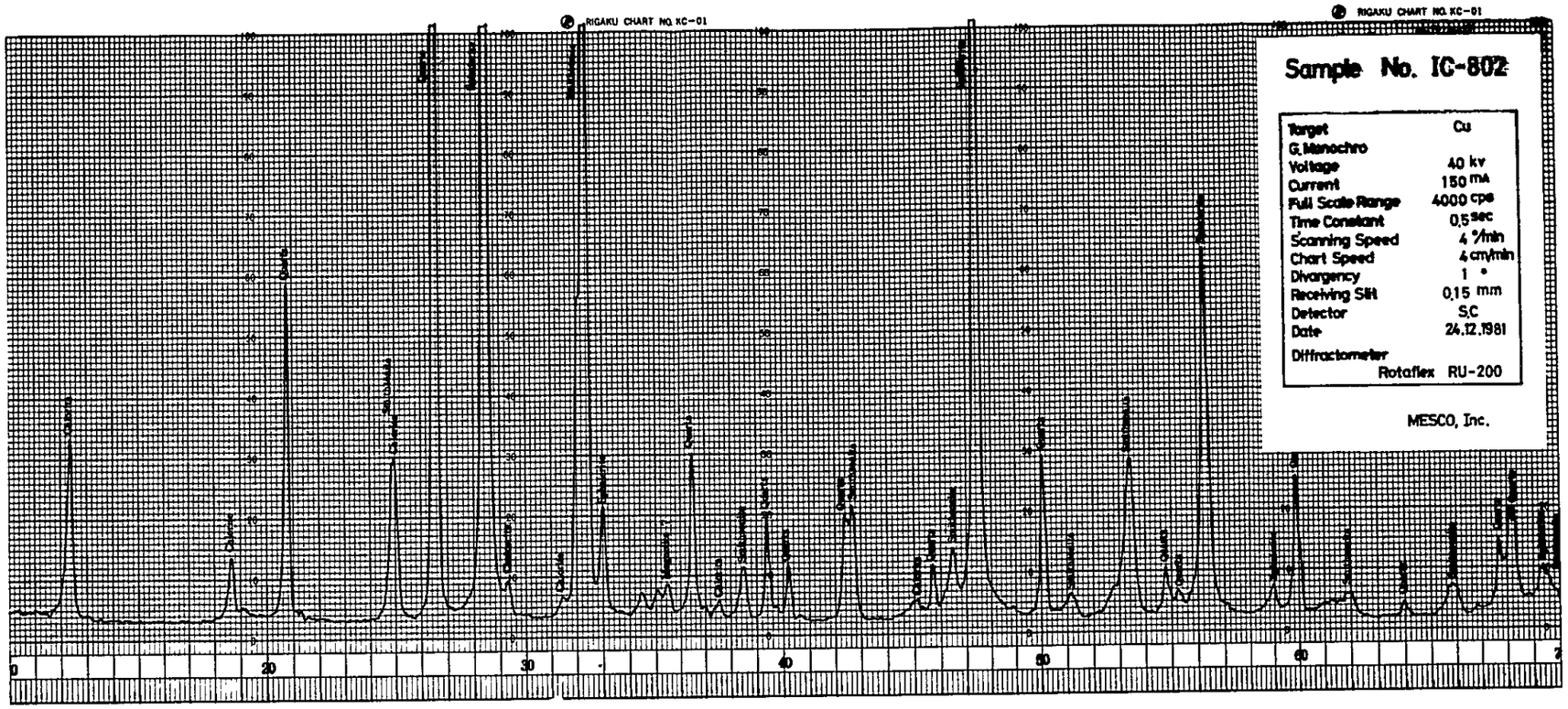
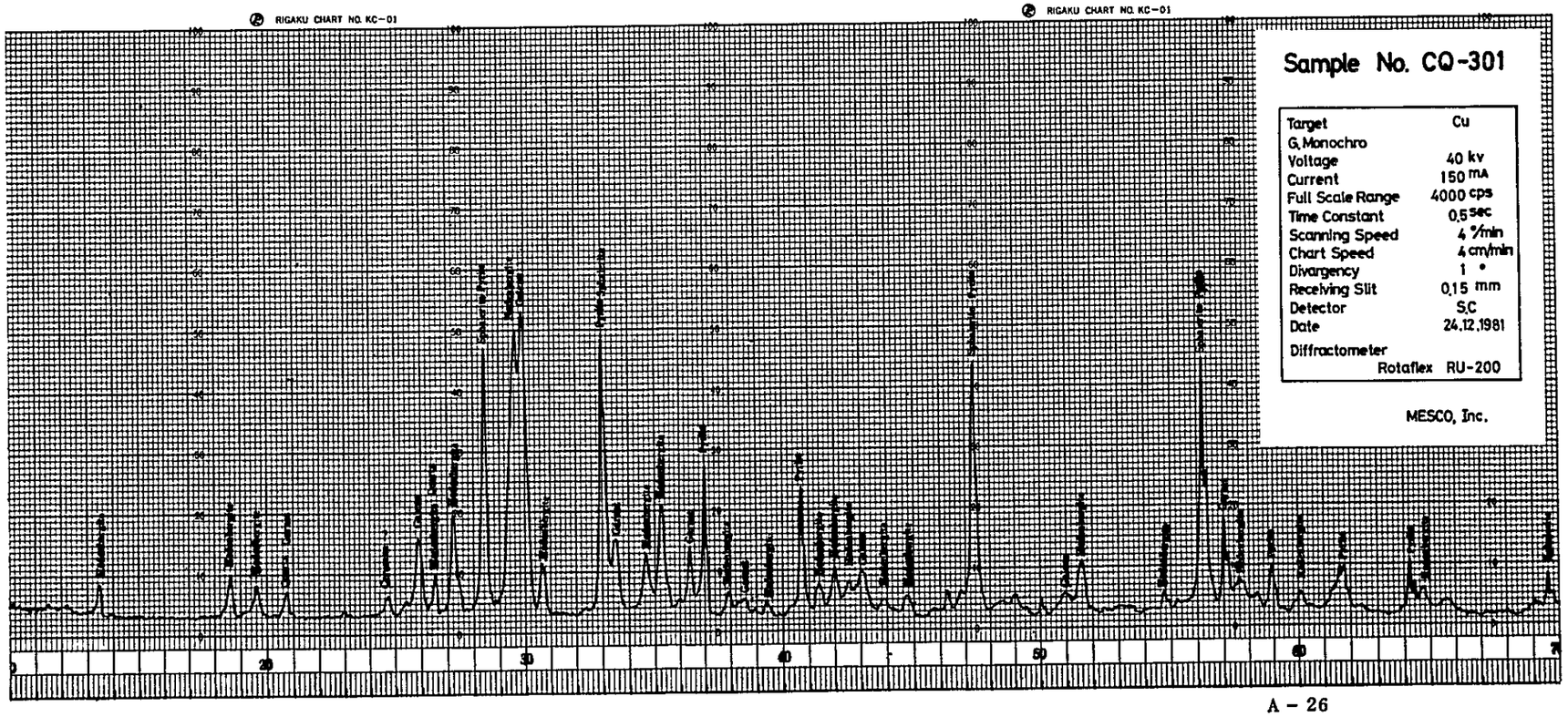
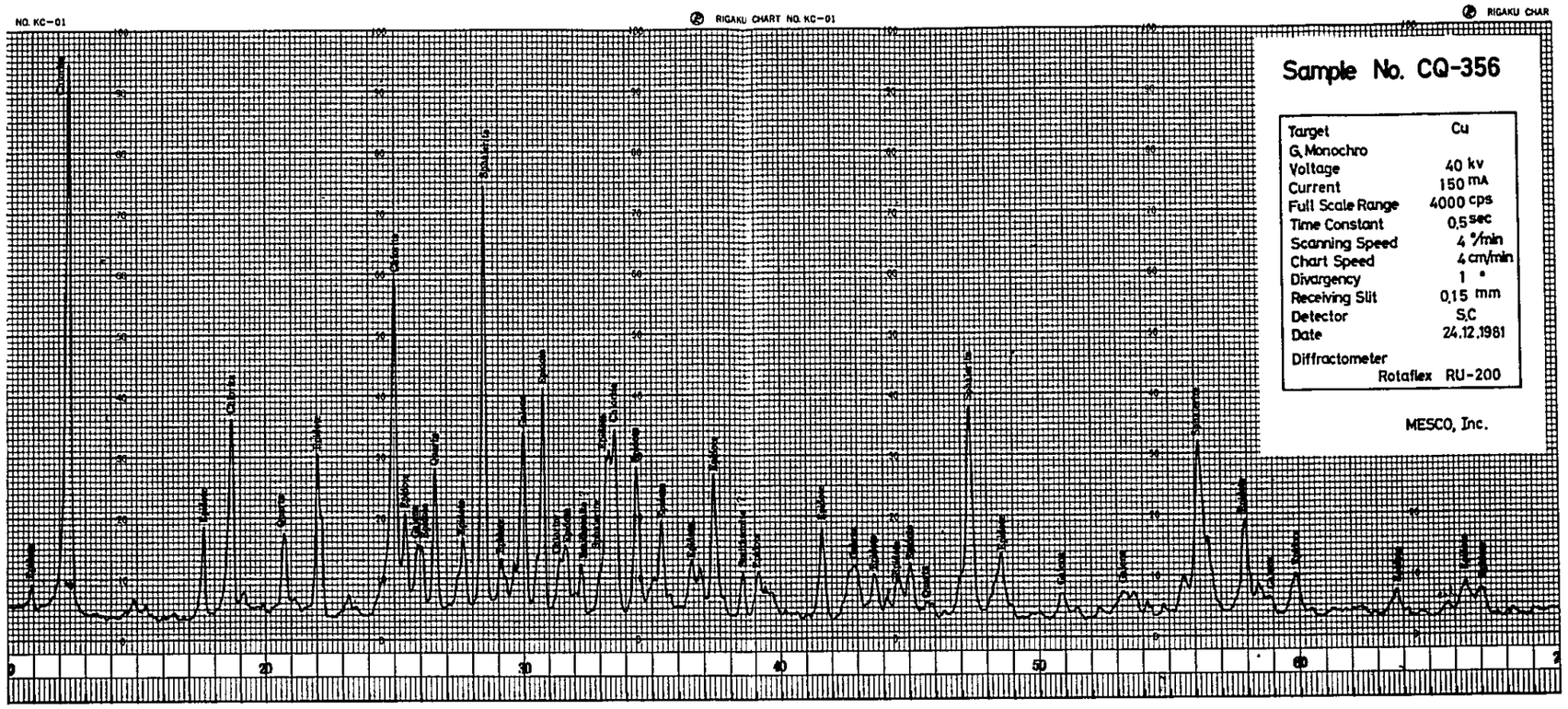
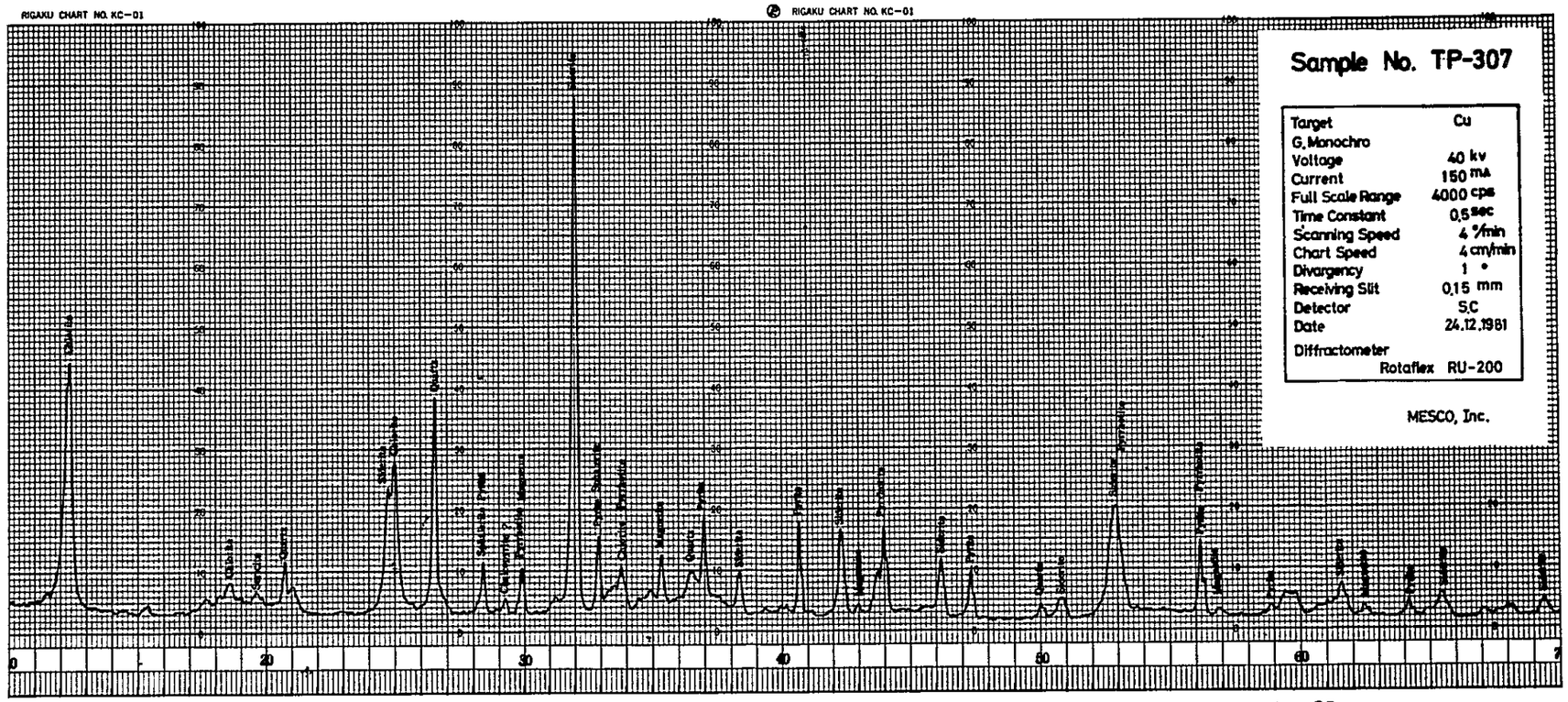

RIGAKU CHART NO. KC-01
Sample No. IC-802
Target Cu
G.Monochro
Voltage 40 kv
Current 150 mA
Full Scale Range 4000 cps
Time Constant 0.5 sec
Scanning Speed 4 °/min
Chart Speed 4 cm/min
Divergency 1 °
Receiving Slit 0.15 mm
Detector S.C
Date 24.12.1981
Diffractometer
Rotaflex RU-200
MESCO, Inc.


RIGAKU CHART NO. KC-01
Sample No. CQ-301
Target Cu
G.Monochro
Voltage 40 kv
Current 150 mA
Full Scale Range 4000 cps
Time Constant 0.5 sec
Scanning Speed 4 °/min
Chart Speed 4 cm/min
Divergency 1 °
Receiving Slit 0.15 mm
Detector S.C
Date 24.12.1981
Diffractometer
Rotaflex RU-200
MESCO, Inc.


NO. KC-01
RIGAKU CHART NO. KC-01
RIGAKU CHAR
Sample No. CQ-356
Target Cu
G, Monochro
Voltage 40 kv
Current 150 mA
Full Scale Range 4000 cps
Time Constant 0,5 sec
Scanning Speed 4 °/min
Chart Speed 4 cm/min
Divergency 1 °
Receiving Slit 0,15 mm
Detector S,C
Date 24.12.1981
Diffractometer
Rotaflex RU-200
MESCO, Inc.


RIGAKU CHART NO. KC-01
RIGAKU CHART NO. KC-01
Sample No. TP-307
Target Cu
G, Monochro
Voltage 40 kv
Current 150 mA
Full Scale Range 4000 cps
Time Constant 0,5 sec
Scanning Speed 4 °/min
Chart Speed 4 cm/min
Divergency 1 °
Receiving Slit 0,15 mm
Detector S,C
Date 24.12.1981
Diffractometer
Rotaflex RU-200
MESCO, Inc.

A. I-6 Assay Results of Ore Samples

(1)

No.	Sample No.	Location	Geological Index	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)
1	NO-601	G4	Jm-Gs	27	0.02	0.3	0.1
2	NO-602	G4	Ph-Gs	10	0.01	0.1	0.5
3	NO-603	G4	Ph-Gs	14	0.01	0.1	0.1
4	NO-604	G4	Fr-Gs	7	0.01	0.1	0.1
5	NO-605	G4	Ph-Ls	7	0.01	tr	tr
6	NO-606	G4	Ph-Sk	38	0.07	0.1	0.1
7	NO-614	G4	Cl-Gs	14	0.03	tr	0.1
8	NO-641	G4	St-Or	117	0.08	3.8	2.1
9	NO-642	G4	St-Or	319	0.34	16.9	23.8
10	NO-643	G4	St-Or	511	0.05	15.0	18.0
11	NO-644	G4	St-Or	17	2.37	0.1	0.1
12	NO-663	CQ-1	St-Or	117	0.23	12.8	8.4
13	SO-501	G4	Cz-Gs	55	0.06	0.5	0.4
14	SO-502	G4	Cz-Gs	65	0.11	0.8	5.4
15	SO-503	G4	Cz-Gs	93	0.19	5.7	11.9
16	SO-504	G4	Cz-Or	69	0.11	3.6	4.0
17	SO-505	G4	Cz-Gs	117	0.16	9.5	8.6
18	SO-506	G4	Ph-Or	27	0.01	0.9	15.3
19	SO-508	G4	Ph-Or	322	0.02	9.4	11.3
20	SO-530	G4	St-Sk	7	0.20	tr	3.8
21	SO-531	G4	St-Sk	55	1.22	tr	7.2
22	SO-532	G4	St-Gs	147	0.21	tr	13.9
23	SO-533	G4	St-Or	14	0.21	tr	1.1
24	SO-534	G4	St-Or	21	0.21	0.1	7.1
25	SO-535	G4	St-Or	31	0.17	0.1	8.9
26	SO-536	G4	St-Or	103	0.47	0.2	11.1
27	SO-537	G4	St-Or	175	0.24	0.2	22.9
28	TO-505	G4	St-Or	3	0.16	tr	tr

Abbreviation

Jm ..... Jumasha formation
Cl ..... Chulec formation
Ph ..... Pariahuanca formation
Fr ..... Farrat formation
Cz ..... Carhuaz formation
St ..... Santa formation

Or ..... Ore
Sk ..... Skarn
Gs ..... Gossan
Ls ..... Limestone
Ald ..... Altered rock

(2)

No.	Sample No.	Location	Geological Index	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)
29	TO-507	G4	St-Or	158	0.04	2.1	0.2
30	TO-508	G4	St-Gs	710	0.48	8.9	0.5
31	TO-509	G4	St-Sk	1,094	0.29	13.2	4.2
32	TO-510	G4	St-Or	545	0.21	4.4	2.2
33	TO-511	G4	St-Or	1,440	0.72	15.9	10.9
34	TO-512	G4	St-Or	1,850	0.60	21.3	3.5
35	TO-514	G4	Ph-Or	10	0.01	0.1	tr
36	TO-515	G4	Ph-Sk	24	1.51	tr	7.3
37	TO-517	G4	St-Gs	28	0.21	tr	0.1
38	IC-702	IC-3	St-Or	1,886	0.02	8.0	3.0
39	IC-703	IC-3	St-Or	69	0.32	0.1	0.1
40	IC-705	IC-3	St-Or	422	2.89	0.1	0.1
41	IC-801	IC-3	St-Or	14	0.04	0.1	11.0
42	IC-804	IC-3	St-Or	21	0.06	0.3	1.6
43	IC-805	IC-3	St-Or	24	0.08	1.6	11.1
44	IC-806	IC-3	St-Or	55	0.77	tr	11.1
45	IC-807	IC-3	St-Or	45	0.92	0.1	9.4
46	IC-808	IC-3	St-Gs	38	0.21	0.1	2.0
47	CQ-301	CQ	Ph-Sk	233	0.25	2.3	3.5
48	CQ-302	CQ	Ph-Sk	209	0.18	2.4	2.0
49	CQ-303	CQ	Ph-Sk	528	0.09	2.8	2.5
50	CQ-304	CQ	Ph-Sk	141	0.12	2.3	3.0
51	CQ-305	CQ	Ph-Or	96	0.16	7.2	8.5
52	CQ-306	CQ	Ph-Or	79	0.04	4.4	2.8
53	CQ-307	CQ	Ph-Sk	86	0.14	3.3	2.0
54	CQ-308	CQ	Ph-Sk	103	0.06	2.9	2.1
55	CQ-309	CQ	Ph-Sk	62	0.06	1.6	2.1
56	CQ-310	CQ	Ph-Or	31	0.07	1.7	4.2
57	CQ-311	CQ	Ph-Sk	38	0.08	2.1	1.3
58	CQ-312	CQ	Ph-Sk	58	0.12	3.4	2.6
59	CQ-313	CQ	Ph-Sk	45	0.23	2.1	2.2
60	CQ-314	CQ	Ph-Sk	34	0.19	2.0	0.9
61	CQ-315	CQ	Ph-Sk	117	0.40	0.7	0.2
62	CQ-316	CQ	Ph-Sk	69	0.25	0.6	0.3
63	CQ-317	CQ	Ph-Sk	62	0.24	4.4	5.1

(3)

No.	Sample No.	Location	Geological Index	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)
64	CQ-318	CQ	Ph-Sk	178	0.66	2.9	2.5
65	CQ-319	CQ	Ph-Sk	237	0.46	3.1	1.5
66	CQ-320	CQ	Ph-Sk	51	0.50	0.4	0.3
67	CQ-321	CQ	Ph-Sk	21	0.03	0.2	0.1
68	CQ-322	CQ	Ph-Sk	34	0.22	0.2	0.2
69	CQ-323	CQ	Ph-Gs	51	0.30	0.1	0.1
70	CQ-324	CQ	Ph-Sk	34	0.13	0.1	0.1
71	CQ-325	CQ	Ph-Sk	24	0.04	0.1	0.1
72	CQ-326	CQ	Ph-Sk	17	0.08	0.2	0.1
73	CQ-327	CQ	Ph-Gs	48	0.13	0.2	0.1
74	CQ-328	CQ	Ph-Sk	41	0.06	0.1	0.1
75	CQ-329	CQ	Ph-Sk	38	0.13	0.1	tr
76	CQ-330	CQ	Ph-Sk	65	0.16	0.1	0.1
77	CQ-331	CQ	Ph-Sk	96	0.02	0.3	0.2
78	CQ-332	CQ	Ph-Sk	51	0.03	0.5	0.2
79	CQ-333	CQ	Ph-Sk	31	0.13	tr	tr
80	CQ-334	CQ	Ph-Sk	69	0.08	0.1	0.1
81	CQ-335	CQ	Ph-Sk	21	0.08	0.1	0.1
82	CQ-336	CQ	Ph-Sk	117	1.27	0.9	1.2
83	CQ-337	CQ	Ph-Or	360	1.30	0.9	0.2
84	CQ-338	CQ	Ph-Or	75	0.93	0.1	0.4
85	CQ-339	CQ	Ph-Sk	55	0.30	0.5	0.2
86	CQ-340	CQ	Ph-Or	206	0.89	0.4	0.2
87	CQ-341	CQ	Ph-Or	69	1.19	tr	0.1
88	CQ-342	CQ	Ph-Sk	17	0.50	tr	tr
89	CQ-343	CQ	Ph-Or	14	0.16	tr	tr
90	CQ-344	CQ	Ph-Sk	14	0.09	tr	tr
91	CQ-345	CQ	Ph-Or	38	0.37	tr	tr
92	CQ-346	CQ	Cl-Or	21	0.73	0.2	0.2
93	CQ-347	CQ	Cl-Sk	24	0.02	0.1	0.1
94	CQ-348	CQ	Ph-Or	117	0.02	6.3	2.4
95	CQ-349	CQ	Ph-Or	62	0.10	2.5	1.6
96	CQ-350	CQ	Ph-Gs	93	0.03	1.1	0.2
97	CQ-351	CQ	Ph-Gs	123	0.03	2.0	0.1
98	CQ-352	CQ	Ph-Gs	51	0.06	2.4	0.2

(4)

No.	Sample No.	Location	Geological Index	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)
99	CQ-353	CQ	Ph-Sk	357	0.18	8.2	2.8
100	CQ-354	CQ	Ph-Sk	322	0.12	8.7	3.2
101	CQ-355	CQ	Ph-Sk	75	0.12	4.4	2.1
102	CQ-356	CQ	Ph-Or	45	0.28	3.3	4.3
103	CQ-357	CQ	Ph-Sk	55	0.06	4.6	0.1
104	CQ-358	CQ	Ph-Sk	62	0.04	2.9	0.2
105	CQ-359	CQ	Ph-Sk	117	0.21	9.4	5.1
106	CQ-360	CQ	Ph-Or	72	0.24	7.2	6.4
107	CQ-361	CQ	Ph-Sk	96	0.07	4.8	0.6
108	CQ-362	CQ	Ph-Sk	82	0.06	5.6	0.6
109	CQ-363	CQ	Ph-Or	72	0.20	7.4	4.8
110	CQ-364	CQ	Ph-Or	151	0.11	3.6	2.8
111	CQ-365	CQ	Ph-Or	117	0.19	7.9	5.9
112	CQ-366	CQ	Ph-Or	106	0.32	9.9	8.0
113	CQ-367	CQ	Ph-Or	134	0.27	7.4	5.1
114	CQ-368	CQ	Ph-Sk	117	0.20	3.0	1.3
115	CQ-369	CQ	Ph-Sk	285	0.32	12.7	5.7
116	CQ-370	CQ	Ph-Sk	21	0.01	1.7	1.4
117	CQ-371	CQ	Ph-Or	27	0.03	2.6	2.4
118	CQ-372	CQ	Ph-Or	27	0.01	1.4	1.5
119	CQ-373	CQ	Ph-Or	21	0.01	1.8	1.4
120	CQ-374	CQ	Ph-Sk	48	0.03	1.5	0.6
121	CQ-375	CQ	Ph-Sk	17	0.01	0.2	0.1
122	CQ-376	CQ	Ph-Sk	17	0.01	0.6	0.2
123	CQ-377	CQ	Ph-Sk	21	0.01	0.4	0.2
124	CQ-380	CQ	Ph-Sk	453	0.01	0.5	tr
125	CQ-381	CQ	Ph-Gs	528	0.01	0.4	tr
126	CQ-382	CQ	Ph-Gs	134	0.01	0.4	tr
127	CQ-383	CQ	Ph-Gs	65	0.01	0.2	tr
128	CQ-384	CQ	Ph-Sk	113	0.22	2.7	2.1
129	CQ-385	CQ	Ph-Sk	154	0.07	2.4	0.5
130	CQ-386	CQ	Ph-Sk	117	0.07	1.5	1.0
131	CQ-387	CQ	Ph-Sk	10	0.01	0.1	0.1
132	CQ-388	CQ	Ph-Sk	10	0.01	0.1	0.1
133	CQ-389	CQ	Ph-Sk	154	0.09	0.2	tr

(5)

No.	Sample No.	Location	Geological Index	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)
134	CQ-390	CQ	Ph-Sk	99	0.14	0.3	tr
135	CQ-391	CQ	Ph-Sk	62	0.01	0.1	0.1
136	CQ-392	CQ	Ph-Sk	34	0.01	tr	tr
137	CQ-393	CQ	Ph-Sk	34	0.02	tr	tr
138	CQ-394	CQ	Ph-Sk	38	0.01	tr	tr
139	CQ-395	CQ	Ph-Sk	195	0.02	0.5	0.1
140	CQ-396	CQ	Ph-Sk	96	0.28	0.3	0.1
141	CQ-397	CQ	Ph-Sk	62	0.09	0.3	0.1
142	CQ-398	CQ	Ph-Sk	195	0.24	1.1	0.2
143	CQ-399	CQ	Ph-Sk	38	0.05	1.5	0.6
144	TP-301	G4	Ph-Or	113	0.61	0.6	23.4
145	TP-302	G4	Ph-Ald	7	0.04	0.1	0.7
146	TP-303	G4	Ph-Or	10	0.17	tr	3.4
147	TP-304	G4	Ph-Sk	75	2.80	tr	0.3
148	TP-305	G4	Ph-Sk	96	3.39	tr	0.3
149	TP-306	G4	Ph-Or	14	0.18	tr	0.2
150	TP-307	G4	Ph-Or	10	0.20	tr	0.4
151	TP-308	G4	Ph-Or	14	0.20	0.1	10.3
152	TP-309	G4	Ph-Or	27	0.22	0.2	15.1
153	TP-310	G4	Ph-Or	10	0.12	tr	7.0
154	TP-311	G4	Ph-Or	7	0.05	0.1	0.8
155	TP-312	G4	Ph-Or	10	0.07	tr	12.9
156	TP-313	G4	Ph-Or	38	1.03	tr	7.4
157	TP-314	G4	Ph-Or	27	0.45	0.1	3.0

A. Ⅲ-1 List of The Used Equipment for Drilling

Item	Model	Quantity	Capacity, Type, and Specification
Drilling Machine	TGM-3C	1	Capacity NQ 510m, BQ 660m Inner Diameter of Spindle 93mm Weight (except engine) 2,300kg
Drilling Machine	EP-1	1	Capacity NQ 510m, BQ 660m Inner Diameter of Spindle 76mm Weight (except engine) 1,500kg
Drilling Machine	L-44	1	Capacity NQ 790m, BQ 1,060m Inner Diameter of Spindle 98mm Weight (except engine) 2,327kg
Engine for Drill	F4L-912	2	Diesel Engine 1,800 rpm/55 PS ∿ 1,500 rpm/41 PS
Engine for Drill	GMG-553	1	Diesel Engine 1,800 rpm/60 PS ∿ 1,500 rpm/51 PS
Pump	NAS-3C	2	Piston ϕ75 mm Capacity 130,72,39,22 ℓ/min Pressure 26 ∿ 40 Kg/cm^2
"	NES-100B	2	Piston ϕ60 mm Capacity 100,50,71,35.5ℓ/min Pressure 18 ∿ 50 Kg/cm^2
"	535-RQ	1	Piston ϕ70 mm Capacity 140,83,45,22,18 ℓ/min Pressure 46 ∿ 56 Kg/cm^2
"	MS-303	1	Piston ϕ25 mm Capacity 25 ∿ 41 ℓ/min Pressure 35 Kg/cm^2
Engine for pump	2T-90L	1	Diesel Engine 1,800 rpm/20 PS
"	NS-130C	2	Diesel Engine 1,800 rpm/8.5 PS
"	NS-110C	2	Diesel Engine 1,800 rpm/8.5 PS
"	NS-65C	9	Diesel Engine 1,800 rpm/5.5 PS
Generator	YSG-3.5	5	3.5KVA, 220V, 60c/s
Engine for Generator	NS-65C	5	Diesel Engine 1,800 rpm/5.5 PS

APPENDICES
PART Ⅲ
DRILLING DATA

List of the used equipment for drilling - continued

Item	Model	Quantity	Capacity, Type, and Specification
Mud Mixer	MCE-200A	2	Volume 200ℓ, 800 ∿ 1,000 rpm/min
"	MCE-100A	1	Volume 100ℓ, 800 ∿ 1,000 rpm/min
Derrick	DCP9-6A	1	Steel structural derrick (Vertical, inclination) Weight 2.4 ton Lifting 9m height
"	GPD-9.5	2	Steel structural derrick (Vertical,) Weight 2.4 ton Lifting 9m height
Rod Holder	RH-85	3	Hand Type
Drill Rods	HQ-WL	18	3.00 m/PC
"	"	1	1.50 m/PC
"	NQ-WL	105	3.00 m/PC
"	"	2	1.50 m/PC
"	BQ-WL	167	3.00 m/PC
"	"	2	1.50 m/PC
Casing Pipes	HW	16	3.00 m/PC
"	"	11	1.00 m/PC
"	"	5	0.50 m/PC
"	NW	47	3.00 m/PC
"	"	1	1.00 m/PC
"	"	4	0.50 m/PC
"	BW	108	3.00 m/PC
"	"	2	1.00 m/PC
"	"	3	0.50 m/PC

A. Ⅲ-2 Supplies and Consumed Parts for Drilling

Description	Specification	Unit	Quantity								
			DDH-4	DDH-5	DDH-6	DDH-7	DDH-8	DDH-9	DDH-10	DDH-11	DDH-12
Light oil		ℓ	4,100	4,100	4,640	5,200	3,250	3,700	3,400	4,900	7,300
Mobil oil		ℓ	120	40	40	130	40	40	105	70	120
Hydraulic oil		ℓ	25	20	25	40	20	25	45	30	45
Grease		kg	13	25	6	35	7	30	35	40	19
Bentonite	50kg/bag	Bag	120	83	146	152	76	45	85	238	239
Libonite		kg	71	50	150	97	25	31	80	179	23
Tel-cellose		kg	23	12	20	25	5	4	12	22	10
Cement	40kg/bag	kg	29	8	10	40	10	13	11	10	8
Tel-stop		kg	50	-	-	-	-	-	-	-	-
Emale 20C		ℓ	28	18	26	18	18	18	18	-	-
Metal crown	116mm	Pc	1	1	1	1	-	1	1	-	-
Trycone Rock Bit	4-3/4"	"	-	-	-	-	-	-	-	1	1
Single core tube	114mm x 0.5m	Set	-	-	-	-	-	1	1	-	-
Double core tube	114mm x 1.5m	"	-	-	-	-	-	-	1	-	-
Wire line core barrel	HQ x 1.50m	"	-	-	-	-	-	1	1	1	-
" "	NQ x 1.50m	"	-	-	-	-	-	1	1	-	1
" "	BQ x 1.50m	"	-	-	1	-	-	-	-	-	1
Inner tube assembly	HQ x 1.50m	"	-	-	1	1	-	-	-	1	-
" "	NQ x 1.50m	"	-	-	-	-	1	-	1	1	-
" "	BQ x 1.50m	"	-	-	-	-	-	1	1	-	1
Outer tube	HQ x 1.50m	Pc	-	-	-	-	-	1	1	1	-
"	NQ x 1.50m	"	-	-	-	-	-	1	1	1	-
"	BQ x 1.50m	"	-	-	-	-	-	1	1	-	1
Inner tube	HQ x 1.50m	"	-	-	-	-	-	1	1	1	-
"	NQ x 1.50m	"	-	-	-	-	-	1	1	1	-
"	BQ x 1.50m	"	-	-	-	-	-	1	1	-	1
Casing metal shoe	HW	"	-	1	1	-	-	1	-	-	1
"	NW	"	1	1	1	1	-	-	1	1	-
"	BW	"	1	1	1	1	-	1	1	-	1

Supplies and Drilling Parts Consumed-Continued

Description	Specification	Unit	Quantity								
			DDH-4	DDH-5	DDH-6	DDH-7	DDH-8	DDH-9	DDH-10	DDH-11	DDH-12
Rag		kg	10	6	15	20	8	10	15	15	20
Core box		Pc	41	47	76	54	65	56	57	78	93
Wire	10#	kg	10	10	15	10	12	8	16	8	15
"	12#	"	5	10	12	8	9	7	10	6	10
Nail		"	5	5	10	10	8	5	6	8	10
Wire rope	6mm x 550m	Roll	-	0.5	-	-	-	1	0.5	0.5	-
"	12mm x 40m	"	-	1	-	-	-	1	1	1	-
Manila rope	18mm x 30m	Pc	2	1	1	2	1	1	1	2	2
Vinyl rope	8mm x 100m	"	1	-	-	1	-	-	1	-	1
Pump packing		"	8	8	12	16	12	8	8	12	12
Valve steel ball	38.1ϕ	"	8	-	8	16	-	8	8	-	8
Piston rod		"	2	-	-	4	-	4	2	2	-
Guide pipe	HQ	"	-	-	1	-	-	1	-	1	-
"	NQ	"	1	-	-	-	-	1	1	1	-
"	BQ	"	1	-	-	-	-	1	1	-	1
Guide coupling	HQ	"	-	-	1	-	-	1	-	1	-
"	NQ	"	1	-	-	-	-	1	1	1	-
"	BQ	"	1	-	-	-	-	1	1	-	1
Suction hose	50mm x 4.5m	"	-	-	-	1	-	-	1	1	-
Water swivel packing		"	-	-	3	-	3	-	3	3	-
Water swivel spindle		"	-	-	1	-	1	-	1	1	-
V-belt	TGM-3CxF4L912	Set	-	-	1	-	-	-	-	-	-
"	EP-1 xF4L912	"	-	-	-	-	-	2	-	-	-
"	L-44 xGMG-553	"	-	-	-	-	-	-	-	1	-
Core lifter	HQ	Pc	2	1	2	2	-	1	1	3	3
"	NQ	"	2	3	3	3	3	3	2	5	4
"	BQ	"	2	1	2	2	-	1	2	-	3
Core lifter case	HQ	"	1	1	1	1	-	1	1	2	2
"	NQ	"	2	2	2	2	2	2	1	4	2
"	BQ	"	2	1	1	1	-	1	1	-	2

A. Ⅲ-3 Preparation and Removal

Item \ Hole No.		DDH-4		DDH-5		DDH-6		DDH-7		DDH-8		DDH-9		DDH-10		DDH-11		DDH-12	
Preparation and removal	In	21th Jun.'81		14th Aug.'81		4th Sep.'81		16th Jul.'81		7th Sep.'81		24th Sep.'81		27th Sep.'81		3th Oct.'81		6th Sep.'81	
		29th Jun.'81		15th Aug.'81		6th Sep.'81		2th Aug.'81		11th Sep.'81		28th Sep.'81		1st Oct.'81		5th Oct.'81		8th Sep.'81	
	Out	8th Aug.'81		2th Sep.'81		25th Sep.'81		5th Sep.'81		22th Sep.'81		11th Oct.'81		13th Oct.'81		21th Oct.'81		2th Oct.'81	
		13th Aug.'81		3th Sep.'81		26th Sep.'81		6th Sep.'81		23th Sep.'81		12th Oct.'81		14th Oct.'81		21th Oct.'81		2th Oct.'81	
		Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts
Preparation	Access road	1	18					2	30										
	Haulage	5	42	1	18	1	18	5	68	1.5	50	2	36	2.5	44	1	20	0.5	10
	Installation	2	36	1	18	1.5	19	3	30	2	36	2	36	1.5	24	1	18	1.5	28
	Water pipe	0.5	10					3	20	0.5	8	0.5	17	0.5	13	0.5	10	0.5	8
	Test run. etc.	0.5	15			0.5	6	1	15	1	15	0.5	17	0.5	14	0.5	18	0.5	8
	Total	9	121	2	36	3	43	14	163	5	109	5	106	5	95	3	66	3	54
Removal	Dismounting	2	30	1	25	1	15	1	19	1	18	0.5	10	1	20	0.5	10	0.5	10
	Pipe removal	4	60	1	15	1	15	1	15	1	18	1.5	26	1	18	0.5	8	0.5	10
	Haulage																		
	Road reinstatement																		
	Others																		
	Total	6	90	2	40	2	30	2	34	2	36	2	36	2	38	1	18	1	20
Grand Total		15	211	4	76	5	73	16	197	7	145	7	142	7	133	4	84	4	74

A. Ⅲ-4 Operational Results of Drill Hole, DDH-4

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	21th Jun.'81∿29th Jun.'81	9	9	-	121
Drilling	30th Jun.'81∿7th Aug.'81	40	33	7	551
Removing	8th Aug.'81∿13th Aug.'81	6	6	-	90
Total	21th Jun.'81∿13th Aug.'81	55	48	7	762

Drilling Length

Planned Length	m 180.00	Over-burden	m 2.60
Increase or Decrease in Length	m	Core Length	m 137.60
Length Drilled	m 184.70	Core Recovery	75.6 %

Core Recovery for each 100m section

Depth of Hole	Section	Total
0 ∿ 100 m	91.7 %	92.4 %
100∿184.70m	59.6 %	75.6 %
m	%	%
m	%	%
m	%	%
m	%	%

Working Time

Drilling		134°30'	18.6 %	17.1 %
Hoisting & Lowering Rod		32°30'	4.5 %	4.1 %
Hoisting & Lowering I.T.		96°00'	13.3 %	12.2 %
Miscellaneous		340°00'	47.1 %	43.3 %
Repairing		91°00'	12.6 %	11.6 %
Others		28°00'	3.9 %	3.6 %
Sub Total		722°00'	100 %	91.9 %
Removing	Preparation	44°00'	-	5.6 %
	Moving	20°00'	-	2.5 %
G. Total		786°00'	-	100 %

Efficiency of Drilling

184.70m/Work Period	3.36 m/day
184.70m/Working Days	3.85 m/day
184.70m/Drilling Period	4.62 m/day
184.70m/Net Drilling Days	5.60 m/day
Total workers/ 184.70 m	4.13 Man/m
Total Drilling Workers/184.70m	2.98 Man/m

Casing Pipe Inserted

Pipe Size & Materage	Inserted Length / Drilling Length %	Recovery of Casing Pipe
HW 2.60 m	1.4 %	100 %
NW 61.10 m	33.1 %	72.7 %
BW 152.20 m	82.4 %	95.0 %

Hoisting&Lowering Rod 43 Times	Hoisting&Lowering I.T. 287 Times

Remarks

I.T.: Inner Tube

A. Ⅲ-5 Operational Results of Drill Hole, DDH-5

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	14th Aug.'81∿15th Aug.'81	2	2	-	36
Drilling	16th Aug.'81∿1st Sep.'81	17	17	-	310
Removing	2th Sep.'81∿3th Sep.'81	2	2	-	40
Total	14th Aug.'81∿3th Sep.'81	21	21	-	386

Drilling Length

Planned Length	m 210.00	Over-burden	m 3.80
Increase or Decrease in Length	m	Core Length	m 171.20
Length Drilled	m 211.10	Core Recovery	82.6 %

Core Recovery for each 100m section

Depth of Hole	Section	Total
0 ∿ 100 m	99.9 %	99.9 %
100∿211.10m	69.3 %	82.6 %
m	%	%
m	%	%
m	%	%
m	%	%

Working Time

Drilling	135°00'	33.4 %	31.4 %
Hoisting & Lowering Rod	12°00'	3.0 %	2.8 %
Hoisting & Lowering I.T.	79°00'	20.0 %	18.4 %
Miscellaneous	172°00'	42.6 %	40.0 %
Repairing	6°00'	1.0 %	1.4 %
Others	-	- %	- %
Sub Total	404°00'	100 %	94.0 %
Removing Preparation	8°00'	-	1.8 %
Removing Moving	18°00'	-	4.2 %
G. Total	430°00'	-	100 %

Efficiency of Drilling

211.10m/Work Period	10.05m/day
211.10m/Working Days	10.05m/day
211.10m/Drilling Period	12.41m/day
211.10m/Net Drilling Days	12.41m/day
Total workers/ 211.10 m	1.82 Man/m
Total Drilling Workers/211.10m	1.46 Man/m

Casing Pipe Inserted

Pipe Size & Materage	Inserted Length / Drilling Length %	Recovery of Casing Pipe
HW 4.00 m	1.9 %	100 %
NW 14.30 m	6.8 %	100 %
BW 180.00 m	85.3 %	100 %

Hoisting&Lowering Rod 24 Times	Hoisting&Lowering I.T. 239 Times

Remarks

I.T.: Inner Tube

A. Ⅲ-6 Operational Results of Drill Hole, DDH-6

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	4th Sep.'81∿6th Sep.'81	3	3	-	43
Drilling	7th Sep.'81∿24th Sep.'81	18	18	-	423
Removing	25th Sep.'81∿26th Sep.'81	2	2	-	30
Total	4th Sep.'81∿26th Sep.'81	23	23	-	496

Drilling Length

Planned Length	m 300.00	Over-burden	m 2.00
Increase or Decrease in Length	m	Core Length	m 279.65
Length Drilled	m 301.60	Core Recovery	% 93.3

Working Time

Drilling	182°00'	40.4 %	36.7 %
Hoisting & Lowering Rod	20°00'	4.4 %	4.0 %
Hoisting & Lowering I.T.	82°00'	18.2 %	16.5 %
Miscellaneous	160°00'	35.6 %	32.3 %
Repairing	6°00'	1.4 %	1.2 %
Others	-	- %	- %
Sub Total	450°00'	100 %	90.7 %
Removing: Preparation	34°00'	-	6.9 %
Removing: Moving	12°00'	-	2.4 %
G. Total	496°00'	-	100 %

Core Recovery for each 100m section

Depth of Hole	Section	Total
0 ∿ 100 m	96.6 %	96.6 %
100 ∿ 200 m	92.5 %	94.5 %
200∿301.60m	91.0 %	93.3 %
m	%	%
m	%	%
m	%	%

Efficiency of Drilling

301.60m/Work Period	13.11m/day
301.60m/Working Days	13.11m/day
301.60m/Drilling Period	16.76m/day
301.60m/Net Drilling Days	16.76m/day
Total workers/ 301.60 m	1.64 Man/m
Total Drilling Workers/301.60m	1.40 Man/m

Hoisting&Lowering Rod 24 Times; Hoisting&Lowering I.T. 329 Times

Casing Pipe Inserted

Pipe Size & Materage	Inserted Length / Drilling Length %	Recovery of Casing Pipe
HW 6.50 m	2.2 %	100 %
NW 34.40 m	11.4 %	100 %
BW 190.50 m	63.2 %	100 %

Remarks

I.T.: Inner Tube

A. Ⅲ-7 Operational Results of Drill Hole, DDH-7

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	16th Jul.'81∿2th Aug.'81	18	14	4	163
Drilling	3th Aug.'81∿4th Sep.'81	33	33	-	603
Removing	5th Sep.'81∿6th Sep.'81	2	2	-	34
Total	16th Jul.'81∿6th Sep.'81	53	49	4	800

Drilling Length

Planned Length	m 230.00	Over-burden	m 0.60
Increase or Decrease in Length	m	Core Length	m 204.10
Length Drilled	m 230.80	Core Recovery	88.7 %

Working Time

Drilling		157°00'	21.7 %	19.7 %
Hoisting & Lowering Rod		28°00'	3.9 %	3.5 %
Hoisting & Lowering I.T.		105°00'	14.5 %	13.2 %
Miscellaneous		338°00'	46.8 %	42.4 %
Repairing		44°00'	6.1 %	5.4 %
Others		50°00'	7.0 %	6.3 %
Sub Total		722°00'	100 %	90.5 %
Removing	Preparation	66°00'	-	8.3 %
Removing	Moving	10°00'	-	1.2 %
G. Total		798°00'	-	100 %

Core Recovery for each 100m section

Depth of Hole	Section	Total
0 ∿ 100 m	90.4 %	90.4 %
100 ∿ 200 m	88.1 %	89.1 %
200∿230.80m	84.9 %	88.7 %
m	%	%
m	%	%
m	%	%

Efficiency of Drilling

230.80m/Work Period	4.35 m/day
230.80m/Working Days	4.71 m/day
230.80m/Drilling Period	6.99 m/day
230.80m/Net Drilling Days	6.99 m/day
Total workers/ 230.80 m	3.47 Man/m
Total Drilling Workers/230.80m	2.61 Man/m

Hoisting&Lowering Rod 20 Times

Hoisting&Lowering I.T. 316 Times

Casing Pipe Inserted

Pipe Size & Materage	Inserted Length / Drilling Length %	Recovery of Casing Pipe
HW 3.10 m	1.3 %	100 %
NW 41.40 m	17.9 %	100 %
BW 135.80 m	58.8 %	100 %

Remarks

I.T.: Inner Tube

A. Ⅲ-8 Operational Results of Drill Hole, DDH-8

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	7th Sep.'81∿11th Sep.'81	5	5	-	109
Drilling	12th Sep.'81∿21th Sep.'81	10	10	-	213
Removing	22th Sep.'81∿23th Sep.'81	2	2	-	36
Total	7th Sep.'81∿23th Sep.'81	17	17	-	358

Drilling Length

Planned Length	m 200.00	Over-burden	m 1.50	
Increase or Decrease in Length	m	Core Length	m 200.30	
Length Drilled	m 200.30	Core Recovery	100 %	

Core Recovery for each 100m section

Depth of Hole	Section	Total
0 ∿ 100 m	100 %	100 %
100∿200.30m	100 %	100 %
m	%	%
m	%	%
m	%	%
m	%	%

Working Time

Drilling	115°00'	44.9 %	36.2%	
Hoisting & Lowering Rod	12°00'	4.7 %	3.8%	
Hoisting & Lowering I.T.	35°00'	13.7 %	11.0%	
Miscellaneous	94°00'	36.7 %	29.5%	
Repairing	-	- %	- %	
Others	-	- %	- %	
Sub Total	256°00'	100 %	80.5%	
Removing Preparation	50°00'	-	15.7%	
Removing Moving	12°00'	-	3.8%	
G. Total	318°00'	-	100 %	

Efficiency of Drilling

200.30m/Work Period	11.78m/day
200.30m/Working Days	11.78m/day
200.30m/Drilling Period	20.03m/day
200.30m/Net Drilling Days	20.03m/day
Total workers/ 200.30 m	1.79 Man/m
Total Drilling Workers/200.30m	1.06 Man/m

Casing Pipe Inserted

Pipe Size & Materage	Inserted Length / Drilling Length %	Recovery of Casing Pipe
HW 1.60 m	0.8 %	100 %
NW 59.60 m	29.8 %	100 %
BW m	%	%

Hoisting&Lowering Rod 12 Times	Hoisting&Lowering I.T. 175 Times

Remarks

I.T.: Inner Tube

A. Ⅲ-9 Operational Results of Drill Hole, DDH-9

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	24th Sep.'81∿28th Sep.'81	5	5	-	106
Drilling	29th Sep.'81∿10th Oct.'81	12	12	-	276
Removing	11th Oct.'81∿12th Oct.'81	2	2	-	36
Total	24th Sep.'81∿12th Oct.'81	19	19	-	418

Drilling Length

Planned Length	m 200.00	Over-burden	m 1.20	
Increase or Decrease in Length	m	Core Length	m 185.20	
Length Drilled	m 200.80	Core Recovery	92.8 %	

Core Recovery for each 100m section

Depth of Hole	Section	Total
0 ∿ 100 m	98.3 %	98.3 %
100∿200.80m	85.7 %	92.8 %
m	%	%
m	%	%
m	%	%
m	%	%

Working Time

Drilling	141°00'	45.8 %	39.4 %	
Hoisting & Lowering Rod	13°00'	4.2 %	3.6 %	
Hoisting & Lowering I.T.	49°00'	15.9	13.7	
Miscellaneous	93°00'	30.2 %	26.0 %	
Repairing	12°00'	3.9 %	3.3 %	
Others	-	- %	- %	
Sub Total	308°00'	100 %	86.0 %	
Removing: Preparation	30°00'	-	8.4 %	
Removing: Moving	20°00'	-	5.6 %	
G. Total	358°00'	-	100 %	

Efficiency of Drilling

200.80m/Work Period	10.57m/day
200.80m/Working Days	10.57m/day
200.80m/Drilling Period	16.73m/day
200.80m/Net Drilling Days	16.73m/day
Total workers/ 200.80 m	2.08 Man/m
Total Drilling Workers/200.80m	1.37 Man/m

Casing Pipe Inserted

Pipe Size & Materage	Inserted Length / Drilling Length %	Recovery of Casing Pipe
HW 1.50 m	0.7 %	100 %
NW 60.00 m	29.9 %	100 %
BW 149.60 m	74.5 %	100 %

Hoisting&Lowering Rod 12 Times	Hoisting&Lowering I.T. 241 Times

Remarks

I.T.: Inner Tube

A. Ⅲ-10 Operational Results of Drill Hole, DDH-10

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	27th Sep.'81∿1st Oct.'81	5	5	-	95
Drilling	2th Oct.'81∿12th Oct.'81	11	11	-	235
Removing	13th Oct.'81∿14th Oct.'81	2	2	-	38
Total	27th Sep.'81∿14th Oct.'81	18	18	-	368

Drilling Length

Planned Length	m 200.00	Over-burden	m 1.00
Increase or Decrease in Length	m	Core Length	m 186.10
Length Drilled	m 200.40	Core Recovery	93.3 %

Core Recovery for each 100m section

Depth of Hole	Section	Total
0 ∿ 100 m	96.6 %	96.6 %
100∿200.40 m	90.5 %	93.3 %
m	%	%
m	%	%
m	%	%
m	%	%

Working Time

Drilling		127°00'	47.0 %	36.3 %
Hoisting & Lowering Rod		16°00'	5.9 %	4.6 %
Hoisting & Lowering I.T.		46°00'	17.0 %	13.1 %
Miscellaneous		81°00'	30.1 %	23.1 %
Repairing		-	- %	- %
Others		-	- %	- %
Sub Total		270°00'	100 %	77.1 %
Removing	Preparation	30°00'	-	8.6 %
Removing	Moving	50°00'	-	14.3 %
G. Total		350°00'	-	100 %

Efficiency of Drilling

200.40m/Work Period	11.13m/day
200.40m/Working Days	11.13m/day
200.40m/Drilling Period	18.22m/day
200.40m/Net Drilling Days	18.22m/day
Total workers/ 200.40 m	1.84 Man/m
Total Drilling Workers/200.40m	1.17 Man/m

Casing Pipe Inserted

Pipe Size & Materage	Inserted Length / Drilling Length %	Recovery of Casing Pipe
HW 2.50 m	1.2 %	100 %
NW 81.30 m	40.6 %	100 %
BW 162.30 m	81.0 %	96.3 %

Hoisting&Lowering Rod	Hoisting&Lowering I.T.
16 Times	279 Times

Remarks

I.T.: Inner Tube

A. Ⅲ-11 Operational Results of Drill Hole, DDH-11

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	3th Oct.'81∿5th Oct.'81	3	3	-	66
Drilling	6th Oct.'81∿20th Oct.'81	15	15	-	340
Removing	21th Oct.'81∿21th Oct.'81	1	1	-	18
Total	3th Oct.'81∿21th Oct.'81	19	19	-	424

Drilling Length

Planned Length	m 250.00	Over-burden	m 2.50
Increase or Decrease in Length	m	Core Length	m 245.25
Length Drilled	m 250.50	Core Recovery	98.9 %

Core Recovery for each 100m section

Depth of Hole	Section	Total
0 ∿ 100 m	97.8 %	97.8 %
100 ∿ 200 m	99.4 %	98.7 %
200∿250.50m	100 %	98.9 %
m	%	%
m	%	%
m	%	%

Working Time

Drilling		127°00'	40.7 %	32.4 %
Hoisting & Lowering Rod		16°00'	5.1 %	4.1 %
Hoisting & Lowering I.T.		42°00'	13.5 %	10.7 %
Miscellaneous		127°00'	40.7 %	32.4 %
Repairing		-	- %	- %
Others		-	- %	- %
Sub Total		312°00'	100 %	79.6 %
Removing	Preparation	36°00'	-	9.2 %
Removing	Moving	44°00'	-	11.2 %
G. Total		392°00'	-	100 %

Efficiency of Drilling

250.50m/Work Period	13.18m/day
250.50m/Working Days	13.18m/day
250.50m/Drilling Period	16.70m/day
250.50m/Net Drilling Days	16.70m/day
Total workers/ 250.50 m	1.69 Man/m
Total Drilling Workers/250.50	1.36 Man/m

Casing Pipe Inserted

Pipe Size & Materage	Inserted Length / Drilling Length %	Recovery of Casing Pipe
HW 2.50 m	1.0 %	100 %
NW 102.30 m	40.8 %	100 %
BW m	%	%

Hoisting&Lowering Rod 16 Times	Hoisting&Lowering I.T. 210 Times

Remarks

I.T.: Inner Tube

A. Ⅲ-12 Operational Results of Drill Hole, DDH-12

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	6th Sep.'81∿8th Sep.'81	3	3	-	54
Drilling	9th Sep.'81∿1st Oct.'81	23	23	-	509
Removing	2th Oct.'81∿2th Oct.'81	1	1	-	20
Total	6th Sep.'81∿2th Oct.'81	27	27	-	583

Drilling Length

Planned Length	m 300.00	Over-burden	m 3.00
Increase or Decrease in Length	m	Core Length	m 295.50
Length Drilled	m 310.50	Core Recovery	96.7 %

Core Recovery for each 100m section

Depth of Hole	Section	Total
0 ∿ 100 m	96.0 %	96.0 %
100 ∿ 200 m	95.8 %	95.9 %
200∿310.50m	96.8 %	96.7 %
m	%	%
m	%	%
m	%	%

Working Time

Drilling	201°00'	35.6%	33.2%
Hoisting & Lowering Rod	22°00'	3.9%	3.6%
Hoisting & Lowering I.T.	92°00'	16.3%	15.2%
Miscellaneous	249°00'	44.2%	41.1%
Repairing	-	- %	- %
Others	-	- %	- %
Sub Total	564°00'	100 %	93.1%
Removing: Preparation	30°00'	-	5.0%
Removing: Moving	12°00'	-	1.9%
G. Total	606°00'	-	100 %

Efficiency of Drilling

310.50m/Work Period	11.50m/day
310.50m/Working Days	11.50m/day
310.50m/Drilling Period	13.50m/day
310.50m/Net Drilling Days	13.50m/day
Total workers/ 310.50m	1.88Man/m
Total Drilling Workers/310.50m	1.64Man/m

Casing Pipe Inserted

Pipe Size & Materage	Inserted Length / Drilling Length %	Recovery of Casing Pipe
HW 3.05m	1.0 %	100 %
NW 111.35m	35.9 %	100 %
BW 223.35m	71.9 %	100 %

Hoisting&Lowering Rod 21 Times	Hoisting&Lowering I.T. 216 Times

Remarks

I.T.: Inner Tube

A. Ⅲ-13 Summaried Operational Data of Each Drill hole

Drill Hole No.	Type of machine	Drilling period	Drilling length	Core		No. of drilling shift			Drilling speed		Remarks
				Length	Recovery	Drilling	Casing etc.	Total	* m/shift	** m/shift	
			m	m	%						
DDH-4	TGM-3C	30th Jun. '81 ∿ 8th Aug. '81	184.70	137.60	75.6	66	39	105	2.80	1.76	
DDH-5	TGM-3C	16th Aug. '81 ∿ 1st Sep. '81	211.10	171.20	82.6	51	13	64	4.14	3.30	
DDH-6	TGM-3C	7th Sep. '81 ∿ 24th Sep. '81	301.60	279.65	93.3	59	11	70	5.11	4.31	
DDH-7	EP-1	3th Aug. '81 ∿ 4th Sep. '81	230.80	204.10	88.7	92	16	108	2.51	2.14	
DDH-8	EP-1	12th Sep. '81 ∿ 21th Sep. '81	200.30	200.30	100.0	34	4	38	5.89	5.27	
DDH-9	EP-1	29th Sep. '81 ∿ 10th Oct. '81	200.80	185.20	92.8	39	8	47	5.15	4.27	
DDH-10	TGM-3C	2th Oct. '81 ∿ 12th Oct. '81	200.40	186.10	93.3	38	3	41	5.27	4.89	
DDH-11	L-44	6th Oct. '81 ∿ 20th Oct. '81	250.50	245.25	98.9	56	7	63	4.47	3.98	
DDH-12	L-44	9th Sep. '81 ∿ 1st Oct. '81	310.50	295.50	96.7	83	3	86	3.74	3.61	
Total			2,090.70	1,904.90	91.9	518	104	622	4.04	3.36	

* Drilled per one shift covering net drilling operations.
** Drilled per one shift covering total works conducted.

A. Ⅲ-14 Working Time of Each Drill Hole

Drill hole No.	Drilling	Hoisting & Lowering of rod & I.T.		Miscellaneous			Repairs	Others	Moving Operation	Total
		Rod	Inner tube	Casing insertion	Hole reaming	Others				
DDH-4	134°00'	32°30'	96°00'	12°00'	90°00'	238°00'	91°00'	28°00'	64°00'	786°00'
DDH-5	135°00'	12°00'	79°00'	18°00'	48°00'	106°00'	6°00'	-	26°00'	430°00'
DDH-6	182°00'	20°00'	82°00'	23°00'	9°00'	128°00'	6°00'	-	46°00'	496°00'
DDH-7	157°00'	28°00'	105°00'	21°00'	57°00'	260°00'	44°00'	50°00'	76°00'	798°00'
DDH-8	115°00'	12°00'	35°00'	9°00'	-	85°00'	-	-	62°00'	318°00'
DDH-9	141°00'	13°00'	49°00'	19°00'	-	74°00'	12°00'	-	50°00'	358°00'
DDH-10	127°00'	16°00'	46°00'	11°00'	-	70°00'	-	-	80°00'	350°00'
DDH-11	127°00'	16°00'	42°00'	7°00'	-	120°00'	-	-	80°00'	392°00'
DDH-12	201°00'	22°00'	92°00'	19°00'	-	230°00'	-	-	42°00'	606°00'
Total	1,319°30'	171°30'	626°00'	139°00'	204°00'	1,311°00'	159°00'	78°00'	526°00'	4,534°00'
				1,654°00'						

A. Ⅲ-15 Drilling Meterage of Diamond Bits

Item	Size	Type	Bit No.	Drilling meterage by drill hole. Unit meter									Total
				DDH-4	DDH-5	DDH-6	DDH-7	DDH-8	DDH-9	DDH-10	DDH-11	DDH-12	
Bit	HX	HQ-WL	M-1569	30.50									30.50
			M-1570	25.50									25.50
			M-1571		10.30								10.30
			M-1572			32.80							32.80
			M-1573				20.80						20.80
			M-1631				17.50						17.50
			M-1632					31.90					31.90
			M-1633					29.70					29.70
			M-1634						10.80				10.80
			M-1635						21.20				21.20
			M-1636						26.50				26.50
			M-1637							32.20			32.20
			M-1638							46.60			46.60
			M-1639								22.30		22.30
			M-1640								39.60		39.60
			M-1641								37.90		37.90
			M-1642									29.20	29.20
			M-1643									22.80	22.80
			M-1644									30.60	30.60
			M-1645									25.70	25.70
			Total	56.00	10.30	32.80	38.30	61.60	58.50	78.80	99.80	108.30	544.40
	NX	NQ-WL	OT-8	32.50									32.50
			M-1574	31.20									31.20
			M-1575	29.90									29.90
			M-1576		35.90								35.90
			M-1577		30.20								30.20
			M-1578		26.70								26.70
			M-1579		36.90								36.90
			M-1580			26.20							26.20
			M-1581			25.80							25.80
			M-1582			29.10							29.10
			M-1583			25.10							25.10
			M-1584			26.20							26.20
			M-1585			19.70							19.70
			M-1586				35.10						35.10
			M-1587				30.10						30.10
			M-1588				29.20						29.20
			M-1606					19.10					19.10
			M-1607					28.20					28.20
			M-1608					25.10					25.10
			M-1609					24.10					24.10
			M-1610					18.70					18.70
			M-1611					23.50					23.50
			M-1612						21.10				21.10
			M-1613						19.20				19.20
			M-1614						20.80				20.80
			M-1615						28.50				28.50
			M-1616							29.20			29.20
			M-1617							22.90			22.90

Item	Size	Type	Bit No.	Drilling meterage by drill hole. Unit meter									Total
				DDH-4	DDH-5	DDH-6	DDH-7	DDH-8	DDH-9	DDH-10	DDH-11	DDH-12	
Bit	NX	NQ-WL	M-1618							28.90			28.90
			M-1619								26.80		26.80
			M-1620								23.90		23.90
			M-1621								27.60		27.60
			M-1622								29.40		29.40
			M-1623								24.90		24.90
			M-1624								15.60		15.60
			M-1625									20.10	20.10
			M-1626									16.70	16.70
			M-1627									17.90	17.90
			M-1628									20.60	20.60
			M-1629									19.80	19.80
			M-1630									16.90	16.90
			Total	93.60	129.70	152.10	94.40	138.70	89.60	81.00	148.20	112.00	1,039.30
	BX	BQ-WL	J-1479	16.20									16.20
			J-1481	9.20									9.20
			171520	5.80									5.80
			873633	1.30									1.30
			OT-6		39.60								39.60
			OT-7		27.50								27.50
			M-1589			22.90							22.90
			M-1590			25.60							25.60
			M-1591			23.70							23.70
			M-1592			19.80							19.80
			M-1593			23.10							23.10
			M-1594				21.90						21.90
			M-1595				24.60						24.60
			M-1596				23.90						23.90
			M-1597				24.60						24.60
			M-1598						26.90				26.90
			M-1599						24.30				24.30
			M-1600							20.60			20.60
			M-1601							17.50			17.50
			M-1602									22.10	22.10
			M-1603									21.90	21.90
			M-1604									23.10	23.10
			M-1605									20.05	20.05
			Total	32.50	67.10	115.10	95.00	-	51.20	38.10	-	87.10	486.15

A. Ⅲ-16 Specifications of Diamond Bits

Size	Type	Carats per bit	Matrix	Stones per carat	Water way	Number	Remarks
HX	HQ-WL	40	X	1/30	6	M-1569	Reset
		40	X	1/30	6	M-1570	"
		40	Y	1/30	6	M-1571	"
		40	Y	1/30	6	M-1572	"
		40	Y	1/30	6	M-1573	"
		40	Y	1/30	6	M-1631	"
		40	Y	1/30	6	M-1632	"
		40	Y	1/30	6	M-1633	"
		40	Y	1/30	6	M-1634	"
		40	Y	1/30	6	M-1635	"
		40	Y	1/30	6	M-1636	"
		40	Z	1/30	6	M-1637	"
		40	Z	1/30	6	M-1638	"
		40	Z	1/30	6	M-1639	"
		40	Z	1/30	6	M-1640	"
		40	Z	1/30	6	M-1641	"
		40	Z	1/30	6	M-1642	"
		40	Z	1/30	6	M-1643	"
		40	Z	1/30	6	M-1644	"
		40	Z	1/30	6	M-1645	"
NX	NQ-WL	30	T_1	1/30	4	OT-8	Reset
		30	Y	1/30	4	M-1574	"
		30	Y	1/30	4	M-1575	"
		30	Y	1/30	4	M-1576	"
		30	Y	1/30	4	M-1577	"
		30	Y	1/30	4	M-1578	"
		30	Z	1/30	4	M-1579	"
		30	Z	1/30	4	M-1580	"
		30	Z	1/30	4	M-1581	"
		30	Z	1/30	4	M-1582	"
		30	Z	1/30	4	M-1583	"
		30	Z	1/30	4	M-1584	"
		30	Z	1/30	4	M-1585	"

Specifications of diamond bits - continued

Size	Type	Carats per bit	Matrix	Stones Per carat	Water way	Number	Remarks
NX	NQ-WL	30	Z	1/30	4	M-1586	Reset
		30	Z	1/30	4	M-1587	"
		30	Z	1/30	4	M-1588	"
		30	Z	1/30	4	M-1606	"
		30	Z	1/30	4	M-1607	"
		30	Z	1/30	4	M-1608	"
		30	Z	1/30	4	M-1609	"
		30	Z	1/30	4	M-1610	"
		30	Z	1/30	4	M-1611	"
		30	Z	1/30	4	M-1612	"
		30	Z	1/30	4	M-1613	"
		30	Z	1/30	4	M-1614	"
		30	Z	1/30	4	M-1615	"
		30	Z	1/30	4	M-1616	"
		30	Z	1/30	4	M-1617	"
		30	Z	1/30	4	M-1618	"
		30	Z	1/30	4	M-1619	"
		30	Z	1/30	4	M-1620	"
		30	Z	1/30	4	M-1621	"
		30	Z	1/30	4	M-1622	"
		30	Z	1/30	4	M-1623	"
		30	Z	1/30	4	M-1624	"
		30	Z	1/30	4	M-1625	"
		30	Z	1/30	4	M-1626	"
		30	Z	1/30	4	M-1627	"
		30	Z	1/30	4	M-1628	"
		30	Z	1/30	4	M-1629	"
		30	Z	1/30	4	M-1630	"
BX	BQ-WL	20	Z	1/30	4	J-1479	Reset
		20	Z	1/30	4	J-1481	"
		20	E	1/30	4	171520	"
		20	E	1/30	4	873633	"
		20	T_1	1/30	4	OT-6	"

Specifications of diamond bits - continued

Size	Type	Carats per bit	Matrix	Stones per carat	Water way	Number	Remarks
BX	BQ-WL	20	T_1	1/30	4	OT-7	Reset
		20	X	1/30	4	M-1589	"
		20	Y	1/30	4	M-1590	"
		20	Y	1/30	4	M-1591	"
		20	Y	1/30	4	M-1592	"
		20	Y	1/30	4	M-1593	"
		20	Z	1/30	4	M-1594	"
		20	Z	1/30	4	M-1595	"
		20	Z	1/30	4	M-1596	"
		20	Z	1/30	4	M-1597	"
		20	Z	1/30	4	M-1598	"
		20	Z	1/30	4	M-1599	"
		20	Z	1/30	4	M-1600	"
		20	Z	1/30	4	M-1601	"
		20	Z	1/30	4	M-1602	"
		20	Z	1/30	4	M-1603	"
		20	Z	1/30	4	M-1604	"
		20	Z	1/30	4	M-1605	"

A. Ⅲ-17 Assay Results of the Drilled Core (1)

No.	Sample No.	Depth (m)	Rock Type	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Fe (%)	S (%)
1	BC-04-062	61.3 ∿ 62.3	Ore	0.04	0.04	10.32	tr	34.38	39.44
2	BC-04-063	62.3 ∿ 63.3	Ore	0.04	0.05	20.27	16	26.95	35.36
3	BC-04-064	63.3 ∿ 64.3	Ore	0.10	0.03	12.42	16	31.61	43.19
4	BC-04-065	64.3 ∿ 65.3	Ore	0.09	0.03	10.68	16	34.78	42.02
5	BC-04-066	65.3 ∿ 66.3	Ore	0.08	0.04	10.41	12	35.27	41.06
6	BC-04-067	66.3 ∿ 67.3	Ore	0.06	0.03	8.95	12	36.66	41.33
7	BC-04-068	67.3 ∿ 68.3	Ore	0.04	0.04	6.94	12	35.53	36.92
8	BC-04-069	68.3 ∿ 69.3	Ore	0.16	0.04	22.73	12	27.05	37.25
9	BC-04-070	69.3 ∿ 70.3	Ore	0.07	0.04	13.60	4	30.81	41.79
10	BC-04-071	70.3 ∿ 71.3	Ore	0.08	0.06	13.88	4	32.89	43.36
11	BC-04-072	71.3 ∿ 72.3	Ore	0.10	0.03	16.16	24	29.82	38.10
12	BC-04-073	72.3 ∿ 73.3	Ore	0.09	0.03	20.63	16	27.15	40.61
13	BC-04-074	73.3 ∿ 74.3	Ore	0.07	0.03	25.29	20	24.08	40.20
14	BC-04-075	74.3 ∿ 75.2	Ore	0.04	0.04	12.96	12	34.08	39.60
15	BC-04-076	75.2 ∿ 76.1	Ore	0.03	0.07	11.69	20	33.49	42.74
16	BC-04-085	84.9 ∿ 85.8	Ore	0.04	5.36	16.70	24	29.43	41.71
17	BC-04-086	85.8 ∿ 86.7	Ore	0.04	0.04	5.48	20	37.85	40.71
18	BC-04-087	86.7 ∿ 87.6	Ore	0.03	0.02	9.40	4	35.37	37.41
19	BC-04-088	87.6 ∿ 88.6	Py	0.02	0.03	0.32	12	38.94	40.31
20	BC-04-089	88.6 ∿ 89.6	Ore	0.04	0.01	11.60	8	35.27	40.15
21	BC-04-090	89.6 ∿ 91.9	Ore	0.24	0.02	7.87	12		
22	BC-04-092	91.9 ∿ 93.6	Sh	0.06	0.01	0.02	4		
23	BC-04-094	93.6 ∿ 95.0	Ore	0.09	0.01	6.16	16		
24	BC-04-096	95.0 ∿ 96.4	Ore	0.06	0.03	4.85	4		
25	BC-04-097	96.4 ∿ 97.4	Ore	0.08	0.03	11.51	tr	24.18	33.08
26	BC-04-098	97.4 ∿ 98.4	Ore	0.10	0.79	10.20	tr	22.69	31.67
27	BC-04-099	98.4 ∿ 99.5	Ore	0.28	0.01	6.46	16	37.16	46.61
28	BC-04-100	99.5 ∿ 100.5	Py	0.08	0.03	0.03	16	39.53	48.09
29	BC-04-101	100.5 ∿ 102.5	Ore	0.12	0.01	11.71	4	34.88	45.95
30	BC-04-103	102.5 ∿ 103.6	Ore	0.08	0.01	5.86	16	39.24	48.11
31	BC-04-104	103.6 ∿ 104.7	Ore	0.12	0.03	19.47	16	28.54	42.78
32	BC-04-139	139.0 ∿ 143.0	Py	0.55	0.01	0.03	26		
33	BC-04-143	143.0 ∿ 146.1	Ore	1.18	0.01	tr	4		
34	BC-04-147	146.1 ∿ 149.5	Py	0.22	0.02	tr	12		
35	BC-04-156	156.0 ∿ 158.6	Py	0.10	0.01	tr	12		

No.	Sample No.	Depth (m)	Rock Type	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Fe (%)	S (%) (2)
36	BC-04-159	158.6 ∿ 162.9	Py	0.14	0.01	tr	14		
37	BC-04-163	162.9 ∿ 166.4	Py	0.18	0.04	tr	8		
38	BC-04-167	166.4 ∿ 168.1	Py	0.20	0.02	tr	tr		
39	BC-04-171	170.8 ∿ 173.8	Py	0.35	0.03	0.02	tr		
40	BC-04-174	173.8 ∿ 176.5	Py	0.10	0.01	tr	tr		
41	BC-04-177	176.5 ∿ 178.7	Py	tr	0.01	0.03	8		
42	BC-04-179	178.7 ∿ 182.2	Py	0.02	0.01	0.03	tr		
43	BC-04-183	182.2 ∿ 184.7	Py	0.02	0.01	0.03	16		
44	BC-05-087	86.7 ∿ 87.6	Py	0.08	0.03	tr	tr		
45	BC-05-088	87.6 ∿ 88.6	Py	0.08	0.01	0.01	tr		
46	BC-05-089	88.6 ∿ 89.6	Py	0.04	0.04	0.03	36		
47	BC-05-090	89.6 ∿ 90.6	Py	0.20	0.03	0.16	tr		
48	BC-05-091	90.6 ∿ 91.6	Py	0.04	0.03	0.01	20		
49	BC-05-092	91.6 ∿ 92.6	Py	0.04	0.01	0.07	4		
50	BC-05-093	92.6 ∿ 93.6	Py	0.06	0.03	0.06	tr		
51	BC-05-094	93.6 ∿ 94.6	Py	0.06	0.04	0.04	tr		
52	BC-05-095	94.6 ∿ 95.6	Py	0.40	0.03	0.05	tr		
53	BC-05-096	95.6 ∿ 96.8	Ore	5.14	0.04	0.29	60		
54	BC-05-097	96.8 ∿ 98.2	Ore	0.24	1.30	23.82	40		
55	BC-05-099	98.2 ∿ 99.6	Ore	0.04	11.19	33.32	tr		
56	BC-05-100	99.6 ∿ 100.6	Ore	0.04	0.04	5.86	44		
57	BC-05-101	100.6 ∿ 101.7	Ore	0.08	0.06	6.06	40		
58	BC-05-102	101.7 ∿ 102.8	Py	0.04	0.04	2.73	tr		
59	BC-05-104	102.8 ∿ 104.1	Py	0.16	0.03	0.40	tr		
60	BC-05-105	104.1 ∿ 105.4	Sh	0.18	0.06	0.39	32		
61	BC-05-106	105.4 ∿ 106.7	Ore	0.40	0.04	1.89	tr		
62	BC-05-107	106.7 ∿ 108.0	Ore	1.12	0.03	5.61	36		
63	BC-05-179	174.8 ∿ 179.2	Ore	1.00	0.41	0.32	tr		
64	BC-05-180	179.2 ∿ 181.0	Ore	0.04	0.64	8.29	32		
65	BC-05-181	181.0 ∿ 182.0	Ore	0.12	10.24	42.00	600		
66	BC-05-182	182.0 ∿ 183.0	Ore	0.16	0.10	45.43	340		
67	BC-05-183	183.0 ∿ 184.0	Ore	0.06	0.03	34.73	284		
68	BC-05-184	184.0 ∿ 185.0	Ore	0.06	2.01	35.24	200		
69	BC-05-185	185.0 ∿ 186.0	Ore	0.12	0.03	31.29	168		
70	BC-05-186	186.0 ∿ 187.0	Ore	0.08	0.03	27.86	8		

(3)

No.	Sample No.	Depth (m)	Rock Type	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Fe (%)	S (%)
71	BC-05-187	187.0 ∿ 188.0	Ore	0.12	0.04	22.31	80		
72	BC-05-188	188.0 ∿ 189.0	Ore	0.08	2.30	1.63	48		
73	BC-05-189	189.0 ∿ 190.0	Ore	0.08	2.79	15.04	56		
74	BC-05-190	190.0 ∿ 191.0	Ore	0.20	0.10	38.06	8		
75	BC-05-191	191.0 ∿ 192.0	Ore	0.14	0.03	32.31	88		
76	BC-05-192	192.0 ∿ 193.0	Ore	0.28	0.03	18.17	88		
77	BC-05-193	193.0 ∿ 194.0	Ore	0.46	0.02	33.72	80		
78	BC-05-194	194.0 ∿ 195.0	Ore	0.36	0.06	31.71	124		
79	BC-05-195	195.0 ∿ 196.0	Ore	0.20	0.03	25.05	88		
80	BC-05-196	196.0 ∿ 197.0	Ore	0.16	0.35	29.80	112		
81	BC-05-197	197.0 ∿ 198.0	Ore	0.16	6.39	35.35	324		
82	BC-05-198	198.0 ∿ 199.0	Ore	0.16	6.90	38.78	248		
83	BC-05-199	199.0 ∿ 200.0	Ore	0.04	11.59	19.10	124		
84	BC-05-200	200.0 ∿ 201.0	Ore	0.04	3.00	8.38	72		
85	BC-05-201	201.0 ∿ 202.0	Ore	0.08	10.10	27.57	308		
86	BC-05-202	202.0 ∿ 203.0	Ore	0.02	6.10	20.91	196		
87	BC-05-203	203.0 ∿ 204.0	Ore	0.04	4.79	10.00	116		
88	BC-06-161	160.0 ∿ 162.0	Do	0.12	0.01	0.91	tr		
89	BC-06-185	184.2 ∿ 185.4	Ore	0.04	0.03	6.87	tr		
90	BC-06-186	185.4 ∿ 186.4	Ore	0.04	0.01	3.18	24		
91	BC-06-187	186.4 ∿ 187.4	Py	0.04	0.04	1.01	12		
92	BC-06-188	187.4 ∿ 188.4	Py	0.04	0.06	0.24	20		
93	BC-06-189	188.4 ∿ 189.4	Py	0.02	0.03	0.17	44		
94	BC-06-190	189.4 ∿ 190.4	Py	0.08	0.03	0.50	32		
95	BC-06-191	190.4 ∿ 191.4	Py	0.16	0.03	2.27	36		
96	BC-06-192	191.4 ∿ 192.4	Py	0.04	0.04	2.12	8		
97	BC-06-193	192.4 ∿ 193.4	Brc	0.04	0.03	1.31	8		
98	BC-06-194	193.4 ∿ 194.4	Brc	0.08	0.03	1.92	tr		
99	BC-06-195	194.4 ∿ 195.4	Ore	0.32	0.03	40.30	tr		
100	BC-06-196	195.4 ∿ 196.4	Ore	0.32	0.03	48.38	tr		
101	BC-06-197	196.4 ∿ 197.4	Ore	0.04	0.04	46.56	36		
102	BC-06-198	197.4 ∿ 198.4	Ore	0.60	0.03	41.41	76		
103	BC-06-199	198.4 ∿ 199.4	Ore	0.40	0.01	36.05	36		
104	BC-06-200	199.4 ∿ 200.4	Ore	0.28	0.03	23.43	28		
105	BC-06-201	200.4 ∿ 201.4	Ore	0.24	0.01	2.83	16		

No.	Sample No.	Depth (m)	Rock Type	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Fe (%)	S (%) (4)
106	BC-06-202	201.4 ∿ 204.0	Ore	0.04	0.03	0.81	20		
107	BC-06-204	204.0 ∿ 205.6	Brc	0.20	0.01	6.57	16		
108	BC-06-206	205.6 ∿ 207.0	Brc	0.32	0.06	12.63	8		
109	BC-06-207	207.0 ∿ 208.0	Ml	0.12	0.01	0.84	12		
110	BC-06-208	208.0 ∿ 209.0	Ml	0.04	0.01	1.71	16		
111	BC-06-209	209.0 ∿ 210.6	Ore	0.08	0.12	7.68	14		
112	BC-06-211	210.6 ∿ 211.6	Ore	0.12	0.03	12.12	tr		
113	BC-06-212	211.6 ∿ 212.6	Ore	0.12	0.01	5.96	16		
114	BC-06-213	212.6 ∿ 213.6	Ore	0.04	3.43	17.68	104		
115	BC-06-214	213.6 ∿ 214.6	Ore	0.04	0.03	5.66	4		
116	BC-06-215	214.6 ∿ 215.3	Ore	0.04	0.03	13.94	4		
117	BC-06-247	247.4 ∿ 248.0	Ore	0.04	0.03	0.07	40		
118	BC-06-248	248.0 ∿ 250.0	Py	7.83	0.03	0.08	tr		
119	BC-06-250	250.0 ∿ 252.0	Py	0.80	0.03	0.03	32		
120	BC-06-252	252.0 ∿ 254.0	Py	0.52	0.01	0.07	38		
121	BC-06-254	254.0 ∿ 256.0	Py	1.04	0.01	0.01	tr		
122	BC-06-256	256.0 ∿ 258.0	Py	0.28	0.01	0.42	4		
123	BC-06-258	258.0 ∿ 260.0	Py	0.52	0.03	0.03	tr		
124	BC-06-260	260.0 ∿ 262.0	Py	0.72	0.06	0.08	18		
125	BC-06-262	262.0 ∿ 264.0	Sh	0.04	0.03	0.03	tr		
126	BC-06-264	264.0 ∿ 266.0	Sh	0.08	0.04	0.01	4		
127	BC-06-266	266.0 ∿ 268.0	Py	0.14	0.03	0.01	tr		
128	BC-06-268	268.0 ∿ 270.0	Py	0.08	0.01	0.09	20		
129	BC-06-270	270.0 ∿ 272.0	Py	0.08	0.02	0.08	28		
130	BC-06-272	272.0 ∿ 274.0	Py	0.08	0.03	0.04	22		
131	BC-06-274	274.0 ∿ 276.0	Py	0.04	0.03	tr	20		
132	BC-06-276	276.0 ∿ 278.0	Py	0.04	0.03	0.04	24		
133	BC-06-278	278.0 ∿ 280.0	Py	0.12	0.01	0.04	8		
134	BC-06-280	280.0 ∿ 282.0	Py	0.12	0.04	0.01	16		
135	BC-06-282	282.0 ∿ 284.0	Py	0.08	0.03	0.01	4		
136	BC-06-284	284.0 ∿ 286.0	Py	0.12	0.03	0.04	tr		
137	BC-06-286	286.0 ∿ 288.0	Py	0.12	0.01	0.05	8		
138	BC-06-288	288.0 ∿ 290.0	Py	0.08	0.03	0.04	4		
139	BC-06-290	290.0 ∿ 292.0	Py	0.08	0.03	0.03	4		
140	BC-06-292	292.0 ∿ 294.0	Py	0.08	0.02	0.08	10		

No.	Sample No.	Depth (m)	Rock Type	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Fe (%)	S (%) (5)
141	BC-06-294	294.0 ∿ 296.0	Sh	0.08	0.04	0.05	24		
142	BC-06-296	296.0 ∿ 298.0	Sh	0.04	0.03	0.05	8		
143	BC-06-298	298.0 ∿ 300.0	Py	0.16	0.02	0.07	20		
144	BC-06-300	300.0 ∿ 301.6	Py	0.20	0.03	0.03	6		
145	BC-07-030	30.0 ∿ 32.0	Sh	0.33	0.1	0.9	10		
146	BC-07-032	32.0 ∿ 34.0	Py	0.22	0.1	0.5	7		
147	BC-07-034	34.0 ∿ 36.0	Py	0.06	tr	0.1	3		
148	BC-07-036	36.0 ∿ 38.0	Py	0.12	tr	0.1	3		
149	BC-07-038	38.0 ∿ 40.0	Py	0.24	tr	0.1	3		
150	BC-07-040	40.0 ∿ 42.0	Sk	0.90	0.1	0.3	7		
151	BC-07-042	42.0 ∿ 44.0	Sk	0.18	0.1	1.0	7		
152	BC-07-044	44.0 ∿ 46.0	Sk	1.58	tr	0.5	17		
153	BC-07-046	46.0 ∿ 48.0	Sk	1.06	0.1	0.5	14		
154	BC-07-048	48.0 ∿ 50.0	Sk	0.83	tr	0.4	14		
155	BC-07-050	50.0 ∿ 52.0	Sk	0.18	tr	0.8	7		
156	BC-07-052	52.0 ∿ 54.0	Sk	0.04	0.1	0.3	3		
157	BC-07-054	54.0 ∿ 56.0	Sk	0.21	0.1	1.2	3		
158	BC-07-056	56.0 ∿ 58.0	Sk	0.14	tr	14.8	3		
159	BC-07-058	58.0 ∿ 60.0	Cly	0.22	tr	28.3	7		
160	BC-07-060	60.0 ∿ 61.0	Ore	0.22	tr	15.9	3		
161	BC-07-061	61.0 ∿ 62.0	Ore	0.20	tr	21.0	7		
162	BC-07-062	62.0 ∿ 63.0	Ore	0.36	0.1	14.9	7		
163	BC-07-063	63.0 ∿ 64.0	Sk	0.19	0.1	0.7	3		
164	BC-07-064	64.0 ∿ 66.0	Sk	0.04	0.3	1.0	3		
165	BC-07-066	66.0 ∿ 68.0	Sk	0.07	0.1	0.4	3		
166	BC-07-068	68.0 ∿ 70.0	Sk	0.07	0.1	1.2	3		
167	BC-07-070	70.0 ∿ 72.0	Sk	0.05	0.1	1.3	3		
168	BC-07-072	72.0 ∿ 74.0	Sk	0.03	0.1	0.8	3		
169	BC-07-074	74.0 ∿ 76.0	Sk	0.08	0.1	0.3	3		
170	BC-07-076	76.0 ∿ 78.0	Sk	0.03	tr	0.1	3		
171	BC-07-078	78.0 ∿ 80.0	Sk	0.14	0.1	0.1	3		
172	BC-07-080	80.0 ∿ 81.0	Sk	0.14	0.1	0.8	7		
173	BC-07-081	81.0 ∿ 82.0	Ore	0.05	0.1	12.7	3		
174	BC-07-082	82.0 ∿ 83.0	Ore	0.04	0.1	0.3	3		
175	BC-07-083	83.0 ∿ 84.0	Ore	0.07	0.1	5.5	3		

No.	Sample No.	Depth (m)	Rock Type	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Fe (%)	S (%) (6)
176	BC-07-084	84.0 ∿ 85.0	Ore	0.13	0.1	8.9	7		
177	BC-07-085	85.0 ∿ 86.0	Ore	0.05	0.1	1.1	3		
178	BC-07-086	86.0 ∿ 87.0	Ore	0.05	0.1	1.1	3		
179	BC-07-087	87.0 ∿ 88.0	Ore	0.16	0.1	14.2	7		
180	BC-07-088	88.0 ∿ 89.0	Ore	0.09	tr	5.9	3		
181	BC-07-089	89.0 ∿ 90.0	Ore	0.04	tr	1.0	3		
182	BC-07-090	90.0 ∿ 91.0	Ore	0.02	0.1	0.3	3		
183	BC-07-091	91.0 ∿ 92.0	Ore	0.03	0.1	1.0	3		
184	BC-07-092	92.0 ∿ 93.0	Ore	0.17	tr	4.9	3		
185	BC-07-093	93.0 ∿ 94.0	Ore	0.07	tr	1.3	3		
186	BC-07-094	94.0 ∿ 95.0	Ore	0.21	tr	0.3	3		
187	BC-07-095	95.0 ∿ 96.0	Ore	0.13	tr	1.2	3		
188	BC-07-096	96.0 ∿ 97.0	Ore	0.40	tr	17.3	7		
189	BC-07-097	97.0 ∿ 98.0	Ore	0.09	tr	11.6	3		
190	BC-07-098	98.0 ∿ 99.0	Ore	0.14	tr	7.5	3		
191	BC-07-099	99.0 ∿ 100.0	Sk	0.07	tr	0.6	3		
192	BC-07-100	100.0 ∿ 102.0	Sk	0.05	tr	1.2	3		
193	BC-07-102	102.0 ∿ 104.0	Sk	0.08	tr	1.2	3		
194	BC-07-104	104.0 ∿ 106.0	Sk	0.15	tr	0.9	3		
195	BC-07-106	106.0 ∿ 108.0	Ore	0.17	tr	8.1	3		
196	BC-07-108	108.0 ∿ 110.0	Ore	0.07	tr	4.6	3		
197	BC-07-110	110.0 ∿ 112.0	Sk	0.07	tr	1.3	3		
198	BC-07-112	112.0 ∿ 114.0	Sk	0.16	tr	0.9	3		
199	BC-07-114	114.0 ∿ 116.0	Sk	0.08	tr	0.9	3		
200	BC-07-116	116.0 ∿ 118.0	Sk	0.17	tr	10.7	3		
201	BC-07-118	118.0 ∿ 120.0	Sk	0.39	tr	14.5	7		
202	BC-07-120	120.0 ∿ 121.0	Sk	0.10	tr	8.1	3		
203	BC-07-121	121.0 ∿ 122.0	Sk	0.32	tr	9.6	7		
204	BC-07-122	122.0 ∿ 123.0	Ore	0.74	tr	34.8	14		
205	BC-07-123	123.0 ∿ 124.0	Ore	0.56	tr	41.3	17		
206	BC-07-124	124.0 ∿ 125.0	Ore	0.17	tr	15.6	3		
207	BC-07-125	125.0 ∿ 126.0	Ore	0.31	tr	19.8	7		
208	BC-07-126	126.0 ∿ 127.0	Ore	0.64	tr	26.3	10		
209	BC-07-127	127.0 ∿ 128.0	Ore	0.43	tr	15.8	7		
210	BC-07-128	128.0 ∿ 129.0	Ore	0.57	tr	12.7	7		

(7)

No.	Sample No.	Depth (m)	Rock Type	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Fe (%)	S (%)
211	BC-07-129	129.0 ∿ 130.0	Ore	0.40	tr	16.2	7		
212	BC-07-130	130.0 ∿ 131.0	Ore	1.21	tr	4.9	3		
213	BC-07-131	131.0 ∿ 133.0	Spc	14.9	tr	36.0	21		
214	BC-07-133	133.0 ∿ 135.0	Spc	12.0	tr	21.8	10		
215	BC-07-135	135.0 ∿ 137.0	Py	1.04	tr	0.7	3		
216	BC-07-137	137.0 ∿ 139.0	Ore	0.77	tr	1.1	7		
217	BC-07-139	139.0 ∿ 141.0	Ore	0.50	tr	0.3	14		
218	BC-07-141	141.0 ∿ 143.0	Sk	0.84	tr	0.4	7		
219	BC-07-181	177.5 ∿ 182.5	Sk	0.29	tr	0.1	7		
220	BC-07-183	182.5 ∿ 185.0	Sk	0.08	tr	0.1	3		
221	BC-07-185	185.0 ∿ 187.0	Py	0.05	tr	0.1	3		
222	BC-07-195	194.2 ∿ 195.8	Ore	0.18	tr	tr	3		
223	BC-07-197	195.8 ∿ 198.3	Py	0.05	tr	0.1	3		
224	BC-07-206	204.6 ∿ 208.2	Py	0.05	tr	0.1	3		
225	BC-08-050	50.0 ∿ 51.0	Sh	0.06	0.1	0.1	3		
226	BC-08-100	100.0 ∿ 101.0	Sh	0.06	0.1	0.1	7		
227	BC-08-150	150.0 ∿ 151.0	Sh	0.03	0.1	tr	3		
228	BC-09-010	9.5 ∿ 11.1	Sk	0.05	0.1	3.9	10		
229	BC-09-012	11.1 ∿ 13.0	Sk	0.05	0.1	1.1	10		
230	BC-09-025	25.0 ∿ 26.0	Sh	0.03	tr	tr	3		
231	BC-09-050	50.0 ∿ 51.0	Sh	0.02	0.1	0.1	7		
232	BC-09-075	75.0 ∿ 76.0	Ss	0.14	0.1	tr	7		
233	BC-09-079	78.6 ∿ 80.0	Ss	0.09	0.2	1.0	10		
234	BC-09-083	83.0 ∿ 84.6	Ml	0.05	0.3	0.4	7		
235	BC-09-085	84.6 ∿ 86.2	Ml	0.06	0.1	0.2	7		
236	BC-09-100	100.0 ∿ 101.0	Sh	0.04	tr	0.1	7		
237	BC-09-125	125.0 ∿ 126.0	Sh	0.09	0.3	0.3	10		
238	BC-09-128	127.9 ∿ 128.4	Ml	0.10	0.3	1.3	14		
239	BC-09-136	135.2 ∿ 136.1	Ml	0.06	0.4	1.0	21		
240	BC-09-138	138.0 ∿ 138.6	Ml	0.10	0.3	1.3	21		
241	BC-09-150	150.0 ∿ 151.0	Sh	0.04	0.2	0.3	17		
242	BC-09-167	166.2 ∿ 167.4	Sh	0.05	0.2	1.1	14		
243	BC-09-168	167.4 ∿ 168.7	Sh	0.05	0.2	0.3	10		
244	BC-09-175	175.0 ∿ 176.0	Sh	0.04	tr	0.1	7		
245	BC-10-058	58.2 ∿ 59.2	Ss	0.08	tr	0.3	10		

(8)

No.	Sample No.	Depth (m)	Rock Type	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Fe (%)	S (%)
246	BC-10-059	59.2 ∿ 61.4	Ss	0.04	tr	4.4	10		
247	BC-10-062	61.4 ∿ 62.8	Ss	0.04	0.1	1.0	10		
248	BC-10-063	62.8 ∿ 64.2	Sh	0.05	0.1	3.2	14		
249	BC-10-065	64.8 ∿ 65.9	Sh	0.03	tr	0.9	7		
250	BC-10-066	65.9 ∿ 67.0	Sh	0.07	0.1	5.7	14		
251	BC-10-067	67.0 ∿ 68.0	Sh	0.10	tr	5.5	10		
252	BC-10-068	68.0 ∿ 69.0	Sh	0.11	0.1	5.8	17		
253	BC-10-069	69.0 ∿ 70.0	Sh	0.03	tr	4.5	10		
254	BC-10-077	76.2 ∿ 77.2	Sh	0.02	0.1	0.4	10		
255	BC-10-078	77.2 ∿ 78.2	Sh	0.04	0.1	0.1	10		
256	BC-10-079	78.2 ∿ 79.2	Sh	0.20	2.2	4.5	21		
257	BC-10-080	79.2 ∿ 80.2	Sh	0.02	tr	0.1	7		
258	BC-10-081	80.2 ∿ 81.2	Sh	0.02	tr	0.9	7		
259	BC-10-099	98.8 ∿ 99.8	Ml	0.02	0.2	0.9	10		
260	BC-10-100	99.8 ∿ 100.8	Ml	0.04	0.5	1.3	17		
261	BC-10-101	100.8 ∿ 101.8	Ml	0.02	0.3	0.4	10		
262	BC-10-110	109.4 ∿ 110.4	Sh	0.02	0.1	0.1	10		
263	BC-10-111	110.4 ∿ 111.4	Sh	0.02	tr	0.7	10		
264	BC-10-112	111.4 ∿ 112.4	Sh	0.01	0.1	0.2	10		
265	BC-10-113	112.4 ∿ 113.4	Sh	0.01	0.1	0.6	7		
266	BC-10-114	113.4 ∿ 114.4	Sh	0.02	0.2	0.9	10		
267	BC-10-115	114.4 ∿ 115.4	Sh	0.01	0.1	0.3	10		
268	BC-10-116	115.4 ∿ 116.4	Sh	0.02	0.1	0.7	17		
269	BC-11-043	43.0 ∿ 44.0	Do	0.03	0.2	1.0	27		
270	BC-11-048	48.0 ∿ 49.0	Sid	0.01	0.1	1.1	7		
271	BC-11-063	63.0 ∿ 64.0	Do	0.01	0.4	4.6	7		
272	BC-11-067	67.0 ∿ 68.0	Sid	0.01	0.3	3.1	7		
273	BC-11-093	93.0 ∿ 94.0	Sid	0.01	0.1	4.2	7		
274	BC-11-126	126.0 ∿ 127.0	Sid	0.02	0.1	2.7	41		
275	BC-11-133	133.0 ∿ 134.0	Do	0.01	0.2	2.8	21		
276	BC-11-163	163.0 ∿ 164.0	Do	0.05	1.1	5.4	21		
277	BC-11-192	192.0 ∿ 193.0	Do	0.02	0.3	2.5	10		
278	BC-11-215	215.0 ∿ 216.0	Sh	0.04	0.2	7.7	14		
279	BC-12-106	104.6 ∿ 107.0	Sid	0.01	0.1	0.4	14		
280	BC-12-108	107.0 ∿ 109.4	Sid	0.03	0.1	1.3	14		

No.	Sample No.	Depth (m)	Rock Type	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Fe (%)	S (%) (9)
281	BC-12-110	109.4 ∿ 111.9	Sid	0.02	0.1	1.2	14		
282	BC-12-112	111.9 ∿ 114.4	Sid	0.02	0.1	0.7	17		
283	BC-12-124	122.8 ∿ 125.4	Ore	0.21	0.1	2.8	17		
284	BC-12-126	125.4 ∿ 128.1	Ore	0.03	0.1	6.9	7		
285	BC-12-138	137.4 ∿ 139.5	Ore	0.68	0.2	6.2	17		
286	BC-12-140	139.5 ∿ 141.6	Spc	0.35	0.1	0.5	14		
287	BC-12-143	142.4 ∿ 144.8	Ore	1.89	tr	0.2	34		
288	BC-12-145	144.8 ∿ 147.2	Sid	0.16	tr	0.1	7		
289	BC-12-159	157.6 ∿ 159.6	Py	0.06	0.1	0.5	17		
290	BC-12-161	159.6 ∿ 161.6	Py	0.04	0.1	0.7	27		
291	BC-12-163	161.6 ∿ 163.6	Py	0.06	0.1	0.9	34		
292	BC-12-165	163.6 ∿ 165.5	Do	0.03	0.1	0.8	51		
293	BC-12-167	165.5 ∿ 167.8	Py	0.02	0.1	0.4	24		
294	BC-12-169	167.8 ∿ 170.1	Py	0.03	0.1	0.8	17		
295	BC-12-171	170.1 ∿ 172.4	Py	0.03	0.1	0.7	17		
296	BC-12-173	172.4 ∿ 174.6	Py	0.02	tr	0.5	14		
297	BC-12-179	178.2 ∿ 180.8	Py	0.03	tr	0.6	34		
298	BC-12-181	180.8 ∿ 183.5	Py	0.04	tr	0.8	58		
299	BC-12-194	193.7 ∿ 195.7	Py	0.02	tr	0.8	38		
300	BC-12-196	195.7 ∿ 197.7	Py	0.04	tr	1.0	48		
301	BC-12-198	197.7 ∿ 199.7	Py	0.03	tr	1.1	38		
302	BC-12-200	199.7 ∿ 201.7	Py	0.03	tr	0.9	45		
303	BC-12-202	201.7 ∿ 203.7	Py	0.02	tr	0.6	24		
304	BC-13-204	203.7 ∿ 205.7	Py	0.02	tr	0.4	14		
305	BC-12-206	205.7 ∿ 207.7	Py	0.02	tr	0.7	17		
306	BC-12-217	215.6 ∿ 217.7	Py	0.02	tr	0.7	21		
307	BC-12-219	217.7 ∿ 219.8	Py	0.02	0.3	1.1	21		
308	BC-12-221	219.8 ∿ 221.9	Py	0.02	tr	0.7	34		
309	BC-12-223	221.9 ∿ 224.0	Py	0.03	tr	1.1	31		
310	BC-12-225	224.0 ∿ 226.0	Py	0.07	tr	1.2	117		
311	BC-12-230	229.0 ∿ 232.6	Py	0.07	0.1	2.7	82		
312	BC-12-238	237.5 ∿ 238.8	Ore	5.02	0.1	1.3	151		
313	BC-12-240	238.8 ∿ 240.9	Spc	0.55	tr	0.4	31		
314	BC-12-242	240.9 ∿ 243.0	Ore	4.87	tr	0.1	206		
315	BC-12-244	243.0 ∿ 245.1	Spc	0.94	tr	0.1	27		

No.	Sample No.	Depth (m)	Rock Type	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Fe (%)	S (%) (10)
316	BC-12-246	245.1 ∿ 247.2	Ore	4.74	tr	0.1	75		
317	BC-12-248	247.2 ∿ 249.2	Spc	0.49	tr	0.1	14		
318	BC-12-263	262.4 ∿ 265.3	Py	0.03	tr	0.2	7		
319	BC-12-266	265.3 ∿ 268.2	Py	0.15	0.1	0.9	31		
320	BC-12-269	268.2 ∿ 271.1	Py	0.02	tr	0.2	7		
321	BC-12-272	271.1 ∿ 274.0	Py	0.03	tr	0.2	7		
322	BC-12-282	281.2 ∿ 283.3	Sk	0.71	tr	0.5	14		
323	BC-12-284	283.3 ∿ 285.4	Ore	4.75	tr	0.3	55		
324	BC-12-295	294.8 ∿ 295.0	Ss	1.91	tr	0.9	38		

Sh ..... Shale
Ss ..... Sandstone
Ml ..... Marl
Do ..... Dolostone
Brc ..... Breccia
Cly ..... Clay
Sid ..... Siderite
Sk ..... Skarn
Spc ..... Specularite
Py ..... Pyrite

A. Ⅲ-18 Microscopic Observation of the Thin Sections

(1)

Sample No.	Rock Type	Microscopic Observation
BC-04-036	Marl (Cz)	It is a calcareous and silty rock. The constituents are fine-grained quartz and carbonate minerals. Quartz and carbonate minerals are seen to be crowded intimately. This rock is divided into two parts according to the quantity of carbonate under the microscope. One is composed essentially of carbonate, with subordinate amount of quartz, the other is very amorphous and accompanied rarely with quartz.
BC-04-061	Altered shale (Cz)	This rock may be brecciated shale including a lot of opaque minerals and a little sphalerite. It is composed mainly of sericite and quartz, with accessory zircon. It is characterized by the prevalence of brecciation. Opaque minerals are mainly pyrite which shows various grain size, up to 1.0 mm in diameter. Sphalerite is of euhedral form and brown to grayish brown in colour.
BC-04-069	Zn-Py ore (St)	The constituents are sphalerite and opaque minerals, with accessory quartz. Sphalerite shows from grayish black to yellowish brown colour. The difference of colours may be depended on the iron content in sphalerite and the existence of chalcopyrite dots. Opaque mineral is mainly of pyrite. Pyrite and sphalerite show a rhythmical banded structure.
BC-04-072	Zn-Py ore (St)	It is composed mainly of sphalerite, pyrite and quartz, with subordinate amount of sericite. Pyrite is coarse-grained and euhedral. Sphalerite is of anhedral form and does not include chalcopyrite dots. It is grayish brown to reddish brown in color. Gangue minerals is composed essentially of fine-grained quartz, accompanied by a small amount of interstitial sericite. (See photograph)
BC-04-078	Altered shale (St)	It is composed mainly of quartz and sericite, with accessory zircon. It includes plenty of opaque minerals which are up to 0.8 mm in diameter. Very fine-grained sericite is interspersed between quartz and opaque minerals.
BC-04-105	Altered shale (St)	The constituents are pyrite, quartz and sericite. It is strongly suffered from sericitization and pyritization. Pyrite is euhedral and up to 0.3 mm in size.
BC-04-136	Limestone (St)	It is composed mainly of carbonate minerals, accompanied by quartz sometimes. It reacts weakly on HCl (6N). A few veinlets which consist of medium-grained carbonates and quartz traverse the matrix. Carbonate minerals are very fine-grained and up to 0.04 mm in size. The matrix is widely turbid owing to dust.
BC-05-086	Silicified shale (St)	This rock shows lastic texture and flow banded structure. This is composed of fine subangular quartz fragments, subhedral to euhedral opaque minerals and very fine-grained felsic minerals matrix. Fragmental quartz is up to 0.05 mm and shows wavy extinction. Opaque minerals (pyrite, etc.) show vein-like form usually. Mica (sericite) and zircon rarelly occur in the matrix.
BC-05-116	Brecciated Carbonates (st)	This rock shows porphyritic and clastic texture. Matrix is composed of subhedral carbonates which are up to 0.1 mm in size. Fragments are siliceous rock pieces which are calcareous shale, shale and amorphous minerals. The size of fragments is up to 4.0 mm. Opaque minerals are scattered in the matrix. (See photograph)
BC-06-131	Altered limestone (St)	This is composed of carbonates and a minor amount of sphalerite. Carbonates show subhebral to euhedral in form. There are two types of carbonates, that is the coarser and the finer. Fine-dotted opaque minerals coexist closely with the finer carbonates.

Sample No.	Rock Type	Microscopic Observation
BC-06-191	Py-Po siliceous ore (St)	This is composed of quartz, sphalerite and opaque minerals. Quartz shows euhedral aggregates containing very fine-dotted minerals (too fine to determine the kind of minerals). Opaque minerals become vein-like aggregates. Sphalerite is dark-red in colour.
BC-06-259	Py siliceous ore (St)	This is composed of quartz, chlorite and opaque minerals. Euhedral quartz, up to 0.3 mm in size, and subhedral opaque minerals are scattered in the chlorite felsic minerals matrix. Chlorite shows fine grains or acicular in form and coexists closely with very fine felsic minerals. Most of opaque minerals may be pyrite. (See photograph)
BC-07-042	Chloritized skarn (St)	This rock is altered almost to chlorite, though a small amount of clinopyroxene is seen occasionally. Clinopyroxene is assumed to be originally skarn and replaced by epidote and tremolite. Chlorite is weakly pleochroic green to pale green and shows aggregates associated with a little sphene. Accessory minerals are quartz and carbonate minerals.
BC-07-056	Altered skarn (St)	This rock is an chloritized skarn associated with sphalerite and dolomite veinlets. It is composed essentially of chlorite and sphalerite. Chlorite shows weak refraction and is colourless in thin section. According to the result of X-ray powder diffraction, antigorite is detected, then it is thought that the chlorite in this skarn is Mg-rich chlorite. Sphalerite shows euhedral form and includes a lot of minute chalcopyrite dots.
BC-07-075	Epidote-Tremolite skarn (St)	It is composed mainly of tremolite and epidote, and suffered from strong carbonatization and muscovitization. Tremolite shows slender bladed crystals and forms radial aggregates. Epidote shows distinct pleochroism, yellowish green to pale green. (See photograph)
BC-07-109	Zn tremolite skarn (St)	This is composed of actinolite, carbonates, quartz, sphalerite and opaque minerals. Actinolite shows platy elongated crystal (up to 8.0 mm in length) and acicular form in parts. Sphalerite is red to yellowish gray in colour, and coexists closely with opaque minerals. Yellowish gray sphalerite contains a large amount of fine-dotted chalcopyrite, but reddish sphalerite contains less amount of chalcopyrite. Fine-grained carbonate and quartz aggregates occur in parts.
BC-07-126	Altered skarn	This is composed of chlorite, sericite, quartz, sphalerite and opaque minerals. Chlorite and sericite show very close coexistent relation. They show relict form after actinolite or pyroxene in places. Quartz occurs in chlorite-sericite aggregates. Sphalerite is brown to yellowish gray in colour and contains dotted chalcopyrite. Sphalerite coexists closely with opaque minerals. (See photograph)
BC-10-063	Mineralized chloritized rock (Cz)	The veinlet composed of sphalerite, quartz and opaque minerals penetrates the chloritized rock of which constituent minerals are fine-grained (0.05 mm) chlorite and fine felsic minerals (too fine to determine the minerals). In the veinlet, there are two types of sphalerite. One is reddish brown to yellowish gray in colour and contains dotted chalcopyrite. The other is colourless without chalcopyrite. The former is penetrated by the latter. And the former is more abundant than the latter. These sphalerites coexist closely with euhedral quartz and opaque minerals.
BC-11-138	Dolomite-Siderite rock (St)	This is composed of carbonates and opaque minerals. A large amount of fossils, up to 0.3 mm, are observed in the rock. Opaque minerals occur in the coarser carbonates. (See photograph)

Sample No.	Rock Type	Microscopic Observation
BC-12-234	Hm-Py silicified ore (St)	The vein composed of opaque minerals, euhedral quartz and carbonates penetrates hematized siliceous rocks. The siliceous rock is composed of very fine felsic minerals, elongated subhedral quartz, fine hematite-aggregates and fine-grained carbonates. Hematite and carbonates coexist closely making a graphic texture in siliceous matrix. In the vein, quartz and carbonates show euhedral form and coexist with opaque minerals.

A. Ⅲ-19 Microscopic Observation of the Polished Sections

(1)

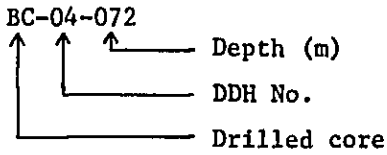
Sample No.	Rock Type	Microscopic Observation
BC-04-062	Zn-Py ore (St)	The constituents are sphalerite and pyrite. Sphalerite is usually very large crystals and includes scarcely chalcopyrite dots. According to the result of electron microprobe analysis, the gangue minerals, which fill the cavities, is sericite.
BC-04-064	Zn-Py ore (St)	The constituents are also sphalerite and pyrite as well as the above, but sphalerite of this ore is accompanied with chalcopyrite dots. Pyrite is brecciated and replaced partly by sphalerite. It is recognized that pyrite has a faint anisotropy.
BC-04-069	Zn-Py ore (St)	It is composed essentially of sphalerite and pyrite, with accessory pyrrhotite. Sphalerite includes chalcopyrite dots, which is locally present in spotled form like a domain. Pyrite is coaser grain size and indicates weak anisotropy partly, including a little amount of pyrrhotite. It is noted that pyrite is altered partly to marcasite.
BC-04-072	Zn-Py ore (St)	The constituents are sphalerite and pyrite. Pyrite is divided into two types according to the grain size. Coarser grain pyrite up to 5.00 mm in size, is replaced mostly by sphalerite in the interior. Smaller grain pyrite, up to 0.1 mm in size, coexists with sphalerite that includes chalcopyrite dots.
BC-04-085	Cu-Pb-Zn-Py ore (St)	It is composed mainly of sphalerite and pyrite, with accessory chalcopyrite, galena and pyrrhotite. These accessory minerals are seemed to be included in sphalerite. Coarse grain pyrite shows euhedral form and are often replaced by sphalerite. Sphalerite includes a little chalcopyrite dots and galena grains.
BC-04-098	Cu-Pb-Zn-Py ore (St)	It is composed mainly of sphalerite and pyrite, with accessory galena. Pyrite shows euhedral form and lies in the matrix which is mainly sphalerite. Pyrite crystals include a lot of tiny dust. Sphalerite includes not only chalcopyrite dot, but also a small amount of galena grains.
BC-04-104	Cu-Pb-Zn-Py ore (St)	It is also composed of sphalerite and pyrite, with accessory galena as well as the above mentioned sample. Sphalerite includes small grains of pyrite, galena and gangue minerals and chalcopyrite dots. Pyrite shows euhedral fine-grained form, up to 0.2 mm in size, and forms aggregates.
BC-04-107	Cu-Pb-Zn-Py ore (St)	The constituents are sphalerite and pyrite. Sphalerite shows anhedral form and occupies the inter-spaces of gangue minerals. Small grains of pyrite are often included in sphalerite and coarse grains of pyrite are replaced by sphalerite.
BC-04-176	Py ore (St)	It is composed of only pyrite. Coarse grains of pyrite, up to 1.5 cm in size, shows euhedral form and the anhedral crystals fill with the cracks and cavities in the matrix of gangue minerals.
BC-05-102	Zn-Py ore (St)	Constituent minerals are sphalerite, galena and pyrite. Sphalerite occurs in large anhedral crystals and includes fine-dotted galena and pyrite. Galena coexists closely with pyrite. Therefore, galena and pyrite aggregates occur in spotted appearance. Flow banded structure composed of fine galena, pyrite and gangue minerals, occurs in parts.

Sample No.	Rock Type	Microscopic Observation
BC-05-107	Cp ore (St)	It is composed essentially of chalcopyrite and sphalerite, with accessory magnetite, hematite and pyrite. Calcopyrite and sphalerite show close coexistent relation and sphalerite contains large amount of dotted chalcopyrite. Magnetite showing granular aggregate occurs surrounding sphalerite. Hematite showing lath shape is usually included in chalcopyrite. A little pyrite shows corroded form and is included in chalcopyrite. (See photograph)
BC-05-181	Pb-Zn ore (St)	This ore is composed of sphalerite, galena and pyrite. The occurrence of them is the nearly same as sample No. 11-238. Large crystals of sphalerite include rarely galena and pyrite. Flow banded structure can not be observed in this sample. (See photograph)
BC-05-184	Zn-Py ore (St)	Constituent minerals are sphalerite, galena and pyrite. Sphalerite occurs in large crystal and includes corroded pyrite aggregates. A little galena exists closely with pyrite aggregate. Fine sphalerite which coexists with galena in parts, occurs in gangue minerals. Very small amount of arsenopyrite occurs in pyrite aggregates.
BC-05-189	Zn-Py ore (St)	Main constituent minerals are pyrite, sphalerite. Pyrite shows euhedral granular and aggregates. Sphalerite occurs in pyrite aggregates. Fine grains of sphalerite coexist closely with gangue minerals. A small amount of fine-grained galena occurs in the boundary parts between pyrite and sphalerite.
BC-05-195	Zn-Py ore (St)	Main constituent minerals are sphalerite and pyrite. Sphalerite and pyrite-aggregates make weak banded structure. Sphalerite contains fine-dotted chalcopyrite. Pyrite shows subhedral form and makes aggregates. Galena occurs occasionally in sphalerite.
BC-05-197	Zn-Py ore (St)	The constituents are sphalerite and pyrite, as accessories arsenopyrite, galena and pyrrhotite. Sphalerite includes corroded pyrite, subhedral arsenopyrite, fine-dotted pyrrhotite and fine galena. Corroded pyrite makes aggregates with smaller amount of arsenopyrite. A little galena occurs in margin of pyrite.
BC-05-203	Py-ore (St)	Main constituent minerals are pyrite, sphalerite and galena. Pyrite shows euhedral to subhedral form and makes aggregates, in which occur sphalerite and galena. Sphalerite coexists closely with galena, and ocupies interspaces of pyrite aggregates.
BC-06-162	Zn-Py ore (St)	The constituents are sphalerite and pyrite, as accessories chalcopyrite, galena and magnetite. Sphalerite includes fine-dotted chalcopyrite and fine galena. Pyrite shows corroded aggregate form and coexists closely with sphalerite. Fine-grained magnetite occurs in parts.
BC-06-189	Py-Po ore (St)	This is composed mainly of pyrrhotite and marcasite, with minor amount of sphalerite and galena. Pyrrhotite occupies majority. Marcasite shows subhedral form and occurs in pyrrhotite matrix. A little sphalerite and galena occurs also in pyrrhotite matrix. They coexist relatively with marcasite. (See photograph)
BC-06-213	Zn dissemination ore (St)	The ore mineral is sphalerite, as accessories galena, pyrite, hematite and magnetite. Sphalerite is subhedral form and corroded in parts. The above mentioned accessory minerals are fine-grained and included in sphalerite crystals.

Sample No.	Rock Type	Microscopic Observation
BC-06-235	Zn dissemination ore (St)	Main constituent mineral is sphalerite. Large crystals of sphalerite include fine-dotted chalcopyrite, galena, pyrrhotite and pyrite. Fine-grained sphalerite is dispersed in gangue minerals.
BC-06-258	Py dissemination ore	The constituents are pyrite and chalocpyrite as accessories sphalerite, galena, hematite, bornite and tetrahedrite. Pyrite occurs in subhedral aggregate and includes fine-grained sphalerite, galena and Cu-minerals. Chalcopyrite occupies interspaces of pyrite aggregates in parts. Hematite shows acicular aggregate which coexists often with chalcopyrite.
BC-06-267	Py dissemination ore (St)	This is the aggregate of pyrite grains. Pyrite shows banded structure, in parts. Pyrite aggregates are associated with fine-grained of Cu minerals, which are chalcopyrite, chalcocite, covelite, bornite and tetrahedrite.
BC-07-075	Cu skarn ore (St)	It is composed mainly of chalcopyrite, pyrite and sphalerite, with subordinate amounts of hematite and galena. Chalcopyrite of xenomorphic form interstices the cracks in the matrix and is scattered widely, associated with pyrite and sphalerite. Sphalerite includes a little chalcopyrite dot and is accompanied with pyrite. According to the relation of their intergrowths, it is considered that the first is pyrite, next sphalerite, then chalcopyrite in the order of their crystallization. (See photograph)
BC-07-122	Py dissemination ore (St)	The constituents are magnetite and pyrite, as accessories sphalerite and chalcopyrite. Magnetite occurs in granular aggregates and coexists closely with corroded pyrite. Sphalerite including dotted chalcopyrite shows close coexisting relation with magnetite.
BC-07-123	Zn-Py ore (St)	The constituents are sphalerite and pyrite, as accessories chalcopyrite, pyrrhotite and galena. Sphalerite includes subhedral pyrite crystals and fine-dotted chalcopyrite. Very small amount of pyrrhotite and galena occur also in sphalerite.
BC-07-127	Zn ore (St)	Main constituent minerals are sphalerite and magnetite. Euhedral magnetite shows close coexistent relation with sphalerite. Sphalerite includes dotted chalcopyrite in many places. A few amount of pyrite occurs in anhedral form with sphalerite. An acicular hematite occurs in parts. (See photograph)
BC-07-195	Py dissemination ore (Cz)	Constituent minerals are pyrite, hematite, chalcopyrite and chalcocite. Pyrite occurs in aggregates. Chalcopyrite shows anhedral form and is rimed by chalcocite film. The Cu-minerals occurs intersticially in pyrite aggregate. Hematite shows acicular aggregates and occurs in pyrite aggregates. (See photograph)
BC-11-238	Cu-Zn-Py ore (St)	Main constituent minerals are pyrite, hematite and chalcopyrite. Pyrite occurs in aggregates and relatively large crystals. Chalcopyrite occurs surrounding pyrite crystals. Cu minerals which are bornite, chalcocite and covelite, occurs in boundary part between pyrite and chalcopyrite. Hematite shows an acicular aggregates, which occurs replacing pyrite crystals. By XMA analysis, tetrahedrite containing Ag is detected accompanied by Cu-minerals. (See photograph)
BC-12-146	Cu dissemination ore (St)	Main constituent minerals are chalcopyrite and hematite with accessory bornite and chalcocite. Chalcopyrite occurs in veinlet form and coexists with fine-grained bornite and chalcocite at the margin of crystals. Hematite shows acicular aggregates and occurs in chalcopyrite and gangue minerals. (See photograph)

A. Ⅲ-20-1 Thin Section

Sample No.	Rock Type
BC-04-072	Sphalerite-pyrite ore
BC-05-116	Brecciated carbonate
BC-06-259	Pyrite-siliceous ore
BC-07-075	Epidote-tremolite skarn
BC-07-126	Altered skarn
BC-11-138	Dolomite-siderite rock



Abbreviations

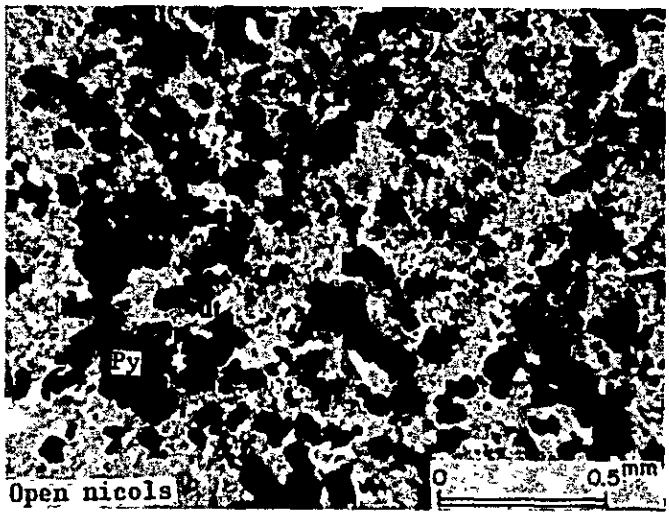
Qt: Quartz
Ep: Epidote
Chl: Chlorite
Carb: Carbonate
Ser: Sericite
Tr: Tremolite
Sp: Sphalerite

Sample No. BC-04-072

Rock Type : Sphalerite-pyrite ore

Sample No. BC-05-116

Rock Type : Brecciated Carbonate



Sample No. BC-06-259

Rock Type : Pyrite-Siliceous ore

Sample No. BC-07-075

Rock Type : Epidote-tremolite skarn

Sample No. BC-07-126

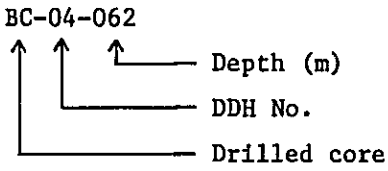
Rock Type : Altered skarn

Sample No. BC-11-138

Rock Type : Dolomite-siderite rock

A. Ⅲ-20-2 Polished Section

Sample No.	Rock Type
BC-04-062	Sphalerite-pyrite ore
BC-05-107	Chalcopyrite ore
BC-05-181	Galena-sphalerite ore
BC-07-075	Chalcopyrite skarn ore
BC-07-127	Sphalerite ore
BC-07-195	Pyrite dissemination ore
BC-11-238(A)	Chalcopyrite-sphalerite-pyrite ore
BC-11-238(B)	Chalcopyrite-sphalerite-pyrite ore
BC-12-146	Chalcopyrite dissemination ore



Abbreviations

Gl:	Galena	Il:	Ilmenite
Sp:	Sphalerite	Cv:	Covellite
Cp:	Chalcopyrite	Mt:	Magnetite
Py:	Pyrite	Hm:	Hematite
Bn:	Bornite	Ser:	Sericite
Tet:	Tetrahedrite		

Sample No. BC-04-062

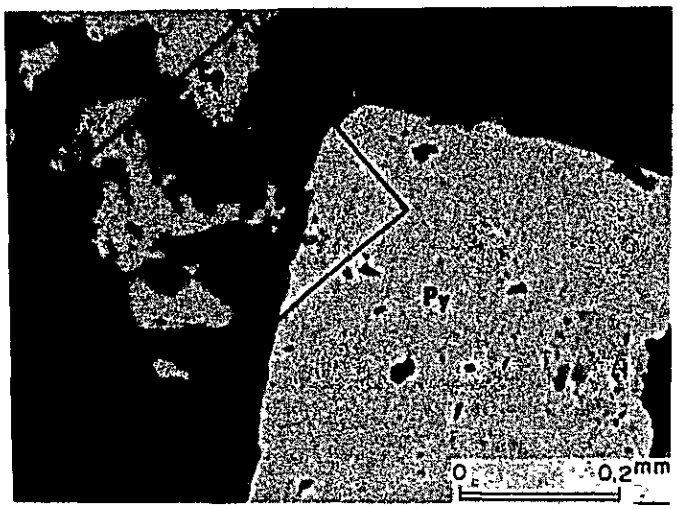
Rock Type : Sphalerite-
Pyrite ore

Sample No. BC-05-107

Rock Type : Chalcopyrite ore

Sample No. BC-05-181

Rock Type : Galena-Sphalerite
ore

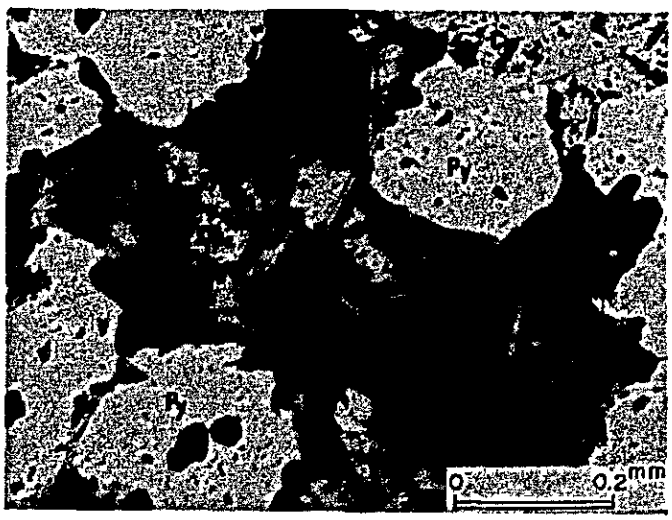


Sample No. BC-07-075

Rock Type : Chalcopyrite-skarn ore

Sample No. BC-07-127

Rock Type : Sphalerite ore

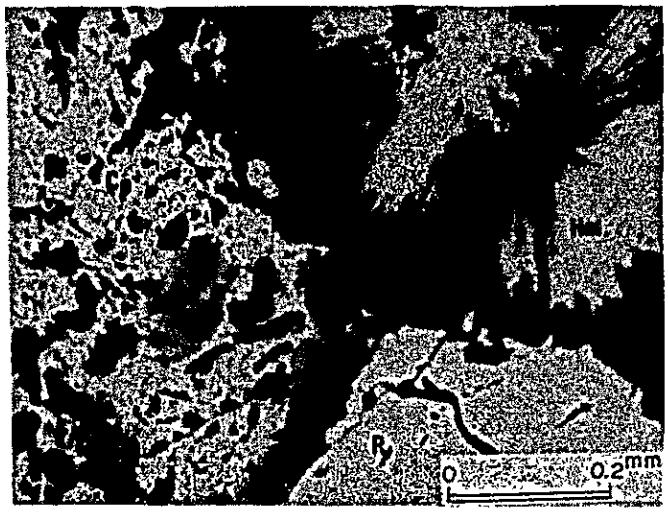


Sample No. BC-07-195

Rock Type : Pyrite dissemination ore

Sample No. BC-11-238(A)

Rock Type : Chalcopyrite-
Sphalerite-pyrite ore



Sample No. BC-11-238(B)

Rock Type : Chalcopyrite-
Sphalerite-pyrite ore

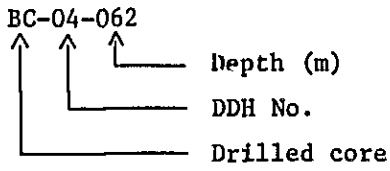
Sample No. BC-12-146

Rock Type : Chalcopyrite
dissemination ore

A. Ⅲ-20-3 EPMA Analysis

Sample No.	Result of EPMA Analysis
BC-04-062	Galena-pyrite ore
BC-05-107	Chalcopyrite ore
BC-07-075	Galena-chalcopyrite ore
BC-11-238(A)	Chalcopyrite-sphalerite-pyrite ore

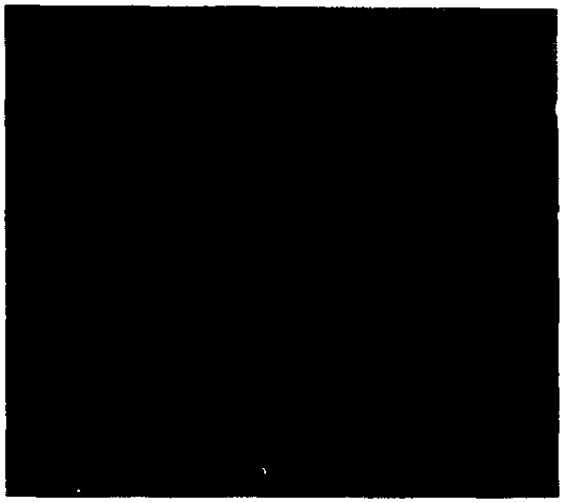
(EPMA: Electron probe microanalysis)



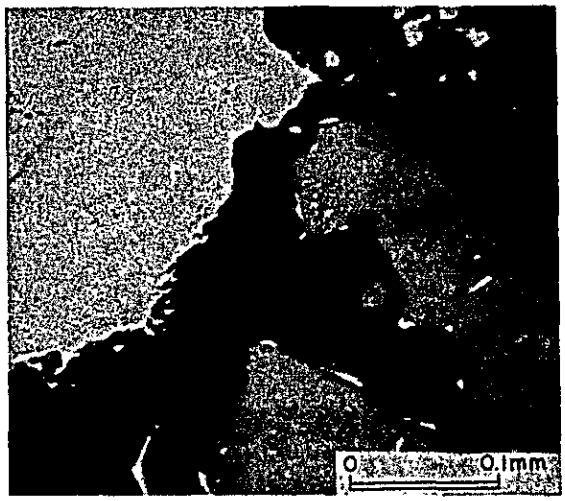
Abbreviations

Cp: Chalcopyrite
Tet: Tetrahedrite
Bn: Bornite
Sp: Sphalerite
Py: Pyrite
Il: Ilmenite

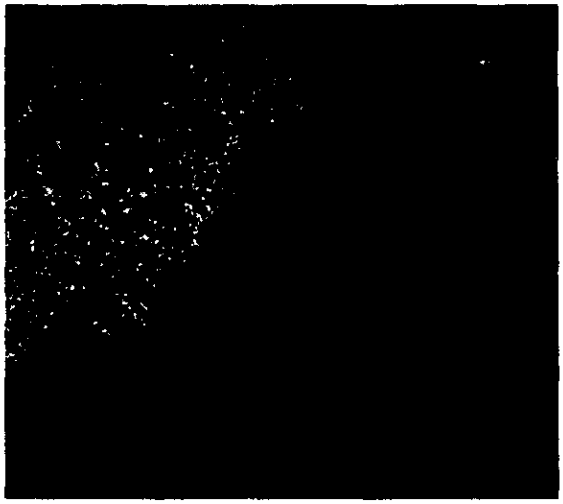
Sample No. BC-04-062



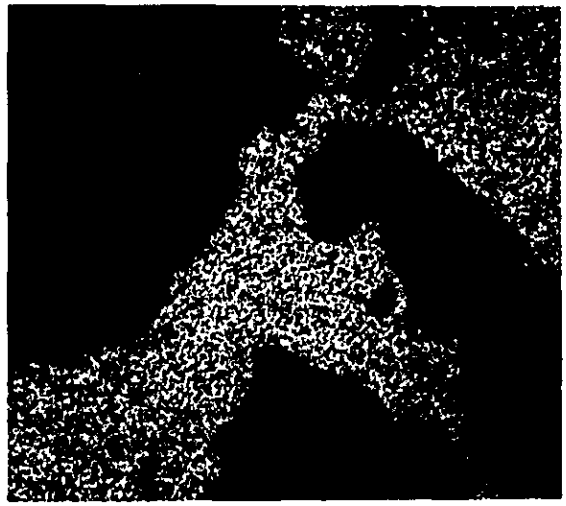
K X-ray image



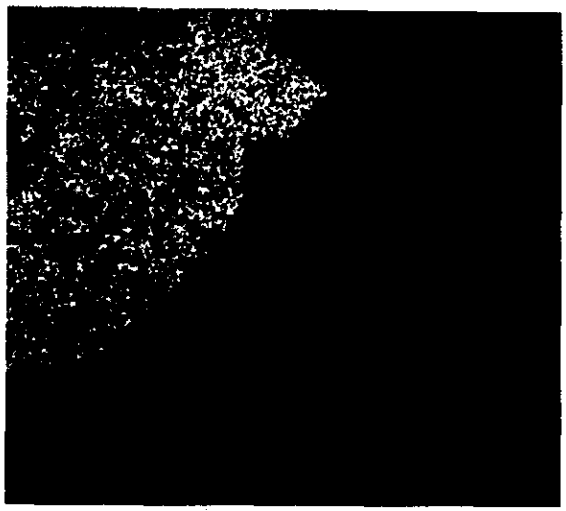
Absorbed electron image



Al X-ray image



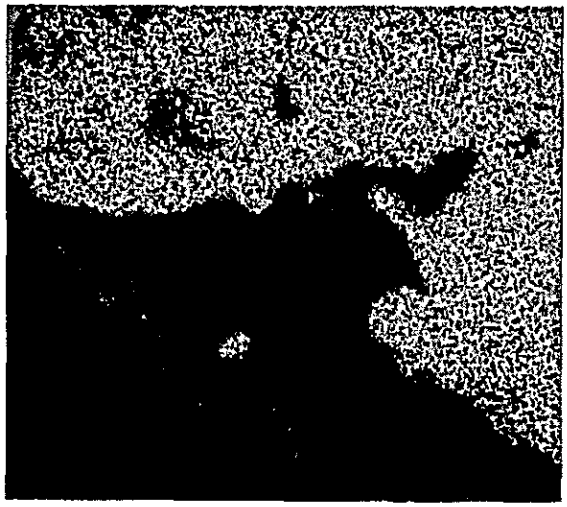
Zn X-ray image



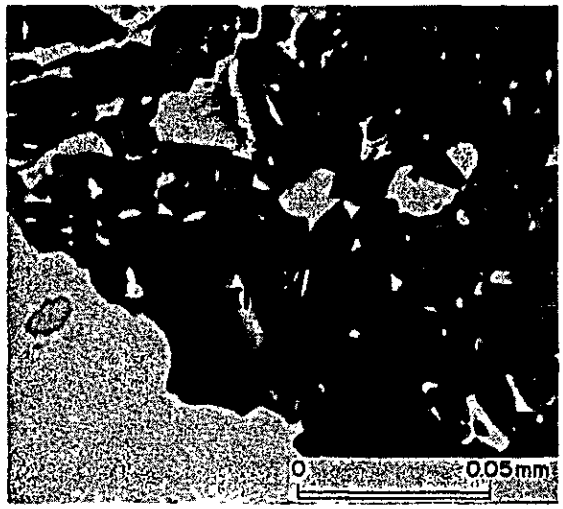
Si X-ray image

Fe X-ray image

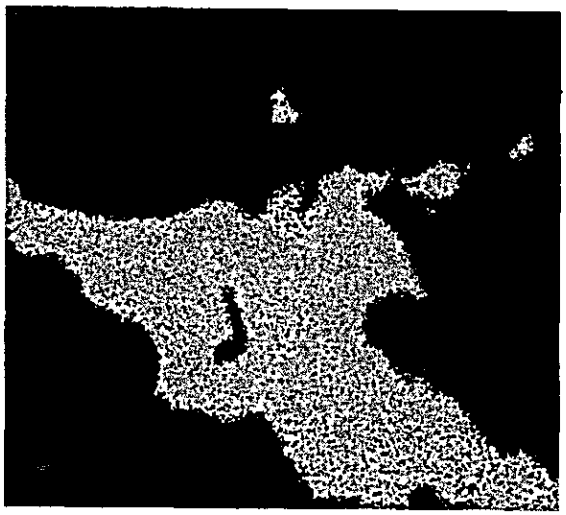
Sample No. BC-05-107



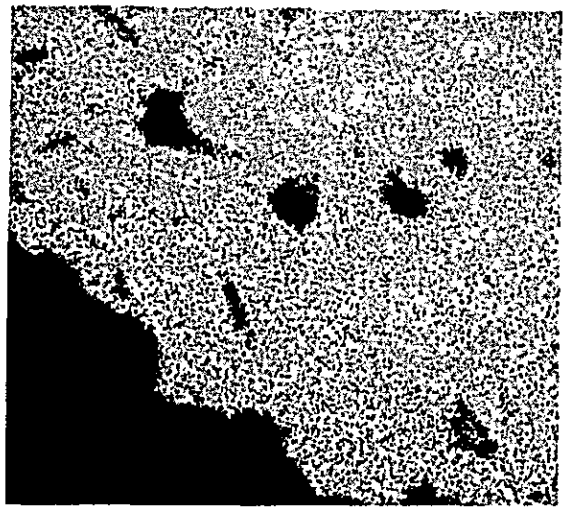
Cu X-ray image



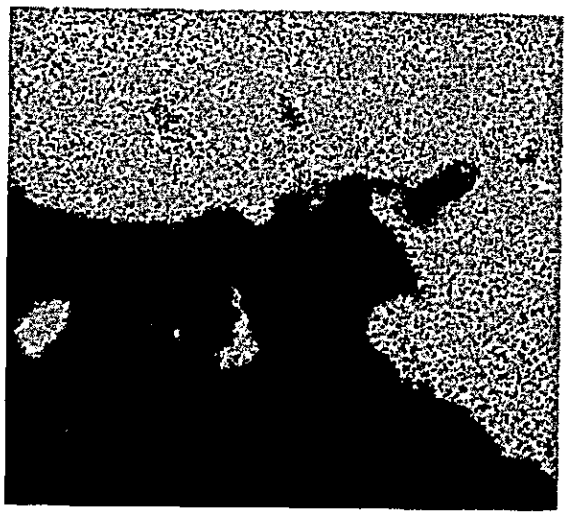
Absorbed electron image



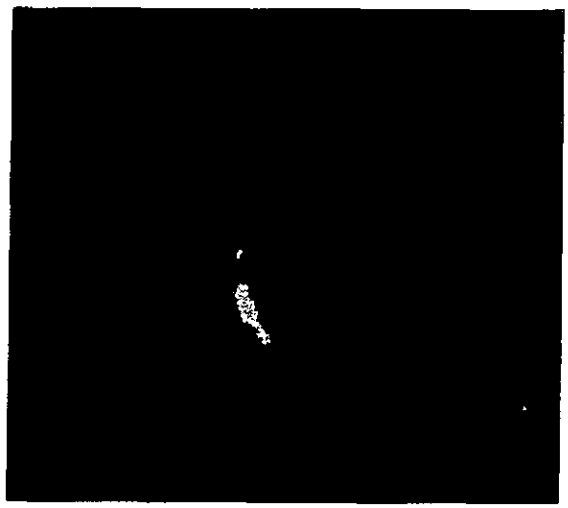
Zn X-ray image



S X-ray image



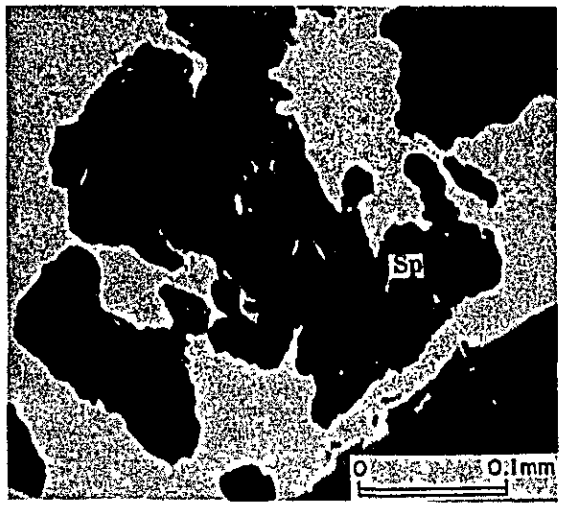
Fe X-ray image



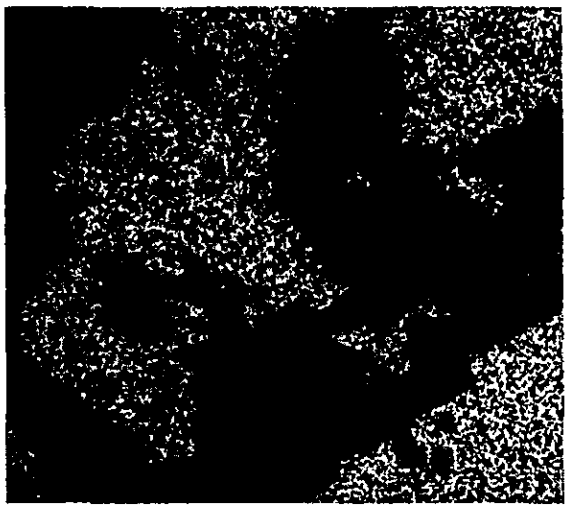
Ti X-ray image

Sample No. BC-07-075

Cu X-ray image



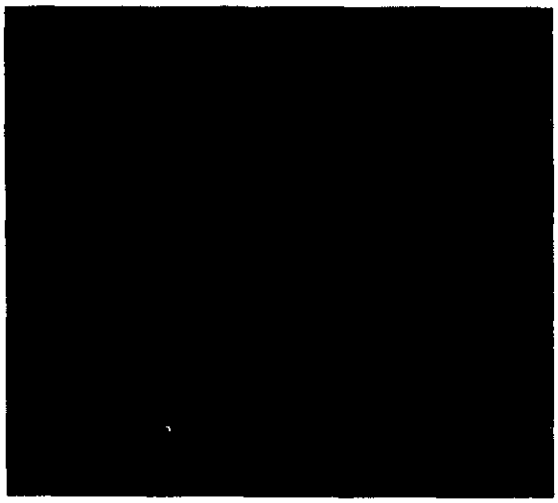
Absorbed electron image



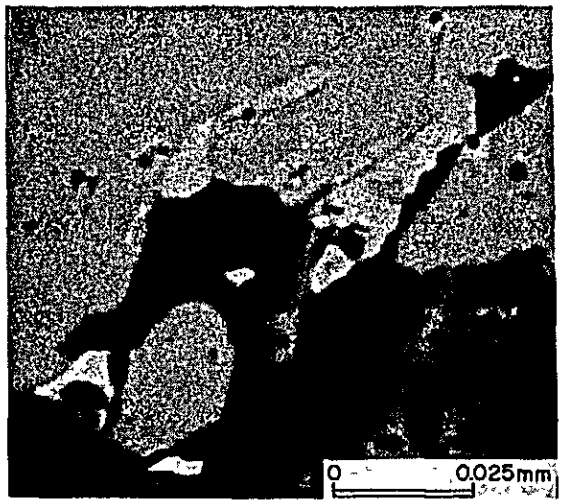
Fe X-ray image

Zn X-ray image

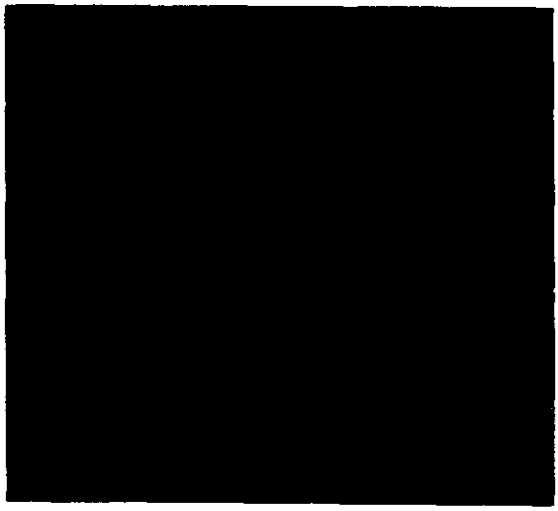
Sample No. BC-11-238(A)



Ag X-ray image



Absorbed electron image



Sb X-ray image

Fe X-ray image

Cu X-ray image

S X-ray image

A. Ⅲ-21 Charts of X-ray Diffraction Test

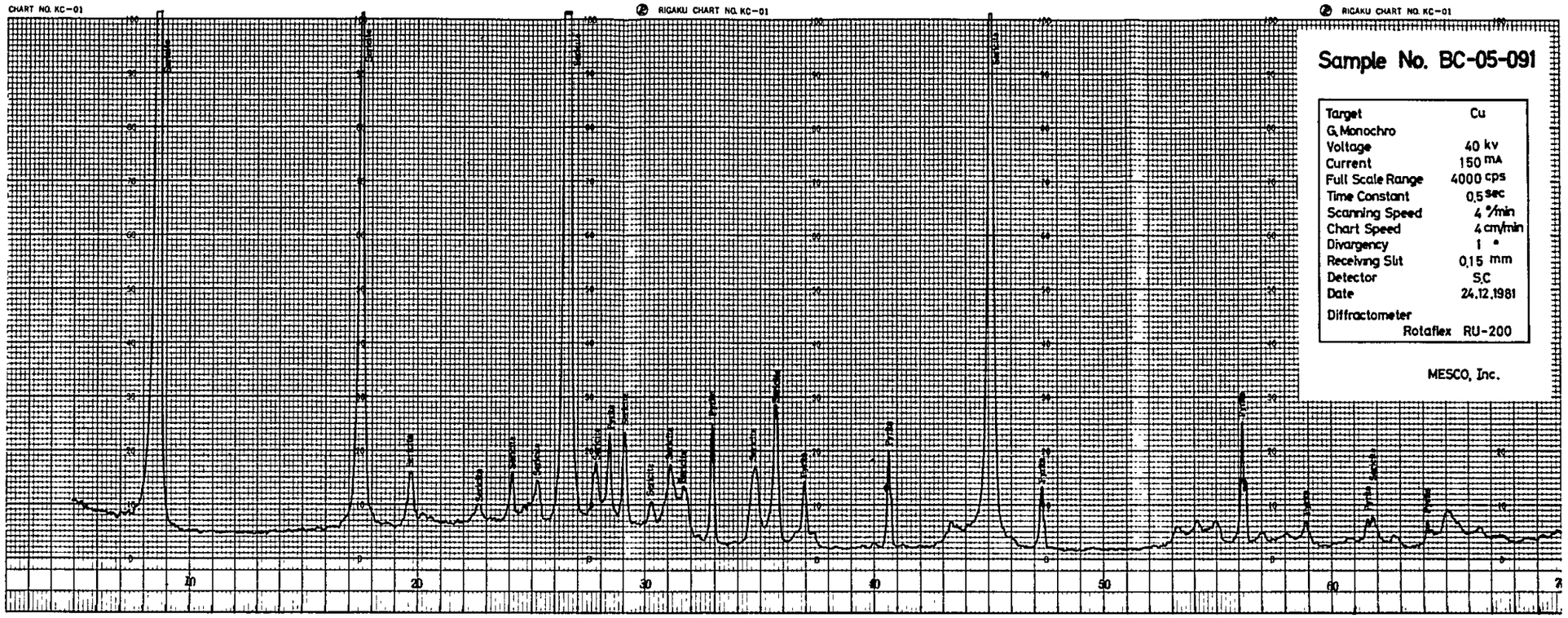
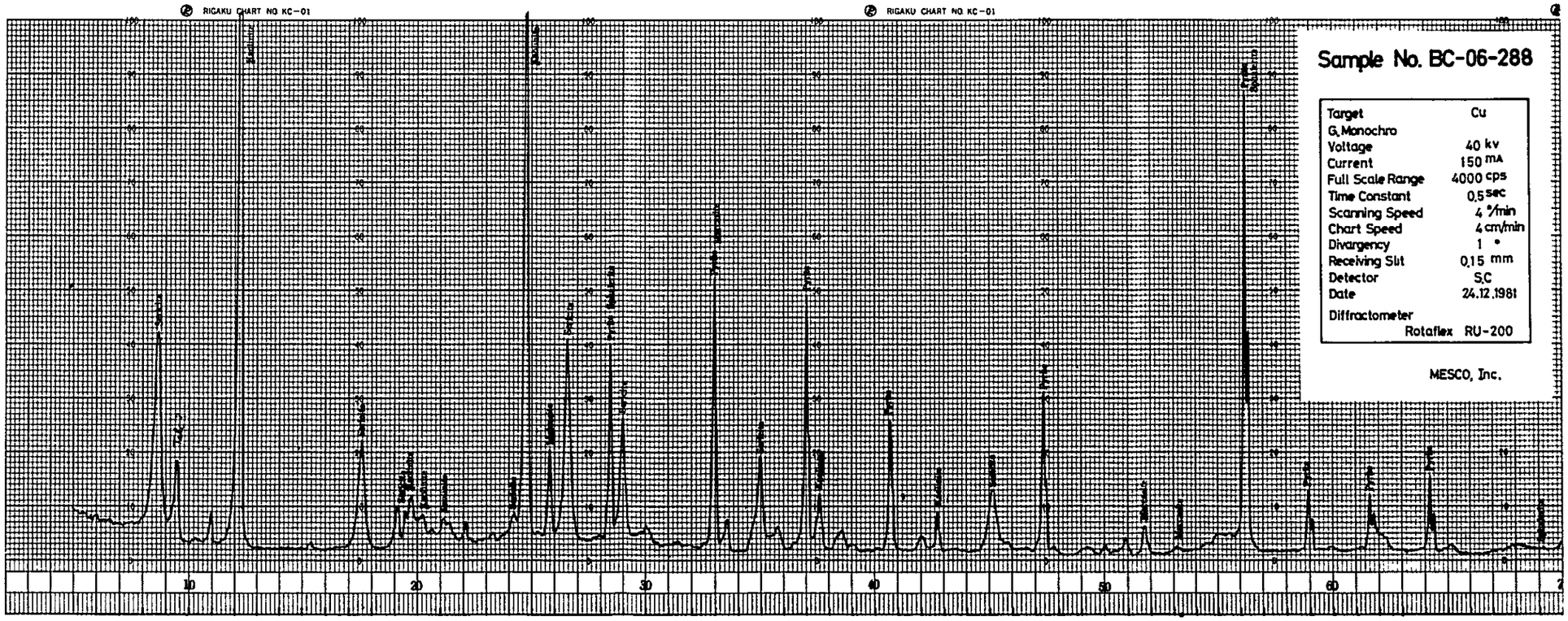
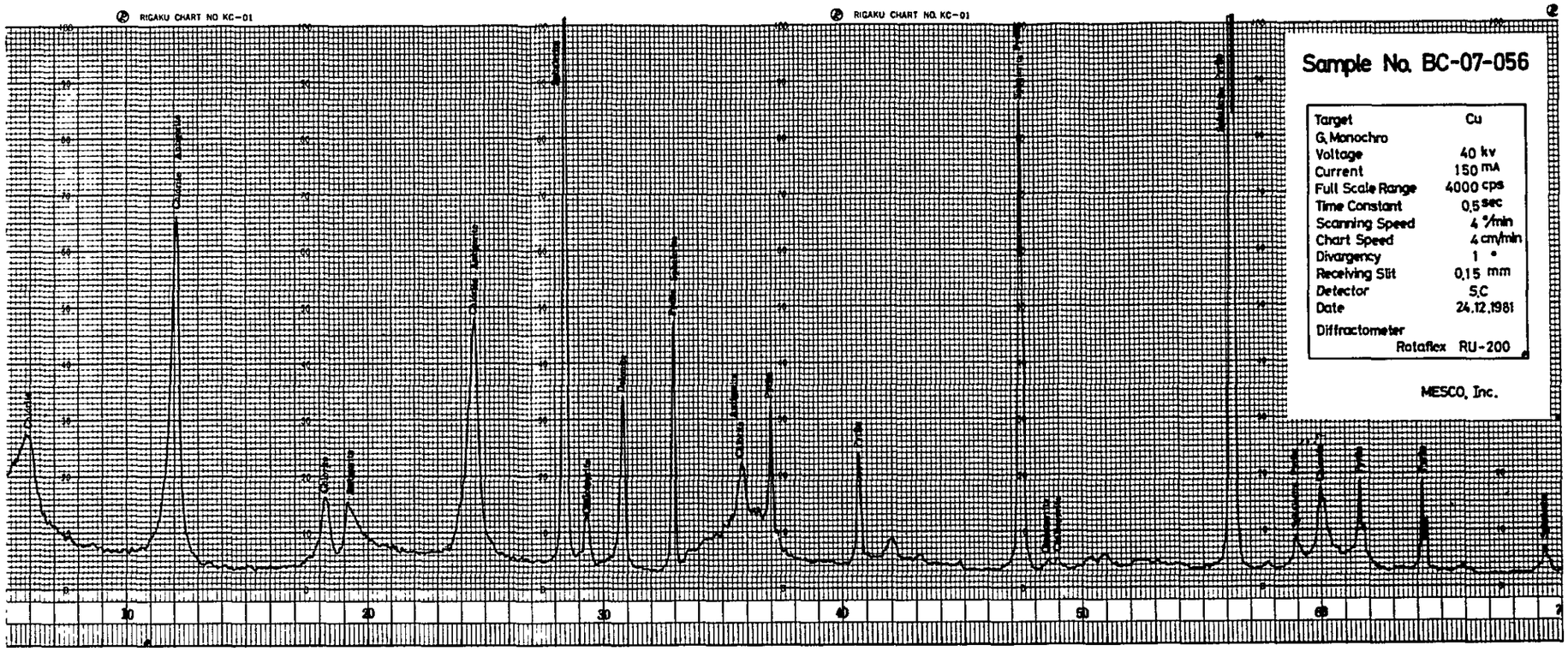
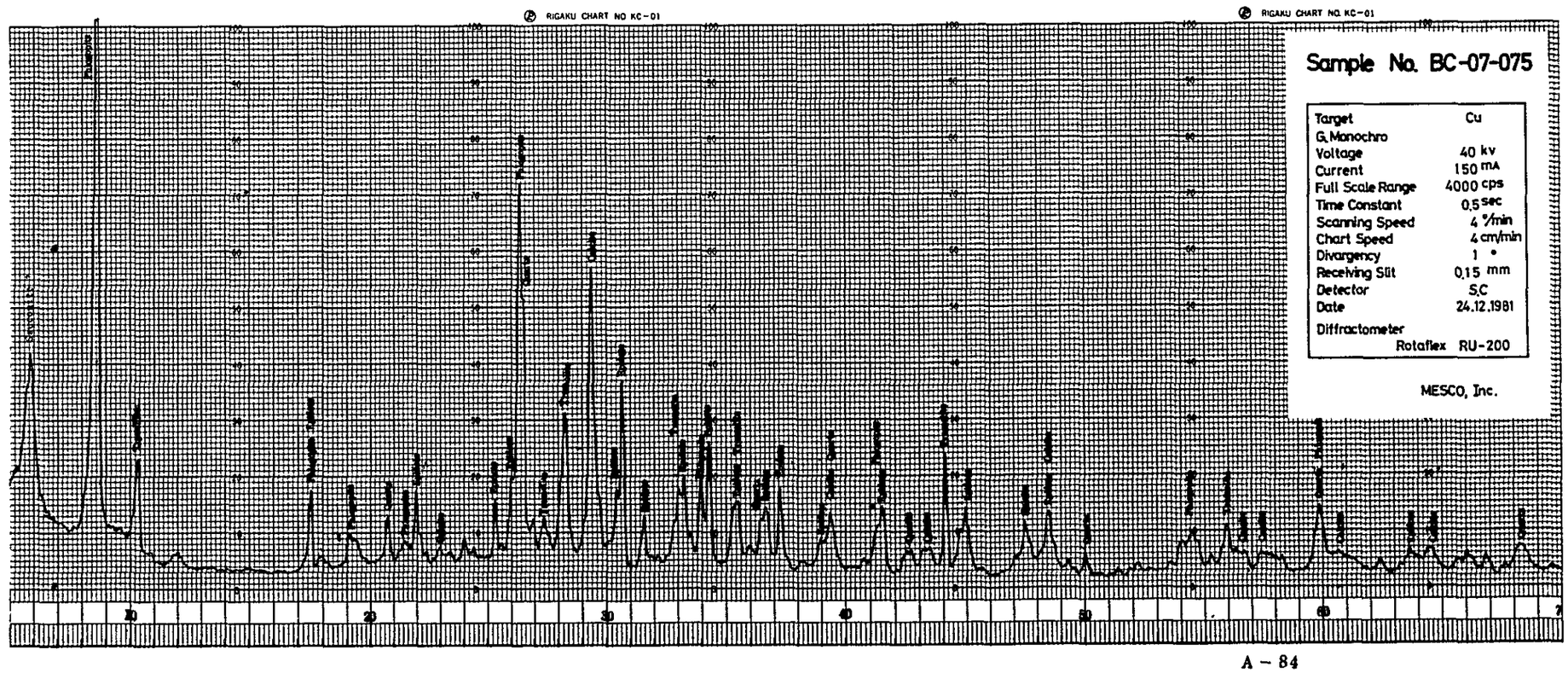


CHART NO. KC-01
RIGAKU CHART NO. KC-01
RIGAKU CHART NO. KC-01
Sample No. BC-05-091
Target Cu
G. Monochro
Voltage 40 kv
Current 150 mA
Full Scale Range 4000 cps
Time Constant 0,5 sec
Scanning Speed 4 °/min
Chart Speed 4 cm/min
Divergency 1 °
Receiving Slit 0,15 mm
Detector S.C
Date 24.12.1981
Diffractometer
Rotaflex RU-200
MESCO, Inc.


RIGAKU CHART NO. KC-01
RIGAKU CHART NO. KC-01
Sample No. BC-06-288
Target Cu
G. Monochro
Voltage 40 kv
Current 150 mA
Full Scale Range 4000 cps
Time Constant 0,5 sec
Scanning Speed 4 °/min
Chart Speed 4 cm/min
Divergency 1 °
Receiving Slit 0,15 mm
Detector S.C
Date 24.12.1981
Diffractometer
Rotaflex RU-200
MESCO, Inc.


RIGAKU CHART NO KC-01
Sample No. BC-07-056
Target Cu
G. Monochro
Voltage 40 kv
Current 150 mA
Full Scale Range 4000 cps
Time Constant 0,5 sec
Scanning Speed 4 °/min
Chart Speed 4 cm/min
Divergency 1 °
Receiving Slit 0,15 mm
Detector S.C
Date 24.12.1981
Diffractometer
Rotaflex RU-200
MESCO, Inc.


RIGAKU CHART NO KC-01
Sample No. BC-07-075
Target Cu
G. Monochro
Voltage 40 kv
Current 150 mA
Full Scale Range 4000 cps
Time Constant 0,5 sec
Scanning Speed 4 °/min
Chart Speed 4 cm/min
Divergency 1 °
Receiving Slit 0,15 mm
Detector S.C
Date 24.12.1981
Diffractometer
Rotaflex RU-200
MESCO, Inc.