Location (Area)	Sample No.	Formation	Rock Name	Microscopic Observations	Remarks
I	Y-1	PII-III	Lithic graywacke	Unsorted, angular grains of quartz, feldspar, and mafic minerals and fragments of volcanic and sedimentary rocks are set in a matrix of chlorite and sericite. Feldspars are sericitized and mafic minerals are chloritized and carbonated.	
I	Y-11	PIII	Lithic arenite sandstone	The rock contains fragments of rocks and crystals in about equal volume. The grains are subrounded and subangular and measure 0.1 to 0.8 millimeters in size. The fragments mainly consist of quartz, K-feldspar, plagioclase, opaque minerals, shale, andesite, keratophyre, meta quartzite and chert. Sericite is formed in interstices of fragments.	
J	B-18	PII-III	Rhyolite	Phenocrysts of quartz, plagioclase, altered biotite, and mafic minerals are in a cryptofelsic base consisting of quartz, feldspar, and sericite. Mafic minerals are completely altered to an aggregate of calcite, sericite, and chlorite.	
J	B-21	PII-III	Rhyolitic lithic tuff	Fragments of quartz, feldspar, and rhyolite to andesite are in a matrix made up of fine-grained quartz and cryptocrystalline glass dusts.	
J	E-23	PII-III	Andesite	Large sericitized plagioclase phenocrysts about 1 mm in size are set in an intergranular and hyalopilitic groundmass consisting of tiny laths of plagioclase and intersertal opaque glass. Carbonate is abundant.	
J	E-25	PII-III	Altered trachytic tuff	Dominant sericitized orthoclase crystals are set in a cryptocrystalline matrix consisting of feldspar and quartz. Feldspars are intensely sericitized. Altered trachyte fragments are also present.	
J	E-29	PII-III	Altered rhyolitic tuff	The rock contains fragments of meta quartzite, quartz, altered biotite and opaque minerals. The base is composed mainly of fine aggregates of quartz, sericite and chlorite, exhibiting a trace of vitroclastic texture. Secondary minerals are sericite and chlorite.	See microphoto. No.10
J	E-47	PII-III	Dacitic tuff breccia	Rock fragments of rhyolite to andesite, broken crystals of quartz and feldspar, and pumice are set in a cryptocrystalline matrix pigmented with opaque minerals.	
J	E-50	PII-III	Trachytic tuff	Small amounts of orthoclase and quartz phenocrysts are set in a cryptofelsic matrix stippled with sericite and ores, retaining glass shard relics and vesicules.	
J	E-65	PII-III	Altered trachyte	Large amounts of feldspars and small amounts of mafic minerals are in a sericitized, orthophyric groundmass consisting of stout crystals and laths of feldspar. Both the phenocrysts and the groundmass feldspars are intensely sericitized.	
J	E-69	PII-III	Highly altered porphyrite	Plagioclase is the only relict igneous mineral and exhibits lath-shaped crystals. The other minerals is entirely altered to chlorite, sericite and sphene. Epidote, quartz and opaque minerals occur in veinlets and is also disseminated in the rock.	
J	E-76	PII-III	Dacitic lithic tuff	Fragments of andesite, trachyte, feldspar, chert, sandstone, and shale are set in a partly carbonated and sericitized matrix.	

Location (Area)	Sample No.	Formation	Rock Name	Microscopic Observations	Remarks
J	E-112	PII-III	Rhyolitic crystal tuff	Broken crystals of dominant feldspars and subordinate quartz are set in a matrix with glass shard relics and cryptocrystalline quartz and feldspar.	
J	F-118	PII-III	Tuffaceous shale	Sharply angular shards of glass are in a fine-grained matrix of dolomite and clay minerals with broken quartz crystals and mica flakes.	
J	F-119	PII-III	Rhyolitic vitric tuff	The rock is composed almost entirely of partly devitrified, cryptofelsic glass with vitroclastic texture. Small amounts of euhedral ore minerals are present.	
J	F-123	PII-III	Welded tuff	Phenocrysts of quartz, plagioclase, K-feldspar, biotite and opaque minerals occur in a fine matrix originally of glass. The glass is converted into devitrified fine material of quartz and other minerals and exhibits a vitriclastic texture. Secondary minerals are calcite, sericite, chlorite and vermiculite.	
J	F-134	PII-III	Recrystallized rhyolitic tuff	The rock is composed shiefly of recrystallized quartz grains less than 0.1 mm in size. Partly very fine-grained sericite flakes are dispersed with weak orientation. Rock fragments about 0.5 mm in size consisting of fine-grained recrystallized quartz, sericite, and opaques are also observed.	
J	F-137	PII-III	Rhyolitic tuff breccia	Crystals of alkali-felspars and quartz and fragments of andesites are set in a cryptocrystalline base consisting of quartz, feldspar, and sericite. Apatite crystals are often observed.	
J	F-141	PII-III	Tuffaceous siltstone	Subangular grains of quartz and rare feldspar and mica flakes are set in a cryptofelsic base with glass shard relics.	
J	G-38	PII-III	Altered rhyolitic tuff	The rock shows fragments of andesite, porphyrite, plagioclase, quartz and opaque minerals in a fine base. The base consists mainly of sericite, chlorite and quartz. Secondary minerals are calcite, sericite and chlorite.	*See microphoto.* No.11
J	G-39	PII-III	Trachyte	Altered mafic mineral phenocrysts surrounded by fine-grained aggregates of feldspar and quartz are set in a groundmass with trachytic and orthophyric fabric. The phenocrysts of mafic minerals ranging 0.1 to 0.5 mm in size are completely altered to cryptocrystalline chlorite sorrounded by carbonates. The groundmass consists of stout laths of alkali-feldspar, intergranular euhedral opaques, and intersertal glass dusts.	See microphoto. No.12
J	G-41	PII-III	Altered trachyte (mineralized)	The rock is composed almost entirely feldspar laths showing a sub-trachytic fabric with intersertal glass dusts. Quartz is impregnated as veinlets and present as clots The feldspar rims are albitized.	See microphoto. No.13
J	G-44	Basal Series	Fine grained graywacke sandstone	Angular grains of quartz, plagioclase, K-feldspar, tourmaline, mica and opaque minerals occur in a fine matrix. They measure 0.05 to 0.2 millimeters in size and average about 0.1 millimeters. Carbonate forms a part of cement.	
J	G-60	PII-III	Altered dacitic tuff	Phenocrysts or fragments and matrix are intensely carbonated. Relic feldspar is rarely observed. Cryptocrystalline quartz is present.	

Location (Area)	Sample No.	Formation	Rock Nome	Microscopic Observations	Remarks
K	C-87	PIII	Epidotized basalt	Epidotized phenocrysts and elongated plagioclase laths are set in an intergranular and subophitic groundmass consisting of plagioclase laths and intergranular chloritized mafic minerals.	
K	C-88	PIII	Meta shale (hornfels)	The minerals present are quartz, muscovite, plagioclase, chlorite, calcite and minor opaque minerals. Muscovite and chlorite are metamorphic in origin and measures usually below 0.2 millimeters in size.	
K	Y-38	PIII	Trachytic tuff breccia	Trachytic to andesitic fragments are set in a matrix consisting of broken, stippled feldspar and quartz crystals, mica flakes, and chloritic base. Mafic minerals in the volcanic fragments are intensely carbonated.	
K	Y-43	Basal Series	Quartz-carbonate rock	The rock is composed mainly of cryptocrystalline, fine-grained quartz and carbonate. Partly quartz is coarse-grained. Greenish ore minerals (malachite?) are present as veinlets.	
L	C-56	PIII	Rhyolite	Phenocrysts of quartz, sodic plagioclase, and orthoclase are set in a cryptofelsic matrix consisting of quartz, feldspar, and sericite. Plagioclase and small amounts of mafic minerals are sericitized.	
L	C-63	PII-III	Mineralized sandstone	Large quartz and carbonate grains are set in a clayey matrix consisting of fine-grained quartz, feldspar, epidote, carbonate, mica, and ore minerals.	
L	C-76	PIII	Rhyolite	Phenocrysts of dominant quartz, subordinate orthoclase, and altered mafic minerals are set in a devitrified, cryptofelsic base. Mafic minerals are carbonated.	
L	C-79	PII-III	Lithic arenite sandstone	The rock consists of angular and subangular rock fragments and contains little argillaceous materials. The rock fragments range from 0.5 to 2.0 millimeters in size and are of sericite shist, meta quartzite, orthoquartzite, chert, keratophyre, quartz porphyry and quartz monzonite porphyry. Calcite is also present and comprises a part of cement.	
L	C-83	PIII	Rhyolitic lithic tuff	Fragments of rhyolite, trachyte, and andesite and quartz and feldspar grains are in a matrix of glass dust and pumiceous materials, partly sericitized and pigmented with opaques.	
L	D-13	PIII	Altered trachytic tuff	Crystals of alkali-feldspar about 1 mm in size are set in a cryptocrystalline base of consisting of chlorite, feldspar, quartz, sericite, and carbonate. Greenish to brownish Cu-minerals are often observed.	
L	D-19	PIII	Rhyolite	Phenocrysts of quartz, plagioclase, and orthoclase are in a cryptocrystalline base of quartz, feldspar, and sericite. Small amounts of mafic minerals are completely altered to calcite, sericite, and chlorite. Ti-minerals are occasionally present.	See microphoto. No.14
L	Y-26	PIII	Rhyolitic tuff breccia	Broken crystals of quartz, orthoclase, and sodic plagioclase, rhyolitic to andesitic fragments, and euhedral opaque mineral grains are set in a stippled, cryptofelsic base.	

Location (Area)	Sample No.	Formation	Rock Name	Microscopic Observations	Remarks
L	Y-34	PIII	Volcanic feldspathic graywacke	The rock is composed of an unsorted aggregate of angular to subrounded grains of quartz and feldspar in a matrix containing microcrystalline chlorite, calcite, sericite, and quartz. Grains also include fragments of andesite and rhyolite. Feldspar is sericitized.	
L	Y-36	PIII	Dolomitic limestone	Carbonate grains are commonly equigranular. Occasionally coarse-grained crystals are alternated with fine-grained ones. Small amounts of quartz are present.	
M	C-33	PIII	Andesite with disseminated greenish Cu-mineral	Abundant tabular crystals of plagioclase of 0.5 to 1 mm in length and less abundant altered mafic minerals occur as phenocrysts in an altered cryptocrystalline groundmass. Plagioclase phenocrysts are probably labradorite. Mafic minerals are altered to colourless amphibole, chlorite, epidote, and opaques; there is also radiating epidote. Opaques are relatively abundant.	
M	C-34	PIII	Altered andesite	Phenocrysts of mafic minerals are in a trachytic, pilotaxitic groundmass of feldspar microlite, a little chloritized mafics, and glass dusts. The mafic phenocrysts are altered to chlorite rimmed by opaques.	
M	C-35	PIII	Lithic and feldspathic arenite	The rock is well-sorted arenite and contains subrounded and rounded rock fragments, plagioclase, opaque minerals and quartz. The rock fragments are mainly of andesite, shist and shale.	
M	C-39	PIII	Dolerite	Idiomorphic plagioclase laths about 1 mm long and subidiomorphic mafic minerals show a subophitic fabric. Mafic minerals are completely altered to uralite, chlorite, opaques, and Ti-minerals. Plagioclase appears to be andesine to oligoclase.	See microphoto. No.15
M	C-41	PIII	Andesite	Large phenocrysts more than 1 mm in size, completely altered to cryptocrystalline chlorite aggregates, are set in an intergranular, intersertal, and subophitic groundmass consisting of laths of plagioclase, altered mafic minerals, opaques, and glass. Radiating epidote and quartz aggregates and graphic intergrowth of epidote-qurtz are present. Plagioclase is partly sericitized.	See microphoto. No.16
M	C-43	PIII	Altered andesite	The rock consists of tabular plagioclase laths of 0.2 to 1 mm long and intergranular mafic minerals about 0.5 mm in size, showing a subophitic fabric. Mafic minerals are completely altered to chlorite and plagioclase is partly sericitized. Opaque minerals and Ti-minerals are present in considerable amounts.	
M	C-45	PIII	Rhyolitic crystal tuff	Broken crystals of quartz and feldspar and fragments of andesite are set in a sericitized, carbonated cryptofelsic base with partly preserved glass shard relics. Carbonated pseudomorphs might have been altered from mafic minerals.	
M	C-50	PIII	Rhyolitic crystal tuff	Large corroded grains of quartz more than 1 mm in size and orthoclase crystals are set in a carbonated matrix consisting of quartz and feldspar with glass shard relics.	

Location (Area)	Sample No.	Formation	Rock Name	Microscopic Observations	Remarks
M	Y-17	PIII	Altered trachyte	Opecitized and carbonated phenocrysts of mafic minerals and small amounts of feldspar phenocrysts are in a trachytic groundmass of feldspar laths with small quantities of euhedral opaques and carbonate grains.	

Table I-2-2 Microscopic Observation of Polished Sections

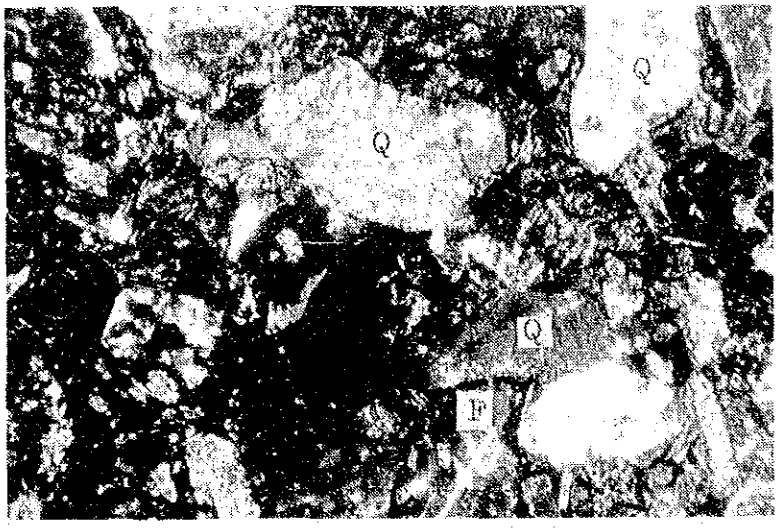
Location (Area)	Sample No.	Formation	Rock Name	Microscopic Observations	Remark
H	E-137	Basal Series	Dolomite	Sulfide minerals are chalcocite and covelline. Chalcocite is the most abundant and is disseminated in the specimen. Covelline replaces chalcocite.	
H	F-105	PIII	Rhyolite	The most abundant sulfide mineral is chalcocite. Covelline is a secondary mineral and replaces chalcocite. Afew minute grains of pyrite are observed within chalcocite crystals.	
J	E-34	PII-III	Rhyolite	Chalcocite is sparsely disseminated in the rock. It fills interstices of silicate minerals and measures 0.1 to 0.5 millimeters in size. Bornite is rarely observed in cores of chalcocite crystals. Covelline replaces chalcocite.	
J	E-106	PII-III	Rhyolite and rhyolitic tuff	No sulfide minerals can be observed. A small amount of rutile is disseminated in the specimen.	
L	C-74	PIII	Sandstone	Sulfide minerals are rare and only sparse minute grains of bornite are formed. Chalcocite replaces bornite as a secondary mineral.	
L	D-12	PIII	Rhyolite	Opaque minerals are extremely rare. Only rutile is sparsely disseminated.	
M	C-44	PIII	Andesite	The observable ore minerals are hematite and ilmenite. Hematite usually is intergrwon with hematite and might be, probably, a alteration product of magnetite. Ilmenite is partly replaced by sphene.	

Table I-3 Microphotographs

Thin Sections

Photo No.	Sample No.	Rock name	Location (Area)
1.	B-16	Volcanic feldspathic sandstone	H
2.	E-22	Andesite	H
3.	E-127	Rhyolitic tuff	H
4.	F-150	Altered dolerite	H
5.	G-49	Graywacke sandstone	H
6.	C-14	Quartzite	I
7.	D-20	Porphyry	I
8.	E-6	Volcanic sandstone	I
9.	F-33	Rhyolitic vitric tuff	I
10.	E-29	Altered rhyolitic tuff	J
11.	G-38	Altered rhyolitic tuff	J
12.	G-39	Trachyte	J
13.	G-41	Altered trachyte (mineralized)	J
14.	D-19	Rhyolite	L
15.	C-39	Dolerite	M
16.	C-41	Andesite	M

1.



Sample No. B-16
Volcanic feldspathic sandstone
Location : H area
Q : Quartz
F : Feldspar

Crossed nicols
1 mm

2.

Sample No. E-22
Andesite
Location : H area
Pl : Plagioclase
Q : Quartz

Crossed nicols
1 mm

3.

Sample No. E-127

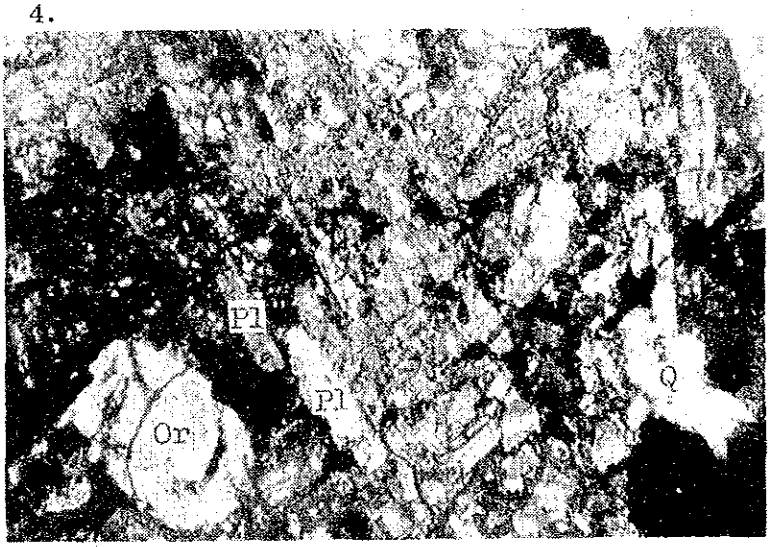
Rhyolitic tuff

Location : H area

Q : Quartz

Crossed nicols
1 mm

4.



Sample No. F-150

Altered dolerite

Location : H area

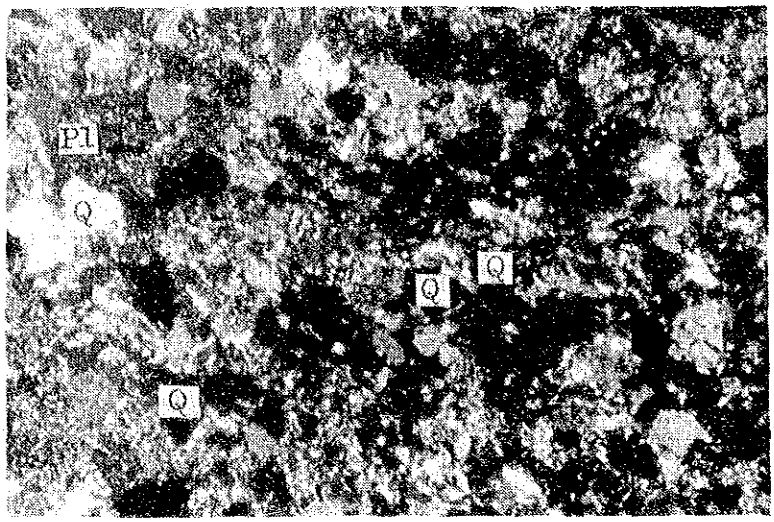
Pl : Plagioclase

Q : Quartz

Or : Orthoclase

Crossed nicols
1 mm

5.



Sample No. G-49

Graywacke sandstone

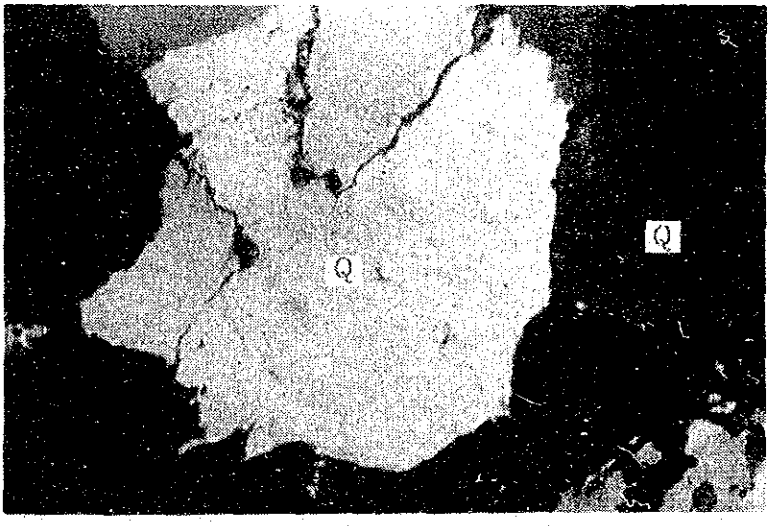
Location : H area

Pl : Plagioclase

Q : Quartz

Crossed nicols
1 mm

6.



Sample No. C-14

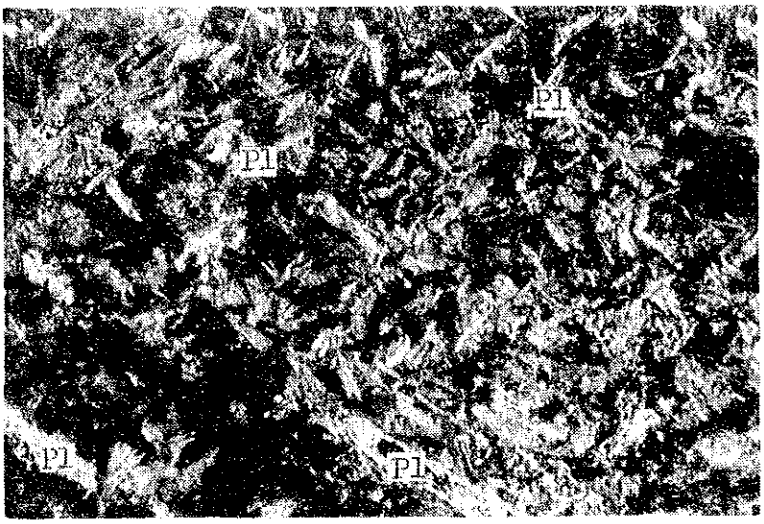
Quartzite

Location : I area

Q : Quartz

Crossed nicols
1 mm

7.



Sample No. D-20

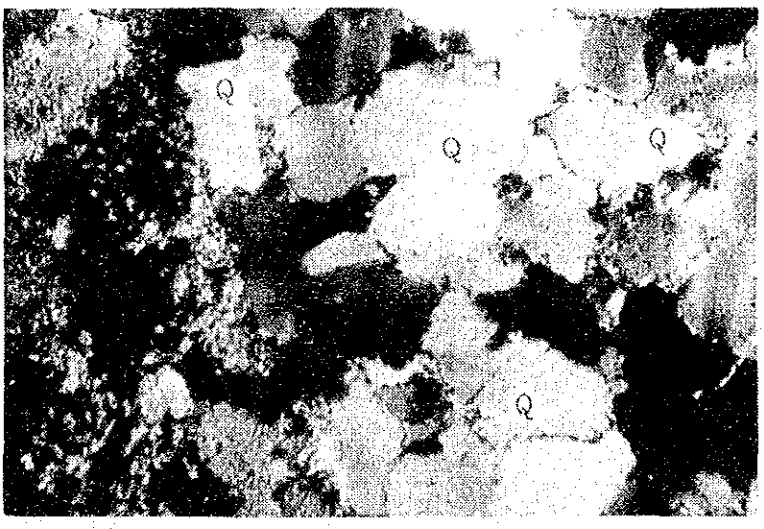
Porphyry

Location : I area

Pl : Plagioclase

Crossed nicols
1 mm

8.



Sample No. E-6

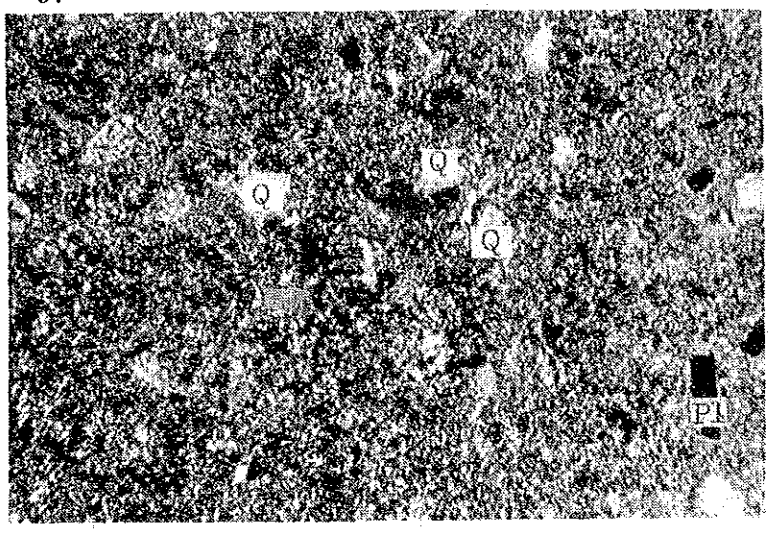
Volcanic sandstone

Location : I area

Q : Quartz

Crossed nicols
1 mm

9.



Sample No. F-33

Rhyolitic vitric tuff

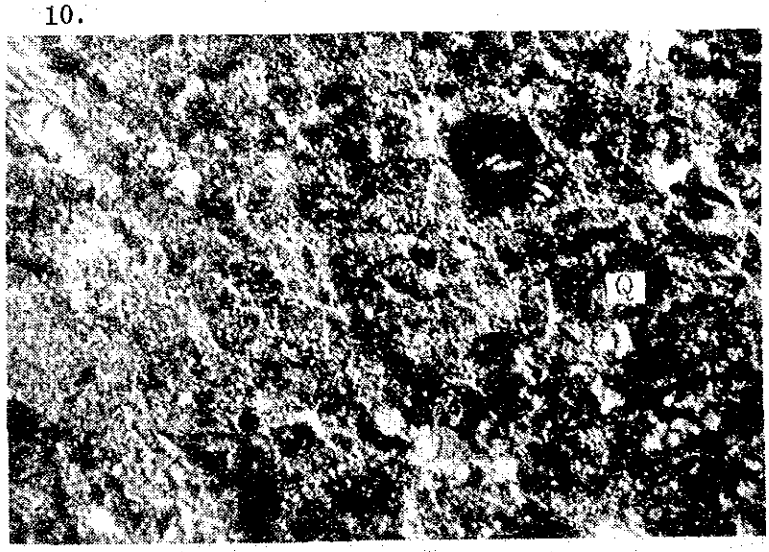
Location : I area

Q : Quartz

Pl : Plagioclase

Crossed nicols
1 mm

10.



Sample No. E-29

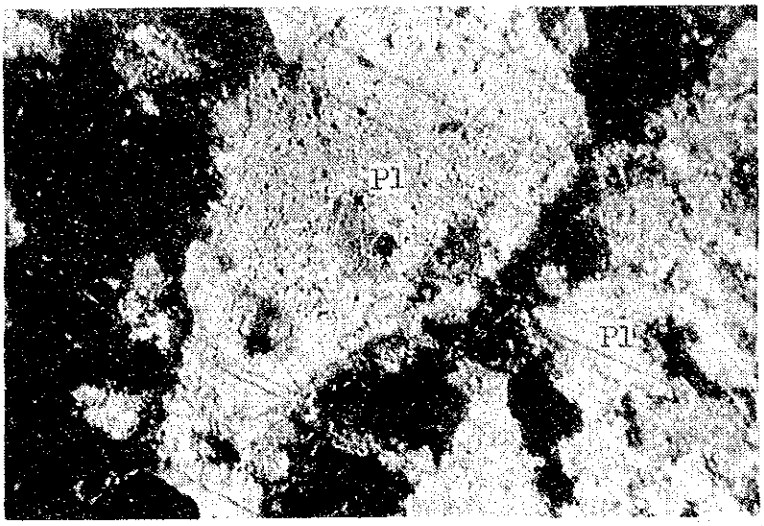
Altered rhyolitic tuff

Location : J area

Q : Quartz

Crossed nicols
1 mm

11.



Sample No. G-38

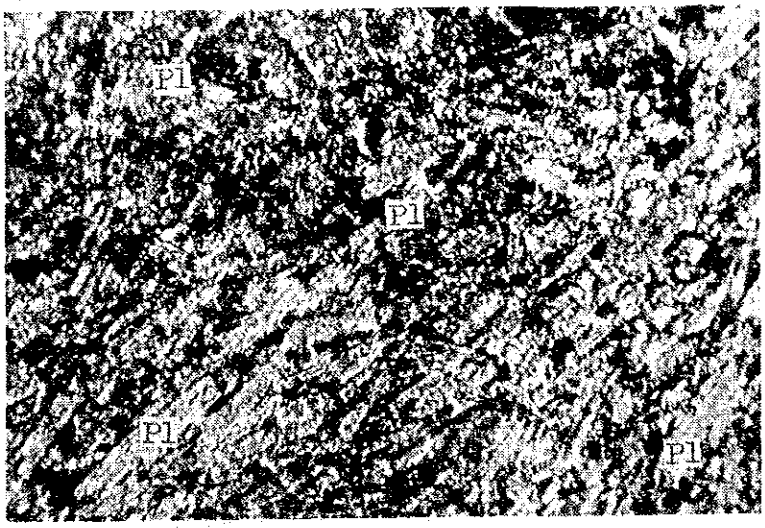
Altered rhyolitic tuff

Location : J area

Pl : Plagioclase

Crossed nicols
1 mm

12.



Sample No. G-39

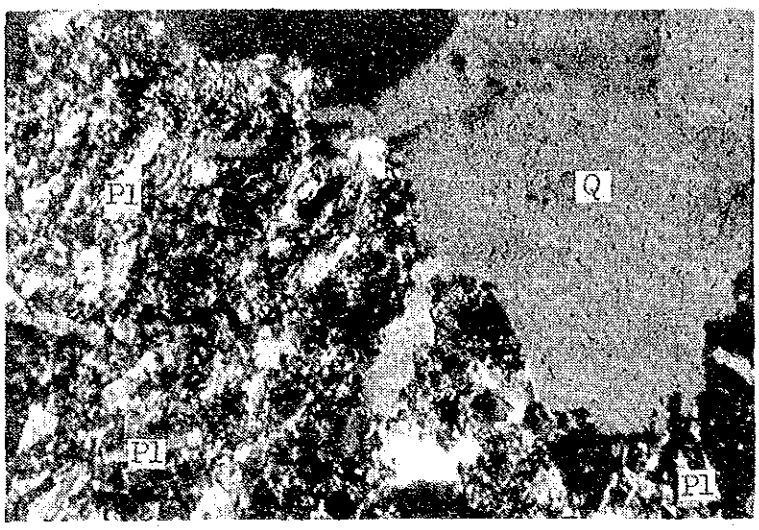
Trachyte

Location : J area

Pl : Plagioclase

Crossed nicols
1 mm

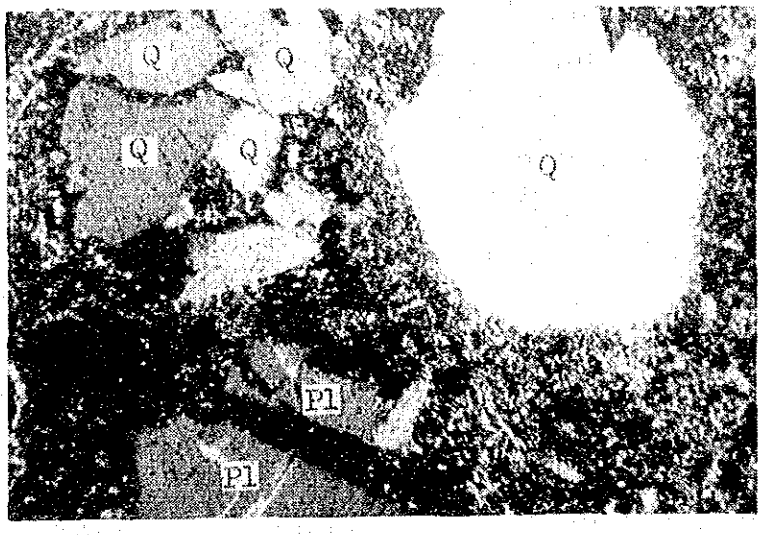
13.



Sample No. G-41
Altered trachyte
(mineralized)
Location : J area
Pl : Plagioclase
Q : Quartz

Crossed nicols
1 mm

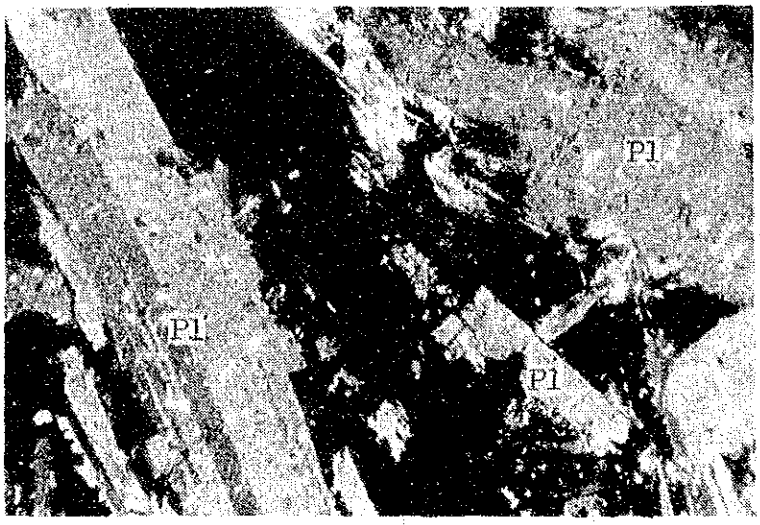
14.



Sample No. D-19
Rhyolite
Location : L area
Q : Quartz
Pl : Plagioclase

Crossed nicols
1 mm

15.



Sample No. C-39

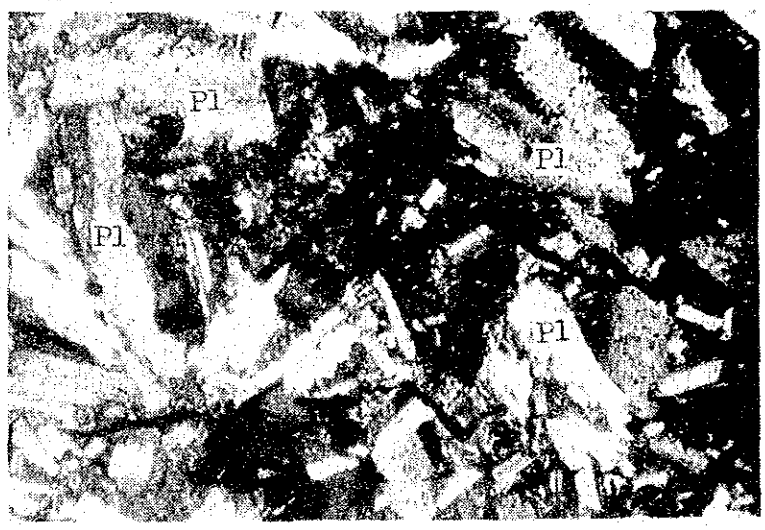
Dolerite

Location : M area

Pl : Plagioclase

Crossed nicols
1 mm

16.



Sample No. C-41

Andesite

Location : M area

Pl : Plagioclase

Crossed nicols
1 mm

Table 1-4 K-Ar Ages on the Rhyolitic Rocks

Sample No.	Analytical Minerals	Sample wt.(g)	K %	$^{40}Ar^{R}/^{40}K$	Air contamination %	Age m.y.
G - 60	whole	1.0058	7.16	0.022032	1.91	344
D - 20	whole	1.0096	3.60	0.020684	2.74	325
E - 129	whole	1.0033	4.46	0.021147	2.07	331
D - 19	whole	0.9656	3.02	0.018193	5.01	288
G - 37	whole	0.9658	3.74	0.024514	3.74	379

$\lambda_e = 0.585 \times 10^{-10} yr^{-1}$

$\lambda_\beta = 4.72 \times 10^{-10} yr^{-1}$

$^{40}K/K = 1.19 \times 10^{-2}$ atom. %

$^{40}Ar^{R}$ = radiogenic argon 40

Table 1-5 Chemical Analysis on Rock Samples

(1)

Chemical composition \ Sample No.	C - 43 WT.(%)	D - 19 WT.(%)	D - 20 WT.(%)	E - 22 WT.(%)	E - 23 WT.(%)	E - 129 WT.(%)	F - 119 WT.(%)	F - 123 WT.(%)
SiO_2	47.15	73.60	73.04	47.80	55.60	66.83	56.65	73.74
TiO_2	1.66	0.24	0.29	1.61	1.05	0.54	1.22	0.21
Al_2O_3	16.94	14.59	13.78	17.10	18.56	15.26	17.58	12.00
Fe_2O_3	6.97	2.00	2.28	8.53	7.41	2.87	9.47	1.18
FeO	1.79	0.52	0.26	1.46	0.42	0.55	0.50	0.33
MnO	0.20	0.01	0.02	0.14	0.09	0.06	0.08	0.02
MgO	9.20	0.37	0.74	9.22	1.28	2.55	2.15	0.69
CaO	3.78	0.54	0.92	2.48	3.39	0.95	1.09	3.16
Na_2O	4.24	4.36	3.47	5.82	5.05	3.71	0.45	1.31
K_2O	1.94	3.51	4.23	0.76	4.45	4.83	7.63	4.93
P_2O_5	0.37	0.07	0.07	0.47	0.24	0.14	0.54	0.06
H_2O+	4.92	0.68	0.85	3.32	1.18	1.26	1.65	0.96
H_2O-	0.33	0.48	0.29	0.38	0.39	0.28	0.38	0.47
Total	99.49	100.98	100.34	99.09	99.11	99.83	99.39	99.06

C. I. P. W. Norm Calculation

Normative minerals \ Sample No.	C - 43		D - 19		D - 20		E - 22		E - 23		E - 129		F - 119		F - 123	
	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)
Q	-	-	33.36	76.71	34.10	76.59	-	-	0.82	4.59	21.70	59.80	21.38	53.26	41.25	81.12
C	1.99	3.99	2.81	3.81	2.01	2.66	3.48	6.88	-	-	2.58	4.19	8.11	11.90	-	-
Or	12.16	4.46	20.78	5.16	25.22	6.11	4.71	1.70	26.96	16.39	29.04	8.64	46.31	12.45	29.84	6.33
Ab	38.07	14.83	36.96	9.74	29.63	7.62	51.62	19.84	43.81	28.26	31.94	10.06	3.91	1.12	11.35	2.56
An	17.33	12.73	2.23	1.11	4.14	2.01	9.68	7.01	15.21	18.49	3.86	2.30	1.93	1.04	12.60	5.35
Ne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salic Total	69.56	36.01	96.14	96.51	95.10	94.99	69.49	35.43	86.79	67.74	89.12	85.01	81.64	79.76	95.04	95.37
Di Wo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.28	1.30
Di En	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.10	1.30
Di Fs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hy En	4.09	8.33	0.92	1.27	1.86	2.50	0.64	1.29	3.27	11.02	6.46	10.66	5.50	8.20	0.66	0.77
Hy Fs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ol Fo	14.17	41.13	-	-	-	-	16.42	47.03	-	-	-	-	-	-	-	-
Ol Fa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mt	1.71	1.51	1.01	0.61	0.06	0.04	0.52	0.45	-	-	0.41	0.29	-	-	0.53	0.27
Hm	6.22	7.95	1.30	1.13	2.26	1.91	8.58	10.83	7.60	16.10	2.64	2.73	9.73	9.11	0.84	0.62
Il	3.35	4.50	0.46	0.42	0.56	0.49	3.21	4.26	1.11	2.47	1.04	1.14	1.26	1.24	0.41	0.32
Tn	-	-	-	-	-	-	-	-	0.30	0.52	-	-	-	-	-	-
Pf	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ru	-	-	-	-	-	-	-	-	0.37	1.57	-	-	0.59	1.10	-	-
Ap	0.91	0.56	0.16	0.07	0.16	0.07	1.14	0.70	0.57	0.59	0.33	0.17	1.29	0.58	0.14	0.05
Cc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Femic Total	30.44	63.99	3.86	3.49	4.90	5.01	30.51	64.57	13.21	32.26	10.88	14.99	18.36	20.24	4.96	4.63

(2)

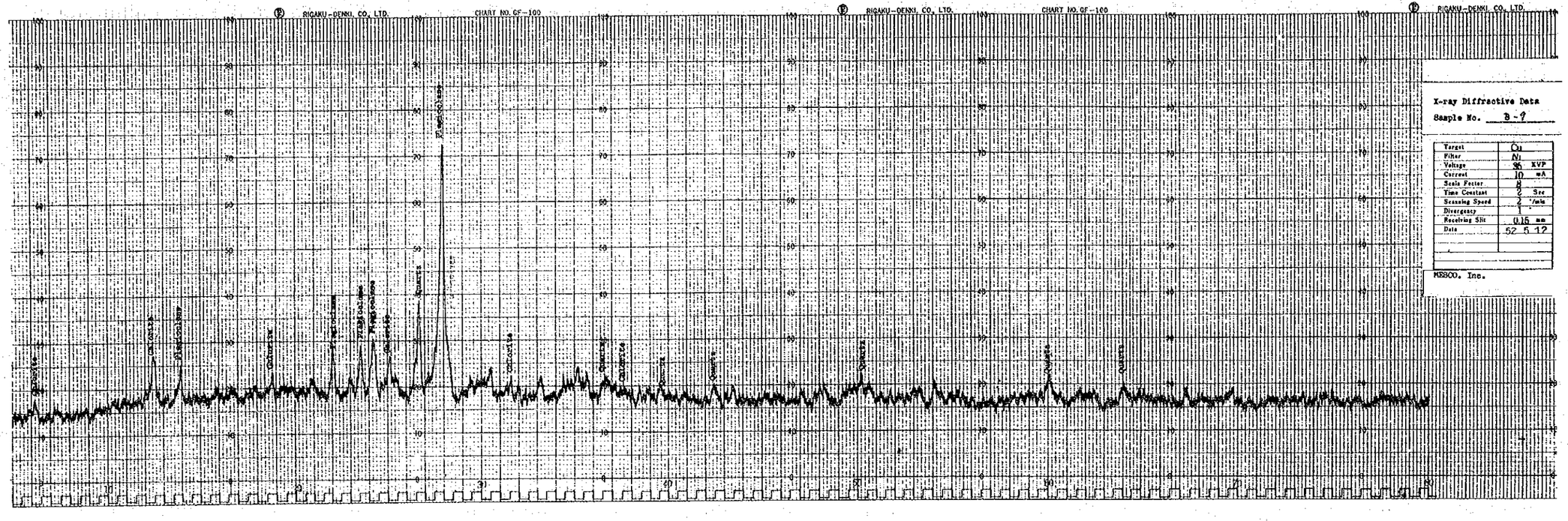
Chemical composition \ Sample No.	G - 32 WT.(%)	G - 37 WT.(%)	G - 60 WT.(%)	Y - 38 WT.(%)	DH No.1 (191.80 m) WT.(%)	DH No.1 (80.00 m) WT.(%)	C - 33 WT.(%)
SiO_2	41.75	72.41	69.47	54.48	44.72	67.44	48.70
TiO_2	1.74	0.23	0.45	1.19	1.69	0.24	2.68
Al_2O_3	15.62	13.22	15.22	13.41	15.01	9.96	15.72
Fe_2O_3	12.83	1.40	1.97	4.34	9.68	0.40	10.17
FeO	1.23	0.31	0.34	3.68	2.51	1.83	2.55
MnO	0.16	0.03	0.01	0.08	0.18	0.09	0.27
MgO	5.87	0.71	1.32	11.31	9.19	3.16	5.75
CaO	7.81	3.14	1.25	3.20	5.91	6.06	4.28
Na_2O	2.84	2.45	0.82	0.51	3.53	0.38	4.56
K_2O	3.84	4.25	8.48	2.79	1.29	4.21	0.98
P_2O_5	0.39	0.07	0.09	0.27	0.37	0.08	0.45
H_2O+	6.53	0.77	1.24	4.78	6.19	6.23	3.30
H_2O-	0.37	0.13	0.26	0.47	0.21	0.22	0.66
Total	100.98	99.12	100.92	100.51	100.58	100.30	100.07

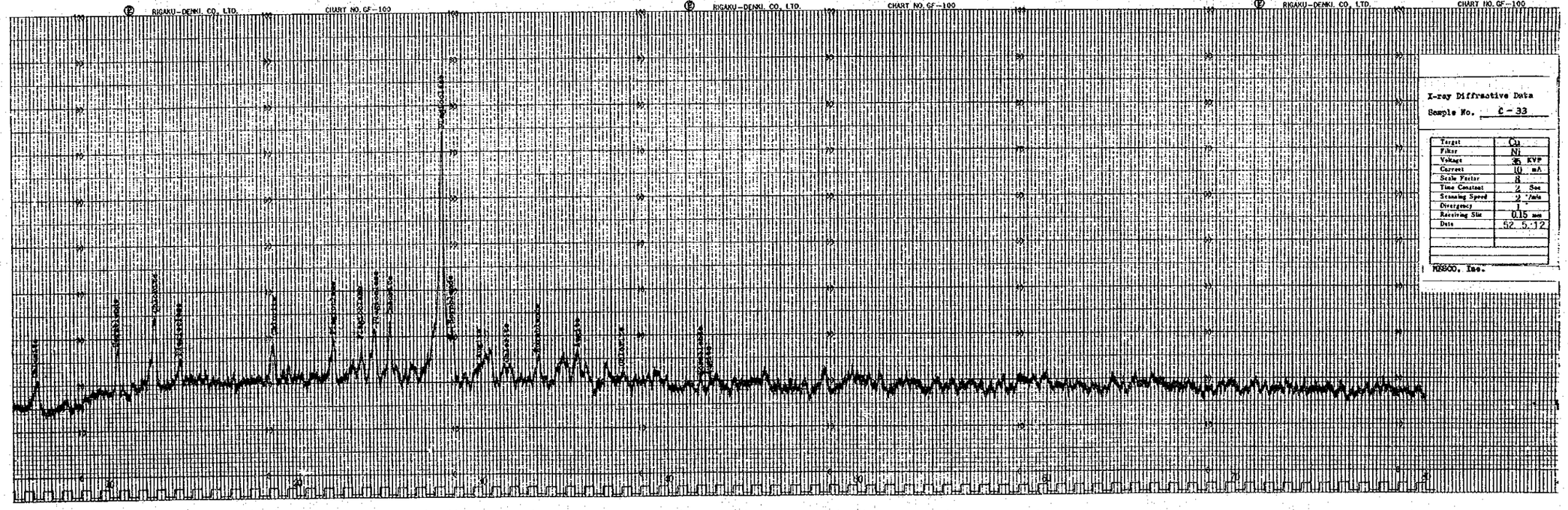
C. I. P. W. Norm Calculation

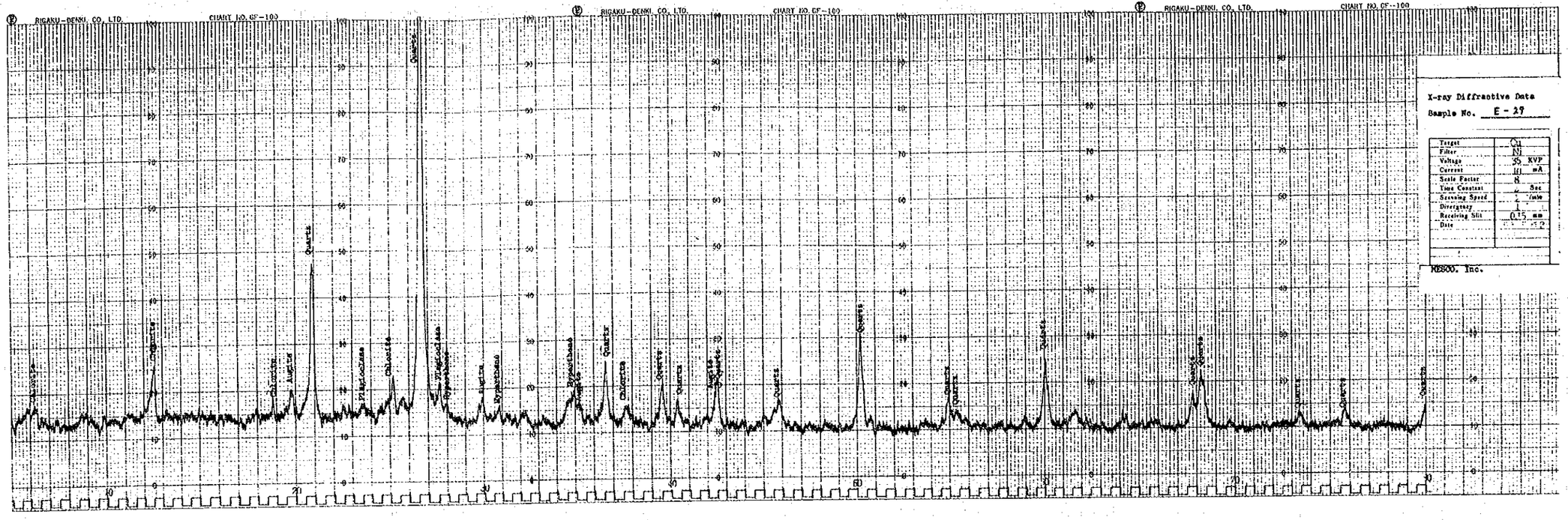
Normative minerals \ Sample No.	G - 32		G - 37		G - 60		Y - 38		DH No.1 (191.80 m)		DH No.1 (80.00 m)		C - 33	
	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)	WT.(%)	MOL.(%)
Q	-	-	35.50	77.47	28.02	69.80	18.13	38.13	-	-	36.16	68.26	2.07	7.58
C	-	-	-	-	2.65	3.89	4.60	5.70	-	-	-	-	0.47	1.04
Or	24.12	8.77	25.57	6.02	50.40	13.55	17.31	3.93	8.72	3.07	26.51	5.40	6.03	2.42
Ab	8.50	3.28	21.11	5.28	6.98	1.99	4.53	1.09	31.71	11.85	3.43	0.74	40.14	17.12
An	19.70	14.33	12.75	6.01	5.65	3.04	14.81	6.73	22.30	15.71	13.89	5.66	19.03	15.30
Ne	9.23	6.58	-	-	-	-	-	-	-	-	-	-	-	-
Salic Total	61.55	32.96	94.92	94.78	93.70	92.27	59.37	55.58	62.74	30.62	79.99	80.06	67.71	43.45
Di Wo	7.54	13.14	1.10	1.25	-	-	-	-	2.61	4.41	7.34	7.17	-	-
Di En	6.52	13.14	0.95	1.25	-	-	-	-	2.26	4.41	4.99	5.64	-	-
Di Fs	-	-	-	-	-	-	-	-	-	-	1.78	1.53	-	-
Hy En	-	-	0.85	1.11	3.31	4.93	29.57	37.22	3.69	7.19	3.39	3.83	14.90	33.19
Hy Fs	-	-	-	-	-	-	1.42	1.36	-	-	1.21	1.04	-	-
Ol Fo	6.32	18.19	-	-	-	-	-	-	12.86	35.82	-	-	-	-
Ol Fa	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mt	-	-	0.44	0.25	-	-	6.61	3.61	4.01	3.39	0.62	0.30	1.39	1.34
Hm	13.64	17.29	1.12	0.92	1.98	1.86	-	-	7.51	9.21	-	-	9.63	13.48
Il	3.13	4.17	0.44	0.38	0.74	0.73	2.37	1.98	3.41	4.40	0.49	0.36	5.30	7.80
Tn	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pf	0.35	0.52	-	-	-	-	-	-	-	-	-	-	-	-
Ru	-	-	-	-	0.06	0.11	-	-	-	-	-	-	-	-
Ap	0.96	0.59	0.17	0.07	0.21	0.10	0.66	0.25	0.91	0.54	0.20	0.07	1.08	0.74
Cc	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Femic Total	38.45	67.04	5.08	5.22	6.30	7.73	40.63	44.42	37.26	69.38	20.01	19.94	32.29	56.55

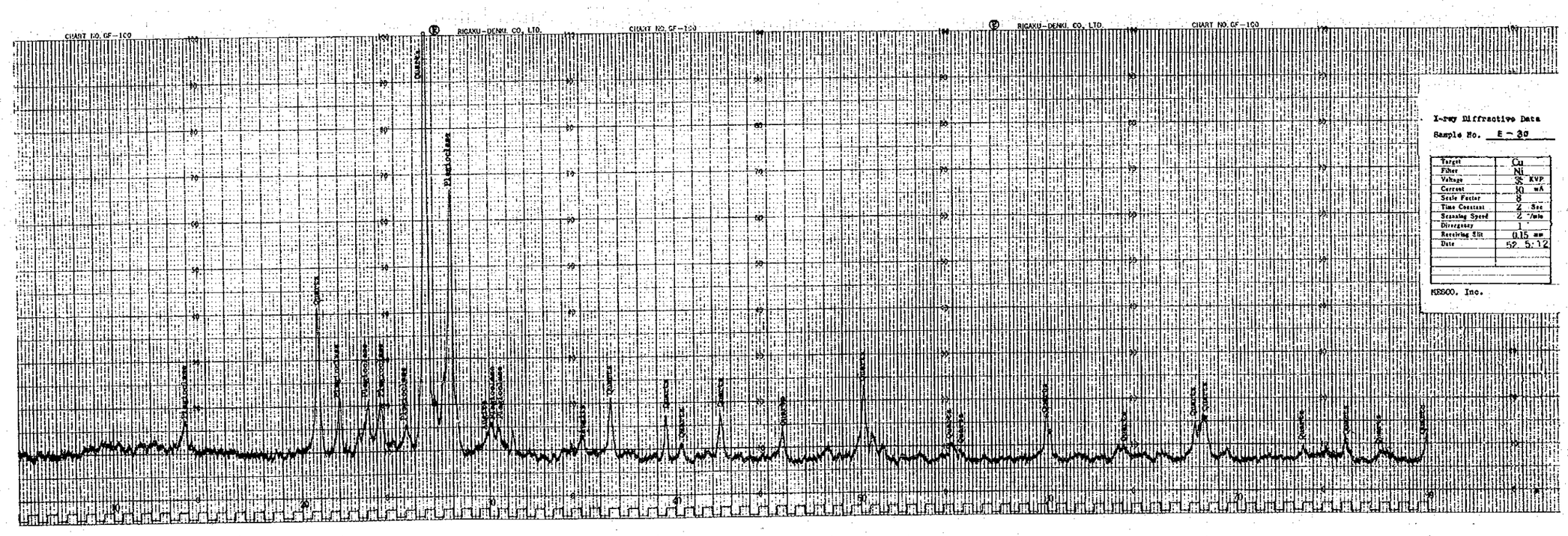
Table I-6 Results and Charts of X-ray Diffractive Analysis

Sample No.	Minerals
B-9	Plagioclase > Quartz > Chlorite
C-33	Plagioclase > Chlorite > Hypersthene ≫ Augite
E-29	Quartz ≫ Chlorite > Plagioclase > Hypersthene > Augite
E-30	Quartz > Plagioclase ≫ Augite
E-51	Quartz > Plagioclase > Sericite
E-60	Quartz ≫ Plagioclase > Sericite
E-62	Quartz ≫ Dolomite > Sericite > Calcite > Plagioclase
E-74	Quartz ≫ Plagioclase > Sericite > Augite
E-76	Quartz ≫ Sericite > Plagioclase
E-78	Quartz > Chlorite > Sericite
E-99	Quartz > Plagioclase > Hypersthene
E-122	Quartz ≫ Sericite > Plagioclase
F-108	Quartz > Plagioclase > Chlorite
F-146	Quartz ≫ Plagioclase > Chlorite > Sericite
G-35	Dolomite > Quartz > Calcite > Chlorite
G-43	Quartz > Sericite > Plagioclase ≫ Calcite
G-51	Quartz ≫ Plagioclase > Chlorite > Sericite
G-52	Quartz ≫ Sericite > Plagioclase > Chlorite
Y-38	Quartz ≫ Chlorite > Sericite > Plagioclase ≫ Augite
Y-43	Calcite > Quartz
Y-45	Plagioclase > Chlorite > Quartz

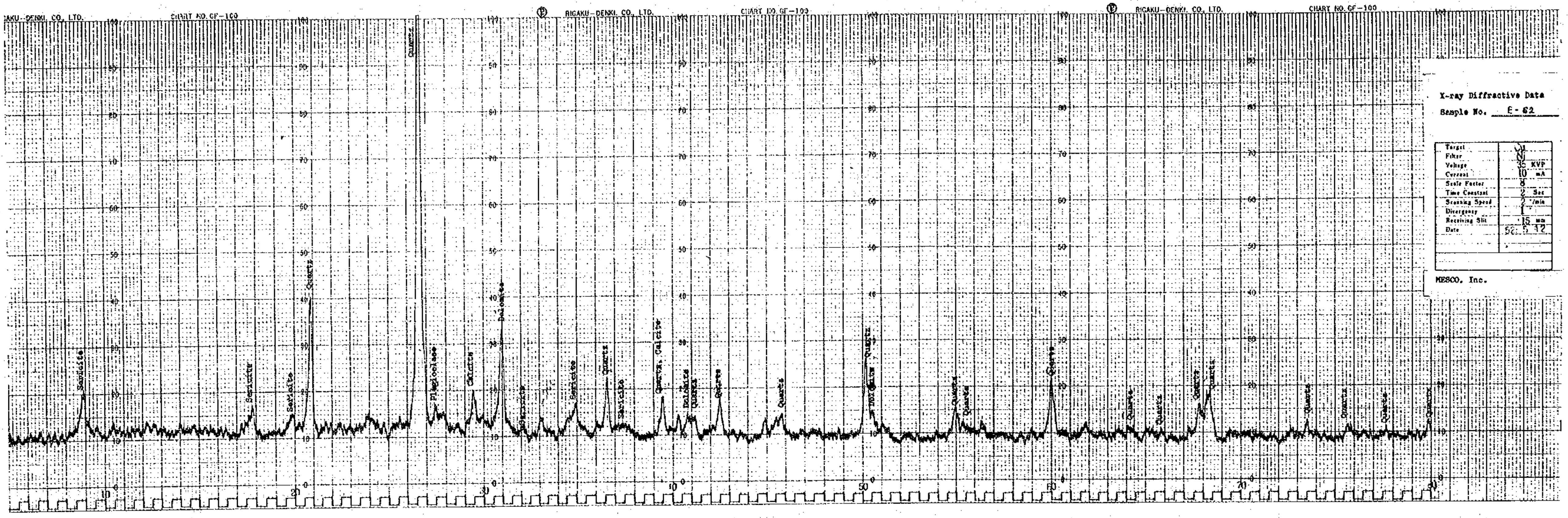

RIGAKU-DENKI CO. LTD.
CHART NO. GF-100
X-ray Diffractive Data
Sample No. B-7
Target Cu
Filter Ni
Voltage 35 KVP
Current 10 mA
Scale Factor 8
Time Constant 2 Sec
Scanning Speed 2 °/min
Divergency 1 °
Receiving Slit 0.15 mm
Date 52.5.12
RIGAKU Inc.

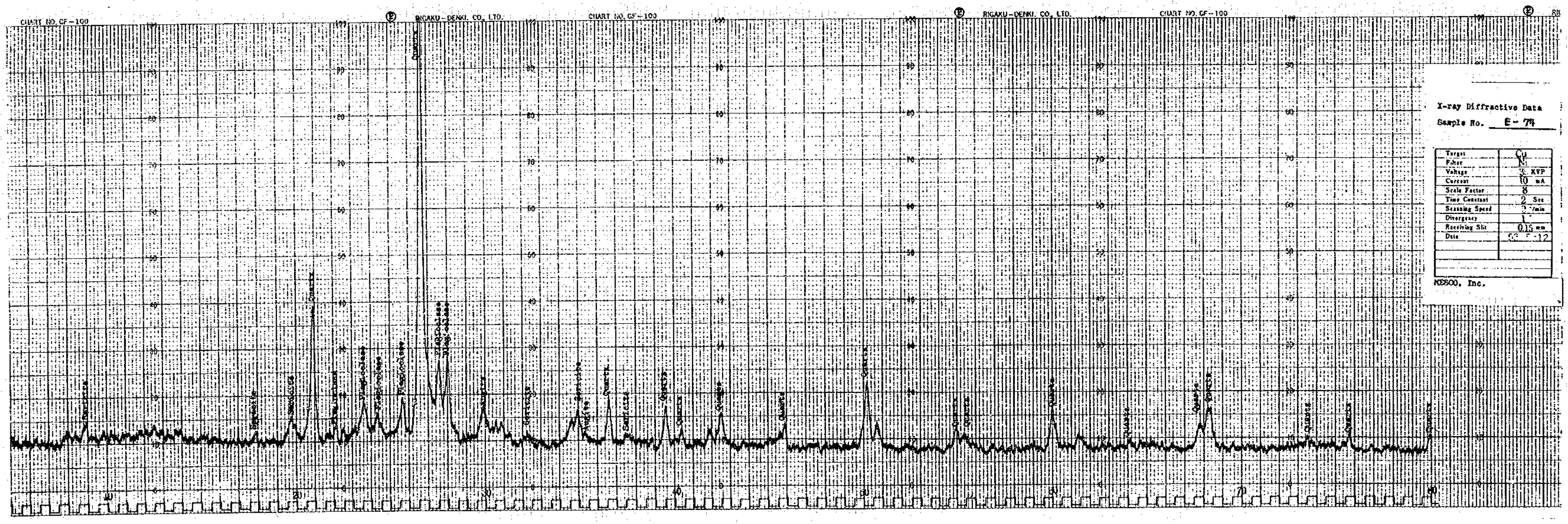

RIGAKU-DENKI CO. LTD.
CHART NO. GF-100
X-ray Diffractive Data
Sample No. C-33
Target Cu
Filter Ni
Voltage 35 KVP
Current 10 mA
Scale Factor 8
Time Constant 2 Sec
Scanning Speed 2 °/min
Divergency 1 °
Receiving Slit 0.15 mm
Date 52.5.12
RIGAKU Inc.

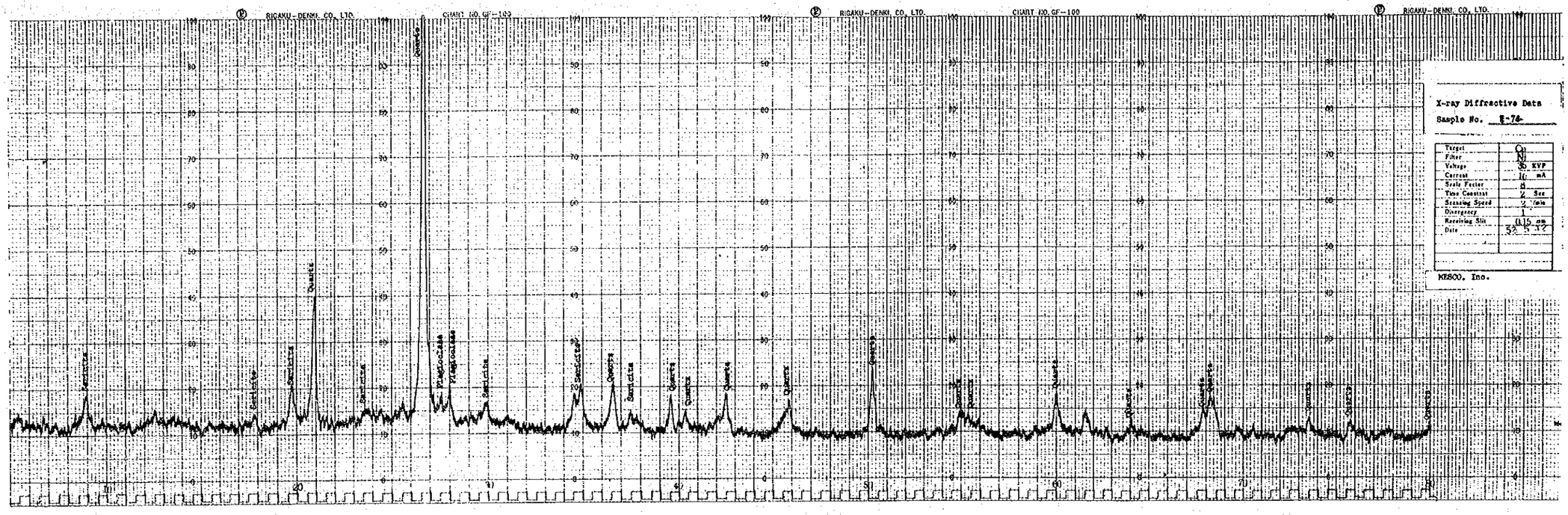

RIGAKU-DENKI CO. LTD.
CHART NO. GF-100
Quartz
Chlorite
Augite
Plagioclase
Hypersthene
X-ray Diffractive Data
Sample No. E - 29
Target Cu
Filter Ni
Voltage 35 KVP
Current 10 mA
Scale Factor 8
Time Constant 2 Sec
Scanning Speed 2 °/min
Divergency 1°
Receiving Slit 0.15 mm
Date 52. 5.12
MESCO. Inc.

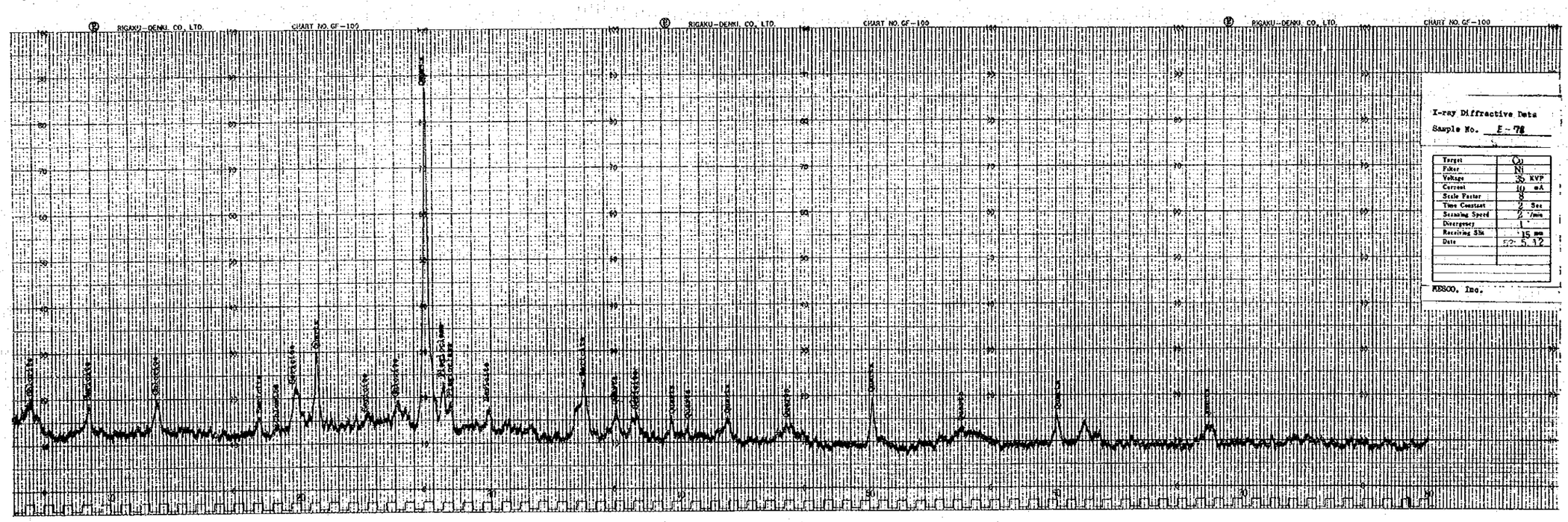

RIGAKU-DENKI CO. LTD.
CHART NO. GF-100
Quartz
Plagioclase
Augite
X-ray Diffractive Data
Sample No. E - 30
Target Cu
Filter Ni
Voltage 35 KVP
Current 10 mA
Scale Factor 8
Time Constant 2 Sec
Scanning Speed 2 °/min
Divergency 1°
Receiving Slit 0.15 mm
Date 52. 5.12
MESCO. Inc.


RIGAKU-DENKI, CO, LTD.
CHART NO. GF-100
X-ray Diffractive Data
Sample No. E-51
Target Cu
Filter Ni
Voltage 35 KVP
Current 10 mA
Scale Factor 8
Time Constant 2 Sec
Scanning Speed 2 °/min
Divergency 1°
Receiving Slit 0.15 mm
Date 52. 5.12
RIGAKU-DENKI, CO, LTD.
CHART NO. GF-100
X-ray Diffractive Data
Sample No. E-60
Target Cu
Filter Ni
Voltage 35 KVP
Current 10 mA
Scale Factor 8
Time Constant 2 Sec
Scanning Speed 2 °/min
Divergency 1°
Receiving Slit 0.15 mm
Date 52. 5.12
RIGAKU-DENKI, CO, LTD.
CHART NO. GF-100


RIGAKU-DENKI. CO. LTD.
CHART NO. GF-100
X-ray Diffractive Data
Sample No. E-62
Target Cu
Filter Ni
Voltage 35 KVP
Current 10 mA
Scale Factor 8
Time Constant 2 Sec
Scanning Speed 2 °/min
Divergency 1°
Receiving Slit 15 mm
Date 52. 5. 12
MESCO. Inc.
Sericite
Quartz
Plagioclase
Calcite
Dolomite
Quartz, Calcite


RIGAKU-DENKI. CO. LTD.
CHART NO. GF-100
X-ray Diffractive Data
Sample No. E-74
Target Cu
Filter Ni
Voltage KVP
Current 10 mA
Scale Factor 8
Time Constant 2 Sec
Scanning Speed °/min
Divergency 1°
Receiving Slit 0.15 mm
Date 12
MESCO. Inc.
Quartz
Plagioclase
Sericite


RIGAKU-DENKI CO. LTD.
CHART NO. GF-100
Quartz
Plagioclase
X-ray Diffractive Data
Sample No. E-76
Target Cu
Filter Ni
Voltage 35 KVP
Current 10 mA
Scale Factor 8
Time Constant 2 Sec
Scanning Speed 2 °/min
Divergency 1°
Receiving Slit 0.15 mm
Date 82. 5. 12
MESCO. Inc.


RIGAKU-DENKI CO. LTD.
CHART NO. GF-100
Quartz
Plagioclase
X-ray Diffractive Data
Sample No. E-78
Target Cu
Filter Ni
Voltage 35 KVP
Current 10 mA
Scale Factor 8
Time Constant 2 Sec
Scanning Speed 2 °/min
Divergency 1°
Receiving Slit 0.15 mm
Date 82. 5. 12
MESCO. Inc.