previous holes, but here contains principally iron sulphide with traces of copper.

Rotary drilled 42 feet, alluvium to 39 feet where bedrock was encountered. Bedrock, which is weakly altered arkose with a little iron sulfide mineralization, was alternately diamond drilled and rotary drilled to a total depth of 304 feet.

Conclusion: The weak alteration indicates this hole to be on the margin of the porphyry copper deposit penetrated by previous holes.

Rotary drilled to 107 feet, penetrated alluvium to 104 feet encountering bedrock at this depth. Alternately diamond and rotary drilled to 327 feet. Bedrock is post-ore basalt and conglomerate.

Conclusion: Pre-ore rock lies an unknown depth below post-ore rock and alluvium.

Rotary drilled alluvium to 76 feet at bedrock. Diamond drilled to 1638 feet. Bedrock is arkose. Porphyry rock of the following depths: 318 to 336 feet, 945 to 998 feet, 1299 to 1425 feet and 1603 to 1638 feet. Arkose is oxidized and contains copper and iron oxides to 196 feet, with secondary copper sulfides to 217 feet. There are streaks of primary copper sulfide of ore grade from 217 to total depth.

Conclusion: This hole is very significant. It first intercepted a chalcocite zone, partly oxidized, and then primary copper minerals for a long vertical extent. Both arkose and porphyry rock are strongly altered.

Rotary drilled to 98 feet, alluvium to 52 feet where bedrock was encountered. Diamond drilled to 277 feet. Bedrock is altered arkose, oxidized and iron oxide stained to 176 feet. There is disseminated iron sulphide below.

Conclusion: The drill penetrated the iron sulphide margin of a porphyry copper deposit.

Rotary drilled to 141 feet, alluvium to 54 feet where bedrock was encountered. Diamond drilled to 294feet. Bedrock is altered arkose, oxidized to 168 feet, below which are ore-grade secondary copper sulphides to 213 feet. Below 213 feet there is disseminated iron sulphide and traces only of copper sulphide.

Conclusion: This hole penetrated the margin of the secondary chalcocite blanket found by previous nearby drill holes.

Rotary drilled to 181 feet, alluvium extends to bedrock at 101 feet. Diamond drilled to 300 feet. Bedrock is altered arkose with some iron oxide in the leached portion, and disseminated iron sulphide beneath.

Conclusion: This hole penetrated the margin of a porphyry copper-type altered zone.

Located on projection of Mission altered zone.

Rotary drilled to 376 feet. Alluvium extends to bedrock at 195 feet. Diamond drilled to 915 feet total depth. Bedrock is a post-ore basalt which extends to 450 feet. Below the basalt is altered argillite which contains iron sulphide and traces of copper sulphide.

Conclusion: Penetrated an altered zone, but copper value not ore-grade.

Rotary drilled to 94 feet, alluvium extends to bedrock at 15 feet. Diamond drilled to 602 feet. Bedrock is arkose, oxidized to 124 feet. Ore grade copper mineralization begins at 312 feet and continues, at various intercepts to the bottom of the hole.

Conclusion: Penetrated porphyry copper deposit. Ore grade values in primary copper sulphide zone.

Rotary drilled to 139 feet, alluvium extends to bedrock at 138 feet. Alternately diamond drilled and rotary drilled to 816 feet. Bedrock is post ore conglomerate and basalt to a depth of 596 feet where it comes in contact with an igneous rock. This igneous rock is only very weakly altered, and contains no copper mineralization.

Conclucsion: This hole is beyond the margin of a porphyry copper deposit.

Rotary drilled to 196, alluvium extends to bedrock at 118 feet. Diamond drilled to 567 feet. Bedrock is arkose with igneous porphyry rock at 362 to 483 feet and 522 to 567 feet. The arkose is altered with traces of secondary copper to 209 feet. There are streaks of ore-grade copper in arkose from 209 feet to total depth.

Conclusion: Penetrated a chalcocite zone with significant primary copper values; part of the porphyry copper deposit in the locality described under X-101S.

Rotary drilled alluvium to 128 feet. Diamond drilled to 413 feet, bedrock at 130 feet. Bedrock is igneous rock, with traces of iron oxide to 308 feet. From 308 to 326 there is a strong fault with arkose below. The arkose, at 355 feet comes in contact with limestone. There is no ore grade copper mineralization.

Conclusion: The hole is beyond the margin of any porphyry copper deposit.

Rotary drilled to 59 feet, alluvium extend to bedrock at 26 feet. Diamond drilled to 334 feet total depth. Bedrock is altered arkose, oxidized and iron oxide stained to 167 feet. There is ore grade secondary copper mineralization to 218 feet. Below this depth there is weak copper mineralization but nonethat is ore grade.

Conclusion: Penetrated a chalcocite zone over primary copper and iron sulphide.

Rotary drilled to 185 feet, alluvium extends to bedrock af 129 feet. Diamond drilled to 289. Bedrock is altered igneous rock to 228. From 228 feet to total depth the rock is altered porphyry. There are traces of copper sulphides.

Conclusion: Penetrated an iron sulphide margin of a porphyry copper deposit.

Rotary drilled to 183 feet, alluvium extends to bedrock at 137 feet. Diamond drilled to 221 feet. Bedrock is altered porphyry rock with traces of copper mineralization.

Conclusion: Penetrated mineral zone similar to X-134.

Rotary drilled to 105, alluvium extends to bedrock at 20 feet. Diamond drilled to 630 feet. Bedrock is altered arkose to a depth of 502 feet where it comes in contact with porphyry rock. There is a copper mineralization throughout with a few ore-grade intercepts.

Conclusion: Penetrated a porphyry copper deposit, but only a few ore-grade streaks.

Started at the surface on outcrop described under X-101S.

Rotary drilled 305 feet total depth. Rock is an altered arkose leached to 58 feet. From 58 feet to total depth, iron sulphide, traces copper sulphide.

Conclusion: Strongly altered zone, with principally iron sulphide.

Rotary drilled to 175 feet, alluvium extends to bedrock at 169 feet. Alternately rotary drilled and diamond drilled to 801 feet. Diamond drilled to 931 feet. Bedrock is post-ore conglomerate and basalt which extends to conglomerate and igneous rock at 615 feet. drilled into pre-ore arkose. The arkose exhibits "spotty" traces of mineralization.

Conclusion: This hole lies beyond any porphyry copper deposit.

This hole was alternately rotary and diamond drilled to a depth of 744 feet. Diamond drilled to 1264 feet total depth. There is 95 feet of alluvium above bedrock which is post-ore conglomerate to total depth.

Conclusion: Pre-mineral rock lies at unknown depth below a thick section of post-ore conglomerate.

There are numerous very small outcrops in section 27 - part pre-ore, part post-ore basalt. The abundance there of oxide of iron suggested a mineral deposit beneath, but other characteristics of a leached capping over disseminated sulfides is lacking.

Rotary drilled to 11 feet, bedrock at surface. Bedrock is igneous rock, altered and iron oxide stained. Below this, at 25 feet, there is a mixture of arkose and conglomerate with a strong fault 113 to 131 feet and from 170 to 205 feet. Below the second fault, is unmineralized granite.

Conclusion: The iron oxide in the scattered outcrops does not overlie sulfides. This vicinity will not contain an ore deposit.

SUMMARY LOGS

TRACT II

AUGUST 29, 1967

Rotary drilled alluvium to 190 feet. Diamond drilled to 548 feet total depth. Post-ore conglomerate extends to bedrock at 220 feet. Bedrock is altered arkose, weakly oxidized to 243 feet. Alteration, iron sulfide and copper mineralization is weak.

Rotary drilled alluvium to 185 feet. Diamond drilled to 1201 feet, total depth. Post-ore conglomerate extends to bedrock at 200 feet. Bedrock is arkose, oxidized and iron oxide smeared to 229 feet. Arkose, with ore-grade copper below 282 feet, extends to 379 feet. Tactite, hornfels, and arkose with ore-grade copper sulphide extends to 432 feet, where arkose is penetrated. The arkose with copper mineralization and some ore-grade copper streaks, extends altered limestone at 731 feet. The altered limestone continues to 869 feet where it bottoms in altered arkose. Copper mineralizati on ranges from traces to ore grade.

Rotary drilled to 180 feet, alluvium extends to bedrock at 175 feet. Diamond drilled to 200 feet total depth. Bedrock is post-ore basalt which extends to 185 feet. Hole bottoms in weakly altered arkose. No mineralization is evident. Arkose, carrying no copper mineralization, is below the basalt.

Rotary drilled alluvium to 180 feet. Alternately rotary and diamond drilled to 1000 feet and diamond drilled to 1402 feet total depth. Post conglomerate extends to bedrock at 200 feet. Bedrock is post-ore basalt which extends to iron oxide stained arkose of 1208 feet. The arkose continues to a depth of 1375 feet where it comes in contact with igneous rock. The hole bottoms in granite. This hole shows traces of mineralization.

Rotary drilled to 156 feet, alluvium extends to bedrock at 145 feet. Diamond drilled to 162 feet total depth. Bedrock is igneous rock containing no mineralization.

Rotary drilled to 149 feet, alluvium extends to bedrock of 140 feet. Diamond drilled to 184 feet total depth. Bedrock is igneous rock with some iron oxide stains but no mineralization.

Rotary drilled alluvium to 149 feet. Diamond drilled to 169 feet total depth. Post-ore conglomerate extends to bedrock at 160 feet. Bedrock is arkose with traces of alteration and iron oxide stains. No copper minerals were observed.

Rotary drilled alluvium to 128 feet. Diamond drilled to 180 feet total depth. Post ore conglomerate extends to bedrock of 153 feet. Bedrock is arkose, strongly altered to 158 feet with ore grade copper mineralization decreasing with depth.

Rotary drilled alluvium to 150 feet, diamond drilled to 778 feet total depth. Post ore conglomerate to bedrock, at 152 feet is arkose with occasional conglomeritic zones. The arkose is oxidized and iron oxide stained to 168 feet. There is copper mineralization, but only few ore grade streaks.

Rotary drilled alluvium to 76 feet. Diamond drilled to 107 feet total depth. Post ore conglomerate extends to bedrock at 85 feet. Bedrock is arkose, which weakly oxidized and iron oxide stained.

Rotary drilled to 90 feet, diamond drilled to 460 feet total depth. Alluvium extends to bedrock at 85 feet. Bedrock is arkose slightly altered and has weak iron and copper sulfides.

Rotary drilled to 142 feet, diamond drilled to 168 feet total depth. Post ore conglomerate extends to bedrock at 155 feet. Bedrock is a slightly altered arkose with traces of iron and copper sulfides.

Rotary drilled alluvium to 192 feet. Diamond drilled to 892 feet total depth. Post ore conglomerate extends to bedrock at 210 feet. Bedrock is altered limestone, oxidized and iron oxide stained, with ore grade copper streaks. At 323 feet the altered limestone comes in contact with arkose. This arkose has copper sulfide but only a few ore grade streaks. At 784 feet the arkose comes in contact with altered limestone, which has some ore grade streaks. The hole bottoms in limestone.

Rotary drilled to 190 feet, diamond drilled to 706 feet total depth. Post ore conglomerate extends to bedrock at 210 feet. Bedrock is arkose moderately to strongly altered with ore grade copper mineralization to 231 feet. Below 231 feet the arkose has copper sulfides but no ore grade intercepts.

Rotary drilled to 191 feet, diamond drilled 1124 feet total depth. Alluvium extends to bedrock of 190 feet. Bedrock is arkose, strongly oxidized and iron oxide stained to approximately 243 feet. The arkose has many ore grade copper streaks. At 1004 feet the arkose comes in contact with altered and slightly altered limestone, with ore grade streaks. The hole bottoms in limestone.

Rotary drilled alluvium to 139 feet. Diamond drilled to 319 feet total depth. Post ore conglomerate extends to bedrock at 145 feet. Bedrock is conglomerate with no alteration.

Rotary drilled alluvium to 199 feet. Diamond drilled to 949 feet total depth. Post ore conglomerate extends to bedrock at 202 feet. Bedrock is arkose, moderately to strongly altered to 233 with some ore grade copper streaks. Below bedrock the drill penetrates altered mineralized, limestone; arkose and limestone with varying degrees of alteration and mineralization. The hole bottoms in igneous rock.

Rotary drilled alluvium to 192 feet. Diamond drilled to 649 feet total depth. Post ore conglomerate extends to bedrock at 212 feet. Bedrock is arkose, strongly altered and iron oxide stained to 259 feet. Copper mineralization is generally weak with very few ore grade streaks.

Rotary drilled alluvium to 190 feet. Diamond drilled to 1397 feet total depth. Post ore conglomerate extends to bedrock at 199 feet. Bedrock is igneous porphyry rock with traces of oxidation and iron oxide stains on the upper portion and weak copper sulfides throughout. Below the drill penetrates arkose, moderately mineralized with some ore grade copper streaks. Below the arkose, igneous porphyry rock continues to contact altered limestone. The altered limestone has several ore grade copper streaks. The drill penetrates a fault and bottoms in granite.

Rotary drilled alluvium to 200 feet. Diamond to 438 feet total depth. Post ore conglomerate extends to bedrock at 211 feet. Bedrock is arkose, altered and iron oxide stained to 240 feet. Copper mineralization is weak.

Rotary drilled alluvium to 184 feet. Diamond drilled to 621 feet, total depth. Post ore conglomerate extends to bedrock at 214 feet. Bedrock is arkose and porphyry rock to a depth of 323 feet where it becomes porphyry rock alone. Alteration is weak with traces of iron and copper sulfides.

Rotary drilled to 190 feet, diamond drilled to 601 feet total depth. Alluvium extends to bedrock at 180 feet. Bedrock is porphyry rock strongly altered to 249 feet. Below this copper mineralization is moderate but there are no ore grade streaks.

Rotary drilled alluvium to 201 feet. Diamond drilled to 649 feet total depth. Post ore conglomerate extends to bedrock at 212 feet. Bedrock is arkose, very weakly altered with traces of mineralization. The drill penetrated zones of weakly altered arkose and altered limestone, with weak copper mineralization to bottom of hole.

Rotary drilled and alluvium to 149 feet. Diamond drilled to 223 feet total depth. Post ore conglomerate extends to bedrock at 165 feet. Bedrock is arkose weakly altered with traces of iron sulfide.

Rotary drilled alluvium to 181 feet. Diamond drilled to 830 feet total depth. Post ore conglomerate extends to bedrock at 191 feet. Bedrock is post ore Basalt. At 237 feet the drill encountered altered arkose and argillite, with moderate copper mineralization and occasional ore grade copper streaks. Hole bottomed in porphyry rock.

Rotary drilled alluvium to 191 feet. Diamond drilled 977 feet total depth. Post ore conglomerate extends to bedrock at 204 feet. Bedrock is arkose with traces of alteration and moderate amounts of iron sulfide. The drill penetrated altered limestone, arkose, and argillite. Copper mineralization varies from traces to moderate with several ore grade copper streaks.

Alternately rotary and diamond to 181 feet total depth. Alluvium extends to bedrock at 151 feet. Bedrock is igneous rock with traces of iron oxides.

Alternately rotary and diamond drilled to 275 feet total depth. Alluvium extends to bedrock at 202 feet. Bedrock is post mineral basalt.

Rotary drilled to 135 feet. Diamond drilled to 226 feet total depth. Alluvium extends to bedrock at 134 feet. Bedrock is arkose with moderate alteration and traces of copper sulfide.

Rotary drilled to 161 feet. Diamond drilled to 255 total depth. Alluvium extends to bedrock at 135 feet. Bedrock is arkose, moderately altered and iron oxide stained to 181 feet. Iron sulfide, secondary copper minerals and copper sulfides are sparse throughout the hole with no ore grade copper streaks.

Rotary drilled to 151 feet. Diamond drilled to 200 feet total depth. Alluvium extends to bedrock at 149 feet. Bedrock is arkose, with weak alteration and iron oxide stains and copper mineralization.

No information available to 173 feet. Drilling summary indicates rotary drilling to 161 feet. Diamond drilled to 205 feet total depth. Bedrock contact uncertain, but bedrock is arkose and argillite. There are traces of alteration and copper mineralization.

Rotary drilled alluvium to 196 feet. Diamond drilled to 1351 feet total depth. Post ore conglomerate extends to bedrock at 215 feet. Bedrock is post ore basalt. The drill penetrated porphyry rock, arkose, altered and unaltered limestone and bottomed in arkose. Copper mineralization ranges from traces to ore grade streaks.

Rotary drilled to 183 feet. Diamond drilled to 218 feet total depth. Alluvium extends to bedrock at 141 feet. Bedrock is arkose, with traces of alteration iron and copper sulfides.

Rotary drilled to 576 feet. Diamond drilled to 789 feet total depth. Alluvium extends to bedrock at 195 feet. Bedrock is post ore basalt. The drill penetrated weakly altered arkose and altered limestone and bottomed in arkose which has traces of iron sulfide. Copper mineralization ranges from traces to ore grade streaks.

Rotary drilled to 251 feet. Diamond drilled to 637 feet total depth. Alluvium extends to bedrock at 218 feet. Bedrock is arkose with traces of alteration, iron and copper sulfides.

Rotary drilled to 282 feet. Diamond drilled to 1224 feet total depth. Alluvium extends to bedrock at 210 feet. Bedrock is a thin layer of Basalt. The drill penetrated porphyry rock to 1190 feet where it entered a strong fault and bottomed in granite. Copper mineralization ranges from weak to occasional ore grade intercepts.

Alternately Rotary and Diamond drilled to 362 feet total depth. Alluvium extends to bedrock at 232 feet. Bedrock is weakly altered arkose with traces of iron sulfide and no copper sulfide.

Rotary drilled to 171 feet, diamond drilled to 420 feet total depth. Alluvium extends to bedrock at 135 feet. Bedrock is arkose with traces of alteration and iron sulfide. The drill penetrated porphyry rock. Copper mineralization ranges from traces of occasional ore grade streaks in the porphyry rock.

Rotary drilled to 171 feet, diamond drilled to 376 feet total depth. Alluvium extends to bedrock at 125 feet. Bedrock is arkose strongly altered and iron oxide stained to 201 feet. Hole bottomed in arkose. Copper mineralization is moderate to strong with many ore grade streaks.

Rotary drilled to 226 feet, diamond drilled to 608 feet total depth. Alluvium extends to bedrock at 205 feet. Bedrock is altered arkose with argillite at depth. Copper mineralization is moderate with occasional ore grade streaks.

Rotary drilled to 181 feet, diamond drilled to 361 feet total depth. Alluvium extends to bedrock at 107 feet. Bedrock is igneous rock with traces of iron and copper sulfides. Hole bottoms in weakly altered arkose, with weak iron and copper sulfide.

Rotary drilled to 825 feet, diamond drilled to 1475 feet total depth. Alluvium extends to bedrock at 205 feet. Bedrock is post ore Basalt. The drill penetrated zones of altered arkose with disseminated iron and copper sulfide, porphyry rock, altered and unaltered limestone, and bottomed in granite. Copper mineralization is generally weak with very few ore grade streaks.

Rotary drilled alluvium to 205 feet, diamond drilled to 394 feet total depth. Post-ore conglomerate extends to bedrock at 205 feet. Bedrock is arkose and argillite, strongly altered and iron oxide stained to 224 feet. Hole bottoms in arkose and argillite. Copper mineralization varies from ore grade in the altered zone to moderate at depth.

Rotary drilled to 167 feet, diamond drilled 306 feet total depth. Alluvium extends to bedrock at 150 feet. Bedrock is weakly altered arkose with weak iron and copper sulfides.

Rotary drilled to 114 feet, diamond drilled 265 feet total depth. Alluvium extends to bedrock at 111 feet. Bedrock is arkose and argillite, strongly altered and iron oxide stained to 163 feet. Copper mineralization is generally ore grade with few non ore grade intercepts.

Rotary drilled to 210 feet diamond drilled to 850 feet total depth. Alluvium extends to bedrock of 208 feet. Bedrock is arkose with weak alteration and strong iron oxide staining. Drill penetrated arkose and altered limestone. Copper mineralization ranges from ore grade in the upper portion trace of the bottom.

Rotary drilled alluvium to 191 feet, diamond drilled to 807 feet total depth. Post-ore conglomerate extends to bedrock at 217 feet. Bedrock is weakly altered arkose. Below is altered limestone and arkose. The hole bottoms in limestone. (Streaks of ore-grade copper in altered limestone.)

Rotary drilled to 147 feet, diamond drilled to 396 feet total depth. Alluvium exists to bedrock of 137 feet. Bedrock is arkose with traces of alteration on upper portion. Hole bottomed in arkose. Copper mineralization is generally weak with occasional ore-grade streaks.

Alternately rotary and diamond drilled to 466 feet, diamond drilled to 931 feet total depth. Alluvium extends to bedrock at 185 feet. Bedrock is arkose with traces of iron sulfide and conglomerate to 370 feet where igneous rock is penetrated. Hole is bottomed in igneous rock. There are only traces of copper mineralization.

Alternately rotary and diamond drilled to 1000 feet total depth. Alluvium extends to bedrock at 188 feet. Bedrock is post-mineral basalt to 920 feet where arkose with iron oxide stains, is encountered. Hole bottoms in arkose. No mineralization.

Rotary drilled alluvium to 191 feet, diamond drilled to 1126 feet total depth. Post-ore conglomerate extends to bedrock at 214 feet. Bedrock is altered arkose with traces of secondary copper, iron and copper sulfides. Drill penetrates argillite, altered limestone, and bottoms in arkose. Copper mineralization ranges from weak to ore grade in the altered limestone.

Rotary drilled alluvium to 191 feet, diamond drilled to 558 feet total depth. Post ore conglomerate extends to bedrock at 206 feet. Bedrock is arkose and argillite. Very strongly altered and iron oxide stained to 291 feet. Ore grade copper mineralization to this depth, below this copper mineralization is generally moderate with some ore grade copper streaks.

Rotary drilled to 201 feet diamond drilled to 389 feet total depth. Alluvium extends to bedrock at 200 feet. Bedrock is arkose and argillite. Strongly altered and iron oxide stained to 286 feet with moderate copper mineralization and few ore grade copper streaks. Hole bottoms in moderately altered arkose, with generally weak copper mineralization.

Rotary drilled to 196 feet, diamond drilled to 402 feet total depth. Post ore conglomerate extends to bedrock at 198 feet. Bedrock is arkose, occasionally mixed with argillite, moderately altered and iron oxide stained, with oregrade copper mineralization to 250 feet. Hole bottoms in altered arkose with igneous rock. Copper mineralization generally moderate with occasional ore grade streak.

Rotary drilled alluvium to 196 feet, diamond drilled to 472 feet total depth. Post ore conglomerate extends to bedrock at 216 feet. Bedrock is arkose and argillite. Weakly altered to 226 feet. Drill penetrates altered limestone and bottoms in weakly altered arkose. Copper mineralization generally moderate with ore grade streaks in altered limestone.

Rotary drilled alluvium to 185 feet, diamond drilled to 468 total depth. Post ore conglomerate extends to bedrock at 186 feet. Bedrock, is weakly altered arkose and igneous rock. Hole bottoms in argillite and arkose. Copper mineralization is generally weak with occasional ore grade streaks.

Rotary drilled alluvium to 171 feet, diamond drilled to 363 total depth. Alluvium extends to bedrock at 176 feet. Bedrock is porphyry rock, strongly altered with ore grade copper streaks to 259 feet. Below this copper and iron sulfides are weak.

Rotary drilled alluvium to 191 feet, diamond drilled 415 feet total depth. Post ore conglomerate extends to bedrock at 217 feet. Bedrock is arkose with traces of alteration and weak iron and copper sulfides.

Rotary drilled alluvium to 177 feet, diamond drilled to 383 final depth. Post ore conglomerate extends to bedrock at 193 feet. Bedrock is porphyry rock occasionally mixed with arkose and argillite. Moderately to strongly altered and iron oxide stained with moderate copper mineralization and occasional ore grade streaks.

Rotary drilled alluvium to 196 feet, diamond drilled to 475 total depth. Post ore conglomerate extend to bedrock at 199 feet. Bedrock is weakly altered arkose and argillite, with traces of iron and copper sulfides.

Rotary drilled to bedrock at 175 feet diamond drilled to 341 feet total depth. Bedrock is porphyry rock moderately to strongly altered and iron oxide stained with iron and copper sulfides ranging from weak to ore grade.

Rotary drilled alluvium to 184 feet, diamond drilled to 285 feet total depth. Post ore conglomerate extends to bedrock at 204 feet. Bedrock is altered arkose with weak iron oxide stains and secondary copper minerals. Copper mineralization is generally moderate with occasional ore grade streaks.

Rotary drilled alluvium to 192 feet, diamond drilled to 356 feet total depth. Post ore conglomerate extends to bedrock at 209 feet. Bedrock is argillite with arkose. Alteration moderate to strong with some ore grade secondary copper. Drill penetrates a strong fault and bottoms in argillite.

Rotary drilled alluvium to 191 feet, diamond drilled to 322 feet total depth. Post ore conglomerate extends to bedrock at 204 feet. Bedrock is altered arkose and argillite with the upper section strongly oxidized and iron oxide stained. Copper mineralization becomes weaker with depth.

Rotary drilled alluvium to bedrock at 208 feet, diamond drilled to 1178 feet total depth. Bedrock is post ore basalt. Below the basalt the drill penetrated altered argillite with weak iron and copper sulfides, strong faults, altered limestone, limestone and bottomed in granite. Copper mineralization ranges from trace to weak.

SUMMARY LOGS

TRACT III

AUGUST 29, 1967

TRACT III

PREFACE

At the beginning of drilling on San Xavier, Tract #3, there was reason to believe that a good portion of this tract might be covered with a fairly thick sequence of basalt and other post-ore rock.

Conclusion: The above believe was substantiated in four holes. Some pre-ore rock was penetrated; in each case, the penetration was in arkose with black shaly partings. Small quantities of iron sulphide in this rock are not related to the nearby porphyry copper mineralization, but instead, originated at the time the strata were deposited.

Alternately Rotary and diamond drilled to 577 feet total depth. Post ore conglomerate extends to bedrock at 191 feet. Bedrock is post ore basalt.

Alternately rotary and diamond drilled to 575 feet to total depth. Post ore conglomerate extends to bedrock at 253 feet. Bedrock is arkose with traces of iron sulphides and conglomerate. Hole bottoms in basalt. No mineralization.

Alternately rotary and diamond drilled to 437 feet total depth. Alluvium extends to bedrock at 285 feet. Bedrock is weakly altered arkose with traces of iron sulfide.

Alternately rotary and diamond drilled to 825 feet total depth. Alluvium extends to bedrock at 285. Bedrock is conglomerate and arkose with no mineralization.