REPUBLIC OF THE PHILIPPINES

DEPARTMENT OF NATURAL RESOURCES

BUREAU OF MINES

REPORT ON GEOLOGICAL SURVEY OF NORTHEASTERN LUZON

PHASE II

GEOLOGICAL AND GEOCHEMICAL SURVEYS

DEC. 1976

METAL MINING AGENCY
JAPAN INTERNATIONAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

REPUBLIC OF THE PHILIPPINES

DEPARTMENT OF NATURAL RESOURCES

BUREAU OF MINES

REPORT ON GEOLOGICAL SURVEY OF NORTHEASTERN LUZON

PHASE II

GEOLOGICAL AND GEOCHEMICAL SURVEYS

DEC. 1976

METAL MINING AGENCY

JAPAN INTERNATIONAL COOPERATION AGENCY

GOVERNMENT OF JAPAN

PREFACE

The Government of Japan, in response to the request of the Government of the Republic of the Philippines, decided to conduct a geological survey for mineral exprolation in Northeastern Luzon of the Philippines, and commissioned its implementation to the Japan International Cooperation Agency.

The Agency, taking into consideration of the importance of technical nature of the survey work, in turn sought the Metal Mining Agency of Japan for its cooperation to accomplish the task within a period of three years.

This year was for the second phase survey, and as for this current year, a survey team was formed consisting of seventeen (17) members headed by Mr. Hiroshi Fuchimoto, Staff of the Metal Mining Agency of Japan, and sent to the Philippines on January 8, 1976. The team stayed there for one hundred eighteen (189) days from January 8, 1976 to July 14, 1976. During the period of its stay, the team, in close collaboration with the Government of the Republic of the Philippines and its various authorities, was able to complete survey works on schedule.

This report submitted hereby summarizes the results of the survey performed for the second-phase survey, and it will be also formed a portion of the final report that will be prepared with regard to the results obtained in the first and the third phases.

I wish to take this opportunity to express my heartfelt gratitude to the Government of the Republic of the Philippines and the other authorities concerned for their kind cooperation and support extended to the Japanese survey team.

December 1976

Shinsaku Hogen
President
Japan International Cooperation Agency

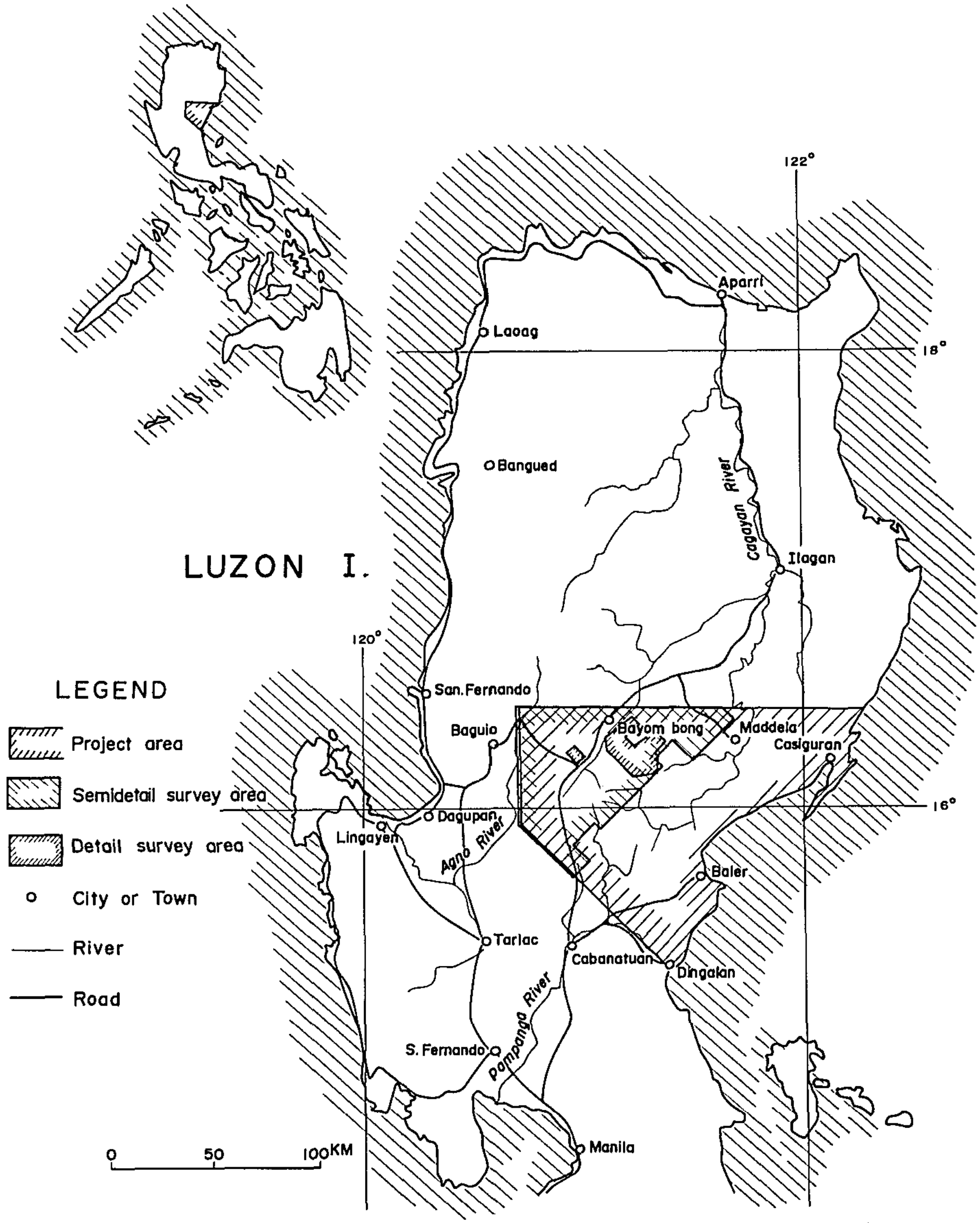


Fig. 1 Location map of the Survey area

CONTENTS

Page

PART III REANALYSES OF AIRBORNE MAGNETIC SURVEY

LIST OF ILLUSTRATIONS

Page

LIST OF APPENDICES

ABSTRACT

In Phase II of the mineral resources survey of Northeastern Luzon, Philippines, semi-detailed geological and geochemical surveys were carried out over 1/3 of the area selected by the Phase I survey team. The more promising area selected from field analyses of geochemical samples, was surveyed in detail. The aeromagnetic results obtained in Phase I were also reanalyzed.

Geological survey disclosed the stratigraphy, the distribution and other important points on petrographic nature of intrusive rocks, the geological structure and the mineralization. The Coastal Batholith intruded into the eastern anticlinal part of the synclinorium 30 ∿ 40 m.y. ago. As the Magma contained very few amounts of K and H_2O, large scale ore deposits cannot be expected in this rock series. Palali Batholith is alkalic and has a peculiar character.

The major fault system trending NNW-SSE had controlled the intrusion of the alkali plutonic rock which was intruded about 25 m.y. ago and probably accompanied by gold mineralization. Copper mineralizations were recognized in the area of alkali plutonic rock and it was proved that they were accompanied by diorite porphyry and characterized by small-scale geochemical anomalies of Zn and Mo. A small-scale porphyry copper deposit near Salinas is also associated with quartz diorite of early Miocene. A large-scale porphyry copper deposit in Tawi Tawi was accompanied by a diorite body which was intruded along the fault in Palali formation (early Miocene) about 6 m.y. ago. This diorite belongs to a calc-alkali rock series and concentrates more alkali in the later stage of differentiation than Coastal and Dupax Batholiths. Porphyry

copper type ore deposits in the survey area are considered to have been brought by post Miocene intrusives of a calc-alkali rock series.

From the above-mentioned findings, three (3) areas will probably be pointed out as having high potential for porphyry copper deposits.

(1) Unknown deposits might be expected in Tawi Tawi.

(2) Mineralization accompanied by a quartz diorite body near Salinas.

(3) Mineralization accompanied by a diorite porphyry in Kingkong Valley

In Phase III, it is therefore recommended to carry out the detail geological, geophysical (IP method) and geochemical surveys and diamond drilling in these 3 areas to determine the nature of mineralization and to find some important exploration guides on porphyry copper deposits in Northern Luzon.

GENERAL INFORMATION

1. Introduction

1-1 Purpose of Survey

The purpose of the survey for the Phase II in the Northeastern Luzon Philippines is to delineate the most promising area which has potential for ore deposits. For this purpose, semi-detailed geological and geochemical surveys were carried out over an area of 3,400 km^2 (Area A) which was selected by the Phase I survey team and was followed by the detailed geological and geochemical surveys in an area of 300 km^2 (Area B) selected by the semi-detailed surveys as having higher potential for ore deposits. Moreover additional surveys were also conducted in the areas (Area C and D) which were not covered by the reconnaissance survey of Phase I. After discussions on the results of geological and geochemical surveys with reinterpretations of aerophotograph and aeromagnetic data, considerations were made on the mutual relations between regional geological structure, igneous rocks and ore deposits.

1-2 Outline of Survey

Before the geological and geochemical surveys, about one month was used for preparatory works such as contact with the Philippine Government's branch offices concerned, preparations to receive the survey team in the field, observation on road condition and establishment of base camp. The road condition was bad for few weeks after rainy season. Therefore, it was considered that the survey could not start before early part of February.

Following the advance party's instruction, the main party arrived in the field and established a base camp in Dupax del Sur where geochemical samples were analyzed. With the progress of field work sub-base camps were set up at Bambang, Kasibu, Santa Fe and Carranglan from where each party made camping to carry out geological surveys in Area A and Area C~D with an accuracy of 1:50,000 and 1:100,000 respectively.

Geochemical samples collected in Area A were sent to the base camp from time to time and more than 4,000 samples were semi-quantitatively analyzed for Cu and Mo in order to select Area B.

The detailed geological and geochemical surveys were carried out in Area B of 300 km^2 which was chosen according to the results of chemical analysis and geological survey. Aerophoto reinterpretation and its field check were also conducted.

After the main surveys four geologists returned to the field to conduct additional geological and geochemical surveys in Area C' of 600 km^2.

The writers are indebted to Dr. Kuniteru Matsumaru of Saitama University on identifying larger foraminiferas. Dr Kazuya Kubo of Tokyo University of Education provided instructive comments on plutonic rocks. Their kind advice and suggestion are highly acknowledged.

Table 1 Period of survey, length of survey route and number of geochemical sample

	Stay in Rep. Philippine	Area	Actual Filed Work	Length of Survey Route	Number of Geochemical Samples
Geological Survey Team	Feb. 4 ∿ Apr. 22 81 days	A area (3,400 km^2)	Feb. 11 ∿ Apr. 11 61 days	2,795 km	3,420 pcs
		B area (300 km^2)	Apr. 5 ∿ Apr. 11 7 days	404 km	920 pcs
		C, D area (900 km^2)	Feb. 14 ∿ Mar. 14 30 days	417 km	318 pcs
	Jun. 7 ∿ Jul. 14 38 days	C' area (about 600 km^2)	Jun. 16 ∿ Jul. 6 21 days	208 km	307 pcs
	Total			3,824 km	4,965 pcs
Photograph Interpretation Team	Jan. 8 ∿ Feb. 3 27 days		Jan. 11 ∿ Feb. 3 24 days		
	Apr. 19 ∿ May 28 40 days		Apr. 21 ∿ May 27 35 days		

1-3 List of Members

The list of members engaged in the survey are as follows.

(Management)

CONSTANTE B. BELANDRES	Bureau of Mines Philippines	HIROSHI FUCHIMOTO	Metal Mining Agency of Japan
FEDERICO E. MIRANDA	do	MASAHIRO YAMAMOTO	Japan International Agency of Japan
		SHINSEI TERASHIMA	M.M.A.J.
		KENJI SAWADA	do

(Geological team)

ARNULFO V. CABANTOG	do	HIROSHI FUCHIMOTO	do
ROMEO L. ALMEDA	do	YASUKICHI UEKI	do
ANDRE P. VICTORIANO	do	HIROFUMI TANIGUCHI	do
ANGEL BRAVO	do	KEIICHI KUMITA	do
JOSE ESPIRIDION	do	IKUHIRO HAYASHI	do
EDWIN DOMINGO	do	MASAHIRO HASE	do
PABLITO ESCALADA	do	TSUTOMU ICHINOSE	do
HERMES SERRER	do	KEIGI NAKANO	do
		SADAHARU IWANE	do
		TAKEO KAKIZAKI	do
		MINORU SAITO	do
		TETSUO SATO	do
		YOSHIAKI SHIBATA	do

(Photo-interpretation)

PANFILO O. MONTERO	do	TOKICHIRO TANI	do
		SADAHARU IWANE	do

(Aeromagnetic reanalysis)

HIDEZO KAKU	do
ASAHI HATTORI	do
YOSHIO TAMURA	do
KENICHI NOMURA	do
MASAO YOSHIZAWA	do
SUSUMU SASAKI	do
YOICHI MATSUDA	do
MANABU KAKU	do

1-4 References

1) Miyashiro & Kushiro (1975) Petrology II
Kyoritsu Press 171p

2) Middlemost, E. (1972) Classification of volcanic rocks
Bull. Volcanol. 36 p382-397

3) Garai, M (1973) Magmatism
Kyoritsu Press 345p

4) Aramaki, et al. (1972) Chemical composition of Japanese Granites Part 2
Joul. Geol. Soc. Japan 78 p39-49

5) Shibata, S. (1966) On Japanese rocks II Plutonic rocks
Asakura Inc. 377p

6) Tuttle & Bowen (1958) Origin of Granite in light of experimental studies
Mem. Geol. Soc. Amer. 74

7) Luth, et al. (1964) The granite system at pressure of 4 to 10 kilobars
Jour. Geophys. Res. 69 p759-773

8) Fujita, Y. et al. (1975) Structure and evolution of the earth crust
URBAN KUBOTA No.12 p51

9) Bureau of Mines (1962) Geological map of the Philippines

10) Matsuno & Hoshino (1975) Structure analysis by ERTS Image
Geological News 245 p1-13

11) Ishihara, S. (1972) The world-wide occurrence of porphyry copper deposits and meteoric water Min. Geol. Japan, Spec. 4, p205-221

12) Bryner, L. (1969) Ore deposits of the Philippines Econ. Geol. 64 p644-666

13) Satoh, S. (1972) Metallogiric locality of green tuff region Min. Geol. Japan, Spec. 4 p185-203

14) MMAJ & JICA (1975) Report on geological survey of northeastern Luzon (Phase I)

15) Nabighian, M. (1972) The analytical signal of two demensional magnetic bodies Geophysics 37 p507-517

2. General Discussion

A lot of information on granitic rocks and geologic structures have been obtained from the Phase II survey. In this chapter the survey results will be discussed aiming at these information.

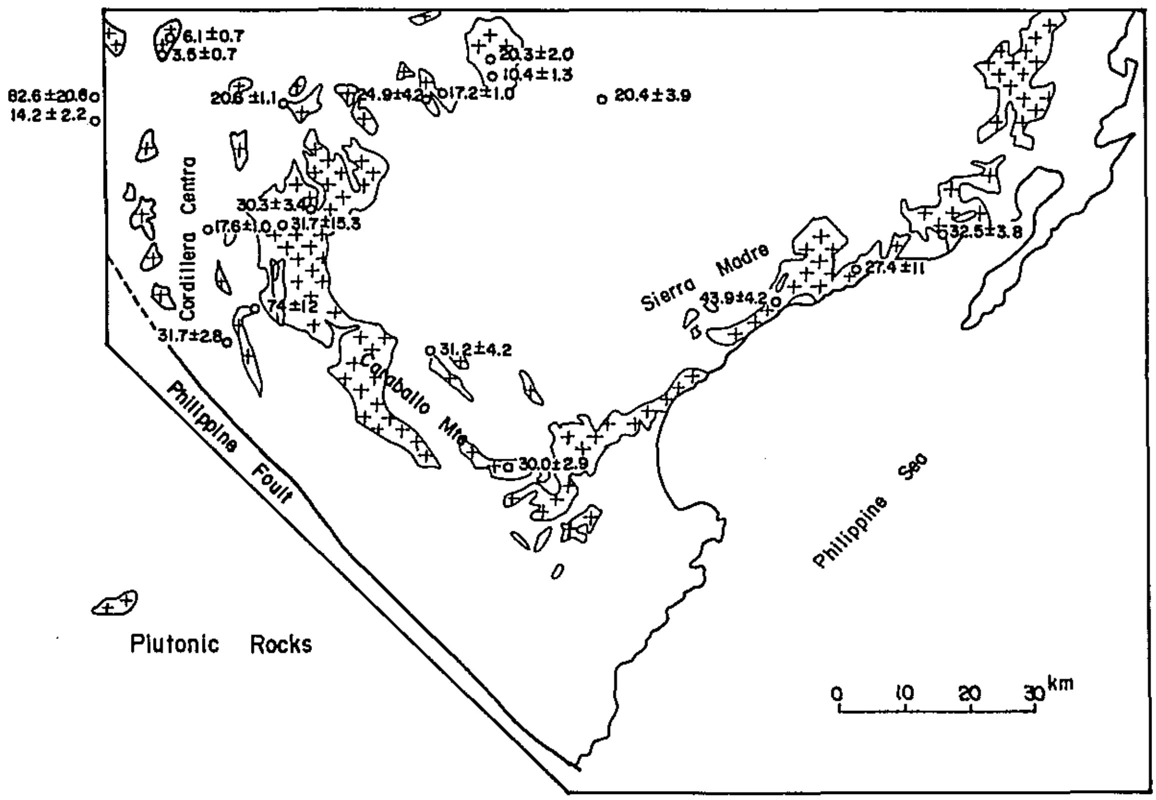


Fig. 2 The resultants of K - Ar dating

2-1 Plutonism, Geological Structure and Mineralization

2-1-1 Coastal Batholith and Dupax Batholith (30∿40 m.y.)

These granitic rocks are characterized by low alkali and low $H_2O(+)$ in amount. Even in a later stage of magmatic differentiation as shown in Fig. I-8, little amount of K concentrate and K-feldspar veins are not usually formed in this rock type. From the viewpoint of ore deposition, a batholith of this type generally originates from a magma which differs from that of a porphyry copper type. This batholith has intruded into the anticlinal part of a synclinorium with folding axes in a NE-SW direction and plunging towards NE. No ore deposits of porphyry copper type have been reported in this area and only small-scale deposits are known. The field survey results in this phase supported the fact that it is probably caused by the above-mentioned nature of the magma.

2-1-2 Palali Batholith and Alkali Plutonic Rocks

These plutonic rocks are characterized by high alkali contents. They have been formed in relation to a large fault movement with a NNW-SSE trend. In the areas where the alkali intrusives are distributed, gold-deposits are now under exploration. As there are some papers pointing close genetic relationship between alkali volcanic area and gold deposits in Japan, the problem whether these gold deposits have been accompanied by alkali plutonic rocks will be left for future studies.

2-1-3 Stocks in Cordillera Central (6 m.y.)

As shown in Fig. I-7, these plutonic rocks belong to a typical calc-alkali rock series. They have intruded into the Palali formation along its boundary in Bokod area where porphyry copper deposits are under exploration.

2-1-4 Stock and Dykes along Santa Fe Faults

A characteristic of these plutonic rocks is that their chemical consitituents tend to separate into some independent groups showing a discontinuous variation, though the data are not enough to discuss their chemical features. The rocks have been intruded along big faults with weak pyrite disseminations but no copper mineralizations could be observed.

2-1-5 Other Stocks

The stocks in this group include all granitic rocks except the above-mentioned four groups. Therefore, they cannot be discussed wholly due to their various feature. As some copper mineralizations were found in granitic rocks of this group, two granitic rocks probably accompanied by mineralization are as follows;

1) A diorite porphyry dike trending NNW-SSW in Kongkong Valley is accompanied by geochemical anomalies.
2) A quartz diorite stock near Salinas extending in a NE-SW direction.

It is also accompanied by copper mineralization which was explored before and proved to be a porphyry copper type. It is 20 m.y. in K/Ar age.

As stated above, porphyry copper type mineralizations in the surveyed area are closely related with Miocene plutonism. The diorite porphyry in Kongkong Valley has the same structural element (NNW-SSE) as the alkali plutonic rocks had when they intruded. It is, therefore, probable that the porphyry is Miocene in age and accompanied by copper mineralization.

2-2 Geochemical Survey Results

In spite of more detailed survey, the geochemical results in this phase are almost the same as Phase I. A genetic relationship between igneous activities of an alkali rock series and copper mineralizations was suggested in the last phase report. But based on the results of detailed geochemical survey, copper mineralizations are probably related to the activities of a calc-alkali rock series. It is also concluded that the copper anomalies with about 200 ppm in Kongkong Valley are due to high background value of copper in Mamparang formation.

Summing up, the following results could be obtained:

(1) High and large scale concentrations of Cu, Zn and Mo in Tawi Tawi area show geochemical anomalies of a porphyry copper type.

(2) The anomalies in Kongkong Valley are chiefly composed of Cu and its strong anomalous zone is narrow.

(3) The anomalies near Salinas is also for Cu and narrowly distributed.

2-3 Reanalytical Resutls of Aeromagnetic Survey

1) A synclinorium with an axis on a NE-SW direction plunging toward NE is presumed in the area extending from the Sierra Maddre to the Caraballo and the Mamparang Mountain Ranges.

2) The Central Plain has slipped down by more than 1,000 meters along the Philippine Fault.

3) The geological structures interpreted by the reanalysis coincides with those of ERTS images.

2-4 Summary

A summary between plutonic rocks, intruding ages, geologic structures and ore deposits is shown below.

Plutonic Rock	K-Ar Age	Geological Structure	Ore Deposit
Coastal Batholith Dupax Batholith	30∿40 m.y.	NE-SW	Cu vein (small scale)
Palali Batholith	25 m.y. ±	NNW-SSE	Au?
Stocks along Santa Fe Faults	?	NNW-SSE	Barren
Stocks in Cordillera Central	6 m.y. ±	N-S	Porphyry copper (large scale)
Stocks in Kongkong Valley	?	NNW-SSE	Cu (small scale)
Stocks near Salinas	20 m.y.	NE-SW	Porphyry copper (small scale)

3. Conclusions and Future Problems

A. Conclusions

1. The major structure prevailing in the survey area is a combination of synclinorium trending NE-SW and prominent faults which trend NNW-SSE traversing the former.
2. The granitic rocks distributed in the survey area have different forming stages and magmatic natures. Controlled by the geologic structures, they intruded at various stages.
3. Most of granitic rocks have close relation to mineralizations. Porphyry copper deposits in the area are accompanied with a calc alkaline granitic rocks of post Miocene.

B. Future Problems

1. Copper anomalies obtained by this survey are located in Kongkong Valley and near Salinas. Although both are considered to be small in scale, the follow-up works are recommended to define nature of the mineralizations.
2. Detailed surveys are needed to find new deposits in Tawi Tawi area where some hundred million tons of ore reserve have been already secured.
3. Studies are desirable to focus on the genesis of Tawi Tawi ore deposits and discuss the common exploration guides in a Black Mountain type mineralization.

PART I GEOLOGICAL SURVEY

1. Geology

1-1 Stratigraphy

In the survey area, there are same formations of Pre-tertiary, Paleogene, Neogene and Quaternary. As shown in the generalized stratigraphic section, the following groups or formations can be named in ascending order; 1) Basements, 2) Caraballo Group 3) Manparang Formation 4) Columbus Formation 5) Palali Formation 6) Natbung Formation 7) Santa Fe Formation 8) Matuno Formation 9) Terrace deposits 10) Talus deposits 11) Alluvium.

Each group or formation will be discribed in this order.

1-1-1 Basement Complex

Distribution; They are observed in Mingan Mountains, the area near Santa Rosa, Tactac, Bone South, Kayapa Proper and Putlan.

Rock Facies; The rock facies of the basement rocks are schists, ultra mafic rocks and tonalite.

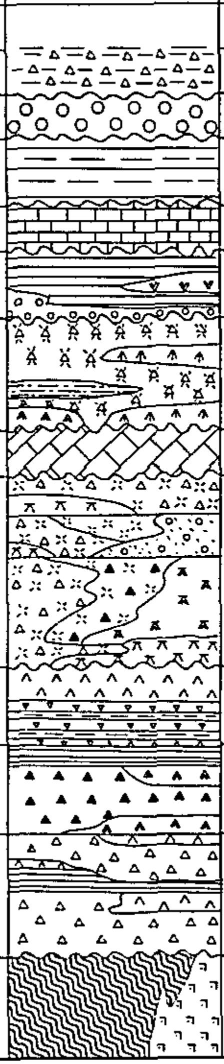
There are several kinds of schist, and they show the green schist facies to the amphibole facies, that is, quartz-plagioclase-pyroxene-hornblend schist, quartz-plagioclase-gernet-hornblend schist and quartz-plogioclase-chlorite schist.

Ultramafic rocks are composed of pyroxinite and peridotite.

Tonalite stocks accompanying with shists are distributed in small area along the great faults of NNW-SSE system. One sample of tonalite near Putlan shows 74 m.y. in K-Ar age (Table I-4).

Table I-1 Generalized stratigraphic section in the survey area

Geological	Group and Formation		Columnar Section	Rock Facies	Tectonics	Plutonism	Mineralization
RECENT				gravel.			
				Talus deposit	Faulting (E-W)		
PLEISTOCENE				Terrace deposit	Philippine fault		
PLIOCENE	Matuno F.			Ls. alt of silt st. and s.s.			
MIOCENE	Santa Fe F.			Ls.	Faulting and folding (N-S)		
	Natbang F.			s.s. and mud st basalt lava cgl.	Faulting and folding (NWN-SES, Santa Fe faults)		
	Palali F.			dacitic pyroclastics and andesite lava, mud st. and s.s. andesitic pyroclastics and lava, basalt lava		Qz-diorite ~Diorite (14 ~ 6 m.y.)	Porphyry cupper large (Bokod)
M. ~ U. OLIGOCENE	Columbus F.			Ls			
	Manpalang F.			andesitic pyroclastics and lava. cgl., andesitic and tracky andesitic pyroclastics and lava basaltic pyroclastics and lava andesitic and tracky andesitic lava and pyroclastics		Qz-diorite ~ Diorite Syenite ~ Monzonite (27 ~ 25 m.y.)	Au dessemi. (Ronnoru)
U. CRET. ~ EOCENE	Caraballo G.	Formation III		andesitic lava and pyroclastics s.s., shale, andesitic tf as partings	Orogenic Mov. (Destruction type) Folding (NE-SW) faulting	Tonalite ~ Gabbro (44 m.y. ~ 27 m.y.)	Porphyry Cupper · Vein Cu small (Mapayao Cr.)
		Formation II		tuffaceous s.s. and shale well bedded basaltic pyroclastics and lava sometimes show pillow st.			
		Formation I		andesitic pyroclastics and lava. partly, alt. of s.s., shale, tf and well bedded andesitic lapilli tf. (fault)			
PRE. CRET.	Basement Complex			amphibole schist Tonalite	Orogenic Mov. (Construction type)	Tonalite (74 m.y.)	



1-1-2 Caraballo Group

Distribution; This group is exposed in Sierra Madre, Caraballo Mountains and Cordillera Central.

Thickness; about 5,500 m

Rock facies; This is mainly composed of volcanic rocks accompanied by little normal sediments. The lithologic character of this group can be divided into 3 formations in ascending order, (1) I formation, (2) II formation and (3) III formation.

The metamorphic facies observed in this group are from prehnite-pumpellyite facies to green schist ones without schistosity.

Age; As this group have a contact with the basements by fault, the direct relation is unknown. But a granitic rock body dated 30∿40 m.y. is emplaced in this group which suffered silicification and weak contact metamorphism by the granite.

No fossil has been discovered in this group.

The forming age of the Caraballo group is considered to be of upper most Cretaceous to upper Eocene age by reason of the K-Ar ages of Basements and Coastal Batholith.

(1) I Formation

Distribution; This formation occurs in the center of Cordillera Central, Sierra Madre and Caraballo Mountains.

Thickness; About 2,500 m(+)

Rock Facies; This formation is mainly composed of andesitic pyroclastics and hyaloclastic andesite lavas, and associated with a little amount of sandstone and shale. The sequence in ascending order is andesitic tuff breccia and a few hyaloclastic andesite lavas, the well-bedded alternations of clastics and tuff, and andesitic tuff breccia and hyaloclast andesite lavas. Microscopic features of andesite lava and andesitic tuff in this group are as follows.

Andesite (C.I.)

Texture; glomeroporphyritic

Phenocryst; plagioclase >> clinopyroxene >> opacite

Groundmass; plagioclase, opacite and alteration minerals.

Alteration minerals; actinolite, chlorite, epidote, sericite, calcite

Andesitic tuff breccia (C.I.)

Lithic tuff

Lithic fragment; porphyrytic andesite, strongly altered andesite

Matrix; chlorite, epidote, calcite, prehnite, pumpellyite

Geological structure; The formation generally shows NE strike, dipping more than 20°, partly overturned in Cordirella Central. The well bedded rocks in this area are useful for good key beds, in which minor folds are observed. And I formation makes up the anticlinal core of the Caraballo Group in Cordillera Central. In Sierra Madre, this formation also shows a NE direction and forms the wing of the synclinorium.

Its contacts with the Basements are observed only by faults and the lowest member has not been discovered yet. But an unconformity is considered to exist between them from the gap of the metamorphic grade between this formation and the Basements. Further studies will be needed for clarification.

(2) II formation

Distribution; This formation is found in Cordirella Central, Sierra Madre and Caraballo Mountains.

Thickness; About 1,300 m

Rock Facies; This formation is mainly composed of dark green ∿ dark gray basalt lavas, dolerites and basaltic tuff breccia, and accompanied with alternations of gray shale and green ∿ red basaltic tuff as the upper member.

The alternation is from 200 m to 500 m thick.

Basalt lavas are composed of massive, hyaloclastic and pillow ones in which the amygdal textures are observed. These facts indicate the lavas were laid in an aqueous environment.

The pillow lavas of basalt and dolerite, being typical rock facies of this formation, will be discribed microscopically.

Basalt (C.II.)

Texture; amygdaloidal, aphanitic and fluidal

Groundmass; skeltonic plagioclase, clinopyroxene, opacite and alteration minerals

Alteration minerals; chlorite, epidote, sericite etc. prehnite and calcite as amygdaloidal minerals.

Dolerite (C.II.)

Texture; hollocrystalline and ophitic

Phenocryst; plagioclase > clinopyroxene >> opacite

Alteration minerals; chlorite, epidote, calcite, pumpellyite, actinolite partly.

Geological Structure; The strikes of this formation generally show a NE direction. In Sierra Madre, it forms the wing of the synclinorium with folding axes of NE-SW.

The alternations of hard shale and tuff have the following structures; boudinages, planeless faults, overturning beds, minar or small folds, and dipping at about 30° on an average. The alternations are also good for key bed determinations.

This is comformably in contact with the I formation.

(3) III Formation

Distribution; This is observed in the south part of Cordillera Central, Caraballo Mountains and Sierra Madre.

Thickness; About 1,700 m

Rock Facies; This formation is mainly composed of dark green andesite lavas and andesitic tuff breccia, and contains two alternation partings of shale, sandstone and tuff.

The rock facies of andesite lavas and andesitic tuff breccia of this formation, have a strong resemblance to those of the I formation.

Geological Strucutre; The strikes trend a NE-SW direction.

This formation shows an intrafolial folding near Santa Fe and composes the maximum submerged part of the synclinorium in Sierra Madre and Caraballo Mountains.

1-1-3 Manparang Formation

Distribution; This formation occurs in Manparang Mountains.

Thickness: About 4,000 m

Rock Facies; Manparang formation is composed of greenish gray ∿ dark gray andesitic tuff breccias, andesite lavas, basalt lavas, basaltic tuff breccias, alkaline volcanics and conglomerates and partly accompanied by dacitic volcanics, mud stone, tuff and limestone.

The features of andesite lavas, basalt lavas and trachyte are described as follows:

Andesite (M.F.)

Texture; porphyritic

Phenocryst; plagioclase > clinopyroxene >> opacite

Groundmass; glass, plagioclase, clinopyroxene, opacite, alteration minerals

Alteration minerals; chlorite, montmorillonite, epidote, zeolite

Basalt (M.F.)

Texture; amygdal and porphyritic

Phenocryst; plagioclase ≥ clinopyroxene > opacite

Groundmass; plagioclase, clinopyroxene, olivine, opacite, alteration minerals

Alteration minerals; chlorite, montmorillonite, calcite zeolite

Trachyte (M.F.)

Texture; trachytic

Phenocryst; plagioclase > soda pyroxene > K-feldspar > Alkali amphibole > opacite ≥ biotite

Groundmass; K-feldspar, plagioclase, clinopyroxene, opacite, biotite, alteration minerals

Alteration minerals; zeolite, calcite, montmorillonite, sericite

Geological Structure; This formation tends to show low dipping beds. The folds developed in this formation are waving ones with aplitude and wave length ratio of 1:10. The direction of fold axes is NNW-SSE. This formation is in contact with the Caraballo group controlled by faults whose directions are NW-SE and NE-SW. In Palali Mountains, the Palali formation unconformably overlies this formation.

Fossil; The following larger foraminiferas are found in a thin limestone lens in Kasibu area.

Eulepidina monstrosa

Spiroclypeus leupoldi

Operculina sp.

Cycloclypeus sp.

Gypsina globulus

Age; The age of the formation is considered to be of Oligocene by reasons of the above mentioned fossils and the datings of syenite intruding this formation.

1-1-4 Columbus Formation

Distribution; Columbus formation is distributed on the upper part of the Columbus River which is one branch of the Agno River

Thickness; About 300 m

Rock Facies; It is composed of massive and/or brecciated limestone showing white ∿ pale blueish white in color.

Fossil; The following larger foraminiferas are found.

Spiroclypeus leupoldi van der Vlerk

Nephrolepidina sp.

Eulepidina monstrosa Yabe

Amphistegina radiata

Age; The age is believed to be of upper upper Oligocene.

1-1-5 Palali Formation

Distribution; This formation is distributed in Palali Mountains, around Bokod and Santa Fe.

Thickness; About 2,000 m

Rock Facies; This formation is mainly composed of sky blueish green ∿ blueish green dacitic tuff breccia and it's lavas.

A little amounts of dacitic and andesitic welded tuff, andesitic tuff breccia and lavas, basalt lava, mudstone, and sandstone are accompanied with them.

In the area of Palali mountains, tuff breccia contains some pebbles of syenite and syenite porphyry. In Santa Fe area, it consists of breccias of Dupax Batholith and dacite lavas with columnar jointings.

In Bokod area, the rock facies of this formation slightly differ from those of other places. It is composed of dacitic tuff breccia, andesitic tuff breccia and lava, and basalt lava. In this area, several partings of the marine alternations of mudstone and tuff are intercalated.

Andesitic ∿ dacitic welded tuffs are observed in all the area of the Palali formation.

As stated above, a question still remains;

The sedimentary environment of this formation is suggested to be marine and terrestrial due to existence of fossiliferous mudstone and welded tuff respectively. It is considered one formation because it has the same rock type and almost the same age in both areas. But this problem should be studied with more field evidences.

The microscopic features of typical rocks of this formation are as follows:

Dacite (P.F.)

Texture; porphyritic

Phenocryst; plagioclase > hornblende > pyroxene > quartz > opacite

Groundmass; glass, plagioclase, alteration minerals, opacite

Alteration minerals; chlorite, calcite, montmorillorite, hydromica, epidote

Dacitic welded tuff (P.F.)

Texture; eutaxitic (vitric tuff)

Lithic fragments; few pyroxene andesite, quartz porphyry

Phenocrxst; plagioclase > quartz > hornblende

Geological Structure; As the formation contains pebbles of the Caraballo group, Dupax Batholith and Manparang Formation in Palali Mountain and Santa Fe areas, it is considered that the Palali formation unconformably overlies the lower formation. On the other hand, it is in contact with the Caraballo group by faults in Bokod area where general strikes of the formation and the folding axes trend N-S

Fossil; Tuff near Bokod contains the following larger foraminiferas.

Cycloclypeus sp.

Miogypsina polymorpha

Austrotrillina hawchini

Nephrolepidina sp.

Planorbulinella larvata

Gypsina globulus

Age; The result of K-Ar dating for welded tuff shows 17 m.y. and the above mentioned fossils indicate lower ∿ middle Miocene. Then, the age of this formation is considered to be lower ∿ middle Miocene.

1-1-6 Natbung Formation

Distribution; The Natbung formation is distributed in Natbung area

Thickness; About 1,800 m

Rock Facies; It is mainly composed of conglomerate with alternation of sandstone and mudstone. Basaltic lava flows are partly intercalated.

Geologic Structure; The western and southern boundaries are in contact with Caraballo group by faults. The eastern bountary is not clear due to covering of talus deposits.

Generally the strike trends N-S. A basin structure with a N-S trend is formed in Natbung area. This formation is unconformably overlain by Santa Fe limestone which will be mentioned later.

Fossil; Some foraminiferas were found in the mudstone of this formation and identified as middle Miocene.

Age; From the fossils, Natbung formation is considered to be middle Miocene.

1-1-7 Santa Fe Formation

Distribution; This formation occurs in the area from Santa Fe to Dalton Pass, in Natbung area and in the southern Kasibu area

Thickness; About 300 m

Rock Facies; It is composed of white ∿ pale pink limestone

Geological Structure; It unconformably overlies Natbung and other lower formations

Fossil; Following is a list of larger foraminiferas found in the area.

Heterostegina borneensis van der Vlerk

Nephrolepidina sp.

Borelis pygmaes (Hanzawa)

Austrotrillina howchiri

Miniacina miniacea

Age; Larger foraminiferas indicate this formation to be of lower Miocene. However, it is more reasonable to consider it middle ∿ upper Miocene from the field evidence that it unconformably overlies the Natbung formation.

1-1-8 Matuno Formation

Distribution; The Matuno formation is exposed in upper river basin of the Matuno, vicinity of Maddela

Thickness; About 1,300 m

Rock Facies; Alternation of yellowish brown ∿ gray sandstone and mudstone, alternation of sandstone and conglomerate are the main conponents.

Geological Structure; It forms a sedimentary basin with a folding axis in N-S direction. It unconformably overlies limestone beds of the Santa Fe formation

Fossil; No fossils could be found

Age; It is considered to be of Pliocene age from the fact that it unconformably covers the Santa Fe formation

1-1-9 Terrace Deposits and Talus Deposits

The discriptions on these deposits are almost the same as those of the Phase I report.

1-2 Intrusive Rocks

In the region of this Project, several intrusive rocks exist such as the plutonic masses varying from ultrabasic to quartz dioritic and dike rocks from dolerite to dacite. Two types of hypabyssal rocks are distinguished in this region, one of which is considered to be accompanied with plutonic activity and the other with volcanic activity. Based on the field evidences such as the dimension of mass, mutual relation among the adjacent masses and microscopic characters such as the existence of porphyritic or equigranular texture.

The plutonic rocks and accompanying hypabyssal rocks were classified into two groups such as ultrabasic rock and granitic (containing gabbroic) rocks, the granitic rocks having been sub-divided into six groups based on the features under microscope, modal compositions (Table I-2), chemical compositions (Table I-3), absolute ages determined by K-Ar method and the distribution of rocks.

Table I-2 Modal composition (1)

Sample No.	A13	A17	A19	A20	A22	A23	A24	A27	A30	A32	A34	A41	A42	A43	A44
Kf				0.54		0.06									
Qz	44.14	37.14	43.19	44.72	45.69	41.94	38.89	9.12	7.90	0.18	0.33	4.40	5.75	1.73	45.47
Pl	52.98	59.57	54.74	47.24	48.82	51.26	55.40	48.05	66.93	36.83	48.12	55.90	60.34	37.88	46.71
Bt			1.13	0.09	4.31	3.65						0.21			3.93
Hb				4.22		1.59	0.88	42.71	21.30	14.29	15.37*	35.59	29.14	49.98*	1.24
Opx										46.16				0.40	
Cpx											27.22			1.82	0.46
Ol															
Fe	0.12		0.23	1.28	0.77	0.74	0.57	0.07	2.23	2.41	8.59	3.64	4.59	8.20	2.10
Mf															
Chl	1.78	1.97	0.47	1.78			2.95		0.20		0.37		0.08		0.09
(serp)															
Epid.		1.31		0.07	0.41		0.79		0.53						
(clay)	0.99		0.23									0.25			
Acs.				0.07		0.74	0.51	0.04	0.92	0.13			0.11		
(ap.sph)															
calc.															
oths.A															
oths.B															
Total	100.01	99.99	99.99	100.01	100.00	99.98	99.99	99.99	100.01	100.00	100.00	99.99	100.01	100.01	100.00

Sample No.	A45A	A46	A47	A48	A49	A50	A52	A59	A63	A64	A115	A213	A216	B7
Kf					0.26				3.34	1.30				8.49
Qz	32.44	37.08	20.24	36.87	35.58	38.74	31.58	34.81	20.87	9.53	6.47		31.34	11.63
Pl	60.97	56.63	60.95	58.77	51.86	57.84	58.70	56.28	63.04	64.14	57.34	59.08	57.39	60.85
Bt	1.61	1.32			3.92	2.70							2.70	0.19
Hb	3.94	3.66	15.26	1.11	5.44		7.49		8.32	17.69*	31.18*	4.29*	7.60	9.57*
Opx			0.03							3.07		11.40		
Cpx	0.76						0.19		0.07			20.25		1.76
Ol														
Fe	0.22	0.91	2.15	0.27	2.70	0.72	1.35	1.15	2.44	2.25	2.51	4.14	0.74	2.73
Mf														
Chl		0.35	1.12	2.43	0.12		0.60	2.94	1.59	1.84	1.54	0.84	0.15	
(serp)														4.53
Epid.			0.16	0.49				4.83						
(clay)		0.05							0.33		0.97			
Acs.	0.06		0.09	0.05	0.09		0.09			0.18			0.07	0.26
(ap.sph)														
calc.														
oths.A														
oths.B														
Total	100.00	100.00	100.00	99.99	99.97	100.00	100.00	100.01	100.00	100.00	100.01	100.00	99.99	100.01

Sample No.	B33	B187	B189	B19	B201	B202	B213	B214	B225	B333	B335	B336	B337	B338	B339
Kf		65.72	56.50	53.52	65.68	59.65	64.86	73.92	40.88	65.60	67.58	69.96	61.65	58.95	80.13
Qz	51.17														
Pl	41.49	10.44	17.01	17.21	3.80	21.94	0.04	5.92	36.22	4.06	9.11	0.37	7.13	0.86	0.27
Bt		1.87	2.89	1.67	0.21	1.10		0.45	2.18	0.11	1.10	1.76	0.25	0.14	5.33
Hb		0.11	4.47*	3.21	0.46	2.01		1.80		0.43	1.55	1.36*	2.32	0.39	
Opx															
Cpx			4.93	6.97				0.86	11.43	1.94	3.06		6.02	2.80	
Ol															
Fe	0.20	0.68	1.09	1.78	0.53	1.45	0.25	1.06	2.47	1.15	1.32	0.84	1.46		0.51
Mf		6.81			12.45	5.90		0.49							
Chl	3.37								0.56						
(serp)															
Epid.	3.65			0.68								0.11			
(clay)										1.08				0.50	
Acs.	0.12		0.42		1.44	1.18	0.43	0.37	1.03		1.26	0.26	0.76		0.08
(ap.sph)		2.52													
calc.															
oths.B		11.76	12.68	14.96	15.44	6.76	32.21	15.14	5.22	25.64	15.01	25.35	20.40	36.35	13.68
oths.B							2.20								
Total	100.00	100.01	99.99	100.00	100.01	99.99	99.99	100.01	99.99	100.01	99.99	100.01	99.99	99.99	100.00

Sample No.	B342	C7	C19	C21	C26	C47	C48	C52	C71	C79	C80	C82	C98	C102
Kf	56.18									0.37		0.05		77.07
Qz		5.89	28.94	20.01	16.50	3.37	43.37		24.16	35.17	36.01	37.79	3.00	
Pl	25.86	70.78	65.92	59.48	68.45	34.24	52.79	53.36	68.86	57.77	57.12	59.31	72.97	1.08
Bt	1.37	3.03	4.28	5.65			0.41		1.97					0.10
Hb	1.88	8.42		12.72	9.81	56.00	2.92	40.64	4.24					7.68
Opx		2.99												
Cpx	3.18	6.24		0.32									0.81	
Ol														
Fe	1.06	2.39	0.78	1.60	3.31			0.38	0.37	0.26	0.35	0.07	4.14	0.81
Mf								1.05		0.30		0.14	19.33	
Chl				0.14	0.85	0.35				4.18	4.85	1.91		
(serp)								4.59						
Epid.			0.07	0.05	0.63	6.04	0.51		0.34	1.88	1.67	0.14		
(clay)														
Acs.	0.34	0.26		0.05	0.45				0.07	0.06				
(ap.sph)														
calc.	10.13													
oths.B													0.08	13.22
oths.B														
Total	100.00	100.00	99.99	100.02	100.00	100.00	100.00	100.00	100.01	99.99	100.00	100.01	99.99	99.96

Table I-2 Modal composition (2)

Sample No.	C109	C125	C144	C157	C180	D6	D18	E12	E18	E29	E64	E71	E81	E83	E154	E163	F102	F118	F129	F131	G83	G89	G159	G163	G164	G504	H20	H29	H32
Kf	81.48	64.98			26.84					6.40							0.51	83.52	73.64	46.64	11.68	78.79		0.03		0.44			54.67
Qz			6.47			12.28		48.92	42.52	13.06	47.36	0.08	36.30	0.31		2.90	21.51				17.62		9.98	3.01	1.02	4.59	41.02	41.55	
Pl	5.43	0.93	67.87	56.24	49.88	66.58	63.61	46.70	50.12	54.67	45.50	77.59	60.28	60.53	73.14	36.04	59.73	4.33		33.85	60.53		63.87	67.80	88.37	67.38	55.91	56.36	
Bt	2.91	1.04			4.24	2.79				2.86						2.41	1.46	2.98		4.20		0.25	3.46	0.42	0.14	1.75			0.87
Hb	7.22*	1.70	19.84	42.65*	0.14	10.61	24.01			20.98		18.47*	1.93	28.35*		22.56	12.27*		4.22		5.74	3.87	20.34	22.92	2.46	22.71		1.56	0.49
Opx						0.96																		0.91	3.58				
Opx					13.10	3.45	6.04			0.25				9.54	9.24	24.93					1.51			1.69	1.98	0.20			10.79
Ol																													
Fe	1.44	0.89	2.47		2.35	3.20	3.95	1.09	0.34	1.70	0.39	3.17	0.88	0.87	2.74	0.75	2.65	1.77	1.06	1.91	2.00	1.22	1.62	2.45	2.01	1.82	0.36		1.77
Mf			0.44		1.53																						0.05		
Chl		1.12	1.97				0.49	2.75	5.23		4.58			0.20	14.33						0.83		0.59	0.06	0.41	0.71	1.95		
(serp)																10.14													
Epid.	1.28			0.28	1.17		0.44	0.53	1.76		1.82				0.26												0.69	0.48	
(clay)												0.69	0.13					0.08											0.10
Acs.	0.24	0.08	0.94	0.81	0.75	0.12	1.46										0.34		0.34	0.86	0.10	0.20	0.12	0.06	0.03	0.40	0.05	0.04	
(ap.sph)									0.03	0.07						0.26													
calc.														0.20															
oths.A		29.27															1.53	7.31	20.74	8.55		7.17							7.25
oths.B											0.35				0.30					3.99		8.49							24.05
Total	100.00	100.00	100.00	99.98	100.00	99.99	100.00	99.99	100.00	99.99	100.00	100.00	100.00	100.00	100.00	99.99	100.00	99.99	100.00	100.00	100.00	99.99	99.98	99.95	100.00	100.00	100.03	99.99	99.99

Sample No.	H53	H61	H115	H125R	H143	H173	H176	H190	H192	H220	H287	H372	H374	K3	K37	L12	L15	L16	L17	L18	L19	L23	L25	L28	L30	L32	L33	L34	L35
Kf														1.67	77.86									0.07					
Qz	2.86	34.63	43.39	3.08	29.19			23.65	3.10	7.41	0.33	11.23	1.48	1.09	3.98	48.78	42.35	30.59	40.95	30.08	21.12	0.68	1.63	0.58	9.27	15.75	26.06	25.86	8.11
Pl	67.87	63.24	52.51	29.14	60.83	71.05	56.60	61.44	38.38	64.85	65.08	69.38	79.89	76.95	12.91	49.41	49.45	63.40	53.27	52.72	51.03	74.86	61.57	68.57	60.41	56.56	55.28	67.67	68.96
Bt	0.65	1.60								3.16	3.39	0.29		3.34	2.83			1.48	1.42	0.32		0.18						0.15	0.13
Hb	17.98*			51.40*	9.71*	20.02*	35.87*		35.24	20.22	24.95		8.92	7.81	0.30*			1.44	2.84	15.94	23.91	0.22		21.22*	21.36	22.35	13.87	1.64	3.64*
Opx	0.97					0.29			4.04														0.22		0.53				2.74
Opx	3.62			14.33		6.13	5.85		18.99					5.15								7.92	17.92		5.14		0.03	0.04	11.72
Ol																													
Fe	5.29	0.10	0.59	1.01		1.50	1.68	0.21	0.24	3.20	0.11	2.48	1.32	2.86	0.82	0.08	0.63	1.37	1.12	0.71	2.86	2.23	5.37	3.34	3.17	4.87	2.03	2.49	4.51
Mf						0.29		2.47																					
Chl	0.59					0.72		11.34					5.26			1.72	6.43	1.30		0.21	0.50	12.93	7.55	3.70	0.07		2.48		
(serp)												12.99														0.14		2.08	
Epid.			3.20	1.05							4.84				0.33		1.14	0.42	0.41		0.57	0.72		1.51					
(clay)		0.44								1.16			3.13		0.41												0.24		
Acs.	0.16		0.32		0.27						0.54	1.33		1.06	0.52					0.04								0.07	0.13
(ap.sph)								0.35																	0.04	0.32			
calc.								0.53			0.76	2.30		0.07								0.25							0.07
oths.A															0.04														
oths.B																							5.74						
Total	99.99	100.01	100.01	99.98	100.00	100.00	100.00	99.99	99.99	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.01	100.02	99.99	99.99	100.00	99.99	99.99	99.99	99.99	100.00	100.01

Table I-2 Modal composition (3)

Sample No.	L37	L38	L39	L42	L43	L52	L53	L54	L55	L76	L80	L115	L201	L202	M142	M208	M218	M242	M703	N31	N39	N48	N78	N96	A15 *	F110	H129	K33	K502
Kf												67.74		0.11	21.84						1.55			0.16		81.19		19.43	46.74
Qz	6.85	7.98	3.29	18.47	4.93	30.20	22.06	18.23	0.35	12.68	0.07		40.05	30.11	4.87		35.76	15.51	10.49	13.27	55.15	10.49	0.17	33.36	42.81				
Pl	60.14	55.22	75.29	63.62	61.04	61.77	58.91	65.14	50.89	53.37	67.23	8.46	55.52	63.75	69.54	64.29	53.82	60.28	73.69	66.93	57.13	73.69	68.07	61.06	40.39		66.91	56.41	31.02
Bt	1.30	1.21	0.09		0.81		0.96					0.57		0.22			5.54	3.40	2.52		8.53	2.52		1.06		16.76		5.04	1.82
Hb	25.95	30.42	7.73	8.37	22.68	5.72	13.76	6.56	36.39*	33.20	5.98*	1.66			2.80	0.31	0.30	15.65	9.03	13.92	9.16	9.03	0.44*	2.82			29.59*	0.07	
Opx	0.08	0.03	2.49	0.07				6.00*										0.05											
Cpx	1.34	1.56	7.96	3.37	7.82		0.43				12.87	4.29				27.96							25.90					15.12	9.79
Ol																													
Fe	3.89	3.57	3.07	4.93	2.59	1.79	2.69	2.50	0.03		2.89	0.90	0.14	0.62	0.62	3.57	1.20	2.60	2.33	2.60	1.04	2.33		1.02	0.19	0.11	3.06	3.61	2.18
Mf													2.57													1.75			1.33
Chl						0.06		0.23	4.05	0.08			1.71	4.65	0.22	3.06			1.41 (+calc)	1.69	0.20	1.41 (+calc)	4.10	0.39	8.64		0.11	0.07	
(serp)											10.92						3.24	1.75											
Epid.	0.24					0.46		0.20	8.04	0.59				0.36									0.66	0.14	7.30		0.33		0.11
(clay)				1.17																1.59					0.52	0.19			
Acs.			0.09					0.03		0.08	0.03				0.12	0.15	0.15	0.76	0.29		0.24	0.29			0.15			0.24	0.21
(ap.sph)	0.20				0.13							0.50																	
calc																													0.14
oths.A												15.88				0.66			0.24			0.24							
oths.B							1.19	1.10	0.24					0.18									0.66						6.67
Total	99.99	99.99	100.01	100.00	100.00	100.00	100.00	99.99	99.99	100.00	99.99	100.00	99.99	100.00	100.01	100.00	100.01	100.00	100.00	100.00	100.00	100.00	100.03	100.01	100.00	100.00	100.00	99.99	100.00

Sample No.	A1 •	A22B•	A31 •	A182 •	A200•	A201•	A256A•	A283•	A294•	B9 •	B18•	B34•	B42•	B66•	B93•	B352•	C4D•	C5D•	C34R•	DR2•	DR30•	PA14•
Kf			0.20		0.17			0.08			1.09			11.66	56.06		0.07	0.60				
Qz	8.20	1.82	43.08	9.42	46.31			42.67	2.66	3.14	45.88	10.73	30.17	0.51		0.56	6.99	0.28	22.54	4.34	41.73	12.89
Pl	58.41	73.46	51.24	61.14	49.08	42.83		53.72	52.17	70.61	47.99	55.16	57.76	66.20	17.79	65.92	56.32	83.20	66.45	66.28	49.71	54.13
Bt		0.12									2.59	1.94	0.27		3.30				5.17			
Hb	28.68*	2.83	5.25		3.46	4.79	4.42	3.29	30.52*			23.22	9.01	5.38	0.58	23.43*	1.19*	13.87*	5.01		7.41	29.92
Opx		9.72					3.47		4.05			4.21		10.43								
Cpx		11.25					71.26		6.66	10.24		2.20			4.09		16.82			19.78		
Ol							18.61															
Fe	4.42	0.15	0.15	2.45	0.22	6.67	2.25	0.25	3.88	3.49	0.82	2.12	2.47	3.73	1.04	9.45	2.57		0.96	4.27	0.99	1.83
Mf		0.64		26.99	0.06	43.14									4.72			1.13				
Chl											0.39						9.52					
(serp)														1.27								
Epid.											1.26				0.67		0.40					
(clay)										12.52			0.32							5.29		
Acs.	0.29		0.08		0.70				0.66			0.41		0.83	0.46	0.63		0.91		0.05	0.16	1.23
(ap.sph)																						
calc.																	4.38					
oths.A																						
oths.B						2.57									11.28		1.74					
Total	100.00	99.99	100.00	100.00	100.00	100.00	100.01	100.01	100.00	100.00	100.02	99.99	100.00	100.01	99.99	99.99	100.00	99.99	100.13	100.01	100.00	100.00

Memo: Albite is pointed to plagioclase. * at data of Hb mean to contain secondary Hb. • Sample of Face I

1-2-1 Ultrabasic Rocks

Distribution; Ultrabasic rock mass occurs with areal exposure of about 100 km^2 at the mountainous district south of Baler, facing the Philippine sea. And also, small mass of this rock type are exposed 5 km north of Kayapa.

Rock Facies; The ultrabasic rock mass to the south of Baler is mainly consisted of clinopyroxenite with small dikes of peridotite (lherzolite). Under the microscope, clinopyroxenite is hypidiomorphic-granular. Partly serpentinized olivine exists interstitially among diopside and small amount of calcite occurs also.

On the other hand, lherzolite is mainly composed of diopside and distinctly pleochroic ferrohyperthene, and contains minor amount of serpentinized olivine and calcite.

Small ultrabasic rock mass to the north of Kayapa consists of peridotite (wehrlite). Under the microscope, olivine is hypidiomorphic and is distinctly serpentinized.

Clinopyroxene shows ophitic ∿ poikilitic texture. Small amount of hornblende exists as the mantle around clinopyroxene.

Biotite (phlogopitic?) occurs associated with hornblende.

Fine-grained idiomorphic opaque minerals exist in small amount.

1-2-2 Granitic Rocks

As shown in Fig. I-1, granitic rocks in this region were classified as follows.

1) Coastal Batholith (East body ○ , West body ●)
2) Dupax Batholith (East body □ , West body ■)
3) Palali Batholith and its related alkaline porphyry rocks (△)

4) Complex of stocks and dikes along Santa Fe faults (◇)

5) Stocks in Cordillera Central Mts. (×)

6) Other Stocks (+)

(The symbol of each mass is shown in the parenthesis.)

The modal compositions of these granitic rocks are shown in Figure I-2,3. In Table I-2,3, albite was taken as plagioclase. For measurements, Swift Co. automatic point counter model C were used and 3,000∿5,000 points were counted for each thin section.

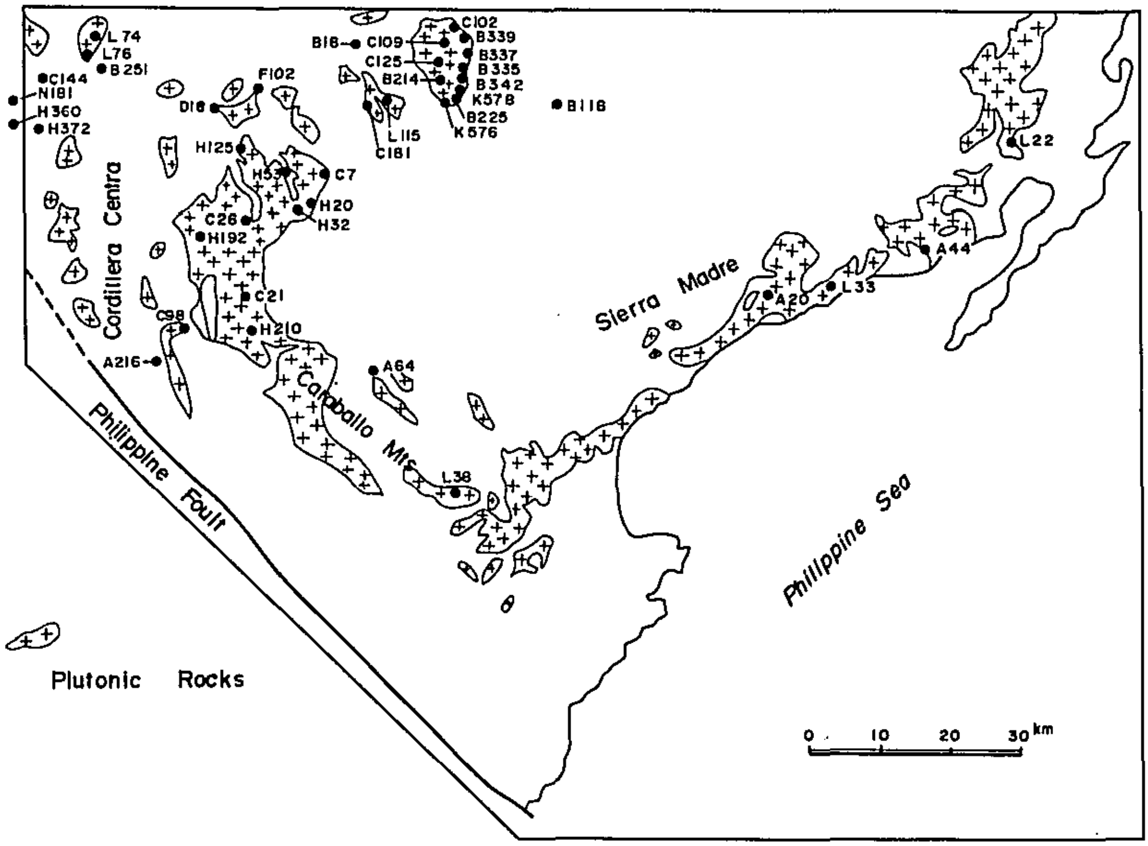


Fig. I-1 Location map of rocks for chemical analysis

Table I-3 Chemical composition of the Granitic rocks

Sample No.	A 20	A 44	A 64	A 216	B 18	B 214	B 225	B 251	B 335	B 337	B 339	B 342	C 7	C 21	C 26	C 98	C 102	C 109	C 125	C 144	C 181	D 18	F 102	H 20	H 32	H 53	H 125R	H 192	H 210R	H 360	H 372	K 576	K 578	L 22	L 33	L 38	L 74	L 76	L 115	N 181	A-200*	B-34*	B-93*	C-5D*	PA-14*
SiO_2	72.16	71.19	52.50	69.30	48.55	54.27	52.88	63.11	54.17	56.59	57.95	56.98	60.38	54.01	49.09	45.73	55.20	56.31	53.24	47.98	51.55	44.41	59.96	75.60	50.72	49.09	48.62	51.09	50.45	62.73	53.66	48.32	48.11	74.59	62.49	51.22	59.83	58.21	54.66	52.21	75.15	51.46	51.64	49.03	54.98
TiO_2	0.34	0.33	0.74	0.47	0.58	0.41	0.63	0.44	0.49	0.53	0.42	0.32	1.04	0.85	0.97	1.95	0.51	0.52	0.43	1.33	0.44	1.22	0.63	0.35	0.37	0.31	0.27	0.45	0.74	0.20	0.98	0.88	0.87	0.28	0.56	0.79	0.46	0.61	0.41	0.45	0.58	0.85	0.92	0.55	0.71
Al_2O_3	13.67	14.23	18.05	14.07	18.76	20.29	16.75	16.83	20.06	19.58	19.95	19.98	15.80	17.96	18.85	16.08	20.24	19.88	20.83	19.77	19.83	16.88	16.42	12.49	18.39	15.94	14.58	13.54	15.56	19.81	17.84	15.78	19.73	13.07	15.74	17.02	17.24	18.13	20.97	17.99	11.72	18.72	19.10	19.56	16.89
Fe_2O_3	1.08	1.20	3.58	0.96	4.03	1.71	5.49	2.43	1.87	3.08	2.86	2.33	4.23	3.15	3.56	5.43	1.83	2.87	1.55	4.37	2.26	6.05	2.90	0.43	7.61	15.14	5.08	1.70	6.20	2.92	0.97	5.25	3.43	0.79	2.10	3.82	2.02	1.12	1.75	1.11	1.68	3.87	2.04	1.95	5.07
FeO	2.66	2.59	6.72	3.84	4.67	2.30	1.78	2.55	2.52	1.19	0.79	1.28	3.63	5.78	7.47	9.92	2.05	2.55	1.72	6.86	2.87	5.71	4.28	2.34	1.18	2.86	6.49	6.14	3.13	0.94	5.46	2.76	2.98	2.08	5.21	7.40	1.98	3.84	2.23	6.14	1.12	5.83	2.70	4.44	2.66
Fe																															1.30							0.72							
MnO	0.12	0.08	0.16	0.11	0.21	0.33	0.13	0.09	0.26	0.12	0.06	0.07	0.23	0.19	0.23	0.20	0.23	0.27	0.31	0.14	0.23	0.17	0.09	0.05	0.08	0.18	0.09	0.13	0.13	0.06	0.18	0.13	0.28	0.07	0.14	0.27	0.11	0.08	0.19	0.17	0.02	0.18	0.03	0.15	0.01
MgO	0.77	0.88	4.16	1.34	3.21	1.47	4.16	2.01	1.38	1.73	2.55	1.81	2.45	3.66	4.28	5.73	1.38	2.19	1.16	4.14	1.97	7.74	2.96	0.64	2.30	7.85	10.49	10.71	3.95	2.20	3.84	6.98	1.87	0.54	2.67	4.88	2.60	2.74	0.91	6.81					
CaO	3.21	4.50	8.73	3.45	9.07	3.11	5.71	2.89	3.94	3.14	1.17	3.11	3.91	8.29	10.16	8.93	1.84	2.22	3.84	9.62	5.25	12.24	6.47	1.13	8.03	4.71	11.54	12.67	7.98	4.99	5.00	9.05	6.90	2.21	6.45	9.89	5.52	3.65	3.24	11.15	4.30	11.11	7.93	11.62	9.23
Na_2O	4.34	3.41	2.91	4.30	3.17	4.26	5.27	4.67	4.62	4.82	2.78	3.61	5.08	3.10	3.16	3.53	4.64	4.30	3.54	2.94	3.80	2.75	3.65	4.56	3.14	2.73	1.17	1.85	4.56	3.93	4.10	3.59	4.57	4.62	3.23	2.32	4.24	4.37	4.10	0.03	3.51	1.98	3.40	3.23	3.86
K_2O	0.70	0.40	0.61	0.46	3.57	7.00	3.03	2.10	6.94	4.70	8.55	6.32	0.65	0.58	0.08	0.13	7.82	5.55	8.14	0.70	5.84	0.44	0.29	0.84	4.65	0.51	0.00	0.08	3.98	0.45	0.53	3.99	5.33	0.43	0.30	0.32	1.96	2.02	7.31	1.94	0.50	0.53	3.97	1.09	0.94
P_2O_5	0.06	0.06	0.13	0.08	0.12	0.19	0.21	0.19	0.23	0.13	0.05	0.07	0.19	0.15	0.33	0.08	0.15	0.30	0.13	0.11	0.30	0.64	0.10	0.06	0.07	0.04	0.01	0.04	0.12	0.10	0.33	0.12	0.29	0.05	0.06	0.05	0.15	0.28	0.15	0.10	0.02	0.07	0.03	0.07	0.05
S																															1.49							0.83							
SO_3			21																												0.16							0.49							
$H_2O(+)$	0.52	0.79	1.21	1.02	2.52	2.80	3.09	2.20	2.68	3.35	1.95	3.27	1.48	1.28	1.01	1.96	2.63	2.08	4.03	1.41	3.99	1.42	1.68	1.17	3.36	0.85	1.88	1.34	2.53	0.89	3.35	2.71	4.25	0.79	0.79	1.30	2.80	2.28	2.90	1.61	0.60	0.23	2.92	2.25	0.69
$H_2O(-)$	0.24	0.18	0.26	0.30	0.48	0.82	0.52	0.16	0.42	0.54	0.32	0.67	0.38	0.36	0.18	0.18	0.46	0.54	0.72	0.22	0.84	0.08	0.18	0.04	0.43	0.13	0.20	0.02	0.44	0.18	0.08	0.35	0.54	0.08	0.02	0.02	0.40	0.14	0.90	0.04	0.27	0.11	0.80	0.34	0.20
Total	99.87	99.81	99.76	99.70	99.34	98.96	99.65	99.64	99.58	99.50	99.40	99.82	99.45	99.36	99.37	99.85	98.98	99.58	99.64	99.59	98.97	99.75	99.61	99.70	100.33	100.34	100.42	99.76	99.82	99.40	99.27	99.91	99.15	99.60	99.76	99.30	99.31	99.51	99.72	99.75	100.47	100.61	99.33	99.92	100.55

Norm component (C.I.P.W. norm)

Q	34.7	37.5	6.4	31.0				18.4		2.8	4.5	4.0	15.8	9.3				4.2		0.6			18.4	40.7		9.6	3.0	14.4		24.6	9.1		1.6	40.6	23.4	7.0	13.0	14.2		5.5	43.48	5.71			5.65
C		0.1		0.5		0.4		2.0		1.2	4.0	1.6					1.1	3.5						2.0		2.3				4.1	2.3			2.3				3.6	0.7						
or	3.9	2.2	3.9	2.8	21.1	41.2	17.8	12.2	41.2	27.8	50.6	37.3	3.9	3.3	5.0	0.6	46.2	32.8	47.9	3.9	34.5	2.8	1.7	5.0	27.3	2.8		0.6	23.4	2.8	3.3	23.4	3.9	2.8	1.7	1.7	11.1	11.7	43.4	0.6	2.78	3.34	23.37	6.68	5.57
ab	36.7	28.8	24.6	36.2	19.6	24.8	38.0	39.3	21.2	40.9	23.6	30.4	4.0	26.2	26.7	29.9	24.4	36.2	13.1	24.6	20.9	11.0	30.9	38.8	22.0	23.1	10.0	15.7	21.8	33.3	33.6	11.3	38.8	39.3	27.3	19.4	35.7	33.6	23.5	16.3	29.89	16.78	24.64	19.92	32.51
an	15.9	22.2	34.2	16.3	26.4	14.5	13.1	13.5	13.4	14.7	5.8	15.3	18.4	33.4	34.8	27.8	8.3	9.2	17.0	38.9	20.0	32.5	27.5	5.6	22.3	23.4	34.5	28.4	10.3	23.8	22.9	15.3	31.4	7.2	27.5	35.3	22.5	16.1	15.3	40.1	14.74	40.32	25.03	35.60	26.14
ne					3.9	6.1	3.6		9.6								8.1		9.1		6.0	6.5			2.6				9.2			10.3							6.0				2.27	3.98	
di wo			3.4		6.2		6.4		1.8				0.1	2.8	5.7	6.5			0.8	3.4	1.9	9.8	1.5		6.6		9.5	11.3	11.4			11.9	0.4		0.3	5.7	1.6			6.4	2.79	6.04	5.92	9.17	8.24
di en			1.8		3.7		5.5		1.0				0.1	1.6	2.9	3.5			0.3	1.9	1.1	7.3	0.8		5.7		6.8	2.7	9.8			10.3	0.3		0.2	3.1	1.2			3.8	2.41	3.92	4.52	6.02	7.13
di fs			1.5		2.2				0.8					1.2	2.7	2.8			0.6	1.3	0.7	1.5	0.5				1.9	9.2					0.1		0.2	2.4	0.3			2.2		1.71	0.79	2.51	
hy en	1.9	2.2	8.5	3.3				5.0					6.1	7.6	7.2	2.4				8.4			6.5	1.6	wo 0.7	19.6	19.3	wo 3.1	wo 0.4		9.5		4.4	1.3	6.5	9.0	5.2	6.8		13.1	0.10	10.24			5.92
hy fs	3.7	3.3	7.1	5.7				2.0					2.0	5.7	4.7	1.6				5.7			4.1	3.6			8.4			5.5	8.0		1.6	2.8	7.1	7.3	1.2	5.1		7.5		4.76			
ol fo					6.0	5.1	3.4		3.4	3.0	4.4	3.2			1.8	6.1	4.8	3.8	3.7		5.4	8.4										4.9							3.2				3.52	5.63	
ol fa					3.9	4.3			3.1						1.8	5.1	3.1	1.5	2.8		3.8	1.8																	3.7				0.81	2.65	
mt	1.6	1.9	5.1	1.4	5.8	2.5	4.4	3.5	2.8	2.8	1.6	3.5	6.0	4.6	5.1	7.9	2.5	4.2	2.3	6.3	3.0	8.8	4.2	0.7	2.8	9.0	7.4	2.5	8.6	2.5	1.4	6.7	4.9	1.2	3.0	5.6	3.0	1.6	2.5	1.6	2.08	5.56	3.01	2.78	6.28
il	0.6	0.6	1.4	0.9	1.1	0.8	1.2	0.9	0.9	1.1	0.8	0.6	2.0	1.7	1.8	3.6	0.9	1.1	0.8	2.6	0.9	2.3	1.2		0.8	0.6	0.5	0.9	1.4	0.5	1.8	1.7	1.7	0.6	1.1	1.5	0.9	1.2	0.8	0.9	1.06	1.67	1.82	1.06	1.37
hm							2.4			1.1	1.8														5.7	8.9			0.3	1.1		0.6									0.32				0.64
ap			0.3	0.3	1.3	0.3	0.3	0.3	0.7	0.3			0.3	0.3	0.7	0.3	0.3	0.7	0.3	0.3	0.7	1.7	0.3	0.6					0.3	0.3	2.7	0.3	0.7	1.3	1.3		0.3	0.7	0.3						
pr																															2.6							1.6							
th																															0.3							0.9							
Total	99.0	99.8	98.2	98.4	101.2	100.0	96.1	97.1	99.9	95.7	97.1	95.9	97.7	97.7	100.9	98.1	99.7	97.2	98.7	97.9	98.9	94.4	97.6	98.6	96.5	99.3	101.3	88.8	96.9	98.5	95.5	96.7	89.8	99.4	99.6	98.0	96.0	97.1	99.4	98.0	99.65	100.05	95.70	96.00	99.45

* analyzed in Face I

Table I-4 Ages of K - Ar dating

No.	Sample No.	Plate No.	Rock Name	Mineral	scc$^{40}Ar^R$/gx10^{-5}	$^{40}Ar^R$ %	K %	Age (m.y.)
1	A - 44	I-4-1-1-ii	Tonalite	Hornblende	0.060	56	0.42	32.5 ± 3.8
2	64	I-4-1-2-i	Hornblende gabbro	"	0.037	23	0.27	31.2 ± 4.2
3	216	I-4-2-2-i	Tonalite	"	0.035	47	0.257	31.7 ± 2.8
4	B - 118	I-4-2-5-i	Hornblende diorite	"	0.10	65	1.37	20.4 ± 3.9
5	335	I-4-2-5-iv	Syenite	"	0.129	67	1.67	20.3 ± 2.0
6	C - 26	I-4-2-3-iii	Quartz diorite	"	0.063	63	0.548	30.3 ± 3.4
7	35	I-4-2-1-ii	Schistose amphibolite	"	0.0045	12	0.053	31.7 ± 15.3
8	98	I-4-2-2-i	Quartz gabbro	"	0.021	20.0	0.076	74 ± 12
9	H - 353	I-4-2-1-iii	Dacite	Whole rock	0.037	20.7	0.507	17.6 ± 1.0
10	380	I-4-2-1-iii	Amphibole schist	Hornblende	0.0050	12	0.098	14.2 ± 2.2
11	L - 33	I-4-1-1-iii	Quartz diorite	"	0.015	24	0.114	27.4 ± 11
12	38	I-4-1-2-i	Amphibole gabbro	"	0.031	29	0.247	30.0 ± 2.9
13	74	I-4-2-1-iv	Andesite	"	0.019	12	0.80	6.1 ± 0.7
14	76	I-4-2-1-iv	Quartz diorite	Whole rock	0.017	16	1.37	3.5 ± 0.7
15	115	I-4-2-3-i	Syenite	"	0.045	66	6.58	17.2 ± 1.0

Remark: i, ii, iii & iv mean the quadrants of each plates.

iv	i
iii	ii

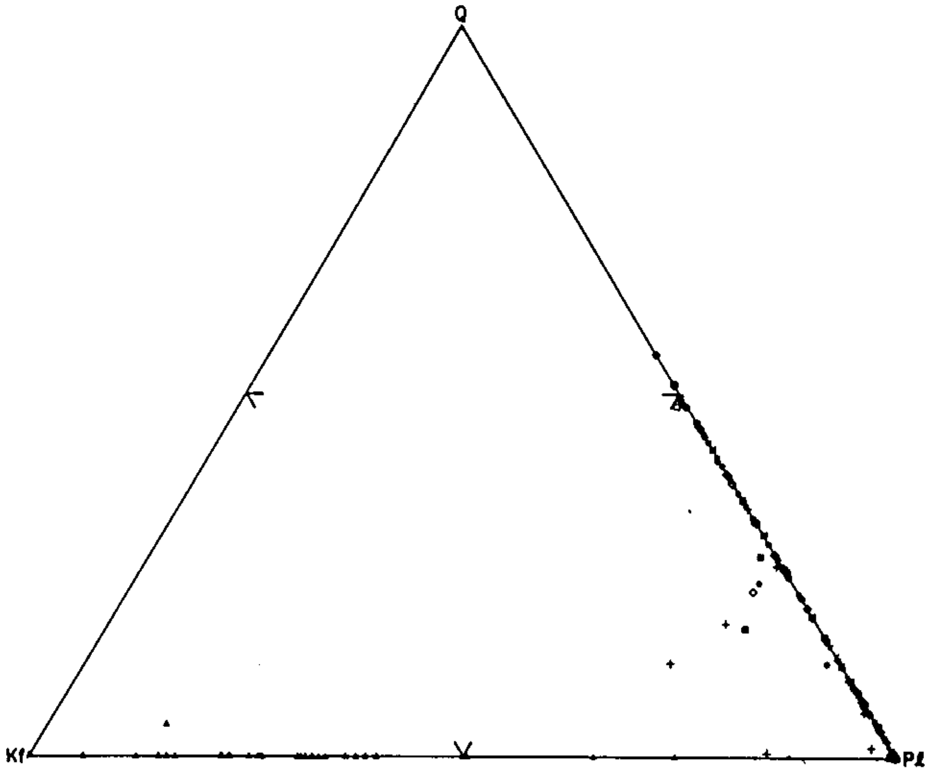


Fig. I-2 Mode; Q - Kf - Pl Diagram

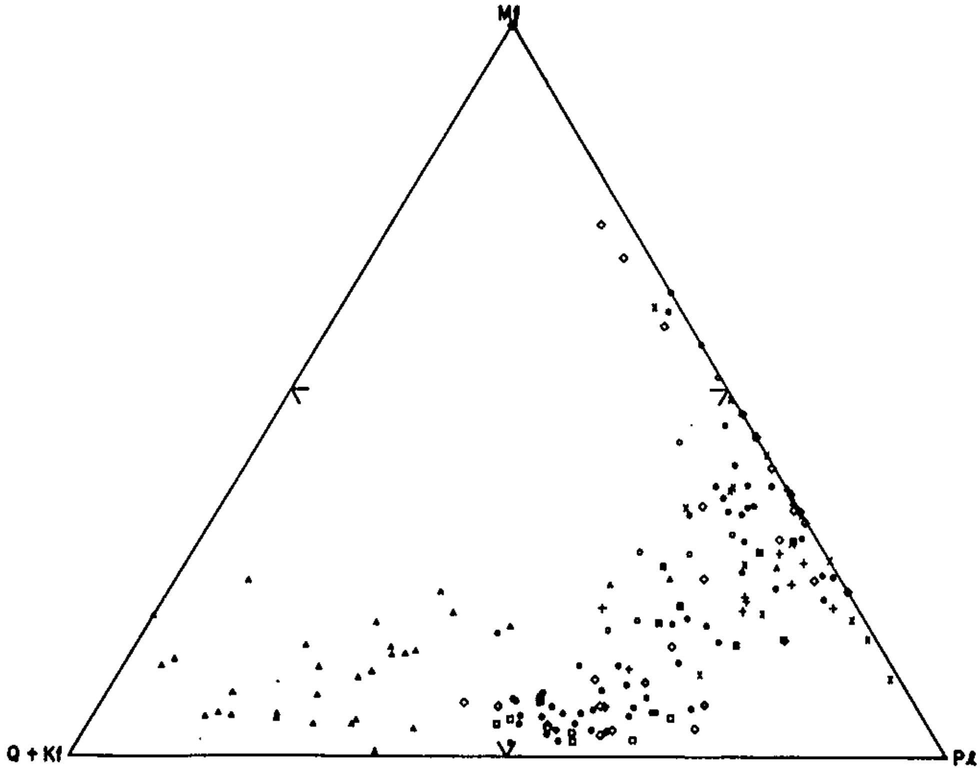


Fig. I-3 Mode; Mf - (Q + Kf) - Pl Diagram

1) Coastal Batholith

Distribution; The Coastal Batholith is exposed in the direction of NE-SW from the northwest of Casiguran to the north of Baler along the coast, and turns toward the east of Carranglan. It has an areal exposure of about 800 km^2.

Rock Facies; The Coastal Batholith consists mainly of tonalite, quartz diorite and diorite with minor gabbroic masses. Diorite is the main rock facies at the eastward of Dinajawan, being accompanied with minor tonalite and gabbro. At the westward of Dinajawan, tonalite is the main rock facies of the Batholith, with small amounts of diorite and gabbro.

o Tonalite

This rock facies is biotite-hornblende tonalite in accuracy and subdivided into following two types.

1) Coarse-grained heterogeneous and melanocratic tonalite

2) Medium-grained hypidiomorphic-granular tonalite

In the former coarse-grained tonalite, cataclastic texture is sometimes recognized. The aggregates consisted of quartz (2 $\sim$ 3 mm across) and fragmental plagioclase (max. 20 mm long) that suffered crushing, transformation and transition. In the latter medium -grained quartz diorite, dark inclusions with a dimension of about 15 × 30 mm^2 are contained.

(Microscopic features)

1) Pl $\geqq$ Qz >> Chl $\geqq$ Ep $\geqq$ Ore > Kf

Plagioclase; It is idiomorphic to hypidiomorphic and 1 $\sim$ 3 mm in length, being homogeneous or normally zoned and corroded by quartz.

Quartz; It is granular or xenomorphic, occurring interstitially with distinct wavy extinction, and is somewhat coarser than plagioclase (ave. 3 ∿ 5 mm across, max. 8 mm across).

Hornblende; It is granular or vermicular-shaped idiomorphic crystal being distinctly actinolitized or chloritized.

Biotite; It is fine-grained hypidiomorphic to xenomorphic crystal and is gathered to form interstitial aggregates. Distinct chloritization is recognized.

Opaque minerals; They are fine granular xenomorphic to hypidiomosphic crystals being partly altered to leucoxene.

K-feldspar; It is xenomorphic crystal occurring interstitially in very small amount.

Altered minerals; Chlorite, epidote, calcite and leucoxene are recognized as secondary minerals.

2) Pl >> Qz > Ho > (Chl > Ep >) Bt > Ore > Kf

Plagioclase; It is an idiomorphic crystal with a dimension of 1 ∿ 5 mm in length, showing normal or oscillatory zoning.
Graphic texture of albite is sometimes recognized at the oscillatory-zoned rim.

Quartz; It is granular or xenomorphic crystal with a dimension of 2 ∿ 3 mm across, occuring interstitially with wavy extinction and partly corrodes plagioclase.

Hornblende; It is hypidiomorphic crystal occurring interstitially with a dimension of about 1 ∿ 2 mm in length.
Chloritization is partly recognized.

Biotite; It is fine-grained acicular crystal occurring interstitially with xenomorphic outline.

Opaque minerals; They are fine-grained idiomorphic crystals.

Altered minerals; Chlorite, epidote and actinolite are recognized.

o Quartz diorite ∿ Diorite

Dark greenish gray, coarse to medium-grained quartz diorite containing plagioclase and quartz being in similar granularity, and dark greenish gray, fine to medium-grained diorite containing coarse -grained quartz (<5 mm across) sporadically, are distinguished.

(Microscopic features)

1) Quartz diorite; Pl > Ho > Qz > Cpx(±)

Plagioclase; It is idiomorphic to hypidiomorphic crystal with a dimension of 0.5 ∿ 2 mm long. Normal ∿ oscillatory zoning is recognized and the core part is frequently corroded by quartz.

Quartz; It is xenomorphic crystal occurring interstitially and is partly recognized the granulation or formation of pods.

Hornblende; It is hypidiomorphic rectangular or xenomorphic granular, greenish brown crystal with a dimension of 1 ∿ 3 mm long. Most of the crystals show ophitic or poikilitic textures. Chloritization is generally recognized though actinolitization develops partly.

Opaque minerals; They are xenomorphic granular to hypidiomorphic fine-grained crystals associated with hornblende.

Clinopyroxene; It is rarely recognized as relict within hornblende in small quantities.

Altered minerals; Chlorite, epidote, calcite and actinolite are recognized.

2) Diorite Pl > Cpx > Ore > Qz > Ho

Plagioclase; It is idiomorphic to hypidiomorphic, long rectangular crystal with a dimension of about 0.5 mm long.

Clinopyroxene; It is fine-grained idiomorphic long rectangular crystal being less than 0.5 mm long.

Opaque minerals; They are fine-grained granular and idiomorphic to hypidiomorphic crystals being less than 0.2 mm across.

Quartz; It is xenomorphic crystal with a dimension of about 1 mm across occurring interstitially with distinct wavy extinction. Frequently quartz-pods exist with recognizable K-feldspar.

Hornblende; It is hypidiomorphic greenish brown crystal with a dimension of about 2 mm in length, and partly suffered chloritization.

Altered minerals; Chlorite, epidote, calcite and sericite are recognized as secondary minerals though the latter two are not so generally found.

o Gabbro ∿ Quartz gabbro (Opx - Cpx - Ho gabbro ∿ Opx - Cpx - Ho - quartz gabbro)

This is pale-greenish to dark greenish gray, fine to medium-grained rock. It contains coarse-grained long prismatic plagioclase (max. 5 mm, ave. 2 ∿ 3 mm in length), coarse-grained idiomorphic pyroxene (6×5 mm^2) and fine-grained hypidiomorphic to xenomorphic pyroxene (1 ∿ 2 mm long). This rock type is subdivided into two groups such as 1) the rock containing quartz and 2) the rock free from quartz.

(Microscopic features)

1) Gabbro (Opx - Cpx - Ho gabbro) Pl > Ho > Cpx > Opx $\geqq$ Qz > Ore > Acs

Plagioclase; It is idiomorphic to hypidiomorphic crystal with a dimension of 1 ∿ 5 mm in length, showing normal step zoning and the core is partly corroded.

Hornblende; It is idiomorphic to hypidiomorphic rectangular crystal with a dimension of 2 ∿ 3 mm long, being pleochroic with green ∿ greenish brown and contains clinopyroxene and plagioclase poikilitically.

Clinopyroxene; It is idiomorphic granular to rectangular crystal, being almost perfectly urabilized, with a dimension of 1 ∿ 2 mm long.

Orthopyroxene; ditto.

Opaque minerals; They are fine-grained granular crystals being not so small in quantities.

Altered minerals; Colorless amphibole, chlorite, epidote with or without calcite are recognized as secondary minerals. Colorless amphibole is consisted of the assemblage of secondary fibrous crystals of which composition is in the tremolite-actinolite series. Judging from the outline of the crystal, the colorless amphibole is considered to have crystallized primarily as pyroxene.

2) Quartz gabbro (Opx - Cpx - Ho quartz gabbro)

Pl > Cpx > Ho > Qz > Opx > Ore > Acs

Microscopic characters of this rock facies are the same as those of above mentioned gabbro except for the existence of quartz.

Quartz is xenomorphic crystal, occurring interstitially with distinct wavy extinction.

Mode; In Fig. I-2, almost all of the rock samples taken from each rock facies of the Coastal Batholith are plotted on the Q-Pl tie line. Therefore, these rocks are named as tonalite, quartz diorite, diorite, quartz gabbro and gabbro. In this diagram, coarse-grained tonalite is plotted within the area of Pl $\geqq$ Q, 50 > Q > 40%, on the other hand, medium-grained tonalite is plotted within the area of Pl >> Q, 40 > Q > 20%. Quartz diorite and quartz gabbro are plotted within the area of 10 > Q > 5%, and also diorite and gabbro within 5% > Q.

In the Fig. I-3, rock smaples of the Coastal Batholith are plotted with a zone of Pl = 65 ∿ 45% except for some of quartz gabbro and gabbro. For the Coastal Batholith, the marginal component Q + Kf of this diagram is actually equivalent to Q content as well shown in Fig. I-2.

As shown in Fig. I-3, coarse-grained tonalite is plotted within the area of Mf < 10% and 5% in average, and medium-grained tonalite is 20% in average. Quartz diorite and diorite is plotted within the area of 40 > Mf > 20%.

Age; The K-Ar dating for Phase I have given the age of 49 m.y. ∿ 43 m.y. The K-Ar dating of this time for Phase II shows, however, the age of 44 m.y. ∿ 27 m.y. The Coastal Batholith is intruded by younger small dioritic mass (19 m.y.) and is intruding into all the Formations I, II, III of Caraballo Group.

2) Dupax Batholith

Distribution; The Dupax Batholith is exposed elongated continuously northward from the north of Burgos to Aritao. This batholith changes continuously into the Coastal Batholith, though both batholiths had been considered to be separated at the north of Burgos in the report of last year. Tonalite occupies the eastern half of the batholith and the western half is consisted of quartz diorite and diorite containing gabbro.

Rock Facies; The batholith is mainly composed of quartz diorite, diorite and tonalite with minor amount of gabbro.

Comparing with the Coastal Batholith, these rock facies are not so different in megascopic features except for the granularity.

o Quartz diorite (Px - Bt - Ho quartz diorite)

This rock facies is medium to coarse-grained and gray ∿ whitish gray in color. Some of the rocks are porphyritic by the existence of plagioclase and hornblende, and in some of them hornblende occurs poikilitically.

(Microscopic features)

Pl > Qz > Ho > Bt > Px > Ore

Plagioclase; It is idiomorphic to hypidiomorphic crystal with a dimension of 1 ∿ 5 mm in length, showing normal zoning or normal step zoning.

Quartz; It is xenomorphic crystal occurring interstitially with distinct wavy extinction and partly corrodes plagioclase.

Hornblende; It is hypidiomorphic to xenomorphic crystal with a dimension of 2 ∿ 6 mm long, most of which has poikilitic texture showing pale-green ∿ greenish brown in color and is partly chloritized.

Biotite; It is hypidiomorphic crystal being less than 1 mm across, occurring in small amount associated with hornblende.

Pyroxene; It occurs in small quantities within hornblende as relict.

Opaque minerals; They are xenomorphic granular crystals, being less than 1 mm across, occurring interstitially.

K-feldspar; It is xenomorphic crystal occurring interstitially in very small amount.

Altered minerals; Chlorite, epidote and calcite are recognized.

o Diorite (Opx - Cpx - Bt - Ho diorite)

Megascopic feature is same as that of quartz diorite.

(Microscopic features)

Pl > Ho > Qz $\geqq$ Ore > Bt > Px

Plagioclase; It is idiomorphic to hypidiomorphic crystal with a dimension of 1 ∿ 3 mm in length, some of which shows oscillatory zoning and the others homogeneous.

Sometimes, the core part of zoned plagioclase is vermicularly corroded.

Hornblende; It is hypidiomorphic to xenomorphic, green crystal with a dimension of 2 ∿ 5 mm long, occurring poikilitically and is partly chloritized.

Quartz; It is xenomorphic crystal occurring interstitially with a dimension of 1 ∿ 2 mm across. It shows distinct wavy extinction, corroding the plagioclase.

Opaque minerals; They are xenomorphic crystals occurring associated with completély chloritized hornblende.

Altered minerals; Chlorite, epidote and calcite are recognized.

o Tonalite

This rock facies is fine to medium-grained heterogeneous, characterized by porphyritic texture by the existence of plagioclase and quartz-aggregates (5 ∿ 6 mm across). Graphic texture or aplitic part are partly recognized.

(Microscopic features)

Pl > Qz > Ho > Bt > Ore

Plagioclase; It is idiomorphic to hypidiomorphic crystal occurring equigranularly with a dimension of 1 ∿ 3 mm in length.

It is lower in An content and shows normal or oscillatory zoning.

Albite ∿ oligoclase occupies the spaces among quartz.

Quartz; It is xenomorphic granular crystal being less than 5 mm across. It shows distinct wavy extinction and frequently forms aggregates.

Hornblende; This mineral is almost completely chloritized.

Biotite; do.

Opeque minerals; They are fine granular crystals occurring in small quantities.

Altered minerals; Chlorite and epidote are recognized.

Mode; The characters with respect to the modal composition of the Dupax Batholith are same as those of the Coastal Batholith.

Age; The Dupax Batholith is intruding into the Caraballo Group, on the other hand it is intruded by syenite dikes.

The K-Ar dating for Phase I have given the age of 25 ∿ 29 m.y.

The measurement on this time shows, however, the age of 30 m.y.

3) Palali Batholith and it's related alkaline porphyry rocks.

Distribution; Palali Batholith occurs with trapezoidal exposure of about 100 km^2 at the southwest of Quezon and the southern part of the batholith is covered by roof-pendant pyroclastics smaller than 10 km^2.

At the Manparang mountains around the batholith, small alkaline plutonic masses expose, most of the long axis of which lie in the direction of NNW-SSE.

Rock Facies; The Palali Batholith is mainly composed of syenite and monzonite associating with minor amount of alkali-feldspar syenite. Most of the small masses around the Palali Batholith are consisted of fine to medium-grained syenite.

o Syenite and alkali-feldspar syenite

This rock facies is whitish gray ∿ pale-pinkish gray in color and the syenite and alkali-feldspar syenite constructing the batholith are medium to coarse grained and heterogeneous, on the other hand the syenite taken from small dike is fine to medium grained rock, some of which are homogeneous and the other are heterogeneous. In the latter case, this heterogeneity is ascribed to the presence of K-feldspar megacrysts longer than 1 cm and as the result, the rock shows porphyritic texture. Plagioclase and amphibole have well-sorted granularity and fine-grained dark inclusions are partly recognized.

(Microscopic features)

Kf > Pl >> Px ∿ Ho ∿ Bt

K-feldspar; It is idiomorphic crystal of which dimension varies from 10 mm to 2 mm in length. Some of the crystal show poikilitic texture.

Plagioclase; It is idiomorphic to hypidiomorphic crystal being less than 10 mm in length. Homogeneous and weakly normal-zoned crystals are recognized though the most of which significantly suffered alteration and replaced by zeolite, sericite, calcite, chlorite, montmorillonite or epidote.

Clinopyroxene; It is idiomorphic, pale-greenish crystal with a dimension of 1 ∿ 2 mm across, and has hourglass structure. It may be titanaugite.

Amphibole; It is idiomorphic to hypidiomorphic crystal being less than 2 mm in length, most of which suffered alteration and replaced by chlorite, montmorillonite or others.

Biotite; It is hypidiomorphic to xenomorphic crystal being less than 1.5 mm across, of which pleochroism is brown ∿ yellowish brown and the most of which is altered to chlorite.

Opaque minerals; They are granular crystals being less than 0.5 mm across, occurring sporadically.

o Monzonite

This rock facies is medium-grained and dark-greenish gray with a dash of pale pink in color. It is equigranular and some of plagioclase show the duplication structure by zoning (reverse-Rapakivi structure).

(Microscopic features)

Kf $\geqq$ Pl > Cpx > Bt $\geqq$ Ho > Ore

Pl $\geqq$ Kf > Cpx > Bt $\geqq$ Ho > Ore

Two types of modal composition are recognized as described above, but the differences in the texture of rocks or microscopic characters of minerals between the rocks of these two types are not recognized.

K-feldspar; It is idiomorphic to hypidiomorphic crystal, some of which are 5 mm in length and the others are less than 2 mm in length. Two types of occurrence are recognized.
One is hypidiomorphic occurring interstitially and has perthite structure, and the other is idiomorphic occurring poikilitically and shows the porphyritic texture.

Plagioclase; It is idiomorphic crystal being less than 2.5 mm in length, some of which are rimmed by albite and frequently replaced by sericite or zeolite.

Clinopyroxene; It is idiomorphic pale-greenish crystal being less than 2.5 mm across, and some of which have hourglass structure. It may be titanaugite.

Amphibole; It is idiomorphic to hypidiomorphic crystal with a dimension of less than 3 mm in length, most of which are altered to carbonate minerals or chlorite.

Biotite; It is fine-grained hypidiomorphic crystal being less than 1 mm across and includes opaque minerals or apatite.

Opaque minerals; They are rarely found fine-grained crystals occurring interstitially.

Mode; As shown in Fig. I-2, these alkaline plutonic rocks are plotted on the Kf-Pl tie line. Therefore, these rocks are named as alkali-feldspar syenite and syenites following the system after IUGS Subcommission. Alkali-feldspar syenite and syenite have Mf $\leqq$ 10%, on the other hand monzonitic rocks have Mf $\geqq$ 10% (Fig. I-3).

Age; These alkaline plutonic rocks are intruded into the Manparang formation and a part of which is intruded into the Dupax Batholith as dikes. Syenite and syenite porphyry belonging to the alkaline plutonic rocks have intruded in a NNW-SSE direction. The K-Ar dating of this year for these alkaline plutonic rocks shows the age of 25 m.y. ∿ 20 m.y. though the dating last year have given the age of 26 m.y. ∿ 25 m.y.

4) Complex stocks and dikes along Santa Fe faults

Distribution; These plutonic rocks are interspersed within the area along Santa Fe faults, from Digdig to the neighbourhood of Pingkian through Santa Fe.

Rock facies; The plutonic rocks are classified into the following two groups.

1) Acidic rock facies such as tonalite or granophyre.
2) Basic rock facies such as diorite or gabbro.

Besides, small amount of quartz diorite is also recognized. Near the plutonic rocks, crystalline-schist occurs.

o Tonalite (Bt - Ho tonalite)

This rock facies is medium-grained and greenish gray in color. Plagioclase is somewhat greenish by the effect of secondary alteration. Hornblende suffered chloritization distinctly.

(Microscopic features)

Pl > Qz >> Ho > Bt $\geqq$ Ore

Plagioclase; It is idiomorphic to hypidiomorphic crystal being less than 2 mm in length. It is normally zoned and the core part is frequently chloritized.

Quartz; It is xenomorphic crystal with a dimension of 1 ∿ 2 mm across, occurring interstitially and forms spots with weak wavy extinction.

Hornblende; It is idiomorphic to hypidiomorphic, prismatic crystal with a dimension of 1 ∿ 2 mm in length and is generally uralitized distinctly.

Biotite; It is completely chloritized.

Opaque minerals; They occur granularly in small quantities.

Altered minerals; Chlorite, sericite, epidote and calcite are recognized.

o Diorite (Cpx - Ho - diorite)

This rock facies is fine to medium-grained and dark-greenish gray in color. Sometimes, porphyritic plagioclase and hornblende are recognized.

(Microscopic features)

Pl > Ho > Qz > Cpx > Ore

Plagioclase; It is idiomorphic crystal being less than 2 mm long. It is normally zoned and the core of which is replaced by chlorite or sericite.

Hornblende; It is idiomorphic to hypidiomorphic crystal being 5 ∿ 2 mm in length and is almost completely uralitized. Poikilitic structure is partly recognized.

Quartz; It is xenomorphic crystal with weak wavy extinction occurring interstitially.

Clinopyroxene; It occurs included within poikilitic hornblende and is partly uralitized.

Opaque minerals; They occur granularly in small quantities.

Altered minerals; Chlorite, sericite, calcite and epidote are recognized.

Mode; In the Qz - Kf - Pl diagram (Fig. I-2), the plutonic rocks described here are plotted on the Qz - Pl tie line. The tonalitic rocks have Pl < 80%, and the dioritic rocks have Pl > 90%.

In the Mf-(Q+Kf)-Pl diagram (Fig. I-3), dioritic rocks plotted near the Mf-Pl tie line and tonalitic rocks plotted on the area of Mf < 10% are distinguished.

Age; The K-Ar dating for these plutonic rocks have not carried out yet. These plutonic rocks occur along Santa Fe faults.

This fact suggests that the age of plutonic activity occurred almost simultaneously as the formation of Santa Fe faults.

If it is the case, these plutonic rocks might have been intruded at the stage of Manparang formation which is considered to be the age of the formation of Santa Fe faults.

5) Stocks in Cordillera Central Mountains

Distribution; The plutonic rocks that crop out at the Cordillera Central Mountains is the younger upheaval zone occupying the western part of the surveyed region. Relatively larger stocks among them occur at the south of Bokod and Balado.

Rock facies; These plutonic rocks are mainly composed of quartz diorite and diorite with minor amount of gabbro. These rock facies are similar in their microscopic characters and only differ in modal compositions.

o Quartz diorite (Bt-Cpx-Ho quartz diorite)

This rock facies is fine to medium-grained and greenish gray in color, some of which have porphyritic texture by the presence of plagioclase and/or hornblende, and is partly equigranular. Porphyritic plagioclase suffered weak chloritization. As colored minerals, pyroxene and hornblende are recognized, the former occurs as core of a grain and the latter encloses it as mantle.

(Microscopic features)

Pl > Ho > Qz > Px > Bt > Ore

Plagioclase; It is idiomorphic to hypidiomorphic crystal with a dimension of less than 5 mm in length, occurring poikilitically and is frequently uralitized.

Quartz; It is xenomorphic crystal with weak wavy extinction occurring interstitially or as spot and frequently corrodes the plagioclase.

Clinopyroxene; It is included in poikilitic hornblende and partly uralitized.

Opaque minerals; They occur granularly in small quantities.

Altered minerals; Chlorite, actinolite, epidote and calcite are recognized.

o Diorite

This rock facies is dark-greenish gray in color and the other megascopic characters are same as those of quartz diorite.

(Microscopic features)

Microscopically, this rock facies is same as quartz diorite.

Mode; In the Q-Kf-Pl diagram (Fig. I-2), the plutonic rocks described here are plotted on the Q-Pl tie line and most of which have Pl > 85%. In the Mf-(Q+Kf)-Pl diagram (Fig. I-3), on the other hand, they are plotted spreading over the wide range of Mf content.

6) Other stocks

Distribution; Granitic rocks occurring as stocks near Bambang or at Mamparang Mountains are described hereafter.

Rock facies; This rock facies is medium to coarse-grained, heterogeneous and dark-greenish gray ∿ gray in color.

1) Quartz diorite and diorite, and 2) tonalite are distinguished. Some of these rocks have cataclastic texture.

o Quartz diorite and diorite (Cpx-Ho-quartz diorite and diorite)

This rock facies has hypidiomorphic granular texture constructed by plagioclase and colored minerals, partly showing ophitic texture. Thin veins consisted of quartz or carbonate minerals are frequently recognized.

(Microscopic features)

Pl > Ho >> Qz > Ore

Plagioclase; It is idiomorphic to hypidiomorphic crystal with the dimension of 2 ∿ 5 mm in length. It shows normal zoning, that is, homogeneous core part is mantled by normally zoned marginal part.

Hornblende; It is hypidiomorphic, prismatic crystal being less than 5 mm in length.

Quartz; It is xenomorphic granular crystal with distinct wavy extinction occurring interstitially.

Opaque minerals; They are xenomorphic granular crystals being less than 1 mm across.

Altered minerals; Uralite, chlorite, calcite and epidote are recognized.

o Tonalite (Bt-Ho tonalite)

This rock facies contains quartz-aggregates and the cataclastic texture is sometimes recognized.

(Microscopic features)

Pl > Qz > Ho > Bt > Ore

Plagioclase; It is hypidiomorphic crystal being less than 4 mm in length and is normally zoned, the margin of which is mantled by albite.

Quartz; It is xenomorphic crystal being less than 8 mm across and distinct wavy extinction is generally recognized, though a weak one is also found.

Hornblende; It is hypidiomorphic crystal being less than 2.5 mm in length and is almost completely altered to chlorite.

Biotite; It is fine-grained xenomorphic crystal coexisting with hornblende in small amount.

Opaque mineral; It is xenomorphic crystal occurring in small quantities.

Altered minerals; Chlorite and calcite are recognized.

Mode; The plutonic rocks described here have considerable variance in modal composition. It may be ascribed to the fact that the rocks in question contain the rocks of several masses being unrelated to one another.

Age; The age of the plutonic rocks is not clear.

1-3 Chemical compositions of plutonic rocks

The rock samples taken from forty locatities of plutonic masses were chemically analyzed in the current year. Adding up the five data gained last year and the present one, forty-five data for the chemical compositions of rock samples taken from the plutonic rocks occurring within the surveyed region had been analyzed. The sources of rock samples of all the data are shown as follows. In the following description, the plutonic rocks are classified into six groups as described in I-2-2. (* indicates the sample number analyzed last year)

1) Coastal Batholith

East body (Symbol ○): A20, A64, A216, L38, A200*, C50

West body (Symbol ●): A44, L33

2) Dupax Batholith

East body (Symbol □): H20

West body (Symbol ■): C21, C26, H53

3) Palali Batholith and its related plutonic rocks

(Symbol △): B118, B214, B225, B335, B33, B339, B342, C102, C109, C125, C181, H32, K576, L115, B93*, C5D

4) Complex of stocks and dikes along Santa Fe faults

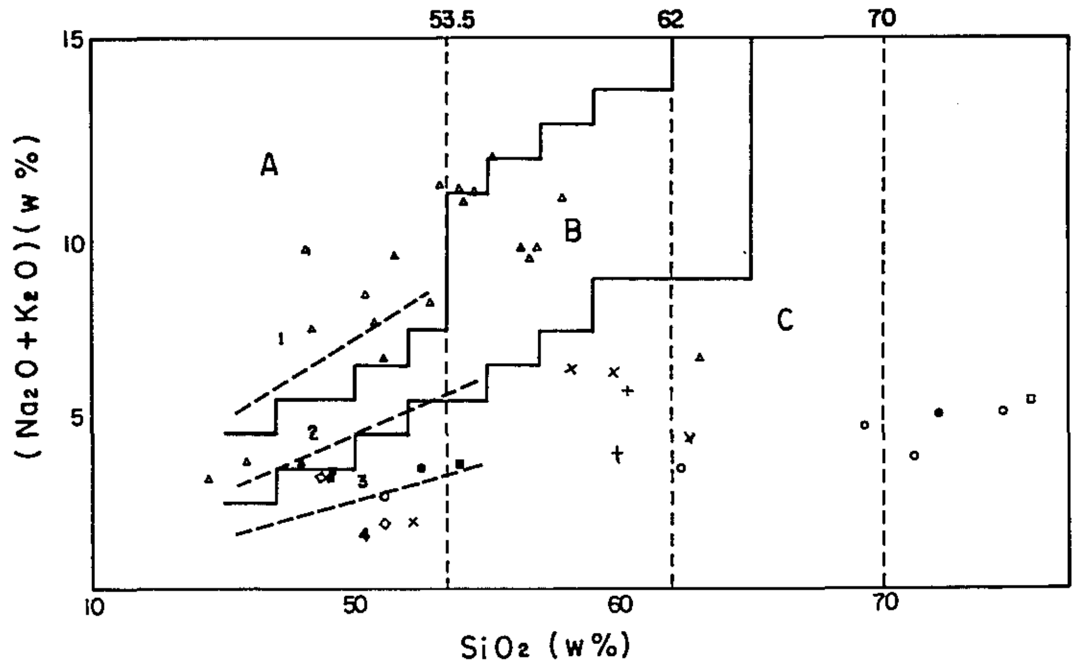
(Symbol ◇): C98, H125, H192, A200*

5) Stocks in Cordillera Central Mts.

(Symbol ×): B251, C144, H360, H372, L74, L76, N181

6) Other stocks

(Symbol +): C7, D18, F102, H210



A ; Peralkalic Rock
B ; Alkalic Rock
C ; Nonalkalic Rock
(Middlemost,E.A.K. 1972)

1 ; Peralkalic Basalt
2 ; Alkalic Basalt
3 ; High-alkalic Tholeiite
(Island arc - Arc of Continenta
-l Margin)
4 ; Low-alkalic Tholeiite
(")
(Gorai,M. 1973)

1. ○ Coastal Batholith, East Body
● " West Body
2. □ Dupax Batholith, East Body
■ " West Body
3. △ Palali Batholith
4. ◇ Stocks along Santa Fe Fault
5. X Stocks in the area of Cordirrera Central
6. + The other stocks

Fig. I-4 ($Na_2O + K_2O$) - SiO_2 Diagram

To investigate these data, the C.I.P.W norm of each analyzed datum was calculated first (Table I-3). As a result, the existence of many nepheline-normative rock samples is noticed as well as the data gained last year. Therefore, using the (K_2O+Na_2O)-SiO_2 diagram which is generally used to classify the volcanic rocks, all the rock samples analyzed were divided into two groups such as alkaline plutonic rocks and non-alkaline plutonic rocks (Fig. I-4).

Then, the normative compositions are plotted on the Q-Kf-Pl-Ne diagram (Fig. I-5) (provided that Kf=or+ab).
As shown in this diagram, the Palali Batholith and its related alkaline rocks are plotted spreading over the both sides of Kf-Pl tie line. After the modal classification, the upper side of this tie line is the field of monzonite, and the lower side is those of syenite and alkali-feldspar syenite. The Coastal Batholith and Dupax Batholith are plotted within a zone of Kf=40 ∿ 50%. These rocks are poorer in K_2O content. Accordingly, the Kf component in this diagram is considered actually to be equivalent to normative Ab. For the modal analysis, albite is regarded as plagioclase (as albite and continuously exchanging more An-rich plagioclase cannot be distinguished under microscope). In this case, the rocks are plotted within a zone where modes of plagioclase keep almost a constant value as well as the case of normative diagram (Fig. I-5). Judging from these facts, in the case of Coastal Batholith and Dupax Batholith, the modal ratio of albite against the other colorless minerals is considered to keep constant throughout all the rock facies.

To examine the characters for changing pattern of each oxide among the rock facies, the contents of oxides are plotted against

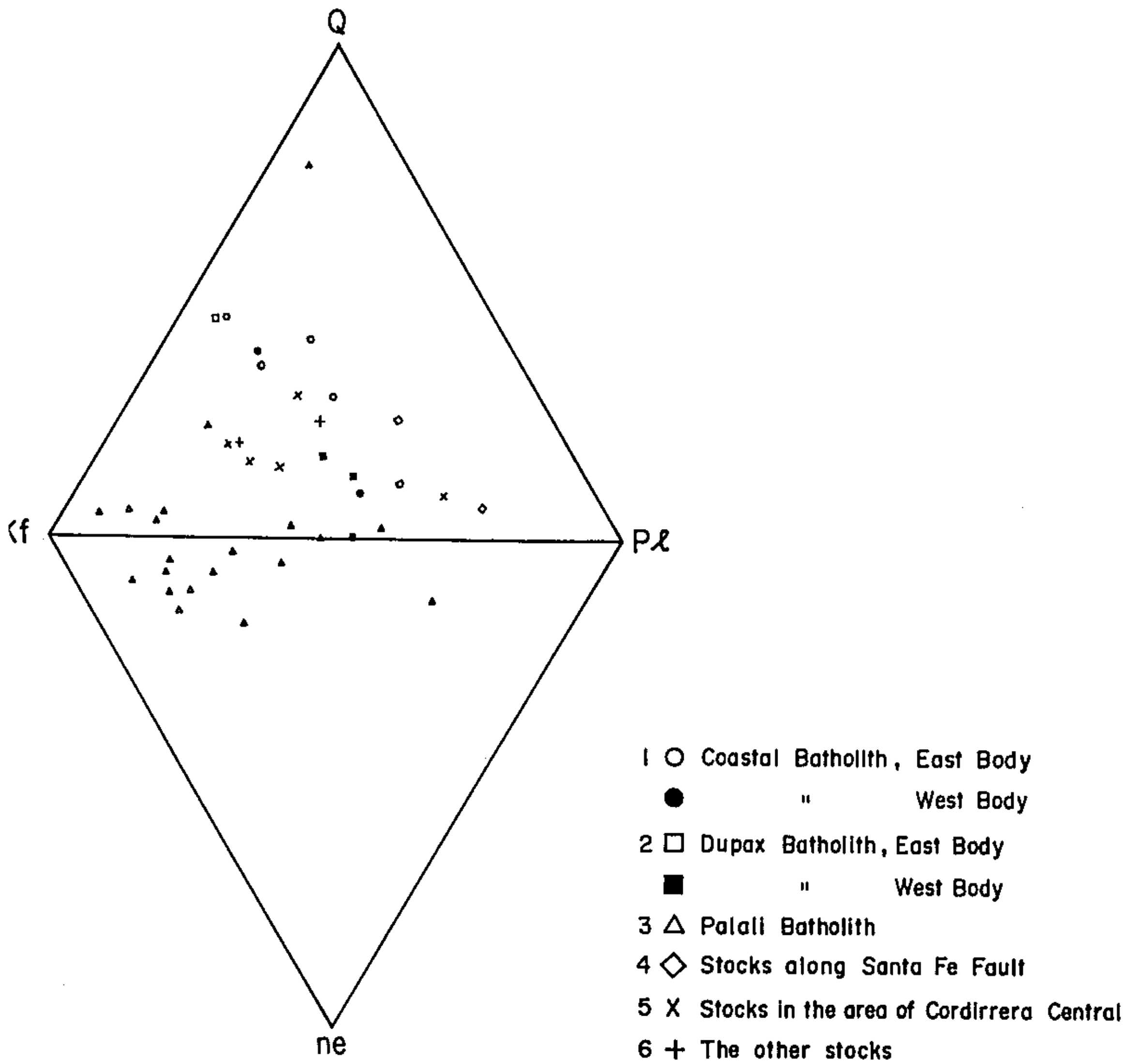


Fig. I-5 Norm; Q - Kf - Pℓ, ne - Kf - Pℓ Diagram

differentiation index (D.I. = Q + Or + Ab + Lc + Ne + Kp content of C.I.P.W. norms) as abscissa (Fig. I-6). As shown in the variation diagram (1), the Coastal Batholith and Dupax Batholith show a distinct linear trend. This fact suggests that these batholiths were derived from a common original magma, in other words, they are the products of the same igneous activity.
The similarity in microscopic characters of both batholiths supports this consideration.

Compared with the trends of granitic rocks in Japan (Aramaki et al., 1971),[4] the trends of these batholiths are characteristic of poor Al_2O_3 content and significantly depleted in K_2O content. $H_2O(+)$ content is also small.

As shown in the variation diagram (2), alkaline plutonic rocks also show roughly linear trend, though the deviations of MnO and Fe_2O_3 contents are somewhat conspicuous. And also, $H_2O(+)$ content is generally high. The granitic rocks in the area of Cordillera Central show also certain trend in the variation diagram (3), though the deviation is not so small.

Then, all the chemical compositions are plotted on the MFA diagrams, in which non-alkaline plutonic rocks (Fig. I-7 (1)) and alkaline plutonic rocks (Fig. I-7 (2)) are plotted separately.
As well shown in Fig. I-7 (1), the rocks of Coastal Batholith and Dupax Batholith are plotted around certain smooth curve, the trend of which is nearly in accordance with the trend of calc-alkaline rock series.

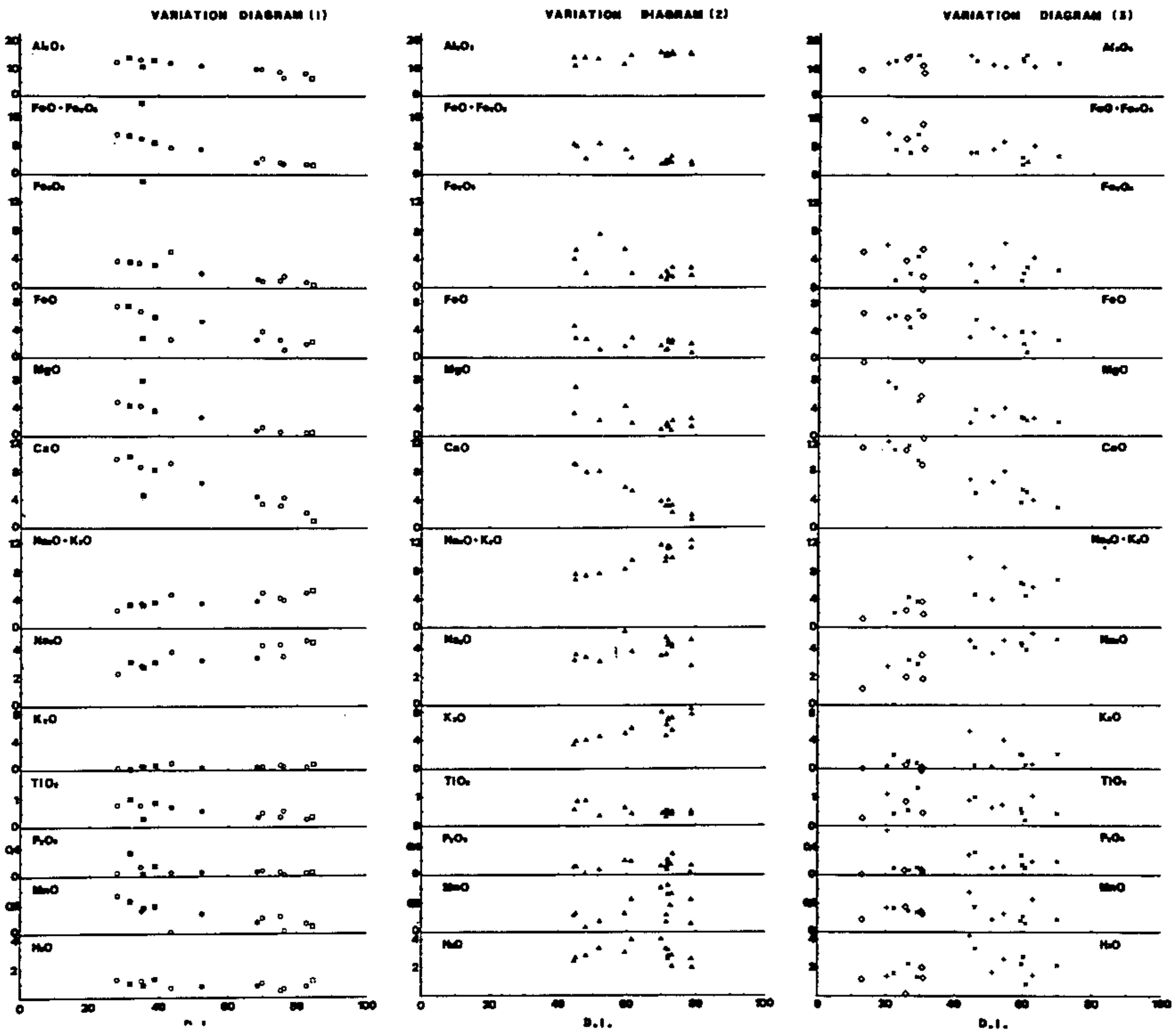
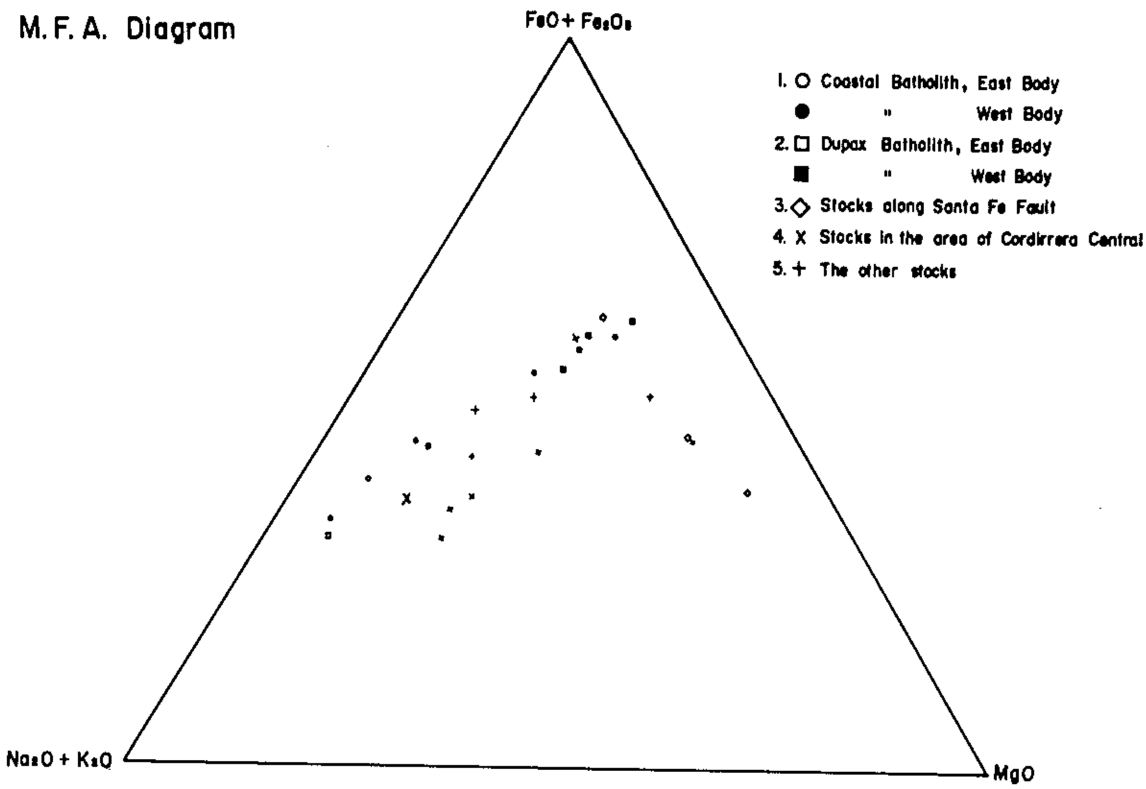


Fig. I-6 Variation Diagrams



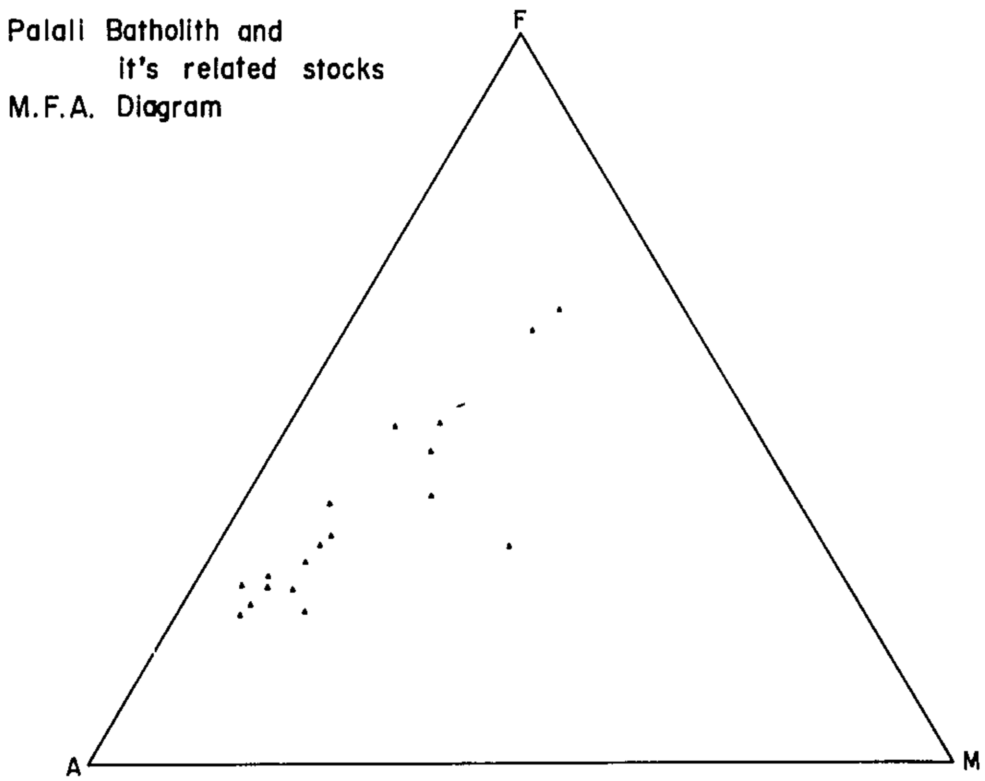


Fig. I-7 M.F.A. Diagram

The granitic rocks in the area of Cordillera Central show also the trend of calc-alkaline rock series though they are plotted on somewhat MgO and alkaline-enriched region than the trend drawn by the Coastal Batholith and Dupax Batholith.

On the other hand, alkaline plutonic rocks show similar trend as calc-alkaline rock series. The MFA diagram is, however, not proper to characterize the alkaline rock series, though it is useful to distinguish the calc-alkaline rock series from the tholeiitic rock series. But Fig. I-7 (2) shows the clear trend characterizing the alkaline rocks in the present district, though one or two diverging points are recognized, and this trend will be compared with the trend of alkaline rocks in other district.

In the Or-Ab-An diagram, the marginal components of which represent the composition of feldspar, the rocks of Coastal Batholith and Dupax Batholith, the granitic rocks in the area of Cordillera Central and the alkaline plutonic rocks are plotted within three areas separated from one another (Fig. I-8). The rocks of Coastal Batholith and Dupax Batholith show a smooth linear trend in this diagram. Comparing this diagram with the same diagram in Japan each plutonic province (Fig. I-9)[5], the following aspects are noticed.

1) The Coastal Batholith and Dupax Batholith show the trend that Or content is low and does not increase as differentiation proceed, and such a trend is not recognized in granitic rocks.
2) The granitic rocks in the area of Cordillera Central have the similar trend as that of granitic rocks in green tuff region.
3) The trend of alkaline plutonic rocks in the present district is not also recognized in the granitic rocks, though the trend is somewhat obscure.

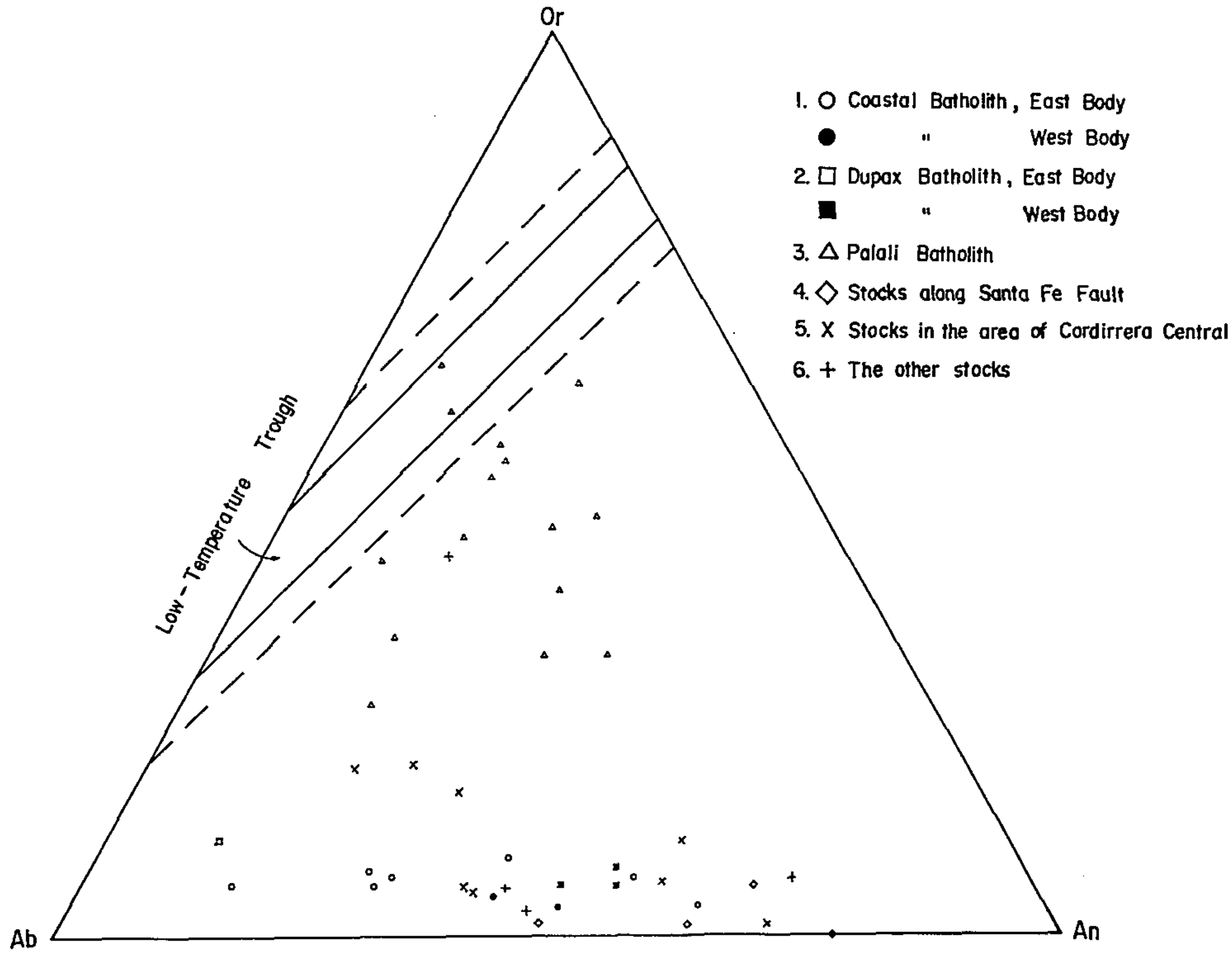


Fig. I-8 Norm; Or - Ab - An Diagram

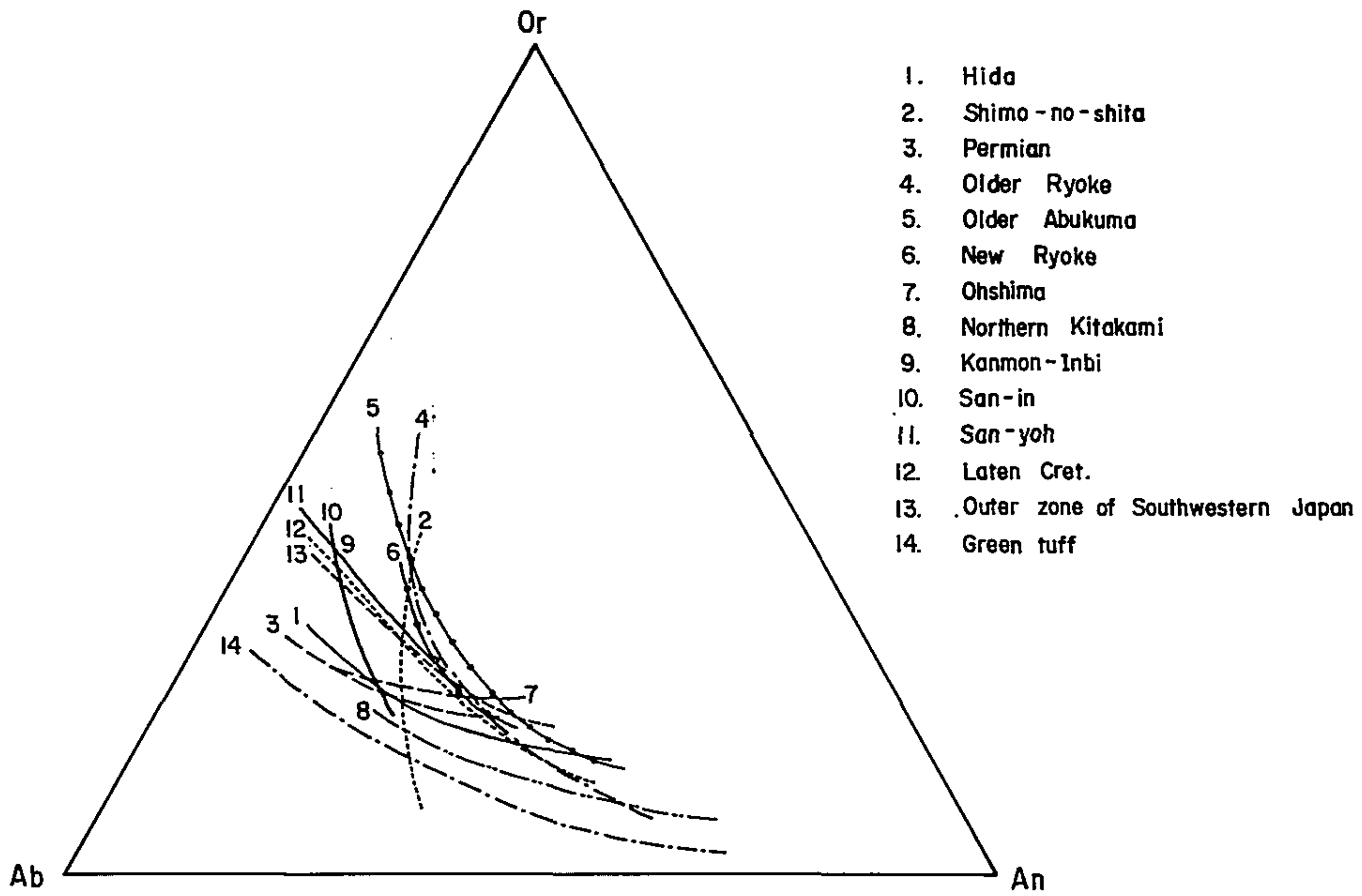


Fig. I-9 Or - Ab - An Diagram for Japanese each Plutonics provinces (Shibata, 1961)

According to Tuttle and Bowen (1958),[6] crystallization condition of granitic rocks of which norm (Qz+Ab+Or) content is more than 80% can be estimated using the experimental data concerning the $NaAlSi_3O_8$-$KAISi_3O_8$-SiO_2-H_2O system. Two rock samples taken from the Coastal Batholith and Dupax Batholith respectively satisfy the restriction for this estimation. These two data are plotted on the norm Ab-Or-Qz diagram (Fig. I-10). Luth et al. (1964)[7] referred to the granitic rocks plotted away from the thermal valley and the granitic rocks plotted on the thermal valley, and considered that the former was formed from H_2O-poor magma at higher temperature, and the latter was formed from H_2O-abundant magma at lower temperature.

Judging from Fig. I-10 and $H_2O(+)$ content, the Coastal Batholith and Dupax Batholith were derived from H_2O-poor magma. The plotted points in Fig. I-10 show these granitic rocks are very depleted in Or component compare with general granitic rocks. This is the reflection of the fact that these batholiths had not enriched in K_2O content at the latest stage of differentiation, so that somewhat unusualy differentiation process should be considered for these batholiths. However, by the secondary migration of materials after the consolidation of igneous mass, such as hydrothermal metasomatism, some amount of K_2O content might have been removed away from these batholiths.

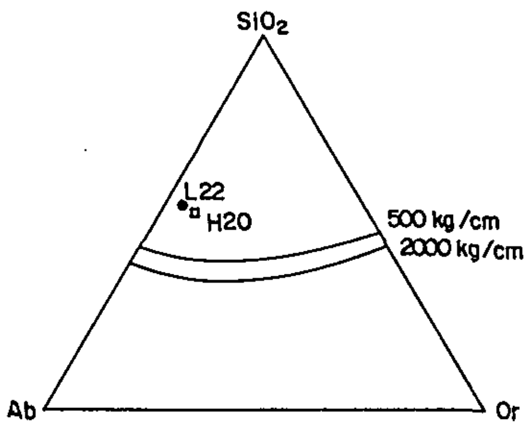


Fig. I-10 The salic normative constituents

1-4 Geological Structure and Tectonics

1-4-1 Tectonic position

Luzon island is located between two oceanic crusts of marginal seas, the Philippine Sea to the east and the South Chinese Sea to the west (Fig. I-11).[8)]

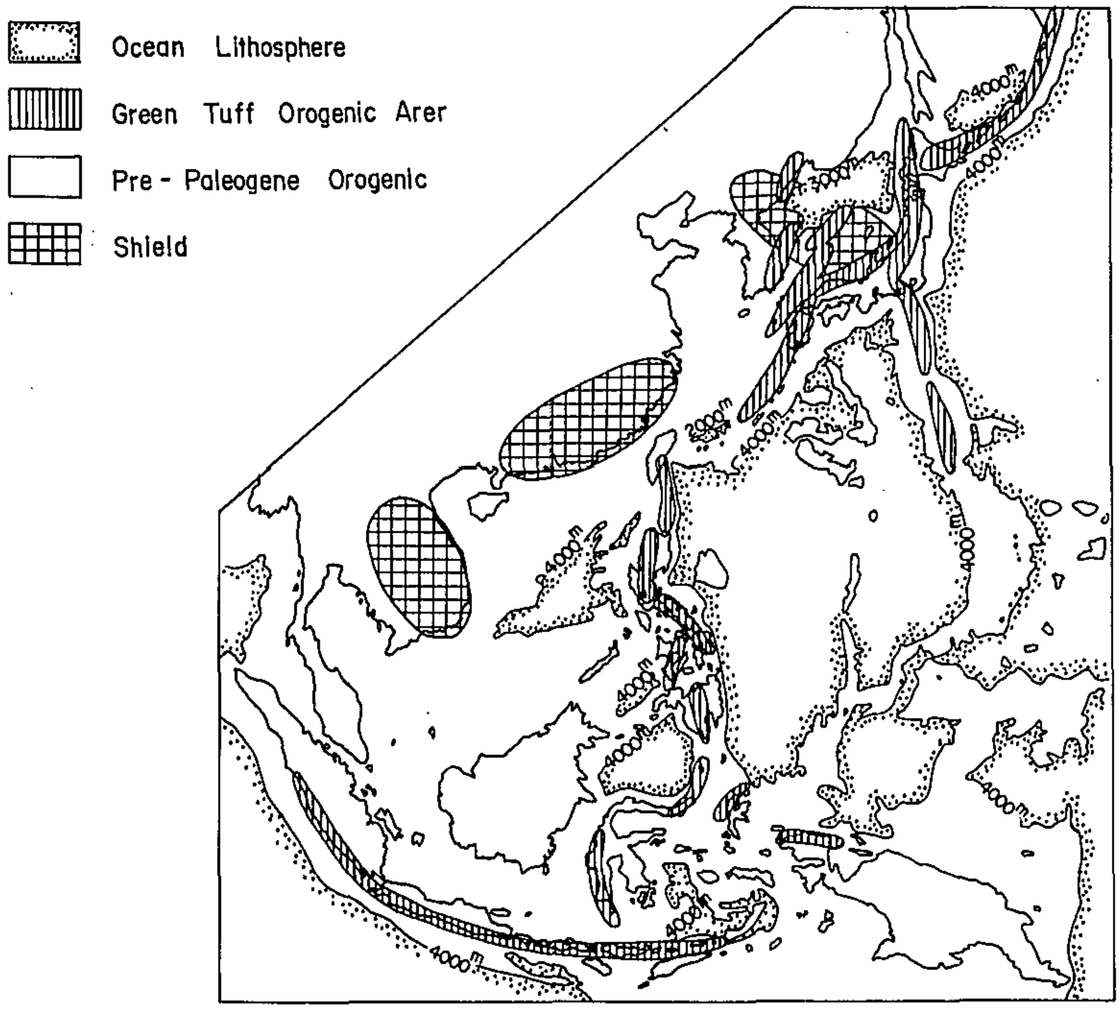


Fig. I-11 Distribution map of crust in Eastern Asia (Fujita, 1975)

Such island arcs as Luzon, Samar and Mindanao Islands, form the western margin of the Philippine Sea.

The survey area is placed between the thrusting oceanic crust at western margin of the Philippine Sea and the Philippine fault, which is believed to stretch as long as 2,500 km from Luzon Island to Mindanao Island.[9)]

1-4-2 Tectonic Provinces

The survey area is largely devided into three geotectonic areas (Fig. I-12):

A; old up-lift zone where the basement complex, Coastal Batholith and Dupax Batholith are distributed.

B; submergence zone including upper part of the Cagayan valley and the distribution area of the Natbang formation.

C: new up-lift zone of Cordillera Central.

Further the two groups of the old up-lift zone A are subdivided into: 1) the distribution area of the basement complex in the south of Baler and 2) Coastal Batholith and Dupax Batholith. The wing of the old up-lift zone A and the submergence zone B form 3) the synclinorium zone of Sierra Madre where NE-SW trending folds with long wave lengths are developed. In the old up-lift zone, there is 4) Manparang area where a structure of NNW-SSE system is developed. The new up-lift zone C includes 5) Cordirella Central with the complicated structure by folding and faulting and 6) Bokod area where a structure of N-S system is remarkably developed 7) Hilly areas such as the surrounding area of Maddela, the distribution area of Natbang formation and the southwestern area of Carranglan, are classified into the new submergenece zone C.

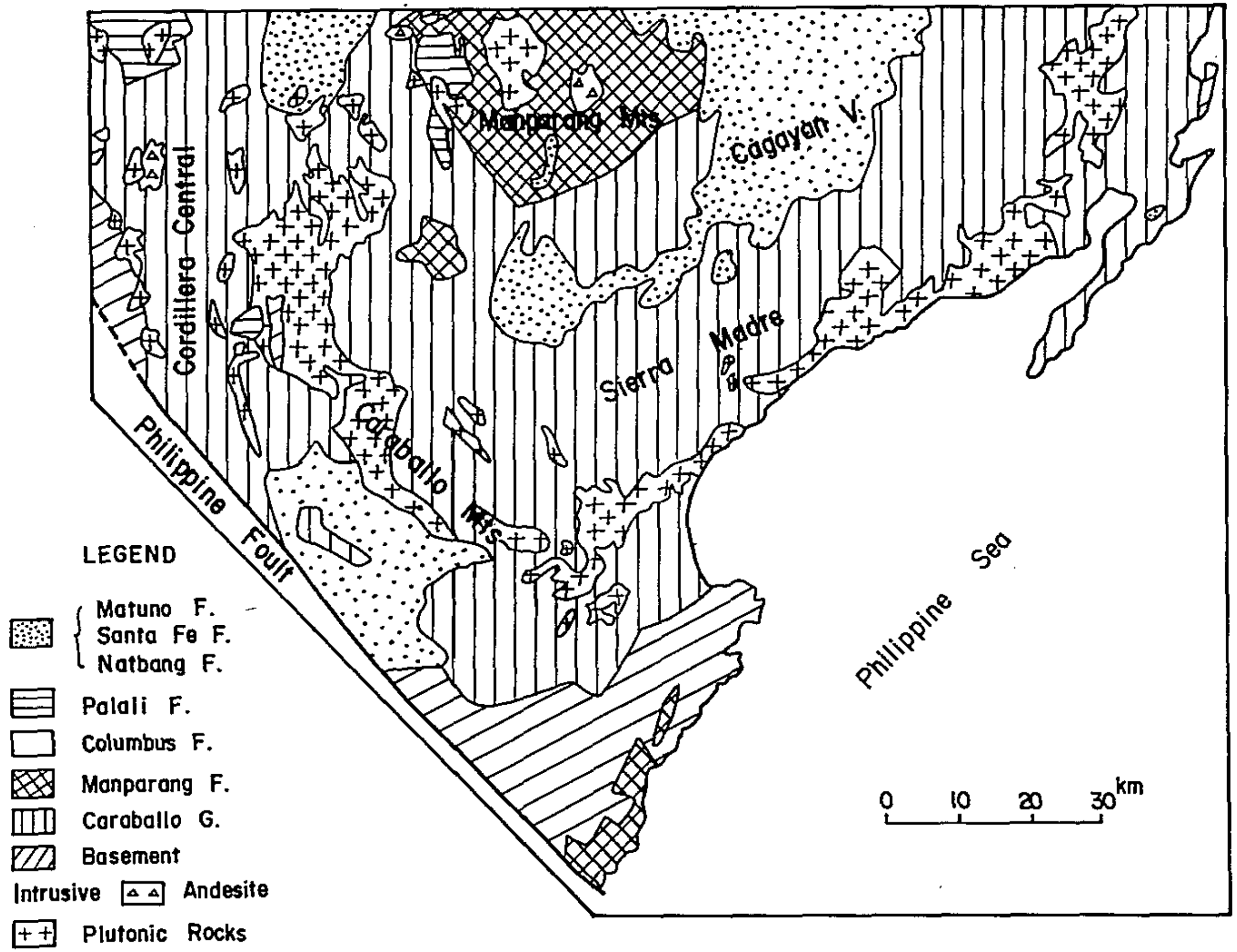


Fig. I-12 The distribution map of principal formations

1-4-3 Lineaments of ERTS Image

From the ERTS images, the lineament map (PL. I-3) is compiled from four pictures (1:250,000) based on the method of édge enhancement (Matuno et al. 1975).[10] The used images each have 7 bands with I.D. nos. 1153-01460 and 1424-01501.

In the lineament map (PL. I-3), two structures of NNW-SSE and NE-SW systems are traversed by recognizable E-W and N-S systems, the NE-SW being cut by the NNW-SSE system. A NW-SE system considered to be the Philippine fault is noticeable. All lineaments are cut by this system.

These lineaments of ERTS coincide well with the results of aerophotograph interpretation and geological survey. The lineaments of the ERTS images is better than aerophotograph interpretation on tracing a large scale fault.

In future, the analysis of lineaments based on the lineament map and the false colour photograph of ERTS images, will help to analyze the geological structure in the reconnaissance survey such as Phase I.

1-4-4 Geological Structure

In the survey area, the five main geologic structural systems are: 1) NE-SW system, 2) NNW-SSE system, 3) NNE(∿N)-SSW(∿S) system, 4) E-W system, 5) NW-SE system. These are shown by the strikes of faults, the directions of folding axes and the distribution of plutonics (PL. I-4).

1) NE-SW system; This system is observed in all over the area and it includes folds, faults and the distribution of Coastal and Dupax Batholiths.

   The folds of this system are developed in the Caraballo group. They have 20 ∿ 50 km of axis length with 15 ∿ 20 km of wave length.

In Sierra Madre, the axes of folding and the synclinorium are plunging to the northeast while in the Cordillera Central, the axes of folding are plunging to the southwest.

Faults of this system are cut by faults of the other systems. They look to be discontinued, but they are observed in Sierra Madre, Caraballo Mts. and Cordillera Central. These faults in Sierra Madre are developed in the wing of the synclinorium and fall down to its center. Evidently, the Dupax Batholith thrusts up Caraballo group to the northwest, along the road between Aritao and Santa Fe.

The distribution of Coastal Batholith is concordant with this structure system.

Then, the stage when this structure was active is believed to be in the last period of Eocene.

2) NNW-SSE system; The structures of this system are distributed all over the survey area, and are composed of faults, folds and the directions of intrusive rocks, with faults being superior to the other structures.

The prominent faults are named Santa Rosa fault, Santa Fe fault and Palali fault from the west. In Santa Rosa fault, there are the metamorphic rock of the basements on the west side and the Caraballo group on the east side. The fault plane is not observed directly in the field, but the east side of the fault falls down with a high angle fault because of the difference in rocks distribution at both sides of the river. On the other hand, the east side of Santa Fe fault displaced to the west and the throw is estimated about 1,000 m. Some intrusive rocks are observed along this fault. Palali fault becomes the boundary between Caraballo group and Manparang formation and the east side of it displaces for about 1,000 m $\sim$ 2,000 m.

These faults become the great fault expanding to the length of 50 $\sim$ 80 km.

A cataclastic texture is observed at the location of the Coastal Batholith where this fault extends and the basement schists and the ultramafic rocks are observed along Pingkian fault.

Moreover, elongated plutonic intrusives are observed along Santa Rosa and Pingkian faults.

The folds of this system are medium in size with less than 10 km of axis length and about 5 km of wave length in the surrounding area of Manparang Mts.

And the alkaline plutonic rocks are trending in a NNW-SSE direction.

This structure cut across the NE-SW system, and is in turn cut by the faults of E-W system and the Philippine fault.

The stage when the structures of this system is likely to be active, is regarded as Oligocene to early Miocene as shown by the results of K-Ar dating of the alkaline plutonic samples and the fossils contained in Mamparang formation.

3) NNE($\sim$N)-SSW($\sim$S) system; The structure of this system is developed in the northern parts of the survey area. It is shown by folds and faults in the area of Palali formation and the long axes of basins of Natbang and Matuno formations. This structure is distributed in limited areas. These areas are also covered with younger formations of Late and Post Miocene. The porphyry copper deposited near Bokod is in this area.

This system is considered to be Post Middle Miocene.

4) E-W system; This system comprises the faults and the directions of dacitic dykes along Benneng river. The Abaca fault reaches about 30 ∿ 40 km, and its northern side falls down. This kind of fault near Baler limits the boundary between the plains and the Basement area.
   This system occurs on the latter stage of Miocene according to the dating results of the above mentioned dacitic dyke.

5) NW-SE system (Philippine fault); This system is like the NNW-SSE system, but it is considered as one independent system because it becomes the clear boundary between the Central Plains and the Mountainous areas.
   This fault system changes the strike little by little, and it continues for about 2,500 km from Luzon Island to Mindanao one. This fault is considered as a first class tectonic line in the world.
   This fault became clear by the active movement after the latter stage of Miocene.

1-4-5 Tectonic History

The metamorphic rocks as amphibole schist and tonalite of the Upper Cretaceous were located all over the survey area (Fig. I-13, Stage I).

On the above mentioned rocks, the volcanic activity happened under the sea during the waving phase of Cretaceous to Eocene and the Caraballo Group were dominant. This volcanic activity changed the rock facies which were andesitic, basaltic and andesitic in ascending order (Fig. I-13, Stage II, III, IV). The volcanics of Caraballo Group were metamorphosed to the green schist facies or prehnite-pumpellyite facies. It was a low

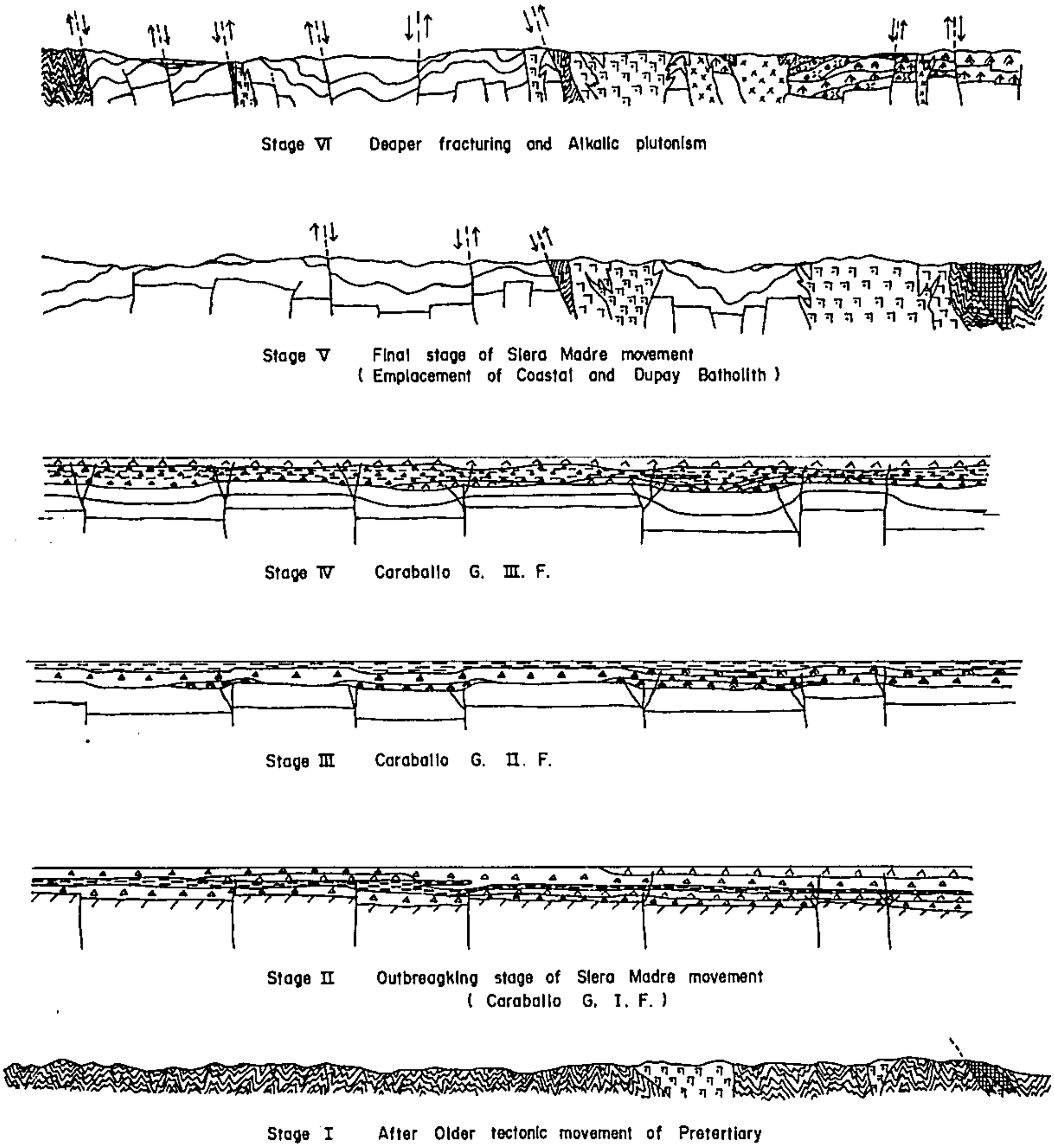


Fig. I-13 Geotectonic history

grade regional metamorphism. This metamorphism formed a connection with the movement creating the synclinorium in Sierra Madre. Coastal Batholith was emplaced in the anticlinal part of the synclinorium showing a large tectonic province with fold axes plunging to the northeast.

This was a kind of an orogenic movement proven by over 5,000 m of sedimentation, formation of synclinorium and folding, plutonism as Coastal Batholith, and regional metamorphism. It is named as Sierra Madre orogenic movement (Fig. I-13, V)

During Oligocene after the above orogency, a gravity collapse happened with the prominent faults of NNW-SSE system in Mamparang area. In the collapse basin, the alkaline and calc-alkaline volcanics were formed at the same stage. Then, Manparang formation was subjected to low grade metamorphism showing the regional metamorphism of zeolite facies to green schist facies. Plutonic stocks were emplaced along Santa Fe fault etc., and the basement schist and the ultramafic rock were observed along these area. On the other hand, the Mamparang Alkaline plutonics were emplaced along faults of NNW-SSE system. The fracturing at this stage was considered very deep. (Fig. I-13, IV).

During Miocene after the alkaline plutonism, dacitic valcanism occurred. This activity was partly marine and terrestrial as evidenced by the mudstone containing foraminifera and welded tuff respectively. Palali formation was formed from the above described activity, and the plutonic rocks of Qz-diorite and Diorite were deposited in Bokod area. The deposits of porphyry copper were brought by this plutonism. This stage is dated Miocene by foraminifera and K-Ar dating.

After the last stage of Miocene, marine sedimentation followed. Specifically, the basin of Matuno formation has an axis the same as the direction of Island arc in Luzon Island.

1-5 Ore Deposits

Two mines are known in the survey area of this phase. One is Tawi Tawi Mine of a porphyry copper type in the northwest part and other, a gold mine of Ronrono in the northeast. Both of them are now under development.

1-5-1 Mineralized Zone

By the Phase II survey, the mineralized zones of last phase were checked and some others have been newly discovered. In order to avoid overlapping descriptions, only new facts obtained will be reported.

1-5-1-1 Bolo River Mineralized Zone

This mineralized zone is a strongly silicified pyrite dissemination zone which is observed along the south bank of the middle reaches of the Bolo River. It extends more than 1,000 m in width. In this area many sheared zones are developed in N-S direction. Some malachite stains are found in the sheared zones where explorations by aditing were conducted in a small scale. Generally, copper minerals in the mineralized zone are very few in amount. The malachite- and chalcanthite-stained, blueish green outcrop described in Phase I report is located in the east part of the zone.

Although it is hard to assume the original rock due to strong mineralization, the country rock may be andesite or andesitic tuff which is intruded by dioritic dikes.

On the north side of the Bolo River, weak argillization can be seen in places and pyrite disseminations rapidly decrease. According to an unpublished data of the mine, the Bolo River limits the north of the mineralized zone which extends likely toward south. Tawi-Tawi ore deposits in Bobok is located 4 km south of this zone.

1-5-1-2 Bobok Mineralized Zone

This zone located in the upper reaches of the Oding creek, a branch of the Benneng River, consist of disseminations ∿ networks of pyrite and chalcopyrite occurring the in strongly silicified and chloritized, porphyritic quartz diorite. It extends mainly toward north with more than 1 km width of pyrite dissemination. Some stripes with better copper content are 100 m - 200 m in width.

Remarkable explorations had probably been carried out for this zone. At the both sides of the Oding creek, some old adits can be found but their details are not clear because of collapse or submergence. A massive sample taken at the mouth of shift which is located in the west part of mineralized zone and runs towards north, contains films of malachite, azurite, chalcopyrite and pyrite giving the following contents.

Au: 0.05 g/T, Ag: 2.3 g/T, Cu: 1.38%, Pb: 0.01%, Zn: 0.05%, Mo: 0.002%, S: 0.74%

1-5-1-3 Mapayao Creek Mineralized Zone

A small scale diorite has been intruded near the junction of the Santa Cruz River and the Mapayao River. Malachite occurs along the sheared zone developed in diorite with NE direction. In the southeast extension of this outcrop, copper exploration was formely carried out by adits which details are not clear because of collapse. The neighboring diorite is strongly silicified and has pyrite dissemination. A sample taken along the ridge in the mineralized zone shows the following grades.

Au: 0.08 g/T, Ag: 1.2 g/T, Cu: 1.18%, Mo: 0.00%, S: 22.5%

K/Ar age gives 21 m.y. for this diorite.

1-5-1-4 Barite River Mineralized Zone

As stated before, Dupax Batholith is distributed in the southeast of Santa Fe. In the middle reaches of the Barite River running along the west margin of the batholith, many quartz stringers accompanied by small amounts of bornite, malachite and epidote are developed. These quartz stringers trending N40E with a dip of 75S are mostly 1 ∿ 2 cm in width but rarely attain 20 cm. The host rock is biotite-hornblende-quartz diorite. Alteration is not recognizable.

Other main showings are as follows:

1. Malachite floats in the east branch of Kongkong Valley. Although their outcrops were not discovered, their origin is probably located near or in diorite porphyry exposed in upper most part of the branch.
2. Pyrite dissemination in the middle course of the Cabalisian creek flowing down to San Nicolas.
   The dissemination occurs in andesitic volcanics in a small scale.
3. Many dikes of diorite porphyry or monzonite have been intruded in the Manparang formation in the area between the middle courses of the Dumalalto and the Diduyon Rivers. They are accompanied by pyrite (rarely chalcopyrite) disseminations. Alteration of the rocks cannot be recognized.
4. Pyrite dissemination occured along the Denip River, branch of the Cagayan in the area of reconnaissance survey.
   A big structural line traversing Sierra Madre ranges from Maria Aurora with a northwest direction, passes along the Denip River where pyrite dissemination can be found in a large

scale. The outcrops are 20 ∿ 30 m in width and extend more than some 2 km. Copper minerals are absent in this zone.

1-5-2 Discussion

As stated before on the Coastal and Dupax Botholiths, K_2O and H_2O do not concentrate in the last phase of differentiation of these batholith. Only very small scale copper ores of a vein type could be found in the field, this rock series is, therefore, considered to have low potential for porphyry copper deposits.(1)(2)

In the area where Palali Batholith and Alkali plutonic rocks are distributed, gold pannings are being carried out. As will be discussed later, geochemical anomalies do not show a pattern of porphyry copper type. As the genetic relation between alkaline rock and gold mineralization has been pointed in Japan,(3) it may be doubtful to consider the gold deposits in the Sulong River as a part of zoning of a porphyry copper type.(4)

However, copper mineralizations could be recognized in diorite porphyry in Mamparang area by the geochemical survey results and floats, and further investigations will be desirable.

The Tawi Tawi ore deposits, a porphyry copper type, located at the south end of the Cordillera Central orogenic belt, are accompanied by very young quartz diorite or diorite (6 m.y.) and are controlled by N-S (or NNE-SSW) structures. In this phase, detailed surveys were not carried out over Tawi Tawi area. Therefore, more detailed survey are recommended to clarify the natures of porphyry copper type deposits.

PART II GEOCHEMICAL SURVEY

1. General Remarks

The geochemical survey of this phase was carried out together with geological survey. In this area it seems to be probable by data that the type of porphyry copper deposit is existent, so that Cu, Zn and Mo were chosen as indicators. As it was necessary that a detailed area was immediately selected from a semi-detailed area, all collected samples were analyzed semi-quantitatively for Cu and Mo at the base camp.

The main results are described as follows.

1. Seven (7) geochemical anomalies of Cu, Zn or Mo were disclosed in the semi-detailed survey area and two (2) anomalies in the reconnaissance survey area. But most of the anomalies were known in "Phase I"

2. At the Bokod area where mining activity is present, all anomalies of Cu, Zn and Mo is remarkable and show the best concentration in all the survey area.

3. In the Kasibu area where the detailed survey was carried out, it seems that the anomalous zone of Cu (10 km × 5 km) depends on the lithologic character of syenite. But the anomalies of Cu at the east part of this zone overlapped with the anomalies of Zn and Mo, and so the examination is necessary in future.

4. The anomalous zone of Cu in the Mapayao area has a tendency to extend to NE direction and a possibility to exist for a type of porphyry copper deposit. Therefore a follow-up survey work is necessary.

5. The anomalies of Zn obtained from each tributaries of the Cagayan River and the Diduyon River are not accompanied with the anomalies of Cu and Mo, and moreover the indication of an ore deposit is not found. So it is possible that they are caused by different rock facies.

2. Sampling and Analyses

2-1 Sampling

In the same way as "Phase I", silty sediments (under 80-mesh fraction) deposited in the active channels of streams were collected. Tributaries were chosen as the sampling sites because the source of mineralization can be exactly defined. And samples were taken in or nearby the sites where were made the plan on the map beforehand in order to take them at the density of 1 piece/km^2 in semi-detailed survey area and 4 pieces/km^2 (including samples of semi-detailed survey) in detailed survey area. About 10 to 20 grams of sediments were collected and placed in plastic bags. After that they were sent to the base camp for a simple chemical analysis of Cu and Mo. of Cu and Mo.

2-2 Analyses

On account of determining the detailed survey area, all samples were analyzed semi-quantitatively for Cu and Mo at the base camp. After this survey, they were analyzed quantitatively in Japan by atomic absorption spectrometry for Cu and Zn, and colorimetry for Mo.

The analytical procedure is mentioned as follows.

2-2-1 Semi-quantitative Method

2-2-1-1 Cu

A 0.2 gram of sample was dissolved by heating with a 0.6 gram of Pyrosulphate ($K_2S_2O_7$), and again with a 4 ml of HCl (1%). Add 10 ml of Keno Buffer Solution and make the pH 5.0, shake thoroughly with the addition of a 2 ml of Biquinoline. And then the reaction color was compared with a standard series previously prepared.

2-2-1-2 Mo

A 0.25 gram of sample was heated with a 2 ml of agua regia, a 1 ml of $HClO_4$ and a 2 ml of H_2SO_4 (1+1) on a sandbath until white vapor appeared. After cooling, the cake was adjusted to 20 ml with the addition of a 7 ml of NaOH (40%), a 1 ml of Na_2CO_3 (10%) and distilled water. After precipitating and clearing a iron oxide, a 2 ml of the clear solution was pipetted into a test-tube and a 5 ml of Hydroxylamine Hydrochloride Solution (2.5%) was added and shaked gently. A 1 ml of Zinc-dithiol Solution (1%) was added to solution. After thorough shaking, the color of the organic layer was compared with a standard series previously prepared.

2-2-2 Quantitative Method

2-2-2-1 Cu and Zn

A 1 gram of sample was taken and heated with a 5 ml of concentrated HNO_3 and a 3 ml of $HClO_4$ on a sandbath until white vapor appeared. After cooling, the cake was dissolved by a 5 ml of dilute HNO_3 (1+2) and the solution was adjusted to 20 ml with the addition of distilled water. The sample solution was filtered and the filtrate was analyzed by atomic-absorption spectrophotometry using a wave length of 3247A° for Cu and 2139A° for Zn.

2-2-2-2 Mo

This analysis was the same method as the semi-quantitative method except a measurement. A photo-electron colorimeter was used in order to measure with a higher accuracy.

3. Compilation and Interpretation of the Results

3-1 Compilation of the Analytical Results

The analytical data are treated statistically as follows. As stated already in the survey area, the plutonic rocks, the volcanic rocks and the sedimentary rocks are distributed and can be divided into several groups. But there are small variations of mean background values of metal content for different rock type. Therefore the data were not divided into groups and treated in the lump. Generally a uniform sampling density is always needed for statistical treatment. Though the detailed and semi-detailed areas are covered satisfactorily, it may be doubtful to treat the data of reconnaissance area together with those of the areas, because majority of the samples were collected in the relatively accessible area and were very few in the Central and the Sierra Madre Mountain Ranges.

About treatment of the data, the mean background value (b) and threshold value (t) were determined by graphing the cumulative frequency distribution. (Fig. II-1, 2) The results are shown in PL II-1, 2 and 3. The general trend of geochemical anomalies become complicated when the anomalies are isolated, so that the value (t') corresponding to 10%-value of total observations from the highest, and 2t (for giving an impression of very high value) are represented on the same map. And especially the value (a) corresponding to 15%-value of total observations from the highest are represented on the same map of detailed survey area.

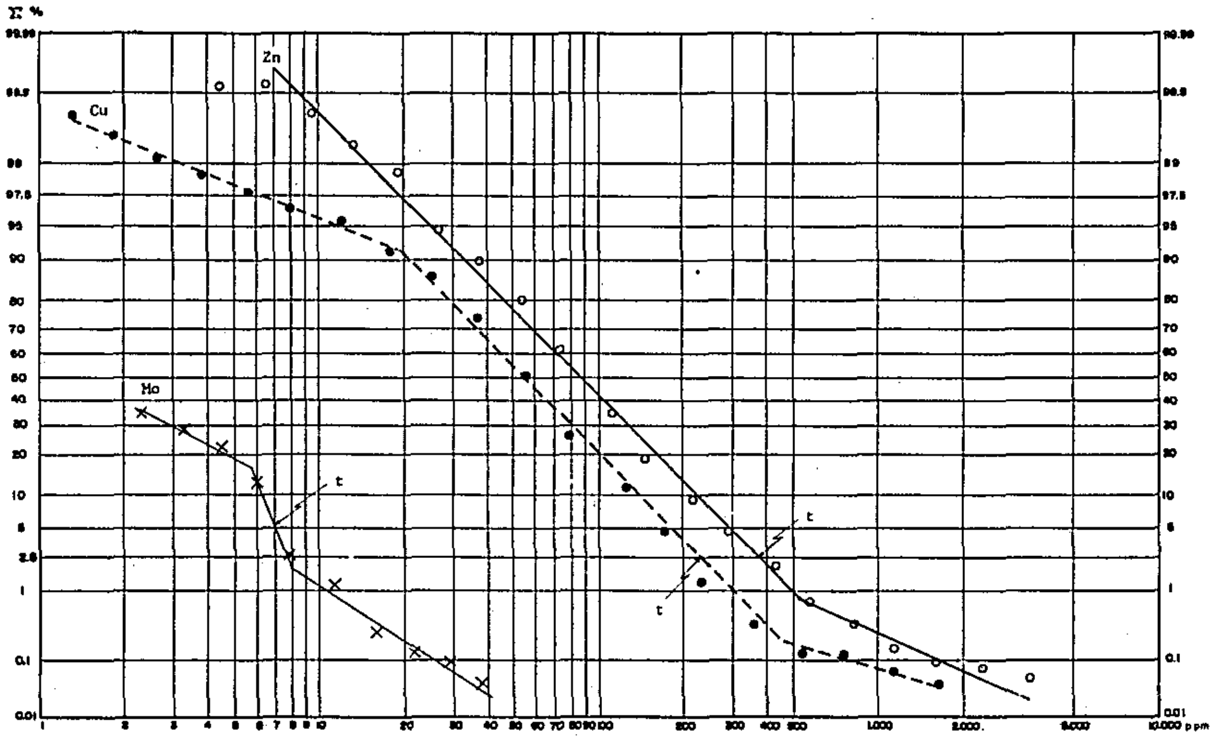


Fig. II-1 Cumulative frequency distribution of Cu, Zn and Mo in the semi-detailed and reconnaissance area (A, C, C' and D area)

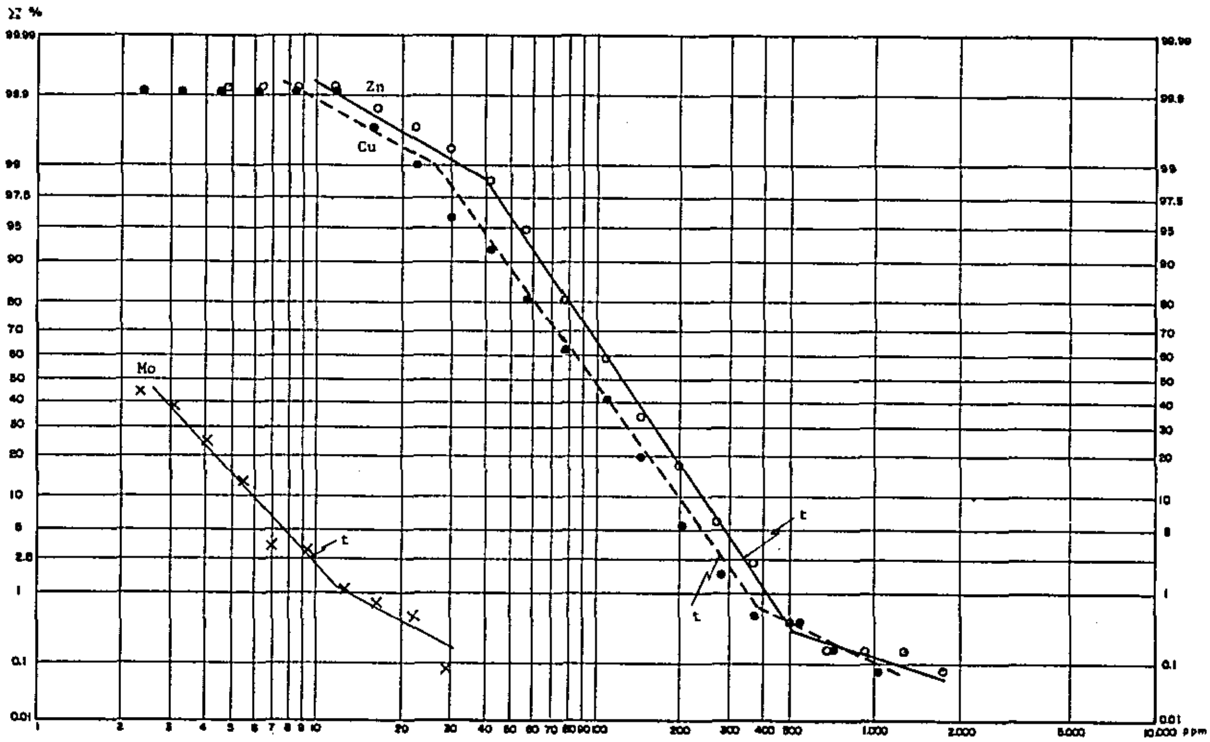


Fig. II-2 Cumulative frequency distribution of Cu, Zn and Mo in the detailed survey area (B area)

3-1-1 Semi-detailed and Detailed Survey Areas

The 4045 analytical data were collected in this phase. As the sampling sites of this phase does not overlap those of the last phase, the 499 data from the previous year were added for geochemical interpretation.

For Cu and Zn, the 2.5%-value of total data from the highest was taken as the threshold (t) by the graph. But for Mo the graph shows to exist for the two different populations, so that the threshold value was determined from the middle point of bending line.

The mean background and the threshold values of 3 elements are shown in Table II-1. And the coefficient of correlation (ρ) between Cu and Zn is 0.568 and the coefficient is not so good in this area.

Table II-1 Regional mean background and threshold values of stream sediment samples (I)

	b	t'	t	2t	Number of samples
Cu	54 ppm	126 ppm	215 ppm	430 ppm	4544
Zn	87	208	375	750	"
Mo	<2	6	7	14	"

b : mean background value

t': 10%-value of total observations from the highest

t : threshold value

3-1-2 Detailed Survey Area

In order to get more accurate values of anomalies, both 920 data of detailed survey and 331 data of semi-detailed survey were treated together.

For the three elements, 2.5% of total data from the highest value was taken as the threshold by the graph. The mean background and the threshold values are shown in Table II-2. And the coefficient of correlation (ρ) between Cu and Zn is 0.359 and the coefficient is worse.

Table II-2 Regional mean background and threshold values of stream sediment samples (2)

	b	a	t'	t	2t	Number of samples
Cu	97 ppm	165 ppm	185 ppm	280 ppm	560 ppm	1251
Zn	118	210	242	320	640	"
Mo	<2	5	6	9	19.0	"

b : mean background value

a : 15%-value of total observations from the highest

t': 10%-value of total observations from the highest

t : threshold value

3-2 Interpretation of the Results

3-2-1 Semi-detailed Area

Seven geochemical anomalies were obtained in this area. Four areas in them are Cu anomalies and especially the Bokod area accompanied by Zn and Mo anomalies. Comparing with the last year's results, this results are little different. The anomalies are not obtained in the lower reaches of the Imugan River and near San Francisco in this phase, and the small anomalous zone are obtained in the upper reaches of the Diduyon River and the Dabibi River.

The main anomalies are described below in detail.

3-2-1-1 Bokod Anomalous Zone

This zone is jammed between the Bolo Creek and the Benneng River and is more or less 30 km^2. The anomalies of Cu and Zn are remarkable and they are accompanied by the Mo anomalies in the west part. The anomalous Cu contents exceed 2t (430 ppm) in 3 points and from t (215 ppm) to 2t in 8 points. The maximum is 1,964 ppm. The anomalous Zn contents exceed 2t (750 ppm) in 3 points and from t (375 ppm) to 2t in 10 points. The maximum is 2,100 ppm. The Mo contents exceed t (7 ppm) in 5 points. t (7 ppm) in 5 points.

This area is composed of the Benneng batholith (quartz diorite ∿ diorite) in Cordillera Central and andesitic pyroclastics of Palali Formation that were intruded by the batholith. As stated already, the Benneng batholith suffered a strong quartz-sericite alteration and the copper disseminations, and veinlets of chalcopyrite and malachite were observed in it.

Therefore, this anomalous zone seems to depend on the Benneng batholith. In this area the mine have been explored as Tawi-Tawi Project.

3-2-1-2 Mapayao Anomalous Zone

This zone is the vicinities of the Santa Cruz River and the Mapayao River of it's branch and shows Cu anomalies. The maximum Cu content is 1,392 ppm that was obtained in the upper reaches of eastern branch of the Cabanglasan River, and in only 5 points the Cu content exceeds t.

This area is exposed by andesitic ∿ basaltic lava and pyroclastics, and granodiorite ∿ diorite of small body. And a strong silicification was observed with copper disseminations.

3-2-1-3 Kongkong Valley Anomalous Zone

These anomalies, with center at the Kongkong Valley, extend 8 km in the direction of E-W and 15 km in the direction of N-S. The Cu anomaly is noticeable. The Zn anomalies tend to be distributed in the south side and the Mo anomalies in the west side. The Cu content exceeds t in 14 points and the maximum is 1,188 ppm. The point of highest Cu content is accompanied with highest Zn content (1,365 ppm) also.

In this area, the fault trending NW-SE exists along the Kongkong Valley, andesitic pyroclastics and lava of Manparang Formation expose in the east side and the rocks of the same quality belonging to Caraballo group also in the west side. All of them are intruded by syenite or diorites and anomalies are distributed to coincide with the exposed area of intrusive rocks.

3-2-1-4 Manga River Anomalous Zone

This is a small Zn anomalous zone in the upper reaches of the Manga River. The Zn anomalies exceed 2t (430 ppm) in 2 points and they are accompanied with the Cu anomalies (t' ∿ t). The maximum is 3,888 ppm.

In this area, there is basalt lava of Caraballo Group and diorite intruded into it.

3-2-1-5 Diduyon River Anomalous Zone

This zone is situated in the upper reaches of the Diduyon River. It extends about 10 km in width. The Zn anomalies in the upper reaches of the Casignan River seem to be the extension of this zone.

The maximum Cu content is 467 ppm. But the Cu content exceed t' in most of sampling points. This area is composed only of andesitic rocks of Caraballo Group, and so this anomaly seems to depend on the difference of rock facies.

3-2-1-6 Sulong River Anomalous Zone

The anomaly occurs in east branches in the upper reaches of the Sulong River that flows down parallel to the Kongkong Valley. This is the Mo anomaly and its zone is about 20 km^2. The contents exceed 2t (14 ppm) in 5 points and there are t (7 ppm) ∿ 2t in 8 points. The maximum is 46 ppm. There are little Zn and Cu anomalies in its outskirts.

This area is exposed by Palali batholith (syenite ∿ monzonite) and Manparang Formation (andesitic, basaltic pyroclastics and lava) that was intruded by the batholith. The anomalies were shown by the samples that were taken at the circumference of their boundary.

Gold is now panned in the Sulong River, and a gold deposit is known in the pyroclastics near the Palali batholith. But the indication of an ore deposit was not found by this survey too. and so it could not draw a conclusion whether Mo anomaly has a relation to gold deposit or porphyry copper deposit.

3-2-1-7 Dabibi River Anomalous Zone

This zone is situated in the upper reaches of the Dabibi River. The Cu anomaly extends about 5 km in width. The Cu content exceeds t in 2 points and its maximum is 258 ppm.

The exposed area of conglomerate, basaltic pyroclastics and basalt lava belongs to the Manparang Formation. The indication of an ore deposit was not found by this survey in particular.

3-2-2 Reconnaissance Survey Area

In this area, there is no anomalous zone except for two areas that were obtained last year as the Zn anomaly.

3-2-2-1 Cagayan River Anomalous Zone

The Zn anomaly was obtained in the upper reaches of the Cagayan River and it's width was about 10 km. The maximum of Zn content is 793 ppm. At the most of sampling sites, the Zn contents exceed t' (208 ppm) and are often over t (375 ppm).

This area is composed of andesitic pyroclastics, lava and alternation of sandstone, shale and tuff belonging to the Caraballo Group. This anomaly seems to depend on the difference of rock facies as well as the Diduyon River anomalous zone.

3-2-2-2 Others

The Zn anomalous zone was known in Diarabasin and its outskirts though the survey was not done in this time. By the survey of "phase I" this zone is considered to be local.

3-2-3 Detailed Survey Area

The following two areas that were taken for as promising were chosen from the detailed survey ones, out of nine anomalies that were obtained by the semi-detailed and reconnaissance survey. The results of its survey are described below in detail.

3-2-3-1 Kasibu Area

This is the area of the Kongkong Valley anomalous zone and its circumference. As shown in PL II-1-3 all anomalies of Cu, Zn and Mo are obtained in this area. And the anomalous zones of each element are not overlapped except in a limited area. Roughly speaking, the Cu anomalies are situated in the center and the Mo anomalies in the west side and the Zn anomalies in the south side.

The Cu anomalies comparatively concentrate in the upper reaches of the Kasibu River and the Sulong River. In the upper reaches of the Kasibu River, the zone exceeding t' (185 ppm) extends over 10 km × 5 km, the contents is almost constant and most of anomalies exist on the same site as syenite exposed. Therefore these Cu anomalies can be thought to originate in the difference of lithologic character. But in the eastern part, it seems that the high anomaly (1,188 ppm) trending in a N-S direction has relationship with the intruding of diorite porphyry. And silicification and pyrite disseminations were observed at places, so that it is necessary to conduct survey in more detail.

The anomalies in the latter exist in the nearby diorite porphyry also, but it is a small area.

The Zn anomalies are obtained in the southern part of detailed survey area and the anomalous zone covers 5 km x 4 km. The small bodies of diorite porphyry intruded the andesite of Manparang Formation in this area too, and the Zn anomalies seem to relate to its intrusion. But they are not accompanied by the Cu and Mo anomalies and both diorite porphyry and andesite received the weak alteration. So a follow-up survey work will be unnecessary.

The Mo anomalous zone is widely distributed in the west side of detailed survey area. Most of the content is from t' (6 ppm) to t (9 ppm).

Some of anomalies had relation with distribution of intrusive rocks as the high anomaly (more than 19 ppm) obtained into syenite body in the upper reaches of the Kasibu River, other obtained in the branches where intrusive rocks could not be observed. A matching of the Mo anomalies to the intrusive rocks is not so clear as that of Cu to Zn anomalies.

3-2-3-2 Mapayao Area

The area of the Mapayao anomalous zone and its vicinity includes the Cu anomalies that were obtained in the upper reaches of the Mapayao River last year. The anomalous zone near the junction has the extension of 1 km x 4 km and trends in the NE direction. The Cu content is from 284 ppm to 776 ppm, and its average is 491 ppm. In the west part of this zone, a private company has carried out underground prospecting and drilling operation. Some ore deposits were reportedly confirmed as the results. And in the outcrops, pyrite disseminations with a strong silicification were noted near the intruded place of diorite porphyry and malachite deposited partly along the shear zone trending in the NE direction. There is andesitic lava in the east side of this anomalous zone and the intrusive body of dioritic rock could not be found. In this area, the Mo anomalies are obtained in 2 points. Therefore, it is desirable to carry out a detailed survey including geochemical survey by soil to define the mineralized zone.

By this year's analyses, the high anomaly was obtained in the anomalous zone that was known by "Phase I" in the upper reaches of the Mapayao River. The Cu contents range from 160 ppm to 180 ppm and its zone has the extension of only 1 km × 1 km.

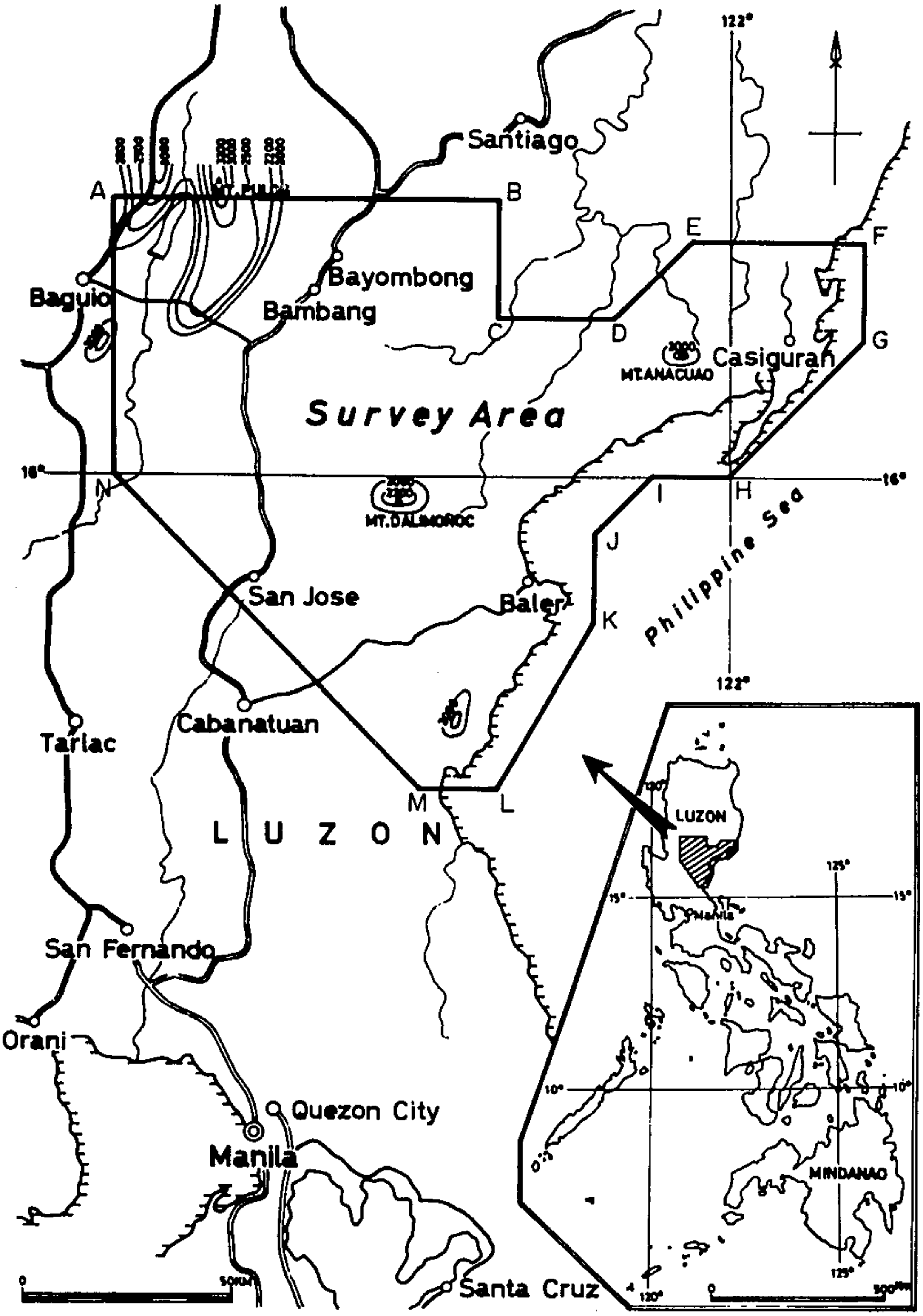
PART III AIRBORNE MAGNETIC SURVEY

1. General Remarks

The analysis of the airborne magnetic survey over northeastern Luzon, Philippines, forms a part of Phase II Mineral Resources Survey of Northeastern Luzon, Philippines.

Under these analysis, it has found the distributions and depths of main geological structures in this field.

Taking 35-lines of magnetic sections separated 5 kms apart, these were processed on a quantitative analysis by computer. After the classification with susceptibility of the body showing magnetic anomalies, and taking some contrast with the observed results of susceptibilities of rock samples, it has determine the depth distributions of the Basement Complex in this field.



(contours indicate areas exceeding 2000M ASL)

Fig. III-1 Location map of Survey area

2. Outline of the Analytical Method for Airborne Magnetic Survey

2-1 Survey Area

The airborne magnetic survey described in this report was conducted at Phase I survey in the northeastern part of Luzon as shown in Fig. III-1. This survey area forms a palygon whose apex are as listed below:

Position	latitude N	longitude E
A	16°35'	120°40'
B	16°35'	121°30'
C	16°20'	121°30'
D	16°20'	121°45'
E	16°30'	121°55'
F	16°30°	122°17.5'
G	16°17.5'	122°17.5'
H	16°00'	122°00'
I	16°00'	121°50'
J	15°52.3'	121°42.5'
K	15°41.3'	121°42.5'
L	15°20'	121°30'
M	15°20'	121°20'
N	16°00'	120°40'

2-2 Period of Survey

Phase I	Field survey	:	16 JAN. 1975 ∿ 20 MAR. 1975
	Data processing and analysis	:	21 MAR. 1975 ∿ 31 OCT. 1975
Phase II	Re-analysis	:	1 FEB. 1976 ∿ 20 DEC. 1976

2-3 Members of Survey

Phase I, Field Survey;

Masao Yoshizawa	Federico E. Miranda
Ikuo Takahashi	Carol S. Samonte
Saburo Tachikawa	Arnulfo V. Cabontog
Motoji Ichikawa	Jose N. Almasco
Mitsuru Sakazaki	Benjamin Cadawon
Shozo Kimura	Romeo L. Almeda
Tamotsu Fujiwara	Urbano Palaganas
Takashi Nakayama	

Phase I, Data Processing and Analysis;

Yuya Furukawa	
Yoshio Tamura	Federico E. Miranda
Ichiro Homma	Arnulfo V. Cabontog
Kenichi Nomura	
Masao Yoshizawa	
Jiro Kamata	
Ikuo Takahashi	
Saburo Tachikawa	

Phase II, Re-analysis;

Hidezo Kaku

Asahi Hattori

Yoshio Tamura

Kenichi Nomura

Masao Yoshizawa

Susumu Sasaki

Ryoichi Matsuda

Masatane Kato

Manabu Kaku

Kazuto Matsukubo

2-4 Summary of Field Operation and Analysis

Phase I, Surveys;

Airbase: Nichols Airbase (Manila International Airport)

Station of geomagnetic variation measurement:

Bayombong, Nueva Vizcaya

Total Survey Area: 14,500 km^2s

Flight Altitude: 2,000 ms above sealevel, horizontal navigation, see Fig. III-2

Separation of Flight Lines: 1.5 kms for the traverse lines and 10 kms for the tie lines

Flight Direction: N-S and E-W

Effective Length of Lines: 9,717.25 kms for N-S direction and 1,526.75 kms for E-W direction, total 11,244 kms

Geomagnetic Dip-Angle: 20°

Geomagnetic Declination: 0°

Total Geomagnetic Intensity: 40,000 gammas

Phase II, Analysis;

Separation of Geomagnetic Sections: 5 kms

Direction of above Sections: N-S

Number of Sections: 35-lines

The position of those lines are shown in Fig. III-2.

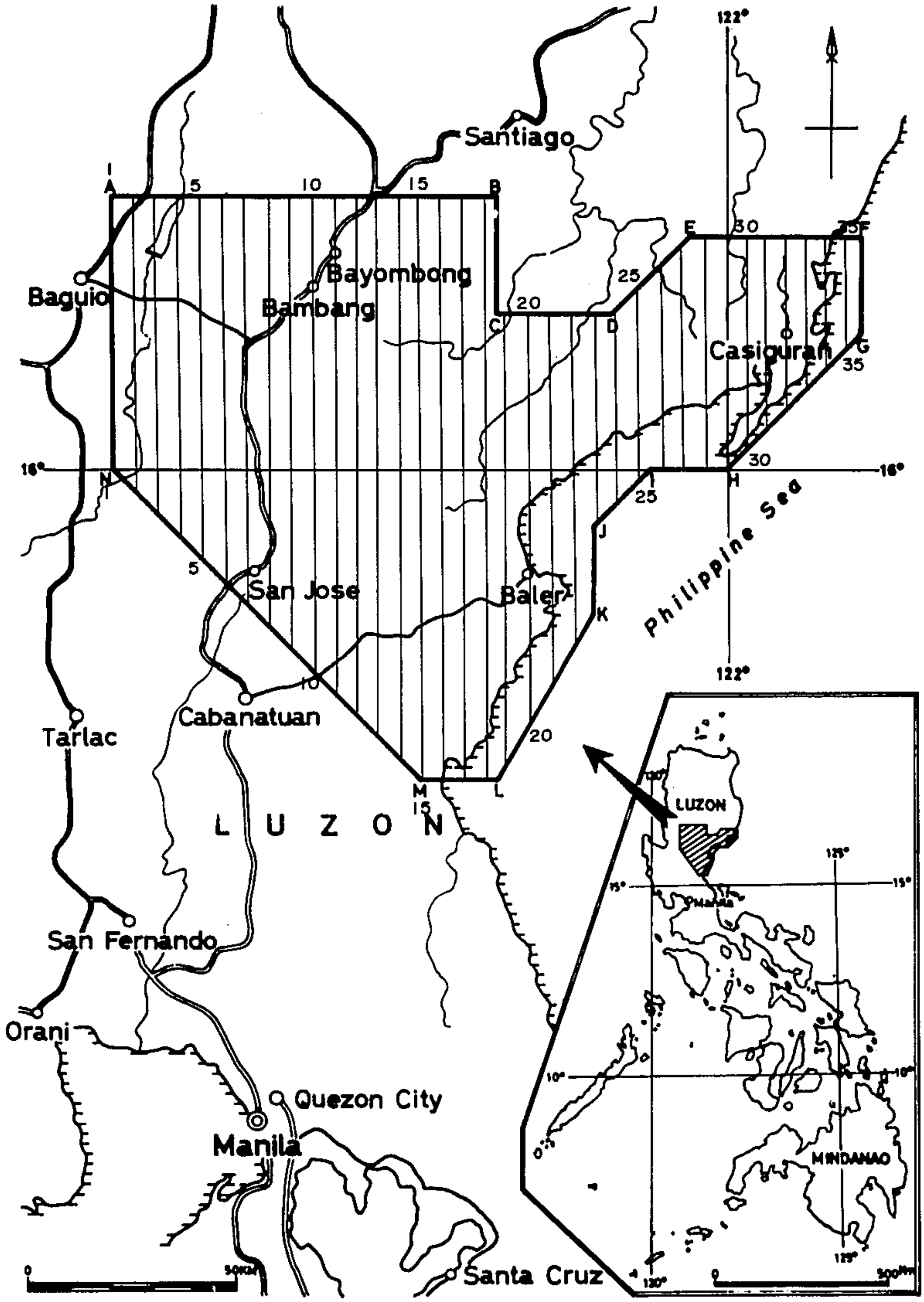


Fig. III-2 Profile line

2-5 Methods of Analysis

As well as described in the Phase I report, there are two methods to analyze the airbone magnetic data. In the qualitative analysis method, some qualitative judgements on the magnetic characteristics are taken for the magnetic anomalies which were obtained by reducing or removing selectively some filtering operations for the residual magnetic anomalies.

The filtering operations for qualitative analysis are shown as below;

(1) Second vertical derivative filter

(2) Band pass filter

(3) Direction filter

(4) Pseudo-gravity filter

(5) Upward or downward continuation filter

(6) Auto-correlation analysis

(7) Spectrum Analysis, etc.

The spectrum analysis are performed before filtering operations to see adequate separation frequencies.

The other way, the quantitative analysis methods have a purpose of finding depths, polygonal forms and magnetic nature of rocks which caused magnetic anomalies in the each magnetic sections, as mentioned below;

(1) Specific point method

(2) Curve matching method

(3) Specific curve method

(4) Spatial domain analytical method

(5) Frequency domain analytical method

For the re-analysis at the Phase II; two dimensional automatic model analysis by computer are applied to the four kinds residual anomalies reduced from each 35 magnetic sections.

Two of them was reduced as follows. The magnetic sections are separated to three wave length bands using the upward continuation filter, two parts of medium and long wave length bands are selected. Another two had been reduced from the same magnetic sections using the band pass filter at the Phase I. These were named BP-1 and BP-2 respectively.

Outline of the analytical method used in the re-analysis at the Phase II will be explained as follows.

Fig. III-3 shows the flow chart of this analytical method.

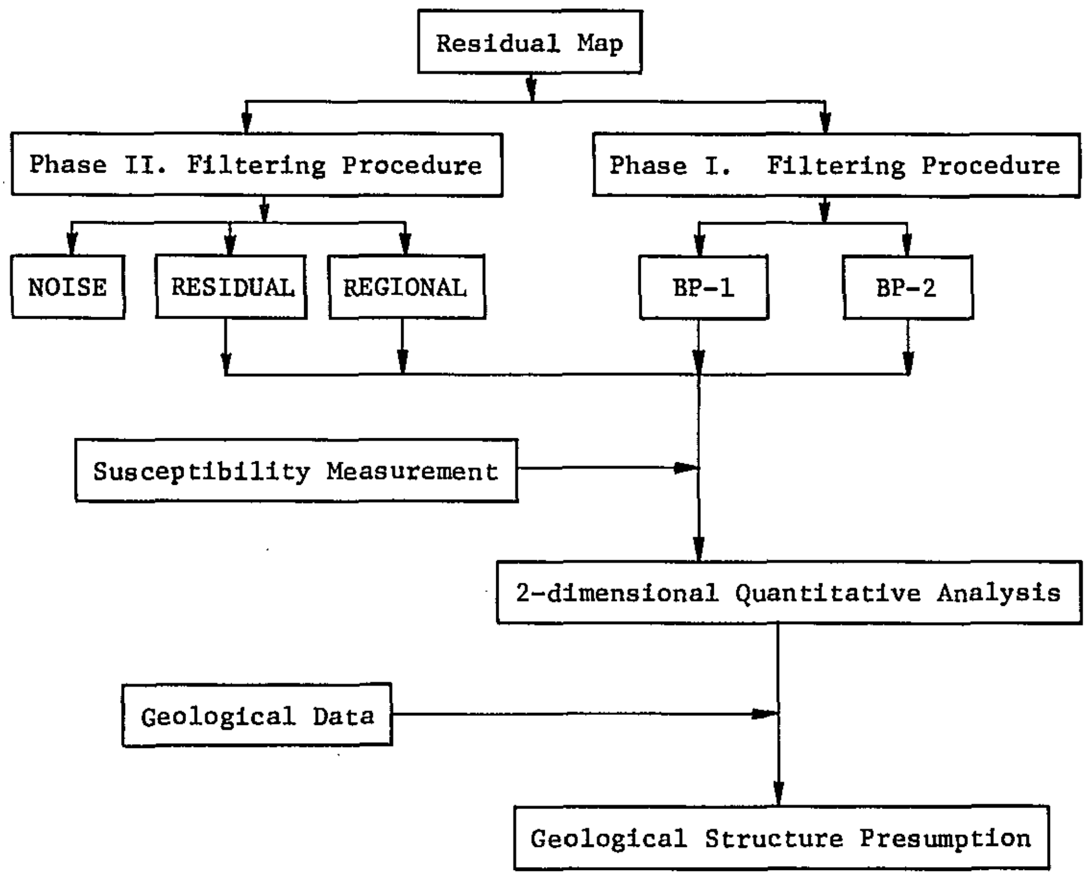


Fig. III-3 Flow chart of analysis

2-5-1 Separation to Three Wave Length Bands

In general, the wave length of the magnetic anomaly caused by a magnetic body in the shallow subsurface shows shorter wave length, and the deeper one shows longer wave length. So, using the above characteristics, it is possible to interpret qualitatively the magnetic maps and to estimate the subsurface structures.

At the present re-analysis, the residual magnetic maps for each 35 lines of magnetic sections were separated to three wave length bands using an upward continuation technique, to calculate quantitatively the above characteristics.

(a) Upward continuation

Upward continuation is a method which calculate mathematically magnetic maps on magnetic sections at different altitude than surveyed one, using the potential field theory.

There are two or more methods to calculate actually the continuation; (1) a calculation method using the convolution technique with a pre-calculated coefficient table; (2) method using the Fourier transform; etc.

A method of the Fourier transform (one dimensional complex digital Fourier transform) was applied for the re-analysis. Outline of this method are as follows.

The magnetic section T(x) are transformed to frequency domain Am by the discrete Fourier transform as shown by the formula:

$$T(x) = \sum_{m=0}^{M} Am\ e{-}j2\pi mx \qquad - (1)$$

$$Am = \frac{1}{L} \sum_{m=0}^{M} T(x) \cdot e{-}j2\pi mx \qquad - (2)$$

where,

$j = \sqrt{-1}$

L = length of section

If D is the altitude difference to obtain the upward continuation, the Fourier coefficient at altitude D becomes A_m^D as

$$A_m^D = Am \cdot e^{-\pi mD} \qquad - (3)$$

and the magnetic section $T_{(x)}^D$ at altitude D is calculated using the reverse Fourier transform as follows.

$$T_{(x)}^D = \sum_{m=0}^{M} Am\ e^{-\pi mD}\ .\ e{-j2\pi mx} \qquad - (4)$$

At the present re-analysis, the upward continuation which D was taken to 0.5 km (2.5 km A.S.L.)and 3.0 km (5.0 km A.S.L.), were performed to 35 lines of the residual magnetic sections.

(b) Separation to three wave length bands

We named the NOISE for the differences between the residual magnetic section and its 0.5 km upward continuation, the RESIDUAL for the difference between the 0.5 km and the 3.0 km upward continuation, and the REGIONAL for the 3.0 km upward continuation.

NOISE, RESIDUAL and REGIONAL shows that the wave length of that bands is short, medium and long respectively.

At the automatic analysis presented in the next section, the analysis was performed for both RESIDUAL and REGIONAL which represent the medium and long wave length bands respectively.

2-5-2 Automatic Analysis

Two dimensional automatic analysis was performed for the four magnetic sections, the RESIDUAL and REGIONAL, which were selected for the three frequency bands separated from the residual magnetic sections, and another two, the BP-1 and BP-2, which were obtained by using the band pass filter operated to the same magnetic sections. By means of these analysis, the depths of tops of the magnetic bodies and their apparent susceptibilities were found for each of magnetic sections. Outline of these techniques are described as follows.

(a) Automatic analysis

When F(w) is the Fourier transform defined by the formula (1) for the magnetic section T(x), and this mutual relation is represented by:

$$T(x) \leftrightarrow F(w) = A_m(w) + jB_m(w) \qquad - (5)$$

where, $w = 2\pi m$, and $j = \sqrt{-1}$

the horizontal derivative Tx(x) and the vertical derivative Tz(x) are shown as follows.

$$Tx(x) = \frac{\partial T(x)}{\partial x} \leftrightarrow jwF(w) = -wB(w) + jwA(w) \qquad - (6)$$

$$Tz(x) = \frac{\partial T(x)}{\partial z} \leftrightarrow wF(w) = wA(w) + jwB(w) \qquad - (7)$$

As mentioned above, the derivative operation becomes very simple in the frequency domain, and it is easy to get the higher derivatives as well as above relations.

It is necessary to define the following function a(x) which means square of the vertical magnetic field strength.

$$a(x) = (Txz(x))^2 + (Tzz(x))^2 \qquad - (8)$$

This function a(x) is called as bell type function. For the two dimensional models, fault and dyke like structure, a(x) becomes simple expressions as follows.

Fault structure: $a_F = \beta^2[(x - x_0)^2 + h^2]^{-1}$ - (9)

dyke like structure:

$$a_D = 4\beta^2 d^2[(x - x_0 - d)^2 + h^2]^{-1}\cdot[(x) - x_0 + d)^2 + h^2]^{-1} \quad - (10)$$

where, $\beta = kTo\cdot(1 - \cos^2 i\cdot\sin^2\alpha)$

k = susceptibility contrust

To = total geomagnetic field value

i = average inclination

α = angles between the magnetic north and the magnetic section

x_0 = position of model structure

2d = width of dyke body

h = depth of the top of body

The steps of analysis is described as follows.

The Fourier transform using the fast digital Fourier transform technique are applied to each magnetic sections to get complex frequency domain values. After processing the second derivative operations, these data is re-transformed to spatial domain by the reverse Fourier transform. Then the bell type function a(x) are completed according to formula (8). After finding the maximum and minimum values and its positions of the a(x), a curve matching process with least square method is applied to decide the type of structure for regions near the maximum value point. Then, the apparent susceptibility, depth and width (in the case of dyke structures) is determined automatically.

The above analytical calculations has been done using CDC 6600 computer.

2-6 Measurement of Rock Magnetism

Rock samples, amounting to 200, were sampled from outcrops at the locations as shown in PL-III-6. The magnetic susceptibilities of those samples were measured by means of the Bison susceptibility meter. The results of those measurements are given in Table III-1~4.

The mean values about the kind of rocks are given as listed below.

Kind of rocks	Susceptibility*	Number of samples
Plutonic rocks		
Syenite, Monzonite	1285	6
Tonalite	1182	13
Grano-diorite	1548	2
Quartz diorite	3086	12
Diorite	2915	5
Quartz gabbro	4040	7
Gabbro	1686	4
Hypabyssal rocks		
Alkaline porphyry	1724	5
Porphyry	527	6
Quartz porphyrite	2380	10
Porphyrite	2147	5
Volcanics		
Alkaline volcanic rock	2361	10
Rhyolite, Dacite	1073	11

Kind of rocks	Susceptibility*	Number of samples
Andesite	3260	37
Trachy-basalt, basalt	2309	7
Pyroclastics		
Alkaline pyroclastics	1356	4
Andesitic tuff	1946	4
Others		
Schist	1204	1
Hematite	83	1

* in 10^{-6} cgs·emu/cc.

As mentioned above, same results have been obtained for susceptibility measurement of rocks in Phase I. As well as in Phase I, the rock samples were classified into rank A (strongly magnetic rocks), rank B (intermediately magnetic rocks) and rank C (weakly magnetic rocks). The andesitic, basaltic, dioritic, gabbroic and porphyritic rocks belong to rank A; tonalite, monzonite, porphyry, rhyolitic and pyroclastics belong to rank B, and sedimentary rocks belong to rank C in this field.

3. Interpretation Results

Automatic interpretation for two dimensional models have been done and 35 magnetic profiles each consisting of four kinds of magnetic anomalies are shown on Fig. PL III-1-1∿35.

Thirty five N-S trending magnetic profiles were picked-up every 5 km apart, which in most cases does not cross over the center of the magnetic anomalies, and of which trend are not always perpendicular with the trends of the magnetic anomalies. So the results of the automatic calculation for depth, width and apparent susceptibility of the magnetic body are sometimes far from actual structure. Especially in the low latitude zone (whose dip angle is 20 degrees), magnetic anomaly tends to extend in E-W direction even the magnetic body is narrow. So all magnetic anomalies are automatically calculated in this analysis, that the suitable depth, width and etc, must be selected. And it should also take into consideration that the calculated results are shown only as two dimensional model such as fault- and dyke-like structures which might be rare in reality. Judging from the filtering results, the REGIONAL anomaly seems to indicate mainly the distribution of Basement complex such as plutonic rocks, schist and ultra-basic rocks, and other three filtered anomalies seem to indicate the overburden and shallow plutonic rocks, Caraballo Group and Mamparang Group. After the above-mentioned conditions are taken into consideration, the consolidated interpretation results are shown on PL III-6. The geological structure profiles are shown on PL III-1-1∿35

4. Concluding Remarks and Future Problems

4-1 Geological Structure

The results of the interpretation can be summarized as geotectonic lines as given below.

(A) A geotectonic line running in a NW-SE direction from Dingalan to the south of Baguio city.

(B) A geotectonic line trending in a N-S direction to the north of Banak after branching off from geotectonic line (A) about 5 km northeast of San Jose.

(C) The other geotectonic line trending in a NW-SE direction extends to the south of Baguio city running 20 km northwards after branching off from geotectonic line (A) 10 km northeast of San Quintin.

(D) A geotectonic line running north 10 km north from Aritao.

(E) A geotectonic line running northeastwards from Bambang through Bayombong.

(F) A geotectonic line running in a NW-SE direction from Bambang to about 15 km west of Dipaculao.

The main structures were clearly divided by the above-mentioned main geotectonic lines. As mentioned below, the structures showing the depth to the basement-complex and the top of Caraballo Group were surrounded by each geotectonic lines.

(I) In the southwest of the geotectonic line (A), i.e. the southwestern part of the survey area.

The basement-complex and the top of Caraballo Group become deepter to the southwest, and the depths of the basement-complex and the top of Caraballo Group exceed 2,000 m and 1,000 m below sea level, respectively.

(II) In the area surrounded by geotectonic line (A) and (C), the basement complex (schist) crops out in the eastern part of this area, and it becomes deeper to the northwest.

(III) In the area surrounded by the geotectonic line (A), (B) and (C), the basement complex becomes shallower from the southeastern margin of this area, showing the anticline structure in the northeast of San Quintin.

Then it becomes gently deeper to the north showing the basin-like structure. And again at about 10 km from Mt. Anap it shows the anticline structure with the strike of NE-SW direction (III-1).

Then it becomes deeper to the northwestern part of the survey area.

The top of Caraballo Group is distributed in the eastern part of this area and seems to increase its depth to the northwest.

Plutonic rocks in small scale is found in the above-mentioned saddle-like structure (III-1) and in Banak.

(IV) In the area surrounded by geotectonic lines (A), (B), (D) and (F), plutonic rocks are exposed in Bambang.

Large scale plutonic rocks are found from Dupax to the boundary of Nueva Vizcaya and Quezon provinces into a southeast direction. The extension of this rocks extends to Casiguran with the width of about 10 km.

(IV-1) In the southern part of this area, the basement complex are exposed, and it becomes deeper to the northwest showing the basin-like structure in the east of San Jose.

The thick Caraballo Group can hardly be found in this area.

(IV-2) In the northern part of this area, the basement complex becomes gradually deeper.

(IV-3) In the area between the geotectonic line (F) and large scale plutonic rocks (P-1), the basement complex becomes deeper to the northeast direction.

The depth of the top of Caraballo Group is above sea level.

(V) In the area between geotectonic line (D) and (E), the basement complex and the top of Caraballo Group each become deeper to the north, and it shows the southern margin of the basin-like structure.

(VI) In the area surrounded by geotectonic lines (E) & (F) and the above-mentioned large scale plutonic rocks (P-2), the basement complex becomes gradually deeper in the western part and the plutonic rocks are seen as outcrops or covered by overburden.

In the eastern part, the basement complex becomes steeply deeper.

4-2 Problems on Analysis

According to the structure analysis, the analytic results of REGIONAL magnetic anomaly indicate the distribution of intrusive rocks and so on, found in the basement complex of the survey area.

The depth of the basement complex were calculated by utilizing the conception of intrabasement.

And it seems that each analytic results of RESIDUAL, BP-1 and BP-2 coincide with the distribution of both wings of basic rocks such as andesite, gabbro, etc. in Caraballo Group, using automatic analysis, the depth of the upper Caraballo Groups were determined.

The following assumption have been made in the above-mentioned calculation. Geological models are either fault structure with semi infinite step or dyke structure of which upper end width is finite.

Then, their depth, width and apparent susceptibility were obtained.

However such idealized structure hardly exist in this area. Especially sheet like structure with finite length are rather dominant. Then in order to compare the calculated structure with the real one, it is necessary to make arrangement of translating dyke structure into sheet like structure. The upper most parts of Caraballo Group are obtained as mentioned above.

Calculated depth (Hc), width (Wc) and apparent susceptibility are correct only when the geological strike is perpendicular with the geomagnetic north and the strike of the rocks is 90 degrees.

In case the strike is not perpendicular with geomagnetic north, following correction must be done.

$$H = Hc \cdot \cos(90-\partial)$$

$$W = Wc \cdot \cos(90-\partial)$$

Where, ∂ is an acute angle between geological strike and geomagnetic north, and H, W are the real depth and width.

The equation between apparent susceptibility (K) and the dip angle of the rock (d) is,

$$K = Ko \sin(d)$$

Then, the susceptibility should be corrected if necessary. But the results of analysis shown on Fig. PL. III-2∿5 are the uncorrected values.

In order to separate magnetic anomaly into NOISE, RESIDUAL and REGIONAL, Upward continuation method was adopted in this analysis. Judging from the analyzed results, however, some more improvement seems possible. As an improvement, the solution for sheet or plate model is now being added.

This analysis has been made only for the underground structure, but the change of physical property, i.e., distribution of mineralized alteration might be analyzed by way of geological, electrical, gravity and aeromagnetic surveys.

Nowadays, one of the biggest problem is to develop the technique of consolidated analysis and interpretation.

Table III-1 Susceptibilities of rock sample

No. 1

Sample No.	Rock Name	Susceptibility x 10^{-6}cgs emu/cc	Mean Susceptibility x 10^{-6}cgs emu/cc
B-202	Syenite-monzonite	1590	1285
B-213		986	
B-338		905	
C-102		1945	
G- 89*		363	
G- 91		611	
L-115		1673	
N- 7*		3392	
C-109	Alkali-porphyry	1277	1724
C-125		1076	
C-181		2078	
M-142		2155	
M-562		2036	
A-305	Alkali-volcanics	2143	2361
A-309		3575	
B-334		2711	
D- 11*		370	
E- 77*		497	
G- 21*		261	
G- 27		2640	
G- 30		3626	
G- 87		2273	
G-103		1215	
H- 72		1005	
H-160		1503	
N- 25		2920	
A- 56*	Alkali-pyroclastics	46	1356
C-117		1045	
D-516		2859	
E- 24		908	
G-100		610	

*Excluded from calculation of mean susceptibility

No. 2

Sample No.	Rock Name	Susceptibility x 10^{-6}cgs emu/cc	Mean Susceptibility x 10^{-6}cgs emu/cc
A- 20	Tonalite	1100	1182
A- 23		664	
A- 24		930	
A- 45		655	
A- 46		660	
A- 48		802	
A- 52		1716	
C- 19		875	
C- 48*		369	
C- 71		1462	
C- 79		925	
E- 18*		56	
E- 64*		89	
L- 34		1758	
M-218		2054	
N- 16		1765	
N- 96*		396	
G- 83	Grano-diorite	2400	1548
L- 45		696	
A- 27*	Quartz-diorite	97	3086
C- 26		3822	
D- 6		3356	
E- 29		2914	
G-159		1956	
G-162		2546	
G-504		2415	
H-220		5665	
L- 33		1700	
L- 53		2954	
L- 76*		110	
M-242		3722	
N- 48		3064	

Table III-2 Susceptibilities of rock sample

No. 3

Sample No.	Rock Name	Susceptibility x 10^{-6}cgs emu/cc	Mean Susceptibility x 10^{-6}cgs emu/cc
A-215	Diorite	2191	2915
E-154*		442	
G-109		5261	
G-163		1997	
G-164		2178	
H-198*		548	
M-175		2950	
C- 98	Quartz-gabbro	3753	4040
D- 18		3909	
H-338		6448	
L- 28		1240	
L- 30		3870	
L- 37		4163	
L- 38		4902	
H-173	Gabbro	861	1686
M-201		2778	
M-208		2090	
M-220		1015	
N- 78*		57	
A- 50	Porphyry rocks	918	527
H- 20		408	
G-128		641	
H-115		420	
H-148		595	
M- 37		179	
A- 26	Quartz-porphyrite	2586	2380
A- 30		1176	
C- 37		1614	
C-135*		277	
E-139		1450	
G- 80		4134	
H-190*		247	
H-210		3173	
H-279		1539	
H-331		987	
H-371		2826	
L- 21		4316	

No. 4

Sample No.	Rock Name	Susceptibility x 10^{-6}cgs emu/cc	Mean Susceptibility x 10^{-6}cgs emu/cc
C- 91	Porphyrite	1018	2147
G-500		2353	
L- 80		1846	
M- 5		3369	
N-183*		87	
M- 43*	Rhyolite	84	1073
M-522*		64	
A- 35*	Dacite	295	
C-139		964	
C-142		1356	
D- 4*		120	
D- 8*		76	
D- 21		984	
D-509		764	
D-511		967	
D-512		1186	
D-513		1211	
D-515		1138	
E-122		853	
G- 8*		326	
G- 79*		51	
G-122		1416	
G-130*		599	
G-135*		107	
H-360		970	

Table III-3 Susceptibilities of rock sample

No. 5

Sample No.	Rock Name	Susceptibility x 10^{-6}cgs emu/cc	Mean Susceptibility x 10^{-6}cgs emu/cc
A- 31	Andesite	1520	
A- 58		2112	
A-101		1356	
A-112		1343	
A-200		3087	
A-210*		218	
A-547*		421	
E- 6		1725	
C- 30		1137	
D- 2		2732	
D- 38		4797	
D- 60		3968	
D- 61		5619	
D- 65*		456	
D- 73		7037	3260
D-130		1383	
D-131		4814	
D-133		5269	
D-142		1982	
D-502		4163	
D-503		5114	
D-523		6095	
D-524		459	
D-525		4931	
D-527		4239	
E- 47		1250	
E- 80		3799	
E-101		2908	
E-115*		77	
E-166		1406	
E-180		2782	
E-193		3227	
G- 7		3997	
G-530		3406	

No. 6

Sample No.	Rock Name	Susceptibility x 10^{-6}cgs emu/cc	Mean Susceptibility x 10^{-6}cgs emu/cc
H-133*	Andesite	202	
H-347		1378	
L- 16		3199	
L- 41*		78	
L- 48*		309	
L- 49		5472	
L- 70*		128	
L- 76*		74	
M- 70		1641	
M-109		3916	
M-156		2307	
N- 45		4004	
N-153		1832	
N-171*		90	
A- 29	Dolerite	2614	
E- 62*	Dolerite	91	
E-129	Basalt	1774	
H-325	Basalt	2563	
L- 8	Basalt	4210	2309
L- 11	Dolerite	977	
L- 56	Basalt	1222	
N- 92*	Dolerite	152	
N-118*	Basalt	320	
N-154	Basalt	2804	

Table III-4 Susceptibilities of rock sample

No. 7

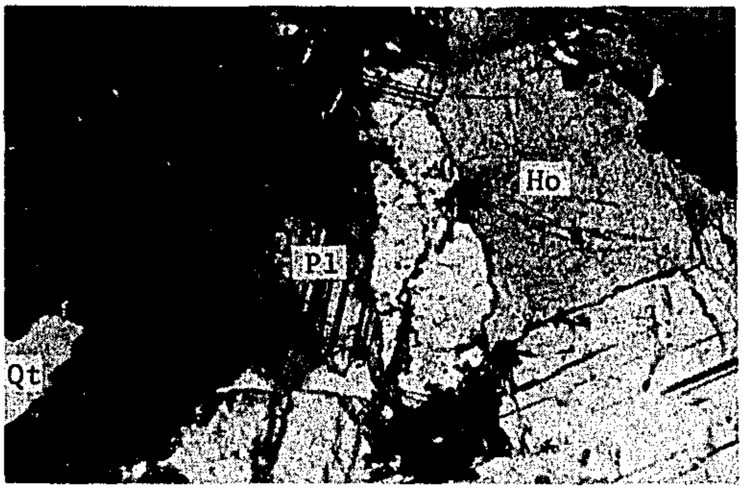
Sample No.	Rock Name	Susceptibility $\times 10^{-6}$cgs emu/cc	Mean Susceptibility $\times 10^{-6}$cgs emu/cc
A- 54*	Andesitic tuff	150	
A-207		2112	
C- 57		629	
C-105		2158	1946
E- 87*		66	
H-296*		74	
M-555		2884	
C- 35*	Shist	103	
H-285		1204	1204
D-531	Hematite	83	

APPENDICES

Table A – 1	Fossils; Larger Foraminifera
A – 2	Microscopic observation
A – 3	X-ray diffractive analysis
A – 4	Metal content of ore sample
A – 5 – (1)	Metal content of geochemical sample for semi-detailed and reconnaissance surveys
A – 5 – (2)	Metal content of geochemical sample for detailed survey

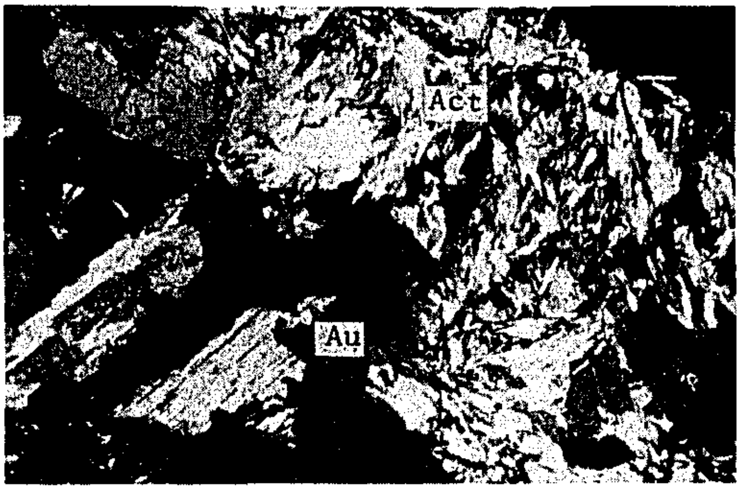
Table A-1 Fossils; larger foraminifera

Sample Number \ Species	Operculina complanata	O. venosa	O. sp.	Heterostegina borneensis	H. sp.	Spiroclypeus leupoldi	S. higinsi	Sporadotrema cylindricum	Sorites marginalis	Schlumbergella sp.	Cycloclypeus eidae	C. sp.	Coral	Nephrolepidina angulosa	N. inflata	N. japonica	N. ferreroi	N. verbeeki	N. sp.	N. parva	Eulepidina formosa	E. sp.	E. monstrosa	Miogypsina polymorpha	M. sp.	Marginopora vertebralis	Miniacina miniacea	Amphistegina radiata	Austrotrillina howchini	Acervulina inhaerens	Borelis pygmaeus	Benthonic foraminifera	Flosculinella bontangensis	Planorbulinella larvata	Planktonic foraminifera	Pararotalia sp.	Textularia sp.	Gypsina globulus	Rotalia sp.	Age
A- 40																																								
107															O						O				O								O							L.Miocene
B- 53RF			O									O							O						O															Miocene
129					O												O			O		O																		Olig.-L.Miocene
C- 65R						O															O																			Oligocene
81																																								
92																											O					O		O						
D- 20		O			O						O					O	O	O		O	O							O		O				O	O					Oligocene
26F																											O			O		O								
E- 72R																												O												
73R					O														O							O	O		O		O	O		O						U.Olig-L.Miocene
89R																																								
128								O																																
F- 28RF			O										O															O												
30													O																											
31F				O							O						O	O	O			O		O				O		O				O						Oligocene
G- 16													O																											
17R													O																											
H-231																			O																					
306R																																			O					
377						O													O				O					O												Oligocene
J- 31																																								
K- 16F	O	O										O		O														O				O								Miocene
66																						O																		Olig.-L.Miocene
L- 1																																			O				O	
5										O												O					O								O					
6						O	O		O		O										O						O	O								O	O	O		Oligocene
M-159												O									O																			Olig.-L.Miocene
705													O						O																					Miocene
709					O								O						O		O											O								Olig.-L.Miocene
722R																																								
N- 53R														O		O								O				O												L.Miocene
Range		Te–Recent		Te_{1-4}		Te_{1-4}										Te	Te–f	Te–f			Te		Te_{1-4} (lower)	Te		Te_5–Recent			Te		Tc–e		Te_5							



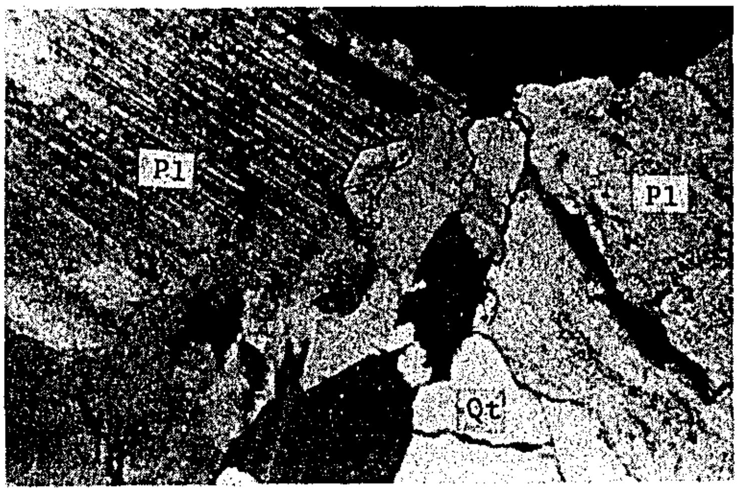
Quartz diorite (Coastal B)
(Sample No. L-19)
A Corroded Plagioclase (Pl), a Quartz (Qt) and Hornblende (Ho) shows optical texture.

cross



Augite gabbro (Coastal B)
(Sample No. A-32)
Augite (Au) partially alters to Actinolite (Act).

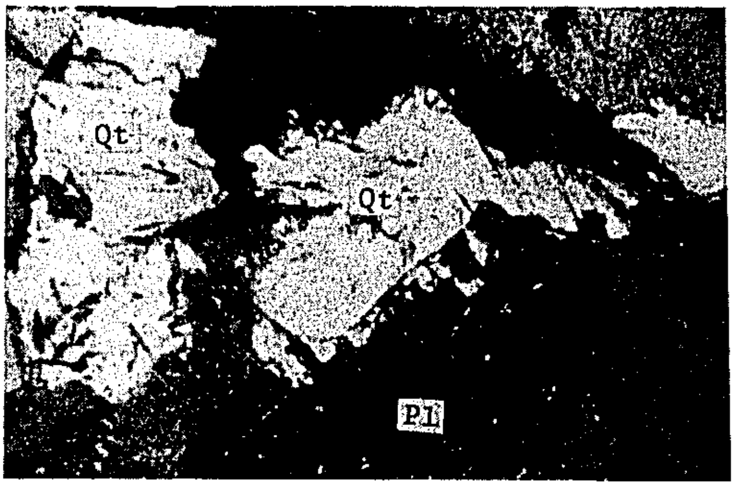
cross



Toralite (Coastal B)
(Sample No. N-96)
A corroded Plagioclase (Pl) and a Quartz (Qt). A few Potash Feldspar occurs.

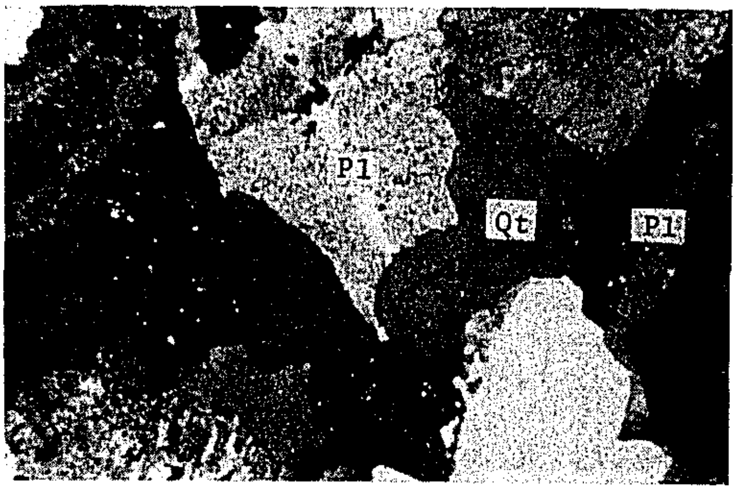
cross

0.0 0.2 0.4 0.6 mm



Mylonitic tonalite (Coastal B)
(Sample No. L-12)
A Plagioclase (Pl) and crushed Quartz (Qt).

cross



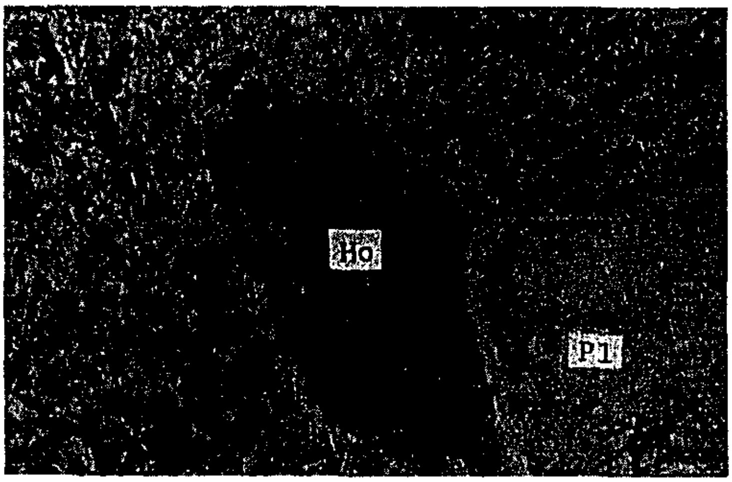
Granophyre (Dupax B)
(Sample No. H-20)
A Plagioclase (Pl) and a Quartz (Qt) show a graphic texture.

cross

Mylonitic tonalite (along Santa Fef.)
(Sample No. C-71)
A Plogioclase (Pl) and equigranular Quartz (Qt).

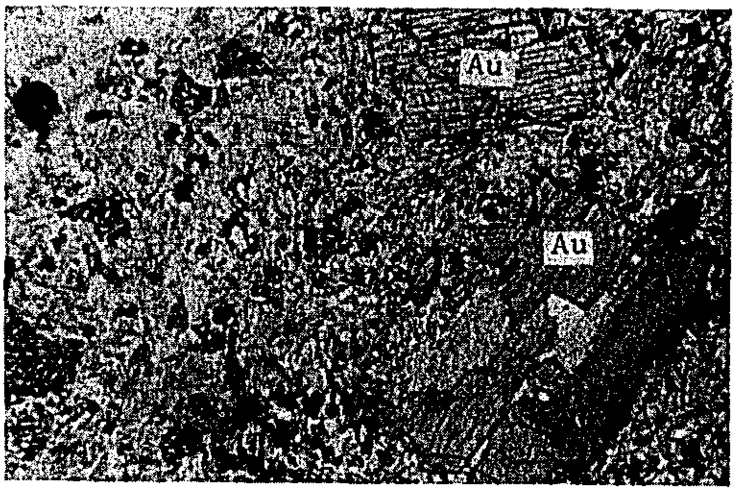
cross

0.0 0.2 0.4 0.6 mm



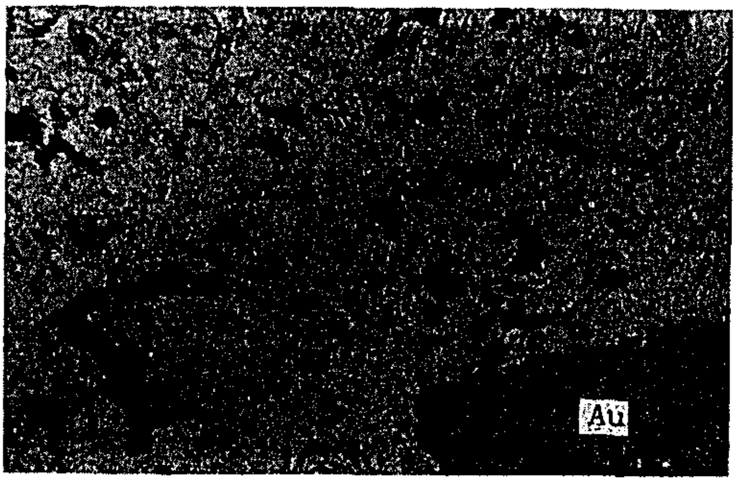
Andesite (Caraballo F.I)
(Sample No. C-148)
Phenocrysts of Plagioclase (Pl) and Hornblende are in a Groundmass.

open



Basalt (Caraballo F.II)
(Sample No. M-234)
A Phenocryst of Augite (Au) and a texture of a Groundmass is intergranular.

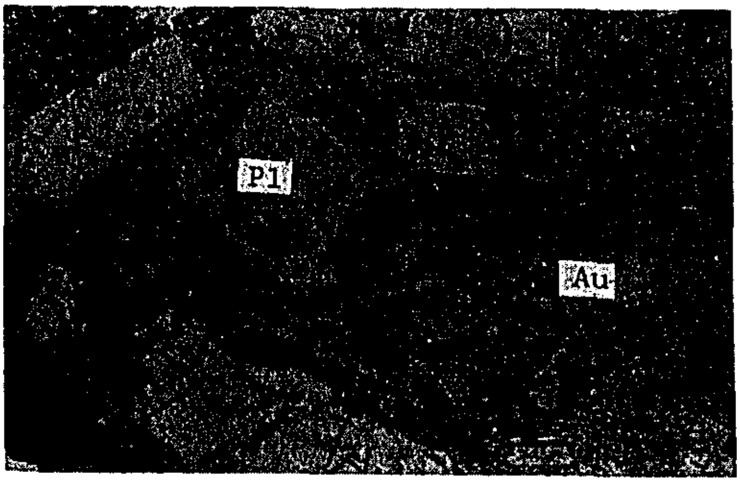
open



Augite (Au) andesite
(Caraballo F.III)
(Sample No. L-93)
A Phenocryst of Augite (Au) is enclosed in a Groundmass.

open

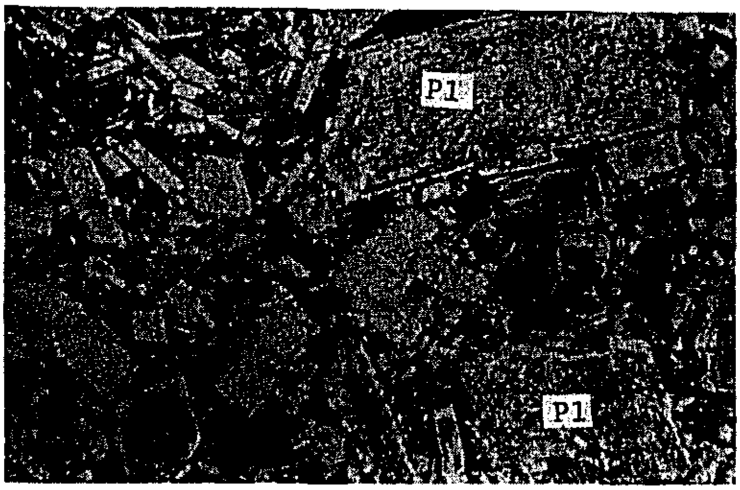
0.0 . 0.2 0.4 0.6 mm



Two pyroxene andesite
(Manparang F)
(Sample No. B-109)

Phenocrysts of Plagioclase (Pl) and Augite (Au) show a porphyritic texture.

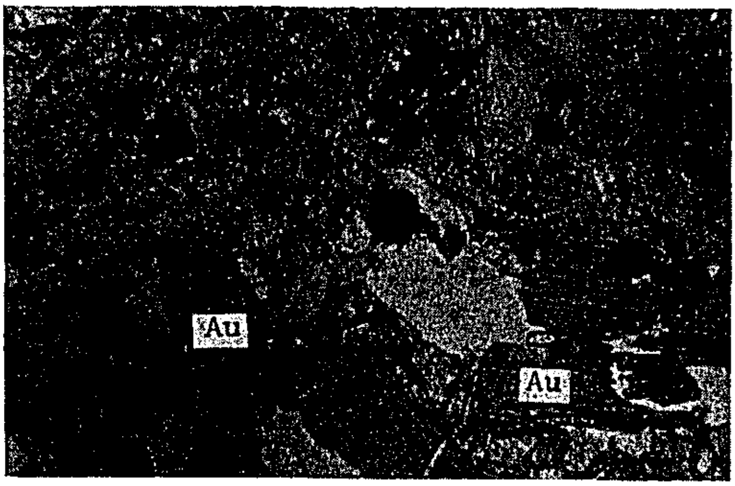
open



Augite andesite (Manparang F)
(Sample No. B-144)

A Phenocryst of Plagioclase (Pl) alters to montmorillonite partially.

open

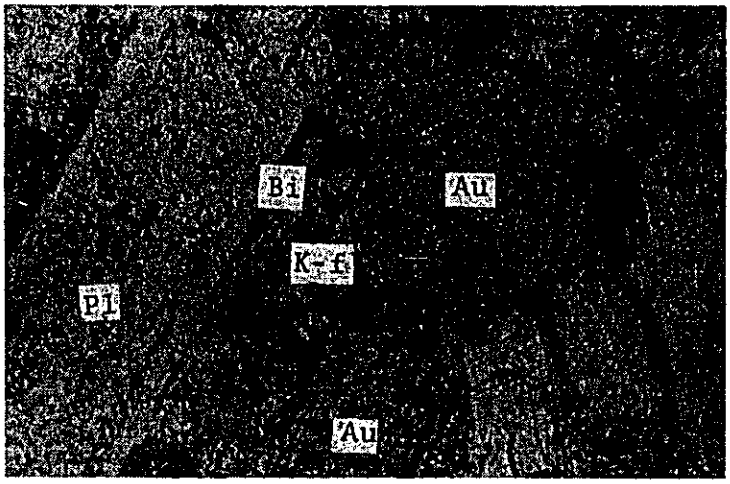


Augite (Au) trachyte (Manparang F)
(Sample No. C-115)

Phenocrysts of Augite (Au) and Plagioclase are enclosed in a trachitic texture.

open

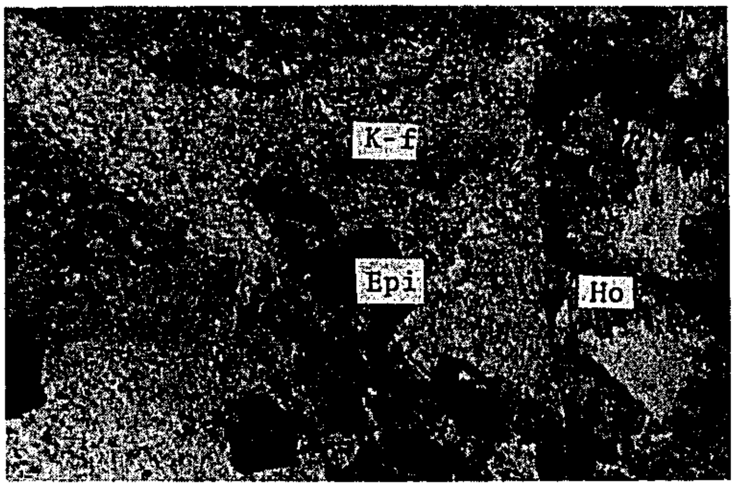
0.0 0.2 0.4 0.6 mm



SYENITE (Palali B)
(Sample No. K-33)

Porphyritic Phenocrysts of Plagioclase (Pl), Augite (Au) and Biotite (Bi) are enclosed in a Potash Feldspar (K-f).

open

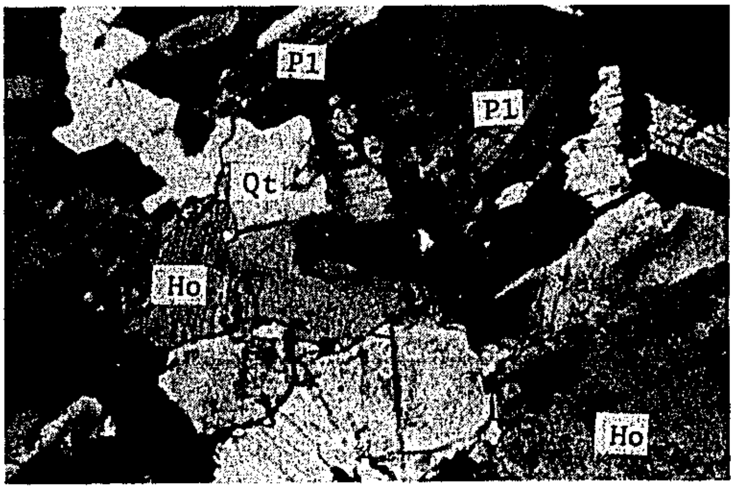


Monzonite (Palali B)
(Sample No. B-202)

A Porphyritic Phenocryst of Hornblende (Ho) is in a Potash Feldspar (K-f).

An Epidote (Epi) occurs.

open



Quartz diorite (in Cordillera Central)
(Sample No. L-76)

A Plagioclase (Pl), corroded Quartz (Qt) and a Hornblende (Ho) are Phenocrysts.

cross

0.0 0.2 0.4 0.6 mm

Rock Mass	Rock Type	Thin Section Number	Description
Coastal batholith	Opx-Cpx-Ho·Qz gabbro, Opx-Cpx-Ho·gabbro	A-27, A-32, A-34, A-41, A-43, A-45B L-22, L-35, L-39, L-42, L-54	These are fine to medium grained orthopyroxene clinopyronene hornblende quartz gabbro or orthopyronene clinopyroxene hornblende gabbro. This type is fine to medium grained and pale green to dark green grey colored rock. It contains coarse grained enhedral plagioclase and pyroxene. Quartz occurs intenstitially. The constituents are plagioclase, hornblende, clinopyroxene, orthopyroxene, quartz, opaque and accessory or plagioclase, clinopyroxene, hornblende, quartz,orthopyroxene, opaque and accessory (in order). Plagioclase is subhedral to euhedral, 0.5 ∿ 3 mm in length and has slight to clear normal zoning. Some show the fluidal texture. Then calcic core is partially corroded. Hornblende is mostly fibrous uralite (actinolite ∿ tremolite). Common hornblende is subhedral prismatic and green to greenish brown colored, and contains clinopyroxene, plagioclase. Relict of clinopyroxene and rarely orthopyroxene are included in uralite, and subhedral to anhedral granules, 1 ∿ 2 mm in length. Quartz occurs interstitially and shows strong wavy extinction. Others are granules of opaque, chlorite, epidote and accessory. The modal ratio of quartz is less than 10.
	Bi-px-Ho·Qz diorite, Bi-Opx-Cpx-Ho·Qz diorite, Bi-Ho-Opx-Cpx·Qz diorite	A-18, A-20, A-30, A-42, A-47, A-64, A-66, A-67 L-18, L-19, L-23, L-25, L-28, L-30, L-32, L-33, L-37, L-38, L-43, L-45, L-47, L-51	Biotite pyroxene hornblende quartz diorite is medium to coarse grained, leucocratic and heterogeneous. It contains porphyritic aggregates (maximum 8 × 10 mm) of quartz. Quartz and plagioclase are poileilitically included in anhedral hornblende. The constituents are plagioclase, quartz, hornblende, pyroxene, biotite and opaque (in order). Plagioclase is euhedral to subhedral, 0.5 ∿ 5 mm in length and has normal to oscillotory zoning. It's corroded by quartz. Quartz (1 ∿ 2 mm) occurs interstitially and strong wavy extinction. Hornblende is anhedral, 1 ∿ 4 mm in length and green to greenish yellow ochre. Cummingtonite is included in hornblende. Few relict of pyroxene is included in hornblende. Biotite is euhedral to subhedral and alters to chlorite.

Rock Mass	Rock Type	Thin Section Number	Description
Coastal batholith			Opaque occurs as fine grained granules. The modal ratio of color index is 20 ∿ 40 and that of quartz is 20 ∿ 30%. Biotite orthopyroxene clinopyroxene hornblende quartz diorite is medium to coarse grained and dark green grey colored. The texture is equigranular with small amount of micrographic quartz and ploginelase. Hornblende occurs poikilitically. The modal ratio of color index is 20 ∿ 40, and that of quartz is about 10%. Biotite hornblende orthopyroxene clinopyroxene quartz diorite is fine to medium grained and dark green grey colored. Coarse grained quartz is about 5 mm in length and scatters only a few. The texture is hypidiomorphic granular. Hornblende occurs as the margin of poikilitic pyroxene. The modal ratio of color index is 20 ∿ 40, and that of quartz is less than 5%.
	Mylonitic Bi-Ho·tonalite Bi-Ho·tonalite	A-4, A-13, A-14, A-15, A-17, A-19, A-22, A-23, A-24, A-44, A-45A, A-46, A-48, A-49, A-50, A-52, A-56, A-59, A-60, A-63, A-216 L-12, L-15, L-16, L-17, L-34, L-34, L-36, L-45, L-52, L-53, L-201, L-202 N-96	Mylonitic biotite hornblende tonalite is leucocratic, coarse grained and heterogeneous. It is affected by mylonitization and contains aggregates (5 ∿ 10 mm) of quartz, mylonitic plagioclase, interstitial hornblende. The constituents are plagioclase, quartz, chlorite and epidote (in order). Quartz is of a size and shows strong wavy extinction. Plagioclase is fragmentary to of a size,1 ∿ 5 mm in length and has weak oscillatory zoning. Mafic mineral occurs interstitially as the altered minerals of chlorite, epidote and opaque. Hornblende is rarely euhedral prismatic and 5 mm in length. The modal ratio of color index is less than 20, and that of plagioclase is equal or larger than quartz. That of quartz is 20 ∿ 40%. Coarse grained biotite hornblende tonalite consits of coarse grained quartz (5 ∿ 8 mm), equigranular quartz and plagioclase, small amount of interstitial mafic mineral. The constituents are *plagioclase, quartz, hornblende, chlorite, epidote, biotite,*

Rock Mass	Rock Type	Thin Section Number	Description
Coastal batholith			opaque and potash-feldspar (in order). Plagioclase is euhedral to subhedral, 1 ∿ 5 mm in length and has normal to oscillatory zoning. It has albite rim with small amount of micrographic quartz. Potash feldspar occurs interstitially. Hornblende is subhedral to anhedral, pale green yellow ochre colored and occurs interstitially. There are small amount of biotite and opaque. The modal ratio of color index is less than 20 and that of plagioclase is much larger than quartz. The modal ratio of quartz is 20 ∿ 40%.
Dupax batholith	Py-Bi-Ho·Qz diorite, Opy-Cpy-Bi-Ho·diorite, Bio-Ho·tonalite	C-21, C-26 E-12, E-18, E-19, E-29, E-99 H-20, H-29, H-53, H-61, H-220 N-16, N-25, N-39, N-48, N-50	Pyroxene biotite hornblende quartz diorite and orthopyroxene clinopyroxene biotite hornblende diorite are medium to coarse grained and homogeneous. They consist of phenocrystic plagioclase and hornblende. The texture is locally poikilitic. One type is pyroxene biotite hornblende quartz diorite. The constituents are plagioclase, quartz, hornblende, biotite, pyroxene, opaque (in order). Plagioclase is euhedral to subhedral, 1 ∿ 5 mm in length and has normal to normal step zoning. Some show the fluidal texture. Quartz occurs interstitially and shows strong wavy extinction. Hornblende is subhedral to anhedral pale green to greenish yellow ochre colored. The relict of pyroxene is included in hornblende. Biotite occurs as subhedral crystal with hornblende. Small amount of potash-feldspar and opaque occur interstitially. The modal ratio of color index is about 20, and that of quartz is about 20%. The other orthopyroxene clinopyroxene diolite hornblende diorite and the constituents are plagioclase, hornblende, quartz, opaque, biotite, pyroxene (in order). Plagioclase is euhedral to subhedral, 1 ∿ 3 mm in length, and has corroded core and homogeneous rim. Hornblende is subhedral, green colored and occurs interstitially.

Rock Mass	Rock Type	Thin Section Number	Description
Dupax batholith			Relict of pyroxene is included in hornblende. Interstitial quartz and granulitic opaque occur. Biotite alters perfectly to chlorite and sphen. The modal ratio of color index is about 20% and that of quartz is about 5%. Biotite hornblende tonalite is fine to medium grained, and consists of porphyritic plagioclase, aggregates of quartz and fine grained plagioclase, quartz and mafic mineral. It presents rarely pinkish. Phenocrystic potash-feldspar. It shows locally graphic texture and contains aplite. The constituents are plagioclase, quartz, chlorite, biotite, epidote, opaque (in order). Plagioclase is subhedral to granular, 1 ∿ 3 mm in length and has *normal to oscillatory zoning*. *Quartz is presents* granular, 1 ∿ 5 mm and has strong wavy extinction. Albite, fine grained biotite and chlorite, opaque occurs interstitially. The modal ratio of color index is less than 5 and that of plagioclase is equal to or larger than quartz.
Palali batholith	Alkari feldsper syenite, Syenite, Syenite porphyry, Monzonite, Monzonite porphyry	A-309 B-14, B-93, B-114, B-187, B-189, B-190, B-200, B-201, B-202, B-213, B-214, B-225, B-329, B-333, B-334, B-335, B-336, B-337, B-338, B-339, B-342 C-102, C-109, C-110, C-113, C-125, C-130, C-172, C-174, C-180, C-181 E-185 F-110, F-118, F-129, F-131, F-150 G-21, G-27, G-87, G-89, G-91, G-103, G-109 H-16, H-32, H-50	Alkali-feldspar syenite, syenite and syenite porphyry are fine ∿ coarse grained, white grey ∿ pale pinkish grey colored and heterogeneous. They contain dark inclusion. There are porphyritic and anhedral to granulitic potash-feldspar. Plagioclase and hornblende are included in large crystal of potash-feldspar. The constituents are potash feldspar, plagioclase, pyroxene, others (hornblende, biotite, zeolite, sericite, epidote, chlorite, calcite, accessory) (in order). Potash feldspar occurs poikilitically and is less than 10 mm. Plagioclase is euhedral to subhedral, less than 10 mm and has weak normal zoning. *It is affected by dominant alteration and* alters to sericite, zeolite, calcite, chlorite and epidote. Biotite is subhedral, less than 3/2 mm and alters to chlorite, epidote, titanite. Clinopyroxene is euhedral to subhedral, 1 ∿ 2 mm, pale green colored and included in hornblende. *It has oscillatory zoning. Hornblende alters to chlorite* and epidote. Small amount of quartz and fine grained opaque occur interstitially. The modal ratio of color index is less than 10%.

Rock Mass	Rock Type	Thin Section Number	Description
Palali batholith		K-33, K-37, K-501, K-502, K-578 L-105, L-106, L-115 M-53 N-7	Monzonite is medium grained and pale pinkish ∿ drak green grey colored. Plagioclase is equigranular to subhedral and potash-feldspar occurs interstitially with small amount of plagioclase rim. The constituents are potash-feldspar, plagioclase, pyroxene, biotite, hornblende, opaque, others (zeolite, epidote, chlorite, calcite, accessory) or plagioclase, potash-feldspar, pyroxene, biotite, hornblende, opaque in order. Potash-feldspar is euhedral to subhedral and occurs as porphyritic microperthite and interstitial one. Plagioclase is euhedral to anhedral. Euhedral plagioclase is less than 5/2 mm in length and has oscillatory zoning with magnetite and apatite. Biotite is subhedral, fine grained and less than 1 mm in length. Hornblende is euhedral to subhedral, pale green ∿ pale yellow ochre colored, less than 3 mm and alters to carbonated mineral, chlorite. The modal ratio of color index is 10 ∿ 20%.
Stocks in Cordillera	Qz diorite, Diorite, gebbro, Diorite porphyry	A-102, A-115 B-261, B-287 C-144, C-157 G-159, G-163, G-164, G-170 H-372, H-374 L-55, L-69, L-76 (1975) C-4D, C-5D	They are green ∿ dark green grey colored and fine to medium grained. The texture is porphyritic or holocrystallic. The constituents are plagioclase, hornblende, quartz, pyroxene, biotite, others (epidote, opaque, chlorite, accessory) (in order). Plagioclase is euhedral to subhedral, less than 2 mm and has normal zoning. Hornblende is subhedral, pale green colored and alters to uralite. Pyroxene is included in hornblende and alters mostly to uralite. Quartz occurs interstitially. Biotite alters to chlorite. The modal ratio of color index is 20 ∿ 50%.

Rock Mass	Rock Type	Thin Section Number	Description
Stocks and dykes along Santa Fe Fault	Qz gabbro, Gabbro, Qz diorite Diorite, Granophyre, Tonalite	C-47, C-48, C-52, C-71, C-79, C-80, C-82, C-89, C-98, C-133, C-135, C-139, C-142, C-158 E-64, E-71, E-81, E-83 G-160, G-162 H-115, H-120, H-125, H-129, H-143, H-148, H-173, H-176, H-190, H-192, H-213, H-358 L-72 M-142, M-175, M-208, M-218, M-231 N-78	Quartz gabbro and gabbro are dark green grey colored, fine to medium grained and show a hypidiomorphic texture. The constituents are plagioclase, hornblende, pyroxene, quartz, others (opaque, chlorite, epidote, accessory) or hornblende, plagioclase, pyroxene, quartz, others (opaque, epidote, chlorite, accessory) (in order). Plagioclase is euhedral to subhedral, less than 2 mm and has homogeneous to normal zoning. Hornblende alters to uralite. Small amount of clinopyroxene, interstitial quartz and granule of opaque occur. Quartz diorite and diorite are fine to medium grained, dark green grey colored. The texture is poikilitic. Plagioclase is included in mafic mineral. The constituents are plagioclase, clinopyroxene, others (chlorite, epidote, uralite, quartz) (in order). Plagioclase is euhedral to subhedral, 2 ∿ 4 mm and has normal zoning. Some show a fluidal texture. Clinopyroxene alters to uralite and is 4 ∿ 6 mm. Hornblende occurs as pyroxene rim. There are small amount of micrographic quartz and opaque accompanied with clinopyroxene. Granophyre and tonalite are pale green grey colored, fine to medium grained and heterogeneous. There are aggregates of quartz and hypidiomorphic quartz, plagioclase and mafic mineral with small amount of graphic quartz. The constituents are plagioclase, quartz, hornblende, opaque, chlorite, epidote, apatite (in order). Plagioclase is subhedral, less than 2 mm and has weak normal to oscillatory zoning.
Others	Qz diorite, Diorite, Granophyre, Tonalite	A-38, A-213 B-7, B-17, B-33, B-164 C-7, C-19 D-6, D-8, D-18, D-131, D-527 E-154, E-163, E-180	Quartz diorite and diorite, rarely gabbro are dark green grey colored, medium to coarse grained and heterogeneous. Some are affected by mylonitization. This type consists of porphyritic phenocrysts and holocrystallined granules. The texture is hypidiomorphic granular with small amount of ophitic plagioclase and mafic mineral. There are various kinds of veins

Rock Mass	Rock Type	Thin Section Number	Description
Others		F-62, F-102 G-7, G-79, G-80, G-83, G-500, G-504 H-25, H-213, H-279, H-287, H-371, H-338, H-348 K-3, K-43, K-86 L-80, L-111 M-42, M-70, M-522 N-31, N-183 (1975) A-1, B-9, B-42, B-66, C-34R	veins composed of quartz, carbonated minerals and hornblende. The constituents are plagioclase, hornblende, clinopyroxene, others (chlorite, epidote, calcite, opaque, accessory, quartz) (in order). Plagioclase is euhedral to subhedral, less than 5 mm and homogeneous core with normal zoning mantle. The relict of clinopyroxene is included in hornblende and 4 ∿ 5 mm in length. Hornblende is pale green ∿ brownish green colored. One is subhedral prismatic and the other corrodes pyroxene and is anhedral. Granophyre and tonalite are grey ∿ grenish grey colored and medium to coarse grained. There are aggregates of quartz, and the texture is hypidiomorphic with small amount of graphic quartz and plagioclase. Some are affected by mylonitization. The constituents are plagioclase is subhedral, less than 4 mm and has normal zoning with albite rim. Pyroxene and hornblende alter to chlorite, epidote and actinolite. Quartz occurs interstitially.
Basements	Ultramafic rocks	A-114 C-35	These are composed of wehrlite and schistose amphybolite. Wehrlite consists of olivine, clinopyroxene, brown hornblende, opaque, and small amount of biotite. Olivine is 0.5 ∿ 1 mm, subhedral to granular and serpentinized dominantly. Clinopyroxene shows ophytic to poikilitic texture. Schistose amphybolite is composed with euhedral hornblende (0.5 ∿ 1.0 mm) and plagioclase (0.5 mm ±). The texture is mosaic.
	Schist	C-37 E-31, E-143 H-285	These are composed of amphybolite schist. Amphybolite schist consists of hornblende, plagioclase, quartz and epidote. Texture is poikilablastic.

Formation	Rock Name	Thin Section Number	Description
Caraballo Group Formation I	andesite	A-58, A-65, B-266, C-9, C-10, C-11, C-148, C-152, D-2, E-6, E-7, E-41, E-80, E-101, E-117, E-156, F-1 G-9, G-508, H-209, H-331, K-22, L-41, L-48, L-50, M-508 M-510, M-523, N-171	The phenocryst consists of plagioclase, mafic mineral and opaque. *Mafic mineral is the pseudomorph of clinopyroxene or hornblende and* is perfectly converted into chlorite. Plagioclase partially alters to opidote, chlorite and calcite. The groundmass consists of plagioclase, fibrous aitinolite, quartz, epidote, saponite, chlorite, zeolite and opaque. Plagioclases of the groundmass build of euhedral prismatic type and that which is surrounded by albite. (Epidoti), chlorite, calcite, (saponite) and (zeolite) occur as alter minerals.
	two pyroxene andesite	B-42 D-140, D-142, D-143 E-47 G-18, G-19, G-23, ·23 G-530 J-5 L-14 M-121, M-156 N-170	The phenocryst consists of plagioclase, augite, orthopyroxene, hornblende and opaque. Hornblende is perfectly converted into chlorite or calcite. Fibrous sericite and saponite occur partially in phenocrystic plagioclases. The glomeroporphyritic texture is found as aggregates of phenocrystic plagioclase and augite. The groundmass consists of euhederal priomatic plagioclase, irregular chlorite, calcite, interstitial quartz and anhedral granulite epidote. Epidote, chlorite, (sericite), calcite, (muscorite) and (saponite) occur as altered minerals.
	andesitic tuff	B-296, E-115, E-147, E-177, F-181, H-26, H-379, K-18, K-23 L-27, L-40, L-49, L-65, L-67, M-149, M-159, M-160, M-170, M-213, T-20, T-47	Lithic fragments consists of basalt, andesite, obsidian and foraminifera limestone. There are both euhedral and subhedral crystals of plagioclase augite, opaque and quartz. Matric consists of plagioclase, chlorite and epidote. There are two different types of plagioclase. One is crystal shards and the other anhedral granule devitrified glass shards. Epidote, chlorite, calcite, sericite and (muscovite) occur.

Formation	Rock Name	Thin Section Number	Description
Caraballo Group Formation II	basalt	B-40, B-244, B-307 C-6, C-8, C-30, C-38 C-146 D-10, D-158, D-185 E-166 F-2, F-166 H-5 L-10, L-26, L-29 L-31, L-90, L-92 M-226, M-234	These rocks are non-porphyritic type but several phenocrysts of plagioclase or augite scatter in the their section. An amygdaloidal structure is found and the contents of the amygdales are minerals of the carbonated minerals, prehnite, chlorite, montmorillonite and quartz. The volume of phenocryst is less than 10%. Some of the rocks have a glomeroporphyritic texture. The groundmass consists of slender striated prisms of plagioclase, minute granules of augite and opaque. The intergranular texture is found. The varioles show sheaf-like aggregates of augite. The altered minerals consist of (pumpellyite), prehnite, epidote, calcite, (chlorite), (muscovite), (montmorillorite) and (zeolite).
	dolerite	A-26, A-29, A-33, A-55, A-113, B-34, B-49, C-53, C-91, C-96, E-62, E-68, E-129, E-132, H-325 L-11, L-13, L-20, L-21 M-5, M-201, N-153	This type is non-porphyritic but some phenocrysts of plagioclase scatter in thin section. Hollocrystallired groundmass mainly consists of augite, actinolite and plagioclase. The ophitic texture is shown. A few of opaque, chlorite, epidote, hornblende, muscovite and quartz occur in the groundmass. The altered minerals consist of actinolite, (prehnite), epidote, chlorite and (muscovite).
	Cpx-basaltic andesite	A-112 B-22 C-38, C-93 E-5 F-23 G-6, G-523 H-133, H-326, H-347 L-24	The phenocryst consists of plagioclase, augite and mafic mineral. Mafic mineral is the pseudomorph and perfectly converted into chlorite, calcite and montmorillonite. Plagioclase partially alters to sericite, epidote and calcite. Groundmass consists of plagioclase, augite, hornblende, opaque, chlorite, epidote, calcite and montmorillomite. Plagioclase of the groundmass build of lath-shaped crystals and little subhedral priomatic crystals interstially. The subintergranular texture is found in the groundmass of plagioclase, augite and opaque. Prehnite and chlorite occur.

Formation	Rock Name	Thin Section Number	Description
Caraballo Group Formation III	pyroxene andesite	A-2, A-3, A-206 B-19 C-165 D-39, D-60 F-11, F-518 G-37 J-51, J-65, J-73 L-3, L-4, L-7, L-8, L-9, L-93, L-203 M-59, M-545 N-118, N-154	This type is dominantly subject to alteration. The phenocryst consists of plagioclase, augite, mafic mineral and opaque. Mafic mineral is perfectly converted into calcite and montmorillonite but the pseudomorph is analogoud to the well-shaped outline of hornblende or orthopyroxene. Plagioclase mostly alters to chlorite, calcite and zeolite. Augite is very fresh mineral. An amygdal structure is found and the contents of the amygdals are minerals of prehnite, chlorite and montmorillonite. The groundmass consists of plagioclase, augite, chlorite, montmorillonite, zeolite, opaque and various kind of clay minerals. The altered minerals consist of prehnite, chlorite, calcite, montmorillonite and others.
Mampalang Group	basalt	B-85, B-91, B-320, B-323 D-81 F-68 G-45 K-114, K-115	This type is porphyritic texture and an amygdaloidal structure is found and the contents of the amygdal are minerals of carbonated minerals, epidote, chlorite and zeolite. The phenocryst consists of plagioclase, augite and olivine. Olivine is perfectly converted into serpentive. The groundmass consists of slender striated prisms of plagioclase, augite, opaque, chlorite, glass and zeolite. Plagioclase and augite of the groundmass show the intergranular texture.
	basaltic tuff c	G-62 K-88, K-112, K-117 M-111	Lithic fragments consist of porphyritic basalt, non-porphyritic basalt and porphyritic andesite. Matrix consists of crystal shards of plagioclase and augite.
	pyroxene andesite	B-16, B-76, B-80, B-100, B-104, B-109, B-110, B-124, B-144, B-149, B-155, B-229, B-266, C-104, C-129 D-73, D-130, D-133, D-522, D-523, D-525	This type is porphyrite texture. The phenocryst consists of plagioclase hornblende, augite and quartz. The volume of phenocrysts is about 10%. Plagioclase partially alters to chlorite and calcite. An amygdal structure and flow structure are found and the contents of the amygdals are minerals of quartz and epidote. Plagioclase, hornblende and augite show partially glomeroporphyritic texture. Hornblende is surrounded by a border of oxides.

Formation	Rock Name	Thin Section Number	Description
Mampalang Group		E-34, F-38, F-78, F-80, F-133, F-153, F-522 G-70, G-169, K-5, K-7, K-9, K-39, K-50, K-55, K-58, K-61, K-75, K-90, K-121, K-526, K-540, L-70, L-73, L-112, L-113, M-59, M-109, M-541, M-572	The groundmass builds of plagioclase, chlorite, expidote, opaque, sericite, calcite and others. Plagioclase and others of the groundmass show the integranular texture.
	andesitic tuff	B-96, B-129, B-151, B-152, B-158, C-105, C-111, E-24, F-97, F-119, F-124, F-137 G-74, G-114, H-72 K-46, K-47, K-66, K-98, K-118, K-119, K-558, L-110, M-113, M-114, M-568, M-570	Lithic fragments consist of porphyritic andesite, non-porphyritic andesite, porphyrite and syenite porphyry. Phenocrystic plagioclase partially alters to calcite and sericite, and phenocrystic augite also alters mostly to chlorite and calcite. The volume of phenocryst is from 10% to 30%. Matrix of the devitrified glass.
	dacite	B-13, B-86, B-87, D-65, D-79, D-509, D-511, D-512, D-515, D-524 F-88, J-116, F-156, F-508, K-549	This type show porphyritic and spherulitic texture. The volume of phenocrysts is from 5% to 10%. The phenocryst consists of plagioclase, quartz, hornblende and potash-feldspar. The groundmass builds of plagioclase, quartz, chlorite, opaque and biotite. Plagioclase and quartz of the groundmass shown the equigranular texture. Calcite, chlorite, sericite and (montmorillonite) occur.
	trachyte trachy andesite	A-305 B-79, B-98, B-105, B-234 C-177 D-61, D-516 E-4 G-39, G-40 K-54, K-70, K-57, K-571 M-562	This type shows a trachytic texture. The phenocryst consists of plagioclase, soda-augite, opaque, green hornblende, biotite, tourmaline and opatite. Plagioclase mostly alters to sericite, chlorite and zeolite. The groundmass consists of potash-feldspar, zeolite, sericite, biotite, opaque, soda-augite and chlorite. Potash feldspar is taken off alteration, but plagioclase perfectly alters to sericite, chlorite and zeolite. There are several vehicles and the contents of the visicle are mainly minerals of zeolite group. There is one type which plagioclase is more than potash-feldspar. In this section occur the veins which mainly consist of potash-feldspar and prehnite.

Formation	Rock Name	Thin Section Number	Description
Mampalang Group	trackytic tuff	A-547 B-239 C-107, C-171, C-173 D-517, D-518 E-186, E-187 G-100, G-104 H-172 K-543 M-548	The phenocryst consists of potash-feldspar, a few plagioclase, opaque and apatite. Potash-feldspar mostly alters to calcite and opaque, and is subject to albitization. There is one type that consists of only phenorystic potash-feldspar. The volume of phenocryst is from 10% to 20%. This type is vitric tuff. Potash-feldspar and chlorite of the matrix are anhedral granular. The matrix shows a hyalopilitic texture. The essntial lens is not subject to compation but consists of porecy glass which builds of a few phenorystic potash-feldspar, apertite and opaque, and alters to chlorite. A few little fragments builds of syenite, syenite porphyry and trachyte.
Palalli Group	andesitic tuff	A-207, A-210 C-57 D-52 E-1, E-21, E-27, E-66, E-191, E-193 F-47 H-160 J-61 L-83, L-85	Phenocryst consists of plagioclase, augite, orthopyroxene, hornblende and opaque but orthopyrexene and hornblende is the pseudomorph and alters perfectly to carbonated minerals and chlorite. The volume of phenocryst is from 20% to 80%. The crystals of matrix mostly alter to chlorite, calcite, opaque and zeolite. There are various kinds of lithic fragments of pyroxene audesite, amygdaloidal andesite and dacite. The volume of lithic fragments is very much except welded tuffs. Welded tuffs are vitric and devitrified matrix shows spherulitic texture.
	dacite	A-101, A-108, A-109, A-110, A-200, A-201, A-202, A-205, A-215 B-36, B-261, B-287 C-10, C-151, C-161 E-44, E-121, E-122, E-139, F-3, F-210 , G-8, G-112, G-128, G-130, G-161, H-86, H-353, H-356, H-360 J-16, K-20, L-56, L-63, L-64, L-87, L-96, M-11, M-501	One type is porphyritic and has phenocrystic plagioclase, biotite, hornblende and quartz. The groundmass consists of plagioclase, quartz, muscovite, chlorite and epidote. The granophyric texture is found in the groundmass. Epidote, chlorite, calcite and muscovite occur. The other is non-porphyritic and an amygdal structure is found and the contents of the amygdals are minerals of plagioclase, quartz and (actinolite). The groundmass consists of plagioclase, actinolite, chlorite, opaque, quartz, (prehnite), (epidote) and (zeolite). Plagioclase and actinolite of the groundmass show the flow structure. Actinolite, opidote, chlosite, calcite and sericite occur.

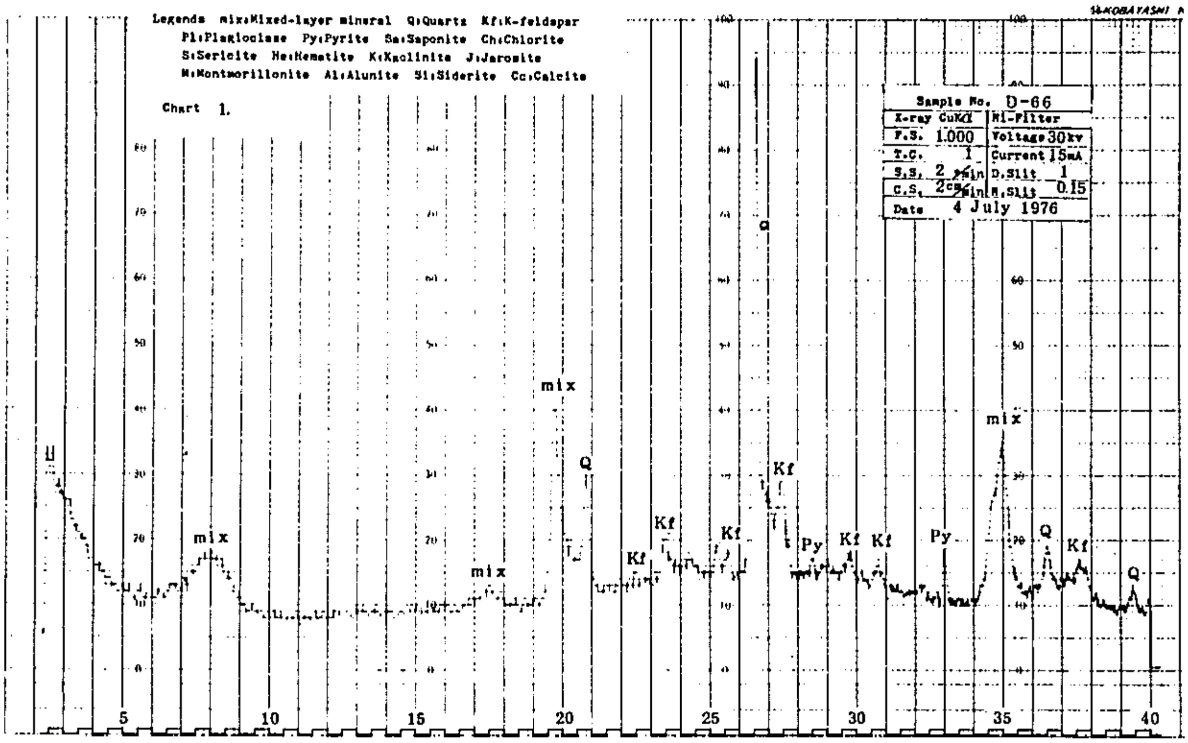
Formation	Rock Name	Thin Section Number	Description
Palalli Group	dacitic tuff	A-103, A-116, A-117, A-208 B-198 C-85 D-21, D-24, D-513 E-52, E-77, E-87 F-513, F-519 G-135, G-150, G-167 H-223, H-296, H-351, H-352 K-100 L-61 M-43, M-555	There are two types of tuff and welded tuff. The latter is vitric and show a hyalopilitic texture. Welded tuff is very fresh and consists of hornblende dacite welded tuff and chropyroxene hornblende dacite welded tuff. Devitrified matrix consists of plagioclase and quartz. The former is subject to the dominant alteration. The phenocryst consists of plagioclase, quartz, hornblende and augite. The volume of phenocryst is more than 50%. *This type is crystal vitric tuff. Matrix builds of calcite,* chlorite, epidote, sericite, montmorillonite, maycovite and leuconene. There are various kinds of lithic fragments of pyroxene audesite amygdaloidal audesite, quartz porphyrite and non-porphyritic dacite. Epidote, chlorite, calcite (sericite), (muscovite) and (leuconene) occur.
	trackyte trackytic tuff ic	A-106, A-306 C-115 G-26, G-30 L-102, L-103	There are trachyte and trachytic tuff. The volume of phenocryst is from 10% to 20%. The phenocryst consists of plagioclase, seda-augite, alkali-hornblende, biotite, potash-feldspar and quartz. The groundmass consists of potash-feldspar, augite, alkali-hornblende and glass. There are two different potash-feldspars. One is an enhedral prismatic and the other equigranular.
Unknown Stage Dykes	two pyroxene andesite	A-31, A-308 C-5 D-38, D-44, D-69, D-502, D-503, D-519 F-20, F-52, F-56 N-45	This type is very fresh. Phenocryst consists of plagioclase, augite, hyperthene, opaque and biotite. Plagioclase partially alters to chlorite and montmorillonite. Volume of phenocryst is about 50%. The groundmass builds plagioclase, augite, opaque, orthopyroxene, very few chlorite and montmorillonite. Plagioclase and augite of the groundmass show partially equigranular texture.
	porphyrite	A-211, B-171, B-261 C-42, E-58, E-70 F-504, H-138, H-210 J-56, K-1 L-78, L-89	This type is porphyritic texture and several phenocrysts of plagioclase or augite scatter in the thin section. The groundmass consists of plagioclase, hornblende, quartz, opaque, epidote and chlorite. Epidote, chlorite, (sericite) and (montmorillonite) occur.

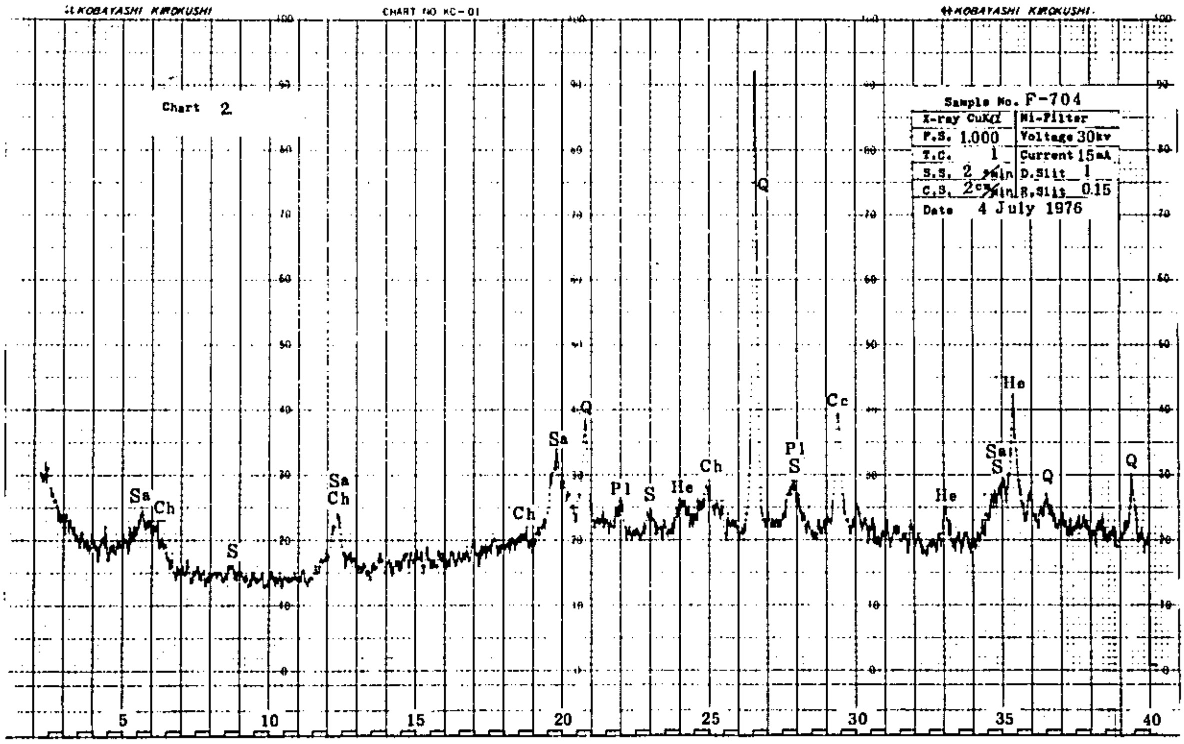
Formation	Rock Name	Thin Section Number	Description
	mud stone	L-1	This is composed with detrital materials, which are clay, angular crystals (as quartz, plagioclase, hornblende, biotite and augite) and microfossils.
	lime stone	L-5, L-6	This is composed with micritic calcite, oobitic calcite, crystal fragments as biotite and plagioclase. There are oobite and fragments of fossil.
	vein	D-531 M-37	These are composed with banded hematite and quartz epidote veins.

Table A-3 X-ray diffiractive analysis

Minerals / Sample Number	montmorillonite	saponite	mixed-layer mineral	chlorite	sericite	kaolinite	pyrophyllite		laumontite		prehnite	epidote	K-feldspar	plagioclase	hornblende		quartz		calcite	alunite	diaspore	pyrite	dolomite	siderite	hematite	jarosite	magnetite	ilmenite
B-168				●	o									◎			○									○		
211					○	◎							o	o			o									○		
212					○	o							◎	◎			o									○		
C-167					o								◎															
D- 1					o	●								○			◎											
10	○			o							○	○		◎			○		o		○							o
11	o						o		○					○	○		○		○								o	
64			○														◎					○						
66			○										●				○					o						
530						◎											◎					o						
F- 65				◎	●									○			◎					o						
210				◎	o				o					○			o					●						
704		o		o	●									●			○		○						○			
706		o												○			○		○			o						
709		o												o			◎		○									
711		o												o			○					o						
725				●										○			◎					o						
727				o	o												◎					● o			o			
G-160	o											○		o			◎											
K-558					o								○	◎			○									○		
563					◎	◎							○	o			o									○		
564					o	◎							◎				o									○		
565					o	◎							◎				○									○		
568					○	◎							o				●											
730	○		o														◎											
L- 58				○	●									○			◎		●				o					
60	o			o	●									○			◎											
71				●	o	●											◎											
M- 20				◎	●									o			◎											
92					o								○									●						
93					o								○													○		
98					o								○									o						
100					○								○									o						
135					○												◎					o						
137				○	●									○			◎											
140				○	o							o		◎			◎		○			o						
145				○	o									o			◎		○									
511			○			●	○										○					o						
512				●	○									o			◎					o						
514																	◎			◎		○		o				
541																	◎			◎								
545						o											◎			○		○						
702				○	●									o			◎					o						
704				o	o									◎			◎											
Ronroro ⑤													◎				○									◎		
" ⑦					o								○	●			o									○		
" ⑨					●								◎				○									◎		

legends; ◎ : abundant ○ : common o : a little ● : rare


Legends mix:Mixed-layer mineral Q:Quartz Kf:K-feldspar
Pl:Plagioclase Py:Pyrite Sa:Saponite Ch:Chlorite
S:Sericite He:Hematite K:Kaolinite J:Jarosite
M:Montmorillonite Al:Alunite Si:Siderite Cc:Calcite
Chart 1.
Sample No. D-66
X-ray CuKα
Ni-Filter
F.S. 1.000
Voltage 30kv
T.C. 1
Current 15mA
S.S. 2 °/min
D.Slit 1
C.S. 2cm/min
R.Slit 0.15
Date 4 July 1976
mix
Q
Kf
Py
5
10
15
20
25
30
35
40


KOBAYASHI KIROKUSHI
CHART NO KC-01
Chart 2.
Sample No. F-704
X-ray CuKα
Ni-Filter
F.S. 1.000
Voltage 30kv
T.C. 1
Current 15mA
S.S. 2 °/min
D.Slit 1
C.S. 2cm/min
R.Slit 0.15
Date 4 July 1976
Sa
Ch
S
Q
Pl
He
Cc
5
10
15
20
25
30
35
40

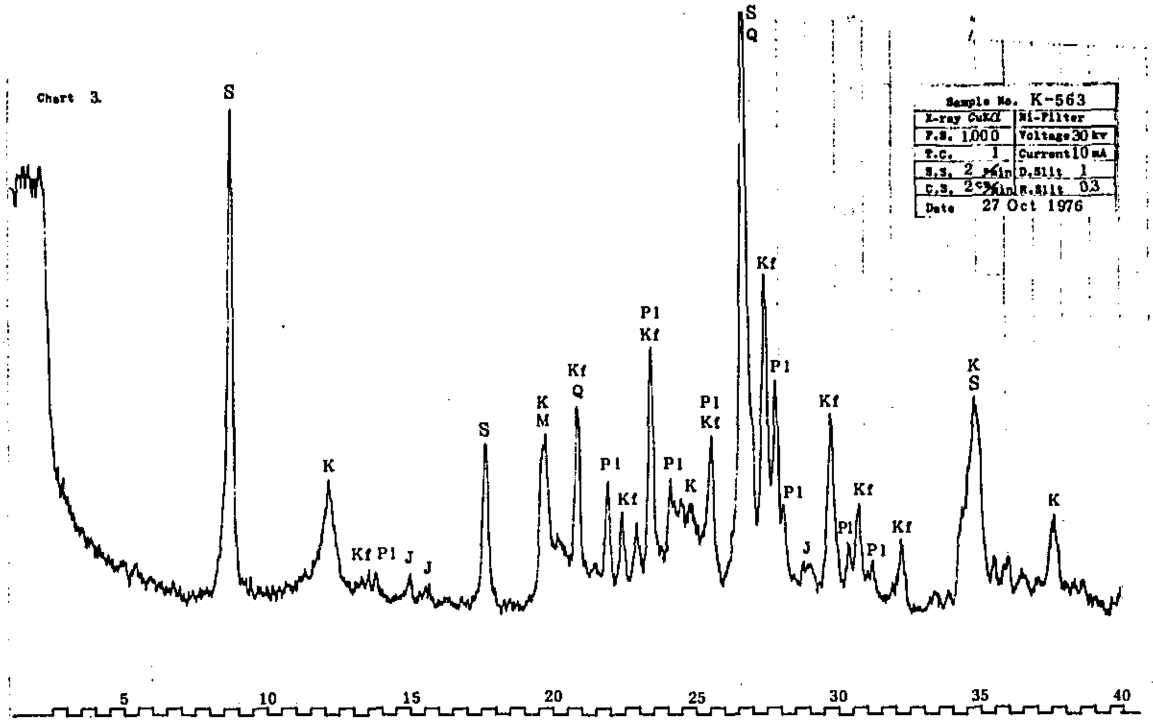


Chart 3.
Sample No. K-563
X-ray CuKα
Ni-Filter
F.S. 1,000
Voltage 30 kv
T.C. 1
Current 10 mA
S.S. 2 °/min
D.Slit 1
C.S. 2 cm/min
R.Slit 0.3
Date 27 Oct 1976
5 10 15 20 25 30 35 40

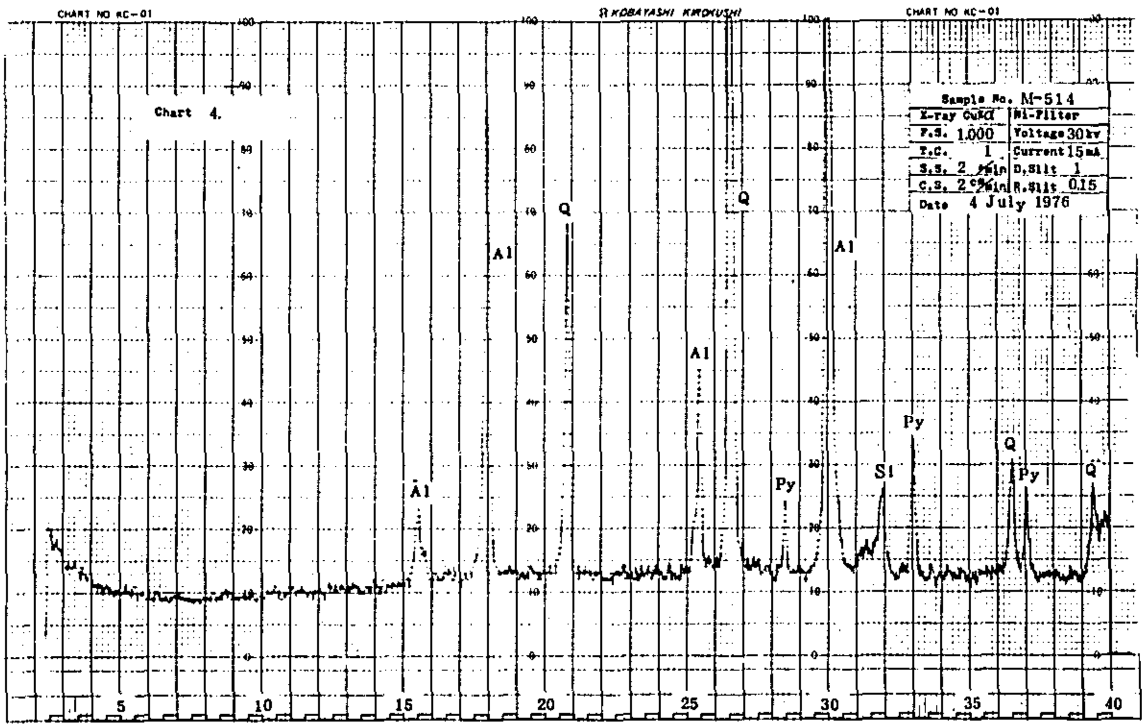


CHART NO KC-01
KOBAYASHI KIROKUSHI
Chart 4.
Sample No. M-514
X-ray CuKα
Ni-Filter
F.S. 1,000
Voltage 30 kv
T.C. 1
Current 15 mA
S.S. 2 °/min
D.Slit 1
C.S. 2 cm/min
R.Slit 0.15
Date 4 July 1976
5 10 15 20 25 30 35 40

Table A-4 Metal content of ore sample

No.	Sample No.	Plate No.	Rock Name	Au g/t	Ag g/t	Cu %	Pb %	Zn %	Mo %	S %	Remarks
1	B - 168	I-4-2-5-ii	Argillized monzonite	0.00	0.00	Non	Non	Non	Non	Non	Pyrite impregnation
2	195	I-4-2-5-iv	Monzonite	0.00	0.00	Non	Non	Non	Non	Non	Silicification
3	210	"	Hornblende andesite	0.00	0.00	Non	Non	Non	Non	Non	
4	211	"	Acidic tuff	0.00	10	Non	Non	Non	Non	Non	Argillization & silicification
5	212	"	Monzonite	0.00	0.00	Non	Non	Non	Non	Non	Argillization
6	213	"	Syenite	0.00	0.00	Non	Non	Non	Non	Non	
7	C - 137	I-4-2-1-iv	Ore	0.05	2.3	1.38	0.01	0.05	0.002	0.74	Pyrite & malachite
8	D - 27	I-4-2-1-ii	Quartz vein	0.08	1.2	1.18			0.000	2.25	Malachite & pyrite
9	29	I-4-2-3-iii	Basalt			0.00			0.002	16.03	Pyrite impregnation
10	90	I-4-2-5-i	Hornblende andesite			0.42			0.000	0.68	Chalcopyrite "
11	96	I-4-2-5-iv	Silicified rock	0.00	0.0	0.00			0.000	0.48	Pyrite "
12	132	I-4-2-5-i	Hornblende andesite			0.02			0.004	0.10	Pyrite & chalcopyrite "
13	F - 65	I-4-2-3-ii	Monzonite porphyry			0.01			0.000	5.69	Pyrite "
14	K - 564R	I-4-3-2-i	Altered rock	0.00	0.00	Non	Non	Non	Non	Non	hematite
15	565R	"	"	53	10	Non	Non	Non	Non	Non	"
16	566R	"	"	0.00	0.00	Non	Non	Non	Non	Non	"
17	567R	"	"	0.00	0.00	Non	Non	Non	Non	Non	"
18	568R	"	"	0.00	10	Non	Non	Non	Non	Non	"
19	L - 76	I-4-2-1-iv	Quartz diorite			0.02			0.000	1.21	Gossan
20	M - 542	I-4-3-1-i	Andesite	0.00	0.0	0.00	0.00	0.00	0.003	1.52	Pyrite & hematite

Remarks: Blank means unenforcement.
Non means no-analysis.
i, ii, iii & iv mean the quadrants of each plates.

iv	i
iii	ii

A – 5 – (1) Metal content of geochemical sample for semi-detailed and reconnaissance survey

Series No. 1 to 4008 are analyzed in Phase II

Series No. 4009 to 4544 are analyzed in Phase I

A-5-(1) Metal content of geochemical sample

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1	A-001	46 (11)	82 (9)	1 (0)
2	004	41 (10)	63 (9)	1 (0)
3	006	42 (10)	49 (8)	1 (0)
4	010	42 (10)	104 (10)	4 (3)
5	011	40 (10)	81 (9)	1 (0)
6	015	52 (11)	351 (14)	1 (0)
7	016	18 (8)	93 (10)	1 (0)
8	017	68 (12)	259 (13)	1 (0)
9	022	18 (8)	60 (8)	4 (3)
10	024	6 (5)	35 (7)	1 (0)
11	025	18 (8)	56 (8)	4 (3)
12	026	20 (8)	57 (8)	6 (4)
13	027	27 (9)	41 (7)	6 (4)
14	037	14 (7)	22 (5)	1 (0)
15	038	23 (9)	18 (5)	1 (0)
16	040	13 (7)	20 (5)	1 (0)
17	042	16 (8)	19 (5)	1 (0)
18	043	10 (7)	19 (5)	1 (0)
19	044	6 (5)	32 (7)	1 (0)
20	047	24 (9)	43 (7)	1 (0)
21	050	26 (9)	39 (7)	1 (0)
22	051	17 (8)	31 (6)	1 (0)
23	055	20 (8)	32 (7)	1 (0)
24	059	17 (8)	36 (7)	1 (0)
25	062	16 (8)	31 (6)	1 (0)
26	065	9 (6)	21 (5)	1 (0)
27	067	19 (8)	27 (6)	1 (0)
28	070	17 (8)	32 (7)	6 (4)
29	073	55 (11)	51 (8)	1 (0)
30	075	61 (11)	66 (9)	1 (0)
31	077	41 (10)	58 (8)	1 (0)
32	078	39 (10)	65 (9)	6 (4)
33	079	28 (9)	59 (8)	1 (0)
34	080	51 (11)	58 (8)	1 (0)
35	081	32 (10)	54 (8)	6 (4)
36	082	24 (9)	45 (8)	6 (4)
37	083	7 (6)	16 (5)	1 (0)
38	084	10 (7)	18 (5)	1 (0)
39	085	31 (10)	38 (7)	1 (0)
40	086	10 (7)	23 (6)	1 (0)
41	087	7 (6)	24 (6)	1 (0)
42	088	18 (8)	25 (6)	1 (0)
43	089	13 (7)	17 (5)	1 (0)
44	090	7 (6)	25 (6)	6 (4)
45	091	43 (10)	31 (6)	6 (4)
46	092	14 (7)	18 (5)	6 (4)
47	096	5 (5)	16 (5)	1 (0)
48	099	9 (6)	15 (4)	1 (0)
49	100	5 (5)	15 (4)	6 (4)
50	103	37 (10)	68 (9)	1 (0)
51	A-104	13 (7)	26 (6)	1 (0)
52	105	18 (8)	44 (7)	1 (0)
53	106	12 (7)	34 (7)	1 (0)
54	107	20 (8)	44 (7)	1 (0)
55	108	26 (9)	45 (8)	1 (0)
56	109	26 (9)	51 (8)	6 (4)
57	110	10 (7)	39 (7)	1 (0)
58	111	23 (9)	38 (7)	6 (4)
59	112	8 (6)	31 (6)	6 (4)
60	113	41 (10)	62 (8)	5 (3)
61	114	24 (9)	37 (7)	1 (0)
62	115	154 (14)	374 (14)	1 (0)
63	116	29 (9)	72 (9)	1 (0)
64	118	29 (9)	38 (7)	1 (0)
65	119	27 (9)	41 (7)	1 (0)
66	120	30 (9)	36 (7)	1 (0)
67	121	27 (9)	40 (7)	1 (0)
68	122	69 (12)	58 (8)	1 (0)
69	123	55 (11)	58 (8)	1 (0)
70	124	3 (3)	22 (5)	1 (0)
71	128	23 (9)	36 (7)	5 (3)
72	130	39 (10)	35 (7)	1 (0)
73	131	52 (11)	72 (9)	1 (0)
74	133	38 (10)	45 (8)	1 (0)
75	134	25 (9)	68 (9)	4 (3)
76	135	36 (10)	41 (7)	1 (0)
77	136	19 (8)	37 (7)	1 (0)
78	137	126 (13)	560 (15)	1 (0)
79	138	63 (11)	85 (9)	1 (0)
80	139	31 (10)	74 (9)	1 (0)
81	140	61 (11)	241 (12)	6 (4)
82	141	37 (10)	74 (9)	1 (0)
83	142	32 (10)	110 (10)	1 (0)
84	143	25 (9)	64 (9)	1 (0)
85	144	25 (9)	69 (9)	1 (0)
86	145	49 (11)	91 (10)	1 (0)
87	146	48 (11)	69 (9)	1 (0)
88	147	216 (15)	1775 (18)	1 (0)
89	148	38 (10)	91 (10)	6 (4)
90	149	40 (10)	72 (9)	6 (4)
91	151	36 (10)	64 (9)	4 (3)
92	152	56 (11)	117 (10)	1 (0)
93	154	27 (9)	71 (9)	1 (0)
94	155	30 (9)	54 (8)	1 (0)
95	156	23 (9)	64 (9)	6 (4)
96	157	34 (10)	107 (10)	1 (0)
97	158	35 (10)	50 (8)	1 (0)
98	159	29 (9)	46 (8)	1 (0)
99	160	35 (10)	70 (9)	1 (0)
100	162	52 (11)	64 (9)	1 (0)
101	163	43 (10)	55 (8)	1 (0)
102	164	40 (10)	84 (9)	1 (0)
103	165	21 (9)	40 (7)	1 (0)
104	166	61 (11)	60 (8)	4 (3)
105	167	41 (10)	34 (7)	4 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
106	A-168	33 (10)	40 (7)	1 (0)
107	169	20 (8)	45 (8)	1 (0)
108	170	14 (7)	34 (7)	1 (0)
109	171	25 (9)	29 (6)	1 (0)
110	172	20 (8)	23 (6)	1 (0)
111	173	44 (10)	22 (5)	1 (0)
112	174	34 (10)	23 (6)	1 (0)
113	175	28 (9)	35 (7)	1 (0)
114	176	41 (10)	29 (6)	6 (4)
115	201	42 (10)	74 (9)	1 (0)
116	202	36 (10)	64 (9)	1 (0)
117	204	30 (9)	42 (7)	1 (0)
118	205	50 (11)	54 (8)	6 (4)
119	206	34 (10)	48 (8)	1 (0)
120	207	42 (10)	59 (8)	6 (4)
121	208	37 (10)	72 (9)	6 (4)
122	209	38 (10)	66 (9)	1 (0)
123	210	83 (12)	73 (9)	1 (0)
124	212	51 (11)	83 (9)	1 (0)
125	213	35 (10)	44 (7)	6 (4)
126	214	112 (13)	664 (15)	6 (4)
127	217	129 (13)	325 (13)	1 (0)
128	218	1964 (20)	451 (14)	6 (4)
129	220	53 (11)	91 (10)	1 (0)
130	222	44 (10)	80 (9)	6 (4)
131	223	45 (11)	82 (9)	1 (0)
132	225	36 (10)	53 (8)	1 (0)
133	228	177 (14)	345 (13)	1 (0)
134	229	106 (13)	84 (9)	4 (3)
135	230	124 (13)	99 (10)	1 (0)
136	231	61 (11)	68 (9)	6 (4)
137	232	26 (9)	62 (8)	1 (0)
138	234	37 (10)	73 (9)	6 (4)
139	235	39 (10)	69 (9)	1 (0)
140	236	41 (10)	66 (9)	1 (0)
141	237	27 (9)	79 (9)	4 (3)
142	250	51 (11)	31 (6)	1 (0)
143	251	38 (10)	62 (8)	1 (0)
144	252	32 (10)	48 (8)	1 (0)
145	253	39 (10)	50 (8)	1 (0)
146	254	37 (10)	55 (8)	1 (0)
147	255	42 (10)	60 (8)	1 (0)
148	256	51 (11)	70 (9)	1 (0)
149	257	41 (10)	68 (9)	1 (0)
150	259	39 (10)	63 (9)	1 (0)
151	260	47 (11)	51 (8)	1 (0)
152	261	44 (10)	52 (8)	1 (0)
153	262	43 (10)	46 (8)	1 (0)
154	263	22 (9)	31 (6)	1 (0)
155	264	40 (10)	67 (9)	1 (0)
156	265	53 (11)	72 (9)	1 (0)
157	266	39 (10)	71 (9)	1 (0)
158	267	42 (10)	65 (9)	1 (0)
159	268	45 (11)	67 (9)	1 (0)
160	269	57 (11)	69 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
161	A-270	42 (10)	48 (8)	1 (0)
162	271	68 (12)	61 (8)	1 (0)
163	272	44 (10)	64 (9)	1 (0)
164	273	50 (11)	67 (9)	1 (0)
165	274	47 (11)	62 (8)	1 (0)
166	275	28 (9)	70 (9)	1 (0)
167	276	52 (11)	79 (9)	1 (0)
168	277	37 (10)	60 (8)	1 (0)
169	278	48 (11)	68 (9)	1 (0)
170	279	43 (10)	52 (8)	1 (0)
171	280	35 (10)	55 (8)	1 (0)
172	281	58 (11)	85 (9)	1 (0)
173	282	41 (10)	64 (9)	1 (0)
174	283	41 (10)	70 (9)	1 (0)
175	284	55 (11)	73 (9)	1 (0)
176	285	44 (10)	67 (9)	1 (0)
177	286	34 (10)	68 (9)	1 (0)
178	287	59 (11)	57 (8)	1 (0)
179	289	43 (10)	78 (9)	1 (0)
180	290	120 (13)	102 (10)	1 (0)
181	291	33 (10)	96 (10)	1 (0)
182	292	37 (10)	81 (9)	1 (0)
183	294	38 (10)	70 (9)	1 (0)
184	295	42 (10)	68 (9)	1 (0)
185	296	45 (11)	43 (7)	1 (0)
186	297	39 (10)	68 (9)	1 (0)
187	298	45 (11)	70 (9)	1 (0)
188	301	47 (11)	51 (8)	1 (0)
189	302	40 (10)	56 (8)	1 (0)
190	303	40 (10)	55 (8)	1 (0)
191	304	177 (14)	50 (8)	1 (0)
192	305	46 (11)	49 (8)	1 (0)
193	306	51 (11)	64 (9)	1 (0)
194	307	71 (12)	60 (8)	1 (0)
195	308	37 (10)	84 (9)	1 (0)
196	309	31 (10)	71 (9)	1 (0)
197	310	46 (11)	38 (7)	1 (0)
198	311	48 (11)	41 (7)	1 (0)
199	312	33 (10)	73 (9)	1 (0)
200	313	43 (10)	64 (9)	6 (4)
201	314	64 (11)	77 (9)	1 (0)
202	315	48 (11)	86 (9)	4 (3)
203	701	81 (12)	75 (9)	1 (0)
204	702	89 (12)	75 (9)	1 (0)
205	703	86 (12)	69 (9)	1 (0)
206	704	61 (11)	63 (9)	1 (0)
207	705	53 (11)	80 (9)	1 (0)
208	706	50 (11)	60 (8)	1 (0)
209	707	42 (10)	56 (8)	1 (0)
210	708	38 (10)	47 (8)	1 (0)
211	709	45 (11)	64 (9)	1 (0)
212	710	85 (12)	72 (9)	1 (0)
213	711	43 (10)	90 (10)	1 (0)
214	712	45 (11)	67 (9)	1 (0)
215	713	71 (12)	61 (8)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
216	714	50 (11)	77 (9)	1 (0)
217	715	67 (12)	66 (9)	1 (0)
218	716	94 (12)	73 (9)	1 (0)
219	717	76 (12)	70 (9)	1 (0)
220	718	88 (12)	65 (9)	1 (0)
221	719	80 (12)	70 (9)	1 (0)
222	720	117 (13)	76 (9)	1 (0)
223	721	112 (13)	74 (9)	1 (0)
224	722	56 (11)	53 (8)	1 (0)
225	723	30 (9)	64 (9)	1 (0)
226	724	47 (11)	75 (9)	1 (0)
227	725	42 (10)	59 (8)	1 (0)
228	726	41 (10)	102 (10)	1 (0)
229	727	57 (11)	65 (9)	1 (0)
230	728	62 (11)	70 (9)	1 (0)
231	729	47 (11)	53 (8)	1 (0)
232	730	39 (10)	68 (9)	1 (0)
233	731	53 (11)	68 (9)	1 (0)
234	732	47 (11)	84 (9)	1 (0)
235	733	47 (11)	54 (8)	1 (0)
236	734	36 (10)	60 (8)	1 (0)
237	735	32 (10)	98 (10)	1 (0)
238	736	50 (11)	80 (9)	1 (0)
239	737	45 (11)	103 (10)	1 (0)
240	738	37 (10)	65 (9)	1 (0)
241	739	43 (10)	75 (9)	1 (0)
242	740	43 (10)	53 (8)	1 (0)
243	741	55 (11)	92 (10)	1 (0)
244	742	66 (12)	200 (12)	1 (0)
245	743	70 (12)	100 (10)	1 (0)
246	744	55 (11)	81 (9)	1 (0)
247	745	63 (11)	103 (10)	1 (0)
248	746	70 (12)	90 (10)	1 (0)
249	747	65 (12)	240 (12)	1 (0)
250	748	52 (11)	102 (10)	1 (0)
251	749	17 (8)	45 (8)	1 (0)
252	750	22 (9)	63 (9)	1 (0)
253	751	17 (8)	60 (8)	1 (0)
254	752	12 (7)	48 (8)	3 (2)
255	753	43 (10)	106 (10)	4 (3)
256	754	92 (12)	517 (15)	3 (2)
257	755	39 (10)	68 (9)	4 (3)
258	756	46 (11)	93 (10)	1 (0)
259	757	46 (11)	81 (9)	1 (0)
260	758	42 (10)	107 (10)	1 (0)
261	759	44 (10)	85 (9)	1 (0)
262	761	23 (9)	197 (12)	1 (0)
263	762	53 (11)	88 (9)	1 (0)
264	763	73 (12)	208 (12)	4 (3)
265	764	37 (10)	189 (12)	3 (2)
266	765	48 (11)	63 (9)	1 (0)
267	766	36 (10)	65 (9)	1 (0)
268	767	80 (12)	187 (12)	1 (0)
269	768	63 (11)	179 (12)	1 (0)
270	769	81 (12)	79 (9)	1 (0)
271	A-770	59 (11)	184 (12)	1 (0)
272	771	62 (11)	90 (10)	1 (0)
273	772	49 (11)	108 (10)	1 (0)
274	773	100 (13)	110 (10)	1 (0)
275	B-001	40 (10)	64 (9)	1 (0)
276	002	54 (11)	82 (9)	1 (0)
277	004	72 (12)	73 (9)	1 (0)
278	005	57 (11)	73 (9)	1 (0)
279	006	57 (11)	91 (10)	1 (0)
280	007	59 (11)	73 (9)	1 (0)
281	008	94 (12)	77 (9)	1 (0)
282	009	91 (12)	132 (11)	1 (0)
283	010	110 (13)	95 (10)	1 (0)
284	011	108 (13)	100 (10)	1 (0)
285	012	110 (13)	91 (10)	1 (0)
286	013	27 (9)	73 (9)	1 (0)
287	014	56 (11)	70 (9)	1 (0)
288	015	47 (11)	63 (9)	1 (0)
289	016	40 (10)	68 (9)	1 (0)
290	017	51 (11)	55 (8)	1 (0)
291	018	74 (12)	77 (9)	1 (0)
292	019	54 (11)	68 (9)	1 (0)
293	021	76 (12)	68 (9)	1 (0)
294	023	77 (12)	91 (10)	1 (0)
295	024	178 (14)	114 (10)	4 (3)
296	026	118 (13)	114 (10)	1 (0)
297	027	101 (13)	95 (10)	1 (0)
298	028	77 (12)	52 (8)	1 (0)
299	029	109 (13)	95 (10)	1 (0)
300	030	71 (12)	64 (9)	1 (0)
301	031	173 (14)	132 (11)	1 (0)
302	032	151 (14)	136 (11)	1 (0)
303	033	168 (14)	136 (11)	1 (0)
304	034	155 (14)	125 (11)	1 (0)
305	035	61 (11)	132 (11)	1 (0)
306	037	151 (14)	111 (10)	1 (0)
307	038	158 (14)	105 (10)	1 (0)
308	039	195 (14)	91 (10)	1 (0)
309	040	148 (14)	107 (10)	1 (0)
310	041	34 (10)	87 (9)	1 (0)
311	045	47 (11)	65 (9)	1 (0)
312	048	72 (12)	100 (10)	1 (0)
313	051	75 (12)	91 (10)	1 (0)
314	052	47 (11)	83 (9)	1 (0)
315	058	69 (12)	81 (9)	1 (0)
316	059	41 (10)	61 (8)	1 (0)
317	060	72 (12)	74 (9)	1 (0)
318	061	38 (10)	70 (9)	1 (0)
319	063	63 (11)	91 (10)	1 (0)
320	064	47 (11)	78 (9)	1 (0)
321	066	53 (11)	87 (9)	1 (0)
322	067	38 (10)	83 (9)	2 (1)
323	068	47 (11)	44 (7)	6 (4)
324	069	50 (11)	11 (3)	6 (4)
325	070	44 (10)	44 (7)	20 (8)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
326	B-071	53 (11)	70 (9)	4 (3)
327	074	72 (12)	44 (7)	2 (1)
328	075	56 (11)	65 (9)	2 (1)
329	076	88 (12)	87 (9)	2 (1)
330	079	75 (12)	104 (10)	6 (4)
331	080	60 (11)	100 (10)	6 (4)
332	081	66 (12)	120 (10)	6 (4)
333	082	47 (11)	113 (10)	2 (1)
334	083	78 (12)	144 (11)	4 (3)
335	084	110 (13)	61 (8)	2 (1)
336	089	78 (12)	113 (10)	2 (1)
337	094	38 (10)	91 (10)	1 (0)
338	098	50 (11)	100 (10)	6 (4)
339	099	60 (11)	109 (10)	6 (4)
340	100	56 (11)	113 (10)	2 (1)
341	102	72 (12)	135 (11)	1 (0)
342	107	69 (12)	109 (10)	2 (1)
343	112	75 (12)	82 (9)	6 (4)
344	114	56 (11)	100 (10)	2 (1)
345	115	46 (11)	102 (10)	2 (1)
346	116	87 (12)	198 (12)	1 (0)
347	121	83 (12)	136 (11)	1 (0)
348	122	80 (12)	99 (10)	1 (0)
349	125	67 (12)	75 (9)	1 (0)
350	126	57 (11)	119 (10)	1 (0)
351	128	69 (12)	75 (9)	2 (1)
352	130	64 (11)	85 (9)	4 (3)
353	132	44 (10)	85 (9)	4 (3)
354	133	101 (13)	89 (10)	6 (4)
355	134	73 (12)	68 (9)	2 (1)
356	135	140 (14)	82 (9)	2 (1)
357	136	106 (13)	61 (8)	6 (4)
358	138	55 (11)	51 (8)	6 (4)
359	139	167 (14)	44 (7)	6 (4)
360	144	37 (10)	55 (8)	1 (0)
361	145	78 (12)	68 (9)	1 (0)
362	146	57 (11)	68 (9)	1 (0)
363	147	37 (10)	68 (9)	1 (0)
364	149	96 (13)	89 (10)	6 (4)
365	150	55 (11)	24 (6)	6 (4)
366	151	179 (14)	55 (8)	6 (4)
367	152	87 (12)	143 (11)	1 (0)
368	153	73 (12)	177 (12)	1 (0)
369	154	87 (12)	109 (10)	1 (0)
370	156	37 (10)	24 (6)	1 (0)
371	160	83 (12)	136 (11)	6 (4)
372	164	83 (12)	143 (11)	1 (0)
373	165	151 (14)	102 (10)	1 (0)
374	168	73 (12)	143 (11)	1 (0)
375	175	96 (13)	106 (10)	2 (1)
376	177	110 (13)	119 (10)	1 (0)
377	178	92 (12)	82 (9)	1 (0)
378	184	69 (12)	164 (11)	6 (4)
379	187	85 (12)	143 (11)	6 (4)
380	188	48 (11)	136 (11)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
381	B-189	29 (9)	114 (10)	2 (1)
382	194	38 (10)	100 (10)	1 (0)
383	195	107 (13)	93 (10)	1 (0)
384	199	62 (11)	64 (9)	1 (0)
385	201	52 (11)	96 (10)	1 (0)
386	202	52 (11)	107 (10)	1 (0)
387	203	62 (11)	114 (10)	1 (0)
388	204	67 (12)	93 (10)	1 (0)
389	210	43 (10)	79 (9)	2 (1)
390	212	105 (13)	114 (10)	6 (4)
391	213	110 (13)	100 (10)	2 (1)
392	214	86 (12)	93 (10)	2 (1)
393	217	138 (13)	43 (7)	1 (0)
394	218	190 (14)	93 (10)	1 (0)
395	225	52 (11)	100 (10)	6 (4)
396	229	57 (11)	121 (10)	10 (6)
397	230	43 (10)	79 (9)	6 (4)
398	243	43 (10)	121 (10)	6 (4)
399	244	67 (12)	136 (11)	2 (1)
400	272	181 (14)	107 (10)	2 (1)
401	274	171 (14)	221 (12)	6 (4)
402	275	143 (14)	121 (10)	1 (0)
403	276	148 (14)	100 (10)	6 (4)
404	279	43 (10)	71 (9)	2 (1)
405	280	62 (11)	86 (9)	1 (0)
406	283	62 (11)	86 (9)	6 (4)
407	284	100 (13)	250 (13)	2 (1)
408	286	95 (13)	186 (12)	2 (1)
409	288	57 (11)	76 (9)	6 (4)
410	291	38 (10)	71 (9)	1 (0)
411	292	90 (12)	143 (11)	1 (0)
412	294	57 (11)	93 (10)	1 (0)
413	296	33 (10)	64 (9)	2 (1)
414	297	52 (11)	71 (9)	1 (0)
415	299	51 (11)	78 (9)	1 (0)
416	301	38 (10)	64 (9)	6 (4)
417	302	38 (10)	67 (9)	2 (1)
418	303	59 (11)	89 (10)	1 (0)
419	312	24 (9)	177 (12)	1 (0)
420	314	39 (10)	110 (10)	2 (1)
421	315	51 (11)	177 (12)	4 (3)
422	323	31 (10)	50 (8)	2 (1)
423	324	37 (10)	85 (9)	1 (0)
424	326	28 (9)	60 (8)	1 (0)
425	328	31 (10)	108 (10)	1 (0)
426	329	42 (10)	105 (10)	1 (0)
427	C-001	64 (11)	216 (12)	6 (4)
428	003	65 (12)	194 (12)	4 (3)
429	004	52 (11)	97 (10)	12 (6)
430	005	70 (12)	80 (9)	4 (3)
431	006	56 (11)	165 (11)	10 (6)
432	007	23 (9)	80 (9)	4 (3)
433	008	60 (11)	94 (10)	10 (6)
434	009	43 (10)	69 (9)	10 (6)
435	010	25 (9)	102 (10)	2 (1)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
436	C-011	27 (9)	217 (12)	1 (0)
437	012	21 (9)	66 (9)	1 (0)
438	013	32 (10)	59 (8)	1 (0)
439	014	30 (9)	91 (10)	2 (1)
440	015	20 (8)	105 (10)	1 (0)
441	016	25 (9)	55 (8)	2 (1)
442	017	13 (7)	80 (9)	1 (0)
443	018	22 (9)	83 (9)	1 (0)
444	019	29 (9)	177 (12)	1 (0)
445	020	36 (10)	180 (12)	2 (1)
446	021	31 (10)	152 (11)	1 (0)
447	022	18 (8)	54 (8)	1 (0)
448	023	22 (9)	58 (8)	1 (0)
449	024	13 (7)	47 (8)	8 (5)
450	025	4 (4)	34 (7)	1 (0)
451	026	17 (8)	47 (8)	2 (1)
452	027	40 (10)	68 (9)	8 (5)
453	028	36 (10)	95 (10)	1 (0)
454	029	85 (12)	83 (9)	1 (0)
455	030	12 (7)	105 (10)	2 (1)
456	031	7 (6)	59 (8)	8 (5)
457	032	34 (10)	57 (8)	1 (0)
458	033	1 (1)	22 (5)	1 (0)
459	035	38 (10)	74 (9)	1 (0)
460	036	31 (10)	74 (9)	8 (5)
461	037	3 (3)	27 (6)	2 (1)
462	038	8 (6)	37 (7)	8 (5)
463	039	25 (9)	58 (8)	1 (0)
464	040	8 (6)	48 (8)	6 (4)
465	041	17 (8)	58 (8)	1 (0)
466	042	13 (7)	47 (8)	1 (0)
467	043	18 (8)	79 (9)	2 (1)
468	045	21 (9)	72 (9)	2 (1)
469	046	33 (10)	92 (10)	1 (0)
470	047	48 (11)	90 (10)	1 (0)
471	048	41 (10)	88 (9)	1 (0)
472	049	39 (10)	184 (12)	2 (1)
473	050	34 (10)	182 (12)	1 (0)
474	051	14 (7)	92 (10)	1 (0)
475	052	18 (8)	33 (7)	1 (0)
476	053	18 (8)	52 (8)	2 (1)
477	054	28 (9)	39 (7)	1 (0)
478	055	35 (10)	26 (6)	2 (1)
479	056	14 (7)	27 (6)	1 (0)
480	057	30 (9)	25 (6)	1 (0)
481	058	42 (10)	27 (6)	4 (3)
482	059	37 (10)	25 (6)	1 (0)
483	060	23 (9)	23 (6)	1 (0)
484	061	35 (10)	18 (5)	6 (4)
485	062	19 (8)	19 (5)	1 (0)
486	063	31 (10)	26 (6)	6 (4)
487	064	16 (8)	18 (5)	2 (1)
488	065	26 (9)	43 (7)	1 (0)
489	066	34 (10)	33 (7)	1 (0)
490	067	39 (10)	40 (7)	2 (1)
491	C-068	33 (10)	25 (6)	1 (0)
492	070	42 (10)	29 (6)	1 (0)
493	071	32 (10)	21 (5)	2 (1)
494	072	40 (10)	22 (5)	1 (0)
495	073	18 (8)	32 (7)	1 (0)
496	074	31 (10)	37 (7)	1 (0)
497	075	32 (10)	38 (7)	2 (1)
498	076	35 (10)	235 (12)	2 (1)
499	077	19 (8)	101 (10)	1 (0)
500	078	30 (9)	271 (13)	2 (1)
501	079	39 (10)	102 (10)	1 (0)
502	080	28 (9)	244 (12)	1 (0)
503	081	55 (11)	115 (10)	1 (0)
504	082	26 (9)	280 (13)	1 (0)
505	083	51 (11)	41 (7)	2 (1)
506	084	44 (10)	27 (6)	1 (0)
507	085	21 (9)	19 (5)	1 (0)
508	086	37 (10)	23 (6)	2 (1)
509	087	33 (10)	31 (6)	1 (0)
510	088	44 (10)	27 (6)	4 (3)
511	089	77 (12)	37 (7)	1 (0)
512	090	49 (11)	30 (6)	1 (0)
513	091	28 (9)	23 (6)	4 (3)
514	092	51 (11)	29 (6)	2 (1)
515	093	58 (11)	51 (8)	6 (4)
516	094	60 (11)	37 (7)	6 (4)
517	095	46 (11)	24 (6)	4 (3)
518	096	45 (11)	25 (6)	6 (4)
519	097	146 (14)	63 (9)	4 (3)
520	098	84 (12)	44 (7)	1 (0)
521	099	69 (12)	52 (8)	6 (4)
522	100	53 (11)	53 (8)	6 (4)
523	101	45 (11)	45 (8)	6 (4)
524	102	65 (12)	84 (9)	1 (0)
525	103	46 (11)	66 (9)	6 (4)
526	104	50 (11)	63 (9)	2 (1)
527	106	55 (11)	115 (10)	6 (4)
528	107	73 (12)	63 (9)	6 (4)
529	108	100 (13)	307 (13)	6 (4)
530	109	25 (9)	34 (7)	1 (0)
531	110	9 (6)	41 (7)	6 (4)
532	111	78 (12)	268 (13)	4 (3)
533	112	60 (11)	61 (8)	6 (4)
534	113	27 (9)	19 (5)	6 (4)
535	114	19 (8)	14 (4)	6 (4)
536	115	25 (9)	19 (5)	6 (4)
537	116	35 (10)	21 (5)	1 (0)
538	117	32 (10)	23 (6)	1 (0)
539	118	64 (11)	51 (8)	6 (4)
540	119	53 (11)	41 (7)	2 (1)
541	120	35 (10)	33 (7)	6 (4)
542	121	34 (10)	33 (7)	6 (4)
543	122	53 (11)	55 (8)	6 (4)
544	123	73 (12)	61 (8)	6 (4)
545	124	59 (11)	59 (8)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
546	C-125	49 (11)	46 (8)	1 (0)
547	126	54 (11)	57 (8)	6 (4)
548	127	41 (10)	62 (8)	1 (0)
549	128	50 (11)	101 (10)	6 (4)
550	129	60 (11)	88 (9)	6 (4)
551	130	54 (11)	100 (10)	1 (0)
552	131	32 (10)	27 (6)	6 (4)
553	132	19 (8)	16 (5)	6 (4)
554	133	15 (8)	16 (5)	6 (4)
555	134	16 (8)	25 (6)	6 (4)
556	135	12 (7)	18 (5)	6 (4)
557	136	30 (9)	50 (8)	6 (4)
558	137	210 (15)	32 (7)	6 (4)
559	138	30 (9)	48 (8)	6 (4)
560	139	15 (8)	33 (7)	1 (0)
561	140	42 (10)	51 (8)	6 (4)
562	141	35 (10)	29 (6)	6 (4)
563	142	26 (9)	28 (6)	2 (1)
564	143	35 (10)	32 (7)	1 (0)
565	144	49 (11)	62 (8)	6 (4)
566	145	56 (11)	68 (9)	2 (1)
567	146	66 (12)	85 (9)	6 (4)
568	147	44 (10)	76 (9)	6 (4)
569	148	43 (10)	85 (9)	1 (0)
570	150	59 (11)	77 (9)	4 (3)
571	152	90 (12)	87 (9)	1 (0)
572	153	54 (11)	51 (8)	2 (1)
573	154	23 (9)	25 (6)	2 (1)
574	155	67 (12)	37 (7)	1 (0)
575	159	15 (8)	23 (6)	1 (0)
576	160	6 (5)	16 (5)	2 (1)
577	161	32 (10)	36 (7)	2 (1)
578	162	11 (7)	23 (6)	1 (0)
579	163	14 (7)	19 (5)	1 (0)
580	164	10 (7)	18 (5)	1 (0)
581	165	7 (6)	33 (7)	1 (0)
582	168	21 (9)	32 (7)	6 (4)
583	169	25 (9)	29 (6)	6 (4)
584	170	19 (8)	30 (6)	6 (4)
585	171	28 (9)	33 (7)	1 (0)
586	172	10 (7)	15 (4)	2 (1)
587	173	14 (7)	16 (5)	2 (1)
588	174	39 (10)	43 (7)	6 (4)
589	175	37 (10)	53 (8)	1 (0)
590	176	18 (8)	33 (7)	2 (1)
591	177	50 (11)	43 (7)	6 (4)
592	178	44 (10)	39 (7)	4 (3)
593	179	11 (7)	60 (8)	2 (1)
594	180	27 (9)	44 (7)	1 (0)
595	181	52 (11)	76 (9)	1 (0)
596	182	40 (10)	77 (9)	6 (4)
597	183	22 (9)	41 (7)	6 (4)
598	184	35 (10)	44 (7)	2 (1)
599	185	40 (10)	53 (8)	1 (0)
600	186	21 (9)	40 (7)	4 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
601	C-187	34 (10)	56 (8)	4 (3)
602	188	63 (11)	248 (12)	1 (0)
603	189	53 (11)	62 (8)	1 (0)
604	190	42 (10)	49 (8)	6 (4)
605	191	44 (10)	54 (8)	6 (4)
606	192	76 (12)	74 (9)	1 (0)
607	193	36 (10)	47 (8)	2 (1)
608	194	28 (9)	39 (7)	2 (1)
609	195	34 (10)	44 (7)	1 (0)
610	196	49 (11)	59 (8)	1 (0)
611	197	30 (9)	47 (8)	6 (4)
612	198	32 (10)	37 (7)	6 (4)
613	199	42 (10)	85 (9)	2 (1)
614	200	44 (10)	31 (6)	1 (0)
615	201	30 (9)	61 (8)	4 (8)
616	202	30 (9)	81 (9)	6 (4)
617	203	45 (11)	66 (9)	1 (0)
618	204	31 (10)	89 (10)	4 (3)
619	205	32 (10)	104 (10)	4 (3)
620	206	25 (9)	62 (8)	1 (0)
621	207	63 (11)	87 (9)	1 (0)
622	208	35 (10)	79 (9)	6 (4)
623	209	24 (9)	49 (8)	1 (0)
624	210	53 (11)	70 (9)	2 (1)
625	211	47 (11)	114 (10)	2 (1)
626	212	25 (9)	54 (8)	1 (0)
627	213	49 (11)	90 (10)	6 (4)
628	222	41 (10)	98 (10)	1 (0)
629	223	63 (11)	58 (8)	2 (1)
630	224	25 (9)	58 (8)	6 (4)
631	233	39 (10)	53 (8)	1 (0)
632	235	32 (10)	76 (9)	2 (1)
633	238	47 (11)	54 (8)	6 (4)
634	241	71 (12)	197 (12)	1 (0)
635	243	59 (11)	93 (10)	6 (4)
636	245	81 (12)	82 (9)	5 (3)
637	246	42 (10)	97 (10)	1 (0)
638	247	26 (9)	174 (11)	1 (0)
639	250	58 (11)	109 (10)	6 (4)
640	253	85 (12)	94 (10)	4 (3)
641	254	26 (9)	154 (11)	2 (1)
642	255	39 (10)	56 (8)	1 (0)
643	257	33 (10)	73 (9)	1 (0)
644	258	30 (9)	58 (8)	2 (1)
645	261	50 (11)	64 (9)	6 (4)
646	263	36 (10)	83 (9)	2 (1)
647	266	27 (9)	44 (7)	2 (1)
648	267	22 (9)	44 (7)	1 (0)
649	268	16 (8)	43 (7)	1 (0)
650	269	47 (11)	633 (15)	2 (1)
651	274	166 (14)	402 (14)	1 (0)
652	277	84 (12)	419 (14)	1 (0)
653	278	41 (10)	88 (9)	2 (1)
654	279	33 (10)	302 (13)	1 (0)
655	281	40 (10)	188 (12)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
656	C-282	78 (12)	296 (13)	1 (0)
657	286	28 (9)	49 (8)	6 (4)
658	287	46 (11)	66 (9)	1 (0)
659	289	29 (9)	64 (9)	1 (0)
660	292	40 (10)	83 (9)	2 (1)
661	293	45 (11)	72 (9)	1 (0)
662	294	45 (11)	76 (9)	1 (0)
663	295	50 (11)	84 (9)	2 (1)
664	296	42 (10)	72 (9)	2 (1)
665	297	49 (11)	81 (9)	1 (0)
666	299	54 (11)	76 (9)	1 (0)
667	300	54 (11)	85 (9)	6 (4)
668	301	48 (11)	77 (9)	1 (0)
669	302	47 (11)	75 (9)	2 (1)
670	303	29 (9)	68 (9)	2 (1)
671	305	31 (10)	59 (8)	1 (0)
672	307	31 (10)	48 (8)	1 (0)
673	311	39 (10)	27 (6)	1 (0)
674	313	35 (10)	24 (6)	1 (0)
675	316	31 (10)	15 (4)	6 (4)
676	317	46 (11)	25 (6)	1 (0)
677	D-001	48 (11)	48 (8)	1 (0)
678	003	47 (11)	42 (7)	1 (0)
679	004	37 (10)	39 (7)	8 (5)
680	005	50 (11)	46 (8)	2 (1)
681	006	45 (11)	52 (8)	8 (5)
682	007	47 (11)	38 (7)	1 (0)
683	008	47 (11)	37 (7)	8 (5)
684	009	48 (11)	45 (8)	8 (5)
685	010	100 (13)	71 (9)	6 (4)
686	013	81 (12)	66 (9)	6 (4)
687	014	74 (12)	73 (9)	8 (5)
688	015	74 (12)	58 (8)	8 (5)
689	016	61 (11)	78 (9)	8 (5)
690	017	94 (12)	118 (10)	8 (5)
691	018	48 (11)	69 (9)	8 (5)
692	019	80 (12)	118 (10)	6 (4)
693	020	31 (10)	41 (7)	1 (0)
694	022	64 (11)	53 (8)	2 (1)
695	023	118 (13)	330 (13)	2 (1)
696	024	75 (12)	154 (11)	1 (0)
697	025	55 (11)	60 (8)	1 (0)
698	026	38 (10)	37 (7)	10 (6)
699	027	61 (11)	59 (8)	2 (1)
700	028	54 (11)	48 (8)	1 (0)
701	029	43 (10)	31 (6)	1 (0)
702	030	33 (10)	32 (7)	1 (0)
703	031	40 (10)	43 (7)	2 (1)
704	032	44 (10)	40 (7)	1 (0)
705	033	33 (10)	25 (6)	6 (4)
706	036	50 (11)	48 (8)	6 (4)
707	037	46 (11)	51 (8)	6 (4)
708	040	54 (11)	44 (7)	1 (0)
709	043	47 (11)	48 (8)	6 (4)
710	044	48 (11)	42 (7)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
711	D-046	40 (10)	36 (7)	6 (4)
712	051	55 (11)	90 (10)	2 (1)
713	052	50 (11)	92 (10)	6 (4)
714	053	60 (11)	41 (7)	6 (4)
715	054	125 (13)	126 (11)	6 (4)
716	058	81 (12)	326 (13)	1 (0)
717	061	52 (11)	302 (13)	2 (1)
718	062	29 (9)	334 (13)	0 (0)
719	064	63 (11)	270 (13)	2 (1)
720	065	63 (11)	318 (13)	6 (4)
721	066	78 (12)	198 (12)	1 (0)
722	067	64 (11)	198 (12)	1 (0)
723	069	70 (12)	129 (11)	1 (0)
724	070	88 (12)	200 (12)	1 (0)
725	071	52 (11)	125 (11)	2 (1)
726	072	29 (9)	224 (12)	0 (0)
727	073	69 (12)	383 (14)	1 (0)
728	074	63 (11)	413 (14)	2 (1)
729	075	76 (12)	428 (14)	1 (0)
730	076	28 (9)	214 (12)	1 (0)
731	077	51 (11)	264 (13)	1 (0)
732	078	42 (10)	102 (10)	2 (1)
733	079	18 (8)	111 (10)	2 (1)
734	080	30 (9)	136 (11)	0 (0)
735	081	37 (10)	230 (12)	0 (0)
736	082	37 (10)	184 (12)	1 (0)
737	084	93 (12)	294 (13)	1 (0)
738	088	160 (14)	114 (10)	6 (4)
739	089	99 (13)	150 (11)	2 (1)
740	091	104 (13)	176 (12)	6 (4)
741	092	84 (12)	150 (11)	4 (3)
742	093	91 (12)	130 (11)	4 (3)
743	094	102 (13)	160 (11)	1 (0)
744	095	132 (13)	148 (11)	4 (3)
745	096	113 (13)	170 (11)	1 (0)
746	097	115 (13)	218 (12)	1 (0)
747	098	86 (12)	294 (13)	1 (0)
748	099	115 (13)	84 (9)	4 (3)
749	100	210 (15)	154 (11)	4 (3)
750	101	142 (14)	166 (11)	2 (1)
751	102	121 (13)	112 (10)	2 (1)
752	103	106 (13)	142 (11)	1 (0)
753	104	126 (13)	266 (13)	6 (4)
754	105	121 (13)	110 (10)	6 (4)
755	106	44 (10)	152 (11)	6 (4)
756	107	36 (10)	178 (12)	4 (3)
757	109	44 (10)	139 (11)	6 (4)
758	110	52 (11)	176 (12)	6 (4)
759	112	42 (10)	154 (11)	6 (4)
760	113	62 (11)	156 (11)	6 (4)
761	115	41 (10)	132 (11)	6 (4)
762	117	54 (11)	182 (12)	4 (3)
763	122	95 (13)	118 (10)	1 (0)
764	123	44 (10)	72 (9)	6 (4)
765	124	77 (12)	180 (12)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
766	D-125	34 (10)	72 (9)	2 (1)
767	126	93 (12)	128 (11)	4 (3)
768	128	86 (12)	102 (10)	1 (0)
769	129	96 (13)	166 (11)	4 (3)
770	130	74 (12)	124 (10)	4 (3)
771	131	88 (12)	144 (11)	1 (0)
772	134	64 (11)	100 (10)	1 (0)
773	135	74 (12)	110 (10)	0 (0)
774	136	94 (12)	128 (11)	6 (4)
775	137	84 (12)	124 (10)	4 (3)
776	138	104 (13)	106 (10)	4 (3)
777	139	89 (12)	100 (10)	2 (1)
778	140	100 (13)	208 (12)	4 (3)
779	141	85 (12)	262 (13)	1 (0)
780	142	142 (14)	332 (13)	1 (0)
781	143	80 (12)	150 (11)	6 (4)
782	144	101 (13)	152 (11)	1 (0)
783	146	71 (12)	134 (11)	4 (3)
784	152	52 (11)	110 (10)	1 (0)
785	155	73 (12)	98 (10)	1 (0)
786	157	84 (12)	82 (9)	2 (1)
787	159	106 (13)	66 (9)	6 (4)
788	161	121 (13)	94 (10)	1 (0)
789	168	160 (14)	50 (8)	2 (1)
790	169	178 (14)	78 (9)	1 (0)
791	170	76 (12)	88 (9)	1 (0)
792	171	89 (12)	44 (7)	1 (0)
793	174	112 (13)	66 (9)	1 (0)
794	178	126 (13)	172 (11)	2 (1)
795	181	180 (14)	120 (10)	2 (1)
796	183	138 (13)	186 (12)	1 (0)
797	188	16 (8)	18 (5)	46 (10)
798	189	18 (8)	10 (3)	34 (10)
799	190	42 (10)	70 (9)	26 (9)
800	203	59 (11)	114 (10)	18 (8)
801	204	64 (11)	78 (9)	16 (7)
802	205	46 (11)	96 (10)	6 (4)
803	206	64 (11)	106 (10)	6 (4)
804	208	120 (13)	166 (11)	1 (0)
805	209	105 (13)	100 (10)	6 (4)
806	212	116 (13)	148 (11)	2 (1)
807	215	70 (12)	68 (9)	6 (4)
808	216	96 (13)	187 (12)	1 (0)
809	217	89 (12)	124 (10)	6 (4)
810	218	116 (13)	158 (11)	6 (4)
811	215	142 (14)	216 (12)	6 (4)
812	220	234 (15)	300 (13)	1 (0)
813	221	93 (12)	146 (11)	2 (1)
814	223	65 (12)	96 (10)	6 (4)
815	225	89 (12)	114 (10)	6 (4)
816	226	69 (12)	76 (9)	6 (4)
817	228	97 (13)	114 (10)	1 (0)
818	229	64 (11)	86 (9)	6 (4)
819	231	97 (13)	68 (9)	6 (4)
820	232	72 (12)	88 (9)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
821	D-234	13 (7)	30 (6)	6 (4)
822	238	69 (12)	94 (10)	1 (0)
823	243	70 (12)	124 (10)	1 (0)
824	245	107 (13)	94 (10)	2 (1)
825	247	80 (12)	96 (10)	2 (1)
826	248	72 (12)	86 (9)	1 (0)
827	252	53 (11)	118 (10)	6 (4)
828	254	34 (10)	48 (8)	6 (4)
829	255	36 (10)	90 (10)	1 (0)
830	256	25 (9)	54 (8)	1 (0)
831	257	31 (10)	40 (7)	2 (1)
832	258	40 (10)	44 (7)	2 (1)
833	259	37 (10)	38 (7)	6 (4)
834	260	53 (11)	68 (9)	6 (4)
835	261	78 (12)	108 (10)	1 (0)
836	263	78 (12)	74 (9)	1 (0)
837	270	74 (12)	66 (9)	1 (0)
838	271	57 (11)	96 (10)	1 (0)
839	272	64 (11)	116 (10)	1 (0)
840	276	59 (11)	84 (9)	6 (4)
841	279	66 (12)	84 (9)	4 (3)
842	281	72 (12)	74 (9)	1 (0)
843	286	44 (10)	70 (9)	2 (1)
844	287	63 (11)	72 (9)	1 (0)
845	288	54 (11)	66 (9)	6 (4)
846	289	53 (11)	60 (8)	2 (1)
847	290	55 (11)	38 (7)	1 (0)
848	292	82 (12)	64 (9)	1 (0)
849	295	53 (11)	52 (8)	1 (0)
850	296	84 (12)	46 (8)	1 (0)
851	297	48 (11)	73 (9)	1 (0)
852	E-001	33 (10)	179 (12)	4 (3)
853	003	39 (10)	233 (12)	4 (3)
854	004	33 (10)	74 (9)	6 (4)
855	005	20 (8)	53 (8)	4 (3)
856	008	41 (10)	87 (9)	4 (3)
857	011	34 (10)	177 (12)	4 (3)
858	012	48 (11)	89 (10)	10 (6)
859	013	44 (10)	88 (9)	10 (6)
860	014	36 (10)	223 (12)	4 (3)
861	015	45 (11)	55 (8)	4 (3)
862	016	53 (11)	67 (9)	4 (3)
863	017	38 (10)	192 (12)	4 (3)
864	019	216 (15)	3888 (20)	2 (1)
865	020	47 (11)	294 (13)	1 (0)
866	026	27 (9)	98 (10)	1 (0)
867	027	49 (11)	210 (12)	1 (0)
868	029	45 (11)	68 (9)	1 (0)
869	030	39 (10)	80 (9)	2 (1)
870	033	22 (9)	76 (9)	1 (0)
871	034	49 (11)	340 (13)	1 (0)
872	035	12 (7)	74 (9)	2 (1)
873	036	19 (8)	174 (11)	1 (0)
874	037	20 (8)	71 (9)	1 (0)
875	038	17 (8)	67 (9)	2 (1)

SER NO.	SAMPLE NO.	Cu	Zn	Mo
876	E-039	25 (9)	72 (9)	1 (0)
877	041	22 (9)	79 (9)	1 (0)
878	042	32 (10)	80 (9)	1 (0)
879	043	23 (9)	50 (8)	2 (1)
880	044	3 (3)	25 (6)	1 (0)
881	045	19 (8)	58 (8)	2 (1)
882	046	25 (9)	56 (8)	2 (1)
883	047	51 (11)	94 (10)	1 (0)
884	048	54 (11)	87 (9)	1 (0)
885	049	82 (12)	194 (12)	1 (0)
886	050	49 (11)	67 (9)	1 (0)
887	051	59 (11)	80 (9)	1 (0)
888	052	48 (11)	92 (10)	1 (0)
889	053	41 (10)	47 (8)	2 (1)
890	054	48 (11)	40 (7)	1 (0)
891	055	0 (20)	8 (3)	2 (1)
892	056	2 (2)	12 (4)	2 (1)
893	057	0 (20)	13 (4)	1 (0)
894	058	0 (20)	5 (1)	1 (0)
895	059	1 (1)	19 (5)	1 (0)
896	060	0 (20)	13 (4)	2 (1)
897	062	3 (3)	10 (3)	2 (1)
898	064	1 (1)	8 (3)	1 (0)
899	066	7 (6)	20 (5)	1 (0)
900	067	24 (9)	22 (5)	2 (1)
901	068	6 (5)	18 (5)	1 (0)
902	069	10 (7)	16 (5)	2 (1)
903	070	11 (7)	23 (6)	2 (1)
904	072	20 (8)	77 (9)	1 (0)
905	073	28 (9)	42 (7)	1 (0)
906	074	14 (7)	37 (7)	1 (0)
907	075	157 (14)	65 (9)	1 (0)
908	076	21 (9)	55 (8)	2 (0)
909	077	35 (10)	70 (9)	1 (0)
910	078	14 (7)	80 (9)	2 (1)
911	079	30 (9)	73 (9)	1 (0)
912	080	24 (9)	74 (9)	1 (0)
913	081	41 (10)	68 (9)	1 (0)
914	082	24 (9)	73 (9)	6 (4)
915	083	27 (9)	71 (9)	6 (4)
916	084	18 (8)	99 (10)	1 (0)
917	086	22 (9)	200 (12)	2 (1)
918	087	25 (9)	120 (10)	2 (1)
919	088	24 (9)	89 (10)	1 (0)
920	089	13 (7)	102 (10)	1 (0)
921	090	17 (8)	99 (10)	2 (1)
922	091	8 (6)	54 (8)	1 (0)
923	092	6 (5)	49 (8)	1 (0)
924	093	13 (7)	51 (8)	1 (0)
925	094	74 (12)	107 (10)	2 (1)
926	095	37 (10)	196 (12)	1 (0)
927	100	27 (9)	75 (9)	6 (4)
928	101	27 (9)	75 (9)	6 (4)
929	102	18 (8)	60 (8)	1 (0)
930	103	11 (7)	43 (7)	2 (1)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
931	E-105	27 (9)	55 (8)	1 (0)
932	107	15 (8)	14 (4)	2 (1)
933	108	8 (6)	15 (4)	6 (4)
934	109	15 (8)	15 (4)	1 (0)
935	110	9 (6)	15 (4)	6 (4)
936	111	20 (8)	19 (5)	1 (0)
937	112	4 (4)	20 (5)	4 (3)
938	113	18 (8)	15 (4)	6 (4)
939	114	26 (9)	28 (6)	6 (4)
940	115	45 (11)	25 (6)	1 (0)
941	116	11 (7)	16 (5)	6 (4)
942	118	15 (8)	18 (5)	1 (0)
943	119	32 (10)	28 (6)	2 (1)
944	121	0 (20)	23 (6)	6 (4)
945	124	21 (9)	20 (5)	4 (3)
946	126	24 (9)	22 (5)	4 (3)
947	127	22 (9)	25 (6)	1 (0)
948	128	15 (8)	28 (6)	1 (0)
949	129	28 (9)	24 (6)	2 (1)
950	131	14 (7)	28 (6)	4 (3)
951	134	30 (9)	20 (5)	1 (0)
952	135	18 (8)	18 (5)	6 (4)
953	137	7 (6)	21 (5)	6 (4)
954	138	12 (7)	23 (6)	6 (4)
955	139	30 (9)	27 (6)	6 (4)
956	140	14 (7)	105 (10)	1 (0)
957	141	30 (9)	113 (10)	2 (1)
958	142	28 (9)	103 (10)	2 (1)
959	143	60 (11)	244 (12)	1 (0)
960	144	21 (9)	121 (10)	1 (0)
961	145	25 (9)	267 (13)	1 (0)
962	146	31 (10)	230 (12)	1 (0)
963	147	31 (10)	109 (10)	1 (0)
964	148	22 (9)	106 (10)	2 (1)
965	151	27 (9)	267 (13)	1 (0)
966	153	44 (10)	85 (9)	2 (1)
967	155	34 (10)	86 (9)	1 (0)
968	156	38 (9)	94 (10)	2 (1)
969	157	22 (9)	114 (10)	1 (0)
970	160	20 (8)	95 (10)	1 (0)
971	161	25 (9)	226 (12)	4 (3)
972	162	45 (11)	107 (10)	1 (0)
973	164	18 (8)	48 (8)	1 (0)
974	166	46 (11)	97 (10)	1 (0)
975	167	35 (10)	84 (9)	2 (1)
976	168	24 (9)	226 (12)	1 (0)
977	169	12 (7)	114 (10)	2 (1)
978	170	33 (10)	73 (9)	2 (1)
979	172	15 (8)	101 (10)	6 (4)
980	173	15 (8)	84 (9)	2 (1)
981	174	30 (9)	69 (9)	1 (0)
982	180	26 (9)	67 (9)	1 (0)
983	181	39 (10)	69 (9)	2 (1)
984	184	37 (10)	69 (9)	2 (1)
985	186	7 (6)	62 (8)	2 (1)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
986	E-188	4 (4)	52 (8)	2 (1)
987	189	69 (12)	70 (9)	2 (1)
988	191	60 (11)	79 (9)	2 (1)
989	194	15 (8)	85 (9)	2 (1)
990	196	28 (9)	90 (10)	1 (0)
991	199	25 (9)	82 (9)	2 (1)
992	200	28 (9)	75 (9)	2 (1)
993	201	52 (11)	28 (6)	1 (0)
994	203	74 (12)	34 (7)	6 (4)
995	204	25 (9)	33 (7)	10 (6)
996	208	18 (8)	35 (7)	6 (4)
997	210	30 (9)	30 (6)	1 (0)
998	212	53 (11)	33 (7)	6 (4)
999	215	48 (11)	19 (5)	1 (0)
1000	216	44 (10)	64 (9)	1 (0)
1001	224	45 (11)	43 (7)	2 (1)
1002	225	46 (11)	47 (8)	1 (0)
1003	226	45 (11)	50 (8)	1 (0)
1004	228	35 (10)	25 (6)	1 (0)
1005	229	21 (9)	25 (6)	1 (0)
1006	230	47 (11)	50 (8)	2 (1)
1007	231	66 (12)	37 (7)	1 (0)
1008	232	21 (9)	38 (7)	2 (1)
1009	233	4 (4)	33 (7)	2 (1)
1010	234	34 (10)	30 (6)	1 (0)
1011	235	13 (7)	35 (7)	1 (0)
1012	236	84 (12)	27 (6)	6 (4)
1013	237	48 (11)	53 (8)	6 (4)
1014	238	17 (8)	19 (5)	1 (0)
1015	239	66 (12)	81 (9)	2 (1)
1016	243	24 (9)	88 (9)	2 (1)
1017	245	338 (16)	50 (8)	1 (0)
1018	246	75 (12)	62 (8)	1 (0)
1019	247	78 (12)	79 (9)	1 (0)
1020	248	55 (11)	70 (9)	6 (4)
1021	249	73 (12)	77 (9)	2 (1)
1022	250	29 (9)	45 (8)	1 (0)
1023	251	43 (10)	56 (8)	2 (1)
1024	252	40 (10)	54 (8)	1 (0)
1025	253	47 (11)	38 (7)	1 (0)
1026	254	47 (11)	57 (8)	1 (0)
1027	255	39 (10)	40 (7)	2 (1)
1028	256	31 (10)	52 (8)	2 (1)
1029	257	34 (10)	54 (8)	1 (0)
1030	258	38 (10)	62 (8)	1 (0)
1031	259	57 (11)	66 (9)	1 (0)
1032	260	38 (10)	58 (8)	2 (1)
1033	262	38 (10)	46 (8)	1 (0)
1034	263	48 (11)	72 (9)	1 (0)
1035	264	50 (11)	69 (9)	1 (0)
1036	265	23 (9)	37 (7)	1 (0)
1037	266	84 (12)	53 (8)	2 (1)
1038	267	57 (11)	62 (8)	2 (1)
1039	268	52 (11)	59 (8)	1 (0)
1040	270	60 (11)	74 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1041	E-271	78 (12)	72 (9)	1 (0)
1042	272	73 (12)	77 (9)	1 (0)
1043	273	70 (12)	69 (9)	1 (0)
1044	274	13 (7)	22 (5)	4 (3)
1045	275	5 (5)	12 (4)	2 (1)
1046	278	2 (2)	13 (4)	2 (1)
1047	279	5 (5)	16 (5)	1 (0)
1048	280	21 (9)	37 (7)	6 (4)
1049	281	42 (10)	44 (7)	2 (1)
1050	282	15 (8)	19 (5)	6 (4)
1051	G-119	63 (11)	170 (11)	1 (0)
1052	E-284	55 (11)	66 (9)	1 (0)
1053	286	58 (11)	61 (8)	2 (1)
1054	287	68 (12)	45 (8)	1 (0)
1055	289	35 (10)	36 (7)	1 (0)
1056	291	55 (11)	42 (7)	1 (0)
1057	292	48 (11)	64 (9)	1 (0)
1058	293	64 (11)	46 (8)	4 (3)
1059	296	80 (12)	47 (8)	2 (1)
1060	297	59 (11)	76 (9)	1 (0)
1061	298	34 (10)	46 (8)	1 (0)
1062	299	50 (11)	39 (7)	2 (1)
1063	302	62 (11)	44 (7)	1 (0)
1064	303	51 (11)	64 (9)	1 (0)
1065	304	36 (10)	52 (8)	1 (0)
1066	305	66 (12)	58 (8)	1 (0)
1067	306	49 (11)	71 (9)	1 (0)
1068	307	26 (9)	58 (8)	1 (0)
1069	308	69 (12)	71 (9)	2 (1)
1070	309	97 (13)	311 (13)	1 (0)
1071	312	40 (10)	60 (8)	2 (1)
1072	313	36 (10)	55 (8)	6 (4)
1073	314	65 (12)	77 (9)	1 (0)
1074	315	13 (7)	36 (7)	1 (0)
1075	316	20 (8)	33 (7)	2 (1)
1076	317	62 (11)	48 (8)	6 (4)
1077	318	19 (8)	46 (8)	1 (0)
1078	319	52 (11)	52 (8)	1 (0)
1079	320	61 (11)	61 (8)	1 (0)
1080	321	30 (9)	38 (7)	1 (0)
1081	G-181	99 (13)	79 (9)	2 (1)
1082	E-323	9 (6)	30 (6)	1 (0)
1083	324	25 (9)	59 (8)	1 (0)
1084	325	30 (9)	61 (8)	1 (0)
1085	326	26 (9)	76 (9)	1 (0)
1086	335	37 (10)	57 (8)	1 (0)
1087	336	37 (10)	76 (9)	2 (1)
1088	337	50 (11)	75 (9)	2 (1)
1089	338	29 (9)	84 (9)	1 (0)
1090	339	30 (9)	79 (9)	1 (0)
1091	340	36 (10)	82 (9)	6 (4)
1092	341	29 (9)	75 (9)	6 (4)
1093	343	57 (11)	55 (8)	1 (0)
1094	344	39 (10)	48 (8)	1 (0)
1095	347	78 (12)	56 (8)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1096	E-348	121 (13)	66 (9)	2 (1)
1097	349	120 (13)	44 (7)	1 (0)
1098	350	84 (12)	37 (7)	6 (4)
1099	351	43 (10)	38 (7)	1 (0)
1100	354	42 (10)	51 (8)	1 (0)
1101	355	46 (11)	36 (7)	1 (0)
1102	359	32 (10)	59 (8)	1 (0)
1103	362	31 (10)	58 (8)	1 (0)
1104	364	41 (10)	64 (9)	1 (0)
1105	375	40 (10)	64 (9)	1 (0)
1106	376	65 (12)	66 (9)	1 (0)
1107	377	56 (11)	60 (8)	1 (0)
1108	378	24 (9)	50 (8)	1 (0)
1109	380	45 (11)	72 (9)	1 (0)
1110	381	45 (11)	68 (9)	1 (0)
1111	G-237	87 (12)	99 (10)	1 (0)
1112	E-385	50 (11)	66 (9)	1 (0)
1113	386	42 (10)	67 (9)	1 (0)
1114	387	36 (10)	61 (8)	1 (0)
1115	388	31 (10)	67 (9)	1 (0)
1116	389	38 (10)	83 (9)	1 (0)
1117	390	37 (10)	64 (9)	1 (0)
1118	391	128 (13)	68 (9)	1 (0)
1119	392	46 (11)	63 (9)	1 (0)
1120	394	27 (9)	93 (10)	1 (0)
1121	395	57 (11)	84 (9)	1 (0)
1122	396	38 (10)	98 (10)	1 (0)
1123	397	29 (9)	105 (10)	1 (0)
1124	398	43 (10)	92 (10)	1 (0)
1125	399	51 (11)	88 (9)	1 (0)
1126	400	76 (12)	73 (9)	1 (0)
1127	401	47 (11)	65 (9)	1 (0)
1128	402	42 (10)	64 (9)	1 (0)
1129	403	30 (9)	47 (8)	1 (0)
1130	404	40 (10)	68 (9)	1 (0)
1131	405	38 (10)	65 (9)	1 (0)
1132	406	41 (10)	72 (9)	1 (0)
1133	407	44 (10)	68 (9)	1 (0)
1134	408	41 (10)	58 (8)	1 (0)
1135	409	40 (10)	63 (9)	1 (0)
1136	413	86 (12)	218 (12)	1 (0)
1137	415	35 (10)	54 (8)	1 (0)
1138	416	29 (9)	34 (7)	1 (0)
1139	417	28 (9)	37 (7)	1 (0)
1140	418	31 (10)	68 (9)	4 (3)
1141	G-317	47 (11)	120 (10)	4 (3)
1142	F-002	56 (11)	50 (8)	1 (0)
1143	003	45 (11)	57 (8)	4 (3)
1144	004	51 (11)	85 (9)	4 (3)
1145	005	60 (11)	60 (8)	4 (3)
1146	006	51 (11)	55 (8)	4 (3)
1147	007	70 (12)	60 (8)	4 (3)
1148	008	50 (11)	53 (8)	4 (3)
1149	009	62 (11)	67 (9)	4 (3)
1150	010	49 (11)	55 (8)	4 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1151	F-011	43 (10)	57 (8)	4 (3)
1152	012	51 (11)	67 (9)	6 (4)
1153	013	60 (11)	62 (8)	6 (4)
1154	014	66 (12)	71 (9)	6 (4)
1155	015	70 (12)	67 (9)	6 (4)
1156	016	93 (12)	82 (9)	6 (4)
1157	017	57 (11)	57 (8)	6 (4)
1158	018	78 (12)	71 (9)	6 (4)
1159	019	77 (12)	67 (9)	1 (0)
1160	021	32 (10)	46 (8)	4 (3)
1161	023	81 (12)	71 (9)	10 (6)
1162	024	65 (12)	67 (9)	4 (3)
1163	025	57 (11)	64 (9)	4 (3)
1164	026	96 (13)	53 (8)	2 (1)
1165	027	41 (10)	29 (6)	4 (3)
1166	028	48 (11)	41 (7)	4 (3)
1167	030	75 (12)	50 (8)	4 (3)
1168	031	102 (13)	88 (9)	1 (0)
1169	032	123 (13)	59 (8)	6 (4)
1170	033	150 (14)	88 (9)	6 (4)
1171	H-028	7 (6)	67 (9)	6 (4)
1172	F-036	184 (14)	141 (11)	6 (4)
1173	037	48 (11)	47 (8)	6 (4)
1174	038	75 (12)	65 (9)	6 (4)
1175	039	48 (11)	41 (7)	6 (4)
1176	040	68 (12)	82 (9)	6 (4)
1177	041	68 (12)	65 (9)	6 (4)
1178	042	96 (13)	106 (10)	6 (4)
1179	043	102 (13)	88 (9)	6 (4)
1180	044	123 (13)	65 (9)	1 (0)
1181	045	89 (12)	76 (9)	1 (0)
1182	046	68 (12)	71 (9)	6 (4)
1183	047	48 (11)	76 (9)	2 (1)
1184	048	65 (12)	71 (9)	1 (0)
1185	049	51 (11)	94 (10)	1 (0)
1186	050	58 (11)	88 (9)	1 (0)
1187	051	75 (12)	88 (9)	4 (3)
1188	052	48 (11)	106 (10)	4 (3)
1189	053	61 (11)	94 (10)	1 (0)
1190	054	21 (9)	53 (8)	6 (4)
1191	055	41 (10)	59 (8)	6 (4)
1192	056	61 (11)	71 (9)	6 (4)
1193	057	75 (12)	71 (9)	6 (4)
1194	058	68 (12)	76 (9)	6 (4)
1195	059	55 (11)	59 (8)	1 (0)
1196	060	48 (11)	94 (10)	6 (4)
1197	061	68 (12)	88 (9)	6 (4)
1198	062	48 (11)	65 (9)	2 (1)
1199	063	73 (12)	72 (9)	6 (4)
1200	064	21 (9)	41 (7)	6 (4)
1201	E-322	3 (3)	17 (5)	6 (4)
1202	F-067	15 (8)	24 (6)	6 (4)
1203	068	6 (5)	11 (8)	6 (4)
1204	069	8 (6)	11 (3)	1 (0)
1205	070	15 (8)	26 (6)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1206	F-071	13 (7)	22 (5)	6 (4)
1207	072	21 (9)	38 (7)	2 (1)
1208	073	12 (7)	22 (5)	6 (4)
1209	075	15 (8)	22 (5)	6 (4)
1210	076	15 (8)	19 (5)	6 (4)
1211	077	18 (8)	24 (6)	6 (4)
1212	078	10 (7)	7 (2)	6 (4)
1213	079	13 (7)	29 (6)	6 (4)
1214	080	224 (15)	74 (9)	1 (0)
1215	081	157 (14)	75 (9)	4 (3)
1216	082	220 (15)	74 (9)	1 (0)
1217	083	259 (15)	110 (10)	2 (1)
1218	084	206 (15)	122 (10)	1 (0)
1219	085	1188 (19)	1365 (17)	1 (0)
1220	086	164 (14)	105 (10)	4 (3)
1221	087	308 (16)	77 (9)	1 (0)
1222	088	213 (15)	99 (10)	1 (0)
1223	089	259 (15)	75 (9)	6 (4)
1224	091	248 (15)	86 (9)	2 (1)
1225	092	189 (14)	110 (10)	2 (1)
1226	093	168 (14)	105 (10)	2 (1)
1227	095	161 (14)	97 (10)	2 (1)
1228	097	143 (14)	115 (10)	1 (0)
1229	098	147 (14)	139 (11)	6 (4)
1230	099	175 (14)	101 (10)	6 (4)
1231	E-382	48 (11)	60 (8)	6 (4)
1232	F-101	262 (15)	93 (10)	6 (4)
1233	102	234 (15)	91 (10)	2 (1)
1234	103	206 (15)	114 (10)	6 (4)
1235	104	243 (15)	100 (10)	1 (0)
1236	105	181 (14)	160 (11)	1 (0)
1237	106	107 (13)	221 (12)	1 (0)
1238	107	72 (12)	221 (12)	1 (0)
1239	108	105 (13)	199 (12)	2 (1)
1240	110	99 (13)	157 (11)	4 (3)
1241	112	114 (13)	260 (13)	1 (0)
1242	114	131 (13)	149 (11)	1 (0)
1243	115	96 (13)	203 (12)	2 (1)
1244	116	191 (14)	157 (11)	2 (1)
1245	117	99 (13)	224 (12)	1 (0)
1246	118	114 (13)	224 (12)	6 (4)
1247	119	107 (13)	181 (12)	1 (0)
1248	120	61 (11)	228 (12)	2 (1)
1249	121	29 (9)	157 (11)	6 (4)
1250	122	99 (13)	192 (12)	1 (0)
1251	123	114 (13)	167 (11)	2 (1)
1252	124	110 (13)	206 (12)	1 (0)
1253	125	87 (12)	192 (12)	1 (0)
1254	126	155 (14)	85 (9)	1 (0)
1255	127	136 (13)	174 (11)	1 (0)
1256	128	147 (14)	93 (10)	6 (4)
1257	129	129 (13)	178 (12)	6 (4)
1258	130	158 (14)	146 (11)	6 (4)
1259	131	144 (14)	174 (11)	6 (4)
1260	132	166 (14)	221 (12)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1261	F-001	46 (11)	66 (9)	6 (4)
1262	135	129 (13)	171 (11)	2 (1)
1263	137	127 (13)	125 (11)	6 (4)
1264	138	123 (13)	171 (11)	1 (0)
1265	139	151 (14)	135 (11)	1 (0)
1266	140	147 (14)	135 (11)	6 (4)
1267	141	59 (11)	142 (11)	2 (1)
1268	142	63 (11)	196 (12)	1 (0)
1269	145	53 (11)	171 (11)	1 (0)
1270	146	87 (12)	157 (11)	6 (4)
1271	148	48 (11)	116 (10)	6 (4)
1272	150	145 (14)	82 (9)	6 (4)
1273	151	53 (11)	154 (11)	6 (4)
1274	154	58 (11)	191 (12)	1 (0)
1275	156	58 (11)	150 (11)	4 (3)
1276	158	39 (10)	130 (11)	6 (4)
1277	160	73 (12)	177 (12)	1 (0)
1278	162	39 (10)	109 (10)	4 (3)
1279	164	44 (10)	164 (11)	6 (4)
1280	166	68 (12)	157 (11)	2 (1)
1281	167	39 (10)	157 (11)	1 (0)
1282	170	44 (10)	205 (12)	6 (4)
1283	171	39 (10)	136 (11)	2 (1)
1284	176	63 (11)	68 (9)	1 (0)
1285	177	34 (10)	171 (11)	6 (4)
1286	178	87 (12)	89 (10)	2 (1)
1287	179	102 (13)	109 (10)	1 (0)
1288	181	92 (12)	96 (10)	4 (3)
1289	182	102 (13)	116 (10)	2 (1)
1290	186	97 (13)	96 (10)	6 (4)
1291	035	96 (13)	82 (9)	1 (0)
1292	189	107 (13)	116 (10)	1 (0)
1293	190	116 (13)	109 (10)	1 (0)
1294	191	136 (13)	177 (12)	2 (1)
1295	193	218 (15)	61 (8)	2 (1)
1296	197	68 (12)	27 (6)	6 (4)
1297	199	73 (12)	55 (8)	1 (0)
1298	200	39 (10)	68 (9)	1 (0)
1299	201	73 (12)	68 (9)	2 (1)
1300	205	87 (12)	96 (10)	1 (0)
1301	207	58 (11)	96 (10)	1 (0)
1302	208	68 (12)	96 (10)	2 (1)
1303	212	70 (12)	75 (9)	2 (1)
1304	213	64 (11)	87 (9)	1 (0)
1305	214	34 (10)	81 (9)	1 (0)
1306	215	52 (11)	76 (9)	1 (0)
1307	217	71 (12)	105 (10)	2 (1)
1308	218	50 (11)	116 (10)	2 (1)
1309	219	49 (11)	102 (10)	4 (3)
1310	220	47 (11)	128 (11)	1 (0)
1311	223	57 (11)	111 (10)	1 (0)
1312	228	65 (12)	122 (10)	1 (0)
1313	230	55 (11)	111 (10)	1 (0)
1314	239	34 (10)	76 (9)	2 (1)
1315	243	37 (10)	122 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1316	F-245	54 (11)	76 (9)	1 (0)
1317	247	52 (11)	105 (10)	1 (0)
1318	250	47 (11)	137 (11)	1 (0)
1319	256	39 (10)	134 (11)	1 (0)
1320	259	47 (11)	151 (11)	2 (1)
1321	065	13 (7)	19 (5)	1 (0)
1322	261	67 (12)	47 (8)	1 (0)
1323	262	40 (10)	111 (10)	1 (0)
1324	264	32 (10)	151 (11)	1 (0)
1325	267	50 (11)	84 (9)	2 (1)
1326	269	45 (11)	116 (10)	2 (1)
1327	270	74 (12)	99 (10)	1 (0)
1328	273	101 (13)	87 (9)	1 (0)
1329	275	94 (12)	87 (9)	1 (0)
1330	276	77 (12)	169 (11)	1 (0)
1331	277	54 (11)	151 (11)	1 (0)
1332	279	17 (8)	29 (6)	2 (1)
1333	280	15 (8)	29 (6)	1 (0)
1334	281	24 (9)	30 (6)	6 (4)
1335	283	37 (10)	47 (8)	6 (4)
1336	284	30 (9)	41 (7)	2 (1)
1337	285	13 (7)	20 (5)	6 (4)
1338	288	65 (12)	132 (11)	1 (0)
1339	289	130 (13)	94 (10)	1 (0)
1340	290	76 (12)	99 (10)	4 (3)
1341	291	51 (11)	108 (10)	1 (0)
1342	293	54 (11)	65 (9)	1 (0)
1343	294	54 (11)	87 (9)	6 (4)
1344	296	40 (10)	76 (9)	6 (4)
1345	316	113 (13)	164 (11)	1 (0)
1346	323	159 (14)	121 (10)	1 (0)
1347	329	82 (12)	141 (11)	4 (3)
1348	330	110 (13)	125 (11)	6 (4)
1349	333	45 (11)	51 (8)	1 (0)
1350	335	88 (12)	76 (9)	6 (4)
1351	100	287 (15)	74 (9)	2 (1)
1352	340	57 (11)	61 (8)	6 (4)
1353	341	62 (11)	80 (9)	2 (1)
1354	342	59 (11)	56 (8)	2 (1)
1355	343	62 (11)	74 (9)	2 (1)
1356	344	34 (10)	80 (9)	6 (4)
1357	346	62 (11)	67 (9)	2 (1)
1358	348	136 (13)	61 (8)	6 (4)
1359	351	51 (11)	80 (9)	6 (4)
1360	353	28 (9)	72 (9)	6 (4)
1361	354	57 (11)	83 (9)	1 (0)
1362	355	54 (11)	67 (9)	1 (0)
1363	357	40 (10)	69 (9)	1 (0)
1364	359	42 (10)	76 (9)	1 (0)
1365	362	37 (10)	80 (9)	1 (0)
1366	363	45 (11)	83 (9)	6 (4)
1367	364	51 (11)	69 (9)	6 (4)
1368	365	34 (10)	80 (9)	4 (3)
1369	366	40 (10)	72 (9)	2 (1)
1370	368	34 (10)	76 (9)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1371	F-371	51 (11)	76 (9)	6 (4)
1372	372	23 (9)	96 (10)	6 (4)
1373	373	44 (10)	80 (9)	6 (4)
1374	374	25 (9)	87 (9)	2 (1)
1375	376	38 (10)	113 (10)	4 (3)
1376	377	38 (10)	69 (9)	2 (1)
1377	379	8 (6)	56 (8)	1 (0)
1378	381	61 (11)	82 (9)	3 (2)
1379	382	113 (13)	99 (10)	1 (0)
1380	383	42 (10)	45 (8)	5 (3)
1381	133	153 (14)	189 (12)	1 (0)
1382	385	61 (11)	74 (9)	1 (0)
1383	702	101 (13)	237 (12)	1 (0)
1384	703	67 (12)	169 (11)	1 (0)
1385	704	58 (11)	134 (11)	1 (0)
1386	705	80 (12)	217 (12)	1 (0)
1387	706	89 (12)	259 (13)	1 (0)
1388	707	91 (12)	164 (11)	1 (0)
1389	709	58 (11)	133 (11)	1 (0)
1390	712	99 (13)	123 (10)	1 (0)
1391	714	71 (12)	119 (10)	1 (0)
1392	716	125 (13)	96 (10)	1 (0)
1393	717	88 (12)	121 (10)	1 (0)
1394	721	91 (12)	139 (11)	1 (0)
1395	723	150 (14)	172 (11)	1 (0)
1396	724	86 (12)	165 (11)	1 (0)
1397	726	71 (12)	143 (11)	1 (0)
1398	727	73 (12)	103 (10)	1 (0)
1399	728	61 (11)	150 (11)	1 (0)
1400	733	98 (13)	487 (14)	1 (0)
1401	738	165 (14)	467 (14)	12 (6)
1402	739	66 (12)	85 (9)	4 (3)
1403	740	96 (13)	202 (12)	1 (0)
1404	742	104 (13)	210 (12)	1 (0)
1405	743	105 (13)	281 (13)	1 (0)
1406	745	95 (13)	210 (12)	1 (0)
1407	746	118 (13)	462 (14)	1 (0)
1408	750	63 (11)	160 (11)	1 (0)
1409	753	65 (12)	181 (12)	1 (0)
1410	754	50 (11)	105 (10)	1 (0)
1411	188	82 (12)	116 (10)	12 (6)
1412	757	77 (12)	220 (12)	1 (0)
1413	759	78 (12)	95 (10)	1 (0)
1414	760	54 (11)	170 (11)	1 (0)
1415	764	111 (13)	192 (12)	1 (0)
1416	766	97 (13)	19 (5)	1 (0)
1417	767	52 (11)	86 (9)	1 (0)
1418	770	75 (12)	198 (12)	12 (6)
1419	774	46 (11)	194 (12)	4 (3)
1420	776	67 (12)	198 (12)	1 (0)
1421	781	47 (11)	292 (13)	1 (0)
1422	785	90 (12)	191 (12)	1 (0)
1423	787	57 (11)	169 (11)	1 (0)
1424	790	112 (13)	210 (12)	2 (1)
1425	G-001	46 (11)	72 (9)	4 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1426	G-002	29 (9)	66 (9)	4 (3)
1427	003	46 (11)	60 (8)	4 (3)
1428	004	42 (10)	64 (9)	4 (3)
1429	005	46 (11)	64 (9)	4 (3)
1430	006	69 (12)	64 (9)	4 (3)
1431	007	55 (11)	64 (9)	6 (4)
1432	008	38 (10)	74 (9)	6 (4)
1433	009	54 (11)	44 (7)	6 (4)
1434	010	52 (11)	56 (8)	2 (1)
1435	011	64 (11)	78 (9)	2 (1)
1436	012	70 (12)	70 (9)	2 (1)
1437	013	67 (12)	74 (9)	4 (3)
1438	014	65 (12)	50 (8)	4 (3)
1439	017	64 (11)	80 (9)	2 (1)
1440	018	78 (12)	80 (9)	2 (1)
1441	F-260	76 (12)	47 (8)	4 (3)
1442	G-020	30 (9)	64 (9)	4 (3)
1443	022	21 (9)	78 (9)	4 (3)
1444	023	36 (10)	68 (9)	1 (0)
1445	024	49 (11)	50 (8)	1 (0)
1446	025	46 (11)	56 (8)	1 (0)
1447	026	44 (10)	48 (8)	1 (0)
1448	027	52 (11)	52 (8)	1 (0)
1449	028	50 (11)	46 (8)	1 (0)
1450	029	55 (11)	54 (8)	1 (0)
1451	030	62 (11)	56 (8)	1 (0)
1452	031	62 (11)	63 (9)	6 (4)
1453	032	24 (9)	43 (7)	6 (4)
1454	033	26 (9)	50 (8)	2 (1)
1455	034	30 (9)	54 (8)	6 (4)
1456	035	27 (9)	45 (8)	2 (1)
1457	036	22 (9)	31 (6)	6 (4)
1458	037	47 (11)	63 (9)	2 (1)
1459	038	22 (9)	45 (8)	2 (1)
1460	039	9 (6)	16 (5)	2 (1)
1461	040	22 (9)	45 (8)	2 (1)
1462	041	18 (8)	31 (6)	0 (0)
1463	042	21 (9)	43 (7)	2 (1)
1464	043	26 (9)	34 (7)	0 (0)
1465	044	48 (11)	70 (9)	2 (1)
1466	045	57 (11)	57 (8)	2 (1)
1467	047	57 (11)	62 (8)	6 (4)
1468	048	21 (9)	36 (7)	2 (1)
1469	049	57 (11)	63 (9)	2 (1)
1470	050	21 (9)	60 (8)	2 (1)
1471	F-338	57 (11)	74 (9)	1 (0)
1472	G-052	58 (11)	74 (9)	1 (0)
1473	053	62 (11)	80 (9)	1 (0)
1474	054	168 (14)	90 (10)	1 (0)
1475	055	126 (13)	69 (9)	6 (4)
1476	056	156 (14)	95 (10)	6 (4)
1477	057	112 (13)	101 (10)	6 (4)
1478	058	110 (13)	103 (10)	6 (4)
1479	059	87 (12)	135 (11)	6 (4)
1480	060	120 (13)	94 (10)	6 (4)
1481	G-061	103 (13)	188 (12)	6 (4)
1482	062	134 (13)	112 (10)	2 (1)
1483	064	106 (13)	118 (10)	2 (1)
1484	065	156 (14)	115 (10)	6 (4)
1485	066	137 (13)	120 (10)	2 (1)
1486	068	129 (13)	125 (11)	6 (4)
1487	068	149 (14)	145 (11)	6 (4)
1488	070	151 (14)	94 (10)	6 (4)
1489	071	129 (13)	194 (12)	6 (4)
1490	072	146 (14)	120 (10)	6 (4)
1491	073	94 (12)	179 (12)	6 (4)
1492	074	93 (12)	77 (9)	1 (0)
1493	075	143 (14)	65 (9)	1 (0)
1494	077	125 (13)	20 (5)	1 (0)
1495	078	156 (14)	53 (8)	1 (0)
1496	079	102 (13)	62 (8)	1 (0)
1497	080	99 (13)	70 (9)	1 (0)
1498	081	114 (13)	139 (11)	1 (0)
1499	082	150 (14)	33 (7)	6 (4)
1500	083	114 (13)	252 (13)	2 (1)
1501	384	70 (12)	78 (9)	1 (0)
1502	085	112 (13)	174 (11)	1 (0)
1503	086	120 (13)	151 (11)	1 (0)
1504	087	2 (2)	4 (1)	1 (0)
1505	088	113 (13)	172 (11)	1 (0)
1506	088	112 (13)	266 (13)	2 (1)
1507	090	35 (10)	92 (10)	2 (1)
1508	091	47 (11)	179 (12)	1 (0)
1509	097	27 (9)	133 (11)	1 (0)
1510	099	47 (11)	86 (9)	1 (0)
1511	105	44 (10)	88 (9)	4 (3)
1512	106	37 (10)	125 (11)	2 (1)
1513	107	54 (11)	122 (10)	1 (0)
1514	108	49 (11)	146 (11)	1 (0)
1515	109	49 (11)	166 (11)	1 (0)
1516	110	52 (11)	120 (10)	1 (0)
1517	111	42 (10)	238 (12)	2 (1)
1518	114	56 (11)	132 (11)	2 (1)
1519	115	51 (11)	154 (11)	6 (4)
1520	116	42 (10)	112 (10)	1 (0)
1521	118	79 (12)	171 (11)	1 (0)
1522	120	140 (14)	88 (9)	1 (0)
1523	122	71 (12)	55 (8)	1 (0)
1524	123	108 (13)	89 (10)	1 (0)
1525	124	82 (12)	118 (10)	1 (0)
1526	126	147 (14)	124 (10)	1 (0)
1527	127	123 (13)	81 (9)	2 (1)
1528	128	74 (12)	115 (10)	2 (1)
1529	129	112 (13)	105 (10)	2 (1)
1530	131	131 (13)	128 (11)	4 (3)
1531	F-756	77 (12)	142 (11)	6 (4)
1532	G-132	55 (11)	134 (11)	1 (0)
1533	134	50 (11)	104 (10)	1 (0)
1534	138	61 (11)	91 (10)	1 (0)
1535	139	41 (10)	127 (11)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1536	G-140	79 (12)	101 (10)	1 (0)
1537	142	60 (11)	96 (10)	1 (0)
1538	145	64 (11)	134 (11)	1 (0)
1539	146	59 (11)	94 (10)	4 (3)
1540	147	50 (11)	109 (10)	6 (4)
1541	148	68 (12)	85 (9)	6 (4)
1542	153	43 (10)	79 (9)	1 (0)
1543	157	53 (11)	103 (10)	1 (0)
1544	158	40 (10)	120 (10)	1 (0)
1545	159	35 (10)	80 (9)	4 (3)
1546	164	63 (11)	69 (9)	2 (1)
1547	165	68 (12)	87 (9)	6 (4)
1548	170	67 (12)	79 (9)	2 (1)
1549	171	59 (11)	85 (9)	1 (0)
1550	173	48 (11)	108 (10)	1 (0)
1551	178	52 (11)	120 (10)	1 (0)
1552	182	89 (12)	87 (9)	1 (0)
1553	183	30 (9)	105 (10)	2 (1)
1554	184	42 (10)	129 (11)	1 (0)
1555	190	49 (11)	95 (10)	1 (0)
1556	191	38 (10)	117 (10)	1 (0)
1557	192	36 (10)	113 (10)	1 (0)
1558	193	58 (11)	104 (10)	1 (0)
1559	194	59 (11)	84 (9)	1 (0)
1560	196	35 (10)	123 (10)	2 (1)
1561	019	35 (10)	64 (9)	2 (1)
1562	197	52 (11)	75 (9)	1 (0)
1563	198	74 (12)	49 (8)	1 (0)
1564	201	113 (13)	111 (10)	1 (0)
1565	202	86 (12)	128 (11)	1 (0)
1566	203	53 (11)	148 (11)	1 (0)
1567	204	65 (12)	158 (11)	1 (0)
1568	206	58 (11)	167 (11)	2 (1)
1569	207	52 (11)	153 (11)	2 (1)
1570	211	88 (12)	152 (11)	1 (0)
1571	212	41 (10)	108 (10)	1 (0)
1572	214	55 (11)	160 (11)	1 (0)
1573	215	85 (12)	99 (10)	1 (0)
1574	216	28 (9)	85 (9)	2 (1)
1575	217	45 (11)	73 (9)	2 (1)
1576	218	24 (9)	56 (8)	1 (0)
1577	219	24 (9)	55 (8)	1 (0)
1578	221	35 (10)	129 (11)	1 (0)
1579	222	30 (9)	60 (8)	2 (1)
1580	234	53 (11)	111 (10)	6 (4)
1581	236	88 (12)	129 (11)	2 (1)
1582	239	93 (12)	152 (11)	6 (4)
1583	241	85 (12)	113 (10)	1 (0)
1584	242	65 (12)	73 (9)	1 (0)
1585	243	27 (9)	50 (8)	1 (0)
1586	244	29 (9)	59 (8)	1 (0)
1587	245	68 (12)	158 (11)	6 (4)
1588	246	120 (13)	169 (11)	2 (1)
1589	247	108 (13)	145 (11)	4 (3)
1590	248	108 (13)	188 (12)	1 (0)
1591	G-051	57 (11)	63 (9)	1 (0)
1592	249	65 (12)	110 (10)	2 (1)
1593	261	60 (11)	110 (10)	2 (1)
1594	268	19 (8)	37 (7)	3 (2)
1595	271	150 (14)	792 (16)	6 (4)
1596	275	42 (10)	226 (12)	2 (1)
1597	277	93 (12)	336 (13)	2 (1)
1598	280	300 (16)	114 (10)	6 (4)
1599	281	560 (17)	304 (13)	6 (4)
1600	284	270 (15)	314 (13)	6 (4)
1601	289	180 (14)	256 (13)	6 (4)
1602	291	170 (14)	242 (12)	11 (6)
1603	292	374 (16)	280 (13)	4 (3)
1604	293	59 (11)	166 (11)	6 (4)
1605	298	26 (9)	46 (8)	6 (4)
1606	303	194 (14)	155 (11)	1 (0)
1607	305	34 (10)	98 (10)	6 (4)
1608	308	34 (10)	54 (8)	6 (4)
1609	311	100 (13)	102 (10)	1 (0)
1610	314	25 (9)	23 (6)	1 (0)
1611	316	52 (11)	83 (9)	6 (4)
1612	319	63 (11)	75 (9)	6 (4)
1613	321	66 (12)	161 (11)	2 (1)
1614	323	70 (12)	172 (11)	2 (1)
1615	325	50 (11)	80 (9)	1 (0)
1616	327	46 (11)	107 (10)	1 (0)
1617	328	55 (11)	69 (9)	1 (0)
1618	H-001	6 (5)	55 (8)	1 (0)
1619	002	7 (6)	44 (7)	4 (3)
1620	003	2 (2)	29 (6)	4 (3)
1621	G-084	130 (13)	175 (11)	14 (7)
1622	H-004	2 (2)	29 (6)	4 (3)
1623	005	15 (8)	58 (8)	6 (4)
1624	006	13 (7)	41 (7)	4 (3)
1625	007	18 (8)	70 (9)	4 (3)
1626	008	18 (8)	70 (9)	6 (4)
1627	009	24 (9)	76 (9)	6 (4)
1628	010	2 (2)	18 (5)	4 (3)
1629	011	6 (5)	45 (8)	10 (6)
1630	012	3 (3)	30 (6)	6 (4)
1631	013	53 (11)	169 (11)	14 (7)
1632	014	42 (10)	177 (12)	4 (3)
1633	015	51 (11)	156 (11)	4 (3)
1634	016	58 (11)	90 (10)	6 (4)
1635	017	27 (9)	191 (12)	1 (0)
1636	019	44 (10)	76 (9)	1 (0)
1637	022	46 (11)	92 (10)	1 (0)
1638	024	57 (11)	85 (9)	1 (0)
1639	025	42 (10)	93 (10)	1 (0)
1640	026	55 (11)	298 (13)	1 (0)
1641	027	11 (7)	53 (8)	1 (0)
1642	029	3 (3)	44 (7)	1 (0)
1643	030	4 (4)	48 (8)	1 (0)
1644	031	12 (7)	56 (8)	1 (0)
1645	032	15 (8)	58 (8)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1646	H-034	27 (9)	69 (9)	1 (0)
1647	035	15 (8)	66 (9)	1 (0)
1648	036	10 (7)	74 (9)	1 (0)
1649	037	26 (9)	67 (9)	1 (0)
1650	038	23 (9)	215 (12)	4 (3)
1651	039	24 (9)	50 (8)	1 (0)
1652	040	0 (20)	9 (3)	4 (3)
1653	041	3 (3)	16 (5)	4 (3)
1654	042	0 (20)	12 (4)	1 (0)
1655	043	4 (4)	27 (6)	1 (0)
1656	044	25 (9)	67 (9)	1 (0)
1657	045	27 (9)	50 (8)	1 (0)
1658	046	26 (9)	37 (7)	1 (0)
1659	047	84 (12)	328 (13)	1 (0)
1660	048	34 (10)	186 (12)	1 (0)
1661	049	35 (10)	100 (10)	1 (0)
1662	051	0 (20)	17 (5)	1 (0)
1663	052	25 (9)	58 (8)	1 (0)
1664	053	10 (7)	45 (8)	1 (0)
1665	054	3 (3)	28 (6)	1 (0)
1666	055	38 (10)	56 (8)	1 (0)
1667	056	62 (11)	69 (9)	1 (0)
1668	057	30 (9)	53 (8)	1 (0)
1669	058	39 (10)	78 (9)	6 (4)
1670	059	32 (10)	85 (9)	1 (0)
1671	060	37 (10)	71 (9)	1 (0)
1672	062	35 (10)	84 (9)	1 (0)
1673	063	41 (10)	95 (10)	1 (0)
1674	064	18 (8)	48 (8)	1 (0)
1675	065	4 (4)	22 (5)	1 (0)
1676	066	15 (8)	44 (7)	1 (0)
1677	067	44 (10)	37 (7)	1 (0)
1678	068	14 (7)	43 (7)	6 (4)
1679	069	7 (6)	39 (7)	4 (3)
1680	070	37 (10)	76 (9)	1 (0)
1681	071	44 (10)	75 (9)	1 (0)
1682	072	31 (10)	62 (8)	1 (0)
1683	073	35 (10)	65 (9)	1 (0)
1684	074	27 (9)	49 (8)	1 (0)
1685	075	29 (9)	331 (13)	1 (0)
1686	077	40 (10)	239 (12)	1 (0)
1687	078	54 (11)	97 (10)	4 (3)
1688	079	39 (10)	85 (9)	1 (0)
1689	080	58 (11)	239 (12)	1 (0)
1690	081	53 (11)	204 (12)	1 (0)
1691	082	36 (10)	250 (13)	1 (0)
1692	083	38 (10)	242 (12)	1 (0)
1693	084	30 (9)	215 (12)	1 (0)
1694	085	42 (10)	371 (14)	1 (0)
1695	086	40 (10)	382 (14)	1 (0)
1696	087	10 (7)	15 (4)	1 (0)
1697	088	32 (10)	25 (6)	6 (4)
1698	089	20 (8)	26 (6)	1 (0)
1699	090	21 (9)	21 (5)	1 (0)
1700	091	15 (8)	13 (4)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1701	H-092	27 (9)	21 (5)	1 (0)
1702	094	21 (9)	16 (5)	1 (0)
1703	095	9 (6)	15 (4)	1 (0)
1704	096	17 (8)	22 (5)	1 (0)
1705	097	22 (9)	23 (6)	4 (3)
1706	098	10 (7)	24 (6)	1 (0)
1707	099	28 (9)	27 (6)	1 (0)
1708	100	61 (11)	39 (7)	1 (0)
1709	101	10 (7)	29 (6)	1 (0)
1710	102	25 (9)	33 (7)	1 (0)
1711	103	32 (10)	42 (7)	1 (0)
1712	104	30 (9)	26 (6)	4 (3)
1713	107	10 (7)	27 (6)	6 (4)
1714	108	5 (5)	42 (7)	1 (0)
1715	109	16 (8)	61 (8)	1 (0)
1716	110	10 (7)	37 (7)	1 (0)
1717	111	53 (11)	91 (10)	1 (0)
1718	112	47 (11)	191 (12)	1 (0)
1719	113	40 (10)	180 (12)	1 (0)
1720	114	52 (11)	422 (14)	1 (0)
1721	115	78 (12)	293 (13)	1 (0)
1722	116	30 (9)	290 (13)	1 (0)
1723	117	88 (12)	320 (13)	1 (0)
1724	118	76 (12)	306 (13)	1 (0)
1725	119	99 (13)	315 (13)	1 (0)
1726	120	72 (12)	223 (12)	1 (0)
1727	121	56 (11)	661 (15)	1 (0)
1728	122	81 (12)	355 (14)	1 (0)
1729	123	55 (11)	325 (13)	1 (0)
1730	124	23 (9)	164 (11)	6 (4)
1731	125	27 (9)	90 (10)	6 (4)
1732	126	3 (3)	66 (9)	4 (3)
1733	131	30 (9)	266 (13)	1 (0)
1734	132	13 (7)	94 (10)	1 (0)
1735	133	43 (10)	67 (9)	1 (0)
1736	134	53 (11)	75 (9)	4 (3)
1737	135	59 (11)	72 (9)	1 (0)
1738	136	50 (11)	101 (10)	4 (3)
1739	137	65 (12)	82 (9)	1 (0)
1740	138	45 (11)	69 (9)	1 (0)
1741	139	27 (9)	62 (8)	4 (3)
1742	140	40 (10)	71 (9)	1 (0)
1743	141	60 (11)	75 (9)	6 (4)
1744	142	43 (10)	68 (9)	1 (0)
1745	143	48 (11)	73 (9)	1 (0)
1746	144	46 (11)	67 (9)	4 (3)
1747	146	36 (10)	69 (9)	6 (4)
1748	147	34 (10)	67 (9)	1 (0)
1749	148	19 (8)	82 (9)	1 (0)
1750	149	20 (8)	66 (9)	1 (0)
1751	150	29 (9)	72 (9)	1 (0)
1752	151	23 (9)	68 (9)	6 (4)
1753	152	35 (10)	78 (9)	6 (4)
1754	153	25 (9)	40 (7)	1 (0)
1755	155	35 (10)	72 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1756	H-157	28 (9)	180 (12)	4 (3)
1757	158	22 (9)	61 (8)	1 (0)
1758	159	29 (9)	67 (9)	1 (0)
1759	161	44 (10)	215 (12)	1 (0)
1760	163	26 (9)	247 (12)	1 (0)
1761	164	32 (10)	215 (12)	1 (0)
1762	165	91 (12)	84 (9)	1 (0)
1763	168	71 (12)	164 (11)	1 (0)
1764	169	100 (13)	255 (13)	1 (0)
1765	171	69 (12)	156 (11)	1 (0)
1766	172	54 (11)	215 (12)	1 (0)
1767	173	85 (12)	78 (9)	1 (0)
1768	174	20 (8)	23 (6)	1 (0)
1769	175	22 (9)	26 (6)	1 (0)
1770	176	20 (8)	23 (6)	1 (0)
1771	177	22 (9)	28 (6)	1 (0)
1772	178	27 (9)	30 (6)	1 (0)
1773	179	12 (7)	19 (5)	1 (0)
1774	180	41 (10)	46 (8)	1 (0)
1775	181	54 (11)	60 (8)	1 (0)
1776	182	44 (10)	41 (7)	1 (0)
1777	183	35 (10)	38 (7)	1 (0)
1778	184	20 (8)	30 (6)	1 (0)
1779	186	17 (8)	25 (6)	1 (0)
1780	187	12 (7)	39 (7)	1 (0)
1781	188	11 (7)	26 (6)	1 (0)
1782	190	18 (8)	29 (6)	1 (0)
1783	191	11 (7)	34 (7)	1 (0)
1784	192	11 (7)	31 (6)	1 (0)
1785	193	44 (10)	73 (9)	1 (0)
1786	194	53 (11)	73 (9)	1 (0)
1787	195	43 (10)	43 (7)	1 (0)
1788	196	23 (9)	17 (5)	1 (0)
1789	197	20 (8)	34 (7)	1 (0)
1790	199	25 (9)	44 (7)	1 (0)
1791	200	16 (8)	54 (8)	1 (0)
1792	201	2 (2)	19 (5)	1 (0)
1793	202	26 (9)	37 (7)	1 (0)
1794	203	26 (9)	41 (7)	1 (0)
1795	204	31 (10)	49 (8)	1 (0)
1796	205	29 (9)	41 (7)	1 (0)
1797	206	33 (10)	47 (8)	1 (0)
1798	207	51 (11)	55 (8)	1 (0)
1799	208	35 (10)	46 (8)	1 (0)
1800	210	106 (13)	60 (8)	1 (0)
1801	211	107 (13)	68 (9)	1 (0)
1802	212	83 (12)	61 (8)	1 (0)
1803	213	39 (10)	36 (7)	1 (0)
1804	214	66 (12)	90 (10)	1 (0)
1805	217	18 (8)	76 (9)	1 (0)
1806	219	40 (10)	80 (9)	1 (0)
1807	220	33 (10)	92 (10)	1 (0)
1808	222	39 (10)	77 (9)	1 (0)
1809	223	41 (10)	42 (7)	1 (0)
1810	224	42 (10)	45 (8)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1811	H-225	40 (10)	33 (7)	1 (0)
1812	226	26 (9)	34 (7)	1 (0)
1813	229	43 (10)	58 (8)	1 (0)
1814	230	51 (11)	60 (8)	1 (0)
1815	231	35 (10)	48 (8)	1 (0)
1816	233	29 (9)	42 (7)	1 (0)
1817	236	52 (11)	36 (7)	1 (0)
1818	238	49 (11)	44 (7)	1 (0)
1819	239	36 (10)	46 (8)	1 (0)
1820	240	30 (9)	56 (8)	1 (0)
1821	242	53 (11)	95 (10)	1 (0)
1822	243	35 (10)	70 (9)	1 (0)
1823	244	62 (11)	77 (9)	1 (0)
1824	245	63 (11)	83 (9)	1 (0)
1825	246	37 (10)	60 (8)	1 (0)
1826	247	12 (7)	41 (7)	1 (0)
1827	248	16 (8)	27 (6)	1 (0)
1828	249	12 (7)	25 (6)	1 (0)
1829	250	14 (7)	27 (6)	1 (0)
1830	251	14 (7)	35 (7)	1 (0)
1831	252	3 (3)	21 (5)	6 (4)
1832	253	15 (8)	34 (7)	1 (0)
1833	254	3 (3)	34 (7)	1 (0)
1834	255	4 (4)	21 (5)	1 (0)
1835	256	11 (7)	35 (7)	1 (0)
1836	257	9 (6)	21 (5)	1 (0)
1837	259	50 (11)	52 (8)	1 (0)
1838	261	62 (11)	86 (9)	1 (0)
1839	262	63 (11)	70 (9)	4 (3)
1840	263	54 (11)	54 (8)	1 (0)
1841	264	39 (10)	45 (8)	1 (0)
1842	265	30 (9)	32 (7)	4 (3)
1843	266	53 (11)	53 (8)	1 (0)
1844	267	62 (11)	52 (8)	1 (0)
1845	268	42 (10)	31 (6)	1 (0)
1846	269	48 (11)	40 (7)	1 (0)
1847	270	36 (10)	44 (7)	1 (0)
1848	271	40 (10)	51 (8)	1 (0)
1849	272	31 (10)	38 (7)	1 (0)
1850	273	35 (10)	36 (7)	1 (0)
1851	274	35 (10)	31 (6)	1 (0)
1852	275	44 (10)	28 (6)	1 (0)
1853	276	45 (11)	29 (6)	1 (0)
1854	277	42 (10)	26 (6)	1 (0)
1855	278	31 (10)	28 (6)	4 (3)
1856	280	37 (10)	28 (6)	1 (0)
1857	281	57 (11)	48 (8)	1 (0)
1858	282	41 (10)	40 (7)	4 (3)
1859	283	45 (11)	36 (7)	4 (3)
1860	284	23 (9)	19 (5)	1 (0)
1861	285	29 (9)	68 (9)	4 (3)
1862	286	88 (12)	62 (8)	1 (0)
1863	287	29 (9)	245 (12)	1 (0)
1864	289	31 (10)	242 (12)	1 (0)
1865	290	26 (9)	67 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1866	H-292	25 (9)	231 (12)	1 (0)
1867	293	35 (10)	94 (10)	1 (0)
1868	294	23 (9)	256 (13)	1 (0)
1869	295	55 (11)	62 (8)	6 (4)
1870	296	25 (9)	64 (9)	6 (4)
1871	297	30 (9)	228 (12)	6 (4)
1872	298	18 (8)	65 (9)	1 (0)
1873	299	54 (11)	73 (9)	6 (4)
1874	300	24 (9)	46 (8)	1 (0)
1875	301	29 (9)	81 (9)	6 (4)
1876	302	24 (9)	48 (8)	6 (4)
1877	303	41 (10)	86 (9)	1 (0)
1878	304	40 (10)	94 (10)	1 (0)
1879	306	34 (10)	209 (12)	1 (0)
1880	307	28 (9)	91 (10)	4 (3)
1881	308	35 (10)	192 (12)	1 (0)
1882	309	23 (9)	78 (9)	6 (4)
1883	310	39 (10)	223 (12)	1 (0)
1884	313	38 (10)	236 (12)	1 (0)
1885	314	33 (10)	55 (8)	1 (0)
1886	315	31 (10)	52 (8)	1 (0)
1887	316	33 (10)	62 (8)	1 (0)
1888	317	73 (12)	321 (13)	6 (4)
1889	318	62 (11)	231 (12)	1 (0)
1890	319	114 (13)	310 (13)	1 (0)
1891	320	52 (11)	81 (9)	1 (0)
1892	321	86 (12)	225 (12)	6 (4)
1893	323	28 (9)	90 (10)	6 (4)
1894	324	37 (10)	49 (8)	1 (0)
1895	327	36 (10)	52 (8)	6 (4)
1896	328	37 (10)	48 (8)	6 (4)
1897	329	23 (9)	48 (8)	1 (0)
1898	330	31 (10)	40 (7)	1 (0)
1899	331	25 (9)	71 (9)	1 (0)
1900	332	23 (9)	52 (8)	1 (0)
1901	333	33 (10)	44 (7)	6 (4)
1902	334	24 (9)	48 (8)	1 (0)
1903	335	25 (9)	30 (6)	6 (4)
1904	336	35 (10)	42 (7)	6 (4)
1905	338	28 (9)	47 (8)	6 (4)
1906	339	10 (7)	44 (7)	4 (3)
1907	340	24 (9)	37 (7)	1 (0)
1908	341	25 (9)	32 (7)	6 (4)
1909	342	20 (8)	27 (6)	6 (4)
1910	343	18 (8)	19 (5)	1 (0)
1911	345	21 (9)	30 (6)	1 (0)
1912	346	40 (10)	48 (8)	1 (0)
1913	347	24 (9)	31 (6)	4 (3)
1914	349	34 (10)	54 (8)	1 (0)
1915	352	50 (11)	38 (7)	1 (0)
1916	354	18 (8)	49 (8)	6 (4)
1917	355	75 (12)	56 (8)	4 (3)
1918	356	26 (9)	50 (8)	1 (0)
1919	357	30 (9)	47 (8)	4 (3)
1920	358	27 (9)	47 (8)	1 (0)
1921	H-362	42 (10)	60 (8)	6 (4)
1922	367	28 (9)	45 (8)	1 (0)
1923	369	31 (10)	51 (8)	6 (4)
1924	370	28 (9)	50 (8)	1 (0)
1925	371	24 (9)	46 (8)	6 (4)
1926	372	21 (9)	78 (9)	1 (0)
1927	374	29 (9)	68 (9)	4 (3)
1928	377	33 (10)	65 (9)	1 (0)
1929	378	44 (10)	60 (8)	6 (4)
1930	379	27 (9)	42 (7)	6 (4)
1931	380	45 (11)	59 (8)	4 (3)
1932	381	45 (11)	53 (8)	1 (0)
1933	382	30 (9)	57 (8)	6 (4)
1934	384	24 (9)	40 (7)	4 (3)
1935	385	34 (10)	48 (8)	6 (4)
1936	386	25 (9)	44 (7)	1 (0)
1937	388	26 (9)	56 (8)	1 (0)
1938	391	32 (10)	52 (8)	6 (4)
1939	393	34 (10)	101 (10)	6 (4)
1940	394	37 (10)	62 (8)	1 (0)
1941	395	45 (11)	75 (9)	1 (0)
1942	398	38 (10)	71 (9)	6 (4)
1943	400	26 (9)	63 (9)	1 (0)
1944	401	38 (10)	64 (9)	1 (0)
1945	404	40 (10)	62 (8)	4 (3)
1946	405	31 (10)	44 (7)	1 (0)
1947	407	38 (10)	50 (8)	6 (4)
1948	408	42 (10)	52 (8)	1 (0)
1949	410	63 (11)	79 (9)	1 (0)
1950	412	42 (10)	52 (8)	4 (3)
1951	413	43 (10)	64 (9)	1 (0)
1952	414	63 (11)	73 (9)	6 (4)
1953	415	38 (10)	60 (8)	6 (4)
1954	416	33 (10)	55 (8)	1 (0)
1955	417	38 (10)	76 (9)	6 (4)
1956	418	35 (10)	52 (8)	1 (0)
1957	419	23 (9)	41 (7)	1 (0)
1958	420	122 (13)	453 (14)	4 (3)
1959	422	64 (11)	73 (9)	1 (0)
1960	423	103 (13)	72 (9)	6 (4)
1961	424	44 (10)	64 (9)	6 (4)
1962	425	30 (9)	44 (7)	1 (0)
1963	426	29 (9)	50 (8)	1 (0)
1964	427	24 (9)	64 (9)	1 (0)
1965	428	21 (9)	53 (8)	1 (0)
1966	429	32 (10)	58 (8)	1 (0)
1967	430	23 (9)	60 (8)	1 (0)
1968	431	22 (9)	49 (8)	1 (0)
1969	432	23 (9)	47 (8)	1 (0)
1970	433	28 (9)	55 (8)	1 (0)
1971	435	31 (10)	60 (8)	1 (0)
1972	437	30 (9)	61 (8)	1 (0)
1973	438	59 (11)	93 (10)	1 (0)
1974	439	28 (9)	52 (8)	1 (0)
1975	440	42 (10)	68 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1976	H-441	27 (9)	70 (9)	1 (0)
1977	442	52 (11)	219 (12)	1 (0)
1978	443	26 (9)	61 (8)	1 (0)
1979	444	43 (10)	74 (9)	1 (0)
1980	445	30 (9)	62 (8)	1 (0)
1981	448	20 (8)	46 (8)	1 (0)
1982	450	29 (9)	57 (8)	1 (0)
1983	451	34 (10)	62 (8)	1 (0)
1984	452	35 (10)	65 (9)	1 (0)
1985	453	19 (8)	47 (8)	1 (0)
1986	454	30 (9)	51 (8)	1 (0)
1987	456	27 (9)	51 (8)	1 (0)
1988	457	50 (11)	64 (9)	1 (0)
1989	458	192 (14)	222 (12)	4 (3)
1990	459	56 (11)	63 (9)	1 (0)
1991	460	40 (10)	66 (9)	1 (0)
1992	461	41 (10)	64 (9)	1 (0)
1993	465	24 (9)	41 (7)	1 (0)
1994	466	34 (10)	187 (12)	1 (0)
1995	468	58 (11)	87 (9)	1 (0)
1996	K-001	132 (13)	87 (9)	4 (3)
1997	002	126 (13)	82 (9)	4 (3)
1998	003	66 (12)	92 (10)	1 (0)
1999	004	82 (12)	92 (10)	1 (0)
2000	006	153 (14)	108 (10)	1 (0)
2001	007	131 (13)	97 (10)	1 (0)
2002	008	143 (14)	97 (10)	2 (1)
2003	011	98 (13)	72 (9)	2 (1)
2004	012	87 (12)	146 (11)	2 (1)
2005	013	126 (13)	133 (11)	1 (0)
2006	014	159 (14)	108 (10)	1 (0)
2007	015	82 (12)	128 (11)	1 (0)
2008	016	164 (14)	103 (10)	2 (1)
2009	017	189 (14)	92 (10)	1 (0)
2010	018	145 (14)	133 (11)	2 (1)
2011	019	46 (11)	41 (7)	4 (3)
2012	021	55 (11)	56 (8)	1 (0)
2013	023	22 (9)	39 (7)	6 (4)
2014	024	44 (10)	44 (7)	6 (4)
2015	026	66 (12)	139 (11)	6 (4)
2016	027	41 (10)	41 (7)	1 (0)
2017	029	66 (12)	77 (9)	1 (0)
2018	030	46 (11)	67 (9)	1 (0)
2019	031	87 (12)	72 (9)	2 (1)
2020	032	44 (10)	46 (8)	8 (5)
2021	033	55 (11)	62 (8)	6 (4)
2022	035	55 (11)	64 (9)	6 (4)
2023	038	55 (11)	77 (9)	1 (0)
2024	040	93 (12)	121 (10)	1 (0)
2025	042	96 (13)	92 (10)	4 (3)
2026	043	23 (9)	37 (7)	2 (1)
2027	044	65 (12)	44 (7)	1 (0)
2028	046	160 (14)	250 (13)	6 (4)
2029	047	50 (11)	96 (10)	4 (3)
2030	048	70 (12)	83 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2031	K-049	150 (14)	78 (9)	1 (0)
2032	050	108 (13)	83 (9)	1 (0)
2033	051	185 (14)	57 (8)	2 (1)
2034	052	170 (14)	44 (7)	1 (0)
2035	056	60 (11)	100 (10)	1 (0)
2036	057	65 (12)	118 (10)	1 (0)
2037	069	110 (13)	83 (9)	1 (0)
2038	093	45 (11)	91 (10)	1 (0)
2039	094	110 (13)	83 (9)	2 (1)
2040	095	75 (12)	96 (10)	1 (0)
2041	097	35 (10)	74 (9)	2 (1)
2042	099	55 (11)	131 (11)	2 (1)
2043	100	50 (11)	91 (10)	1 (0)
2044	101	50 (11)	128 (11)	2 (1)
2045	102	95 (13)	113 (10)	1 (0)
2046	104	35 (10)	122 (10)	2 (1)
2047	105	55 (11)	139 (11)	2 (1)
2048	106	48 (11)	148 (11)	1 (0)
2049	107	48 (11)	139 (11)	1 (0)
2050	109	85 (12)	83 (9)	1 (0)
2051	111	60 (11)	113 (10)	1 (0)
2052	116	70 (12)	78 (9)	1 (0)
2053	120	65 (12)	96 (10)	2 (1)
2054	122	60 (11)	104 (10)	2 (1)
2055	123	65 (12)	91 (10)	2 (1)
2056	124	65 (12)	109 (10)	2 (1)
2057	125	65 (12)	100 (10)	1 (0)
2058	126	50 (11)	122 (10)	1 (0)
2059	128	55 (11)	104 (10)	1 (0)
2060	130	73 (12)	100 (10)	1 (0)
2061	139	42 (10)	53 (8)	2 (1)
2062	144	84 (12)	47 (8)	2 (1)
2063	146	126 (13)	116 (10)	1 (0)
2064	147	72 (12)	47 (8)	1 (0)
2065	152	84 (12)	63 (9)	1 (0)
2066	157	108 (13)	42 (7)	1 (0)
2067	158	72 (12)	84 (9)	1 (0)
2068	164	30 (9)	100 (10)	1 (0)
2069	165	54 (11)	105 (10)	1 (0)
2070	166	42 (10)	100 (10)	1 (0)
2071	168	126 (13)	84 (9)	2 (1)
2072	173	48 (11)	95 (10)	2 (1)
2073	174	96 (13)	100 (10)	1 (0)
2074	176	144 (14)	95 (10)	1 (0)
2075	177	90 (12)	105 (10)	1 (0)
2076	181	108 (13)	74 (9)	1 (0)
2077	182	114 (13)	89 (10)	1 (0)
2078	186	48 (11)	100 (10)	1 (0)
2079	188	36 (10)	100 (10)	1 (0)
2080	189	60 (11)	95 (10)	2 (1)
2081	190	42 (10)	121 (10)	2 (1)
2082	191	30 (9)	111 (10)	1 (0)
2083	193	78 (12)	84 (9)	1 (0)
2084	197	72 (12)	89 (10)	2 (1)
2085	198	90 (12)	105 (10)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2086	K-199	96 (13)	100 (10)	6 (4)
2087	201	162 (14)	111 (10)	6 (4)
2088	202	174 (14)	111 (10)	2 (1)
2089	203	198 (14)	111 (10)	6 (4)
2090	204	258 (15)	89 (10)	6 (4)
2091	205	210 (15)	100 (10)	6 (4)
2092	206	258 (15)	105 (10)	6 (4)
2093	207	204 (15)	105 (10)	4 (3)
2094	209	168 (14)	116 (10)	6 (4)
2095	210	174 (14)	116 (10)	6 (4)
2096	211	163 (14)	116 (10)	6 (4)
2097	214	74 (12)	110 (10)	1 (0)
2098	215	98 (13)	104 (10)	1 (0)
2099	216	70 (12)	119 (10)	1 (0)
2100	218	61 (11)	122 (10)	6 (4)
2101	220	67 (12)	116 (10)	6 (4)
2102	221	70 (12)	101 (10)	2 (1)
2103	222	74 (12)	101 (10)	6 (4)
2104	223	42 (10)	96 (10)	4 (3)
2105	225	51 (11)	130 (11)	4 (3)
2106	227	51 (11)	135 (11)	6 (4)
2107	228	65 (12)	135 (11)	6 (4)
2108	701	111 (13)	229 (12)	1 (0)
2109	703	64 (11)	218 (12)	1 (0)
2110	704	73 (12)	127 (11)	1 (0)
2111	705	49 (11)	110 (10)	1 (0)
2112	707	76 (12)	116 (10)	1 (0)
2113	709	62 (11)	128 (11)	1 (0)
2114	710	76 (12)	139 (11)	1 (0)
2115	711	66 (12)	212 (12)	1 (0)
2116	712	61 (11)	147 (11)	1 (0)
2117	717	73 (12)	80 (9)	1 (0)
2118	718	49 (11)	145 (11)	1 (0)
2119	720	59 (11)	142 (11)	1 (0)
2120	721	60 (11)	137 (11)	1 (0)
2121	722	55 (11)	83 (9)	1 (0)
2122	725	44 (10)	87 (9)	1 (0)
2123	726	61 (11)	122 (10)	1 (0)
2124	727	31 (10)	112 (10)	1 (0)
2125	728	42 (10)	90 (10)	1 (0)
2126	729	61 (11)	103 (10)	1 (0)
2127	730	62 (11)	89 (10)	1 (0)
2128	731	66 (12)	90 (10)	1 (0)
2129	732	63 (11)	89 (10)	1 (0)
2130	733	91 (12)	245 (12)	1 (0)
2131	734	74 (12)	283 (13)	1 (0)
2132	735	88 (12)	230 (12)	1 (0)
2133	736	82 (12)	190 (12)	1 (0)
2134	737	76 (12)	169 (11)	1 (0)
2135	738	51 (11)	142 (11)	1 (0)
2136	740	67 (12)	86 (9)	1 (0)
2137	741	82 (12)	78 (9)	1 (0)
2138	743	79 (12)	79 (9)	1 (0)
2139	745	71 (12)	139 (11)	1 (0)
2140	746	76 (12)	71 (9)	1 (0)
2141	K-748	79 (12)	109 (10)	1 (0)
2142	749	86 (12)	119 (10)	1 (0)
2143	752	80 (12)	84 (9)	1 (0)
2144	753	78 (12)	82 (9)	1 (0)
2145	754	69 (12)	79 (9)	1 (0)
2146	755	78 (12)	116 (10)	1 (0)
2147	756	76 (12)	231 (12)	1 (0)
2148	757	76 (12)	165 (11)	1 (0)
2149	758	114 (13)	128 (11)	1 (0)
2150	759	101 (13)	177 (12)	1 (0)
2151	760	170 (14)	110 (10)	1 (0)
2152	761	102 (13)	269 (13)	1 (0)
2153	762	108 (13)	170 (11)	1 (0)
2154	763	126 (13)	188 (12)	1 (0)
2155	764	229 (15)	189 (12)	1 (0)
2156	765	182 (14)	195 (12)	1 (0)
2157	L-002	46 (11)	61 (8)	6 (4)
2158	003	24 (9)	73 (9)	1 (0)
2159	004	32 (10)	56 (8)	1 (0)
2160	005	33 (10)	58 (8)	1 (0)
2161	008	52 (11)	96 (10)	1 (0)
2162	010	53 (11)	91 (10)	1 (0)
2163	014	82 (12)	192 (12)	4 (3)
2164	016	36 (10)	95 (10)	6 (4)
2165	018	70 (12)	152 (11)	6 (4)
2166	020	78 (12)	162 (11)	1 (0)
2167	022	70 (12)	70 (9)	1 (0)
2168	024	23 (9)	180 (12)	1 (0)
2169	025	8 (6)	130 (11)	4 (3)
2170	026	72 (12)	190 (12)	1 (0)
2171	027	45 (11)	367 (14)	6 (4)
2172	028	35 (10)	247 (12)	1 (0)
2173	030	59 (11)	40 (7)	6 (4)
2174	031	26 (9)	150 (11)	6 (4)
2175	032	57 (11)	35 (7)	6 (4)
2176	033	73 (12)	95 (10)	1 (0)
2177	035	47 (11)	84 (9)	6 (4)
2178	036	41 (10)	96 (10)	6 (4)
2179	037	9 (6)	46 (8)	1 (0)
2180	038	14 (7)	50 (8)	1 (0)
2181	040	10 (7)	40 (7)	1 (0)
2182	041	7 (6)	37 (7)	1 (0)
2183	044	6 (5)	22 (5)	6 (4)
2184	045	4 (4)	34 (7)	6 (4)
2185	048	5 (5)	29 (6)	1 (0)
2186	051	0 (20)	42 (7)	6 (4)
2187	054	18 (8)	41 (7)	1 (0)
2188	056	20 (8)	16 (5)	6 (4)
2189	058	3 (3)	42 (7)	10 (6)
2190	065	9 (6)	27 (6)	6 (4)
2191	066	36 (10)	26 (6)	1 (0)
2192	068	47 (11)	31 (6)	4 (3)
2193	069	33 (10)	31 (6)	6 (4)
2194	071	57 (11)	27 (6)	1 (0)
2195	072	11 (7)	47 (8)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2196	L-073	11 (7)	44 (7)	6 (4)
2197	074	7 (6)	39 (7)	6 (4)
2198	076	24 (9)	63 (9)	6 (4)
2199	077	24 (9)	54 (8)	6 (4)
2200	079	27 (9)	59 (8)	4 (3)
2201	080	19 (8)	43 (7)	6 (4)
2202	081	49 (11)	50 (8)	1 (0)
2203	085	12 (7)	43 (7)	4 (3)
2204	086	32 (10)	62 (8)	4 (3)
2205	089	43 (10)	69 (9)	6 (4)
2206	091	58 (11)	83 (9)	6 (4)
2207	092	28 (9)	35 (7)	4 (3)
2208	095	113 (13)	32 (7)	4 (3)
2209	096	32 (10)	28 (6)	6 (4)
2210	097	59 (11)	37 (7)	1 (0)
2211	098	47 (11)	54 (8)	6 (4)
2212	100	17 (8)	26 (6)	1 (0)
2213	101	18 (8)	19 (5)	6 (4)
2214	102	15 (8)	20 (5)	1 (0)
2215	104	28 (9)	160 (11)	6 (4)
2216	105	17 (8)	22 (5)	1 (0)
2217	106	22 (9)	24 (6)	4 (3)
2218	107	39 (10)	27 (6)	1 (0)
2219	111	10 (7)	62 (8)	1 (0)
2220	112	21 (9)	46 (8)	4 (3)
2221	113	33 (10)	53 (8)	1 (0)
2222	114	23 (9)	57 (8)	6 (4)
2223	115	35 (10)	45 (8)	4 (3)
2224	116	19 (8)	29 (6)	6 (4)
2225	117	21 (9)	50 (8)	1 (0)
2226	118	12 (7)	23 (6)	6 (4)
2227	119	16 (8)	23 (6)	1 (0)
2228	120	48 (11)	27 (6)	1 (0)
2229	121	38 (10)	30 (6)	6 (4)
2230	122	39 (10)	33 (7)	4 (3)
2231	123	13 (7)	27 (6)	4 (3)
2232	124	12 (7)	20 (5)	1 (0)
2233	126	24 (9)	37 (7)	6 (4)
2234	127	20 (8)	36 (7)	6 (4)
2235	128	59 (11)	47 (8)	1 (0)
2236	129	109 (13)	86 (9)	6 (4)
2237	130	94 (12)	102 (10)	6 (4)
2238	131	13 (7)	23 (6)	1 (0)
2239	132	10 (7)	25 (6)	1 (0)
2240	133	18 (8)	18 (5)	1 (0)
2241	134	12 (7)	24 (6)	1 (0)
2242	135	12 (7)	26 (6)	1 (0)
2243	136	6 (5)	13 (4)	6 (4)
2244	137	11 (7)	17 (5)	6 (4)
2245	138	73 (12)	38 (7)	6 (4)
2246	139	167 (14)	92 (10)	6 (4)
2247	140	33 (10)	40 (7)	1 (0)
2248	141	41 (10)	37 (7)	6 (4)
2249	142	51 (11)	55 (8)	1 (0)
2250	143	12 (7)	31 (6)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2251	L-144	28 (9)	54 (8)	1 (0)
2252	145	11 (7)	20 (5)	1 (0)
2253	146	21 (9)	55 (8)	6 (4)
2254	147	17 (8)	54 (8)	6 (4)
2255	148	112 (13)	63 (9)	1 (0)
2256	149	22 (9)	49 (8)	6 (4)
2257	151	94 (12)	39 (7)	6 (4)
2258	154	40 (10)	74 (9)	6 (4)
2259	155	37 (10)	56 (8)	1 (0)
2260	156	23 (9)	47 (8)	6 (4)
2261	157	27 (9)	49 (8)	10 (6)
2262	158	30 (9)	35 (7)	6 (4)
2263	159	48 (11)	74 (9)	6 (4)
2264	160	22 (9)	56 (8)	10 (6)
2265	161	41 (10)	59 (8)	1 (0)
2266	162	32 (10)	85 (9)	1 (0)
2267	164	40 (10)	87 (9)	1 (0)
2268	165	32 (10)	72 (9)	1 (0)
2269	167	32 (10)	60 (8)	1 (0)
2270	168	52 (11)	57 (8)	1 (0)
2271	169	48 (11)	60 (8)	6 (4)
2272	171	48 (11)	80 (9)	6 (4)
2273	172	19 (8)	48 (8)	1 (0)
2274	173	18 (8)	40 (7)	1 (0)
2275	175	62 (11)	86 (9)	6 (4)
2276	176	62 (11)	86 (9)	6 (4)
2277	177	52 (11)	90 (10)	1 (0)
2278	178	56 (11)	88 (9)	6 (4)
2279	184	35 (10)	29 (6)	1 (0)
2280	185	48 (11)	48 (8)	6 (4)
2281	186	35 (10)	64 (9)	1 (0)
2282	187	43 (10)	70 (9)	1 (0)
2283	188	83 (12)	191 (12)	1 (0)
2284	189	43 (10)	69 (9)	1 (0)
2285	190	30 (9)	72 (9)	1 (0)
2286	191	35 (10)	71 (9)	1 (0)
2287	193	60 (11)	88 (9)	1 (0)
2288	194	65 (12)	79 (9)	1 (0)
2289	195	62 (11)	78 (9)	1 (0)
2290	196	62 (11)	77 (9)	1 (0)
2291	197	39 (10)	65 (9)	1 (0)
2292	198	43 (10)	61 (8)	1 (0)
2293	199	37 (10)	66 (9)	1 (0)
2294	200	37 (10)	71 (9)	1 (0)
2295	201	52 (11)	80 (9)	1 (0)
2296	202	43 (10)	75 (9)	1 (0)
2297	203	39 (10)	73 (9)	1 (0)
2298	204	43 (10)	72 (9)	1 (0)
2299	205	58 (11)	80 (9)	1 (0)
2300	206	55 (11)	79 (9)	1 (0)
2301	207	53 (11)	71 (9)	1 (0)
2302	208	16 (8)	85 (9)	1 (0)
2303	209	56 (11)	79 (9)	1 (0)
2304	210	61 (11)	81 (9)	1 (0)
2305	211	22 (9)	76 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2306	L-212	17 (8)	85 (9)	1 (0)
2307	213	45 (11)	84 (9)	1 (0)
2308	214	65 (12)	83 (9)	1 (0)
2309	215	61 (11)	77 (9)	1 (0)
2310	216	42 (10)	82 (9)	1 (0)
2311	217	67 (12)	71 (9)	1 (0)
2312	218	47 (11)	79 (9)	1 (0)
2313	219	71 (12)	82 (9)	4 (3)
2314	220	54 (11)	81 (9)	1 (0)
2315	221	51 (11)	84 (9)	1 (0)
2316	222	31 (10)	91 (10)	1 (0)
2317	223	59 (11)	77 (9)	1 (0)
2318	224	48 (11)	67 (9)	1 (0)
2319	225	55 (11)	75 (9)	1 (0)
2320	226	52 (11)	73 (9)	1 (0)
2321	227	64 (11)	85 (9)	3 (2)
2322	228	48 (11)	85 (9)	10 (6)
2323	229	65 (12)	81 (9)	1 (0)
2324	230	67 (12)	86 (9)	1 (0)
2325	231	52 (11)	75 (9)	1 (0)
2326	232	22 (9)	33 (7)	1 (0)
2327	234	38 (10)	63 (9)	1 (0)
2328	236	42 (10)	121 (10)	1 (0)
2329	237	44 (10)	56 (8)	1 (0)
2330	238	63 (11)	60 (8)	1 (0)
2331	239	49 (11)	90 (10)	1 (0)
2332	240	57 (11)	568 (15)	1 (0)
2333	241	36 (10)	191 (12)	1 (0)
2334	242	58 (11)	457 (14)	1 (0)
2335	243	45 (11)	256 (13)	1 (0)
2336	M-001	20 (8)	45 (8)	1 (0)
2337	002	69 (12)	85 (9)	1 (0)
2338	003	50 (11)	70 (9)	1 (0)
2339	004	61 (11)	74 (9)	1 (0)
2340	005	65 (12)	72 (9)	1 (0)
2341	006	63 (11)	85 (9)	1 (0)
2342	007	14 (7)	31 (6)	0 (0)
2343	008	75 (12)	78 (9)	1 (0)
2344	009	73 (12)	72 (9)	4 (3)
2345	010	56 (11)	41 (7)	4 (3)
2346	011	71 (12)	72 (9)	4 (3)
2347	012	81 (12)	80 (9)	1 (0)
2348	013	79 (12)	82 (9)	4 (3)
2349	014	83 (12)	73 (9)	6 (4)
2350	015	70 (12)	65 (9)	1 (0)
2351	016	81 (12)	74 (9)	1 (0)
2352	017	94 (12)	74 (9)	6 (4)
2353	018	13 (7)	48 (8)	1 (0)
2354	019	18 (8)	28 (6)	1 (0)
2355	020	45 (11)	69 (9)	1 (0)
2356	021	24 (9)	61 (8)	1 (0)
2357	022	45 (11)	89 (10)	1 (0)
2358	023	22 (9)	66 (9)	1 (0)
2359	024	40 (10)	95 (10)	1 (0)
2360	025	43 (10)	79 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2361	M-026	37 (10)	66 (9)	1 (0)
2362	027	46 (11)	96 (10)	1 (0)
2363	030	48 (11)	79 (9)	1 (0)
2364	031	51 (11)	92 (10)	1 (0)
2365	032	23 (9)	65 (9)	1 (0)
2366	034	24 (9)	37 (7)	1 (0)
2367	035	51 (11)	61 (8)	1 (0)
2368	036	8 (6)	34 (7)	1 (0)
2369	037	20 (8)	35 (7)	1 (0)
2370	040	37 (10)	73 (9)	1 (0)
2371	041	68 (12)	126 (11)	1 (0)
2372	042	61 (11)	154 (11)	1 (0)
2373	045	39 (10)	72 (9)	1 (0)
2374	046	25 (9)	50 (8)	1 (0)
2375	047	18 (8)	35 (7)	1 (0)
2376	048	18 (8)	39 (7)	1 (0)
2377	049	20 (8)	41 (7)	1 (0)
2378	050	16 (8)	50 (8)	1 (0)
2379	051	15 (8)	52 (8)	1 (0)
2380	052	18 (8)	63 (9)	1 (0)
2381	053	18 (8)	57 (8)	1 (0)
2382	054	20 (8)	58 (8)	1 (0)
2383	055	34 (10)	68 (9)	1 (0)
2384	056	26 (9)	40 (7)	1 (0)
2385	057	40 (10)	60 (8)	1 (0)
2386	058	33 (10)	55 (8)	1 (0)
2387	059	49 (11)	90 (10)	1 (0)
2388	060	50 (11)	66 (9)	1 (0)
2389	051	20 (8)	73 (9)	1 (0)
2390	062	9 (6)	65 (9)	1 (0)
2391	063	10 (7)	64 (9)	4 (3)
2392	064	17 (8)	82 (9)	1 (0)
2393	065	10 (7)	72 (9)	1 (0)
2394	066	6 (5)	50 (8)	1 (0)
2395	067	38 (10)	38 (7)	1 (0)
2396	068	45 (11)	39 (7)	1 (0)
2397	069	6 (5)	12 (4)	1 (0)
2398	070	2 (2)	20 (5)	1 (0)
2399	071	5 (5)	13 (4)	1 (0)
2400	072	4 (4)	12 (4)	1 (0)
2401	073	7 (6)	20 (5)	1 (0)
2402	076	11 (7)	24 (6)	1 (0)
2403	077	30 (9)	95 (10)	1 (0)
2404	078	11 (7)	36 (7)	1 (0)
2405	079	53 (11)	122 (10)	1 (0)
2406	080	31 (10)	51 (8)	1 (0)
2407	081	31 (10)	80 (9)	0 (0)
2408	082	37 (10)	84 (9)	0 (0)
2409	083	28 (9)	65 (9)	1 (0)
2410	084	48 (11)	78 (9)	1 (0)
2411	085	20 (8)	60 (8)	0 (0)
2412	086	32 (10)	75 (9)	0 (0)
2413	087	85 (12)	89 (10)	1 (0)
2414	088	102 (13)	104 (10)	1 (0)
2415	089	157 (14)	90 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2416	M-090	192 (14)	130 (11)	1 (0)
2417	091	214 (15)	104 (10)	1 (0)
2418	092	214 (15)	124 (10)	1 (0)
2419	093	168 (14)	155 (11)	1 (0)
2420	094	150 (14)	220 (12)	1 (0)
2421	095	143 (14)	188 (12)	1 (0)
2422	096	104 (13)	170 (11)	1 (0)
2423	097	172 (14)	159 (11)	0 (0)
2424	098	110 (13)	110 (10)	1 (0)
2425	099	149 (14)	193 (12)	1 (0)
2426	100	154 (14)	125 (11)	1 (0)
2427	101	174 (14)	163 (11)	1 (0)
2428	102	157 (14)	119 (10)	1 (0)
2429	103	153 (14)	157 (11)	1 (0)
2430	104	198 (14)	110 (10)	1 (0)
2431	105	122 (13)	213 (12)	1 (0)
2432	106	140 (14)	155 (11)	1 (0)
2433	107	112 (13)	190 (12)	1 (0)
2434	108	226 (15)	135 (11)	1 (0)
2435	109	194 (14)	108 (10)	1 (0)
2436	110	168 (14)	156 (11)	1 (0)
2437	111	136 (13)	232 (12)	1 (0)
2438	112	145 (14)	123 (10)	1 (0)
2439	113	145 (14)	162 (11)	1 (0)
2440	114	129 (13)	154 (11)	1 (0)
2441	115	174 (14)	168 (11)	1 (0)
2442	116	142 (14)	138 (11)	1 (0)
2443	117	134 (13)	120 (10)	1 (0)
2444	119	165 (14)	121 (10)	1 (0)
2445	120	161 (14)	114 (10)	1 (0)
2446	121	142 (14)	89 (10)	1 (0)
2447	122	135 (13)	97 (10)	1 (0)
2448	123	121 (13)	100 (10)	1 (0)
2449	124	95 (13)	244 (12)	1 (0)
2450	125	62 (11)	90 (10)	1 (0)
2451	126	99 (13)	171 (11)	0 (0)
2452	127	91 (12)	166 (11)	1 (0)
2453	134	134 (13)	89 (10)	1 (0)
2454	136	68 (12)	254 (13)	1 (0)
2455	137	34 (10)	162 (11)	6 (4)
2456	138	42 (10)	149 (11)	1 (0)
2457	139	42 (10)	102 (10)	1 (0)
2458	140	42 (10)	134 (11)	1 (0)
2459	142	57 (11)	143 (11)	1 (0)
2460	143	54 (11)	192 (12)	1 (0)
2461	145	64 (11)	150 (11)	1 (0)
2462	146	70 (12)	160 (11)	1 (0)
2463	148	42 (10)	162 (11)	1 (0)
2464	149	64 (11)	200 (12)	1 (0)
2465	150	68 (12)	185 (12)	1 (0)
2466	151	66 (12)	145 (11)	1 (0)
2467	152	64 (11)	171 (11)	1 (0)
2468	153	62 (11)	200 (12)	1 (0)
2469	154	63 (11)	240 (12)	1 (0)
2470	155	70 (12)	177 (12)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2471	M-156	75 (12)	116 (10)	1 (0)
2472	157	83 (12)	148 (11)	1 (0)
2473	158	62 (11)	195 (12)	1 (0)
2474	159	62 (11)	123 (10)	1 (0)
2475	161	59 (11)	113 (10)	6 (4)
2476	162	33 (10)	43 (7)	1 (0)
2477	163	34 (10)	48 (8)	1 (0)
2478	165	44 (10)	94 (10)	1 (0)
2479	166	51 (11)	108 (10)	1 (0)
2480	169	70 (12)	51 (8)	6 (4)
2481	174	83 (12)	84 (9)	1 (0)
2482	179	64 (11)	79 (9)	6 (4)
2483	185	105 (13)	76 (9)	1 (0)
2484	186	66 (12)	73 (9)	1 (0)
2485	190	58 (11)	124 (10)	1 (0)
2486	191	48 (11)	56 (8)	6 (4)
2487	193	64 (11)	76 (9)	1 (0)
2488	194	40 (10)	122 (10)	1 (0)
2489	204	104 (13)	108 (10)	1 (0)
2490	207	77 (12)	78 (9)	6 (4)
2491	213	55 (11)	79 (9)	1 (0)
2492	216	66 (12)	69 (9)	1 (0)
2493	219	90 (12)	60 (8)	1 (0)
2494	221	53 (11)	63 (9)	1 (0)
2495	224	102 (13)	93 (10)	6 (4)
2496	225	60 (11)	73 (9)	1 (0)
2497	227	66 (12)	67 (9)	6 (4)
2498	231	95 (13)	85 (9)	6 (4)
2499	232	88 (12)	77 (9)	1 (0)
2500	233	64 (11)	67 (9)	6 (4)
2501	238	73 (12)	80 (9)	1 (0)
2502	239	80 (12)	77 (9)	6 (4)
2503	241	55 (11)	69 (9)	1 (0)
2504	251	62 (11)	81 (9)	6 (4)
2505	252	50 (11)	48 (8)	1 (0)
2506	253	39 (10)	40 (7)	10 (6)
2507	254	28 (9)	26 (6)	6 (4)
2508	255	25 (9)	20 (5)	1 (0)
2509	256	78 (12)	75 (9)	6 (4)
2510	257	82 (12)	80 (9)	1 (0)
2511	258	84 (12)	77 (9)	4 (3)
2512	260	138 (13)	69 (9)	1 (0)
2513	261	1392 (20)	48 (8)	6 (4)
2514	263	41 (10)	61 (8)	1 (0)
2515	265	41 (10)	67 (9)	6 (4)
2516	266	48 (11)	57 (8)	1 (0)
2517	267	40 (10)	73 (9)	6 (4)
2518	268	63 (11)	65 (9)	1 (0)
2519	269	97 (13)	51 (8)	6 (4)
2520	271	33 (10)	38 (7)	1 (0)
2521	272	35 (10)	57 (8)	4 (3)
2522	273	39 (10)	60 (8)	1 (0)
2523	274	34 (10)	57 (8)	6 (4)
2524	276	49 (11)	65 (9)	1 (0)
2525	279	91 (12)	54 (8)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2526	M-280	85 (12)	68 (9)	3 (2)
2527	281	46 (11)	60 (8)	1 (0)
2528	283	77 (12)	65 (9)	6 (4)
2529	284	61 (11)	80 (9)	6 (4)
2530	285	92 (12)	73 (9)	6 (4)
2531	286	52 (11)	62 (8)	6 (4)
2532	289	62 (11)	76 (9)	6 (4)
2533	290	38 (10)	70 (9)	6 (4)
2534	291	49 (11)	98 (10)	1 (0)
2535	292	35 (10)	66 (9)	6 (4)
2536	293	22 (9)	52 (8)	6 (4)
2537	294	26 (9)	55 (8)	6 (4)
2538	295	50 (11)	70 (9)	6 (4)
2539	296	52 (11)	70 (9)	6 (4)
2540	297	36 (10)	52 (8)	6 (4)
2541	298	28 (9)	75 (9)	1 (0)
2542	304	102 (13)	59 (8)	6 (4)
2543	305	91 (12)	59 (8)	6 (4)
2544	306	68 (12)	79 (9)	6 (4)
2545	307	40 (10)	60 (8)	1 (0)
2546	308	109 (13)	65 (9)	6 (4)
2547	309	116 (13)	111 (10)	1 (0)
2548	310	40 (10)	65 (9)	1 (0)
2549	311	117 (13)	82 (9)	6 (4)
2550	312	44 (10)	53 (8)	6 (4)
2551	313	79 (12)	66 (9)	6 (4)
2552	314	111 (13)	59 (8)	6 (4)
2553	315	59 (11)	62 (8)	6 (4)
2554	317	79 (12)	40 (7)	6 (4)
2555	318	28 (9)	70 (9)	6 (4)
2556	319	37 (10)	48 (8)	6 (4)
2557	320	59 (11)	67 (9)	6 (4)
2558	321	44 (10)	67 (9)	6 (4)
2559	322	77 (12)	72 (9)	1 (0)
2560	323	45 (11)	72 (9)	6 (4)
2561	324	51 (11)	67 (9)	6 (4)
2562	325	77 (12)	69 (9)	1 (0)
2563	326	52 (11)	70 (9)	1 (0)
2564	327	74 (12)	51 (8)	1 (0)
2565	328	51 (11)	69 (9)	1 (0)
2566	329	49 (11)	74 (9)	1 (0)
2567	330	34 (10)	29 (6)	6 (4)
2568	331	82 (12)	80 (9)	4 (3)
2569	332	48 (11)	79 (9)	4 (3)
2570	334	30 (9)	30 (6)	4 (3)
2571	335	36 (10)	102 (10)	4 (3)
2572	336	71 (12)	110 (10)	6 (4)
2573	337	26 (9)	102 (10)	1 (0)
2574	339	91 (12)	173 (11)	4 (3)
2575	340	53 (11)	59 (8)	4 (3)
2576	341	34 (10)	81 (9)	4 (3)
2577	342	42 (10)	89 (10)	4 (3)
2578	343	36 (10)	96 (10)	6 (4)
2579	344	39 (10)	71 (9)	6 (4)
2580	345	35 (10)	95 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2581	M-346	43 (10)	72 (9)	1 (0)
2582	347	38 (10)	89 (10)	1 (0)
2583	348	39 (10)	89 (10)	3 (2)
2584	349	25 (9)	34 (7)	1 (0)
2585	350	48 (11)	46 (8)	1 (0)
2586	351	47 (11)	47 (8)	1 (0)
2587	352	28 (9)	47 (8)	1 (0)
2588	353	22 (9)	32 (7)	1 (0)
2589	354	46 (11)	50 (8)	5 (3)
2590	355	27 (9)	35 (7)	1 (0)
2591	356	45 (11)	49 (8)	1 (0)
2592	357	14 (7)	21 (5)	3 (2)
2593	358	43 (10)	70 (9)	3 (2)
2594	359	73 (12)	59 (8)	3 (2)
2595	362	45 (11)	56 (8)	3 (2)
2596	363	50 (11)	73 (9)	1 (0)
2597	364	72 (12)	57 (8)	1 (0)
2598	368	53 (11)	98 (10)	1 (0)
2599	369	54 (11)	86 (9)	1 (0)
2600	370	52 (11)	30 (6)	1 (0)
2601	371	23 (9)	58 (8)	1 (0)
2602	374	83 (12)	117 (10)	1 (0)
2603	375	65 (12)	91 (10)	1 (0)
2604	376	284 (15)	109 (10)	1 (0)
2605	377	134 (13)	86 (9)	4 (3)
2606	378	60 (11)	62 (8)	3 (2)
2607	379	776 (18)	38 (7)	3 (2)
2608	380	66 (12)	50 (8)	3 (2)
2609	381	157 (14)	92 (10)	5 (3)
2610	383	90 (12)	153 (11)	5 (3)
2611	384	49 (11)	67 (9)	3 (2)
2612	385	180 (14)	288 (13)	8 (5)
2613	386	66 (12)	195 (12)	8 (5)
2614	387	58 (11)	185 (12)	3 (2)
2615	388	89 (12)	158 (11)	3 (2)
2616	389	28 (9)	77 (9)	3 (2)
2617	390	114 (13)	79 (9)	3 (2)
2618	391	88 (12)	74 (9)	3 (2)
2619	392	27 (9)	83 (9)	3 (2)
2620	393	27 (9)	69 (9)	3 (2)
2621	701	42 (10)	280 (13)	1 (0)
2622	702	36 (10)	200 (12)	3 (2)
2623	703	39 (10)	195 (12)	3 (2)
2624	704	47 (11)	109 (10)	1 (0)
2625	705	38 (10)	69 (9)	1 (0)
2626	706	49 (11)	104 (10)	1 (0)
2627	707	49 (11)	173 (11)	1 (0)
2628	708	22 (9)	110 (10)	1 (0)
2629	709	20 (8)	104 (10)	1 (0)
2630	710	21 (9)	280 (13)	1 (0)
2631	711	31 (10)	61 (8)	1 (0)
2632	712	32 (10)	112 (10)	1 (0)
2633	713	34 (10)	105 (10)	1 (0)
2634	714	33 (10)	81 (9)	1 (0)
2635	715	29 (9)	93 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2636	M-716	32 (10)	97 (10)	1 (0)
2637	717	38 (10)	56 (8)	1 (0)
2638	718	40 (10)	94 (10)	1 (0)
2639	719	67 (12)	105 (10)	1 (0)
2640	720	69 (12)	179 (12)	3 (2)
2641	721	31 (10)	38 (7)	1 (0)
2642	722	60 (11)	213 (12)	1 (0)
2643	723	65 (12)	219 (12)	1 (0)
2644	724	67 (12)	109 (10)	1 (0)
2645	725	32 (10)	96 (10)	1 (0)
2646	726	53 (11)	101 (10)	1 (0)
2647	727	42 (10)	49 (8)	1 (0)
2648	728	52 (11)	99 (10)	1 (0)
2649	729	44 (10)	97 (10)	1 (0)
2650	730	27 (9)	35 (7)	1 (0)
2651	731	63 (11)	216 (12)	1 (0)
2652	732	37 (10)	82 (9)	1 (0)
2653	733	34 (10)	53 (8)	1 (0)
2654	734	36 (10)	36 (7)	1 (0)
2655	735	52 (11)	52 (8)	1 (0)
2656	736	45 (11)	99 (10)	1 (0)
2657	737	56 (11)	73 (9)	1 (0)
2658	738	37 (10)	58 (8)	1 (0)
2659	739	33 (10)	65 (9)	1 (0)
2660	740	5 (5)	59 (8)	1 (0)
2661	741	48 (11)	77 (9)	1 (0)
2662	742	36 (10)	110 (10)	1 (0)
2663	743	62 (11)	72 (9)	1 (0)
2664	744	41 (10)	89 (10)	1 (0)
2665	745	68 (12)	103 (10)	1 (0)
2666	746	49 (11)	104 (10)	1 (0)
2667	747	51 (11)	269 (13)	1 (0)
2668	748	39 (10)	248 (12)	1 (0)
2669	749	50 (11)	288 (13)	1 (0)
2670	750	43 (10)	218 (12)	1 (0)
2671	751	41 (10)	195 (12)	1 (0)
2672	752	73 (12)	88 (9)	1 (0)
2673	753	48 (11)	78 (9)	1 (0)
2674	754	56 (11)	60 (8)	1 (0)
2675	755	62 (11)	95 (10)	1 (0)
2676	756	55 (11)	99 (10)	1 (0)
2677	757	48 (11)	76 (9)	1 (0)
2678	758	54 (11)	58 (8)	1 (0)
2679	759	50 (11)	73 (9)	1 (0)
2680	760	59 (11)	(10)	1 (0)
2681	761	59 (11)	66 (9)	1 (0)
2682	762	57 (11)	79 (9)	1 (0)
2683	763	55 (11)	79 (9)	1 (0)
2684	764	50 (11)	70 (9)	1 (0)
2685	765	60 (11)	66 (9)	1 (0)
2686	766	56 (11)	92 (10)	1 (0)
2687	777	39 (10)	57 (8)	1 (0)
2688	778	55 (11)	77 (9)	1 (0)
2689	779	40 (10)	66 (9)	1 (0)
2690	770	70 (12)	71 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2691	M-771	31 (10)	45 (8)	1 (0)
2692	772	28 (9)	49 (8)	1 (0)
2693	773	25 (9)	33 (7)	1 (0)
2694	774	57 (11)	75 (9)	1 (0)
2695	775	54 (11)	85 (9)	1 (0)
2696	776	52 (11)	72 (9)	1 (0)
2697	777	53 (11)	73 (9)	1 (0)
2698	778	57 (11)	82 (9)	1 (0)
2699	779	59 (11)	75 (9)	1 (0)
2700	780	64 (11)	141 (11)	1 (0)
2701	N-001	9 (6)	38 (7)	10 (6)
2702	002	22 (9)	55 (8)	6 (4)
2703	003	9 (6)	31 (6)	6 (4)
2704	004	14 (7)	70 (9)	4 (3)
2705	005	2 (2)	23 (6)	4 (3)
2706	006	2 (2)	23 (6)	4 (3)
2707	007	1 (1)	27 (6)	10 (6)
2708	008	6 (5)	28 (6)	4 (3)
2709	009	2 (2)	27 (6)	4 (3)
2710	010	0 (20)	47 (8)	6 (4)
2711	011	1 (1)	43 (7)	10 (6)
2712	013	19 (8)	66 (9)	1 (0)
2713	014	5 (5)	38 (7)	1 (0)
2714	016	28 (9)	66 (9)	1 (0)
2715	017	15 (8)	52 (8)	1 (0)
2716	019	27 (9)	76 (9)	1 (0)
2717	021	15 (8)	61 (8)	1 (0)
2718	022	3 (3)	37 (7)	1 (0)
2719	023	3 (3)	14 (4)	6 (4)
2720	024	6 (5)	20 (5)	6 (4)
2721	025	5 (5)	21 (5)	4 (3)
2722	026	4 (4)	17 (5)	4 (3)
2723	027	15 (8)	21 (5)	6 (4)
2724	028	5 (5)	22 (5)	4 (3)
2725	029	4 (4)	27 (6)	1 (0)
2726	030	3 (3)	15 (4)	1 (0)
2727	031	2 (2)	15 (4)	1 (0)
2728	032	9 (6)	9 (3)	6 (4)
2729	033	4 (4)	14 (4)	6 (4)
2730	034	4 (4)	22 (5)	6 (4)
2731	035	1 (1)	16 (5)	1 (0)
2732	036	13 (7)	38 (7)	6 (4)
2733	037	2 (2)	17 (5)	4 (3)
2734	038	3 (3)	17 (5)	4 (3)
2735	039	15 (8)	38 (7)	6 (4)
2736	040	5 (5)	18 (5)	6 (4)
2737	041	9 (6)	22 (5)	1 (0)
2738	042	16 (8)	45 (8)	1 (0)
2739	043	12 (7)	40 (7)	1 (0)
2740	044	5 (5)	24 (6)	1 (0)
2741	045	0 (20)	12 (4)	1 (0)
2742	046	9 (6)	18 (5)	6 (4)
2743	047	24 (9)	64 (9)	6 (4)
2744	048	48 (11)	83 (9)	1 (0)
2745	049	4 (4)	27 (6)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2746	N-050	3 (3)	17 (5)	6 (4)
2747	051	12 (7)	28 (6)	1 (0)
2748	052	71 (12)	100 (10)	1 (0)
2749	053	33 (10)	116 (10)	6 (4)
2750	054	43 (10)	95 (10)	1 (0)
2751	055	43 (10)	122 (10)	1 (0)
2752	056	43 (10)	99 (10)	1 (0)
2753	058	25 (9)	105 (10)	1 (0)
2754	059	28 (9)	19 (5)	1 (0)
2755	060	29 (9)	19 (5)	1 (0)
2756	061	22 (9)	18 (5)	6 (4)
2757	062	47 (11)	21 (5)	1 (0)
2758	063	17 (8)	18 (5)	1 (0)
2759	064	35 (10)	21 (5)	6 (4)
2760	065	54 (11)	31 (6)	6 (4)
2761	066	17 (8)	26 (6)	6 (4)
2762	067	34 (10)	20 (5)	6 (4)
2763	068	56 (11)	29 (6)	6 (4)
2764	069	56 (11)	33 (7)	6 (4)
2765	070	6 (5)	17 (5)	1 (0)
2766	071	24 (9)	21 (5)	1 (0)
2767	072	7 (6)	14 (4)	1 (0)
2768	073	10 (7)	27 (6)	1 (0)
2769	074	147 (14)	33 (7)	1 (0)
2770	075	34 (10)	19 (5)	1 (0)
2771	076	9 (6)	15 (4)	1 (0)
2772	078	38 (10)	24 (6)	1 (0)
2773	079	72 (12)	25 (6)	1 (0)
2774	080	21 (9)	23 (6)	1 (0)
2775	081	43 (10)	44 (7)	6 (4)
2776	082	26 (9)	25 (6)	1 (0)
2777	083	24 (9)	23 (6)	1 (0)
2778	084	17 (8)	21 (5)	1 (0)
2779	085	19 (8)	30 (6)	4 (3)
2780	086	17 (8)	20 (5)	2 (1)
2781	088	35 (10)	37 (7)	6 (4)
2782	089	13 (7)	26 (6)	6 (4)
2783	090	3 (3)	17 (5)	6 (4)
2784	091	18 (8)	23 (6)	1 (0)
2785	092	9 (6)	21 (5)	1 (0)
2786	093	14 (7)	24 (6)	1 (0)
2787	094	15 (8)	24 (6)	1 (0)
2788	096	30 (9)	297 (13)	1 (0)
2789	097	45 (11)	109 (10)	1 (0)
2790	098	26 (9)	254 (13)	1 (0)
2791	099	21 (9)	123 (10)	1 (0)
2792	100	37 (10)	32 (7)	1 (0)
2793	101	28 (9)	25 (6)	1 (0)
2794	102	13 (7)	21 (5)	1 (0)
2795	103	28 (9)	24 (6)	1 (0)
2796	104	29 (9)	22 (5)	1 (0)
2797	105	37 (10)	23 (6)	1 (0)
2798	106	27 (9)	43 (7)	1 (0)
2799	107	27 (9)	22 (5)	1 (0)
2800	108	46 (11)	28 (6)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2801	N-109	43 (10)	37 (7)	1 (0)
2802	110	37 (10)	39 (7)	1 (0)
2803	111	22 (9)	22 (5)	1 (0)
2804	113	20 (8)	31 (6)	1 (0)
2805	114	42 (10)	42 (7)	1 (0)
2806	115	51 (11)	36 (7)	1 (0)
2807	116	28 (9)	33 (7)	6 (4)
2808	117	56 (11)	55 (8)	1 (0)
2809	118	42 (10)	46 (8)	1 (0)
2810	119	57 (11)	51 (8)	1 (0)
2811	120	33 (10)	39 (7)	1 (0)
2811	120	33 (10)	39 (7)	1 (0)
2812	121	50 (11)	49 (8)	1 (0)
2813	122	59 (11)	67 (9)	1 (0)
2814	123	69 (12)	69 (9)	1 (0)
2815	124	71 (12)	75 (9)	1 (0)
2816	125	41 (10)	49 (8)	1 (0)
2817	126	50 (11)	50 (8)	1 (0)
2818	127	44 (10)	65 (9)	1 (0)
2819	128	47 (11)	51 (8)	1 (0)
2820	129	39 (10)	33 (7)	1 (0)
2821	130	23 (9)	38 (7)	1 (0)
2822	131	48 (11)	53 (8)	1 (0)
2823	132	35 (10)	245 (12)	1 (0)
2824	133	47 (11)	272 (13)	1 (0)
2825	134	43 (10)	520 (15)	1 (0)
2826	135	19 (8)	63 (9)	1 (0)
2827	136	4 (4)	50 (8)	1 (0)
2828	137	32 (10)	66 (9)	1 (0)
2829	138	12 (7)	58 (8)	1 (0)
2830	139	22 (9)	65 (9)	1 (0)
2831	140	36 (10)	28 (6)	1 (0)
2832	141	29 (9)	24 (6)	1 (0)
2833	142	36 (10)	33 (7)	1 (0)
2834	143	23 (9)	28 (6)	1 (0)
2835	144	27 (9)	29 (6)	1 (0)
2836	145	32 (10)	32 (7)	1 (0)
2837	146	35 (10)	35 (7)	1 (0)
2838	147	35 (10)	37 (7)	1 (0)
2839	148	39 (10)	38 (7)	1 (0)
2840	149	20 (8)	24 (6)	1 (0)
2841	150	27 (9)	28 (6)	1 (0)
2842	151	33 (10)	34 (7)	1 (0)
2843	152	29 (9)	25 (6)	1 (0)
2844	153	29 (9)	23 (6)	1 (0)
2845	154	35 (10)	20 (5)	6 (4)
2846	155	21 (9)	23 (6)	1 (0)
2847	156	26 (9)	26 (6)	1 (0)
2848	157	36 (10)	31 (6)	1 (0)
2849	158	76 (12)	78 (9)	1 (0)
2850	159	40 (10)	82 (9)	1 (0)
2851	160	23 (9)	27 (6)	1 (0)
2852	161	33 (10)	39 (7)	1 (0)
2853	162	45 (11)	35 (7)	1 (0)
2854	164	50 (11)	96 (10)	1 (0)
2855	166	56 (11)	81 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2856	N-170	62 (11)	72 (9)	1 (0)
2857	171	64 (11)	66 (9)	1 (0)
2858	172	41 (10)	112 (10)	1 (0)
2859	173	46 (11)	55 (8)	1 (0)
2860	174	45 (11)	44 (7)	1 (0)
2861	175	33 (10)	43 (7)	1 (0)
2862	176	65 (12)	63 (9)	1 (0)
2863	177	49 (11)	49 (8)	1 (0)
2864	178	90 (12)	68 (9)	1 (0)
2865	179	36 (10)	72 (9)	1 (0)
2966	180	58 (11)	70 (9)	1 (0)
2867	181	94 (12)	69 (9)	1 (0)
2868	182	47 (11)	105 (10)	1 (0)
2869	183	54 (11)	69 (9)	1 (0)
2870	184	53 (11)	79 (9)	1 (0)
2871	185	76 (12)	236 (12)	1 (0)
2872	186	48 (11)	69 (9)	1 (0)
2873	188	50 (11)	66 (9)	1 (0)
2874	189	28 (9)	53 (8)	1 (0)
2875	190	32 (10)	28 (6)	1 (0)
2876	191	21 (9)	35 (7)	1 (0)
2877	192	17 (8)	31 (6)	1 (0)
2878	194	41 (10)	62 (8)	1 (0)
2879	197	37 (10)	50 (8)	6 (4)
2880	198	15 (8)	56 (8)	6 (4)
2881	200	32 (10)	40 (7)	1 (0)
2882	201	43 (10)	94 (10)	6 (4)
2883	202	58 (11)	39 (7)	6 (4)
2884	203	40 (10)	26 (6)	6 (4)
2885	205	44 (10)	45 (8)	1 (0)
2886	206	40 (10)	39 (7)	1 (0)
2887	209	26 (9)	36 (7)	1 (0)
2888	210	30 (9)	46 (8)	1 (0)
2889	211	43 (10)	38 (7)	1 (0)
2890	212	49 (11)	71 (9)	1 (0)
2891	213	96 (13)	228 (12)	1 (0)
2892	214	24 (9)	36 (7)	1 (0)
2893	215	98 (13)	242 (12)	1 (0)
2894	216	121 (13)	297 (13)	1 (0)
2895	217	21 (9)	33 (7)	1 (0)
2896	219	7 (6)	23 (6)	1 (0)
2897	220	2 (2)	16 (5)	1 (0)
2898	221	13 (7)	30 (6)	1 (0)
2899	222	7 (6)	24 (6)	1 (0)
2900	223	5 (5)	25 (6)	1 (0)
2901	225	20 (8)	38 (7)	1 (0)
2902	226	3 (3)	20 (5)	1 (0)
2903	228	4 (4)	21 (5)	1 (0)
2904	229	44 (10)	77 (9)	1 (0)
2905	230	10 (7)	25 (6)	1 (0)
2906	231	13 (7)	30 (6)	1 (0)
2907	232	18 (8)	33 (7)	1 (0)
2908	233	18 (8)	32 (7)	1 (0)
2909	234	13 (7)	29 (7)	1 (0)
2910	236	10 (7)	31 (6)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2911	N-237	19 (8)	32 (7)	0 (0)
2912	238	10 (7)	37 (7)	1 (0)
2913	239	39 (10)	79 (9)	1 (0)
2914	240	26 (9)	74 (9)	1 (0)
2915	241	20 (8)	56 (8)	1 (0)
2916	242	36 (10)	84 (9)	1 (0)
2917	243	36 (10)	81 (9)	1 (0)
2918	244	18 (8)	39 (7)	1 (0)
2919	245	7 (6)	24 (6)	1 (0)
2920	246	12 (7)	39 (7)	1 (0)
2921	247	15 (8)	53 (8)	1 (0)
2922	248	30 (9)	66 (9)	1 (0)
2923	249	39 (10)	64 (9)	1 (0)
2924	250	41 (10)	78 (9)	1 (0)
2925	251	43 (10)	74 (9)	1 (0)
2926	252	27 (9)	57 (8)	1 (0)
2927	253	37 (10)	56 (8)	1 (0)
2928	254	22 (9)	56 (8)	1 (0)
2929	255	28 (9)	54 (8)	6 (4)
2930	256	54 (11)	336 (13)	6 (4)
2931	258	52 (11)	72 (9)	6 (4)
2932	259	53 (11)	59 (8)	6 (4)
2933	260	63 (11)	100 (10)	1 (0)
2934	264	13 (7)	65 (9)	6 (4)
2935	267	34 (10)	60 (8)	1 (0)
2936	268	28 (9)	68 (9)	1 (0)
2937	269	42 (10)	70 (9)	1 (0)
2938	270	36 (10)	76 (9)	1 (0)
2939	271	40 (10)	70 (9)	1 (0)
2940	272	38 (10)	76 (9)	1 (0)
2941	273	40 (10)	71 (9)	1 (0)
2942	275	43 (10)	75 (9)	1 (0)
2943	276	36 (10)	79 (9)	1 (0)
2944	277	42 (10)	68 (9)	1 (0)
2945	278	76 (12)	73 (9)	1 (0)
2946	279	41 (10)	69 (9)	1 (0)
2947	280	42 (10)	69 (9)	1 (0)
2948	281	100 (13)	84 (9)	1 (0)
2949	282	42 (10)	69 (9)	1 (0)
2950	283	39 (10)	74 (9)	1 (0)
2951	284	40 (10)	77 (9)	1 (0)
2952	285	38 (10)	105 (10)	1 (0)
2953	286	26 (9)	97 (10)	1 (0)
2954	287	40 (10)	89 (10)	1 (0)
2955	288	24 (9)	61 (8)	7 (4)
2956	289	21 (9)	56 (8)	1 (0)
2957	290	25 (9)	74 (9)	1 (0)
2958	291	27 (9)	70 (9)	1 (0)
2959	292	29 (9)	74 (9)	1 (0)
2960	293	38 (10)	72 (9)	1 (0)
2961	295	45 (11)	77 (9)	1 (0)
2962	297	36 (10)	73 (9)	1 (0)
2963	298	31 (10)	80 (9)	1 (0)
2964	299	3 (3)	23 (6)	1 (0)
2965	300	41 (10)	64 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
2966	N-301	49 (11)	74 (9)	1 (0)
2967	302	38 (10)	79 (9)	1 (0)
2968	303	46 (11)	89 (10)	1 (0)
2969	304	45 (11)	70 (9)	1 (0)
2970	305	63 (11)	78 (9)	1 (0)
2971	307	51 (11)	58 (8)	1 (0)
2972	308	31 (10)	58 (8)	1 (0)
2973	309	31 (10)	78 (9)	1 (0)
2974	310	37 (10)	63 (9)	1 (0)
2975	311	34 (10)	74 (9)	1 (0)
2976	312	24 (9)	79 (9)	1 (0)
2977	315	38 (10)	67 (9)	1 (0)
2978	316	47 (11)	74 (9)	1 (0)
2979	317	37 (10)	72 (9)	1 (0)
2980	318	32 (10)	69 (9)	1 (0)
2981	320	32 (10)	73 (9)	1 (0)
2982	321	27 (9)	68 (9)	1 (0)
2983	322	31 (10)	55 (8)	4 (3)
2984	323	24 (9)	41 (7)	1 (0)
2985	324	32 (10)	51 (8)	1 (0)
2986	325	34 (10)	51 (8)	1 (0)
2987	326	31 (10)	36 (7)	1 (0)
2988	327	57 (11)	57 (8)	1 (0)
2989	328	40 (10)	58 (8)	1 (0)
2990	329	31 (10)	62 (8)	1 (0)
2991	330	36 (10)	50 (8)	1 (0)
2992	331	26 (9)	57 (8)	1 (0)
2993	332	51 (11)	60 (8)	1 (0)
2994	333	49 (11)	72 (9)	1 (0)
2995	334	26 (9)	65 (9)	1 (0)
2996	335	44 (10)	57 (8)	1 (0)
2997	337	29 (9)	103 (10)	1 (0)
2998	338	37 (10)	52 (8)	1 (0)
2999	340	15 (8)	67 (9)	1 (0)
3000	341	15 (8)	60 (8)	1 (0)
3001	342	41 (10)	105 (10)	1 (0)
3002	343	40 (10)	60 (8)	1 (0)
3003	344	33 (10)	57 (8)	1 (0)
3004	345	74 (12)	226 (12)	1 (0)
3005	347	26 (9)	32 (7)	1 (0)
3006	349	38 (10)	40 (7)	1 (0)
3007	350	54 (11)	37 (7)	1 (0)
3008	351	8 (6)	33 (7)	1 (0)
3009	352	45 (11)	63 (9)	1 (0)
3010	353	37 (10)	62 (8)	1 (0)
3011	354	27 (9)	55 (8)	10 (6)
3012	355	49 (11)	73 (9)	1 (0)
3013	356	31 (10)	54 (8)	1 (0)
3014	357	43 (10)	64 (9)	1 (0)
3015	358	43 (10)	61 (8)	1 (0)
3016	359	35 (10)	68 (9)	1 (0)
3017	361	32 (10)	66 (9)	1 (0)
3018	362	30 (9)	55 (8)	1 (0)
3019	364	26 (9)	52 (8)	1 (0)
3020	366	30 (9)	77 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3021	N-368	29 (9)	61 (8)	1 (0)
3022	369	65 (12)	55 (8)	1 (0)
3023	370	29 (9)	71 (9)	1 (0)
3024	373	30 (9)	61 (8)	1 (0)
3025	374	30 (9)	64 (9)	1 (0)
3026	375	31 (10)	60 (8)	1 (0)
3027	376	31 (10)	66 (9)	1 (0)
3028	378	35 (10)	64 (9)	1 (0)
3029	379	32 (10)	64 (9)	1 (0)
3030	380	35 (10)	69 (9)	1 (0)
3031	381	38 (10)	53 (8)	1 (0)
3032	382	33 (10)	52 (8)	1 (0)
3033	383	42 (10)	52 (8)	1 (0)
3034	384	37 (10)	53 (8)	1 (0)
3035	386	52 (11)	61 (8)	1 (0)
3036	387	44 (10)	58 (8)	1 (0)
3037	390	49 (11)	45 (8)	1 (0)
3038	391	36 (10)	53 (8)	1 (0)
3039	392	25 (9)	53 (8)	1 (0)
3040	393	29 (9)	64 (9)	1 (0)
3041	394	46 (11)	106 (10)	1 (0)
3042	395	44 (10)	98 (10)	1 (0)
3043	396	46 (11)	82 (9)	1 (0)
3044	397	50 (11)	57 (8)	1 (0)
3045	398	52 (11)	88 (9)	1 (0)
3046	399	33 (10)	67 (9)	1 (0)
3047	400	52 (11)	76 (9)	1 (0)
3048	401	36 (10)	76 (9)	1 (0)
3049	402	25 (9)	40 (7)	1 (0)
3050	403	47 (11)	54 (8)	1 (0)
3051	404	53 (11)	59 (8)	1 (0)
3052	405	33 (10)	44 (7)	1 (0)
3053	406	43 (10)	91 (10)	1 (0)
3054	407	85 (12)	302 (13)	1 (0)
3055	408	49 (11)	89 (10)	1 (0)
3056	409	37 (10)	74 (9)	1 (0)
3057	410	35 (10)	76 (9)	1 (0)
3058	411	44 (10)	109 (10)	1 (0)
3059	412	28 (9)	91 (10)	1 (0)
3060	414	48 (11)	92 (10)	1 (0)
3061	416	33 (10)	82 (9)	1 (0)
3062	420	30 (9)	77 (9)	1 (0)
3063	421	33 (10)	75 (9)	1 (0)
3064	423	33 (10)	98 (10)	1 (0)
3065	424	52 (11)	64 (9)	1 (0)
3066	425	92 (12)	61 (8)	4 (3)
3067	426	70 (12)	64 (9)	1 (0)
3068	427	57 (11)	84 (9)	1 (0)
3069	428	59 (11)	68 (9)	1 (0)
3070	429	33 (10)	60 (8)	1 (0)
3071	430	62 (11)	51 (8)	1 (0)
3072	431	61 (11)	266 (13)	1 (0)
3073	432	53 (11)	59 (8)	1 (0)
3074	433	47 (11)	67 (9)	1 (0)
3075	434	70 (12)	251 (13)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3076	N-435	129 (13)	69 (3)	1 (0)
3077	436	63 (11)	266 (13)	1 (0)
3078	P-003	5 (5)	22 (5)	4 (3)
3079	004	2 (2)	17 (5)	4 (3)
3080	008	4 (4)	17 (5)	4 (3)
3081	009	3 (3)	10 (3)	4 (3)
3082	012	5 (5)	14 (4)	4 (3)
3083	013	48 (11)	40 (7)	3 (2)
3084	014	39 (10)	37 (7)	3 (2)
3085	015	40 (10)	44 (7)	5 (3)
3086	016	16 (8)	37 (7)	3 (2)
3087	017	18 (8)	31 (6)	3 (2)
3088	022	13 (7)	40 (7)	3 (2)
3089	024	46 (11)	64 (9)	3 (2)
3090	028	18 (8)	49 (8)	5 (3)
3091	029	15 (8)	79 (9)	5 (3)
3092	032	34 (10)	70 (9)	3 (2)
3093	036	16 (8)	14 (4)	3 (2)
3094	037	16 (8)	17 (5)	3 (2)
3095	038	15 (8)	17 (5)	1 (0)
3096	043	14 (7)	50 (8)	1 (0)
3097	047	47 (11)	80 (9)	3 (2)
3098	048	41 (10)	76 (9)	3 (2)
3099	049	7 (6)	16 (5)	5 (3)
3100	050	20 (8)	26 (6)	5 (3)
3101	051	18 (8)	35 (7)	5 (3)
3102	053	23 (9)	28 (6)	5 (3)
3103	054	19 (8)	47 (8)	5 (3)
3104	055	20 (8)	32 (7)	5 (3)
3105	056	45 (11)	74 (9)	5 (3)
3106	057	22 (9)	37 (7)	5 (3)
3107	058	36 (10)	30 (6)	5 (3)
3108	059	24 (9)	30 (6)	5 (3)
3109	060	54 (11)	102 (10)	5 (3)
3110	061	24 (9)	56 (8)	5 (3)
3111	062	23 (9)	62 (8)	5 (3)
3112	063	45 (11)	48 (8)	5 (3)
3113	064	26 (9)	52 (8)	5 (3)
3114	065	22 (9)	22 (5)	5 (3)
3115	066	13 (7)	21 (5)	5 (3)
3116	067	27 (9)	29 (6)	5 (3)
3117	068	9 (6)	11 (3)	5 (3)
3118	069	13 (7)	16 (5)	3 (2)
3119	070	14 (7)	19 (5)	5 (3)
3120	071	17 (8)	14 (4)	5 (3)
3121	072	17 (8)	16 (5)	3 (2)
3122	074	66 (12)	47 (8)	8 (5)
3123	075	44 (10)	32 (7)	5 (3)
3124	076	17 (8)	47 (8)	5 (3)
3125	077	14 (7)	18 (5)	5 (3)
3126	078	14 (7)	33 (7)	5 (3)
3127	079	13 (7)	33 (7)	10 (6)
3128	080	17 (8)	47 (8)	3 (2)
3129	081	56 (11)	77 (9)	3 (2)
3130	082	51 (11)	90 (10)	4 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3131	P-084	11 (7)	50 (8)	3 (2)
3132	086	12 (7)	26 (6)	4 (3)
3133	087	28 (9)	17 (5)	4 (3)
3134	088	34 (10)	55 (8)	4 (3)
3135	090	29 (9)	44 (7)	3 (2)
3136	091	12 (7)	85 (9)	3 (2)
3137	094	52 (11)	63 (9)	3 (2)
3138	095	34 (10)	47 (8)	3 (2)
3139	096	45 (11)	61 (8)	3 (2)
3140	097	40 (10)	53 (8)	4 (3)
3141	098	44 (10)	79 (9)	4 (3)
3142	100	19 (8)	60 (8)	4 (3)
3143	103	56 (11)	35 (7)	4 (3)
3144	104	38 (10)	46 (8)	4 (3)
3145	105	132 (13)	232 (12)	6 (4)
3146	106	44 (10)	95 (10)	4 (3)
3147	107	47 (11)	69 (9)	4 (3)
3148	109	42 (10)	95 (10)	3 (2)
3149	110	428 (16)	724 (16)	5 (3)
3150	111	136 (13)	1120 (17)	5 (3)
3151	112	166 (14)	516 (15)	5 (3)
3152	113	280 (15)	3140 (20)	5 (3)
3153	114	89 (12)	348 (13)	3 (2)
3154	115	189 (14)	716 (16)	1 (0)
3155	116	149 (14)	268 (13)	4 (3)
3156	117	716 (18)	404 (14)	6 (4)
3157	118	336 (16)	340 (13)	16 (7)
3158	119	296 (16)	300 (13)	10 (6)
3159	120	141 (14)	2100 (19)	3 (2)
3160	121	35 (10)	130 (11)	3 (2)
3161	123	31 (10)	428 (14)	10 (6)
3162	124	24 (9)	37 (7)	3 (2)
3163	125	28 (9)	45 (8)	3 (2)
3164	126	40 (10)	52 (8)	3 (2)
3165	128	34 (10)	58 (8)	3 (2)
3166	130	22 (9)	35 (7)	3 (2)
3167	131	24 (9)	30 (6)	3 (2)
3168	132	45 (11)	56 (8)	3 (2)
3169	133	46 (11)	58 (8)	3 (2)
3170	135	35 (10)	55 (8)	3 (2)
3171	136	28 (9)	56 (8)	3 (2)
3172	137	37 (10)	52 (8)	3 (2)
3173	138	35 (10)	56 (8)	3 (2)
3174	139	40 (10)	61 (8)	1 (0)
3175	R-015	17 (8)	29 (6)	1 (0)
3176	018	1 (1)	29 (6)	1 (0)
3177	021	10 (7)	14 (4)	1 (0)
3178	022	8 (6)	18 (5)	1 (0)
3179	028	18 (8)	50 (8)	1 (0)
3180	029	5 (5)	21 (5)	1 (0)
3181	032	30 (9)	50 (8)	1 (0)
3182	035	25 (9)	36 (7)	1 (0)
3183	036	35 (10)	57 (8)	1 (0)
3184	037	26 (9)	84 (9)	1 (0)
3185	040	41 (10)	91 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3186	R-047	25 (9)	52 (8)	1 (0)
3187	048	20 (8)	49 (8)	3 (2)
3188	052	35 (10)	89 (10)	1 (0)
3189	053	30 (9)	63 (9)	1 (0)
3190	054	41 (10)	82 (9)	3 (2)
3191	055	68 (12)	59 (8)	4 (3)
3192	056	107 (13)	66 (9)	4 (3)
3193	057	118 (13)	92 (10)	6 (4)
3194	058	175 (14)	42 (7)	4 (3)
3195	059	225 (15)	38 (7)	12 (6)
3196	060	343 (16)	42 (7)	7 (4)
3197	061	148 (14)	56 (8)	4 (3)
3198	062	27 (9)	59 (8)	1 (0)
3199	063	24 (9)	61 (8)	1 (0)
3200	064	41 (10)	39 (10)	1 (0)
3201	065	50 (11)	89 (10)	1 (0)
3202	066	36 (10)	84 (9)	1 (0)
3203	067	65 (12)	99 (10)	1 (0)
3204	068	36 (10)	94 (10)	1 (0)
3205	069	163 (14)	56 (8)	6 (4)
3206	070	74 (12)	80 (9)	1 (0)
3207	071	30 (9)	78 (9)	1 (0)
3208	072	44 (10)	108 (10)	4 (3)
3209	073	36 (10)	98 (10)	5 (3)
3210	074	30 (9)	87 (9)	4 (3)
3211	075	53 (11)	85 (9)	1 (0)
3212	076	59 (11)	75 (9)	1 (0)
3213	077	51 (11)	115 (10)	1 (0)
3214	078	32 (10)	44 (7)	1 (0)
3215	079	32 (10)	68 (9)	1 (0)
3216	080	55 (11)	80 (9)	1 (0)
3217	081	79 (12)	167 (11)	4 (3)
3218	082	55 (11)	94 (10)	1 (0)
3219	083	41 (10)	72 (9)	1 (0)
3220	084	45 (11)	72 (9)	1 (0)
3221	085	53 (11)	70 (9)	1 (0)
3222	086	45 (11)	90 (10)	1 (0)
3223	087	90 (12)	72 (9)	1 (0)
3224	088	68 (12)	88 (9)	3 (2)
3225	089	49 (11)	81 (9)	3 (2)
3226	091	68 (12)	77 (9)	3 (2)
3227	092	49 (11)	79 (9)	1 (0)
3228	093	79 (12)	79 (9)	3 (2)
3229	094	47 (11)	79 (9)	1 (0)
3230	095	54 (11)	81 (9)	3 (2)
3231	096	49 (11)	86 (9)	1 (0)
3232	097	77 (12)	79 (9)	1 (0)
3233	098	78 (12)	79 (9)	1 (0)
3234	099	68 (12)	84 (9)	1 (0)
3235	100	53 (11)	79 (9)	1 (0)
3236	101	43 (10)	82 (9)	1 (0)
3237	102	63 (11)	82 (9)	1 (0)
3238	103	56 (11)	72 (9)	1 (0)
3239	104	37 (10)	104 (10)	1 (0)
3240	107	78 (12)	99 (10)	3 (2)
3241	R-701	55 (11)	62 (8)	1 (0)
3242	702	48 (11)	60 (8)	1 (0)
3243	703	56 (11)	78 (9)	1 (0)
3244	704	50 (11)	79 (9)	1 (0)
3245	705	55 (11)	77 (9)	1 (0)
3246	706	48 (11)	74 (9)	1 (0)
3247	707	31 (10)	93 (10)	1 (0)
3248	708	63 (11)	72 (9)	1 (0)
3249	709	66 (12)	88 (9)	1 (0)
3250	710	56 (11)	75 (9)	1 (0)
3251	711	50 (11)	86 (9)	1 (0)
3252	712	78 (12)	99 (10)	1 (0)
3253	713	55 (11)	75 (9)	1 (0)
3254	714	48 (11)	229 (12)	1 (0)
3255	715	74 (12)	62 (8)	1 (0)
3256	716	46 (11)	75 (9)	1 (0)
3257	717	41 (10)	197 (12)	1 (0)
3258	718	53 (11)	105 (10)	1 (0)
3259	719	32 (10)	104 (10)	4 (3)
3260	720	27 (9)	269 (13)	3 (2)
3261	721	7 (6)	38 (7)	1 (0)
3262	S-004	8 (6)	53 (8)	6 (4)
3263	008	4 (4)	26 (6)	4 (3)
3264	015	36 (10)	117 (10)	1 (0)
3265	016	33 (10)	141 (11)	1 (0)
3266	017	26 (9)	110 (10)	1 (0)
3267	018	34 (10)	170 (11)	1 (0)
3268	019	26 (9)	159 (11)	2 (1)
3269	020	32 (10)	129 (11)	2 (1)
3270	021	34 (10)	18 (5)	1 (0)
3271	023	23 (9)	12 (4)	2 (1)
3272	025	18 (8)	15 (4)	2 (1)
3273	026	32 (10)	25 (6)	1 (0)
3274	027	28 (9)	20 (5)	1 (0)
3275	028	25 (9)	17 (5)	1 (0)
3276	029	16 (8)	11 (3)	1 (0)
3277	030	30 (9)	18 (5)	1 (0)
3278	031	17 (8)	23 (6)	1 (0)
3279	032	30 (9)	196 (12)	2 (1)
3280	035	20 (8)	173 (11)	1 (0)
3281	036	11 (7)	188 (12)	1 (0)
3282	037	18 (8)	121 (10)	1 (0)
3283	040	10 (7)	252 (13)	2 (1)
3284	041	8 (6)	232 (12)	2 (1)
3285	042	13 (7)	213 (12)	1 (0)
3286	043	19 (8)	122 (10)	2 (1)
3287	046	14 (7)	89 (10)	1 (0)
3288	048	9 (6)	90 (10)	6 (4)
3289	049	35 (10)	80 (9)	6 (4)
3290	054	3 (3)	21 (5)	6 (4)
3291	056	5 (5)	26 (6)	6 (4)
3292	058	46 (11)	162 (11)	1 (0)
3293	061	64 (11)	75 (9)	1 (0)
3294	062	54 (11)	79 (9)	1 (0)
3295	063	74 (12)	84 (9)	2 (1)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3296	S-064	76 (12)	145 (11)	1 (0)
3297	065	20 (8)	262 (13)	0 (0)
3298	066	73 (12)	120 (10)	1 (0)
3299	067	45 (11)	182 (12)	2 (1)
3300	070	33 (10)	92 (10)	1 (0)
3301	072	36 (10)	35 (7)	6 (4)
3302	073	40 (10)	23 (6)	6 (4)
3303	074	32 (10)	32 (7)	6 (4)
3304	075	28 (9)	28 (6)	6 (4)
3305	076	53 (11)	45 (8)	6 (4)
3306	078	32 (10)	18 (5)	6 (4)
3307	080	52 (11)	49 (8)	6 (4)
3308	081	42 (10)	19 (5)	6 (4)
3309	082	40 (10)	20 (5)	6 (4)
3310	083	39 (10)	120 (10)	2 (1)
3311	084	35 (10)	115 (10)	6 (4)
3312	085	71 (12)	400 (14)	2 (1)
3313	086	32 (10)	92 (10)	1 (0)
3314	087	45 (11)	117 (10)	0 (0)
3315	088	58 (11)	72 (9)	2 (1)
3316	089	59 (11)	76 (9)	6 (4)
3317	090	43 (10)	47 (8)	3 (2)
3318	095	57 (11)	100 (10)	3 (2)
3319	097	40 (10)	66 (9)	3 (2)
3320	098	42 (10)	49 (8)	3 (2)
3321	099	38 (10)	39 (7)	3 (2)
3322	101	45 (11)	47 (8)	3 (2)
3323	103	45 (11)	77 (9)	3 (2)
3324	104	45 (11)	95 (10)	3 (2)
3325	105	26 (9)	48 (8)	3 (2)
3326	107	49 (11)	93 (10)	3 (2)
3327	110	31 (10)	46 (8)	3 (2)
3328	111	83 (12)	67 (9)	3 (2)
3329	112	28 (9)	75 (9)	3 (2)
3330	114	16 (8)	39 (7)	3 (2)
3331	115	24 (9)	43 (7)	6 (4)
3332	116	32 (10)	45 (8)	6 (4)
3333	118	35 (10)	47 (8)	3 (2)
3334	120	36 (10)	40 (7)	3 (2)
3335	122	35 (10)	41 (7)	3 (2)
3336	126	37 (10)	86 (9)	5 (3)
3337	128	20 (8)	45 (8)	3 (2)
3338	129	18 (8)	27 (6)	3 (2)
3339	131	8 (6)	11 (3)	3 (2)
3340	133	12 (7)	16 (5)	3 (2)
3341	134	9 (6)	17 (5)	3 (2)
3342	137	2 (2)	6 (2)	3 (2)
3343	138	5 (5)	11 (3)	3 (2)
3344	141	37 (10)	45 (8)	3 (2)
3345	148	2 (2)	10 (3)	3 (2)
3346	151	4 (4)	7 (2)	3 (2)
3347	152	14 (7)	15 (4)	3 (2)
3348	153	14 (7)	34 (7)	3 (2)
3349	154	18 (8)	71 (9)	1 (0)
3350	155	86 (10)	55 (8)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3351	S-156	14 (7)	71 (9)	3 (2)
3352	157	12 (7)	47 (8)	3 (2)
3353	158	11 (7)	42 (7)	3 (2)
3354	159	22 (9)	134 (11)	3 (2)
3355	160	14 (7)	81 (9)	3 (2)
3356	161	28 (9)	143 (11)	3 (2)
3357	162	14 (7)	94 (10)	3 (2)
3358	163	46 (11)	50 (8)	3 (2)
3359	164	13 (7)	71 (9)	3 (2)
3360	165	28 (9)	45 (8)	3 (2)
3361	166	38 (10)	38 (7)	1 (0)
3362	167	40 (10)	38 (7)	1 (0)
3363	168	36 (10)	40 (7)	1 (0)
3364	169	48 (11)	52 (8)	5 (3)
3365	170	92 (12)	67 (9)	1 (0)
3366	171	76 (12)	136 (11)	3 (2)
3367	172	28 (9)	28 (6)	3 (2)
3368	173	30 (9)	38 (7)	3 (2)
3369	174	40 (10)	64 (9)	3 (2)
3370	176	40 (10)	33 (7)	3 (2)
3371	177	43 (10)	43 (7)	3 (2)
3372	179	83 (12)	65 (9)	3 (2)
3373	181	32 (10)	47 (8)	3 (2)
3374	182	36 (10)	52 (8)	3 (2)
3375	183	22 (9)	43 (7)	3 (2)
3376	184	33 (10)	50 (8)	1 (0)
3377	185	28 (9)	48 (8)	3 (2)
3378	186	54 (11)	67 (9)	3 (2)
3379	188	33 (10)	46 (8)	1 (0)
3380	189	63 (11)	62 (8)	3 (2)
3381	193	40 (10)	92 (10)	3 (2)
3382	196	33 (10)	77 (9)	3 (2)
3383	198	27 (9)	90 (10)	3 (2)
3384	200	23 (9)	77 (9)	3 (2)
3385	201	42 (10)	76 (9)	3 (2)
3386	203	53 (11)	59 (8)	3 (2)
3387	207	27 (9)	56 (8)	3 (2)
3388	208	52 (11)	92 (10)	3 (2)
3389	209	22 (9)	48 (8)	1 (0)
3390	210	39 (10)	105 (10)	3 (2)
3391	211	32 (10)	54 (8)	3 (2)
3392	212	22 (9)	63 (9)	3 (2)
3393	213	22 (9)	70 (9)	3 (2)
3394	214	24 (9)	117 (10)	3 (2)
3395	215	21 (9)	59 (8)	1 (0)
3396	216	13 (7)	94 (10)	1 (0)
3397	217	22 (9)	51 (8)	1 (0)
3398	218	18 (8)	42 (7)	1 (0)
3399	219	22 (9)	57 (8)	1 (0)
3400	220	24 (9)	62 (8)	1 (0)
3401	221	30 (9)	51 (8)	3 (2)
3402	223	33 (10)	48 (8)	1 (0)
3403	226	40 (10)	58 (8)	1 (0)
3404	227	27 (9)	51 (8)	1 (0)
3405	228	21 (9)	47 (8)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3406	S-231	48 (11)	67 (9)	3 (2)
3407	234	41 (10)	66 (9)	3 (2)
3408	235	38 (10)	59 (8)	5 (3)
3409	236	38 (10)	55 (8)	1 (0)
3410	237	67 (12)	90 (10)	3 (2)
3411	239	36 (10)	80 (9)	1 (0)
3412	240	28 (9)	56 (8)	8 (5)
3413	242	28 (9)	55 (8)	1 (0)
3414	243	20 (8)	37 (7)	1 (0)
3415	244	20 (8)	28 (6)	1 (0)
3416	245	16 (8)	15 (4)	1 (0)
3417	246	26 (9)	26 (6)	1 (0)
3418	247	26 (9)	24 (6)	1 (0)
3419	250	25 (9)	37 (7)	1 (0)
3420	252	76 (12)	62 (8)	1 (0)
3421	253	50 (11)	65 (9)	1 (0)
3422	254	25 (9)	30 (6)	8 (5)
3423	256	38 (10)	66 (9)	1 (0)
3424	263	34 (10)	65 (9)	1 (0)
3425	265	22 (9)	55 (8)	1 (0)
3426	266	23 (9)	60 (8)	1 (0)
3427	267	27 (9)	50 (8)	1 (0)
3428	268	24 (9)	58 (8)	1 (0)
3429	269	14 (7)	51 (8)	1 (0)
3430	273	36 (10)	69 (9)	1 (0)
3431	276	42 (10)	87 (9)	1 (0)
3432	278	31 (10)	47 (8)	3 (2)
3433	281	40 (10)	60 (8)	1 (0)
3434	282	36 (10)	51 (8)	1 (0)
3435	283	34 (10)	66 (9)	1 (0)
3436	284	62 (11)	51 (8)	1 (0)
3437	287	30 (9)	69 (9)	1 (0)
3438	288	56 (11)	71 (9)	1 (0)
3439	289	48 (11)	58 (8)	1 (0)
3440	290	43 (10)	60 (8)	1 (0)
3441	291	45 (11)	69 (9)	1 (0)
3442	295	42 (10)	71 (9)	1 (0)
3443	296	63 (11)	66 (9)	10 (6)
3444	299	18 (8)	32 (7)	1 (0)
3445	300	12 (7)	44 (7)	1 (0)
3446	301	24 (9)	41 (7)	1 (0)
3447	302	6 (5)	55 (8)	1 (0)
3448	303	14 (7)	36 (7)	1 (0)
3449	304	21 (9)	41 (7)	1 (0)
3450	305	28 (9)	44 (7)	1 (0)
3451	309	31 (10)	35 (7)	1 (0)
3452	311	48 (11)	88 (9)	1 (0)
3453	312	39 (10)	70 (9)	1 (0)
3454	313	26 (9)	50 (8)	1 (0)
3455	314	35 (10)	51 (8)	1 (0)
3456	315	30 (9)	65 (9)	1 (0)
3457	316	54 (11)	92 (10)	1 (0)
3458	317	47 (11)	53 (8)	1 (0)
3459	318	52 (11)	79 (9)	1 (0)
3460	319	40 (10)	71 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3461	320	58 (11)	122 (10)	3 (2)
3462	321	27 (9)	65 (9)	1 (0)
3463	322	38 (10)	51 (8)	1 (0)
3464	323	39 (10)	79 (9)	1 (0)
3465	324	82 (12)	59 (8)	1 (0)
3466	325	44 (10)	79 (9)	1 (0)
3467	326	46 (11)	80 (9)	1 (0)
3468	327	64 (11)	59 (8)	1 (0)
3469	328	39 (10)	62 (8)	1 (0)
3470	329	47 (11)	51 (8)	1 (0)
3471	330	31 (10)	46 (8)	1 (0)
3472	T-001	54 (11)	96 (10)	10 (6)
3473	002	49 (11)	95 (10)	12 (6)
3473	003	42 (10)	83 (9)	6 (4)
3475	004	47 (11)	87 (9)	4 (3)
3476	005	51 (11)	104 (10)	14 (7)
3477	008	30 (9)	110 (10)	1 (0)
3478	009	32 (10)	129 (11)	1 (0)
3479	010	34 (10)	102 (10)	2 (1)
3480	012	39 (10)	89 (10)	2 (1)
3481	014	244 (15)	818 (16)	2 (1)
3482	015	4 (4)	40 (7)	1 (0)
3483	016	6 (5)	49 (8)	1 (0)
3484	017	4 (4)	35 (7)	1 (0)
3485	018	9 (6)	61 (8)	1 (0)
3486	019	4 (4)	21 (5)	1 (0)
3487	020	1 (1)	5 (1)	2 (1)
3488	021	42 (10)	92 (10)	2 (1)
3489	022	9 (6)	28 (6)	1 (0)
3490	023	19 (8)	52 (8)	1 (0)
3491	024	2 (2)	12 (4)	1 (0)
3492	025	34 (10)	89 (10)	1 (0)
3493	026	5 (5)	18 (5)	1 (0)
3494	027	5 (5)	29 (6)	1 (0)
3495	028	3 (3)	31 (6)	1 (0)
3496	029	6 (5)	9 (3)	1 (0)
3497	030	3 (3)	43 (7)	2 (1)
3498	031	2 (2)	22 (5)	2 (1)
3499	032	2 (2)	36 (7)	2 (1)
3500	036	35 (10)	72 (9)	1 (0)
3501	039	3 (3)	36 (7)	1 (0)
3502	043	14 (7)	67 (9)	1 (0)
3503	044	16 (8)	74 (9)	1 (0)
3504	047	54 (11)	184 (12)	1 (0)
3505	049	26 (9)	169 (11)	1 (0)
3506	050	26 (9)	181 (12)	1 (0)
3507	051	21 (9)	150 (11)	2 (1)
3508	053	38 (10)	98 (10)	1 (0)
3509	054	19 (8)	18 (5)	1 (0)
3510	056	22 (9)	18 (5)	1 (0)
3511	057	13 (7)	11 (3)	1 (0)
3512	058	27 (9)	20 (5)	2 (1)
3513	065	19 (8)	50 (8)	1 (0)
3514	066	26 (9)	23 (6)	1 (0)
3515	067	16 (8)	30 (6)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3516	T-068	19 (8)	24 (6)	1 (0)
3517	069	26 (9)	23 (6)	2 (1)
3518	070	26 (9)	24 (6)	1 (0)
3519	071	32 (10)	42 (7)	1 (0)
3520	072	26 (9)	29 (6)	1 (0)
3521	073	16 (8)	11 (3)	2 (1)
3522	074	32 (10)	20 (5)	1 (0)
3523	075	29 (9)	19 (5)	1 (0)
3524	076	16 (8)	35 (7)	1 (0)
3525	077	13 (7)	18 (5)	1 (0)
3526	079	37 (10)	37 (7)	1 (0)
3527	080	29 (9)	30 (6)	1 (0)
3528	081	46 (11)	60 (8)	1 (0)
3529	082	11 (7)	17 (5)	1 (0)
3530	083	67 (12)	47 (8)	1 (0)
3531	084	67 (12)	27 (6)	1 (0)
3532	085	74 (12)	47 (8)	1 (0)
3533	086	112 (13)	33 (7)	1 (0)
3534	087	63 (11)	50 (8)	1 (0)
3535	088	56 (11)	87 (9)	1 (0)
3536	089	56 (11)	90 (10)	1 (0)
3537	090	35 (10)	93 (10)	1 (0)
3538	091	7 (6)	110 (10)	1 (0)
3539	092	7 (6)	83 (9)	1 (0)
3540	093	14 (7)	87 (9)	3 (2)
3541	095	25 (9)	123 (10)	2 (1)
3542	096	7 (6)	90 (10)	2 (1)
3543	097	14 (7)	77 (9)	2 (1)
3544	098	18 (8)	87 (9)	2 (1)
3545	100	63 (11)	60 (8)	1 (0)
3546	101	60 (11)	63 (9)	3 (2)
3547	102	39 (10)	27 (6)	2 (1)
3548	103	81 (12)	33 (7)	3 (2)
3549	104	46 (11)	67 (9)	2 (1)
3550	105	74 (12)	70 (9)	1 (0)
3551	106	53 (11)	90 (10)	2 (1)
3552	107	77 (12)	93 (10)	1 (0)
3553	108	81 (12)	87 (9)	2 (1)
3554	113	14 (7)	20 (5)	1 (0)
3555	115	7 (6)	17 (5)	1 (0)
3556	117	25 (9)	27 (6)	1 (0)
3557	118	46 (11)	40 (7)	1 (0)
3558	121	21 (9)	67 (9)	1 (0)
3559	122	53 (11)	40 (7)	1 (0)
3560	123	60 (11)	37 (7)	1 (0)
3561	125	49 (11)	47 (8)	3 (2)
3562	126	35 (10)	53 (8)	1 (0)
3563	127	42 (10)	25 (6)	3 (2)
3564	128	62 (11)	79 (9)	5 (3)
3565	129	55 (11)	98 (10)	1 (0)
3566	131	66 (12)	74 (9)	7 (4)
3567	132	87 (12)	94 (10)	8 (5)
3568	134	68 (12)	108 (10)	5 (3)
3569	136	82 (12)	107 (10)	3 (2)
3570	137	63 (11)	101 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3571	T-188	49 (11)	76 (9)	1 (0)
3572	190	41 (10)	61 (8)	1 (0)
3573	192	30 (9)	60 (8)	1 (0)
3574	193	74 (12)	128 (11)	1 (0)
3575	194	52 (11)	72 (9)	1 (0)
3576	195	52 (11)	76 (9)	1 (0)
3577	198	55 (11)	130 (11)	1 (0)
3578	203	44 (10)	204 (12)	1 (0)
3579	208	41 (10)	144 (11)	1 (0)
3580	209	55 (11)	96 (10)	1 (0)
3581	210	49 (11)	375 (14)	1 (0)
3582	215	79 (12)	81 (9)	1 (0)
3583	216	57 (11)	74 (9)	1 (0)
3584	218	44 (10)	87 (9)	1 (0)
3585	220	55 (11)	83 (9)	1 (0)
3586	221	52 (11)	92 (10)	3 (2)
3587	U-001	116 (13)	80 (9)	3 (2)
3588	002	109 (13)	67 (9)	10 (6)
3589	003	133 (13)	65 (9)	8 (5)
3590	016	37 (10)	74 (9)	1 (0)
3591	020	57 (11)	58 (8)	1 (0)
3592	022	56 (11)	100 (10)	1 (0)
3593	023	44 (10)	47 (8)	1 (0)
3594	025	47 (11)	50 (8)	1 (0)
3595	029	53 (11)	44 (7)	1 (0)
3596	030	47 (11)	51 (8)	1 (0)
3597	037	66 (12)	93 (10)	1 (0)
3598	038	108 (13)	80 (9)	1 (0)
3599	055	48 (11)	78 (9)	1 (0)
3600	058	52 (11)	98 (10)	1 (0)
3601	059	40 (10)	91 (10)	1 (0)
3602	060	89 (12)	106 (10)	1 (0)
3603	061	78 (12)	93 (10)	1 (0)
3604	065	33 (10)	80 (9)	1 (0)
3605	067	66 (12)	81 (9)	1 (0)
3606	071	50 (11)	109 (10)	1 (0)
3607	077	33 (10)	42 (7)	1 (0)
3608	082	50 (11)	52 (8)	3 (2)
3609	098	24 (9)	135 (11)	1 (0)
3610	099	43 (10)	107 (10)	1 (0)
3611	100	31 (10)	125 (11)	1 (0)
3612	101	38 (10)	123 (10)	1 (0)
3613	102	32 (10)	116 (10)	1 (0)
3614	103	41 (10)	116 (10)	1 (0)
3615	104	37 (10)	118 (10)	1 (0)
3616	105	45 (11)	102 (10)	1 (0)
3617	701	109 (13)	149 (11)	1 (0)
3618	702	91 (12)	150 (11)	1 (0)
3619	705	83 (12)	176 (12)	1 (0)
3620	706	106 (13)	194 (12)	1 (0)
3621	710	46 (11)	89 (10)	1 (0)
3622	712	51 (11)	123 (10)	1 (0)
3623	713	113 (13)	87 (9)	1 (0)
3624	718	57 (11)	124 (10)	1 (0)
3625	719	80 (12)	236 (12)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3626	U-720	65 (12)	237 (12)	1 (0)
3627	722	111 (13)	176 (12)	1 (0)
3628	723	68 (12)	137 (11)	1 (0)
3629	727	68 (12)	78 (9)	1 (0)
3630	730	49 (11)	88 (9)	1 (0)
3631	731	78 (12)	89 (10)	1 (0)
3632	734	88 (12)	86 (9)	1 (0)
3633	735	94 (12)	87 (9)	1 (0)
3634	739	72 (12)	133 (11)	1 (0)
3635	740	69 (12)	157 (11)	1 (0)
3636	743	76 (12)	167 (11)	1 (0)
3637	V-001	50 (11)	70 (9)	3 (2)
3638	002	50 (11)	80 (9)	1 (0)
3639	003	38 (10)	71 (9)	1 (0)
3640	004	69 (12)	73 (9)	1 (0)
3640	005	56 (11)	71 (9)	1 (0)
3642	005	63 (11)	77 (9)	4 (3)
3643	007	50 (11)	66 (9)	1 (0)
3644	008	63 (11)	71 (9)	1 (0)
3645	010	125 (13)	110 (10)	1 (0)
3646	011	119 (13)	103 (10)	1 (0)
3647	012	131 (13)	103 (10)	1 (0)
3648	013	119 (13)	103 (10)	1 (0)
3649	014	144 (14)	88 (9)	1 (0)
3650	018	172 (14)	183 (12)	3 (2)
3651	019	157 (14)	138 (11)	3 (2)
3652	021	189 (14)	192 (12)	5 (3)
3653	022	192 (14)	180 (12)	4 (3)
3654	023	162 (14)	144 (11)	6 (4)
3655	025	144 (14)	162 (11)	1 (0)
3656	029	48 (11)	252 (13)	1 (0)
3657	031	99 (13)	192 (12)	3 (2)
3658	033	81 (12)	234 (12)	4 (3)
3659	043	101 (13)	147 (11)	4 (3)
3660	044	90 (12)	207 (12)	1 (0)
3661	045	87 (12)	123 (10)	4 (3)
3662	049	82 (12)	144 (11)	4 (3)
3663	050	77 (12)	120 (10)	4 (3)
3664	052	66 (12)	108 (10)	5 (3)
3665	053	38 (10)	120 (10)	6 (4)
3666	055	55 (11)	132 (11)	5 (3)
3667	056	5] (11)	138 (11)	5 (3)
3668	058	66 (12)	135 (11)	1 (0)
3669	060	93 (12)	150 (11)	7 (4)
3670	061	52 (11)	156 (11)	4 (2)
3671	062	33 (10)	72 (9)	1 (0)
3672	064	96 (13)	141 (11)	5 (3)
3673	065	63 (11)	147 (11)	4 (3)
3674	066	101 (13)	171 (11)	4 (3)
3675	068	60 (11)	96 (10)	1 (0)
3676	072	60 (11)	144 (11)	1 (0)
3677	082	68 (12)	156 (11)	1 (0)
3678	089	60 (11)	222 (12)	1 (0)
3679	090	44 (10)	159 (11)	1 (0)
3680	092	38 (10)	189 (12)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3681	V-093	63 (11)	138 (11)	1 (0)
3682	096	60 (11)	148 (11)	1 (0)
3683	118	87 (12)	117 (10)	3 (2)
3684	123	44 (10)	192 (12)	3 (2)
3684	130	36 (10)	136 (11)	3 (2)
3686	132	65 (12)	123 (10)	10 (6)
3687	134	64 (11)	101 (10)	5 (3)
3688	137	65 (12)	109 (10)	3 (2)
3689	138	80 (12)	107 (10)	4 (3)
3690	141	77 (12)	106 (10)	2 (1)
3691	146	67 (12)	113 (10)	2 (1)
3692	150	62 (11)	116 (10)	2 (1)
3693	153	42 (10)	140 (11)	3 (2)
3694	155	91 (12)	126 (11)	3 (2)
3695	158	54 (11)	90 (10)	1 (0)
3696	160	55 (11)	124 (10)	3 (2)
3697	164	122 (13)	126 (11)	4 (3)
3698	166	52 (11)	102 (10)	5 (3)
3699	171	23 (9)	126 (11)	2 (1)
3700	174	39 (10)	215 (12)	3 (2)
3701	175	41 (10)	250 (13)	4 (3)
3702	177	39 (10)	285 (13)	3 (2)
3703	182	22 (9)	54 (8)	1 (0)
3704	193	55 (11)	79 (9)	1 (0)
3705	198	15 (8)	38 (7)	6 (4)
3706	200	73 (12)	67 (9)	6 (4)
3707	201	37 (10)	50 (8)	6 (4)
3708	203	26 (9)	54 (8)	2 (1)
3709	204	251 (15)	46 (8)	6 (4)
3710	206	62 (11)	63 (9)	1 (0)
3711	208	62 (11)	83 (9)	1 (0)
3712	211	44 (10)	104 (10)	1 (0)
3713	212	44 (10)	58 (8)	6 (4)
3714	213	55 (11)	92 (10)	4 (3)
3715	219	55 (11)	96 (10)	6 (4)
3716	222	55 (11)	71 (9)	6 (4)
3717	224	150 (14)	88 (9)	6 (4)
3718	225	124 (13)	92 (10)	6 (4)
3719	226	66 (12)	100 (10)	2 (1)
3720	227	150 (14)	88 (9)	6 (4)
3721	228	154 (14)	92 (10)	6 (4)
3722	229	99 (13)	100 (10)	1 (0)
3723	232	110 (13)	117 (10)	6 (4)
3724	233	114 (13)	121 (10)	1 (0)
3725	235	51 (11)	75 (9)	6 (4)
3726	245	26 (9)	100 (10)	1 (0)
3727	247	37 (10)	83 (9)	1 (0)
3728	250	33 (10)	58 (8)	2 (1)
3729	252	55 (11)	79 (9)	2 (1)
3730	256	369 (16)	285 (13)	5 (3)
3731	260	302 (16)	250 (13)	4 (3)
3732	262	140 (14)	260 (13)	5 (3)
3733	265	52 (11)	68 (9)	2 (1)
3734	273	251 (15)	360 (14)	10 (6)
3735	277	78 (12)	63 (9)	5 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3736	V-280	82 (12)	65 (9)	4 (3)
3737	282	49 (11)	60 (8)	2 (1)
3738	294	62 (11)	102 (10)	3 (2)
3739	297	31 (10)	85 (9)	4 (3)
3740	300	54 (11)	85 (9)	5 (3)
3741	302	36 (10)	94 (10)	3 (2)
3742	307	80 (12)	106 (10)	1 (0)
3743	310	52 (11)	85 (9)	3 (2)
3744	312	41 (10)	142 (11)	3 (2)
3745	314	54 (11)	102 (10)	5 (3)
3746	317	77 (12)	61 (8)	3 (2)
3747	322	50 (11)	107 (10)	7 (4)
3748	W-001	24 (9)	129 (11)	1 (0)
3749	002	78 (12)	153 (11)	1 (0)
3750	003	29 (9)	153 (11)	1 (0)
3751	004	77 (12)	121 (10)	1 (0)
3752	005	130 (13)	119 (10)	4 (3)
3753	006	61 (11)	145 (11)	3 (2)
3754	009	102 (13)	141 (11)	1 (0)
3755	010	68 (12)	115 (10)	1 (0)
3756	011	82 (12)	127 (11)	1 (0)
3757	012	106 (13)	139 (11)	1 (0)
3758	013	94 (12)	105 (10)	1 (0)
3759	014	94 (12)	135 (11)	1 (0)
3760	015	97 (13)	105 (10)	1 (0)
3761	016	109 (13)	113 (10)	1 (0)
3762	017	152 (14)	151 (11)	3 (2)
3763	018	121 (13)	121 (10)	1 (0)
3764	019	80 (12)	127 (11)	1 (0)
3765	020	87 (12)	150 (11)	1 (0)
3766	021	136 (13)	113 (10)	1 (0)
3767	022	109 (13)	120 (10)	1 (0)
3768	023	142 (14)	120 (10)	1 (0)
3769	024	120 (13)	165 (11)	1 (0)
3770	025	82 (12)	165 (11)	1 (0)
3771	026	131 (13)	105 (10)	1 (0)
3772	027	98 (13)	135 (11)	1 (0)
3773	028	93 (12)	150 (11)	1 (0)
3774	029	115 (13)	158 (11)	1 (0)
3775	030	98 (13)	158 (11)	1 (0)
3776	032	109 (13)	98 (10)	1 (0)
3777	033	158 (14)	135 (11)	1 (0)
3778	034	76 (12)	143 (11)	1 (0)
3779	036	60 (11)	120 (10)	1 (0)
3780	039	76 (12)	120 (10)	1 (0)
3781	040	136 (13)	113 (10)	1 (0)
3782	041	87 (12)	120 (10)	1 (0)
3783	042	104 (13)	135 (11)	1 (0)
3784	043	147 (14)	113 (10)	3 (2)
3785	044	142 (14)	113 (10)	1 (0)
3786	045	125 (13)	105 (10)	1 (0)
3787	046	153 (14)	105 (10)	1 (0)
3788	049	60 (11)	90 (10)	3 (2)
3789	050	120 (13)	120 (10)	3 (2)
3790	051	104 (13)	113 (10)	4 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3791	W-053	109 (13)	113 (10)	5 (3)
3792	054	93 (12)	135 (11)	4 (3)
3793	055	98 (13)	128 (11)	4 (3)
3794	056	76 (12)	139 (11)	3 (2)
3795	059	102 (13)	118 (10)	4 (3)
3796	061	102 (13)	127 (11)	4 (3)
3797	063	104 (13)	131 (11)	4 (3)
3798	065	87 (12)	146 (11)	5 (3)
3799	068	126 (13)	129 (11)	4 (3)
3800	070	68 (12)	111 (10)	5 (3)
3801	071	114 (13)	127 (11)	5 (3)
3802	072	97 (13)	109 (10)	4 (3)
3803	073	87 (12)	140 (11)	4 (3)
3804	074	102 (13)	105 (10)	6 (4)
3805	078	184 (14)	118 (10)	6 (4)
3806	079	82 (12)	138 (11)	6 (4)
3807	080	176 (14)	131 (11)	5 (3)
3808	084	102 (13)	92 (10)	5 (3)
3809	086	102 (13)	131 (11)	4 (3)
3810	087	126 (13)	96 (10)	4 (3)
3811	092	102 (13)	114 (10)	4 (3)
3812	093	121 (13)	118 (10)	11 (6)
3813	095	114 (13)	114 (10)	6 (4)
3814	100	75 (12)	92 (10)	5 (3)
3815	111	48 (11)	138 (11)	3 (2)
3816	113	68 (12)	100 (10)	3 (2)
3817	115	87 (12)	107 (10)	4 (3)
3818	118	73 (12)	105 (10)	4 (3)
3819	120	46 (11)	57 (8)	3 (2)
3720	122	232 (15)	66 (9)	29 (9)
3821	123	46 (11)	52 (8)	3 (2)
3922	124	68 (12)	61 (8)	4 (3)
3823	126	51 (11)	63 (9)	4 (3)
3824	127	58 (11)	63 (9)	4 (3)
3825	128	65 (12)	61 (8)	4 (3)
3826	132	71 (12)	71 (9)	3 (2)
3827	137	41 (10)	64 (9)	3 (2)
3828	167	38 (10)	117 (10)	4 (3)
3829	171	83 (12)	81 (9)	3 (2)
3830	174	94 (12)	86 (9)	3 (2)
3831	176	105 (13)	81 (9)	3 (2)
3832	177	45 (11)	76 (9)	3 (2)
3833	178	101 (13)	86 (9)	3 (2)
3834	182	53 (11)	76 (9)	3 (2)
3835	183	94 (12)	86 (9)	3 (2)
3836	185	60 (11)	76 (9)	3 (2)
3837	186	101 (13)	71 (9)	3 (2)
3838	188	56 (11)	76 (9)	3 (2)
3839	190	60 (11)	76 (9)	3 (2)
3840	192	68 (12)	71 (9)	3 (2)
3841	193	60 (11)	56 (8)	3 (2)
3842	195	56 (11)	71 (9)	3 (2)
3843	196	68 (12)	86 (9)	3 (2)
3844	198	64 (11)	76 (9)	3 (2)
3845	200	41 (10)	66 (9)	2 (1)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3846	W-201	68 (12)	76 (9)	3 (2)
3847	202	34 (10)	91 (10)	5 (3)
3848	204	60 (11)	71 (9)	5 (3)
3849	205	45 (11)	122 (10)	5 (3)
3850	206	64 (11)	66 (9)	5 (3)
3851	207	53 (11)	66 (9)	4 (3)
3852	208	49 (11)	66 (9)	3 (2)
3853	210	45 (11)	71 (9)	4 (3)
3854	211	53 (11)	86 (9)	5 (3)
3855	212	41 (10)	61 (8)	4 (3)
3856	215	45 (11)	122 (10)	5 (3)
3857	219	113 (13)	100 (10)	4 (3)
3858	222	68 (12)	87 (9)	1 (0)
3859	223	58 (11)	90 (10)	1 (0)
3860	225	92 (12)	103 (10)	1 (0)
3861	226	79 (12)	88 (9)	1 (0)
3862	228	79 (12)	73 (9)	1 (0)
3863	229	37 (10)	52 (8)	1 (0)
3864	230	34 (10)	60 (8)	1 (0)
3865	231	24 (9)	72 (9)	1 (0)
3866	232	24 (9)	52 (8)	1 (0)
3867	233	50 (11)	65 (9)	3 (2)
3868	234	47 (11)	70 (9)	3 (2)
3869	236	58 (11)	72 (9)	3 (2)
3870	238	47 (11)	57 (8)	1 (0)
3871	239	63 (11)	77 (9)	1 (0)
3872	240	79 (12)	97 (10)	1 (0)
3873	241	37 (10)	63 (9)	1 (0)
3874	242	58 (11)	73 (9)	3 (2)
3875	703	70 (12)	262 (13)	1 (0)
3876	707	111 (13)	163 (11)	1 (0)
3877	708	81 (12)	130 (11)	1 (0)
3878	709	64 (11)	250 (13)	1 (0)
3879	711	190 (14)	114 (10)	1 (0)
3880	713	135 (13)	251 (13)	1 (0)
3881	714	131 (13)	175 (11)	1 (0)
3882	716	91 (12)	228 (12)	1 (0)
3883	717	89 (12)	246 (12)	1 (0)
3884	719	80 (12)	194 (12)	1 (0)
3885	721	100 (13)	298 (13)	1 (0)
3886	722	79 (12)	299 (13)	1 (0)
3887	723	111 (13)	435 (14)	1 (0)
3888	725	78 (12)	299 (13)	1 (0)
3889	726	50 (11)	257 (13)	1 (0)
3890	728	81 (12)	528 (15)	1 (0)
3891	729	106 (13)	491 (14)	1 (0)
3892	733	42 (10)	140 (11)	1 (0)
3893	735	45 (11)	183 (12)	1 (0)
3894	Y-001	58 (11)	61 (8)	1 (0)
3895	002	47 (11)	60 (8)	1 (0)
3896	003	52 (11)	64 (9)	1 (0)
3897	004	59 (11)	63 (9)	1 (0)
3898	005	52 (11)	64 (9)	1 (0)
3899	006	47 (11)	57 (8)	1 (0)
3900	007	50 (11)	57 (8)	1 (0)
3901	Y-008	50 (11)	57 (8)	1 (0)
3902	009	48 (11)	63 (9)	1 (0)
3903	010	58 (11)	54 (8)	1 (0)
3904	011	44 (10)	59 (8)	1 (0)
3905	012	47 (11)	220 (12)	1 (0)
3906	013	46 (11)	58 (8)	1 (0)
3907	014	49 (11)	52 (8)	1 (0)
3908	015	40 (10)	52 (8)	1 (0)
3909	016	114 (13)	53 (8)	1 (0)
3910	018	111 (13)	60 (8)	1 (0)
3911	020	130 (13)	59 (8)	1 (0)
3912	023	105 (13)	60 (8)	1 (0)
3913	025	39 (10)	55 (8)	1 (0)
3914	026	30 (9)	55 (8)	1 (0)
3915	028	40 (10)	63 (9)	1 (0)
3916	029	41 (10)	54 (8)	1 (0)
3917	031	36 (10)	49 (8)	1 (0)
3918	032	48 (11)	76 (9)	1 (0)
3919	034	46 (11)	66 (9)	1 (0)
3920	036	33 (10)	63 (9)	1 (0)
3921	037	32 (10)	60 (8)	1 (0)
3922	038	43 (10)	67 (9)	1 (0)
3923	039	44 (10)	73 (9)	1 (0)
3924	041	27 (9)	59 (8)	1 (0)
3925	042	45 (11)	87 (9)	1 (0)
3926	043	48 (11)	78 (9)	1 (0)
3927	044	42 (10)	70 (9)	1 (0)
3928	045	44 (10)	73 (9)	1 (0)
3929	046	42 (10)	71 (9)	1 (0)
3930	047	45 (11)	68 (9)	1 (0)
3931	049	52 (11)	68 (9)	1 (0)
3932	051	62 (11)	69 (9)	1 (0)
3933	053	38 (10)	67 (9)	1 (0)
3934	054	41 (10)	78 (9)	1 (0)
3935	055	43 (10)	75 (9)	1 (0)
3936	056	45 (11)	63 (9)	1 (0)
3937	058	31 (10)	89 (10)	1 (0)
3938	059	31 (10)	89 (10)	1 (0)
3939	060	69 (12)	85 (9)	1 (0)
3940	062	36 (10)	216 (12)	1 (0)
3941	063	53 (11)	76 (9)	1 (0)
3942	065	37 (10)	83 (9)	1 (0)
3943	066	45 (11)	79 (9)	1 (0)
3944	067	44 (10)	71 (9)	1 (0)
3945	068	63 (11)	69 (9)	1 (0)
3946	069	46 (11)	71 (9)	1 (0)
3947	070	46 (11)	62 (8)	1 (0)
3948	071	47 (11)	207 (12)	1 (0)
3949	073	46 (11)	70 (9)	1 (0)
3950	076	50 (11)	73 (9)	1 (0)
3951	077	47 (11)	69 (9)	1 (0)
3952	078	76 (12)	73 (9)	1 (0)
3953	079	74 (12)	78 (9)	1 (0)
3954	080	53 (11)	73 (9)	1 (0)
3955	081	52 (11)	65 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
3956	Y-083	64 (11)	67 (9)	1 (0)
3957	084	37 (10)	79 (9)	1 (0)
3958	086	49 (11)	65 (9)	1 (0)
3959	087	49 (11)	66 (9)	1 (0)
3960	088	62 (11)	70 (9)	1 (0)
3961	090	70 (12)	72 (9)	1 (0)
3962	091	71 (12)	64 (9)	6 (4)
3963	Z-001	26 (9)	33 (7)	5 (3)
3964	002	35 (10)	52 (8)	3 (2)
3965	005	25 (9)	46 (8)	3 (2)
3966	007	27 (9)	56 (8)	6 (4)
3967	008	30 (9)	49 (8)	3 (2)
3968	009	34 (10)	64 (9)	3 (2)
3969	010	31 (10)	61 (8)	3 (2)
3970	011	28 (9)	55 (8)	3 (2)
3971	012	32 (10)	58 (8)	3 (2)
3972	013	26 (9)	51 (8)	3 (2)
3973	014	23 (9)	45 (8)	3 (2)
3974	016	22 (9)	44 (7)	3 (2)
3975	018	32 (10)	54 (8)	3 (2)
3976	019	34 (10)	58 (8)	3 (2)
3977	020	25 (9)	65 (9)	3 (2)
3978	024	17 (8)	97 (10)	3 (2)
3979	026	47 (11)	84 (9)	3 (2)
3980	028	49 (11)	86 (9)	3 (2)
3981	030	49 (11)	74 (9)	3 (2)
3982	031	45 (11)	85 (9)	3 (2)
3983	032	45 (11)	95 (10)	3 (2)
3984	033	50 (11)	74 (9)	3 (2)
3985	034	38 (10)	95 (10)	3 (2)
3986	035	59 (11)	88 (9)	3 (2)
3987	036	46 (11)	92 (10)	3 (2)
3988	037	53 (11)	89 (10)	3 (2)
3989	038	50 (11)	79 (9)	3 (2)
3990	039	40 (10)	68 (9)	3 (2)
3991	040	42 (10)	83 (9)	3 (2)
3992	041	60 (11)	74 (9)	3 (2)
3993	042	50 (11)	80 (9)	3 (2)
3994	043	50 (11)	86 (9)	3 (2)
3995	044	42 (10)	68 (9)	3 (2)
3996	045	45 (11)	81 (9)	3 (2)
3997	046	52 (11)	81 (9)	3 (2)
3998	052	28 (9)	68 (9)	3 (2)
3999	057	44 (10)	55 (8)	3 (2)
4000	058	52 (11)	56 (8)	3 (2)
4001	060	49 (11)	63 (9)	3 (2)
4002	061	26 (9)	63 (9)	3 (2)
4003	062	25 (9)	62 (8)	3 (2)
4004	071	44 (10)	93 (10)	3 (2)
4005	075	42 (10)	115 (10)	3 (2)
4006	077	62 (11)	125 (11)	3 (2)
4007	078	70 (12)	193 (12)	3 (2)
4008	A-001	36 (10)	281 (13)	1 (0)
4009	002	27 (9)	115 (10)	1 (0)
4010	003	47 (11)	281 (13)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
4011	A-004	49 (11)	409 (14)	1 (0)
4012	005	81 (12)	256 (13)	1 (0)
4013	006	58 (11)	230 (12)	1 (0)
4014	007	72 (12)	153 (11)	1 (0)
4015	008	116 (13)	435 (14)	1 (0)
4016	009	49 (11)	102 (10)	1 (0)
4017	010	49 (11)	435 (14)	1 (0)
4018	011	51 (11)	230 (12)	1 (0)
4019	012	58 (11)	205 (12)	1 (0)
4020	013	40 (10)	153 (11)	1 (0)
4021	014	40 (10)	230 (12)	1 (0)
4022	015	47 (11)	281 (13)	1 (0)
4023	016	58 (11)	77 (9)	1 (0)
4024	017	67 (12)	384 (14)	1 (0)
4025	018	49 (11)	115 (10)	1 (0)
4026	019	67 (12)	102 (10)	1 (0)
4027	020	81 (12)	716 (16)	1 (0)
4028	021	60 (11)	102 (10)	1 (0)
4029	022	58 (11)	486 (14)	1 (0)
4030	023	41 (10)	205 (12)	1 (0)
4031	024	41 (10)	205 (12)	1 (0)
4032	025	43 (10)	358 (14)	1 (0)
4033	026	47 (11)	691 (15)	1 (0)
4034	027	56 (11)	473 (14)	1 (0)
4035	028	77 (12)	153 (11)	1 (0)
4036	029	62 (11)	384 (14)	1 (0)
4037	030	60 (11)	435 (14)	1 (0)
4038	031	69 (12)	153 (11)	1 (0)
4039	032	69 (12)	537 (15)	1 (0)
4040	033	39 (10)	793 (16)	1 (0)
4041	035	47 (11)	179 (12)	1 (0)
4042	037	39 (10)	230 (12)	1 (0)
4043	038	51 (11)	281 (13)	1 (0)
4044	039	30 (9)	230 (12)	1 (0)
4045	040	43 (10)	307 (13)	1 (0)
4046	041	41 (10)	486 (14)	1 (0)
4047	042	51 (11)	409 (14)	1 (0)
4048	043	43 (10)	409 (14)	1 (0)
4049	044	28 (9)	179 (12)	1 (0)
4050	045	21 (9)	205 (12)	1 (0)
4051	046	30 (9)	230 (12)	1 (0)
4052	047	43 (10)	435 (14)	1 (0)
4053	048	36 (10)	256 (13)	1 (0)
4054	049	51 (11)	256 (13)	1 (0)
4055	050	73 (12)	205 (12)	1 (0)
4056	051	13 (7)	332 (13)	1 (0)
4057	052	58 (11)	281 (13)	1 (0)
4058	053	54 (11)	358 (14)	1 (0)
4059	054	34 (10)	741 (16)	1 (0)
4060	055	47 (11)	281 (13)	1 (0)
4061	056	34 (10)	256 (13)	1 (0)
4062	057	34 (10)	256 (13)	1 (0)
4063	058	39 (10)	256 (13)	1 (0)
4064	059	34 (10)	129 (11)	1 (0)
4065	060	73 (12)	205 (12)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
4066	A-061	51 (11)	307 (13)	1 (0)
4067	062	47 (11)	281 (13)	1 (0)
4068	063	23 (9)	256 (13)	1 (0)
4069	064	47 (11)	205 (12)	1 (0)
4070	065	50 (11)	154 (11)	1 (0)
4071	066	55 (11)	205 (12)	1 (0)
4072	067	41 (10)	244 (12)	1 (0)
4073	069	43 (10)	218 (12)	1 (0)
4074	070	65 (12)	90 (10)	1 (0)
4075	071	30 (9)	128 (11)	1 (0)
4076	072	54 (11)	169 (11)	1 (0)
4077	074	34 (10)	141 (11)	1 (0)
4078	075	46 (11)	82 (9)	1 (0)
4079	076	43 (10)	128 (11)	1 (0)
4080	078	39 (10)	179 (12)	1 (0)
4081	079	50 (11)	154 (11)	1 (0)
4082	080	44 (10)	103 (10)	1 (0)
4083	081	65 (12)	154 (11)	1 (0)
4084	082	117 (13)	410 (14)	1 (0)
4085	083	157 (14)	244 (12)	1 (0)
4086	084	57 (11)	244 (12)	1 (0)
4087	085	83 (12)	218 (12)	1 (0)
4088	086	100 (13)	192 (12)	1 (0)
4089	087	61 (11)	326 (13)	1 (0)
4090	088	63 (11)	167 (11)	1 (0)
4091	093	133 (13)	108 (10)	1 (0)
4092	095	63 (11)	77 (9)	1 (0)
4093	096	50 (11)	154 (11)	1 (0)
4094	097	109 (13)	77 (9)	1 (0)
4095	098	70 (12)	103 (10)	1 (0)
4096	099	67 (12)	103 (10)	1 (0)
4097	100	102 (13)	97 (10)	1 (0)
4098	101	104 (13)	82 (9)	1 (0)
4099	102	36 (10)	77 (9)	1 (0)
4100	103	39 (10)	77 (9)	1 (0)
4101	104	47 (11)	82 (9)	1 (0)
4102	105	94 (12)	308 (13)	1 (0)
4103	106	96 (13)	436 (14)	1 (0)
4104	107	38 (10)	87 (9)	1 (0)
4105	108	54 (11)	108 (10)	1 (0)
4106	109	43 (10)	64 (9)	1 (0)
4107	110	43 (10)	90 (10)	1 (0)
4108	112	87 (12)	397 (14)	1 (0)
4109	113	113 (13)	500 (15)	1 (0)
4110	114	48 (11)	210 (12)	1 (0)
4111	115	33 (10)	79 (9)	1 (0)
4112	116	83 (12)	256 (13)	1 (0)
4113	117	33 (10)	167 (11)	1 (0)
4114	118	78 (12)	244 (12)	1 (0)
4115	120	20 (8)	56 (8)	1 (0)
4116	121	16 (8)	192 (12)	1 (0)
4117	122	14 (7)	64 (9)	1 (0)
4118	123	6 (5)	77 (9)	1 (0)
4119	124	28 (9)	72 (9)	1 (0)
4120	125	16 (8)	95 (10)	1 (0)
4121	A-126	10 (7)	154 (11)	1 (0)
4122	127	10 (7)	92 (10)	1 (0)
4123	128	6 (5)	78 (9)	1 (0)
4124	129	4 (4)	29 (6)	1 (0)
4125	130	17 (8)	44 (7)	1 (0)
4126	131	15 (8)	20 (5)	2 (1)
4127	132	22 (9)	46 (8)	4 (3)
4128	133	13 (7)	32 (7)	1 (0)
4129	134	22 (9)	32 (7)	1 (0)
4130	135	7 (6)	24 (6)	1 (0)
4131	136	20 (8)	20 (5)	1 (0)
4132	137	23 (9)	73 (9)	1 (0)
4133	138	37 (10)	122 (10)	1 (0)
4134	139	16 (8)	85 (9)	1 (0)
4135	140	30 (9)	102 (10)	1 (0)
4136	141	21 (9)	44 (7)	11(0)
4137	142	27 (9)	93 (10)	1 (0)
4138	143	28 (9)	117 (10)	1 (0)
4139	144	32 (10)	41 (7)	1 (0)
4140	145	37 (10)	51 (8)	1 (0)
4141	147	33 (10)	73 (9)	2 (1)
4142	148	32 (10)	98 (10)	3 (2)
4143	149	33 (10)	78 (9)	1 (0)
4144	150	28 (9)	78 (9)	1 (0)
4145	151	29 (9)	76 (9)	1 (0)
4146	152	9 (6)	15 (4)	1 (0)
4147	153	11 (7)	54 (8)	1 (0)
4148	154	13 (7)	68 (9)	1 (0)
4149	155	11 (7)	24 (6)	1 (0)
4150	156	19 (8)	98 (10)	1 (0)
4151	157	11 (7)	39 (7)	1 (0)
4152	158	12 (7)	34 (7)	1 (0)
4153	159	12 (7)	98 (10)	1 (0)
4154	160	4 (4)	37 (7)	1 (0)
4155	161	4 (4)	44 (7)	1 (0)
4156	166	4 (4)	112 (10)	1 (0)
4157	167	27 (9)	90 (10)	1 (0)
4158	168	3 (3)	41 (7)	1 (0)
4159	169	5 (5)	88 (9)	1 (0)
4160	170	3 (3)	80 (9)	1 (0)
4161	171	12 (7)	97 (10)	1 (0)
4162	172	5 (5)	34 (7)	1 (0)
4163	173	5 (5)	53 (8)	1 (0)
4164	174	10 (7)	59 (8)	1 (0)
4165	175	11 (7)	97 (10)	1 (0)
4166	176	12 (7)	83 (9)	1 (0)
4167	177	13 (7)	134 (11)	1 (0)
4168	178	20 (8)	23 (6)	1 (0)
4169	179	26 (9)	34 (7)	1 (0)
4170	180	22 (9)	34 (7)	1 (0)
4171	181	16 (8)	38 (7)	1 (0)
4172	182	28 (9)	57 (8)	1 (0)
4173	183	30 (9)	75 (9)	1 (0)
4174	184	20 (8)	91 (10)	1 (0)
4175	185	32 (10)	1000 (17)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
4176	A-186	49 (11)	491 (14)	1 (0)
4177	187	33 (10)	925 (16)	1 (0)
4178	188	48 (11)	59 (8)	1 (0)
4179	189	186 (14)	870 (16)	6 (4)
4180	190	33 (10)	70 (9)	1 (0)
4181	191	31 (10)	41 (7)	1 (0)
4182	192	20 (8)	37 (7)	1 (0)
4183	193	43 (10)	56 (8)	1 (0)
4184	194	32 (10)	74 (9)	1 (0)
4185	195	28 (9)	74 (9)	1 (0)
4186	196	35 (10)	59 (8)	1 (0)
4187	197	28 (9)	106 (10)	1 (0)
4188	198	9 (6)	31 (6)	1 (0)
4189	190	27 (9)	48 (8)	1 (0)
4190	200	70 (12)	65 (9)	1 (0)
4191	201	64 (11)	56 (8)	1 (0)
4192	203	40 (10)	52 (8)	1 (0)
4193	204	41 (10)	46 (8)	1 (0)
4194	205	113 (13)	104 (10)	1 (0)
4195	206	64 (11)	59 (8)	1 (0)
4196	208	60 (11)	93 (10)	1 (0)
4197	209	50 (11)	93 (10)	1 (0)
4198	210	39 (10)	65 (9)	1 (0)
4199	211	19 (8)	78 (9)	1 (0)
4200	212	49 (11)	65 (9)	1 (0)
4201	213	68 (12)	69 (9)	1 (0)
4202	214	44 (10)	24 (6)	1 (0)
4203	215	32 (10)	41 (7)	1 (0)
4204	216	34 (10)	28 (6)	1 (0)
4205	217	36 (10)	46 (8)	1 (0)
4206	218	42 (10)	11 (3)	1 (0)
4207	219	48 (11)	56 (8)	1 (0)
4208	220	44 (10)	50 (8)	1 (0)
4209	221	47 (11)	102 (10)	1 (0)
4210	222	77 (12)	78 (9)	1 (0)
4211	223	25 (9)	33 (7)	1 (0)
4212	224	23 (9)	31 (6)	1 (0)
4213	225	33 (10)	56 (8)	1 (0)
4214	226	22 (9)	89 (10)	1 (0)
4215	227	35 (10)	56 (8)	1 (0)
4216	228	10 (7)	30 (6)	1 (0)
4217	229	19 (8)	39 (7)	1 (0)
4218	230	30 (9)	30 (6)	1 (0)
4219	231	31 (10)	65 (9)	11(0)
4220	232	19 (8)	57 (8)	1 (0)
4221	233	16 (8)	111 (10)	1 (0)
4222	234	24 (9)	139 (11)	1 (0)
4223	235	48 (11)	185 (12)	1 (0)
4224	236	7 (6)	41 (7)	1 (0)
4225	237	49 (11)	83 (9)	1 (0)
4226	238	18 (8)	78 (9)	1 (0)
4227	239	6 (5)	13 (4)	1 (0)
4228	240	16 (8)	65 (9)	1 (0)
4229	241	57 (11)	139 (11)	1 (0)
4230	242	90 (12)	120 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
4231	A-243	89 (12)	61 (8)	1 (0)
4232	244	65 (12)	161 (11)	1 (0)
4233	245	56 (11)	213 (12)	1 (0)
4234	246	58 (11)	133 (11)	1 (0)
4235	247	68 (12)	159 (11)	1 (0)
4236	248	38 (10)	170 (11)	1 (0)
4237	249	59 (11)	62 (8)	1 (0)
4238	250	66 (12)	179 (12)	1 (0)
4239	251	48 (11)	86 (9)	1 (0)
4240	252	15 (8)	223 (12)	1 (0)
4241	254	9 (6)	161 (11)	1 (0)
4242	255	12 (7)	112 (10)	1 (0)
4243	256	9 (6)	196 (12)	1 (0)
4244	257	5 (5)	77 (9)	1 (0)
4245	258	7 (6)	107 (10)	1 (0)
4246	259	19 (8)	71 (9)	1 (0)
4247	260	12 (7)	98 (10)	1 (0)
4248	261	4 (4)	107 (10)	1 (0)
4249	262	10 (7)	54 (8)	1 (0)
4250	263	15 (8)	89 (10)	1 (0)
4251	264	24 (9)	54 (8)	1 (0)
4252	266	23 (9)	36 (7)	1 (0)
4253	268	22 (9)	62 (8)	1 (0)
4254	269	15 (8)	45 (8)	1 (0)
4255	270	7 (6)	34 (7)	1 (0)
4256	271	6 (5)	36 (7)	1 (0)
4257	272	10 (7)	61 (8)	1 (0)
4258	273	22 (9)	57 (8)	1 (0)
4259	275	19 (8)	36 (7)	1 (0)
4260	277	10 (7)	39 (7)	1 (0)
4261	278	15 (8)	42 (7)	1 (0)
4262	279	37 (10)	38 (7)	1 (0)
4263	280	33 (10)	45 (8)	1 (0)
4264	281	11 (7)	32 (7)	1 (0)
4265	282	21 (9)	64 (9)	1 (0)
4266	283	17 (8)	48 (8)	1 (0)
4267	284	12 (7)	49 (8)	1 (0)
4268	285	5 (5)	32 (7)	1 (0)
4269	287	4 (4)	32 (7)	1 (0)
4270	288	2 (2)	27 (6)	1 (0)
4271	291	42 (10)	89 (10)	1 (0)
4272	292	4 (4)	43 (7)	1 (0)
4273	295	19 (8)	50 (8)	1 (0)
4274	296	41 (10)	84 (9)	1 (0)
4275	297	35 (10)	98 (10)	1 (0)
4276	298	44 (10)	134 (11)	1 (0)
4277	299	12 (7)	54 (8)	1 (0)
4278	301	20 (8)	143 (11)	1 (0)
4279	304	39 (10)	129 (11)	1 (0)
4280	305	72 (12)	107 (10)	1 (0)
4281	306	41 (10)	89 (10)	1 (0)
4282	307	70 (12)	98 (10)	1 (0)
4283	308	23 (9)	71 (9)	1 (0)
4284	309	14 (7)	114 (10)	1 (0)
4285	310	36 (10)	71 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
4286	A-311	58 (11)	129 (11)	1 (0)
4287	D-001	85 (12)	82 (9)	1 (0)
4288	002	90 (12)	83 (9)	1 (0)
4289	003	72 (12)	68 (9)	1 (0)
4290	004	118 (13)	50 (8)	1 (0)
4291	006	138 (13)	88 (9)	1 (0)
4292	007	112 (13)	75 (9)	1 (0)
4293	008	100 (13)	75 (9)	1 (0)
4294	009	98 (13)	98 (10)	1 (0)
4295	010	55 (11)	88 (9)	1 (0)
4296	011	92 (12)	90 (10)	1 (0)
4297	012	85 (12)	70 (9)	1 (0)
4298	013	78 (12)	70 (9)	1 (0)
4299	015	74 (12)	75 (9)	1 (0)
4300	016	78 (12)	60 (8)	1 (0)
4301	017	75 (12)	70 (9)	1 (0)
4302	018	68 (12)	88 (9)	1 (0)
4303	019	72 (12)	75 (9)	1 (0)
4304	023	68 (12)	78 (9)	1 (0)
4305	024	68 (12)	78 (9)	1 (0)
4306	025	72 (12)	75 (9)	1 (0)
4307	026	66 (12)	75 (9)	1 (0)
4308	027	78 (12)	90 (10)	1 (0)
4309	028	66 (12)	98 (10)	1 (0)
4310	029	52 (11)	107 (10)	1 (0)
4311	030	62 (11)	73 (9)	1 (0)
4312	031	65 (12)	64 (9)	1 (0)
4313	032	60 (11)	75 (9)	1 (0)
4314	033	50 (11)	70 (9)	1 (0)
4315	034	60 (11)	66 (9)	1 (0)
4316	035	56 (11)	57 (8)	1 (0)
4317	036	60 (11)	64 (9)	1 (0)
4318	038	54 (11)	55 (8)	1 (0)
4319	039	60 (11)	72 (9)	1 (0)
4320	040	88 (12)	60 (8)	1 (0)
4321	041	40 (10)	58 (8)	1 (0)
4322	042	72 (12)	55 (8)	1 (0)
4323	043	58 (11)	53 (8)	1 (0)
4324	044	60 (11)	53 (8)	1 (0)
4325	046	26 (9)	37 (7)	1 (0)
4326	047	28 (9)	44 (7)	1 (0)
4327	048	38 (10)	48 (8)	1 (0)
4328	049	38 (10)	48 (8)	1 (0)
4329	050	30 (9)	44 (7)	1 (0)
4330	051	46 (11)	63 (9)	1 (0)
4331	053	55 (11)	58 (8)	1 (0)
4332	054	56 (11)	55 (8)	1 (0)
4333	055	34 (10)	52 (8)	1 (0)
4334	058	48 (11)	52 (8)	1 (0)
4335	061	56 (11)	63 (9)	1 (0)
4336	062	60 (11)	58 (8)	1 (0)
4337	064	80 (12)	58 (8)	1 (0)
4338	065	62 (11)	46 (8)	1 (0)
4339	067	78 (12)	40 (7)	1 (0)
4340	070	62 (11)	71 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
4341	D-071	52 (11)	64 (9)	1 (0)
4342	072	46 (11)	64 (9)	1 (0)
4343	073	48 (11)	91 (10)	1 (0)
4344	075	62 (11)	65 (9)	1 (0)
4345	076	50 (11)	81 (9)	1 (0)
4346	078	104 (13)	43 (7)	1 (0)
4347	079	112 (13)	68 (9)	1 (0)
4348	082	92 (12)	55 (8)	1 (0)
4349	083	108 (13)	55 (8)	1 (0)
4350	085	74 (12)	58 (8)	1 (0)
4351	086	60 (11)	45 (8)	1 (0)
4352	087	55 (11)	48 (8)	1 (0)
4353	088	55 (11)	45 (8)	1 (0)
4354	090	50 (11)	61 (8)	1 (0)
4355	091	135 (13)	61 (8)	1 (0)
4356	092	120 (13)	92 (10)	1 (0)
4357	094	92 (12)	59 (8)	1 (0)
4358	096	75 (12)	56 (8)	1 (0)
4359	097	94 (12)	59 (8)	1 (0)
4360	098	80 (12)	59 (8)	1 (0)
4361	099	50 (11)	63 (9)	1 (0)
4362	100	55 (11)	60 (8)	1 (0)
4363	104	40 (10)	57 (8)	1 (0)
4364	105	40 (10)	60 (8)	1 (0)
4365	106	42 (10)	60 (8)	1 (0)
4366	107	95 (13)	54 (8)	1 (0)
4367	108	42 (10)	38 (7)	1 (0)
4368	109	35 (10)	32 (7)	1 (0)
4369	110	50 (11)	66 (9)	1 (0)
4370	111	45 (11)	70 (9)	1 (0)
4371	115	35 (10)	28 (6)	1 (0)
4372	281	44 (10)	83 (9)	1 (0)
4373	285	52 (11)	67 (9)	1 (0)
4374	288	46 (11)	92 (10)	1 (0)
4375	289	52 (11)	56 (8)	1 (0)
4376	292	35 (10)	75 (9)	1 (0)
4377	294	35 (10)	71 (9)	1 (0)
4378	297	42 (10)	73 (9)	1 (0)
4379	299	42 (10)	69 (9)	1 (0)
4380	300	20 (8)	41 (7)	1 (0)
4381	317	46 (11)	58 (8)	1 (0)
4382	318	29 (9)	33 (7)	1 (0)
4383	319	29 (9)	35 (7)	1 (0)
4384	320	48 (11)	41 (7)	1 (0)
4385	323	57 (11)	70 (9)	1 (0)
4386	J-001	58 (11)	113 (10)	1 (0)
4387	002	65 (12)	100 (10)	1 (0)
4388	003	58 (11)	108 (10)	1 (0)
4389	004	65 (12)	99 (10)	1 (0)
4390	005	54 (11)	150 (11)	1 (0)
4391	006	61 (11)	88 (9)	1 (0)
4392	007	108 (13)	178 (12)	1 (0)
4393	008	191 (14)	509 (15)	1 (0)
4394	009	271 (15)	236 (12)	1 (0)
4395	010	275 (15)	436 (14)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
4396	J-011	76 (12)	83 (9)	1 (0)
4397	012	69 (12)	80 (9)	1 (0)
4398	013	54 (11)	107 (10)	1 (0)
4399	016	69 (12)	96 (10)	1 (0)
4400	019	152 (14)	166 (11)	1 (0)
4401	020	131 (14)	327 (13)	1 (0)
4402	021	134 (13)	164 (11)	1 (0)
4403	022	37 (12)	46 (8)	5 (3)
4404	023	119 (13)	161 (11)	1 (0)
4405	024	112 (13)	110 (10)	4 (3)
4406	025	152 (14)	167 (11)	3 (2)
4407	026	163 (14)	309 (13)	5 (3)
4408	027	33 (10)	19 (5)	4 (3)
4409	028	105 (13)	124 (10)	1 (0)
4410	029	145 (14)	472 (14)	1 (0)
4411	030	98 (13)	476 (14)	1 (0)
4412	031	94 (12)	409 (14)	1 (0)
4413	032	80 (12)	309 (13)	1 (0)
4414	033	119 (13)	158 (11)	1 (0)
4415	034	94 (12)	145 (11)	1 (0)
4416	035	94 (12)	123 (10)	1 (0)
4417	036	83 (12)	103 (10)	1 (0)
4418	037	148 (14)	112 (10)	1 (0)
4419	038	87 (12)	139 (11)	1 (0)
4420	040	54 (11)	82 (9)	3 (2)
4421	041	58 (11)	92 (10)	4 (3)
4422	042	51 (11)	84 (9)	9 (5)
4423	043	47 (11)	88 (9)	1 (0)
4424	044	87 (12)	85 (9)	3 (2)
4425	046	80 (12)	94 (10)	1 (0)
4426	047	116 (13)	166 (11)	1 (0)
4427	048	152 (14)	121 (10)	1 (0)
4428	049	80 (12)	177 (12)	1 (0)
4429	050	80 (12)	103 (10)	1 (0)
4430	051	112 (13)	109 (10)	1 (0)
4431	052	65 (12)	491 (14)	1 (0)
4432	054	90 (12)	454 (14)	3 (2)
4433	055	87 (12)	125 (11)	3 (2)
4434	056	94 (12)	196 (12)	1 (0)
4435	057	90 (12)	102 (10)	1 (0)
4436	058	33 (10)	48 (8)	9 (5)
4437	060	18 (8)	96 (10)	1 (0)
4438	062	54 (11)	90 (10)	1 (0)
4439	063	34 (10)	135 (11)	4 (3)
4440	064	101 (13)	110 (10)	6 (4)
4441	065	40 (10)	87 (9)	1 (0)
4442	066	29 (9)	69 (9)	3 (2)
4443	067	79 (12)	198 (12)	1 (0)
4444	071	68 (12)	117 (10)	1 (0)
4445	072	25 (9)	404 (14)	1 (0)
4446	074	57 (11)	579 (15)	1 (0)
4447	075	79 (12)	119 (10)	1 (0)
4448	077	25 (9)	167 (11)	1 (0)
4449	078	82 (12)	102 (10)	3 (2)
4450	079	50 (11)	116 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
4451	J-080	71 (12)	120 (10)	5 (3)
4452	081	75 (12)	106 (10)	3 (2)
4453	082	61 (11)	112 (10)	1 (0)
4454	083	68 (12)	92 (10)	1 (0)
4455	084	64 (11)	92 (10)	5 (3)
4456	086	107 (13)	117 (10)	6 (4)
4457	087	32 (10)	27 (6)	15 (7)
4458	088	104 (13)	162 (11)	1 (0)
4459	090	36 (10)	102 (10)	4 (3)
4460	091	57 (11)	65 (9)	10 (6)
4461	092	82 (12)	128 (11)	1 (0)
4462	093	164 (14)	316 (13)	1 (0)
4463	094	168 (14)	178 (12)	1 (0)
4464	096	125 (13)	144 (11)	1 (0)
4465	097	68 (12)	132 (11)	1 (0)
4466	098	143 (14)	151 (11)	1 (0)
4467	099	104 (13)	456 (14)	4 (3)
4468	100	114 (13)	183 (12)	1 (0)
4469	101	136 (13)	100 (10)	1 (0)
4470	102	64 (11)	83 (9)	6 (4)
4471	103	61 (11)	82 (9)	7 (4)
4472	104	18 (8)	72 (9)	1 (0)
4473	105	61 (11)	404 (14)	1 (0)
4474	106	36 (10)	41 (7)	10 (6)
4475	107	39 (10)	56 (8)	10 (6)
4476	108	43 (10)	76 (9)	1 (0)
4477	109	39 (10)	69 (9)	10 (6)
4478	110	89 (12)	129 (11)	1 (0)
4479	111	175 (14)	96 (10)	7 (4)
4480	112	132 (13)	95 (10)	1 (0)
4481	113	75 (12)	97 (10)	1 (0)
4482	114	36 (10)	106 (10)	1 (0)
4483	115	39 (10)	77 (9)	1 (0)
4484	116	32 (10)	89 (10)	1 (0)
4485	117	96 (13)	162 (11)	1 (0)
4486	118	61 (11)	103 (10)	1 (0)
4487	119	132 (13)	120 (10)	1 (0)
4488	120	136 (13)	170 (11)	1 (0)
4489	121	71 (12)	118 (10)	1 (0)
4490	122	121 (13)	101 (10)	1 (0)
4491	123	57 (11)	91 (10)	1 (0)
4492	124	139 (14)	123 (10)	1 (0)
4493	125	114 (13)	108 (10)	1 (0)
4494	126	61 (11)	69 (9)	1 (0)
4495	127	68 (12)	68 (9)	1 (0)
4496	128	64 (11)	67 (9)	1 (0)
4497	129	89 (12)	68 (9)	1 (0)
4498	130	36 (10)	77 (9)	1 (0)
4499	131	50 (11)	73 (9)	1 (0)
4500	133	54 (11)	74 (9)	11 (6)
4501	134	39 (10)	43 (7)	12 (6)
4502	135	39 (10)	42 (7)	1 (0)
4503	136	89 (12)	84 (9)	1 (0)
4504	137	46 (11)	149 (11)	1 (0)
4505	138	46 (11)	121 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
4506	J-139	50 (11)	54 (8)	1 (0)
4507	140	46 (11)	116 (10)	1 (0)
4508	141	64 (11)	121 (10)	1 (0)
4509	142	25 (9)	120 (10)	1 (0)
4510	143	61 (11)	116 (10)	1 (0)
4511	144	50 (11)	98 (10)	1 (0)
4512	145	57 (11)	596 (15)	1 (0)
4513	146	46 (11)	94 (10)	1 (0)
4514	147	25 (9)	92 (10)	1 (0)
4515	148	61 (11)	93 (10)	1 (0)
4516	149	25 (9)	87 (9)	1 (0)
4517	150	64 (11)	104 (10)	1 (0)
4518	151	68 (12)	439 (14)	1 (0)
4519	152	57 (11)	145 (11)	1 (0)
4520	153	54 (11)	63 (9)	1 (0)
4521	154	32 (10)	87 (9)	1 (0)
4522	155	39 (10)	119 (10)	1 (0)
4523	156	36 (10)	148 (11)	1 (0)
4524	157	27 (9)	72 (9)	1 (0)
4525	158	36 (10)	133 (11)	1 (0)
4526	159	43 (10)	102 (10)	1 (0)
4527	160	46 (11)	104 (10)	1 (0)
4528	161	54 (11)	333 (13)	1 (0)
4529	162	36 (10)	126 (11)	1 (0)
4530	163	29 (9)	350 (14)	1 (0)
4531	164	29 (9)	351 (14)	1 (0)
4532	165	25 (9)	79 (9)	1 (0)
4533	166	29 (9)	82 (9)	1 (0)
4534	167	61 (11)	151 (11)	1 (0)
4535	168	146 (14)	129 (11)	1 (0)
4536	169	46 (11)	137 (11)	1 (0)
4537	170	54 (11)	114 (10)	1 (0)
4538	171	50 (11)	158 (11)	1 (0)
4539	172	50 (11)	60 (8)	1 (0)
4540	174	46 (11)	91 (10)	1 (0)
4541	175	64 (11)	158 (11)	1 (0)
4542	176	43 (10)	180 (12)	1 (0)
4543	177	61 (11)	491 (14)	1 (0)
4544	178	125 (13)	135 (11)	1 (0)

A – 5 – (2) Metal content of geochemical sample for detailed survey

Series No. 1 to 1251 are analyzed in Phase II

A-5-(2) Metal content of geochemical sample

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1	B-002	54 (11)	82 (10)	1 (0)
2	005	57 (11)	73 (10)	1 (0)
3	006	57 (11)	91 (11)	2 (1)
4	007	59 (11)	73 (10)	1 (0)
5	008	94 (13)	77 (10)	1 (0)
6	009	91 (12)	132 (12)	1 (0)
7	010	110 (13)	95 (11)	1 (0)
8	011	108 (13)	100 (11)	1 (0)
9	013	27 (9)	73 (10)	1 (0)
10	014	56 (11)	70 (10)	2 (1)
11	015	47 (10)	63 (9)	1 (0)
12	016	40 (10)	68 (10)	1 (0)
13	017	51 (11)	55 (9)	2 (1)
14	018	74 (12)	77 (10)	2 (1)
15	019	54 (11)	68 (10)	1 (0)
16	021	76 (12)	68 (10)	2 (1)
17	023	77 (12)	91 (11)	2 (1)
18	024	178 (15)	114 (11)	2 (1)
19	026	118 (13)	114 (11)	4 (3)
20	027	101 (13)	95 (11)	2 (1)
21	028	77 (12)	52 (9)	1 (0)
22	029	109 (13)	95 (11)	1 (0)
23	030	71 (12)	64 (9)	1 (0)
24	031	173 (14)	132 (12)	1 (0)
25	032	151 (14)	136 (12)	4 (3)
26	033	168 (14)	136 (12)	2 (1)
27	034	155 (14)	125 (12)	1 (0)
28	035	61 (11)	132 (12)	1 (0)
29	037	151 (14)	111 (11)	1 (0)
30	038	158 (14)	105 (11)	1 (0)
31	039	195 (15)	91 (11)	1 (0)
32	074	72 (12)	44 (8)	2 (1)
33	075	56 (11)	64 (9)	1 (0)
34	076	88 (12)	87 (10)	1 (0)
35	D-013	81 (12)	66 (9)	6 (4)
36	058	81 (12)	326 (15)	2 (1)
37	061	52 (11)	302 (14)	1 (0)
38	062	29 (9)	334 (15)	1 (0)
39	064	63 (11)	270 (14)	1 (0)
40	065	63 (11)	318 (15)	6 (4)
41	066	78 (12)	198 (13)	1 (0)
42	067	64 (11)	198 (13)	1 (0)
43	069	70 (12)	129 (12)	1 (0)
44	070	88 (12)	200 (13)	1 (0)
45	071	52 (11)	125 (12)	1 (0)
46	072	29 (9)	224 (13)	1 (0)
47	073	69 (12)	383 (15)	1 (0)
48	074	63 (11)	413 (15)	1 (0)
49	075	76 (12)	428 (15)	1 (0)
50	076	28 (9)	214 (13)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
51	D-077	51 (11)	264 (14)	1 (0)
52	078	42 (10)	102 (11)	1 (0)
53	079	18 (7)	111 (11)	1 (0)
54	080	30 (9)	136 (12)	1 (0)
55	082	37 (10)	184 (13)	1 (0)
56	084	93 (13)	294 (14)	2 (1)
57	088	160 (14)	114 (11)	6 (4)
58	089	99 (13)	150 (12)	2 (1)
59	091	104 (13)	176 (13)	6 (4)
60	092	84 (12)	150 (12)	4 (3)
61	093	91 (12)	130 (12)	4 (3)
62	094	102 (13)	160 (12)	1 (0)
63	095	132 (14)	148 (12)	4 (3)
64	096	113 (13)	170 (13)	2 (1)
65	097	115 (13)	218 (13)	1 (0)
66	098	86 (12)	294 (14)	1 (0)
67	099	115 (13)	84 (10)	4 (3)
68	100	210 (15)	154 (12)	4 (3)
69	101	142 (14)	166 (12)	2 (1)
70	102	121 (13)	112 (11)	1 (0)
71	103	106 (13)	142 (12)	2 (1)
72	104	126 (13)	266 (14)	6 (4)
73	105	121 (13)	110 (11)	6 (4)
74	107	36 (10)	178 (13)	4 (3)
75	109	44 (10)	139 (12)	6 (4)
76	110	52 (11)	176 (13)	6 (4)
77	112	42 (10)	154 (12)	6 (4)
78	113	62 (11)	156 (13)	6 (4)
79	115	41 (10)	132 (12)	6 (4)
80	117	54 (11)	182 (13)	4 (3)
81	122	95 (13)	118 (11)	1 (0)
82	123	44 (10)	72 (10)	6 (4)
83	124	77 (12)	180 (13)	2 (1)
84	125	34 (9)	72 (10)	1 (0)
85	126	93 (13)	128 (12)	4 (3)
86	128	86 (12)	102 (11)	2 (1)
87	129	96 (13)	166 (12)	4 (3)
88	130	74 (12)	124 (12)	4 (3)
89	131	88 (12)	144 (12)	1 (0)
90	134	64 (11)	100 (11)	1 (0)
91	135	74 (12)	110 (11)	0 (0)
92	136	94 (13)	128 (12)	6 (4)
93	137	84 (12)	124 (12)	4 (3)
94	138	104 (13)	106 (11)	4 (3)
95	139	89 (12)	100 (11)	2 (1)
96	140	100 (13)	208 (13)	4 (3)
97	141	85 (12)	262 (14)	2 (1)
98	142	142 (14)	332 (15)	1 (0)
99	143	80 (12)	150 (12)	6 (4)
100	F-002	56 (11)	50 (9)	4 (3)
101	003	45 (10)	57 (9)	2 (1)
102	004	51 (11)	85 (10)	4 (3)
103	005	60 (11)	60 (9)	4 (3)
104	006	51 (11)	55 (9)	4 (3)
105	007	70 (12)	60 (9)	4 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
106	F-008	50 (11)	53 (9)	4 (3)
107	009	62 (11)	67 (10)	4 (3)
108	010	49 (11)	55 (9)	4 (3)
109	011	43 (10)	57 (9)	4 (3)
110	012	51 (11)	67 (10)	4 (3)
111	013	60 (11)	62 (9)	6 (4)
112	014	66 (11)	71 (10)	6 (4)
113	015	70 (12)	67 (10)	6 (4)
114	016	93 (13)	82 (10)	6 (4)
115	017	57 (11)	57 (9)	6 (4)
116	018	78 (12)	71 (10)	6 (4)
117	019	77 (12)	67 (10)	6 (4)
118	021	32 (9)	46 (8)	2 (1)
119	023	81 (12)	71 (10)	4 (3)
120	024	65 (11)	67 (10)	10 (6)
121	025	57 (11)	64 (9)	4 (3)
122	026	96 (13)	53 (9)	4 (3)
123	027	41 (10)	29 (7)	2 (1)
124	028	48 (10)	41 (8)	4 (3)
125	030	75 (12)	50 (9)	4 (3)
126	031	102 (13)	88 (10)	4 (3)
127	032	123 (13)	59 (9)	4 (3)
128	033	150 (14)	88 (10)	6 (4)
129	035	96 (13)	82 (10)	6 (4)
130	036	184 (15)	141 (12)	6 (4)
131	037	48 (10)	47 (8)	6 (4)
132	038	75 (12)	65 (9)	6 (4)
133	039	48 (10)	41 (8)	6 (4)
134	040	68 (12)	82 (10)	6 (4)
135	041	68 (12)	65 (9)	6 (4)
136	042	96 (13)	106 (11)	6 (4)
137	043	102 (13)	88 (10)	6 (4)
138	044	123 (13)	65 (9)	6 (4)
139	045	89 (12)	76 (10)	1 (0)
140	046	68 (12)	71 (10)	2 (1)
141	047	48 (10)	76 (10)	6 (4)
142	048	65 (11)	71 (10)	1 (0)
143	049	51 (11)	94 (11)	1 (0)
144	050	58 (11)	88 (10)	1 (0)
145	051	75 (12)	88 (10)	1 (0)
146	052	48 (10)	106 (11)	4 (3)
147	053	61 (11)	94 (11)	4 (3)
148	080	224 (15)	74 (10)	6 (4)
149	081	157 (14)	75 (10)	2 (1)
150	082	220 (15)	74 (10)	4 (3)
151	083	259 (16)	110 (11)	1 (0)
152	084	206 (15)	122 (11)	1 (0)
153	085	1188 (20)	1365 (19)	2 (1)
154	086	164 (14)	105 (11)	1 (0)
155	087	308 (16)	77 (10)	4 (3)
156	088	213 (15)	99 (11)	1 (0)
157	089	259 (16)	75 (10)	2 (1)
158	091	248 (16)	89 (10)	6 (4)
159	092	189 (15)	110 (11)	1 (0)
160	093	168 (14)	105 (11)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
161	F-095	161 (14)	97 (11)	1 (0)
162	097	143 (14)	115 (11)	6 (4)
163	098	147 (14)	139 (12)	2 (1)
164	099	175 (15)	101 (11)	6 (4)
165	100	287 (16)	74 (10)	6 (4)
166	101	262 (16)	93 (11)	6 (4)
167	102	234 (15)	91 (11)	6 (4)
168	103	206 (15)	114 (11)	2 (1)
169	104	243 (16)	100 (11)	6 (4)
170	105	181 (15)	160 (12)	1 (0)
171	106	107 (13)	221 (13)	1 (0)
172	107	72 (12)	221 (13)	1 (0)
173	108	105 (13)	199 (13)	1 (0)
174	110	99 (13)	157 (12)	2 (1)
175	112	114 (13)	260 (14)	4 (3)
176	114	131 (14)	149 (12)	1 (0)
177	115	96 (13)	203 (13)	1 (0)
178	116	191 (15)	157 (12)	2 (1)
179	117	99 (13)	224 (13)	1 (0)
180	118	114 (13)	224 (13)	1 (0)
181	119	107 (13)	181 (13)	6 (4)
182	120	61 (11)	228 (13)	2 (1)
183	121	29 (9)	157 (12)	2 (1)
184	122	99 (13)	192 (13)	6 (4)
185	123	114 (13)	167 (12)	1 (0)
186	124	110 (13)	206 (13)	1 (0)
187	125	87 (12)	192 (13)	1 (0)
188	126	155 (14)	85 (10)	1 (0)
189	127	136 (14)	174 (13)	1 (0)
190	128	147 (14)	93 (11)	1 (0)
191	129	129 (14)	178 (13)	6 (4)
192	130	158 (14)	146 (12)	6 (4)
193	131	144 (14)	174 (13)	6 (4)
194	132	166 (14)	221 (13)	6 (4)
195	133	153 (14)	189 (13)	2 (1)
196	135	129 (14)	171 (13)	6 (4)
197	137	127 (13)	125 (12)	2 (1)
198	138	123 (13)	171 (13)	6 (4)
199	139	151 (14)	135 (12)	2 (1)
200	140	147 (14)	135 (12)	2 (1)
201	141	59 (11)	142 (12)	6 (4)
202	142	63 (11)	196 (13)	2 (1)
203	145	53 (11)	171 (13)	2 (1)
204	146	87 (12)	157 (12)	6 (4)
205	148	48 (10)	116 (11)	6 (4)
206	150	145 (14)	82 (10)	6 (4)
207	151	53 (11)	154 (12)	6 (4)
208	170	44 (10)	205 (13)	2 (1)
209	171	39 (10)	136 (12)	6 (4)
210	176	63 (11)	68 (10)	2 (1)
211	177	34 (9)	171 (13)	1 (0)
212	178	87 (12)	89 (10)	6 (4)
213	179	102 (13)	109 (11)	1 (0)
214	181	92 (12)	96 (11)	1 (0)
215	182	102 (13)	116 (11)	4 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
216	F-186	97 (13)	96 (11)	2 (1)
217	188	82 (12)	116 (11)	6 (4)
218	189	107 (13)	116 (11)	2 (1)
219	190	116 (13)	109 (11)	1 (0)
220	191	136 (14)	177 (13)	1 (0)
221	384	61 (11)	78 (10)	5 (4)
222	385	61 (11)	74 (10)	1 (0)
223	G-001	46 (10)	72 (10)	2 (1)
224	002	29 (9)	66 (9)	4 (3)
225	003	46 (10)	60 (9)	4 (3)
226	004	42 (10)	64 (9)	4 (3)
227	005	46 (10)	64 (9)	4 (3)
228	006	69 (12)	64 (9)	4 (3)
229	007	55 (11)	64 (9)	4 (3)
230	008	38 (10)	74 (10)	6 (4)
231	009	54 (11)	44 (8)	6 (4)
232	010	52 (11)	56 (9)	6 (4)
233	011	64 (11)	78 (10)	2 (1)
234	012	70 (12)	70 (10)	2 (1)
235	013	67 (11)	74 (10)	2 (1)
236	014	65 (11)	50 (9)	4 (3)
237	017	64 (11)	80 (10)	4 (3)
238	018	78 (12)	80 (10)	2 (1)
239	019	35 (9)	64 (9)	1 (0)
240	024	49 (11)	50 (9)	1 (0)
241	025	46 (10)	56 (9)	1 (0)
242	026	44 (10)	48 (8)	1 (0)
243	027	52 (11)	52 (9)	1 (0)
244	028	50 (11)	46 (8)	1 (0)
245	029	55 (11)	54 (9)	1 (0)
246	030	62 (11)	56 (9)	1 (0)
247	031	62 (11)	63 (9)	1 (0)
248	054	168 (14)	90 (10)	1 (0)
249	055	126 (13)	69 (10)	2 (1)
250	056	156 (14)	95 (11)	6 (4)
251	057	112 (13)	101 (11)	6 (4)
252	058	110 (13)	103 (11)	6 (4)
253	059	87 (12)	135 (12)	6 (4)
254	060	120 (13)	94 (11)	6 (4)
255	061	103 (13)	188 (13)	6 (4)
256	062	134 (14)	112 (11)	6 (4)
257	064	106 (13)	118 (11)	1 (0)
258	065	156 (14)	115 (11)	1 (0)
259	066	137 (14)	120 (11)	6 (4)
260	068	129 (14)	125 (12)	2 (1)
261	069	149 (14)	145 (12)	6 (4)
262	070	151 (14)	94 (11)	6 (4)
263	071	129 (14)	194 (13)	6 (4)
264	072	146 (14)	120 (11)	6 (4)
265	073	94 (13)	179 (13)	6 (4)
266	074	93 (13)	97 (11)	6 (4)
267	075	143 (14)	65 (9)	2 (1)
268	077	125 (13)	20 (6)	2 (1)
269	078	156 (14)	53 (9)	1 (0)
270	079	102 (13)	62 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
271	G-080	99 (13)	70 (10)	1 (0)
272	081	114 (13)	139 (12)	1 (0)
273	082	150 (14)	33 (7)	1 (0)
274	083	114 (13)	252 (14)	6 (4)
275	084	130 (14)	175 (13)	1 (0)
276	085	112 (13)	174 (13)	1 (0)
277	086	120 (13)	151 (12)	1 (0)
278	087	2 (1)	4 (1)	1 (0)
279	088	113 (13)	172 (13)	1 (0)
280	089	112 (13)	266 (14)	1 (0)
281	091	47 (10)	179 (13)	1 (0)
282	097	27 (9)	133 (12)	1 (0)
283	107	54 (11)	122 (11)	1 (0)
284	108	49 (11)	146 (12)	1 (0)
285	109	49 (11)	166 (12)	1 (0)
286	110	52 (11)	120 (11)	1 (0)
287	111	42 (10)	238 (14)	1 (0)
288	114	56 (11)	132 (12)	1 (0)
289	115	51 (11)	154 (12)	1 (0)
290	116	42 (10)	112 (11)	6 (4)
291	118	79 (12)	171 (13)	1 (0)
292	119	63 (11)	170 (13)	1 (0)
293	120	140 (14)	88 (10)	1 (0)
294	122	71 (12)	55 (9)	2 (1)
295	123	108 (13)	89 (10)	1 (0)
296	124	82 (12)	118 (11)	1 (0)
297	126	147 (14)	124 (12)	2 (1)
298	127	123 (13)	81 (10)	1 (0)
299	128	74 (12)	115 (11)	1 (0)
300	129	112 (13)	105 (11)	1 (0)
301	131	131 (14)	128 (12)	4 (3)
302	132	55 (11)	134 (12)	6 (4)
303	K-001	132 (14)	87 (10)	4 (3)
304	002	126 (13)	82 (10)	4 (3)
305	003	66 (11)	92 (11)	2 (1)
306	004	82 (12)	92 (11)	2 (1)
307	006	153 (14)	108 (11)	2 (1)
308	007	131 (14)	97 (11)	1 (0)
309	008	148 (14)	97 (11)	1 (0)
310	011	98 (13)	72 (10)	2 (1)
311	012	87 (12)	146 (12)	1 (0)
312	013	126 (13)	133 (12)	1 (0)
313	014	159 (14)	108 (11)	1 (0)
314	015	82 (12)	128 (12)	1 (0)
315	016	164 (14)	103 (11)	2 (1)
316	017	189 (15)	92 (11)	1 (0)
317	018	145 (14)	133 (12)	1 (0)
318	M-084	48 (10)	78 (10)	2 (1)
319	085	20 (8)	60 (9)	1 (0)
320	089	157 (14)	90 (10)	1 (0)
321	090	192 (15)	130 (12)	1 (0)
322	091	214 (15)	104 (11)	1 (0)
323	092	214 (15)	124 (12)	1 (0)
324	093	168 (14)	155 (12)	1 (0)
325	094	150 (14)	220 (13)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
326	M-095	143 (14)	188 (13)	1 (0)
327	096	104 (13)	170 (13)	1 (0)
328	097	172 (14)	159 (12)	1 (0)
329	098	110 (13)	110 (11)	1 (0)
330	099	149 (14)	193 (13)	1 (0)
331	100	154 (14)	125 (12)	1 (0)
332	101	174 (14)	163 (12)	1 (0)
333	102	157 (14)	119 (11)	1 (0)
334	103	153 (14)	157 (12)	1 (0)
335	104	198 (15)	110 (11)	1 (0)
336	105	122 (13)	213 (13)	2 (1)
337	106	140 (14)	155 (12)	1 (0)
338	107	112 (13)	190 (13)	1 (0)
339	108	226 (15)	135 (12)	1 (0)
340	109	194 (15)	108 (11)	1 (0)
341	110	168 (14)	156 (12)	1 (0)
342	111	136 (14)	232 (14)	2 (1)
343	112	145 (14)	123 (11)	2 (1)
344	113	145 (14)	162 (12)	1 (0)
345	114	129 (14)	154 (12)	1 (0)
346	115	174 (14)	168 (12)	1 (0)
347	116	142 (14)	138 (12)	1 (0)
348	117	134 (14)	120 (11)	1 (0)
349	119	165 (14)	121 (11)	1 (0)
350	120	161 (14)	114 (11)	1 (0)
351	121	142 (14)	89 (10)	2 (1)
352	122	135 (14)	97 (11)	1 (0)
353	123	121 (13)	100 (11)	1 (0)
354	124	95 (13)	244 (14)	1 (0)
355	125	62 (11)	90 (10)	1 (0)
356	126	99 (13)	171 (13)	1 (0)
357	127	91 (12)	166 (12)	1 (0)
358	134	134 (14)	89 (10)	2 (1)
359	137	34 (9)	162 (12)	6 (4)
360	138	42 (10)	149 (12)	2 (1)
361	139	42 (10)	102 (11)	1 (0)
362	140	42 (10)	134 (12)	1 (0)
363	142	57 (11)	143 (12)	2 (1)
364	143	54 (11)	192 (13)	1 (0)
365	149	64 (11)	200 (13)	1 (0)
366	152	64 (11)	171 (13)	1 (0)
367	153	62 (11)	200 (13)	1 (0)
368	154	63 (11)	240 (14)	1 (0)
369	155	70 (12)	177 (13)	2 (1)
370	156	75 (12)	116 (11)	1 (0)
371	157	83 (12)	148 (12)	1 (0)
372	158	62 (11)	195 (13)	2 (1)
373	159	62 (11)	123 (11)	1 (0)
374	161	59 (11)	113 (11)	6 (4)
375	162	33 (9)	43 (8)	1 (0)
376	163	34 (9)	48 (8)	1 (0)
377	165	44 (10)	94 (11)	1 (0)
378	166	51 (11)	108 (11)	1 (0)
379	376	284 (16)	109 (11)	1 (0)
380	377	134 (14)	86 (10)	4 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
381	M-378	60 (11)	62 (9)	3 (2)
382	379	776 (19)	38 (8)	3 (2)
383	380	66 (11)	50 (9)	3 (2)
384	V-001	50 (11)	70 (10)	3 (2)
385	002	50 (11)	81 (10)	1 (0)
386	003	38 (10)	71 (10)	1 (0)
387	004	69 (12)	73 (10)	1 (0)
388	005	56 (11)	71 (10)	1 (0)
389	006	63 (11)	77 (10)	4 (3)
390	007	50 (11)	66 (9)	1 (0)
391	008	63 (11)	81 (10)	1 (0)
392	010	125 (13)	110 (11)	1 (0)
393	011	119 (13)	117 (11)	1 (0)
394	012	131 (14)	103 (11)	1 (0)
395	013	119 (13)	103 (11)	1 (0)
396	014	144 (14)	88 (10)	1 (0)
397	018	172 (14)	183 (13)	3 (2)
398	019	157 (14)	138 (12)	3 (2)
399	021	182 (15)	192 (13)	5 (4)
400	022	192 (15)	180 (13)	4 (3)
401	023	162 (14)	144 (12)	6 (4)
402	025	144 (14)	162 (12)	1 (0)
403	029	48 (10)	252 (14)	1 (0)
404	031	99 (13)	192 (13)	3 (2)
405	033	81 (12)	234 (14)	4 (3)
406	049	82 (12)	144 (12)	4 (3)
407	050	77 (12)	120 (11)	4 (3)
408	052	66 (11)	108 (11)	5 (4)
409	053	38 (10)	120 (11)	6 (4)
410	055	55 (11)	132 (12)	5 (4)
411	056	52 (11)	138 (12)	5 (4)
412	058	66 (11)	135 (12)	1 (0)
413	061	52 (11)	156 (12)	3 (2)
414	062	33 (9)	72 (10)	1 (0)
415	W-001	24 (8)	129 (12)	1 (0)
416	002	78 (12)	153 (12)	1 (0)
417	003	29 (9)	153 (12)	1 (0)
418	004	77 (12)	121 (11)	1 (0)
419	005	130 (14)	119 (11)	4 (3)
420	006	61 (11)	145 (12)	3 (2)
421	009	102 (13)	141 (12)	1 (0)
422	010	68 (12)	115 (11)	1 (0)
423	011	82 (12)	127 (12)	1 (0)
424	012	106 (13)	139 (12)	1 (0)
425	013	94 (13)	105 (11)	1 (0)
426	014	94 (13)	135 (12)	1 (0)
427	015	97 (13)	105 (11)	1 (0)
428	016	109 (13)	113 (11)	1 (0)
429	017	152 (14)	151 (12)	3 (2)
430	018	121 (13)	121 (11)	1 (0)
431	019	80 (12)	127 (12)	1 (0)
432	020	87 (12)	150 (12)	1 (0)
433	021	136 (14)	113 (11)	1 (0)
434	022	109 (13)	120 (11)	1 (0)
435	023	142 (14)	120 (11)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
436	W-024	120 (13)	165 (12)	1 (0)
437	025	82 (12)	165 (12)	1 (0)
438	026	131 (14)	105 (11)	1 (0)
439	027	98 (13)	135 (12)	1 (0)
440	028	93 (13)	150 (12)	1 (0)
441	029	115 (13)	158 (12)	1 (0)
442	030	98 (13)	158 (12)	1 (0)
443	032	109 (13)	98 (11)	1 (0)
444	033	158 (14)	135 (12)	1 (0)
445	034	76 (12)	143 (12)	1 (0)
446	036	60 (11)	120 (11)	1 (0)
447	039	76 (12)	120 (11)	1 (0)
448	040	136 (14)	113 (11)	1 (0)
449	041	87 (12)	120 (11)	1 (0)
450	042	104 (13)	135 (12)	1 (0)
451	043	147 (14)	113 (11)	3 (2)
452	044	142 (14)	113 (11)	1 (0)
453	045	125 (13)	105 (11)	1 (0)
454	046	153 (14)	105 (11)	1 (0)
455	049	60 (11)	90 (10)	3 (2)
456	050	120 (13)	120 (11)	3 (2)
457	051	104 (13)	113 (11)	4 (3)
458	053	109 (13)	113 (11)	5 (4)
459	054	93 (13)	135 (12)	4 (3)
460	055	98 (13)	128 (12)	4 (3)
461	056	76 (12)	139 (12)	3 (2)
462	059	102 (13)	118 (11)	4 (3)
463	061	102 (13)	127 (12)	4 (3)
464	063	104 (13)	131 (12)	4 (3)
465	065	87 (12)	146 (12)	5 (4)
466	068	126 (13)	129 (12)	4 (3)
467	070	68 (12)	111 (11)	5 (4)
468	071	114 (13)	127 (12)	5 (4)
469	072	97 (13)	109 (11)	4 (3)
470	073	87 (12)	140 (12)	4 (3)
471	074	102 (13)	105 (11)	6 (4)
472	A-519	151 (14)	98 (11)	1 (0)
473	520	174 (14)	93 (11)	1 (0)
474	521	165 (14)	99 (11)	1 (0)
475	522	130 (14)	78 (10)	1 (0)
476	523	140 (14)	97 (11)	1 (0)
477	524	164 (14)	101 (11)	1 (0)
478	525	181 (15)	79 (10)	4 (3)
479	526	102 (13)	182 (13)	1 (0)
480	527	119 (13)	66 (9)	1 (0)
481	528	102 (13)	98 (11)	8 (6)
482	529	73 (12)	95 (11)	3 (2)
483	530	103 (13)	172 (13)	1 (0)
484	531	127 (13)	284 (14)	1 (0)
485	532	191 (15)	84 (10)	1 (0)
486	533	138 (14)	75 (10)	1 (0)
487	534	111 (13)	100 (11)	1 (0)
488	535	154 (14)	277 (14)	1 (0)
489	536	105 (13)	200 (13)	4 (3)
490	537	55 (11)	70 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
491	A-538	177 (15)	86 (10)	1 (0)
492	539	100 (13)	103 (11)	1 (0)
493	540	167 (14)	90 (10)	1 (0)
494	542	106 (13)	424 (15)	1 (0)
495	543	149 (14)	287 (14)	1 (0)
496	544	124 (13)	299 (14)	1 (0)
497	546	128 (14)	109 (11)	1 (0)
498	547	117 (13)	65 (9)	1 (0)
499	548	100 (13)	59 (9)	1 (0)
500	549	127 (13)	100 (11)	1 (0)
501	550	57 (11)	80 (10)	1 (0)
502	551	22 (8)	51 (9)	1 (0)
503	552	43 (10)	61 (9)	1 (0)
504	553	47 (10)	107 (11)	1 (0)
505	B-501	102 (13)	100 (11)	1 (0)
506	502	75 (12)	117 (11)	1 (0)
507	503	91 (12)	122 (11)	4 (3)
508	504	86 (12)	106 (11)	1 (0)
509	505	38 (10)	72 (10)	1 (0)
510	506	54 (11)	103 (11)	3 (2)
511	507	54 (11)	111 (11)	3 (2)
512	508	64 (11)	156 (12)	1 (0)
513	509	113 (13)	133 (12)	1 (0)
514	510	102 (13)	128 (12)	1 (0)
515	511	102 (13)	111 (11)	3 (2)
516	512	123 (13)	144 (12)	1 (0)
517	513	113 (13)	111 (11)	3 (2)
518	514	59 (11)	117 (11)	1 (0)
519	515	64 (11)	83 (10)	1 (0)
520	516	75 (12)	268 (14)	3 (2)
521	517	67 (11)	72 (10)	3 (2)
522	518	102 (13)	144 (12)	1 (0)
523	519	102 (13)	106 (11)	1 (0)
524	520	72 (12)	106 (11)	3 (2)
525	521	155 (14)	183 (13)	3 (2)
526	522	110 (13)	128 (12)	3 (2)
527	523	80 (12)	106 (11)	1 (0)
528	524	102 (13)	94 (11)	1 (0)
529	525	113 (13)	83 (10)	3 (2)
530	526	94 (13)	106 (11)	1 (0)
531	527	129 (14)	122 (11)	1 (0)
532	528	118 (13)	144 (12)	1 (0)
533	529	75 (12)	128 (12)	1 (0)
534	530	113 (13)	117 (11)	1 (0)
535	531	64 (11)	156 (12)	1 (0)
536	532	113 (13)	128 (12)	1 (0)
537	533	115 (13)	106 (11)	1 (0)
538	534	126 (13)	131 (12)	1 (0)
539	535	80 (12)	83 (10)	1 (0)
540	536	84 (12)	194 (13)	2 (1)
541	537	38 (10)	189 (13)	1 (0)
542	538	82 (12)	189 (13)	2 (1)
543	539	65 (11)	189 (13)	1 (0)
544	540	80 (12)	189 (13)	1 (0)
545	541	89 (12)	156 (12)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
546	B-542	80 (12)	133 (12)	1 (0)
547	544	96 (13)	278 (14)	1 (0)
548	546	94 (13)	178 (13)	1 (0)
549	547	103 (13)	156 (12)	3 (2)
550	548	98 (13)	132 (12)	1 (0)
551	549	80 (12)	140 (12)	1 (0)
552	550	80 (12)	140 (12)	1 (0)
553	551	98 (13)	148 (12)	1 (0)
554	552	94 (13)	185 (13)	3 (2)
555	553	42 (10)	201 (13)	1 (0)
556	554	42 (10)	197 (13)	1 (0)
557	555	42 (10)	189 (13)	1 (0)
558	556	42 (10)	214 (13)	1 (0)
559	557	28 (9)	115 (11)	1 (0)
560	C-501	52 (11)	51 (9)	1 (0)
561	502	32 (9)	41 (8)	1 (0)
562	503	54 (11)	56 (9)	1 (0)
563	504	115 (13)	177 (13)	1 (0)
564	505	58 (11)	66 (9)	1 (0)
565	506	57 (11)	52 (9)	1 (0)
566	507	40 (10)	52 (9)	1 (0)
567	508	56 (11)	61 (9)	1 (0)
568	510	49 (11)	46 (8)	1 (0)
569	511	50 (11)	48 (8)	1 (0)
570	512	54 (11)	55 (9)	1 (0)
571	513	32 (9)	42 (8)	1 (0)
572	514	73 (12)	67 (10)	1 (0)
573	516	67 (11)	55 (9)	1 (0)
574	517	35 (9)	48 (8)	1 (0)
575	518	36 (10)	56 (9)	1 (0)
576	519	36 (10)	51 (9)	1 (0)
577	520	39 (10)	50 (9)	1 (0)
578	521	94 (13)	81 (10)	16 (8)
579	522	116 (13)	92 (11)	8 (6)
580	523	99 (13)	52 (9)	32 (10)
581	524	155 (14)	63 (9)	20 (9)
582	525	170 (14)	92 (11)	3 (2)
583	526	99 (13)	65 (9)	4 (3)
584	527	128 (14)	97 (11)	4 (3)
585	528	92 (12)	82 (10)	1 (0)
586	529	113 (13)	52 (9)	4 (3)
587	530	339 (17)	78 (10)	4 (3)
588	531	37 (10)	77 (10)	1 (0)
589	532	51 (11)	88 (10)	1 (0)
590	533	53 (11)	47 (8)	1 (0)
591	534	45 (10)	35 (7)	1 (0)
592	535	49 (11)	58 (9)	5 (4)
593	536	38 (10)	51 (9)	1 (0)
594	537	56 (11)	46 (8)	1 (0)
595	538	47 (10)	16 (5)	1 (0)
596	539	60 (11)	46 (8)	3 (2)
597	540	31 (9)	50 (9)	1 (0)
598	541	46 (10)	67 (10)	1 (0)
599	542	74 (12)	66 (9)	1 (0)
600	543	62 (11)	58 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
601	C-544	30 (9)	58 (9)	1 (0)
602	545	33 (9)	40 (9)	1 (0)
603	549	86 (12)	81 (10)	3 (2)
604	550	36 (10)	44 (8)	3 (2)
605	551	95 (13)	94 (11)	4 (3)
606	552	79 (12)	67 (10)	10 (6)
607	553	109 (13)	52 (9)	1 (0)
608	554	61 (11)	65 (9)	1 (0)
609	555	73 (12)	39 (8)	1 (0)
610	D-501	37 (10)	93 (11)	4 (3)
611	502	42 (10)	250 (14)	4 (3)
612	503	41 (10)	234 (14)	1 (0)
613	504	63 (11)	102 (11)	4 (3)
614	505	75 (12)	170 (13)	4 (3)
615	506	48 (10)	234 (14)	4 (3)
616	507	88 (12)	458 (16)	0 (0)
617	508	52 (11)	360 (15)	4 (3)
618	509	54 (11)	322 (15)	4 (3)
619	510	111 (13)	168 (12)	3 (2)
620	511	125 (13)	286 (14)	3 (2)
621	512	124 (13)	162 (12)	3 (2)
622	513	70 (12)	76 (10)	3 (2)
623	514	94 (13)	190 (13)	3 (2)
624	515	178 (15)	114 (11)	3 (2)
625	517	142 (14)	134 (12)	3 (2)
626	518	63 (11)	212 (13)	3 (2)
627	519	126 (13)	158 (12)	3 (2)
628	520	100 (13)	238 (14)	3 (2)
629	521	147 (14)	132 (12)	3 (2)
630	523	102 (13)	134 (12)	3 (2)
631	524	101 (13)	230 (13)	3 (2)
632	525	28 (9)	206 (13)	3 (2)
633	527	39 (10)	412 (15)	4 (3)
634	530	45 (10)	280 (14)	3 (2)
635	531	68 (12)	366 (15)	3 (2)
636	532	56 (11)	2048 (20)	4 (3)
637	533	66 (11)	340 (15)	3 (2)
638	534	64 (11)	380 (15)	3 (2)
639	535	60 (11)	154 (12)	6 (4)
640	536	47 (10)	210 (13)	6 (4)
641	537	70 (12)	394 (15)	4 (3)
642	538	50 (11)	240 (14)	4 (3)
643	539	75 (12)	350 (15)	4 (3)
644	542	113 (13)	194 (13)	4 (3)
645	544	119 (13)	216 (13)	3 (2)
646	545	137 (14)	274 (14)	3 (2)
647	546	135 (14)	212 (13)	3 (2)
648	548	138 (14)	204 (13)	3 (2)
649	549	193 (15)	328 (15)	3 (2)
650	550	85 (12)	106 (11)	3 (2)
651	551	126 (13)	196 (13)	3 (2)
652	552	81 (12)	168 (12)	3 (2)
653	553	106 (13)	290 (14)	3 (2)
654	554	79 (12)	126 (12)	3 (2)
655	555	51 (11)	216 (13)	10 (6)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
656	D-556	78 (12)	74 (10)	6 (4)
657	557	47 (10)	120 (11)	4 (3)
658	E-501	49 (11)	65 (9)	1 (0)
659	503	58 (11)	53 (9)	1 (0)
660	504	105 (12)	83 (10)	1 (0)
661	505	92 (12)	74 (10)	1 (0)
662	506	104 (13)	212 (13)	4 (3)
663	507	54 (11)	90 (10)	1 (0)
664	508	74 (12)	58 (9)	1 (0)
665	509	81 (12)	58 (9)	1 (0)
666	510	111 (13)	71 (10)	8 (6)
667	511	99 (13)	91 (11)	8 (6)
668	512	85 (12)	98 (11)	1 (0)
669	514	107 (13)	49 (9)	1 (0)
670	515	62 (11)	46 (8)	1 (0)
671	516	109 (13)	83 (10)	20 (9)
672	517	99 (13)	101 (11)	16 (8)
673	518	58 (11)	95 (11)	1 (0)
674	519	54 (11)	198 (13)	1 (0)
675	520	125 (13)	130 (12)	1 (0)
676	521	52 (11)	61 (9)	1 (0)
677	522	85 (12)	44 (8)	1 (0)
678	523	62 (11)	78 (10)	1 (0)
679	524	49 (11)	67 (10)	1 (0)
680	525	67 (11)	76 (10)	1 (0)
681	526	72 (12)	83 (10)	1 (0)
682	527	107 (13)	92 (11)	1 (0)
683	528	46 (10)	61 (9)	1 (0)
684	529	45 (10)	65 (9)	1 (0)
685	530	59 (11)	60 (9)	1 (0)
686	531	41 (10)	51 (9)	1 (0)
687	532	65 (11)	55 (9)	1 (0)
688	533	46 (10)	47 (8)	1 (0)
689	534	43 (10)	45 (8)	1 (0)
690	535	95 (13)	58 (9)	1 (0)
691	536	37 (10)	49 (9)	1 (0)
692	537	55 (11)	57 (9)	1 (0)
693	538	49 (11)	60 (9)	1 (0)
694	539	50 (11)	50 (9)	1 (0)
695	540	68 (12)	49 (9)	1 (0)
696	541	63 (11)	53 (9)	1 (0)
697	542	90 (12)	45 (8)	1 (0)
698	543	121 (13)	65 (9)	1 (0)
699	544	31 (9)	59 (9)	1 (0)
700	545	28 (9)	59 (9)	1 (0)
701	546	31 (9)	56 (9)	1 (0)
702	547	46 (10)	82 (10)	1 (0)
703	549	49 (11)	67 (10)	1 (0)
704	550	40 (10)	63 (9)	1 (0)
705	551	37 (10)	69 (10)	1 (0)
706	552	51 (11)	77 (10)	1 (0)
707	553	44 (10)	66 (9)	1 (0)
708	554	48 (10)	48 (9)	1 (0)
709	555	55 (11)	52 (9)	1 (0)
710	556	44 (10)	97 (11)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
711	E-557	52 (11)	75 (10)	1 (0)
712	558	92 (12)	91 (11)	1 (0)
713	559	29 (9)	43 (8)	1 (0)
714	560	32 (9)	42 (8)	1 (0)
715	561	25 (8)	54 (9)	1 (0)
716	562	68 (12)	88 (10)	1 (0)
717	563	57 (11)	93 (11)	1 (0)
718	564	68 (12)	110 (11)	3 (2)
719	565	70 (12)	60 (9)	1 (0)
720	566	69 (12)	64 (9)	1 (0)
721	567	78 (12)	81 (10)	1 (0)
722	568	57 (11)	65 (9)	1 (0)
723	569	64 (11)	64 (9)	1 (0)
724	570	49 (11)	60 (9)	1 (0)
725	571	49 (11)	63 (9)	3 (2)
726	572	30 (9)	65 (9)	1 (0)
727	F-501	61 (11)	189 (13)	1 (0)
728	503	63 (11)	206 (13)	1 (0)
729	504	75 (12)	111 (11)	1 (0)
730	505	66 (11)	164 (12)	1 (0)
731	506	79 (12)	115 (11)	1 (0)
732	507	79 (12)	107 (11)	1 (0)
733	508	81 (12)	107 (11)	1 (0)
734	510	130 (14)	99 (11)	1 (0)
735	511	108 (13)	82 (10)	3 (2)
736	513	59 (11)	181 (13)	1 (0)
737	514	94 (13)	265 (14)	1 (0)
738	515	113 (13)	188 (13)	1 (0)
739	516	81 (12)	188 (13)	1 (0)
740	517	100 (13)	150 (12)	1 (0)
741	520	50 (11)	75 (10)	1 (0)
742	521	21 (8)	100 (11)	1 (0)
743	523	27 (9)	213 (13)	1 (0)
744	524	28 (9)	250 (14)	1 (0)
745	526	25 (8)	125 (12)	1 (0)
746	527	38 (10)	63 (9)	2 (1)
747	534	75 (12)	225 (13)	1 (0)
748	535	16 (7)	175 (13)	1 (0)
749	538	38 (10)	150 (12)	1 (0)
750	539	15 (7)	138 (12)	1 (0)
751	540	66 (11)	75 (10)	1 (0)
752	541	75 (12)	188 (13)	1 (0)
753	543	141 (14)	163 (12)	1 (0)
754	544	119 (13)	163 (12)	1 (0)
755	545	175 (15)	100 (11)	1 (0)
756	546	119 (13)	125 (12)	2 (1)
757	548	113 (13)	150 (12)	2 (1)
758	549	84 (12)	138 (12)	1 (0)
759	550	113 (13)	100 (11)	1 (0)
760	551	94 (13)	94 (11)	1 (0)
761	552	72 (12)	175 (13)	1 (0)
762	553	75 (12)	163 (12)	1 (0)
763	554	59 (11)	175 (13)	1 (0)
764	555	103 (13)	155 (12)	1 (0)
765	556	84 (12)	166 (12)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
766	F-557	100 (13)	114 (11)	1 (0)
767	558	81 (12)	135 (12)	1 (0)
768	559	56 (11)	103 (11)	1 (0)
769	560	15 (7)	129 (12)	1 (0)
770	562	72 (12)	207 (13)	1 (0)
771	563	97 (13)	238 (14)	1 (0)
772	564	63 (11)	176 (13)	1 (0)
773	565	41 (10)	41 (8)	1 (0)
774	566	31 (9)	47 (8)	1 (0)
775	567	38 (10)	72 (10)	1 (0)
776	G-514	123 (13)	270 (14)	3 (2)
777	516	98 (13)	138 (12)	3 (2)
778	517	113 (13)	124 (12)	3 (2)
779	518	94 (13)	120 (11)	3 (2)
780	519	148 (14)	174 (13)	3 (2)
781	520	520 (18)	180 (13)	3 (2)
782	525	30 (9)	52 (9)	3 (2)
783	526	49 (11)	78 (10)	3 (2)
784	527	30 (9)	64 (9)	3 (2)
785	528	25 (8)	55 (9)	3 (2)
786	529	30 (9)	66 (9)	3 (2)
787	530	13 (6)	34 (7)	3 (2)
788	531	11 (6)	31 (7)	1 (0)
789	532	27 (9)	77 (10)	1 (0)
790	533	64 (11)	112 (11)	1 (0)
791	534	71 (12)	113 (11)	6 (4)
792	535	65 (11)	97 (11)	3 (2)
793	536	79 (12)	104 (11)	3 (2)
794	537	64 (11)	172 (13)	3 (2)
795	538	72 (12)	59 (9)	3 (2)
796	539	85 (12)	163 (12)	3 (2)
797	540	72 (12)	109 (11)	3 (2)
798	541	76 (12)	74 (10)	4 (3)
799	542	94 (13)	131 (12)	4 (3)
800	543	106 (13)	75 (10)	4 (3)
801	544	58 (11)	65 (9)	4 (3)
802	545	86 (12)	136 (12)	3 (2)
803	546	238 (15)	93 (11)	3 (2)
804	547	76 (12)	99 (11)	3 (2)
805	548	92 (12)	147 (12)	3 (2)
806	549	89 (12)	98 (11)	3 (2)
807	550	106 (13)	74 (10)	3 (2)
808	551	84 (12)	197 (13)	3 (2)
809	552	56 (11)	84 (10)	3 (2)
810	553	94 (13)	105 (11)	1 (0)
811	554	118 (13)	94 (11)	1 (0)
812	555	108 (13)	124 (12)	1 (0)
813	558	64 (11)	102 (11)	1 (0)
814	559	34 (9)	86 (10)	1 (0)
815	560	64 (11)	92 (11)	3 (2)
816	561	70 (12)	90 (10)	3 (2)
817	562	41 (10)	98 (11)	3 (2)
818	563	90 (12)	105 (11)	1 (0)
819	564	30 (9)	111 (11)	1 (0)
820	K-501	111 (13)	110 (11)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
821	K-502	130 (14)	112 (11)	4 (3)
822	503	103 (13)	175 (13)	4 (3)
823	504	152 (14)	130 (12)	4 (3)
824	505	132 (14)	128 (12)	4 (3)
825	507	139 (14)	99 (11)	4 (3)
826	508	160 (14)	120 (11)	4 (3)
827	509	90 (12)	17 (5)	13 (7)
828	510	169 (14)	188 (13)	4 (3)
829	511	164 (14)	198 (13)	6 (4)
830	512	480 (18)	89 (10)	13 (7)
831	513	173 (14)	201 (13)	5 (4)
832	514	193 (15)	201 (13)	4 (3)
833	515	181 (15)	188 (13)	4 (3)
834	516	208 (15)	211 (13)	6 (4)
835	517	197 (15)	214 (13)	5 (4)
836	518	197 (15)	214 (13)	5 (4)
837	520	37 (10)	94 (11)	5 (4)
838	521	130 (14)	172 (13)	4 (3)
839	522	243 (16)	183 (13)	5 (4)
840	524	119 (13)	198 (13)	3 (2)
841	525	140 (14)	222 (13)	5 (4)
842	526	86 (12)	175 (13)	1 (0)
843	527	97 (13)	183 (13)	1 (0)
844	528	103 (13)	183 (13)	1 (0)
845	529	144 (14)	177 (13)	1 (0)
846	530	97 (13)	209 (13)	1 (0)
847	532	76 (12)	177 (13)	1 (0)
848	533	152 (14)	193 (13)	1 (0)
849	534	181 (15)	188 (13)	1 (0)
850	535	84 (12)	188 (13)	1 (0)
851	536	256 (16)	97 (11)	9 (6)
852	537	136 (14)	500 (16)	3 (2)
853	538	171 (14)	417 (15)	1 (0)
854	539	50 (11)	64 (9)	4 (3)
855	540	40 (10)	50 (9)	3 (2)
856	541	95 (13)	79 (10)	3 (2)
857	L-501	235 (15)	330 (15)	1 (0)
858	502	118 (13)	106 (11)	1 (0)
859	503	88 (12)	305 (14)	1 (0)
860	504	151 (14)	94 (11)	1 (0)
861	505	136 (14)	116 (11)	1 (0)
862	506	152 (14)	488 (16)	1 (0)
863	509	46 (10)	185 (13)	1 (0)
864	510	24 (8)	237 (14)	1 (0)
865	512	33 (9)	121 (11)	1 (0)
866	513	53 (11)	111 (11)	1 (0)
867	514	82 (12)	183 (13)	1 (0)
868	519	77 (12)	74 (10)	1 (0)
869	520	114 (13)	70 (10)	8 (6)
870	521	108 (13)	68 (10)	1 (0)
871	522	134 (14)	79 (10)	4 (3)
872	523	218 (15)	109 (11)	6 (4)
873	524	247 (16)	101 (11)	8 (6)
874	525	126 (13)	98 (11)	3 (2)
875	526	200 (15)	83 (10)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
876	L-527	196 (15)	79 (10)	1 (0)
877	528	185 (15)	102 (11)	1 (0)
878	529	104 (13)	308 (14)	1 (0)
879	530	138 (14)	253 (14)	1 (0)
880	532	89 (12)	79 (10)	5 (4)
881	533	110 (13)	50 (9)	1 (0)
882	534	134 (14)	57 (9)	1 (0)
883	535	143 (14)	78 (10)	1 (0)
884	536	273 (16)	38 (8)	1 (0)
885	537	175 (15)	90 (10)	1 (0)
886	538	109 (13)	96 (11)	1 (0)
887	539	96 (13)	81 (10)	1 (0)
888	540	82 (12)	58 (9)	1 (0)
889	541	113 (13)	124 (12)	1 (0)
890	542	152 (14)	94 (11)	1 (0)
891	543	130 (14)	70 (10)	1 (0)
892	544	146 (14)	68 (10)	1 (0)
893	545	94 (13)	125 (12)	1 (0)
894	546	107 (13)	290 (14)	1 (0)
895	547	155 (14)	256 (14)	1 (0)
896	548	152 (14)	115 (11)	1 (0)
897	549	145 (14)	302 (14)	1 (0)
898	550	113 (13)	120 (11)	1 (0)
899	551	106 (13)	265 (14)	1 (0)
900	552	114 (13)	122 (11)	1 (0)
901	553	156 (14)	262 (14)	1 (0)
902	554	54 (11)	67 (10)	1 (0)
903	555	20 (8)	79 (10)	1 (0)
904	556	25 (8)	90 (10)	1 (0)
905	557	51 (11)	71 (10)	1 (0)
906	M-500	139 (14)	132 (12)	3 (2)
907	501	32 (9)	27 (7)	3 (2)
908	503	56 (11)	24 (6)	3 (2)
909	504	39 (10)	17 (5)	3 (2)
910	506	54 (11)	18 (5)	3 (2)
911	507	44 (10)	39 (8)	3 (2)
912	508	57 (11)	25 (6)	3 (2)
913	509	39 (10)	37 (8)	3 (2)
914	510	36 (10)	38 (8)	1 (0)
915	511	24 (8)	33 (7)	1 (0)
916	512	308 (16)	133 (12)	8 (6)
917	513	496 (18)	121 (11)	5 (4)
918	514	114 (13)	70 (10)	24 (9)
919	515	85 (12)	120 (11)	1 (0)
920	516	38 (10)	64 (9)	1 (0)
921	517	140 (14)	278 (14)	1 (0)
922	518	184 (15)	184 (13)	1 (0)
923	519	50 (11)	49 (9)	1 (0)
924	520	59 (11)	85 (10)	1 (0)
925	521	114 (13)	71 (10)	1 (0)
926	522	81 (12)	58 (9)	1 (0)
927	523	40 (10)	53 (9)	1 (0)
928	524	31 (9)	49 (9)	1 (0)
929	525	59 (11)	107 (11)	1 (0)
930	526	79 (12)	99 (11)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
931	M-527	89 (12)	150 (12)	1 (0)
932	528	120 (13)	141 (12)	1 (0)
933	529	125 (13)	107 (11)	1 (0)
934	530	74 (12)	156 (12)	1 (0)
935	531	49 (11)	212 (13)	1 (0)
936	532	47 (10)	59 (9)	1 (0)
937	533	44 (10)	32 (7)	1 (0)
938	534	48 (10)	46 (8)	1 (0)
939	535	24 (8)	33 (7)	1 (0)
940	536	33 (9)	27 (7)	1 (0)
941	537	37 (10)	42 (8)	1 (0)
942	538	66 (11)	92 (11)	1 (0)
943	539	47 (10)	96 (11)	1 (0)
944	540	14 (7)	24 (6)	1 (0)
945	541	22 (8)	28 (7)	1 (0)
946	542	45 (10)	104 (11)	1 (0)
947	543	50 (11)	142 (12)	1 (0)
948	544	55 (11)	81 (10)	1 (0)
949	545	58 (11)	102 (11)	3 (2)
950	546	58 (11)	85 (10)	3 (2)
951	547	60 (11)	100 (11)	3 (2)
952	548	58 (11)	97 (11)	3 (2)
953	550	67 (11)	124 (12)	5 (4)
954	551	45 (10)	42 (8)	10 (6)
955	552	78 (12)	46 (8)	5 (4)
956	553	65 (11)	192 (13)	3 (2)
957	554	56 (11)	68 (10)	3 (2)
958	555	50 (11)	62 (9)	3 (2)
959	556	56 (11)	68 (10)	1 (0)
960	557	66 (11)	74 (10)	1 (0)
961	558	52 (11)	66 (9)	3 (2)
962	559	59 (11)	68 (10)	1 (0)
963	560	66 (11)	42 (8)	1 (0)
964	561	68 (12)	52 (9)	3 (2)
965	562	88 (12)	55 (9)	4 (3)
966	563	54 (11)	49 (9)	3 (2)
967	564	63 (11)	52 (9)	1 (0)
968	565	65 (11)	50 (9)	1 (0)
969	566	45 (10)	83 (10)	3 (2)
970	567	54 (11)	66 (9)	8 (6)
971	568	40 (10)	89 (10)	4 (3)
972	569	36 (10)	81 (10)	4 (3)
973	570	75 (12)	56 (9)	1 (0)
974	571	45 (10)	73 (10)	1 (0)
975	572	66 (11)	75 (10)	1 (0)
976	573	81 (12)	75 (10)	1 (0)
977	574	81 (12)	87 (10)	1 (0)
978	P-502	46 (10)	53 (9)	1 (0)
979	503	34 (9)	66 (9)	3 (2)
980	504	33 (9)	78 (10)	3 (2)
981	505	30 (9)	79 (10)	3 (2)
982	506	33 (9)	76 (10)	3 (2)
983	507	30 (9)	80 (10)	3 (2)
984	508	34 (9)	84 (10)	3 (2)
985	509	49 (11)	69 (10)	3 (2)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
986	P-510	30 (9)	82 (10)	3 (2)
987	511	60 (11)	69 (10)	3 (2)
988	512	27 (9)	81 (10)	3 (2)
989	R-501	44 (10)	82 (10)	3 (2)
990	502	69 (12)	89 (10)	1 (0)
991	503	89 (12)	85 (10)	1 (0)
992	504	56 (11)	77 (10)	3 (2)
993	507	59 (11)	75 (10)	1 (0)
994	508	63 (11)	84 (10)	1 (0)
995	510	69 (12)	102 (11)	1 (0)
996	511	63 (11)	85 (10)	1 (0)
997	513	85 (12)	172 (13)	1 (0)
998	514	74 (12)	87 (10)	3 (2)
999	515	156 (14)	114 (11)	4 (3)
1000	516	100 (13)	77 (10)	18 (8)
1001	517	135 (14)	106 (11)	11 (7)
1002	518	163 (14)	110 (11)	11 (7)
1003	519	188 (15)	124 (12)	9 (6)
1004	520	125 (13)	128 (12)	8 (6)
1005	521	59 (11)	92 (11)	1 (0)
1006	522	56 (11)	73 (10)	3 (2)
1007	523	56 (11)	70 (10)	3 (2)
1008	524	63 (11)	88 (10)	3 (2)
1009	525	44 (10)	106 (11)	1 (0)
1010	526	56 (11)	84 (10)	3 (2)
1011	527	56 (11)	84 (10)	1 (0)
1012	528	63 (11)	92 (11)	3 (2)
1013	529	63 (11)	99 (11)	1 (0)
1014	530	59 (11)	84 (10)	1 (0)
1015	531	50 (11)	73 (10)	1 (0)
1016	532	19 (8)	51 (9)	1 (0)
1017	533	19 (8)	51 (9)	1 (0)
1018	534	22 (8)	62 (9)	1 (0)
1019	535	53 (11)	66 (9)	1 (0)
1020	536	53 (11)	77 (10)	1 (0)
1021	537	56 (11)	66 (9)	1 (0)
1022	538	88 (12)	81 (10)	1 (0)
1023	539	100 (13)	84 (10)	4 (3)
1024	T-501	137 (14)	123 (11)	3 (2)
1025	502	107 (13)	117 (11)	1 (0)
1026	503	115 (13)	90 (10)	1 (0)
1027	505	145 (14)	96 (11)	1 (0)
1028	506	115 (13)	128 (12)	1 (0)
1029	507	126 (13)	204 (13)	1 (0)
1030	509	107 (13)	105 (11)	0 (0)
1031	510	98 (13)	108 (11)	0 (0)
1032	511	90 (12)	117 (11)	0 (0)
1033	513	123 (13)	134 (12)	0 (0)
1034	514	153 (14)	116 (11)	1 (0)
1035	517	155 (14)	100 (11)	1 (0)
1036	518	95 (13)	107 (11)	1 (0)
1037	520	95 (13)	111 (11)	1 (0)
1038	521	110 (13)	100 (11)	3 (2)
1039	522	110 (13)	100 (11)	2 (1)
1040	526	95 (13)	114 (11)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1041	T-528	45 (10)	86 (10)	1 (0)
1042	529	65 (11)	71 (10)	1 (0)
1043	533	40 (10)	86 (10)	1 (0)
1044	534	100 (13)	107 (11)	1 (0)
1045	535	85 (12)	143 (12)	2 (1)
1046	536	125 (13)	107 (11)	1 (0)
1047	539	115 (13)	100 (11)	1 (0)
1048	541	85 (12)	100 (11)	1 (0)
1049	542	70 (12)	86 (10)	1 (0)
1050	543	60 (11)	93 (11)	1 (0)
1051	544	48 (10)	57 (9)	1 (0)
1052	545	105 (13)	107 (11)	1 (0)
1053	546	70 (12)	64 (9)	1 (0)
1054	548	70 (12)	86 (10)	1 (0)
1055	549	25 (8)	64 (9)	1 (0)
1056	550	35 (9)	79 (10)	1 (0)
1057	U-501	102 (15)	92 (11)	1 (0)
1058	502	121 (13)	75 (10)	5 (4)
1059	503	48 (10)	51 (9)	10 (6)
1060	504	135 (14)	75 (10)	3 (2)
1061	505	79 (12)	105 (11)	3 (2)
1062	506	53 (11)	131 (12)	3 (2)
1063	507	30 (9)	236 (14)	3 (2)
1064	510	24 (8)	130 (12)	3 (2)
1065	512	88 (12)	272 (14)	3 (2)
1066	515	79 (12)	69 (10)	3 (2)
1067	516	131 (14)	70 (10)	3 (2)
1068	518	128 (14)	57 (9)	4 (3)
1069	519	95 (13)	124 (12)	5 (4)
1070	521	95 (13)	90 (10)	3 (2)
1071	522	100 (13)	86 (10)	3 (2)
1072	523	108 (13)	64 (9)	3 (2)
1073	524	110 (13)	58 (9)	3 (2)
1074	525	186 (15)	114 (11)	1 (0)
1075	526	73 (12)	87 (10)	3 (2)
1076	527	77 (12)	60 (9)	6 (4)
1077	528	135 (14)	65 (9)	3 (2)
1078	530	54 (11)	97 (11)	1 (0)
1079	532	67 (11)	220 (13)	1 (0)
1080	533	56 (11)	316 (15)	6 (4)
1081	534	52 (11)	194 (13)	6 (4)
1082	535	54 (11)	155 (12)	6 (4)
1083	537	70 (12)	164 (12)	6 (4)
1084	539	54 (11)	123 (11)	6 (4)
1085	541	62 (11)	90 (10)	8 (6)
1086	V-502	97 (13)	166 (12)	4 (3)
1087	503	58 (11)	169 (13)	8 (6)
1088	504	78 (12)	132 (12)	4 (3)
1089	506	86 (12)	107 (11)	5 (4)
1090	507	122 (13)	112 (11)	4 (3)
1091	508	128 (14)	112 (11)	3 (2)
1092	509	78 (12)	112 (11)	4 (3)
1093	510	139 (14)	112 (11)	4 (3)
1094	511	111 (13)	126 (12)	5 (4)
1095	512	25 (8)	84 (10)	6 (4)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1096	V-513	28 (9)	96 (11)	8 (6)
1097	514	28 (9)	104 (11)	7 (5)
1098	515	25 (8)	93 (11)	7 (5)
1099	516	19 (8)	124 (12)	5 (4)
1100	517	17 (7)	98 (11)	5 (4)
1101	518	22 (8)	118 (11)	4 (3)
1102	519	17 (7)	93 (11)	3 (2)
1103	520	19 (8)	93 (11)	4 (3)
1104	521	17 (7)	124 (12)	8 (6)
1105	522	28 (9)	113 (11)	4 (3)
1106	523	39 (10)	104 (11)	3 (2)
1107	524	25 (8)	101 (11)	3 (2)
1108	525	22 (8)	104 (11)	3 (2)
1109	526	133 (14)	112 (11)	5 (4)
1110	527	183 (15)	118 (11)	7 (5)
1111	528	128 (14)	135 (12)	5 (4)
1112	529	122 (13)	141 (12)	5 (4)
1113	530	106 (13)	118 (11)	4 (3)
1114	531	95 (13)	135 (12)	5 (4)
1115	533	72 (12)	163 (12)	4 (3)
1116	534	106 (13)	146 (12)	6 (4)
1117	535	111 (13)	124 (12)	5 (4)
1118	537	106 (13)	118 (11)	8 (6)
1119	538	65 (11)	111 (11)	1 (0)
1120	539	96 (13)	96 (11)	1 (0)
1121	540	94 (13)	86 (10)	1 (0)
1122	541	63 (11)	135 (12)	1 (0)
1123	542	78 (12)	121 (11)	1 (0)
1124	543	75 (12)	135 (12)	1 (0)
1125	544	73 (12)	127 (12)	1 (0)
1126	545	85 (12)	113 (11)	1 (0)
1127	548	101 (13)	125 (12)	1 (0)
1128	549	82 (12)	98 (11)	1 (0)
1129	550	94 (13)	117 (11)	1 (0)
1130	556	89 (12)	159 (11)	1 (0)
1131	557	130 (14)	167 (12)	3 (2)
1132	559	143 (14)	163 (12)	1 (0)
1133	563	85 (12)	113 (11)	1 (0)
1134	565	39 (10)	167 (12)	1 (0)
1135	566	44 (10)	173 (13)	3 (2)
1136	567	36 (10)	78 (10)	3 (2)
1137	W-500	121 (13)	103 (11)	3 (2)
1138	501	105 (13)	90 (10)	3 (2)
1139	503	74 (12)	58 (9)	1 (0)
1140	507	121 (13)	88 (10)	1 (0)
1141	508	140 (14)	112 (11)	8 (6)
1142	513	82 (12)	60 (9)	4 (3)
1143	514	84 (12)	87 (10)	4 (3)
1144	518	63 (11)	87 (10)	3 (2)
1145	519	111 (13)	88 (10)	3 (2)
1146	520	105 (13)	108 (11)	1 (0)
1147	521	126 (13)	82 (10)	4 (3)
1148	522	95 (13)	87 (10)	3 (2)
1149	523	116 (13)	110 (11)	1 (0)
1150	524	75 (12)	64 (9)	1 (0)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1151	W-525	63 (11)	60 (9)	2 (1)
1152	526	55 (11)	56 (9)	2 (1)
1153	527	91 (12)	68 (10)	2 (1)
1154	528	67 (11)	64 (9)	3 (2)
1155	529	225 (15)	73 (10)	3 (2)
1156	530	181 (15)	19 (5)	3 (2)
1157	531	123 (13)	64 (9)	3 (2)
1158	532	111 (13)	68 (10)	3 (2)
1159	533	28 (9)	41 (8)	2 (1)
1160	534	28 (9)	60 (9)	3 (2)
1161	535	83 (12)	79 (10)	1 (0)
1162	537	87 (12)	105 (11)	4 (3)
1163	538	87 (12)	83 (10)	3 (2)
1164	539	103 (13)	75 (10)	5 (4)
1165	542	63 (11)	105 (11)	5 (4)
1166	543	83 (12)	30 (7)	3 (2)
1167	545	99 (13)	75 (10)	1 (0)
1168	547	107 (13)	90 (10)	3 (2)
1169	549	91 (12)	64 (9)	1 (0)
1170	550	79 (12)	75 (10)	3 (2)
1171	551	89 (12)	58 (9)	3 (2)
1172	554	47 (10)	53 (9)	3 (2)
1173	558	103 (13)	64 (9)	3 (2)
1174	559	55 (11)	53 (9)	3 (2)
1175	560	67 (11)	60 (9)	3 (2)
1176	561	111 (13)	64 (9)	1 (0)
1177	562	47 (10)	60 (9)	4 (3)
1178	563	79 (12)	68 (10)	1 (0)
1179	564	111 (13)	105 (11)	1 (0)
1180	565	95 (13)	75 (10)	1 (0)
1181	566	95 (13)	75 (10)	1 (0)
1182	567	63 (11)	105 (11)	3 (2)
1183	Y-501	91 (12)	69 (10)	1 (0)
1184	502	64 (11)	82 (10)	1 (0)
1185	503	145 (14)	71 (10)	4 (3)
1186	504	89 (12)	73 (10)	1 (0)
1187	505	107 (13)	82 (10)	1 (0)
1188	506	116 (13)	81 (10)	1 (0)
1189	507	91 (12)	88 (10)	1 (0)
1190	508	89 (12)	75 (10)	3 (2)
1191	509	85 (12)	250 (14)	1 (0)
1192	510	73 (12)	79 (10)	1 (0)
1193	511	83 (12)	77 (10)	1 (0)
1194	512	94 (13)	78 (10)	1 (0)
1195	513	84 (12)	120 (11)	1 (0)
1196	514	77 (12)	250 (14)	1 (0)
1197	515	74 (12)	338 (15)	4 (3)
1198	516	58 (11)	72 (10)	4 (3)
1199	517	120 (13)	98 (11)	8 (6)
1200	518	76 (12)	109 (11)	1 (0)
1201	519	100 (13)	84 (10)	4 (3)
1202	520	96 (13)	83 (10)	4 (3)
1203	521	113 (13)	101 (11)	6 (4)
1204	522	86 (12)	117 (11)	1 (0)
1205	523	132 (14)	80 (10)	4 (3)

SER.NO.	SAMPLE NO.	Cu	Zn	Mo
1206	Y-524	124 (13)	98 (11)	1 (0)
1207	525	122 (13)	85 (10)	24 (9)
1208	526	88 (12)	93 (11)	1 (0)
1209	527	96 (13)	125 (12)	1 (0)
1210	528	56 (11)	63 (9)	1 (0)
1211	529	167 (14)	82 (10)	22 (9)
1212	530	145 (14)	88 (10)	8 (6)
1213	531	86 (12)	84 (10)	1 (0)
1214	532	136 (14)	118 (11)	10 (6)
1215	533	68 (12)	71 (10)	1 (0)
1216	534	53 (11)	65 (9)	1 (0)
1217	535	64 (11)	68 (10)	1 (0)
1218	536	87 (12)	61 (9)	1 (0)
1219	537	67 (11)	63 (9)	1 (0)
1220	538	55 (11)	65 (9)	1 (0)
1221	539	73 (12)	68 (10)	1 (0)
1222	541	83 (12)	63 (9)	1 (0)
1223	542	60 (11)	60 (9)	1 (0)
1224	543	34 (9)	65 (9)	1 (0)
1225	544	44 (10)	76 (10)	1 (0)
1226	545	71 (12)	85 (10)	1 (0)
1227	546	146 (14)	68 (10)	1 (0)
1228	547	91 (12)	69 (10)	1 (0)
1229	548	66 (11)	92 (11)	1 (0)
1230	549	44 (10)	74 (10)	1 (0)
1231	551	77 (12)	85 (10)	1 (0)
1232	552	55 (11)	78 (10)	1 (0)
1233	553	60 (11)	84 (10)	1 (0)
1234	554	64 (11)	108 (11)	1 (0)
1235	555	101 (13)	73 (10)	1 (0)
1236	556	14 (7)	24 (6)	1 (0)
1237	557	96 (13)	80 (10)	1 (0)
1238	558	60 (11)	69 (10)	1 (0)
1239	559	80 (12)	82 (10)	1 (0)
1240	560	90 (12)	87 (10)	1 (0)
1241	561	68 (12)	63 (9)	1 (0)
1242	562	100 (13)	86 (10)	1 (0)
1243	563	75 (12)	71 (10)	1 (0)
1244	564	68 (12)	60 (9)	1 (0)
1245	565	59 (11)	69 (10)	1 (0)
1246	566	41 (10)	79 (10)	1 (0)
1247	567	70 (12)	90 (10)	1 (0)
1248	568	57 (11)	87 (10)	1 (0)
1249	569	106 (13)	83 (10)	6 (4)
1250	570	43 (10)	78 (10)	1 (0)
1251	K-531	93 (13)	193 (13)	1 (0)