

また、ドロストンにおけるMg / Ca モル比は、理論的には1 : 1であり、ドロストンと石灰岩とは中間的組成のものは少いと一般に言われている。本地域のドロストンは、それに反し中間的組成のものが多い。ドロマイト度が極めて悪い環境における生成と見られる。

以上述べたように、Santa 層には顕著なPb・Znの初生濃集だけでなく、ドロマイト化も明瞭に行われていない。初生的に沈殿したPb・Znがドロマイト化作用により移動したような形跡も地化学的にまた鉱物学的に認められていない。ドロマイト化が弱いので期待もできない。従って、ペルー中部地区のPucara 層群のように、層準規制型鉱床の存在する可能性は殆んどないと言ってよいようである。

6-2 Iscay Cruz 鉱床の鉱質と帯状分布について

Iscay Cruz 地域の鉱化作用は、Chupa 鉱床を含めると次の3つのタイプに分類される。

- (1) 現在ゴッサン化されているPb・Zn 鉱化作用
- (2) 炭酸塩岩中のPb・Zn 鉱化作用
- (3) スカルンに伴われる、Cu・Zn 鉱化作用

(1)、(2)は現在の地表における徴候が異っているが、起源的にはいずれも熱水性鉱化作用によるもので、同一視されよう。第1 徴から第4 徴までおよび第6 徴、さらに第1 徴の北方2 Kmに位置するゴッサン化石灰岩などがこれに属する。ゴッサンは、主に鉄、石英より成り、かなりの量のPb・Znを含んでいる。これらの元素の大部分は、炭酸塩岩にもともと含有されていたものでなく、熱水性鉱化作用により添加され、黄鉄鉱、閃亜鉛鉱などの初生硫化物の酸化によってもたらされたものと思われる。ゴッサン中のPb・Znの大部分は酸化鉱物である。Pb含有量が特に多いのが第1 徴の北部で、その南方および北方へPb量を減じている。さらに、その南方の第3、4 徴ではゴッサンの発達は局部的であり、ここではPb・Zn硫化物が炭酸塩岩中に直接晶出している。Pb・Zn含有量はゴッサンに比べやや少く、ほかにCuの含有が見られる。これらの徴の中には、塊状黄鉄鉱を伴うところがあり、そこでは規模は小さいがPbの極端な濃集の見られるところがある。スカルンに伴われる鉱化作用としては、第5 徴とその西方に位置するChupa 鉱床がある。ここではPbが少くChupa 徴に見られるようにCuが特に多くなる傾向がある。

これらのことから、Iscay Cruz 地域における各徴およびChupa 鉱床の間には、全体的に見て元素の帯状配列が存在すると考察される。すなわち、Cu・Znに富むChupa 鉱床が中央部に位置し、その周囲にZn帯、さらにその外側にZn・Pb帯が配置されているのが認められる。

上述したような鉱化作用の帯状配列を明瞭にするため、各徴の露頭部のCu・Pb・Zn平均品位の百分比を示め三角ダイアグラムにプロットした(Fig. 19)。3元素の分析値の百

分比は鉍化帯に含まれる元素の濃度を量比に置き換えたものであり、量比によってそれぞれの元素の濃度の変化を表現しようとする試みである。なお、Cu・Pb・Zn 3成分の構成比の分布範囲を明瞭にするため、Cuは品位を10倍した。3成分の比率を各々 π -Cu, π -Pb, π -Znと呼ぶこととする。

この結果、①Chupa 鉍床および第4鉍徴は π -Pbが低く、相対的にCu・Znに富むこと、②第5, 6鉍徴は π -Znが高くZnに富むこと、③第1鉍徴から第3鉍徴までは π -Cuが低くZn・Pbに富むこと、などが明らかとなった。このことは、上述のCu・Zn帯を中心とするZn帯→Zn・Pb帯の帯状配列の存在を裏付けている。

また、オヨン地区周辺における黄鉄鉍を伴う鉍床には、Cerro de Pasco, Huanzalaなどが知られている。Cerro de Pasco 鉍床では、塊状黄鉄鉍体(Pyrite-Quartz zone)があり、黄鉄鉍体を中心にその外側へSn・Cu・Zn帯またはZn帯→Pb・Zn帯→Pb帯の帯状胚列が知られている(Einaudi, 1977)。Huanzala 鉍床の場合も黄鉄鉍塊の周囲に、Cu帯→Cu・Zn・Pb帯→Zn・Pb帯→Pb帯の胚列が認められる。また、ここでは顕著なゴッサンが地表に発達し、下部における鉍床胚列の徴候となっている(堀田ほか, 1972; 佐藤ほか, 1977)。Isca Cruz 地域の鉍化作用もこれらと酷似していると思われよう。

6-3 鉍化帯の構造規制

Isca Cruz 地域の鉍化帯に確認されている火成岩は、第1鉍徴西方の岩株状石英安山岩と第4鉍徴の下盤側にシート状岩脈として貫入している酸性火成岩とである。岩株状石英安山岩は、Jumasha 層を軸とする向斜の東翼において、主としてJumasha 層を貫いて分布している。極めて微弱だが周辺の石灰岩にスカム化を与えている。Chupa 鉍床では未だ火成岩は確認されていないが、これと関連した火成活動によって形成された公算が強い。第4鉍徴下盤側の酸性火成岩は、粘土化を主とする変質が著しく原岩の構造を不明にしており、針鉄鉍を鉍染しているのが認められる。Huanzala 鉍床でも、このような酸性火成岩が鉍化帯内にあり、鉍化作用と間接的な関係を有している。

この地域の鉍化作用には、前述したように元素の帯状配列がある。このことは、Chupa 鉍床をもたらした火成岩(まだ確認されていない)が鉍化帯全体を支配し、鉍化作用がChupa 鉍床 Isca Cruz 鉍床へと展開して行ったものではないかと考察される。しかし、11 Kmにわたる本鉍床の鉍質分布や帯状分布が単純な形態を示しているわけではない。鉍化作用には、Santa 層に形成された断層・裂か系も重要な要素を持ち、さらに石英安山岩やChupa 付近などに潜在される複数の火成岩が関係しているものかも知れない。

現時点におけるこれらの解明は極めて困難である。しかし、今後鉍化帯の掘り、鉍質および鉍石鉍物の濃集度などを考察するために、明白にしておかねばならない問題である。従って、

火成岩の分布とその鉱化作用への関与，裂か系を中心とした構造規制について調査を進め解明してゆく必要がある。

Table 6 Assay Results of Minor Elements in the Carbonate Rocks

No.	Field No.	Location	Ca (%)	Mn (%)	Fe (%)	Mg (%)	Ba (%)	Sr (ppm)	Molal ratio Mg/Ca
1	A0-121	G3	30.00			3.75	0.019	0.046	0.205
2	A0-150	G4	18.20			8.79	0.024	0.015	0.795
3	A0-161	G4	19.51	0.04	0.83	7.96	0.032	0.055	0.672
4	A0-162	G4	25.08	0.02	0.45	2.10	0.045	0.043	0.137
5	A0-166	G4	36.07			0.19	0.027	0.029	0.007
6	A0-169	G3	33.93			0.16	0.012	0.070	0.007
7	B0-112	G2	30.33			2.43	0.026	0.035	0.130
8	B0-166	G4	19.18			8.83	0.021	0.011	0.759
9	B0-173	G3	16.39			7.21	0.033	0.010	0.725
10	C0-114	G1	32.30			0.53	0.030	0.025	0.026
11	C0-157	G2	37.21			0.44	0.036	0.023	0.019
12	C0-180	G3	24.59			6.92	0.052	0.021	0.463
13	N0-124	G1	22.30	0.03	0.40	6.05	0.096	0.092	0.446
14	N0-125	G1	18.85	0.03	0.89	7.39	0.066	0.073	0.646
15	N0-128	G1	27.87	0.14	1.37	6.67	0.051	0.026	0.394
16	S0-135	S1	12.04	2.59	4.69	5.98	0.042	0.066	0.820
17	S0-136	S1	36.39			0.21	0.039	0.043	0.008
18	S0-146	S1	22.13	0.03	0.17	8.04	0.038	0.035	0.597
19	S0-150	S1	35.74	0.07	0.44	0.18	0.042	0.037	0.007
20	S0-155	S1	31.80			0.40	0.029	0.064	0.020
21	S0-157	S1	20.49	0.05	1.16	8.14	0.044	0.070	0.653
22	S0-163	S1	30.66	0.03	0.11	1.96	0.022	0.032	0.104
23	S0-165	S1	22.62	0.04	0.12	7.89	0.032	0.023	0.574
24	S0-167	S1	19.34	0.36	0.36	8.95	0.019	0.006	0.763
25	S0-180	G4	15.15			5.44	0.072	0.014	0.591
26	S0-194	G2	7.37			1.79	0.192	0.008	0.398
27	S0-212	S1	29.34			0.42	0.058	0.021	0.023
28	IC-318	S2	12.18			5.37	0.060	0.003	0.726

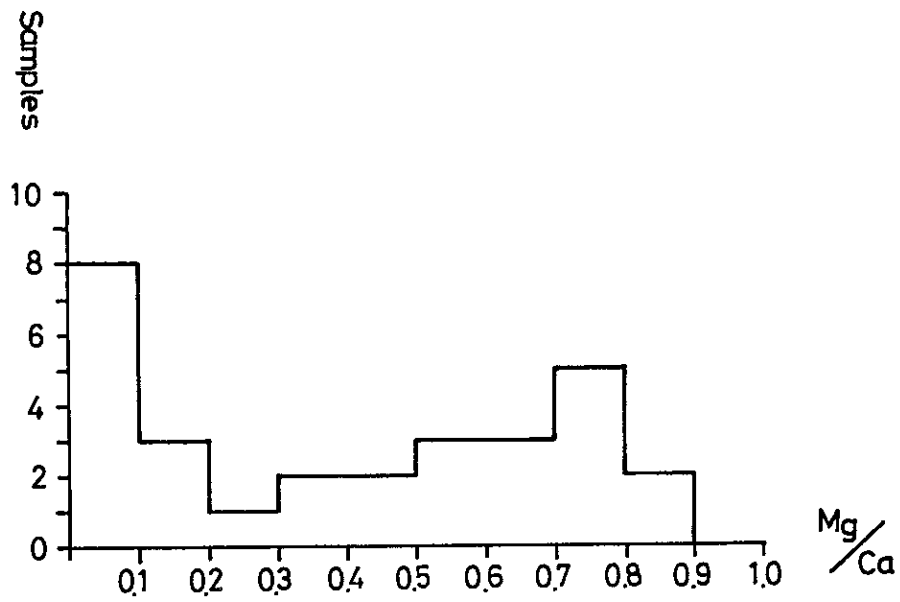


Fig.18. Histogram of Molar Ratio Between Mg and Ca in Carbonate Rocks in the Iscay Cruz Area

Number of Mineralized Zone

- | | |
|--------|--------------|
| ▽ NO 0 | □ NO 4 |
| ○ NO 1 | + NO 5 |
| ● NO 2 | × NO 6 |
| △ NO 3 | ■ Chupa Mine |

$$\pi - \text{Cu} = \frac{\text{Cu}^{(wt)} \times 10}{\text{Cu}^{(wt)} \times 10 + \text{Pb}^{(wt)} + \text{Zn}^{(wt)}} \times 100$$

$$\pi - \text{Pb} = \frac{\text{Pb}^{(wt)}}{\text{Cu}^{(wt)} \times 10 + \text{Pb}^{(wt)} + \text{Zn}^{(wt)}} \times 100$$

$$\pi - \text{Zn} = \frac{\text{Zn}^{(wt)}}{\text{Cu}^{(wt)} \times 10 + \text{Pb}^{(wt)} + \text{Zn}^{(wt)}} \times 100$$

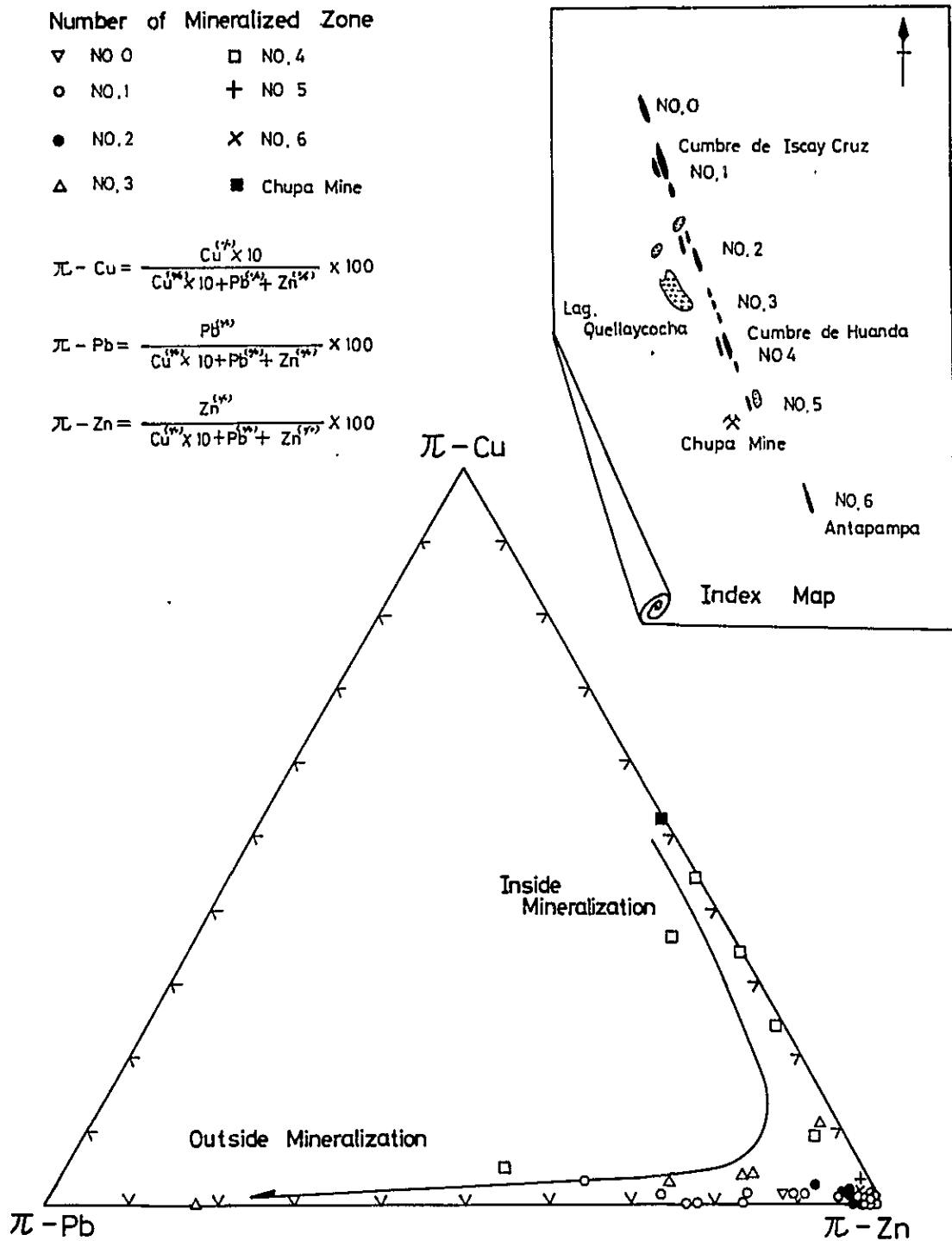


Fig.19. Ternary Diagram of Cu-Pb-Zn Ratio(π -ratio) in the Iscay Cruz Mineralized Zone.

APPENDICES

A. 1. List of Rock Samples

Index of Geological Units	Index of Analysis
Sedimentary rocks	
Jm Jumasha formation	T Thin section
Pt Pariatambo formation	P Polished section
Cl Chulec formation	X X-ray diffraction test
Ph Pariahuanca formation	E EPMA (electron probe microanalysis)
Fr Farrat formation	O Chemical analysis of ore
Cz Carhuaz formation	R Chemical analysis of rock
St Santa formation	D Isotopic age determination
Cm Chimu formation	F Fossil identification
Oy Oyon formation	M Minor element analysis
 Igneous rocks	
Cp Calipuy volcanics	
Ig Igneous rocks	

A. 1. List of Rock Samples

No.	Field No.	Location	Geological Unit	Rock Name	T	P	X	E	O	R	D	F	M
1	A0-101	G3	Cp	Tuff breccia	○								
2	A0-106	G3	Ig	Tonalite porphyry	○								
3	A0-115	G3	Cp	Ore (Pb, Zn)				○					
4	A0-116	G3	Cp	Andesite	○					○			
5	A0-117	G3	Cp	Syenitic porphyry	○								
6	A0-121	G3	St	Limestone									○
7	A0-148	G4	Cl	Limestone								○	
8	A0-150	G4	St	Dolostone									○
9	A0-161	G4	St	Dolostone									○
10	A0-162	G4	St	Limestone									○
11	A0-166	G4	St	Limestone									○
12	A0-169	G3	St	Limestone									○
13	B0-102	G2	Jm	Limestone								○	
14	B0-112	G2	St	Dolomitic limestone									○
15	B0-125	G4	St	Limestone					○				
16	B0-134	G1	Ig	Dacite porphyry					○				
17	B0-136	G1	Jm	Limestone					○				
18	B0-139	G4	Cl	Limestone					○				
19	B0-150	G4	Ph	Ore (Zn)					○				
20	B0-151	G4	Ph	Ore (Cu)					○				
21	B0-152	G4	Ph	Ore (Zn)					○				

No.	Field No.	Location	Geological Unit	Rock Name	T	P	X	E	O	R	D	F	M
22	BO-153	G4	Ph	Ore (Zn)					○				
23	BO-154	G4	Ph	Ore (Cu)					○				
24	BO-155	G4	Ph	Ore (Zn)					○				
25	BO-166	G4	St	Dolostone									○
26	BO-173	G3	St	Limestone									○
27	BO-175	G3	Cz	Shale	○								
28	CO-114	G1	Ph	Limestone									○
29	CO-121	G1	Ig	Tonalite	○					○	○		
30	CO-122	G1	Ig	Tonalite	○					○	○		
31	CO-157	G2	Ph	Limestone									○
32	CO-162	G2	Ig	Quartz porphyry	○								
33	CO-164	G2	Ig	Porphyrite	○								
34	CO-171	G3	Pt	Limestone	○								
35	CO-180	G3	St	Limestone									○
36	CO-186	G3	Ig	Porphyrite	○								
37	NO-113	G1	Ig	Granite porphyry	○								
38	NO-124	G1	St	Limestone									○
39	NO-125	G1	St	Dolostone									○
40	NO-128	G1	St	Dolostone									○
41	NO-131	G3	Cp	Andesite	○								
42	NO-132	G3	Cp	Diorite porphyry	○								
43	NO-146	G1	Ig	Andesite	○								
44	NO-148	G1	Ig	Dacite porphyry	○								

No.	Field No.	Location	Geological Unit	Rock Name	T	P	X	E	O	R	D	F	M
45	NO-149	G1	Cp	Dacitic tuff	○								
46	NO-161	G4	St	Garnet skarn	○								
47	NO-175	G3	Cm	Skarnized hornfels	○								
48	SO-101	G3	Cp	Andesitic tuff	○								
49	SO-103	G3	Cp	Andesite	○								
50	SO-106	G3	Cp	Andesitic tuff	○								
51	SO-135	S1	St	Limestone		○		○					○
52	SO 136	S1	St	Limestone									○
53	SO-137	S1	St	Gossan		○		○					
54	SO-142	S1	Cm	Siliceous sandstone	○								
55	SO-146	S1	St	Limestone			○						○
56	SO-150	S1	St	Limestone									○
57	SO-155	S1	St	Limestone									○
58	SO-157	S1	St	Limestone									○
59	SO-163	S1	St	Limestone									○
60	SO-165	S1	St	Dolostone									○
61	SO-167	S1	St	Dolostone									○
62	SO-176	G1	Ig	Dacite porphyry	○					○			
63	SO-180	G4	St	Limestone									○
64	SO-194	G2	St	Limestone									○
65	SO-212	S1	St	Dolostone									○
66	IC-103	S1	St	Gossan		○							○
67	IC-234	S1	St	Gossan		○							○

No.	Field No.	Location	Geological Unit	Rock Name	T	P	X	E	O	R	D	F	M
68	IC-246	S1	St	Gossan			○						
69	IC-301	S2	St	Ore (Zn)	○	○	○		○				
70	IC-313	S2	St	Gossan	○	○							
71	IC-318	S2	St	Dolostone	○	○			○				○
72	IC-324	S2	Ig	Altered rock		○							
73	IC-325	S2	St	Gossan	○	○	○						
74	IC-326	S2	St	Ore (Pyrite)		○							
75	IC-329	S2	St	Ore (Pb)					○				
76	IC-331	S2	St	Dolostone					○				
77	IC-342	S2	St	Gossan	○	○							
78	IC-349	S2	St	Oxides								○	
79	IC-350	S2	St	Oxides								○	

A. 2. Microscopic Observation of the Thin Sections

A.2. Microscopic Observation of the Thin Sections

(1)

Field No.	Rock Type	Microscopic Observation
AO-101	Tuff breccia (Cp)	The rock is porphyritic and is composed of quartz (rounded to subangular), altered feldspar and hornblende. Sandstone (only quartz) fragments occur in pale brown matrix which shows fluidal texture.
AO-106	Tonalite porphyry (Ig)	Phenocrystic minerals are plagioclase (euhedral or subhedral, dirty clay occurs, An = 50-40, 8.60 x 3.60 ~ 0.58 x 0.40 mm, inclusion of biotite), quartz (anhedral, only three pieces, inclusion of rounded brown glass and subhedral plagioclase) and biotite (euhedral to subhedral, 4.30 x 1.30 ~ 0.44 x 0.05 mm, X = brown, Y = Y' = dark brown, Z = black, inclusion of plagioclase). Groundmass is pale brown, and consists of anhedral quartz (less than 0.06 x 0.05 mm), lath-shaped alkali-feldspar and plagioclase. A lot of sericite are seen as secondary minerals.
AO-116	Andesite (Cp)	The rock shows porphyritic (andesitic) texture, and is composed mainly of plagioclase. Phenocrystic plagioclase occurs euhedral in form and about 1.5 mm in length. It is affected by weak carbonitization and chloritization. Mafic minerals are perfectly altered to chlorite, and show chlorite aggregated patch in parts. Groundmass is composed of lath-like (0.1 ~ 0.2 mm) plagioclase, fine-grained recrystallize felsic minerals, chlorite and dotted opaque minerals.
AO-117	Syenitic porphyry (Cp)	The rock is porphyritic and is composed of alkali-feldspar (subhedral is to anhedral, fresh type is 6.80 x 5.56 ~ 2.26 x 1.58 mm, dirty type is 4.20 x 2.37 ~ 0.58 x 0.36 mm, clear Carlsbad twin, strong kaolinitization.), plagioclase (subhedral, 2.25 x 1.48 ~ 0.38 x 0.18 mm, Carlsbad-albite twin, altered to fine mixture of kaolinite and sericite), quartz (anhedral, 1.70 x 1.04 ~ 0.34 x 0.22 mm), hornblende (perfectly altered, fine-grained mixture of sericite and brown clay) and rarely iron minerals.

Field No.	Rock Type	Microscopic Observation
BO-175	Shale (Cz)	Argillaceous constituents consist of angular quartz grains and angular-subangular clay minerals after feldspar. A small quantity of sericite is seen. Quartz vein (less than 1.3 mm in width) occurs and irregular chlorite is seen in marginal part of the vein.
CO-121	Biotite-hornblende tonalite (Ig)	The rock shows granular texture. Main constituent is plagioclase, next in abundance is quartz, orthoclase, then mafic minerals. Plagioclase is subhedral in form and 3.0 mm in maximum size. It shows albite twinning and zonal structure. It also shows mirmekitic texture. Crystalline quartz is subhedral and about 2.0 mm in size. It shows wavy extinction. Orthoclase shows perthite structure and about 2.0 mm in size. Biotite shows subhedral, and 2.0 mm in maximum size. It is red to brownish yellow and affected by chloritization. Hornblende shows platy subhedral form and brownish green to green. It is often accompanied with sphene and suffered by chloritization. Fine-grained opaque minerals and apatite are dotted in the specimen.
CO-122	Biotite-hornblende tonalite (Ig)	The rock is similar to the No. CO-121, although grain sizes of all minerals are a little bit coarser than CO-121. Plagioclase occurs in less abundant and orthoclase occurs more than CO-121. Mafic minerals are minor amounts. These facts mean this rock is more acidic than the No. CO-121.
CO-162	Silicified quartz porphyry (Ig)	The rock is porphyritic and is composed of quartz (subhedral to euhedral, less than 2.54 x 2.00 mm) and altered feldspar (subhedral, less than 2.40 x 1.40 mm) as phenocrysts. Only one cordierite (radial structure, 0.40 x 0.34 mm) is seen in matrix. The rock is suffered strong silicification.

(3)

Field No.	Rock Type	Microscopic Observation
CO-164	Augite porphyrite (Ig)	<p>The rock is porphyritic and is composed of plagioclase (euhedral to subhedral, 2.65 x 1.28 ~ 1.20 x 0.15 mm, Carlsbad-albite twin, zoning rarely, altered to kaolinite or sericite in the central part along the cleavage), hornblende (euhedral to subhedral, 4.26 x 1.48 ~ 2.09 x 0.86 mm, X = X' = pale brownish yellow, Z = yellowish brown, inclusions of plagioclase and iron ore), hypersthene (euhedral, less than 1.56 x 0.60 mm, weak pleochroism, oftenly associated with augite), and augite (subhedral or anhedral, 1.57 x 1.40 ~ 0.70 x 0.40 mm, slightly strong double refraction). Accessory mineral is iron ore. Pale grey groundmass shows intersertal texture and consists of lath-shaped plagioclase, short prismatic augite and prismatic or granular hypersthene. Amygdaroidal calcite in matrix and sericite in phenocrysts occur as secondary minerals.</p>
CO-171	Limestone (Pt)	<p>Calcite occurs as isolated rhombohedron and as aggregates bounded by the original grain margin. The rock shows mesh texture.</p>
CO-186	Altered porphyrite (Ig)	<p>Phenocrystic minerals are plagioclase (euhedral to subhedral, 1.72 x 1.56 ~ 0.85 x 0.35 mm, largely altered to clay minerals, fine mixture of sercite, chlorite, and calcite), hypersthene (euhedral to subhedral, a small quantity) and hornblende (euhedral to subhedral, perfectly altered to two types; one is chloritization and the other is sericitization). The groundmass shows coarse hyalopilitic texture and only plagioclase is seen because of strong alternation. Secondary mineral is calcite.</p>

Field No.	Rock Type	Microscopic Observation
NO-113	Biotite granite porphyry (Ig)	<p>The rock is porphyritic and is composed mainly of quartz (euhedral to subhedral, 5.55 x 4.20 - 0.30 x 0.17 mm, very transparent, rarely embayed), alkali-feldspar (subhedral, 4.05 x 2.85 ~ 0.25 x 0.20 mm, weakly altered to clay), plagioclase (euhedral to subhedral, 4.10 x 3.75 ~ 0.40 x 0.28 mm, An = 55-30, clear twinning and zoning, alkali-feldspar in marginal part and biotite (subhedral to euhedral, 2.17 x 0.45 ~ 0.40 x 0.06 mm, X = pale brownish grey, Z = dark brown, plagioclase as inclusion). Only one hypersthene (anhedral, 0.5 x 0.5 mm) is seen. The groundmass shows fine granular texture after alteration.</p>
NO-131	Pyroxene andesite (Cp)	<p>The rock is porphyritic and is weakly altered to propylite. Plagioclase (euhedral to subhedral, 1.82 x 1.44 ~ 0.08 x 0.06 mm, An = 80-55), and pyroxene (perfectly decomposed, mainly hypersthene by figure) are phenocrysts. Altered plagioclase is seen fine mixture of sericite and chlorite along the cleavage or central part. Groundmass is fine mixture of clay minerals.</p>
NO-132	Altered diorite porphyry (Cp)	<p>The rock is porphyritic and is perfectly altered. Plagioclase (subhedral to anhedral, 5.50 x 5.15 ~ 0.95 x 0.25 mm, largely altered to fine mixture of sericite, zoicite, chlorite, and unknown clay minerals) and pyroxene (perfectly decomposed and shows the mixture of zoicite and sericite) are phenocrystic minerals. Groundmass shows intergranular texture and is perfectly altered. Pyrrhotite (anhedral and prismatic) occurs as ore mineral and calcite is seen as secondary mineral.</p>

Field No.	Rock Type	Microscopic Observation
NO-146	Hornblende trachyandesite (Ig)	<p>The rock is porphyritic and is composed of plagioclase (euhedral or subhedral, $3.00 \times 1.90 \sim 1.14 \times 0.68$ mm, Carlsbad-albite twin, An = 72-55, large crystals shows weak zoning), alkali-feldspar (euhedral to subhedral, sanidine by optical angle, $0.50 \times 0.40 \sim 0.50 \times 0.20$ mm), quartz (anhedral, less than 0.10×0.08 mm), and hornblende (euhedral to subhedral, $5.20 \times 1.15 \sim 1.20 \times 0.40$ mm, X = brownish yellow, Z = yellowish brown, central part is fresh but outer part altered to epidote and sericite) as phenocrysts. Octahedral magnetite (less than 0.14×0.10 mm) occurs as iron mineral. Groundmass shows trachytic texture and is composed of lath-shaped plagioclase, anhedral alkali-feldspar, anhedral quartz, and glass. Secondary minerals are calcite, epidote and sericite.</p>
NO-148	Hornblende-biotite dacite porphyry (Ig)	<p>The rock is porphyritic and is composed mainly of plagioclase (euhedral to subhedral, $8.96 \times 3.30 \sim 1.08 \times 0.59$ mm, Carlsbad-albite twin, strong zoning, An = 65-32), hornblende (subhedral, $3.88 \times 1.40 \sim 1.22 \times 0.40$ mm, X or X' = green, Z = greenish brown inclusions of apatite and anhedral biotite in central or marginal part, and biotite (euhedral to subhedral, X = brownish yellow, Z = dark brown, inclusions of apatite and plagioclase). Iron ore minerals is common. Groundmass shows hyalopilitic texture and is composed of lath-shaped plagioclase, globular phroxene and glass.</p>
NO-149	Dacitic tuff (Cp)	<p>Constituent minerals are plagioclase (subhedral to anhedral, $2.60 \times 2.15 \sim 0.24 \times 0.17$ mm, An = 53 by fresh one), alkali-feldspar (a small quantity, subhedral, less than 1.01×0.70 mm), quartz (anhedral, $1.03 \times 0.82 \sim 0.33 \times 0.25$ mm) and mafic mineral (not determined by strong alteration). Matrix shows pale brown and fine texture. Subrounded sandstone, rounded to subrounded pumice, and rounded tuff occur as fragments.</p>

Field No.	Rock Type	Microscopic Observation
NO-161	Actinolite-garnet skarn (St)	Constituent minerals are garnet (subhedral to euhedral, 3.44 x 3.00 ~ 1.30 x 0.85 mm, accompanied with feldspar or chlorite along the small tiny fissures or in marginal part, clear zoning in margin), actinolite (needle figure; euhedral, less than 2.16 x 0.40 mm), quartz (angular or subhedral), calcite (anhedral, amoeba figure), and a few amount of hornblende and iron ore minerals.
NO-175	Skarnized hornfels (Cm)	The rock is composed of calcite, garnet, tourmaline (anhedral, O = yellowish brown, E = brown, schorlite type by pleochroism), granular hedenbergite (very small, strong double refraction) and a small quantity of prismatic epidote.
SO-101	Andesitic tuff (Cp)	The rock shows clastic texture. Fragments are composed of andesite and plagioclase crystals. These sizes are about 1.0 mm. Matrix is composed of glass, fine-grained recrystalline felsic minerals, limonite and opaque minerals.
SO-103	Epidotized andesite (Cp)	The rock is thought to be originally andesite. Epidotization is very strong especially in phenocryst. Phenocrystic minerals, mafic minerals and plagioclase, are perfectly altered to epidote, a few amounts of quartz, calcite and chlorite. Grandmass is composed of plagioclase, recrystallized fine felsic minerals and dotted opaque minerals.
SO-106	Andesitic tuff (Cp)	The rock shows recrystallized clastic texture. Fragments are andesite (7.0 mm in maximum) and plagioclase crystals. Matrix is composed of plagioclase, quartz, dotted opaque minerals, carbonates and chlorite.
SO-142	Siliceous sandstone (Cm)	Constituent mineral is only quartz (granular, 1.75 x 1.55 ~ 0.16 x 0.16 mm) and cementing material is a small quantity of clay minerals.

Field No.	Rock Type	Microscopic Observation
SO-176	Biotite-hornblende dacite porphyry (Ig)	The rock is porphyritic and is composed of plagioclase (sub-hedral to euhedral, 9.50 x 3.35 ~ 0.94 x 0.76 mm, Carlsbad-albite-pericline twin, An = 76-60, zoning in marginal part, inclusions of hornblende, iron ore, and brown glass), hornblende (subhedral, 4.62 x 2.08 ~ 0.50 x 0.16mm, X = X' = yellowish green, Z = pale brownish yellow, partly altered to sericite, inclusions of iron ore and plagioclase), and biotite (euhedral to subhedral, 2.78 x 2.16 ~ 0.82 x 0.30 mm, X = pale brownish yellow, Z = dark brown). The groundmass is hyalopilitic and consists of lath-shaped plagioclase, short prismatic anorthoclase, irregular or granular quartz and glass.
IC-301	Zn-ore in dolomitic limestone (St)	The rock is dolomitic limestone with equicrystalline texture. A lot of fine-grained zinc mineral of needle, massive and wide lenticular figures is observed in the specimen.
IC-313	Hematite-siderite gossan (St)	The rock is composed of large anhedral siderite, prismatic iron ore (less than 2.55 x 0.10 mm), needle hematite (less than 1.05 x 0.18 mm), long prismatic alkali-feldspar (1.90 x 1.28 ~ 0.70 x 0.40 mm) and granular quartz (0.15 x 0.15 mm). Tiny quartz vein (less than 0.40 mm in width) runs in the rock.
IC-318	Dolostone (St)	Some dolomite veins (less than 0.70 mm in width) occur in fine granular dolomite.
IC-325	Hematite-siderite gossan (St)	The rock is similar as IC-313.
IC-342	Siderite gossan (St)	The rock is composed of quartz (0.85 x 0.70 ~ 0.50 x 0.40 mm), anhedral siderite, needle hematite and alkali-feldspar.

A. 3. Microscopic Observation of the Polished Sections

A.3. Microscopic Observation of the Polished Sections

(1)

Field No.	Rock Type	Microscopic Observation
SO-135	Sphalerite gossan (St)	<p>Chalcophanite, pyrite and sphalerite are observed in this polished section. Chalcophanite ((Zn, Mn, Fe) Mn₃O₇ 3H₂O) occurs as veinlets of 0.3 ~ 0.1 mm in width, in which small subhedral sphalerite grains of about 0.05 mm in diameter are included. Although small amount of sphalerite is also found in the host rock as very small dots, a great part of sphalerite occurs closely with chalcophanite veinlets. Pyrite occurs as small anhedral grains of 0.2 x 0.1 mm - 0.05 x 0.05 mm in size scattering in host rock. Some parts of pyrite contains blueish light grey fine-grained mineral which is too small to determine. (This sample was tested by EPMA.)</p>
SO-137	Zn-oxide gossan (St)	<p>This rock have been completely replaced by secondary oxide and hydroxide minerals containing Mn, Fe and Zn elements, remained the part of quartz. Surrounding the pseudomorphs of probably pyrite, secondary Mn and An-bearing mineral occurs, which shows cryptocrystalline and is difficult to determine by microscopic observation. Judging from the X-ray and EPMA analysis, the cryptocrystalline mineral is inferred to be chalcophanite. The pseudomorph mineral after pyrite is inferred to be Mn-bearing geothite. (This sample was tested by EPMA.)</p>
IC-103	Pb - Zn - oxide ore (gossan) (St)	<p>In this polished section, primary ore minerals are rare and secondary ore minerals are observed surrounding the spots of gangue minerals. The greater parts of ore minerals show holohyaline and cryptocrystalline, in which 2-3 mineral layers are supposed to be included. A few small aggregates of prismatic anhedral to subhedral crystals occur surrounding cavities. This mineral shows characteristic reflection pleochroism and strong anisotropy and is inferred to be chalcophanite. From the X-ray analysis, gangue minerals are composed of barite and quartz.</p>

(2)

Field No.	Rock Type	Microscopic Observation
IC-234	Pb - Zn - oxide ore (gossan)(St)	<p>As for the zinc containing mineral, chalcophanite is found. There are two types in the occurrence of chalcophanite, one is small aggregates of cryptocrystalline chalcophanite scattering irregularly in various shapes, the other is aggregates of prismatic and acicular crystals filling in cracks and cavities showing banded colloform texture. According to the EPMA, the cryptocrystalline part is rich in Fe element and poor in Mn and Zn elements. On the contrary, banded colloform part is poor in Fe element and rich in Mn and Zn elements. Small amount of Fe-hydroxides is also observed, though primary sulfide minerals are not found. (This sample was tested by EPMA.)</p>
IC-301	Sphalerite massive ore (St)	<p>As for the ore minerals, sphalerite, magnetite and hematite are observed. Sphalerite occurs as massive large crystals which contains small chalcopyrite dots. Hematite occurs as massive large crystals which contains small prismatic crystals of 0.2 mm in length together closely with magnetite grains.</p>
IC-313	Hematite-siderite gossan (St)	<p>Hematite alone is observed. It appears as aggregates of prismatic and acicular crystals of around 0.5 mm in length.</p>
IC-318	Galena-sphalerite dissemination ore (St)	<p>A lot of galena grains disseminated in the host rock are observed but sphalerite is not found in this section. Galena shows usually as various fine to coarse anhedral grains and seems to have a close paragenesis to the gangue minerals composed of mainly carbonates.</p>
IC-324	Hematite dissemination in altered rock (St)	<p>Hematite is only ore mineral in this rock. Usually, it appears as aggregates of prismatic and acicular crystals of around 0.4 mm in length. Hematite occurs also in druse which seems to be recrystallized products.</p>
IC-325	Hematitesiderite gossan (St)	<p>Hematite is only ore mineral in this section. It shows prismatic crystals and fluidal structure.</p>

(3)

Field No.	Rock Type	Microscopic Observation
IC-326	Pyrite massive ore (St)	Pyrite and sphalerite are observed. Both minerals occur together closely as massive large crystals. In sphalerite grains, a small quantity of chalcopyrite dots is found. Some parts of pyrite show bird-eye structure.
IC-342	Siderite-delomite gossan with sphalerite (St)	Sphalerite and pyrite are observed. Small anhedral sphalerite grains are dotted with the host rock. Small amount of pyrite exists in the sphalerite grains. Those sulfide minerals seem to occur in the carbonate veinlets.

A. 4. Photomicrographs of Rock and Ore Samples

4-1 Thin Section

Field No.	Location	Geological Unit	Rock Name
CO-121	G1	Ig	Tonalite
CO-122	G1	Ig	Tonalite
AO-116	G3	Cp	Andesite
SO-101	G3	Cp	Andesitic tuff
SO-103	G3	Cp	Epidotized andesite
SO-106	G3	Cp	Andesitic tuff
SO-142	S1	Cm	Siliceous sandstone
BO-175	G3	Cz	Shale
NO-131	G3	Cp	Pyroxene andesite
NO-149	G1	Cp	Dacitic tuff
CO-162	G2	Ig	Silicified quartz porphyry
CO-164	G2	Ig	Augite prophyrite
SO-176	G1	Ig	Biotite-hornblende dacite
CO-186	G3	Ig	Altered porphyrite
NO-146	G1	Ig	Hornblende trachyandesite
NO-148	G1	Ig	Hornblende-biotite dacite porphyry
NO-161	G4	St	Actinolite garnet skarn
IC-318	S2	St	Dolostone
IC-301	S2	St	Zn-ore in dolomitic limestone
IC-325	S2	St	Hematite-siderite gossan

Abbreviations

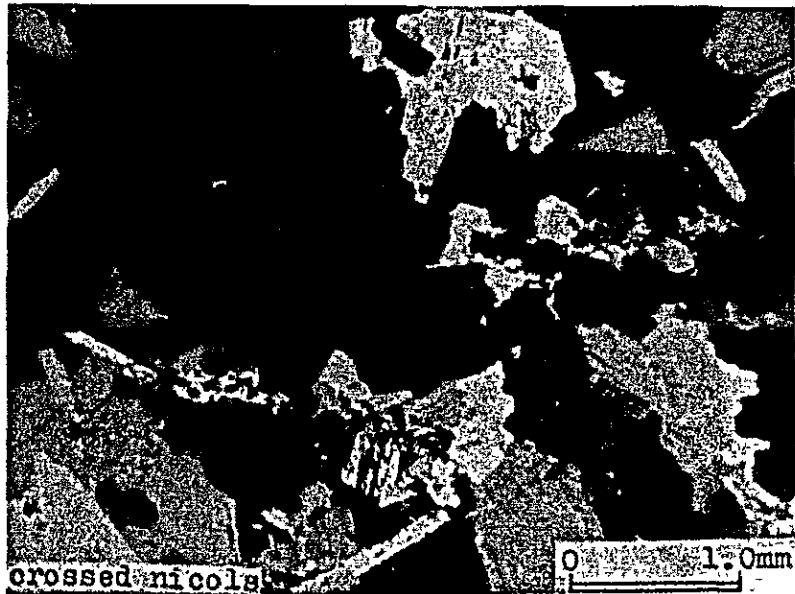
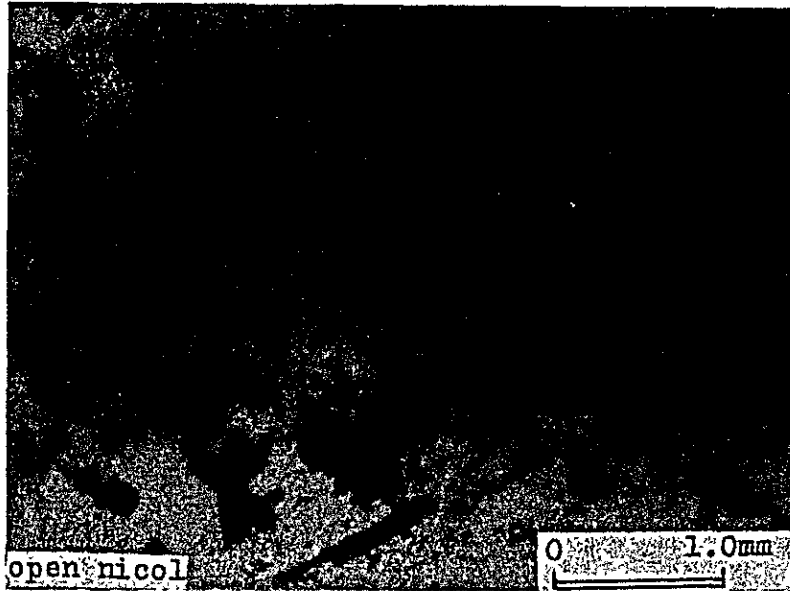
qt : quartz	au : augite	cal : calcite
pl : plagioclase	hy : hyperthine	dol : dolomite
kf : K-feldspar	ep : epidote	sid : siderite
snd : sanidine	crd : cordierite	dol-v : dolomite vein
bt : biotite	act : actinolite	alt-f : altered feldspar
hb : hornblend	gar : garnet	hm : hematite
px : pyroxene	chl : chlorite	Zn : Zn-ore

Field No. CO-121

Location : G1

Geological unit : Ig

Rock name : Tonalite



Field No. CO-122

Location : G1

Geological unit : Ig

Rock name : Tonalite

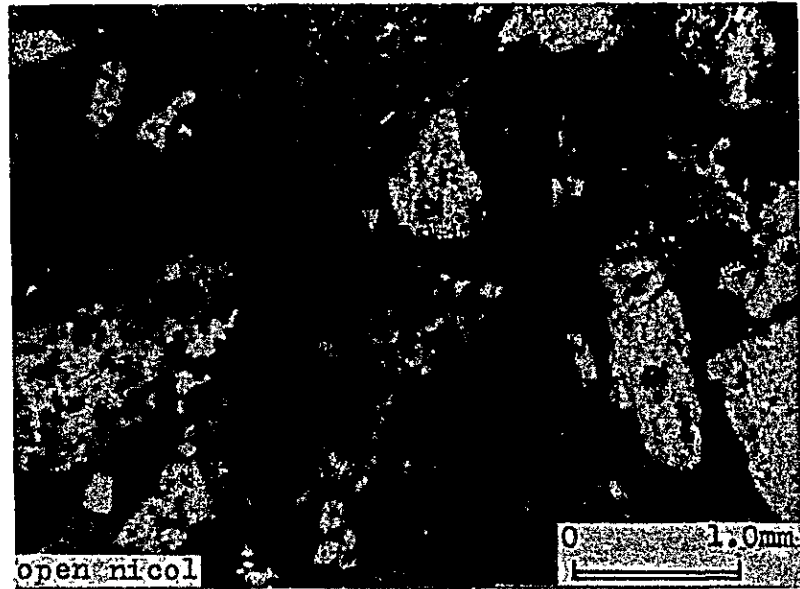


Field No. A0-116

Location : G3

Geological unit : Cp

Rock name : Andesite

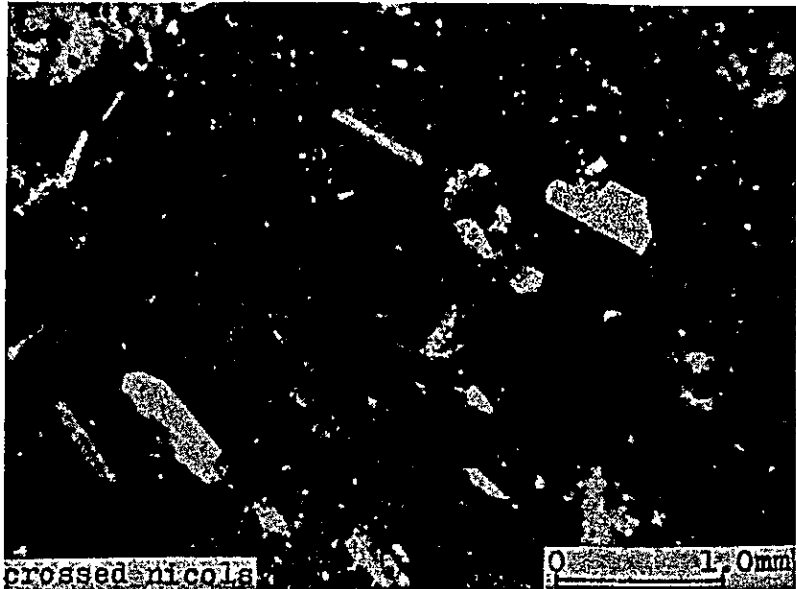


Field No. S0-101

Location : G3

Geological unit : Cp

Rock name : Andesitic tuff

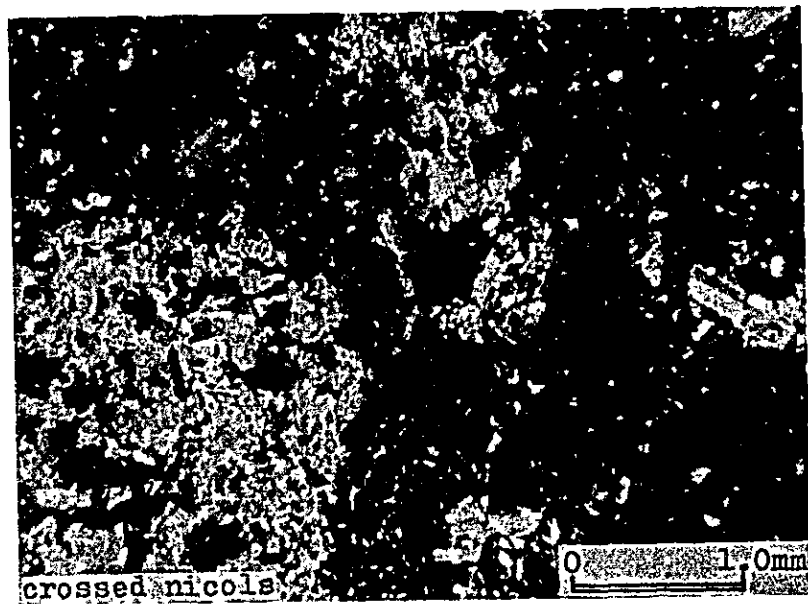


Field No. SO-103

Location : G3

Geological unit : Cp

Rock name : Epidotized andesite

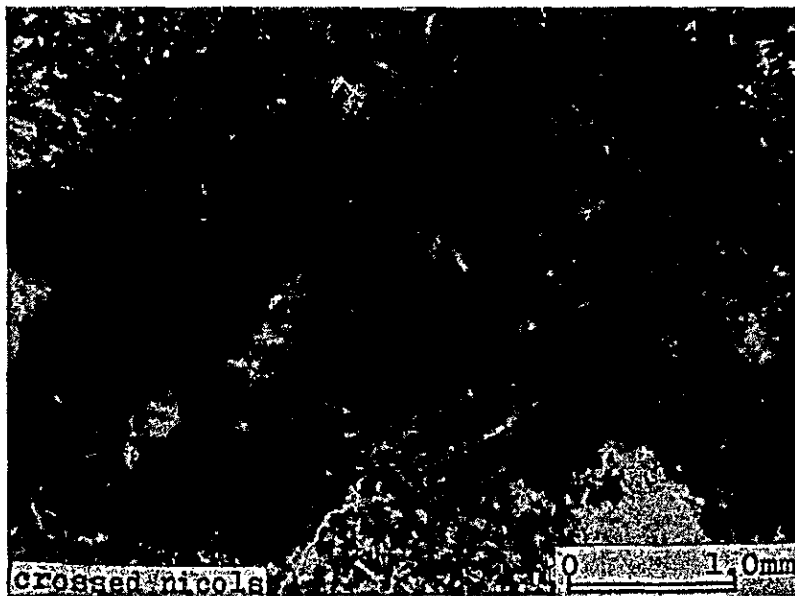


Field No. S0-106

Location : G3

Geological unit : Cp

Rock name : Andesitic tuff

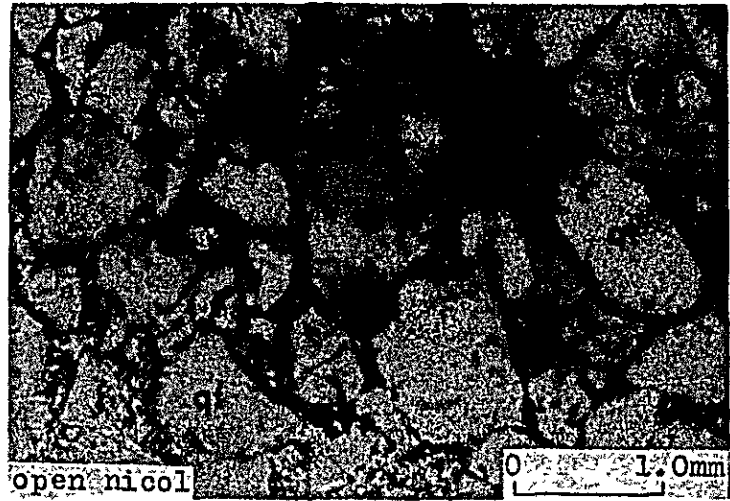


Field No. S0-142

Location : S1

Geological unit : Cm

Rock name : Siliceous sandstone

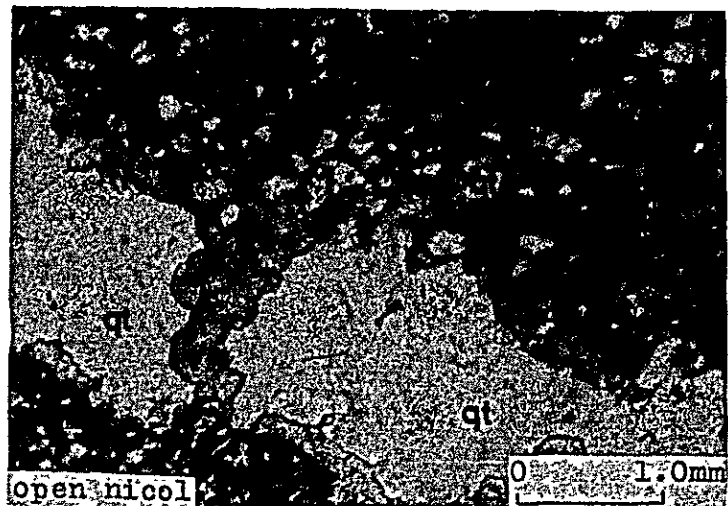


Field No. B0-175

Location : G3

Geological unit : Cz

Rock name : Shale

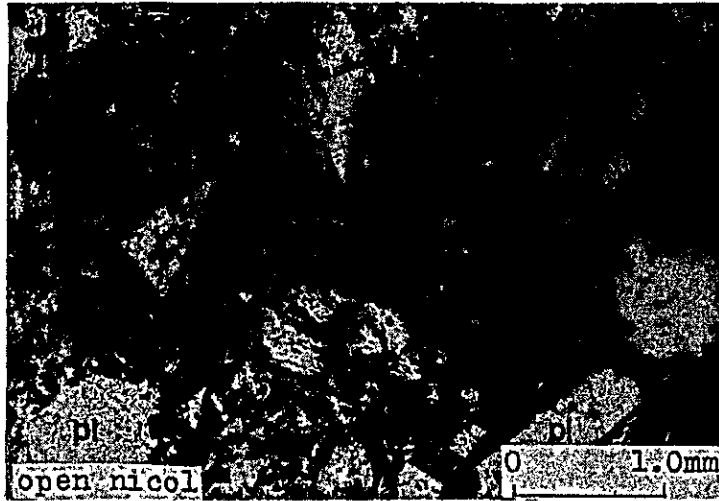


Field No. NO-131

Location : G3

Geological unit : Cp

Rock name : Pyroxene andesite



Field No. NO-149

Location : D1

Geological unit : Cp

Rock name : Dacitic tuff



Field No. CO-162

Location : D2

Geological unit : Ig

Rock name : Silicified quartz porphyry

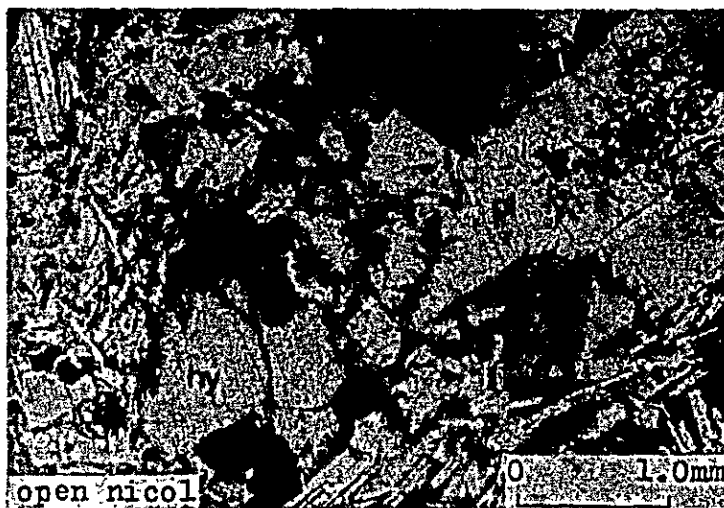


Field No. CO-164

Location : D2

Geological unit : Ig

Rock name : Augite porphyrite

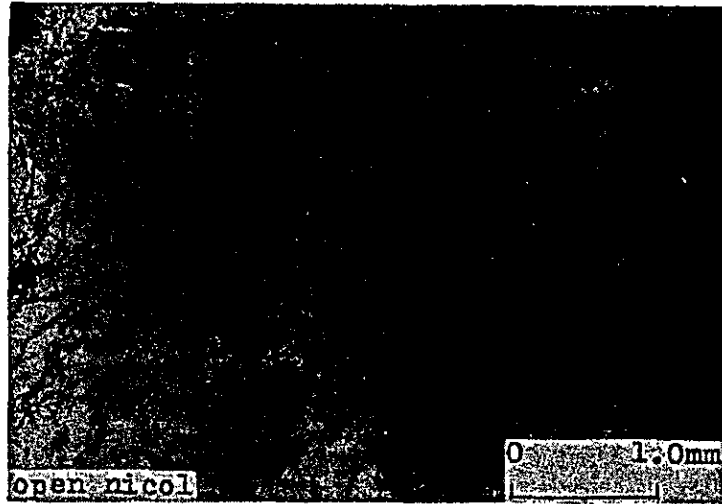


Field No. SO-176

Location : G1

Geological unit : Ig

Rock name : Biotite-hornblende dacite

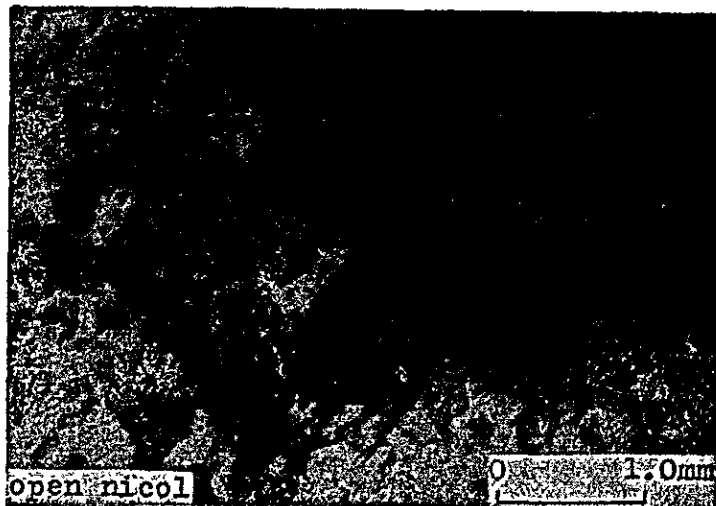


Field No. CO-186

Location : G3

Geological unit : Ig

Rock name : Altered porphyrite



Field No. NO-146

Location : G1

Geological unit : Ig

Rock name : Hornblende
trachyandesite

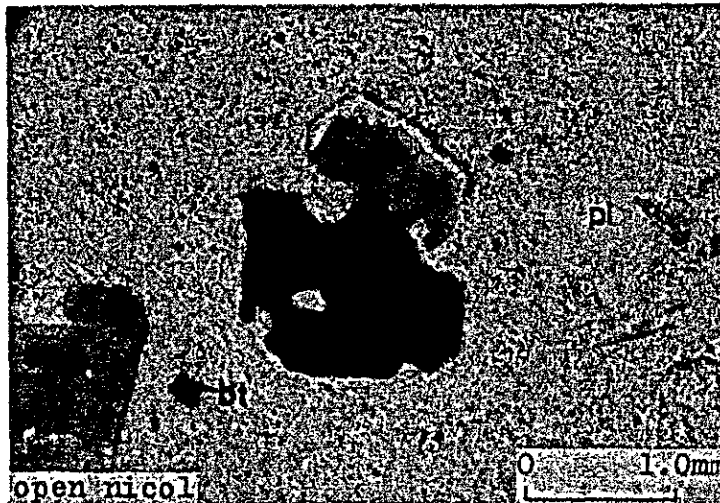


Field No. NO-148

Location : D1

Geological unit : Ig

Rock name : Hornblende-biotite
dacite porphyry



Field No. NO-161

Location : D4

Geological unit : St

Rock name : Actinolite garnet skarn



Field No. IC-318

Location : S2

Geological unit : St

Rock name : Dolostone

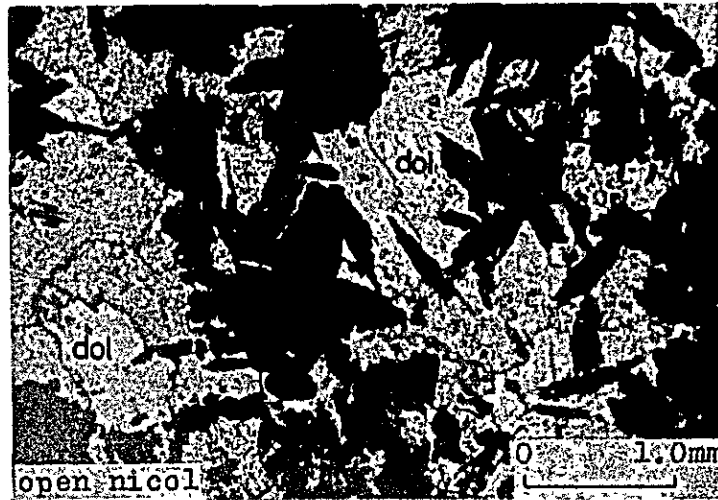


Field No. IC-301

Location : S2

Geological unit : St

Rock name : Zn-ore in dolomitic
limestone

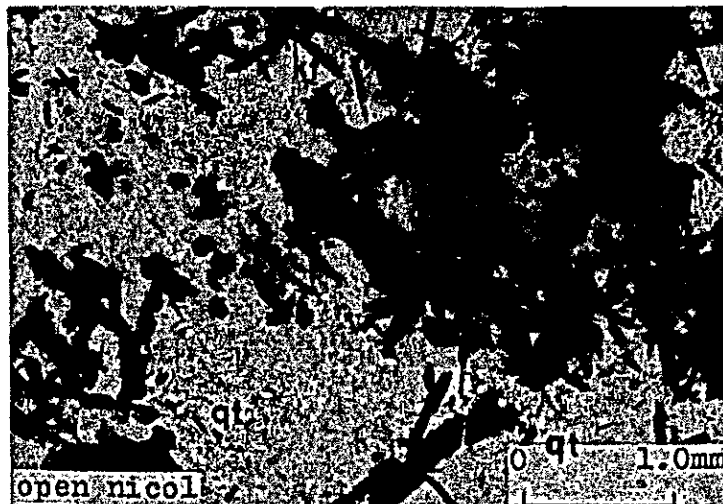


Field No. IC-325

Location : S2

Geological unit : St

Rock name : Hematite-siderite gossan



4-2 Polished Section

Field No.	Location	Geological Unit	
SO-135	S1	St	Sphalerite gossan
SO-137	S1	St	Zn-oxide gossan
IC-103	S1	St	Pb-Zn-oxide ore (gossan)
IC-234	S1	St	Pb-Zn-oxide ore (gossan)
IC-301	S2	St	Sphalerite massive ore
IC-313	S2	St	Hematite siderite gossan
IC-318	S2	St	Galena-sphalerite dissemination ore
IC-324	S2	Ig	Hematite dissemination in altered rock
IC-325	S2	St	Hematite-siderite gossan
IC-326	S2	St	Pyrite massive ore
IC-342	S2	St	Siderite dolomite gossan with sphalerite dissmination

Abbreviations

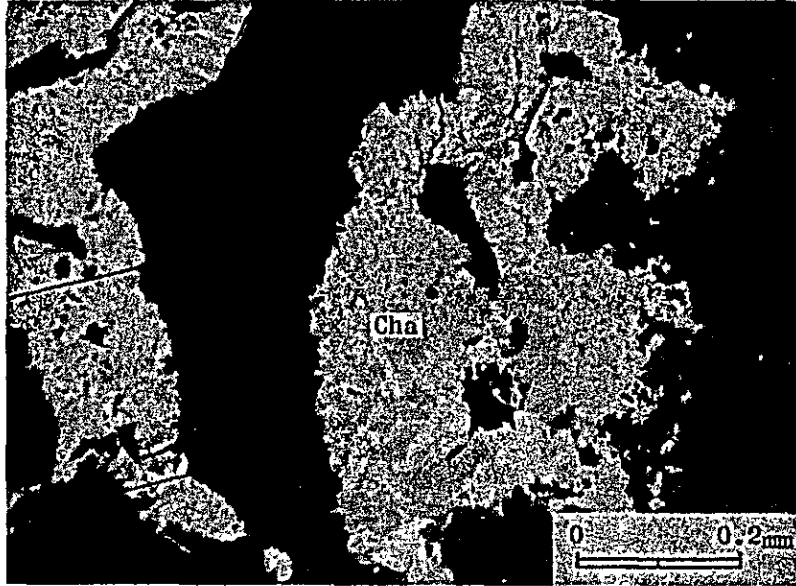
Cha : chalcophanite	Py : Pyrite
Goe : goethite	Mt : Magnetite
Gl : galena	Hm : Hematite
Sp : sphalerite	

Field No. 1C-234

Location : S1

Geological unit : St

Rock type : Pb-Zn-oxide ore
(gossan)

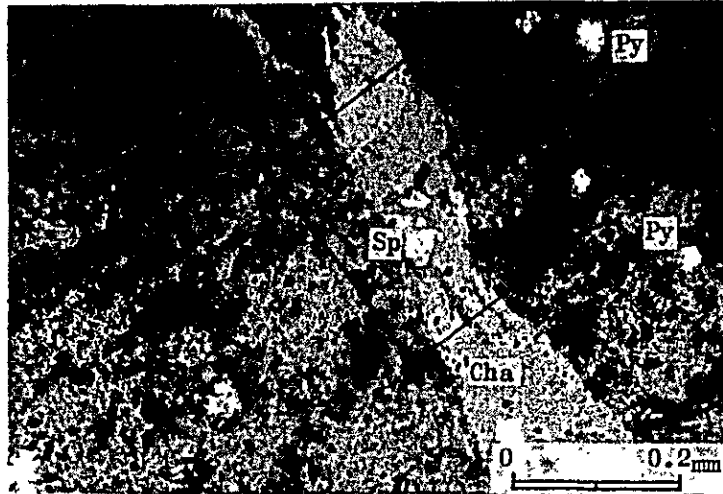


Field No. SO-135

Location : S1

Geological unit : St

Rock type : Sphalerite gossan

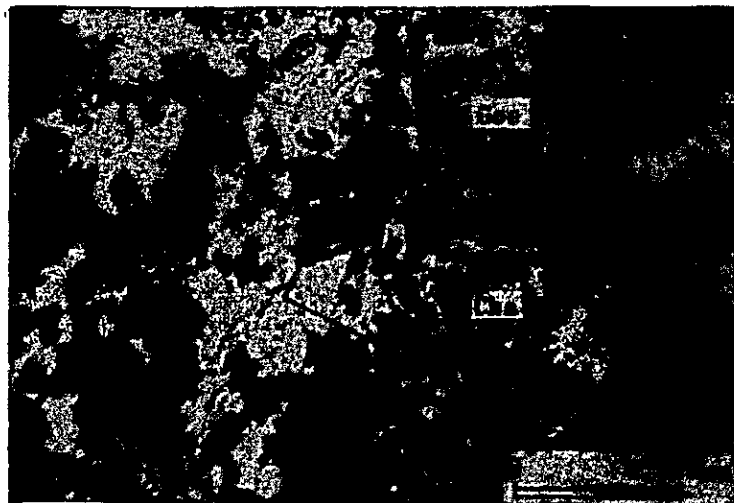


Field No. SO-137

Location : S1

Geological unit : St

Rock type : Zn-oxide gossan

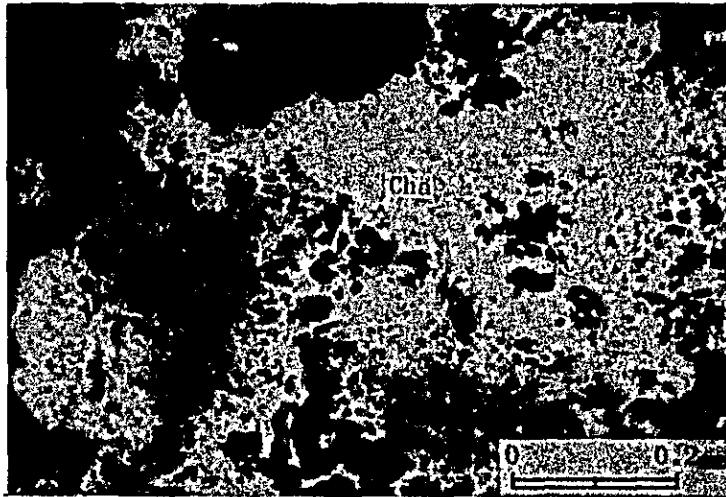


Field No. IC-103

Location : S1

Geological unit : St

Rock type : Pb-Zn-oxide ore
(gossan)

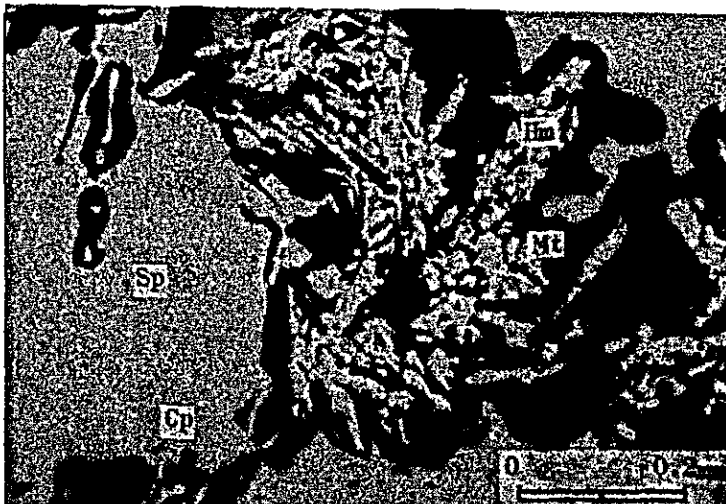


Field No. IC-301

Location : S2

Geological unit : St

Rock type : Sphalerite massive ore

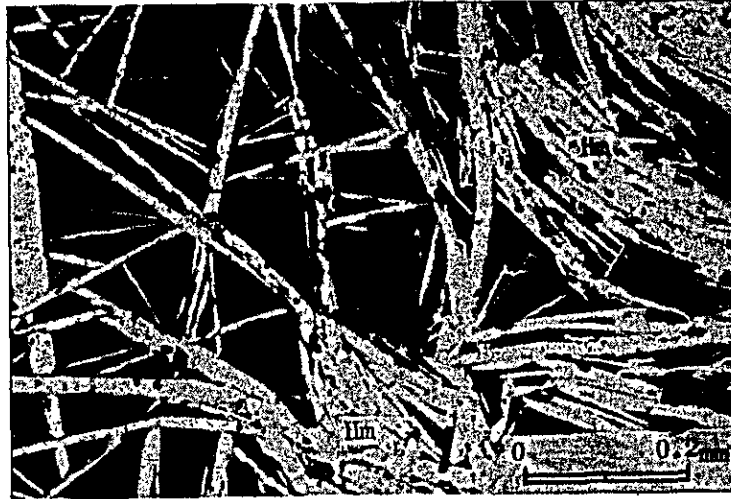


Field No. IC-313

Location : S2

Geological unit : St

Rock type : Hematite-siderite
gossan



Field No. IC-318

Location : S2

Geological unit : St

Rock type : Galena-sphalerite
dissemination ore

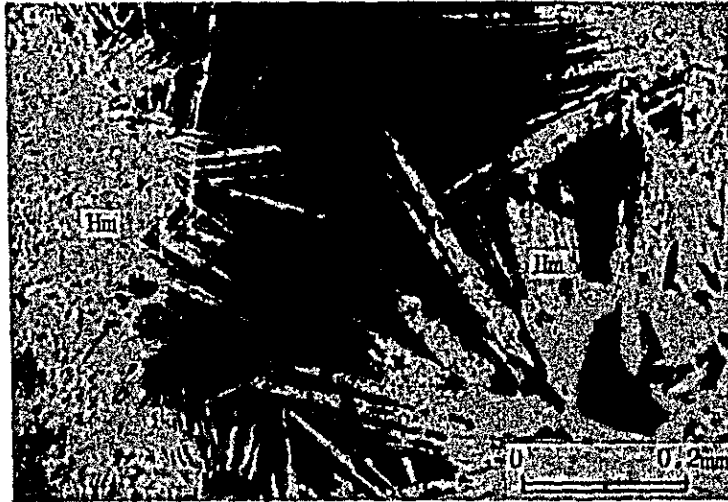


Field No. IC-324

Location : S2

Geological unit : Ig

Rock type : Hematite dissemination
in altered rock



Field No. IC-325

Location : S2

Geological unit : St

Rock type : Hematite-siderite gossan

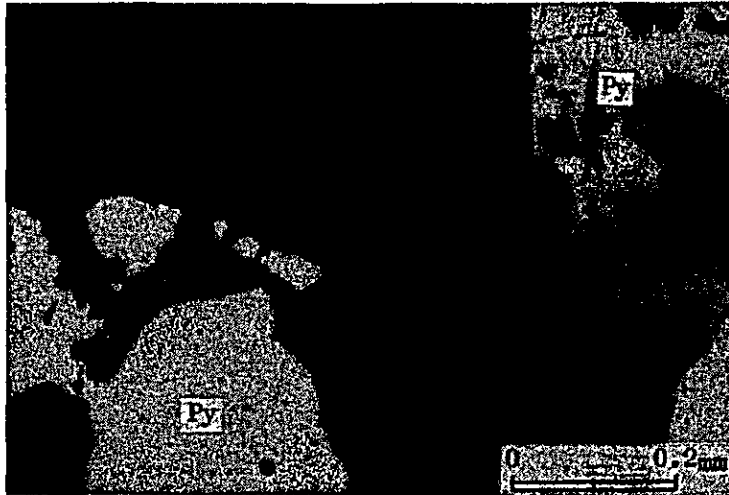


Field No. IC-326

Location : S2

Geological unit : St

Rock type : Pyrite massive ore

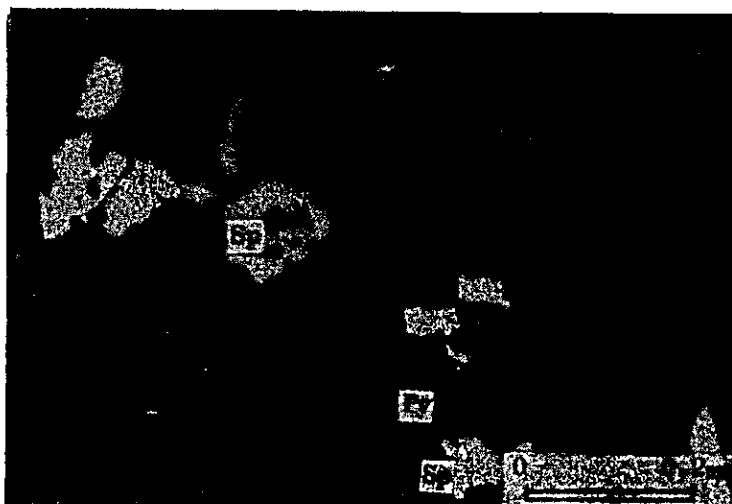


Field No. IC-342

Location : S2

Geological unit : St

Rock type : Siderite dolomite gossan
with sphalerite dissemination



4-3 EPMA Analysis

Field No.	Location	Geological Unit	Rock Type
S0-135	S1	St	Sphalerite gossan
S0-137	S1	St	Zn-oxide gossan
IC-234	S1	St	Pb-Zn-oxide ore (gossan)

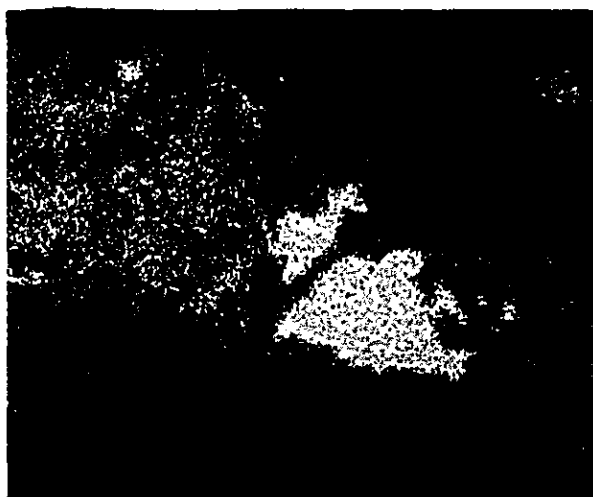
* EPMA (electron probe microanalysis)

Abbreviations

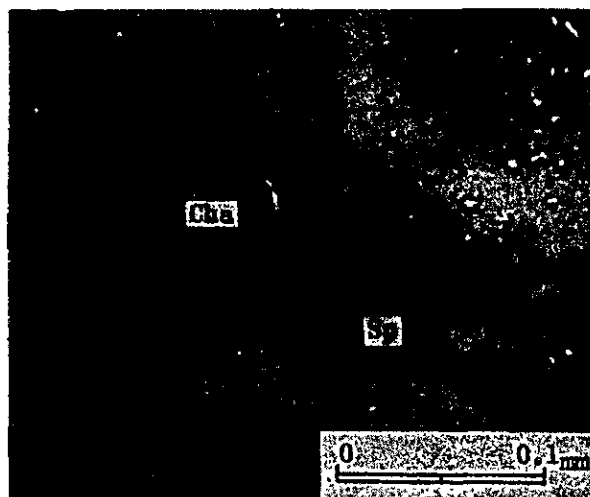
Cha : chalcophanite

Goe : goethite

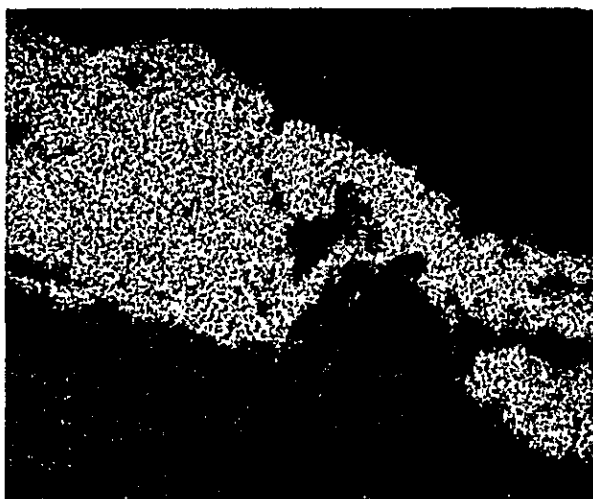
Sp : sphalerite



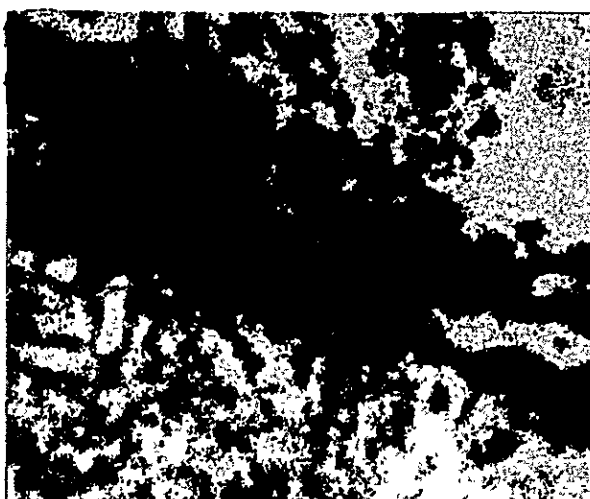
Zn X-ray image



Absorbed electron image



Mn X-ray image



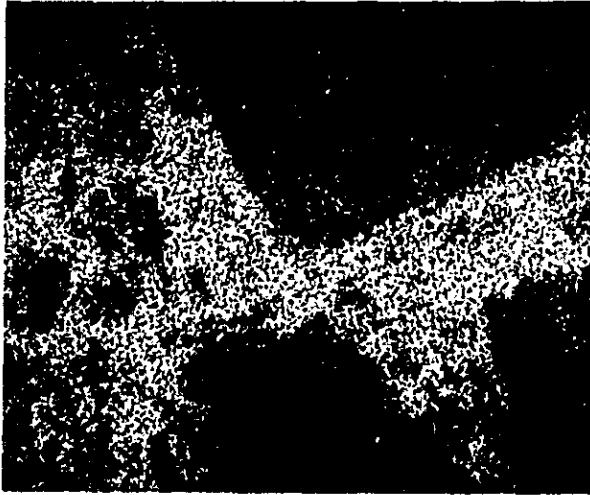
Si X-ray image



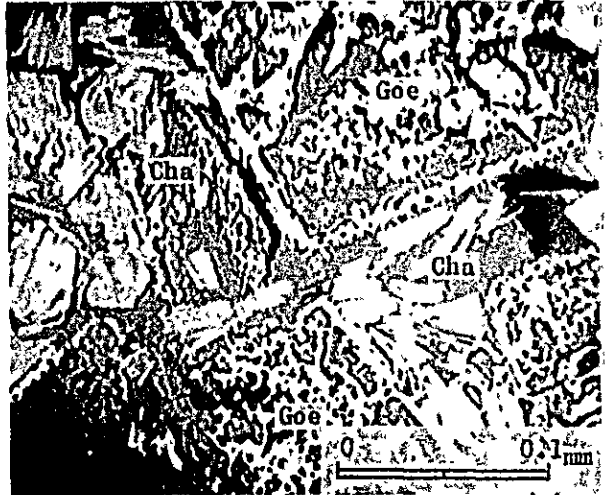
Fe X-ray image



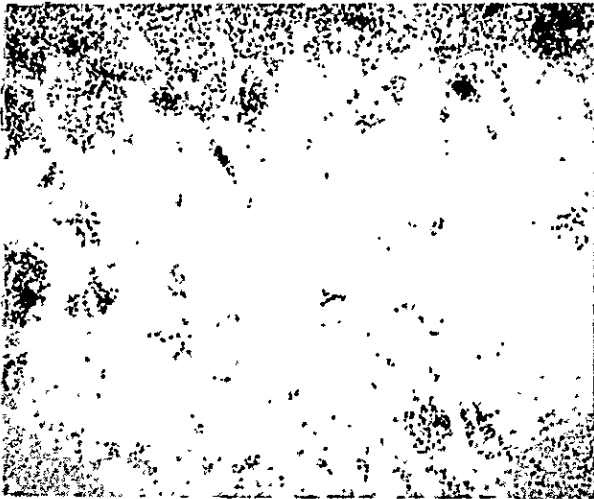
S X-ray image



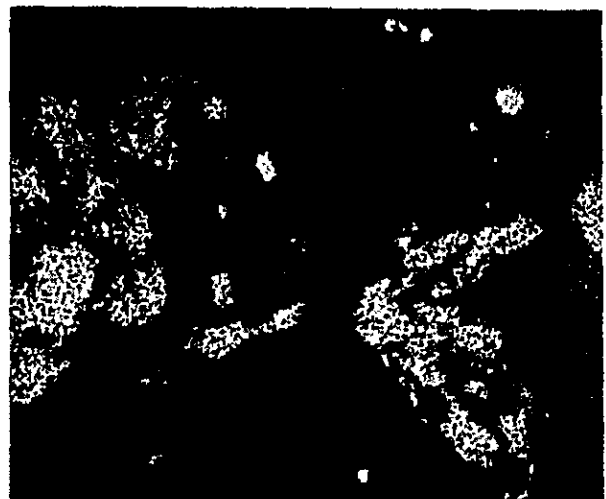
Zn X-ray image



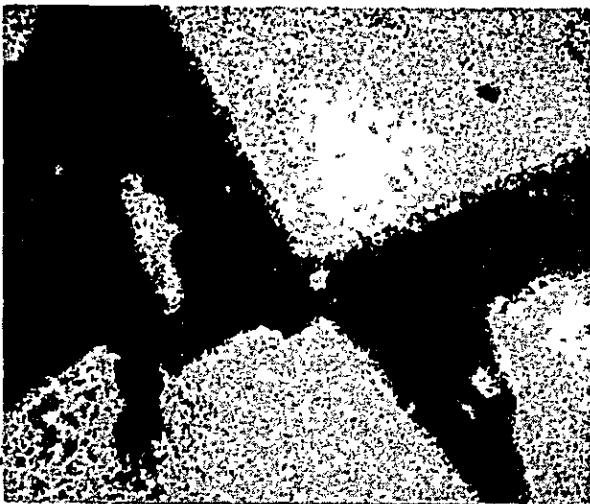
Absorbed electron image



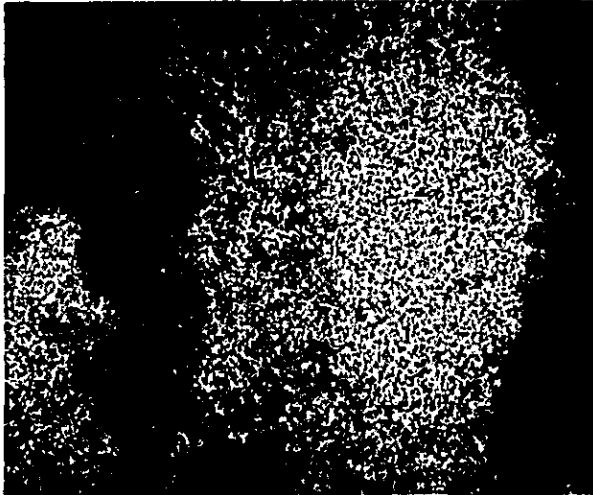
Mn X-ray image



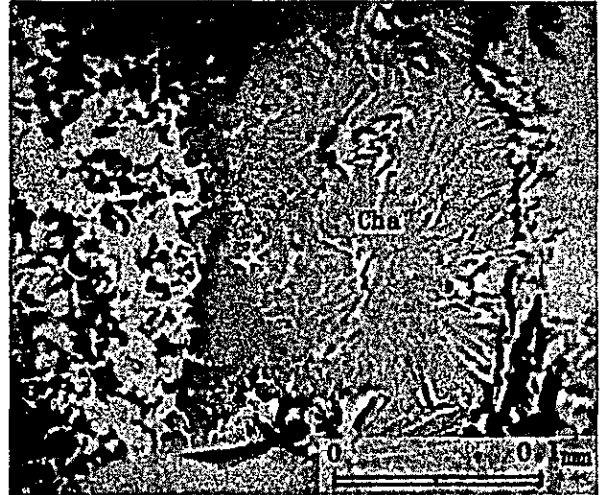
Si X-ray image



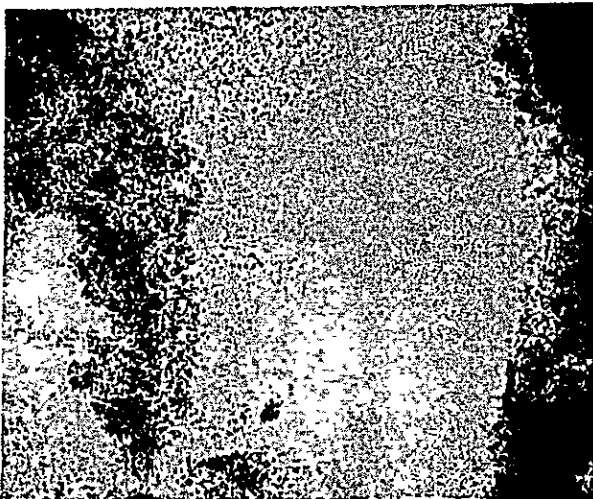
Fe X-ray image



Zn X-ray image



Absorbed electron image



Mn X-ray image



Si X-ray image



Fe X-ray image

Accelerating voltage : 25 KV
Electron absorbed current : 0.2 uA

A. 5. List of Fossils

A.5. List of Fossils

Field No.	Location	Stratigraphical Unit	Fossils	Estimated Age	Remarks
BO-102	G2	Junasha formation	Not identified		
AO-148	G4	Chulec formation	Inoceramus sp.	Albian	Bivalvia
BO-139	G4	Chulec formation	Prolyelliceras sp. Prolyelliceratidae gen. et sp. indet. Modiolus? sp. Lima? sp. Helicanthus? sp.	Lower Albian Albian Albian Albian Upper Jurassic- Lower Cretaceous	Ammonitina Ammonitina Bivalvia Bivalvia Gastropoda

(Determined by Prof. Tadashi Sato of Tsukuba Univ.)

A. 6. Photographs of Fossils

Plate 1

Fig. 1. *Lyelliceratidae* gen. et sp. indet.

Side view of a poorly preserved specimen showing the straight simple ribs dominated by small tubercles. B0-139, Chulec formation, x 1.

Fig. 2 - 4. *Prolyelliceras* sp.

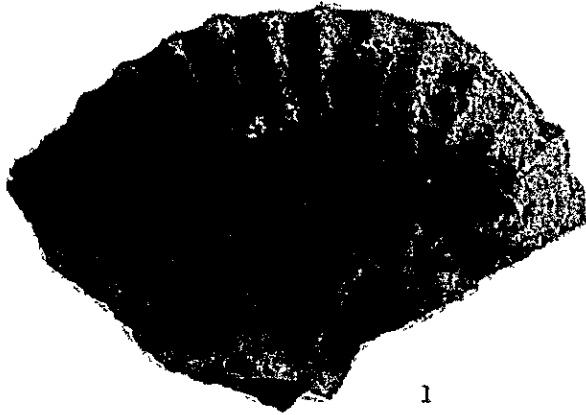
Fig. 2. Side view of a fragment of whorl showing the straight simple ribs on flank dominated by small clavi. B0-139, Chulec formation, x 1.

Fig. 3a,b. Fragment of ultimate and penultimate whorls showing weakly sinuated simple ribs, continuous through siphonal area, dominated by 5 rows of clavi. 3a, side view; 3b, siphonal view. B0-139, Chulec formation, x 1.

Fig. 4a,b. Fragment of fully grown whorl showing weakly sinuated simple ribs dominated by 5 rows of flattened clavi. 4a, side view; 4b, siphonal view. B0-139, Chulec formation, x 1.

Fig. 5. *Inoceramus* sp.

Right valve of a fragmentary specimen showing concentric ribs. A0-148, Chulec formation, x 1.



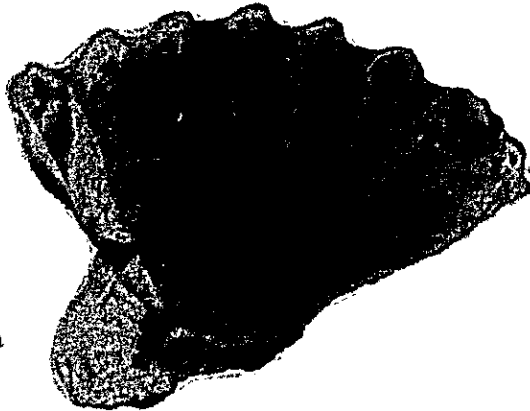
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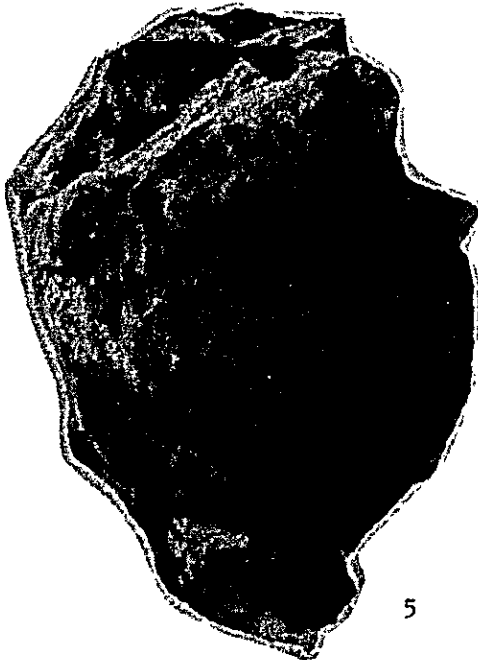
2



3b



3a



5



4b



4a

Plate 2

Fig. 1 - 2. Modiolus? sp.

Fig. 1. Right valve of a fragmentary specimen. BO-139, Chulec formation, x 1.5.

Fig. 2. Left valve of another specimen, BO-139, Chulec formation, x 1.3.

Fig. 3. Lima? sp.

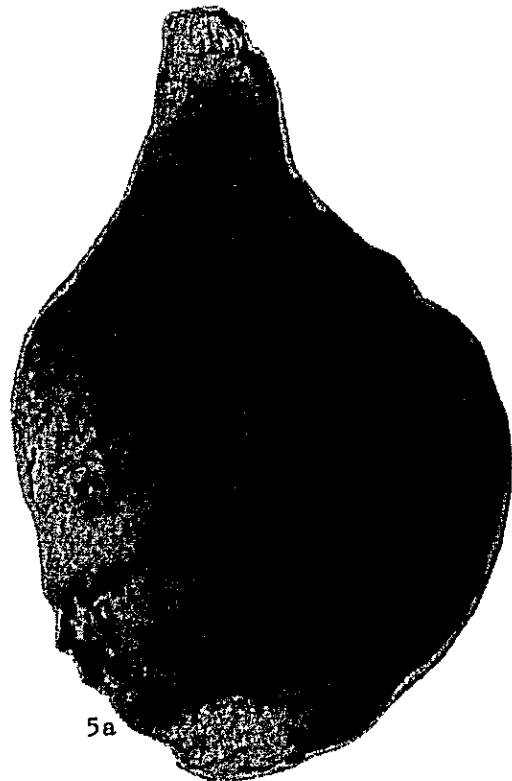
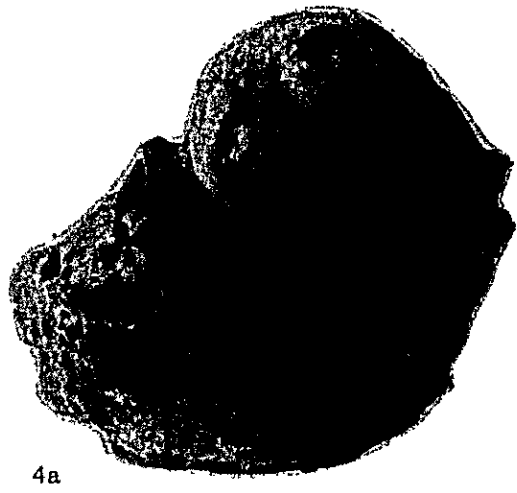
Left valve showing radial ribs. BO-139, Chulec formation, x 1.2.

Fig. 4a, b. Helicanthus? sp.

Slightly deformed specimen. 4a, apical view; 4b, umbilical view. BO-139, Chulec formation, x 1.

Fig. 5a, b. Unidentifiable specimen

Internal mould? of unidentifiable Bivalve? 5a, side view; 5b, lateral view. BO-102, Jumasha formation, x 1.



A. 7. Summary of X-ray Diffraction Test

⊙ Very abundant

⊙ Abundant

○ Common

○ Rare

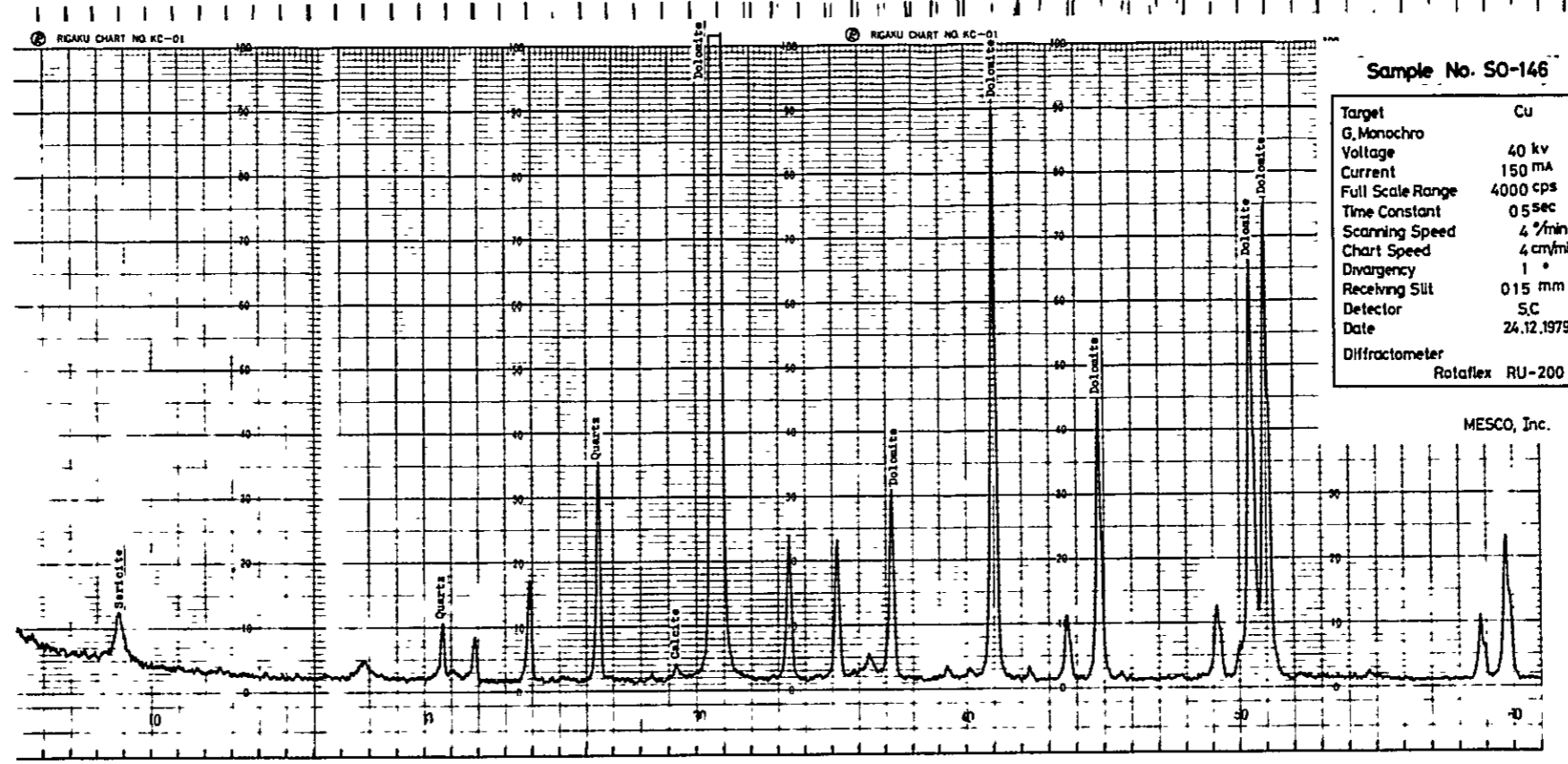
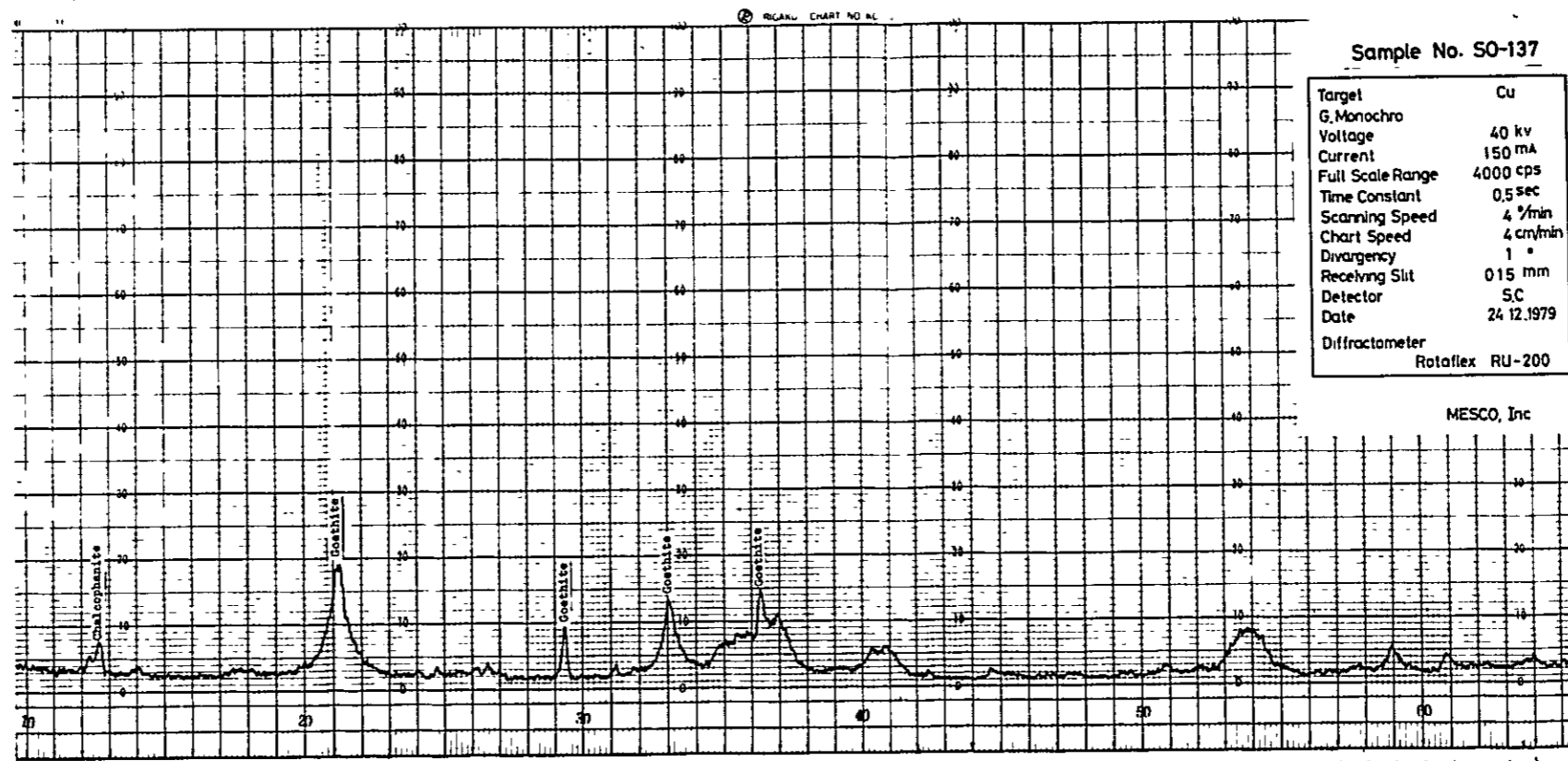
● Very rare

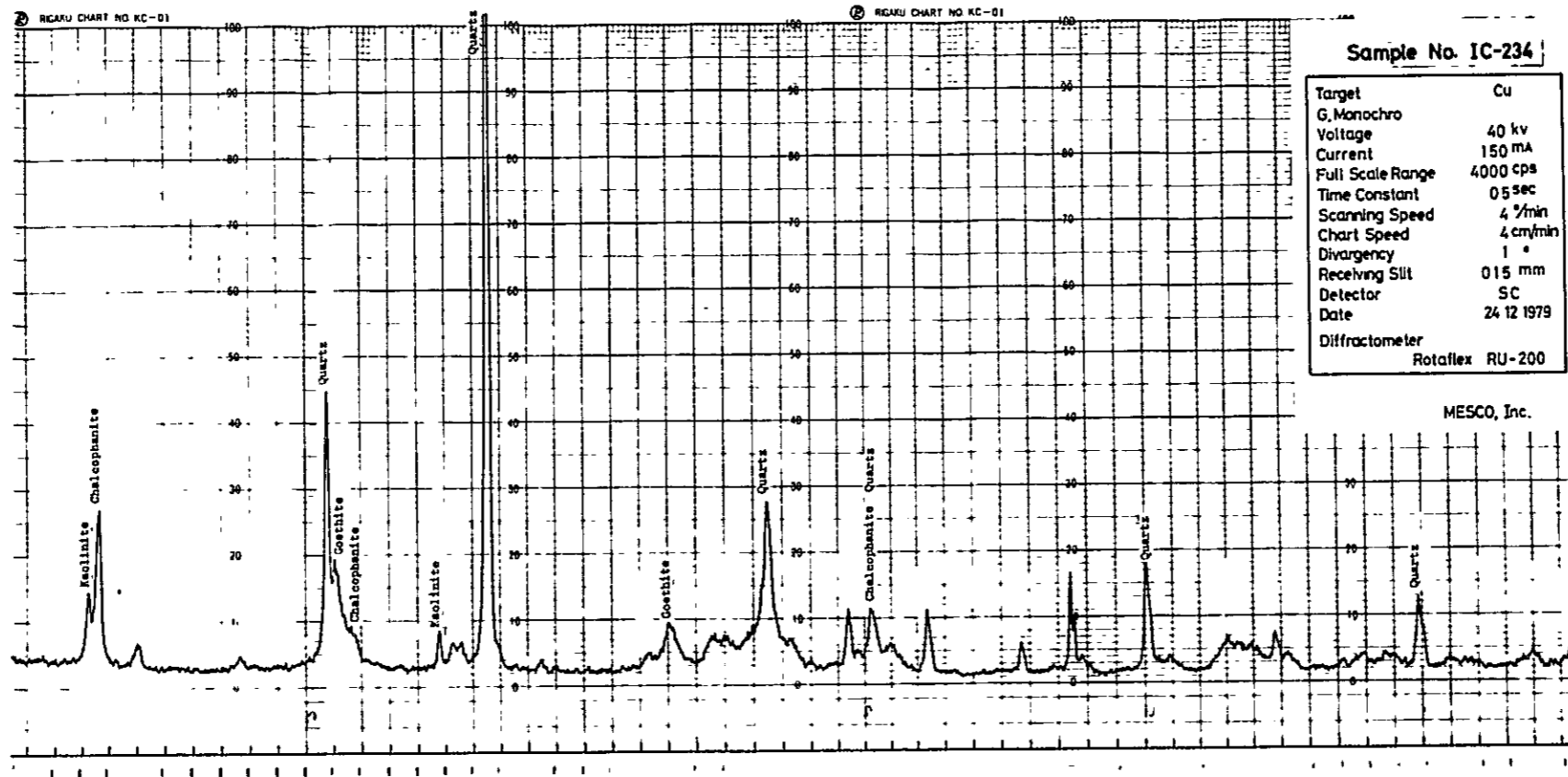
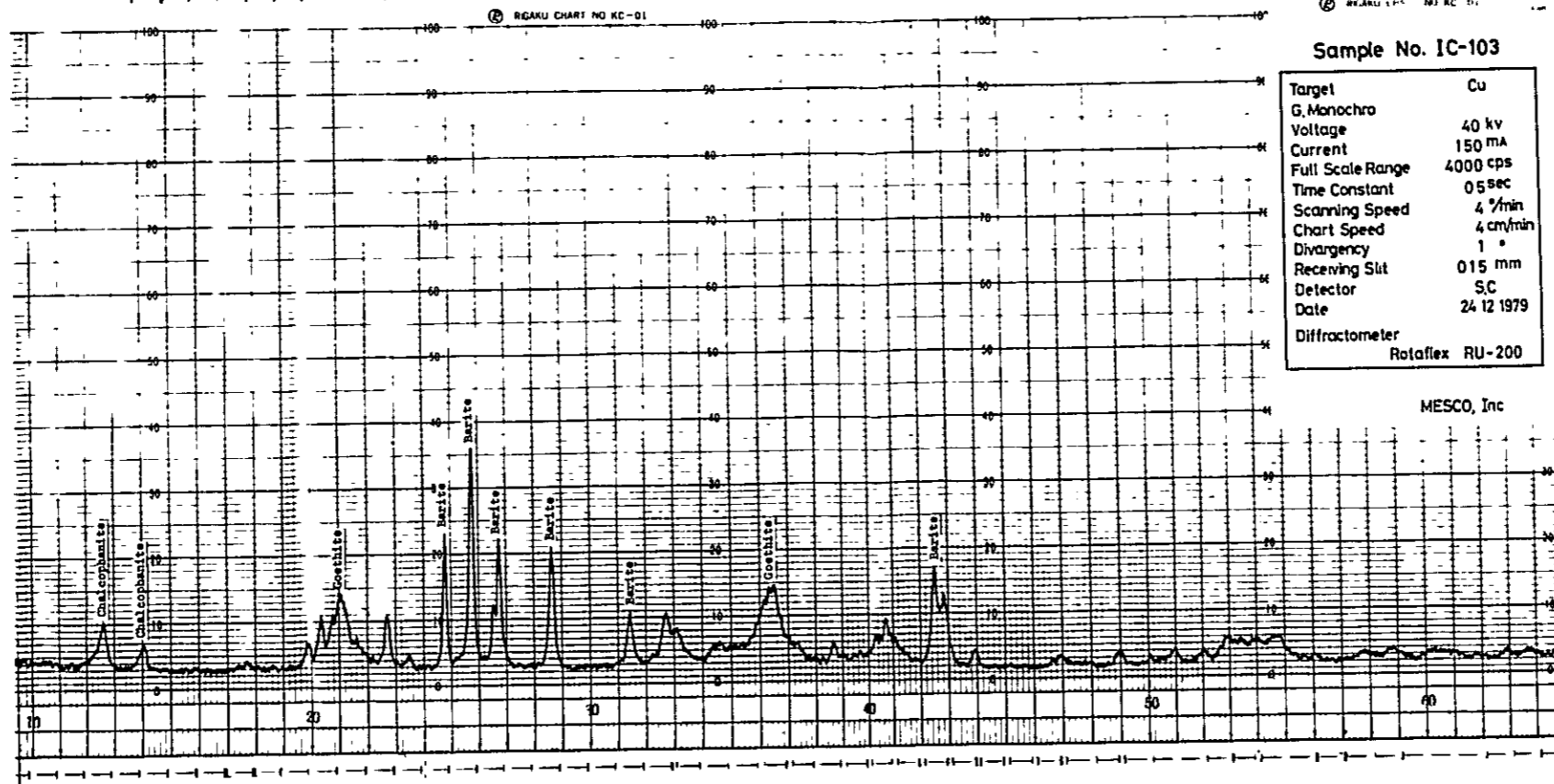
A.7. Summary of X-ray Diffraction Test

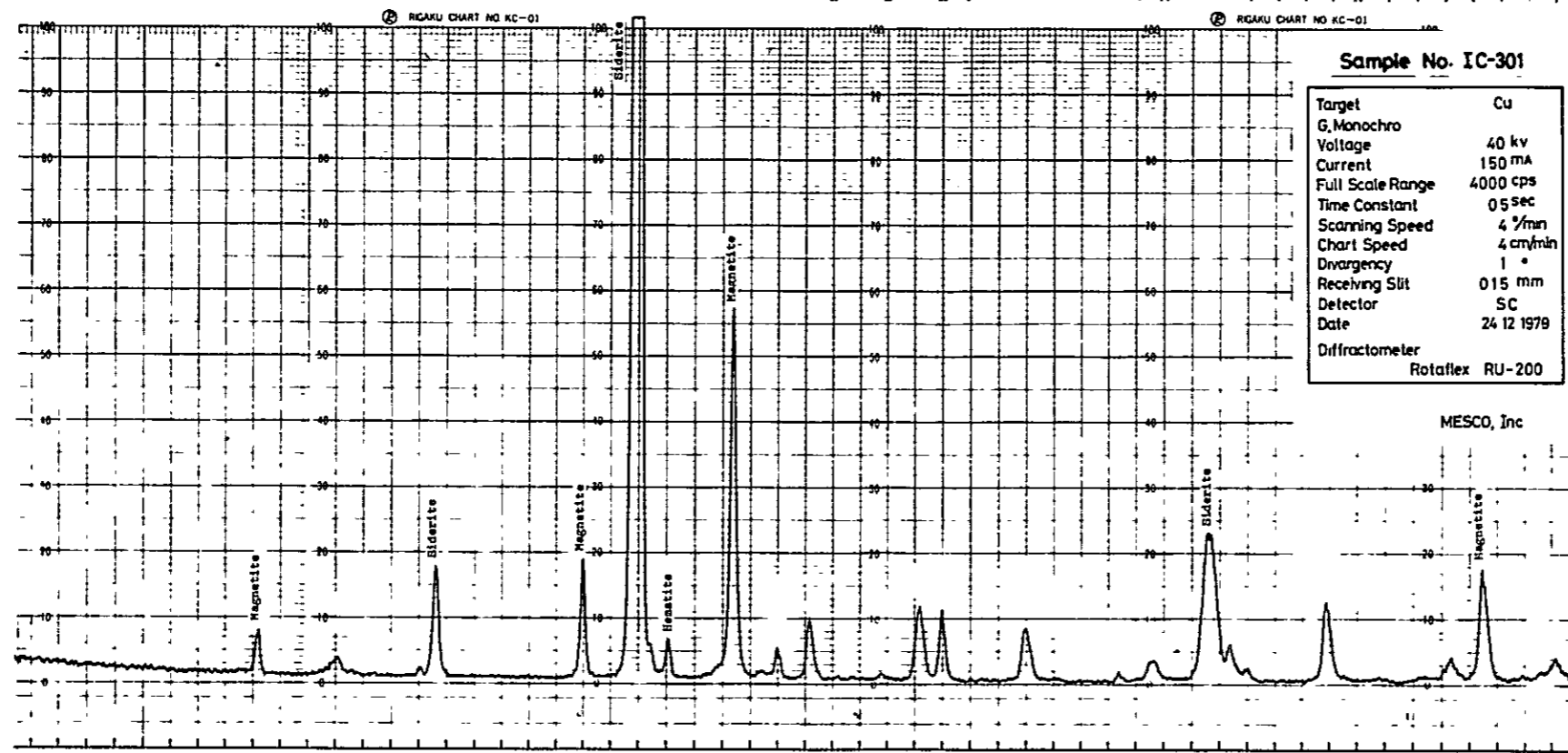
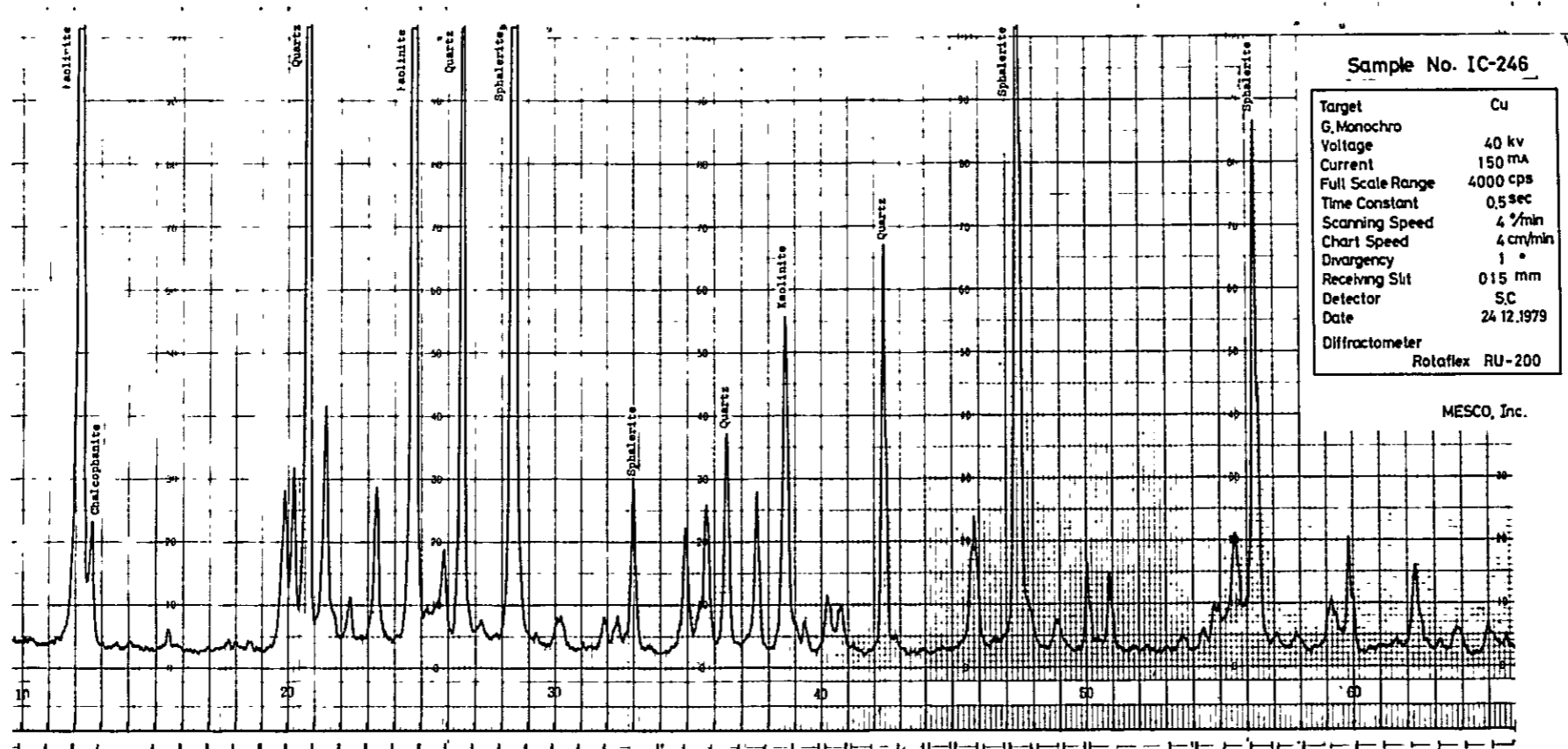
Field No. / Minerals	Sphalerite	Chalcophanite	Bianchite	Magnetite	Hematite	Goethite	Siderite	Rozenite	Siderotil	Fibroferrite	Gypsum	Gibbsite	Barite	Quartz	Calcite	Dolomite	Sericite	Kaolinite	Chlorite
SO-137		o				⊙									o				
SO-146														o		⊙	o		
IC-103		o				o							⊙	o					
IC-234		o				o								⊙					
IC-246	⊙	o												⊙		•		⊙	
IC-301				o	o	o	⊙												
IC-325				o	o							o		⊙					⊙
IC-349								⊙											
IC-350			o						⊙	o	o								



A. 8. Charts of X-ray Diffraction Test







A. 9. Assay Results of Ore Samples

A.9. Assay Results of Ore Samples

No.	Location	Field No.	Geological Index	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)
1	G3	A0-115	Cp-Or	0.05	7.60	11.00	6.75
2	G4	B0-125	St-Ls	tr	0.02	0.12	0.04
3	G1	B0-134	Ig-Or	tr	0.05	0.13	0.30
4	G1	B0-136	Jm-Ls	tr	0.06	0.09	9.94
5	G4	B0-150	Ph-Or	0.48	0.04	32.00	0.24
6	G4	B0-151	Ph-Or	3.25	0.01	0.48	0.70
7	G4	B0-152	Ph-Or	0.33	0.05	22.90	0.20
8	G4	B0-153	Ph-Or	0.17	0.05	17.20	0.09
9	G4	B0-154	Ph-Or	4.90	0.01	0.55	1.35
10	G4	B0-155	Ph-Or	0.23	0.01	10.20	0.10
11	S2	IC-301	St-Or	tr	0.02	2.00	0.05
12	S2	IC-318	St-Do	tr	2.18	1.00	1.98
13	S2	IC-329	St-Or	tr	49.25	0.75	28.40
14	S2	IC-331	St-Do	tr	0.35	0.90	0.40

Abbreviation

Cp Calipuy volcanics Or Ore
 St Santa formation Ls limestone
 Ig igneous rock Do dolostone
 Jm Jumasha formation
 Ph Pariahuanca formation

A. 10. Assay Results of Composite Samples

No.	Composite Sample No.	No. of Original Samples	Ag Grade (g/t)
1	IC-1-1	IC-101, 102, 103, 104, 105, 106	0.2
2	IC-1-2	IC-107, 108, 109, 110	tr
3	IC-1-3	IC-230, 231, 232, 233, 234, 235	1.6
4	IC-1-4	IC-269, 270	3.4
5	IC-1-5	IC-228, 229	4.1
6	IC-1-6	IC-236, 237, 238, 239, 240, 241, 242	tr
7	IC-1-7	IC-226, 227	tr
8	IC-1-8	IC-243, 244	4.4
9	IC-1-9	IC-262, 263, 264, 265, 266, 267, 268	tr
10	IC-1-10	IC-223, 224, 225	0.4
11	IC-1-11	IC-221, 222	1.0
12	IC-1-12	IC-212, 213, 214, 215, 216	0.2
13	IC-1-13	IC-210, 211	tr
14	IC-1-14	IC-217, 218, 219, 220	tr
15	IC-1-15	IC-208, 209	0.6
16	IC-1-16	IC-201, 202, 203, 204, 205, 206, 207	2.4
17	IC-2-1	IC-246, 247	68.8
18	IC-2-2	IC-245	3.7
19	IC-2-3	IC-248, 249	2.3
20	IC-2-4	IC-250, 251	2.3
21	IC-2-5	IC-252	4.7
22	IC-2-6	IC-253, 254, 255, 256, 257, 258, 259 260	11.5
23	IC-3-1	IC-332, 333	7.8
24	IC-3-2	IC-334, 335	116.4
25	IC-3-3	IC-336, 337, 338	36.8
26	IC-3-4	IC-339, 340, 341	12.9
27	IC-3-5	IC-327, 328, 329	70.4
28	IC-4-1	IC-319, 320, 321	4.2
29	IC-4-2	IC-314, 315, 316, 317	11.2
30	IC-4-3	IC-309, 310, 311, 312	12.9
31	IC-4-4	IC-302, 303, 304, 305, 306, 307	4.2

Composites were prepared using original samples in proportion to the sampling lengths.

A. 11. Assay Results of Geochemical Samples

GEOLOGICAL INDEX

FORMATION

Jm	Jumasha formation
Pt	Pariatambo formation
Cl	Chulec formation
Ph	Pariahuanca formation
Fr	Farrat formation
Cz	Carhuaz formation
St	Santa formation
Cm	Chimu formation
Oy	Oyon formation
Cp	Calipuy volcanics

SEDIMENTARY ROCK

Do	Dolostone
Ls	Limestone
Sh	Shale
Qz	Quartzite
Ss	Sandstone
Mr	Marl

IGNEOUS ROCK

Dc	Dacite & porphyrite
Dp	Dacite porphyry
Tp	Tonalite porphyry
Gp	Phyolite & granite porphyry
Tn	Tonalite
Tf	Tuff & tuff breccia
Ad	Andesite

MINERALIZATION

Or	Ore
Gs	Gossan
Gy	Skarn

(1) Rocks

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn ppm
1	G3	A0-104	St-Ls	6	36	18
2	G3	A0-105	St-Ls	4	30	34
3	G4	A0-108	Ph-Ls	5	34	20
4	G4	A0-109	Ph-Ls	12	35	24
5	G4	A0-110	Jm-Ls	4	32	12
6	G4	A0-111	Ph-Ls	5	40	14
7	G4	A0-112	Fr-Ss	6	16	5
8	G3	A0-113	St-Ls	7	34	24
9	G3	A0-114	St-Ls	6	35	20
10	G3	A0 118	St-Ls	5	32	19
11	G3	A0-119	St-Ls	7	35	15
12	G3	A0-120	St-Ls	7	33	40
13	G3	A0-121	St-Ls	7	28	17
14	G3	A0-122	St-Ls	5	33	12
15	G2	A0-123	St-Ls	5	27	9
16	G2	A0-124	St-Ls	5	32	14
17	G2	A0-125	Ph-Ls	5	30	17
18	G2	A0-126	Ph-Ls	9	35	38
19	G2	A0-127	St-Ls	7	33	162
20	G4	A0-128	St-Do	4	27	13
21	G4	A0-129	Cz-Ss	7	28	43
22	G4	A0-130	Fr-Ss	2	3	12
23	G4	A0-131	Ph-Ls	4	28	17
24	G4	A0-132	Cl-Ls	6	36	45
25	G4	A0-133	Pt-Ls	8	24	17
26	G4	A0 134	Jm-Ls	3	29	32
27	G4	A0 135	St-Ls	3	24	15
28	G4	A0-136	Cm-Qz	tr	10	8
29	G4	A0-137	St-Ls	4	28	11
30	G4	A0-138	Fr-Ss	1	tr	14
31	G4	A0-139	Ph-Ls	4	37	158
32	G4	A0-140	Pt-Ls	3	29	18
33	G4	A0-141	Jm-Ls	4	27	15

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn ppm
34	G4	A0-142	Oy-Ss	5	2	21
35	G4	A0-143	Cm-Qz	tr	tr	7
36	G4	A0-146	Fr-Ss	4	11	7
37	G4	A0-148	C1-Ls	12	42	155
38	G4	A0-149	St-Ls	3	27	12
39	G4	A0-150	St-Do	2	34	21
40	G4	A0-151	St-Ls	3	32	20
41	G4	A0-152	Ig-Dc	16	16	60
42	G4	A0-153	St-Ls	6	32	15
43	G4	A0-154	St-Ls	6	29	13
44	G4	A0-155	Oy-Ss	9	tr	13
45	G4	A0-156	St-Ls	5	36	37
46	G4	A0-157	Ph-Ls	7	32	22
47	G4	A0-158	C1-Sh	18	29	42
48	G4	A0-159	C1-Ls	16	26	43
49	G4	A0-160	St-Sh	3	tr	8
50	G4	A0-161	St-Do	19	26	21
51	G4	A0-162	St-Ls	27	29	16
52	G4	A0-163	St-Ls	3	32	42
53	G4	A0-164	Ig-Dc	67	8	76
54	G4	A0-166	St-Ls	5	37	27
55	G3	A0-168	St-Ls	5	31	16
56	G3	A0-169	St-Ls	5	38	20
57	G3	A0-170	St-Ls	4	32	33
58	G2	B0-104	St-Ls	4	33	11
59	G1	B0-106	Cz-Ss	4	15	16
60	G1	B0-107	Fr-Ss	6	25	9
61	G1	B0-109	St-Do	8	37	49
62	G1	B0-111	Pt-Ls	6	28	39
63	G2	B0-112	St-Ls	5	31	12
64	G2	B0-114	St-Ls	4	28	12
65	G2	B0-115	St-Ls	3	28	33
66	G4	B0-116	St-Ls	13	28	32
67	G4	B0-117	St-Ls	8	25	12
68	G4	B0-118	St-Ls	4	28	10

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn ppm
69	G4	B0-119	St-Do	4	25	16
70	G4	B0-120	St-Ls	5	31	29
71	G4	B0-121	St-Ls	2	25	15
72	G4	B0-122	St-Do	3	25	23
73	G4	B0-123	St-Ls	2	26	16
74	S1	B0-127	Cm-Ss	5	36	184
75	S1	B0-128	St-Gs	2	523	302
76	S1	B0-129	St-Gs	4	1,342	1,636
77	S1	B0-130	St-Gs	3	534	8,060
78	S1	B0-131	St-Gs	4	407	10,288
79	G4	B0-133	Jm-Ls	4	28	26
80	G4	B0-140	Pt-Ls	5	28	33
81	G3	B0-158	St-Ls	24	34	61
82	G3	B0-159	St-Gy	4	21	10
83	G3	B0-162	Pt-Ls	10	24	31
84	G3	B0-164	Jm-Ls	4	30	17
85	G3	B0-165	Ph-Ls	7	32	33
86	G4	B0-166	St-Do	4	20	18
87	G3	B0-167	Fr-Ss	26	tr	37
88	G3	B0-168	Cz-Sh	4	12	29
89	G3	B0-169	Ph-Ls	5	25	12
90	G3	B0-171	Pt-Ls	21	27	37
91	G4	B0-172	Jm-Ls	3	29	14
92	G3	B0-173	St-Ls	3	15	32
93	G3	B0-174	St-Ls	4	34	16
94	G3	B0-175	Cz-Sh	14	2	75
95	G3	B0-176	Pt-Ls	13	21	37
96	G3	B0-177	St-Ls	6	15	29
97	G3	B0-178	St-Ls	4	30	27
98	G3	B0-179	Cz-Sh	14	20	38
99	G3	B0-181	St-Ls	176	553	54
100	G1	C0-114	Ph-Ls	6	17	3,383
101	G1	C0-115	C1-Ls	7	19	29
102	G1	C0-117	Pt-Ls	3	21	25
103	G1	C0-118	Pt-Ls	6	35	84

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn ppm
104	G1	CO-119	Cl-Ls	16	25	60
105	G1	CO-120	Ph-Ls	10	27	38
106	G1	CO-125	Jm-Ls	4	33	14
107	G1	CO-126	Jm-Ls	7	39	88
108	G1	CO-130	Ph-Ls	7	29	133
109	G1	CO-134	Cl-Ls	7	39	16
110	G1	CO-135	Pt-Ls	3	22	13
111	G2	CO-147	St-Ls	6	19	15
112	G2	CO-148	St-Ls	3	19	523
113	G2	CO-149	Ph-Ls	6	26	27
114	G2	CO-150	Cl-Ls	6	41	22
115	G2	CO-152	St-Ls	7	30	14
116	G2	CO-153	St-Ls	5	30	17
117	G2	CO-155	Ph-Ls	9	37	26
118	G2	CO-156	Cl-Ls	5	33	19
119	G2	CO-157	Ph-Ls	3	37	34
120	G2	CO-159	St-Ls	4	16	20
121	G2	CO-162	Ig-Gp	tr	4	27
122	G2	CO-166	St-Ls	3	21	11
123	G2	CO-167	Cl-Ls	4	26	29
124	G2	CO-168	Cl-Ls	6	29	49
125	G2	CO-169	Ph-Ls	9	20	2,390
126	G3	CO-170	Pt-Ls	8	19	54
127	G3	CO-171	Pt-Ls	3	17	14
128	G3	CO-172	Jm-Ls	3	19	13
129	G3	CO-173	Jm-Ls	3	25	14
130	G3	CO-174	Jm-Ls	3	26	17
131	G3	CO-175	Jm-Ls	3	23	135
132	G3	CO-176	Cl-Ls	4	16	16
133	G3	CO-177	Ph-Ls	40	17	618
134	G3	CO-178	St-Ls	3	21	15
135	G3	CO-179	St-Ls	5	22	16
136	G3	CO-180	St-Ls	3	19	14
137	G3	CO-181	St-Ls	3	27	20
138	G3	CO-182	Pt-Ls	3	28	110

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn ppm
139	G3	CO-183	Pt-Ls	4	18	15
140	G3	CO-184	Pt-Ls	4	25	55
141	G3	CO-185	Cl-Ls	5	25	33
142	G3	CO-187	Pt-Ls	4	28	23
143	G3	CO-189	Pt-Ls	8	21	35
144	G3	CO-190	Ph-Ls	4	28	18
145	G3	CO-191	Cl-Ls	5	28	30
146	G3	CO-193	Cl-Ls	5	25	39
147	G3	CO-196	Pt-Ls	4	25	14
148	G3	CO-197	Jm-Ls	3	25	17
149	G3	CO-199	Ph-Ls	4	28	20
150	G3	CO-202	Cz-Ss	10	5	23
151	G3	CO-206	Cz-Ss	13	4	55
152	G3	CO-208	Cz-Ss	30	9	84
153	G1	NO-111	Ph-Ls	9	35	41
154	G1	NO-112	Pt-Ls	5	23	27
155	G1	NO-113	Ig-Gp	6	tr	575
156	G1	NO-114	St-Ls	3	26	14
157	G1	NO-115	St-Ls	7	25	11
158	G1	NO-116	St-Ls	5	37	85
159	G1	NO-117	St-Ls	4	28	22
160	G1	NO-118	St-Do	4	25	20
161	G1	NO-119	St-Do	7	28	15
162	G1	NO-120	St-Ls	3	32	45
163	G1	NO-122	St-Ls	7	25	12
164	G1	NO-123	Cm-Qz	8	92	14
165	G1	NO-124	St-Ls	6	25	19
166	G1	NO-125	St-Do	5	25	24
167	G1	NO-126	St-Do	6	25	16
168	G1	NO-127	St-Ls	4	28	10
169	G1	NO-128	St-Do	3	28	11
170	G3	NO-134	Cp-Tf	5	3	51
171	G3	NO-135	Cp-Tf	4	6	13
172	G3	NO-138	Cp-Tf	5	12	76
173	G1	NO-141	Cp-Tf	2	11	19

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn ppm
174	G1	NO-142	Cp-Tf	12	74	45
175	G1	NO-145	Ig-Dp	13	tr	61
176	G1	NO-146	Ig-Ad	12	tr	82
177	G1	NO-148	Ig-Dp	13	tr	63
178	G1	NO-149	Cp-Tf	6	18	46
179	G1	NO-150	Jm-Ls	12	32	46
180	G1	NO-151	Cp-Gs	10	3	27
181	G1	NO-152	Cp-Tf	16	3	101
182	G1	NO-153	Jm-Ls	4	20	144
183	G1	NO-154	St-Do	8	tr	40
184	G1	NO-155	St-Do	3	26	133
185	G3	NO-156	St-Do	4	19	18
186	G4	NO-161	St-Sk	10	22	3,455
187	G4	NO-162	St-Do	2	11	2,006
188	G4	NO-163	St-Do	8	120	4,429
189	G3	NO-172	Cm-Ss	15	63	153
190	G3	NO-173	Cm-Sh	19	3	71
191	G3	NO-174	Cm-Sh	63	10	13
192	G3	NO-176	St-Ls	4	39	22
193	G3	NO-177	St-Ls	4	51	28
194	G3	NO-178	Cm-Sh	25	16	20
195	G3	NO-179	Cm-Ss	17	22	23
196	G3	NO-180	Cm-Qz	tr	10	7
197	G3	NO-181	St-Ls	6	38	19
198	G3	NO-182	St-Ls	17	45	22
199	G3	NO-183	Cz-Sh	41	15	104
200	G3	NO-184	Cp-Tf	tr	4	91
201	G3	NO-185	Cp-Tf	tr	1	86
202	G3	NO-191	St-Ls	7	31	26
203	G3	NO-192	St-Ls	tr	1	39
204	G3	NO-193	Cm-Qz	4	38	21
205	G3	NO-194	Cz-Sh	8	32	58
206	G3	NO-195	Cz-Sh	2	9	42
207	G3	NO-196	Fr-Ss	1	12	6
208	G3	NO-197	Ph-Ls	4	33	64

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn ppm
209	G3	NO-198	St-Ls	7	72	366
210	G3	NO-199	Cl-Ls	10	20	28
211	G3	NO-200	Cl-Mr	36	34	307
212	G3	NO-201	Cl-Sh	6	28	26
213	G3	NO-202	Ig-Tn	10	3	65
214	G3	NO-203	Cz-Ss	9	7	57
215	G3	NO-204	St-Ls	5	109	55
216	G3	NO-205	St-Ls	4	41	71
217	G3	NO-206	Ig-Tn	20	5	58
218	G3	NO-207	Cl-Ls	5	29	25
219	G3	NO-208	Cl-Mr	8	36	52
220	G3	NO-209	Pt-Ls	6	28	21
221	G3	NO-210	Pt-Ls	3	25	19
222	G3	NO-211	Pt-Ls	12	27	63
223	G3	NO-212	Jm-Ls	3	27	85
224	G3	NO-213	Cl-Ls	2	27	15
225	G3	SO-103	Cp-Ad	tr	1	69
226	G3	SO-106	Cp-Tf	3	7	42
227	G3	SO-109	Ph-Ls	5	32	16
228	G3	SO-110	Ph-Do	3	7	15
229	G4	SO-112	St-Ls	4	33	101
230	G4	SO-113	Cz-Ls	4	31	137
231	G3	SO-115	St-Ls	4	28	26
232	G3	SO-117	St-Do	3	31	13
233	G3	SO-120	St-Ls	4	36	27
234	G3	SO-123	Cz-Ls	7	39	50
235	G3	SO-124	St-Ls	4	52	23
236	G3	SO-126	St-Ls	3	39	31
237	G3	SO 128	St-Ls	6	120	283
238	G3	SO-130	Cz-Ss	23	16	112
239	S1	SO-135	St-Ls	9	5,580	20,938
240	S1	SO-136	St-Ls	4	35	53
241	S1	SO-140	St-Do	3	2,901	5,167
242	S1	SO-142	Cm-Ss	1	9	36
243	S1	SO-143	St-Ls	3	186	12,188

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn ppm
244	S1	S0-146	St-Ls	6	25	62
245	S1	S0-147	St-Ls	4	25	15
246	S1	S0-148	St-Ls	5	31	13
247	S1	S0-149	St-Ls	9	29	25
248	S1	S0-150	St-Ls	4	25	17
249	S1	S0-151	St-Ls	7	25	20
250	S1	S0-152	St-Ls	5	31	18
251	S1	S0-153	St-Ls	7	24	14
252	S1	S0-154	St-Ls	6	28	29
253	S1	S0-155	St-Ls	8	27	128
254	S1	S0-156	St-Ls	8	22	14
255	S1	S0-157	St-Ls	7	22	21
256	S1	S0-158	St-Ls	2	tr	11
257	S1	S0-159	St-Ls	6	24	14
258	S1	S0-160	St-Ls	5	22	12
259	S1	S0-161	St-Ls	6	24	13
260	S1	S0-162	St-Ls	5	24	21
261	S1	S0-163	St-Ls	4	24	21
262	S1	S0-164	St-Ls	5	27	18
263	S1	S0-165	St-Do	4	33	26
264	S1	S0-166	St-Ls	5	44	107
265	S1	S0-167	St-Do	1	1,317	2,848
266	S1	S0-212	St-Do	13	36	65
267	S1	S0-175	Ph-Ls	5	30	72
268	G2	S0-177	Ph-Ls	4	33	20
269	G4	S0-178	Cz-Ss	22	6	149
270	G4	S0-179	St-Ls	6	20	15
271	G4	S0-180	St-Ls	7	20	27
272	G4	S0-182	St-Ls	3	26	21
273	G2	S0-183	Ph-Ls	6	29	28
274	G2	S0-184	Cz-Sh	11	32	35
275	G2	S0-185	Cz-Sh	5	12	29
276	G4	S0-186	Cz-Sh	6	12	40
277	G4	S0-187	St-Ls	3	26	21
278	G4	S0-188	St-Ls	7	6	15

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn ppm
279	G4	S0-191	St-Ls	5	17	10
280	G4	S0-192	St-Ls	3	32	25
281	G2	S0-193	St-Ls	16	29	14
282	G2	S0-194	St-Ls	5	12	19
283	G2	S0-197	St-Ls	3	26	10
284	G3	S0-198	Ph-Ls	6	29	25
285	G4	S0-199	St-Do	2	23	14
286	G4	S0-200	St-Ls	3	23	13
287	G4	S0-203	Cz-Ss	2	6	33
288	G3	S0-204	Ph-Ls	4	26	63
289	G3	S0-208	St-Ls	3	29	16

(2) Gossan in Iscay Cruz

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn %
1	S1	IC-101	St-Gs	15	1.98 (%)	6.80
2	S1	IC-102	St-Gs	20	1.50 (%)	5.10
3	S1	IC-103	St-Gs	18	1.95 (%)	6.65
4	S1	IC-104	St-Gs	40	0.70 (%)	4.05
5	S1	IC-105	St-Gs	22	1.02 (%)	4.05
6	S1	IC-106	St-Gs	19	2.05 (%)	6.30
7	S1	IC-107	St-Gs	17	1.48 (%)	8.20
8	S1	IC-108	St-Gs	22	0.80 (%)	5.95
9	S1	IC-109	St-Gs	20	1.20 (%)	5.80
10	S1	IC-110	St-Gs	54	1.85 (%)	6.10
11	S1	IC-201	St-Gs	30	900	4.25
12	S1	IC-202	St-Gs	28	390	3.38
13	S1	IC-203	St-Gs	26	450	4.65
14	S1	IC-204	St-Gs	24	880	5.10
15	S1	IC-205	St-Gs	24	380	4.05
16	S1	IC-206	St-Gs	22	690	5.30
17	S1	IC-207	St-Gs	24	700	3.50
18	S1	IC-208	St-Gs	34	0.74 (%)	2.40
19	S1	IC-209	St-Gs	33	2,550	2.80
20	S1	IC-210	St-Gs	28	280	3.58
21	S1	IC-211	St-Gs	23	200	3.10
22	S1	IC-212	St-Gs	22	680	4.50
23	S1	IC-213	St-Gs	28	900	4.65
24	S1	IC-214	St-Gs	25	380	2.55
25	S1	IC-215	St-Gs	32	320	2.80
26	S1	IC-216	St-Gs	31	400	3.10
27	S1	IC-217	St-Gs	29	480	4.70
28	S1	IC-218	St-Gs	22	320	6.55
29	S1	IC-219	St-Gs	30	312	4.65
30	S1	IC-220	St-Gs	21	122	4.85
31	S1	IC-221	St-Gs	24	270	3.80
32	S1	IC-222	St-Gs	18	450	4.25
33	S1	IC-223	St-Gs	21	490	5.18

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn %
34	S1	IC-224	St-Gs	28	400	4.50
35	S1	IC-225	St-Gs	36	650	4.55
36	S1	IC-226	St-Gs	22	3,220	3.40
37	S1	IC-227	St-Gs	27	0.72 (%)	5.80
38	S1	IC-228	St-Gs	26	1,580	6.05
39	S1	IC-229	St-Gs	29	1,220	6.45
40	S1	IC-230	St-Gs	33	1.90 (%)	5.20
41	S1	IC-231	St-Gs	70	2.50 (%)	7.80
42	S1	IC-232	St-Gs	23	1.90 (%)	7.60
43	S1	IC-233	St-Gs	33	2.90 (%)	8.20
44	S1	IC-234	St-Gs	22	1.75 (%)	8.25
45	S1	IC-235	St-Gs	32	1.86 (%)	6.30
46	S1	IC-236	St-Gs	22	1,510	4.15
47	S1	IC-237	St-Gs	35	2,500	4.90
48	S1	IC-238	St-Gs	21	3,440	4.92
49	S1	IC-239	St-Gs	29	4,520	5.55
50	S1	IC-240	St-Gs	24	0.90 (%)	4.76
51	S1	IC-241	St-Gs	26	0.68 (%)	4.90
52	S1	IC-242	St-Gs	29	0.68 (%)	5.60
53	S1	IC-243	St-Gs	26	850	4.50
54	S1	IC-244	St-Gs	28	3,420	4.72
55	S1	IC-245	St-Gs	24	1,400	5.60
56	S1	IC-246	St-Gs	37	1,150	12.20
57	S1	IC-247	St-Gs	32	1,450	3.10
58	S1	IC-248	St-Gs	24	2,400	3.70
59	S1	IC-249	St-Gs	42	580	3.72
60	S1	IC-250	St-Gs	26	1,600	3.55
61	S1	IC-251	St-Gs	24	620	4.35
62	S1	IC-252	St-Gs	27	780	2.95
63	S1	IC-253	St-Gs	25	800	2.40
64	S1	IC-254	St-Gs	19	420	3.90
65	S1	IC-255	St-Gs	40	750	4.37
66	S1	IC-256	St-Gs	33	600	1.58
67	S1	IC-257	St-Gs	22	3,700	0.62
68	S1	IC-258	St-Gs	24	1,100	0.45

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn %
69	S1	IC-259	St-Gs	23	1,250	0.70
70	S1	IC-260	St-Gs	124	2,830	0.92
71	S1	IC-262	St-Gs	28	1.58 (%)	5.38
72	S1	IC-263	St-Gs	38	2.35 (%)	5.40
73	S1	IC-264	St-Gs	29	3.35 (%)	3.80
74	S1	IC-265	St-Gs	28	4,100	2.30
75	S1	IC-266	St-Gs	32	1.15 (%)	3.10
76	S1	IC-267	St-Gs	20	0.50 (%)	5.02
77	S1	IC-268	St-Gs	36	0.62 (%)	3.45
78	S1	IC-269	St-Gs	158	1.05 (%)	1.55
79	S1	IC-270	St-Gs	40	1.07 (%)	2.30
80	S2	IC-302	St-Do	128	330	4.60
81	S2	IC-303	St-Do	70	1,550	1.66
82	S2	IC-304	St-Do	495	320	3.95
83	S2	IC-305	St-Do	298	2,150	1.15
84	S2	IC-306	St-Do	34	550	0.03
85	S2	IC-307	St-Do	303	600	0.90
86	S2	IC-308	St-Do	30	680	450 (ppm)
87	S2	IC-309	St-Gs	2,175	250	5.60
88	S2	IC-310	St-Gs	615	150	4.45
89	S2	IC-311	St-Gs	425	150	1.72
90	S2	IC-312	St-Gs	0.64 (%)	0.02 (%)	0.30
91	S2	IC-314	St-Gs	0.12 (%)	0.05 (%)	0.21
92	S2	IC-315	St-Gs	0.01 (%)	0.44 (%)	1.10
93	S2	IC-316	St-Gs	75	100	0.60
94	S2	IC-317	St-Gs	466	350	2.08
95	S2	IC-319	St-Do	1,070	200	1.00
96	S2	IC-320	St-Do	55	280	1.60
97	S2	IC-321	St-Do	540	200	2.60
98	S2	IC-322	St-Ss	27	300	710 (ppm)
99	S2	IC-323	St-Ss	26	260	200 (ppm)
100	S2	IC-324	St-Gs	42	950	390 (ppm)
101	S2	IC-327	St-Or	68	0.88 (%)	4.90
102	S2	IC-328	St-Gs	22	0.74 (%)	2.25
103	S2	IC-332	St-Do	20	1,200	0.55

No.	Location	Field No.	Geological Index	Cu ppm	Pb ppm	Zn %
104	S2	IC-333	St-Do	28	480	0.30
105	S2	IC-334	St-Do	28	2,250	0.65
106	S2	IC-335	St-Do	37	3,950	1.20
107	S2	IC-336	St-Do	43	700	0.80
108	S2	IC-337	St-Do	26	1,480	0.75
109	S2	IC-338	St-Do	30	1,550	0.30
110	S2	IC-339	St-Do	228	150	1.90
111	S2	IC-340	St-Do	75	180	0.45
112	S2	IC-341	St-Do	88	300	0.80
113	S2	IC-342	St-Do	15	460	2.05
114	S2	IC-343	St-Do	1,700	180	3.25
115	S2	IC-344	St-Or	105	0.69 (%)	150 (ppm)
116	S2	IC-345	St-Or	62	0.78 (%)	100 (ppm)
117	S2	IC-346	St-Do	16	500	1.80

(3) Stream Sediments

No.	Location	Field No.	Cu ppm	Pb ppm	Zn ppm
1	G3	SD-1	20	52	85
2	G3	SD-2	15	38	106
3	G4	SD-3	21	20	156
4	G4	SD-4	17	29	92
5	G4	SD-5	16	29	191
6	G4	SD-6	21	20	69
7	G4	SD-7	10	23	67
8	G4	SD-8	22	20	42
9	G4	SD-9	39	40	223
10	G4	SD-10	14	194	183
11	G4	SD-11	14	17	56
12	G4	SD-12	16	20	209
13	G4	SD-13	18	22	124
14	G4	SD-14	97	25	310
15	G4	SD-15	16	19	46
16	G2	SD-16	742	168	416
17	G3	SD-17	21	60	83
18	G3	SD-18	79	120	172
19	G2	SD-19	32	27	287
20	G2	SD-20	14	21	115
21	G3	SD-21	18	26	74
22	G3	SD-22	13	26	82
23	G3	SD-23	16	23	77
24	G3	SD-24	14	14	77
25	G3	SD-25	28	26	83
26	G2	SD-26	16	100	76
27	G2	SD-27	6	tr	77
28	G2	SD-28	182	103	114
29	G2	SD-29	12	37	78
30	G2	SD-30	77	63	1,905
31	G2	SD-31	73	83	147
32	G2	SD-33	23	2,500	300
33	G2	SD-33	20	77	395

No.	Location	Field No.	Cu ppm	Pb ppm	Zn ppm
34	G2	SD-34	19	60	104
35	G2	SD-35	36	134	240
36	G3	SD-36	18	80	106
37	G3	SD-37	11	49	88
38	G3	SD-38	19	23	104
39	G3	SD-39	15	26	104
40	G3	SD-40	16	29	124
41	G3	SD-41	16	29	127
42	G3	SD-42	11	26	117
43	G3	SD-43	12	34	79
44	G3	SD-44	25	43	81