PART II Survey Results

CHAPER 1 DATA COMPLITION

1-1 Content of Work

Data compilation was carried out at Geological Information Center in Ulaanbaatar, Mongolia, for a period of 7 days. Necessary Data were collected and evaluated in order to accomplish the purpose of the survey.

1-2 Results of Data Compilation

Existing data related to the Western Erdenet area of the project area were collected in the Geological Information Center and Erdenet Mine. The collected data are shown in Appendix 1. The data consist of topographic maps in and around the Erdenet mine, geological maps and explanation notes, geophysical interpretation maps and drilling log descriptions.

The topographic maps are 1: 100,000, 1: 50,000 and 1: 25,000 in scale.

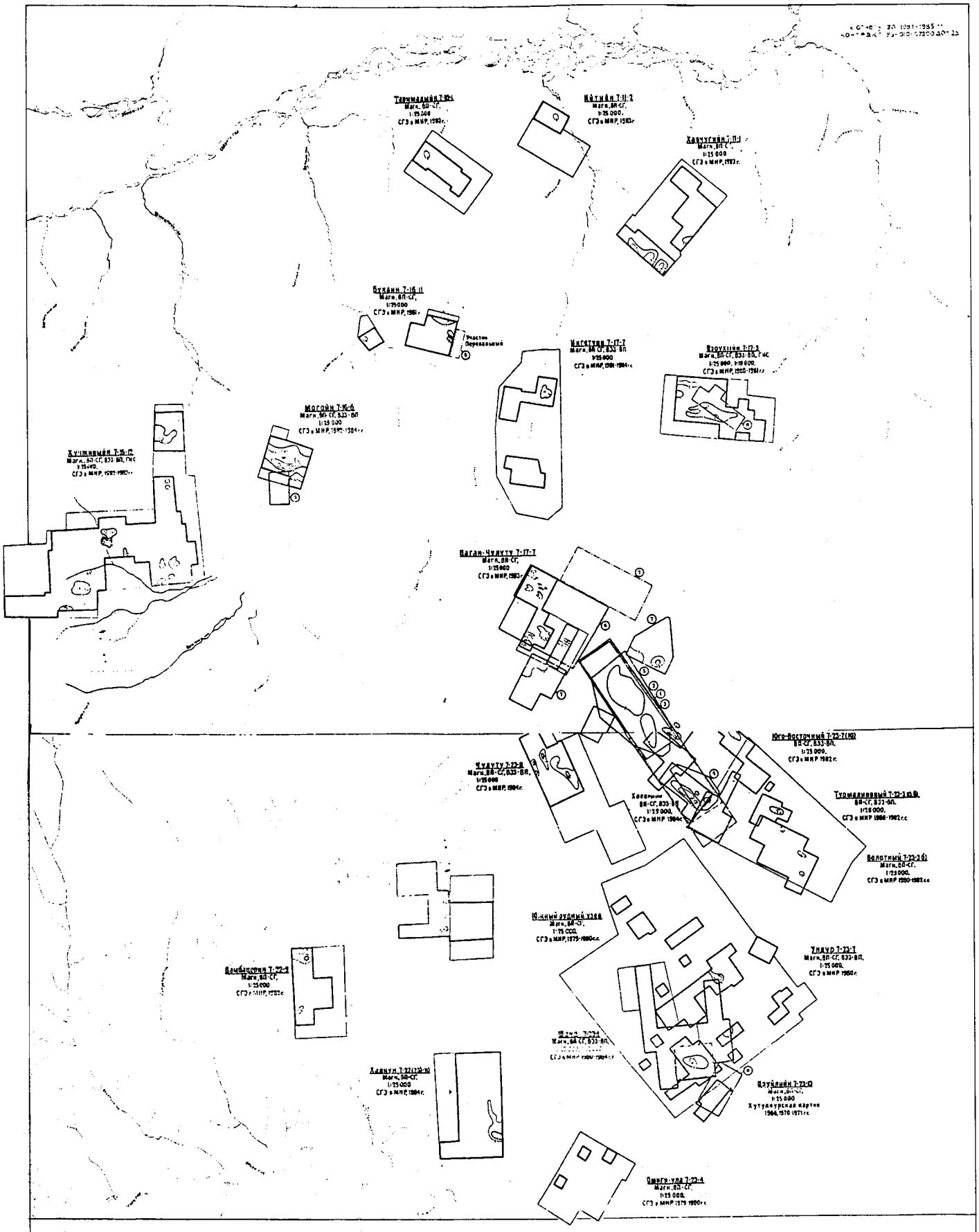
The geological data consist of the mineral location map of Mongolia, the geological map of the Erdenet mine area of 1: 100, 0000 in scale, the geological map of seven geological survey areas and explanation notes.

According to the results of the existing data compilation, it was found out that previous geological surveys were carried out from 1913 to 1985. Main survey products were geological maps at the scales of 1: 1,000,000, 1: 200,000, 1: 100,000, 1: 50,000 and 1: 25,000. The periods when previous geological surveys were carried are as follow:

1: 1,000,000 geological mapping surveys: 1913 to 1914, 1941, 1947, 1954, 1959
1: 200,000 geological mapping surveys: 1947, 1967, 1971, 1981, 1983, 1981 to 1985
1: 100,000 geological mapping surveys: 1965, 1968
1: 50,000 geological mapping surveys: 1968, 1974, 1970 to 1981, and 1981 to 1985
1: 25,000 geological mapping surveys: 1968, 1979 to 1985 (including 1: 10,000 maps)
Geological survey for Mineralization: 1972, 1976, 1981 to 1983, 1981 to 1985
Making a 1: 200,000 structural map: 1972

During these surveys, excellent results were found with the discovery of the porphyry copper-molybdenum mine, called Erdenet mine. In the discovered mineralized areas the following surveys were also carried out: geochemical surveys including stream water geochemistry and soil geochemistry, geophysical surveys including magnetic and IP & SP surveys, and drilling survey.

Fig. I-3-1 shows the existing geological map in and around the project area. Fig. II-1-1 shows the geophysical survey areas in and around the project area.



УСЛОВНЫЕ ОБОЗНАЧЕНИЯ

Геофизические исследования, проведенные другими организациями за прошедший период

1. Каминов З. и др. Магниторазведка, радиометрия, метод естественного поля. Масштаб 1:10 000, 1984-1986 гг.
2. Каминов З. и др. метод комбинированного электропрофилирования. Масштаб 1:10 000, 1986 г.
3. Каминов З. и др. Метод вызванной поляризации (ВП-СГ, ВЭЗ-ВП) Масштаб 1:5000, 1987-1988 гг.
4. Мигмар и др. Магниторазведка. Масштаб 1:10 000, 1969-1978 гг.
5. Кадинов В.С. и др. Электроразведка масштаба 1:5000 (ГМС), (ВП-СГ, ВЭЗ-ВП), магниторазведка, радиометрия
6. Шабаловский А.Е. Электроразведка (ВП-СГ), магниторазведка. Масштаб 1:50 000, 1972-1974 гг.
7. Яхимов А. Электроразведка (ВП-СГ), магниторазведка, проверка на безрудность под промобъекты. Масштаб 1:50 000, 1974 г.
8. Герасимов Д. и др. Электроразведка (ВП-СГ), магниторазведка. масштаб 1:5000, 1972 г.
9. Шабаловский А.Е. Аэрогеофизическая съемка масштаба 1:10 000, 1974 г.
10. Шпильман А. и др. Аэромагнитная съемка масштаба 1:200 000, СГЭ в МИР, 1980-1981 гг.
11. Шпильман А. и др. Комплексная аэромагнитная гамма-спектрометрическая съемка масштаба 1:50 000, СГЭ в МИР, 1984 г.

Контур магниторазведочных работ

Контур электроразведочных работ методом ВП-СГ

Контур детальных работ

ГМС Геофизические исследования снимки методами ВС, ГК, ВП, МЗВ, маг., рад.

Контур изолиний η_s в % (3,5,7)

7-17-5 Номенклатурный номер участка (знаменки)

СГЭ в МИР Советская геологическая экспедиция в МНР. Эрдэнэтская партия

Fig. II-1-1 Location of Geophysical survey areas in Erdenet Mine area

The geophysical data consist of magnetic survey result maps of the six geological areas except the Tsookher mert area, and chargeability and resistivity maps of the geophysical IP survey.

The drilling data are of the Zuukhiin gol mineral showing area, Khujiriin gol mineral showing area and the Erdenet mine area.

Table II-1-1 shows results of previous geological surveys in selected areas.

Table II-1-2 shows the results of previous geological surveys in selected areas.

Table II-2-3 shows the results of previous geophysical surveys in the geological survey areas.

Table II-1-1 Summary of previous survey in the Western Erdenet area, Mongolia

Geological survey area	Geological survey	Geochemical survey	Geophysical survey	Drilling survey	F/S survey
Zuukhiin gol	1: 50,000, 1: 25,000 1: 100,000 Trench survey	Bio-geochemical survey, Geochemical survey: Cu, Mo. Pb, Zn	magnetic survey, IP survey	12 holes	
Mogoin gol	1: 25,000 Trench survey	Rock geochemical survey: Cu Pb, Zn, Ag	magnetic survey, IP survey	9 holes	
Khujiriin gol	1: 25,000 Trench survey	Geochemical survey: Cu Pb, Zn, Mo, Ag	magnetic survey, IP survey	5 holes	
Tsagaan chuluut	1: 50,000, 1: 25,000	Geochemical survey	magnetic survey, IP survey	3 holes	
Erdenet Mine	1: 50,000, 1: 25,000 1: 10,000 1: 5,000 Trench survey	Geochemical survey: Cu, Pb, Zn, Mo, Ag, W, Sn, Sb, As,V, Sr, Co, Si, Be-, a	magnetic survey, IP survey	many holes	F/S survey
Danbatseren	1: 25,000	Geochemical survey: Cu, Pb, Zn, Mo, Au	magnetic survey, IP survey	not clear	
Undrakh	1: 500,000, 1: 50,000, 1: 25,000 Trench survey	Geochemical survey	magnetic survey, IP survey	5 holes	
Tsookher mert	1: 25,000, 1: 10,000 Trench survey	Geochemical survey	magnetic survey, IP survey	20 holes	

Table II-1-2 Summary of previous survey methods performed in the Western Erdenet area,

Mineral Occurrence	Expected deposit type	Results of previous survey	Geology	Alteration		Mineralization	Remarks
				Characteristics	Alteration mineral assemblage		
Zuukhiin gol	Porphyry Cu-Mo	Cu:0.11-0.17%, Mo:0.003-0.007% (drilling core), 21 drilling holes	Selenge complex, micro diorite, dacite-andesite porphyry, dacite and andesite volcanic	Potassic alteration		Oxide copper	Oxide copper deposits are expected beneath the surface at shallow
Mogoin gol	Porphyry Cu-Mo, Epithermal Au	Cu:0.34-0.074%, Mo:0.002-0.018% (ore samples), 21FE:6% (IP method)	Selenge complex, Permian volcanics, late Triassic-early Jurassic volcanics	secondary quartzite (2km×4km) with sericite, alunite, andalusite and kaolinite	Qz+Se+Alu+Kao, Qz+Kao±And	Oxide copper	Epithermal Au deposits are expected within secondary quartzite and porphyry Cu-Mo deposits are expected beneath it at deep
Khujiriin gol	Porphyry Cu-Mo, Polimetalic Cu-Pb-Zn	Cu ore: Cu0.01 – 0.08%, Geochemistry: Cu0.05%, Zn0.01%, Pb0.01 – 0.1%	Selenge complex, Permian volcanics, late Triassic-early Jurassic volcanics	Sericite-Chlorite alteration	Qz+Se+Alu+Kao, Qz+Kao±And	Oxide copper and chalcopyrite	Oxide copper deposits are expected beneath the surface at shallow
Tsagaan chuluut	Porphyry Cu-Mo, Epithermal Au	Cu:0.75%, (drilling core length 15m)	Selenge complex, Permian-Triassic volcanics	Quartz-sericite metasomatic alteration and greisen with sericite, alunite	Qz+Kao+Alu, Qz+Ser	Pyrite, malachite, Bornite	Epithermal Au deposits are expected within secondary quartzite and porphyry Cu-Mo deposits are expected beneath it at deep
Erdenet Mine	Porphyry Cu-Mo-Ag	Ore deposit: 512 Mt, Metal Cu: 4,300,000 t	Erdenet complex, Selenge complex, Permian volcanics	Hydrothermal alteration, metasomatic alteration	Qtz+Ser+K-fel+Bi+Chi+Py+Gl	Pyrite-chalcopyrite dissemination, pyrite dissemination, oxide copper, quartz stockwork	
Danbatseren	Porphyry Cu-Mo, Epithermal Au	High resistivity and FE detected by IP method, weak geochemical anomaly (Cu, Pb, Zn, Mo, Au)	Selenge complex, rhyolite intrusive	secondary quartzite (0.5km×0.3km) with sericite, alunite, pyrophyllite, andalusite and kaolinite	Qz+Se+Kao, Pyro±And		Epithermal Au deposits are expected within secondary quartzite and porphyry Cu-Mo deposits are expected beneath it at deep
Undrakh	Porphyry Cu-Mo	Cu:0.5-0.7% (point samples)	Selenge complex, aplite	Potassic alteration (300m ×150m+)		Oxide copper, chalcopyrite	Primary and oxide copper deposits are expected beneath the surface at shallow
Tsookher mert	Epithermal Au	Cu:0.02-0.3%, Au:3-10g/t, Ag:20-500g/t (quartz vein)	Selenge complex, dacite intrusive	Wall rock alteration (silicification, sericite)	Qz+Kao, Qz+Ser	Qz vein with oxide copper, sphalerite and etc., Au:285g/t, Ag:950g/t, Cu:624ppm, Pb:8.99%, Zn:0.101% (width 30cm)	High grade auriferous quartz veins are expected beneath the surface at shallow

Table II-1-3 Summary of previous geophysical surveys performed in the seven geological survey areas of Western Erdenet area

Area		Magnetic Survey	IP Electric Survey	
			Chargeability	Resistivity
Erdenet Mine area				
	NW Erdenet	Anomaly: 0.0 ~ -300 Area: 5.5km × 2.5km	Anomaly: 5 ~ 17 Area: 5.5km × 2.5km	Anomaly: 800 ~ 200 Area: 5.5km × 2.5km
	Central	Anomaly: 0.0 ~ -300 Area: 4.0km × 1.5km	Anomaly: 5 ~ 13 Area: 4.0km × 1.5km	Anomaly: 800 ~ 600 Area: 4.0km × 1.0km
	Middle	Anomaly: 0.0 ~ -200 Area: 4.0km × 1.5km	Anomaly: 3 ~ 4 Area: ?	Anomaly: 800 ~ 400 Area: ?
	SE Erdenet	Anomaly: 0.0 ~ -200 Area: 3.0km × 2.0km	Anomaly: 5 ~ 12 Area: 3.5km × 1.0km	Anomaly: 1500 ~ 500 Area: ?
Zuukhiin gol area		non	Anomaly: 7 ~ 10 Area: 4.0km × 2.0km	Anomaly: 500 ~ 1000 Area: 2.0km × 1.0km
Mogoin gol/Khujiriin gol area				
	Mogoin gol	Anomaly: 0.0 ~ -600 Area: ?	Anomaly: 7 ~ 10 Area: 4.0km × 2.0km	Anomaly: 500 ~ 1000 Area: 2.0km × 1.0km
	Khujiriin gol area	Anomaly: 600 ~ 1000 not clear	Anomaly: 3.0 ~ 10 Area: 2.5km × 3.0km	Anomaly: 2000 ~ 1000 not clear
Tsagaan Chuluut area		not clear	not clear	not clear
Danbatseren area		non	Anomaly: 3 ~ 6 Area: 2.5km × 1.0km	not clear
Undrakh		not clear	not clear	not clear
Tsookher mert area		non	non	non

CHAPER 2 GEOLOGICAL SURVEY

2-1 Location of the Survey Areas

The Western Erdenet area is located in the northern central of Mongolia at 300 km west from the capital of Ulaanbaatar. The survey area as shown in Fig. 1 covers an area of 5,500 km^2, and consists of Area 1 and Area 2 delimited by the coordinates 49° 20′ N, 48° 40′ N, 104° 27′ E and 102° 38′ E.

The geological survey areas are located in and around Erdenet mine and consist of Zuukhiin gol area, Mogoin gol/Khujiriin gol area, Tsagaan Chuluut area, Erdenet Mine area, Danbatseren area, Undrakh area and Tsookher mert area.

2-2 Survey Method

The geological survey conducted in seven selected promising areas took also into consideration the previous geological survey results performed by MMAJ from 1999 to 2000 that investigated the mineralization and constructed a mineralization model. The survey method of the geological survey carried out in this phase is as follows:

(1) Field survey

a) Survey route was arranged by analyzing the existing data.

b) Satellite image was used during the geological field survey.

c) Trench sketches of mineralization were made during field survey and their positions were confirmed by using GPS.

d) In the description, observation items related to detail lithology, alteration, mineralization, structure, etc. were written in detail on the route maps.

e) The results of the trench survey were compiled in a geological map.

(2) Sample collection and processing

a) Samples for the geological survey were collected in order to clarify the representative lithology and correlation among the rocks.

b) Different types of rocks were investigated by thin section and X-ray diffraction analysis.

c) Samples for chemical analysis were prepared and analyzed by selecting a suitable analytical method.

d) All of samples used for laboratory work were stored in rectangular shapes of about 6 cm x 4

cm x 2 cm.

2-3 Results of Laboratory Test

2-3-1 Laboratory Works

The samples for laboratorial samples were collected from the seven geological survey areas in order to analyze the geology and mineralization in the project area. The laboratory works are shown in Table I-1-2, while the results are indicated in Appendices 2 to 11.

2-3-2 Description of Thin Section for Rocks

Rock samples of typical rock species, rock facie and altered rocks were collected from the geological survey areas. A total of 62 thin sections were made and observed under microscope. The results of rock observation for thin sections are shown Appendix 2.

The results of rock observation show that the rock for the thin sections consist of Paleozoic granites, Permian volcanic rocks and granites, Triassic volcanic rocks and granites, Triassic to Jurassic volcanic rocks and granites and alteration rock from the mineralized areas.

2-3-3 Description of Polished Thin Section for Ore

Ore samples were collected from the mineralized areas of the geological survey areas. 21 polished thin section were made and observed under microscope. The results of observation for ore polished thin sections are shown in Appendix 3.

The following ore minerals and alteration minerals are observed: pyrite, goethite, hematite, limonite, chalcopyrite, chalcocite, covellite, bornite and pyrrhotite. Alteration minerals of quartz, biotite, sericite, chlorite, epidote, carbonate kaolinite and smectite are observed.

2-3-4 X-ray diffraction analysis

The samples collected consisted of ordinary rocks and altered rocks from the geological survey areas. A total of 163 X-ray diffraction tests were conducted. The results of X-ray diffraction analysis for rock and ore samples are shown in Appendix 4.

The detected alteration minerals are quartz, plagioclase, potassic feldspar, albite, sericite, chlorite, kaolinite, smectite, pyrophyllite, hornblende, augite, biotite, alunite, jarosite, calcite, pyrite, hematite, epidote, rutile, goethite, marcasite, andalusite and topaz.

The alteration mineral assemblages are classified as below and their distributions are indicated in Fig. II-2-1.

1) quartz-(jarosite)-(kaolinite)
2) quartz-alunite-(pyrophylite)-(kaolinite)

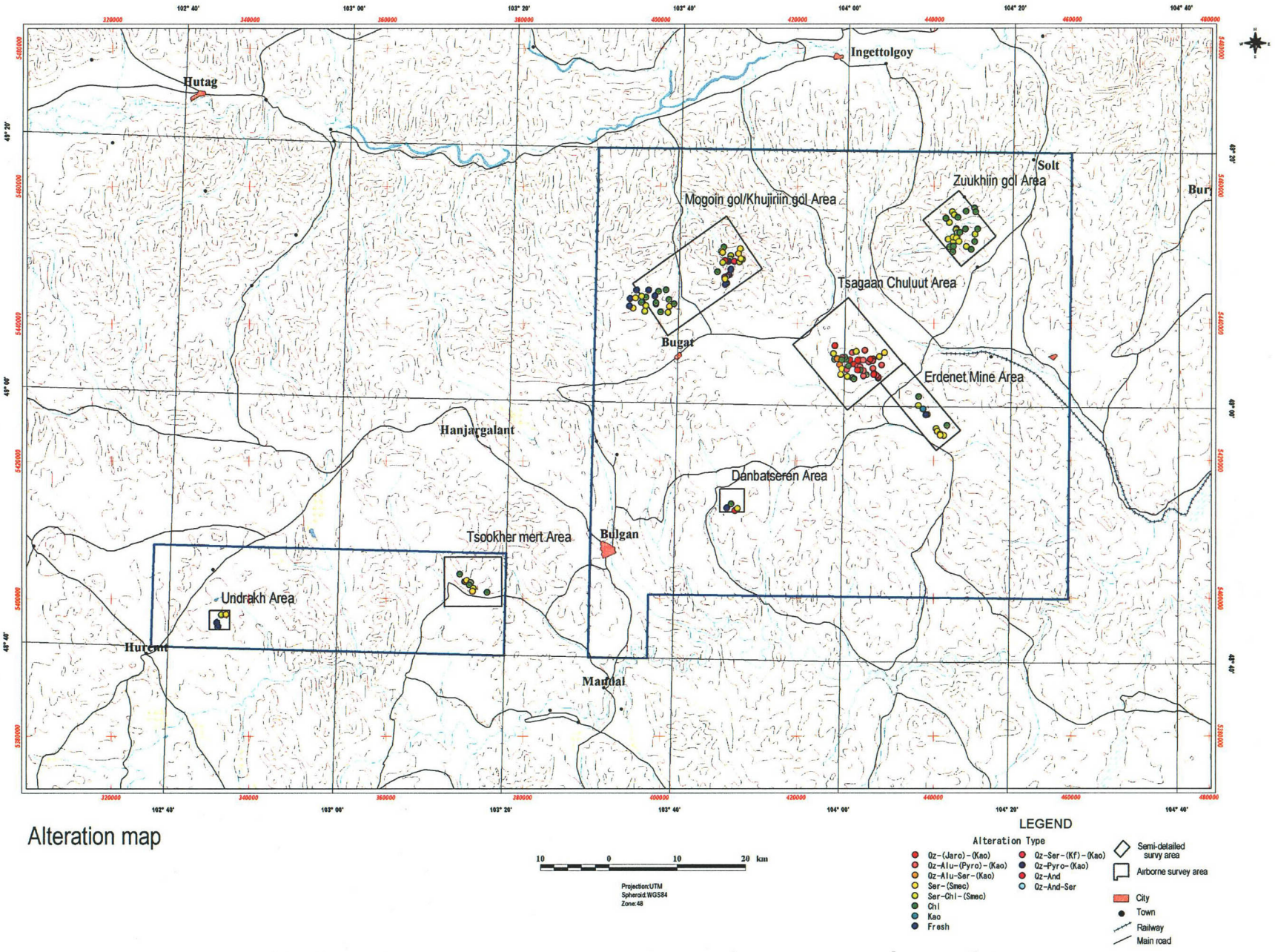


Fig. II-2-1 Distribution map of alteration minerals assemblage in the project area

3) quartz-alunite-sericite-(kaolinite)
4) quartz-sericite-(K-feldspar)-(kaolinite)
5) quartz-pyrophylite-kaolinite
6) quartz-andalusite
7) quartz-andalusite-sericite
8) sericite-(smectite)
9) sericite-chlorite-(smectite)
10) chlorite
11) kaolinite
12) fresh

Alteration of the Erdenet Mine area is composed of alteration mineral assemblage of sericite-(smectite), sericite-chlorite-(smectite) and chlorite. The mineral assemblage of alteration mineral zoning in the Erdenet Mine is inferred to consist of a)quartz-sericite, b)quartz-sericite-chlorite and c)albite –chlorite, distributed outwards from the central part.

The characteristics of the geological survey areas are as follows:

1) In the Zuukhiin gol area, the alteration mineral assemblage is composed of sericite-chlorite-(smectite) and chlorite, same alteration mineral assemblage around the Erdenet Mine, porphyry Cu-Mo mineralization.
2) In the Mogoin gol mineral showing, the alteration mineral assemblage includes mainly mineral assemblage of quartz-andalusite, quartz-andalusite-sericite and sericite-(smectite) related to high sulphide hydrothermal alteration.
3) In the Khujiriin gol mineral showing, the alteration mineral assemblage is composed of sericite-(smectite), sericite-chlorite-(smectite) and chlorite, same alteration mineral assemblage around the Erdenet Mine, and porphyry Cu-Mo mineralization.
4) In the Tsagaan Chuluut area: the alteration mineral assemblage includes mainly mineral assemblage of quartz-(jarosite)-(kaolinite), quartz-alunite-(pyrophylite)-(kaolinite) and quartz-alunite-sericite-(kaolinite) related to advanced argillic alteration. The alteration mineral assemblage including alunite belongs to the advanced argillic alteration zone as shown Fig. II-2-1.
5) In the Danbatseren area, the alteration mineral assemblage includes mainly mineral assemblage of quartz-andalusite, quartz-andalusite-sericite and sericite-(smectite) related to high sulphide hydrothermal alteration.
6) In the Undrakh area, the alteration mineral assemblage includes mainly mineral assemblage of sericite-chlorite-(smectite) and chlorite of the propylitic alteration.
7) In the Tsookher mert area, the alteration mineral assemblage includes mainly mineral assemblage of sericite-(smectite), sericite-chlorite-(smectite) and chlorite, propylitic alteration.

Alteration mineral assemblages, as same as in the Erdenet mine area, are confirmed in the central hill of the Zuukhiin gol area and in the Khujiriin gol mineral showing of the Mogoin gol/Khujiriin gol area.

2-3-5 Petrological and chemical analysis

The rock samples for the petrological chemical analysis were typical igneous rocks collected from the geological survey areas. 10 igneous rocks were analyzed and the results of petrological chemical analysis data are shown Appendix 5. The results of petrological chemistry are shown in the diagram in Appendix 5.

The (Na2O+K2O)–SiO2 diagram shows that the granites are composed of granite, syenitic granite and gabbro. The A/NK-A/CNK diagram shows that granites in the project area are located in the area of Per-aluminous (Appendix 5).

The normative mineral contents are shown in Q-A-P diagram (Appendix 5). The granitic rocks in the survey areas are plotted in the area of granite, syenitic granite, granodiorite and quartz monzonite.

The MFA diagram indicates that the granitoid in the project area are included in calc-alkaline rock series same as the orogenic granitoids (Appendix 5).

The Rb-(Y+Nb) and Nb-Y diagrams by Pearde et at (1984) show that the granitoids are found in the areas within-plate granites (WPG) and volcanic-arc granites (VAG), or volcanic-arc granite and syn-collisional granites (VAG + syn-COLG) (Appendix 5).

Consequently, the granitic rocks are considered related to the subduction process of the ocean plates.

2-3-6 Ore assay analysis

The ore samples for the ore chemical analysis were collected from the mineral showings in the geological survey areas. 41 ore samples were analyzed and the results of ore chemical analysis data are shown Appendix 6. The mineral showings and the results of the ore assay analysis are shown in Fig. II-2-2.

In the Zuukhiin gol area, analytical values of Zuukhiin gol mineral showing are Cu 0.213 % to Cu 0.464 % and Zn 0.013 % to Zn 0.019 %.

In the Mogoin gol mineral showings, analytical values show Cu 0.423 % as maximum.

In the Khujiriin gol mineral showings, analytical values are Cu 11.131 % as maximum, Ag 221 ppm as maximum, Mo 0.269 % ppm as maximum, Pb 5.575 % as maximum and Zn 2.644 % as maximum.

In the Danbatseren area, analysis shows maximum values of Cu 0.004 %.

In the Undrakh area, analytical shows maximum values of Cu 0.011 %.

In the Tsookher mert area, analytical values are Au 0.02 g/t to Au1.49 g/t, Ag 48 ppm to Ag 538 ppm, Cu 0.006 % to Cu 0.247 %, Pb 0.005 % to Pb 6.737 % and Zn 0.004 % to Zn 0.682 %.

From the ore assay results, the first priority potential area for further studies for porphyry Cu-Mo mineralization was selected around the Khujiriin gol mineral showings, while the second priority potential area was selected in the Zuukhiin gol area.

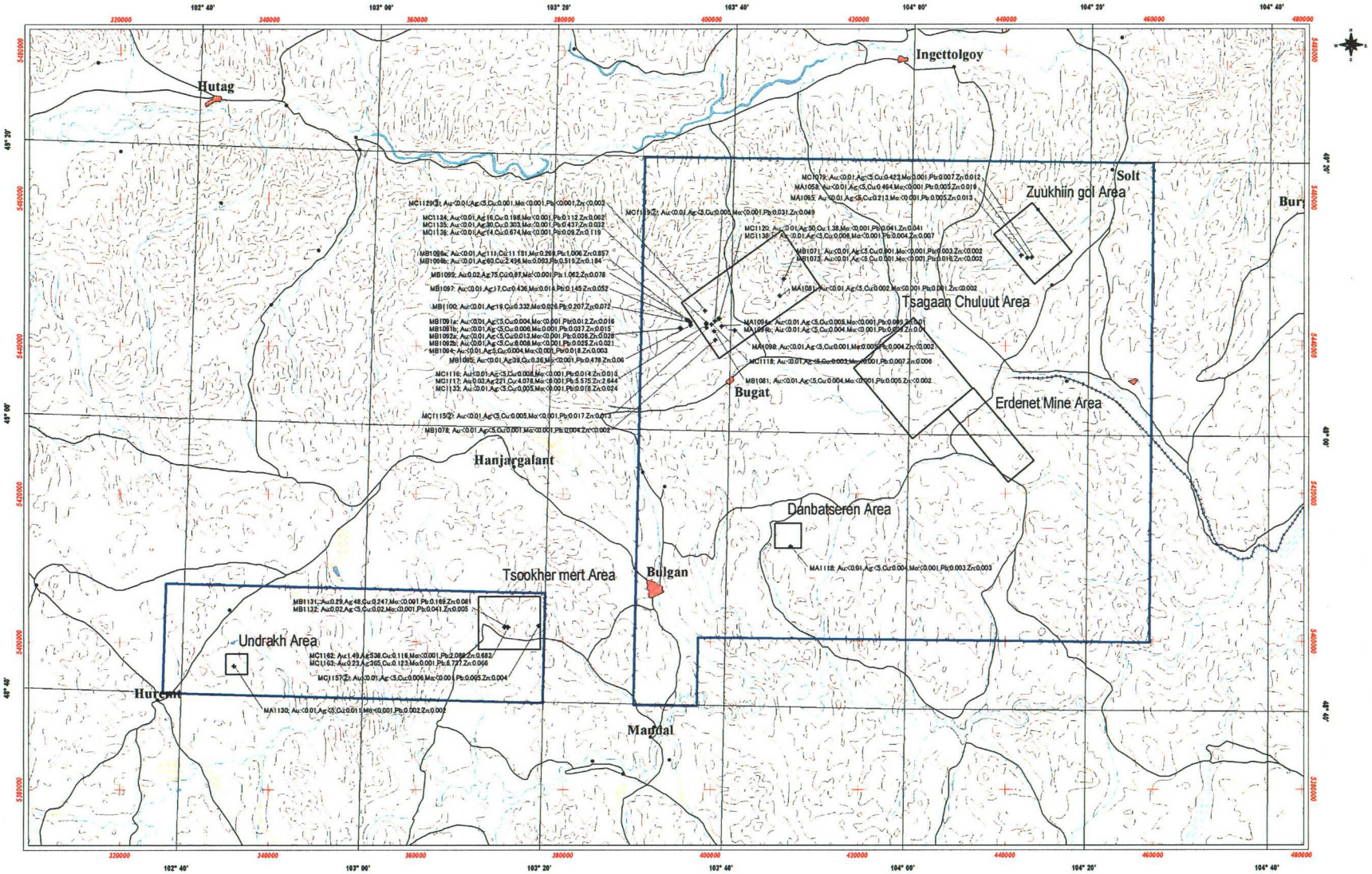


Fig. II-2-2 Location map of ore assay samples from mineral showings

2-3-7 Rock chemical analysis

(1) Sample collection and chemical analysis

Igneous rock samples distributed in the seven geological survey areas were collected. 217 rock samples were analyzed and the results of chemical analysis data are shown in Appendix 7.

The analytical elements consisted of 28 compositions of Au, As, Sb, Hg, Ag, Al, Ba, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sr, Ti, V, W and Zn. Detection limits of elements is shown in Appendix 7.

Laboratory assigned to do the chemical analysis was the Chemical Laboratory of Mitsubishi Material Natural Resources Development Corp.

(2) Interpretation Methods

The rock samples for the chemical analysis were collected in the geological survey areas. The results from geochemical samples were also statistically analyzed, and their results are shown in the Appendices 8.

A half value of detection limit was used for samples indicating values less than the detection limit. Based on statistical processing, computerized distribution maps were drawn for every element. The correlation matrices among the elements were also calculated and the Exploratory Data Analysis (EDA) method was applied to define the threshold values (anomalous values) for each element.

Factor analysis studies were also utilized for the processing of geochemical data, and the results are shown on computerized maps.

(3) Results from statistical data treatment

The locations of the rock samples are shown in the location maps of the geological survey areas. The results obtained from the statistical data treatment are shown on Appendix 7.

The six elements of Au, Ag, Bi, Cd, Mo and W indicated values less than the detection limit in almost all samples.

Correlation coefficients were calculated in order to clarify the relation among elements. From this point of view, none of the analyzed elements showed high correlation coefficients with Cu, though Ag, Cd, Pb, W and Zn shows a low correlation coefficient (0.40) with Cu.

(4) Single element analysis

Based on the results of statistical data treatment (Appendix 8), the threshold values were determined using histogram analysis, EDA methods and cumulative frequencies.

The threshold values for each element are as follows:

Au : 10 ppb, As : 30 ppm, Sb : 20 ppm, Hg : 90 ppm,

Ag : 2.0 ppm,	Al : 0.7 %,	Ba : 900 ppm,	Bi : 10 ppm,
Ca : 0.09 %,	Cd : 1.3 ppm,	Co : 20 ppm,	Cr : 500 ppm,
Cu : 1000 ppm,	Fe : 4.0 %,	K : 0.7 %,	Mg : 1.5 %,
Mn : 300 ppm,	Mo : 12 ppm,	Na : 1.0 %,	Ni : 50 ppm,
P : 1000 ppm,	Pb : 90 ppm,	Sr : 1000 ppm,	Ti : 0.5 %,
V : 100 ppm,	W : 30 ppm,	Zn : 100 ppm	

Anomalous maps for each element were elaborated by using the threshold values on Appendix 8. Fig II-2-3 and Fig II-2-4 indicate the rock silver and copper anomaly map

The high rock chemical anomalies of Cu, Au, Ag and Pb related to porphyry Cu-Mo mineralization are distributed in the Erdenet Mine area, in the central hill of the Zuukhiin gol area and in the Khujiriin gol mineral showing of the Mogoin gol/ Khujiriin gol area. These results are shown in Fig. II-2-3 to Fig. II-2-4 and in Appendix 8.

Au: Gold values of more than 10ppb are distributed in the Erdenet Mine area and in the Khujiriin gol mineral showing area of the Mogoin gol/Khujiriin gol area (Appendix 8).

Sb, Ag and Cu: Values of more than Sb20ppm, Ag2.0ppm and Cu300 ppm are distributed in the Erdenet Mine area, in the central area of the Zuukhiin gol area and in the Khujiriin gol mineral showing area of the Mogoin gol/Khujiriin gol area (Fig. II-2-3 to Fig. II-2-4).

Pb, Zn: Values of more than Pb90 ppm and Zn100ppm are distributed in six geological survey areas except the Danbatseren area (Appendix 8).

Al, Ca, K, Na: Low anomalous values of Al, Ca, K and Na are distributed in the Mogoin gol mineral showing area of the Mogoin gol/Khujiriin gol area, in the Tsookher mert area and in the Danbatseren area. Strong acidic alteration zones were confirmed in these areas.

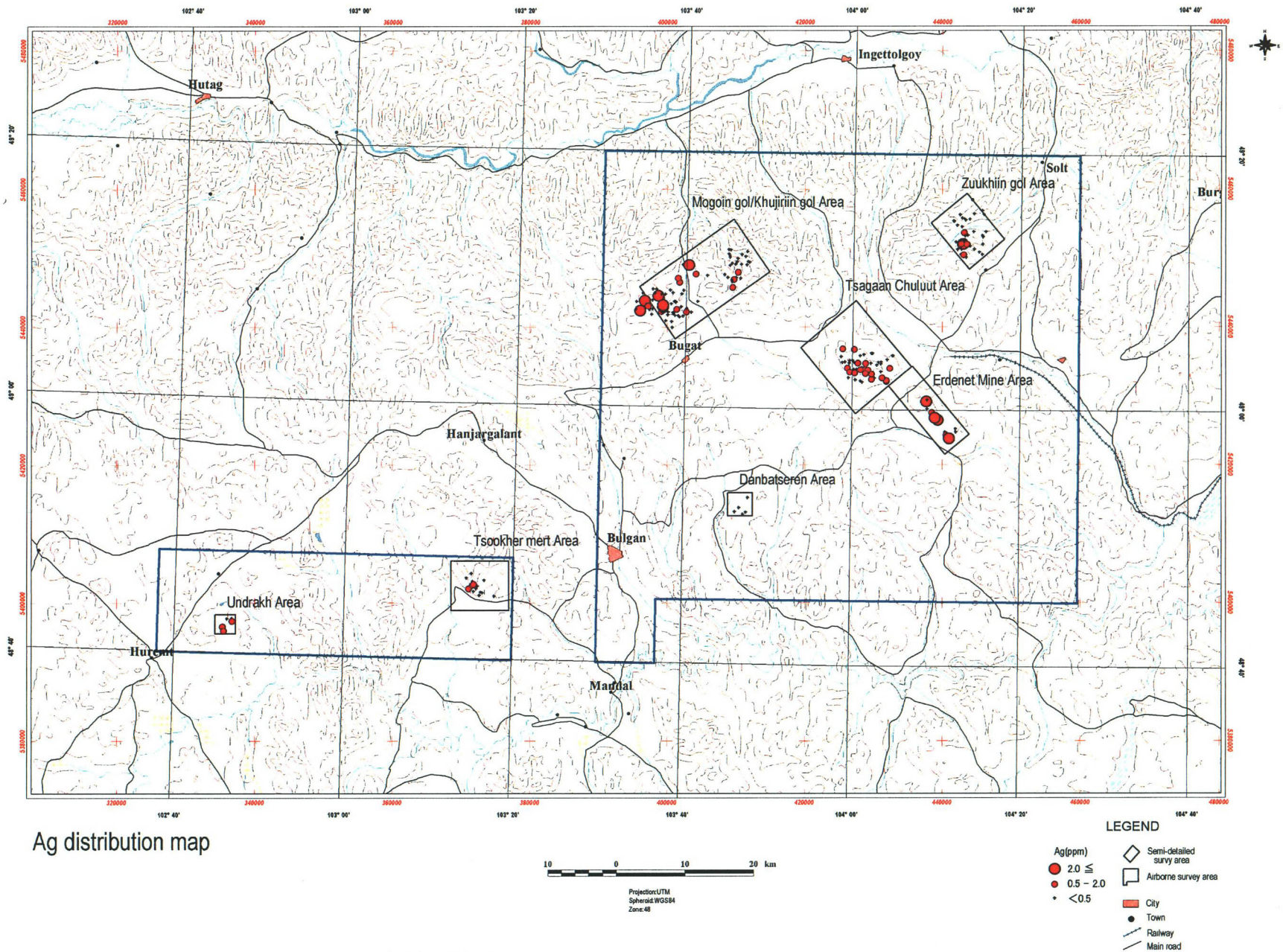
(5) Multi element analysis

A multi element analysis was conducted by using factor analysis method and its results are shown in Appendix 8.

The following relationship among the elements were extracted by using the factor analysis of the data obtained during the rock geochemical survey of Phase I:

1) Factor 1: Ba-Ca-Co-Fe-Mg-Mn-Ti-Zn or (As)-(Ag)-Mo
2) Factor 2: Ag-Cd-Cu-(Mo)-Pb-W-Zn
3) Factor 3: Al-Be-(Ca)-K-Na
4) Factor 4: (Al)-(Ca)-(Co)-(Fe)-P-Sr-Ti-V
5) Factor 5: Au-(Ag)-Bi
6) Factor 6: Sb-(Cu)-(Co)-Mg
7) Factor 7: Cr-Ni

Among the results of factors analysis, one factor (Factor 2) was selected and on this basis, a distribution map of factor score was prepared and shown in Fig II-2-5.



Ag distribution map

Fig. II-2-3 Distribution map of Ag anomaly in the project area

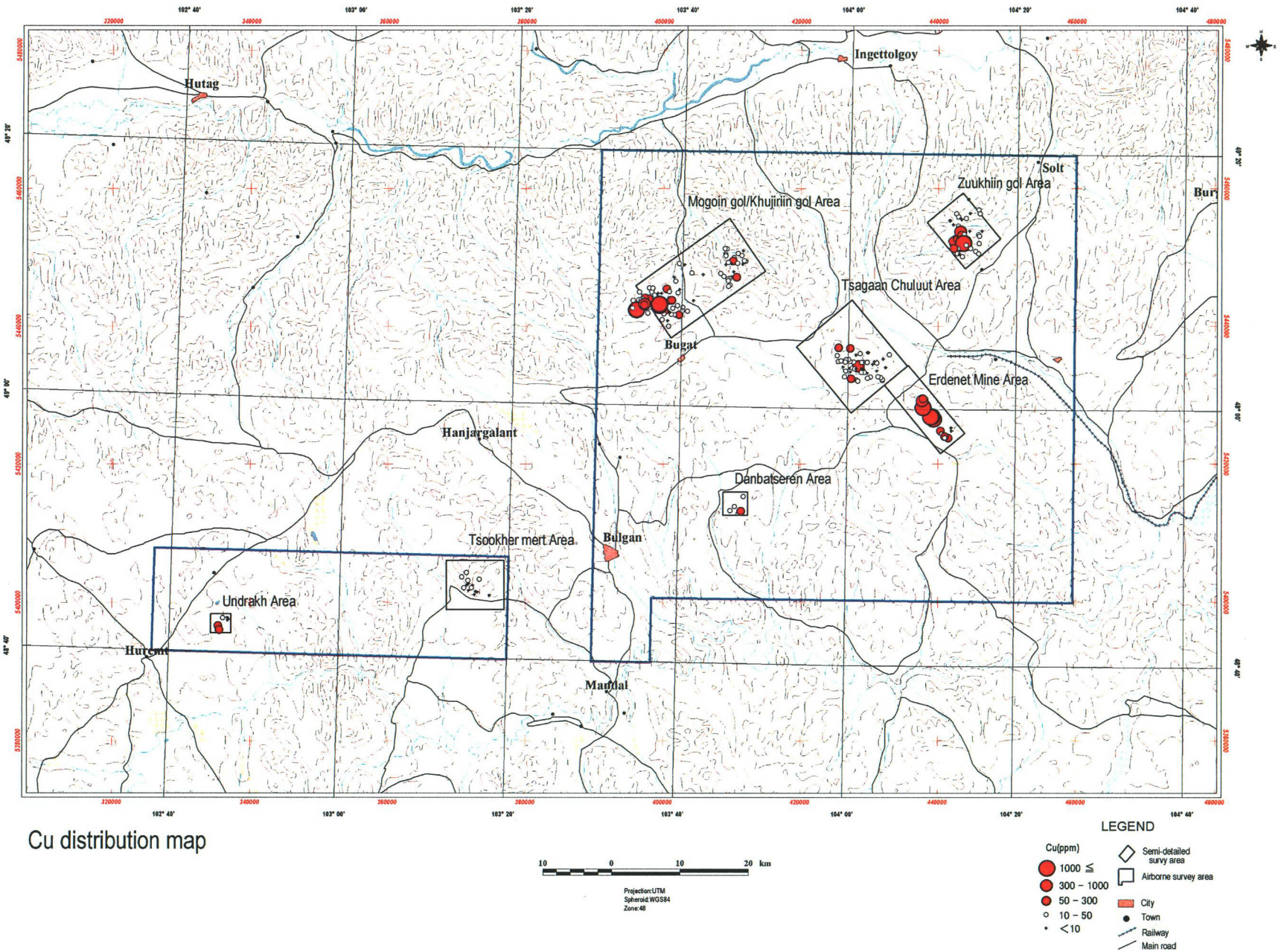
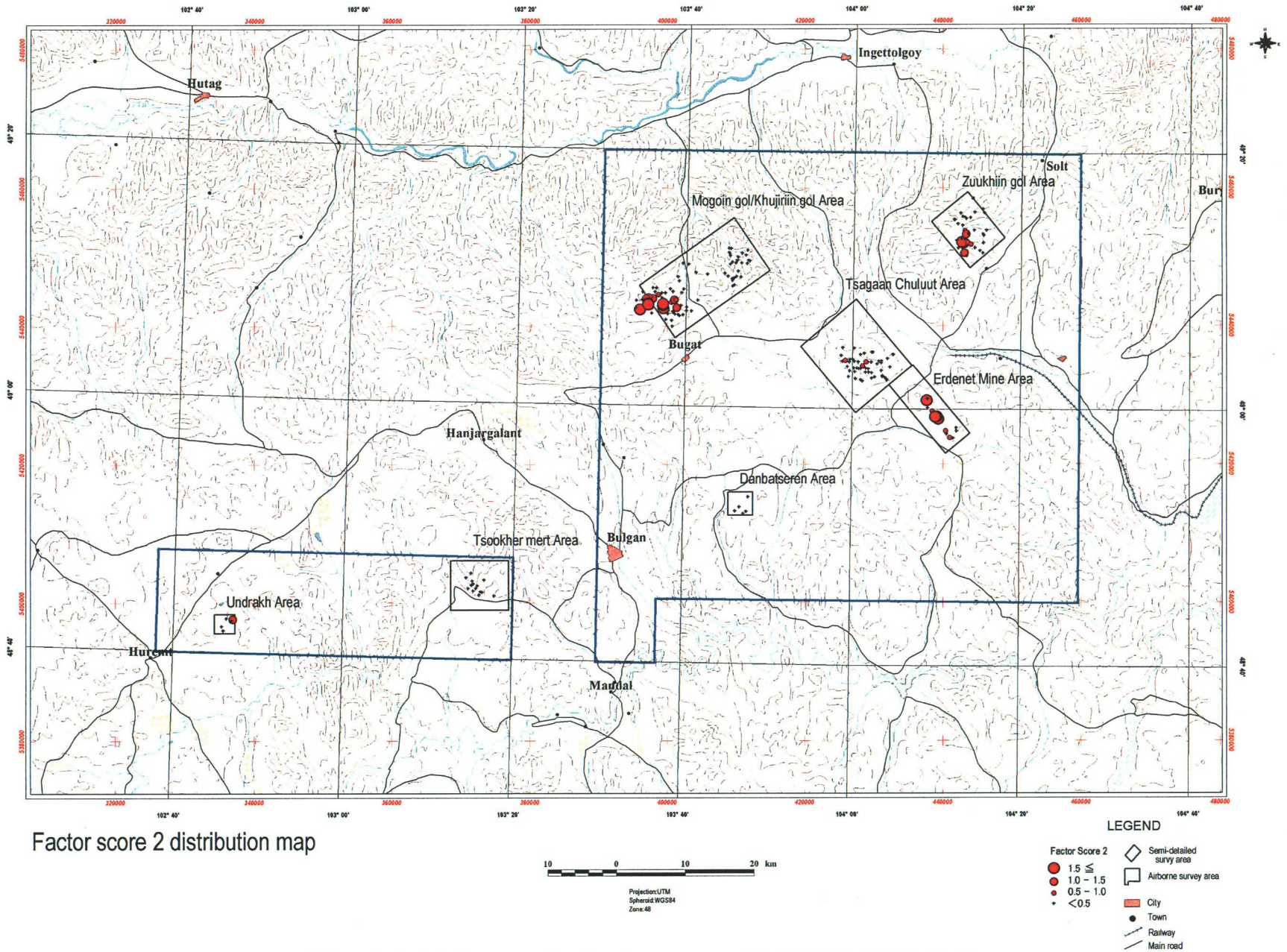


Fig. II-2-4 Distribution map of Cu anomaly in the project area



Factor score 2 distribution map

Fig. II-2-5 Factor score distribution map of Factor 2 in the project area

2-3-8 Fluid Inclusion Test

The quartz samples for the fluid inclusion test were collected from the mineral showings in the geological survey areas. 4 samples were tested and the results of fluid inclusion test data are shown in Appendix 9. Four quartz samples include many fluid inclusions with water phase and only several fluid inclusions with air phase.

In the Zuukhiin gol area, the results of fluid inclusion presented an average temperature of 241.3 ℃ and salinity of 3.9%.

In the Khujiriin gol area, the results from fluid inclusion presented an average temperature from 244.2^0 to 289.0 ^{0} and salinity from NaCl 3.0 % to NaCl 4.0 %.

2-3-9 Results of Dating

Granitic samples for dating were collected from the geological survey areas. 4 samples were tested and the results of the dating by K/Ar method are shown Appendix 10.

The dating results for granodiorite collected in the Zuukhiin gol area indicate that the age is 183 Ma and the geologic age corresponds to the early Jurassic. The dating results for granodiorite collected in the Khujiriin gol mineral showing of the Mogoin gol/Khujiriin gol area indicate that the age is Ma and the geologic age corresponds to early Jurassic. The dating results for granite porphyry collected in the Erdenet Central mineral showing of the Erdenet mine area indicate that the age is 181 Ma and the geologic age belongs to the early Jurassic. The dating results for granodiorite collected in the Tsookher mert mineral showing of the Tsookher mert area indicate that the age is 176 Ma and the geologic age corresponds to the early Jurassic.

According to the results of the radiometric dating, the dating ages of granodiorite and granite porphyry in the Erdenet mine area and the Zuukhiin gol area are show same late Permian age. The dating age of granodiorite in the Khujiriin gol area is older than in Erdenet mine area. On the other hand, the dating age of granodiorite in the Tsookher mert area is younger than in Erdenet mine area.

2-3-10 Results of measuring of remanent magnetization

Igneous and sedimentary rock samples were collected from the geological survey areas in order to determine their remanent magnetization. 8 samples were tested and the results of remanent magnetization are shown Appendix in 11.

2-3-11 High Potential Areas Selected From Results of Laboratory Tests

The results of the X-ray diffraction test (Fig. II-2-1), the results of the rock chemistry (Fig. II-2 3 to 5) and the ore chemical (Fig. II-2-2) indicate that high potential and promising areas with porphyry Cu-Mo mineralization similar to the Erdenet Mine area are as follows:

(1) First priority potential areas

1) Central mineralized zone in the Zuukhiin gol area

2) Western mineralized zone including Zuukhiin gol mineral showing in the Mogoin gol/Khujiriin gol area.

(2) Second priority potential area

Second potential area is considered to be the advanced argillic alteration zone related to porphyry Co-Mo mineralization in the deeper part from the ground surface.

1) Tsagaan Chuluut mountain area with advanced argillic alteration