Table Ⅱ-2-7-7 Ore-showings in the Sologoi Area (2)

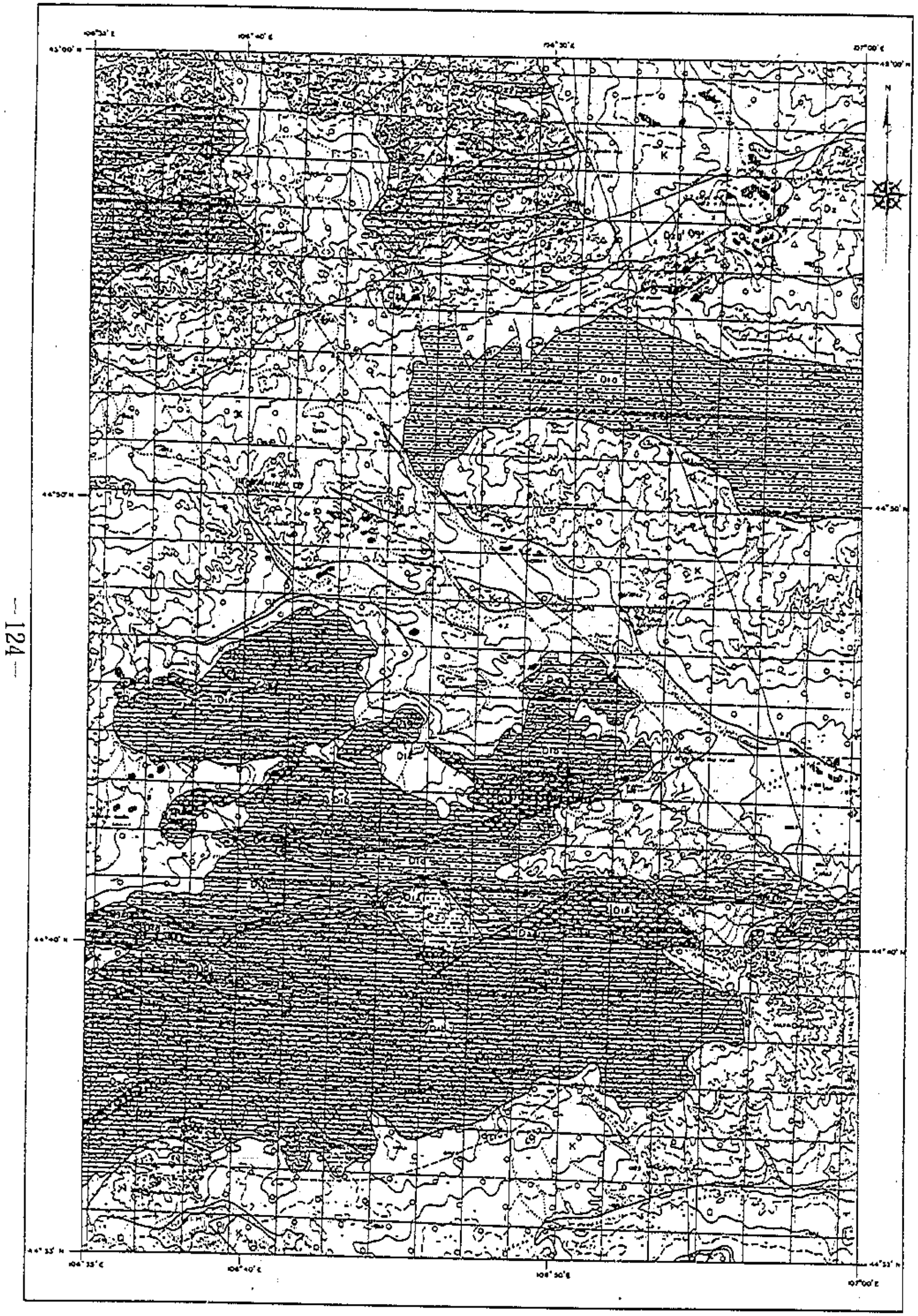
No.	Name of deposit	Mineral	Type of Deposit	Coodinate Longitude	Coodinate Latitude	Characteristics and Size	Host Rock	Assay Au(g/t)	Assay Ag(g/t)	Assay pcs	Filling Temp ℃	Alteration type	Remarks
61		Au	Qz-v	106° 45′ 43′ ~ 106° 46′ 46′	45° 19′ 39′ ~ 45° 19′ 47′	Silisified rocks and quartz veins in three vein zones. vein size: Max. 10m×500 m area: EW 1.5 km ×NS 1.2 km	diorite(C_{2-3})	0.04 ~ 0.05	< 0.3 ~ 0.6	5	—	—	N25° W·45° E, N60° W·44° NE, N50° W·45° E, N70° ~80° E·60 ~76° NE
62	Futur Us	Au	Qz-v	106° 39′ 51′ ~ 106° 44′ 25′	45° 16′ 15′ ~ 45° 17′ 05′	milky white quartz veins in the area of 2 km×7 km fluorite occures in the eastern part. vein size: Max. 8 m×500 m	graphite gneiss(V-C_1) diabase, diorite, gabbro	0.04 ~ 0.06	< 0.3	6	140 ~260	Qz-ser-Musc-pl-K-fel	N25° E·70° W, N75 ° E·50° NW N75° W·80° N, N80 ° W·75° N hydro-fracturing is commonly seen
63	Ulziit Ovoo	Au	Qz-v	106° 36′ 21′ ~ 106° 38′ 48′	45° 10′ 45′ ~ 45° 10′ 24′	More than ten milky white quartz veins are seen in the area of EW 3.500m×NS 1.000m Maximum size of a vein is 1.5 m wide × 100m long.	limestone (V-C_1) basalt	0.03 ~ 0.04	< 0.3 ~ 2.9	9	142 ~237	Qz-ser	N80° W·45° S, N60° W·60° S N80° W·70° S, N60° W·70° S E-W·75° N, N85° E·50° S N60° W·80° NE, N40° W·50° SW green copper and galena
64	Sologoi Bayan	Au	Massive silicified r. + Qz-v	106° 44′ 25′ ~ 106° 45′ 41′	45° 10′ 41′ ~ 45° 10′ 39′	Three massive silicified bodies with network of quartz veinlets. Unit size Max. 120m× 800m area 500m× 1900 m South side is covered by dune and colluvial deposits.	limestone (V-C_1)	0.04 ~ 0.04	< 0.3 ~ 0.8	4	—	Qz-Ka-pyp	N65° E·70° S, N65° W·70° N E-W·50° S, N50° W·60° SW

Table Ⅱ-2-7-7 Ore-showings in the Sologoi Area (3)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate Longitude	Coodinate Latitude	Characteristics and Size	Host Rock	Assay Au(g/t)	Assay Ag(g/t)	Assay pcs	Filling Temp ℃	Alteration type	Remarks
65		Au	Qz-v	106° 53′ 18″	45° 05′ 36″	parallel quartz veins and silicified rock vein size: Max. 5m×400 m vein zone: Max. 80m×400 m	granite	0.04	0.3	1	–	(Qz-Ser)	Strike: N80°W, dip: 75°S? graphite bering
66	Hetsuu Tsagaan Uul	Au	Hot spring type	106° 53′ 14″ ~ 106° 53′ 53″	45° 06′ 23″ ~ 45° 05′ 48″	silicified zone with silicious and calcaleous sinter cones. siliceous sinter is cut by chalcedonic quartz veinlets. silicified zone: EW 2.5 km×NS 2.5 km	limestone(R₂) siltstone, sandstone(J-K)	0.04 ~ 0.05	< 0.3 1.9	8	119 ~133	Qz-cal	N80°E·60°N, N-S and others. surface of the sinter-cones are widely covered by the fragments of siliceous sinter and dune. This zone is located at southeastern lim of the mesozoic depression.
67		Au	massive silicified rock	106° 58′ 09″	45° 06′ 28″	a couple of massive silicified rocks vein size: Max. 15 m×280 m vein zone: Max. 100m×300 m	limestone(R₂)	0.04	0.3	2	–	(Qz-cal)	Strike: N50°~60E°, dip: 55°~60°NW Silicified rock bodies are located at the southeastern corner of the Mesozoic basin.
68		Au	Qz-v	107° 08′ 49″ ~ 107° 07′ 59″	45° 10′ 43″ ~ 45° 10′ 21″	a couple of milky white mono-quartz vein cut by two faults. vein size: Max. 15 m×1,200 m insufficiently surveyed	granite (PZ_1)	–	–	–	–	–	Strike: N75°~85°E, dip: 40°~45°S about 12 km east of Sologoi area

Table Ⅱ-2-7-7 Ore-showings in the Sologoi Area (4)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling	Alteration	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs	Temp ℃	type	
69		Au	silicified zone	107°07′01′	45°11′36′	silicified zone along the lim of the Mesozoic depression. zone: Max. 23m×> 1 km	sandstone, siltstone ($J-K_1$)	—	—	—	—	(Qz-?)	Strike: N50°E. dip: 50°S insufficiently surveyed
70		Au	Qz-v	106°29′29′	45°14′27′	parallel quartz vein swarm in limestone($V-C_1$) vein size: Max. 40m×1.5 km	limestone (Rℓ)	—	—	—	—	(Qz-?)	strike and dip: E-W·80°N, N78°E·75°N insufficiently surveyed
71		Au	Qz-v with sil sinter	106°02′18′	45°10′52′	milky white chalcedonic mono-quartz veins with siliceous sinter. two parallel veins vein size: Max. 5 m×100 m	granite. granodiorite (P_2)	—	—	—	—	(Qz-?)	parallel quartz veins N30°E·90°? insufficiently surveyed
72		Au	Qz-v & alteration zone	106°10′55′	45°01′31′	parallel quartz veins and silicified rocks in wide hydrothermal alteration zones. vein size: 1~5 m×100 m zone: 500 m×> 5 km	pelitic~psammitic schist (PZ_1)	—	—	—	—	(Qz-Ser)	N70°W·90° There are about ten alteration zones in a profile.
73			massive silicified rock	106°27′36′	45°07′42′	single massive silicified rock body at the lim of the Mesozoic depression. size: 100 m×800 m	limestone(Rℓ)	—	—	—	—	(Qz-?)	N70°W·90° insufficiently surveyed



LEGEND

Geologic Age	Geologic Unit	Symbol	Rock Types
Quaternary	Q		sand, gravel, loam
Tertiary	Tv		olivine basalt
Cretaceous	K		sandstone, siltstone, conglomerate, limestone, coal
Jurassic-Cretaceous	J-K		conglomerate, siltstone, sandstone
	J-Kv		basalt, trachybasalt-trachyandesite, trachyte
Jurassic	J		conglomerate, siltstone, sandstone
	Jv		trachyte-dacite, trachyrhyolite
Permian	P		trachyte, andesite, trachyandesite, dacite, tuff
Carboniferous-Permian	C-P		basalt, trachyandesite, andesite, tuff, conglomerate
Carboniferous	C		sandstone, siltstone, conglomerate, mudstone
Devonian-Carboniferous	D-C		tuffaceous conglomerate, sandstone, siltstone
Devonian	D2ℓ		limestone
	D2		basalt, trachybasalt, andesite, dacite, rhyolite, tuff
	D1ℓ		limestone
	D1b		sandstone, shale, siltstone
	D1a		shale, siltstone, sandstone
Silurian-Devonian	S-Dℓ		limestone
	S-D		dacite, rhyolite, andesite, tuff, phyllite, shale
Silurian	S		sandstone, siltstone, shale, phyllite
Undetermined Paleozoic	PZ		sandstone, siltstone, clayey shale
Riphean	Rℓ		recrystallized limestone
	R2		quartzite, phyllite, siltstone, sandstone, amphibolite
	R1-2		shale, amphibolite, quartzite, phyllite, gneiss
Intrusive Rocks	e		granodiorite porphyry
	d		diorite, microdiorite, diorite porphyry
	P3		granite, granosyenite
	Pr		rhyolite, quartz porphyry
	C-P3		granite, granodiorite, granosyenite, diorite
	D2s		granite, granodiorite
	D2d		diorite, gabbro
	D1r		rhyolite, dacite

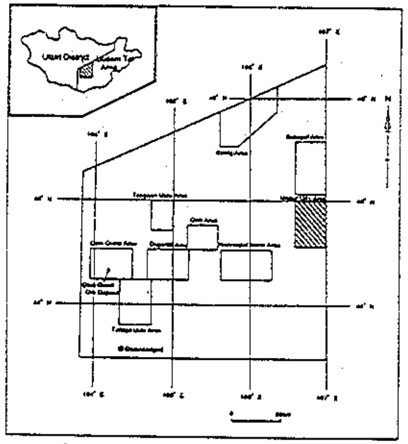
● ore showing

K	unit name and boundary
	strike and dip direction
	anticline
	syncline
	fault
	inferred fault
	thrust fault

PL.II-1-10

MINERAL EXPLORATION
IN
THE UUDAM TAL AREA, MONGOLIA (PHASE II)

Geologic Map of the Undur Uda Area



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JANUARY 1993

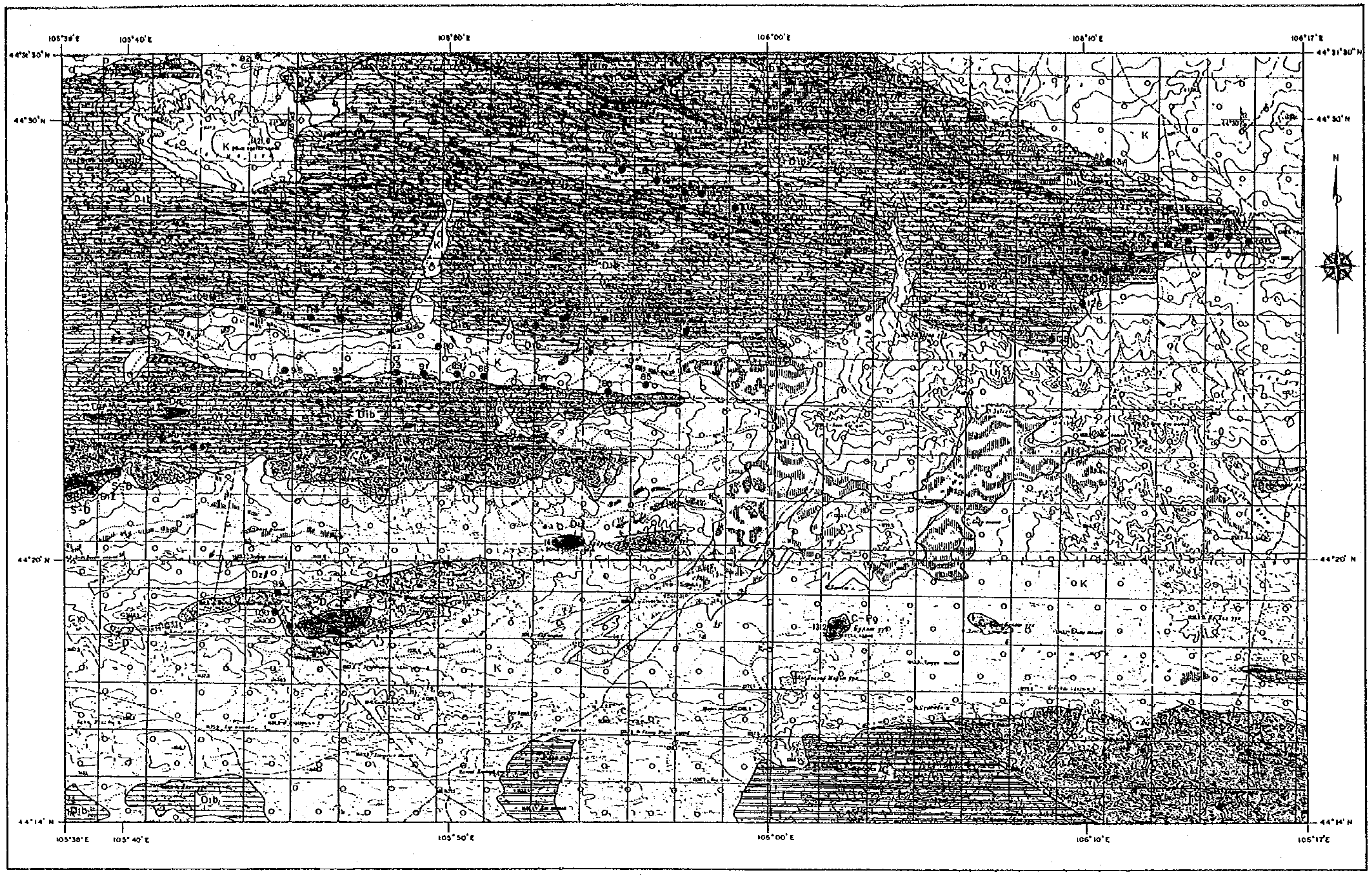
Fig. II-2-7-24 Geologic Map of the Undur-uda Area (phase II)

Table Ⅱ-2-7-8 Ore-showings in the Undur-uda Area (1)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling	Alteration type	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs	Temp ℃		
74		Au	Qz-v	106° 50′ 14′	44° 56′ 08′	a couple of small quartz veins in the area of 20 m×20m.	fng amphibolite~melanocratic gns	—	—	—	—	epidotization	E-W·90°, N80°W, 80°S no other ore-showings around
75		Au	Qz-v	106° 45′ 32′	44° 54′ 37′	milky white single quartz vein vein size: Max. 0.8m×150 m	granodiorite-porphyry	0.04	0.9	1	—	—	N75°W·60°N, N40°E·40°NW N70°W·60°N
76		Au	Qz-v	106° 52′ 27′	44° 43′ 50′	three parallel quartz veins. vein size: Max. 0.6 m×20m	chl-ser sch. phyllitic	—	—	—	—	(chl-ser)	N85°W· 75°~80°S
77		Au	Qz-v	106° 46′ 39′	44° 41′ 23′	quartz-pipe formed at the contact between granite and limestone size: Max. 25m×45m	granite and limestone (PZ_1)	0.04	< 0.3	1	—	Qz-ser-pl-K-fel	elongated to N80°E direction
78		Au	Qz-v	106° 39′ 51′	44° 42′ 20′	parallel quartz veinlets. vein size: Max. 0.3 m×3 m area: 10m×15m	chl-ser sch. lithoidite dike	—	—	—	—	Qz-Ka-ser	N80°W· 50°S
79		Au	Hot spring type	106° 32′ 51′	44° 53′ 26′	quartz vein, siliceous sinter and mud pots aligned to N 75°E direction size of sinter cone: Max. 50m ×50m area: 50m×500 m	chl-ser sch. phyllitic	—	—	—	—	Qz-Ka-K-fel	extending to N75°E Sinter cones are alined along the northern lim of the Mesozoic depression.

Table Ⅱ-2-7-8 Ore-showings in the Undur-uda Area (2)

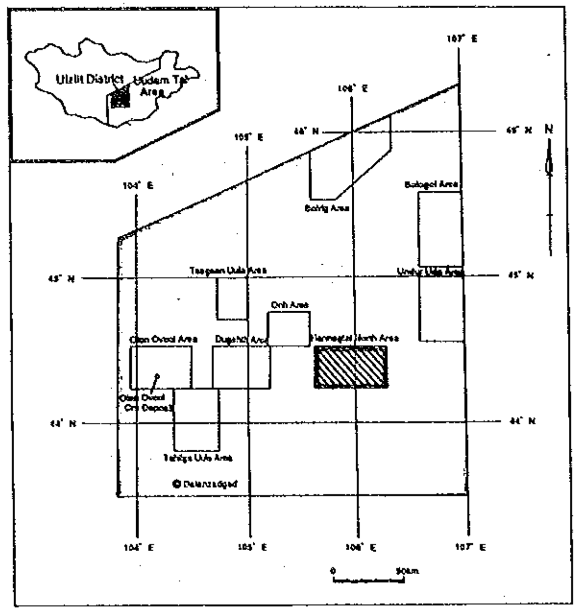
No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling Temp ℃	Alteration type	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs			
80		Au	silicified zone	106° 08′ 43′ ~ 105° 43′ 19′	44° 42′ 17′ ~ 44° 38′ 38′	massive silicified rocks containing fragments of milky quartz size: Max. 20m×800 m	limestone (D_1)	—	—	—	—	—	N45°~60°E· 75°S



PL. II-1-8

MINERAL EXPLORATION
IN
THE UUDAM TAL AREA, MONGOLIA (PHASE II)

Geologic Map of the North Harmagtai Area



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JANUARY 1993

LEGEND

Geologic Age	Geologic Unit	Symbol	Rock Types
Quaternary	Q		sand, gravel, loam
Tertiary	Tv		olivine basalt
Cretaceous	K		sandstone, siltstone, conglomerate, limestone, coal
Jurassic-Cretaceous	J-K		conglomerate, siltstone, sandstone
	J-Kv		basalt, trachybasalt-trachyandesite, trachyte
Jurassic	J		conglomerate, siltstone, sandstone
	Jv		trachyte-dacite, trachyrhyolite
Permian	P		trachyte, andesite, trachyandesite, dacite, tuff
Carboniferous-Permian	C-P		basalt, trachyandesite, andesite, tuff, conglomerate
Carboniferous	C		sandstone, siltstone, conglomerate, mudstone
Devonian-Carboniferous	D-C		tuffaceous conglomerate, sandstone, siltstone
Devonian	D2l		limestone
	D2		basalt, trachybasalt, andesite, dacite, rhyolite, tuff
	D1l		limestone
	D1b		sandstone, shale, siltstone
	D1a		shale, siltstone, sandstone

Silurian-Devonian	S-Dl		limestone
	S-D		dacite, rhyolite, andesite, tuff, phyllite, shale
Silurian	S		sandstone, siltstone, shale, phyllite
Undifferentiated Paleozoic	PZ		sandstone, siltstone, clayey shale
Ripheian	Rl		recrystallized limestone
	R2		quartzite, phyllite, siltstone, sandstone, amphibolite
	R1-2		shale, amphibolite, quartzite, phyllite, gneiss
Intrusive Rocks	e		granodiorite porphyry
	d		diorite, microdiorite, diorite porphyry
	Pγ		granite, granosyenite
	Pr		rhyolite, quartz porphyry
	C-Pγ		granite, granodiorite, granosyenite, diorite
	D2γ		granite, granodiorite
	D2d		diorite, gabbro
	D1r		rhyolite, dacite

● ore showing

X	unit name and boundary
	strike and dip directon
	anticline
	syncline
	fault
	inferred fault
	thrust fault

Fig. II-2-7-25 Geologic Map of the North-harmagtai Area (phase II)

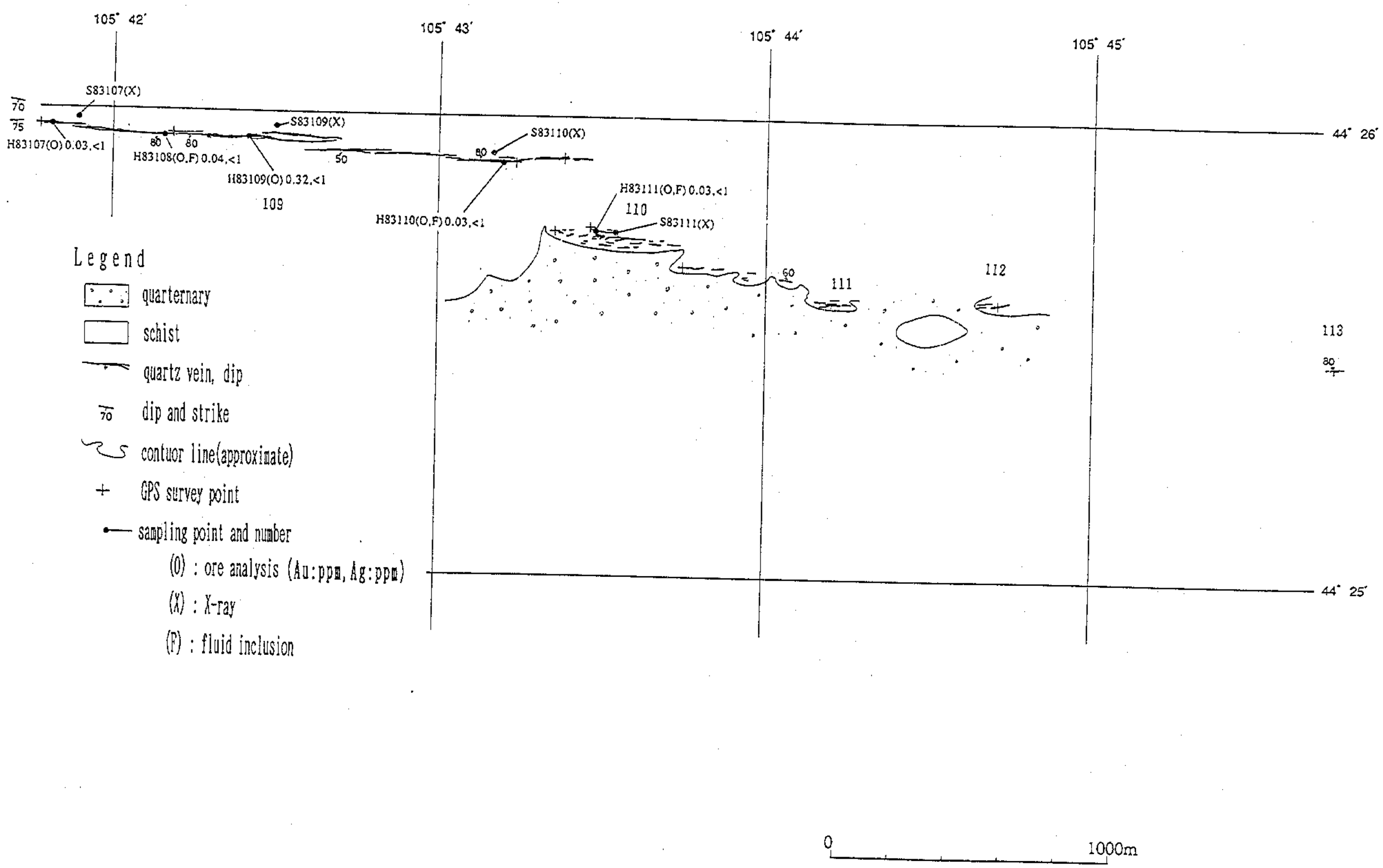


Fig. II-2-7-26 Geologic Map of Ore-showings No. 109, 110, 111, 112 and 113

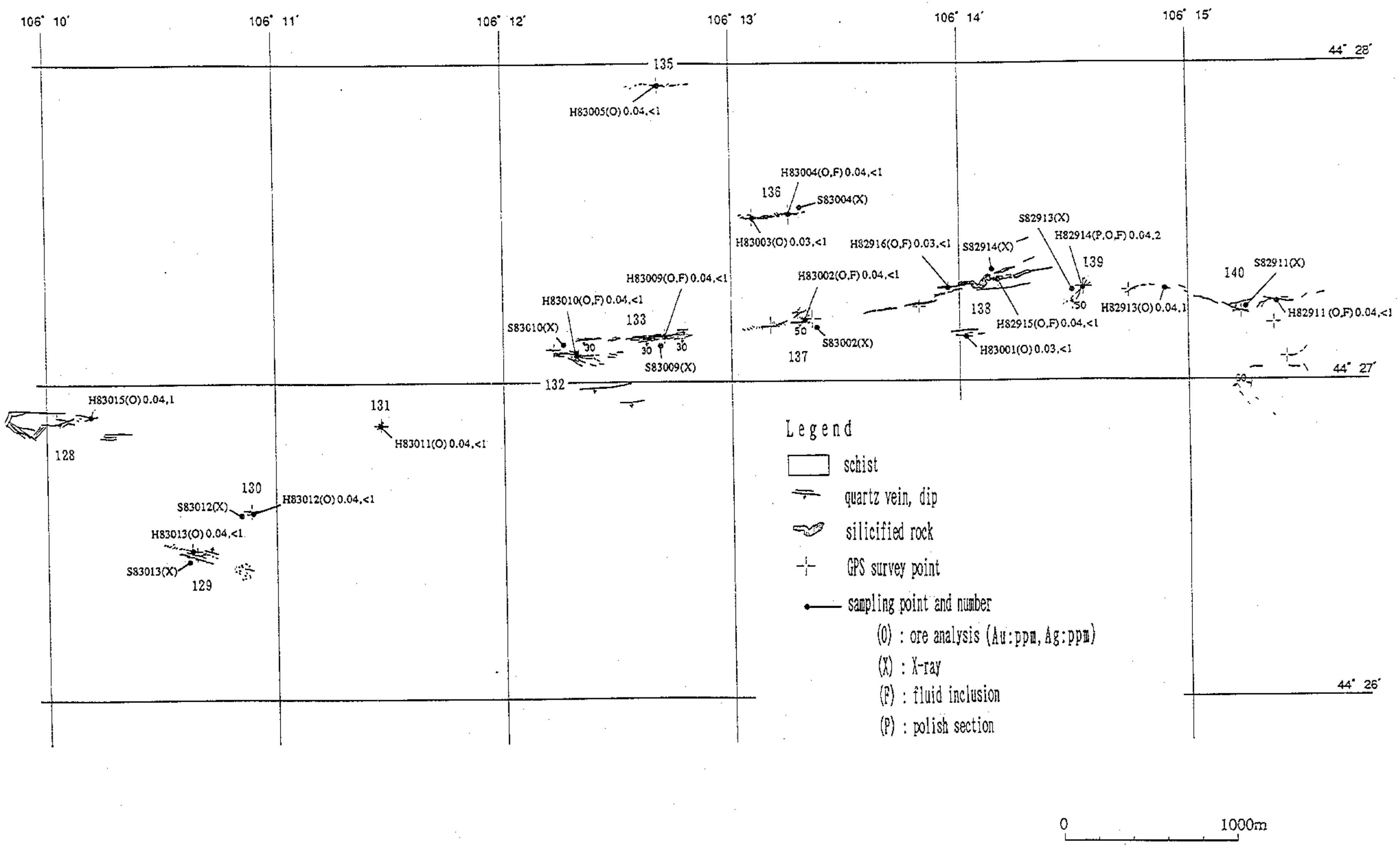


Fig. Ⅱ-2-7-27 Geologic Map of Ore-showings No. 128 ~140

Table II-2-7-9 Ore-showings in the North-harmagtai Area (1)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling Temp ℃	Alteration type	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs			
81		Au	Qz-v	105° 43′ 38″	44° 32′ 01″	parallel quartz vein swarm in the area of 40m×140 m. no wall rock alteration	grn-gry sch phyllitic (D_1)	—	—	—	—	(chl-ser)	The zone extends approximately three km to the insufficiently surveyed
82		Au	Qz-v	105° 44′ 03″	44° 31′ 26″	milky white mono-quartz veins vein size: Max. 2 m×25m zone: 50m×300 m	pelitic sch (D_1)	—	—	—	—	(ser-py)	N80° W·50° S hydro-fracturing
83		Au	Qz-v	105° 54′ 57″ ~ 105° 55′ 50″	44° 28′ 52″ ~ 44° 28′ 46″	parallel mono-quartz veins vein size: Max. 0.8 m×400 m zone: 600 m×1,500 m	chl-ser sch. phyllitic (D_1)	0.02 ~ 0.03	< 0.3	3	162 ~263	Qz-chl-ser pl-cal-py	veins: N3 0° E· 80° ~85° SE zone: N70° W
84		Au	Qz-v	105° 57′ 10″	44° 29′ 18″	aggrigate of parallel quartz veins, milky white chalcedonic size: Max. 20 m×500 m	dk gry phyl sch(D_1)	0.02	0.8	1	—	Qz-pl-ser	N80° W·50° N
85		Au	Qz-v	105° 5′ 07″	44° 23′ 55″	parallel quartz veinlets. vein size: Max. 0.6 m×6 m area: 10m×25m	blk pelitic sch. phyllitic (D_1)	—	—	—	—	(Qz-ser)	E-W· 70° ~80° S
86		Au	Qz-vl	105° 54′ 59″	44° 23′ 48″	three small quartz veins aligned. vein size: Max. 0.6 m×3 m total length: 30m	ser sch. phyllitic (D_1)	—	—	—	—	(Qz-ser)	extending to N60° W

Table Ⅱ-2-7-9 Ore-showings in the North-harmagtai Area (2)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling Temp ℃	Alteration type	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs			
87		Au	Qz-v	105°52′58′	44°23′53′	four parallel quartz veins in the area of 30m×50m. vein size: Max. 2 m×20m	blk sch, phyllitic(D_1) dio-por stock	—	—	—	—	(Qz-ser)	N80°W・80°S, EW90°
88		Au	Qz-v	105°51′03′	44°24′08′	a couple of milky white tour-Qz veins aligned size: 0.6 m×15m, 0.6m×10m	red alt ser sch(D_1)	—	—	—	—	(ser-py)	N50°W・80°~90°S
89		Au	Qz-v	105°50′13′	44°24′11′	single milky white quartz vein size: Max. 1.2m×60m	blk ser sch, phyll (D_1)	—	—	—	—	(Qz-ser)	N75°W・75°N manganese oxide bearing
90		Au	Qz-v	105°49′37′	44°24′49′	a couple of parallel quartz veins. size: 2.5 m×20m, 1.5m×10m	blk sch, phyllitic(D_1)	—	—	—	—	(Qz-ser)	E-W・80°N
91		Au	Qz-v	105°49′12′	44°24′12′	parallel milky white quartz veins in the area of 100m×200 m, six veins in a profile size: 2 m×15m, 0.6m×10m	gry alt ser sch, phyllitic (D_1)	—	—	—	—	(Qz-ser)	N80°W・70°~80°N Σv =4 m
92		Au	Qz-v	105°48′48′	44°24′08′	four parallel milky white quartz veins vein size: Max. 2 m×30m area: 20m×50m	dk gry sch, phyll (D_1)	0.02	1.0	1	—	(Qz-ser)	N80°W・90° Σv =2 m

Table Ⅱ-2-7-9 Ore-showings in the North-harmagtai Area (3)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling	Alteration	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs	Temp ℃	type	
93		Au	Qz-v	105° 48′ 20′	44° 24′ 14′	milky white single quartz vein vein size: Max. 2 m×50m	grn-gry sch (D_1)	0.02	0.8	1	—	(Qz-ser)	N85° E· 90°
94		Au	Qz-v	105° 48′ 25′	44° 24′ 02′	aggregate of for parallel quartz veins vein size: max. 2.5 m×45m zone: 5 m×60m	alt diorite	0.02	1.1	1	—	(ser)	N75° W·80° N
95		Au	Qz-v	105° 46′ 35′	44° 24′ 06′	milky white parallel quartz veins and Qz-network in dior-ite dike vein size: Max. 4 m×20m zone: 100 m×150 m	blk ser sch. phyll (D_1) & alt. diorite	0.03	< 0.3	1	—	(Qz-ser)	N80 ° W· 60° S central part of Dayangol South zone. Veins are shattered and dislocated too much.
96		Au	Qz-v	105° 44′ 55′	44° 24′ 16′	aggregate of parallel quartz veinlets. area: 30m×60m. vein size: Max. 0.3 m×5 m	gry sch. phy-llitic(D_1)	—	—	—	—	(Qz-ser)	N80° E· 80° N
97		Au	Qz-v	105° 42′ 03′	44° 22′ 34′	six parallel quartz veins exi-st in the area of 100 m×400 m, milky white mono quartz unit vein size: 1.5 m×20m	blk sch. phyll (D_1)	0.03	1.1	1	—	(Qz-ser)	E-W· 40° N There are three vein zones The veins are dislocated and dispersed too much
98		Au	Qz-v	105° 41′ 04′	44° 22′ 47′	ten parallel quartz veins are seen in the area of 150m×400m vein size: Max. 0.5 m×40m	gry sch. phyll (D_1)	0.02 ～ 0.03	0.4 ～ 0.6	2	—	(Qz-ser)	E-W · 75° N Density of the quartz vein is too much dilute.

Table Ⅱ-2-7-9 Ore-showings in the North-harmagtai Area (4)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling Temp ℃	Alteration type	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs			
99		Au	Qz-v	105° 44′ 41′	44° 19′ 16′	floats of milky white quartz-blocks size: Max. 1.5m×4 m	green sch(D) serp. basic r.	—	—	—	—	(chl)	arramgement of blocks:E-W, remnant of eroded Qz-v
100		Au	Qz-v	105° 44′ 35′	44° 18′ 49′	single quartz vein, galena and green copper bearing milky Qz vein size: max. 0.5 m×50m	alt diorite	—	—	—	—	(epi-chl)	N20° E・55° SW
101		Au	Qz-v	105° 45′ 02′ ～ 105° 45′ 07′	44° 18′ 32′ ～ 44° 18′ 27′	aggregate of parallel quartz veinlets. area: 80m×250 m. vein size: Max. 0.5 m×80m	alt granite	0.03	< 0.3	1	101～166	Qz-ser-chl	N-S~N50° W・ 45°~80° NE average width =20 cm for 250 m
102		Au	Qz-v	106° 02′ 29′	44° 26′ 58′	single quartz vein located at anticlinal axis size: Max. 10 m×450 m	grn-gry sch, phyllitic (D_1)	0.03	< 0.3	1	190～221	Qz-ser-chl	N80° W・ 60°~70° S
103		Au	Qz-v	105° 59′ 37′	44° 27′ 34′	three parallel quartz veins emplaced at anticlinal axis, milky white mono Qz unit vein size: 1.5 m×350 m zone: 40m×350 m	grn-gry sch, phyllitic (D_1)	0.04	< 0.3	1	138～262	pl-ser	N80° W・ 70° S There are three veins
104		Au	Qz-v	105° 58′ 59′	44° 27′ 56′	four parallel quartz veins are seen in the area of 40m ×350m vein size: Max. 0.5 m×80m	gry sch, phyll (D_1)	—	—	—	—	(Qz-ser)	N75° W・ 80° N
105		Au	Qz-v	105° 57′ 53′	44° 28′ 15′	parallel quartz vein zone size: 8 m×100 m	grn gry sch, phyll (D_1)	0.03	< 0.3	1	—	Qz-ser-chl-cal	N60° W・ 80° S

Table Ⅱ-2-7-9 Ore-showings in the North-harmagtai Area (5)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate Longitude	Coodinate Latitude	Characteristics and Size	Host Rock	Assay Au(g/t)	Assay Ag(g/t)	Assay pcs	Filling Temp ℃	Alteration type	Remarks
106		Au	Qz-v	105°57′23′	44°28′17′	aggregate of parallel quartz veins size: Max. 1 m×80m. Av. width 0.1 ~0.3 m zone: 8 m×150 m, Σwv= 4 m	grn-gry sch (D_1)	0.03	< 0.3	1	—	ser	N70°W・70°~85°SW
107		Au	Qz-v	105°56′30′	44°28′33′	parallel quartz vein swarm vein size: max. 0.5 m×80m area 150m×200 m	grn-gry sch (D_1)	0.03	< 0.3	1	—	Qz-ser	N65°~70°W・70°~80°SW Σwv=5 m
108		Au	Qz-v	105°56′07′	44°28′47′	vein swarm of milky quartz vein size: Max. 0.8 m×5 m area: 300 m×800 m.	grn-gry sch (D_1)	0.03	< 0.3	1	—	(Qz-ser)	E-W~N50°W veins are too small and the density is too dilute
109		Au	Qz-v	105°41′54′ ~ 105°43′23′	44°25′58′ ~ 44°25′55′	single quartz vein size: Max. 6m×2,000 m	grn-gry sch. phyllitic (D_1)	0.03 ~ 0.32	< 0.3 ~ 0.4	4	140~200	Qz-ser-Kfd	N85°W・80°S~N
110		Au	Qz-v	105°43′22′ ~ 105°43′45′	44°25′45′ ~ 44°25′41′	parallel quartz vein swarm vein size: Max. 0.8 m×50m area: 100 m×900 m.	gry sch. phyll (D_1)	0.03	< 0.3	1	134~166	Qz-ser	N80°W・60°N?
111		Au	Qz-v	105°44′11′	44°25′36′	parallel quartz vein swarm vein size: Max. 0.5 m×50m area: 50m×180 m.	grn gry sch. phyll (D_1)	—	—	—	—	—	N80°W・60°N?
112		Au	Qz-v	105°44′43′	44°25′37′	parallel quartz veins, size: 1 m ×50 m×5, total L.=150 m	grn gry sch. phyll (D_1)	—	—	—	—	—	N80°W・60°N?

Table Ⅱ-2-7-9 Ore-showings in the North-harmagtai Area (6)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling	Alteration	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs	Temp ℃	type	
113		Au	Qz-v	105° 45′ 44′	44° 25′ 29′	four quartz veins uint size Max. 0.3m×15m. total length 50 m	gry sch. phyllitic (D_1)	—	—	—	—	—	E-W・80° N
114		Au	Qz-v	105° 46′ 27′ ~ 105° 46′ 47′	44° 25′ 29′ ~ 44° 25′ 26′	two vein zones along anticlinal axis unit size: Max. 2 m×300 m zone: 50m×450 m	pelitic sch (D_1)	0.04	< 0.3	1	152~199	Qz-ser-cal pl	N80° E・60° S
115		Au	Qz-v	105° 47′ 23′ ~ 105° 48′ 02′	45° 25′ 23′ ~ 44° 25′ 23′	five mono-quartz veins vein size: Max. 1 m×180 m zone: 150 m×850 m	pelitic sch. phyllitic (D_1)	—	—	—	156~196	—	veins: N80° W・80° N, E-W・90°, zone: N70° W
116		Au	Qz-v	105° 48′ 24′	44° 25′ 32′	quartz veins conformably formed at anticlinal axis (saddle leef) size: Max. 30 m×250 m	dk gry phyl sch(D_1)	0.04	< 0.3	1	—	Qz-ser-cal pl	E-W・25°~30° N. 30°~60° S Thickness of the leefs are unknown
117		Au	Qz-v	105° 49′ 54′	45° 25′ 33′	six parallel quartz veins. formed along anticlinal axis vein size: Max. 0.5 m×20m area: 20m×150 m	blk pelitic sch. phyllitic (D_1)	—	—	—	—	—	N80° W・80°~90° N
118		Au	Qz-vl	105° 52′ 43′	44° 25′ 16′	ring-shaped quartz veins formed at anticlinal axis vein size: Max. 1 m×160 m total length: 30m	ser sch. phyllitic (D_1)	—	—	—	—	Qz-ser	N70 ′ W・80° N

Table Ⅱ-2-7-9 Ore-showings in the North-harmagtai Area (7)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling	Alteration	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs	Temp ℃	type	
119		Au	Qz-v	105°53′02′	44°25′35′	single quartz vein along anti-clinal axis vein size: Max. 4 m×800 m	gry psammitic sch (D_1)	0.03	0.3	1	142～192	Qz(ser-chl)	N84°W・60°~70°N. insufficiently surveyed
120		Au	Qz-v	105°53′34′	44°25′26′	single milky white quartz vein size: 1 m×450 m	gry psammitic sch (D_1)	—	—	—	—	—	N84°W・90° insufficiently surveyed
121		Au	Qz-v	105°53′43′	44°25′28′	aggregate vein of milky white quartz veins unit vein size: Max. 2m×80m total size: 20m×450 m	gry psammitic sch (D_1)	0.04	0.3	1	148～198	Qz-dol	E-W・80°S
122		Au	Qz-v	105°54′50′	44°25′25′	single quartz vein, milky white chalcedonic quartz size: 2 m×400 m	blk sch, phyllitic(D_1)	—	—	—	—	Qz-ser	N60°W・60°~90°N
123		Au	Qz-v	105°57′25′	44°25′08′	parallel milky white quartz veins in the area of 70 m×400 m, Σvw = 4m unit size: Max. 4 m×400 m	gry alt ser sch, phyllitic (D_1)	0.05	< 0.3	1	—	Qz-ser-cal	N80°W・70°~80°N Σv =4 m
124		Au	Qz-v	106°06′45′	44°25′23′	vein swarm of milky white quartz veins unit size: Max. 0.5 m×50m zone: 60m×150 m	dk gry sch, phyll (D_1)	—	——	—	—	Qz-ser	an oval area elongated to E-W direction density of the vein is too dilute

Table Ⅱ-2-7-9 Ore-showings in the North-harmagtai Area (8)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate Longitude	Coodinate Latitude	Characteristics and Size	Host Rock	Assay Au(g/t)	Assay Ag(g/t)	Assay pcs	Filling Temp ℃	Alteration type	Remarks
125		Au	Qz-v	106°08′58′	44°24′59′	milky white single quartz vein vein size: 2m×500 m	gry phyll sch (D_1)	0.03	< 0.3	1	171～213	Qz-pl	N70°W・70°S~80°N
126		Au	Qz-v	106°09′57′	44°25′47′	aggregate of quartz veinlets vein size: max. 0.5 m×6 m zone: 10m×40m	gry phyll sch (D_1)	0.03	< 0.3	1	—	Qz-pl-ser	an oval area elongated to E-W direction
127		Au	Qz-v	106°09′00′	44°26′29′	network of quartz veins vein size: Max. 0.5m×15m zone: 15m×60m	grn sch, phyll (D_1)	0.04	0.3	1	—	ser-chl	mainly N80°W・80°S, partly N50°W・60°SW, N80°E・80°N
128		Au	Qz-v	106°09′54′ ～ 106°10′12′	44°26′55′ ～ 44°26′54′	aggregate of quartz veins unit vein size: Max. 4 m×500m area: 200 m×700 m	blu-gry sch, phyll (D_1)	0.03 ～ 0.04	< 0.3 ～ 1.4	3	149～204	Qz-pl-ser	N80°W・70°S, N80°W・60°N, N55°W・70°Sw, E-W・60°S,
129		Au	Qz-v	106°10′39′	44°26′28′	four parallel quartz vein zones in the area of 100 m×300 m, milky white mono quartz unit vein size: 0.6 m×80m	blu-gry sch, phyll(D_1)	0.04	< 0.3	1	—	ser-chl	N70°W・60°~80°N
130		Au	Qz-v	106°10′54′	44°26′35′	aggregate of quartz veins in the oval area unit vein size: Max. 5m×35m area: 25m×70m	gry sch, phyll (D_1)	0.04	< 0.3	1	—	Qz-pl-ser	N55°W・80°S, E-W・50°S, N20°W・60°S, partly saddle leef

Table Ⅱ-2-7-9 Ore-showings in the North-harmagtai Area (9)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling	Alteration	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs	Temp ℃	type	
131		Au	Qz-v	106°11′28″	44°26′52″	net work of milky white quartz veins size: Max. 0.6m×8 m area: 30m×40m	blu-gry alt sch (D_1)	0.04	< 0.3	1	—	—	N80°E・80°S, N70°E・80°S, N10°E・80°E, N40°E・80°E N40°W・60°SW
132		Au	Qz-v	106°12′20″ ~ 106°12′13″	44°27′05″ ~ 44°27′06″	parallel quartz vein zone unit vein size: max.1 m×250m vein zone: 200m×300 m	grn-gry sch. phyll (D_1)	0.04	< 0.3	1	170~202	ser-chl	N70°~80°W・80°S N55°W・50°~60°NE
133		Au	Qz-v	106°12′42″	44°27′08″	parallel quartz vein zone vein size: 0.1 m~0.2 m×9 zone: 5 m×300 m	dk gry sch (D_1)	0.04	0.3	1	184~258	Qz-ser-chl pl	E-W・30°S
134		Au	Qz-v	106°10′57″ ~ 106°10′38″	44°29′02″ ~ 44°28′57″	parallel quartz vein zone vein size: Max.8m~400 m zone: 200 m×700 m	dk gry sch. phyllitic (D_1)	0.03 ~ 0.05	< 0.3 ~ 1.7	3	244~258	Qz-pl(ser)	N65°W・70°~80°N
135		Au	Qz-v	106°12′41″	44°27′56″	single quartz vein milky white mono quartz vein size: Max.1.5m×350 m	dk gry sch. phyllitic (D_1)	0.04	0.3	1	—	—	N70°W・90° size of the major part is 1 m×120 m
136		Au	Qz-v	106°13′06″ ~ 106°13′15″	44°27′30″ ~ 44°27′31″	aggregate of saddle reef and ladder veins vein size: Max. 0.5 m×30m zone: 20m×300 m	gry sch. (D_1)	0.03 ~ 0.04	< 0.3 ~ 0.4	2	207~250	Qz-pl-ser	unit vein N25°W・30°~50°E zone: E-W

Table Ⅱ-2-7-9 Ore-showings in the North-harmagtai Area (10)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling	Alteration type	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs	Temp ℃		
137		Au	Qz-v	106°13′21′ ~ 106°13′10′	44°27′12′ ~ 44°27′10′	aggregate of saddle reef and ladder veins vein size: Max. 4 m×40m zone: 100 m×400 m	gry sch, phyll (D_1)	0.04	0.3	1	—	Qz-ser-chl	unit vein : E-W·50°~80° S N20°~40° W· 30°~45° SW zone: E-W
138		Au	Qz-v	106°14′11′ ~ 106°13′49′	44°27′19′ ~ 44°27′14′	aggregate of parallel quartz veins unit vein : Max. 35 m×800 m Av. total width of veins =3 m zone: 140 m×1,150 m	gry sch, phyll (D_1)	0.03 ~ 0.04	< 0.3	3	217~275	Qz-ser	E-W· 45°~60° N, E- W·50° S
139		Au	Qz-v	106°14′32′	44°27′17′	a couple of quartz veins containing galena vein size: max. 0.8 m×50m area 20 m×80m	gry sch, phyll (D_1)	0.04	1.4	1	—	Qz-ser-chl	N30° E·80° SE N60° E·50°~80° SE
140		Au	Qz-v	106°15′26′ ~ 106°14′53′	44°27′04′ ~ 44°27′16′	aggregate of quartz veins veins size: Max. 2 m×100 m more than eight veins zone: 250 m×1,100 m	grn-gry sch, phyll (D_1)	0.04	0.3 ~ 1.1	2	—	Qz-pl-ser-chl	N60° W· 90°, N65° W· 90° N10° E· 60° W N70° W· 80° S
141		Au	Qz-v	106°18′54′ ~ 106°18′29′	44°26′54′ ~ 44°27′05′	a quartz vein swarm veins size: Max. 15m×400 m more than ten veins are seen zone: 1,000 m×1,500 m	grn-gry sch, phyll (D_1)	—	—	—	—	—	E-W, N40° E, N60° E, N10° E dip is not obvious very insufficiently observed

Table Ⅱ-2-7-9 Ore-showings in the North-harmagtai Area (11)

No.	Name of deposit	Mineral	Type of Deposit	Coodinate		Characteristics and Size	Host Rock	Assay			Filling Temp ℃	Alteration type	Remarks
				Longitude	Latitude			Au(g/t)	Ag(g/t)	pcs			
142	Shvuun Hudag	Au	Qz-v	106°18′54′ ~ 106°18′38′	44°16′55′ ~ 44°16′55′	massive silicified rocks and milky white quartz vein size of silicified rocks 100 m×250 m cut by Qz vlets 5 m×120 m size of quartz vein 1 ~2 m×140 m zone: 200 m×600 m	basalt (C_3 - P_1)	—	—	—	—	Qz-pl-chl K-fel	quartz vein: N7 0°W·90° silicified rocks: N60°E. N60°W hydro-fracturing is seen

Table II-2-8-1 Feasibility Evaluation of Major Ore Deposits in Uudam Tal Area

AREA	ORE DEPOSIT	DESCRIPTION				EVALUATION					NOTE
		MINERALES	TYPE	RESERVE(M. t)	ORE GRADE(%, Au, Ag:g/t)	MINERALS	RESERVE	ORE GRADE	INFRA STR.	TOTAL EVAL.	
	TSAV	Pb, Zn, Ag	VEIN	7.68	Pb 6.4, Zn 4.6, Ag 222	◎	○	◎	◎	◎	Large potentiality is ex-
	ULAAN	Ag, Pb, Zn	PIPE	93.1	Pb 0.95, Zn 1.9, Ag 49	◎	◎	○?	◎	○?	pected for polymetallic
	MUKHOR	Ag, Pb, Zn	PIPE	25.5	pb 0.6, Zn 3.4, Ag 113	◎	△?	△?	◎	△?	mineralization in this area
	BAYAN-UUR	Au, Ag	Qz-V	81.1	Pb Zn 1.5, Ag 80 g/t.	◎	○?	×	○	○?	
DORNOD	SALHIIT	Pb, Zn, Ag	Qz-V	-	Ag 15g/t at out crop	◎	?	?	○	?	Further study is required
	DELGER-MUNH	Ag, Pb, Zn	?	-	Pb 4-6	◎	?	?	○	?	Further study is required
	TSAGAAN-CHULUUT HUDUK	Au	PLACER	Au 4t ?	Au0.3g/t?	◎	○?	◎?	○	○?	Restricted by law of MPR.
	MARDAI	U	?	?	?	×	?	?	◎	○?	Restricted by law of MPR.
	TUMURTIIN-OBOO	Zn, Fe	SKARN	7.57	Zn 11.5	◎	○	○	×	○?	Little potentiality is re-
TUMURTIIN-OVOO	SARHIT	Zn	SKARN	0.92	Zn 6.4	◎	△	×	×	×	mained for new discovery of
	SARAA	W	QZ-V	0.17	WO 1.35	◎	×	○	×	×	ore as an area.
	ARIN-NUUR	Mo	GREIZ	24.1	Mo 0.0107	◎	×	×	×	×	
	YUGZER	W, Mo, Be	GREIZ	21.5	WO 0.197, Mo 0.056	◎	×	×	×	×	Very few potentiality is
	TUB (TSENTR)	Sn, W, Be	GREIZ	9	Sn 0.078, WO 0.137	◎	×	×	×	×	remained for new discovery
	NUHUTTIN-TSAGA-ANTOLGOI	Be	PEG	?	?(lenticular ore body, 10 ~20 m long)	◎	×	×	×	×	of profitable ore deposit in this area.
						◎	×	×	×	×	
NUHUTT-DAWAA	AR-BAYAN	W	GREIZ	0.01	WO < 0.1	◎	×	×	×	×	
	UYURBAYAN	W	GREIZ	-	WO 0.04-0.1	◎	×	×	×	×	
	ORT GROUP	W	GREIZ	-	WO 0.01-0.05	◎	×	×	×	×	
	TARVAGATAI	Mo, W	GREIZ	-	WO < 0.08, Mo<1	◎	×	×	×	×	
	DZURH-OVOO	Mo, Sn	SKARN	-	Mo 0.003, Sn 0.008	◎	×	×	×	×	
	BAYAN-HAIRAST	W	QZ-V	-	WO 1-2	◎	×	×	×	×	
	SAIHAN-ULA	W	QZ-V	-	WO 0.18-0.5	◎	×	×	×	×	
	NUHUTTIIN	W	QZ-V	-	WO 0.04-0.13	◎	×	×	×	×	
	BOR-UNDUR	CaF_2	VEIN	20.98	CaF_2 39.1%, Qz-Fl type	△	◎	○	◎	△	Fluorite is to cheap in the
	ADAG	CaF_2	VEIN	4.0	CaF_2 40 %, Qz-Fl type	△	◎	○	◎	△	western world market.
HAR-AIRAG	CHOL-TSAGAAN-DEL	CaF_2	VEIN	1.4	CaF_2 40-53%, Qz-Fl type	△	◎	○	○	△	
	HONGOR	CaF_2	VEIN	1.37	CaF_2 29-34%, Qz-Fl, Cal	△	◎	△	○	×	
	MAIHANTA	CaF_2	VEIN	3.08	CaF_2 33-36%, Qz-Fl, Cal	△	◎	△	×	×	
	TSAGANTAKHILCH	CaF_2	VEIN	1.82	CaF_2 40.5%, Qz-Fl type	△	◎	○	×	×	
LUGIINGOL	LUGIINGOL	RE	CARB-V	0.436	TREO 2.86	◎	×	×	×	×	No secondary enrichment
	TSAGAANSUVRAGA	Cu, Mo	PO-Cu	240.0	Cu 0.53, Mo 0.018	◎	◎	×	×	×	No secondary enrichment
	DUCHINN-HURAL	Cu	VEIN	-		◎	×	×	×	×	in this region.
	HARMAGTAI	Cu	PO-Cu	139.6	Cu 0.25	◎	○	×	×	×	
TSAGAAN-SUVRAGA	IH-SHANHAI	Cu	PO-CU	-		◎	×	×	×	×	
	NARIN-HUDUK	Cu	PO-CU	0.05	Cu 0.58	◎	×	×	×	×	
	OYOOTU-HIRA	Cu	PO-Cu	-		◎	×	×	×	×	
	SHUTEN	Cu	PO-Cu	12.6	Cu 0.31	◎	×	×	×	×	
	UHAA-HUDAG	Cu	PO-CU	-		◎	×	×	×	×	
	HUNGUT	Cu	PO-Cu	-		◎	×	×	×	×	
	MUSHGIA-HUDAK	RE	Carb	398	TREO 1.53 %, O.R. Reduced	◎	○	×	×	×	No secondary enrichment
	BAYAN-HOSHOO	Sr	St. W.	0.7	SrO 40 ~50 %	◎	×	×	×	×	
ULZIIT	OLON-OVOOT	Au	VEIN	?	Au ≤32.8g/t, Max 340g/t	◎	○?	○?	○	○?	Large potentiality for new
	BAYAN-OVOOT	CaF_2	VEIN	1.0	CaF_2 75 % Qz-Fl type	△	○	○	×	×	discovery of workable gold
	DUGSHIH	Au	Qz-V	?	Au ≤50 g/t	◎	?	?	○	○?	ore deposits is expectable
	ONH	Au	Qz-V	?	Au ≤0.4g/t(13 samples)	◎	?	?	○	?	in this area.
	BAYAN-BOR-NURUU	Au	Qz-v	?	Au 1-6 g/t(182 samples)	◎	?	○?	○	○?	

Note:
◎ good, ○ passable, △ with difficulty, × bad

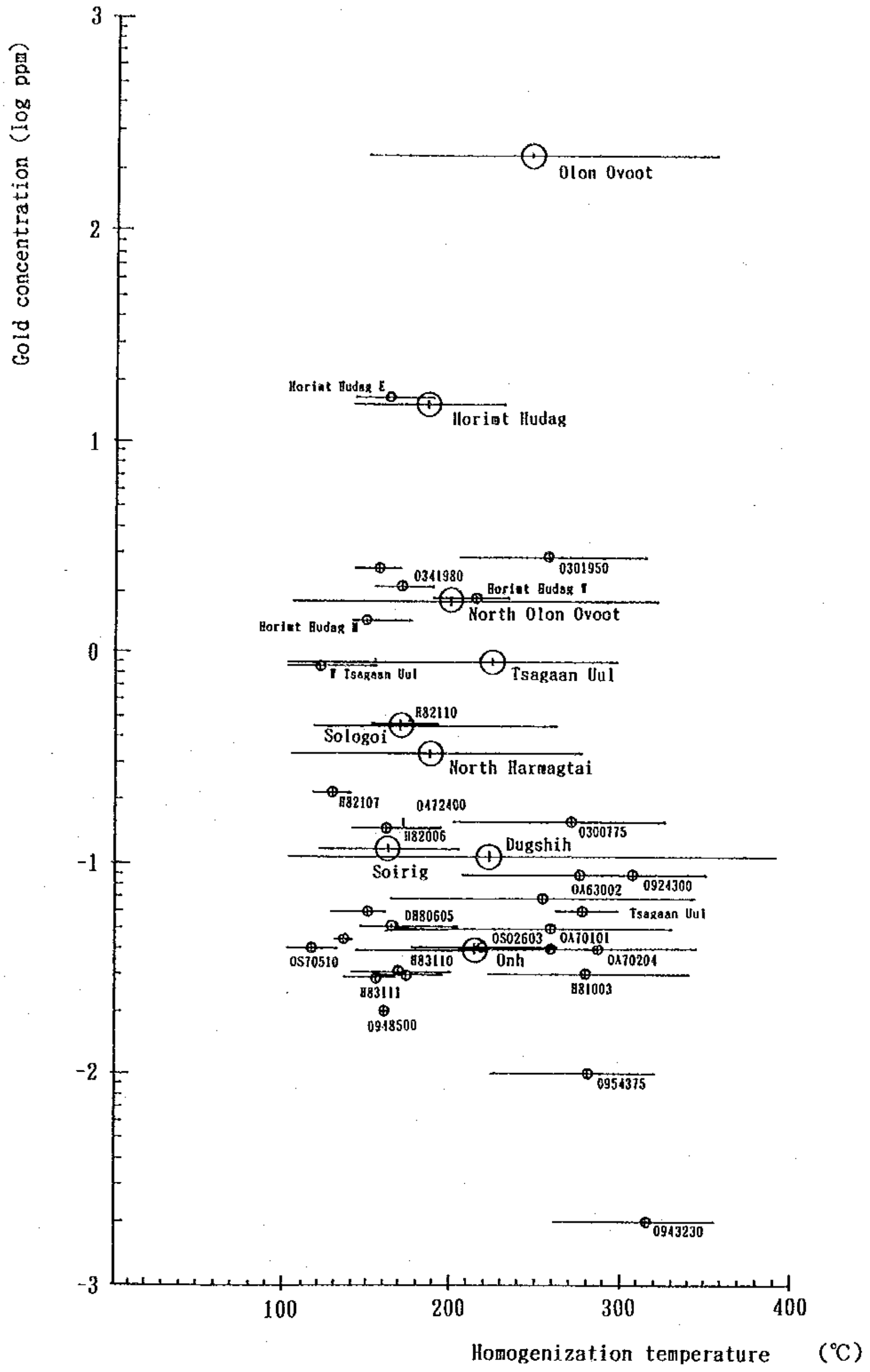
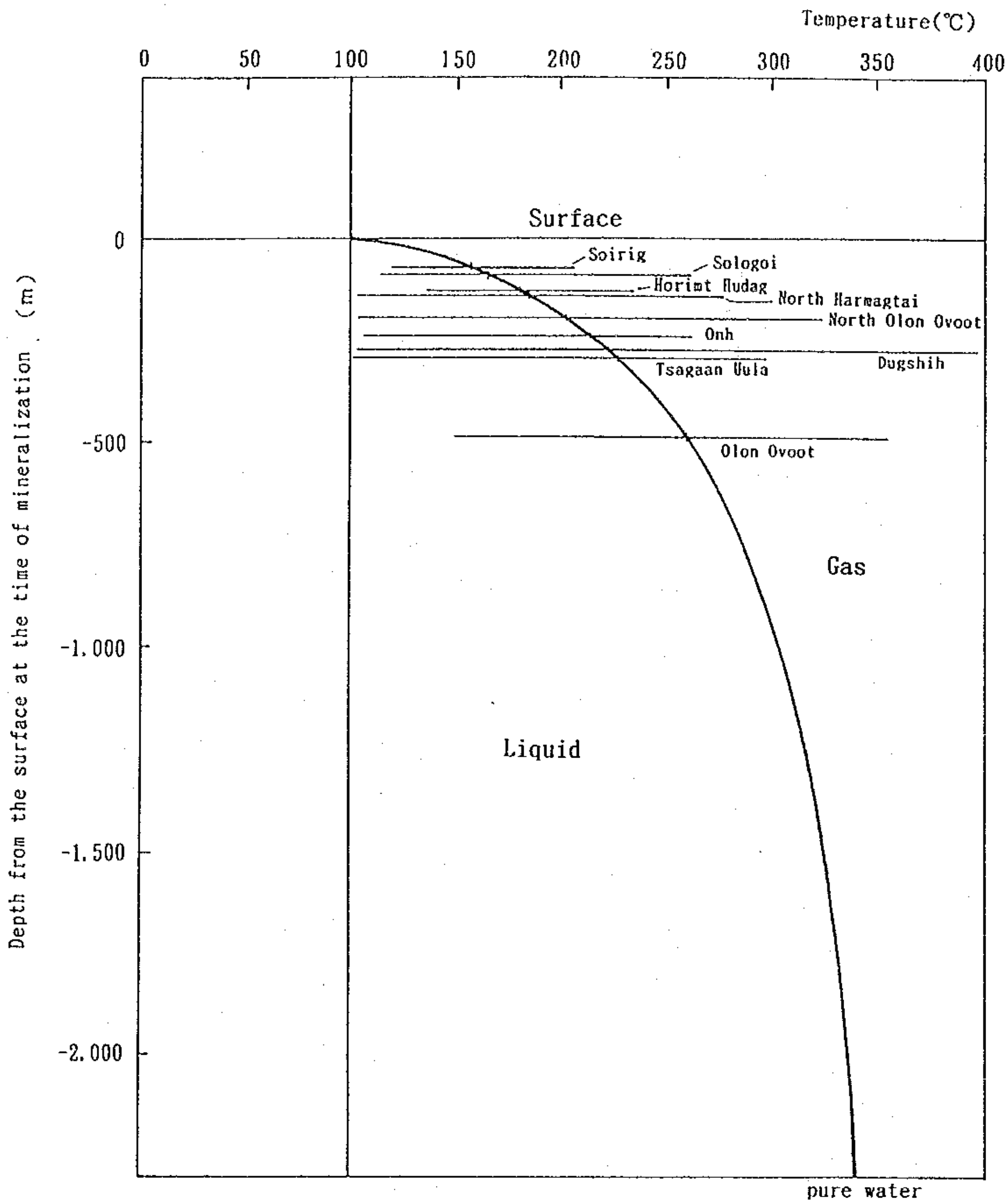


Fig. II-2-7-28 Gold Concentration in Relation to the Homogenization Temperatures of the Fluid Inclusions

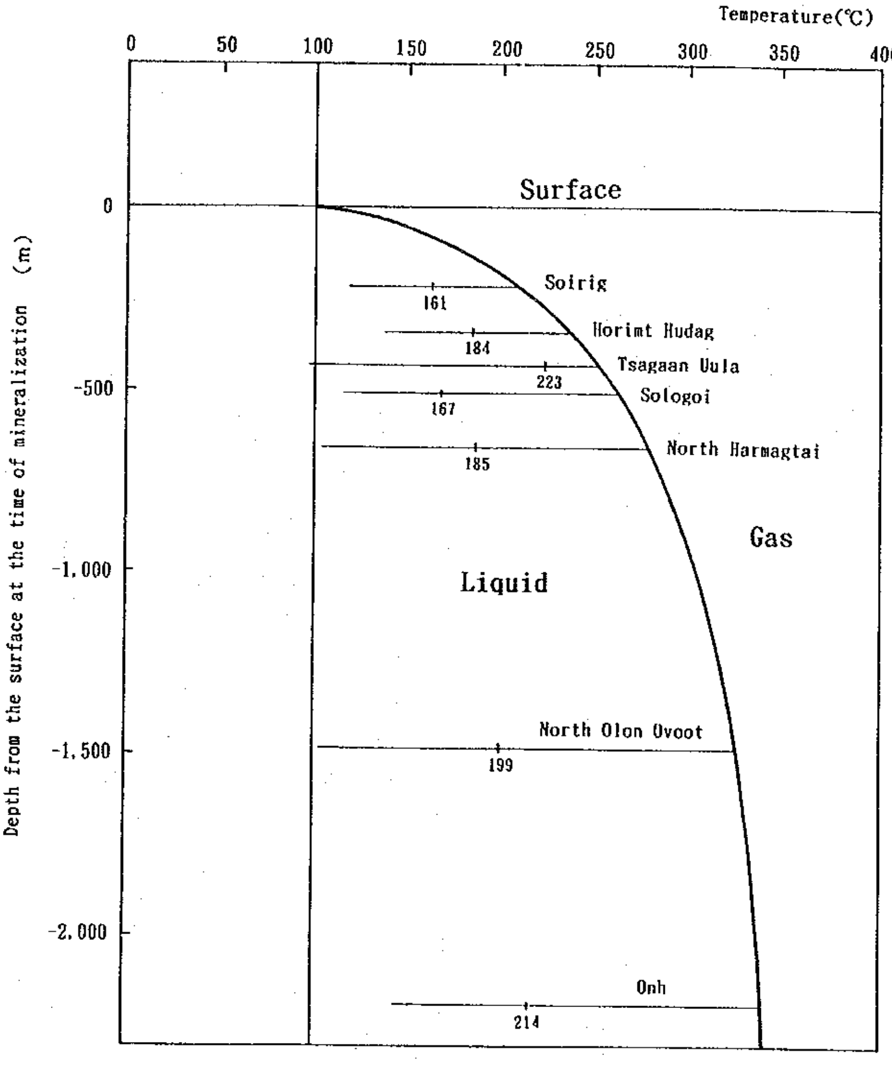


Average homogenization temperatures were adopted taking self-sealing effect into consideration.

Fig. II-2-7-29 Depth of Ore Formation in Relation to the Homogenization Temperatures of the Fluid Inclusions in Self-sealing Model

Homogenization temperature of the ULZIIT DISTRICT

Name of the area	Temperature Range (℃)				Number of measuring	Note
	Min.	Max.	Av.	Mode		
Horimt Hudag	138	232	184	220	25	multiple peaks
North Olon Ovoot	102	323	199	219	20	dispersed
Olon Ovoot	148	356	256	172	181	multiple peaks
Tsagaan Uula	98	298	223	285	21	double peaks
Dugshih	101	392	222	172	235	single peak ?
Onh	142	340	214	162	87	multiple peaks
Soirig	119	205	161	180	102	multiple peaks
Sologoi	115	260	167	160	135	double peaks
North Harmagtai	101	275	185	170	234	single peak



Hydrostatic Condition (maximum temperature=boiling temperature)
In this case, depth of Dugshih(Max. T. = 392 ℃) and Olon Ovoot(Max. T. = 356 ℃) comes unreasonably large. Uniaxial strength of the schists in the Ulziit district looks insufficient to sustain large caverns (tension cracks) to form quartz veins in such a deep place.

Fig. II-2-7-30 Depth of Ore Formation in Relation to the Homogenization Temperatures of the Fluid Inclusions in Hydrostatic Model discoversd outcropping gold in 1990, is considered to be of the highest feasibility of development though the area is located in the remote desert with disadvantageous conditions. The Olon-ovoot Ore can easily be processed into the light weight product becaous of the characteristics of ore sutable for heap leaching.

On the other hand, the second year's reconnaissance geological survey revealed that there are numerous, large gold indications in a broad area(Govi District) extending from Ulziit District to Tsagaan-suvraga District. At these gold indications, the homogenization temperatures of fluid inclusion are lower than those of Olon-ovoot Deposit, and are accompenied by large, massive silicified rock bodies and various kinds of sinters on the surface, which suggest occurrence of epithermal blind gold deposits(Fig.II-2-7-2 thru II-2-7-30).

Gold mineralization in Ulziit District has so far been unknown. In order to acquire certain guidance for exploration of gold resources in Govi District, surveys of Olon-ovoot Deposit should desirably be continued(Table II-2-8-1).

2-8 Consisderations

An overall evaluation of the foregoing major deposits, as of the fiscal 1991, is seen in Table II-2-8-2.

Within Uudam Tal Area, Tsav Deposit, though somewhat small in size, is considered to be of highest possibility of development because of its favorable ore grade and characteristics, and the infrastructure. For Ulaan and Mukhar Deposits, feasibility studies including a review of cutoff grades will be necessary

Tumurtiin-ovoo Deposit have certain problems in terms of ore reserves and characteristics whilst Tsagaan-suvraga in terms of ore grade and infrastructure.

In view of the social and geographical conditions of the survey area, minerals of high unit prices such as gold can be considered as the most desirable type of minerals. Olon-ovoot Deposit is small in scale but further survey of the deposit will be of great significance not only becaus of the high possibility of its development but becaus it would give invaluable guidance for future gold prospecting in Govi area.

Chapter 3 Semi-Detailed Geological Survey (phase II)

3-1 Purpose of survey

The survey was intended to investigate geological conditions and nature of mineralization around Olon-ovoot Deposit, thereby defining extension of the deposit and helping analyse geophysical survey findings.

3-2 Suvey methods

The semi-detailed geological survey was carried out at an area of 3km north to south and 4km east to west surrounding the deposit (Fig.II-3-2-1). The survey area and route are identical to the geophisycal survey lines. The survey was conducted in the east west direction at intervals of 200m along the planned survey line extending magnetic north to south. The total length of the survey route was 63km including the base line survey. Route maps with a scale of 1/5,000 were compiled by a line geological survey using a pocket compass and a measuring tape, while rock samples for geochemical survey was collected by pitting.

Laboratory tests included microscopic observation, whole rock chemical analysis, absolute dating, ore-analysis, mesurement of homogenization temperatures of fluid inclusion.

The ore analysis was conducted for the two elements, Au and Ag. Atomic absorption with aqua regia extraction was applied for the analysis while, for cross cheking, fire assay was used. The detection limits were set at 0.1-600ppm for Au and 0.3-600ppm for Ag.

Geochemical analysis was made by the ICP method on the seven elements: Au, Ag, Hg, As, Sb, W and Mo. The detection limits were set as follows:

Au	Ag	Hg	As	Sb	W	Mo
1ppb-10ppm	0.2-200ppm	10ppb-1%	2ppm-1%	2ppm-1%	2ppm-1%	1ppm-1%

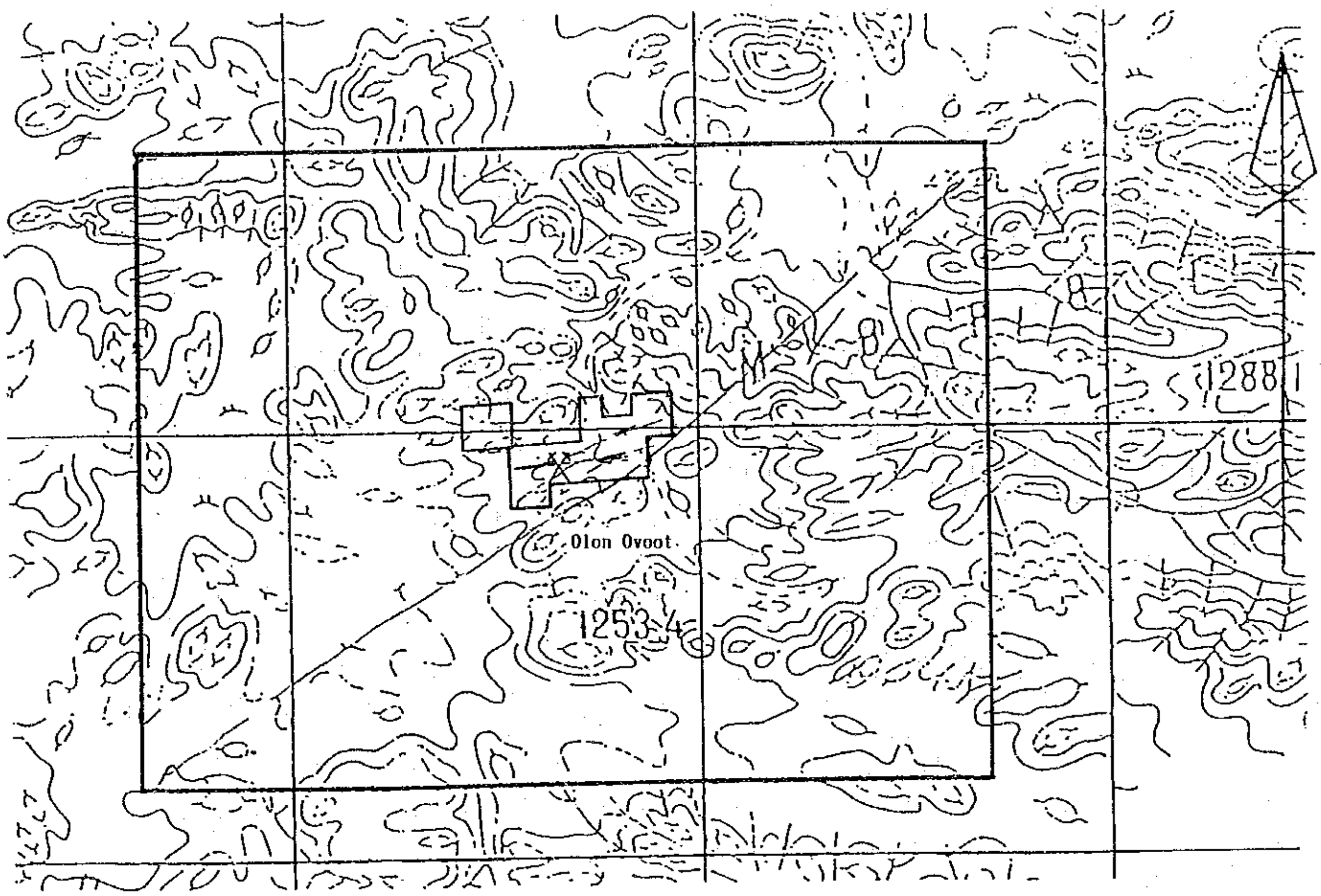
3-3 Survey findings

3-3-1 Geology

The geology of the semi-detailed survey area is composed of Silurian, Devonian and Jurassic, and intrusive rocks which intrude into Paleozoic group(Fig.II-3-1).

The Silurian is composed of crystalline schist derived from marine sediments and is exposed in most part of the area. It consists, in ascending order, of sandstone, alternated beds of siltstone, siltstone medium-to fine-grained sandstone, green schist and mudstone, into which fine-grained diorite, fine-grained granodiorite, basaltic andesite, basalt, trachyte, etc. intrude.

The Devonian is composed of white-colored limestone rich in



Semidetailed Survey Area (12km²)

0 1,000 m

Fig. II-3-2-1 Location Map of the Semidetailed Geological Survey Area

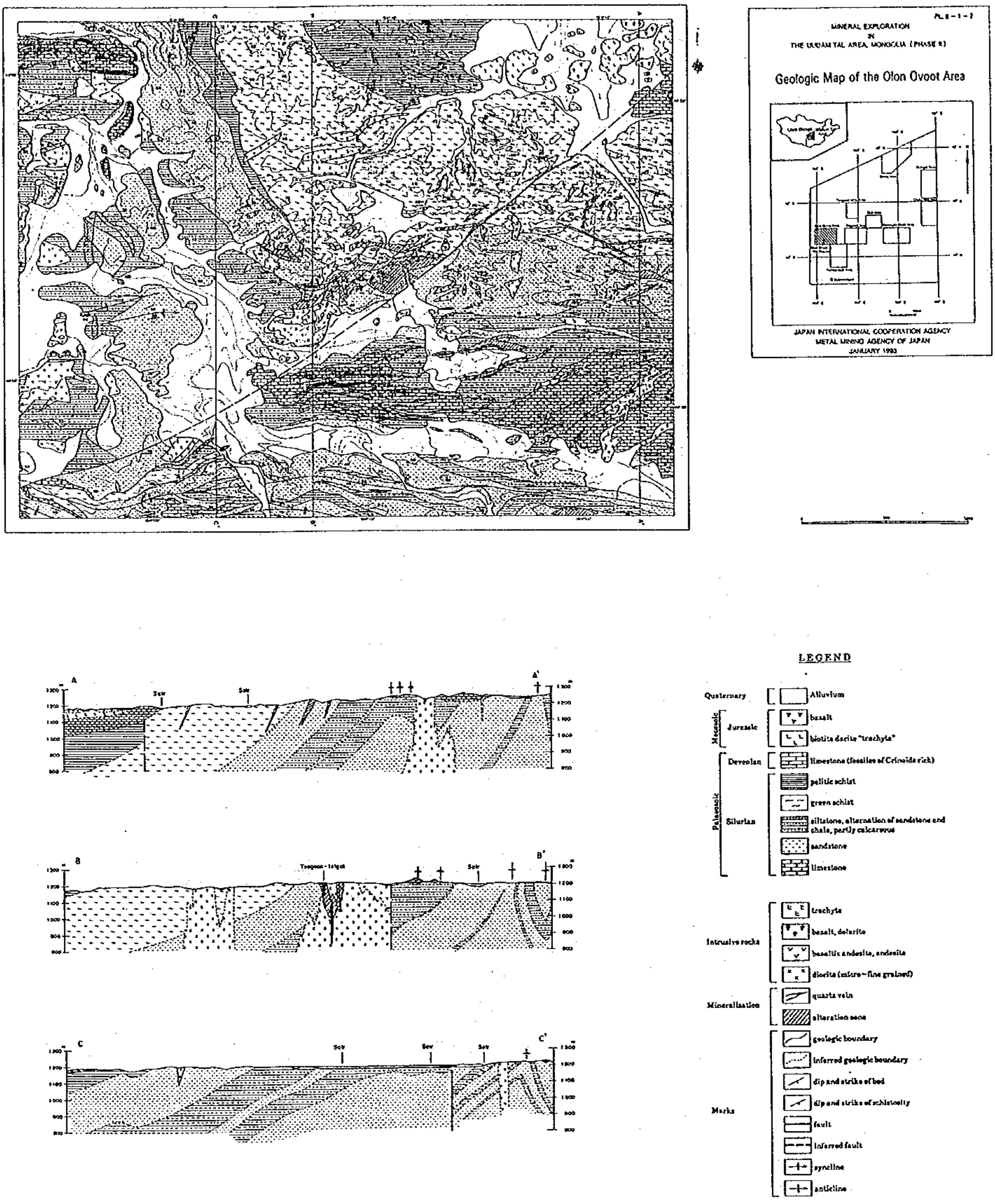
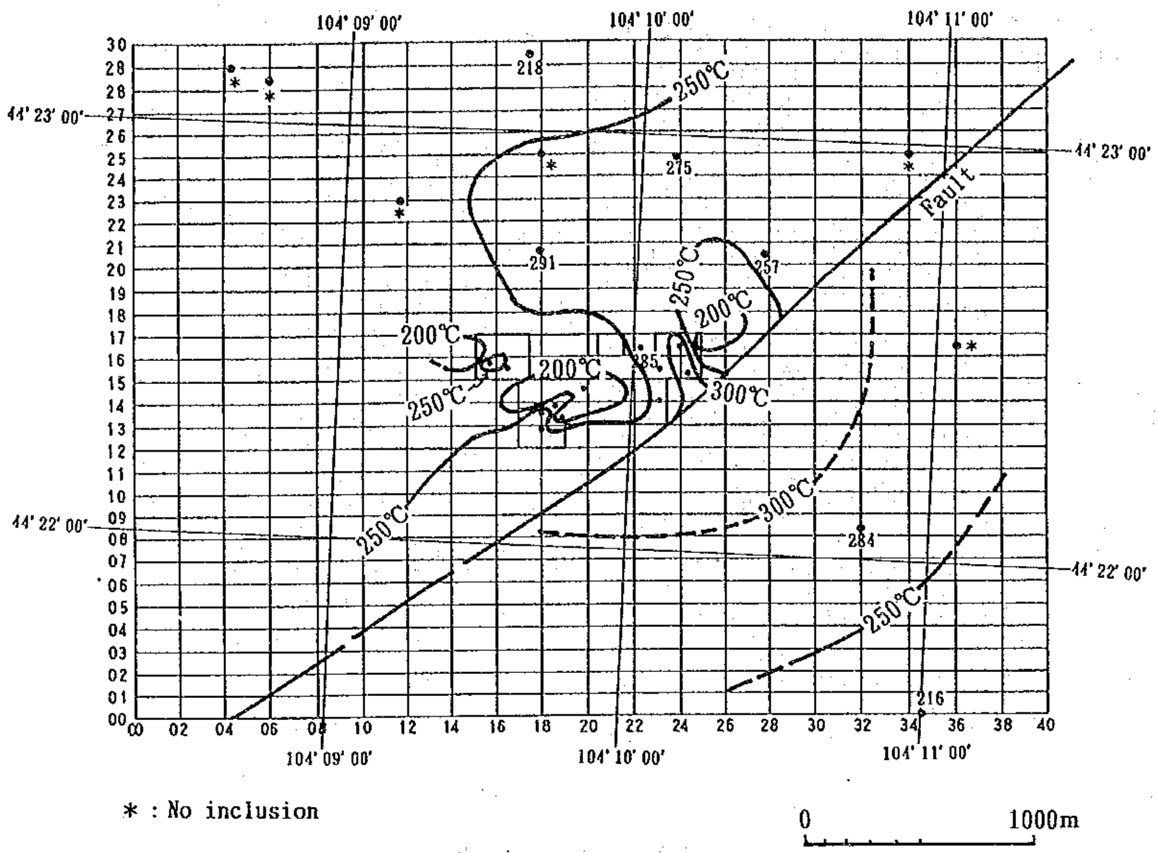
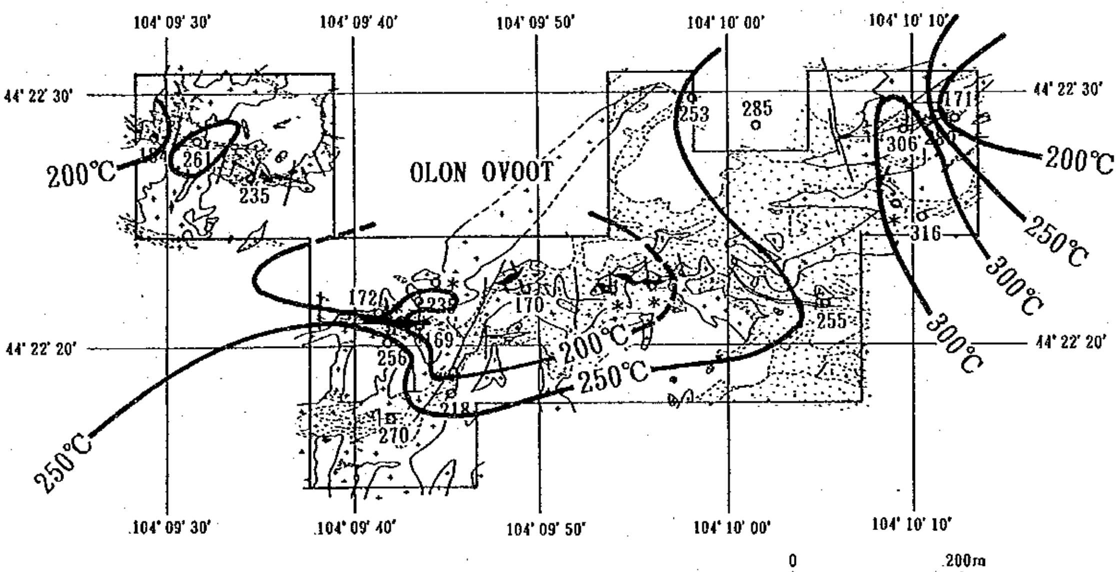


Fig. II-3-3-1 Geologic Map of the Semidetailed Geological Survey Area

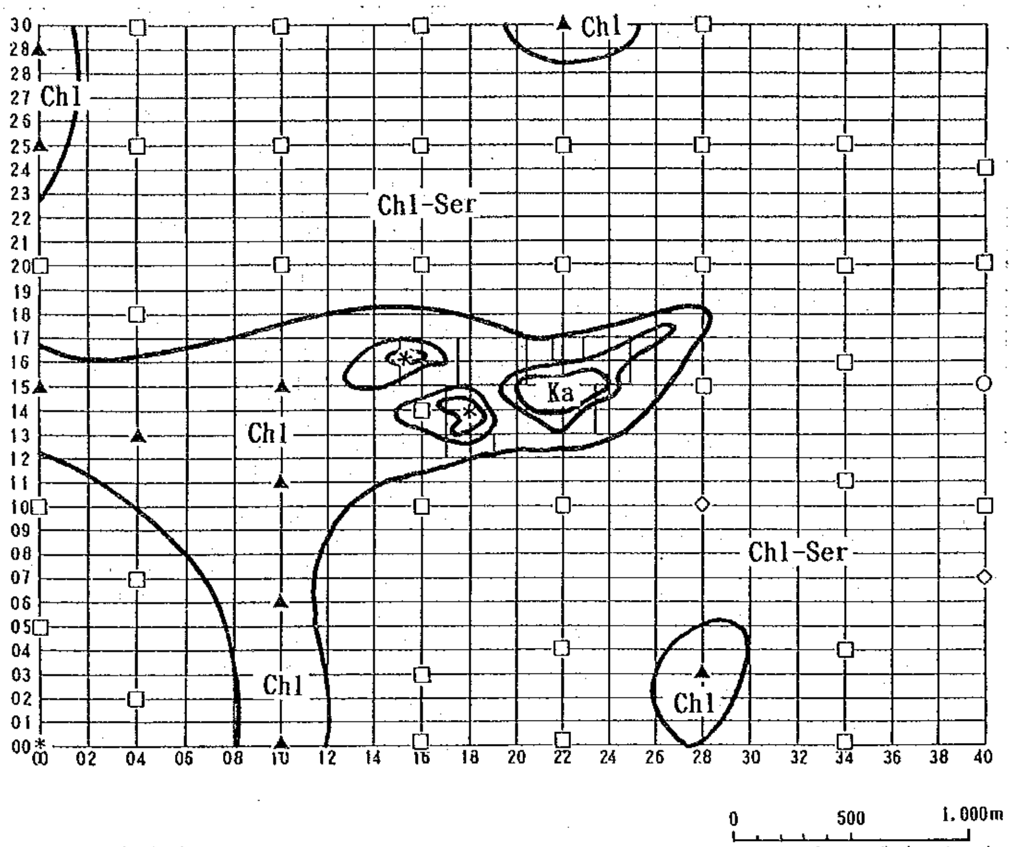


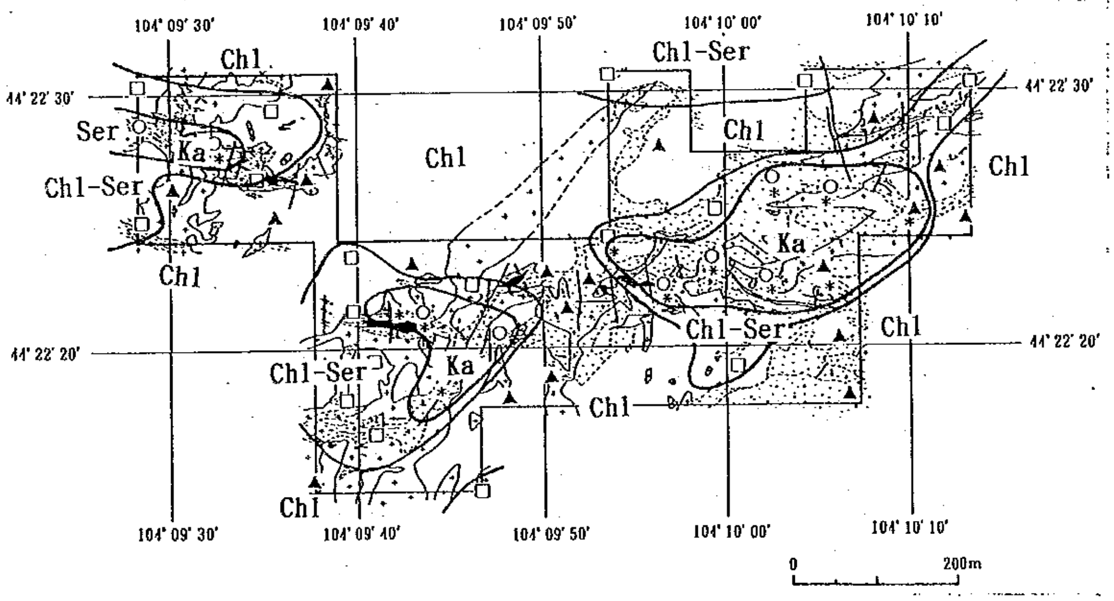
Semidetailed Survey Area



Geochemical Survey Area

Fig. II-3-3-2 Distribution of the Homogenization Temperatures of the Fluid Inclusions in the Semidetailed Survey Area





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- ＊ Kaollinite
- ○ Sericite
- ▲ Chlorite
- □ Sericite-Chlorite
- ◇ Calcite

Fig. II-3-3-3 Alteration Zoning in the Semidetailed Survey Area

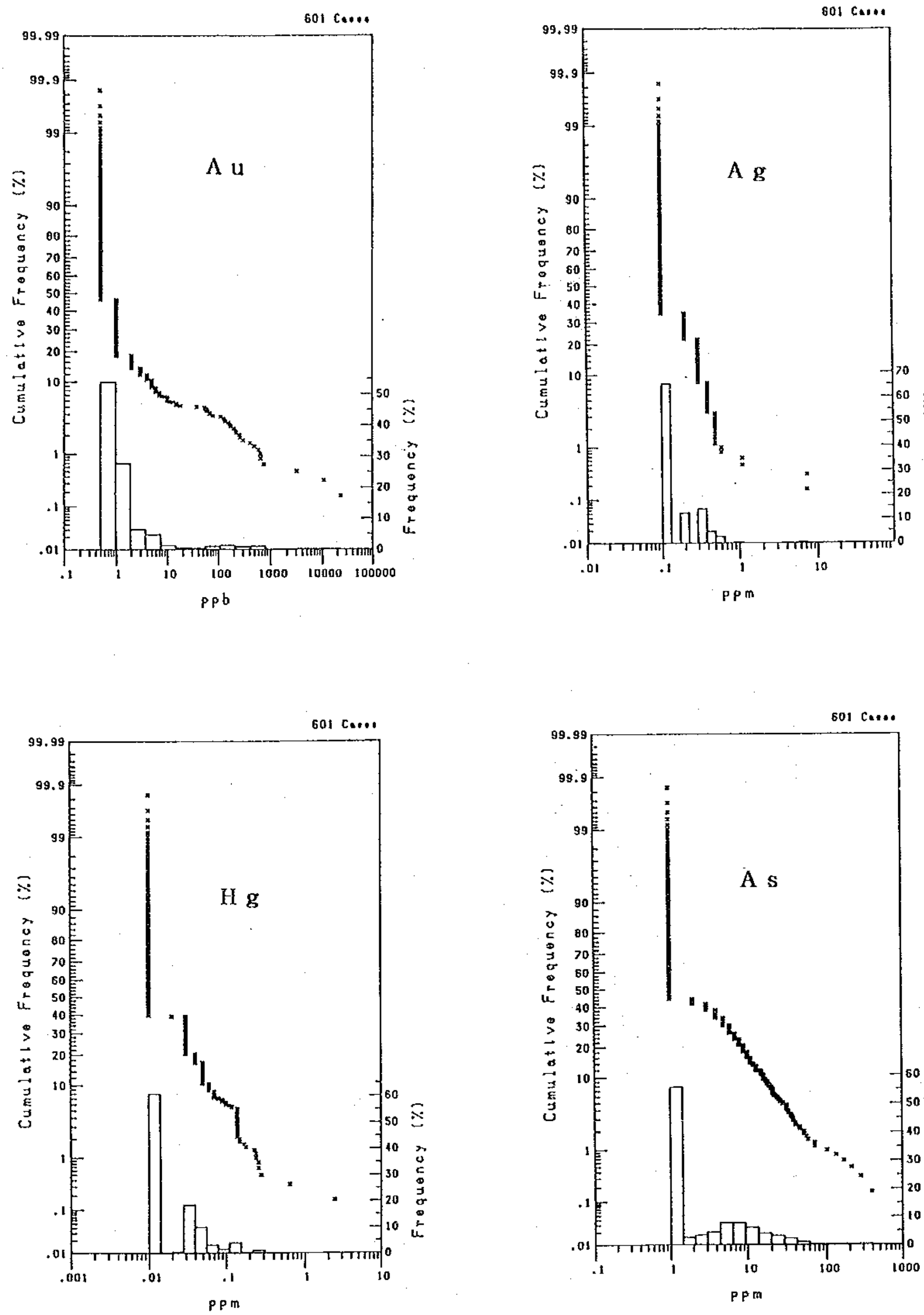
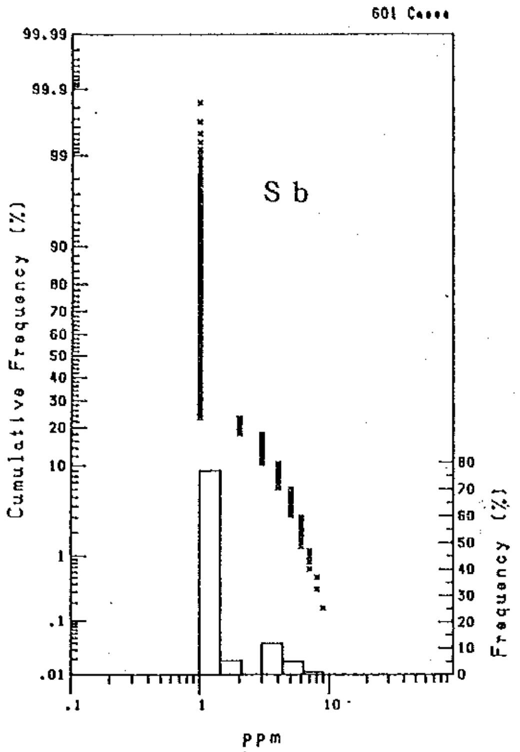
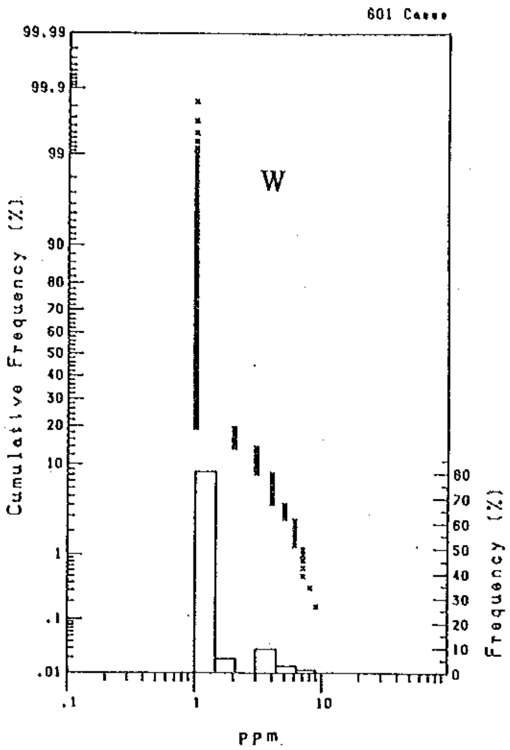


Fig. Ⅱ-3-3-4 Cumlative Frequency Curves of Assay Results (Au, Ag, Hg, As)





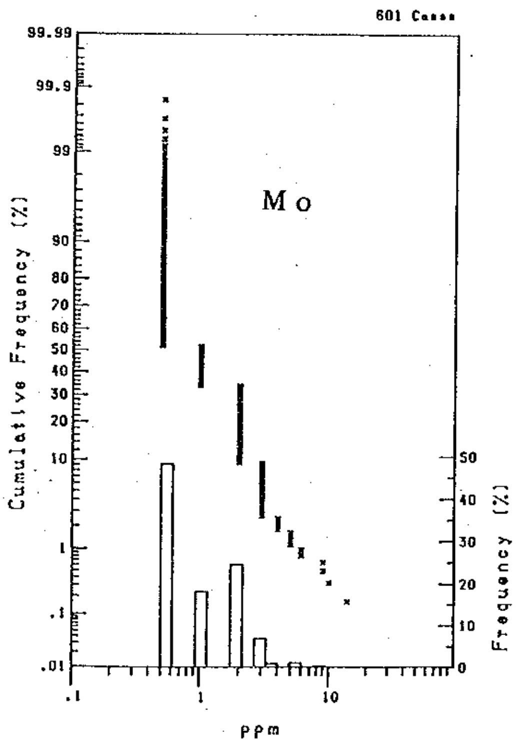
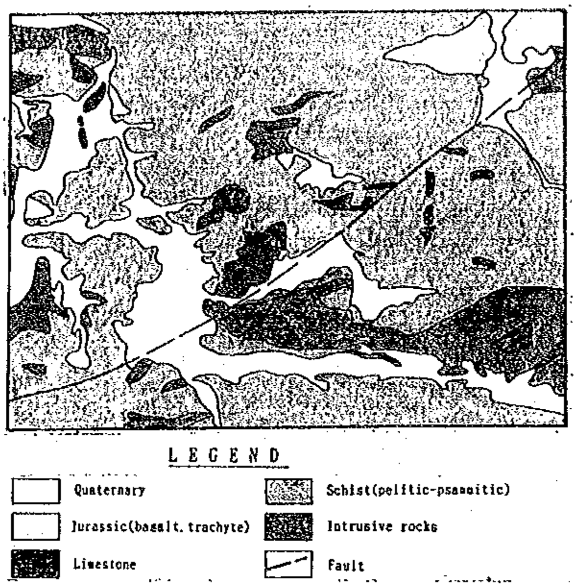
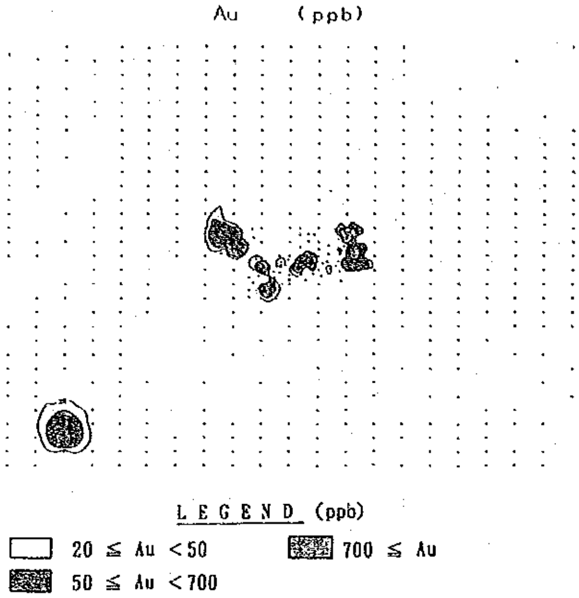


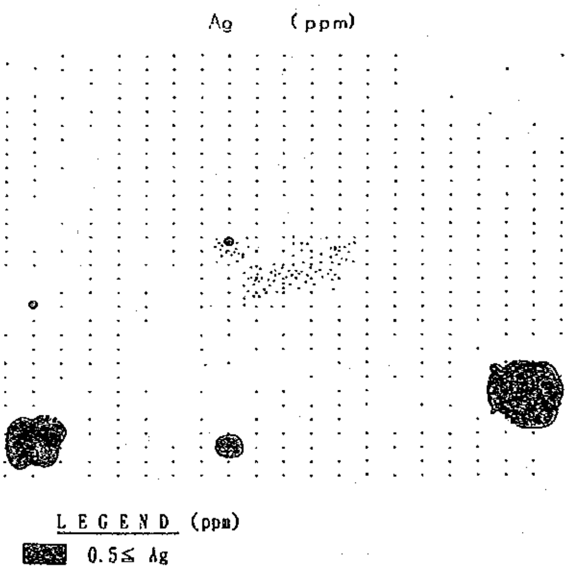
Fig. Ⅱ-3-3-5 Cumlative Frequency Curves of Assay Results (Sb, W, Mo)



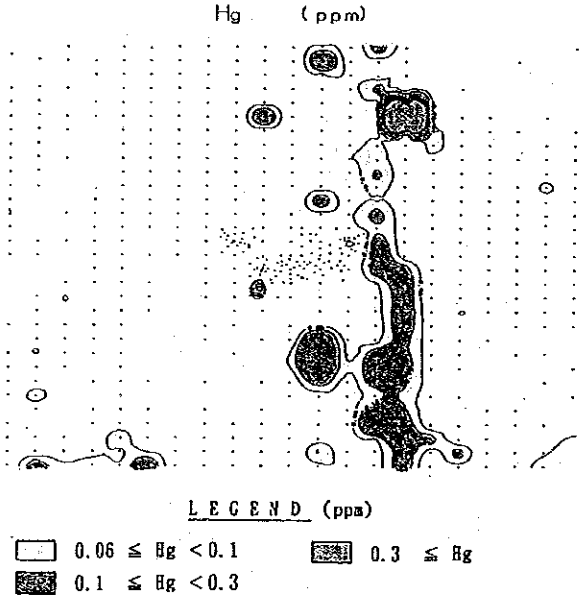
Modified Geologic Map of the Semidetailed Geological Survey Area



Gold



Silver



Mercury

0 1 km

Fig. II-3-3-6 Distribution of Minor Elements in the Rocks of Semidetailed Geological Survey Area(Au, Ag, Hg)

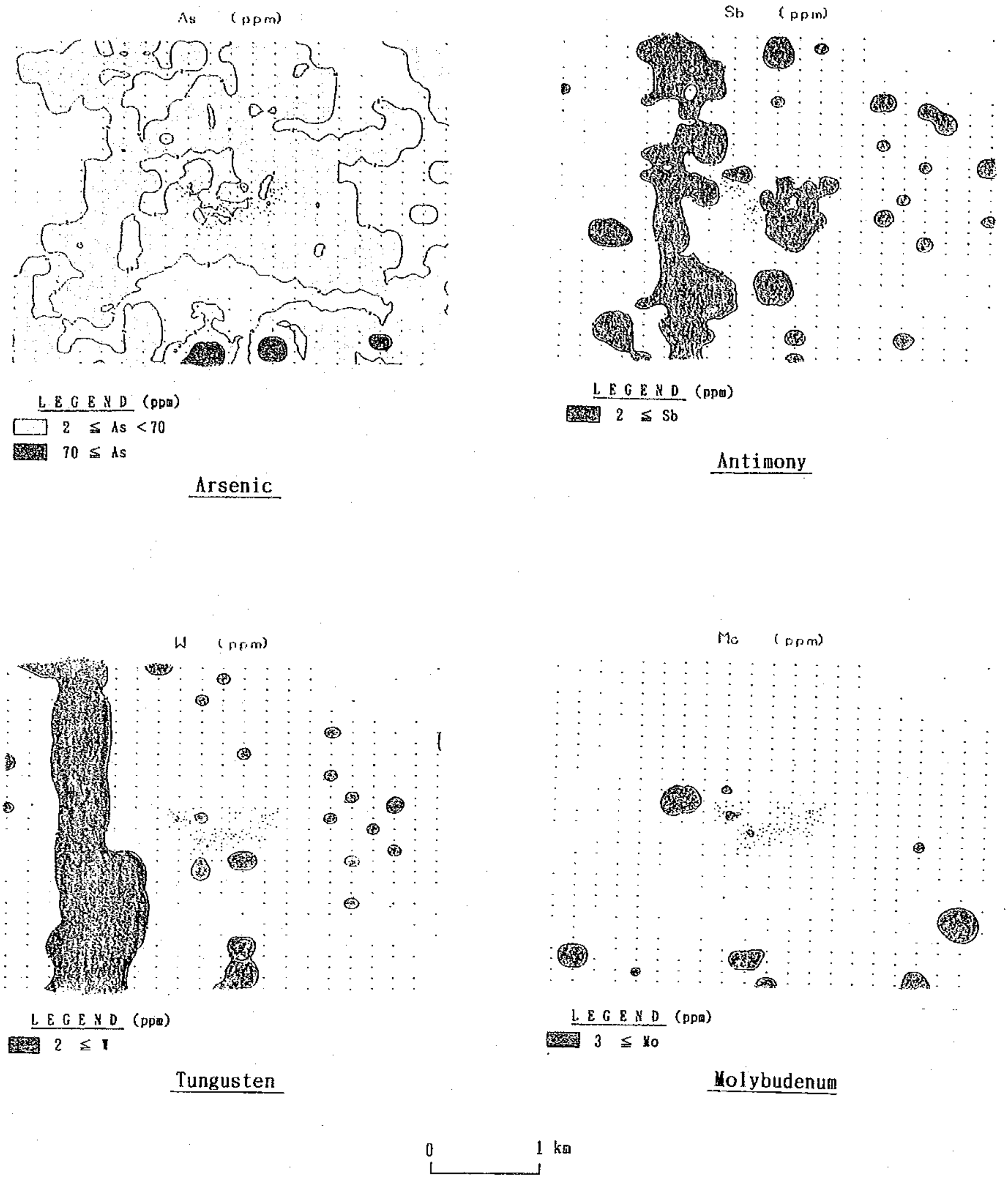


Fig. II-3-3-7 Distribution of Minor Elements in the Rocks of Semidetailed Geological Survey Area(As, Sb, W, Mo)

Table Ⅱ-3-1 Statistical Numbers on Geochemical Survey Elements

	Au	Ag	As	Sb	Mo	Hg	W
試料数	601	601	601	601	601	601	601
最大値	23260	7.2	390	9	14	2.43	9
最小値	0.5	0.1	1	1	0.5	0.01	1
平均	73.93	0.19	7.72	1.62	1.27	0.03	1.49
Auとの相関係数	1	0.0371	0.0217	-0.027	0.1382**	-0.0104	-0.0211

**: 有意(有意水準=0.001)

fossils of crinoids, distributed in the northwestern, southern and northeastern parts of the area. The thickness of the formation exceeds 50m. The formation, folding with an axis east to west, has the structure unconformable to the underlying silurian. It lacks basal conglomerate and is in contract with the Silurian with sharp boundary.

The Jurassic is composed of unaltered lavas of basalt and biotite-rhyorite, exposing itself in the northeastern part of the area. It is located at the margins of upheaved block of Paleozoic formation and distributed on a flat level.

The intrusive rock is composed of medium- to fine-grained diorite, medium- to fine-grained granodiorite, basaltic andesite, bsalt and trachyte. Diorite and medium- to fine-grained granodiorite are distributed in the form of small intrusive rock bodies all over the area, especially in the neighborhood of Olon-ovoot Deposit. Basaltic andesite and basalt in the form of small intrusive rock bodies are conspicuous in the western part of the area.

The structure is divided into two large blocks by a fault running northeast to southwest in the central part of the area(hereafter called "Olon-ovoot Fault" or simply "the fault "). The block east of the fault is characterized by folding structure with an axis of the east-west direction, similar to the regional general structure of the area. In contrast, the block west of the fault shifts its strike to the NW-SE direction near the fault, representing a structural distinction.

Olon-ovoot deposit is located at the intersection of the NE-SW fault and the Silurian sandstone, where intrusive rocks gather densely.

There are six quartz veins, max. 20m wide and 50-100m long, arranged in an arc form on the west side of the fault. Total extension of the aggregate of quartz veins reaches 1,000m. Besides, silicified and pyritzed alteration zones, max. 200m wide, develops around the deposit, a part of which extends for more than 1km northeastward along the fault. Similar alteration zones are found on the east side of the fault and in the northeastern part of the atea. Furthermore, a dominant quartz vein zone was newly found from the northeastern tip over to the western outer side of the survey area.

The homogenization temperatures of the quartz veins' fluid inclusion often exceed 250℃ in the northern and eastern parts of the deposit whilst, at the gold rich parts, the temperatures are lower than 250℃(Fig.II-3-2).

Investigation of alteration zones indicated that the wall rock alteration zones of Olon-ovoot Deposit are predominated by chlorite, partially of sericite-chlorite facies and accompanied by plagioclase and some calcite. Only in the close neighborhood of the deposit, the alteration zones are associated with small amount of sericite and, rarely, with kaolinite(Fig.II-3-3-3).

3-3-2 Geochemical survey findings

A histogram of the seven elements(Au, Ag, Hg, As, Sb, W, and Mo) was compiled and the thresholds were determined(Figs.II-3-3-4 and II-3-3-5), on the basis of which an anomaly distribution map was prepared for the respective elements(Figs.II-3-3-6 and II-3-3-7). Statistical study was made on the analysis figures. Correlations between the elements were also studied(Table II-3-1). The results are summarized as follows:

Gold :Gold anomalies appeared clearly around the major quartz veins and also on the fault in the southwestern part of the area.

Silver :Siver concentration was low in general, although anomalies were recognized in the center of the deposit, along the fault, in the alteration zones rich in manganese oxide and also in the silicified sandstone zones in the south.

Mercury:An anomaly zones is formed in the east of the central part of the area, in the north-south direction.

Arsenic:Anomaly zones in ring forms were detected over the surroundings of the deposit; and, the silicified sandstone zones in the south also showed high values.

Antimony:An anomaly zone in the north-south direction was detected in the western part of the area, as well as minor anomalies around the deposit.

Tungsten:In the western part, anomaly zone stretching in the north-sourth direction was recognized while one-point anomalies were sporadically observed from the central to the northern part of the area.

Molybdenum:Sporadic anomaly zones were detected in the central and southern parts of the area.

As the result of studies on correlations between each element, no correlation was recognized, except weak statistical correlations between molybdenum and gold. No systematic difference by type of wall rock was observed either,as compared to the geological map.

3-4 Observation

Mineral indication in the semi-detailed survey area may be classified into the following three types:

i) Quartz veins without wall rock alteration zones.

ii) Quartz veins accompanied by silicified, pyritized alteration zones.

iii) Independent silicified, pyritized alteration zones.

From the fact that the distribution of quartz veins and of silicified, pyritized alteration zones are not always conforming to each other, it is presumed that this area has undergone repeated hydrothermal mineralization, which makes it difficult to interpret the geochemical survey findings.

In case, in geochemical survey, elements other than a target element are used, there should be certain systematic relations between the elements used and the target element. Normally, either positive or negative correlations are expected. However, it does not necessarily seen to be sufficient to explain only by correlation the character of the ring-shaped halos as shown by arsenic anomalies in this survey; probably, a concept of three dimensional models will be required for it.

It is presumably because the subject has since paleozoic time been affected by repeated igneous activity that the six elements used in this geochemical survey did not show correlations with gold.

Chapter 4 Geophysical Survey (phase II)

4-1 Purpose of survey

The geophysical survey was aimed to estimate extension/continuity of Olon-ovoot Deposit into the deep and to the surroundings, and also to clarify relations between mineralized zones and the geological structure.

4-2 Survey method

The survey was conducted at the object area of 12km^2 (3km magnetic north to south and 4km east to west) around the deposit. For the resistivity survey, the transient electromagnetic measurement(TEM) method was applied. The survey points were located by open traverse method on grid of 100m magnetic north to south and 200m east to west. At the central portion of the deposit, measurements were done not only on the total measurement points were 548.(Fig.II-4-1-1)

The transmitter loop dimension were 100m x 100m at most of survey points. For detailed survey of Tsagaan-tolgoi, however, measurement was done in the Turam arrangement using a 100m x 200m rectangular 100p, and in the steep limestone area in the northwestern part of the survey area, the Turam arrangement using a square loop with a 100-m side was applied, respectivery. The transmission current was about 11.0-12.5A for the 100-m square loop and 9A for the 100m x 200m rectangular 100p.

4-3 Findings of the survey

The data of all the survey points were converted by imaging processing to the resistivity structure for analysis.(Fig.II-4-3-1 thru II-4-3-4)

4-3-1 Resistivity plans

i) Resistivity imaging plan - 1,150m lavel(Fig.II-4-3-1)

This plan indicates the resistivity values at a depth of about 50m below the surface. The high-resistivity portion in excess of 200-300 ohm-m in the southern part of the survey area corresponds to the limestone-green schist-sandstone area. To the south of it, a low-resistivity zone under 100 ohm-m is recognized along Olon-ovoot Fault. At the lower area in the northeastern part, there is a lage, low-resistivity portion of under 50 ohm-m. In the northwestern part, a low-resistivity zone of under 50 ohm-m stretches in the northeast-southwest ditection.

ii) Resistivity imaging plan - 1,100m lavel(Fig.II-4-3-2)

Continuity of the high-resistivity zone parallel to the Olon-ovoot Fault in the center appears more clearly. The low-resisitivity zone of under 100 ohm-m in the northern part further expands to conform the green schist-sandstone area.

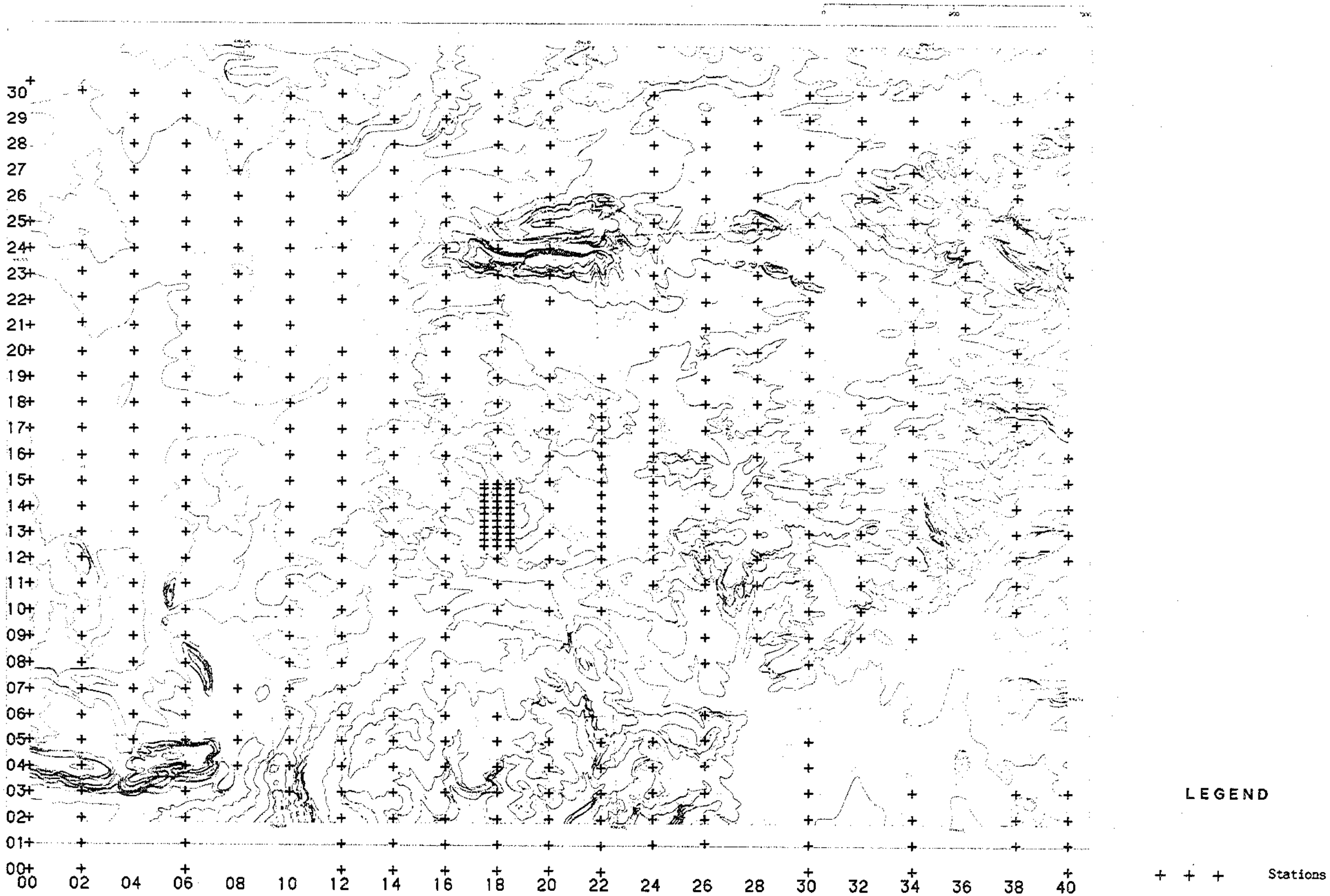
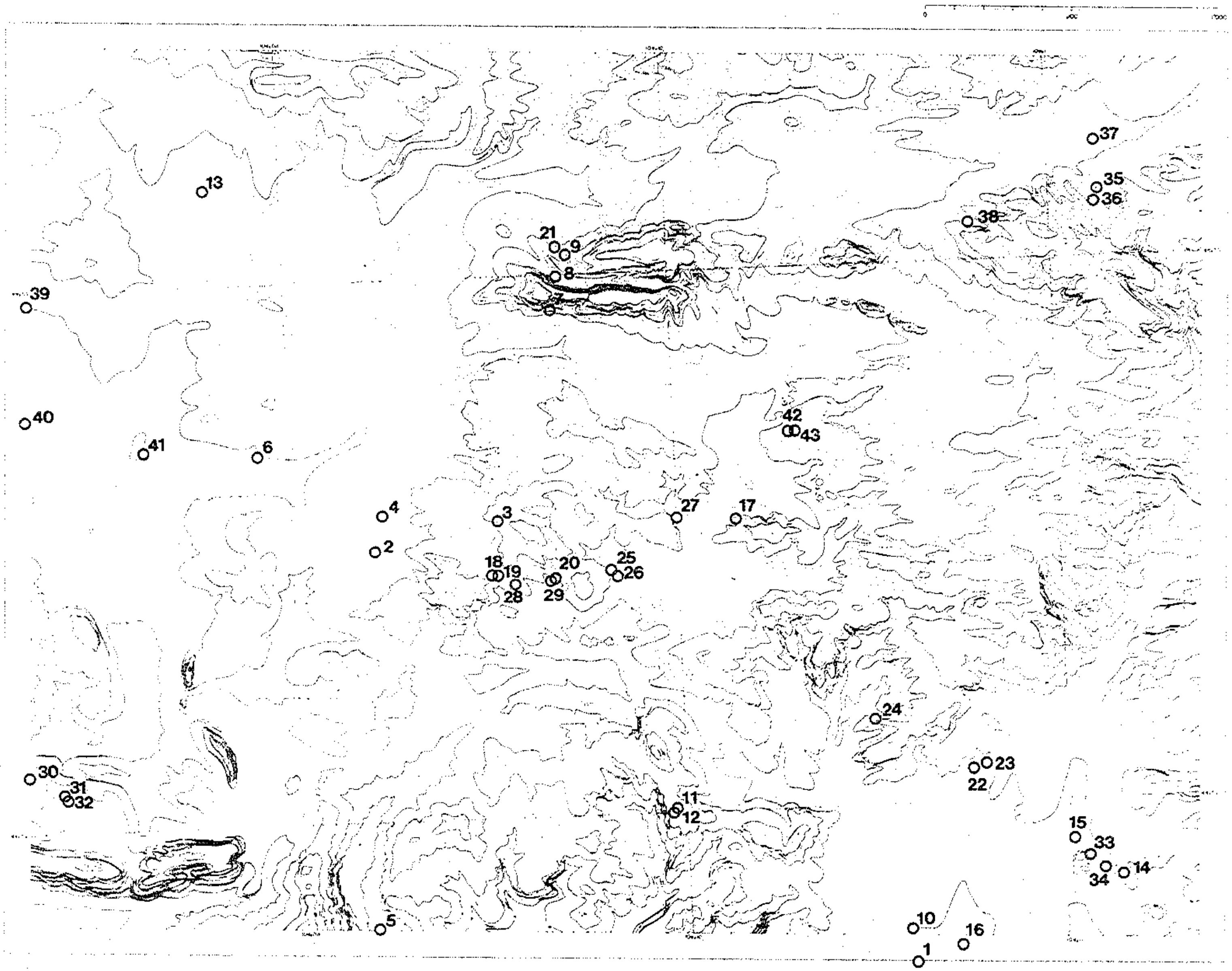


Fig. II-4-1-1 Station Location Map



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○15 Sampling Point

Fig. Ⅱ-4-1-2 Rock Samples Location Map

Table II-4-1 Rock Properties

NO	ROCKNAME	RESISTIVITY (ohm-m)		DENSITY (g/cc)		FE (%)	COMMENT
		MEAN	AVE	MEAN	AVE		
1	sandstone	3,420	2,974	2.68	2.67	0.4	
2		4,190		2.66		0.4	with Qtz vein
3		1,410		2.62		0.3	fine, core
4		2,720		2.67		0.4	
5		4,390		2.66		0.4	silicified
6		5,470		2.71		0.5	greenish gray
7		1,650		2.70		0.4	greenish gray
8		2,160		2.65		0.4	greenish gray
9		3,870		2.67		0.5	greenish gray
10	limestone	6,550	7,903	2.72	2.72	0.3	
11		10,500		2.69		0.4	
12		20,200		2.76		0.4	
13		10,600		2.65		0.5	
14		7,040		2.83		0.5	
15		2,350		2.66		0.4	
16	quartz	15,100	18,774	2.66	2.63	0.4	
17		6,170		2.61		0.4	
18		20,200		2.64		0.4	
19		15,300		2.60		0.4	
20		44,200		2.63		0.3	
21		34,400		2.64		0.5	
22	altered andesite	2,350	4,480	2.83	2.84	0.3	
23		8,540		2.85		0.3	
24	altered diorite	658	511	2.71	2.71	0.2	
25		348		2.69		0.2	
26		488		2.74		0.4	
27		258		2.78		0.0	
28		1,210		2.62		0.4	pyrhytization
29	diorite	1,410	5,168	2.78	2.88	0.3	boring core
30		6,760		2.90		0.5	micro
31		13,800		2.93		0.5	micro
32		11,300		2.95		0.5	
33		1,780		2.84		0.5	micro
34		7,200		2.86		0.4	micro
35	dacite	390	707	2.32	2.46	0.2	
36		903		2.56		0.4	
37		1,910		2.62		0.4	
38		514		2.35		0.2	
39	shale	3,640	8,719	2.70	2.71	0.4	greenish gray
40		15,300		2.76		0.5	silicified
41		11,900		2.68		0.6	silicified, fg
42		2,510	5,950	2.68	2.69	0.4	black shale
43		14,100		2.69		0.6	black shale
	AVERAGE		3,880		2.69	0.4	

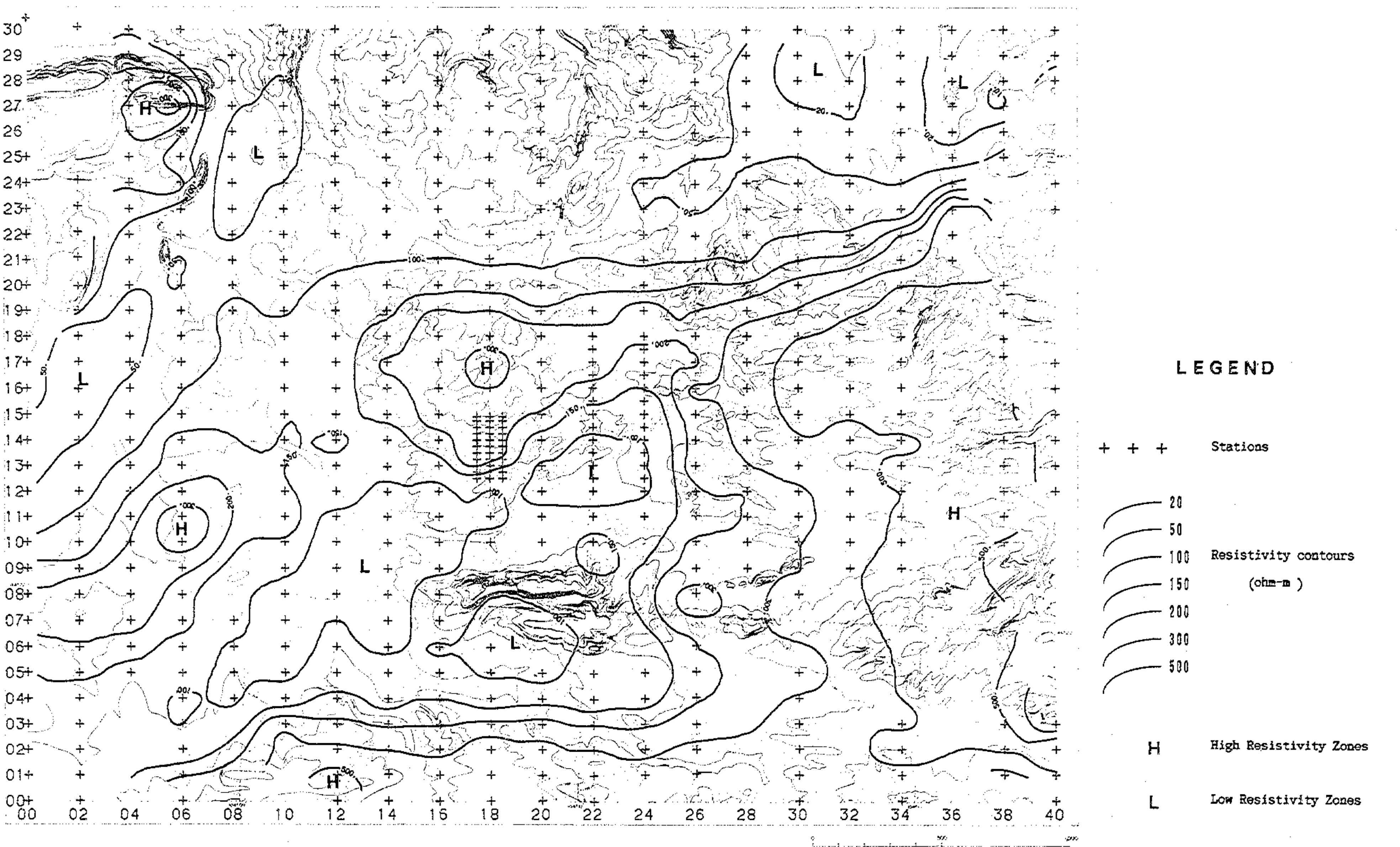


Fig. Ⅱ-4-3-1 Resistivity Image Map on 1,150 m Level

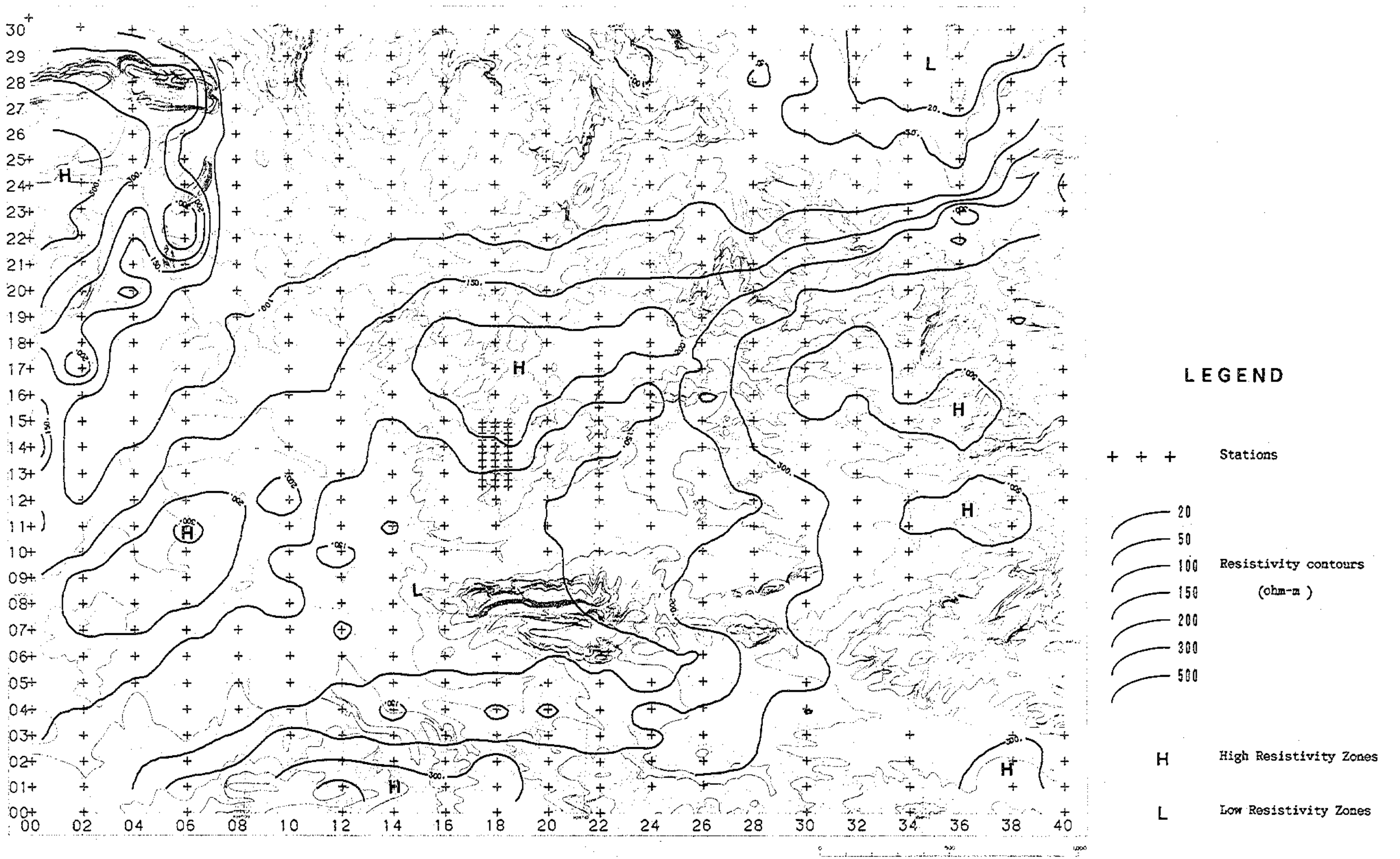


Fig. Ⅱ-4-3-2 Resistivity Image Map on 1,100 m Level

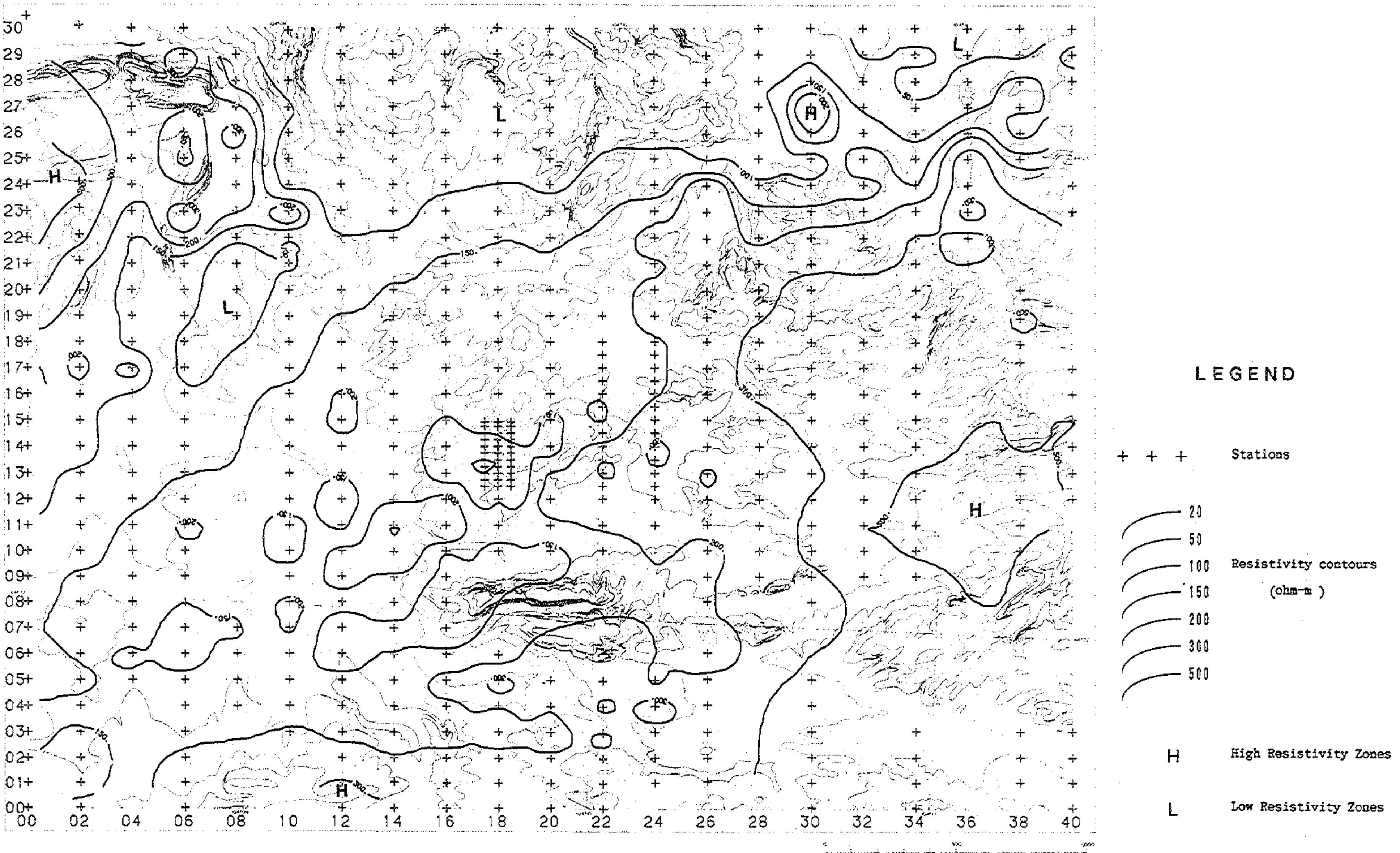


Fig. II-4-3-3 Resistivity Image Map on 1,050 m Level

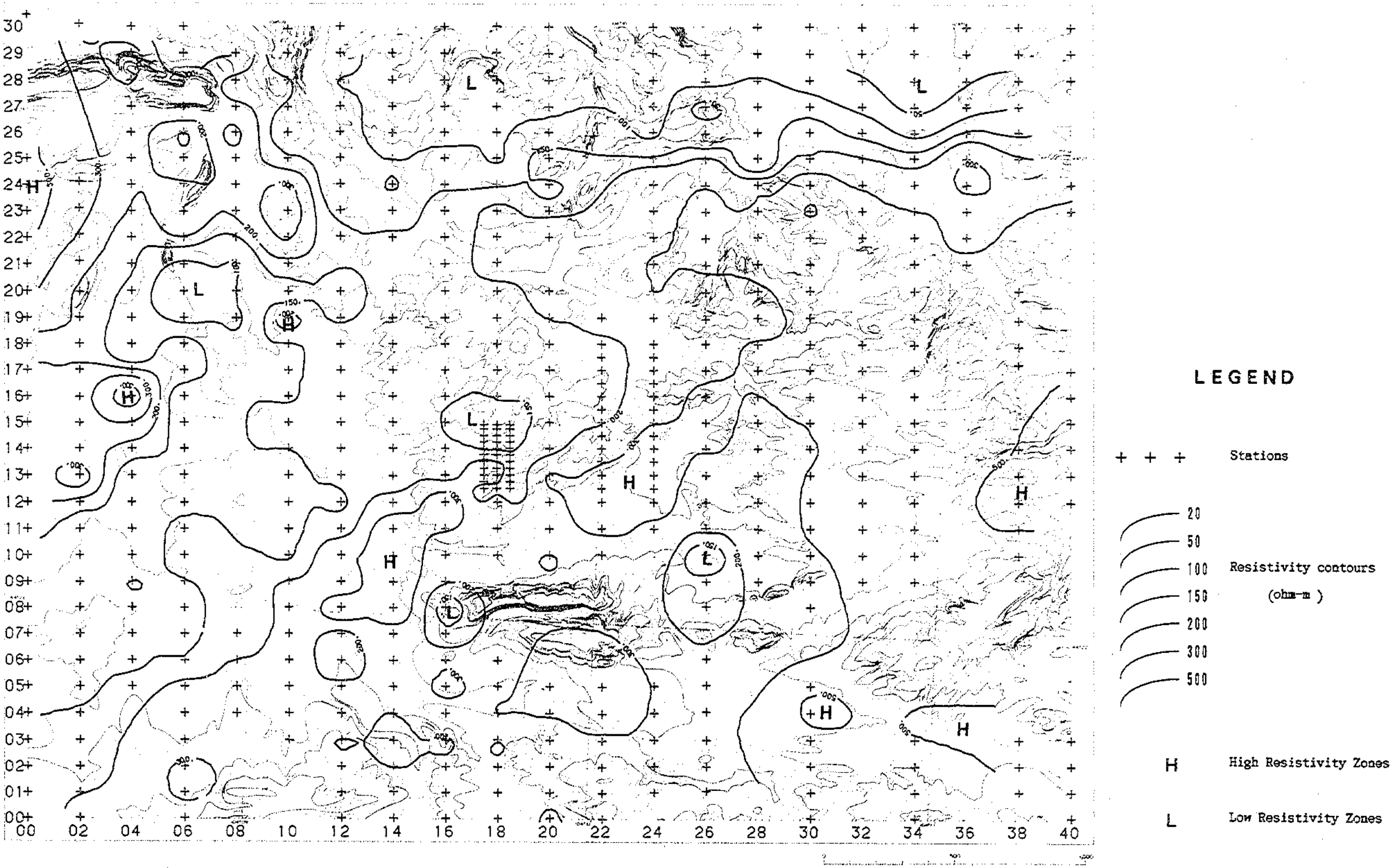


Fig. Ⅱ-4-3-4 Resistivity Image Map on 1,000 m Level

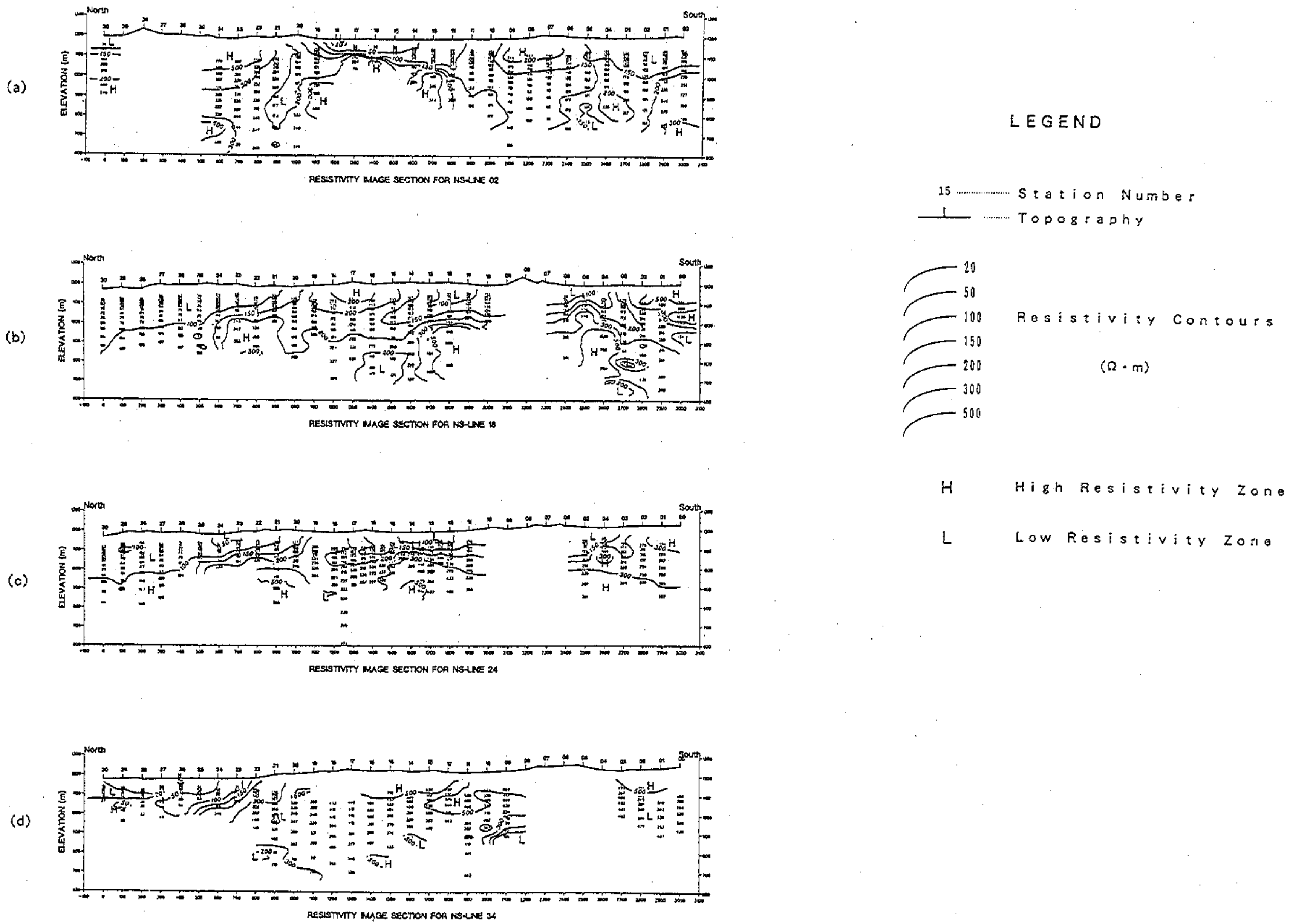


Fig. Ⅱ-4-3-5 Resistivity Image Sections for N-S Lines 02, 18, 24 and 34

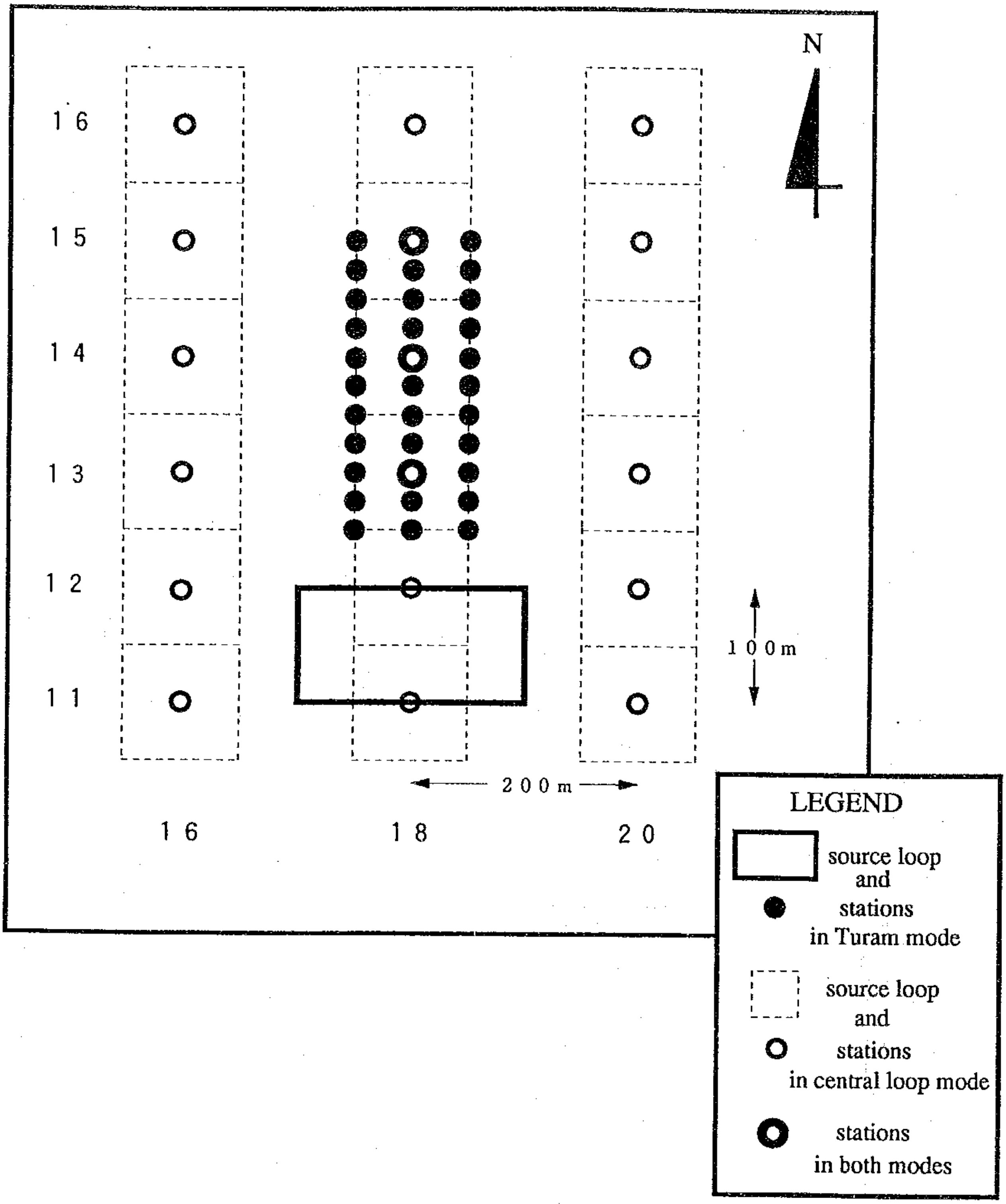


Fig. Ⅱ-4-3-6 TEM Survey Configurations at Tsagaan-tolgoi

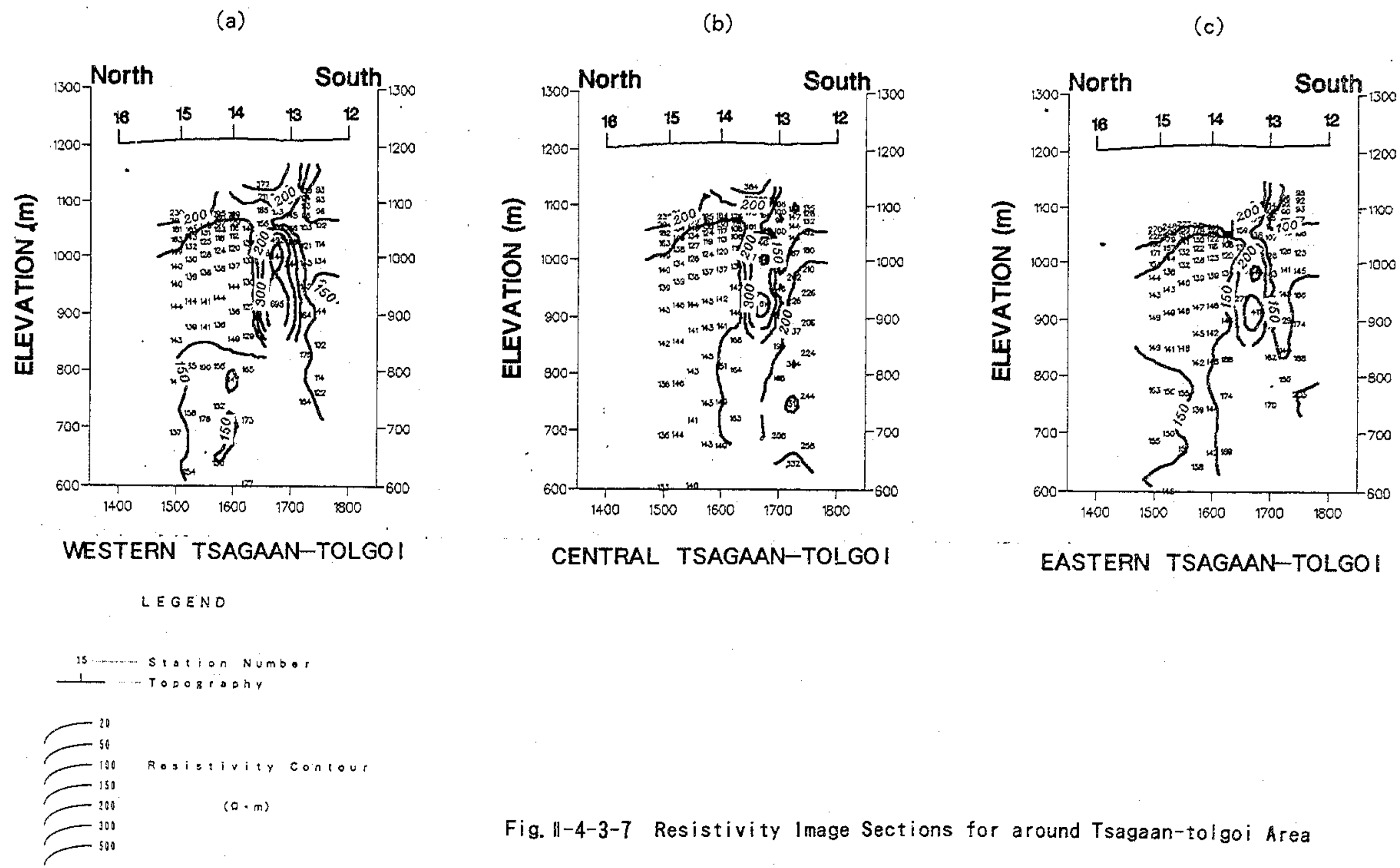
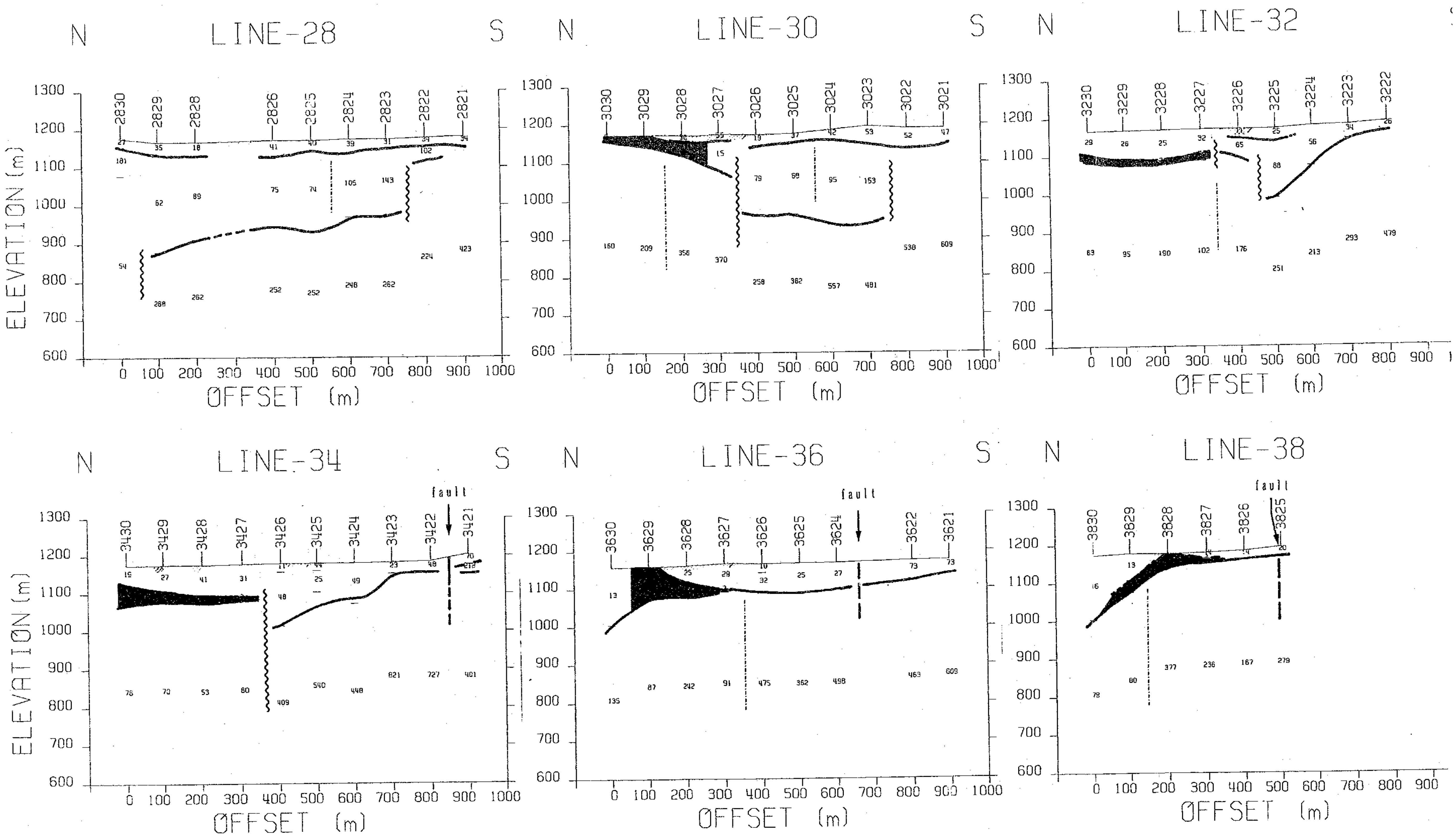


Fig. Ⅱ-4-3-7 Resistivity Image Sections for around Tsagaan-tolgoi Area



conductive zone (≦10ohm-m)

dacite outcrops

Fig. II-4-3-8 Resistivity Sections of the Northeastern Survey Area

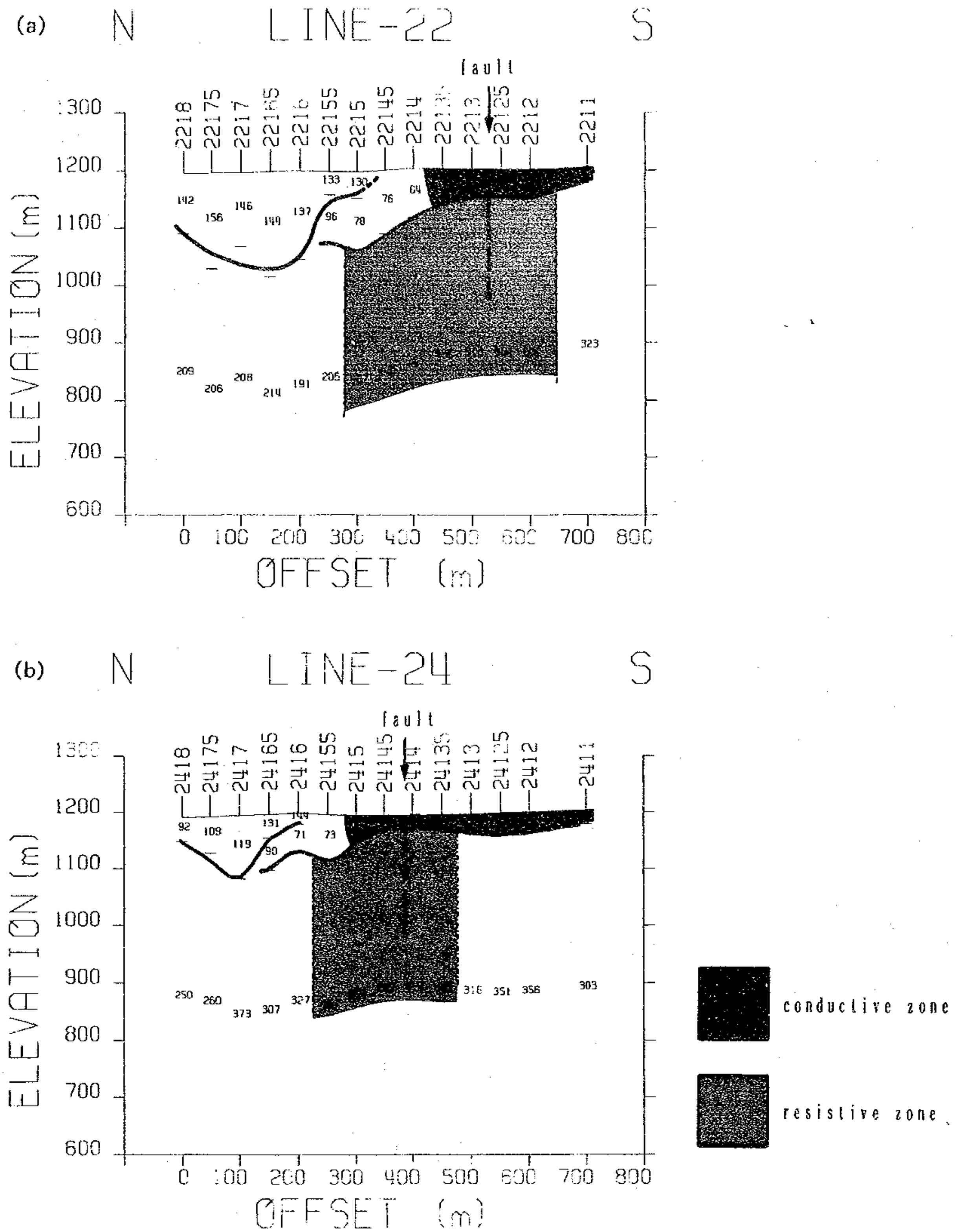


Fig. Ⅱ-4-3-9 Resistivity Sections of N-S Lines 22 and 24 Around the Olon-ovoot Fault

The low resistivity portion under 50 ohm-m in the northeastern part somewhat narrows down but still has an extension over 600m east to west. In the northwestern part, a high resistivity portion conforming to the limestone area was captured.

iii) Resistivity imaging plan - 1,050m lavel(Fig.II-4-3-3)

The low-resistivity zone along the Olon-ovoot Fault in the center of the area, as seen in the 1,150m-level plan changes to a hig-resistivity zone over 200 ohm-m in this plan. The high-resistivity zone in the north of the fault becomes unclear. The limestone-green schist-sandstone area represents high resistivity over 200 ohm-m. The low resistivity zone in the northeastern part shows complicated changes in its shape.

iv) Resistivity imaging plan - 1,000m level(Fig.II-4-3-4)

While high-resistivity areas over 200 ohm-m enlarge. In the north-central part, areas under 200 ohm-m extend east to west. Along the Olon-ovoot Fault in the central part, a high resistivity zone of over 300 ohm-m continue. On the other hand, high-resistivity zones over 500 ohm-m narrow down as the depth increases. In this plan, such zones are confined only to the limestone area in the eastern end.

4-3-2 Resistivity profiles

Resistivity profiles were compiled by imaging of all the survey lines.(Fig.II-4-3-5) Here, resistivity porfiles obtained by imaging of Tsagaan-tolgoi and its surroundings are shown.

i) Resistivity profile -Tsagaan-tolgoi (Fig.II-4-3-6 & II-4-3-7)

The profiles indicate three sections, north to south, centering at the survey line 18. In all the three sections, a vein-like, high-resistivity zone, approx. 70m wide, standing almost upright, is captured right under the survey point No.13. This high-resistivity zone becomes clearer towards the west side. On the surface, a quartz vein exposes itself in the east-west direction near the survey point No.14, which was not captured by this survey. The 2-d forward modeling was performed to confirm the existence of the resistive body which was detaced by imaging also.

ii) Northeastern part of surveey area(Fig.II-4-3-8)

This profile indicates the results of 1-D inversion of the north-eastern part of the survey area. The low-resistivity zone of under 10 ohm-m is seen at the N-S survey lines 30 - 38, at the depth of 50m to 90m below the surface. As seen in the N-S survey line 30 and 38, these low-resistivity zones continue to the surface on the east and west sides. They tend to become shallow northwards. The low-resistivity zones correspond aproximately to the Jurassic volcanic rock zones.

iii) Olon-ovoot fault(Fig.II-4-3-9)

The profiles (a) and (b) indicate the results of the 1-D inversion of an area traversing the Olon-ovoot fault. In the profiles, measurements were done at intervals of 50m.

The Fig.II-4-3-9(a) is a profile along the survey line 22, in which Olon-ovoot Fault is located somewhat to the south of the center. Near the fault, a low-resistivity zone(20-90 ohm-m), over 400m wide, can been seen at the surface, under which lies a high-resistivity layer over 400 ohm-m.

4-4 Discussin and conclusion

Following are anomalous resistivity areas notable from the viewpoint of exploration:

i) An area centering around the survey point 1813 at Tsagaan-tolgoi(a vein-like, high-resistivity anomaly)

ii) An area centering around the survey point 2413 along Olon-ovoot Fault(low-resistivity anomaly in the shallow part; high-resistivity anomaly in the deep)

iii) An area centering around the survey lines 32-36 in the northeastern part of the survey area(large scale, low-resistivity anomaly)

a) Tsagaan-tolgoi

The quartz vein group at Olon-ovoot Deposit is located between the low-resistivity zone along the fault and the high-resistivity zone parallel with it.(Fig.II-4-4-1) This high resistive zone is is presumed to represent sandstone beds. The vein-like, high-resistivity zone, about 70m wide, standing almost upright, which was found right under the survey point 181325(the survey point 25m north of the 1813) by the detailed survey in the Turam arrangement, is believed to capture quartz veins.

b) The low-resistivity anomaly in the shallow portion, and the high-resistivity anomaly in the deep, along Olon-ovoot Fault.

The low-resistivity anomaly zone extends northeastward. At the depth of 20-120m under the surface where the extension reaches, there is a high-resistivity zone over 400 ohm-m with over 400m wide, along the fault. As there is an alteration zone on the surface, this high-resistivity zone is likely to be a silicified zone formed along the fault.

c) Large scale, low-resistivity anomaly in the northeastern part

The area of this low-resistivity anomaly corresponds approximately to the Jurassic volcanic rock area. In this low-resistivity anomaly area, magnetic anomaly was also detected in the course of the survey work. As there are Devonian limestone accompanied by small green copper mineral-bearing hematite skarn, possible occurrence of a skarn-type deposit with magnetite or pirrhotite is inferred.

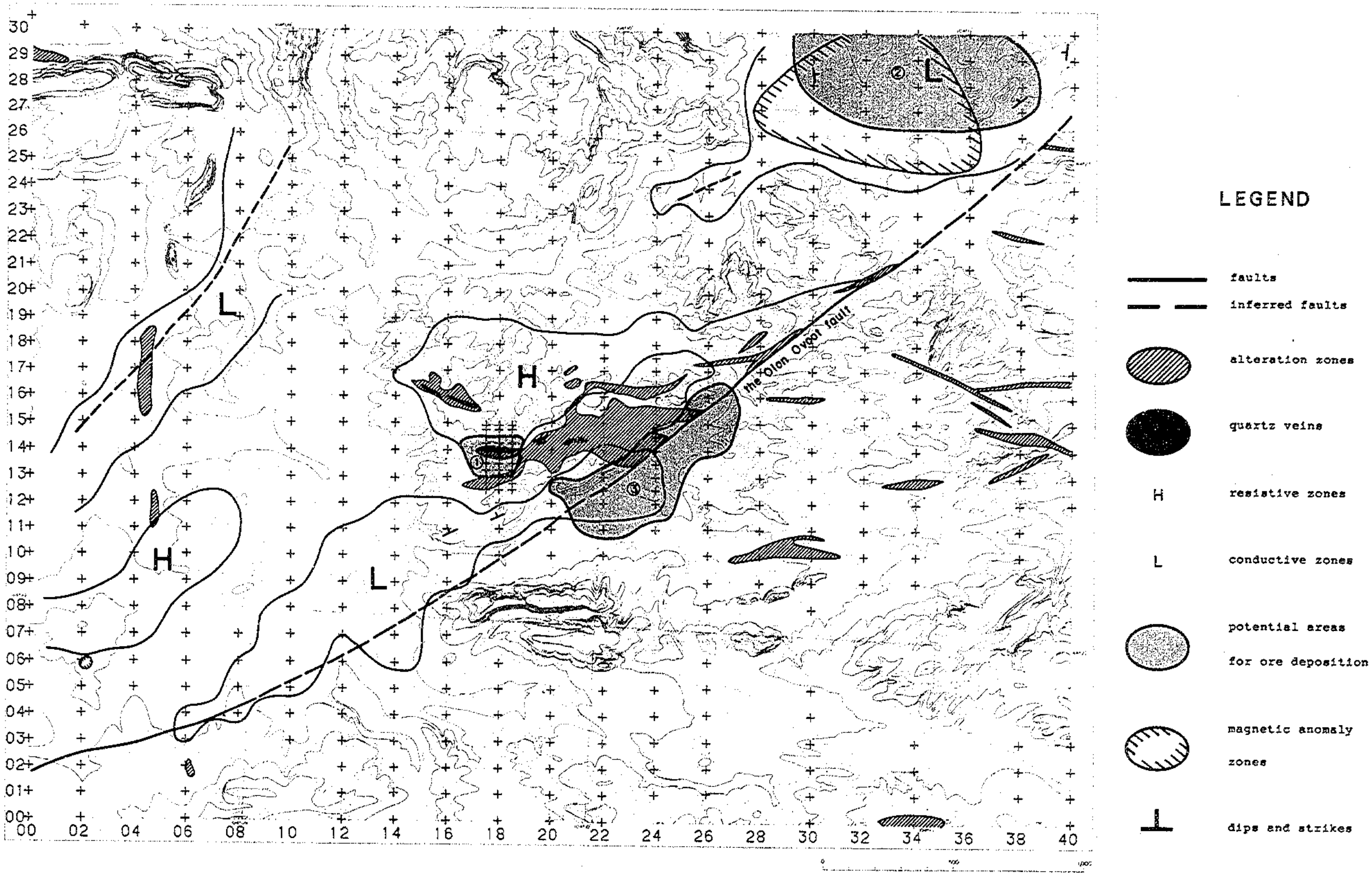


Fig. Ⅱ-4-4-1 Map of Geophysical Interpretation

Chapter 5 Geochemical Survey(phase II)

5-1 Purpose of survey

The survey was conducted for the purpose of clarifying conditions of gold mineralization of quartz veins and wall rock of Olon-ovoot Deposit and investigating extension and continuity of the deposit and approximate grade distribution near the surface.

5-2 Survey method

The geochemical survey was carried out at the object area, 0.5km^2 , around Olon-ovoot Deposit.(Fig.II-5-2-1)

One hundred and one survey lines were set up in the direction of magnetic north to south at intervals of 10m east to west.

In principle, samples were collected at intervals of 2.5m for quartz veins, 5-10m for alteration zones and 20m or more for the others. The total number of collected samples was 2,261 pieces. Sample collection was done while compiling a 1/1,000 scale route map by summary survey with a pocket compass and a measuring tape.(Fig.II-5-2-2)

Pitting was done when necessary for collecting autochthonous, unweathered ore samples.

On sample ores and rocks with recognizable mineralization, the gold and silver analysis, microscopic observation of polished sections, measurement of homogenization temperature of fluid inclusion and K-Ar dating were conducted.

The ore analysis was done on the two components, Au and Ag, by the atomic absorption method with aqua regia extraction while the fire assays was used for the checking. The detection limits were set at 0.1-600ppm for Au and 0.3-600ppm for Ag.

Geochemical analysis was done of the two components, Au and Ag, by the ICP method with the detection limits of 1ppb-10ppm for Au and 0.2ppm-200ppm for Ag.

5-3 Survey findings

Concerning Au and Ag, thresholds were determined by cumulative frequency curves.(Fig.II-5-3-1) Anomaly distribution maps were drawn for the respective components.(Figs.II-5-3-2 and II-5-3-3) Statistical study was conducted on analized datea while correlation between respective components were studied.(Table II-5-1)

A summary of these studies are as follows:

Gold: Gold concentration is prominent around quartz veins. Gold concentrations of workable level were observed especially on Tsagaan-tolgoi, which has an approximate total ore area of 1,500m^2 at 3.3g/t Au. Quartz veins in other places and some part of alteration zones also have such gold concentrations.

From these findings, it is estimated that the whole deposit has an approximate ore area of 2,500km^2 (3.2g/t Au).(Table II-5-2)

Silver: In general, silver concentration is so that no economic value

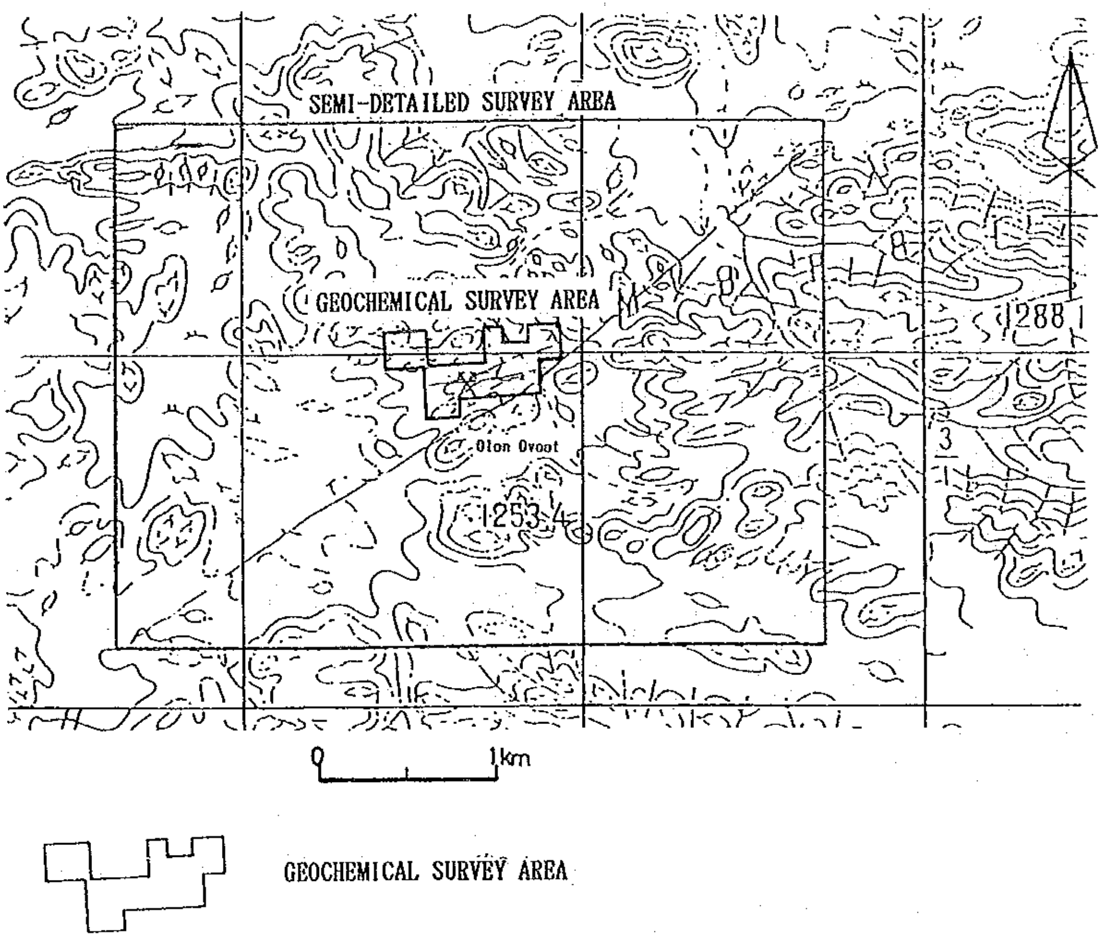
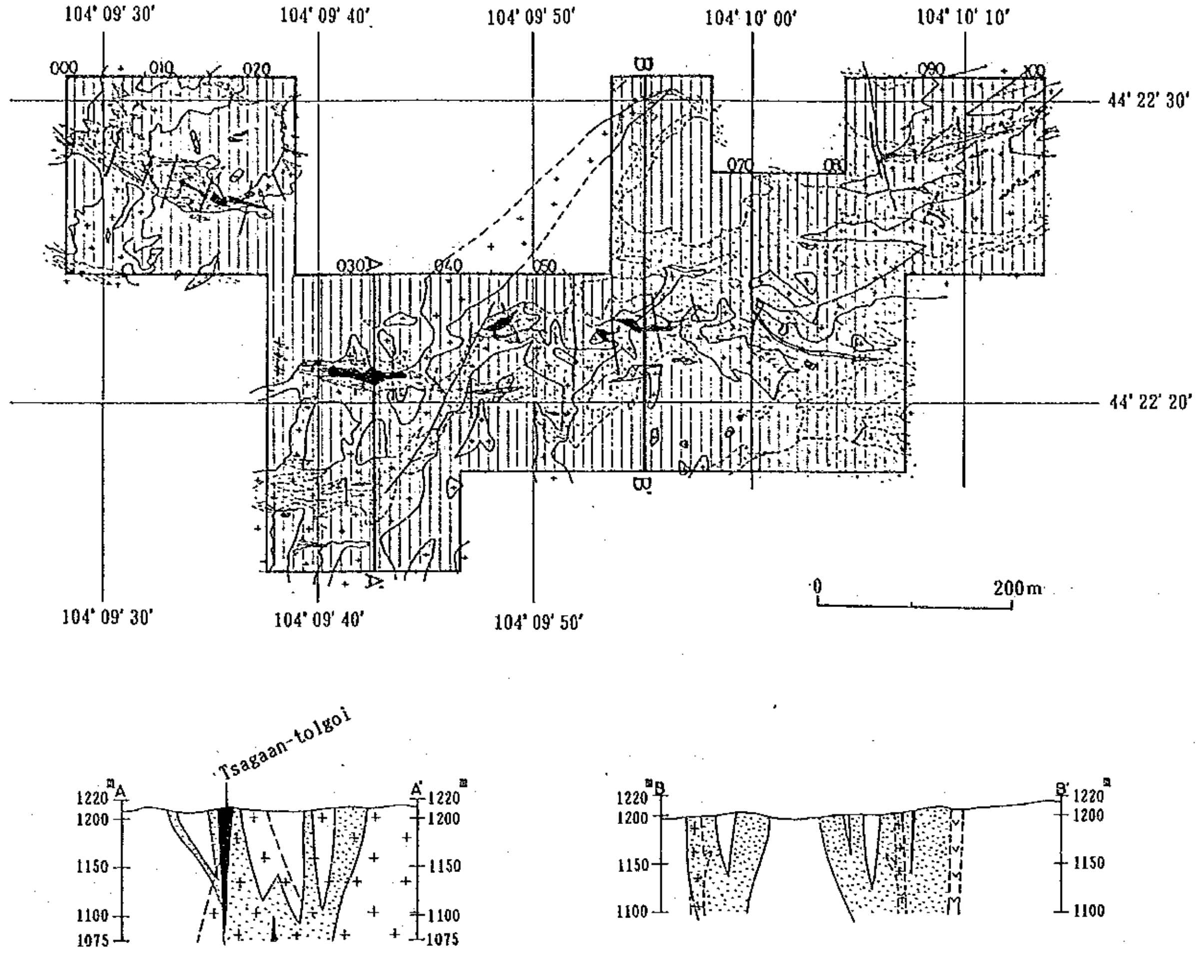


Fig. II-5-2-1 Location Map of the Geochemical Survey Area



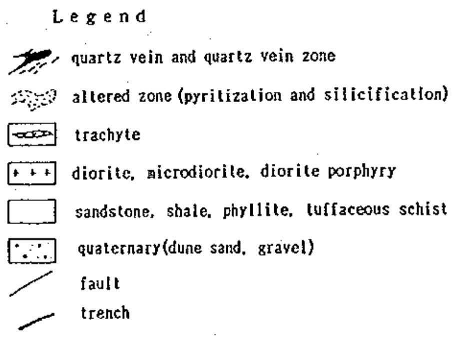


Fig. II-5-2-2 Geologic Map of the Geochemical Survey Area

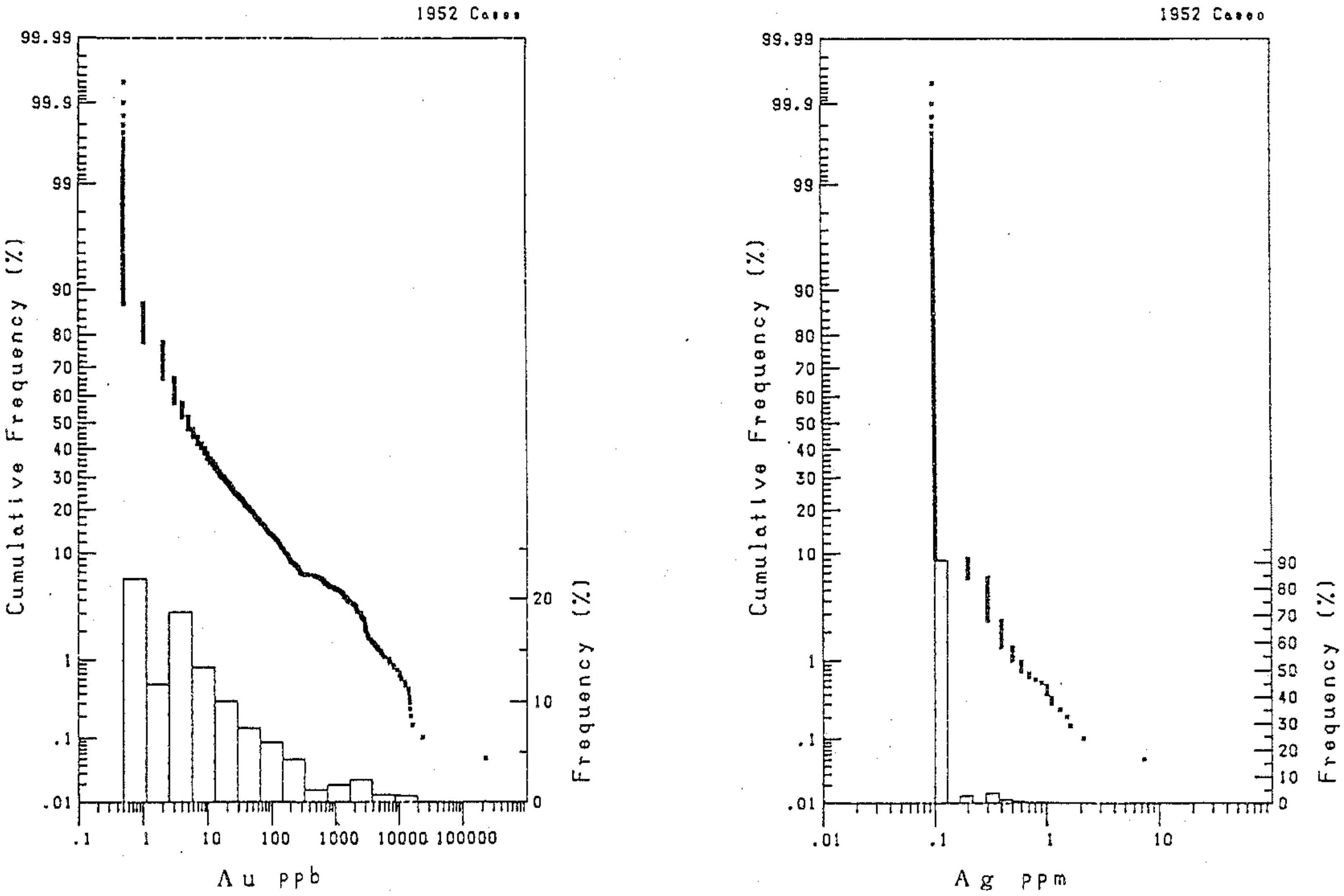


Fig. II-5-3-1 Cumlative Frequency Curves of Gold and Silver

Table Ⅱ-5-1 Statistical Numbers on Gold and Silver in the Geochemical Survey

	Au	Ag
試料数	1952	1952
最大値	223000	7.3
最小値	0	0.1
平均	365.13	0.13
Auとの相関係数	1	0.1658**

**: 有意(有意水準=0.001)

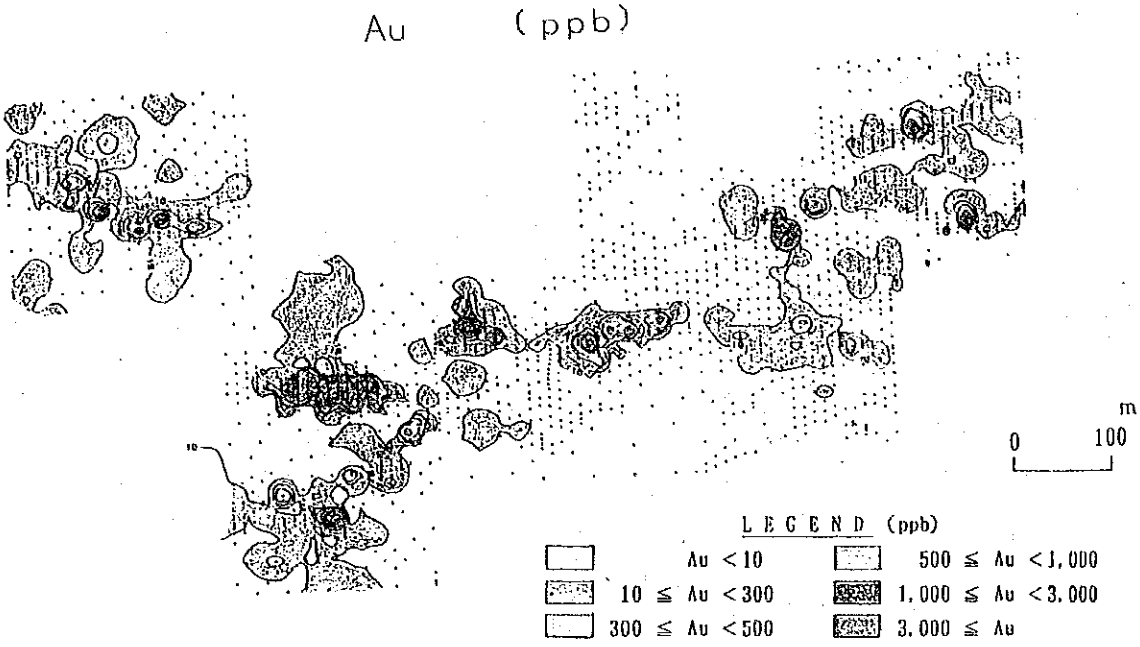


Fig. II-5-3-2 Distribution of Gold in Geochemical Survey Area

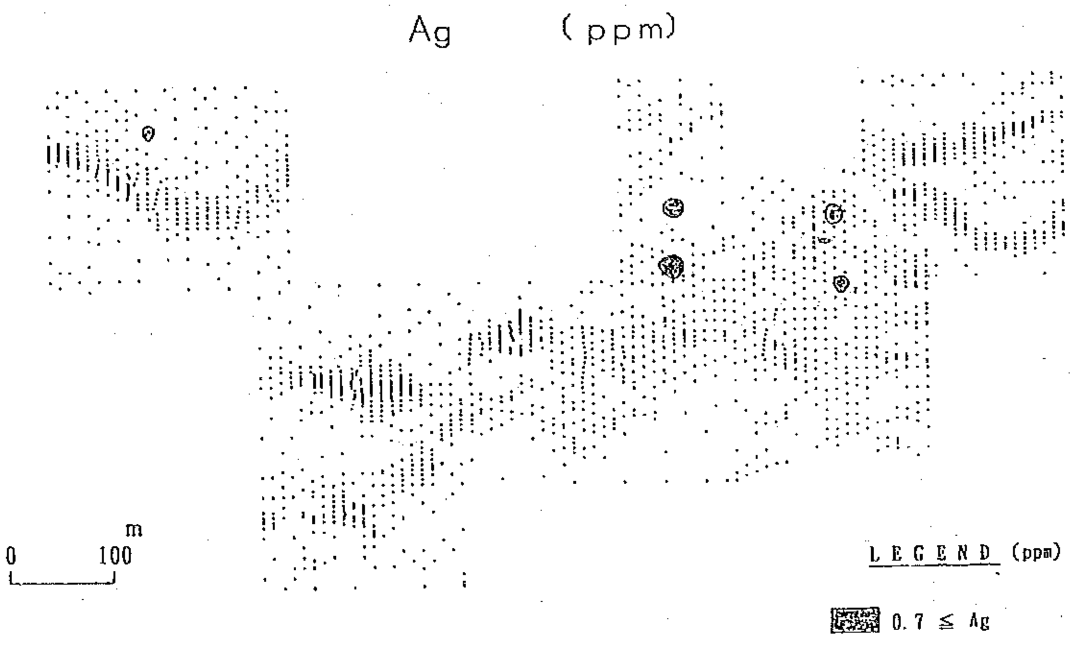


Fig. II-5-3-3 Distribution of Silver in Geochemical Survey Area is expected. The central part of the deposit and alteration zones showed some anomalous figures, but only statistically.

Neither clear correlations between gold and silver nor systematic differences by type of wall rock were recognized by the correlation studies.

In this geochemical survey, the minimum interval between ore sampling points was not less than 2.5m, therefore, narrow quartz veins could not be blocked out.

5-4 Considerations

Since gold ore-level concentration of gold are detected at many points on narrow quartz veins both on the east and west sides, a further increase of the ore blocks would be possible by more detailed/minute surveys.

As gold of Olon-ovoot Deposit is generally coarse-grained and, sometimes, wall rock yields gold, it would be necessary to consider/check possible influence of the secondary enrichment in relation to the grades of gold near the suface. For evaluation of the deposit's potential ore reserves, it is necessary to confirm continuity into the deep of quartz veins and Au grades, by core drilling.

As regards gold yielded by wall rock of quartz veins, attention should be paid to relations with silicification after the for mation of quartz veins and with pyritized alteration zones.

The poor silver contents in Olon-ovoot Deposit can interpreted as its intrinsic character in view of the fact that quartz veins of the deposit bear little base metals and no "Ginguro" (silver black).

Table II-5-2 Potential Ore Reserve of the Olon-ovoot Deposit

Block No.	Size (m²)	Average grade (Au g/t)	Numbers of samples(pcs)	Note
1	1,500	3.3	60	Tsagaan Tolgoi(massive quartz ~quartz vein)
2	500	2.3	15	150 m west from Tsagaan Tolgoi(wide quartz vein)
3	140	7.3	5	130 m south from Tsagaan Tolgoi(qz v and host rock)
4	90	1.9	4	630 m northeast from Tsagaan Tolgoi (qz v)
5	250	2.0	3	280 m east from Tsagaan Tolgoi (wide qz v)
6	50	2.7	5	250 m~330 m northwest from Tsagaan Tolgoi (qz v)
Total	2,530	3.2	92	

Note: Numbers in this table should be taken for "Potential" because of the number of the analysed samples are too few to evaluate gold deposit. Closer sampling is required to consolidate the workable area and the ore grade.

Chapter 6 Drilling Survey(phase III)

6-1 Purpose of Survey

Core drilling of eight boreholes, totalling 850m, was carried out at Olon-ovoot deposit where gold concentration was detected by the second year's geochemical survey and also at the geophysical anomaly zone. The drilling survey was aimed at confirming continuity of mineralization into the deep and at checking the geophysical anomaly zone in the south and approx. 2.5km northeast of the deposit. Major purposes of the drilling survey may be summarized as follows:

i) Confirm continuity of the deposit to the deep.
ii) Clarify occurrence and grades of gold and silver to a depth of 50m.
iii) Check the geophysical anomaly zone.
iv) Clarify character of the deposit thereby giving guidance for future gold prospecting in Govi area.
v) Technical transfer of drilling technology, through this survey.

6-2 Survey method

In the area indicated in Fig.II-6-2-1, the drilling work was executed. The survey was concentrated on and around Tsagaan-tolgoi, which is considered to be the center of the deposit in terms of ore reserves and grade. As the deposit was presumed to sharply dip towards the north, the drilling angles were made as gentle as possible so that drill holes may cross quartz veins at the highest possible angles. An L-38-98 drilling machine was adopted for the work.

For the drilling, the wire line method was applied. For the final diameter of drilling, NX was applied in a bid to improve core recovery and shorten the work period.

The work period was 74 days from July 8 to September 19, 1993.

A complete set of the drilling equipment was carried in from Japan. The transportation was made by ship from Yokohama to Tianjin, China, by railroad from Tianjin to Ulaan Baatar via Beijin, and by a large truck and a crane truck from Ulaan Baatar to the survey site. Haulage of equipment between boreholes were done with a power shovel, a truck and manpower.

Preparations for the drilling operations were done in the order of drill hole numbers.

Water for drilling was conveyed by a tank truck from a well at Bayan-khushuu Village, some 20km away, and used in circulation at the work site.

Determination of drilling positions and directions was made, based on a summary survey with a pocket compass and a measuring tape. Post-drilling measurement of borehole deviations were done without since the respective boreholes were so short that slight deviations were anticipated.

Particulars of the drilling survey is shown in Table II-6-1.

6-3 Survey findings

The results of the drilling survey are shown in the drill logs at the

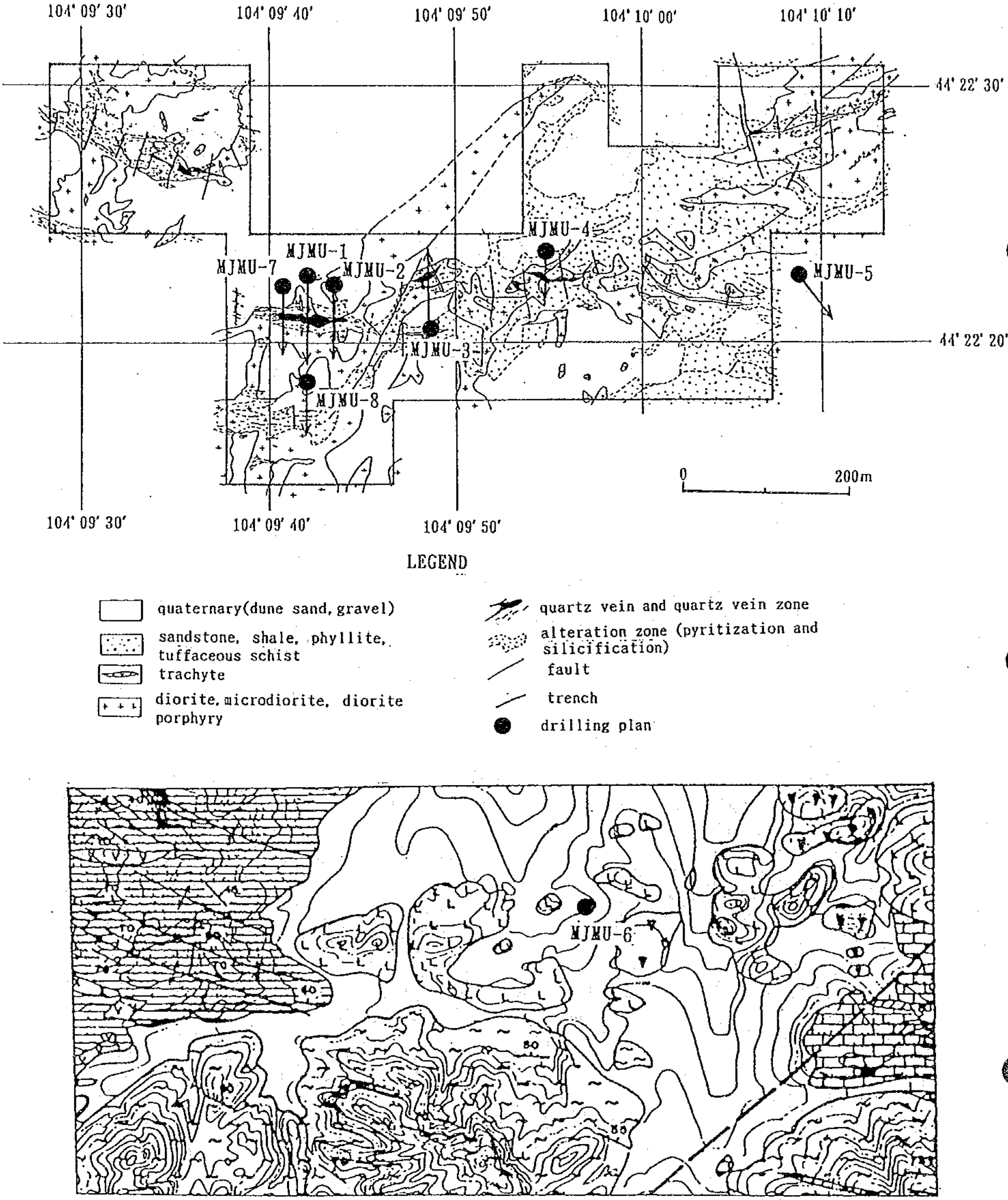
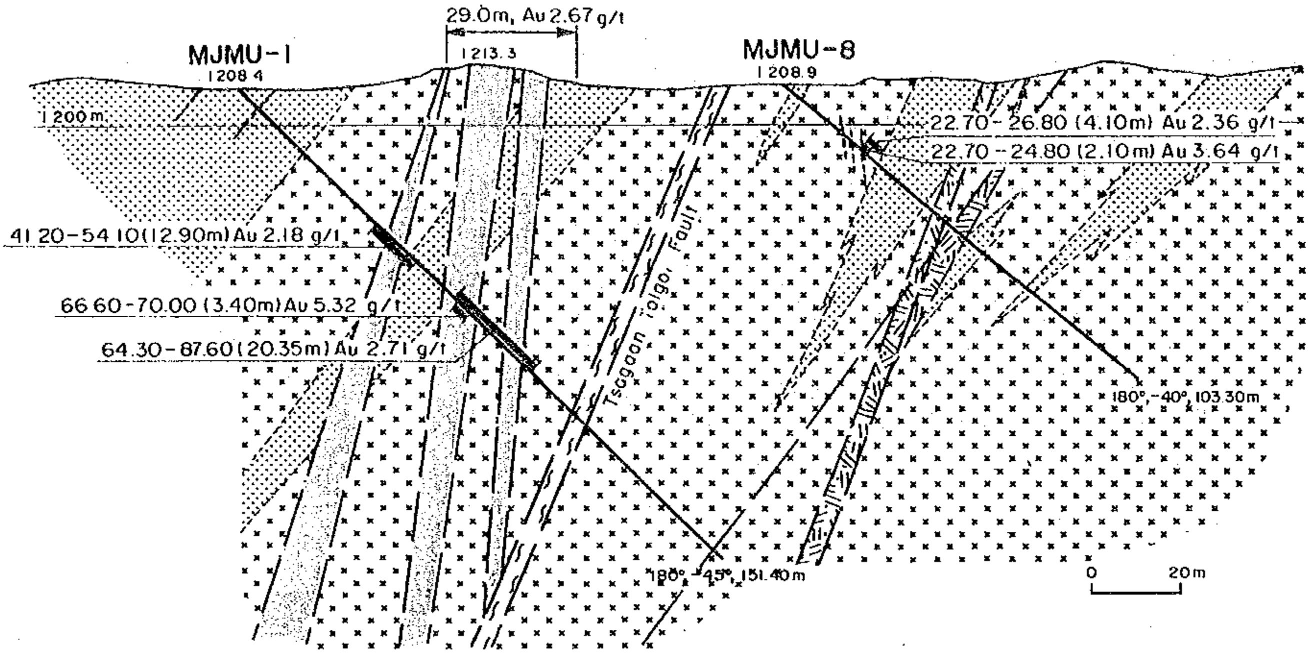


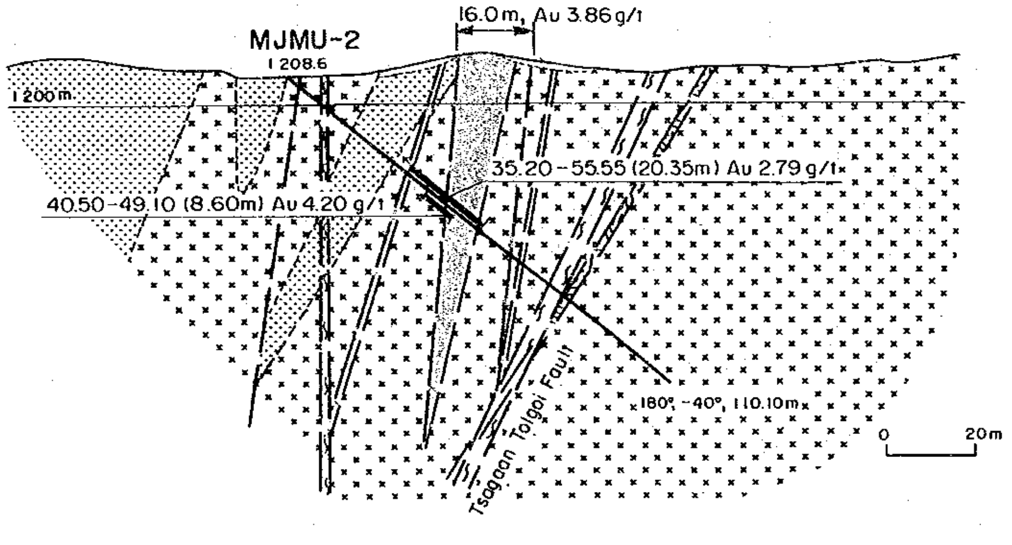
Fig. II-6-2-1 Location of the Drillings Showing with Geophysical Survey Results

Table Ⅱ-6-1 Location, Direction, Inclination, Length and Purpose of the Drillings

NAME	LOCATION*			DIRECTION (digree)		LENGTH (m)	NOTE
	X	Y	Z				
MJMU-1	0.47	54.23	1208.2	180°	-45°	151.40	To check the continuity of Ts. T. ore body
MJMU-2	29.91	40.86	1206.6	180°	-40°	110.70	To check the continuity of Ts. T. ore body
MJMU-3	150.14	-16.32	1207.9	0°	-40°	100.60	To check the continuity of mineralization
MJMU-4	280.14	74.50	1203.1	180°	-55°	100.80	To check the continuity of mineralization
MJMU-5	582.00	35.94	1197.7	145°	-40°	100.40	To check geophysical anomaly and fault
MJMU-6	1551.2	1399.7	1176.0	—	-90°	91.00	To check geophysical anomaly
MJMU-7	-29.98	58.84	1206.6	180°	-45°	103.50	To check the continuity of Ts. T. ore body
MJMU-8	0	-73.95	1208.1	180°	-40°	103.30	To check the continuity of mineralization
TOTAL	8 Holes					861.70	

*Base point of the survey : Tsagaan-tolgoi (X= 0, Y= 0, Z= 1213.6m)





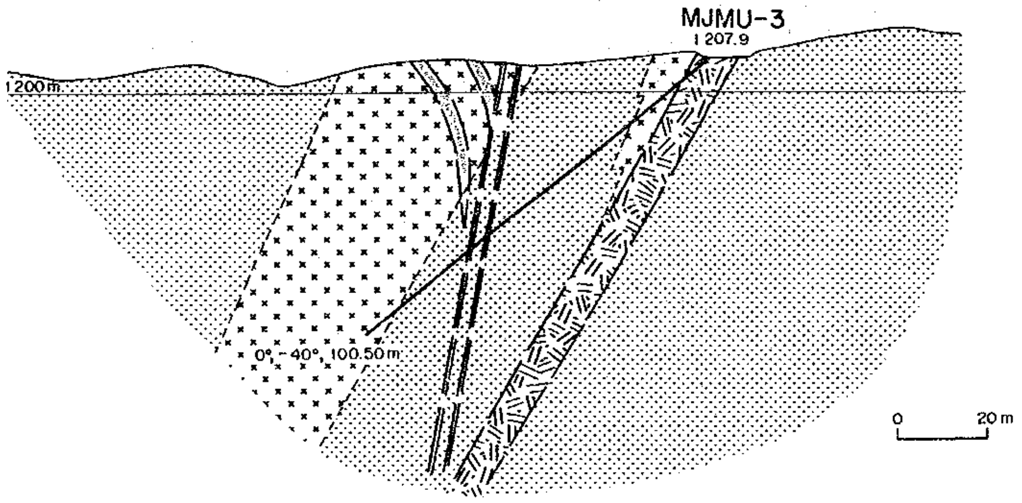
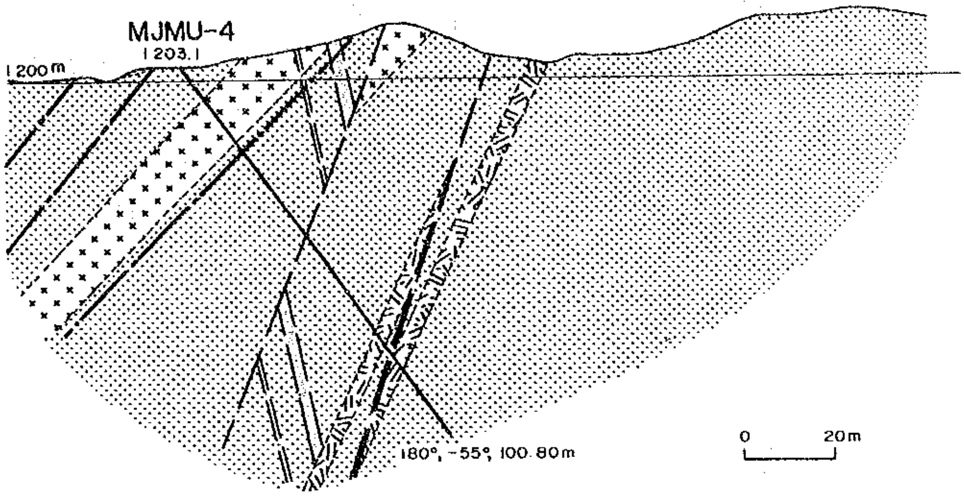
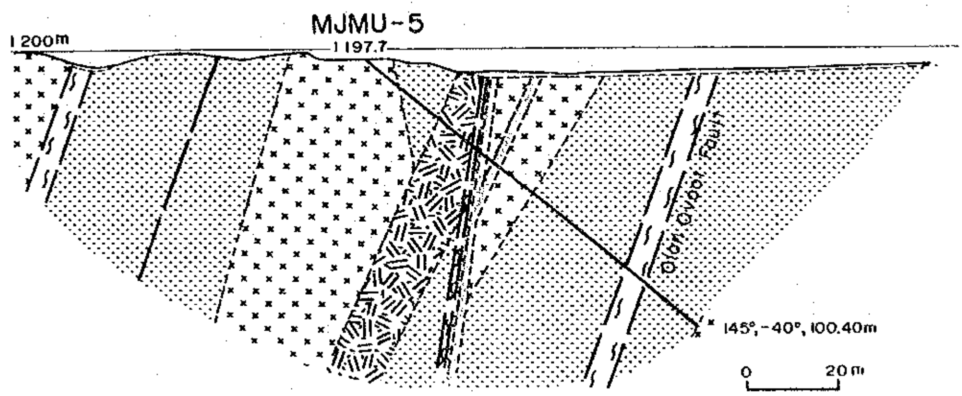


Fig. II-6-3-1 Geologic Profiles Along MJMU-1, MJMU-2, MJMU-3 and MJMU-8





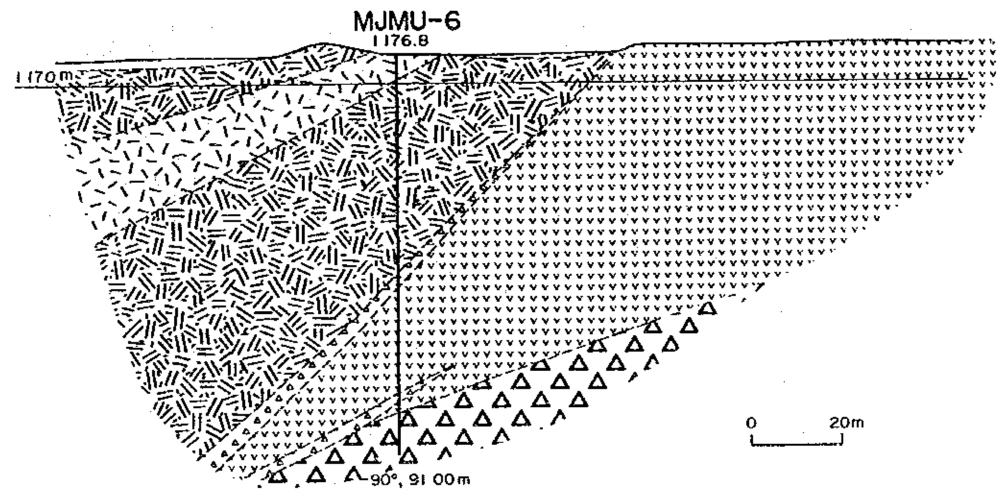
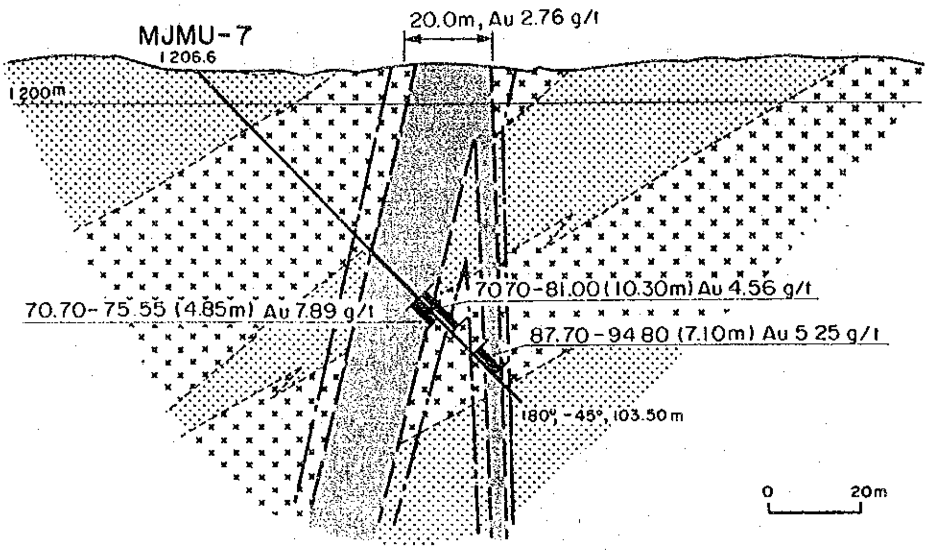


Fig. II-6-3-2 Geologic Profiles Along MJMU-4, MJMU-5, and MJMU-6



LEGEND

CENOZOIC	Quaternary	gravel, sand
MESOZOIC	Jurassic	trachytic tuffbreccia
		trachyte
		trachybasaltic tuffbreccia
		trachybasalt～trachyandesitic basalt
		tuff breccia, volcanic conglomerate
PALEOZOIC	Permian	microdiorite
	Silurian	sandstone, siltstone

- quartz vein, quartz vein zone
- hydrothermal alteration zone
- geologic boundary
- fault
- drilling

Fig. Ⅱ-6-3-3 Geologic Profile Along MJMU-7

Table Ⅱ-6-2 Major Ore Portions Captured by the Drillings

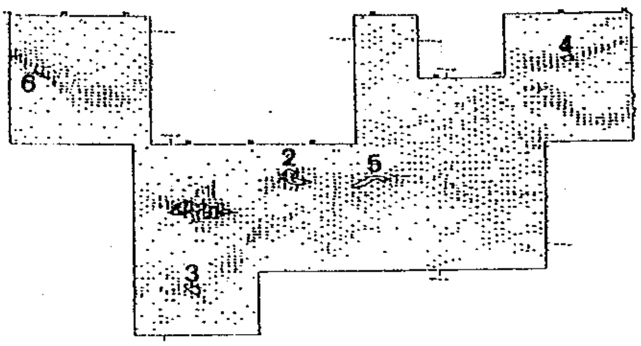
NAME	ORE ZONES (m)	WIDTH (m)	ORE GRADE(g/t)		N O T E
			Au	Ag	
	41.20 ~54.10	12.90	2.18	<0.2	Qzv +host r.
MJMU-1	64.30 ~87.60	23.30	2.71	<0.2	Qzv +host r.
	(65.00 ~85.80	20.80	2.97	<0.2	higher grade part)
	(66.60 ~70.00	3.40	5.32	0.3	ditto)
MJMU-2	35.20 ~55.55	20.35	2.79	<0.2	Qzv +host r.
	(40.50 ~49.10	8.60	4.20	<0.2	ditto)
	70.70 ~81.00	10.30	4.56	0.2	Qzv +host r.
MJMU-7	(70.70 ~75.55	4.85	7.89	0.2	ditto)
	87.70 ~94.80	7.10	5.25	<0.2	Qzv +host r.
MJMU-8	22.70 ~26.80	4.10	2.36	<0.2	Qzv +host r.
	(22.70 ~24.80	2.10	3.64	<0.2	ditto)

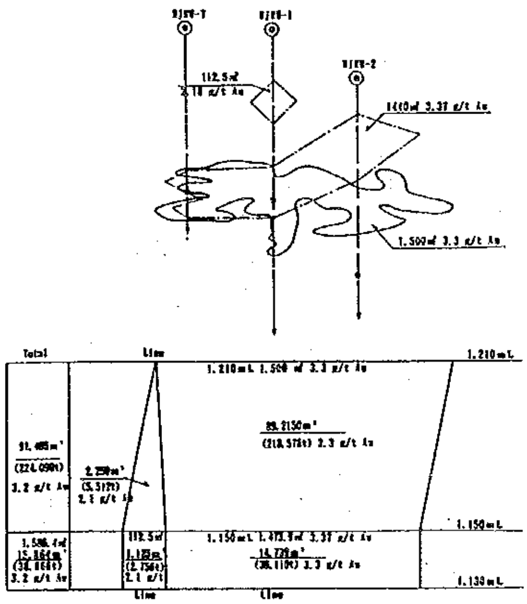
Abbreviations:
Qzv: Quartz vein, host r.: host rock

Table II-6-3 Ore-blocks and Ore-grade of the Olon Ovoot Deposit

Block No.	AREA						BLOCK				TOTAL	NOTE
	SURFACE		1150mL		1130 mL		Surface-1150 mL		1150mL-1130mL			
	m²	g/t Au	m²	g/t Au	m²	g/t Au	m³ (t)	g/t Au	m³ (t)	g/t Au		
1	1,500	3.3	1,552	3.2	Line	3.2	91,400 (224,000)	3.2	15,800 (38,800)	3.2	107,200m³ 262,800t 3.2g/t	Tsagaan-tolgoi
2	500	2.3	N.D									
3	140	7.3	N.D									
4	90	1.9	N.D									
5	250	2.0	N.D									
6	50	2.7	N.D									
TOTAL	2,530	3.2									262,800t, 3.2g/tAu	

Note;
① Surface level of No.1 ore-block: 1,210 m
② Bulk specific gravity of ore: 2.45 (assumption)
③ Abbreviation; N.D.: not determined
④ Ore-blocks (blocked out by the geochmical survey data in 1992);
1: Tsgaan-tolgoi 2: 150 m west from Tsagaan-tolgoi 3: 130 m south from Tsagaan-tolgoi 4: 630m northwest from Tsagaan-tolgoi 5: 280m east from Tsagaan-tolgoi 6: 250m～330 m northwest from Tsagaan-tolgoi
⑤ Potential ore reserve; Assuming that the ore bodies captured by geochemical survey continue 110m down from the outcrops, potential ore reserve will be estimeted about 700,000tons.





end of this volume, while the geological sections indicate the analysis results. The main ore parts caught by the drilling are listed in Table II-6-2.

The drilling survey revealed the following points:

a) Gold is concentrated at both quartz veins and wall rock.
b) The deposit does not decline in its size and ore grade to a depth of 50m under the surface, accordingly, it will presumably continue further down into the deep.
c) The high magnetic, low-resistivity anomalies detected in the north-eastern part of the deposit derives from the high salinity water held in porous lavas.

6-4 Considerations

From these findings, it is inferred:

a) From the above mentioned facts, Olon-ovoot Deposit is considered to reach further to the depth. Tsagaan-tolgoi Ore Body was proved to continue more than 50m down from the outclop by 3 drillings in this survey, and the total prospective ore reserve is assumed to be 369,900 tons(3.2 g/t Au).
   It is somewhat difficult to estimate the total potential ore reserve of Olon-ovoot Deposit only by the drilling data of this year, but 700,000 tons of reserve at gold grade of about 3 g/t will be prospected supposing that the deposit is twice as long as the confirmed vertical length at Tsagaan-tolgoi in this survey. And by further exploration of ore-indications and geophysical anomalies around there, the amount will be expected to inclease.
b) that a substantial portion of the ore reserves is amenable to exploitation by open pit, which enhances possibility of the deposit being worked favorably.

Chapter 7 Considerations

7-1 Promising ore deposits

Economic viability of mineral resources is determined by a variety of factors such as i)type of minerals, ii)ore grade, iii)ore reserves, iv)occurrence of a deposit, v)shape of a deposit, vi)climatic conditions, vii) social infrastructure(transportation, communication, etc.), viii)energy cost, ix)labor costs, x)legislation, and forth.

Since Uudam Tal Area is under constraint in the transportation aspect, minerals to be developed must be those which are not bulky, of high grades and of high market prices.

In the first year of the survey, Tsav Deposit, which is of high grade although somewhat small in size, was considered to have the highest feasibility, as matters related to ore reserves and grade of gold and silver were treated as the state secret. Ulaan and Mukhar, which are of low ore grades but are large in size, are considered to be deposits worthy of feasibility study after a review of the cutoff grades, if necessary adjustments with Russia are made.

Tumurtiin-ovoo is rather small in size and, reportedly, its sphalerite is of high manganese content; therefore, a study on characteristics of the ore would be required.

Tsagaan-suvraga Deposit lacks secondary enrichment zones and is of low grade on the whole; therefore, it is considered difficult to develop the deposit on the assumption of ores being treated by flotation. The deposit is not rich in pyrite and has hard and compact dissemination ores, extraction of copper by leaching method will presumably be difficult, too.

At the Olon-ovoot Deposit, it was ascertained by drilling survey that the primary gold concentration, as well as the size and grade, does not decline to a depth of 50m below the surface. Therefore, the deposit will presumably continue further down to the deep. In addition, a substantial portion of the ore reserves is amenable to exploitation by open pit. Thanks to these factors, the deposit is likely to be operated profitably in spite of its small size.

The mineral indication at Shuten retrieved from the existing literature in the first year has been explored in search of copper. However, its alteration zones are composed of massive silified rock accompanied by alunite, which represents the character of a epithermal gold deposit. Since the indication is large in size, Shuten should be reviewed as a target for gold deposit exploration.(Fig.II-2-6-7)

The other ore deposits and mineral indications in the survey area appear unlikely to be targets for development in view of the type of minerals, ore grades and deposit sizes.

7-2 Promising districts

7-2-1 Ulziit District

Olon-ovoot Deposit is of the highest homogenization temperatures of

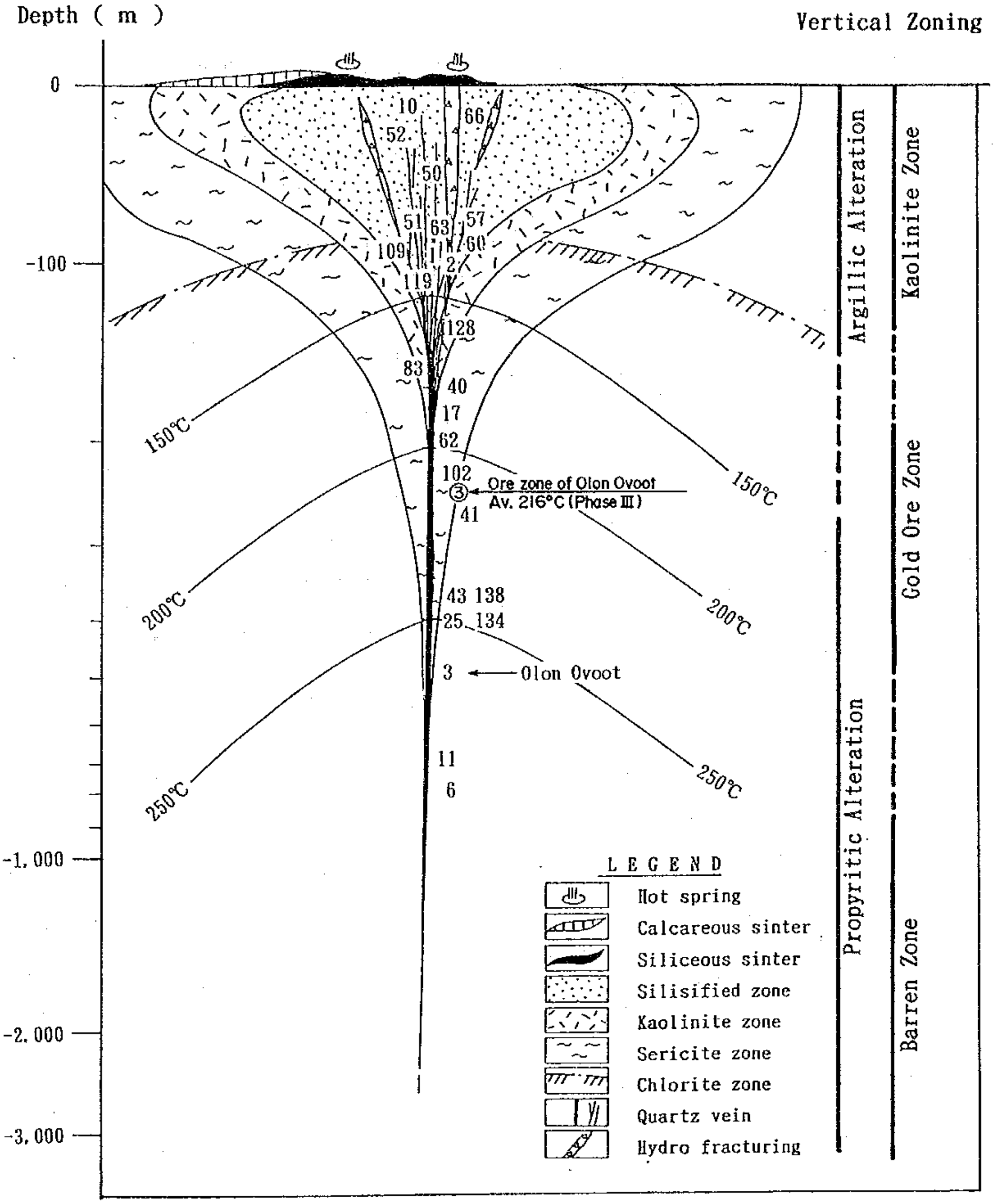


Fig. II-7-2-1 Schematic Geologic Profile of the Gold Ore Showings in Govi Region its fluid inclusion in Govi area. Confirmation of the primary gold concentration at this deposit by the survey enhanced the possibility of occurrence of gold deposits formed in the Late Paleozoic time all over Govi area. This has been substantiated by the discovery of numerous gold indications of large scales in a broad area of Ulziit District.(Fig.II-7-2-1)

7-2-2 Dornod District

In Dornod District, Jurassic to Cretaceous volcanic rocks are widely distributed along the margins of Choibalsan Sedimentary Basin, with which polymetallic deposits such as Tsav, Ulaan and Muhar have been formed.

These deposits were confirmed as the result of regional surveys such as aeromagnetic survey, gravity survey, geochemical survey, etc. which were conducted simultaneously with the regional geological survey in a 1/200,000 scale, as well as the follow-up surveys including γ-ray spectrum survey, trenching, drilling and tunneling, etc. conducted on anomalies extracted by the foregoing regional surveys. The gravity survey was intended for petroleum. Many of these deposits are of non-magnetic substances and presumably fave undergone little erosion in view of their characteristics.

On the other hand, most part of the Choibalsan Sedimentary Basin is covered by the Middle to Upper Cretaceous formations. Therefore, this district is likely to embrace blind deposit zones of a non-magnetic, polymetallic type.

AREA	MAJOR ORE-DEPOSITS	DESCRIPTION: MINERALES	DESCRIPTION: TYPE	DESCRIPTION: RESERVE(M. t)	DESCRIPTION: ORE GRADE(%, Au, Ag: g/t)	FACTOR EVALUATION: MINERALS	FACTOR EVALUATION: RESERVE	FACTOR EVALUATION: ORE GRADE	FACTOR EVALUATION: INFRA STR.	FACTOR EVALUATION: TOTAL EVAL.	COMMENT: DEPOSIT	COMMENT: AREA
DORNOD	TSAV	Pb, Zn, Ag	VEIN	7.66	Pb 6.4, Zn 4.6, Ag 222	◎	○	◎	◎	○	Small but the highest grade	Large potentiality for polymetallic mineralization is expectable in this area. It is recommendable to excute further regional geological survey in this area. Re-evaluation of Ulaan Ore Deposit is also an important subject in the future. Exploration on gold is recommendable too.
	ULAAN	Ag, Pb, Zn	PIPE	93.1	Pb 0.95, Zn 1.0, Ag 49	◎	◎	○?	◎	○?	The largest but low grade	
	MUXUAR	Ag, Pb, Zn	PIPE	25.5	Pb 0.6, Zn 3.4, Ag 113	◎	△?	△?	◎	△?	Large but lowgrade	
	BAYAN UUR	Au, Ag	Qz-V	61.1	Pb+Zn 1.5, Ag 85 g/t.	◎	○?	×	○	○?	Large but lowgrade	
	SALHIT	Pb, Zn, Ag	Qz-V	-	Pb ≤1.8, Zn≤4.1, Ag≤74	◎	?	?	○	?	Further study is required	
	DELGER MUNKH	Ag, Pb, Zn	VEIN	-	Pb 4-8	◎	?	?	○	?	— do. —	
	TSAGAAN-CHULUUT INDUO	Au	PLACER	Au 41 ?	Au0.3g/t?	◎	○?	◎?	○	○?	— do. —	
	MARDAI	U	?	?	?	×	?	?	◎	○?	Restricted by the law.	
	ALTAN TOLGOIT	Pb, Zn, Ag	VEIN	-	Pb ~3.7, Zn ~6.8, Ag ~122	◎	?	?	○	?	Further study is required	
	BAITS	Pb, Zn, Ag	VEIN	-	pb 0.3-15.3, Zn 0.2-12, Ag Max. 1,400g/t	◎	?	?	○	?	— do. —	
	BOLOSTIN	Au, Ag, Sb	VEIN	-	Au 10.5-30, Ag 80-150, Sb 1%, AS 3%	◎	?	○	○	?	— do. —	
TUMURTIIN OYOO	TUMURTIIN-OBOO	Zn, Fe	SKARN	7.57	Zn 11.5	◎	○	○	×	○?	High Mn content in sph?	Little potentiality is remained for new discovery of profitable ore deposit in this area.
	SARHIT	Zn	SKARN	0.92	Zn 8.4	◎	△	×	×	×	Small and scattered	
	SARAA	W	QZ-V	0.17	WO_3, 1.35	◎	×	○	×	×	Small	
	ARIN NUUR	Mo	GREIZ	24.1	Mo 0.0107	◎	×	×	×	×	Too low grade	
MURUTT-DAWAA	YUGZER	W, Mo, Be	GREIZ	21.5	WO_3 0.197, Mo 0.058	◎	×	×	×	×	Too low grade	Very few potentiality is remained for new discovery of profitable ore deposit in this area.
	TUB (TSENTR)	Sn, W, Be	GREIZ	9	Sn 0.078, WO 0.137	◎	×	×	×	×	Too low grade	
	MURUTTIN-TSAGAANTOLGOI	Be	PEG	?	?(lenticular ore body, 10 ~20 m long)	◎	×	×	×	×	Too small	
						◎	×	×	×	×	Too small and lowgrade	
	AR-BAYAN	W	GREIZ	0.01	WO_3 < 0.1	◎	×	×	×	×	— do. —	
	UYUBAYAN	W	GREIZ	-	WO_3 0.04-0.1	◎	×	×	×	×	— do. —	
	ORT GROUP	W	GREIZ	-	WO_3 0.01-0.08	◎	×	×	×	×	— do. —	
	TARVAGATAI	Mo, W	GREIZ	-	WO_3 < 0.08, Mo<?	◎	×	×	×	×	— do. —	
	ZURH OYOO	Mo, Sn	SKARN	-	Mo 0.005, Sn 0.008	◎	×	×	×	×	— do. —	
	BAYAN HAIRAST	W	QZ-V	-	WO_3 1-2	◎	×	×	×	×	Too small and exhausted	
	SAIHAN-ULA	W	QZ-V	-	WO_3 0.18-0.5	◎	×	×	×	×	— do. —	
	MURUTTIIN	W	QZ-V	-	WO_3 0.01-0.13	◎	×	×	×	×	Too small and lowgrade	
HAR-AIRAG	BOR-UNDUR	CaF_2	VEIN	20.98	CaF_2 39.1%, Qz-Fl type	△	◎	○	◎	△	Fluospar is to cheap in the western world market.	This area is already intensively explored for fluospar. This area should be re-checked for gold in the future.
	ADAG	CaF_2	VEIN	4.0	CaF_2 40 %, Qz-Fl type	△	◎	○	◎	△		
	CHOL-TSAGAAN-DEL	CaF_2	VEIN	1.4	CaF_2 40-53%, Qz-Fl type	△	◎	○	○	△	— do. —	
	HONGOR	CaF_2	VEIN	1.37	CaF_2 29-34%, Qz-Fl, Cal	△	◎	△	○	×	— do. —	
	MAIHANTA	CaF_2	VEIN	3.08	CaF_2 33-36%, Qz-Fl, Cal	△	◎	△	×	×	— do. —	
	TSAGANTAXHILCH	CaF_2	VEIN	1.82	CaF_2 40.5%, Qz-Fl type	△	◎	○	×	×	— do. —	
LUGIINGOL	LUGIINGOL	REE	CARB-V	0.438	TREO 2.86	○	×	×	×	×	Too small and low grade	No room for exploration
TSAGAAN-SUVRAGA	TSAGAANSUVRAGA	Cu, Mo	PO-Cu	240.0	Cu 0.53, Mo 0.018	◎	◎	×	×	×	Low grade, no 2ndary ore	This area is already well explored for copper. Re-checking survey on gold resources is strongly required. Large potentiality for new discovery of workable gold deposits is expectable in ths area.
	DUCHINN-HURAL	Cu	VEIN	-		◎	×	×	×	×	Too small and low grade	
	HARMAGTAI	Cu	PO-Cu	139.6	Cu 0.25	◎	○	×	×	×	Too low grade for Cu	
	IH-SHANHAI	Cu	PO-CU	-		◎	×	×	×	×	— do. —	
	NARIN-HUDUK	Cu	PO-CU	0.05	Cu 0.58	◎	×	×	×	×	— do. —	
	OYOOTU-HIRA	Cu	PO-Cu	-		◎	×	×	×	×	— do. —	
	SHUTEN	Cu	PO-Cu	12.8	Cu 0.31	◎	×	×	×	×	Very necessary to check on Au	
	UGAA-HUDAG	Cu	PO-CU	-		◎	×	×	×	×	Too low grade for Cu	
	HUNGUT	Cu	PO-Cu	-		◎	×	×	×	×	Too low grade for Cu	
ULZIIT	MUSHGIA-HUDAG	RE	Carb	398	TREO 1.53 % O.R. Reduced	○	○	×	×	×	Too low grade	Large potentiality for new discovery of workable gold deposits is expectable in ths area.
	BAYAN-KHUSHUU	Sr	St.V.	0.7	SrO 40 ~50 %	◎	×	×	×	×	Too low grade?	
	OLON OVOOT	Au	VEIN	0.5 - 2	Au ≈3g/t, Max 340g/t	◎	○	○	○	○	Small but probably workable	
	BAYAN OVOOT	CaF_2	VEIN	1.0	CaF_2 75 % Qz-Fl type	△	○	○	×	×	Fluospar is too cheap	
	DUGSHIH	Au	Qz-V	-	Au ≤50 g/t	◎	×	×	○	×	Too small and scattered	
	OMH	Au	Qz-V	-	Au ≤0.4g/t(13 samples)	◎	×	×	○	×	Further study is required	
	BAYAN BOR-NURUU	Au	Qz-v	-	Au 1-8 g/t(182 samples)	◎	?	○?	○	○?	Too small and scattered	
	MUNH TSAGAAN-TOLGOI	Au	Msv-Sil	-	Au ≤0.05, Ag ≤1.3 (9 samples)	◎	?	?	○	○?	Further study is required	
	HETSUU TSAGAAN-TOLGOI	Au	Msv-Sil	-	Au ≤0.05, Ag ≤1.3 (182 samples)	◎	?	?	○	○?	— do. —	
	GERSEN US-HUDUK	Au	Qz-V	-	Au ≤2g/t, Ag ≤2g/t (180 samples)	◎	?	?	○	○?	— do. —	
	MORIT	Au	Qz-V	-	Au ≤0.7g/t, Ag≤55g/t (35 samples)	◎	?	?	○	○?	— do. —	
	FUTUR-US	Au	Sil-V	-	Au ≤0.06g/t, Ag ≤0.3 g/t (35 samples)	◎	?	?	○	○?	— do. —	
	ULZIIT OVOO	Au	Qz-V	-	Au ≤0.04g/t, Ag ≤2.9 g/t (9 samples)	◎	?	?	○	○?	— do. —	
	SOLOGOI-BAYAN	Au	Msv-Sil	-	Au ≤0.04g/t, Ag ≤0.8 g/t (4 samples)	◎	?	?	○	○?	— do. —	

Note; ◎ good , ○ passable, △ with difficulty, × bad

Table Ⅱ-7-1 Final Evaluation of Ore Deposits and Areas in the Uudam Tal Area

Part III CONCLUSIONS AND RECOMMENDATIONS

Chapter 1 Conclusions

From the surveys, the following conclusions can be drawn with regard to promising districts and deposits:

1-1 Promising ore deposits

1) Olon-ovoot (auriferous quartz veins)

The deposit, although small in size, has possibility of becoming a profitable mine since a substantial portion of its ore reserves is amenable to exploitation by open pit. It is desirable to explore and develop the deposit also from the standpoint that it may result in giving guidance for exploration and evaluation of the large gold indications found in wide zones in Govi area.

2) Tsav Deposit (a vein-type polymetallic deposit)

Although small in size, this deposit has been explored to the most advanced stage, and has ores of highest grades and reasonable infrastructure, Which led to a conclusion that the deposite has the highest possibility of development.

3) Ulaan and Mukhar Deposits (Pipe-type deposits partially skarnized)

These large deposits have been considerably explored and has reasonable infrastructure, but those ore grades are low. There remain tasks such as review of the cutoff grades, study of ore characteristics and adjustment of interest with Russia.

1-2 Promising districts

1) Ulziit District

The confirmation of gold concentration of workable grade at Olon-ovoot Deposit and of large gold indications widespread in the surrounding areas which are considered to have undergone lesser erosion than Olon-ovoot, leads to a conclusion that the Upper Paleozoic volcanic rock zones widely distributed in Govi area is worthy of note because of the possibility that the area emplaces blind gold deposits. (In 1992, Mongolia opened the door to foreign countries with respect to gold resources, as well,)

2) Dornod District

The substantial exploration conducted in the past at Tsav, Ulaan, etc. indicates that this district has certain interesting ore deposits. From the geological point of view, occurence of blind polymetallic deposits is presumable. Occurrence of gold deposits is also highly possible

Chapter 2 Recommendations

2-1 Promising ore Deposits

1) Olon-ovoot Deposits

Further exploration and development of the deposit should desirably be promoted so that it may give guidance for exploration and evaluation of the large gold indications confirmed in the surrounding areas.

2) Ulaan and Mukhar Deposits

It is desirable that, once adjustment of interest with Russia is settled, studies for development including review of the cutoff grades, ore characteristics study and feasibility study be conducted.

2-2 Promising districts

1) Southern Mongolia

In view of the geographical conditions, current state of infrastructure and economic conditions of Mongolia, it is recommended that regional reconnaissance survey of mineral resurces development be executed with a main aim at exploration and development of gold deposits. Such survey should desirably be conducted on a regional basis, along the Upper Palozoic volcanic rock zones in an area extending east-west direction.

2) Dornod District

After completion of the topographic maps with scales of 1/50,000 and 1/25,000 which are currently being prepared under the collaboration between Mongolia and Japan, regional reconnaissance survey aimed at blind polymetallic deposits and gold deposits should desirably be executed, based on the maps.

REFERENCES

Chapter 1 Conclusions

Results of the year's survey will be summalized as follows

1) Olon-ovoot Deposit has gold concentration both in a part of the quartz veins and in wall rock.

2) The deposit shows no decline in size and grade to a depth of 50m from the surface; therefore, the deposit is highly likely to continue further into the deep.

3) Consequently, the potential ore reserves of Olon-ovoot Deposit has a high possibility to reach 700,000 tons or more at a grade of Au 3g/t. supposing that the deposit is twice as long as the confirmed vertical length at Tsagaan-tolgoi in this survey. And by further exploration of ore-indications and geophysical anomalies around there, the reserve will be expected to inclease.

4) A substantial portion of its ore reserves is amenable to open pit mining; accordingly, the deposit, though small in size, is likely to be worked on a profitable basis.

5) The genetic age of the deposit was revealed to Early Permian by potassium-argon dating.

6) It was confirmed that grades of primary gold ore of the deposit are hith enough, which suggests possibility of occurrence of similar deposits anywhere in the wide area of Govi.

7) The low-resistivity, high-magnetic zone captured by geophysical prospecting 2.5km northeast of Olon-ovoot Deposit was found to be originated in saline water contained in the Jurassic porous lavas, which excludes possibility of occurrence of a sulfide deposit of skarn-type containing pyrrhotite.

Chapter 2 Recommendations

From the above mentioned facts, following survey items are recommendable as the future subjecys.

1) With respect to Olon-ovoot Deposit, it is recommended that further drilling surveys should be conducted to clarify its occurrence, that gold heap leaching tests should be made, and that, on the basis of results of these surveys and tests, feasibility study on the deposit should be conducted.

Appendices

Appendix1-2 Coal Production of Mongolia(1986 ~1992)

Name of the Mines	Mineral	Products	Unit	1986	1987	1988	1989	1990	1991	1992	Note
1. Erdenet	Cu, Mo	Crude ore	M. t	17.0	16.6	17.3	17.9	17.9			Porphyry type
		Cu-conc. (35% Cu)	T. t	344.4	345.4	347.7	419.7	425.9	260.0	296.0	All exported to USSR and
		Mo-conc. (47% Mo)	t	3.232	3.240	3.268	3.072	3.156	3.373	3.075	Japan
1. Modot	Sn, W	Sn-conc. (50% Sn)	t	175.4	178.1	181.7	273.1	317.4	140.9	62.9	Placer type
		W- conc. (20% WO_3)	t	81.4	50.4	103.9	0	0	0	0	exported to CSR
1. Ulaan-uul (USSR) 2. Tsagaandawaa (HPR)	W	W- conc. (60% WO_3)	t	15.0	20.0	30.3	50.0	45.0	35	25	Quartz vein All exported
1. Bor-undur 2. Har-airag 3. Berh 4. Chuluut-tsagaandel	CaF_2	Crude ore	T. t	730.2	754.2	890.9	613.2	587.2	333.4	209.3	Vein type All exported. 1. ~3. to USSR. 4. to CSR
		CaF_2 conc. (95~96% CaF_2)	T. t	41.0	72.7	115.1	91.8	91.8	91.8	100.0	

Abbreviations; USSR; Union of Soviet Socialist Republics . JPN; Japan. HPR; Hungarian People's Republic CSR; Czechoslovac Socialist Republic.
conc.; concentrate. Tt; thousand tons , t; ton

Appendix 2-1 Productions of Non-ferrous Metallic Minerals and Fluorite of Mongolia (1986 ~1992)