

**APPENDICES
(DRILLING)**

Table III-1 List of Rock Samples

(1)

Location (Area)	Sample No.	Field Observation	Thin Section	Polished Section	Mineral Analysis				Chemical Analysis	X-ray Analysis	Dating	Remarks
					S	Cu	Fe	Zn				
Alous	W-1	Andesite	○									PhotoNo.1
Alous	W-2	Dolomite										
DH-No.1	5.50m	Sandstone										
DH-No.1	10.00m	Sandstone										
DH-No.1	19.30m	Sandstone										
DH-No.1	30.00m	Sandstone	○									PhotoNo.2
DH-No.1	39.50m	Siltstone										
DH-No.1	45.60m	Siltstone										
DH-No.1	47.40m	Sandstone										
DH-No.1	60.00m	Sandstone										
DH-No.1	70.00m	Sandstone										
DH-No.1	75.20m	Sandstone										
DH-No.1	80.00m	Sandstone	○	○	○	○	○	○	○			Table 1-6. E62
DH-No.1	85.23m	Sandstone	○									
DH-No.1	89.80m	Dolomite										
DH-No.1	99.60m	Dolomite										
DH-No.1	101.35m	Dolomite										
DH-No.1	105.00m	Dolomite										
DH-No.1	110.75m	Dolomite										
DH-No.1	114.70m	Dolomite										

Location (Area)	Sample No.	Field Observation	Thin Section	Polished Section	Mineral Analysis				Chemical Analysis	X-ray Analysis	Dating	Remarks
					S	Cu	Fe	Zn				
DH-No.1	120.00m	Dolomite										
DH-No.1	125.40m	Dolomite										
DH-No.1	130.00m	Dolomite										
DH-No.1	135.30m	Dolomite										
DH-No.1	140.00m	Dolomite										
DH-No.1	141.60m	Dolomite										
DH-No.1	143.90m	Dolomite										
DH-No.1	150.00m	Dolomite										
DH-No.1	155.00m	Dolomite										
DH-No.1	156.00m	Andestic tuff	○									PhotoNo.3
DH-No.1	161.50m	Andestic tuff	○									
DH-No.1	166.00m	Andesite										
DH-No.1	170.00m	Andesite										
DH-No.1	175.00m	Andesite	○									PhotoNo.4
DH-No.1	180.00m	Andesite										
DH-No.1	185.00m	Andesite										
DH-No.1	190.00m	Andesite										
DH-No.1	191.80m	Andesite	○									
DH-No.1	194.30m	Andesite										
DH-No.1	197.45m	Andesite										

Location (Area)	Sample No.	Field Observation	Thin Section	Polished Section	Mineral Analysis				Chemical Analysis	X-ray Analysis	Dating	Remarks
					S	Cu	Fe	Zn				
DH-No. 1	204.00m	Andesite	○		○	○						
DH-No. 1	205.00m	Andesite										
DH-No. 1	211.00m	Andesite										
DH-No. 1	220.45m	Andesite	○		○	○						
DH-No. 1	229.80m	Andesite										
DH-No. 1	230.30m	Andesite										
DH-No. 1	240.00m	Andestic lapilli tuff										
DH-No. 1	250.00m	Andestic lapilli tuff	○									PhotoNo. 5
DH-No. 1	260.00m	Sandstone	○									
DH-No. 1	270.00m	Andesite	○									
DH-No. 1	280.00m	Andesite										
DH-No. 1	290.80m	Andesite	○		○	○						PhotoNo. 6

Table III-2-1 Microscopic Observation of Thin Sections

(1)

Location	Sample No.	Formation	Rock Name	Microscopic Observations	Remarks
Alous	W-1	PIII	Epidotized gabbro	The rock is composed chiefly of altered mafic minerals and plagioclase optically intergrown. Mafic minerals are completely altered to an aggregate of epidote, carbonate, and chlorite. Plagioclase is partly altered to saussurite. Quartz clots are also present.	See microphoto. No.1
DH-1	30.00m	Basal Series	Graywacke sandstone	Abundant angular to subangular quartz grains are accompanied by large and small unoriented flakes of altered biotite or chlorite and muscovite. Feldspars are subordinate. Matrix is cryptocrystalline quartz, chlorite, and sericite.	See microphoto. No.2
DH-1	80.00m	Basal Series	Graywacke sandstone	Angular to subangular grains of quartz and feldspar are set in a matrix of cryptocrystalline calcite, sericite, and chlorite. Opaques are present in considerable amounts.	
DH-1	85.23m	Basal Series	Calcareous sandstone	Angular to subangular grains of quartz are cemented by a calcareous matrix with cryptocrystalline quartz, chlorite, and muscovite. Euhedral opaques slightly corroded from surface are present in considerable amounts.	
DH-1	156.00m	PIII	Tuffaceous shale	Fragments of subangular quartz are dispersed in a matrix consisting of cryptocrystalline quartz, chlorite, and sericite. A fragment of muscovite quartz rock (gneiss?) is present. Reddish brown opaques are fairly abundant.	See microphoto. No.3
DH-1	161.50m	PIII	Highly sericitized rock	The rock is a mixture of sericite, chlorite, quartz and calcite. Sericite is the most abundant mineral and forms fine aggregates. Chlorite comprises replacement of euhedral mafic minerals.	
DH-1	175.00m	PIII	Altered andesite	Aggregates of chlorite, calcite, muscovite, and opaque minerals are set in a cryptocrystalline matrix of sericite, quartz, and chlorite. Original textures and fabrics are almost completely altered.	See microphoto. No.4
DH-1	191.80m	PIII	Altered andesite	Pseudomorphs after plagioclase consisting of calcite, quartz, and chlorite retain an original intergranular fabric. Mafic minerals are altered to an aggregate of calcite, chlorite, and opaque minerals. Matrix is composed of sericite, quartz, calcite, and feldspar, with small quantities of sphene.	
DH-1	204.00m	PIII	Altered andesite	The rock consists of partly altered plagioclase laths and completely altered intergranular mafic minerals, composed of calcite, chlorite, and opaque minerals. Plagioclase is albitized. Considerable amounts of sphene are present.	
DH-1	220.45m	PIII	Altered trachyte	The rock consists of oligoclase laths showing subtrachytic fabrics and opaques with minor sphene. Veins and clots of calcite, feldspar, and chlorite are present.	

(2)

Location	Sample No.	Formation	Rock Name	Microscopic Observations	Remarks
DH-1	250.00m	PIII	Volcanic lithic graywacke	Subangular to subrounded fragments of andesite, rhyolite, shale, and chert and quartz and feldspar grains are set in a fine-grained matrix of quartz and sericite. Calcite and sericite are partly abundant.	See microphoto. No. 5
DH-1	260.00m	PIII	Arkosic wacke sandstone	Subrounded and rounded grains of quartz, plagioclase, K-feldspar, opaque minerals, epidote and rock fragments occur in a fine grained matrix. They measure 1.0 to 0.1 millimeters across and average about 0.3 millimeters. The rock fragments are mainly of andesite, quartz porphyry and low grade shist.	
DH-1	270.00m	PIII	Volcanic breccia	A trachyte fragment contains large tabular phenocrysts of potassium-feldspar in an orthopyric groundmass consisting of small stout crystals of alkali-feldspars, opaques, and epidote. The matrix consists of quartz grains, calcite pseudomorphs after pyroxene?, andesite chips, epidote, and opaque minerals.	See microphoto. No. 6

Table III-2-2 Microscopic Observation of Polished Section

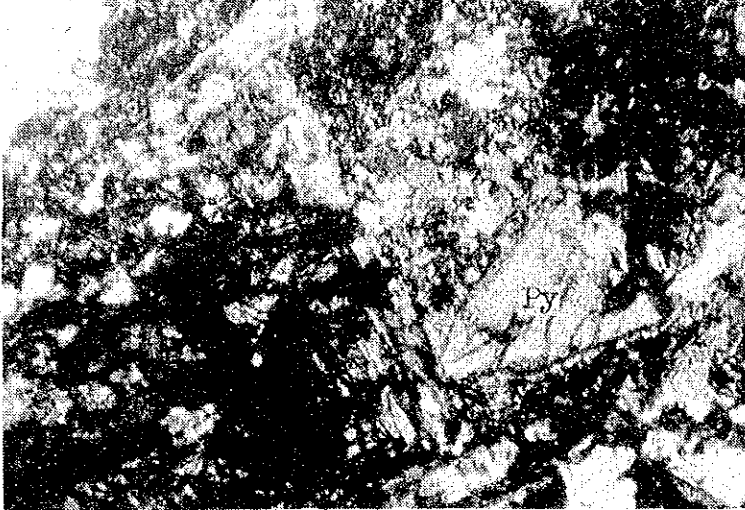
Location	Sample No.	Formation	Rock Name	Microscopic Observation	Remark
DH-No. 1	50.00m	Basal Series	Graywacke sandstone	<p>Pyrite is the only essential opaque mineral and is disseminated in the specimen. It measures mostly 1.0 to 0.1 millimeters in size. Graphite and rutile are also present but in small amounts. Coebsite occurs as a late supergene mineral.</p>	

Table III-3 Microphotographs

Thin Sections

Photo No.	Sample No.	Rock name	Location
1.	W-1	Epidotized gabbro	Alous
2.	30.00m	Graywacke sandstone	DH-No. 1
3.	156.00m	Tuffaceous shale	DH-No. 1
4.	175.00m	Altered andesite	DH-No. 1
5.	250.00m	Volcanic lithic graywacke	DH-No. 1
6.	270.00m	Volcanic breccia	DH-No. 1

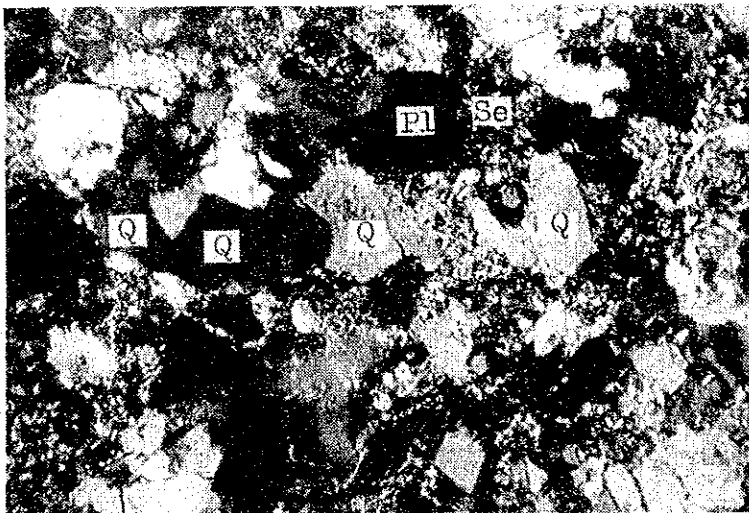
1.



Sample No. W-1
Epidotized gabbro
Location : Alous area
Py : Pyroxene

Crossed nicols
1 mm

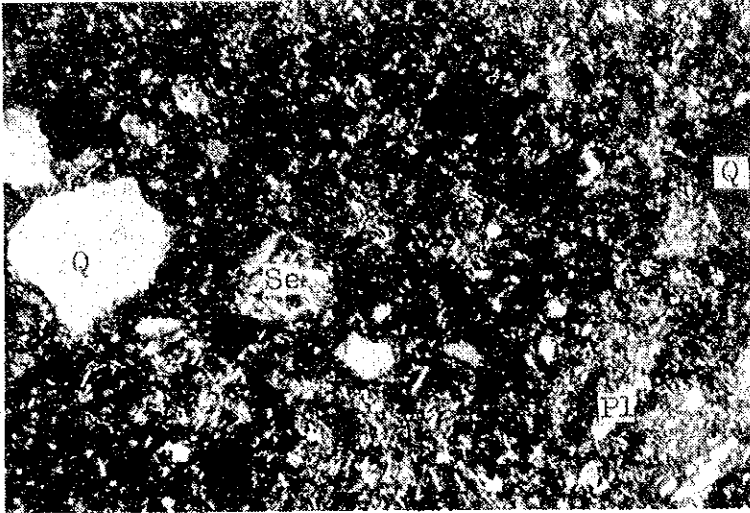
2.



Sample No. 30.00m
Graywacke sandstone
Location : DH-No. 1
Q : Quartz
Pl : Plagioclase
Se : Sericite

Crossed nicols
1 mm

3.



Sample No. 156.00m

Tuffaceous shale

Location : DH-No. 1

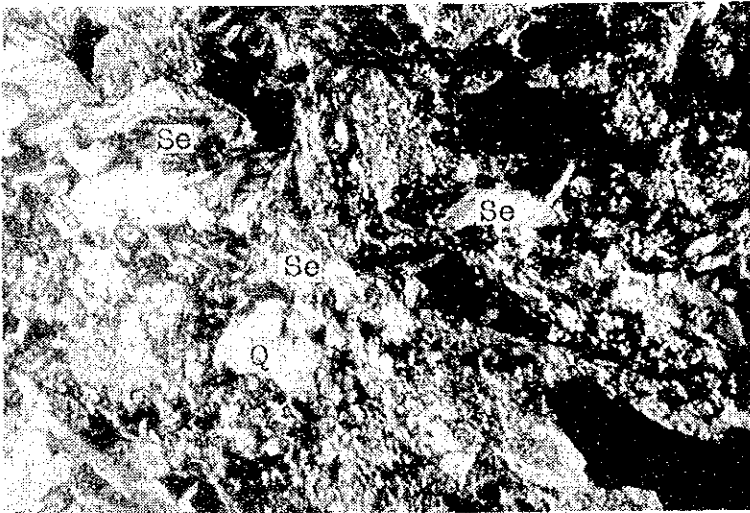
Q : Quartz

Se : Sericite

Pl : Plagioclase

Crossed nicols
1 mm

4.



Sample No. 175.00m

Altered andesite

Location : DH-No. 1

Se : Sericite

Q : Quartz

Crossed nicols
1 mm

5.

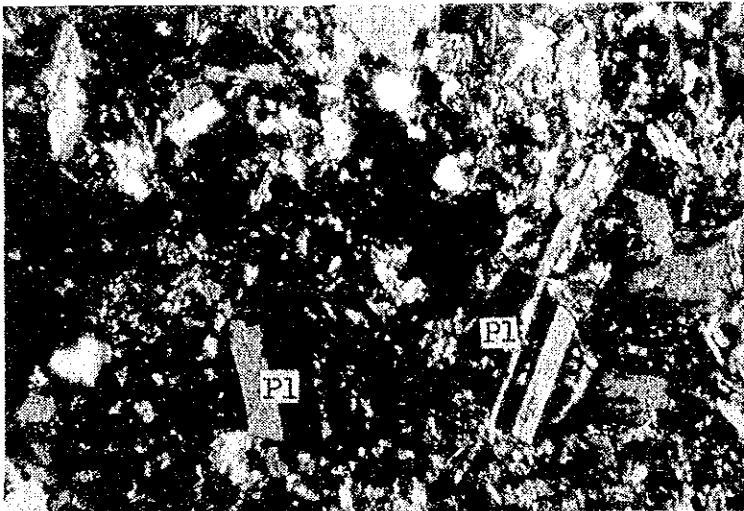


Sample No. 250.00m
Volcanic lithic graywacke
Location : DH-No. 1
Q : Quartz
Pl : Plagioclase

Crossed nicols
1 mm



6.



Sample No. 270.00m
Volcanic breccia
Location : DH-No. 1
Pl : Plagioclase

Crossed nicols
1 mm



Table III-4 Chemical Analysis of Ores

Depth m	Cu %	Fe %	S %
80.00	0.03	2.40	1.8
143.90	0.03	0.34	< 0.01
156.00	0.09	6.40	< 0.01
161.50	< 0.01	4.30	< 0.01
175.00	< 0.01	7.10	0.02
185.00	0.01	6.80	< 0.01
191.80	< 0.01	9.40	—
204.00	< 0.01	8.86	< 0.01
220.45	< 0.01	8.70	1.1
290.80	< 0.01	5.30	< 0.01

Table III-5. Chemical Analysis on Core Samples

	80.00 m	191.80 m
SiO ₂	67.44	44.72
TiO ₂	0.24	1.69
Al ₂ O ₃	9.96	15.01
Fe ₂ O ₃	0.40	9.68
FeO	1.83	2.51
MnO	0.09	0.18
MgO	3.16	9.19
CaO	6.06	5.91
Na ₂ O	0.38	3.53
K ₂ O	4.21	1.39
P ₂ O ₅	0.08	0.37
H ₂ O ₊	6.23	6.19
H ₂ O ₋	0.22	0.21
Total	100.30 %	100.58 %

