

0760

6000 0087

Appears to be a semi-typical
contact deposit, but it seems to
be in the intrusive gneiss rather
than the intruded volcanics.

Also no garnet or epidote, but then
there is no Ca^{++} source either.

File No. 0006I

Hotton Tot Prospect

USGS seq. no. 0320210396

Introduction

The Hotton Tot Prospect is a contact metasomatic iron-copper deposit along the north-west trending belt of similar deposits which crosses the central part of the Walker River ^{in the S^t Sec. 2, T. 12 N., R. 30 E. at an elevation of 4,656 msl.} Indian Reservation. Probable and potential reserves as determined by the staff of Occidental Minerals Corporation (1969?) are 1,850,000 Tons ^{with} ~~of~~ a grade of 46.2% iron and 0.10-0.15% copper.

The deposit was discovered during a reconnaissance survey for such deposits by following traces of streambed magnetite float to their outcrop source (Lawrence and Wilson, 1966). Low altitude aeromagnetic surveys were conducted during 1963, 1969, and 1970; a ground magnetic survey was conducted in 1965. Two induced potential surveys were conducted during 1965 ~~and~~; a third had been conducted prior to and EXTRAN This date. An AFMAG survey, ^{etc?} was also purportedly completed. Three separate areas were drilled during 1964, 1965, 1966, 1968, and 1975.

The primary lessee during this period was Idaho Mining Co.; other companies who have examined the property under their auspices are Walker-Martel Mining Co., Occidental Minerals Corp., Bear Creek Mining Co., and United States Steel Corp. Exploration rights within the Reservation are currently leased by Extotal Resources Inc.

Geology

The rock units at the HottenTot Prospect consist of a submarine volcano-sedimentary sequence which has been intruded by an epizonal (?) stock. This is unconformably overlain by a much younger, subaerial ash flow-tuff sequence followed by a subaerial basin unit.

The volcano-sedimentary ~~unit~~^{sequence of Hardyman, 1980} (T_V) consists^{dominantly} of intermediate to highly acidic flows, tuff, ignimbrite, and volcanogenic sediment units with intercalated^{lenticular} limestone pods. The proportion of igneous rock decreases up-section. This unit has in the past been called the Excelsior Formation and Luning Formation, but is probably the proposed Pamlico Formation as described by Oldow (1978). Many authors (Speed, 1978; Oldow, 1978; Schweicker, 1978; Hamilton, 1978) attribute this rock unit's origins to a magmatic arc although there is disagreement relative to the arc polarity and whether the arc was oceanic, continental or transitional. The current consensus is that this arc was oceanic and accreted to the craton during the early Mesozoic Era.^{A post-collision sedimentary sequence has been locally removed by erosion.} The intruding diorite (K_2) has been tentatively assigned a Cretaceous age by Hardyman (1980). The rock is a fine-grained, equigranular, pyroxene diorite (Hardyman, 1980). This description is indicative of the types of intrusive rocks common to island arcs, and the age of the diorite may, therefore, be slightly post- T_V - probably Jurassic. Contact metasomatic deposits formed in such an environment tend to have magnetite-bearing endoskarn development.

These are in the Hottentot S and SE magnetic anomalies, and albited, chloritized, epidotized, garnetiferous diorite and metasediment with massive magnetite/hematite and accessory chalcopyrite, pyrrhotite, and pyrite are exposed. There are several short, steep and adits and several hundred feet of roads and trekkers.

(chalcopyrite) (cobaltite)

with minor accessory copper, cobalt, and gold.

Other diagnostic ore and alteration minerals are

sodium-silicate, grandite, epidote, amphibole, and chlorite
(Einaudi, 1981)

and features
i.e. All the preceding minerals have been observed
at the Hottentot Prospect. Such deposits are of par-
ticular interest, because of their anomalous gold con-
tent.

Only a small area of the Triassic-Jurassic units
are exposed. Most of the vicinity is underlain by
ash flow-tuff
quartz latite cooling units of the Tertiary age
(T_{1a}) which are overlain unconformably by intermediate
silicic tuff. These are in turn unconformably overlain
by late Tertiary basic flows and their feeder dikes.
Both rock units extruded during Basin-Range extensional
deformation.

The dominant structural features are westward-
tilting fault-blocks of Basin-Ridge origin and the
right lateral.
Northwest-Trending, strike-slip faults of the
Walker Lane, a regional feature. Several authors have
suggested that the many magnetite deposits within
the Walker Lane may actually be parts of only a few
deposits which have been dismembered by right-
lateral movement.

Geochemistry

Very little exploration geochemical sampling has been
done in the vicinity of the Hottentot Prospect. Walker-
Marcel Mining Co. reports indicate stream sediment
samples were taken, but the results are not known.

The Department of Energy conducted a National Uranium Resource Evaluation (NURE) survey of the Walker River drainage basin during 1976, but no samples were taken near the Hottentot Prospect. Sample analyses are too sparse at the deposit to discern any rock geochemistry patterns.

Geophysics

Since the early 1960's, two aeromagnetic surveys and three induced potential surveys have been conducted. A Magneto Telluric (AFMAG) and a resistivity survey were reportedly conducted, but no data has been made available. The first aeromagnetic survey was ~~conducted~~ in 1963 by Aero Service Corporation and interpreted by Walker-MerCal Corporation. The data reduction appeared to be poor, and the data was recompiled and reduced by Lockwood, Kessler, and Barton, Inc. in 1969. Then reinterpreted for Occidental Minerals Corp. by Elliot Geophysical Co. in 1970. The map illustrates¹ 750-1000 gamma anomaly centered over drill hole H-1 (Hottentot N). A distortion of the anomaly occurs over the southeast flank (Hottentot S and Hottentot SE). A higher altitude aeromagnetic survey (A.S.G.S., 1971) indicates an approximately 150 gamma anomaly over the Hottentot Prospect. A "Downward Continued Regional Magnetic Component" contour map by Hunter Ltd. (1976) indicates a 200 gamma anomaly over the Hottentot Prospect. This map which includes the Hottentot Prospect, apparently of Lockwood, Kessler, and Barton data, moderately broad

is not shown. A ground magnetic survey conducted in March, 1963 is illustrated on Pl. ____ with the low altitude aeromagnetic survey results. Hollenton S and narrow and Hollenton SE are the most significant anomalies at 4,700 and 3,400 gammas respectively. The broader main Hollenton N anomaly is 2,400 gammas. An interpretation by Elliott (1970) apparently of both the aeromagnetic and ground magnetic surveys is included on Pl. ____.

During 1965 three companies conducted induced potential (I.P.) geophysical surveys, McPhar Geophysics, Ltd., Bear Creek Mining Co., and Heinrichs Geoexploration Co. The lines and anomalies are shown on Pl. _____. Letters from Bear Creek Mining Co. and Heinrichs Geoexploration Co. indicate they found no distinct anomalies and that the questionable anomalies they did locate were probably caused by surface inductive coupling. Correspondence by Robert E. Holt, Walker-Martel Mining Co. (1966) states that I.P. anomaly correlation with magnetite observed in drill holes is very poor and that I.P. surveys should not be utilized. The close correspondence of I.P. anomalies with alluvium derived from silicic volcanics and at the margin of a salt-rich evaporite basin verify that the I.P. responses are - result of inductive coupling. No details of the McPhar survey are available. Heinrichs Geoexploration used a 200 foot electrode spacing and frequencies of 0.05, 1.0, and 3.0 cycles; Bear Creek Mining Co. used electrode spacing of 200 feet at unknown frequencies.

The magnetic surveys appear to be the most reliable geophysical method used at the Hottentot Prospect, and although the data filtering techniques used are not known a cursory interpretation can be made. A comparison of ground versus aeromagnetic responses¹ indicates that ~~that~~ Hottentot N is a large, deeper magnetic source of low grade such as diorite and that the Hottentot S and SE anomalies are caused by smaller, near surface, high-grade magnetite sources. This is partially verified by drilling.

Drilling

The first drilling program was initiated in 1964 within the aeromagnetic anomaly at Hottentot N. This was followed in 1965, 1966, and 1968 in all three anomalous areas. Two holes; H-100 and H-101 were apparently drilled in the 1970's. Drill logs are incomplete; total depth² is unknown, and there are no analyses from eleven drill holes. Precious metals analyses are few. All drill hole locations are illustrated on Pls. and ; those with magnetite intercepts greater than ten feet³ with more than 30 percent iron are differentiated. A summary of all drill holes follows in Table .

TABLE NH

constructed by Idaho Mining Co. (1977?)

Three cross sections⁴ are located on Pl. illustrated on Pl. .

Hottentot Drill Log Summary

6000 0087 (0700)

Hottentot
Hottentot

H-1

- 0 - 703.2 Tertiary volcanics
- 703.2 - 713 Shear zone, gruge 703.2 - 706.4 ; bx w/ rounded frags 706.4 - 710.0
- 713 - 743.4 Magnetite ore
- 743.4 - 746.9 Gouge w/ bx-dio
- 6.0 746.9 - 752.9 Fault bx - bx frags are dio (Arg. & chl)
- 752.9 - 756.0 Dio - alb.itized & silicified
- 1.6 756.0 - 757.6 Gouge
- 9.4 757.6 - 767.0 BX-dio, silicified & alb.itized
- 767.0 - 780.1 Dio, silic. & alb.itized
- 6.1 780.1 - 786.2 Fault bx
- 786.2 - 789.1 Dio - silic. & chl.
- 36.4 789.1 - 825.5 BX-dio - alb.itized & silicified, scattered py
- 8.0 825.5 - 833.5 Gouge
- 42.6 833.5 - 876.1 BX-dio - silicified, chl, Arg w/ numerous veinlets gto
- 2.1 876.1 - 878.2 Gouge
- 878.2 - 882.0 Magnetite ore
- 6.5 882.0 - 888.5 BX-mag ore
- 10.3 888.5 - 898.8 BX-dio,
- 898.8 - 913.4 Magnetite ore
- 6.2 913.4 - 919.6 Gouge & bx-dio
- 919.6 - 921.7 Mag ore
- 27.5 921.7 - 949.2 BX-dio
- 949.2 - 965.3 Dio
- 118.6 965.3 - 1083.9 Gouge & bx-dio

H-1

144.1 1083.0 - 1228.0

T.D.

Dio - "completely bx & crushed"

(question if this is actually fault related,
or if it is actually ground prep that
took place during & shortly after intrusion).

Hottentot

H-1A

Rotary 0 to 864 no strux

0-10 Qal

10-515 Tertiary volcanics

515-800 Fine grnd intrusive, qtz monz to qtz dio

800-864 Qtz monz?

864-1046 Dio bx (see comments on H-1 for 1083.9-1228)
T.D.

Hottentot

H-1B No structure logged

0 - 725 Tertiary volcanics

725 - 950 Qtz monz - silicified & slightly albited

950 - 1115 Qtz monz

1115 - 1116,7 Silicified (20-40%) qtz monz

Hotentot

H-2

No structure logged

0-200 Alluvium

200-801.5 Tertiary volcanics

Hottenfort

H-3

0-41.3 Tertiary Volcanics

- 41.3 - 43 Mineralized zone w/ mag, hem, & lim - considerable pyrophyllite, talc & sericite
- 43 - 132 Mineralized ^{endo} skarn? (some epidote, garnet & tremolite)
w/ post mineral bx at 51.5 ± 45°?
- 132 - 141 Fine grained intrusive - argillized
- 141 - 171 Granodiorite or diorite
- 4.0 ~~175~~ Shear zone - argillized & jarositic 45°?
- 175 - 198 Mineralized endoskarn w/ Tr Cu at 175;
187, ± 197 - 200 ft.
- 198 - 200 Fine-grained intrusive w/ mag & hem (endoskarn?)
- 200 - 227 Slightly altered to fresh granodio or dio.

Hottentot

H-3A

0 - 83 Tertiary Volcanics

83 - 131.6 Silicified fine-grained intrusive

131.6 - 147 Mineralized zone argillized & chloritized

5.5 147 - 152.5 ~~Gouge~~ 45°?

152.5 - 168 Granodio or dio

168 - 172 Granodio or dio endostarn w/ considerable
garnet, epidote, & zoisite.

1.0 172 - 173 ~~bx Shear Zone~~ 40°?

173 - 180.5 Granodio or dio endostarn?

1.5 180.5 - 182 ~~bx Shear Zone~~ 40°?

182 - 183 Granodio or dio endostarn?

3.0 183 - 186 ~~bx Shear Zone~~ 45°?

186 - 213.6 Granodio or dio endostarn (silicified, chloritized &
epidotized along frax)

213.6 - 246 Silicified & albited granodio.

17.3 246 - 263.3 ~~bx~~ granodio

263.3 - 270 Silicified & albited granodio.

Hottentot

H-3B

- 0- 14 Rotary - no return?
- 14- 124.2 Silicified fine grained intrusive, 40% argillized & 20-60% silicified. Abitized in places
- 124.2 - 175 Mineralized zone in dio (endostarn?)
- 16.0 175- 191 Shear zone w/ some bx in silicified fine-grained intrusive. 65°?
- 191- 240.4 Mineralized zone in dio (endostarn?)
- 11.0 240.4- 252 Shear zone w/ bx in silicified & argillized fine grained intrusive
- 252.- 307.1 Mineralized dio (endostarn?), chloritized, slightly to mod argillized, & slightly silicified.
- 307.1- 314.5 Chl & slightly silicified dio
- 1.1 314.5- 315.6 Shear zone 75°?
- 315.6 - 354.6 Chl & slightly silicified dio.

Hottenfot

H-3C

0-6 Calc-silicates

2.0 6-8 Gouge & 6x in fine grnd dio

8-28.5 Mineralized fine grnd dio, slightly argillized to highly chl.

0.7 28.5-29.2 Gouge 55°?

29.2-40.0 Mineralized fine grnd dio(?) w/ 30% actinolite & up to 60% Chl.

40.0-44.0 Fine grnd dio(?) w/ moderate silification, small amt 2ndary albite, & slight argillization

1.2 44.0-45.2 Gouge & 6x 70°?

45.2-49.1 Same as 40.0-44.0

49.1-91.0 Dioprite endostern slightly to mod. argillized

91-92.6 Mineralized zone (dio endostern?)

2.4 92.6-95 Bx

95-113 Mineralized zone (dio. endostern?)

0.8 113-113.8 Gouge 45°?

113.8-127 Mineralized zone (dio. endostern?)

2.1 127-129.1 Gouge

129.1-131.0 Chl & argillized dio (endostern?)

1.2 131-132.2 Gouge & 6x

132.2-156.2 Chl & argillized dio (endostern?)

1.3 156.2-157.5 Bx 55°?

157.5-161.0 Chlo. dio.

0.5 161.0-161.5 6x 30°?

161.5-199.2 Chlo. dio.

13.1 199.2-212.3 Bx & Gouge 40°-65°? T.D.

Hottenot

H-3D

- 0-29 Fine grnd intrusive (dio?) chl. & argillized
- 29-51 Dio(?) endostkarn w/ mag
- 51-87.5 chl dio, ...
- 62.5 87.5-150 Siliceous dio, highly bx^v - (ground prep from
intrusion?)

Hottenot

H-3E

0-42 Qtz dio mod silicified & slightly arg

11.0 42-43 Shearzone 60° ?

43-47 Qtz dio

48.0 47-95 Bx Qtz dio

95-104 Qtz dio

14.0 104-118 Shear zone

118-135 Qtz dio endostarn w/ epidote & garnet

135-140.5 Bx 70° ?

5.5 140.5 - 148.5 Qtz dio endostarn w/ epidote & garnet

Hottentot

H. 3F

0 - 7.5 Tertiary volcanics

7.5 - 18.2 Qtz dio (?) chloritized

18.2 - 20 Fault zone 85° ?

1.8

20 - 51.6 Mineralized (Fe) zone - endostarn?

27 - 40 Shear zone dipping 75° to 85° (contains mag deposited in the shear zone?) 13.0

51.6 - 72.4 Qtz dio, chloritized.

72.4 - 103.3 Mineralized (Fe) zone - endostarn?

103.3 - 121.2 Starn (endostarn?) w/ garnet, amphibole, trace cp,
(
 & Fe

121.2 - 135. Starn (endostarn?), argillized w/ garnet, amphibole,
 & Fe

135 - 137 Qtz dio.

137 - 141 Bx 75° ?

4.0

141 - 142.8 Qtz dio.

142.8 - 157.2 Bx 55° - 70° ?

14.4

157.2 - 159 Qtz dio.

Hottentot H-3G

0-5 Qa1

5-14 Tertiary (?) andesite

14.0-14.6 Gouge

14.6-19.5 Tertiary (?) andesite

19.5-98 Mineralized zone (endostrom ?), argillized & chloritized

2.6 98-100.6 Bx 70°?

100.6-118.6 Dio, silicified

13.2 118.6-131.8 Bx & clay (gouge?) 60-65°?

131.8-152.1 Mineralized zone (endostrom ?)

152.1-175. Qtz dio

Hoffenforf

H-3H

O-7 Qal

7-138 Tertiary volcanics

7.0 138-145, Bx (Tectonic? or tuff bx?) 65° ?

0.5 145.0-145.5 Bx in qtz dio (mag in qtz dio)

17.8 145.5-163.3 Bx in ^{silicified} qtz dio

163.3 - 178.6 Mineralized ^(Fe) zone (endostkarn? - silicified
qtz dio).

14.2 178.6-192.8 Bx qtz dio (argillized)

192.8 - 221.0 Qtz dio.

Hottenfo +

H-6

- 0 - 177 Tertiary volcanics
- 177 - 260 Mineralized (Fe) zone endostarn?)
- 1.4 260 - 261.4 Gouge ✓ 55°?
- 261.4 - 269.4 Silicified dio(?)
- 269.4 - 286.6 Mineralized ^(Fe) zone (endostarn?)
- 286.6 - 287.2 Silicified dio(?)
- 287.2 - 354.6 Mineralized (Fe) zone (endostarn?)
- 354.6 - 361.1 Silicified, chloritized, & argillized dio.
- 361.1 - 370.7 Mineralized (Fe) zone (endostarn?)
- 370.7 - 371.4 Silicified & chloritized dio
- 371.4 - 379.6 Mineralized zone (Fe) (endostarn?)
- 379.6 - 388 Arg & chb dio
- 24.5 388 - 412.5 Shear zone in silicified & arg dio. w/mag & Ha
at 396 - 408
- 412.5 - 425.4 Silicified dio.
- 4.1 425.4 - 429.5 Gouge & Bx 55°?

Hottentot

- 4-6A Rotary to T.D. no structure
- 0-288.8 Tertiary volcanics
- 2.0 288.8-290.8 Bx & gouge
- 290.8-293.2 Tertiary volcanics
- 17.2 293.2-354.6 Mineralized zone^(Fe) in dio. endostarn
- 6.2 354.6-371.8 Bx & gouge 30°-60°?
- 371.8-378 Bx in mineralized zone (dio endostarn)
- 378-387.5 Min zone^(Fe) in dio endostarn
- 9.0 387.5-396.5 Bx dio, dips 85° ✓
- 2.0 396.5-421.0 Mm zone^(Fe) in dio endostarn
- (421-423 Gouge
- 423-424.5 Min zone^(Fe) in dio endostarn
- 11.9 424.5-436.4 Bx dio 55°?
- 436.4-445.7 Dio endostarn w/mag
- 2.9 445.7-448.6 Gouge 20°-60°?
- 448.6-451 Dio endostarn w/mag
- 482.4-504.5 Arg & albitized dio
- 4.9 504.5-509.4 Bx dio 55°

No vis log

Hottenfot

4-6D	Rotary 0-168 - no strux
0-15	Andosite
15-160	Tertiary volc.
160-168	Mg & 1cm
168-188	Qtz monz eudostkarn? (Fe min)
12.0 188-200	Highly bx ^{eudostkarn} dips 60°-65° ✓
22.0 <u>200-222</u>	Highly bx qtz monz dips 60-65° ✓
222-242	Qtz monz

Hottentot

H-6E Rotary to T.D. - no strux

O-120 Tertiary volcanics

Hottenfot

No vis log

- H-6F Rotary 0-278 no strnx
- 0-275 Tertiary volcanics
- 275-278 Mag & Lim in cuttings
- 278 - 289 Mineralized zone (Fe)
- 289 - 294 Silicified & albited Qtz monz
- 10.0 294 - 304 Bx in Qtz monz dips 60-65° ✓
- 304 - 342 Silicified & albited Qtz monz
- 4.0 342 - 346 Bx, dips 60-70° ✓
- 346 - 353 Qtz monz

Hottonfoot

H-6C Rotary to T.D. - no strux

0-190 Tertiary volcanics

190-401 unk - footage from Idaho Mining
Corp Map 6D (sections AA' and DD')

Hottentot

- H-100 No structure logged
- 0- 660 Tertiary volcanics
- 660-670 Hf1s
- 670-720 Fine-grnd ig rx (original andesite?)
w/ argillized feldspars, silica flooding, &
bleaching of ferromag min.
- 720-805 Calc-silicate rocks (hf1s?) w/ 35-50% mag &
very minor cp & py
- 805-828 Poor recovery (makes up 20% of core)
- 828-831 Nx core of Calc-silicate rock w/ 65% mag,
15% py & po.
- Note Fe & Cu assays from 710-805,
805-828, 828-831.

