5-2-10 MJ-10 (cf. PL-2, PL-4, PL-6-7)

The hole was collared approximately at the same position with that of DG-9. The purpose of this hole was (1) to confirm massive sphalerite ore intersected in DG-9 between 79.6m and 85.1m, and (2) to trace the extension of the two skarn horizons which had been confirmed in MJ-3. The hole was located within IP and geochemical Zn-anomalies .

The results are as follows: (1) Quartz porphyry which had been considered as a sill was proved to be a dyke. Consequently the two horizons mentioned above could not be confirmed , as the porphyry occupies the expected positions. (2) The mineralization has not been confirmed at the position to correspond to the ore intersection in DG-9. It might be due to the reasons that the drill site of this hole not exactly the same to that of DC-9, and that the exact order of the core may have not been restored, as the cores were upset by last earthquake. (3) Massive pyrite was intersected for 7.3 m at 53.6-60.9m (0.63 % Zn, for 1.50m between 10.40-11.90).

# 6. Discussion and Recommendation

## 6-1 On geochemical exploration

Grid-sampling of geochemical soil samples was performed in the second phase. 861 samples were collected on a 200m x 100m grid,and four elements (cu, Zn, Pb, and Ag) were assayed. As a result, widely distributed anomalies of Cu and Zn were localized (Fig. 2). The anomalies were delineated using following threshold values (in ppm); 70 for Cu, 70 for Pb, 200 for Zn, and 2.5 for Ag (cf. 3-7 in Phase-II Report).

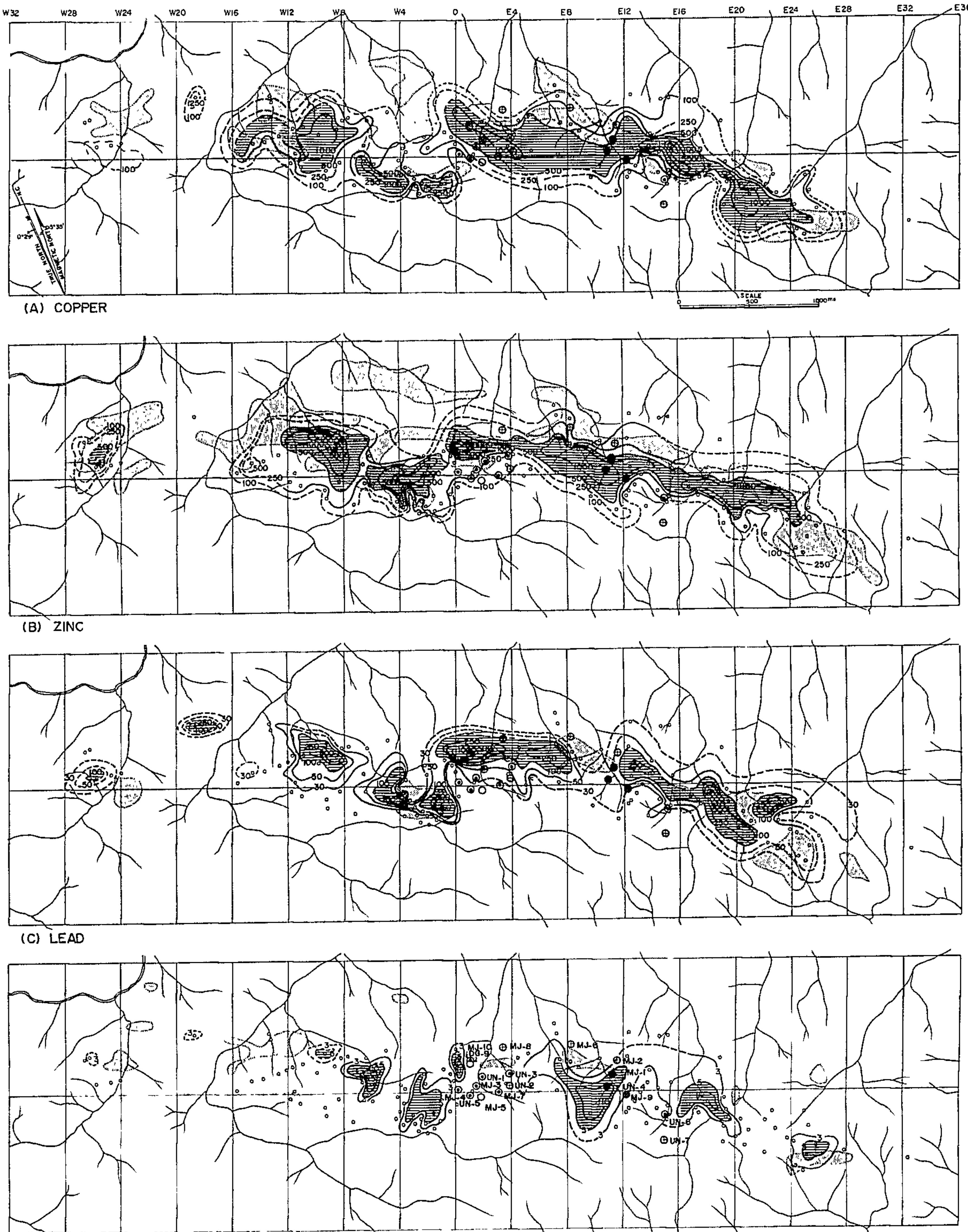
129 rock-chip samples were collected for geochemical purpose in the present phase, and 8 to 9 elements (Cu, Pb, Zn, S, Fe, Mn, (Au), and Ag) were assayed (Appendix 6-1, PL-7, 8, 9).

### 6-1-1 Correlation between geochemical anomalies of soil samples and drill results

Geochemical anomalies of soil samples do not very well correlate to drill results: (1) Among three DDHs that intersected %-order Zn-mineralization, two holes MJ-9, UN-4,in which sulfides are intersected were,located outside of the anomalies. (2) Three DDHs (MJ-2, -6, -8), which are situated outside of IP anomalies and were originally intended to explore deeper extension of geochemical anomalies, did not encounter even mineralization of 0.1% Zn-order.

The facts mentioned above may be attributed to following reasons: (1) The %-order Zn-mineralization so far confirmed by DDHs only occurs selectively in a skarn horizon around the boundary between the Tactic and Chicol Formations, and the horizon rarely crops out on the surface due to geological structure. (2) Therefore, the distribution of indicators on the surface reflects halos caused by primary despersion of mineralization, but anomalies in soil do not exactly indicate location of the holes, as indicators in soil have been displaced by secondary dispersion toward geographically lower position. The secondary dispersion may have been caused by supergene alternation and/or transportation of soil. The apparent displacement observed in the smallest in Pb, the largest in Ag, and intermediate in Cu and Zn (PL-10, Fig.10).

Fig. 9　CORRELATION : SOIL GEOCHEM. vs. ROCK CHIP ASSAY




(A) COPPER

(B) ZINC

(C) LEAD

(D) SILVER

LEGEND

ROCK CHIP SAMPLES (3rd PHASE)
- ○ SAMPLE SITE
- ISO-GRADE CONTOUR (FIGURE IN PPM)
- HIGHS (Cu≧500, Zn≧500, Pb≧100, Ag≧5 IN PPM)

SOIL SAMPLES (2nd PHASE)
- GEOCHEMICAL ANOMALIES (Cu≧70, Zn≧200, Pb≧70, Ag≧25 IN PPM)

DRAINAGES

PICKET LINES (2nd PHASE)　W12

DDHs
- ○ HOLES IN WHICH ABUNDANT PYRITE MINERALIZATION INTERSECTED (S≧10+n% FOR INTERVAL ≧ n m)
  - ● HOLES IN WHICH % ORDER Zn MINERALIZATION INTERSECTED
  - ◉ HOLES IN WHICH 0.1%-ORDER Zn MINERALIZATION INTERSECTED
- ⊕ HOLES IN WHICH NO CONSPICUOUS PYRITE MINERALIZATION OBSERVED

### 6-1-2 Correlation between geochemical anomalies of rock-chip samples and drill results

Geochemical anomalies of rock-chip samples, which were collected on the surface during the present phase, very well correlate to drill results (PL-10, Fig. 9, 10): (1) Three of four DDHs that are located within anomalies delineated by 500 ppm Zn intersected %-order Zn-mineralization, whereas all other DDHs outside of the anomalies only intersected Zn-mineralization of 0.1%-order or lower. (2) Three DDHs that intersected obvious secondary enrichment zone of Cu with supergene chalcocite (MJ-9 3.80% Cu for 0.60m, MJ-1 0.19% for 1.0m, UN-4 0.19% thickness unknown) are all located within anomalies delineated by 500 ppm Cu, and most of other DDHs within the anomalies also confirmed the presence of supergene chalcocite or bornite (UN-1 160' (bornite), UN-2 180-190', UN-5 around 215'; UN, 1973). In these holes, the secondary enrichment zones are situated at the lowermost parts of, or directly below the oxide zone.

Above-mentioned facts indicate that holes by primary dispersion of mineralization affected overlying rocks directly above the mineralized loci up to the present surface, because the loci are located about 80 to 100m below the surface, and their horizon rarely exposes on the surface in the proximity of the anomalies.

### 6-1-3 Target areas for further exploration based on geochemical aspects

Further DDHs should be done aiming at the zones underneath the geochemical anomalies*delineated by 500 ppm Zn, being judged simply from geochemical aspects. The target anomalies*extend in a WNW-ESE direction approximately along the base-line covering an area of about 3.6 x 0.2km (PL-10, Fig. 9, Fig. 10). *Here anomalies denote those of rock-chip's.

First priority should be given to an anomaly between E4 and E16, in which DDHs MJ-9, MJ-1, and UN-4 are located. In the proximity of this particular anomaly, it seems to be necessary to drill the area up to the granite contact, beyond the bounds of the anomaly from geological aspects.

## 6-2 On geophysical exploration

### 6-2-1 On induced polarization (IP) survey

IP anomalies, especially those delineated by FE≥3%, well coincide with pyrite mineralization; almost all the DDHs that were carried out within the anomalies encountered mineralized intersections of about several m thick, in which pyrite concentrates up to semi-massive appearance with 10 + several % S sulfur (Table-5, Fig. 2 vs. Fig. 10).

However, unfortunately, all the three DDHs (MJ-9, MJ-1, and UN-4), in which %-order Zn-mineralization was intersected, are located outside of the FE-3% anomalies. Two of the three (MJ-1, and UN-4) are somehow situated in the marginal part of a MCF-anomaly delineated by 40 mho/m, but the best hole MJ-9 is outside of it (Fig. 2).

In the present project, IP survey should be appreciated in an aspect that it disclosed the presence of sulfide minerals underneath a leached capping.

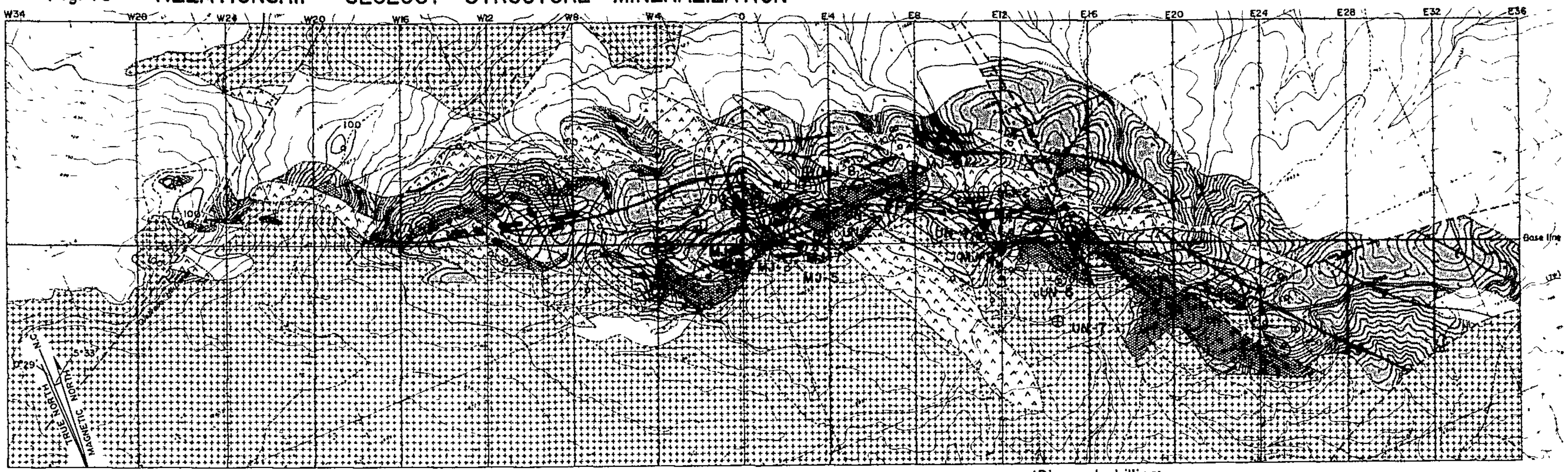
### 6-2-2 On ground magnetic survey

It is so far difficult to criticize the applicability of magnetic survey in the project area, because the most conspicuous magnetic body inferred from the ground magnetic survey (Fig. 2), which is located between W4 and 0 lines near the base-line, has not been explored by a drill as yet.

The magnetic body may be attributed to underground magnetite concentration, as gossan floats and outcrops with hematite are abundantly scattered on the surface above the inferred magnetic body (Fig. 10). Therefore, it is necessary to confirm the anomaly by one or two DDHs though the priority for this ground is not so high; there is enough space to include a sizable ore body in the ground, as the extent of the gossan area is about 400m by 100m, but there is a problem on the quality of "ores", as tolerable amounts of sulfides are expected to accoumany them.

A weak but widely distributed inferred magnetic body, in which the conspicuous one mentioned above is included, approximately coincides with IP anomalies. The body is considered to reflect magnetite that pervasively occurs in the pyrite zone with a inferred concentration of several % in weight.

# Fig. 10 RELATIONSHIP GEOLOGY – STRUCTURE – MINERALIZATION




LEGEND

(Geology)

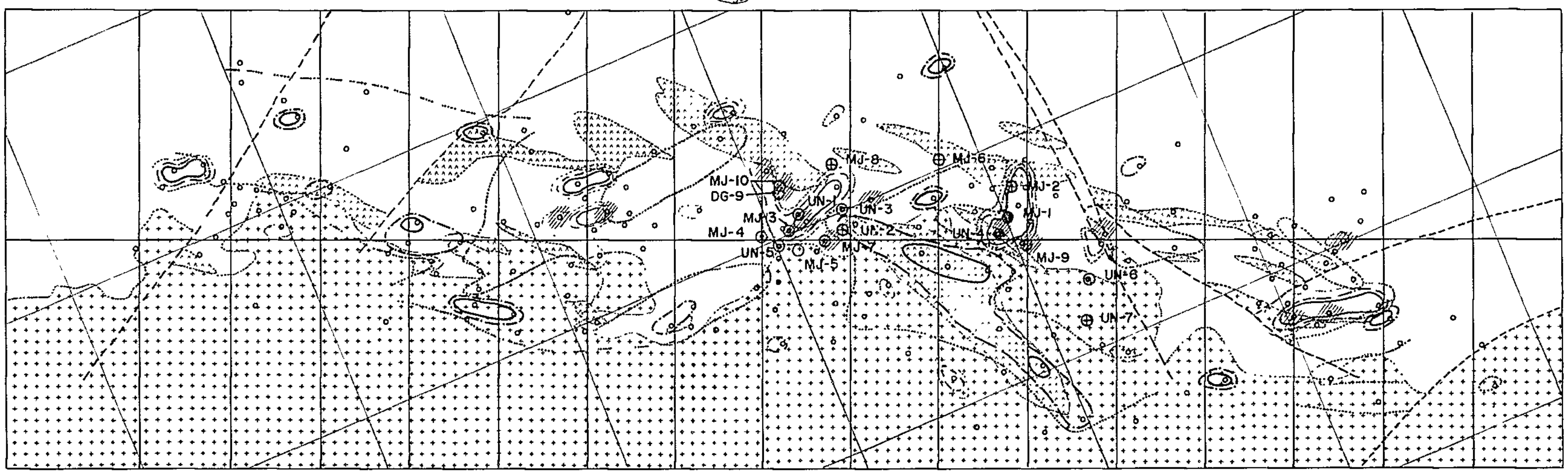
- Altered tuffaceous shale & fine sandstone
- Granitic rocks
- Rhyolite & quartz porphyry
- Limonite gossan
- Fault
- Anticline
- Syncline

(Assay results of rock chip samples)

- o Sample site
- Cu – Iso-grade contour (PPm)
- Zn – Iso-grade contour (PPm)

(Diamond drilling)

- O Holes in which abundant pyrite mineralization intersected (S ≧ 10+n % for interval ≧ nm)
  - Holes in which %-order Zn mineralization intersected
  - Holes in which 0.1%-order Zn mineralization intersected
- ⊕ Holes in which no conspicuous pyrite mineralization observed




LEGEND

Alteration minerals

- o Sample site

(Epidote) *1

- ≧ 4
- ≧ 3
- ≧ 2

(Sericite)

- ≧ 4
- ≧ 3
- ≧ 2

(Amphibole) *2

- ≧ 2

*1 Relative abundance determined by X-ray diffractometry
4: Very abundant
3: Abundant
2: Common

*2
- Amphibole in intrusive rocks is omitted, as it is a primary rock-forming minerals.
- Amphibole in rock chip samples is semi quantitatively determined by X-ray, while that in DDHs indicates only its presence

0 500 1000m

## 6-3 On mineralization

Observations on mineralization in the project area are summarized, and interpretations on them are tentatively made.

### 6-3-1 Alteration-Mineralization Zoning

At present it is fairly difficult to discuss the alteration zoning in the project area with certainty, as reliable data are not sufficiently available due to following facts; (1) the most important skarn horizon, which contains the known "%-order Zn-mineralization" occurs around the boundary between the Tactic and Chicol Formations, and the horizon rarely exposes on the surface, (2) drill holes that penetrated the horizon are very limited both in number and in area, (3) all the rocks that cropout on the surface in the mineralized area are extremely suffered from supergene alteration, so that original hydrothermal alteration is not always well preserved.

Here, a tentative interpretation on alteration-mineralization zoning is made, based on mainly the surface data with supplemental drill core data. The surface data include results of X-ray diffractometry and chemical analysis on handspecimens collected during the surface mapping.

Rather clear and simple zonal patterns in alteration and metallic minerals (elements) are observed in both the western and eastern parts of the mineralized zone (between E20 and E28, and W12 and 0; Fig. 9, 10, PL-5, 10). That is to say: (1) Alteration zones that are rich in sericite and resemble somewhat so-called the phyllic assemblage occur along the granite-"sediments" contact both in the two units. Another zones that are relatively rich in epidote and/or tremolite-actinolite and resemble the propylitic assemblage occur in the north-northeast side of the formers (outward from the granity side). (2) Cu-anomalies of rock-chip samples delineated by 500 ppm are localized approximately coinciding with the sericite-rich zones. On the other hand, Zn-anomalies delineated by 500 ppm are localized "outside" of the Cu-anomalies, coinciding with the alteration zones rich in epidote and tremolite-actionlite.

The zoning pattern is not very obvious in the central part of the mineralized zone (0-E20), where all the drill sites are located.

Though both the Cu and Zn anomalies occur as if they were located in the same position in the above mentioned part, following zonal patterns can be distinguished (PL-5, Fig. 10): (1) In the area between 0 and E12, near the base-line, an alteration zone very rich in sericite is discernible in and around a quartz porphyry dyke which occurs in the granitic rock between E4 and E12, and elongates in a NW-direction. (2) Outward from this zone, two areas rich in epidote are discernible on the surface in the terrain of the Tactic sedimentary rocks (0-E4 and around E12). Directly underneath these areas, skarns that contain tremolite-actinolite and chlorite are intersected in drill holes. These facts suggest that the tremolite~actinolite-chlorite assemblage in skarn is equivalent to the epidote-rich one in shale-sandstone facies.

Approximately coinciding with the alteration zoning mentioned above, main parts of Cu-anomalies are localized in the areas nearer to the quartz porphyry, and Zn-anomalies are in the areas outer than the formers (Fig. 9, 10, PL-5, -10).

Nearly the same relationship can be discernible in the south side of a small quartz porphyry dyke that occurs in the sedimentary terrain between E12 and E18 (Fig. 10, Pl-5).

Prominent gossan zones observed on the surface are mainly located in the terrain of the "sediments" along the contact between granitic rocks and the "sediments" (Fig. 10, PL-5). Among these gossan zones, an area between W4 and 0, in the proximity of which no prominent quartz porphyry dyke can be observed, corresponds to a conspicuous magnetic body inferred from ground magnetic survey. This suggests that the body may be attributed to rocks rich in magnetite. On the other hand, other areas of the gossan zones, near which quartz porphyry dykes are observed, are considered to have been derived from pervasive pyrite zone with magnetite, being judged from drill results.

6-3-2 Mineralization sequence

No conclusion with certainty can be made on the mineralization sequence at present, as the subject has not been sufficiently studied as yet. A tentative interpretation on the mineralization sequence is mentioned below, as well as megascopic and microscopic observations:
(1) Specularite (mostly in schists) was replaced by magnetite, and some of chalcopyrite and pyrite were likely formed approximately contemporaneous to the magnetization of the hematite. The magnetite of this stage is inferred to have been formed by the intrusion of granitic rocks, along the boundary between this and the "sediments", judged from the spatial relationship among gossan zones, boundary of granitic rocks, and the inferred magnetic body (cf. 6-1-4, 6-3-1).
(2) There are many places where magnetite is replaced by pyrite. This sulfidization may be interpreted to have been caused by the intrusion of quartz porphyries, from the spatial relationship between gossan zones and quartz porphyries as discussed in previous 6-3-1. Pyrite of this stage likely comprises the major parts of the pyrite zone in the project area. (3) However, in quartz porphyries, magnetite often occurs disseminated, and/or as veinlets, nests, and irregular lenses, as well as pyrite. This implies that magnetite of the second stage may have been formed contemporaneously with the pyrite of the main stage. (4) Sphalerite clearly occurs interstitially to, and filling fractures of magnetite, and pyrite grains. This suggests that spalerite formed in the latest stage in the metallic mineralization in this area. (5) Sphalerite is replaced by botryoidal chlorite.

6-3-3 Relationship between host-rock types and metallic minerals

Pyrite occurs predominantly in epidote-rich altered rocks such as epidote skarn, and epidote-rich altered shale, sandstone, and tuffaceous shale. Magnetite occurs preferably in garnet-rich sharns, quartz porphyries, and green schists (replacing specularite). The "%-order Zn-mineralization" is observed, without exception, to occur selectively in skarns rich in tremolite-actinolite, and/or chlorite. Chlorite in these skarn may have been derived from amphiboles, due to retrogessive alteration or reconstitution by ore fluid of the waning stage.

6-3-4 Discussion

A working hypothesis that at least two phases of mineralization occurred in this area is constructed from the facts and the interpretation mentioned above.

1st phase: The first phase mineralization seemingly occurred being related with the granitic intrusion. Followings are the summary of the mineralization and alternation of this phase.

Alteration zones were formed by alteration accompanied with the mineralization: (1) The granitic rocks themselves, and shale, tuffaceous shale, and sandstone of the Tactic Formation were altered to form sericite-rich zones in and near the granitic rocks, whereas epidote-rich zones were formed in the outer parts. (2) Calcareous layers of the Tactic Formation, and limestone layers in the Chicol were altered to form garnet-rich skarns directly adjacent to the granitic rocks, epidote-rich ones next to the former, and tremolite-actinolite-rich ones at the furthermost parts from the contact.

In this phase, magnetite mineralization may have taken place along the granitic contact, especially in garnet-rich skarns. Probably, a minor part of chalcopyrite and pyrite were contemporaneously formed in and outer parts of the garnet-rich zones. Magnetization of specularite in schists seems to correspond to this phase.

Second phase: Mineralization accompanied with the intrusion of quartz porphyries was superimposed on the already existed mineralization-alteration zones of the first phase. Strongly sericitized zones were formed near and in quartz porphyry dykes. Epidote content may have probably been increased in the areas where the outer zones of the second phase overlapped on the epidote-rich zones of the first phase. Tremolite-actionlite of the first phase was changed partly to completely into chlorite in the areas where the outer zones of the second phase superimposed.

In this phase, the magnetite of the first stage was seemingly sulfidized to form a major part of pyrite, and the magnetite of the second stage was formed in quartz porphyry as well as pyrite. The major mineralization of Zn and Cu likely took place in the latest stage of this mineralization phase to form chalcopyrite in the parts nearer to the quartz porphyries, and sphalerite in the parts farther from them.

The hypothesis that assumes twofold mineralization can very well accounts for the mineralization in this area, though a few contradictory phenomena still remain.

Mineralization environment: Mineralization in this area has such distinct natures in mireral assemblage as follows: A large amount of pyrite occurs pervasively with a tolerable amount of magnetite. Sphalerite is locally concentrated with pyrite, and accompanies a smaller amount of copper, but practically no lead.

This may be explained as follows: The mineralization occurred in an environment in which reduction did not advance very much and pH was comparatively low, as organic materials were lacking in the proximity, and the volume of calcareous rocks available was relatively smaller, compared with that of ore fluid. The condition as above is considered to have restrained copper and lead to precipitate.

6-4 On exploration potential

At present, we are not in such a time as ore reserves can be estimated, as only a single hole MJ-9 of 19 DDHs just intersected so-called economic grade mineralization.

Nevertheless, we consider that the further exploration potential of this area is faily large, based on the following facts: (1) Geochemical anomalies of rock-chip samples delineated by 500 ppm Zn very well coincide with the intersections of the "%-order Zn-mineralization" underneath the anomalies; almost all the four drills carried out in the anomalies intersected the "%-order Zn-mineralization." (2) The 500 ppm Zn-anomalies occur elongatedly in a WNW-ESE direction between W12 and E24, having an extent about 3.6 km by 0.2 km (in average).

In order to know further potential expected within the prospect, a rough estimate of volume will be made below, assuming that (1) an apparent thickness of expected ores is 9.5m (equal to that of MJ-9 intersection), (2) the "ores" horizontally continue for 100m in a NNE-SSW direction (equivalent to a dip-length in a steeply dipping deposit; as the deposite here is expected to be gentle), and (3) specific gravity of ores is 4.0 (no actual measurement available). The strike length of workable parts is to be changed arbitrarily as follows:

Case-1: Assume an 100m horizontal length in WNW-ESE around MJ-9 is mineable.

Reserves will be;

$$100m \times 9.5m \times 100m \times 4\ T/m^3 = 380,000\ T$$

Case-2: Assume 1/4 of 1,600m between 0 and E16 lines, where the central part of the mineralization is expected to occur, is mineable.

Rserves will be;

$$1,600m \times 1/4 \times 9.5m \times 100m \times 4\ T/m^3 = 1,520,000\ T$$

Case-3: Assume 1/10 of 3,600m between W12 and E24 lines, where the 500 ppm-Zn anomalies exist, is expected to be mineable.

Reserves will be;

$$3,600m \times 1/10 \times 9.5m \times 100m \times 4\ T/m^3 = 1,360,000\ T$$

Case-4: Assume 1/4 of the same length as in Case-3 is expected to be mineable.

Reserves will be:

$$3,600m \times 1/4 \times 9.5m \times 100m \times 4\ T/m^3 = 3,420,000\ T$$

As known from the above estimates, possibilities that mineable reserves of say $n \times 10^5$ to $n \times 10^6$ T exist in this prospect are considered to be fairly great. Therefore,further exploration by DDHs is warranted

## 6-5 Recommendation

It is strongly recommended to carry on a further drilling program mentioned below, which comprises 27 DDHs totaling 4,910m. Proposed DDHs are summarized in the table below, and shown in Fig. 6, and PL-1-1 and PL-1-2.

DDHs in the 1st priority targets:

20 DDHs totaling 3,600m are proposed between 0 and E16 lines, mainly in the geochemical anomalies of rock-chip samples delineated by 500 ppm Zn. However, in the vicinity of MJ-9, the target ground is extened up to the granite boundary, beyond the southern limit of the anomalies. In this part DDHs are planned on a 50m-spacing, centering MJ-9.

DDHs in the second priority targets (scout drills in unexplored parts):

(1) 5 DDHs totaling 1,250m are proposed in Zn-anomalies between

W12 and 0 lines. A DDH is planned on each line of W10, W8, W4, W2,and W22, and the spacings of the lines are 200 and 400m.

(2) 2 DDHs totaling 300m are proposed in Cu-anomalies on W2 and E21, and an inferred magnetic body between W4 and 0 lines. A DDH on W2 of the two is for both the Cu anomaly and the magnetic body.

Summary of proposed DDHs

| | Location (line) | Number of holes x Depth (m) | Total (m) | Remarks *1 |
|---|---|---|---|---|
| 1st Priority | E12-E16<br>O-E16 | 12 x 180<br>8 x 150 | 2,160<br>1,200 | ∘Around MJ-9<br>∘On 50-m spacing<br>°Zn anomalies |
| 2nd Priority | W2-W10, and E12 | 5 x 250 | 1,250 | °Zn anomalies |
| (Scout DDHs in unexplored areas) | Around W2 | 1 x 150 | 150 | °Inferred magnetic body and Cu anomaly |
| in unexplored | E21 | 1 x 150 | 150 | °Cu anomaly |
| Total | | 27 holes | 4,910m | |

*1 Anomalies are of rock-chip samples, and delineated by 500 ppm Cu and Zn

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# APPENDICES

Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| J 6 | 1693.87 | 689.39 | Massive limonite | | | | o | | |
| 7A | 1694.51 | 689.95 | Quartz porphyry | | | | | o | |
| 8 | 1694.59 | 690.04 | Sandstone | | | | | o | |
| 10 | 1694.60 | 689.85 | Altered quartz porphyry | | o | | | o | |
| 12 | 1694.19 | 689.39 | Limonite gossan | | | | o | | |
| 15 | 1694.34 | 688.24 | Granite | | | | | o | |
| 17 | 1694.44 | 688.42 | Sandstone | | | | | o | |
| 19 | 1694.62 | 688.35 | Granodiorite | | | | | o | |
| 23 | 1694.97 | 688.22 | Sericite schist | | | | | o | |
| 26 | 1695.11 | 688.37 | Acidic volcanic rocks | | | | | o | |
| 28 | 1695.15 | 688.40 | Limonite gossan | | | | o | | |
| 32 | 1695.31 | 688.55 | Green schist | | | | | o | |
| 37 | 1695.65 | 688.08 | Granodiorite | | | | | o | |
| 38 | 1695.56 | 688.05 | Granodiorite | | | | | o | |
| 40 | 1695.41 | 688.29 | Acidic volcanic rocks | | | | | o | |
| 41 | 1695.32 | 688.22 | Green schist | | | | | o | |
| 45 | 1695.63 | 687.73 | Granite | | | | | o | |
| 46 | 1694.42 | 687.92 | Limonite gossan | | | | o | | |
| 47 | 1693.43 | 691.05 | Limonite-hematite gossan | | | | o | | |
| 48 | 1693.34 | 690.91 | Limonite gossan | | | | o | | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| J 50 | 1693.40 | 691.01 | Magnetite-hematite mineralized rock | | | | o | | |
| 51 | 1693.45 | 691.10 | Limonite gossan | | | o | o | | |
| 52 | 1693.50 | 691.15 | do | | | | o | | |
| 53 | 1693.55 | 691.25 | do | | | | o | | |
| 54 | 1693.47 | 691.29 | do | | | | o | | |
| 55 | 1693.54 | 691.53 | Quartz porphyry | | | | | o | |
| 58 | 1693.66 | 691.64 | Acidic volcanic rocks | | | | | o | |
| 63 | 1693.82 | 691.52 | Magnetite mineralized rock | | | | o | | |
| 64 | 1693.84 | 691.46 | Magnetite-hematite mineralized rock | | | | o | | |
| 65 | 1693.89 | 691.18 | Quartz porphyry | | | | | o | |
| 66 | 1693.80 | 691.19 | Limonite gossan | | | | o | | |
| 69 | 1693.63 | 691.30 | do | | | | o | | |
| 71 | 1693.35 | 691.23 | do | | | | o | | |
| 72 | 1693.27 | 691.11 | do | | | | o | | |
| 74 | 1693.04 | 691.62 | Limonite-hematite gossan | | | | o | | |
| 84 | 1692.66 | 691.46 | Granite | | | | | o | |
| 90 | 1692.63 | 691.19 | Altered biotite granodiorite | | o | | | o | |
| 94 | 1692.94 | 691.28 | Altered hornblende-biotite granodiorite | | o | | | o | |
| 96 | 1693.62 | 691.09 | Siltstone | | | | | o | |
| 97 | 1693.58 | 691.12 | Hematite-limonite gossan | | | | o | | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| J 98 | 1693.71 | 691.08 | Siltstone | | | | | o | |
| 101 | 1693.78 | 691.13 | Skarn | | | | | o | |
| 102 | 1693.82 | 691.00 | Granodiorite | | | | | o | |
| 103 | 1693.85 | 691.00 | Massive magnetite and hematite | | | o | o | o | |
| 104 | 1693.91 | 691.03 | Quartz porphyry | | | | | o | |
| 105 | 1693.73 | 690.88 | Siltstone | | | | | o | |
| 106 | 1693.84 | 690.84 | Limonite gossan | | | | o | | |
| 107 | 1693.88 | 690.92 | Siltstone | | | | | o | |
| 108 | 1693.91 | 690.80 | Limonite stain in siltstone | | | | o | | |
| 109 | 1693.89 | 690.74 | Sandstone | | | | | o | |
| 111 | 1693.80 | 693.63 | Quartz porphyry | | | | | o | |
| 112 | 1693.75 | 690.64 | Granitic rock with limonite stain | | | | o | | |
| 114 | 1693.59 | 690.68 | Quartz porphyry | | | | | o | |
| 115 | 1693.50 | 690.84 | Sandstone | | | | | o | |
| 116 | 1693.62 | 690.95 | Siltstone | | | | | o | |
| 117 | 1693.55 | 691.02 | Siltstone | | | | | o | |
| 119 | 1693.45 | 690.95 | Sandstone | | | | | o | |
| 120 | 1693.39 | 690.89 | Granodiorite | | | | | o | |
| 123 | 1692.85 | 692.03 | Siltstone | | | | | o | |
| 124 | 1692.88 | 692.13 | Siltstone | | | | | o | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| J 125 | 1692.94 | 692.25 | Siltstone | | | | | o | |
| 126 | 1692.97 | 692.32 | Acidic volcanic rocks | | | | | o | |
| 128 | 1693.00 | 692.36 | Black slate | | | | | o | |
| 130 | 1693.05 | 692.47 | Limestone | | | | | o | |
| 133 | 1693.18 | 692.53 | Limestone | | | | | o | |
| | 1693.22 | 692.49 | Limestone | | | | | | |
| 135 | 1693.19 | 692.39 | Limestone | | | | | o | |
| 137 | 1693.15 | 692.19 | Green schist | | | | | o | |
| 139 | 1693.02 | 692.07 | Quartz rock | | | | | o | |
| 140 | 1692.98 | 692.00 | Quartz porphyry | | | | | o | |
| 141 | 1694.11 | 689.98 | Limonite gossan | | | | o | | |
| 142 | 1694.16 | 689.97 | do | | | | o | | |
| 143 | 1694.21 | 689.94 | do | | | | o | | |
| 144 | 1694.24 | 689.79 | do | | | | o | | |
| 145 | 1694.24 | 689.74 | do | | | | | o | |
| 146 | 1694.18 | 689.63 | do | | | | o | | |
| 147 | 1694.22 | 689.61 | do | | | | o | | |
| 148 | 1694.16 | 689.78 | do | | | | o | | |
| 149 | 1694.15 | 689.55 | do | | | | o | | |
| 150 | 1694.09 | 689.58 | do | | | | o | | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| J 151 | 1694.04 | 689.59 | Limonite gossan | | | | o | | |
| 152 | 1694.04 | 689.53 | do | | | | o | | |
| 153 | 1694.01 | 689.48 | do | | | | o | | |
| 154 | 1693.95 | 685.51 | do | | | | o | | |
| 155 | 1693.87 | 689.56 | Siltstone | | | | | o | |
| 156 | 1693.83 | 689.42 | Granite | | | | | o | |
| 157 | 1693.78 | 689.50 | Granite | | | | | o | |
| 158 | 1693.73 | 689.61 | Granite | | | | | o | |
| 159 | 1693.84 | 689.71 | Limonite gossan | | | | o | | |
| 160 | 1693.82 | 689.65 | do | | | | o | | |
| 161 | 1693.86 | 689.60 | do | | | | o | | |
| 162 | 1693.98 | 689.60 | do | | | | o | | |
| 163 | 1693.94 | 689.65 | do | | | | o | | |
| 164 | 1693.89 | 689.66 | do | | | | o | | |
| 165 | 1693.94 | 689.75 | do | | | | o | | |
| 166 | 1693.91 | 689.88 | do | | | | o | | |
| 167 | 1693.93 | 689.94 | do | | | | o | | |
| K 9 | 1693.71 | 689.89 | Medium-grained sandstone | | o | | | o | |
| 13 | 1693.82 | 689.95 | Altered hornblende micro-diorite | | o | | | o | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| K 16 | 1693.97 | 690.07 | Limonite gossan | | | | o | | |
| 17 | 1694.02 | 690.06 | Siltstone | | | | | o | |
| 21 | 1694.21 | 690.04 | Manganese oxide ore | | | o | o | o | Chalcopharite |
| 22 | 1694.29 | 690.08 | Siltstone | | | | | o | |
| 34 | 1694.39 | 690.47 | Quartz porphyry | | | | | o | |
| 40 | 1694.33 | 690.58 | Quartz porphyry | | | | | o | |
| 43 | 1694.08 | 690.55 | Limonite gossan | | | | o | | |
| 44 | 1693.99 | 690.40 | Limonite gossan | | | | o | | |
| 46 | 1693.82 | 690.40 | Limonite gossan | | | | o | | |
| 47 | 1693.68 | 690.59 | Quartz porphyry | | | | | o | |
| 55 | 1694.90 | 687.97 | Granodiorite | | | | | o | |
| 62 | 1694.97 | 687.68 | Green schist | | | | | o | |
| 63 | 1694.94 | 687.58 | Altered hornblende-biotite granodiorite | | o | | | | |
| 66 | 1695.06 | 687.71 | Limonite stain in siltstone | | | | o | | |
| 70 | 1695.09 | 687.61 | Limonite gossan | | | | o | | |
| 78 | 1695.07 | 687.33 | Granodiorite | | | | | o | |
| 81 | 1693.25 | 691.58 | Limonite gossan | | | | o | | |
| 83 | 1693.41 | 691.71 | Quartz porphyry | | | | | o | |
| 86 | 1693.52 | 691.80 | Limonite gossan | | | | o | | |
| 87 | 1693.69 | 691.84 | Acidic volcanic rocks | | | | | o | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffractometry | |
| K 93 | 1693.09 | 691.66 | Manganese oxide | | | | o | | |
| 95 | 1693.12 | 691.99 | Acidic volcanic rocks | | | | | o | |
| 99 | 1693.26 | 692.04 | Siltstone | | | | | o | |
| 104 | 1693.15 | 692.07 | Quartz porphyry | | | | | o | |
| 107 | 1693.00 | 691.98 | Limonite gossan | | | | o | | |
| 108 | 1692.96 | 691.91 | Limonite gossan | | | | o | | |
| 122 | 1692.54 | 692.35 | Pyrite dissemination in skarn | | | | o | | |
| 123B | 1692.54 | 692.35 | Pyrite dissemination in quartzose rock | | | | o | | |
| 124 | 1692.49 | 692.42 | Acidic volcanic rocks | | | | | o | |
| 127 | 1692.29 | 692.24 | Quartz diorite | | | | | o | |
| 131 | 1692.47 | 692.08 | Granodiorite | | | | | o | |
| 132 | 1692.51 | 692.01 | Massive limonite and hematite | | | | o | | |
| 133 | 1692.57 | 691.98 | Limonite gossan | | | | o | | |
| 135 | 1692.61 | 692.08 | Limonite gossan | | | | o | | |
| 136 | 1692.79 | 692.03 | Epidote-quartz-actinolite rock | | o | | | o | |
| 140 | 1694.95 | 688.04 | Siltstone | | | | | o | |
| 144 | 1695.01 | 688.04 | Sandstone | | | | | o | |
| 147 | 1695.01 | 687.90 | Quartz porphyry | | | | | o | |
| 149 | 1695.12 | 687.91 | Altered quartz prophyry | | o | | | | |
| 152 | 1695.10 | 687.92 | Granodiorite | | | | | o | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| K 157 | 1695.08 | 687.80 | Acidic volcanic rocks | | | | | o | |
| 158 | 1695.14 | 687.85 | Quartz rock | | | | | o | |
| 159 | 1695.05 | 687.78 | Skarn with pyrite and magnetite | | | o | o | | |
| 160 | 1695.19 | 687.80 | Green schist | | | | | o | |
| 162 | 1695.30 | 687.75 | Quartz epidote rock | | | | | o | |
| 165 | 1695.29 | 687.64 | Limonite gossan | | | | o | | |
| 166 | 1695.32 | 687.62 | Epidote-quartz rock | | o | | | o | |
| 167 | 1695.30 | 687.60 | Limonite gossan | | | | o | | |
| 168 | 1695.27 | 687.55 | Granite | | | | | o | |
| 169 | 1692.28 | 692.41 | Quartz epidote rock | | | | | o | |
| 171 | 1692.61 | 692.42 | Sandstone | | | | | o | |
| 172 | 1692.34 | 692.76 | Sandstone | | | | | o | |
| 173 | 1692.29 | 692.75 | Limonite gossan | | | | o | | |
| 176 | 1692.15 | 692.75 | Granitic rock | | | | | o | |
| 177 | 1692.50 | 692.68 | Quartz porphyry | | | | | o | |
| 180 | 1692.75 | 691.82 | Limonite gossan | | | | o | | |
| 182 | 1692.65 | 691.64 | Quartz diorite | | | | | o | |
| 183 | 1692.93 | 691.57 | Limonite gossan | | | | o | | |
| 184 | 1693.24 | 691.26 | Limonite gossan | | | | o | | |
| 185 | 1693.27 | 691.28 | Limonite gossan | | | | o | | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| K 187 | 1693.33 | 691.31 | Limonite gossan | | | | o | | |
| 189 | 1693.41 | 691.35 | Shale | | | | | o | |
| 190 | 1693.47 | 691.39 | Epidote-quartz rock | | o | | o | | |
| 191 | 1693.45 | 691.39 | Shale | | | | | o | |
| 192 | 1693.47 | 691.39 | Manganese oxide ore | | | | o | | |
| 193 | 1693.47 | 691.39 | Siltstone | | | | o | | |
| 194 | 1693.47 | 691.39 | Malachite stain in altered rock | | | | o | | |
| 197 | 1693.30 | 691.43 | Quartz porphyry | | | | | o | |
| 198 | 1693.27 | 691.45 | Limonite gossan | | | | o | | |
| 200 | 1693.24 | 691.48 | do | | | | o | | |
| 201 | 1693.20 | 691.49 | do | | | | o | | |
| 202 | 1693.27 | 691.65 | Quartz porphyry | | | | | o | |
| 204 | 1693.23 | 691.71 | Limonite gossan | | | | o | | |
| 205 | 1693.14 | 691.69 | do | | | | o | | |
| 206 | 1693.03 | 691.75 | do | | | | o | | |
| 207 | 1692.95 | 691.67 | do | | | | o | | |
| 208 | 1692.86 | 691.71 | do | | | | o | | |
| 209 | 1692.94 | 691.77 | do | | | | o | | |
| 210 | 1692.78 | 692.01 | do | | | | o | | |
| 212 | 1692.74 | 692.04 | do | | | | o | | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| K 213 | 1692.71 | 692.11 | Granodiorite | | | | | o | |
| 214 | 1692.66 | 692.17 | Pyrite dissemination in quartzose rock | | | | o | | |
| 215 | 1692.73 | 692.18 | Skarn | | | | | o | |
| 216 | 1692.80 | 692.18 | Pyrite dissemination in skarn | | | | o | | |
| 218 | 1692.83 | 692.34 | Acidic volcanic rocks | | | | | o | |
| 220 | 1692.92 | 692.19 | Massive limonite | | | | o | | |
| 222 | 1692.92 | 691.95 | Limonite gossan | | | | o | | |
| 223 | 1692.90 | 691.91 | Granodiorite | | | | | o | |
| EK 51 | 1692.78 | 692.01 | Massive magnetite | | | | o | | |
| S 1 | 1694.24 | 689.22 | Granodiorite | | | | | o | |
| 2 | 1693.96 | 689.03 | Siltstone | | | | | o | |
| 3B | 1693.98 | 689.10 | Quartz porphyry | | | | | o | |
| 5 | 1694.50 | 689.62 | Limonite gossan | | | | o | | |
| 6A | 1694.56 | 689.65 | Quartz porphyry | | | | | o | |
| 8 | 1695.28 | 689.50 | Granodiorite | | | | | o | |
| | 1694.93 | 689.12 | Black slate | | | | | | |
| 10 | 1694.89 | 689.13 | Green schist | | | | | o | |
| 11 | 1694.86 | 689.18 | Conglomerate schist | | | | | | |
| 14 | 1694.22 | 689.03 | Limonite gossan | | | | o | | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| S 17 | 1694.47 | 689.12 | Skarn | | | | | o | |
| 19 | 1694.57 | 689.26 | Quartz-epidote rock | | | | | o | |
| 21 | 1694.79 | 689.12 | Quartz porphyry | | | | | o | |
| 23 | 1694.94 | 688.97 | Quartz porphyry | | | | | o | |
| 24 | 1694.96 | 688.90 | Pyrite dissemination in quartz porphyry | | | | o | | |
| 26 | 1694.91 | 688.89 | Limonite gossan | | | | o | | |
| 28A | 1694.68 | 688.95 | Magnetite dissemination in porphyritic rock | | | o | o | | |
| 28B | 1694.68 | 688.95 | Pyrite dissemination in skarn | | | | o | | |
| 28C | 1694.68 | 688.95 | Garnet bearing epidote-actinolite rock | | o | o | o | | |
| 30 | 1694.55 | 689.10 | Limonite gossan | | | | o | | |
| 31 | 1694.39 | 688.90 | Limonite gossan | | | | o | | |
| 33 | 1694.08 | 688.77 | Siltstone | | | | | o | |
| 35 | 1694.68 | 688.65 | Limonite gossan | | | | o | | |
| 37 | 1693.49 | 690.78 | Limonite gossan | | | | o | | |
| 40 | 1693.72 | 691.25 | Quartz porphyry | | | | | o | |
| 42 | 1693.95 | 691.28 | Magnetite dissemination in epidote skarn | | | o | o | | |
| 46 | 1694.40 | 691.00 | Rhyolitic pumice tuff | | o | | | o | |
| 48 | 1694.45 | 690.80 | Green schist | | | | | o | |
| 52 | 1694.22 | 690.80 | Limonite gossan | | | | o | | |
| 54 | 1694.14 | 690.79 | Limonite gossan in quartz porphyry | | | | o | | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| S 56 | 1693.95 | 690.74 | Magnetite dissemination in altered sandstone | | | | o | | |
| 60 | 1693.30 | 690.37 | Granodiorite | | | | | o | |
| 61 | 1693.12 | 690.51 | Quartz-epidote-actinolite rock | | o | | | o | |
| 64 | 1693.12 | 691.01 | Granodiorite | | | | | o | |
| 66 | 1693.00 | 691.18 | Granodiorite | | | | | o | |
| 69 | 1692.73 | 690.98 | Altered muscovite-biotite granodiorite or quartz diorite | | o | | | o | |
| 75 | 1692.75 | 690.80 | Granite | | | | | o | |
| 78 | 1693.02 | 690.91 | Quartz diorite | | o | | | o | |
| 79 | 1693.06 | 690.73 | Quartz diorite | | | | | o | |
| 85 | 1692.89 | 690.51 | Granodiorite | | | | | o | |
| 88 | 1693.24 | 690.79 | Quartz porphyry | | | | | o | |
| 91 | 1693.85 | 690.47 | Limonite gossan | | | | o | | |
| 92 | 1693.92 | 690.37 | Quartz porphyry | | | | | o | |
| 93 | 1693.94 | 690.31 | Limonite gossan | | | | o | | |
| 95 | 1693.99 | 690.47 | Siltstone | | | | | o | |
| 96A | 1694.08 | 690.47 | Limonite gossan | | | | o | | |
| 96B | 1694.08 | 690.47 | Limonite gossan | | | | o | | |
| 97 | 1694.10 | 690.35 | Quartz-epidote rock | | | | | o | |
| 98 | 1694.01 | 690.16 | Quartz-epidote rock | | | | | o | |
| 105 | 1694.19 | 689.42 | Granodiorite | | | | | o | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| S 107 | 1693.93 | 689.60 | Magnetite dissemination in altered rock | | | | o | | |
| 108 | 1693.84 | 689.85 | Siltstone | | | | | o | |
| 109 | 1693.92 | 689.99 | Quartz porphyry | | | | | o | |
| 110 | 1693.82 | 690.22 | Siltstone | | | | | o | |
| 111 | 1693.88 | 690.15 | Sandstone | | | | | o | |
| 112 | 1694.55 | 688.52 | Sandstone | | | | | o | |
| 113 | 1694.51 | 688.52 | Granodiorite | | | | | o | |
| 115 | 1694.63 | 688.46 | Siltstone | | | | | o | |
| 117 | 1694.69 | 688.54 | Siltstone | | | | | o | |
| 119 | 1694.65 | 688.79 | Siltstone | | | | | o | |
| 120 | 1694.54 | 688.68 | Sandstone | | | | | o | |
| 122B | 1694.50 | 689.25 | Siltstone | | | | | o | |
| 123 | 1694.54 | 689.24 | Limonite gossan | | | o | o | | |
| 125 | 1694.22 | 688.57 | Sandstone | | | | | o | |
| 127 | 1694.26 | 689.52 | Siltstone | | | | | o | |
| 128 | 1694.32 | 689.39 | Siltstone | | | | | o | |
| 129 | 1694.35 | 689.37 | Limonite gossan | | | | o | | |
| 130 | 1694.35 | 689.43 | Siltstone | | | | | o | |
| 131 | 1694.39 | 689.44 | Limonite gossan | | | | o | | |
| 132 | 1694.47 | 689.46 | Siltstone | | | | | o | |

Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| S 133 | 1694.51 | 689.46 | Limonite gossan | | | | o | | |
| 134 | 1694.56 | 689.41 | Quartz-epidote rock | | | | | o | |
| 135 | 1694.58 | 689.35 | Limonite gossan | | | | o | | |
| 136 | 1694.59 | 689.30 | Limonite gossan | | | | o | | |
| 137 | 1694.66 | 689.20 | Manganese oxide in altered rock | | | | o | | |
| 138 | 1694.65 | 689.03 | Limonite gossan | | | | o | | |
| 139 | 1694.65 | 688.91 | do | | | | o | | |
| 140 | 1694.66 | 688.84 | do | | | | o | | |
| 141 | 1694.66 | 688.73 | do | | | | o | | |
| 142 | 1694.65 | 688.52 | do | | | | o | | |
| 143 | 1694.39 | 688.71 | Siltstone | | | | | o | |
| 144 | 1694.32 | 688.68 | Granodiorite | | | | | o | |
| 145 | 1694.26 | 688.64 | Sandstone | | | | | o | |
| 146 | 1694.15 | 688.78 | Sandstone | | | | | o | |
| 147 | 1694.33 | 688.85 | Granodiorite | | | | | o | |
| 148 | 1694.45 | 688.84 | Limonite gossan | | | | o | | |
| 149 | 1694.49 | 688.90 | Limonite gossan | | | | o | | |
| 150 | 1694.54 | 688.90 | Quartz porphyry | | | | | o | |
| 151 | 1694.47 | 689.02 | Epidote rock | | | | | o | |
| 152 | 1694.40 | 689.34 | Quartz-epidote rock | | | | | o | |

## Appendix 1-1 List of Samples Tested

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | N | E | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| S 153 | 1694.35 | 689.25 | Quartz-epidote rock | | | | | o | |
| 154 | 1694.31 | 689.17 | Limonite gossan | | | | o | | |
| 155 | 1694.28 | 689.04 | Limonite gossan | | | | o | | |
| 156 | 1694.25 | 689.09 | Granodiorite | | | | | o | |
| 157 | 1694.13 | 689.03 | Granodiorite | | | | | o | |
| 158 | 1694.11 | 689.20 | Limonite gossan | | | | o | | |
| 159 | 1694.22 | 689.33 | Limonite gossan | | | | o | | |
| 160 | 1693.63 | 690.14 | Quartz rock | | | | | o | |
| 161 | 1693.48 | 690.07 | Granite | | | | | o | |
| 163 | 1693.56 | 689.87 | Siltstone | | | | | o | |
| 165 | 1693.53 | 690.24 | Granite | | | | | o | |
| 167 | 1693.62 | 690.30 | Granodiorite | | | | | o | |
| 168 | 1693.62 | 690.40 | Granodiorite | | | | | o | |

## Appendix- 1-2 List of Samples Tested (Drill Core)

| Sample No. | Location | | | Formation or Group | Rock Type | Item tested | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * Topo.Map | UTM Grid X | UTM Grid Y | | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-Ray Diffract. | K-Ar Dating | Fossil Identif-ication | EPMA | |
| DDH No. MJ-1 | | | | | | | | | | | | | | |
| 23.40 | | 691. 042 | 1693. 660 | Tactic F. | Siltstone | | | | | o | | | | |
| 72.70 | | " | " | Intrusive | Bleached rhyo-lite. | | | | | o | | | | |
| 88.40 | | " | " | " | Altered rhyolite | | | | | o | | | | |
| 102.50 | | " | " | " | " | | | | | o | | | | |
| 109.40 | | " | " | " | Altered quartz porphyry | | o | | | | | | | |
| 112.40 | | " | " | " | Quartz porphyry | | | | | o | | | | |
| 114.40 | | " | " | " | Altered quartz porphyry | | o | | | | | | | |
| 124.00 | | " | " | " | " | | o | | | | | | | |
| 127.00 | | " | " | " | " | | o | | | | | | | |
| 138.70 | | " | " | " | " | | o | | | | | | | |
| 148.50 | | " | " | " | Quartz porphyry | | o | | | o | | | | |
| 161.10 | | " | " | " | Altered quartz porphyry | | o | | | | | | | |
| 162.40 | | " | " | " | Quartz porphyry | | | | | o | | | | |
| 162.80 | | " | " | " | Quartz diorite porphyry | | o | | | | | | | |
| 223.60 | | " | " | Chicol F. | Sericite quartz schist | | o | | | | | | | |
| 227.40 | | " | " | Intrusive | Hornblende granophyre | | o | | | | | | | |
| 231.50 | | " | " | " | Quartz porphyry | | | | | o | | | | |
| 232.70 | | " | " | Chicol F. | Quartz sericite schist | | o | | | | | | | |
| 235.10 | | " | " | " | Sericite quartz schist | | o | | | | | | | |
| 246.00 | | " | " | Intrusive | Altered grano-phyre. | | o | | | | | | | |
| 255.90 | | " | " | Chicol F. | Green schist | | | | | o | | | | |
| DDH No. MJ-2 | | | | | | | | | | | | | | |
| 26.10 | | 691. 137 | 1693. 775 | Tactic F. | Quartz-epidote rock | | | | | o | | | | |
| 36.70 | | " | " | Chicol F. | Quartz muscovite schist | | o | | | | | | | |
| 37.40 | | " | " | " | Magnetite-epidote rock | | | | | o | | | | |

* Topo.Map: Sheet No. of 1/50,000 IGN quadrangle map.

Appendix- 1-2 List of Samples Tested (Drill Core)

| Sample No. | Location | | | Formation or Group | Rock Type | Item tested | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * Topo.Map | UTM Grid X | UTM Grid Y | | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-Ray Diffract. | K-Ar Dating | Fossil Identification | EPMA | |
| DDH No. MJ-2 | | | | | | | | | | | | | | |
| 40.10 | | 691.137 | 1693.775 | Intrusive | Altered quartz porphyry | | o | | | | | | | |
| 67.60 | | " | " | " | Quartz porphyry | | | | | o | | | | |
| 94.80 | | " | " | " | Altered quartz porphyry | | o | | | | | | | |
| 94.90 | | " | " | " | Quartz porphyry | | | | | o | | | | |
| 113.40 | | " | " | " | " | | | | | o | | | | |
| 117.00 | | " | " | " | " | | o | | | | | | | |
| 183.40 | | " | " | Chocol F. | Siliceous green schist | | | | | o | | | | |
| 244.30 | | " | " | " | " | | | | | o | | | | |
| 261.70 | | " | " | Intrusive | Rhyolite | | | | | o | | | | |
| 277.60 | | " | " | Chicol F. | Sericite quartz schist | | o | | | | | | | |
| 281.90 | | " | " | " | Green schist | | | | | o | | | | |
| 282.40 | | " | " | " | Sericite quartz schist | | o | | | | | | | |
| 295.00 | | " | " | Intrusive | Sheared rhyolite | | | | | o | | | | |
| MJ-3 | | | | | | | | | | | | | | |
| 16.40 | | 690.116 | 1693.998 | Tactic F. | Siltstone | | | | | o | | | | |
| 25.00 | | " | " | " | " | | | | | o | | | | |
| 39.50 | | " | " | " | Epidote rock | | | | | o | | | | |
| 61.00 | | " | " | Chicol F. | Chlorite quartz schist | | | | | o | | | | |
| 75.50 | | " | " | " | Green schist | | | | | o | | | | |
| 85.80 | | " | " | " | Sericite quartz schist | | o | | | | | | | |
| 92.00 | | " | " | " | Chlorite quartz schist | | | | | o | | | | |
| 100.70 | | " | " | " | Sericite quartz schist | | o | | | | | | | |
| 109.30 | | " | " | " | Garnet epidote skarn | | | | | o | | | | |
| 121.30 | | " | " | " | Chlorite quartz schist | | | | | o | | | | |
| 125.00 | | " | " | " | Sericite quartz schist | | o | | | | | | | |
| 155.60 | | " | " | Intrusive | Quartz porphyry | | | | | o | | | | |
| 164.30 | | " | " | " | Altered quartz porphyry | | o | | | | | | | |

* Topo.Map: Sheet No. of 1/50,000 IGN quadrangle map.

Appendix- 1-2 List of Samples Tested (Drill Core)

| Sample No. | Location | | | Formation or Group | Rock Type | Item tested | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * Topo.Map | UTM Grid | | | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-Ray Diffract. | K-Ar Dating | Fossil Identif-ication | EPMA | |
| | | X | Y | | | | | | | | | | | |
| DDH No. MJ-3 | | | | | | | | | | | | | | |
| 182.70 | | 690. 116 | 1693. 998 | Intrusive | Altered quartz porphyry | | o | | | | | | | |
| 188.50 | | " | " | " | Altered rhyolite | | o | | | | | | | |
| 195.40 | | " | " | " | Altered quartz porphyry | | o | | | | | | | |
| 197.90 | | " | " | " | Quartz porphyry | | | | | o | | | | |
| DDH No. MJ-4 | | | | | | | | | | | | | | |
| 1 | | 689. 958 | 1694. 023 | | Limonite stain in argillized rock. | | | | o | | | | | 64.70 - 65.60 |
| 2 | | " | " | | do | | | | o | | | | | 65.6- - 65.90 |
| 3 | | " | " | | do | | | | o | | | | | 65.90 - 66.30 |
| 4 | | " | " | | do | | | | o | | | | | 75.75 - 75.95 |
| 5 | | " | " | | do | | | | o | | | | | 81.50 - 81.90 |
| 6 | | " | " | | do | | | | o | | | | | 83.10 - 83.40 |
| 7 | | " | " | | Pyrite veinlet and dissemina-tion in chlo-ritized rock. | | | | o | | | | | 86.00 - 86.40 |
| 8 | | " | " | | do | | | | o | | | | | 86.40 - 87.40 |
| 9 | | " | " | | do | | | | o | | | | | 87.40 - 88.80 |

* Topo.Map: Sheet No. of 1/50,000 IGN quadrangle map.

Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-4 | 10 | 689.958 | 1694.023 | Pyrite veinlet and dissemination in chloritized rock | | | | o | | 88.80 - 89.80 |
| | 11 | " | " | do | | | | o | | 89.80 - 90.20 |
| | 12 | " | " | do | | | | o | | 90.20 - 90.80 |
| | 13 | " | " | Pyrite veinlets and dissemination in epidote rock | | | | o | | 90.80 - 91.80 |
| | 14 | " | " | do | | | | o | | 91.80 - 92.60 |
| | 15 | " | " | do | | | | o | | 92.70 - 93.00 |
| | 16 | " | " | Dense pyrite dissemination in epidote rock | | | | o | | 93.00 - 93.80 |
| | 17 | " | " | do | | | | o | | 93.80 - 95.80 |
| | 18 | " | " | do | | | | o | | 95.80 - 96.40 |
| | 19 | " | " | Pyrite dissemination in siliceous rock | | | | o | | 96.40 - 97.30 |
| | 20 | " | " | do | | | | o | | 97.30 - 98.00 |
| | 43 | " | " | Pyrite dissemination in argillized rock | | | | o | | 104.40 - 105.60 |
| | 21 | " | " | Limonite stain in argillized rock | | | | o | | 112.00 - 113.20 |
| | 22 | " | " | do | | | | o | | 113.20 - 113.80 |
| | 23 | " | " | Limonite stain and pyrite dissemination in epidote rock | | | | o | | 113.80 - 114.65 |
| | 24 | " | " | Pyrite dissemination in silicified rock | | | | o | | 127.00 - 127.70 |
| | 25 | " | " | do | | | | o | | 127.70 - 128.60 |
| | 26 | " | " | do | | | | o | | 128.60 - 129.30 |
| | 27 | " | " | do | | | | o | | 129.30 - 130.30 |
| | 28 | " | " | do | | | | o | | 130.30 - 131.20 |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-4 | 29 | 689.958 | 1694.023 | Pyrite dissemination in silicafied rock | | | | o | | 131.20 - 131.70 |
| | 30 | " | " | do | | | | o | | 131.70 - 132.80 |
| | 31 | " | " | do | | | | o | | 132.80 - 133.80 |
| | 32 | " | " | Pyrite dissemination in argillized rock | | | | o | | 133.80 - 135.20 |
| | 33 | " | " | do | | | | o | | 135.20 - 135.50 |
| | 34 | " | " | Pyrite dissemination in chloritized rock | | | | o | | 139.10 - 140.10 |
| | 35 | " | " | Massive pyrite | | | | o | | 140.10 - 140.60 |
| | 36 | " | " | Pyrite dissemination in silicified rock | | | | o | | 140.60 - 140.90 |
| | 37 | " | " | Pyrite dissemination in argillized rock | | | | o | | 140.90 - 141.20 |
| | 38 | " | " | Vein-form pyrite in silicified rock | | | | o | | 141.20 - 141.70 |
| | 39 | " | " | Pyrite dissemination in chloritized rock | | | | o | | 142.80 - 143.20 |
| | 40 | " | " | Pyrite dissemination in epidote rock | | | | o | | 147.40 - 148.00 |
| | 41 | " | " | Pyrite dissemination in fractured zone | | | | o | | 148.00 - 148.40 |
| | 42 | " | " | Pyrite dissemination in argillized rock | | | | o | | 149.80 - 150.20 |
| | 15.70 | " | " | Sandstone | | | | | o | |
| | 35.60 | " | " | Siltstone | | | | | o | |
| | 65.70 | " | " | Gossan | | | | | o | |
| | 86.50 | " | " | Garnet bearing epidote-quartz rock | | o | | | | |
| | 87.30 | " | " | Skarn | | | | | o | |
| | 91.40 | " | " | Epidote rock | | | | | o | |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-4 | 92.60 | 689.958 | 1694.023 | Garnet bearing quartz-epidote rock | | o | | | | |
| | 112.30 | " | " | Pyrite mineralized rock | | | | | o | |
| | 131.65 | " | " | Silicified rock | | | | | o | |
| | 140.15 | " | " | Massive pyrite | | | | | o | |
| | 140.50 | " | " | Massive pyrite with minor amount of epidote | | o | | | | |
| | 150.00 | " | " | Chlorite quartz schist | | | | | o | |
| DDH No.MJ-5 | 1 | 690.113 | 1693.927 | Limonite stain in granitic rock | | | | o | | 24.80 - 25.30 |
| | 2 | " | " | do | | | | o | | 62.90 - 63.30 |
| | 3 | " | " | Pyrite dissemination in epidote rock | | | | o | | 80.30 - 80.80 |
| | 4 | " | " | do | | | | o | | 80.80 - 81.60 |
| | 5 | " | " | do | | | | o | | 83.20 - 83.90 |
| | 6 | " | " | do | | | | o | | 84.60 - 85.30 |
| | 7 | " | " | Pyrite dissemination in altered chlorite quartz schist | | | | o | | 91.90 - 92.20 |
| | 8 | " | " | do | | | | o | | 92.20 - 93.50 |
| | 9 | " | " | do | | | | o | | 93.50 - 94.20 |
| | 10 | " | " | do | | | | o | | 100.50 - 101.10 |
| | 11 | " | " | Pyrite dissemination in epidote rock | | | | o | | 116.40 - 116.50 |
| | 12 | " | " | do | | | | o | | 116.50 - 117.50 |
| | 13 | " | " | do | | | | o | | 117.50 - 119.30 |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-5 14 | 690.113 | 1693.927 | Pyrite dissemination in clastic rock | | | | o | | 119.30 - 119.45 |
| 15 | " | " | Pyrite dissemination in epidote rock | | | | o | | 119.45 - 120.40 |
| 16 | " | " | do | | | | o | | 120.40 - 121.30 |
| 17 | " | " | Pyrite dissemination in chloritized rock | | | | o | | 130.60 - 131.30 |
| 10.60 | " | " | Granitic rock | | | | | o | |
| 37.20 | " | " | Granitic rock | | | | | o | |
| 56.30 | " | " | Altered granite | | o | | | | |
| 57.80 | " | " | Granitic rock | | | | | o | |
| 75.80 | " | " | Clustic granite | | o | | | | |
| 83.40 | " | " | Epidote rock | | | | | o | |
| 93.80 | " | " | Sericite chlorite quartz schist | | o | | | | |
| 119.20 | " | " | Mineralized rock | | | | | o | |
| 119.30 | " | " | Skarn | | o | | | | |
| 119.43 | " | " | Epidote-sericite-quartz rock | | o | | | | |
| 120.40 | " | " | Garnet bearing epidote quartz rock | | o | | | | |
| 150.90 | " | " | Sericite chlorite quartz schist | | | | | o | |
| DDH No.MJ-6 1 | 690.848 | 1694.009 | Siltstone | | | | o | | 22.50 - 24.80 |
| 2 | " | " | Magnetite dissemination in quartz porphyry | | | | o | | 45.80 - 46.30 |
| 3 | " | " | Quartz porphyry | | | | o | | 56.40 - 57.20 |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-6 | 4 | 690.848 | 1694.009 | Pyrite dissemination in quartz-chlorite vein | | | | o | | 89.00 - 89.10 |
| | 5 | " | " | Quartz-chlorite vein | | | | o | | 109.80 - 110.20 |
| | 6 | " | " | Pyrite-chlorite-quartz vein | | | | o | | 92.00 - 92.50 |
| | 20.90 | " | " | Siltstone | | | | | o | |
| | 46.10 | " | " | Altered dacite | | o | | | o | |
| | 57.10 | " | " | Altered dacite | | o | | | | |
| | 71.50 | " | " | Sandstone | | | | | o | |
| | 98.45 | " | " | Conglomerate schist | | o | | | | |
| | 99.00 | " | " | Chlorite quartz schist | | | | | o | |
| | 119.50 | " | " | Sericite quartz schist | | o | | | | |
| | 133.80 | " | " | Sericite chlorite schist | | | | | o | |
| DDH No.MJ-7 | 1 | 690.260 | 1693.890 | Limonite stain in porous rock | | | | o | | 15.00 - 15.80 |
| | 2 | " | " | do | | | | o | | 15.80 - 16.30 |
| | 3 | " | " | do | | | | o | | 16.30 - 17.00 |
| | 4 | " | " | Limonite stain in siltstone | | | | o | | 17.00 - 17.40 |
| | 5 | " | " | do | | | | o | | 17.40 - 18.90 |
| | 6 | " | " | Quartz veinlets with limonite stain in siltstone | | | | o | | 34.60 - 35.20 |
| | 7 | " | " | Pyrite dissemination with limonite stain in argillized rock | | | | o | | 51.70 - 52.30 |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-7 | 8 | 690.260 | 1693.890 | Pyrite dissemination in fractured zone | | | | o | | 75.60 - 75.80 |
| | 9 | " | " | Magnetite dissemination in chlorite-epidote rock | | | | o | | 81.60 - 82.75 |
| | 10 | " | " | Pyrite dissemination in silicified rock | | | | o | | 84.00 - 84.10 |
| | 13 | " | " | Galena impregnation in silicified rock | | | | o | | 84.10 - 85.00 |
| | 11 | " | " | Pyrite dissemination in silicified rock | | | | o | | 88.70 - 89.30 |
| | 14 | " | " | do | | | | o | | 92.80 - 93.10 |
| | 12 | " | " | do | | | | o | | 100.10 - 100.70 |
| | 15 | " | " | Magnetite dissemination in epidote rock | | | | o | | 122.30 - 123.60 |
| | 16 | " | " | Pyrite dissemination in epidote rock | | | | o | | 124.50 - 125.60 |
| | 17 | " | " | Pyrite dissemination in epidote rock | | | | o | | 125.60 - 126.40 |
| | 18 | " | " | Pyrite dissemination in garnet rock | | | | o | | 126.40 - 127.00 |
| | 19 | " | " | Magnetite-pyrite dissemination in epidote-garnet rock | | | | o | | 127.00 - 127.90 |
| | 20 | " | " | Pyrite stringer in epidote rock | | | | o | | 127.90 - 128.80 |
| | 21 | " | " | Pyrite dissemination in epidote rock | | | | o | | 143.10 - 143.70 |
| | 22 | " | " | do | | | | o | | 161.20 - 161.80 |
| | 23 | " | " | do | | | | o | | 166.50 - 167.20 |
| | 24 | " | " | Magnetite-pyrite stringer in altered chlorite quartz schist | | | | o | | 172.70 - 174.70 |
| | 25 | " | " | Magnetite stringer in chloritized rock | | | | o | | 178.70 - 179.60 |
| | 26 | " | " | Magnetite dissemination in silicified rock | | | | o | | 180.70 - 181.10 |
| | 27 | " | " | do | | | | o | | 187.90 - 188.10 |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-7 28 | 690.260 | 1693.890 | Magnetite-pyrite dissemination in silicified rock | | | | o | | 188.10 - 188.40 |
| 29 | " | " | do | | | | o | | 191.00 - 191.70 |
| 30 | " | " | do | | | | o | | 191.70 - 192.40 |
| 31 | " | " | Magnetite dissemination in silicified rock | | | | o | | 192.40 - 192.80 |
| 32 | " | " | do | | | | o | | 192.80 - 193.40 |
| 33 | " | " | do | | | | o | | 248.20 - 248.70 |
| 13.80 | " | " | Sandstone | | | | | o | |
| 17.70 | " | " | Sandstone | | | | | o | |
| 30.60 | " | " | Sandstone | | | | | o | |
| 36.20 | " | " | Altered sandstone | | o | | | | |
| 61.90 | " | " | Siltstone | | | | | o | |
| 76.55 | " | " | Altered chlorite quartz schist | | o | | | | |
| 82.75 | " | " | Skarn (Pyrite, Magnetite) | | | o | | | |
| 82.90 | " | " | Massive pyrite | | | | | o | |
| 117.60 | " | " | Granitic rock | | | | | o | |
| 123.35 | " | " | Skarn (Pyrite) | | | o | | | |
| 126.30 | " | " | Chlorite-tremolite-epidote rock | | o | | | | |
| 127.00 | " | " | Garnet skarn | | | | | o | |
| 155.30 | " | " | Chlorite quartz schist | | | | | o | |
| 181.70 | " | " | Altered rhyolite or quartz porphyry | | o | | | | |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-7 192.40 | 690.260 | 1693.890 | Massive magnetite | | | o | | | |
| 192.50 | " | " | Magnetite mineralized rock | | | | | o | |
| 196.30 | " | " | Altered rhyolite or quartz porphyry | | o | | | | |
| 200.80 | " | " | Sericite chlorite quartz schist | | o | | | | |
| 206.70 | " | " | Quartz schist | | o | | | | |
| 222.10 | " | " | Sericite chlorite quartz schist | | o | | | | |
| 223.90 | " | " | Magnetite mineralized rock | | | | | o | |
| 224.00 | " | " | Altered quartz porphyry | | o | | | | |
| 224.80 | " | " | Altered granite | | o | | | | |
| 242.40 | " | " | Altered quartz porphyry | | o | | | | |
| 251.90 | " | " | Altered quartz porphyry | | o | | | | |
| 266.00 | " | " | Altered quartz porphyry | | o | | | | |
| 283.20 | " | " | Chlorite schist | | | | | o | |
| DDH No.MJ-8 1 | 690.400 | 1694.198 | Limonite stain in siltstone | | | | o | | 12.00 - 12.30 |
| 2 | " | " | do | | | | o | | 70.00 - 70.70 |
| 3 | " | " | Limonite magnetite in sandstone | | | | o | | 96.30 - 97.00 |
| 6 | " | " | do | | | | o | | 100.70 - 101.50 |
| 5 | " | " | Pyrite dissemination in chloritized rock | | | | o | | 125.00 - 126.75 |
| 4 | " | " | Limonite stain in chlorite schist | | | | o | | 144.60 - 144.90 |

Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | Location (Coordinate) E | N | Rock Type and/or Occurence of Metallic Minerals | Items Tested: Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| DDH No.MJ-8 6.05 | 690.400 | 1694.198 | Sandy shale | | o | | | | |
| 11.60 | " | " | Siltstone | | | | | o | |
| 68.00 | " | " | Sandstone | | | | | o | |
| 88.60 | " | " | Quartz porphyry | | o | | | | |
| 101.00 | " | " | Magnetite mineralized rock | | | | | o | |
| 112.90 | " | " | Quartz porphyry | | o | | | | |
| 126.50 | " | " | Sandstone | | | | | o | |
| 126.85 | " | " | Granite | | o | | | | |
| 133.30 | " | " | porphyrite(?) | | | | | o | |
| 139.70 | " | " | Quartz porphyry | | | | | o | |
| 142.00 | " | " | Quartz porphyry | | o | | | | |
| 147.80 | " | " | Chlorite schist | | | | | o | |
| DDH No.MJ-9 39 | 691.075 | 1693.511 | Limonite stain in siltstone | | | | o | | 36.20 - 37.40 |
| 40 | " | " | Pyrite dissemination in siltstone | | | | o | | 54.70 - 54.80 |
| 1 | " | " | Pyrite-limonite-manganese oxide | | | | o | | 82.30 - 82.90 |
| 2 | " | " | Limonite stain in argillized rock | | | | o | | 88.60 - 88.85 |
| 3 | " | " | do | | | | o | | 88.85 - 90.10 |
| 4 | " | " | Massive pyrite and argillized rock | | | | o | | 90.10 - 91.10 |
| 5 | " | " | Massive pyrite | | | | o | | 91.10 - 92.00 |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-9 | 6 | 691.075 | 1693.511 | Massive pyrite | | | | o | | 92.00 - 92.50 |
| | 7 | " | " | do | | | | o | | 92.50 - 93.00 |
| | 8 | " | " | do | | | | o | | 93.00 - 93.50 |
| | 9 | " | " | do | | | | o | | 93.50 - 94.10 |
| | 10 | " | " | do | | | | o | | 94.10 - 95.10 |
| | 11 | " | " | do | | | | o | | 95.10 - 96.40 |
| | 12 | " | " | do | | | | o | | 96.40 - 97.70 |
| | 13 | " | " | Pyrite dissemination in argillized rock | | | | o | | 97.70 - 98.10 |
| | 14 | " | " | Pyrite dissemination in chloritized rock | | | | o | | 98.10 - 98.30 |
| | 15 | " | " | Pyrite dissemination in epidote rock | | | | o | | 98.30 - 98.60 |
| | 16 | " | " | Pyrite dissemination in silicified rock | | | | o | | 98.60 - 98.85 |
| | 17 | " | " | Large idiomorphic pyrite in chloritized rock | | | | o | | 98.85 - 98.95 |
| | 18 | " | " | Pyrite dissemination in epidote rock | | | | o | | 98.95 - 99.30 |
| | 19 | " | " | Pyrite dissemination in silicified rock | | | | o | | 99.30 - 99.90 |
| | 20 | " | " | Pyrite dissemination in epidote rock | | | | o | | 99.90 - 100.80 |
| | 21 | " | " | Massive pyrite | | | | o | | 100.80 - 101.20 |
| | 22 | " | " | Pyrite dissemination in epidote rock | | | | o | | 101.20 - 102.50 |
| | 23 | " | " | Limonite stain in argillized rock | | | | o | | 102.50 - 103.50 |
| | 24 | " | " | Massive pyrite and argillized rock | | | | o | | 103.50 - 104.60 |
| | 25 | " | " | Large idiomorphic pyrite in argillized rock | | | | o | | 104.60 - 105.00 |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-9 26 | 691.075 | 1693.511 | Pyrite-specularite in quartzose rock | | | | o | | 105.00 - 105.40 |
| 27 | " | " | do | | | | o | | 105.40 - 105.90 |
| 28 | " | " | Pyrite dissemination in chlorite-epidote rock | | | | o | | 105.90 - 106.60 |
| 29 | " | " | do | | | | o | | 106.60 - 107.00 |
| 30 | " | " | do | | | | o | | 110.85 - 111.30 |
| 31 | " | " | do | | | | o | | 122.90 - 123.50 |
| 32 | " | " | Limonite stain in chlorite quartz schist | | | | o | | 128.20 - 129.50 |
| 33 | " | " | Pyrite vein and aggregate in epidote rock | | | | o | | 138.40 - 138.65 |
| 34 | " | " | do | | | | o | | 138.65 - 139.20 |
| 35 | " | " | do | | | | o | | 139.20 - 140.00 |
| 38 | " | " | Pyrite dissemination in chlorite-epidote rock | | | | o | | 141.70 - 142.00 |
| 36 | " | " | Pyrite dissemination in silicified rock | | | | o | | 144.80 - 146.20 |
| 37 | " | " | do | | | | o | | 146.20 - 146.60 |
| 26.70 | " | " | Quartz porphyry | | | | | o | |
| 56.50 | " | " | Siltstone | | | | | o | |
| 75.00 | " | " | Altered rock (Pyrite) | | | o | | | |
| 77.40 | " | " | Siltstone | | | | | o | |
| 82.50 | " | " | Massive limonite with chalcocite(djurleite?) intersticical to relict pyrite. | | | o | | | |
| 92.60 | " | " | Pyrite-sphalerite ore in chlorite(amphibole) skarn | o | | o | | | |
| 98.80 | " | " | Porphyrite | | o | | | | |
| 104.75 | " | " | Garnet rock (Skarn) | | o | | | | |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-9 105.20 | 691.075 | 1693.511 | Quartz rock (Vein) | | o | | | | |
| 106.00 | " | " | Epidote rock | | | | | o | |
| 138.90 | " | " | Gernet-epidote-actinolite rock | | o | | | | |
| 143.50 | " | " | Chlorite quartz schist | | | | | o | |
| DDH No.MJ-10 1 | 690.135 | 1694.175 | Argillized rock | | | | o | | 6.90 - 7.90 |
| 2 | " | " | Epidotized rock | | | | o | | 10.40 - 10.90 |
| 3 | " | " | do | | | | o | | 10.90 - 11.90 |
| 4 | " | " | Massive hematite | | | | o | | 45.70 - 46.90 |
| 5 | " | " | do | | | | o | | 46.90 - 49.90 |
| 6 | " | " | Massive pyrite | | | | o | | 53.60 - 54.50 |
| 7 | " | " | do | | | | o | | 54.50 - 55.60 |
| 8 | " | " | do | | | | o | | 55.60 - 56.10 |
| 9 | " | " | do | | | | o | | 56.10 - 57.10 |
| 10 | " | " | do | | | | o | | 57.10 - 58.10 |
| 11 | " | " | Pyrite veinlets in argillized rock | | | | o | | 58.10 - 58.90 |
| 12 | " | " | Pyrite dissemination in argillized rock | | | | o | | 58.90 - 59.90 |
| 13 | " | " | do | | | | o | | 59.90 - 60.90 |
| 14 | " | " | Pyrite-hematite dissemination with magnetite stringer in argillized rock | | | | o | | 61.90 - 63.00 |
| 15 | " | " | do | | | | o | | 63.00 - 63.50 |

## Appendix 1-2 List of Samples Tested (Drill Core)

| Sample No. | Location (Coordinate) | | Rock Type and/or Occurence of Metallic Minerals | Items Tested | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | E | N | | Hand Specimen | Thin Section | Polished Section | Chemical Analysis | X-ray Diffrac-tometry | |
| DDH No.MJ-10 16 | 690.135 | 1694.175 | Pyrite dissemination in argillized rock | | | | o | | 63.50 - 63.90 |
| 17 | " | " | do | | | | o | | 63.90 - 64.10 |
| 18 | " | " | do | | | | o | | 71.10 - 71.70 |
| 19 | " | " | do | | | | o | | 78.70 - 78.80 |
| 20 | " | " | do | | | | o | | 79.90 - 80.30 |
| 21 | " | " | do | | | | o | | 98.70 - 100.20 |
| 22 | " | " | Pyrite dissemination in silicified rock | | | | o | | 100.20 - 100.70 |
| 23 | " | " | do | | | | o | | 100.70 - 101.40 |
| 24 | " | " | do | | | | o | | 108.20 - 108.50 |
| 7.10 | " | " | Siltstone | | | | | o | |
| 55.10 | " | " | Massive pyrite | | | | | o | |
| 56.60 | " | " | Quartzose rock (Pyrite) | | | o | | | |
| 72.70 | " | " | Quartz porphyry | | | | | o | |
| 81.20 | " | " | Quartz porphyry | | o | | | | |
| 86.80 | " | " | | | | | | o | |
| 118.00 | " | " | Altered quartz porphyry | | o | | | | |
| 126.50 | " | " | Quartz-epidote rock | | o | | | | |
| 141.90 | " | " | Quartz porphyry | | | | | o | |
| 149.70 | " | " | Altered quartz porphyry | | o | | | o | |

## Appendix 2-1 Microscopic Observation - Thin Section (1)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | J 10 | N1694.60 E 689.85 | Intrusive rock | Altered quartz porphyry | White, compact rock. Macroscopically phenocrysts of quartz and plagioclase are observed. | Phenocrysts are of quartz, plagioclase and altered mafic mineral. The groundmass is felsic and rather holocrystalline. It is composed of sericite and quartz. | X-ray Diffractometry |
| " | J 90 | N1692.63 E 691.19 | Intrusive rock | Altered biotite granodiorite | Grey, medium-grained granitic rock | Principal minerals are quartz, plagioclase, potassium feldspar, and biotite. Small amounts of sphene occur as accessry. Plagioclase is intensely altered into sericite. Biotite is altered into chlorite and epidote. Veinlets of epidote and carbonate mineral are present. | X-ray Diffractometry |
| " | J 94 | N1692.94 E 691.28 | Intrusive rock | Altered hornblende-biotite granodiorite | Grey, medium-grained granitic rock | Principal minerals are intensely sericitized plagioclase, potassium feldspar, quartz, biotite and hornblende. Small amounts of sphene and opaque minerals occur as accessory. Unidentified primary mafic minerals are generally altered into epidote. | X-ray Diffractometry |
| " | K 9 | N1693.71 E 689.89 | Tactic F. | Medium-grained sandstone | Reddish grey, compact rock | Subrounded grains of quartz, 0.7mm in size is scattered in the matrix composed of fine-grained quartz, sericite and limonitic materials. | X-ray Diffractometry |
| " | K 13 | N1693.82 E 689.95 | Intrusive rock | Altered hornblende micro-diorite | Greyish white, fine-grained granitic rock | Principal minerals are plagioclase and hornblende. Small amounts of sphene and epidote occur as accessory. The rock is intergranular in texture. | X-ray Diffractometry |
| " | K 63 | N1694.94 E 687.58 | Intrusive rock | Altered hornblende-biotite, granodiorite | Grey, fine-grained, granitic rock | Principal minerals are quartz, plagioclase, potassium fledspar, altered biotite and altered hornblende. Compact xenolith is present. | |
| " | K 136 | N1692.79 E 692.03 | Tactic F. | Epidote-quartz -actinolite rock | Greenish grey, siliceous rock | Principal minerals are epidote and quartz. Accessories are small amounts of small needle-shaped actinolite. | X-ray Diffractometry |

## Appendix 2-1 Microscopic Observation - Thin Section (2)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | K 149 | N1695.12 E 687.91 | Intrusive rock | Altered quartz porphyry | White, siliceous rock, including breccias | Phenocrysts are of quartz. Glass in the groundmass is devitrified and altered into quartzose matter, accompanied by biotite and plagioclase. Veinlets of quartz are also observed. | |
| " | K 166 | N1695.32 E 687.62 | Chicol F. | Epidote-quartz rock | Greenish grey, siliceous rock | Principal minerals are epidote and quartz. Accessory is sericite accompanied with quartz. | X-ray Diffractometry |
| " | K 190 | N1693.47 E 691.39 | Tactic F. | Epidote-quartz rock | Pale greyish green rock, including malachite vein | Principal minerals are idiomorphic epidote and quartz. Veinlets filled by colloidal malachite are observed. | Chemical analysis Fe 8.02% |
| " | S 28C | N1694.68 E 688.95 | Tactic F. | Garnet bearing epidote-actinolite rock (Skarn) | Pale greenish white rock with limonite stain | Epidote and actinolite are crowded. Among them, sericite and chlorite are observed. Reddish brown poikilitic garnet is scattered. | Chemical analysis Ag 1%, Cu 0.01%, Pb Tr, Zn 0.09%, S 0.09%, Mn 0.34% |
| " | S 46 | N1694.40 E 691.00 | Chocol F. | Sericite chlorite quartz schist (Rhyolite tuff origin?) | Pale greenish white, showing cleavage. Felsic crystals are scattered. Matrix is lustrous. | Vitroclastic structure is seen. Phenocrystic chips of quartz and plagioclase are scattered in the schistose matrix. The matrix is altered and composed of fibrous sericite, quartz, biotite and opaque minerals. | X-ray Diffractometry |
| " | S 61 | N1693.30 E 690.51 | | Skarn | Yellowish green, holocrystalline rock | Principal minerals are quartz, hornblende and sphene, accompanied by epidote, zoicite, chlorite, apatite, tremolite and siderite ?. Vein of epidote is also observed. | |
| " | S 69 | | | Altered muscovite-biotite granodiorite or quartz diorite. | Grey, granitic rock | Principal minerals are quartz, plagioclase, biotite and muscovite. Plagioclase is intensely altered into sericite. | |
| " | S 78 | N1693.02 E 690.91 | Intrusive | Quartz porphyry | Grey, compact siliceous rock with limonite stains | Grain mineral is quartz and plagioclase. Matrix is composed of quartz and sericite. Granular garnet is scatterd. | X-ray Diffractometry |

## Appendix-2-1 Microscopic Observation(Drill Core)

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| MJ-1 109.4 | | | Altered (sericitized) Quartz Porphyry | The rock is grayish white in color, and has porphyritic structure. Small pyrite grains of metallic buster are distributed. | Under the microscope, the rock is porphyritic, and the phenocryst composed of quartz, sericitized plagioclase and opaque mineral. Groundmass is made up of quartz, sericite and microlites of colored and opaque mineral.<br><br>(Phenocryst)<br>Quartz --- Phenocrystic quartz smaller than 2mm are partly corroded.<br>Plagioclase --- Though the crystals are wholy sericitized, outline of the original crystal are still reserved and maximum size is measured to 2mm.<br>Opaque mineral --- Smaller than 1mm crystals are scattered<br><br>(Groundmass)<br>Quartz --- Abundant quartz grains smaller than 0.03mm accupied the groundmass.<br>Sericite --- Feather like sericite crystals show the parallel arrangement. | Vein Quartz-opaque mineral vein cut the quartz porphyry. |
| MJ-1 114.4 | | | Altered (sericitized chloritized) Hornblende Quartz Porphyry ~ Rhyolite | The rock is grayish white in color and has porphyritic structure. Small pyrite grains of metallic luster are present. | Under the microscope, the rock is porphyritic, and the phenocryst composed of quartz, plagioclase, altered hornblende, and opaque mineral; and groundmass is made up of fine quartz grains and sericite.<br><br>(Phenocryst)<br>Quartz --- The crystals are magmaticaly corroded and have many embayment. Maximum size measured to 2.5mm.<br>Plagioclase --- Maximum size is measured to 2.7mm showing carlsbad and albite twinnings. Some parts are altered to sericite.<br>Altered Hornblende --- The mast crystals are altered into chlorite but reserves their original crystal outline and enclose opaque mineral.<br>Opaque mineral --- Maximum size of phenocrystic opaque mineral is 0.5mm. *Continued to next page.* | Vein Narrow-quartz veins cut the quartz porphyry. |

Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| | | | | | (Groundmass)<br>Quartz --- Abundant quartz grains smaller than 0.02mm size occuppied the groundmass.<br>Sericite --- Feather like, high birefringence sericite crystals are distributed in the groundmass, | |
| MJ-1 124.0 | | | Altered (sericitized, chloritized, epidotized) Quartz Porphyry | The rock is gray in color and has porphyritic structure. Small grains of pyrite are observed. | Under the microscope, the rock is porphyritic and the phenocrysts of plagioclase quartz, mafic mineral and opaque mineral are embeded in the fine quartz, sericite, chlorite, epidote groundmass.<br>(Phenocryst)<br>Plagioclase --- The crystals are idiomorphie and the maximum size is measured 2mm. Carlsbad and albite twining are observed. Some parts are altered to sericite, chlorite and epidote.<br>Quartz --- Small amount of corroded quartz are scattered in the groundmass.<br>Mafic mineral --- Though the whole mineral is altered into chlorite, epidote and opaque mineral, outline of hte original crystal is reserved, and maximum size is measured 1mm.<br>Opaque mineral ---<br>(Groundmass)<br>Quartz --- Micrograins of quartz are intermingled in the sericite crystals of parallel arrangement.<br>Sericite --- Associating with chlorite, fine feather like sericite crystals are arranged in paralled.<br>Chlorite<br>Epidote --- These minerals are scattered in the<br>Opaque mineral groundmass. | Vein narrow-quartz veins cut the quartz porphyry. |

Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| MJ-1 127.0 | | | Altered (Chloritized, epidotized, sericitized) Quartz Porphyry | The rock is gray in color and penetrated by white quartz vein. | Under the microscope, the rock is porphyritic, and the phenocryst composed of quartz, plagioclase, altered mafic and opaque mineral. Groundmass is made up of lange amount of quartz, chlorite, epidote, sericite and opaque mineral.<br><br>(Phenocryst)<br>Quartz --- Magmaticaly corroded quartz are embeded in the groundmass of fine grained quartz. Maximum size is measured 2mm.<br>Plagioclase --- Plagioclase of albite twin is also present as phenocryst. Some crystals are corroded magmaticaly.<br>Altered mafic mineral --- All of the phenocrystic mafic mineral are altered into aggregate of chlorite, epidote and opaque mineral.<br>Opaque mineral --- Maximum size of the opaque mineral is measured to 0.8mm and enclose apatite.<br>(Groundmass)<br>Quartz --- Abundant fine to medium grained quartz crystals are present in the groundmass.<br>Chlorite<br>Epidote --- These minerals are scattered in the groundmass.<br>Sericite | Vein narrow-quartz Veins cut the quartz porphyry. |
| MJ-1 138.7 | | | Altered (sericitized chloritized epidotized) Quartz porphyry | The rock is dark gray in color. Small grains of pyrite are distributed. | Under the microscope, the rock is porphyritic and the phenocryst composed of quartz and opaque mineral. Groundmass is made up of quartz, sericite chlorite, epidote and opaque mineral.<br><br>(Phenocryst)<br>Quartz --- Size of quartz is measured smaller than 1.2mm.<br>Opaque mineral --- Size of opaque mineral is measured smaller than 1mm and enclose apatite crystals.<br>(Groundmass)<br>Quartz --- Grain size of aggregated groundmass quartz is measured smaller than 0.2mm. *Continued to next page.* | |

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| | | | | | Sericite --- Flakes or fine feather like high birefringence sericite crystals are arranged in parallel.<br>Chlorite --- Radiated crystals of pale green color and low birefringence chlorite are also aggregated in the groundmass.<br>Epidote --- Small crystals of brown color and high birefringence epidote are also aggregated in the groundmass.<br>Opaque mineral --- Associating always with chlorite and epidote, opaque mineral present in the groundmass | |
| MJ-1 148.5 | | | Altered(sericitized chloritized, epidotized) Quartz Porphyry | Though the rock is compact and gray in color, porphyritic atructure is observed. | Under the microscope the rock is porphyritic and the phenocryst consist of quartz, plagioclase altered mafic and opaque mineral. Groundmass composed of quartz, sericite, chlorite, epidote and pyrite.<br><br>(Phenocryst)<br>Quartz --- Maximum size of phenocrystic quartz is measured to 4mm. Quartz crystals are magmaticaly corroded showing embayment.<br>Plagioclase --- Maximum size is measured to 2.5mm and show twinnings of carlsbad and albite law. Some crystals are completely replaced by sericite crystals.<br>Altered Mafic Mineral --- Most of the phenocrystic mafic minerals are altered into aggregate of chlorite, epidote and opaque minerals.<br>Pyrite --- Maximum size is muasured to 0.5mm.<br><br>(Groundmass)<br>Quartz --- Main parts of the groundmass occupied by fine to medium grain quartz.<br>Sericite --- Feathery, high birefringence sericite scattered in the groundmass.<br><br>*Continued to next page.* | Vein Quartz-K-feldsper-chlorite veins cut the quartz porphyry. |

## Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| | | | | | Chlorite, Epidote --- Secondary chlorite and epidote are also scattered in the groundmass.<br>Pyrite --- Small grains of pyrite are also distributed in the groundmass. | |
| MJ-1 161.1 | | | Strongly altered (sericitized, epidotized, chloritized pyritized) Quartz Porphyry | The rock is compact and gray in color. Pyrite crystals are observed. | Under the microscope the rock is porphyritic and the phenocryst composed of quartz, sericitized feldspar, altered mafic mineral and ore. Groundmass is made up of quartz, sericite and epidote.<br><br>(Phenocryst)<br>Quartz --- The crystals are smaller than 1.2mm and have many embayment due to magmatic corrosion.<br>Altered Plagioclase --- Though the crystals are wholly replaced by sericite aggregate, original outline of plagioclase are still well reserved.<br>Altered mafic mineral --- Though the mineral is wholly replaced by chlorite, epidote and pyrite, original outline of mafic mineral is still reserved.<br>Ore --- Maximum size measured to 0.8mm and enclose apatite crystals.<br><br>(Groundmass)<br>Quartz --- Fine to medium grained quartz are scattered in the groundmass<br>Sericite --- Sericite, altered from groundmass plagioclase are scattered in the groundmass<br>Epidote --- Epidote crystals, which are altered from mafic minerals are scattered in the groundmass | |

## Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| MJ-1 162.8 | | | Strongly altered (sericitized epidotized chloritized pyritized) Quartz Diorite Porphyry | The rock is dark gray in color. Small grains of pyrite ore are distributed in the rock. | Under the microscope, abundant altered mafic mineral, plagioclase and ore are embeded in the quartzose and sericitized groundmass.<br><br>(Phenocryst)<br>Altered Plagioclase --- Though the crystals are wholly altered into sericite, original outline of plagioclase is reserved and maximum size measured to 2.2mm.<br>Altered mafic mineral --- Though the crystals are wholly replaced by epidote, chlorite and ore, original outline of mafic mineral is reserved and maximum size measured to 2mm.<br>Pyrite --- Maximum size measured to 0.5mm and enclose apatite crystals.<br>Apatite --- Many apatite smaller than 0.5mm prismatic crystals are distributed in the groundmass.<br><br>(Groundmass)<br>Quartz --- Primary fine quartz and secondary quartz of patch form are scattered in the groundmass<br>Sericite --- Fine feather like sericite altered from groundmass plagioclase occupied the groundmass<br>Altered mafic mineral --- Mafic minerals in the groundmass are altered into epidote showing high birefringence.<br>Pyrite --- Small grains of opaque mineral are distributed in the groundmass | |
| MJ-1 223.6 | | | Epidote Chlorite Sericite Quartz Schist | The rock is dark gray in color, and compact. | Under the microscope, angular quartz grains of medium, size, subangular fragment of opaque mineral, and epidote grains are cemented by sericite, chlorite and fine quartz.<br>(Sand Grain)<br>Quartz grain --- Angular grains smaller than 0.3mm are nearly arranged in stratiform and cemented by sericite, chlorite and fine quartz. | Vein quartz vein, chlorite-epidote-ore vein cut the epidote- |

*Continued to next page.*

Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| | | | | | Opaque mineral grain --- subangular fragments smaller than, 0.2mm are also distributed in the matrix.<br><br>Epidote grain --- Small amount of epidote grains smaller than 0.1mm are scattered in the matrix.<br><br>(Cementing Material)<br>Sericite --- Filling up the interstices of quartz grains, sericite crystals are developed.<br>Chlorite --- Some part of interstices, chlorite crystals are sporadicaly developed.<br>Fine Quartz --- Cementing the angular medium grained quartz, fine grained quartz crystals are observed. | chlorite-sericite-quartz-schist. |
| MJ-1 227.4 | | | Altered (sericitized chloritized epidotized pyritized) Hornblende Granophyre | The rock is gray in color. Small grains of pyrite are distributed. | Under the microscope, the rock is porphyritic and the altered phenocrysts, plagioclase and hornblende are embeded in the groundmass of granophyric structure.<br><br>(Phenocryst)<br>Altered plagioclase --- Smaller than 2mm of the plagioclase crystals are wholy sericitized, but some part remain fresh showing calsbad and albite twinings.<br>Altered Hornblende --- Smaller than 1.5mm of the hornblende are wholy altered into chlorite, epidote and opaque mineral but reserves their original outline of hornblende.<br><br>(Groundmass)<br>Quartz, Feldspar --- Groundmass of this rock shows typical micro-graphic structure of quartz and feldspar.<br>Chlorite, Epidote, Ore --- Small amount of chlorite epidote and opaque mineral are distributed in the groundmass. | Vein<br>Quartz vein and epidote vein cut the hornblende granophyre. |

## Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| MJ-1 232.7 | | | Quartz Sericite Schist | The rock is compact and gray in color. Pyrite crystals are distributed in the rock. | Under the microscope, rock fragments of quartzite, mineral fragments of quartz and plagioclase are cemented by fine quartz and sericite.<br><br>(Rock Fragments)<br>Quartzite --- Rounded quartzite grains smaller than 3mm, have a mosaic structure of quartz crystals.<br>Quartz Porphyry --- Grains are porphyritic, and the corroded quartz and plagioclase are cemented by fine quartz and sericite.<br><br>(Mineral Fragments)<br>Quartz --- Subrounded and corroded quartz grains smaller than 0.5mm are common.<br>Plagioclase --- Subrounded plagioclase grains smaller than 0.5mm show albite twining<br><br>(Cementing material)<br>Quartz --- Large amounts of fine quartz grains together with sericite, cement the interstices of rock and mineral fragments.<br>Sericite --- Associating with fine quartz, abundant sericite are scattered in the matrix. | Vein<br>Quartz vein and Epidote-chlorite vein cut the quartz sericite schist. |
| MJ-1 235.1 | | | Epidote Chlorite Sericite Quartz Schist | The rock is compact and gray in color. Pyrite crystals are distributed in the rock. | Under the microscope, rock and mineral fragments are cemented by fine quartz, sericite, chlorite and opaque minerals. Rock fragments are quartz porphyry and mineral fragments are quartz, plagioclase and altered mafic mineral.<br><br>(Rock Fragments)<br>Quartz porphyry --- Abundant rock fragments of quartz porphyry are scattered in the matrix. Fragments are porphyritic and phenocrystic quartz and plagioclase are cemented by fine quartz and chlorite.<br><br>*Continued to next page.* | |

Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
| --- | --- | --- | --- | --- | --- | --- |
| | | | | | (Mineral Fragments)<br>Quartz --- Some crystals smaller than 3mm are magmatiealy corroded.<br>Plagioclase --- Abundant fragments smaller than 2mm show carlsbad and albite twinnings.<br>Altered mafic mineral --- Small amount of mafic mineral altered into aggregate of chlorite, epidote and opaque minerals.<br><br>(Cementing Materials)<br>Quartz --- Fine quartz crystals are arranged in one direction showing schistose structure.<br>Sericite --- Some fine sericite crystals are aggregated in lenticular to vein form.<br>Chlorite, Opaque mineral --- Both minerals are scattered in the matrix. | |
| MJ-1 246.0 | | | Altered (sericitized, epidotized zoisitized) Granophyre | The rock is compact and dark gray in color. | Under the microscope, the rock is porphyritic, and the phenocryst composed of quartz, altered plagioclase and altered mafic mineral. Groundmass is made up of graphic intergrowth of quartz and plagioclase, and some altered mafic mineral.<br><br>(Phenocryst)<br>Quartz --- Magmaticaly corroded crystals of 0.7mm are present as phenocryst.<br>Plagioclase --- Smaller than 3mm phenocrystic plagioclase are present, most part are altered into sericite, partly into epidote and zoisite.<br>Mafic mineral --- Small amount of phenocrystic mafic mineral altered into aggregate of chlorite, epidote and opaque mineral.<br><br>(Groundmass)<br>Quartz, Plagioclase --- Micrographic intergrowth of quartz and plagioclase are observed. Some Plagioclase altered into sericite. | |

## Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
| --- | --- | --- | --- | --- | --- | --- |
| MJ-2 36.7 | | | Quartz Muscovite Schist | The rock is gray in color, and show schistosė structure. Pyrite crystals are scattered in the rock. | Under the microscope the rock is halocrystalline consisting of quartz muscovite, mafic mineral and pyrite. In this rock, fine crystalline part and medium crystalline part are alternately arranged showing schistose structure.<br>Fine crystalline part<br>Fine crystalline part is made up of fine quartz and mafic minerals.<br>Medium crystalline part<br>Medium grained part composed of quartz, muscovite and pyrite | Vein<br>The rock is penetrated by chlorite vein. |
| MJ-2 40.1 | | | Altered (sericitized) Quartz Porphyry | The rock is reddish gray in color. Porphyritic structure is observed. | Under the microscope, the rock is porphyritic, and the phenocryst consist of quartz, plagioclase and mafic mineral. Groundmass is made up of quartz, sericite mafic mineral and limonite.<br>(Phenocryst)<br>Quartz --- Rounded and partly corroded quartz crystals smaller than 2.5mm are scattered in the groundmass.<br>Plagioclase --- Phenocrystic plagioclase crystals smaller than 1mm show albite twinning.<br>Mafic mineral --- Phenocrystic mafic mineral smaller than 0.5mm are all altered into limonite or goethite.<br>(Groundmass)<br>Quartz --- Small irregular form of quartz grains occupied main parts of the groundmass.<br>Sericite --- Fine, high birefringence sericite are aggregated in the lenticular form.<br>Mafic mineral --- Fine microlites of mafic mineral are scattered in the groundmass.<br>Limonite(Goethite) --- Microcrystals of limonite (goethite) are also distributed in the groundmass. | |

## Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| MJ-2 94.8 | | | Altered (sericitized, epidotized, zoisitized, pyritized) Quartz Porphyry | The rock is gray in color, and phenocrystic dark spots are arranged in parallel. Pyrite crystal with metallic luster are scattered. | Under the microscope, the rock is porphyritic and the phenocryst composed of quartz, plagioclase, altered mafic mineral and opaque mineral. Groundmass is made up of micro-graphic structure of quartz and feldspar, sericite, epidote and opaque mineral.<br><br>(Phenocryst)<br>Quartz --- Corroded quartz crystals smaller than 1.5mm are scattered in the groundmass.<br>Plagioclase --- Plagioclase crystals smaller than 2mm are altered mostly into sericite aggregate, partly into epidote and zoicite, but some crystal show albite twining.<br>Mafic mineral --- Mafic crystals are altered into aggregate of epidote and zoicite.<br>Opaque mineral ---<br><br>(Groundmass)<br>Quartz Plagioclase --- Micrographic structure of quartz and feld-spar are observed.<br>Sericite --- Lenticular aggregate of fine sericite are ob-served in the groundmass.<br>Epidote --- Fine epidote crystals are distributed in the groundmass.<br>Opaque mineral --- Small opaque crystals are scattered. | Vein Epidote vein cut the quartz porphyry. |
| MJ-2 117.0 | | | Altered (sericitized, epidotized) Hornblende Quartz Porphyry ~ Rhyolite | The rock is gray in color. Porphyritic structure is seen. | Under the microscope, the rock is prophyritic and the phe-nocryst composed of quartz, plagioclase, hornblende (alte-red) and opaque mineral. Groundmass is made up of quartz, sericite and opaque mineral.<br><br>(Phenocryst)<br>Quartz --- Phenocrystic bipyramidal quartz are scattered in the groundmass. The crystals show magmatic corrosion.<br>*Continued to next page.* | |

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| | | | | | Plagioclase --- Phenocrystic plagioclase smaller than 1mm are mostly sericitized, but some crystals show albite twin.<br>Hornblende --- Phenocrystic hornblendes smaller than 1.5mm are all altered into epidote of high birefringence.<br>Opaque mineral --- Small amount of opaque mineral are sporadicaly scattered.<br><br>(Groundmass)<br>Quartz --- Fine quartz occupied the main parts of the groundmass.<br>Sericite --- Together with the groundmass quartz, fine high birefringence sericite are scattered in the groundmass.<br>Opaque mineral --- Associated with epidote, opaque mineral is distributed. | |
| MJ-2 277.6 | | | Chlorite Sericite Quartz Schist | The rock is compact and gray in color. | Under the microscope, mineral grains of quartz and plagioclase are cemented by fine quartz and sericite crystals showing schistose structure.<br><br>(Sand Grains)<br>Quartz --- Angular quartz grains smaller than 1mm are sporadicaly distributed in the stratified matrix. Some crystals are magmaticaly corroded.<br>Plagioclase --- Angular plagioclase grains smaller than 0.8mm are scattered in the matrix and show albite twining.<br>Mafic mineral --- Small amount of altered mafic mineral grains are scattered in the matrix.<br>Opaque mineral --- Small amount of opaque mineral grains are also scattered in the matrix.<br><br>(Cementing Material(Matrix) )<br>Quartz --- Fine quartz crystals are ranged in paralle. | Vein quartz-carbonate vein cut the chlorite, sericite, quartz shist. |

*Continued to next page.*

## Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| | | | | | Sericite --- Fine sericite crystals take parallel arrangement with each other and matrix quartz showing schistosity<br>Chlorite --- Pale green color chlorite rarely shows linear arrangement.<br>Carbonate --- High birefringence carbonate are also sporadicaly distributed. | |
| MJ-2 282.4 | | | Sericite Quartz Schist | The rock is compact and gray in color. | Under the microscope, rock and mineral fragments are cemented by fine quartz, sericite and opaque crystals showing schistose structure. Rock fragments are sandstone and the mineral fragments are quartz, plagioclase and opaque mineral.<br><br>(Rock Fragments)<br>Sandstone grain --- Leuticular sandstone fragment smaller than 2.5mm composed of quartz, sericite, chlorite and opaque mineral.<br><br>(Mineral Fragments)<br>Quartz --- Angular to subangular quartz, grains smaller than 1mm are scattered in the matrix. Some grains show magmatic corrosion.<br>Plagioclase --- Subangular plagioclase smaller than 0.7mm are sporadicaly scattered in the matrix.<br>Opaque mineral --- Small amount of opaque minerals are scattered in the matrix.<br><br>(Cementing Material)<br>Quartz --- Fine quartz crystals take parallel arrangement in certain direction.<br>Sericite --- Fine sericite crystals ranged in parallel with each other and matrix quartz showing schistose structure.<br>Opaque mineral --- Small grains are scattered in the matrix. | |

## Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| MJ-3 85.8 | | | Epidote Zoisite Sericite Quartz Schist | The rock is gray in color and has schistose structure. | Under the microscope, colorless minerals and mafic minerals are alternately arranged showing schistose structure. Colorless minerals are quartz and sericite and mafic minerals are made up of zoisite, epidote and opaque mineral.<br><br>(Colorless Minerals)<br>Quartz --- Subangular quartz of smaller than 0.1mm are cemented by sericite.<br>Serucite --- Fine, high index and birefringence sericite crystals are ranged in parallel together with fine quartz.<br><br>(Mafic Minerals)<br>Zoisite --- Zoisite crystals smaller than 0.15mm are ranged in certain direction together with opaque mineral and epidote.<br>Epidote --- Associating with zoisite crystals, small amount of epidote crystals are distributed.<br>Opaque mineral --- Associating with zoisite, opaque minerals smaller than 0.7mm are arranged in ore direction. | |
| MJ-3 100.7 | | | Zoisite Chlorite Epidote Sericite Quartz Schist | The rock is gray in color and has schistose structure. | Under the microscope, colorless minerals and mafic minerals are alternately arranged showing schistose structure. Colorless minerals are quartz and sericite, mafic minerals are made up of epidote, chlorite, zoisite and opaque mineral.<br><br>(Colorless Minerals)<br>Quartz --- Subangular grains smaller than 0.15mm are cemented by fine sericite.<br>Sericite --- Fine, high index and birefringence sericite crystals are arranged in certain direction.<br><br>(Mafic Minerals)<br>Epidote --- High birefringence epidote crystals smaller than 0.1mm are scattered in the rock. | |

*Continued to next page.*

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| | | | | | Chlorite --- Pale green color and low birefringence chlorite crystals are scattered in the rock.<br>Zoisite --- Together with epidote mineral small amount of zoisite is also observed.<br>Opaque mineral --- Associated with epidote, opaque minerals smaller than 0.2mm are scattered. | |
| MJ-3 125.0 | | | Epidote Chlorite Sericite Quartz Schist | The rock is dark gray in color and has schistose structure. Small pyrite crystals are scattered in the rock. | Under the microscope, colorless minerals and mafic minerals are alternately arranged in parallel and show schistose structure. Colorless minerals consist of quartz and sericite, mafic minerals are chlorite, epidote and opaque mineral.<br>(Colorless Minerals)<br>Quartz --- Associated with sericite crystals, quartz crystals smaller than 0.2mm are arranged in parallel.<br>Sericite --- Fine, high index and birefringence sericite crystals are arranged in parallel showing schistose structure.<br>(Mafic Minerals)<br>Chlorite --- Filling up the interstices of quartz crystals and opaque mineral, pale green and low birebringence chlorite crystals are developed.<br>Epidote --- Associated with epidote and intermingled with quartz, high birefringence epidote are scattered.<br>Opaque mineral --- Concordant to schistocity, most of the opaque minerals are distributed together with chlorite. But some crystals are arranged obliquely to the general schistocity of the rock. | |

## Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| MJ-3 164.3 | | | Altered (sericitized epidotized chloritized) Quartz Porphyry ~ Rhyolite | The rock is gray in color, and show porphyritic structure. | Under the microscope, the rock is porphyritic, and the phenocryst composed of quartz, plagioclase, altered mafic mineral and opaque mineral. Groundmass is made up of quartz, epidote and sericite.<br><br>(Phenocryst)<br>Quartz --- Partly corroded quartz crystals smaller than 2mm are present as phenocryst.<br>Plagioclase --- Phenocrystic plagioclase smaller than 3mm are present. Many crystals are altered and wholy replaced by fine sericite. Some crystal remains fresh and show albite twining.<br>Altered mafic mineral --- Mafic mineral smaller than 1mm are all altered into chlorite, epidote and opaque mineral.<br>Opaque mineral --- Opaque mineral smaller than 0.4mm are present as phenocryst and enclose minor apatite crystals.<br><br>(Groundmass)<br>Quartz --- Main part of groundmass is occupied by fine quartz of irregular shape.<br>Epidote --- Minor epidote grains of high birefringence are scattered in the quartzose groundmass.<br>Sericite --- Fine sericite crystals are scattered in the groundmass. | |
| MJ-3 182.7 | | | Altered (sericitized chloritized epidotized) Quartz Porphyry | The rock is grayish white in color and show porphyritic structure | Under the microscope the rock is porphyritic, and the phenocryst composed of quartz, plagioclase and opaque mineral. Groundmass is made up of quartz, plagioclase sericite, chlorite, epidote and opaque mineral.<br><br>(Phenocryst)<br>Quartz --- Portly corroded phenocrystic quartz smaller than 2mm are embeded in the groundmass of fine quartz, plagioclase and sericite. *Continued to next page.* | |

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| | | | | | Plagioclase --- Idiomorphic, twinned crystals are present as phenocryst. Some crystals partly altered into sericite.<br>Opaque mineral --- Small amount of opaque minerals are scattered in the groundmass.<br><br>(Groundmass)<br>Quartz --- Abundant irregular shape quartz crystals occupied the main part of groundmass.<br>Sericite --- Fine sericite crystals are scattered in the groundmass.<br>Chlorite --- Pale green color and low birefringence chlorite crystals are distributed in the groundmass.<br>Epidote --- High birefringence epidote crystals are scattered in the groundmass.<br>Opaque mineral --- Small grain of opaque minerals are scattered in the groundmass. | |
| MJ-3 188.5 | | | Altered (sericitized, chloritized, epidotized) Rhyolite | The rock is grayish green in color and show porphyritic structure | Under the microscope, the rock is porphyritic, and phenocryst composed of quartz, plagioclase and altered mafic mineral. Groundmass is made up of felsitic structure of quartz, sericite, chlorite and epidote.<br><br>(Phenocryst)<br>Quartz --- Partly corroded phenocrystic quartz smaller than 3mm are embeded in the groundmass of felsitic structure of quartz and sericite.<br>Plagioclase --- Idiomorphic, twinned crystals are present as phenocryst. The crystals are mostly altered into zoicite, epidote and sericite.<br>Mafic mineral --- Small amount of mafic mineral altered into chlorite and epidote.<br><br>(Groundmass)<br>Quartz --- Abundant fine quartz grains of felsitic structure is developed in the groundmass. | Vein quartz-epidote-ore mineral vein cut the rhyolite |

*Continued to next page.*

Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| | | | | | Sericite --- Fine sericite crystals are scattered in the quartzose groundmass.<br>Chlorite --- Chlorite of the pale green color is also distributed in the groundmass.<br>Epidote --- High birefringence epidote crystals are also scattered in the groundmass. | |
| MJ-3 195.4 | | | Altered (sericitized chloritized epidotized Quartz) Porphyry | The rock is gray in color, and show porphyritic structure. | Under the microscope, the rock is porphyritic and the phenocryst composed of quartz, plagioclase, altered mafic mineral and opaque mineral. Groundmass is made up of irregular shape quartz feldspar, chlorite, epidote, sericite and opaque mineral.<br><br>(Phenocryst)<br>Quartz --- Partly corroded quartz crystals smaller than 5mm are scattered in the groundmass.<br>Plagioclase --- Idiomorphic, smaller than 4mm twinned plagioclase crystals are present as phenocryst. Some parts are altered into needle sericite.<br>Altered mafic mineral --- Mafic phenocrysts smaller than 1mm are all altered into aggregate of epidote, chlorite and opaque mineral.<br>Opaque mineral --- Opaque mineral smaller than 0.3mm are scattered in the groundmass.<br><br>(Groundmass)<br>Quartz --- Abundant quartz crystals occupied main part of the groundmass.<br>Feldspar --- Feldspar crystals larger than quartz sporadically scattered in the groundmass.<br>Chlorite<br>Epidote --- Small grains of these minerals are<br>Sericite scattered in the groundmass.<br>Opaque mineral | |

## Appendix- Microscopic Observation

| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| MJ-3<br>272.3 | | | Altered<br>(sericitized<br>epidotized<br>chloritized)<br>Rhyolite | The rock is gray in color, and show porphyritic structure | Under the microscope, the rock is porphyritic and the phenocryst composed of quartz, altered plagioclase and altered mafic mineral. Groundmass is made up felsitic structure of quartz and sericite; epidote and chlorite are also scuttered in the groundmass.<br><br>(Phenocryst)<br>Quartz --- Partly corroded quartz crystals smaller than 3mm are scattered in the groundmass.<br>Altered Plagioclase --- All phenocrystic plagioclase smaller than 2mm are altered into sericite or epidote and zoicite crystals.<br>Altered mafic mineral --- All mafic mineral smaller than 2mm are altered into chlorite, epidote and opaque mineral.<br>Opaque mineral --- Opaque mineral smaller than 1mm are present as phenocryst.<br><br>(Groundmass)<br>Quartz --- Spheruritic quartz of 0.2mm diameter occupied the whole groundmass enclosing poikiliticaly sericite and other groundmass minerals.<br>Sericite --- Fine sericite are enclosed in the groundmass quartz.<br>Epidote<br>Chlorite --- Small grains of these minerals are scattered<br>Opaque in the groundmass.<br>Mineral | |

Appendix 2-1 Microscopic Observation - Thin Section (3)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | Drill Core MJ-4 86.50 | N1694.023 E 689.958 | Chicol F. | Garnet bearing epidote-quartz rock | Brown and yellowish brown parts are blended at random. | Principal minerals are epidote and quartz. Pale brown chlorite is also observed. Opaque minerals are accompanied by garnet. | |
| " | Drill Core MJ-4 92.60 | N1694.023 E 689.958 | Chicol F. | Garnet bearing quartz-epidote rock | Yellow and green, massive rock with pyrite impregnation, and showing alteration blending. | Groundmass is composed of quartz, epidote, garnet and chlorite. The rock is suffered weak mineralization. Opaque mineral (Pyrite) accompanied by garnet is scattered. | |
| " | Drill Core MJ-4 140.50 | N1694.023 E 689.958 | Chicol F. | Massive pyrite with minor amounts of epidote skarn. | Dense aggregate of granular pyrite | Principal minerals are mostly of opaque minerals (pyrite) including epidote, and a small amount of chlorite. | |
| " | Drill Core MJ-5 56.30 | N1693.927 E 690.113 | Intrusive rock | Altered granite | Altered holocrystalline rock. Green spots are scattered. | Principal minerals, of medium-grained, are quartz, perthitic potassium feldspar and altered biotite. Plagioclase is mostly altered into aggregates of sericite. Chlorite and epidote occur as secondary minerals in biotite. Opaque mineral is scattered and is accompanied by epidote. | |
| " | Drill Core MJ-5 75.80 | N1693.927 E 690.113 | Intrusive rock | Clastic granite | Sheared, pale green, medium-grained granitic rock. | Principal minerals are abundant quartz, feldspar and muscovite. Some parts of feldspar altered into sericite aggregate. | |

Appendix 2-1 Microscopic Observation - Thin Section (4)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | Drill Core MJ-5 93.80 | N1693.927 E 690.113 | Chicol F. | Sericite chlorite quartz schist | White pale grey banded rock impregneted by ore mass | Groundmass is composed of quartz and sericite which show arrangement in a direction. Veinlet of ore and quartz is observed. | |
| " | Drill Core MJ-5 119.30 | N1693.927 E 690.113 | Chicol F. | Skarn | Clastic part(structural ?) with massive pyrite and magnetite | Black opaque mineral is dominant. Clastic structure is shown. Quartz, feldspar and glass are seen. Groundmass is altered to epidote, chlorite and quartz. | |
| " | Drill Core MJ-5 119.43 | N1693.927 E 690.113 | Chicol F. | Epidote-sericite-quartz rock | Dark green, mineralized massive rock | Principal minerals are epidote, sericite, quartz and opaque mineral. Sericite is relatively coarse. Original rock is unknown. | |
| " | Drill Core MJ-5 120.40 | N1693.927 E 690.113 | Chicol F. | Garnet bearing epidote-quartz rock | Pale green, porous | Principal minerals are, as a matter of course, epidote, quartz and garnet. Garnet is granular in shape. | |
| " | Drill Core MJ-6 46.10 | N1694.009 E 690.848 | Intrusive rock | Altered dacite | Grey, siliceous rock with magnetite dissemination | Rock are altered to quartz and fine sericite. Opaque mineral is scattered | X-ray Diffractometry |
| " | Drill Core MJ-6 57.10 | N1694.009 E 690.848 | Intrusive rock | Altered dacite | White altered rock, showing fluidal structure. Altered phenocrysts are seen. | Structure is fluidal. Phenocrysts are of quartz, plagioclase and unidentified mafic mineral. The matrix is devitrified and altered into quartzose matter, including sericite. These secondary minerals run parallel to each other. | |

## Appendix 2-1 Microscopic Observation - Thin Section (5)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | Drill Core MJ-6 98.45 | N1694.009 E 690.848 | Chicol F. | Conglomerate schist | Rock is stratified and coarse rock fragments are seen. | Quartz grain is fresh and fragmental. Feldspar is weekly altered to sericite-quartz. Matrix is strongly suffered to sericite and quartz. | |
| " | Drill Core MJ-6 119.50 | N1694.009 E 690.848 | Chicol F. | Sericite quartz schist | Pale green rock. | Quartz and plagioclase grains are observed and plagioclase is altered. Matrix is suffered sericite-quartz-epidote alteration. | |
| " | Drill Core MJ-7 36.20 | N1693.890 E 690.260 | Tactic F. | Altered sand-stone | White, medium-grained sandstone, including felsic fragments | Subangular grains of quartz and altered feldspar are scattered, together with a small amount of biotite in the matrix composed of sericite and opaque mineral accompanied by biotite. | |
| " | Drill Core MJ-7 76.55 | N1693.890 E 690.260 | Tactic F. | Altered sand-stone | Yellowish white, coarse-grained sand-stone | Subangular grains of quartz, altered plagioclase and a small amount of muscovite flakes are scattered in the matrix composed of sericite. | |
| " | Drill Core MJ-7 126.30 | N1693.890 E 690.260 | Chicol F. | Chlorite-tremolite-epidote rock with opaque mineral | | Principal minerals are epidote, quartz and opaque mineral. Accessories are actinolite and chlorite. These minerals run parallel to each other. Opaque mineral occurs as veinlet or dissemination. | |
| " | Drill Core MJ-7 181.70 | N1693.890 E 690.260 | Intrusive rock | Altered rhyolite or quartz porphyry | Greenish grey, compact rock | Phenocryst is of partly sericitized plagioclase sericite and opaque minerals. Veinlets composed of epidote, opaque mineral and quartz are observed. | |

## Appendix 2-1 Microscopic Observation - Thin Section (6)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | Drill Core MJ-7 196.30 | N1693.890 E 690.260 | Intrusive rock | Altered rhyolite or quartz porphyry | Greyish white, silicified rock | Glass in the groundmass is devitrified and altered into quartzose matter and sericite, accompanied by opaque mineral. Veinlets of quartz, opaque mineral and epidote are observed. | |
| " | Drill Core MJ-7 200.80 | N1693.890 E 690.260 | Chicol F. | Sericite chlorite quartz schist (Rhyolite tuff origin?) | Greenish grey, compact rock | Fragments of pumice and chips composed of quartz, plagioclase and mefic mineral are scattered in the altered matrix. Fragments of pumice and chips of plagioclase are wholly altered into sericite. Mefic minerals are also altered into secondary quartz, epidote, chlorite and opaque mineral. Veins composed of secondary quartz, chlorite, epidote and opaque mineral are observed. | |
| " | Drill Core MJ-7 206.70 | N1693.890 E 690.260 | Chicol F. | Quartz schist | White and bluish grey parts are banded. White part is coarser than bluish grey part | Black opaque mineral are scattered. Quartz and feldspar grains small in quantity are observed. Matrix is composed of fine quartz and sericite and shows arrangement of one direction. | |
| " | Drill Core MJ-7 222.10 | N1693.890 E 690.260 | Chicol F. | Sericite chlorite quartz schist (Rhyolite tuff origin?) | Pale greenish grey, compact siliceous rock | Chips of quartz, plagioclase, and fragments of pophyritic rock and pumice are scattered in the matrix. The matrix are altered and composed of sericite. Veinlets of quartz, chlorite, epidote and muscovite are observed. | |
| " | Drill Core MJ-7 224.00 | N1693.890 E 690.260 | Intrusive | Altered quartz porphyry | Greenish grey, siliceous rock | Phenocryst is quartz. Glass in the groundmass is devitrified and altered into quartzose matter, including sericite. Veinlets of quartz, chlorite and epidote are present. | |

Appendix 2-1 Microscopic Observation - Thin Section (7)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | Drill Core MJ-7 224.80 | N1693.890 E 690.260 | Intrusive | Altered granite | Pale greyish white, coarse-grained granitic rock | Principal minerals, of coarse-grained, are quartz, plagioclase and potassium feldspar. Small amounts of epidote, chlorite and sericite occur as secondary minerals. Opaque mineral is present, accompanied by epidote. | |
| " | Drill Core MJ-7 242.40 | N1693.890 E 690.260 | Intrusive | Altered quartz porphyry | Greyish white | Phenocryst is a small amount of quartz. Groundmass is composed of quartz, epidote, zoisite, sericite and muscovite. | |
| " | Drill Core MJ-7 251.90 | N1693.890 E 690.260 | Intrusive rock | Altered quartz porphyry | Greenish grey, compact rock | Phenocryst is of quartz, plagioclase and unidentified mafic mineral altered into aggregate of chlorite and epidote. The groundmass is felsic and is composed of quartz, feldspar and chlorite. Veinlets of epidote, chlorite and secondary quartz are present. | |
| " | Drill Core MJ-7 266.00 | N1693.890 E 690.260 | Intrusive rock | Altered quartz porphyry | Pale greenish grey, compact porphyritic rock | Phenocryst is of quartz, plagioclase. Unidentified mafic mineral altered into chlorite, epidote and opaque mineral. Some parts of plagioclase are altered into sericite. The groundmass is composed of quartz, feldspar sericite and epidote. Veinlet of sericite is observed. | |
| " | Drill Core MJ-8 6.05 | N1694.198 E 690.400 | Santa Rosa | Sandy shale | Pale green, weathered, fine-grained, loose rock | Subangular or subrounded grains of quartz and feldspar scattered in the altered matrix, composed of sericite and biotite. Opaque mineral is also observed. | |

## Appendix 2-1 Microscopic Observation - Thin Section (8)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | Drill Core MJ-8 88.60 | N1694.198 E 690.400 | Intrusive rock | Quartz porphyry | Pale green, compact rock | Texture is vitroclastic. Phenocryst are of quartz and feldspar. Feldspar is altered into sericite and epidote. Groundmass is altered into sericite and quartzose matter. | |
| " | Drill Core MJ-8 112.90 | N1694.198 E 690.400 | Intrusive rock | Quartz porphyry | Yellowish grey, compact rock. Felsic grains are scattered. | Texture is vitroclastic. Phenocrysts of quartz and plagioclase are large in quantity. Albite twin of plagioclase can be observed. Matrix is altered to sericite and quartz. Epidote and apatite are also observed. | |
| " | Drill Core MJ-8 126.85 | N1694.198 E 690.400 | Intrusive rock | Granite | Holocrystalline granitic rock suffered to green alteration | It shows holocrystalline texture and is composed of quartz, plagioclase, orthoclase and biotite. Orthoclase is suffered sericitization. Epidote is also formed. | |
| " | Drill Core MJ-8 142.00 | N1694.198 E 690.400 | Intrusive rock | Quartz porphyry | Fine siliceous rock. Felsic crystals are scattered. | Principal minerals are angular quartz and plagioclase. Groundmass is composed of quartz, feldspar and sericite. A small amount of epidote is seen. | |

## Appendix- Microscopic Observation - Thin Section (9)

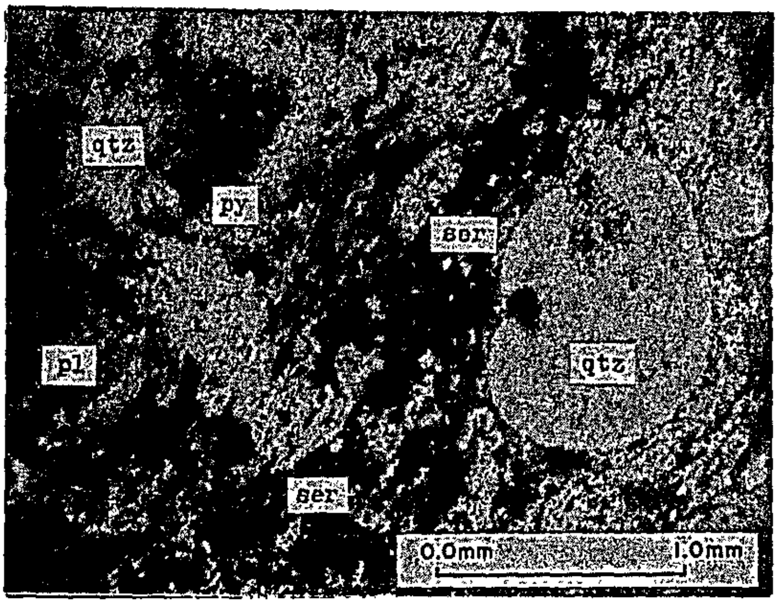
| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| Drill Core MJ-9 92.60 | N1693.511 E 691.075 | Chicol F. | Pyrite-sphalerite ore in chlorite skarn. | Pyrite and sphalerite grains are richly disseminated in dark gray gangue matrix. | Sphalerite is transparent and shagreen in thin section, and occurs as dense aggregates of anhedral crystals of 0.1 to 0.5mm in diameter. Sometimes it penetrates the grains of pyrite having the shape of minute veinlets. Replaced with chlorite. Pyrite is mostly anhedral to subhedral, but rarely keeps the cube-shaped euhedral crystal form. It occurs to have two sorts of grain size. Coarser grains are of 0.5 to 1.5mm in diameter and show anhedral to subhedral form surrounded and replaced by sphalerite and chlorite, whereas finer grains exhibit subhedral to euhedral form of 0.05mm ± in diameter included in sphalerite. Sphalerite and pyrite are cemented and replaced with radial or fibrous aggregates of acicular chlorite crystals. | |
| MJ-9 98.80 | N1693.511 E 691.075 | Intrusive rock | Porphyrite | White grey, altered rock. Felsic phenocrysts are scattered and pyrites disseminate. | Phenocryst is altered plagioclase. This rock is suffered wholly strong silicification. Groundmass is composed of relatively coarse sericite and quartz. Epidote is seen small in quantity. | |

Appendix 2-1 Microscopic Observation - Thin Section (10)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | Drill Core MJ-9 104.75 | N1693.511 E 691.075 | Chicol F. | Garnet Skarn | Dark grey, massive rock | Garnet is zoned hexagonal in shape. Opaque mineral (Pyrite) occurs in dissemination or veinlet. | |
| " | Drill Core MJ-9 105.20 | N1693.511 E 691.075 | Vein | Quartz rock (Vein) | White compact rock | Principal mineral is quartz which is usually holocrystalline granular or idiomorphic hexagonal shape. (Sericite is also formed.) Black opaque and reddish needle-like minerals are scattered. | |
| " | Drill Core MJ-9 138.90 | N1693.511 E 691.075 | Chicol F. | Garnet-epidote-actinolite rock (Skarn) | Yellowish green, massive rock | Principal minerals are garnet, epidote and tremolite. Opaque mineral accompanied by tremolite occurs mainly in garnet. | |
| " | Drill Core MJ-10 81.20 | N1694.175 E 690.135 | Intrusive rock | Quartz porphyry | Grey, laminated rock | Phenocrysts are plagioclase and a small amount of quartz. Groundmass is altered into sericite and quartzose matter. Veinlets of quartz are observed. | |
| " | Drill Core MJ-10 118.00 | N1694.175 E 690.135 | Intrusive | Altered quartz porphyry | Pale green, altered rock. Felsic phenocrysts are scattered. | Phenocryst is quartz which is 1.5mm in diameter. Groundmass is composed of quartz and sericite which are coarse and show granular texture. Veinlets of quartz are observed. | |
| " | Drill Core MJ-10 126.50 | N1694.175 E 690.135 | | Quartz-epidote rock | Yellow and green parts are blended at random. | Principal minerals are quartz and epidote. Quartz is relatively coarse, 0.2mm in diameter. Veinlets of quartz are observed. Poikilitic and granular opaque minerals are scattered. | X-ray Diffractometry |

Appendix 2-1 Microscopic Observation - Thin Section (11)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | Drill Core MJ-10 149.70 | N1694.175 E 690.135 | Intrusive | Altered quartz porphyry | Pale bluish green rock. Green phenocrysts are scattered. | Phenocrysts are composed of quartz, plagioclase and altered mafic mineral. Unidentified mafic mineral is completely altered into sericite and chlorite. Groundmass is composed of quartz, sericite, chlorite and apatite in decreasing order. Opaque mineral is observed. | |

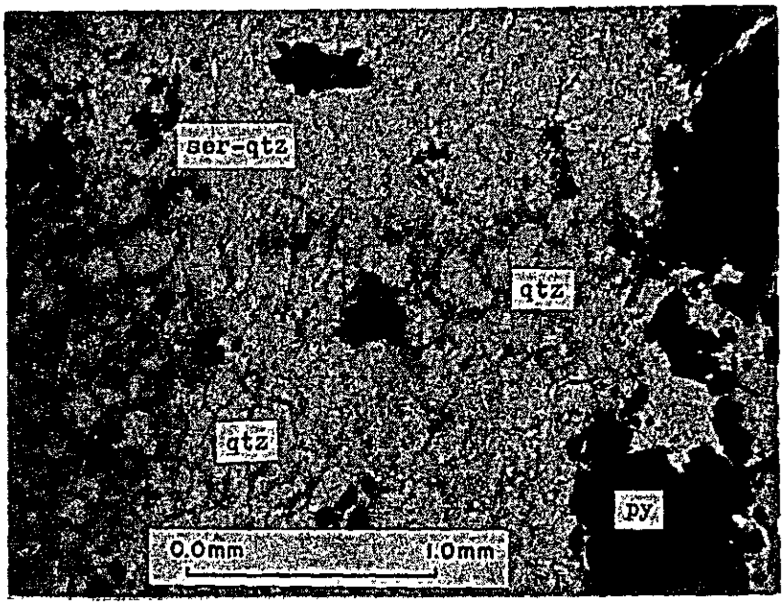



Sericite-chlorite
quartz schist

Sample No. Drill core MJ-7
222.10m

Locality Llano del Coyote

qtz : Quartz
pl : Plagioclase
ser : Sericite
py : Pyrite

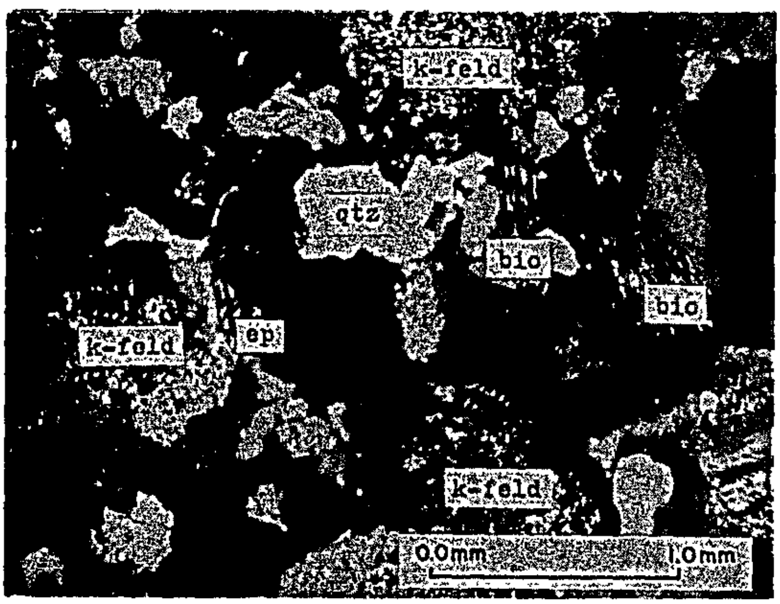



Altered sandstone

Sample No. Drill core MJ-7
76.55m

Locality Llano del Coyote

qtz : Quartz
ser-qtz : Sericite-quartz aggregate

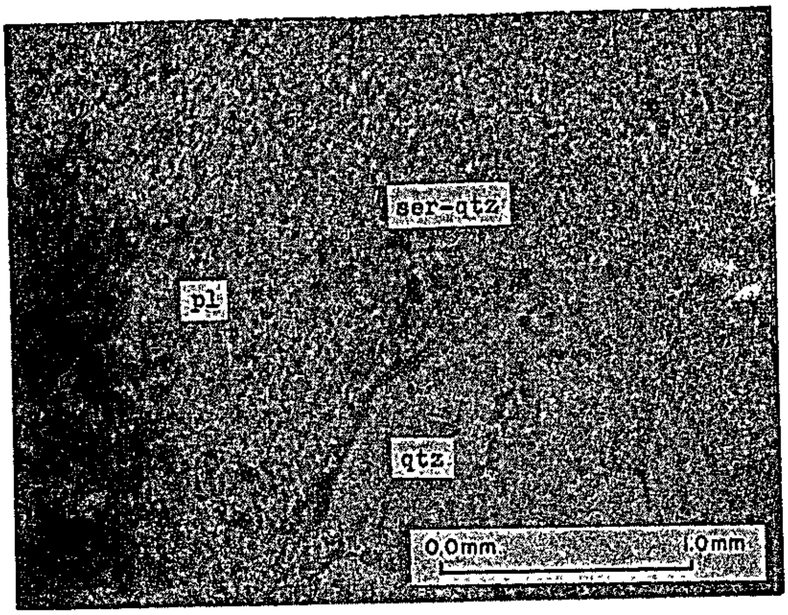



Altered hornblande
biotite granodiorite

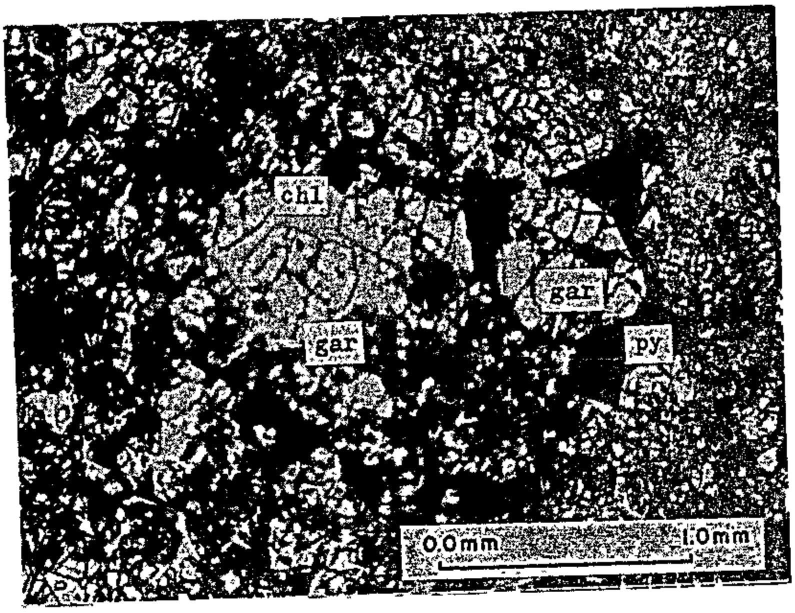
Sample No. J-94

Locality Llano del Coyote

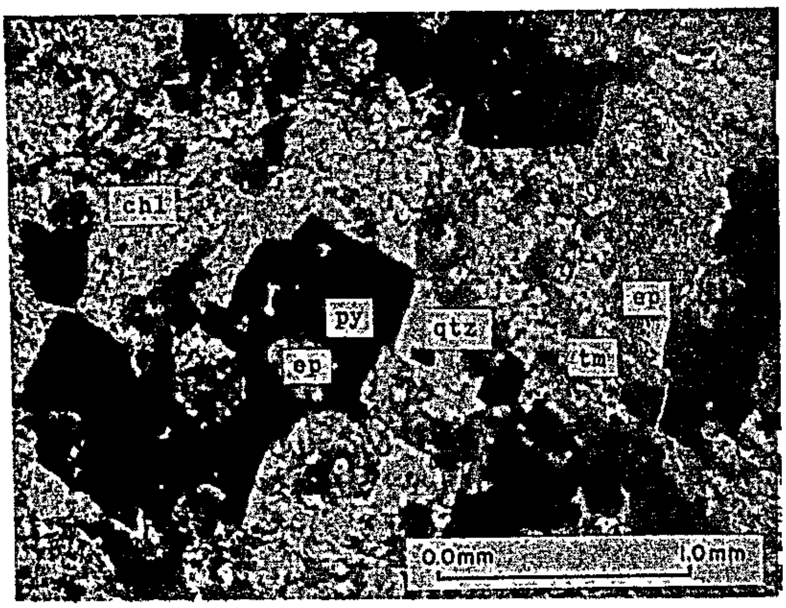
qtz : Quartz
k-feld : Potash feldspar
bio : Biotite
ep : Epidote



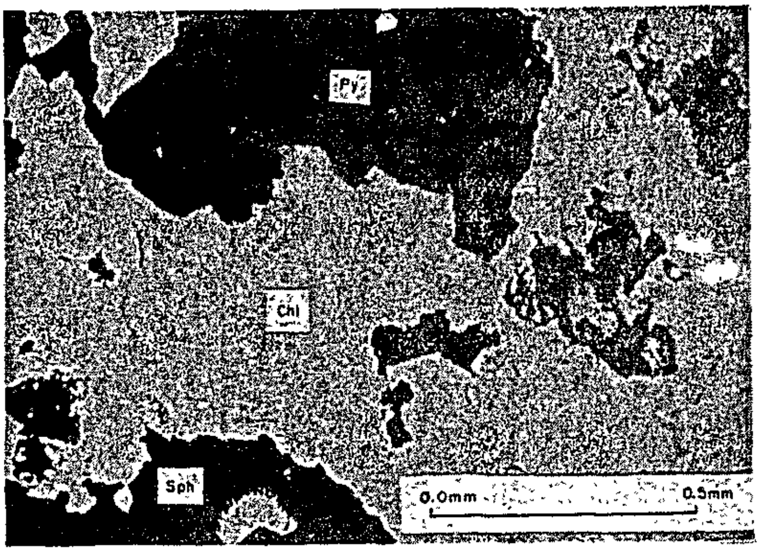

Altered quartz porphyry
Sample No. Drill core MJ-10
118.00m
Locality Llano del Coyote
qtz : Quartz
pl : Plagioclase
ser-qtz : Sericite-quartz aggregate
Open nicol



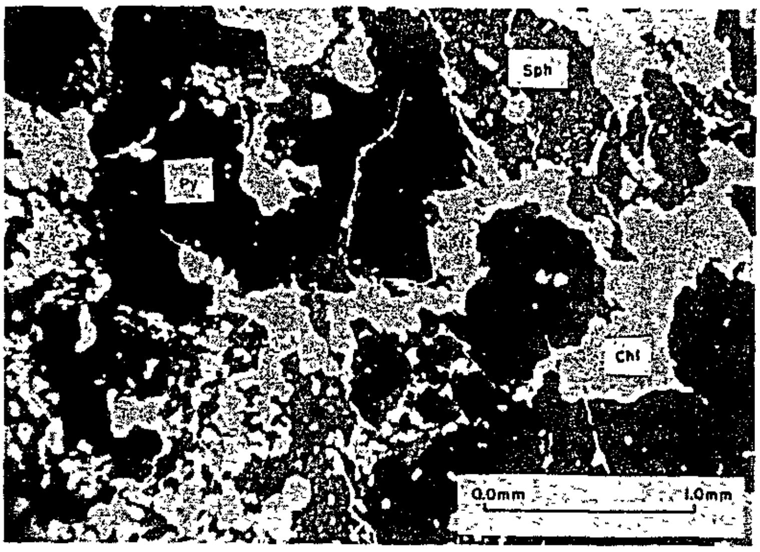

Garnet skarn
Sample No. Drill core MJ-9
104.75m
Locality Llano del Coyote
gar : Garnet
chl : Chlorite
py : pyrite



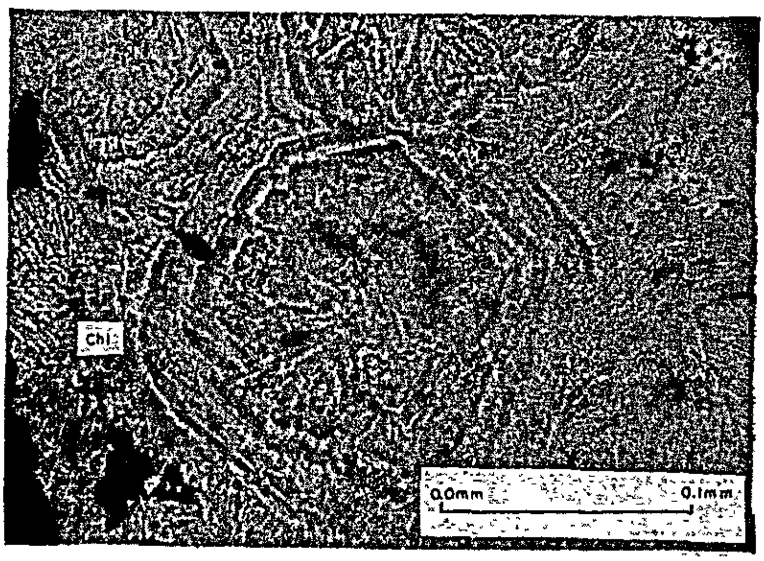

Chlorite-tremolite-epidote skarn
Sample No. Drill core MJ-7
126.30m
Locality Llano del Coyote
qtz : Quartz
ep : Epidote
tm : Tremolite
chl : Chlorite
py : Pyrite




Pyrite-sphalerite ore
Sample No. Drill core MJ-9
92.60m
Locality : Llano del Coyote
Chl : Chlorite
Py : Pyrite
Sph : Sphalerite
x10




Pyrite-sphalerite ore
Sample No. Drill core MJ-9
92.60m
Locality : Llano del Coyote
Chl : Chlorite
Py : Pyrite
Sph : Sphalerite
x4




Pyrite-sphalerite ore
Sample No. Drill core MJ-9
92.60m
Locality : Llano del Coyote
Chl : Chlorite
x40

Appendix 3-1 Microscopic Observation - Polished Section (1)

| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | J 51 | N1693.45<br>E 691.10 | Tactic | Limonite gossan | Irregular network veinlets of sub-metallic mineral in porous brick-like red matrix. | Limonite -- Colloidal deposition of limonite filling up the cracks and cavities in gangue. No sulfides are observable. | Chemical analysis:<br>Ag 1g/t, Cu 0.02%,<br>Pb Tr, Zn 0.01%,<br>S 0.09%,<br>Fe 30.77%,<br>Mn 0.12%. |
| " | J 103 | N1693.85<br>E 691.00 | Tactic | Massive magnetite and hematite | Thick aggregate of fine-grained dark grey metallic magnetic mineral. Magnetism is a little weaker than pure magnetite. | Magnetite -- Aggregate of short-prismatic crystals of about 0.02mm x 0.05mm size.<br>Hematite -- Magnetite crystals are significantly changed to hematite showing lattice-like texture. | X-ray:<br>Appendix 5<br><br>Chemical analysis:<br>Ag 1g/t, Cu 0.01%,<br>Pb Tr, Zn 0.01%,<br>S 0.02%,<br>Fe 40.16%,<br>Mn 0.18%. |
| " | K 21 | N1694.21<br>E 690.04 | Tactic | Manganese oxide ore | Massive black sub-metallic mineral, partly fibrous. Not magnetic. | Chalcophanite ($Zn Mn_3 O_7 - 3H_2O$)<br>-- Aggregate of minute fibrous acicular crystals. Anisotropism is distinct. No internal reflection. Identified by X-ray. | Microphotograph:<br>Appendix 3-2<br><br>Chemical analysis:<br>Ag 15g/t,<br>Cu 0.05%, Pb 0.24%<br>Zn 3.75%, S 0.08%,<br>Fe 42.03%,<br>Mn 37.91%.<br><br>X-ray diffractometry:<br>6.95 Å (100)<br>4.07 Å ( 10)<br>3.49 Å ( 20) |
| " | K 159 | N1695.05<br>E 687.78 | Tactic | Skarn with pyrite and magnetite | Dissemination of irregular shaped pyrite aggregates in green epidote skarn. Partly magnetic. | Pyrite -- Subhedral grains of 0.05 ~ 0.3mm φ with many minute inclusions are dispersed. Fine cracks are developed in these grains.<br>Magnetite -- It occurs as irregular euhedral crystals of 0.02 ~ 0.1mm φ in gangue minerals. | Chemical analysis:<br>Au 0g/t, Ag 1g/t,<br>Cu 0.01%, Pb Tr,<br>Zn 0.01%, S 4.00%,<br>Fe 16.92%,<br>Mn 0.06%. |

Appendix 3-1 Microscopic Observation - Polished Section (2)

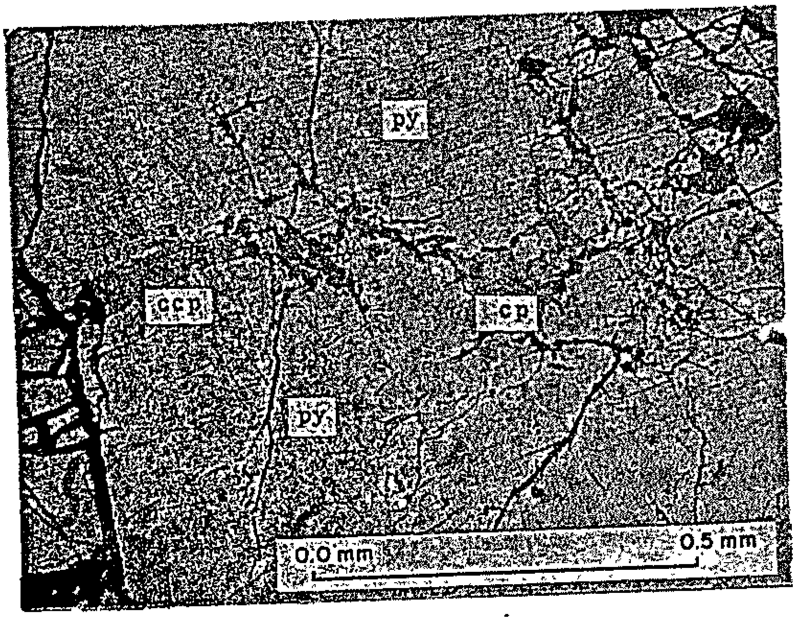
| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | S 28A | N1694.68<br>E 688.95 | Tactic | Porphyritic rock with magnetite dissemination | Poor dissemination of dark grey metallic magnetic mineral in white-spot bearing siliceous rock. | Magnetite -- Irregular-shaped dense aggregate of granular crystals with many inclusions. In the magnetite crystals, light grey mineral (maybe hematite) is formed along crystallographic directions showing lettice-like or lamella texture. | Chemical analysis:<br>Au 0g/t, Ag 2g/t,<br>Cu 0.04%, Pb Tr,<br>Zn 0.28%, S 0.51%,<br>Fe 23.60%,<br>Mn 0.17%. |
| " | S 42 | N1693.95<br>E 691.28 | Tactic | Skarn with magnetite | Banded aggregate of dark grey metallic magnetic fine-grained crystals in green epidote skarn. | Magnetite -- Dissemination and aggregate of euhedral crystals of about 0.05mmϕ.<br>Hematite -- It occurs secondarily in magnetite grains showing lettice-like form. Some of the magnetite grains are almost fully oxidized to hematite. | Microphotograph:<br>Appendix 3-2<br><br>Chemical analysis:<br>Au 0g/t, Ag 1g/t,<br>Cu Tr, Pb Tr,<br>Zn 0.01%, S 0.12%,<br>Fe 28.63%,<br>Mn 0.20%. |
| " | S 123 | N1694.54<br>E 689.24 | Tactic | Limonite gossan | Porous light brown limonitic rock (gossan) | Hematite and/or hydro-hematite<br>-- Colloform texture is distinct, sometimes oolitic. Veinlets of 0.002mm± width are developed throughout the specimen. Rhythmical banding is recognized by means of faint difference of reflexion color. | Chemical analysis:<br>Ag 2g/t, Cu 0.08%,<br>Pb 0.06%, Zn 1.00%<br>S 0.13%,<br>Fe 47.10%,<br>Mn 0.17%. |
| " | Drill Core<br>MJ 7<br>82.75 | N1693.890<br>E 690.260 | Chicol | Massive pyrite with magnetite and skarn | Dense aggregate of granular pyrite crystals in dark grey, strongly magnetic matrix. | Pyrite -- Major constituent mineral occurring as aggregate of euhedral to subhedral crystals larger than 0.2mmϕ, and including minute magnetite grains of about 0.05mmϕ.<br>Magnetite -- Other than the granular crystals included in pyrite, it occurs in the interstitial gangue minerals and shows granular to short-prismatic shape.<br>Hematite -- It replaces the magnetite crystals to form fibrous crystals, also occurs in gangue as fibrous aggregate. | Chemical analysis:<br>Depth 81.60m ~<br>82.75m (1.15m),<br>Ag 2g/t, Cu 0.09%,<br>Pb Tr, Zn 0.02%,<br>S 9.95%,<br>Fe 20.22%,<br>Mn 0.17%. |

Appendix 3-1 Microscopic Observation - Polished Section (3)

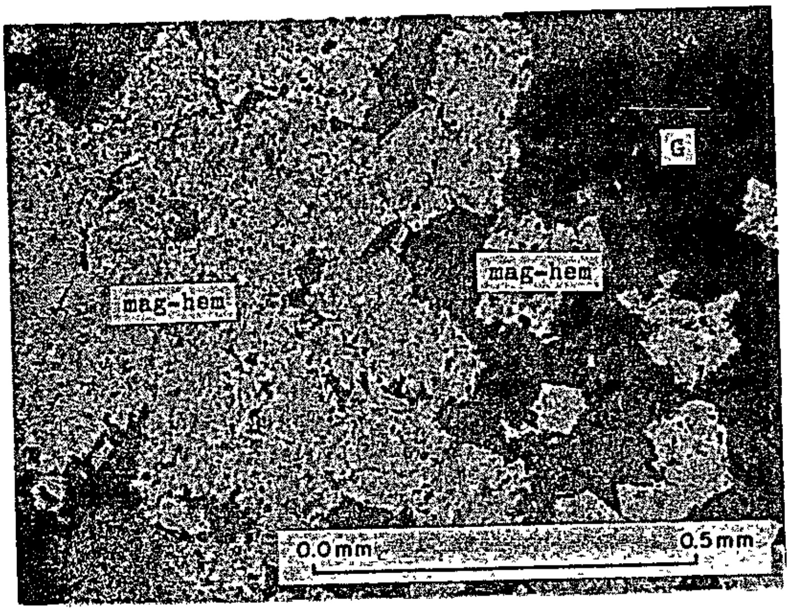
| Area | Sample No. | Location (Coordinate) | Group | Rock Type | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|---|
| Llano del Coyote | Drill Core MJ-7 123.35 | N1693.890 E 690.260 | Chicol | Skarn with pyrite dissemination | Vein-form aggregate of granular pyrite in dark grey rock of weak magnetism. | Pyrite -- Aggregate of euhedral (cube-shaped) to subhedral crystals of 0.02 ∿ 0.5mm ϕ.<br>Chalcopyrite -- Rarely included in pyrite grains showing euhedral shape.<br>Magnetite -- In granular and anisotropic gangue minerals occurring in the interstices of pyrite grains, granular crystals of magnetite with the size of about 0.02mm are scattered. | Microphotograph: Appendix 3-2<br><br>Chemical analysis: Depth 122.30m ~ 123.60m (1.30m)<br>Au 0g/t, Ag 2 g/t<br>Cu 0.01%,<br>Pb Tr ,<br>Zn 0.14%,<br>Fe 26.54%,<br>Mn 0.22%, |
| " | Drill Core MJ-7 192.40 | N1693.890 E 690.260 | Chicol | Massive magnetite | Massive aggregate of dark grey, metallic and strongly magnetic grains of magnetite. | Magnetite -- Thick aggregate of minute granular crystals of magnetite having the size of about 0.01mmϕ. Gangue minerals are included abundantly in the interstices.<br>No sulfides are observable. | Chemical analysis: Depth 191.70m ~ 192.40m (0.70m)<br>Au 0g/t, Ag 1 g/t<br>Cu 0.02%,<br>Pb Tr ,<br>Zn 0.01%,<br>Fe 9.45%,<br>Mn 0.05%, |
| " | Drill Core MJ-9 75.00 | N1693.511 E 691.075 | Tactic | Disseminated pyrite with alterating minerals | Thick aggregate of fine-grained granular pyrite. Not magnetic. | Pyrite -- Cube-shaped euhedral crystals of 0.05 ∿ 0.5mmϕ are cemented with gangue minerals.<br>Limolite -- It occurs along the peripheries and cracks of pyrite grains, having the width of 0.01 ∿ 0.02mm. | X-ray diffractometry: Quartz, Plagioclase, Sericite, Chlorite, Montmorillonite. |

## Appendix- Microscopic Observation - Polished Section (4)

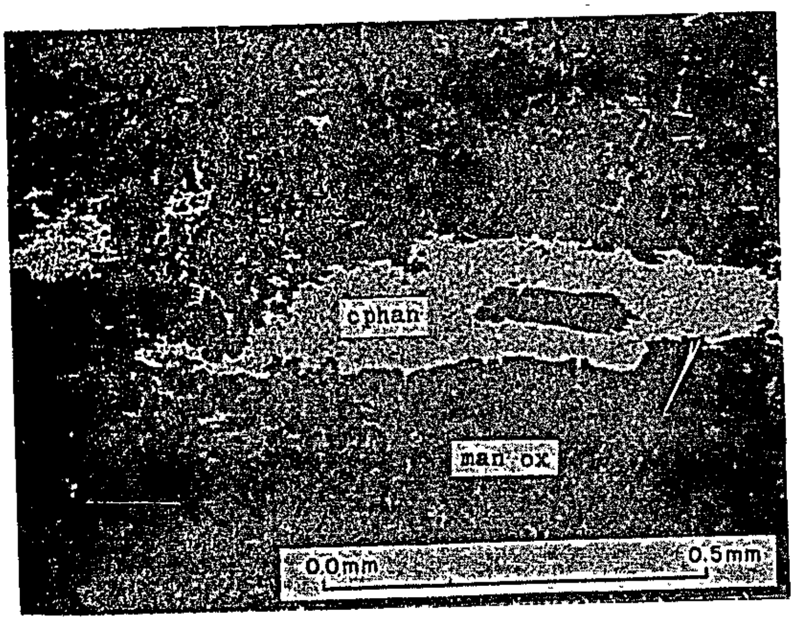
| Sample No. | Location | Formation or Group | Rock Name | Macroscopic Features | Microscopic Observation | Remarks |
|---|---|---|---|---|---|---|
| Drill Core MJ-9 82.50 | N1693.511 E 691.075 | Tactic | Pyrite-chalcocite ore | Pyrite grains are cemented with limonite and steely black chalcocite-like mineral. | Pyrite grains are generally anhedral, and their grain size varies diversely from 0.05mm to 5mm. These pyrite grains are cut and cemented with limonite, gangue with bluish green internal reflection, and light gray minerals with various shades of pink and blue. Light gray mineral with pinkish tint is substantially isotropic, and does not show reflection pleochroism and internal reflection. It is perhaps a kind of so-called "chalcocite". Light gray mineral with bluish tint is weakly anisotropic, and does not show reflection pleochroism and internal reflection. It is presumably digenite. The pinkish one is cut and covered botryoidally with the bluish one.<br>Roughly separated specimen of the light gray material is proved to contain djurleite by X-ray powder diffraction. | Chemical analysis: Depth 82.30-82.90m (0.60m) Au 1g/t, Ag 11g/t, Cu3.80%, Pb 0.01%, Zn 0.80%, Fe 34.32%, Mn 0.19%, |
| MJ-9 92.60 | N1693.511 E 691.075 | Chicol | Pyrite-sphalerite ore in chlorite (amphibole) skarn | Pyrite and sphalerite grains are richly disseminated, in dark gray gangue matrix | Sphalerite and pyrite show the modes of occurrence .<br>Same as described about observation in thin section. (cf Appendix 2-1). Under the reflected light, sphalerite exhibits weak internal reflection of light brownish gray color. No chalcopyrite or galena is included. | Chemical analysis:Depth 92.50-93.00m (0.50m) Au 0 g/t, Ag 4 g/t, Cu 0.10%, Pb Tr, Zn 17.12%, Fe 29.08%, Mn 0.16%, |
| MJ-10 56.60 | N1694.175 E 690.135 | Tactic | Quartzose rock with pyrite dissemination | Thick dissemination of fine-grained pyrite in siliceous rock. Not magnetic. | Pyrite -- Subhedral grains of 0.05 ∿ 0.5mmϕ are cemented by gangue minerals. No other kind of ore minerals is observable. | Chemical analysis: Depth 56.10∿57.10m (100m) Ag2 g/t Cu Tr Pb Tr Mn Tr , Zn Tr Fe 33.69%, |



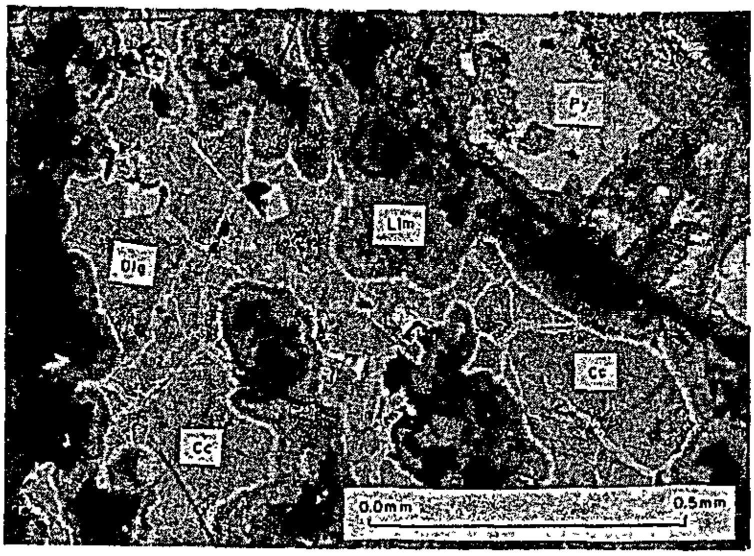

Pyrite-chalcopyrite ore
Sample No. Drill core MJ-7
123.35m
Locality Llano del Coyote
py : Pyrite
cp : Chalcopyrite



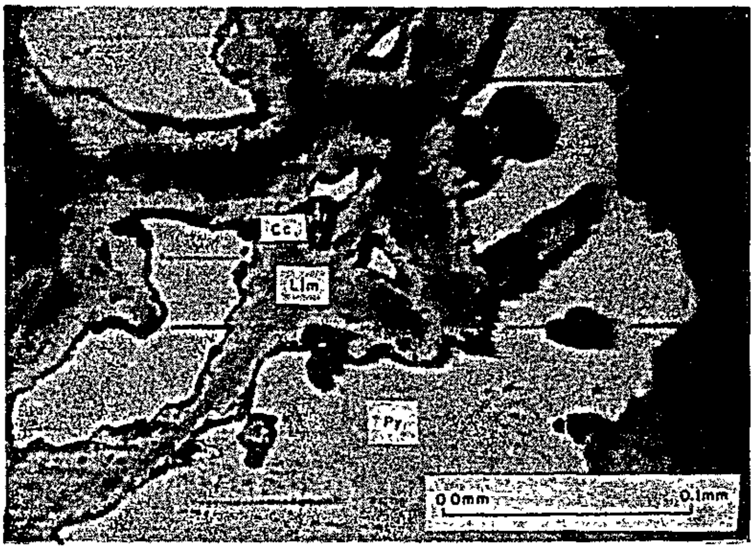

Magnetite-hamatite ore
Sample No. S42
Locality Llano del Coyote
mag-hem : Magnetite (light gray) and hematite (gray)
G : Gangue




Manganese oxide ore
Sample No. K21
Locality Llano del Coyote
cphan : Chalcophanite
man ox: Manganese oxide




Pyrite-Chalcocite ore
Sample No. Drill core MJ-9
82.50m
Locality: Llano del Coyote
Lim : Limonite
Py : Pyrite
Cc : Chalcocite
Dig : Digenite
x10




Pyrite-chalcocite ore
Sample No. Drill core MJ-9
82.50m
Locality : Llano del Coyote
Lim : Limonite
Py : Pyrite
Cc : Chalcocite
x40


Pyrite-sphalerite ore
Sample No. Drill core MJ-9
92.60m
Locality : Llano del Coyote
Chl : Chlorite
Py : Pyrite
Sph : Sphalerite
x10

## Appendix 4-1 Summary of X-ray Powder Diffractometry

| Sample No. | Location (Coordinate) N | Location (Coordinate) E | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J 7A | 1694.51 | 689.95 | Quartz porphyry | +++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 8 | 1694.59 | 690.04 | Sandstone | + | - | ++ | - | - | + | + | ++ | ++++ | - | - | - | | |
| 10 | 1694.60 | 689.85 | Quartz porphyry | ++ | +++ | - | + | - | +++ | - | - | - | - | - | - | | |
| 15 | 1694.34 | 688.24 | Granite | ++ | ++ | - | + | - | - | - | - | - | + | - | - | | |
| 17 | 1694.44 | 688.42 | Sandstone | + | ++ | - | ++ | - | - | + | - | - | - | - | - | | |
| 19 | 1694.62 | 688.35 | Granodiorite | + | +++ | +++ | + | - | - | ++ | - | - | - | - | - | | |
| 23 | 1694.97 | 688.22 | Sericite schist | +++ | - | - | +++ | - | - | - | - | - | - | - | - | | |
| 26 | 1695.11 | 688.37 | Acidic volcanic rocks | + | ++ | - | ++ | - | - | - | - | - | - | - | - | | |
| 32 | 1695.31 | 688.55 | Green schist | ++ | ++ | - | ++ | - | - | - | - | - | - | - | - | | |
| 37 | 1695.65 | 688.08 | Granodiorite | + | ++ | - | + | ++ | - | - | - | - | +++ | - | - | | |
| 38 | 1695.56 | 688.05 | Granodiorite | ++ | ++ | - | ++ | - | - | - | - | - | + | - | - | | |
| 40 | 1695.41 | 688.29 | Acidic volcanic rocks | ++ | ++ | - | ++ | - | + | + | - | - | +++ | - | - | | |
| 41 | 1695.32 | 688.22 | Green schist | + | ? | - | ++++ | - | +++ | ++++ | - | - | - | - | - | | |
| 45 | 1694.63 | 687.73 | Granite | ++ | ++ | - | + | - | - | - | - | + | + | - | - | | |
| 55 | 1693.54 | 691.53 | Quartz porphyry | + | ++ | - | + | - | ++++ | ++ | - | - | - | - | - | | |
| 58 | 1693.66 | 691.64 | Acidic volcanic rocks | ++ | - | - | +++ | - | - | - | - | - | - | - | - | | |
| 65 | 1693.89 | 691.18 | Quartz porphyry | + | ++++ | - | + | - | ++ | ++ | - | - | - | - | - | | |
| 84 | 1692.66 | 691.46 | Granite | ++ | ++ | - | + | - | - | - | - | - | + | - | - | | |
| 90 | 1692.63 | 691.19 | Granodiorite | + | ++ | - | + | ++++ | - | - | - | - | + | - | - | | |
| 94 | 1692.94 | 691.28 | Granodiorite | + | ++ | - | + | - | ++ | ++ | - | ++ | - | - | - | | |

++++ Very abundant  +++ Abundant  ++ Common  + A little  - Not detected

## Appendix 4-1 Summary of X-ray Powder Diffractometry

| Sample No. | Location (Coordinate) N | Location (Coordinate) E | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J 96 | 1693.62 | 691.09 | Siltstone | + | - | - | - | - | - | - | - | ++++ | - | - | - | | |
| 98 | 1693.71 | 691.08 | Siltstone | + | - | - | - | - | - | - | - | ++++ | - | - | - | | Chart: Appendix 5(1) |
| 101 | 1693.78 | 691.13 | Skarn | + | - | - | - | - | + | +++ | - | ++++ | - | - | - | | |
| 102 | 1693.82 | 691.00 | Granodiorite | + | +++ | - | ++ | - | ++ | - | - | - | - | - | - | | |
| 103 | | | Magnetite mineralized siliceous rock | +++ | - | - | - | - | - | - | - | - | - | ++++ | - | Magnetite | Chart: Appendix 5(2) |
| 104 | 1693.91 | 691.03 | Quartz porphyry | +++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 105 | 1693.76 | 690.88 | Siltstone | ++ | - | - | + | - | + | - | - | - | - | + | - | | |
| 107 | 1693.88 | 690.92 | Siltstone | ++ | + | - | ++ | +++ | - | - | - | - | - | - | - | | |
| 109 | 1693.89 | 690.74 | Sandstone | ++ | - | - | ++++ | - | - | - | - | - | - | - | - | | |
| 111 | 1693.80 | 690.63 | Quartz porphyry | ++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 114 | 1693.59 | 690.68 | Quartz porphyry | ++ | - | - | ++++ | - | - | - | - | - | - | - | - | | |
| 115 | 1693.50 | 690.84 | Sandstone | ++ | - | - | ++++ | - | - | - | - | - | - | - | - | | Chart: Appendix 5(3) |
| 116 | 1693.62 | 690.95 | Siltstone | + | - | - | - | - | - | - | - | ++++ | - | - | - | | |
| 117 | 1693.55 | 691.02 | Siltstone | + | +++ | - | + | - | ++ | ++ | - | ++ | - | - | - | | |
| 119 | 1693.45 | 690.95 | Sandstone | ++ | - | - | +++ | - | - | - | - | - | - | - | - | | |
| 120 | 1693.39 | 690.89 | Granodiorite | + | - | - | + | - | ++++ | - | - | - | - | - | - | | |
| 123 | 1692.85 | 692.03 | Siltstone | ++ | +++ | - | + | - | ++ | ++++ | - | ++ | - | - | - | | |
| 124 | 1692.88 | 692.13 | Siltstone | ++ | +++ | - | + | - | + | - | - | - | - | - | - | | |
| 125 | 1692.94 | 692.25 | Siltstone | ++ | - | - | ++ | - | +++ | + | - | - | - | - | - | | |
| 126 | 1692.97 | 692.32 | Acidic volcanic rocks | ++ | ++ | - | + | - | - | - | - | - | - | - | - | | |

++++ Very abundant +++ Abundant ++ Common + A little - Not detected

## Appendix 4-1 Summary of X-ray Powder Diffractometry

| Sample No. | Location (Coordinate) N | E | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J128 | 1693.00 | 692.36 | Black slate | + | +++ | +++ | - | - | ++ | - | - | ++ | - | - | - | | |
| 130 | 1693.05 | 692.47 | Limestone | + | ? | - | - | - | - | - | - | - | ++++ | - | - | | |
| 133 | 1693.18 | 692.53 | Limestone | + | - | - | - | - | - | - | - | - | ++++ | - | - | | |
| 135 | 1693.19 | 692.39 | Limestone | + | - | - | - | - | - | - | - | - | ++++ | - | - | | |
| 137 | 1693.15 | 692.19 | Green schist | + | - | - | ++ | - | ++ | ++ | - | - | - | - | - | | |
| 139 | 1693.02 | 692.07 | Quartz rock | ++++ | - | - | - | - | - | - | - | - | - | - | - | | |
| 140 | 1692.98 | 692.00 | Quartz porphyry | ++ | +++ | - | + | - | + | - | - | - | - | - | - | | |
| 145 | 1694.24 | 689.74 | Gossan | +++ | - | - | - | - | + | - | - | ++ | - | - | - | | |
| 155 | 1693.87 | 689.56 | Siltstone | + | - | - | +++ | - | - | + | - | - | - | + | - | | |
| 156 | 1693.83 | 689.42 | Granite | +++ | - | - | +++ | - | - | - | - | - | - | - | - | | |
| 157 | 1693.78 | 689.50 | Granite | + | ++ | - | ++ | - | - | - | - | - | + | - | - | | |
| 158 | 1693.73 | 689.61 | Granite | ++ | ++ | - | + | - | + | - | - | - | + | - | - | | |
| K 9 | 1693.71 | 689.89 | Sandstone | ++++ | - | - | + | - | - | - | - | - | - | - | - | | |
| 13 | 1693.82 | 689.95 | Granite | - | ++++ | ++++ | - | - | - | - | - | - | - | - | - | | |
| 17 | 1694.02 | 690.06 | Siltstone | + | +++ | - | - | - | - | ++ | - | +++ | - | - | - | | |
| 21 | 1694.19 | 690.04 | Manganese oxide ore | +++ | - | - | - | - | - | - | - | - | - | - | - | Chalcophanite | Chart: Appendix 5(4) |
| 22 | 1694.29 | 690.08 | Siltstone | + | - | ++ | - | - | - | - | +++ | +++ | - | - | - | | Chart: Appendix 5(5) |
| 34 | 1694.39 | 690.47 | Quartz porphyry | + | - | - | - | - | - | - | - | ++ | - | - | - | | |
| 40 | 1694.33 | 690.58 | Quartz porphyry | ++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 47 | 1693.68 | 690.59 | Quartz porphyry | + | - | - | ++++ | - | - | - | - | - | - | - | - | | |

++++ Very abundant  +++ Abundant  ++ Common  + A little  - Not detected

## Appendix 4-1 Summary of X-ray Powder Diffractometry

| Sample No. | Location (Coordinate) | | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | E | | | | | | | | | | | | | | | |
| K 55 | 1694.90 | 687.97 | Granodiorite | + | +++ | +++ | + | - | - | - | - | ++ | - | - | - | | |
| 62 | 1694.97 | 687.68 | Green schist | + | ++ | - | + | ++++ | - | - | - | ++ | - | - | ++ | | |
| 78 | 1695.07 | 687.33 | Granodiorite | + | ++ | - | ++ | - | - | - | - | - | - | - | - | | |
| 83 | 1693.41 | 691.71 | Quartz porphyry | ++ | ++ | - | + | - | - | - | - | - | - | - | - | | |
| 87 | 1693.69 | 691.84 | Acidic volcanic rocks | + | ++ | - | + | - | ++ | - | - | - | - | - | - | | |
| 95 | 1693.12 | 691.99 | Acidic volcanic rocks | ++ | +++ | - | + | - | ++ | - | - | - | - | - | - | | |
| 99 | 1693.26 | 692.04 | Siltstone | + | - | - | - | - | - | - | - | - | - | - | - | | |
| 104 | 1693.15 | 692.07 | Quartz porphyry | ++ | +++ | - | - | - | + | - | - | ++ | - | - | - | | |
| 124 | 1692.49 | 692.42 | Acidic volcanic rocks | +++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 127 | 1692.29 | 692.24 | Quartz diorite | + | + | - | ++ | - | ++ | - | - | - | - | - | - | | |
| 131 | 1692.47 | 692.08 | Granodiorite | + | +++ | - | + | - | - | ++++ | - | - | - | - | - | | |
| 136 | 1692.79 | 692.03 | Epidote-quartz -actinolite rock | ++ | - | ++ | - | - | - | - | - | ++++ | - | - | - | | |
| 140 | 1694.95 | 688.04 | Siltstone | ++++ | + | - | + | - | + | + | - | - | - | - | - | | |
| 144 | 1695.01 | 688.04 | Sandstone | ++ | ++++ | - | + | - | - | ++ | - | - | - | - | - | | |
| 147 | 1695.01 | 687.90 | Quartz porphyry | + | +++ | - | + | - | - | ++ | - | ? | - | - | - | | |
| 152 | 1695.10 | 687.92 | Granodiorite | + | ++++ | - | + | - | ++ | + | - | ? | - | - | - | | |
| 157 | 1695.08 | 687.80 | Acidic volcanic rocks | + | ++ | - | + | ++++ | - | - | - | - | - | - | - | | |
| 158 | 1695.14 | 687.85 | Quartz rock | + | - | - | - | - | ++ | - | - | - | - | - | - | Glass | |
| 160 | 1695.19 | 687.80 | Green schist | + | ++ | - | ++ | ++++ | - | - | - | - | ++++ | - | - | | |
| 162 | 1695.30 | 687.75 | Quartz-epidote rock | +++ | - | - | - | - | - | - | - | ++++ | - | - | - | | |

++++ Very abundant  +++ Abundant  ++ Common  + A little  - Not detected

## Appendix 4-1 Summary of X-ray Powder Diffractometry

| Sample No. | Location (Coordinate) | | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | E | | | | | | | | | | | | | | | |
| K166 | 1695.32 | 687.62 | Epidote-quartz rock | + | - | - | - | - | ++ | + | - | ++++ | - | - | - | | |
| 168 | 1695.27 | 687.55 | Granite | ++ | ++ | - | + | - | - | - | - | ? | ++ | - | - | | |
| 169 | 1692.68 | 692.41 | Quartz epidote rock | + | - | - | - | - | - | - | - | ++++ | - | - | - | | |
| 171 | 1692.61 | 692.42 | Sandstone | + | - | - | ++++ | - | +++ | - | - | - | - | - | - | | |
| 172 | 1692.34 | 692.76 | Sandstone | +++ | + | - | + | - | + | - | - | - | - | - | - | | |
| 176 | 1692.15 | 692.75 | Granitic rock | ++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 177 | 1692.50 | 692.68 | Quartz porphyry | + | ++ | - | + | - | - | - | - | - | - | - | - | | |
| 182 | 1692.65 | 691.64 | Quartz diorite | ++ | + | - | ++++ | - | ++++ | - | - | - | - | - | - | | |
| 189 | 1693.41 | 691.35 | Shale | ++ | + | - | + | ++++ | - | - | - | +++ | - | - | - | | Chart: Appendix 5(6) |
| 191 | 1693.45 | 691.39 | Shale | + | - | +++ | - | +++ | - | ++++ | - | + | - | - | - | | |
| 193 | | | Siltstone | +++ | - | - | - | ++ | - | - | - | - | - | - | - | Malachite stain | |
| 197 | 1693.30 | 691.43 | Quartz porphyry | +++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 202 | 1693.27 | 691.65 | Quartz porphyry | +++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 213 | 1692.71 | 692.11 | Granodiorite | + | - | - | + | - | ++++ | ++ | - | + | - | - | - | | |
| 215 | 1692.73 | 692.18 | Skarn | - | - | ++++ | - | - | - | ++ | - | ++++ | - | - | - | | |
| 218 | 1692.83 | 692.34 | Acidic volcanic rocks | ++ | ++ | - | ++ | - | + | - | - | - | - | - | - | | |
| 223 | 1692.90 | 691.91 | Granodiorite | + | ++ | - | + | - | ++ | - | - | - | - | - | - | | |
| S 1 | 1694.24 | 689.22 | Granodiorite | ? | ++ | ++++ | - | ++++ | - | - | - | ++ | - | - | - | | |
| 2 | 1693.96 | 689.03 | Siltstone | + | ++ | - | ++ | - | + | - | - | - | - | - | - | | |
| 3B | 1693.98 | 689.10 | Quartz porphyry | + | +++ | - | + | - | + | - | - | - | - | - | - | | |

++++ Very abundant    +++ Abundant    ++ Common    + A little    - Not detected

## Appendix 4-1 Summary of X-ray Powder Diffractometry

| Sample No. | Location (Coordinate) N | Location (Coordinate) E | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S 6A | 1694.56 | 689.65 | Quartz porphyry | ++ | - | - | + | - | + | - | - | - | - | - | - | | |
| 8 | 1695.28 | 689.50 | Granodiorite | + | ++ | +++ | + | ++++ | - | - | - | ++ | - | - | - | | |
| 10 | 1694.89 | 689.13 | Green schist | + | +++ | - | ++ | ++++ | - | - | - | - | ++++ | - | - | | |
| 17 | 1694.47 | 689.12 | Skarn | ++ | +++ | +++ | - | - | - | - | - | ++ | - | - | - | | |
| 19 | 1694.57 | 689.26 | Quartz-epidote rock | ++ | - | - | - | - | - | - | - | ++++ | - | - | - | | |
| 21 | 1694.79 | 689.12 | Quartz porphyry | + | ++++ | - | + | - | - | - | - | - | - | - | - | | |
| 23 | 1694.94 | 688.97 | Quartz porphyry | ++ | - | - | ++++ | - | - | - | - | - | - | - | - | | |
| 33 | 1694.08 | 688.77 | Siltstone | +++ | - | - | ++ | - | ++ | - | - | - | - | - | - | | |
| 40 | 1693.72 | 691.25 | Quartz porphyry | +++ | + | - | + | - | + | - | - | - | - | - | - | | |
| 46 | 1694.40 | 691.00 | Rhyolitic pumice tuff | ++ | + | - | ++++ | - | + | - | - | - | - | - | - | | |
| 48 | 1694.45 | 690.80 | Green schist | + | ++ | - | + | ++++ | - | - | - | + | ++++ | - | - | | |
| 60 | 1693.30 | 690.37 | Granodiorite | - | +++ | ++++ | - | - | ++ | ++ | - | - | - | - | - | | |
| 61 | 1693.12 | 690.51 | Quartz-epidote -actinolite rock | + | - | ++++ | - | - | - | - | - | +++ | - | - | - | | |
| 64 | 1693.12 | 691.01 | Granodiorite | + | + | - | ++ | - | ++++ | - | - | - | - | - | - | | |
| 66 | 1693.00 | 691.18 | Granodiorite | ++ | - | - | + | - | - | - | - | - | - | - | - | | |
| 69 | 1692.73 | 690.98 | Granodiorite or quartz porphyry | + | ++ | - | +++ | - | - | - | - | - | - | - | - | | |
| 75 | 1692.75 | 690.80 | Granite | ++ | ++ | - | + | - | - | - | - | ? | + | - | - | | |
| 78 | 1693.02 | 690.91 | Quartz diorite | ++ | - | - | ++++ | - | - | - | - | - | - | - | - | | |
| 79 | 1693.06 | 690.73 | Quartz diorite | + | +++ | - | + | - | ++ | - | - | - | - | - | - | | |
| 85 | 1692.89 | 690.51 | Granodiorite | ++ | ++ | - | + | - | - | - | - | ? | - | - | - | | |

++++ Very abundant +++ Abundant ++ Common + A little - Not detected

## Appendix 4-1 Summary of X-ray Powder Diffractometry

| Sample No. | Location (Coordinate) N | Location (Coordinate) E | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S 88 | 1693.24 | 690.79 | Quartz porphyry | ++ | - | - | +++ | - | - | - | - | - | - | - | - | | |
| 92 | 1693.92 | 690.37 | Quartz porphyry | ++ | - | - | +++ | - | - | - | - | - | - | - | - | | |
| 95 | 1693.99 | 690.47 | Siltstone | + | +++ | +++ | - | - | - | - | - | - | - | - | - | | |
| 97 | 1694.10 | 690.35 | Quartz-epidote rock | ++ | - | - | - | - | - | ++ | - | ++++ | - | - | - | | |
| 98 | 1694.01 | 690.16 | Quartz-epidote rock | + | - | +++ | - | - | - | - | - | ++++ | - | - | - | | |
| 105 | 1694.19 | 689.42 | Granodiorite | + | +++ | - | + | - | ++ | ++ | - | - | - | - | - | | |
| 108 | 1693.84 | 689.85 | Siltstone | ++ | ++ | - | ++ | - | ++ | - | - | - | - | - | - | | |
| 109 | 1693.92 | 689.99 | Quartz porphyry | ++++ | - | - | + | - | ++ | - | - | - | - | - | - | | |
| 110 | 1693.82 | 690.22 | Siltstone | ++ | - | - | + | - | ++++ | - | - | + | - | - | - | | |
| 111 | 1693.88 | 690.15 | Sandstone | ++++ | - | - | + | - | - | - | - | - | - | - | - | | |
| 112 | 1694.55 | 688.52 | Sandstone | ++ | + | - | ++ | - | - | - | - | - | - | - | - | | |
| 113 | 1694.51 | 688.52 | Granodiorite | + | ++ | - | + | - | ++ | - | - | ++ | - | - | - | | |
| 115 | 1694.63 | 688.46 | Siltstone | ++ | + | - | +++ | - | + | - | - | - | - | - | - | | |
| 117 | 1694.69 | 688.54 | Siltstone | ++ | - | - | ++++ | - | - | - | - | - | - | - | - | | |
| 119 | 1694.65 | 688.79 | Siltstone | ++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 120 | 1694.54 | 688.68 | Sandstone | ++ | - | - | +++ | - | - | - | - | - | - | - | - | | |
| 122B | 1694.50 | 689.25 | Siltstone | + | - | - | - | - | - | ++++ | - | - | - | - | - | | |
| 125 | 1694.22 | 688.57 | Sandstone | ++++ | + | - | + | - | + | - | - | - | - | - | - | | |
| 127 | 1694.26 | 689.52 | Siltstone | + | +++ | - | + | - | ++ | ++ | - | - | - | - | - | | |
| 128 | 1694.32 | 689.39 | Siltstone | + | ++ | - | + | - | ++ | ++ | - | + | - | - | - | | |

++++ Very abundant  +++ Abundant  ++ Common  + A little  - Not detected

## Appendix 4-1 Summary of X-ray Powder Diffractometry

| Sample No. | Location (Coordinate) | | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | E | | | | | | | | | | | | | | | |
| S130 | 1694.35 | 689.43 | Siltstone | + | - | - | ++ | - | ++++ | - | - | - | - | - | - | | |
| 132 | 1694.47 | 689.46 | Siltstone | + | +++ | - | ++ | - | ++ | + | - | - | - | - | - | | |
| 134 | 1694.56 | 689.41 | Quartz-epidote rock | + | - | - | - | - | - | ++ | - | ++++ | - | - | - | | |
| 143 | 1694.39 | 688.71 | Siltstone | ++ | ++ | - | ++ | - | ++ | - | - | - | - | - | - | | |
| 144 | 1694.32 | 688.68 | Granodiorite | + | ++ | - | + | - | ++ | - | - | - | - | - | - | | |
| 145 | 1694.26 | 688.64 | Sandstone | + | - | - | ++++ | - | - | - | - | - | - | - | - | | |
| 146 | 1694.15 | 688.78 | Sandstone | + | - | - | ++++ | - | + | - | - | - | - | - | - | | |
| 147 | 1694.33 | 688.85 | Granodiorite | + | +++ | - | + | - | ++ | - | - | - | - | - | - | | |
| 150 | 1694.54 | 688.90 | Quartz porphyry | ++ | ++ | - | + | - | ++ | - | - | ? | - | - | - | | |
| 151 | 1694.47 | 689.02 | Epidote rock | + | - | - | - | - | - | - | ++++ | - | - | - | - | | |
| 152 | 1694.40 | 689.34 | Quartz-epidote rock | ++ | - | ++ | - | - | - | - | - | ++++ | - | - | - | | |
| 153 | 1694.35 | 689.25 | Quartz-epidote rock | + | - | - | - | - | - | - | - | ++ | - | - | - | | |
| 156 | 1694.25 | 689.09 | Granodiorite | + | ++ | - | ++ | - | ++ | - | - | - | - | - | - | | |
| 157 | 1694.13 | 689.03 | Granodiorite | + | ++ | - | ++ | - | ++ | - | - | - | - | - | - | | |
| 160 | 1693.63 | 690.14 | Quartz rock | ++++ | - | - | + | - | - | - | - | - | - | - | - | | |
| 161 | 1693.48 | 690.07 | Granite | ++ | ++ | - | + | - | - | - | - | - | + | - | - | | |
| 163 | 1693.56 | 689.87 | Siltstone | + | + | - | +++ | - | ++ | ++ | - | - | - | - | - | | |
| 165 | 1693.53 | 690.24 | Granite | +++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 167 | 1693.62 | 690.30 | Granodiorite | +++ | - | - | ++ | - | - | - | - | - | - | - | - | | |
| 168 | 1693.62 | 690.40 | Granodiorite | - | ++ | ++++ | ++ | - | - | - | - | ++ | - | - | - | | |

++++ Very abundant  +++ Abundant  ++ Common  + A little  - Not detected

## Appendix 4-2 Summary of X-ray Powder Diffractometry (Drill Core)

| Sample No. | Location (Coordinate) N | E | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDH No. MJ-1 | | | | | | | | | | | | | | | | | |
| 23.40 | 1693.660 | 691.042 | Siltstone | ++ | ++++ | ++ | - | - | + | + | - | ++ | - | - | - | | ** |
| 72.70 | " | " | Bleached rhyolite | ++++ | - | - | - | - | - | - | - | - | - | - | - | Glass | |
| 88.40 | " | " | Altered rhyolite | + | - | - | ++ | - | - | - | - | - | - | ++ | - | | |
| 102.50 | " | " | Altered rhyolite | ++ | - | - | ++ | - | - | - | - | - | - | - | +++ | | |
| 112.40 | " | " | Quartz porphyry | + | - | - | + | ++ | +++ | - | - | - | - | - | + | | |
| 148.50 | " | " | Quartz porphyry | + | +++ | - | + | ++ | - | - | - | ++ | - | - | + | | |
| 162.40 | " | " | Quartz porphyry | + | +++ | - | ++ | ++ | - | - | - | ++ | - | - | + | | |
| 231.50 | " | " | Quartz porphyry | ++ | + | - | +++ | ++++ | - | - | - | - | - | - | - | | |
| 255.90 | " | " | Green schist | + | ++ | - | + | ++++ | - | - | - | ++ | - | - | - | | |
| DDH No. MJ-2 | | | | | | | | | | | | | | | | | |
| 26.10 | 1693.775 | 691.137 | Quarz-epidote rock | ++ | - | - | - | - | - | ++ | - | ++++ | - | - | - | | ** |
| 37.40 | " | " | Magnetite-epidote rock | + | - | - | - | - | +++ | ++ | - | ++ | - | - | ++ | | |
| 67.60 | " | " | Quartz porphyry | +++ | + | - | +++ | - | - | - | - | - | - | - | - | | |
| 94.90 | " | " | Quartz porphyry | + | +++ | - | + | - | ++ | +++ | - | - | - | - | - | | |
| 113.40 | " | " | Quartz porphyry | + | ++++ | - | - | - | ++ | +++ | - | ++ | - | - | - | | |
| 183.40 | " | " | Siliceous green schist | +++ | + | - | ++ | ++ | - | - | - | - | - | - | - | | |
| 244.30 | " | " | Siliceous green schist | +++ | + | - | + | ++++ | - | - | - | - | - | - | - | | |
| 261.70 | " | " | Rhyolite | +++ | ++ | - | ++ | - | - | - | - | - | - | - | - | | |
| 281.90 | " | " | Siliceous green schist | ++ | + | - | ++ | - | ++ | + | - | - | - | - | - | | |

++++ Very abundant   +++ Abundant   ++ Common   + A little   - Not detected

** Drilled in the second phase, sampled in the present pha-

## Appendix 4-2 Summary of X-ray Powder Diffractometry (Drill Core)

| Sample No. | Location (Coordinate) N | Location (Coordinate) E | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDH No. MJ-2 295.00 | 1693.775 | 691.137 | Sheared rhyolite | +++ | + | - | + | - | - | - | - | - | - | - | - | | |
| DDH No. MJ-3 16.40 | 1693.998 | 690.116 | Siltstone | ++ | - | - | ? | - | ++ | + | - | - | - | - | - | | ** |
| 25.00 | " | " | Siltstone | + | ++++ | - | + | +++ | - | - | - | - | - | - | - | | |
| 39.50 | " | " | Epidote rock | ? | - | - | - | - | ++ | +++ | - | ++++ | - | - | - | | |
| 61.00 | " | " | Chlorite quartz schist | ++ | ++ | - | + | +++ | - | - | - | ++ | - | - | ++ | | |
| 75.50 | " | " | Green schist | ++ | - | - | - | +++ | - | - | - | - | - | - | - | | |
| 92.00 | " | " | Chlorite quartz schist | ++ | ++ | - | ++ | ++ | - | - | - | ++ | - | - | - | | |
| 109.30 | " | " | Zoisite chlorite epidote Sericite quartz schist | + | - | ++++ | - | ++ | - | - | - | ? | - | - | - | | |
| 121.30 | " | " | Chlorite quartz schist | ++ | - | - | ++ | + | - | - | - | - | - | - | +++ | | |
| 155.60 | " | " | Quartz porphyry | ++ | ++++ | - | + | ++ | - | - | - | - | - | - | - | | |
| 197.90 | " | " | Quartz porphyry | ++ | +++ | - | + | + | - | - | - | - | - | - | - | | |
| DDH No. MJ-4 15.70 | 1694.023 | 689.958 | Sandstone | ++ | ++++ | ++ | - | - | - | - | - | +++ | - | - | - | | |
| 35.60 | " | " | Siltstone | ++ | ++ | - | + | - | + | ++ | - | ++ | - | - | - | | |
| 65.70 | " | " | Gossan | + | - | - | - | - | ++ | - | - | - | - | + | - | | |
| 87.30 | " | " | Skarn | + | - | +++ | - | - | - | +++ | + | +++ | - | - | - | | Chart: Appendix 5(7) |
| 91.40 | " | " | Epidote rock | ? | - | +++ | - | - | - | ++ | - | ++++ | - | - | ++ | | |
| 112.30 | " | " | Pyrite mineralized rock | + | - | - | - | - | ? | - | - | - | - | - | +++ | | |

++++ Very abundant  +++ Abundant  ++ Common  + A little  - Not detected

** Drilled in the second phase, sampled in the present phase.

Appendix 4-2 Summary of X-ray Powder Diffractometry (Drill Core)

| Sample No. | Location (Coordinate) N | Location (Coordinate) E | Rock Type | Quartz | Plagio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDH No. MJ-4 | | | | | | | | | | | | | | | | | |
| 131.65 | 1694.023 | 689.958 | Silicified rock | +++ | + | - | ++ | - | + | - | - | - | - | - | ++++ | | Chart: Appendix 5(8) |
| 140.15 | " | " | Massive pyrite | ++ | + | - | + | ++ | - | ++ | - | ++ | - | - | ++++ | | Chart: Appendix 5(9) |
| 150.00 | " | " | Chlorite quartz schist | +++ | + | - | + | + | - | + | - | - | - | - | ++++ | | |
| DDH No. MJ-5 | | | | | | | | | | | | | | | | | |
| 10.60 | 1693.927 | 690.113 | Granitic rock | + | ++ | +++ | + | - | - | +++ | - | ++ | - | - | ++ | | |
| 37.20 | " | " | Granitic rock | + | +++ | - | + | - | ++ | + | - | - | - | - | - | | |
| 57.80 | " | " | Granitic rock | ++ | ++ | - | ++ | - | ++ | - | - | - | - | - | ++ | | |
| 83.40 | " | " | Epidote rock | + | - | - | - | - | - | - | + | ++++ | - | - | - | | |
| 119.20 | " | " | Mineralized rock | - | - | ++++ | - | - | - | - | +++ | ++ | - | - | - | | Chart: Appendix 5(10) |
| 150.90 | " | " | Sericite chlorite quartz schist | ++ | ++ | - | ++ | ++ | - | - | - | - | - | - | - | | |
| DDH No. MJ-6 | | | | | | | | | | | | | | | | | |
| 20.90 | 1694.009 | 690.848 | Siltstone | + | - | - | ++++ | ++++ | - | ? | - | - | - | - | - | | |
| 46.10 | " | " | Altered dacite | + | + | - | ++++ | - | + | - | - | - | - | ++ | - | | Chart: Appendix 5(11) |
| 71.50 | " | " | Sandstone | ++ | + | - | ++ | + | - | ++ | - | - | - | - | - | | |
| 99.00 | " | " | Chlorite quartz schist | ++ | ++ | - | ++ | ++ | - | - | - | - | - | - | - | | |
| 133.80 | " | " | Sericite chlorite schist | ++ | + | - | +++ | +++ | - | + | - | ++ | - | - | - | | |
| DDH No. MJ-7 | | | | | | | | | | | | | | | | | |
| 13.80 | 1693.890 | 690.260 | Sandstone | + | - | - | ++ | - | ++++ | ++ | - | - | - | - | - | | |
| 17.70 | " | " | Sandstone | + | - | - | + | - | ++ | + | - | - | - | ? | - | | |

++++ Very abundant   +++ Abundant   ++ Common   + A little   - Not detected

Appendix 4-2 Summary of X-ray Powder Diffractometry (Drill Core)

| Sample No. | Location (Coordinate) N | Location (Coordinate) E | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDH No. MJ-7 30.60 | 1693.890 | 690.260 | Sandstone | + | - | - | ++++ | - | ++++ | - | - | - | - | - | - | | Chart: Appendix 5(12) |
| 61.90 | " | " | Siltstone | ++ | ? | - | ++ | +++ | - | - | - | ++ | - | - | - | | |
| 82.90 | " | " | Massive pyrite | + | - | - | - | - | - | - | - | - | - | ? | ? | | |
| 117.60 | " | " | Granitic rock | ++ | - | - | + | - | - | - | - | - | - | - | +++ | | |
| 127.00 | " | " | Garnet skarn | + | - | +++ | - | - | - | - | ++++ | - | - | - | ? | | |
| 155.30 | " | " | Chlorite quartz schist | + | + | - | + | - | ++ | - | - | ++ | - | - | - | | |
| 192.50 | " | " | Magnetite mineralized rock | ++ | - | - | - | +++ | - | - | - | - | - | - | +++ | | |
| 223.90 | " | " | Magnetite mineralized rock | ++ | ++ | - | + | ++++ | - | - | - | - | - | - | - | | Chart: Appendix 5(13) |
| 283.20 | " | " | Green schist | +++ | + | - | ++ | +++ | - | - | - | - | - | - | - | | |
| DDH No. MJ-8 11.60 | 1694.198 | 690.400 | Siltstone | ++ | - | - | ++++ | - | - | - | - | - | - | - | - | | |
| 68.00 | " | " | Sandstone | ++ | - | - | ++++ | - | ++ | ++++ | - | - | - | - | - | | |
| 101.00 | " | " | Magnetite mineralized rock | + | +++ | - | - | - | + | ++++ | - | - | - | - | + | | |
| 126.50 | " | " | Sandstone | + | - | - | +++ | +++ | - | + | - | - | - | - | - | | Chart: Appendix 5(14) |
| 133.30 | " | " | Porphyrite | + | - | - | - | - | +++ | ++++ | - | ++ | - | - | - | | |
| 139.70 | " | " | Quartz porphyry | ++ | ++++ | - | + | - | + | ++ | - | - | - | - | - | | |
| 147.80 | " | " | Green schist | ++++ | + | - | + | + | - | ++ | - | - | - | - | - | | |
| DDH No. MJ-9 26.70 | 1693.511 | 691.075 | Quartz porphyry | ++ | ++ | - | + | - | ++ | - | - | ++ | - | - | - | | |

++++ Very abundant  +++ Abundant  ++ Common  + A little  - Not detected

## Appendix 4-2 Summary of X-ray Powder Diffractometry (Drill Core)

| Sample No. | Location (Coordinate) N | Location (Coordinate) E | Rock Type | Quartz | Pla-gio-clase | Amph-ibole | Ser-cite | Chlo-rite | Kaolin | Mont-moril-lonite | Garnet | Epi-dote | Cal-cite | Hema-tite Goe-thite | Pyrite | Others | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDH No. MJ-9 | | | | | | | | | | | | | | | | | |
| 56.50 | 1693.511 | 691.075 | Siltstone | ++ | + | - | ++ | - | +++ | +++ | - | - | - | - | - | | |
| 77.40 | " | " | Siltstone | +++ | ++ | - | ++ | +++ | - | + | - | - | - | - | - | | |
| 106.00 | " | " | Epidote rock | ? | - | - | + | ++++ | - | - | + | ++ | - | - | ++ | | |
| 143.50 | " | " | Sandstone | ++ | +++ | - | + | + | - | - | - | - | - | - | + | | |
| DDH No. MJ-10 | | | | | | | | | | | | | | | | | |
| 7.10 | 1694.175 | 690.135 | Siltstone | + | - | - | - | - | - | ++++ | - | - | - | - | - | | |
| 55.10 | " | " | Massive pyrite | + | - | - | - | - | - | - | - | - | - | - | ++++ | | |
| 72.70 | " | " | Quartz porphyry | +++ | - | - | +++ | - | ++++ | - | - | - | - | - | + | | |
| 86.80 | " | " | Quartz porphyry | ++ | ++ | - | ++ | +++ | - | - | - | - | - | - | - | | |
| 126.50 | " | " | Granitic rock | + | + | - | ++ | - | - | - | - | ? | - | - | + | | |
| 141.90 | " | " | Quartz porphyry | ++ | +++ | - | + | - | + | - | - | - | - | - | - | | |

++++ Very abundant  +++ Abundant  ++ Common  + A little  - Not detected