第Ⅳ部　結論及び提言

第1章　結　　論

今年度の調査結果に基づいて，まず既知鉱床の今後の開発の可能性（経済性）という観点から地区別に評価した（Table Ⅳ－1－1）。

その結果，オーダムタル地域の鉱床の中では，下記の鉱床が有望であるといえる。

1．ドルノト地区：ツァヴ鉱脈型多金属鉱床，オラーン（及びムホル）の網状～スカルン型多金属鉱床

2．トゥムルティン・オボ地区：トゥムルティン・オボ亜鉛鉱床

3．ウルズィート地区：オロン・オボート金鉱床及び周辺の金鉱徴

とくにツァヴ鉱床については，鉱質・鉱量・品位・インフラ（鉄道が近い）の点においてすぐれており，最も開発の可能性が高い鉱床であるといえる。

トゥムルティン・オボ鉱床も，その鉱量・品位の点で十分開発の対象として検討する価値がある鉱床である。

これら既にかなり探鉱が進んでいる鉱床については，別途より進んだ段階の調査を実施することが望ましい。具体的には先ずより高品位かつ規模も手頃でリスクが小さなツァヴ鉱床の開発調査を通じて技術移転を図り，しかるのちにその他の鉱床の開発に着手するのが手順と考えられる。

次に，今後新たな鉱床が発見される可能性という観点から地区別に評価した。その結果下記の地区が有望といえる。

① ドルノト地区：ドルノト地区の多金属鉱床はその産状からいずれも潜頭鉱床ないしあまり削剥が進んでいない鉱床と考えられ，ジュラ紀から白亜紀にかけての火山岩類が広く分布する周辺地域一帯は潜頭多金属鉱床地帯である可能性があるといえる。

② ウルズィート地区～ツァガーン・スヴラグ地区：ウルズィート地区～ツァガーン・スヴラグ地区西部にかけての地区には，多数の金銀鉱徴が分布することが知られている。これらの金鉱徴は，その記載や今回の調査結果から中熱水性（老脈型）金鉱床，ポーフィリー型金鉱床等，いくつかのタイプのものが存在すると推定される。

Table Ⅳ-1-1 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.	
DORNOD	TSAV	Pb, Zn, Ag	VEIN	7.68	Pb 6.4, Zn 4.6, Ag 222	◎	○	◎	◎	◎	Large potentiality is expected for polymetallic mineralization in this area
	ULAAN	Ag, Pb, Zn	PIPE	93.1	Pb 0.95, Zn 1.9, Ag 49	◎	◎	○?	◎	○?	
	MUKHOR	Ag, Pb , Zn	PIPE	25.5	pb 0.6, Zn 3.4, Ag 113	◎	△?	△?	◎	△?	
	BAYAN-UUR	Au, Ag	Qz-V	61.1	Pb Zn 1.5, Ag 80 g/t,	◎	○?	×	○	○?	
	SALHIIT	Pb, Zn, Ag	Qz-V	-	Ag 15g/t at out crop	◎	?	?	○	?	Further study is required
	OELGER-MURN	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-OVOO	TUMURTIIN-OBOO	Zn, Fe	SKARN	7.57	Zn 11.5	◎	○	○	×	○?	Little potentiality is remained for new discovery of ore as an area.
	SARHIT	Zn	SKARN	0.92	Zn 6.4	◎	△	×	×	×	
	SARAA	W	QZ-V	0.17	W0 1.35	◎	×	○	×	×	
	ARIN-NUUR	Mo	GREIZ	24.1	Mo 0.0107	◎	×	×	×	×	
NURUTT-DAWAA	YUGZER	W, Mo, Be	GREIZ	21.5	W0 0.197, Mo 0.056	◎	×	×	×	×	Very few potentiality is remained for new discovery of profitable ore deposit in this area.
	TUB (TSENIR)	Sn, W, Be	GREIZ	9	Sn 0.078, W0 0.137	◎	×	×	×	×	
	NURUTTIN-TSAGA-ANTOLGOI	Be	PEG	?	?(lenticular ore body, 10 ~20 m long)	◎	×	×	×	×	
	AR-BAYAN	W	GREIZ	0.01	W0 < 0.1	◎	×	×	×	×	
	UYURBAYAN	W	GREIZ	-	W0 0.04-0.1	◎	×	×	×	×	
	ORT GROUP	W	GREIZ	-	W0 0.01-0.06	◎	×	×	×	×	
	TARVAGATAI	Mo, W	GREIZ	-	W0 < 0.08, Mo<1	◎	×	×	×	×	
	DZURH-OVOO	Mo, Sn	SKARN	-	Mo 0.003, Sn 0.008	◎	×	×	×	×	
	BAYAN-HAIRAST	W	QZ-V	-	W0 1-2	◎	×	×	×	×	
	SAIHAN-ULA	W	QZ-V	-	W0 0.18-0.5	◎	×	×	×	×	
	NURUTTIIN	W	QZ-V	-	W0 0.04-0.13	◎	×	×	×	×	
HAR-AIRAG	BOR-UNDUR	CaF_2	VEIN	20.98	CaF_2 39.1%, Qz-Fl type	△	◎	○	◎	△	Fluorite is to cheap in the western world market.
	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	△	◎	○	○	△	
	HONGOR	CaF_2	VEIN	1.37	CaF_2 29~34%, Qz-Fl, Cal	△	◎	△	○	×	
	MAIHANTA	CaF_2	VEIN	3.08	CaF_2 33-35%, 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
TSAGAAN-SUVRAGA	TSAGAANSUVRAGA	Cu, Mo	PO-Cu	240.0	Cu 0.53, Mo 0.018	◎	◎	×	×	×	No secondary enrichment in this region.
	DUCHINN-MURAL	Cu	VEIN	-		◎	×	×	×	×	
	HARMAGTAI	Cu	PO-Cu	139.6	Cu 0.25	◎	○	×	×	×	
	IH-SHANHAI	Cu	PO-CU	-		◎	×	×	×	×	
	HARIN-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	-		◎	×	×	×	×	
ULZIIT	MUSHGIA-HUDAK	RE	Carb	388	TREO 1.53 %, O.R. Reduced	◎	○	×	×	×	No secondary enrichment
	BAYAN-HOSHOO	Sr	St. W.	0.7	Sr0 40 ~50 %	◎	×	×	×	×	
	OLON-OVOOT	Au	VEIN	?	Au ≤32.8g/t, Max 340g/t	◎	○?	○?	○	○?	Large potentiality for new discovery of workable gold ore deposits is expectable in this area.
	BAYAN-OVOOT	CaF_2	VEIN	1.0	CaF_2 75 % Qz-Fl type	△	○	○	×	×	
	OUGSHIH	Au	Qz-V	?	Au ≤50 g/t	◎	?	?	○	○?	
	ONH	Au	Qz-V	?	Au ≤0.4g/t(13 samples)	◎	?	?	○	?	
	BAYAN-BOR-NURUU	Au	Qz-v	?	Au 1-6 g/t(182 samples)	◎	?	○?	○	○?	

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

第２章　第２年次調査への提言

１．モンゴル人民共和国には，過去に実施された調査に関する膨大な資料があることがわかった。同国における調査をより円滑かつ効果的に進めるためには，今後さらに既往の調査や調査地域の地質に関する情報の収集に努める必要があり，これを踏まえて各地区の調査段階と地質状況や鉱床の特性に応じた調査の展開方法を考えてゆく必要があると考えられる。

２．オーダム・タル地域調査としては，有利な鉱山の早期実現にむけて下記の調査を実施することが望ましい。

①Ａ：オロン・オボート金鉱床の調査の推進。

その方法としては，

a) オロン・オボート鉱床について鉱脈図・地表における品位分布図等の基本図を作成するとともに，物理探査手法により鉱脈の水平・垂直方向の拡がりや構造を確認する。

②Ｂ：ウルズィート地区からツァガーン・スヴラグ地区にかけて東西約 300km×南北約60kmの範囲に分布する多数の金鉱徴地を評価するための調査。

a) 既知の鉱徴地に対して鉱石分析，脈質調査，変質帯調査，流体包有物の均質化温度測定及び鉱物研究等からなる総合地化学調査を実施し，各鉱徴地の鉱床賦存の可能性を評価する。

b) 衛星画像解析や重力探査により砕屑物に覆われた構造線の位置を推定し，鉱床胚胎の場を特定する。

c) 地区にはデボン紀から白亜紀までの間に火成活動が繰り返し起こっており，タイプを異にする金の鉱化作用が重複している可能性があるので，この点を解明するため，主要な鉱床の鉱化年代を決定する。

d) 本年度実施した衛星画像による写真地質学的判読及び変質帯抽出作業のグランド・トゥルースを含むリモートセンシング技術を適用・実施する。

③Ｃ：一方ドルノト地区では，ジュラ紀から白亜紀にかけての火山岩類が広く分布する区域には潜頭性の大規模多金属鉱床が存在する可能性が考えられるので，この探査に向けて広域重力探査を実施する。

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2．トゥムルティン・オボー地区

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3．ヌフットダワー地区

No.2576　Жарантай, Р.（アール・ジャランタイ）ほか（1978）；ツェントル近傍の希少金属鉱床（1974 - 1978 年のツェントル鉱床の地質・試掘作業とその近傍の縮尺 1:10,000 の探査に関するエルデネツァガーン班の報告，モンゴル人民共和国地質鉱業省ドルノト地質調査隊エルデネツァガーン班。

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4．ハル・アイラグ地区

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5．ルギンゴル地区

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APPENDICES

Appendix 1

Results of Laboratory Works

Appendix 1-1 Table of Laboratory Works

Testing items	Quantity Specified	Dornot	Tumurtiin -Ovoo	Nuhut-Dawaa	Har-Airag	Lugiin -gol	Tsagaan-suvraga	Ulziit	Performance Total
1. Thin sections	80	26	14	4	3	8	7	20	82
2. Polished sections	50	19	16	1	0	1	11	4	52
3. Whole rock chemical analysis	50	17	5	2	2	7	6	12	51
4. Ore analysis	370	82	45	12	29	7	90	120	385
1) Polymetallic vein and skarn (Cu, Pb, Zn, Ag, Au, Mo, W)	(100)	62	32	10	0	0	0	0	104
2) Porphyry copper(Cu, Mo, Ag, Au)	(100)	0	13	0	0	0	90	0	103
3) Auriferous quartz vein (Au, Ag)	(90)	18	0	0	0	0	0	74	92
4) Carbonatite and Apatite rock (TREO, Sr, Ba, P, Y)	(30)	0	0	0	0	7	0	26	33
5) Fluorite ore(CaF_2 , SiO_2 , $CaCO_3$, Fe_2O_3 ,)	(30)	0	0	2	29	0	0	0	31
6) Strontium ore ($SrSO_4$, $BaSO_4$, $CaSO_4$, Fe_2O_3 ,)	(20)	2	0	0	0	0	0	20	22
5. X-ray diffraction	100	25	12	5	9	6	19	26	102
6. Dating	30	10	3	0	0	7	3	7	30
1) K-Ar Method(whole rock)	(5)	2	0	0	0	1	0	2	5
2) K-Ar Method(mineral)	(20)	4	2	0	0	6	3	5	20
3) Pb-Pb Method(mineral)	(5)	4	1	0	0	0	0	0	5
7. Fluid inclusion test	10	3	0	1	2	1	0	7	14
8. Fossil identification	1	0	0	0	0	0	1	0	1

ABBREVIATIONS FOR SAMPLE LIST

act : actinolite
alk : alkaline
alt : altenated
and : andesite
apt : apatite
argd : argillizated
az : azurite
ba : barite
ba : barite
bas : basalt
bg : bearing
bn : bornite
bre : brecciated
brn : brown
bt : biotite
cal : calcite
cala : calamine
calc : calcareous
carb : carbonate
cbt : carbonatite
ccp : chalcopyrite
cel : celestite
cer : cerussite
chl : chlorite
cly : clay
comp : compact
cpx : clinopyroxine
cpx : clinopyroxene
crdm : corundum
csg : coase grained
cup : cuprite
cv : covelline
da : dacite
dio : diorite
dress plt ; dressing plant
drsy ; drusy
effsv ; effusive
ep ; epidote
f ; fault
feld ; feldspor
fl ; fluorite
flowstrc : flow structure
fng : fine grained
gar : garnet
gb : gabbro
gd : granodiorite
gn : galene
gp : granite porphyry
gr : granite
grn : green
grnCu : green Copper
grsn : greisen
gry : grey
gyp : gypsum
hb : hornblende
hem : hematite
hf : hornfels
kaol : kaolinite
lampro : lamprophyre
liev : lievrite
lm : limonite
lptf : lapilli tuff
ls : limestone
ltl : little
mal : malachite
mart : martite
mcs : marcacite
mdg : medium grained
mgt : magnetite
mo : molybdenite
monz : monzonite
ms : mudstone
msv : massive
mus : muscovite
neph : nepheline
ntwk : net work
ol : olivine
opx : orthopyroxine
oxd : oxide
pari : parisite
part : partialy
peg : pegmatite
phl : phlogopite
po : porphyry
po : pyrrhotite
po-Cu : porphyry copper
por : porphyrite
prop : propylite
prs : porous
purp : purple
py : pyrite
qp : quartz porphyry
qz : quartz
rh : rhyolite
scnd : secondary
sed : sedimentary rock
ser : serisite
sil : silicified
siltst : siltstone
sk : skarn
skzed : skarnized
sp : sphalerite
specl : specularite
ss : sandstone
stg : strong
stkwk : stock work
sy : syenite
synchi : synchisite
tf : tuff
trch : trachyte
trl : translucent
trp : transparent
v : vein
vlt : veinlet
vtrc : vitric
wd tf : welded tuff
wf : wolframite
wht : white
wk : weak
wthd : weathered
xln : crystalline

Appendix 1-2 (1) Sample List (1)

	SAMPLE No.	LOCALITY	ROCK NAME	WTDP ASTL	ORE FPGMVCBR	CS	XF DI	REMARKS
1	3 DN 1	Tsav	granodiorite, mdg, mt					No. 4trench
2	3 DN 2	Tsav	granodiorite	X			X	No. 4trench
3	3 DN 3	Tsav	clay, gry-wht, alt				X	No. 4trench
4	3 DN 4	Tsav	Pb-Zn ore		X			No. 14shaft pile
5	3 DN 5	Tsav	Pb-Zn ore		X			No. 14shaft pile
6	3 DN 6	Tsav	Pb-Zn ore		X			No. 14shaft pile
7	3 DN 7	Tsav	Pb-Zn ore		X			No. 14shaft pile
8	3 DN 8	Tsav	Pb-Zn ore		X			No. 14shaft pile
9	3 DN 9	Tsav	granite, csg, py					No. 14shaft pile, dike
10	3 DN 10	Tsav	qz, ccp, gn	X	X			No. 14shaft pile
11	3 DN 11	Tsav	qz, Mn-cbt, py, gn		X		X	No. 14shaft pile
12	3 DN 12	Tsav	granodiorite, csg, mt					No. 14shaft pile
13	3 DN 13	Tsav	Pb-Zn ore, Mn-cbnt	X	X		X	No. 15shaft pile
14	3 DN 14	Tsav	Pb-Zn ore, Mn-cbnt		X			No. 15shaft pile
15	3 DN 15	Tsav	Pb-Zn ore, Mn-cbnt, Ag	X	X			No. 15shaft pile
16	3 DN 16	Tsav	Pb-Zn ore, calamine		X		X	No. 15shaft pile
17	3 DN 17	Tsav	monzodiorite	XXK				DDH, Habirgan cmplx
18	3 DN 18	Tsav	granite porphyry	XXK				DDH, Habirgan cmplx
19	3 DN 19	Tsav	granite, schistose	XXK				DDH, Habirgan cmplx
20	3 DN 20	Tsav	alkali basalt	XX				DDH
21	3 DN 21	Tsav	nepheline basalt	XX				DDH
22	3 DN 22	Bayan-Uul	granite, schistose	XX				
23	3 DN 23	Tsav area	rhyolite					dike
24	3 DN 24	Tsav area	andesite					
25	3 DN 25	Tsav area	quartz orphyry, csg					
26	3 DN 26	Delger-Munh	15cm, qzv		X			
27	3 DN 27	Delger-Munh	1.2m, Pb ore, qzv-ntwk	X	X		X	
28	3 DN 28	Delger-Munh	sandstone					
29	3 DN 29	Mardai	welded tuff	X			XX	
30	3 DN 30	Mardai	lapilli tuff, alt, chl				XX	
31	3 DN 31	Mardai	welded tuff	X			X	
32	3 DN 32	Ulaan area	rhyolite	XX				S of Ulaan
33	3 DN 33	Ulaan area	rhyorite, flow-strc					S of Ulaan
34	3 DN 34	Ulaan area	rhyolite					S of Ulaan
35	3 DN 35	Ulaan area	dacite					NW of Ulaan
36	3 DN 36	Ulaan area	granite, sytic					NW of Ulaan
37	3 DN 37	Tsagaan-Chuluut Hud.	granite	XX				
38	3 DN 38	Ulaan area	granite	XXK				NW of Ulaan
39	3 DN 39	Ulaan	rhyolite, carb-fl	XGX	X			waste pile
40	3 DN 40	Ulaan	skarn, ep, sp	X	X			waste pile
41	3 DN 41	Ulaan	skarn, ep-act	X X				waste pile
42	3 DN 42	Ulaan	skarn, ep py, qzv, fl				X	
43	3 DN 42	Ulaan	rhyolite with qz v	X X				waste pile
44	3 DS 1	Tsav	galena rich ore	G	X			No. 4trench
45	3 DS 2	Tsav	oxd, gn, mal, cerussite	X	X		X	No. 4trench
46	3 DS 3	Tsav	oxd, gn, sp, qz		X			No. 4trench
47	3 DS 4	Tsav	qz, gn, ccp, py. grnCu	X	X			No. 4trench
48	3 DS 5	Tsav	galena rich ore, ccp	GX	X			No. 14shaft pile
49	3 DS 6	Tsav	1m v, oxd, MnO2, Ag		X		X	No. 8trench
50	3 DS 7	Tsav	andesite, wht alt				X	No. 8trench
51	3 DS 8	Tsav	oxd, Pb, Zn ore		X			No. 1trench
52	3 DS 9	Tsav	qzv10cm, oxd, Pb, Zn		X			No. 1trench
53	3 DS 10	Tsav	carbonate-opaq-qz v	X X	X		X	No. 15shaft tunnel
54	3 DS 11	Salhiit	qz, csg		X			
55	3 DS 12	Salhiit	meta-tonalite	XX				

Appendix 1-2 (2) Sample List (2)

	SAMPLE No.	LOCALITY	ROCK NAME	WTDP AST	ORE PPG L	PCS MVC	XF BRD	I	REMARKS
56	3 DS 13	Delger-Munh	ntwk10cm, wht carb		X		X		
57	3 DS 14	Delger-Munh	sil bre-zone 30cm		X				
58	3 DS 15	Ulaan	bre, sp, py, fl, qz		X				
59	3 DS 16	Ulaan	rhyolite	XX					
60	3 DS 17	Ulaan	skarn, gar-act-bt-ep	X X	X				proptic
61	3 DS 18	Ulaan	bre, gn, act, ep, sp, py						fl
62	3 DS 19	Ulaan	bre qz, sp, py, fl						
63	3 DS 20	Ulaan	galena, act, py, sp		X				stock pile
64	3 DS 21	Ulaan	galena, act, py, sp		X				stock pile
65	3 DS 22	Ulaan	py, qz, sp		X				stock pile
66	3 DS 23	Ulaan	py, qz, sp		X				stock pile
67	3 DS 24	Ulaan	galena, act, py, sp, qz		X				stock pile
68	3 DS 25	Ulaan	skarn ep-act		X				stock pile
69	3 DS 26	Ulaan	skarn ep-act, py		X				stock pile
70	3 DS 27	Ulaan	galena, act, py, sp, qz		X				stock pile
71	3 DS 28	Ulaan	galena, act, py, sp, qz		X				stock pile
72	3 DS 29	Ulaan	skarn ep-act, py		X		X		stock pile
73	3 DS 30	Ulaan	qz, epidote		X				
74	3 DS 31	Ulaan	rhyolite, sp, py		X				
75	3 DS 32	Ulaan	rhyolite, sil, sp, py		X				
76	3 DS 33	Ulaan	rhyolite, sil, sp, py		X		X		
77	3 DS 34	Ulaan	rh, bre, sp, py, act		X				
78	3 DS 35	Ulaan	strong oxd ore		X				
79	3 DS 36	Ulaan	oxd, act, ep, py, qz		X		X		
80	3 DS 37	Ulaan	hematite rich ore		X				
81	3 DS 38	Ulaan	oxd, bre, Mn		X				
82	3 DS 39	Ulaan	oxd, hem		X				
83	3 DS 40	Ulaan	1.5m qz, pegmatite					X	
84	3 DS 41	Ulaan	galena rich ore		X				
85	3 DS 42	Ulaan	qz, drusy		X				
86	3 DS 43	Tsagaan-Chuluut Hud.	qz, stkwk, oxd	X	X				
87	3 DS 44	Tsagaan-Chuluut Hud.	qz, stkwk, oxd, porous	X	X				
88	3 DS 45	Tsagaan-Chuluut Hud.	qz, stkwk, oxd	X	X				
89	3 DS 46	Tsagaan-Chuluut Hud.	qz, ser, py	X	X		X		
90	3 DS 47	Tsagaan-Chuluut Hud.	qz brecciated, mica		X		X		
91	3 DS 48	Tsagaan-Chuluut Hud.	qz, oxd, porous		X				
92	3 DS 49	Tsagaan-Chuluut Hud.	qz, oxd, porous		X				
93	3 DS 50	Tsagaan-Chuluut Hud.	qz, oxd, porous		X				
94	3 DS 51	Tsagaan-Chuluut Hud.	qz in peg, oxd, po		X				
95	3 DS 52	Tsagaan-Chuluut Hud.	qz brecciated, ntwk		X				
96	3 DS 53	Tsagaan-Chuluut Hud.	qz, ntwk		X				
97	3 DS 54	Tsagaan-Chuluut Hud.	qz, ntwk		X				
98	3 DS 55	Tsagaan-Chuluut Hud.	qzvlt		X				
99	3 DS 56	Tsagaan-Chuluut Hud.	qzv, 5m		X				
100	3 DS 57	Tsagaan-Chuluut Hud.	qzv, 50cm		X				
101	3 DS 58	Tsagaan-Chuluut Hud.	qzv 2.5m, py, mal, az		X		X		
102	3 DY 1	Tsav	Pb-Zn ore	X X	X		X		No. 4trench
103	3 DY 2	Tsav	Pb-Zn ore		X				No. 14shaft pile
104	3 DY 3	Tsav	Pb-Zn ore	GX	X				No. 14shaft pile
105	3 DY 4	Tsav	granite, schistose	XX					No. 15shaft pile
106	3 DY 5	Salhiit	qzv		X		X		
107	3 DY 6	Salhiit	qzv, oxd		X				
108	3 DY 7	Bayan-Uul	qzv, oxd		X		X		
109	3 DY 8	Bayan-Uul	qzv, oxd		X		X		
110	3 DY 9	Bayan-Uul	qzv, oxd		X		X		

Appendix 1-2 (3) Sample List (3)

	SAMPLE No.	LOCALITY	ROCK NAME	WTDP ASTL	ORE FPGP LMVC	XF CS BRDI	REMARKS
111	3 DY 10	Bayan-Uul	qzv, oxd		X		
112	3 DY 11	Bayan-Uul	qzv, oxd		X		
113	3 DY 12	Bayan-Uul	qzv, oxd		X		
114	3 DY 13	Bayan-Uul	meta-dolerite	XX			
115	3 DY 14	Ulaan area	rhyolite, spherulite				
116	3 DY 15	Tsagaan-Chuluut Hud.	monzodiorite	XX	X		
117	3 DY 16	Tsagaan-Chuluut Hud.	granite porphyry	XXK			
118	3 DY 17	Tsagaan-Chuluut Hud.	monzodiorite	XX			
119	3 DY 18	Tsagaan-Chuluut Hud.	welded tuff				
120	3 DY 19	Tsagaan-Chuluut Hud.	meta-granite po	XX			
121	3 DY 20	Tsagaan-Chuluut Hud.	qzv		X		
122	3 DZ 1	Tsav	skarn, sp fl, qzv, fl			X	
123	3 HA 1	Bor-Undur No. 5	quartz orphyry, sil			X	tunnel
124	3 HN 1	Hatsungin-alshan	calcareous sinter				
125	3 HN 2	Tsagaantakhilch	qzv, fl				
126	3 HN 3	Tsagaantakhilch	qzv, fl				
127	3 HN 4	Tsagaantakhilch	qzv, fl				
128	3 HN 5	Maihanta 2	fl, zebra ore				
129	3 HN 6	Maihanta 2	Marble, banded				
130	3 HN 7	Tsagaantakhilch	granite, gneissose				DDH
131	3 HN 8	Tsagaantakhilch	granite, fng～mdg				
132	3 HN 9	Hongor 3	limestone, part sil				
133	3 HN 10	Hongor 3	qzv, fl				
134	3 HN 11	Hongor 3	rhyolite, a ltl of qz				
135	3 HN 12	Bor-Undur No. 2	quartz orphyry				waste pile
136	3 HN 13	Bor-Undur No. 3	quartz orphyry, fl		X	X	
137	3 HN 14	Bor-Undur No. 3	basalt				
138	3 HN 15	Bor-Undur No. 2	qzv, fl		X		waste pile
139	3 HN 16	Bor-Undur No. 11	meta-dacite	XX			
140	3 HN 17	Bor-Undur No. 11	fl ore		X		
141	3 HN 18	Bor-Undur No. 11	clay in 3HN17			X	
142	3 HN 19	Adag No. 1	granite, aplitic				
143	3 HN 20	Adag No. 1	white alt in 3HN19			X	
144	3 HN 21	Adag No. 1	granophyre	XX			
145	3 HN 22	Bor-Undur No. 5	qz-fl v	X	X	XX	tunnel
146	3 HN 23	Bor-Undur No. 5	quartz orphyry, sil				tunnel
147	3 HN 24	Bor-Undur No. 5	fl ore		X		tunnel
148	3 HN 25	Bor-Undur No. 5	fl ore		X		tunnel
149	3 HN 26	Bor-Undur dress plt	flotation head ore		X		ϕ16-20mm
150	3 HN 27	Bor-Undur dress plt	fl-conc		X		final product
151	3 HN 28	S of choir Mt.	granite, csg, potic				
152	3 HS 2	Bor-Undur No. 3	fl ore		X		
153	3 HS 3	Bor-Undur No. 2	fl ore		X		
154	3 HS 4	Bor-Undur No. 13	fl ore		X		
155	3 HS 5	Bor-Undur No. 13	fl ore		X		
156	3 HS 6	Adag No. 3	fl ore		X	X	
157	3 HS 7	Adag No. 3	fl ore		X		
158	3 HS 8	Bor-Undur No. 5	clay, fl		X	X	tunnel
159	3 HS 9	Bor-Undur No. 5	fl ore		X		tunnel
160	3 HS 10	Bor-Undur No. 5	fl ore		X		tunnel
161	3 HS 11	Bor-Undur No. 5	fl ore		X		tunnel
162	3 HS 12	Bor-Undur No. 5	fl ore		X		tunnel
163	3 HY 1	Tsagaantakhilch	fng qzv, comp fl		X		
164	3 HY 2	Maihanta 2	fng qzv, csg fl		X	X	
165	3 HY 3	Bor-Undur No. 13	fng fl		X		

Appendix 1-2 (4) Sample List (4)

	SAMPLE No.	LOCALITY	ROCK NAME	WTDP ASTL	ORE PPGLMV	PCS CBR	XF DI	REMARKS
166	3 HY 4	Adag	rhyolite, wk sil, fl		X			
167	3 HY 5	Bor-Undur No. 5	qzv, fl		X		X	tunnel
168	3 HY 6	Chol-Tsagaan-Del	white clay				X	
169	3 HY 7	Chol-Tsagaan-Del	qzv, fl		X			
170	3 HY 8	Chol-Tsagaan-Del	qzv, fl		X			
171	3 HY 9	Chol-Tsagaan-Del	qz ntwk, fl		X			
172	3 HY 10	Chol-Tsagaan-Del	qzv, fl		X			
173	3 HY 11	Chol-Tsagaan-Del	fl ore, fng gravel		X			tailing
174	3 NN 1	Yuguzer	qzv w8cmm min, Mo W				X	
175	3 NS 1	Yuguzer	greisen, fl	X	X		X	
176	3 NS 2	Yuguzer	greisen, mica, mo	X	X			
177	3 NS 3	Yuguzer	greisen	XX	X			
178	3 NS 4	Yuguzer	greisen	X	X			
179	3 NS 5	Yuguzer	fl v		X			
180	3 NS 6	Yuguzer	oxide ore		X		X	
181	3 NS 7	Yuguzer	qzv, ccp, py, gn, mo		X			
182	3 NS 8	Yuguzer	qzv, wf, mo		X			
183	3 NS 9	Yuguzer	qzv, mo, weathered		X			
184	3 NS 10	Tsentr	qz, wf		X			
185	3 NS 11	Tsentr	secondary carb, on qp				X	
186	3 NS 12	Tsentr	granite, greisenized	XX				
187	3 NS 13	Nuhutiin-Tsagaantolg.	beryl				X	Be assey
188	3 NS 14	Nuhutiin-Tsagaantolg.	qz, wf		X		X	
189	3 NS 15	Nuhutiin-Tsagaantolg.	fl ore		X			
190	3 RS 1	Lugiingol	carbonatite, synchi			X	X	
191	3 RS 2	Lugiingol	hornfels, corundum	XX		X		
192	3 RS 3	Lugiingol	carbonatite	XX		X	X	
193	3 RS 4	Lugiingol	syenite	XX				alkali gabbro
194	3 RS 5	Lugiingol	syenite					
195	3 RS 6	Lugiingol	syenite	XX				
196	3 RS 7	Lugiingol	lamprophyre	X				
197	3 RS 8	Lugiingol	cbt, shynchi, pari			X	X	
198	3 RS 9	Lugiingol	nepheline syenite, fl	XXK				
199	3 RS 10	Lugiingol	cbt, shynchi, pari, gn			X	X	wdth 8cm
200	3 RS 11	Lugiingol	carbonatite, pseu py			X	X	
201	3 RS 12	Lugiingol	carbonatite, specul?	X				
202	3 RS 13	Lugiingol	shynchi, fl			X	XX	
203	3 RS 14	Lugiingol	syenite	XXK				DDH10-A-8, 10m
204	3 RS 15	Lugiingol	nepheline syenite	XXK				DDH12-A-6, 90m
205	3 SN 1	Tsagaansuvraga	tuff					DDH
206	3 SN 2	Tsagaansuvraga	meta-dacite	X		X	X	survey line 12
207	3 SN 3	Tsagaansuvraga	qz monzonite, grn-Cu			X	X	survey line 12
208	3 SN 4	Tsagaansuvraga	qz monzonite, grn-Cu			X		survey line 12
209	3 SN 5	Tsagaansuvraga	qz monzonite, grn-Cu			X		survey line 12
210	3 SN 6	Tsagaansuvraga	qz monzonite, grn-Cu			X		survey line 12
211	3 SN 7	Tsagaansuvraga	syenite, dike			X	X	survey line 12
212	3 SN 8	Tsagaansuvraga	qz monzonite, grn-Cu			X		survey line 12
213	3 SN 9	Tsagaansuvraga	qz monzonite, grn-Cu			X		survey line 12
214	3 SN 10	Tsagaansuvraga	quartz monzonite	XX		X	X	survey line 12
215	3 SN 11	Tsagaansuvraga	qz monzonite, grn-Cu			X		survey line 12
216	3 SN 12	Tsagaansuvraga	qz monzonite, grn-Cu			X		survey line 12
217	3 SN 13	Tsagaansuvraga	qz monzonite, grn-Cu			X		survey line 12
218	3 SN 14	Tsagaansuvraga	qz monzonite, grn-Cu			X		survey line 12
219	3 SN 15	Tsagaansuvraga	qz monzonite, grn-Cu			X		survey line 12
220	3 SN 16	Tsagaansuvraga	qz monzonite, grn-Cu			X	X	survey line 12

Appendix 1-2 (5) Sample List (5)

	SAMPLE No.	LOCALITY	ROCK NAME	WTDP ORE XF FPGPCS ASTLLMVCBRDI	REMARKS
221	3 SN 17	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 12
222	3 SN 18	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 12
223	3 SN 19	Tsagaansuvraga	qz monzonite, grn-Cu	X X	survey line 12
224	3 SN 20	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 12
225	3 SN 21	Tsagaansuvraga	greisen	XXK X X	
226	3 SN 22	Tsagaansuvraga area	quartz monzonite	XXK	10km east from T.S.
227	3 SS 1	Tsagaansuvraga	qz monzonite, grn-Cu		
228	3 SS 2	Tsagaansuvraga	qz monzonite, grn-Cu		
229	3 SS 3	Tsagaansuvraga	qz monzonite, grn-Cu		
230	3 SS 4	Tsagaansuvraga	qz monzonite, grn-Cu		
231	3 SS 5	Tsagaansuvraga	qz monzonite, ccp, cv		stock pile
232	3 SS 6	Tsagaansuvraga	qz monz, mo, grn-Cu		stock pile
233	3 SS 7	Tsagaansuvraga	keratophyre	XX X	
234	3 SS 8	Tsagaansuvraga	acid-effsv or wdtf	X	
235	3 SS 9	Tsagaansuvraga	qz monzonite, ccp		DDH-core
236	3 SS 10	Tsagaansuvraga	calc-siltst, fossil	X	survey line 20
237	3 SS 11	Tsagaansuvraga	tuff breccia	X X	survey line 20
238	3 SS 12	Tsagaansuvraga	qz monzonite, grn-Cu	X X	survey line 20
239	3 SS 13	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
240	3 SS 14	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
241	3 SS 15	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
242	3 SS 16	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
243	3 SS 17	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
244	3 SS 18	Tsagaansuvraga	qz monzonite, grn-Cu	X X	survey line 20
245	3 SS 19	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
246	3 SS 20	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
247	3 SS 21	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
248	3 SS 22	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
249	3 SS 23	Tsagaansuvraga	leuco granite, grn-Cu	X	survey line 20
250	3 SS 24	Tsagaansuvraga	quartz monzonite, Cu	XXK X X	survey line 20
251	3 SS 25	Tsagaansuvraga	leuco granite, grn-Cu	X	survey line 20
252	3 SS 26	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
253	3 SS 27	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
254	3 SS 28	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
255	3 SS 29	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
256	3 SS 30	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
257	3 SS 31	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
258	3 SS 32	Tsagaansuvraga	qz monzonite, grn-Cu	X X	survey line 20
259	3 SS 33	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 20
260	3 SS 34	Tsagaansuvraga	keratophyre	XX X	survey line 20
261	3 SS 35	Tsagaansuvraga	granodiorite	X X	survey line 20
262	3 SS 36	Tsagaansuvraga	qz monzonite, grn-Cu	X X	survey line 32
263	3 SS 37	Tsagaansuvraga	granodiorite, grn-Cu	X	survey line 32
264	3 SS 38	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 32
265	3 SS 39	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 32
266	3 SS 40	Tsagaansuvraga	qz monzonite, grn-Cu	X X	survey line 32
267	3 SS 41	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 32
268	3 SS 42	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 32
269	3 SS 43	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 32
270	3 SS 44	Tsagaansuvraga	qz monzonite, grn-Cu	X X	survey line 32
271	3 SS 45	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 32
272	3 SS 46	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 32
273	3 SS 47	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 32
274	3 SS 48	Tsagaansuvraga	qz monzonite, grn-Cu	X X	survey line 32
275	3 SS 49	Tsagaansuvraga	qz monzonite, grn-Cu	X	survey line 32

Appendix 1-2 (6) Sample List (6)

	SAMPLE No.	LOCALITY	ROCK NAME	WTDP ASTL	ORE FPGL	ORE PCS MVC	XF BRDI	REMARKS
276	3 SS 50	Tsagaansuvraga	qz monzonite, grn-Cu		X			survey line 32
277	3 SY 1	Tsagaansuvraga	qzv, mal, cc, ccp	X	X		X	stock pile
278	3 SY 2	Tsagaansuvraga	mal, cup					stock pile
279	3 SY 3	Tsagaansuvraga	ccp, bn, mo	X	X			stock pile, Composit
280	3 SY 4	Tsagaansuvraga	py, ccp, bn, mal, mo		X			stock pile, Composit
281	3 SY 5	Tsagaansuvraga	py, ccp, bn, mal	X	X			stock pile, Composit
282	3 SY 6	Tsagaansuvraga	po, py, ccp, bn, mal		X			stock pile, Composit
283	3 SY 7	Tsagaansuvraga	py, ccp, mo, mal		X			stock pile, Composit
284	3 SY 8	Tsagaansuvraga	qzv, ccp, mo, bn, py	X	X			stock pile
285	3 SY 9	Tsagaansuvraga	qzv, ccp, mo, bn, py					stock pile
286	3 SY 10	Tsagaansuvraga	qz-ser v, ccp, bn					stock pile
287	3 SY 11	Tsagaansuvraga	qzv, ccp, bn, mal					stock pile
288	3 SY 12	Tsagaansuvraga	qz-ser v, ccp	X	X			stock pile
289	3 SY 13	Tsagaansuvraga	mal, ccp, bn, mo		X			stock pile, Composit
290	3 SY 14	Tsagaansuvraga	qz-ser v, ccp, bn, mal	X	X			stock pile
291	3 SY 15	Tsagaansuvraga	qzv, ccp, bn, mal	X	X		X	stock pile
292	3 SY 16	Tsagaansuvraga	mal, ccp, bn, cv, mo		X			stock pile, Composit
293	3 SY 17	Tsagaansuvraga	mal, ccp		X			stock pile, Composit
294	3 SY 18	Tsagaansuvraga	qz-ser v, mal, ccp, py					stock pile
295	3 SY 19	Tsagaansuvraga	ccp, py					stock pile
296	3 SY 20	Tsagaansuvraga	ccp, bn, mal, mo	X	X			stock pile, Composit
297	3 SY 21	Tsagaansuvraga	ccp, bn, mo, fl		X			stock pile, Composit
298	3 SY 22	Tsagaansuvraga	ccp, bn, mo, fl	X	X			stock pile, Composit
299	3 SY 23	Tsagaansuvraga	qz-ser v, mal, ccp, mo					stock pile
300	3 SY 24	Tsagaansuvraga	qzv, ccp, mal, bn	X	X			stock pile
301	3 SY 25	Tsagaansuvraga	ccp, mal, bn		X			stock pile, Composit
302	3 SY 26	Tsagaansuvraga	mal, ccp, bn, mo		X			stock pile, Composit
303	3 SY 27	Tsagaansuvraga	ccp, cv, mal		X			stock pile, Composit
304	3 SY 28	Tsagaansuvraga	ccp, cv, bn		X			stock pile, Composit
305	3 SY 29	Tsagaansuvraga	ccp, bn, mo		X			stock pile, Composit
306	3 SY 30	Tsagaansuvraga	ccp, bn, mal, mo		X			stock pile, Composit
307	3 SY 31	Tsagaansuvraga	ccp, mo, mal		X			stock pile, Composit
308	3 SY 32	Tsagaansuvraga	ccp, cv, mal, mo	X	X			stock pile, Composit
309	3 SY 33	Tsagaansuvraga	ccp, bn, mal		X			stock pile, Composit
310	3 SY 34	Tsagaansuvraga	ccp, mal		X			stock pile, Composit
311	3 TN 1	Tumurtiin-Ovoo	skarn, gar, mgt, sp	X X	X		X	
312	3 TN 2	Salaa	granite, mdg-csg, bio					pale-grn feld
313	3 TN 3	Salaa	granite	XXK				pale-grn feld, DDH
314	3 TN 4	Salhiit core strage	skarn, gar	X X	X		X	
315	3 TN 5	Salhiit core strage	skarn, gar, sp		X			DDH
316	3 TN 6	Salhiit core strage	skarn, gar, mgt		X			
317	3 TN 7	Salhiit core strage	cortlandite	X	X		X	
318	3 TN 8	Salhiit core strage	limestone/skarn, gn	G				DDH
319	3 TS 1	Arin-Nuur	oxd ore, grnCu, mus		X		X	
320	3 TS 2	Arin-Nuur	granite	X X	X			
321	3 TS 3	Arin-Nuur	granite, potic, mus, mo		X			
322	3 TS 4	Arin-Nuur	qzv, py, mo, mus,		X			
323	3 TS 5	Arin-Nuur	qz, mus, mo, py		X			
324	3 TS 6	Arin-Nuur	Mo ore		X			stock pile
325	3 TS 7	Arin-Nuur	granite	X X	X		X	
326	3 TS 8	Arin-Nuur	Mo ore		X			stock pile
327	3 TS 9	Arin-Nuur	Mo ore		X			stock pile
328	3 TS 10	Arin-Nuur	Mo ore		X			stock pile
329	3 TS 11	Arin-Nuur	Mo ore		X			stock pile
330	3 TS 12	Arin-Nuur	Mo ore		X			stock pile

Appendix 1-2 (7) Sample List (7)

	SAMPLE No.	LOCALITY	ROCK NAME	WTDP		ORE				XF	REMARKS
				AS	TL	FP	GP	CS	MV	CB	RD	I	
331	3 TS 13	Arin-Nuur	Mo ore				X						stock pile
332	3 TS 14	Tumurtiin-Ovoo	skarn, gar, sp, mgt		X	X							
333	3 TS 15	Tumurtiin-Ovoo	skarn, gar, sp, mgt		X	X							
334	3 TS 16	Tumurtiin-Ovoo	skarn, gar, sp, mgt		X	X							
335	3 TS 17	Tumurtiin-Ovoo	skarn, hem, mgt, sp		X	X							
336	3 TS 18	Tumurtiin-Ovoo	skarn, oxd, scnd carb			X				X			
337	3 TS 19	Tumurtiin-Ovoo	skarn, oxd, mgt, fl			X							
338	3 TS 20	Tumurtiin-Ovoo	skarn, oxd			X							
339	3 TS 21	Tumurtiin-Ovoo	skarn, mgt, gar, lm			X							
340	3 TS 22	Tumurtiin-Ovoo	skarn, mgt, lm, grn-Cu			X							
341	3 TS 23	Tumurtiin-Ovoo	skarn, mgt, lm			X							
342	3 TS 24	Tumurtiin-Ovoo	skarn, specul?		X	X				X			
343	3 TS 25	Tumurtiin-Ovoo	skarn, gar, Mn-oxd			X							
344	3 TS 26	Tumurtiin-Ovoo	skarn, gar, Mn-oxd			X							
345	3 TS 27	Tumurtiin-Ovoo	ls, gar, Mn-oxd, blueCu			X				X			
346	3 TS 28	Tumurtiin-Ovoo	sk, gar, qz, mgt, Mn-oxd			X							
347	3 TS 29	Tumurtiin-Ovoo	marble	X		X							
348	3 TS 30	Tumurtiin-Ovoo	skarn, gar sp	X	X	X				X			stock pile
349	3 TS 31	Tumurtiin-Ovoo	granophyre, wthd	X									
350	3 TS 32	Salaa	gabbro	XX									
351	3 TS 33	Salaa	qz, mo		X	X							
352	3 TS 34	Salaa	qz, wf		X	X							
353	3 TS 35	Salaa	qz, wf			X							
354	3 TS 36	Salaa	qz, lm			X				X			
355	3 TS 37	Salhiit core strage	limestone, wk sk										DDH
356	3 TS 38	Salhiit core strage	skarn, mgt		X	X				X			DDH
357	3 TS 39	Salhiit core strage	granite, mo vlt			X							DDH
358	3 TS 40	Salhiit core strage	granite	X	X								DDH
359	3 TS 41	Salhiit core strage	limestone										DDH
360	3 TS 42	Salhiit core strage	granite	XX									DDH
361	3 TS 43	Salhiit core strage	qzv, wf?		X	X							DDH
362	3 TS 44	Salhiit	skarn, mgt, oxd		X	X							
363	3 TS 45	Salhiit	skarn, mgt, oxd			X							
364	3 TY 1	Tumurtiin-Ovoo area	granite, aplitic	XX									
365	3 TY 2	Tumurtiin-Ovoo area	skarnized slt			X				X			
366	3 TY 3	Tumurtiin-Ovoo area	porphyrite										
367	3 TY 4	Tumurtiin-Ovoo area	granite	XXK									
368	3 TY 5	Tumurtiin-Ovoo area	rhyolite										
369	3 TY 6	Tumurtiin-Ovoo area	aplite										
370	3 TY 7	Tumurtiin-Ovoo area	granite porphyry										
371	3 TY 8	Tumurtiin-Ovoo area	hornfels(sh~ss)										
372	3 UN 1	Olon-Ovoot area	graphic granite	XXK									
373	3 UN 2	Olon-Ovoot area	gabbro	XXK									
374	3 UN 3	Mushgia-Hudak	granite	XXK									
375	3 UN 4	Olon-Ovoot area	granodiorite	XXK									
376	3 UN 5	Olon-Ovoot area	alkali rh, topaz-bg	X				X		X			ongonite
377	3 UN 6	Bayan-Ovoot	fl ore										
378	3 UN 7	Hanbogd	alkali granite	XXK									
379	3 UN 8	Olon-Ovoot	qzv			X							No. 68trench
380	3 UN 9	Olon-Ovoot	qzv			X							No. 68trench
381	3 UN 10	Olon-Ovoot	qzv			X							No. 68trench
382	3 UN 11	Olon-Ovoot	qzv			X							No. 68trench
383	3 UN 12	Olon-Ovoot	qzv			X							No. 68trench
384	3 UN 13	Olon-Ovoot	qzv			X							No. 69trench
385	3 UN 14	Olon-Ovoot	qzv			X							No. 69trench

Appendix 1-2 (8) Sample List (8)

	SAMPLE No.	LOCALITY	ROCK NAME	WTDP ASTL	ORE FPGPCS LMVCBR	XF DI	REMARKS
386	3 UN 15	Olon-Ovoot	qzv		X		No. 69trench
387	3 UN 16	Olon-Ovoot	qzv, alt zone		X	X	No. 69trench
388	3 UN 17	Olon-Ovoot	qzv		X		No. 69trench
389	3 UN 18	Mushgia-Hudak	carbonatite, fl	XX	X		fresh
390	3 UN 19	Mushgia-Hudak	trachy-andesite, apt	X	X		
391	3 UN 20	Mushgia-Hudak	meta-andesite, cp act	X	X		
392	3 US 1	Mushgia-Hudak	carbonatite, bre, fl				
393	3 US 2	Mushgia-Hudak	carbonatite, bre, fl		X	X	
394	3 US 3	Mushgia-Hudak	carbonatite, bre				
395	3 US 4	Mushgia-Hudak	liparite, qv				
396	3 US 5	Mushgia-Hudak	carbonatite, bre		X		
397	3 US 6	Mushgia-Hudak	carbonatite, bre, fl		X	X	
398	3 US 7	Mushgia-Hudak	carbonatite, bre, fl				
399	3 US 8	Mushgia-Hudak	carbonatite, bre		X		
400	3 US 9	Mushgia-Hudak	cbt, fl, apt, martite	X X	X	X	
401	3 US 10	Mushgia-Hudak	apatite rock, martite				
402	3 US 11	Mushgia-Hudak	carbonatite, fl		X		
403	3 US 12	Mushgia-Hudak	carbonatite, qz-netwk		X		
404	3 US 13	Mushgia-Hudak	carbonatite, bre, fl		X		
405	3 US 14	Mushgia-Hudak	apatite, gyp, prs				apatite hill
406	3 US 15	Mushgia-Hudak	apatite, gyp, prs		X	X	apatite hill
407	3 US 16	Mushgia-Hudak	apatite, gyp, prs				apatite hill
408	3 US 17	Mushgia-Hudak	apatite, gyp, prs		X		apatite hill
409	3 US 18	Mushgia-Hudak	mgt rock, phlog		X	X	apatite hill
410	3 US 19	Mushgia-Hudak	syenite	XXK	X		
411	3 US 20	Mushgia-Hudak	magnetite rock		X		
412	3 US 21	Mushgia-Hudak	mgt, apt, gyp		X	X	
413	3 US 22	Mushgia-Hudak	gabbro	XX	X		
414	3 US 23	Mushgia-Hudak	qz, fl		X		
415	3 US 24	Mushgia-Hudak	phonolite	XX	X		
416	3 US 25	Mushgia-Hudak	carbonatite, fl				
417	3 US 26	Mushgia-Hudak	cbt, fl purp		X	X	
418	3 US 27	Mushgia-Hudak	dolomite-carbonatite		X		
419	3 US 28	Olon-Ovoot	siltstone		X	X	No. 59trench
420	3 US 29	Olon-Ovoot	siltstone		X		No. 59trench
421	3 US 30	Olon-Ovoot	siltstone		X		No. 59trench
422	3 US 31	Olon-Ovoot	siltstone		X	X	No. 59trench
423	3 US 32	Olon-Ovoot	qzvlt in slt		X		No. 59trench
424	3 US 33	Olon-Ovoot	siltstone, arg, ser		X		No. 59trench
425	3 US 34	Olon-Ovoot	qzv in siltstone		X		No. 59trench
426	3 US 35	Olon-Ovoot	qzv in siltstone		X	X	No. 59trench
427	3 US 36	Olon-Ovoot	qz v	X	X	X	No. 59trench
428	3 US 37	Olon-Ovoot	qzv		X		No. 59trench
429	3 US 38	Olon-Ovoot	qzv		X		No. 59trench
430	3 US 39	Olon-Ovoot	qzv		X		No. 59trench
431	3 US 40	Olon-Ovoot	qz v	X	X	X	No. 59trench
432	3 US 41	Olon-Ovoot	qzv		X	X	No. 59trench
433	3 US 42	Olon-Ovoot	qzv		X		No. 59trench
434	3 US 43	Olon-Ovoot	qzv in siltstone		X	X	No. 59trench
435	3 US 44	Olon-Ovoot	qzv in siltstone		X		No. 59trench
436	3 US 45	Olon-Ovoot	qzv in siltstone		X		No. 59trench
437	3 US 46	Olon-Ovoot	qzv in siltstone		X		No. 59trench
438	3 US 47	Olon-Ovoot	qzv in siltstone		X	XX	No. 59trench
439	3 US 48	Olon-Ovoot	diorite, sheared		X	X	No. 59trench
440	3 US 49	Olon-Ovoot	diorite		X		No. 59trench

Appendix 1-2 (9) Sample List (9)

	SAMPLE No.	LOCALITY	ROCK NAME	WTDP ASTL	ORE FPGLMVC	XF PCSBRDI	REMARKS
441	3 US 50	Olon-Ovoot	diorite		X		No. 59trench
442	3 US 51	Olon-Ovoot	diorite		X	X	No. 59trench
443	3 US 52	Olon-Ovoot	meta-dolerite	X	X		No. 59trench
444	3 US 53	Olon-Ovoot	diorite		X		No. 59trench
445	3 US 54	Olon-Ovoot	qzv with visible Au	X		X	No. 59trench
446	3 US 55	Olon-Ovoot	grano-dio, qzvlt, py		X		DDH24, 72m
447	3 US 56	Olon-Ovoot	diorite, arg, py		X		DDH24, 80m
448	3 US 57	Olon-Ovoot	qz, massive		X		No. 60trench
449	3 US 58	Olon-Ovoot	diorite, oxd arg		X		No. 60trench
450	3 US 59	Olon-Ovoot	diorite, oxd arg		X		No. 60trench
451	3 US 60	Olon-Ovoot	qzv		X		No. 60trench
452	3 US 61	Olon-Ovoot	qzv		X		No. 60trench
453	3 US 62	Olon-Ovoot	qzv		X		No. 61trench
454	3 US 63	Olon-Ovoot	qzv		X		No. 61trench
455	3 US 64	Olon-Ovoot	qzv in siltstone		X		No. 62trench
456	3 US 65	Olon-Ovoot	qzv in siltstone		X		No. 62trench
457	3 US 66	Olon-Ovoot	qzv		X		No. 67trench
458	3 US 67	Olon-Ovoot	siltstone with qzv		X	X	No. 67trench
459	3 US 68	Olon-Ovoot	diorite		X		No. 67trench
460	3 US 69	Olon-Ovoot	diorite		X		No. 67trench
461	3 US 70	Olon-Ovoot	diorite		X	X	No. 67trench
462	3 US 71	Olon-Ovoot	qzv		X		No. 67trench
463	3 US 72	Olon-Ovoot	diorite, py, oxd	X	X	X	No. 67trench
464	3 US 73	Olon-Ovoot	qzv		X		No. 67trench
465	3 US 74	Olon-Ovoot	diorite, py		X	X	No. 67trench
466	3 US 75	Olon-Ovoot	diorite with qz-vlt		X		No. 67trench
467	3 US 76	Olon-Ovoot	diorite with qz-vlt		X		No. 67trench
468	3 US 77	Olon-Ovoot	qzv		X		No. 67trench
469	3 US 78	Olon-Ovoot	siltstone with qzvlt		X	X	No. 67trench
470	3 US 79	Olon-Ovoot	diorite+siltstone		X		No. 67trench
471	3 US 80	Olon-Ovoot	qzv, py, visible Au	X	X		No. 67trench
472	3 US 81	Bayan-Hoshoo	rhyolitic tuff			X	
473	3 US 82	Bayan-Hoshoo	rhyolitic tuff			X	
474	3 US 83	Bayan-Hoshoo	apatite-bt rock, fl	X		X	
475	3 US 84	Bayan-Hoshoo	carbonatite, bre			X	
476	3 US 85	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
477	3 US 86	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
478	3 US 87	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
479	3 US 88	Bayan-Hoshoo	rhyoritic tf, cel, qz			XX	trench
480	3 US 89	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
481	3 US 90	Bayan-Hoshoo	rhyoritic tf, cel, qz			XX	trench
482	3 US 91	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
483	3 US 92	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
484	3 US 93	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
485	3 US 94	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
486	3 US 95	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
487	3 US 96	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
488	3 US 97	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
489	3 US 98	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
490	3 US 99	Bayan-Hoshoo	rhyoritic tf, cel, qz			X	trench
491	3 US100	Bayan-Hoshoo	qzv?, fl			X	trench
492	3 US101	Bayan-Hoshoo	monzonite, apt	XX			
493	3 US102	Bayan-Hoshoo	carbonatite, cel, ba			XXX	trench
494	3 US103	Bayan-Hoshoo	cbt, ba, qz, fl, py			X X	trench
495	3 US104	Bayan-Hoshoo	monzonite, apt, fl	XX			

Appendix 1-2 (10) Sample List (10)

	SAMPLE No.	LOCALITY	ROCK NAME	WTDP ASTL	ORE FPGPCS LMVCBRDI	XF	REMARKS
496	3 US105	Olon-Ovoot	qzv, 65cm		X		No. 64trench
497	3 US106	Olon-Ovoot	diorite, qzvlt, py, Au		X		No. 64trench
498	3 US107	Olon-Ovoot	qzv, 150cm		X		No. 64trench
499	3 US108	Olon-Ovoot	qzv, 80cm		X		No. 64trench
500	3 US109	Olon-Ovoot	qzv, 20cm		X		No. 65trench
501	3 US110	Olon-Ovoot	qzv, 40cm		X		No. 65trench
502	3 UY 1	Onh	qzv		X	X	
503	3 UY 2	Onh	qzv		X		
504	3 UY 3	Onh	qzv		X		
505	3 UY 4	Onh	qzv		X		
506	3 UY 5	Tsogt-Ovoo	granite	XXK			Tsogt Ovoo massive
507	3 UY 6	Dugshih	qzv		X	X	
508	3 UY 7	Dugshih	qzv		X	X	

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	Laboratory works	Numbers for laboratory works	
W A	WHOLE ROCK ANALYSIS	51	
T S	THIN SECTION	82	
D T	DATING(25K-Ar, 5Pb-Pb)	25	25K-Ar, 5Pb-Pb
P L	POLISH	52	
F L	ASSAY fl ore	31	CaF2, SiO2, CaCO3, Fe2O3
O P M	polimetal v, sk	104	Cu, Pb, Zn, Ag, Au, Mo, W
R G V	qzv with Au	92	Au, Ag
E P M	po-Cu	103	Cu, Mo, Ag, Au
C B	cbt, apt rock	33	TRE, Sr, Ba, P
S R	Sr ore	22	SrSO4, BaSO4, CaSO4, Fe2O3
	X-RAY DIFFRACTION	102	
X D	FLUID INCLUSION	14	

Appendix 1-3 (1) Microscopic Observations (Thin Section) (1)

No.	SAMPLE No.	LOCALITY	ROCK NAME	PRIMARY MINERAL																										SECONDARY MINERAL												
				Quartz	Plagioclase	K-feldspar	Nepheline	Biotite	Phlogopite	Muscovite	Amphibole	Orthopyroxene	Clinopyroxene	Olivine	Opaque mineral	Spinel	Garnet	Sphene	Zircon	Monazite	Apatite	Fluorite	Calcite	Epidote	Corundum	Topaz	Cancrinite	Synchysite	Glass		Quartz	Albite	Carbonate	Sericite	Chlorite	Epidote	Biotite	Actinolite	Hematite	Geothite	Limonite	Cerussite	Zeolite
1	3 DN 2	Tsav	Granodiorite	○	◎	○		△			△				△				•		•												•	•	•		•					
2	3 DN 17	Tsav	Monzodiorite		◎	△		△				•	△	•	△						•												•		•		•					
3	3 DN 18	Tsav	Granite porphyry	○	○	○		△			△		△		•				•		•												•	•	•	•		•				
4	3 DN 19	Tsav	Schistose granite	◎	◎	○		△											•														•	•	•							
5	3 DN 20	Tsav	Alkali basalt		○			△	•				△	△	△						•								△								•					
6	3 DN 21	Tsav	Nepheline basalt		◎		○		•		•		△		△						•																•					
7	3 DN 22	Bayan-Uul	Schistose granite	○	◎	○		△							•				•		•										△		•			△						
8	3 DN 29	Mardai	Welded tuff	△	△	△									•														◎				○				•		△			
9	3 DN 31	Mardai	Welded tuff	○	○	○									•																						•					
10	3 DN 32	Ulaan area	Rhyolite	○	○	○		•							•					•		•							•				•									
11	3 DN 37	Tsagaan-Chuluut Bud.	Granite	◎	○	◎		△							•				•		•												•	•								
12	3 DN 38	Ulaan area	Granite	○	○	○		•		•					•																		•	•								
13	3 DN 39	Ulaan	Rhyolite	○	○	○									•							•											•	•								
14	3 DN 41	Ulaan	Skarn								◎						○							◎																			
15	3 DN 42	Ulaan	Rhyolite	◎	○	○									•							•											•									
16	3 DS 10	Tsav	Quartz vein	◎											△																			•	•								
17	3 DS 12	Salhiit	Meta-tonalite	△	◎			△							•						•												•	•	△	△		•				
18	3 DS 16	Ulaan	Rhyolite	◎	△	○									•										•																		
19	3 DS 17	Ulaan	Skarn					△			○				•		•							◎									•										
20	3 DY 1	Tsav	Pb-Zn ore	◎											△																		•	•							△	
21	3 DY 4	Tsav	Schistose granite	◎	○	○		△									△				•												•	•	•							
22	3 DY 13	Bayan-Uul	Meta-dolerite		○			△			◎				△																			•	•		•	•		•			
23	3 DY 15	Tsagaan-Chuluut Bud.	Monzodiorite	•	◎	△		△			△	△	△		•																											
24	3 DY 16	Tsagaan-Chuluut Bud.	Granite porphyry	◎	○	○		△							•			•	•		•												•	•								
25	3 DY 17	Tsagaan-Chuluut Bud.	Monzodiorite	•	◎	△					○				•			•			•												•	•								
26	3 DY 19	Tsagaan-Chuluut Bud.	Meta-granite porphyry	○	○	○		△							•															○				•		△						
27	3 HN 16	Bor-Undur No.11	Meta-dacite		○			•							•															○	△		•			•		•				
28	3 HN 21	Adag No.1	Granophyre	◎		◎		•							•							•												•				•				

◎ : Abundunt ○ : Commom △ : Poor • : Rare

Appendix 1-3 (2) Microscopic Observations (Thin Section) (2)

No.	SAMPLE No.	LOCALITY	ROCK NAME	PRIMARY MINERAL																											SECONDARY MINERAL												
				Quartz	Plagioclase	K-feldspar	Nepheline	Biotite	Phlogopite	Muscovite	Amphibole	Orthopyroxene	Clinopyroxene	Olivine	Opaque mineral	Spinel	Garnet	Sphene	Zircon	Monazite	Apatite	Fluorite	Calcite	Epidote	Corundum	Topaz	Cancrinite	Synchysite	Glass			Quartz	Albite	Carbonate	Sericite	Chlorite	Epidote	Biotite	Actinolite	Hematite	Geothite	Limonite	Cerussite	Zeolite
29	3 HN 22	Bor-Undur No.5	Quartz-fluorite vein	△																	◎																						
30	3 NS 1	Yuguzer	Greisen	◎						○					•						•											•										
31	3 NS 3	Yuguzer	Greisen	◎						○					•																	•										
32	3 NS 4	Yuguzer	Greisen	◎						○					•																											
33	3 NS 12	Tsentr	Greisenized granite	◎	○	△				△					•				•						△																	
34	3 RS 2	Lugiingol	Hornfels	○	○	△		•		•					•	•								○																		
35	3 RS 3	Lugiingol	Carbonatite	○						△					•					•	•	△	•					○					•						•			
36	3 RS 4	Lugiingol	Syenite		△	◎		△			○		△		•			•			•												•	•								
37	3 RS 6	Lugiingol	Syenite		△	◎							○				△																•									
38	3 RS 7	Lugiingol	Lamprophyre			◎		○			△		○		•			•			•												•	•								
39	3 RS 9	Lugiingol	Nepheline syenite			◎	○	△							•		•					•						•					•	•								•
40	3 RS 14	Lugiingol	Syenite		△	◎		○			○							•	•	•	•							•					•	•								•
41	3 RS 15	Lugiingol	Nepheline syenite			◎	○	△			△				•			•				•						•						•								•
42	3 SN 2	Tsagaansuvraga	Meta-dacite		○						△				•																•	•			•	•	•					
43	3 SN 10	Tsagaansuvraga	Quartz monzonite	△	◎	○					△				•			•		•	•												•					•				
44	3 SN 21	Tsagaansuvraga	Greisen	◎		△				○					△							•	•																			
45	3 SN 22	Tsagaansuvraga area	Quartz monzonite	△	○	○		△			○		△		•			•			•														•	•						
46	3 SS 7	Tsagaansuvraga	Keratophyre	•	◎							•	•		•						•													•	•				•			
47	3 SS 24	Tsagaansuvraga	Quartz monzonite	△	○	○									•					•	•													•	•							
48	3 SS 34	Tsagaansuvraga	Keratophyre	•	◎			△			•				•																			•	•							
49	3 TN 1	Tumurtiin-Ovoo	Skarn												◎		○															•		•		•			•			
50	3 TN 3	Salaa	Granite	○	○	○		•		△					•					•		•												•								
51	3 TN 4	Salhiit core strage	Skarn														◎															•		•								
52	3 TN 7	Salhiit core strage	Cortlandite					△			○		○	○	△						○															•	•			•			
53	3 TS 2	Arin-Nuur	Granite	◎	○	◎		•		•					•			•	•		•														•							
54	3 TS 7	Arin-Nuur	Granite	◎	△	○		△		•								•	•		•														•	•						
55	3 TS 29	Tumurtiin-Ovoo	Marble												•								◎												•							
56	3 TS 30	Tumurtiin-Ovoo	Skarn												○		◎						△																	•			

◎ : Abundunt ○ : Commom △ : Poor • : Rare

Appendix 1-3 (3) Microscopic Observations (Thin Section) (3)

No.	SAMPLE No.	LOCALITY	ROCK NAME	PRIMARY MINERAL																													SECONDARY MINERAL											
				Quartz	Plagioclase	K-feldspar	Nepheline	Biotite	Phlogopite	Muscovite	Amphibole	Orthopyroxene	Clinopyroxene	Olivine	Opaque mineral	Spinel	Garnet	Sphene	Zircon	Monazite	Apatite	Fluorite	Calcite	Epidote	Corundum	Topaz	Cancrinite	Synchysite	Glass		Quartz	Albite	Carbonate	Sericite	Chlorite	Epidote	Biolite	Actinolite	Hematite	Gaothite	Limonite	Cerussite	Zeolite
57	3 TS 31	Tumurtiin-Ovoo	Granophyre	○	◎	△		•																																			
58	3 TS 32	Salaa	Gabbro		◎			•					○	•	•																		•	•	•		•						
59	3 TS 40	Salhiit core strage	Granite	○	○	○		△							•				•		•												•		•								
60	3 TS 42	Salhiit core strage	Granite	○	○	○		△											•		•												•	•	•			•					
61	3 TY 1	Tumurtiin-Ovoo area	Aplitic granite	○	○	○		•		•					•				•																•			•					
62	3 TY 4	Tumurtiin-Ovoo area	Granite	○	○	○		△							•				•		•													•	•	•								
63	3 UN 1	Olon-Ovoot area	Graphic granite	◎	○	△		•							•																			•	•									
64	3 UN 2	Olon-Ovoot area	Gabbro		○						△		○		△								•											•	•	•	•							
65	3 UN 3	Olon-Ovoot area	Granite	○	○	○		△							•				•		•													•	•			•					
66	3 UN 4	Olon-Ovoot area	Granodiorite	○	◎	○		△			△				•			•	•		•																							
67	3 UN 5	Olon-Ovoot area	Alkali rhyolite	◎		○		•							•											•			○									•						
68	3 UN 7	Hanbogd	Alkali granite	◎	△	◎					△		△																				•											
69	3 UN 18	Mushgia-Hudak	Carbonatite												•							○	◎																					
70	3 UN 19	Mushgia-Hudak	Trachyandesite		◎	△		△				•	•		•						△												•		•								
71	3 UN 20	Mushgia-Hudak	Meta-andesite		○										△																△				○		○						
72	3 US 9	Mushgia-Hudak	Carbonatite												○						○	△															•	•					
73	3 US 19	Mushgia-Hudak	Syenite			◎		•	•				△		•				•		•																						•
74	3 US 22	Mushgia-Hudak	Gabbro		◎								○	•	•																			•			•	•				
75	3 US 24	Mushgia-Hudak	Phonolite		○	•	△	△					△		△				•		△																						
76	3 US 36	Olon-Ovoot	Quartz vein	◎											•								•																				
77	3 US 40	Olon-Ovoot	Quartz vein	◎											•																												
78	3 US 52	Olon-Ovoot	Meta-dolerite	△	○						△				•																△				△	△		△					
79	3 US 83	Bayan-Hoshoo	Apatite-biotite rock					◎													○	•																					
80	3 US101	Bayan-Hoshoo	Monzonite		○	○		△			•		△		•				•		△										•												
81	3 US104	Bayan-Hoshoo	Monzonite	•	△	◎		△			•		△		•						•																						
82	3 UY 5	Tsogt-Ovoo	Granite	○	○	○		△			△				•						•													•	•	•		•					

◎ : Abundunt ○ : Common △ : Poor • : Rare

Appendix 1-4 (1) Microscopic Observations (Polished Section) (1)

No.	SAMPLE No.	LOCALITY	ROCK NAME	Chalcopyrite	Tetrahedrite-series	Chalcocite	Bornite	Covelline	Bournonite	Galena	Boulangerite	Sphalerite	Electrum	Ag bearing mineral	Molybdenite	Wolframite series	Stibnite	Magnetite	Pyrite	Pyrrhotite	Marcasite	Hematite	Goethite	Arsenopyrite	Quartz	K-feldspar	Plagioclase	Biotite	Clinopyroxene	Calcite	Chlorite	Sericite	Muscovite	Garnet	Epidote	Actinolite	Vesuvianite	Cerrusite	Anglesite	Smithonite	Apatite	Fluorite
1	3 DN 27	Delger-Munh	l.2m,qzvntwk					•		△															◎						◎			○								
2	3 DS 43	Tsagaan-Chuluut H.	Qz,stkwk,oxd																				◎		◎																	
3	3 DS 44	Tsagaan-Chuluut H.	Qz,stkwk,oxd,prs																•				◎		◎																	
4	3 DS 45	Tsagaan-Chuluut H.	Qz,stkwk,oxd	•									•						•				○		◎																	
5	3 DS 46	Tsagaan-Chuluut H.	Qz,ser,py																				○		◎						○	○										
6	3 DN 10	Tsav	Qz,ccp,gn	◎						△		△							○						◎					○		○										
7	3 DN 13	Tsav	Pb-Zn,Mn-cbnt	△	•					○		◎		•					•		•				◎					◎	○											
8	3 DN 15	Tsav	Pb-Zn,Mn-cbnt,Ag	△	△					○		◎		△					○		△				◎					◎												
9	3 DS 2	Tsav	Oxd,gn,mal,cerussite					•		△																												◎	◎			
10	3 DS 4	Tsav	Qz,gn,ccp,py,grn-Cu	△						•									△				◎		◎																	
11	3 DS 5	Tsav	Galena rich ore,ccp	△						△		◎	•						△						◎																	
12	3 DS 10	Tsav	Carbonate ore,Pb Zn	•	△					○		◎							•		•			•	◎					◎	○											
13	3 DY 1	Tsav	Pb-Zn ore					•		•									•						◎													◎	◎	◎		
14	3 DY 3	Tsav	Pb-Zn ore	•						◎		◎							○						◎							△										
15	3 DN 39	Ulaan	Brecciated ore,sp,fl,gn	△						○		◎							△	•				△	◎																	○
16	3 DN 40	Ulaan	Skarn,ep,sp	•						○		◎							•	•					○										◎	○						
17	3 DN 41	Ulaan	Skarn,ep,act,sp							•									•						◎									◎		◎						
18	3 DN 42	Ulaan	Brecciated ore,sp,gn	△				•		•		•							○						◎																	△
19	3 DS 17	Ulaan	Brecciated ore,sp	•						△		○							○									◎			◎				◎							
20	3 NS 2	Yuquzer	Greisen,mica,mo												△	•									◎								○									
21	3 RS 12	Lugiingol	Carbonatite,specul?																△			◎								◎											
22	3 SY 1	Tsagaansuvraga	Qzv,mal,cc,ccp	•		△		•											•						◎																
23	3 SY 3	Tsagaansuvraga	Ccp,bn,mo	△			•	•				•			•							△			◎			◎													
24	3 SY 5	Tsagaansuvraga	Py,ccp,bn,mal	△								•										•			◎			○													
25	3 SY 8	Tsagaansuvraga	Qzv,ccp,mo,bn,py	○			•	•				•													◎																
26	3 SY 12	Tsagaansuvraga	Qz-ser v,ccp	◎			•	•				•							•						◎																

◎:Abundant ○:Common △:Poor •:Rare

Appendix 1-4 (2) Microscopic Observations (Polished Section) (2)

No.	SAMPLE No.	LOCALITY	ROCK NAME	Chalcopyrite	Tetrahedrite-series	Chalcocite	Bornite	Covellite	Bournonite	Galena	Boulangerite	Sphalerite	Electrum	Ag bearing mineral	Molybdenite	Wolframite series	Stibnite	Magnetite	Pyrite	Pyrrhotite	Marcasite	Hematite	Goethite	Arsenopyrite	Quartz	K-feldspar	Plagioclase	Biotite	Clinopyroxene	Calcite	Chlorite	Sericite	Muscovite	Garnet	Epidote	Actinolite	Vesuvianite	Cerussite	Anglesite	Smithonite	Apatite	Fluorite
27	3 SY 14	Tsagaansuvraga	Qz-ser v,ccp,bn,mal	○		•	△	•														◎			◎			◎													
28	3 SY 15	Tsagaansuvraga	Qzv,ccp,bn,mal	○				•														•			◎			○													
29	3 SY 20	Tsagaansuvraga	Ccp,bn,mal,mo	△			•	•														△			○			○													
30	3 SY 22	Tsagaansuvraga	Ccp,bn,mo,fl	◎		•	○	•														○			◎			◎													
31	3 SY 24	Tsagaansuvraga	Qzv,ccp,mal,bn	◎				•																	◎																
32	3 SY 32	Tsagaansuvraga	Ccp,cv,mal,mo	○				△														△			○			○													
33	3 TS 2	Arin-Nuur	Granite,mo,py,qzvlt	△								△			△				○						○			○													
34	3 TS 7	Arin-Nuur	Granite,mo,py,qzv-Cu	○				△							△				△						◎			◎													
35	3 TS 33	Salaa	Qz,mo												△				○						◎																
36	3 TS 34	Salaa	Qz,wf													◎									◎					•											
37	3 TN 4	Salhiit	Skarn																			△			△								◎							
38	3 TS 44	Salhiit	Skarn,mgt,oxd															◎							△								○							
39	3 TS 38	Salhiit	Skarn,mgt															◎				○			•				△				◎							
40	3 TS 40	Salhiit core strage	Gr/sk(sed), contact	•														△	•			•			○	◎	△													
41	3 TS 43	Salhiitcore strage	Qzv,wf?																			◎			◎								△							
42	3 TN 1	Tumurtiin-Ovoo	Skarn,gar,mgt,sp															◎				△			○								○							
43	3 TS 14	Tumurtiin-Ovoo	Skarn,gar,sp,mgt	•								•						◎				○			△				○				◎							
44	3 TS 15	Tumurtiin-Ovoo	Skarn,gar,sp,mgt	•								◎						○	△			△			△				•				◎			△				
45	3 TS 16	Tumurtiin-Ovoo	Skarn,gar,sp,mgt									•							•			△											◎							
46	3 TS 17	Tumurtiin-Ovoo	Skarn,hem,mgt,sp															◎				○			△				△	•			○							
47	3 TS 24	Tumurtiin-Ovoo	Skarn,specul?						•		•						•	•																						
48	3 TS 30	Tumurtiin-Ovoo	Skarn,gar,sp									○						◎				•			△				△				◎							
49	3 US 9	Mushgia-Hudak	Apatite rock,martite															△				◎																◎		
50	3 US 54	Olon-Ovoot	Qzv with visible Au										○												◎															
51	3 US 72	Olon-Ovoot	Diorite,py oxd															•				○			△															
52	3 US 80	Olon-Ovoot	Qzv																•			◎			◎															

◎:Abundant ○:Common △:Poor •:Rare

Appendix 1-5 Results of Whole Rock Analyses

	SAMPLE No.	LOCALITY	ROCK NAME	SiO2 %	TiO2 %	Al2O3 %	Fe2O3 %	FeO %	MnO %	MgO %	CaO %	Na2O %	K2O %	P2O5 %	BaO %	CO2 %	LOI %	TOTAL %	+H2O %	-H2O %	WTDP: ORE KF ASTLMVCBRDI FPGPCS	REMARKS
17	3 DN 17	Tsav	monzodiorite	47.82	2.02	16.39	4.92	6.35	0.30	4.44	8.50	3.55	1.85	1.30	0.07	-	0.76	98.27	1.02	0.26	XXK	DDH, Habirgan cmplx
18	3 DN 18	Tsav	granite porphyry	68.55	0.68	15.01	1.98	1.61	0.08	1.00	2.10	4.26	4.38	0.18	0.08	-	0.80	100.69	0.71	0.28	XXK	DDH, Habirgan cmplx
19	3 DN 19	Tsav	granite, schistose	76.69	0.31	11.78	1.46	1.01	0.15	0.34	0.79	2.72	4.17	0.06	0.10	-	1.25	100.83	0.85	0.22	XXK	DDH, Habirgan cmplx
20	3 DN 20	Tsav	alkali basalt	57.30	1.38	16.37	2.42	4.46	0.13	3.13	5.36	4.48	2.72	0.64	0.10	-	0.74	99.23	0.78	0.43	XX	DDH
21	3 DN 21	Tsav	nepheline basalt	55.42	1.47	16.89	5.45	1.44	0.12	2.30	5.62	4.14	3.50	0.59	0.08	-	1.06	99.08	0.63	0.50	XX	DDH
22	3 DN 22	Bayan-Uul	granite, schistose	70.90	0.50	16.22	1.41	0.34	0.04	0.32	0.63	5.83	2.90	0.07	0.09	-	1.73	100.98	1.46	0.65	XX	
32	3 DN 32	Ulaan area	rhyolite	76.09	0.15	12.15	1.11	0.40	0.04	0.02	0.15	3.04	4.85	<0.01	0.01	-	0.95	98.96	0.88	0.48	XX	S of Ulaan
37	3 DN 37	Tsagaan-Chuluut Hud.	granite	73.13	0.20	13.82	1.13	0.45	0.04	0.38	0.88	4.30	4.39	0.08	0.11	-	0.53	99.44	0.59	0.12	XX	
38	3 DN 38	Ulaan area	granite	76.33	0.13	13.34	0.65	0.20	0.01	<0.01	0.18	4.39	4.76	<0.01	0.08	-	0.66	100.74	0.55	0.23	XXK	NW of Ulaan
55	3 DS 12	Salhiit	meta-tonalite	66.38	0.53	14.12	2.56	1.65	0.06	1.67	3.53	4.02	2.16	0.15	0.04	<0.2	1.90	98.87	2.27	0.42	XX	
59	3 DS 16	Ulaan	rhyolite	73.84	0.16	11.94	1.61	0.71	0.07	<0.01	0.08	3.75	5.93	<0.01	<0.01	-	0.94	99.05	0.53	0.21	XX	
105	3 DY 4	Tsav	granite, schistose	70.85	0.26	15.35	0.77	0.57	0.06	0.43	1.17	3.01	5.46	0.04	0.06	0.6	2.11	100.74	1.76	1.00	XX	No.15shaft pile
114	3 DY 13	Bayan-Uul	meta-dolerite	47.35	0.98	17.97	3.11	5.61	0.22	6.47	11.71	1.97	0.98	0.08	0.02	0.3	1.70	98.47	2.70	0.53	XX	
116	3 DY 15	Tsagaan-Chuluut Hud.	monzodiorite	58.84	0.89	15.54	2.28	4.15	0.11	4.87	6.11	3.74	3.08	0.24	0.06	-	0.85	100.76	0.82	0.25	XX	X
117	3 DY 16	Tsagaan-Chuluut Hud.	granite porphyry	72.07	0.29	14.65	0.83	1.05	0.03	0.52	0.83	3.87	5.34	0.08	0.09	-	1.00	100.85	1.06	0.26	XXK	
118	3 DY 17	Tsagaan-Chuluut Hud.	monzodiorite	51.35	0.87	15.57	4.26	4.71	0.17	6.10	6.51	3.22	2.20	0.15	0.10	<0.2	2.59	97.90	3.34	0.54	XX	
120	3 DY 19	Tsagaan-Chuluut Hud.	meta-granite po	73.61	0.28	13.58	1.97	0.70	0.07	0.52	0.61	4.43	3.12	0.09	0.10	-	1.19	100.27	1.38	0.38	XX	
139	3 HN 16	Bor-Undur No.11	meta-dacite	74.92	0.27	14.60	1.21	0.59	0.16	0.12	0.05	2.09	2.66	0.10	0.09	<0.2	2.80	99.76	3.73	0.74	XX	
144	3 HN 21	Adag No.1	granophyre	77.76	0.12	12.39	0.91	0.26	0.02	<0.01	0.03	3.54	4.80	<0.01	<0.01	-	0.76	100.41	0.56	0.33	XX	
177	3 NS 3	Yuguzer	greisen	80.00	0.04	9.72	0.93	0.85	0.37	0.21	0.89	0.80	4.14	0.08	<0.01	-	1.92	99.95	1.52	0.24	XX	X
186	3 NS 12	Tsentr	granite, greisenized	76.66	0.02	13.31	0.44	2.32	0.20	0.05	0.53	3.37	2.23	<0.01	<0.01	-	0.99	100.13	0.65	0.26	XX	
191	3 RS 2	Lugiingol	hornfels, corundum	57.35	0.02	26.48	1.71	0.33	0.03	<0.01	1.62	6.84	4.80	<0.01	0.01	0.9	0.93	101.03	1.03	0.45	XX	X
192	3 RS 3	Lugiingol	carbonatite	60.31	0.77	2.06	12.66	0.01	1.49	1.07	5.64	0.12	0.42	0.20	0.01	5.9	3.62	94.28	3.02	1.06	XX	X X
193	3 RS 4	Lugiingol	syenite	49.83	1.07	15.81	3.78	5.80	0.27	3.05	5.72	3.50	6.51	0.57	0.11	<0.2	1.24	98.36	1.76	0.37	XX	alkali gabbro
195	3 RS 6	Lugiingol	syenite	43.80	2.55	12.72	11.35	2.59	0.54	1.02	14.37	2.85	4.44	0.22	0.11	0.5	1.59	98.65	2.17	0.41	XX	
198	3 RS 9	Lugiingol	nepheline syenite, fl	51.26	0.32	23.90	1.08	0.63	0.09	<0.01	1.51	8.74	9.32	<0.01	0.02	0.8	2.22	99.90	2.11	0.37	XXK	
203	3 RS 14	Lugiingol	syenite	57.64	0.42	19.29	1.54	2.73	0.15	0.54	2.63	4.95	7.34	0.17	0.05	0.5	0.84	98.79	1.07	0.24	XXK	DDH10-A-8, 10m
204	3 RS 15	Lugiingol	nepheline syenite	49.89	0.40	22.99	1.20	1.10	0.16	<0.01	1.98	10.38	7.19	<0.01	0.03	1.5	1.57	98.49	2.05	0.24	XXK	DDH12-A-6, 90m
214	3 SN 10	Tsagaansuvraga	quartz monzonite	66.91	0.29	16.23	1.02	0.26	0.03	0.23	0.56	5.85	4.58	0.03	0.09	0.3	0.93	99.31	1.01	0.38	XX	X X survey line 12
225	3 SN 21	Tsagaansuvraga	greisen	71.89	0.23	13.54	0.05	2.11	0.01	0.25	1.02	0.48	6.07	<0.01	0.05	0.5	2.35	98.55	2.00	0.25	XXK	X X
226	3 SN 22	Tsagaansuvraga area	quartz monzonite	59.23	0.64	18.10	2.93	2.50	0.15	1.96	4.52	5.02	3.96	0.33	0.05	-	0.88	100.27	0.98	0.27	XXK	10km east from T.S.
233	3 SS 7	Tsagaansuvraga	keratophyre	64.38	0.74	16.30	3.99	0.36	0.11	1.06	0.73	6.76	2.37	0.20	0.08	0.3	2.35	99.73	2.40	1.06	XX	X
250	3 SS 24	Tsagaansuvraga	quartz monzonite, Cu	69.01	0.28	16.01	<0.01	0.13	0.01	0.10	<0.01	3.20	9.82	0.02	0.11	-	0.70	101.26	0.55	0.31	XXK	X X survey line 20
260	3 SS 34	Tsagaansuvraga	keratophyre	74.16	0.19	14.64	0.94	0.20	0.06	0.24	0.14	4.31	4.82	0.05	0.14	<0.2	1.23	101.22	1.03	0.61	XX	X survey line 20
313	3 TN 3	Salaa	granite	76.34	0.14	13.27	0.36	0.50	0.11	<0.01	0.23	3.96	4.81	<0.01	0.06	-	0.96	100.75	0.48	0.23	XXK	pale-grn feld, DDH
350	3 TS 32	Salaa	gabbro	47.73	1.69	15.88	4.14	6.32	0.26	6.29	7.31	2.95	1.60	0.16	0.04	0.8	2.25	97.42	3.03	0.81	XX	
360	3 TS 42	Salhiit core strage	granite	72.55	0.39	14.27	1.15	0.88	0.13	0.39	1.12	4.58	4.15	0.06	0.07	-	1.67	101.42	0.85	0.30	XX	DDH
364	3 TY 1	Tumurtiin-Ovoo area	granite, aplitic	78.94	0.13	12.53	0.14	0.23	0.01	<0.01	0.15	3.34	5.14	<0.01	0.03	-	0.54	101.29	0.49	0.26	XX	
367	3 TY 4	Tumurtiin-Ovoo area	granite	76.43	0.19	12.87	0.61	0.29	0.05	0.07	0.18	3.74	5.30	<0.01	0.03	-	0.76	100.62	0.58	0.32	XXK	
372	3 UN 1	Olon-Ovoot area	graphic granite	77.70	0.17	12.36	1.49	0.41	0.03	0.27	<0.01	6.87	0.14	<0.01	<0.01	-	0.69	100.35	0.74	0.27	XXK	
373	3 UN 2	Olon-Ovoot area	gabbro	48.15	1.20	14.76	5.39	7.00	0.20	5.82	9.15	2.80	0.79	0.41	0.02	<0.2	2.56	98.35	3.67	0.41	XXK	
374	3 UN 3	Mushgia-Hudak	granite	73.04	0.50	13.79	1.85	0.29	0.04	0.23	0.55	3.28	5.22	0.11	<0.01	-	0.50	99.40	0.49	0.19	XXK	
375	3 UN 4	Olon-Ovoot area	granodiorite	68.77	0.63	15.11	0.38	2.70	0.06	0.41	1.53	3.98	3.69	<0.01	0.04	-	0.55	97.86	0.50	0.20	XXK	
378	3 UN 7	Hanbogd	alkali granite	74.75	0.16	10.02	3.47	0.27	0.27	<0.01	<0.01	4.79	4.46	<0.01	0.01	-	0.39	98.61	0.23	0.21	XXK	
389	3 UN 18	Mushgia-Hudak	carbonatite, fl	1.72	<0.01	0.18	1.23	0.10	0.09	0.22	64.39	0.37	0.02	1.38	3.85	12.4	1.62	87.57	0.54	0.27	XX	X fresh
410	3 US 19	Mushgia-Hudak	syenite	58.12	0.95	17.54	2.54	0.85	0.05	1.21	2.67	5.13	7.67	0.21	0.32	<0.2	1.09	98.45	0.67	0.49	XXK	X
413	3 US 22	Mushgia-Hudak	gabbro	47.94	2.03	17.34	5.67	3.26	0.16	6.25	7.66	4.58	0.92	0.44	0.10	0.3	1.78	98.43	1.67	0.58	XX	X
415	3 US 24	Mushgia-Hudak	phonolite	51.27	1.06	17.11	4.22	2.33	0.10	3.07	5.70	3.65	6.27	1.28	0.79	0.2	1.73	98.78	1.86	0.39	XX	X
492	3 US101	Bayan-Hoshoo	monzonite, apt	55.83	1.29	16.24	3.91	1.30	0.11	3.07	4.56	5.12	5.01	0.88	0.36	0.4	1.15	98.23	0.54	0.43	XX	
495	3 US104	Bayan-Hoshoo	monzonite, apt, fl	55.82	1.53	16.46	3.80	2.26	0.11	3.04	4.35	4.63	4.05	0.77	0.29	<0.2	0.95	98.16	0.48	0.40	XX	
506	3 UY 5	Tsogt-Ovoo	granite	66.63	0.88	15.62	2.02	1.22	0.07	1.27	1.31	3.74	4.51	<0.01	0.08		1.53	98.89	1.57	0.42	XXK	Tsogt Ovoo massive

Appendix 1-6 (1) Chemical Compositions and CIPW Norms (1)

No.	1	2	3	4	5	6
SAMPLE No.	3 DN 17	3 DN 18	3 DN 19	3 DN 20	3 DN 21	3 DN 22
LOCALITY	Tsav	Tsav	Tsav	Tsav	Tsav	Bayan-Uul
ROCK NAME	Monzo-diorite	Granite porphyry	Schistose granite	Alkali basalt	Nepheline basalt	Schistose granite
SiO2	47.82	68.55	76.69	57.30	55.42	70.90
TiO2	2.02	0.68	0.31	1.38	1.47	0.50
Al2O3	16.39	15.01	11.78	16.37	16.89	16.22
Fe2O3	4.92	1.98	1.46	2.42	6.45	1.41
FeO	6.35	1.61	1.01	4.46	1.44	0.34
MnO	0.30	0.08	0.15	0.13	0.12	0.04
MgO	4.44	1.00	0.34	3.13	2.30	0.32
CaO	8.50	2.10	0.79	5.36	5.62	0.63
Na2O	3.55	4.26	2.72	4.48	4.14	5.83
K2O	1.85	4.38	4.17	2.72	3.50	2.90
P2O5	1.30	0.16	0.06	0.64	0.59	0.07
H2O+	1.02	0.71	0.85	0.78	0.63	1.46
H2O-	0.36	0.28	0.22	0.43	0.50	0.65
BaO	0.07	0.08	0.10	0.10	0.08	0.09
Total	98.89	100.88	100.65	99.70	99.15	101.36
FeO*	10.78	3.39	2.32	6.64	7.24	1.61
FeO*/MgO	2.43	3.39	6.83	2.12	3.15	5.03
SOLIDIFY INDEX	21.53	7.67	3.56	18.44	13.38	3.00
CIPW NORM						
Q	0.00	21.38	42.61	5.82	5.58	24.25
C	0.00	0.00	1.43	0.00	0.00	2.55
or	10.93	25.88	24.64	16.07	20.68	17.14
ab	30.04	36.05	23.02	37.91	35.03	49.33
an	23.32	8.90	3.71	16.52	17.16	2.57
lc	0.00	0.00	0.00	0.00	0.00	0.00
ne	0.00	0.00	0.00	0.00	0.00	0.00
kp	0.00	0.00	0.00	0.00	0.00	0.00
ac	0.00	0.00	0.00	0.00	0.00	0.00
wo	0.00	0.00	0.00	0.00	0.00	0.00
di-wo	4.41	0.26	0.00	2.55	2.94	0.00
di-en	2.86	0.21	0.00	1.57	2.54	0.00
di-fs	1.25	0.03	0.00	0.84	0.00	0.00
hy-en	5.49	2.28	0.85	6.23	3.19	0.80
hy-fs	2.39	0.32	0.42	3.32	0.00	0.00
fo	1.89	0.00	0.00	0.00	0.00	0.00
fa	0.91	0.00	0.00	0.00	0.00	0.00
cs	0.00	0.00	0.00	0.00	0.00	0.00
mt	7.14	2.87	2.11	3.51	0.77	0.00
hm	0.00	0.00	0.00	0.00	5.92	1.41
il	3.84	1.29	0.59	2.62	2.79	0.80
ru	0.00	0.00	0.00	0.00	0.00	0.00
ap	3.08	0.38	0.14	1.52	1.40	0.17
ΣFEMIC	33.26	7.64	4.11	22.15	19.55	3.18
D.I.	40.97	83.31	90.27	59.80	61.29	90.72
SERIES	TH	CA	TH	CA	TH	TH

*: Total Fe as FeO

Appendix 1-6 (2) Chemical Compositions and CIPW Norms (2)

No.	7	8	9	10	11	12
SAMPLE No.	3 DN 32	3 DN 37	3 DN 38	3 DS 12	3 DS 16	3 DY 4
LOCALITY	Ulaan area	Tsagaan-Chuluut Hud.	Ulaan area	Salhiit	Ulaan	Tsav
ROCK NAME	Rhyolite	Granite	Granite	Meta-tonalite	Rhyolite	Schistose granite
SiO2	76.09	73.13	76.33	66.38	73.84	70.85
TiO2	0.15	0.20	0.13	0.53	0.16	0.26
Al2O3	12.15	13.82	13.34	14.12	11.94	15.35
Fe2O3	1.11	1.13	0.65	2.56	1.61	0.77
FeO	0.40	0.45	0.20	1.65	0.71	0.57
MnO	0.04	0.04	0.01	0.06	0.07	0.06
MgO	0.02	0.38	0.01	1.67	0.01	0.43
CaO	0.15	0.88	0.18	3.53	0.08	1.17
Na2O	3.04	4.30	4.39	4.02	3.75	3.01
K2O	4.85	4.39	4.76	2.16	5.93	5.46
P2O5	0.01	0.08	0.01	0.15	0.01	0.04
H2O+	0.88	0.59	0.55	2.27	0.53	1.76
H2O-	0.48	0.12	0.23	0.42	0.21	1.00
BaO	0.01	0.11	0.08	0.04	0.01	0.06
Total	99.37	99.62	100.86	99.56	98.85	100.79
FeO*	1.39	1.47	0.78	3.95	2.16	1.26
FeO*/MgO	69.71	3.86	156.62	2.37	431.92	2.93
SOLIDIFY INDEX	0.21	3.61	0.05	14.15	0.04	4.23
CIPW NORM						
Q	39.50	29.00	32.14	25.54	29.78	29.32
C	1.63	0.51	0.60	0.00	0.00	2.42
or	28.66	25.94	28.13	12.76	35.04	32.27
ab	25.72	36.39	37.15	34.02	28.40	25.47
an	0.73	4.05	1.01	14.10	0.00	5.65
lc	0.00	0.00	0.00	0.00	0.00	0.00
ne	0.00	0.00	0.00	0.00	0.00	0.00
kp	0.00	0.00	0.00	0.00	0.00	0.00
ac	0.00	0.00	0.00	0.00	2.94	0.00
wo	0.00	0.00	0.00	0.00	0.00	0.00
di-wo	0.00	0.00	0.00	1.05	0.00	0.00
di-en	0.00	0.00	0.00	0.88	0.00	0.00
di-fs	0.00	0.00	0.00	0.03	0.00	0.00
hy-en	0.05	0.95	0.01	3.28	0.01	1.07
hy-fs	0.00	0.00	0.00	0.12	0.68	0.10
fo	0.00	0.00	0.00	0.00	0.00	0.00
fa	0.00	0.00	0.00	0.00	0.00	0.00
cs	0.00	0.00	0.00	0.00	0.00	0.00
mt	0.98	1.00	0.30	3.71	0.86	1.11
hm	0.43	0.44	0.44	0.00	0.00	0.00
il	0.28	0.38	0.25	1.01	0.30	0.49
ru	0.00	0.00	0.00	0.00	0.00	0.00
ap	0.01	0.19	0.01	0.36	0.01	0.09
ΣFEMIC	1.76	2.96	1.01	10.43	4.81	2.87
D.I.	93.89	91.33	97.41	72.32	93.22	87.06
SERIES	TH	CA	TH	CA	TH	CA

*: Total Fe as FeO

Appendix 1-6 (3) Chemical Compositions and CIPW Norms (3)

No.	13	14	15	16	17	18
SAMPLE No.	3 DY 13	3 DY 15	3 DY 16	3 DY 17	3 DY 19	3 HN 16
LOCALITY	Bayan-Uul	Tsagaan-Chuluut Hud.	Tsagaan-Chuluut Hud.	Tsagaan-Chuluut Hud.	Tsagaan-Chuluut Hud.	Bor-Undur No. 11
ROCK NAME	Meta-dolerite	Monzo-diorite	Granite porphyry	Monzo-diorite	Meta-granite porphyry	Meta-dacite
SiO2	47.35	58.84	72.07	51.35	73.61	74.92
TiO2	0.98	0.89	0.29	0.87	0.28	0.27
Al2O3	17.97	15.54	14.65	15.57	13.58	14.60
Fe2O3	3.11	2.28	0.93	4.26	1.97	1.21
FeO	5.61	4.15	1.05	4.71	0.70	0.59
MnO	0.22	0.11	0.03	0.17	0.07	0.16
MgO	6.47	4.87	0.62	6.10	0.52	0.12
CaO	11.71	6.11	0.83	6.51	0.61	0.05
Na2O	1.97	3.74	3.87	3.22	4.43	2.09
K2O	0.98	3.08	5.34	2.20	3.12	2.66
P2O5	0.08	0.24	0.08	0.15	0.09	0.10
H2O+	2.70	0.82	1.06	3.34	1.38	3.73
H2O-	0.53	0.25	0.26	0.54	0.38	0.74
BaO	0.02	0.06	0.09	0.10	0.10	0.09
Total	99.70	100.98	101.17	99.09	100.84	101.33
FeO*	8.40	6.20	1.89	8.54	2.47	1.68
FeO*/MgO	1.30	1.27	3.05	1.40	4.76	14.02
SOLIDIFY INDEX	36.30	27.22	5.29	30.41	4.93	1.83
CIPW NORM						
Q	0.00	6.20	26.24	1.82	33.99	52.51
C	0.00	0.00	1.12	0.00	1.95	8.37
or	5.79	18.20	31.56	13.00	18.44	15.72
ab	16.67	31.65	32.75	27.25	37.49	17.68
an	37.29	16.52	3.76	21.53	2.63	0.00
lc	0.00	0.00	0.00	0.00	0.00	0.00
ne	0.00	0.00	0.00	0.00	0.00	0.00
kp	0.00	0.00	0.00	0.00	0.00	0.00
ac	0.00	0.00	0.00	0.00	0.00	0.00
wo	0.00	0.00	0.00	0.00	0.00	0.00
di-wo	8.48	5.16	0.00	4.17	0.00	0.00
di-en	5.60	3.48	0.00	3.00	0.00	0.00
di-fs	2.27	1.28	0.00	0.79	0.00	0.00
hy-en	8.02	8.65	1.54	12.20	1.30	0.30
hy-fs	3.25	3.19	0.73	3.22	0.00	0.00
fo	1.74	0.00	0.00	0.00	0.00	0.00
fa	0.78	0.00	0.00	0.00	0.00	0.00
cs	0.00	0.00	0.00	0.00	0.00	0.00
mt	4.50	3.30	1.35	6.17	1.67	1.64
hm	0.00	0.00	0.00	0.00	0.82	0.08
il	1.86	1.69	0.55	1.65	0.53	0.51
ru	0.00	0.00	0.00	0.00	0.00	0.00
ap	0.19	0.57	0.19	0.36	0.21	0.24
ΣFEMIC	36.70	27.32	4.37	31.55	4.53	2.77
D.I.	22.46	56.05	90.54	42.07	89.92	85.91
SERIES	TH	CA	CA	TH	CA	TH

*: Total Fe as FeO

Appendix 1-6 (4) Chemical Compositions and CIPW Norms (4)

No.	19	20	21	22	23	24
SAMPLE No.	3 HN 21	3 NS 3	3 NS 12	3 RS 2	3 RS 3	3 RS 4
LOCALITY	Adag No.1	Yuguzer	Tsentr	Lugiingol	Lugiingol	Lugiingol
ROCK NAME	Granophyre	Greisen	Granite, greisenized	Hornfels	Carbonatite	Syenite
SiO2	77.76	80.00	76.66	57.35	60.31	49.83
TiO2	0.12	0.04	0.02	0.02	0.77	1.07
Al2O3	12.39	9.72	13.31	26.48	2.06	16.81
Fe2O3	0.91	0.93	0.44	1.71	12.66	3.78
FeO	0.26	0.85	2.32	0.33	0.01	5.80
MnO	0.02	0.37	0.20	0.03	1.49	0.27
MgO	0.01	0.21	0.05	0.01	1.07	3.05
CaO	0.03	0.89	0.53	1.62	5.64	5.72
Na2O	3.54	0.80	3.37	6.84	0.12	3.50
K2O	4.60	4.14	2.23	4.80	0.42	6.51
P2O5	0.01	0.08	0.01	0.01	0.20	0.57
H2O+	0.56	1.52	0.65	1.03	3.02	1.76
H2O-	0.33	0.24	0.26	0.45	1.06	0.37
BaO	0.01	0.01	0.01	0.01	0.01	0.11
Total	100.54	99.79	100.05	100.68	88.84	99.15
FeO*	1.08	1.68	2.72	1.87	11.40	9.20
FeO*/MgO	215.95	8.01	54.35	374.28	10.65	3.02
SOLIDIFY INDEX	0.05	3.07	0.60	0.04	8.22	13.70
CIPW NORM						
Q	39.50	56.86	45.40	0.00	49.81	0.00
C	1.54	2.49	4.40	7.09	0.00	0.00
or	27.18	24.47	13.18	28.37	2.48	38.47
ab	29.95	6.77	28.52	48.56	1.02	11.32
an	0.13	3.91	2.61	8.01	3.84	10.93
lc	0.00	0.00	0.00	0.00	0.00	0.00
ne	0.00	0.00	0.00	5.05	0.00	9.91
kp	0.00	0.00	0.00	0.00	0.00	0.00
ac	0.00	0.00	0.00	0.00	0.00	0.00
wo	0.00	0.00	0.00	0.00	6.46	0.00
di-wo	0.00	0.00	0.00	0.00	3.08	5.83
di-en	0.00	0.00	0.00	0.00	8.25	3.10
di-fs	0.00	0.00	0.00	0.00	0.00	2.55
hy-en	0.01	0.52	0.12	0.00	0.00	0.00
hy-fs	0.00	1.42	4.23	0.00	0.00	0.00
fo	0.00	0.00	0.00	0.01	0.00	3.15
fa	0.00	0.00	0.00	0.00	0.00	2.86
cs	0.00	0.00	0.00	0.00	0.00	0.00
mt	0.56	1.34	0.64	1.10	2.66	5.49
hm	0.53	0.00	0.00	0.95	10.82	0.00
il	0.23	0.08	0.04	0.04	1.46	2.03
ru	0.00	0.00	0.00	0.00	0.00	0.00
ap	0.01	0.19	0.01	0.01	0.47	1.35
ΣFEMIC	1.34	3.55	5.05	2.11	27.63	26.36
D.I.	96.64	88.09	87.09	81.97	53.31	59.70
SERIES	TH	TH	TH	TH	TH	TH

*: Total Fe as FeO

Appendix 1-6 (5) Chemical Compositions and CIPW Norms (5)

No.	25	26	27	28	29	30
SAMPLE No.	3 RS 6	3 RS 9	3 RS 14	3 RS 15	3 SN 10	3 SN 21
LOCALITY	Lugiingol	Lugiingol	Lugiingol	Lugiingol	Tsagaan-suvraga	Tsagaan-suvraga
ROCK NAME	Syenite	Nepheline syenite	Syenite	Nepheline syenite	Quartz monzonite	Greisen
SiO2	43.80	51.26	57.64	49.89	66.91	71.89
TiO2	2.55	0.32	0.42	0.40	0.29	0.23
Al2O3	12.72	23.90	19.29	22.99	18.23	13.54
Fe2O3	11.35	1.08	1.54	1.20	1.02	0.05
FeO	2.59	0.63	2.73	1.10	0.26	2.11
MnO	0.54	0.09	0.15	0.16	0.03	0.01
MgO	1.02	0.01	0.54	0.01	0.23	0.25
CaO	14.37	1.51	2.63	1.98	0.56	1.02
Na2O	2.85	8.74	4.95	10.38	5.85	0.48
K2O	4.44	9.32	7.34	7.19	4.58	6.07
P2O5	0.22	0.01	0.17	0.01	0.03	0.01
H2O+	2.17	2.11	1.07	2.05	1.01	2.00
H2O-	0.41	0.37	0.24	0.24	0.38	0.25
BaO	0.11	0.02	0.05	0.03	0.09	0.05
Total	99.14	99.36	98.76	97.62	99.47	97.95
FeO*	12.80	1.60	4.11	2.18	1.18	2.15
FeO*/MgO	12.55	320.36	7.62	435.60	5.12	8.60
SOLIDIFY INDEX	4.83	0.03	3.19	0.03	1.94	2.79
CIPW NORM						
Q	0.00	0.00	0.00	0.00	13.82	41.70
C	0.00	0.00	0.00	0.00	2.64	4.30
or	26.24	45.02	43.38	42.49	27.07	35.87
ab	5.95	0.00	30.43	3.52	49.50	4.06
an	8.80	0.00	8.74	0.00	2.75	5.12
lc	0.00	7.89	0.00	0.00	0.00	0.00
ne	9.84	38.49	6.20	40.46	0.00	0.00
kp	0.00	0.00	0.00	0.00	0.00	0.00
ac	0.00	2.57	0.00	3.47	0.00	0.00
wo	22.64	0.00	0.00	0.00	0.00	0.00
di-wo	2.94	0.00	1.38	0.00	0.00	0.00
di-en	22.11	0.00	0.41	0.00	0.00	0.00
di-fs	0.00	0.00	1.02	0.00	0.00	0.00
hy-en	0.00	0.00	0.00	0.00	0.57	0.62
hy-fs	0.00	0.00	0.00	0.00	0.00	3.48
fo	0.00	0.01	0.65	0.01	0.00	0.00
fa	0.00	0.49	1.78	1.28	0.00	0.00
cs	0.00	0.00	0.00	0.00	0.00	0.00
mt	2.72	0.28	2.23	0.00	0.10	0.07
hm	9.48	0.00	0.00	0.00	0.96	0.00
il	4.84	0.61	0.80	0.76	0.55	0.44
ru	0.00	0.00	0.00	0.00	0.00	0.00
ap	0.52	0.01	0.40	0.01	0.07	0.01
ΣFEMIC	45.68	3.97	8.68	5.53	2.25	4.61
D.I.	42.03	91.39	80.01	86.48	90.39	81.63
SERIES	TH	TH	TH	TH	TH	TH

*: Total Fe as FeO

Appendix 1-6 (6) Chemical Compositions and CIPW Norms (6)

No.	31	32	33	34	35	36
SAMPLE No.	3 SN 22	3 SS 7	3 SS 24	3 SS 34	3 TN 3	3 TS 32
LOCALITY	Tsagaan-suvraga area	Tsagaan-suvraga	Tsagaan-suvraga	Tsagaan-suvraga	Salaa	Salaa
ROCK NAME	Quartz monzonite	Keratophyre	Quartz monzonite	Keratophyre	Granite	Gabbro
SiO2	59.23	64.38	69.01	74.16	76.34	47.73
TiO2	0.64	0.74	0.28	0.19	0.14	1.69
Al2O3	18.10	16.30	18.01	14.64	13.27	15.88
Fe2O3	2.93	3.99	0.01	0.94	0.36	4.14
FeO	2.50	0.36	0.13	0.20	0.50	6.32
MnO	0.15	0.11	0.01	0.06	0.11	0.26
MgO	1.96	1.06	0.10	0.24	0.01	6.29
CaO	4.52	0.73	0.01	0.14	0.23	7.31
Na2O	5.02	6.76	3.20	4.31	3.96	2.95
K2O	3.96	2.37	9.82	4.82	4.81	1.60
P2O5	0.33	0.20	0.02	0.05	0.01	0.16
H2O+	0.98	2.40	0.55	1.03	0.48	3.03
H2O-	0.27	1.06	0.31	0.61	0.23	0.81
BaO	0.05	0.08	0.11	0.14	0.06	0.04
Total	100.64	100.54	101.57	101.53	100.50	98.21
FeO*	5.14	3.95	0.14	1.04	0.83	10.04
FeO*/MgO	2.62	3.73	1.39	4.35	165.51	1.60
SOLIDIFY INDEX	12.19	7.50	0.75	2.30	0.05	30.12
CIPW NORM						
Q	3.64	13.50	12.64	30.02	34.10	0.00
C	0.00	1.98	2.12	2.10	1.10	0.00
or	23.40	14.01	58.03	28.48	28.43	9.46
ab	42.48	57.20	27.08	36.47	33.51	24.96
an	15.16	1.72	0.00	0.63	1.22	25.36
lc	0.00	0.00	0.00	0.00	0.00	0.00
ne	0.00	0.00	0.00	0.00	0.00	0.00
kp	0.00	0.00	0.00	0.00	0.00	0.00
ac	0.00	0.00	0.00	0.00	0.00	0.00
wo	0.00	0.00	0.00	0.00	0.00	0.00
di-wo	2.18	0.00	0.00	0.00	0.00	4.15
di-en	1.55	0.00	0.00	0.00	0.00	2.79
di-fs	0.44	0.00	0.00	0.00	0.00	1.05
hy-en	3.33	2.64	0.25	0.60	0.01	11.03
hy-fs	0.95	0.00	0.00	0.00	0.59	4.14
fo	0.00	0.00	0.00	0.00	0.00	1.29
fa	0.00	0.00	0.00	0.00	0.00	0.53
cs	0.00	0.00	0.00	0.00	0.00	0.00
mt	4.25	0.00	0.00	0.29	0.53	6.00
hm	0.00	3.99	0.01	0.74	0.00	0.00
il	1.22	1.00	0.30	0.36	0.27	3.21
ru	0.00	0.00	0.10	0.00	0.00	0.00
ap	0.78	0.47	0.05	0.12	0.01	0.38
ΣFEMIC	14.70	8.10	0.70	2.10	1.41	34.57
D.I.	69.52	84.71	97.75	94.97	96.03	34.42
SERIES	TH	TH	CA	CA	TH	TH

*: Total Fe as FeO

Appendix 1-6 (7) Chemical Compositions and CIPW Norms (7)

No.	37	38	39	40	41	42
SAMPLE No.	3 TS 42	3 TY 1	3 TY 4	3 UN 1	3 UN 2	3 UN 3
LOCALITY	Salhiit core strage	Tumurtiin-Ovoo area	Tumurtiin-Ovoo area	Olon-Ovoot area	Olon-Ovoot area	Mushgia-Hudak
ROCK NAME	Granite	Granite, aplitic	Granite	Graphic granite	Gabbro	Granite
SiO2	72.55	78.94	76.43	77.70	48.15	73.04
TiO2	0.39	0.13	0.19	0.17	1.20	0.50
Al2O3	14.27	12.53	12.97	12.36	14.76	13.79
Fe2O3	1.16	0.14	0.61	1.49	5.39	1.85
FeO	0.88	0.23	0.29	0.41	7.00	0.29
MnO	0.13	0.01	0.05	0.03	0.20	0.04
MgO	0.39	0.01	0.07	0.27	5.82	0.23
CaO	1.12	0.15	0.18	0.01	9.15	0.55
Na2O	4.58	3.34	3.74	6.87	2.80	3.28
K2O	4.15	5.14	5.30	0.14	0.79	5.22
P2O5	0.06	0.01	0.01	0.01	0.41	0.11
H2O+	0.86	0.49	0.58	0.74	3.67	0.49
H2O-	0.30	0.26	0.32	0.27	0.41	0.19
BaO	0.07	0.03	0.03	0.01	0.02	0.01
Total	100.91	101.40	100.76	100.47	99.77	99.58
FeO*	1.93	0.36	0.84	1.75	11.85	1.95
FeO*/MgO	4.94	71.91	11.96	6.50	2.04	8.49
SOLIDIFY INDEX	3.53	0.06	0.70	2.99	27.37	2.15
CIPW NORM						
Q	27.04	39.45	33.89	36.80	2.35	32.87
C	0.30	1.19	0.75	0.91	0.00	2.17
or	24.52	30.38	31.32	0.83	4.67	30.85
ab	38.75	28.26	31.65	58.13	23.69	27.75
an	5.30	0.77	0.92	0.00	25.37	1.56
lc	0.00	0.00	0.00	0.00	0.00	0.00
ne	0.00	0.00	0.00	0.00	0.00	0.00
kp	0.00	0.00	0.00	0.00	0.00	0.00
ac	0.00	0.00	0.00	0.00	0.00	0.00
wo	0.00	0.00	0.00	0.00	0.00	0.00
di-wo	0.00	0.00	0.00	0.00	7.27	0.00
di-en	0.00	0.00	0.00	0.00	4.63	0.00
di-fs	0.00	0.00	0.00	0.00	2.17	0.00
hy-en	0.97	0.01	0.17	0.67	9.87	0.57
hy-fs	0.25	0.11	0.00	0.00	4.62	0.00
fo	0.00	0.00	0.00	0.00	0.00	0.00
fa	0.00	0.00	0.00	0.00	0.00	0.00
cs	0.00	0.00	0.00	0.00	0.00	0.00
mt	1.68	0.21	0.55	0.93	7.82	0.00
hm	0.00	0.00	0.23	0.86	0.00	1.85
il	0.74	0.25	0.36	0.32	2.28	0.70
ru	0.00	0.00	0.00	0.00	0.00	0.00
ap	0.14	0.01	0.01	0.01	0.97	0.26
ΣFEMIC	3.79	0.59	1.32	2.79	39.62	3.38
D.I.	90.32	98.09	96.86	95.76	30.71	91.47
SERIES	TH	TH	TH	TH	TH	TH

*: Total Fe as FeO

Appendix 1-6 (8) Chemical Compositions and CIPW Norms (8)

No.	43	44	45	46	47	48
SAMPLE No.	3 UN 4	3 UN 7	3 UN 18	3 US 19	3 US 22	3 US 24
LOCALITY	Olon-Ovoot area	Hanbogd	Mushgia-Hudak	Mushgia-Hudak	Mushgia-Hudak	Mushgia-Hudak
ROCK NAME	Grano-diorite	Alkali granite	Carbonatite	Syenite	Gabbro	Phonolite
SiO2	68.77	74.75	1.72	58.12	47.94	51.27
TiO2	0.63	0.16	0.01	0.95	2.03	1.06
Al2O3	15.11	10.02	0.18	17.54	17.34	17.11
Fe2O3	0.38	3.47	1.23	2.54	5.67	4.22
FeO	2.70	0.27	0.10	0.85	3.26	2.33
MnO	0.06	0.27	0.09	0.05	0.16	0.10
MgO	0.41	0.01	0.22	1.21	6.25	3.07
CaO	1.53	0.01	64.39	2.67	7.66	5.70
Na2O	3.99	4.79	0.37	5.13	4.58	3.65
K2O	3.69	4.46	0.02	7.67	0.92	6.27
P2O5	0.01	0.01	1.38	0.21	0.44	1.28
H2O+	0.50	0.23	0.54	0.67	1.67	1.86
H2O-	0.20	0.21	0.27	0.49	0.58	0.39
BaO	0.04	0.01	3.85	0.32	0.10	0.79
Total	98.01	98.66	74.36	98.42	98.60	99.10
FeO*	3.04	3.39	1.21	3.13	8.36	6.13
FeO*/MgO	7.42	678.47	5.48	2.59	1.34	2.00
SOLIDIFY INDEX	3.68	0.04	12.12	7.06	31.08	16.06
CIPW NORM						
Q	25.84	33.48	0.00	0.00	0.00	0.00
C	1.76	0.00	0.00	0.00	0.00	0.00
or	21.81	26.36	0.12	45.33	5.44	37.05
ab	33.76	26.71	0.50	30.23	36.74	21.15
an	7.63	0.00	0.00	2.18	24.04	11.78
lc	0.00	0.00	0.00	0.00	0.00	0.00
ne	0.00	0.00	0.17	7.14	1.09	5.27
kp	0.00	0.00	0.00	0.00	0.00	0.00
ac	0.00	10.04	2.04	0.00	0.00	0.00
wo	0.00	0.00	0.00	0.81	0.00	0.00
di-wo	0.00	0.00	0.00	3.49	4.72	4.03
di-en	0.00	0.00	0.00	3.71	4.08	3.48
di-fs	0.00	0.00	0.00	0.00	0.00	0.00
hy-en	1.02	0.01	0.00	0.00	0.00	0.00
hy-fs	3.72	0.73	0.00	0.00	0.00	0.00
fo	0.00	0.00	0.38	0.00	8.05	2.92
fa	0.00	0.00	0.00	0.00	0.00	0.00
cs	0.00	0.00	0.00	0.00	0.00	0.00
mt	0.55	0.00	0.60	0.15	5.14	4.76
hm	0.00	0.00	0.11	2.43	2.12	0.94
il	1.20	0.30	0.01	1.80	3.86	2.01
ru	0.00	0.00	0.00	0.00	0.00	0.00
ap	0.01	0.01	3.27	0.50	1.04	3.03
ΣFEMIC	6.50	11.10	6.41	12.19	29.01	21.17
D.I.	81.41	86.54	0.79	82.69	43.27	63.48
SERIES	TH	TH	TH	TH	TH	TH

*: Total Fe as FeO

Appendix 1-6 (9) Chemical Compositions and CIPW Norms (9)

No.	49	50	51
SAMPLE No.	3 US101	3 US104	3 UY 5
LOCALITY	Bayan-Hoshoo	Bayan-Hoshoo	Tsogt-Ovoo
ROCK NAME	Monzonite	Monzonite	Granite
SiO2	55.83	55.82	66.63
TiO2	1.29	1.53	0.88
Al2O3	16.24	16.46	15.62
Fe2O3	3.91	3.80	2.02
FeO	1.30	2.26	1.22
MnO	0.11	0.11	0.07
MgO	3.07	3.04	1.27
CaO	4.56	4.35	1.31
Na2O	5.12	4.63	3.74
K2O	5.01	4.05	4.51
P2O5	0.88	0.77	0.01
H2O+	0.54	0.48	1.57
H2O-	0.43	0.40	0.42
BaO	0.36	0.29	0.08
Total	98.65	97.99	99.35
FeO*	4.81	5.68	3.04
FeO*/MgO	1.57	1.87	2.39
SOLIDIFY INDEX	17.04	17.47	10.11
CIPW NORM			
Q	0.00	2.53	22.87
C	0.00	0.00	2.16
or	29.61	23.93	26.65
ab	39.36	39.18	31.65
an	6.53	12.17	6.61
lc	0.00	0.00	0.00
ne	2.15	0.00	0.00
kp	0.00	0.00	0.00
ac	0.00	0.00	0.00
wo	0.00	0.00	0.00
di-wo	4.61	2.07	0.00
di-en	3.99	1.79	0.00
di-fs	0.00	0.00	0.00
hy-en	0.00	5.78	3.16
hy-fs	0.00	0.00	0.00
fo	2.56	0.00	0.00
fa	0.00	0.00	0.00
cs	0.00	0.00	0.00
mt	0.81	3.21	1.61
hm	3.35	1.59	0.91
il	2.45	2.91	1.67
ru	0.00	0.00	0.00
ap	2.08	1.82	0.01
ΣFEMIC	19.86	19.17	7.37
D.I.	71.12	65.64	81.17
SERIES	CA	CA	CA

*: Total Fe as FeO

Appendix 1-7 (1) Assay Results (Polymetallic Vein, Skarn) (1)

	SAMPLE No.	LOCALITY	ROCK NAME	Cu %	Pb %	Zn %	Ag g/t	Au g/t	Mo %	W ppm	#TDP: ORE XF ASTL FPGPCS MVCBRDI	REMARKS
4	3 DN 4	Tsav	Pb-Zn ore	0.050	1.190	1.300	27.5	0.190	0.001	15	X	No.14shaft pile
5	3 DN 5	Tsav	Pb-Zn ore	0.070	0.930	1.500	20.5	0.295	0.001	50	X	No.14shaft pile
6	3 DN 6	Tsav	Pb-Zn ore	0.310	1.980	2.010	41.8	0.315	0.003	20	X	No.14shaft pile
7	3 DN 7	Tsav	Pb-Zn ore	0.070	1.260	0.980	66.0	0.320	<0.001	7	X	No.14shaft pile
8	3 DN 8	Tsav	Pb-Zn ore	0.080	1.250	2.600	27.9	0.510	0.001	3	X	No.14shaft pile
10	3 DN 10	Tsav	qz, ccp, gn	8.310	3.880	0.120	473.0	0.800	<0.001	2	X X	No.14shaft pile
11	3 DN 11	Tsav	qz, Mn-cbt, py, gn	0.340	0.590	0.290	28.3	3.420	0.002	4	X	X No.14shaft pile
13	3 DN 13	Tsav	Pb-Zn ore, Mn-cbnt	0.180	9.600	15.100	2,950.0	0.150	<0.001	2	X X	X No.15shaft pile
14	3 DN 14	Tsav	Pb-Zn ore, Mn-cbnt	0.070	2.180	10.400	848.0	0.215	<0.001	<2	X	No.15shaft pile
15	3 DN 15	Tsav	Pb-Zn ore, Mn-cbnt, Ag	0.070	9.010	8.670	1,400.0	0.065	0.001	85	X X	No.15shaft pile
16	3 DN 16	Tsav	Pb-Zn ore, calamine	0.130	11.300	12.700	3,210.0	0.095	0.002	9	X	X No.15shaft pile
26	3 DN 26	Delger-Munh	15cm, qzv	0.028	0.193	0.432	1.5	<0.016	0.001	15	X	
27	3 DN 27	Delger-Munh	1.2m, Pb ore, qzv-ntwk	0.023	2.760	0.463	123.5	0.233	<0.001	5	X X	X
39	3 DN 39	Ulaan	rhyolite, carb-fl	0.140	7.260	16.400	133.0	2.840	0.003	8	XGX X	waste pile
40	3 DN 40	Ulaan	skarn, ep, sp	0.240	1.700	8.320	130.0	0.205	0.001	60	X X	waste pile
44	3 DS 1	Tsav	galena rich ore	0.120	76.700	0.060	1,030.0	1.300	<0.001	<2	G X	No.4trench
45	3 DS 2	Tsav	oxd, gn, mal, cerussite	0.780	58.000	0.240	858.0	13.100	0.001	<2	X X	X No.4trench
46	3 DS 3	Tsav	oxd, gn, sp, qz	0.240	3.520	0.520	51.3	0.605	<0.001	<2	X	No.4trench
47	3 DS 4	Tsav	qz, gn, ccp, py, grnCu	0.620	7.280	0.050	201.0	49.400	<0.001	<2	X X	No.4trench
48	3 DS 5	Tsav	galena rich ore, ccp	6.600	48.500	2.510	1,330.0	1.440	0.008	<2	GX X	No.14shaft pile
49	3 DS 6	Tsav	1m v, oxd, MnO2, Ag	0.013	1.270	1.260	706.0	0.120	0.020	20	X	X No.8trench
51	3 DS 8	Tsav	oxd, Pb, Zn ore	0.010	0.180	0.140	3.0	0.060	<0.001	6	X	No.1trench
52	3 DS 9	Tsav	qzv10cm, oxd, Pb, Zn	0.050	0.870	0.180	52.8	0.070	0.003	8	X	No.1trench
53	3 DS 10	Tsav	carbonate-opaq-qz v	0.100	7.850	26.800	2,100.0	0.105	0.001	2	X X X	X No.15shaft tunnel
54	3 DS 11	Salhiit	qz, csg	0.011	0.590	0.039	20.0	0.047	<0.001	3	X	
56	3 DS 13	Delger-Munh	ntwk10cm, wht carb	0.004	0.176	0.014	2.5	0.047	<0.001	<2	X	X
57	3 DS 14	Delger-Munh	sil bre-zone 30cm	0.004	0.956	0.181	20.0	0.715	<0.001	2	X	
58	3 DS 15	Ulaan	bre, sp, py, fl, qz	0.100	1.520	10.100	53.0	0.695	0.006	5	X	
60	3 DS 17	Ulaan	skarn, gar-act-bt-ep	<0.010	1.430	0.500	37.8	0.200	<0.001	25	X X X	proptic
63	3 DS 20	Ulaan	galena, act, py, sp	0.008	0.553	0.724	14.0	0.185	0.001	85	X	stock pile
64	3 DS 21	Ulaan	galena, act, py, sp	0.009	0.812	0.787	58.0	0.115	0.001	80	X	stock pile
65	3 DS 22	Ulaan	py, qz, sp	0.031	1.130	2.340	20.0	0.190	0.001	17	X	stock pile
66	3 DS 23	Ulaan	py, qz, sp	0.024	1.470	2.260	28.0	0.325	0.004	200	X	stock pile
67	3 DS 24	Ulaan	galena, act, py, sp, qz	0.007	0.691	0.858	12.0	0.025	<0.001	12	X	qz, stock pile
68	3 DS 25	Ulaan	skarn ep-act	0.005	0.584	1.035	14.0	0.035	<0.001	10	X	stock pile
69	3 DS 26	Ulaan	skarn ep-act, py	0.009	0.708	0.509	32.0	0.685	0.004	18	X	stock pile
70	3 DS 27	Ulaan	galena, act, py, sp, qz	0.010	0.716	0.931	16.0	0.195	<0.001	15	X	qz, stock pile
71	3 DS 28	Ulaan	galena, act, py, sp, qz	0.009	0.595	0.821	14.0	0.125	0.001	40	X	qz, stock pile
72	3 DS 29	Ulaan	skarn ep-act, py	0.007	0.946	0.808	22.0	0.245	<0.001	3	X	X stock pile
73	3 DS 30	Ulaan	qz, epidote	0.007	0.326	0.094	100.0	0.285	<0.001	6	X	
74	3 DS 31	Ulaan	rhyolite, sp, py	0.008	0.462	0.450	14.0	0.080	<0.001	6	X	
75	3 DS 32	Ulaan	rhyolite, sil, sp, py	0.047	2.580	4.720	88.0	1.410	<0.001	3	X	
76	3 DS 33	Ulaan	rhyolite, sil, sp, py	0.052	0.377	12.700	18.0	0.235	0.001	320	X	X
77	3 DS 34	Ulaan	rh, bre, sp, py, act	0.002	0.366	0.502	4.0	0.050	<0.001	65	X	
78	3 DS 35	Ulaan	strong oxd ore	0.006	0.653	0.414	20.0	0.085	0.001	12	X	

Appendix 1-7 (2) Assay Results (Polymetallic Vein, Skarn) (2)

	SAMPLE No.	LOCALITY	ROCK NAME	Cu %	Pb %	Zn %	Ag g/t	Au g/t	Mo %	W ppm	WTDP: ORE XF AST L L MVC BRDI	REMARKS
79	3 DS 36	Ulaan	oxd, act, ep, py, qz	0.007	0.389	0.357	6.0	0.065	0.002	16	X X	
80	3 DS 37	Ulaan	hematite rich ore	0.001	0.025	0.403	<2.0	<0.005	<0.001	2	X	
81	3 DS 38	Ulaan	oxd, bre, Mn	0.001	0.018	0.434	<2.0	<0.005	<0.001	2	X	
82	3 DS 39	Ulaan	oxd, hem	0.005	0.217	0.101	2.0	<0.005	0.001	<2	X	
84	3 DS 41	Ulaan	galena rich ore	0.030	77.400	0.300	1,970.0	0.195	<0.001	<2	X	
85	3 DS 42	Ulaan	qz, drusy	0.028	0.867	0.122	22.0	0.030	0.002	<2	X	
102	3 DY 1	Tsav	Pb-Zn ore	0.900	62.400	0.060	958.0	0.460	0.009	<2	X X X X	No. 4trench
103	3 DY 2	Tsav	Pb-Zn ore	0.530	6.830	27.800	231.0	1.200	0.013	2	X	No. 14shaft pile
104	3 DY 3	Tsav	Pb-Zn ore	0.970	46.600	5.390	637.0	2.780	0.002	140	GX X	No. 14shaft pile
106	3 DY 5	Salhiit	qzv	0.040	0.707	0.053	41.5	0.078	<0.001	2	X X	
107	3 DY 6	Salhiit	qzv, oxd	0.028	0.345	0.054	41.5	0.062	0.001	300	X	
108	3 DY 7	Bayan-Uul	qzv, oxd	0.014	0.158	0.042	37.0	3.186	0.004	5	X X	
109	3 DY 8	Bayan-Uul	qzv, oxd	0.011	0.054	0.013	78.0	0.016	0.007	200	X X	
110	3 DY 9	Bayan-Uul	qzv, oxd	0.014	0.199	0.018	49.0	0.482	0.001	15	X X	
111	3 DY 10	Bayan-Uul	qzv, oxd	0.009	0.075	0.012	24.0	0.047	0.002	7	X	
112	3 DY 11	Bayan-Uul	qzv, oxd	0.008	0.024	0.009	12.5	0.109	0.002	8	X	
113	3 DY 12	Bayan-Uul	qzv, oxd	0.007	0.034	0.009	12.0	0.109	0.003	6	X	
175	3 NS 1	Yuguzer	greisen, fl	0.005	0.006	0.086	0.5	<0.016	0.041	1,110	X X X X	
176	3 NS 2	Yuguzer	greisen, mica, mo	0.004	0.001	0.004	<0.5	<0.016	0.001	2	X X	
177	3 NS 3	Yuguzer	greisen	0.002	0.056	0.042	3.0	<0.016	1.060	3,170	XX X	
178	3 NS 4	Yuguzer	greisen	0.001	<0.001	0.004	2.0	0.031	1.670	30	X X	
180	3 NS 6	Yuguzer	oxide ore	0.218	0.126	0.312	26.0	0.015	0.027	850	X X	
181	3 NS 7	Yuguzer	qzv, ccp, py, gn, mo	0.435	0.561	0.030	60.0	0.030	0.015	1,000	X	
182	3 NS 8	Yuguzer	qzv, wf, mo	0.004	0.087	0.008	44.5	0.016	0.704	16,180	X	
183	3 NS 9	Yuguzer	qzv, mo, weathered	0.013	0.267	0.165	14.5	<0.016	5.300	300	X	
184	3 NS 10	Tsentr	qz, wf	0.002	0.004	0.013	3.0	0.031	0.025	38,860	X	
188	3 NS 14	Nuhutiin-Tsagaantolg.	qz, wf	0.012	0.202	0.003	30.5	<0.016	0.01	1,740	X X	
311	3 TN 1	Tumurtiin-Ovoo	skarn, gar, mgt, sp	<0.010	0.420	0.270	15.0	0.010	0.018	2,140	X X X X	
314	3 TN 4	Salhiit core strage	skarn, gar	0.001	0.100	0.143	4.0	<0.005	0.015	350	X X X X	
315	3 TN 5	Salhiit core strage	skarn, gar, sp	0.020	0.570	12.500	33.5	0.095	0.379	30	X	DDH
316	3 TN 6	Salhiit core strage	skarn, gar, mgt	<0.010	0.510	10.600	14.6	0.005	0.001	50	X	
317	3 TN 7	Salhiit core strage	cortlandite	<0.010	0.090	0.230	1.7	0.010	0.008	20	X X X	
332	3 TS 14	Tumurtiin-Ovoo	skarn, gar, sp, mgt	0.010	0.080	16.700	2.2	<0.005	0.014	280	X X	
333	3 TS 15	Tumurtiin-Ovoo	skarn, gar, sp, mgt	0.040	0.900	24.300	18.9	0.150	0.002	12	X X	
334	3 TS 16	Tumurtiin-Ovoo	skarn, gar, sp, mgt	<0.010	0.060	0.500	3.3	<0.005	0.002	130	X X	
335	3 TS 17	Tumurtiin-Ovoo	skarn, hem, mgt, sp	0.001	0.020	0.649	4.0	<0.005	0.021	130	X X	
336	3 TS 18	Tumurtiin-Ovoo	skarn, oxd, scnd carb	0.014	0.585	0.350	6.0	0.015	0.200	1,000	X X	
337	3 TS 19	Tumurtiin-Ovoo	skarn, oxd, mgt, fl	0.147	0.010	0.339	6.0	<0.005	0.005	22	X	
338	3 TS 20	Tumurtiin-Ovoo	skarn, oxd	0.217	0.211	1.895	10.0	<0.005	0.030	65	X	
339	3 TS 21	Tumurtiin-Ovoo	skarn, mgt, gar, lm	0.218	0.043	0.210	6.0	<0.005	0.012	20	X	
340	3 TS 22	Tumurtiin-Ovoo	skarn, mgt, lm, grn-Cu	1.650	0.107	0.236	18.0	<0.005	0.079	15	X	
341	3 TS 23	Tumurtiin-Ovoo	skarn, mgt, lm	0.009	0.001	0.377	6.0	<0.005	0.008	300	X	
342	3 TS 24	Tumurtiin-Ovoo	skarn	0.151	0.092	21.400	38.0	<0.005	0.034	90	X X X	
343	3 TS 25	Tumurtiin-Ovoo	skarn, gar, Mn-oxd	0.005	0.028	0.159	<2.0	<0.005	0.003	18	X	
344	3 TS 26	Tumurtiin-Ovoo	skarn, gar, Mn-oxd	0.074	1.040	1.455	120.0	<0.005	0.212	200	X	

Appendix 1-7 (3) Assay Results (Polymetallic Vein, Skarn) (3)

	SAMPLE No.	LOCALITY	ROCK NAME	Cu %	Pb %	Zn %	Ag g/t	Au g/t	Mo %	W ppm	WTDP: ORE XF AST LI MV CB RD I FP GP CS	REMARKS
345	3 TS 27	Tumurtiin-Ovoo	ls, gar, Mn-oxd, blueCu	0.013	0.156	0.470	<2.0	<0.005	0.007	25	X	
346	3 TS 28	Tumurtiin-Ovoo	sk, gar, qz, mgt, Mn-oxd	0.015	0.042	0.404	4.0	<0.005	0.003	120	X	
347	3 TS 29	Tumurtiin-Ovoo	marble	0.002	0.021	0.072	<2.0	<0.005	0.001	6	X X	
348	3 TS 30	Tumurtiin-Ovoo	skarn, gar sp	0.006	0.010	15.100	<2.0	<0.005	0.050	200	X X X	stock pile
351	3 TS 33	Salaa	qz, mo	0.005	0.155	0.028	2.5	<0.016	0.338	100	X X	
352	3 TS 34	Salaa	qz, wf	0.004	0.008	0.025	13.0	<0.016	0.01	305,300	X X	
353	3 TS 35	Salaa	qz, wf	0.001	0.002	0.003	1.0	<0.016	0.056	80,880	X	
354	3 TS 36	Salaa	qz, lm	0.003	0.029	0.017	9.5	<0.016	0.037	2,540	X X	
356	3 TS 38	Salhiit core strage	skarn, mgt	<0.010	0.050	0.770	1.0	<0.005	0.033	1,820	X X X	DDH
357	3 TS 39	Salhiit core strage	granite, mo vlt	0.001	0.007	0.010	0.5	<0.016	0.534	200	X	DDH
361	3 TS 43	Salhiit core strage	qzv	0.008	0.359	0.628	37.5	<0.016	0.001	<80	X X	DDH
362	3 TS 44	Salhiit	skarn, mgt, oxd	0.028	0.008	0.454	4.0	<0.005	0.008	13	X X	
363	3 TS 45	Salhiit	skarn, mgt, oxd	0.004	0.029	0.224	4.0	<0.005	0.009	40	X	
365	3 TY 2	Tumurtiin-Ovoo area	skarnized slt	0.002	0.013	0.095	0.5	<0.016	0.002	22	X X	

Appendix 1-8 (1)　Assay Results (Porphyry Copper) (1)

	SAMPLE No.	LOCALITY	ROCK NAME	Cu %	Mo %	Ag g/t	Au g/t	WTDP ORE XF ASTLLMVCBRDI	REMARKS
206	3 SN 2	Tsagaansuvraga	meta-dacite	0.011	0.070	46.5	<0.016	X X X	survey line 12
207	3 SN 3	Tsagaansuvraga	qz monzonite, grn-Cu	0.315	0.002	2.0	<0.005	X X	survey line 12
208	3 SN 4	Tsagaansuvraga	qz monzonite, grn-Cu	0.247	<0.001	<2.0	<0.005	X	survey line 12
209	3 SN 5	Tsagaansuvraga	qz monzonite, grn-Cu	0.400	0.005	<2.0	0.055	X	survey line 12
210	3 SN 6	Tsagaansuvraga	qz monzonite, grn-Cu	0.819	0.003	<2.0	0.015	X	survey line 12
211	3 SN 7	Tsagaansuvraga	syenite, dike	9.602	0.002	<0.5	<0.016	X X	survey line 12
212	3 SN 8	Tsagaansuvraga	qz monzonite, grn-Cu	1.145	0.006	<2.0	0.020	X	survey line 12
213	3 SN 9	Tsagaansuvraga	qz monzonite, grn-Cu	0.377	0.002	<2.0	<0.005	X	survey line 12
214	3 SN 10	Tsagaansuvraga	quartz monzonite	0.324	0.002	<2.0	<0.005 XX	X X	survey line 12
215	3 SN 11	Tsagaansuvraga	qz monzonite, grn-Cu	0.899	0.002	4.0	0.055	X	survey line 12
216	3 SN 12	Tsagaansuvraga	qz monzonite, grn-Cu	0.574	0.001	2.0	0.060	X	survey line 12
217	3 SN 13	Tsagaansuvraga	qz monzonite, grn-Cu	0.381	0.001	<2.0	0.095	X	survey line 12
218	3 SN 14	Tsagaansuvraga	qz monzonite, grn-Cu	0.067	0.002	<2.0	<0.005	X	survey line 12
219	3 SN 15	Tsagaansuvraga	qz monzonite, grn-Cu	0.129	<0.001	<2.0	<0.005	X	survey line 12
220	3 SN 16	Tsagaansuvraga	qz monzonite, grn-Cu	0.047	<0.001	<2.0	<0.005	X X	survey line 12
221	3 SN 17	Tsagaansuvraga	qz monzonite, grn-Cu	0.025	<0.001	<2.0	<0.005	X	survey line 12
222	3 SN 18	Tsagaansuvraga	qz monzonite, grn-Cu	0.056	<0.001	<2.0	<0.005	X	survey line 12
223	3 SN 19	Tsagaansuvraga	qz monzonite, grn-Cu	0.043	<0.001	<2.0	<0.005	X X	survey line 12
224	3 SN 20	Tsagaansuvraga	qz monzonite, grn-Cu	0.009	<0.001	<2.0	<0.005	X	survey line 12
225	3 SN 21	Tsagaansuvraga	greisen	1.855	0.242	4.0	<0.005 XXK	X X	
233	3 SS 7	Tsagaansuvraga	keratophyre	0.016	0.008	<0.5	<0.016 XX	X	
234	3 SS 8	Tsagaansuvraga	acid-effsv or wdtf	0.002	0.001	<0.5	<0.016	X	
236	3 SS 10	Tsagaansuvraga	calc-siltst, fossil	0.013	0.000	<0.5	<0.016	X	survey line 20
237	3 SS 11	Tsagaansuvraga	tuff breccia	0.032	0.000	0.5	<0.016	X X	survey line 20
238	3 SS 12	Tsagaansuvraga	qz monzonite, grn-Cu	0.740	<0.001	2.0	<0.005	X X	survey line 20
239	3 SS 13	Tsagaansuvraga	qz monzonite, grn-Cu	0.350	<0.001	<2.0	<0.005	X	survey line 20
240	3 SS 14	Tsagaansuvraga	qz monzonite, grn-Cu	0.360	0.007	<2.0	<0.005	X	survey line 20
241	3 SS 15	Tsagaansuvraga	qz monzonite, grn-Cu	1.265	0.015	<2.0	<0.005	X	survey line 20
242	3 SS 16	Tsagaansuvraga	qz monzonite, grn-Cu	0.450	<0.001	<2.0	0.010	X	survey line 20
243	3 SS 17	Tsagaansuvraga	qz monzonite, grn-Cu	0.732	0.008	<2.0	0.015	X	survey line 20
244	3 SS 18	Tsagaansuvraga	qz monzonite, grn-Cu	0.132	0.001	<2.0	<0.005	X X	survey line 20
245	3 SS 19	Tsagaansuvraga	qz monzonite, grn-Cu	0.012	0.001	<2.0	<0.005	X	survey line 20
246	3 SS 20	Tsagaansuvraga	qz monzonite, grn-Cu	0.426	0.001	<2.0	<0.005	X	survey line 20
247	3 SS 21	Tsagaansuvraga	qz monzonite, grn-Cu	0.473	0.008	<2.0	<0.005	X	survey line 20
248	3 SS 22	Tsagaansuvraga	qz monzonite, grn-Cu	0.227	0.009	<2.0	<0.005	X	survey line 20
249	3 SS 23	Tsagaansuvraga	leuco granite, grn-Cu	0.091	<0.001	<2.0	<0.005	X	survey line 20
250	3 SS 24	Tsagaansuvraga	quartz monzonite, Cu	0.147	<0.001	<2.0	<0.005 XXK	X X	survey line 20
251	3 SS 25	Tsagaansuvraga	leuco granite, grn-Cu	0.135	0.001	<2.0	<0.005	X	survey line 20
252	3 SS 26	Tsagaansuvraga	qz monzonite, grn-Cu	0.008	0.001	<2.0	<0.005	X	survey line 20
253	3 SS 27	Tsagaansuvraga	qz monzonite, grn-Cu	0.302	0.002	<2.0	<0.005	X	survey line 20
254	3 SS 28	Tsagaansuvraga	qz monzonite, grn-Cu	0.618	0.010	<2.0	<0.005	X	survey line 20
255	3 SS 29	Tsagaansuvraga	qz monzonite, grn-Cu	0.553	0.003	<2.0	0.010	X	survey line 20
256	3 SS 30	Tsagaansuvraga	qz monzonite, grn-Cu	0.353	0.002	<2.0	<0.005	X	survey line 20
257	3 SS 31	Tsagaansuvraga	qz monzonite, grn-Cu	0.160	0.001	<2.0	<0.005	X	survey line 20
258	3 SS 32	Tsagaansuvraga	qz monzonite, grn-Cu	0.143	0.001	<2.0	<0.005	X X	survey line 20

Appendix 1-8 (2) Assay Results (Porphyry Copper) (2)

	SAMPLE No.	LOCALITY	ROCK NAME	Cu %	Mo %	Ag g/t	Au g/t	WTDP ORE XF AST	FPGPCS LMVCBRDI	REMARKS
259	3 SS 33	Tsagaansuvraga	qz monzonite, grn-Cu	0.444	0.002	<2.0	<0.005		X	survey line 20
260	3 SS 34	Tsagaansuvraga	keratophyre	0.030	<0.001	<2.0	<0.005	XX	X	survey line 20
261	3 SS 35	Tsagaansuvraga	granodiorite	0.034	0.000	<0.5	<0.016		X X	survey line 20
262	3 SS 36	Tsagaansuvraga	qz monzonite, grn-Cu	0.009	<0.001	<2.0	<0.005		X X	survey line 32
263	3 SS 37	Tsagaansuvraga	granodiorite, grn-Cu	0.166	<0.001	<2.0	<0.005		X	survey line 32
264	3 SS 38	Tsagaansuvraga	qz monzonite, grn-Cu	0.800	0.001	2.0	<0.005		X	survey line 32
265	3 SS 39	Tsagaansuvraga	qz monzonite, grn-Cu	5.610	0.016	<2.0	<0.005		X	survey line 32
266	3 SS 40	Tsagaansuvraga	qz monzonite, grn-Cu	0.392	0.004	<2.0	<0.005		X X	survey line 32
267	3 SS 41	Tsagaansuvraga	qz monzonite, grn-Cu	1.260	0.001	<2.0	<0.005		X	survey line 32
268	3 SS 42	Tsagaansuvraga	qz monzonite, grn-Cu	0.306	0.013	<2.0	<0.005		X	survey line 32
269	3 SS 43	Tsagaansuvraga	qz monzonite, grn-Cu	0.259	0.004	<2.0	<0.005		X	survey line 32
270	3 SS 44	Tsagaansuvraga	qz monzonite, grn-Cu	1.185	0.015	<2.0	<0.005		X X	survey line 32
271	3 SS 45	Tsagaansuvraga	qz monzonite, grn-Cu	0.433	0.009	<2.0	<0.005		X	survey line 32
272	3 SS 46	Tsagaansuvraga	qz monzonite, grn-Cu	0.299	0.003	<2.0	<0.005		X	survey line 32
273	3 SS 47	Tsagaansuvraga	qz monzonite, grn-Cu	0.373	0.002	<2.0	<0.005		X	survey line 32
274	3 SS 48	Tsagaansuvraga	qz monzonite, grn-Cu	0.142	0.002	<2.0	<0.005		X X	survey line 32
275	3 SS 49	Tsagaansuvraga	qz monzonite, grn-Cu	0.101	0.001	<2.0	<0.005		X	survey line 32
276	3 SS 50	Tsagaansuvraga	qz monzonite, grn-Cu	0.056	0.001	<2.0	<0.005		X	survey line 32
277	3 SY 1	Tsagaansuvraga	qzv, mal, cc, ccp	3.210	0.079	16.0	0.040	X	X X	stock pile
279	3 SY 3	Tsagaansuvraga	ccp, bn, mo	0.323	0.001	<2.0	0.020	X	X	stock pile, C
280	3 SY 4	Tsagaansuvraga	py, ccp, bn, mal, mo	0.630	0.020	16.0	0.130		X	stock pile, C
281	3 SY 5	Tsagaansuvraga	py, ccp, bn, mal	0.383	0.005	2.0	0.025	X	X	stock pile, C
282	3 SY 6	Tsagaansuvraga	po, py, ccp, bn, mal	0.275	0.003	2.0	0.035		X	stock pile, C
283	3 SY 7	Tsagaansuvraga	py, ccp, mo, mal	0.475	0.006	2.0	0.035		X	stock pile, C
284	3 SY 8	Tsagaansuvraga	qzv, ccp, mo, bn, py	0.632	0.018	8.0	0.065	X	X	stock pile
288	3 SY 12	Tsagaansuvraga	qz-ser v, ccp	0.980	0.009	4.0	0.075	X	X	stock pile
289	3 SY 13	Tsagaansuvraga	mal, ccp, bn, mo	0.374	0.068	2.0	0.025		X	stock pile, C
290	3 SY 14	Tsagaansuvraga	qz-ser v, ccp, bn, mal	3.250	0.040	12.0	0.185	X	X	stock pile
291	3 SY 15	Tsagaansuvraga	qzv, ccp, bn, mal	1.005	0.005	4.0	0.040	X	X X	stock pile
292	3 SY 16	Tsagaansuvraga	mal, ccp, bn, cv, mo	0.457	0.023	2.0	0.025		X	stock pile, C
293	3 SY 17	Tsagaansuvraga	mal, ccp	0.375	0.017	<2.0	0.040		X	stock pile, C
296	3 SY 20	Tsagaansuvraga	ccp, bn, mal, mo	0.350	0.025	<2.0	0.030	X	X	stock pile, C
297	3 SY 21	Tsagaansuvraga	ccp, bn, mo, fl	1.090	0.006	2.0	0.045		X	stock pile, C
298	3 SY 22	Tsagaansuvraga	ccp, bn, mo, fl	1.125	0.003	2.0	0.070	X	X	stock pile, C
300	3 SY 24	Tsagaansuvraga	qzv, ccp, mal, bn	5.040	0.042	22.0	0.230	X	X	stock pile
301	3 SY 25	Tsagaansuvraga	ccp, mal, bn	0.400	0.006	2.0	0.020		X	stock pile, C
302	3 SY 26	Tsagaansuvraga	mal, ccp, bn, mo	0.483	0.015	2.0	0.030		X	stock pile, C
303	3 SY 27	Tsagaansuvraga	ccp, cv, mal	0.376	0.024	<2.0	0.025		X	stock pile, C
304	3 SY 28	Tsagaansuvraga	ccp, cv, bn	0.718	0.020	2.0	0.050		X	stock pile, C
305	3 SY 29	Tsagaansuvraga	ccp, bn, mo	0.562	0.014	<2.0	0.020		X	stock pile, C
306	3 SY 30	Tsagaansuvraga	ccp, bn, mal, mo	0.570	0.012	<2.0	0.055		X	stock pile, C
307	3 SY 31	Tsagaansuvraga	ccp, mo, mal	0.480	0.031	<2.0	0.030		X	stock pile, C
308	3 SY 32	Tsagaansuvraga	ccp, cv, mal, mo	0.515	0.028	<2.0	0.020	X	X	stock pile, C
309	3 SY 33	Tsagaansuvraga	ccp, bn, mal	0.308	0.047	<2.0	0.015		X	stock pile, C
310	3 SY 34	Tsagaansuvraga	ccp, mal	0.475	0.004	<2.0	0.025		X	stock pile, C

Appendix 1-8 (3) Assay Results (Porphyry Copper) (3)

	SAMPLE No.	LOCALITY	ROCK NAME	Cu %	Mo %	Ag g/t	Au g/t	WTDP: ORE XF ASTL	PGPCS LMVCBRDI	REMARKS
319	3 TS 1	Arin-Nuur	oxd ore, grnCu, mus	1.365	0.344	14.0	0.010		X X	
320	3 TS 2	Arin-Nuur	granite	0.164	0.028	0.5	<0.016	X X	X	
321	3 TS 3	Arin-Nuur	granite, potic, mus, mo	0.011	0.242	<0.5	<0.016		X	
322	3 TS 4	Arin-Nuur	qzv, py, mo, mus,	0.061	0.076	<0.5	<0.016		X	
323	3 TS 5	Arin-Nuur	qz, mus, mo, py	0.004	2.480	2.0	<0.016		X	
324	3 TS 6	Arin-Nuur	Mo ore	0.108	0.093	0.5	<0.016		X	stock pile
325	3 TS 7	Arin-Nuur	granite	0.230	0.203	0.5	<0.016	X X	X X	
326	3 TS 8	Arin-Nuur	Mo ore	0.056	0.212	1.0	<0.016		X	stock pile
327	3 TS 9	Arin-Nuur	Mo ore	0.074	0.057	1.5	24.000		X	stock pile
328	3 TS 10	Arin-Nuur	Mo ore	0.024	0.071	4.0	<0.016		X	stock pile
329	3 TS 11	Arin-Nuur	Mo ore	0.056	0.161	1.0	<0.016		X	stock pile
330	3 TS 12	Arin-Nuur	Mo ore	0.057	0.143	1.5	<0.016		X	stock pile
331	3 TS 13	Arin-Nuur	Mo ore	0.430	0.051	11.5	<0.016		X	stock pile

Appendix 1-9 (1) Assay Results (Auriferous Quartz Vein) (1)

	SAMPLE No.	LOCALITY	ROCK NAME	Au g/t	Ag g/t	WTDP ORE XF AST	LL	FPG	MV	PCS CB	RD	I	REMARKS
86	3 DS 43	Tsagaan-Chuluut Hud.	qz, stkwk, oxd	26.30	44.0	X		X					
87	3 DS 44	Tsagaan-Chuluut Hud.	qz, stkwk, oxd, porous	106.00	377.0	X		X					
88	3 DS 45	Tsagaan-Chuluut Hud.	qz, stkwk, oxd	91.80	155.0	X		X					
89	3 DS 46	Tsagaan-Chuluut Hud.	qz, ser, py	0.27	4.6	X		X			X		
90	3 DS 47	Tsagaan-Chuluut Hud.	qz brecciated, mica	2.60	16.0			X			X		
91	3 DS 48	Tsagaan-Chuluut Hud.	qz, oxd, porous	3.77	2.7			X					
92	3 DS 49	Tsagaan-Chuluut Hud.	qz, oxd, porous	0.27	6.2			X					
93	3 DS 50	Tsagaan-Chuluut Hud.	qz, oxd, porous	3.29	1.5			X					
94	3 DS 51	Tsagaan-Chuluut Hud.	qz in peg, oxd, po	<0.07	<0.5			X					
95	3 DS 52	Tsagaan-Chuluut Hud.	qz brecciated, ntwk	<0.07	0.6			X					
96	3 DS 53	Tsagaan-Chuluut Hud.	qz, ntwk	<0.07	<0.5			X					
97	3 DS 54	Tsagaan-Chuluut Hud.	qz, ntwk	<0.07	0.5			X					
98	3 DS 55	Tsagaan-Chuluut Hud.	qzvlt	<0.07	<0.5			X					
99	3 DS 56	Tsagaan-Chuluut Hud.	qzv, 5m	<0.07	<0.5			X					
100	3 DS 57	Tsagaan-Chuluut Hud.	qzv, 50cm	<0.07	0.7			X					
101	3 DS 58	Tsagaan-Chuluut Hud.	qzv 2.5m, py, mal, az	0.07	42.7			X			X		
116	3 DY 15	Tsagaan-Chuluut Hud.	monzodiorite	<0.07	<0.5	XX		X					
121	3 DY 20	Tsagaan-Chuluut Hud.	qzv	<0.07	3.3			X					
379	3 UN 8	Olon-Ovoot	qzv	1.92	<0.5			X					No. 68trench
380	3 UN 9	Olon-Ovoot	qzv	<0.07	<0.5			X					No. 68trench
381	3 UN 10	Olon-Ovoot	qzv	1.64	<0.5			X					No. 68trench
382	3 UN 11	Olon-Ovoot	qzv	0.14	<0.5			X					No. 68trench
383	3 UN 12	Olon-Ovoot	qzv	1.78	<0.5			X					No. 68trench
384	3 UN 13	Olon-Ovoot	qzv	0.48	<0.5			X					No. 69trench
385	3 UN 14	Olon-Ovoot	qzv	<0.07	<0.5			X					No. 69trench
386	3 UN 15	Olon-Ovoot	qzv	<0.07	<0.5			X					No. 69trench
387	3 UN 16	Olon-Ovoot	qzv, alt zone	<0.07	<0.5			X			X		No. 69trench
388	3 UN 17	Olon-Ovoot	qzv	0.27	<0.5			X					No. 69trench
419	3 US 28	Olon-Ovoot	siltstone	<0.07	<0.5			X			X		No. 59trench
420	3 US 29	Olon-Ovoot	siltstone	<0.07	<0.5			X					No. 59trench
421	3 US 30	Olon-Ovoot	siltstone	0.27	<0.5			X					No. 59trench
422	3 US 31	Olon-Ovoot	siltstone	0.82	<0.5			X			X		No. 59trench
423	3 US 32	Olon-Ovoot	qzvlt in slt	0.14	<0.5			X					No. 59trench
424	3 US 33	Olon-Ovoot	siltstone, arg, ser	1.10	<0.5			X					No. 59trench
425	3 US 34	Olon-Ovoot	qzv in siltstone	5.00	<0.5			X					No. 59trench
426	3 US 35	Olon-Ovoot	qzv in siltstone	6.71	<0.5			X			X		No. 59trench
427	3 US 36	Olon-Ovoot	qz v	2.12	<0.5	X		X				X	No. 59trench
428	3 US 37	Olon-Ovoot	qzv	0.34	<0.5			X					No. 59trench
429	3 US 38	Olon-Ovoot	qzv	0.55	<0.5			X					No. 59trench
430	3 US 39	Olon-Ovoot	qzv	0.27	<0.5			X					No. 59trench
431	3 US 40	Olon-Ovoot	qz v	0.07	<0.5	X		X				X	No. 59trench
432	3 US 41	Olon-Ovoot	qzv	32.80	<0.5			X			X		No. 59trench
433	3 US 42	Olon-Ovoot	qzv	16.40	<0.5			X					No. 59trench
434	3 US 43	Olon-Ovoot	qzv in siltstone	0.41	<0.5			X			X		No. 59trench
435	3 US 44	Olon-Ovoot	qzv in siltstone	5.21	<0.5			X					No. 59trench
436	3 US 45	Olon-Ovoot	qzv in siltstone	0.14	<0.5			X					No. 59trench
437	3 US 46	Olon-Ovoot	qzv in siltstone	8.77	<0.5			X					No. 59trench
438	3 US 47	Olon-Ovoot	qzv in siltstone	4.32	<0.5			X			XX		No. 59trench
439	3 US 48	Olon-Ovoot	diorite, sheared	1.58	<0.5			X			X		No. 59trench
440	3 US 49	Olon-Ovoot	diorite	<0.07	<0.5			X					No. 59trench

Appendix 1-9 (2) Assay Results (Auriferous Quartz Vein) (2)

	SAMPLE No.	LOCALITY	ROCK NAME	Au g/t	Ag g/t	WTDP ORE XF AST	FPGPCS LMVCBRDI	REMARKS
441	3 US 50	Olon-Ovoot	diorite	<0.07	<0.5		X	No.59trench
442	3 US 51	Olon-Ovoot	diorite	<0.07	<0.5		X X	No.59trench
443	3 US 52	Olon-Ovoot	meta-dolerite	<0.07	<0.5	X	X	No.59trench
444	3 US 53	Olon-Ovoot	diorite	<0.07	<0.5		X	No.59trench
446	3 US 55	Olon-Ovoot	grano-dio, qzvlt, py	0.27	<0.5		X	DDH24, 72m
447	3 US 56	Olon-Ovoot	diorite, arg, py	9.18	<0.5		X	DDH24, 80m
448	3 US 57	Olon-Ovoot	qz, massive	0.48	<0.5		X	No.60trench
449	3 US 58	Olon-Ovoot	diorite, oxd arg	107.00	<0.5		X	No.60trench
450	3 US 59	Olon-Ovoot	diorite, oxd arg	12.90	<0.5		X	No.60trench
451	3 US 60	Olon-Ovoot	qzv	13.00	<0.5		X	No.60trench
452	3 US 61	Olon-Ovoot	qzv	0.21	<0.5		X	No.60trench
453	3 US 62	Olon-Ovoot	qzv	1.44	<0.5		X	No.61trench
454	3 US 63	Olon-Ovoot	qzv	0.14	<0.5		X	No.61trench
455	3 US 64	Olon-Ovoot	qzv in siltstone	<0.07	<0.5		X	No.62trench
456	3 US 65	Olon-Ovoot	qzv in siltstone	<0.07	<0.5		X	No.62trench
457	3 US 66	Olon-Ovoot	qzv	0.14	<0.5		X	No.67trench
458	3 US 67	Olon-Ovoot	siltstone with qzv	<0.07	<0.5		X X	No.67trench
459	3 US 68	Olon-Ovoot	diorite	<0.07	<0.5		X	No.67trench
460	3 US 69	Olon-Ovoot	diorite	0.21	<0.5		X	No.67trench
461	3 US 70	Olon-Ovoot	diorite	0.75	<0.5		X X	No.67trench
462	3 US 71	Olon-Ovoot	qzv	0.21	<0.5		X	No.67trench
463	3 US 72	Olon-Ovoot	diorite, py, oxd	2.60	<0.5	X	X X	No.67trench
464	3 US 73	Olon-Ovoot	qzv	5.21	<0.5		X	No.67trench
465	3 US 74	Olon-Ovoot	diorite, py	1.44	<0.5		X X	No.67trench
466	3 US 75	Olon-Ovoot	diorite with qz-vlt	0.68	<0.5		X	No.67trench
467	3 US 76	Olon-Ovoot	diorite with qz-vlt	0.14	<0.5		X	No.67trench
468	3 US 77	Olon-Ovoot	qzv	<0.07	<0.5		X	No.67trench
469	3 US 78	Olon-Ovoot	siltstone with qzvlt	4.11	<0.5		X X	No.67trench
470	3 US 79	Olon-Ovoot	diorite+sltstone	0.21	<0.5		X	No.67trench
471	3 US 80	Olon-Ovoot	qzv, py, visible Au	19.30	<0.5	X	X	No.67trench
496	3 US105	Olon-Ovoot	qzv, 65cm	<0.07	<0.5		X	No.64trench
497	3 US106	Olon-Ovoot	diorite, qzvlt, py, Au	2.53	<0.5		X	No.64trench
498	3 US107	Olon-Ovoot	qzv, 150cm	0.14	<0.5		X	No.64trench
499	3 US108	Olon-Ovoot	qzv, 80cm	<0.07	<0.5		X	No.64trench
500	3 US109	Olon-Ovoot	qzv, 20cm	1.30	<0.5		X	No.65trench
501	3 US110	Olon-Ovoot	qzv, 40cm	0.21	<0.5		X	No.65trench
502	3 UY 1	Onh	qzv	<0.07	<0.5		X X	
503	3 UY 2	Onh	qzv	<0.07	<0.5		X	
504	3 UY 3	Onh	qzv	<0.07	<0.5		X	
505	3 UY 4	Onh	qzv	<0.07	<0.5		X	
507	3 UY 6	Dugshih	qzv	<0.07	<0.5		X X	
508	3 UY 7	Dugshih	qzv	<0.07	<0.5		X X	

Appendix 1-10 (1) Assay Results (Carbonatite, Apatite Rock) (1)

	SAMPLE No.	LOCALITY	ROCK NAME	Ce ppm	Eu ppm	La ppm	Lu ppm	Nd ppm	Sm ppm	Tb ppm	Th ppm	U ppm	Yb ppm	WTDP: ORE XF AST L MVC BRD I	REMARKS
190	3 RS 1	Lugiingol	carbonatite, synchi	>10000	>100.00	>10000	0.9	>1000	477.2	13.6	907	22	<0.10	X X	
191	3 RS 2	Lugiingol	hornfels, corundum	2406	4.50	1416	1.1	555	45.8	1.3	233	10	7.0	XX X	
192	3 RS 3	Lugiingol	carbonatite	>10000	>100.00	>10000	2.5	>1000	>500.0	22.4	1928	83	4.7	XX X X	
197	3 RS 8	Lugiingol	cbt, shynchi, pari	>10000	68.00	>10000	2.5	>1000	401.5	7.6	636	29	11.2	X X	
199	3 RS 10	Lugiingol	cbt, shynchi, pari, gn	6086	29.00	3587	1.9	>1000	127.4	6.8	178	18	11.7	X X	wdth 8cm
200	3 RS 11	Lugiingol	carbonatite, pseu py	>10000	>100.00	>10000	4.2	>1000	>500.0	9.3	931	67	13.8	X X	
202	3 RS 13	Lugiingol	shynchi, fl	>10000	>100.00	>10000	3.7	>1000	>500.0	5.5	2206	76	7.6	X XX	
376	3 UN 5	Olon-Ovoot area	alkali rh, topaz-bg	216	<0.50	69	1.3	50	6.7	0.1	88	2	7.4	X X X	ongonite
389	3 UN 18	Mushgia-Hudak	carbonatite, fl	9018	40.50	6665	1.2	>1000	92.5	2.8	33	28	4.6	XX X	fresh
390	3 UN 19	Mushgia-Hudak	trachy-andesite, apt	380	4.50	164	0.4	125	18.3	0.9	46	8	2.2	X X	
391	3 UN 20	Mushgia-Hudak	meta-andesite, ep act	20	0.50	8	0.4	5	2.1	0.4	1	<1.0	1.7	X X	
393	3 US 2	Mushgia-Hudak	carbonatite, bre, fl	200	1.00	105	0.4	65	6.9	0.3	35	11	2.6	X X	
396	3 US 5	Mushgia-Hudak	carbonatite, bre	286	2.00	183	0.5	70	8.7	0.4	4	19	2.7	X	
397	3 US 6	Mushgia-Hudak	carbonatite, bre, fl	6590	26.00	4244	0.9	950	90.8	3.4	13	62	8.2	X X	
399	3 US 8	Mushgia-Hudak	carbonatite, bre	8182	28.50	4894	1.5	1425	131.1	3.6	86	47	6.2	X	
400	3 US 9	Mushgia-Hudak	cbt, fl, apt, martite	>10000	>100.00	7922	3.2	4460	517.2	13.5	306	157	24.4	X X X X	
402	3 US 11	Mushgia-Hudak	carbonatite, fl	1450	7.50	849	1.2	325	34.1	1.7	32	31	7.5	X	
403	3 US 12	Mushgia-Hudak	carbonatite, qz-netwk	>10000	61.00	4673	2.2	2670	306.3	11.1	146	80	19.2	X	
404	3 US 13	Mushgia-Hudak	carbonatite, bre, fl	816	3.50	477	0.5	205	20.7	0.6	15	23	3.4	X	
406	3 US 15	Mushgia-Hudak	apatite, gyp, prs	>10000	104.50	>10000	3.1	>1000	>500.0	16.7	83	97	25.8	X X	apatite hill
408	3 US 17	Mushgia-Hudak	apatite, gyp, prs	>10000	229.00	>10000	5.8	>1000	>500.0	31.9	84	162	42.1	X	apatite hill
409	3 US 18	Mushgia-Hudak	mgt rock, phlog	288	2.00	151	0.2	75	9.6	<0.10	4	4	0.8	X X	apatite hill
410	3 US 19	Mushgia-Hudak	syenite	386	5.00	154	0.3	145	19.5	1.2	21	9	2.2	XXX X	
411	3 US 20	Mushgia-Hudak	magnetite rock	436	2.50	187	0.3	125	13.3	0.8	13	24	1.1	X	
412	3 US 21	Mushgia-Hudak	mgt, apt, gyp	1572	11.00	662	0.7	595	70.5	3.7	103	19	4.4	X X	
413	3 US 22	Mushgia-Hudak	gabbro	182	2.50	91	0.5	45	7.9	2.4	2	2	3.5	XX X	
414	3 US 23	Mushgia-Hudak	qz, fl	9374	37.00	5557	1.1	1675	134.8	5.5	6	19	7.4	X	
415	3 US 24	Mushgia-Hudak	phonolite	352	5.00	157	0.2	135	20.0	1.3	12	3	1.9	XX X	
417	3 US 26	Mushgia-Hudak	cbt, fl purp	3800	25.50	1709	1.7	1215	144.6	7.9	56	16	11.7	X X	
418	3 US 27	Mushgia-Hudak	dolomite-carbonatite	580	6.00	255	1.0	160	18.0	2.0	52	16	5.5	X	
475	3 US 84	Bayan-Hoshoo	carbonatite, bre	1128	9.50	757	0.2	280	23.0	0.7	2	23	<0.10	X	
493	3 US102	Bayan-Hoshoo	carbonatite, cel, ba	>10000	>100.00	>10000	2.3	>1000	299.5	7.0	14	11	<0.10	XXX	trench
494	3 US103	Bayan-Hoshoo	cbt, ba, qz, fl, py	1462	5.00	1161	<0.10	250	16.8	0.7	4	11	0.3	X X	trench

Appendix 1-10 (2) Assay Results (Carbonatite, Apatite Rock) (2)

	SAMPLE No.	LOCALITY	ROCK NAME	Sr ppm	Ba ppm	P ppm	Y ppm	WTDP ORE XF AST	LIL	FPG MVC	PCS BRD	I	REMARKS
190	3 RS 1	Lugiingol	carbonatite, synchi	3,510	90	260	95				X	X	
191	3 RS 2	Lugiingol	hornfels, corundum	412	130	190	30	XX			X		
192	3 RS 3	Lugiingol	carbonatite	916	110	390	300	XX			X	X	
197	3 RS 8	Lugiingol	cbt, shynchi, pari	34,700	180	730	120				X	X	
199	3 RS 10	Lugiingol	cbt, shynchi, pari, gn	8,920	660	650	80				X	X	wdth 8cm
200	3 RS 11	Lugiingol	carbonatite, pseu py	1,925	120	670	130				X	X	
202	3 RS 13	Lugiingol	shynchi, fl	1,415	90	270	320				X	XX	
376	3 UN 5	Olon-Ovoot area	alkali rh, topaz-bg	40	20	40	30	X			X	X	ongonite
389	3 UN 18	Mushgia-Hudak	carbonatite, fl	1,910	1,380	4,830	160	XX			X		fresh
390	3 UN 19	Mushgia-Hudak	trachy-andesite, apt	6,800	2,480	2,960	20	X			X		
391	3 UN 20	Mushgia-Hudak	meta-andesite, ep act	679	100	530	10	X			X		
393	3 US 2	Mushgia-Hudak	carbonatite, bre, fl	287	1,510	280	20				X	X	
396	3 US 5	Mushgia-Hudak	carbonatite, bre	515	3,190	260	20				X		
397	3 US 6	Mushgia-Hudak	carbonatite, bre, fl	1,235	1,870	310	240				X	X	
399	3 US 8	Mushgia-Hudak	carbonatite, bre	1,465	2,670	830	220				X		
400	3 US 9	Mushgia-Hudak	cbt, fl, apt, martite	124,000	20	46,480	460	X	X		X	X	
402	3 US 11	Mushgia-Hudak	carbonatite, fl	4,540	3,340	2,870	70				X		
403	3 US 12	Mushgia-Hudak	carbonatite, qz-netwk	923	4,380	4,360	340				X		
404	3 US 13	Mushgia-Hudak	carbonatite, bre, fl	634	3,600	670	30				X		
406	3 US 15	Mushgia-Hudak	apatite, gyp, prs	5,360	150	47,130	690				X	X	apatite hill
408	3 US 17	Mushgia-Hudak	apatite, gyp, prs	10,100	560	112,600	1220				X		apatite hill
409	3 US 18	Mushgia-Hudak	mgt rock, phlog	3,080	490	720	25				X	X	apatite hill
410	3 US 19	Mushgia-Hudak	syenite	3,330	2,870	2,130	30	XXX			X		
411	3 US 20	Mushgia-Hudak	magnetite rock	191	80	1,370	30				X		
412	3 US 21	Mushgia-Hudak	mgt, apt, gyp	464	70	6,850	65				X	X	
413	3 US 22	Mushgia-Hudak	gabbro	759	980	1,800	35	XX			X		
414	3 US 23	Mushgia-Hudak	qz, fl	5,160	3,780	2,490	310				X		
415	3 US 24	Mushgia-Hudak	phonolite	9,700	6,590	4,540	25	XX			X		
417	3 US 26	Mushgia-Hudak	cbt, fl purp	40,200	320	18,290	220				X	X	
418	3 US 27	Mushgia-Hudak	dolomite-carbonatite	1,610	1,860	1,800	60				X		
475	3 US 84	Bayan-Hoshoo	carbonatite, bre	3,220	2,390	740	20				X		
493	3 US102	Bayan-Hoshoo	carbonatite, cel, ba	5,230	1,330	800	320				XX	X	trench
494	3 US103	Bayan-Hoshoo	cbt, ba, qz, fl, py	336,000	20	720	20				X	X	trench

Appendix 1-11 Assay Results (Fluorite)

	SAMPLE No.	LOCALITY	ROCK NAME	CaO %	F %	SiO2 %	CO2 %	TOTAL-Fe %	WTDP ASTL	ORE FPGP MVCB	CS RDI	XF	REMARKS
136	3 HN 13	Bor-Undur No.3	quartz orphyry, fl	5.2	3.02	80.00	< 0.2	1.21		X		X	
138	3 HN 15	Bor-Undur No.2	qzv, fl	62.8	42.60	9.90	< 0.2	0.08		X			waste pile
140	3 HN 17	Bor-Undur No.11	fl ore	61.9	42.60	10.90	< 0.2	0.19		X			
145	3 HN 22	Bor-Undur No.5	qz-fl v	68.7	45.70	6.16	< 0.2	0.08	X	X		XX	tunnel
147	3 HN 24	Bor-Undur No.5	fl ore	31.2	16.50	48.60	< 0.2	1.16		X			tunnel
148	3 HN 25	Bor-Undur No.5	fl ore	25.5	13.10	54.90	< 0.2	0.56		X			tunnel
149	3 HN 26	Bor-Undur dress plt	flotation head ore	20.3	9.72	57.60	0.3	0.86		X			16-20mm
150	3 HN 27	Bor-Undur dress plt	fl-conc	69.9	47.70	2.09	< 0.2	0.05		X			final product
152	3 HS 2	Bor-Undur No.3	fl ore	63.9	41.70	10.00	< 0.2	0.11		X			
153	3 HS 3	Bor-Undur No.2	fl ore	55.9	36.60	19.70	< 0.2	0.09		X			
154	3 HS 4	Bor-Undur No.13	fl ore	67.6	42.60	6.28	< 0.2	0.06		X			
155	3 HS 5	Bor-Undur No.13	fl ore	69.6	42.60	5.29	< 0.2	0.08		X			
156	3 HS 6	Adag No.3	fl ore	50.9	31.50	25.80	< 0.2	0.17		X		X	
157	3 HS 7	Adag No.3	fl ore	29.3	15.80	48.90	< 0.2	0.41		X			
158	3 HS 8	Bor-Undur No.5	clay, fl	35.9	17.10	36.30	< 0.2	1.61		X		X	tunnel
159	3 HS 9	Bor-Undur No.5	fl ore	50.8	32.40	26.80	< 0.2	0.52		X			tunnel
160	3 HS 10	Bor-Undur No.5	fl ore	32.7	17.10	45.40	< 0.2	0.92		X			tunnel
161	3 HS 11	Bor-Undur No.5	fl ore	51.9	32.50	26.30	< 0.2	0.29		X			tunnel
162	3 HS 12	Bor-Undur No.5	fl ore	55.9	35.60	22.80	< 0.2	0.24		X			tunnel
163	3 HY 1	Tsagaantakhilch	fng qzv, comp fl	41.4	25.70	39.60	< 0.2	0.32		X			
164	3 HY 2	Maihanta 2	fng qzv, csg fl	34.8	22.30	50.40	< 0.2	0.17		X		X	
165	3 HY 3	Bor-Undur No.13	fng fl	50.9	33.00	26.60	< 0.2	0.12		X			
166	3 HY 4	Adag	rhyolite, wk sil, fl	11.6	6.17	71.40	< 0.2	0.31		X			
167	3 HY 5	Bor-Undur No.5	qzv, fl	52.7	25.70	26.40	< 0.2	0.28		X		X	tunnel
169	3 HY 7	Chol-Tsagaan-Del	qzv, fl	63.9	38.70	16.00	< 0.2	0.19		X			
170	3 HY 8	Chol-Tsagaan-Del	qzv, fl	57.9	36.60	19.60	< 0.2	0.25		X			
171	3 HY 9	Chol-Tsagaan-Del	qz ntwk, fl	52.0	33.10	26.40	< 0.2	0.18		X			
172	3 HY 10	Chol-Tsagaan-Del	qzv, fl	41.9	24.40	28.90	< 0.2	1.21		X			
173	3 HY 11	Chol-Tsagaan-Del	fl ore, fng gravel	40.9	17.30	30.90	< 0.2	1.79		X			tailing
179	3 NS 5	Yuguzer	fl v	14.7	7.34	72.60	< 0.2	0.45		X			
189	3 NS 15	Nuhutiin-Tsagaantolg.	fl ore	20.3	10.30	60.60	< 0.2	0.62		X			

Appendix 1-12 Assay Results (Strontium)

	SAMPLE No.	LOCALITY	ROCK NAME	Sr %	Ba %	CaO %	TOTAL-Fe %	SO4 %	total S %	WTDP ORE XF FPGPCS ASTLLMVCBRDI	REMARKS
29	3 DN 29	Mardai	welded tuff	0.02	0.06	0.67	0.95	0.02	0.36	X XX	
30	3 DN 30	Mardai	lapilli tuff, alt, chl	0.04	0.02	1.28	1.50	0.02	0.02	XX	
472	3 US 81	Bayan-Hoshoo	rhyolitic tuff	0.09	0.10	0.37	2.22	0.10	0.03	X	
473	3 US 82	Bayan-Hoshoo	rhyolitic tuff	0.07	0.14	1.12	1.84	0.18	0.05	X	
474	3 US 83	Bayan-Hoshoo	apatite-bt rock, fl	5.34	0.04	3.96	4.30	5.20	2.07	X X	
476	3 US 85	Bayan-Hoshoo	rhyoritic tf, cel, qz	12.70	0.67	1.47	2.68	13.24	4.41	X	trench
477	3 US 86	Bayan-Hoshoo	rhyoritic tf, cel, qz	19.10	0.92	1.56	4.80	13.59	5.55	X	trench
478	3 US 87	Bayan-Hoshoo	rhyoritic tf, cel, qz	23.40	0.89	1.17	4.87	12.14	4.69	X	trench
479	3 US 88	Bayan-Hoshoo	rhyoritic tf, cel, qz	10.80	0.42	2.67	3.63	10.60	4.14	XX	trench
480	3 US 89	Bayan-Hoshoo	rhyoritic tf, cel, qz	5.56	0.55	1.87	2.14	7.17	2.42	X	trench
481	3 US 90	Bayan-Hoshoo	rhyoritic tf, cel, qz	3.98	0.46	2.65	1.65	6.14	2.60	XX	trench
482	3 US 91	Bayan-Hoshoo	rhyoritic tf, cel, qz	5.79	0.61	1.28	4.49	6.70	2.40	X	trench
483	3 US 92	Bayan-Hoshoo	rhyoritic tf, cel, qz	4.39	0.36	0.86	2.72	5.47	1.83	X	trench
484	3 US 93	Bayan-Hoshoo	rhyoritic tf, cel, qz	9.27	0.44	0.86	4.31	8.26	3.43	X	trench
485	3 US 94	Bayan-Hoshoo	rhyoritic tf, cel, qz	1.46	0.84	2.43	5.21	2.41	0.86	X	trench
486	3 US 95	Bayan-Hoshoo	rhyoritic tf, cel, qz	8.63	1.03	1.72	6.03	8.58	3.32	X	trench
487	3 US 96	Bayan-Hoshoo	rhyoritic tf, cel, qz	14.50	0.53	1.14	3.74	9.74	4.90	X	trench
488	3 US 97	Bayan-Hoshoo	rhyoritic tf, cel, qz	9.90	0.45	0.74	3.93	8.48	3.52	X	trench
489	3 US 98	Bayan-Hoshoo	rhyoritic tf, cel, qz	8.83	0.40	1.13	3.29	8.91	3.31	X	trench
490	3 US 99	Bayan-Hoshoo	rhyoritic tf, cel, qz	10.80	0.54	2.04	3.35	10.31	3.67	X	trench
491	3 US100	Bayan-Hoshoo	qzv?, fl	3.95	0.02	35.00	0.31	4.02	1.80	X	trench
493	3 US102	Bayan-Hoshoo	carbonatite, cel, ba	0.52	0.13	10.35	3.50	0.74	3.64	XXX	trench

Appendix 1-13 X-ray Diffraction Analyses (Pb-Zn, W Deposits)

No.	SAMPLE No.	LOCALITY	ROCK NAME	Quartz	Plagioclase	K-feldspar	Calcite	Rhodochrosite	Siderite	Cerussite	Smectite	Sericite/Smectite	Sericite	Chlorite	Kaolinite	Biotite	Amphibole	Epidote	Andradite	Hollandite	Anatase	Jarosite	Anglesite	Melanterite	Lanarkite	Galena	Sphalerite	Pyrite	Beaverite	Scorodite	Magnetite	Hematite	Goethite	Chalcophanite	Hydrohetaerolite	Hollandite
1	3 DN 2	Tsav	Granodiorite,fng	◎	◎	◎							·	○																		△				
2	3 DN 3	Tsav	Clay,gry-wht,alt	◎	·	△					△		△		△							·														
3	3 DN 11	Tsav	Qz,Mn-cbt,py,gn	◎			△	◎					·													△	△	△								
4	3 DN 13	Tsav	Pb-Zn,Mn-cbnt	△				◎																		◎	◎									
5	3 DN 16	Tsav	Pb-Zn,calamine	◎				◎																												
6	3 DN 27	Delger-Munh	1.2m,qzvntwk	○				·		◎												△	△			◎										
7	3 DN 29	Mardai	Welded tuff	◎	△	△						△		·																						
8	3 DN 30	Mardai	Lapilli tuff,alt,chl	◎	△							△																								
9	3 DN 31	Mardai	Welded tuff	◎	◎	△						·	·																			·				
10	3 DS 2	Tsav	Oxide ore,gn,mal,cer	○						◎												·	△													
11	3 DS 6	Tsav	Limonite v,oxd,MnO2,Ag	◎			·			·										△												△			
12	3 DS 7	Tsav	Andesite,wht alt	◎		○						△			·?						△															
13	3 DS 10	Tsav	Carbonate ore,Pb Zn	○				◎																		·	◎									
14	3 DS 13	Delger-Munh	Ntwk10cm,wht carbonate	◎			◎						·																			·				
15	3 DS 29	Ulaan	Skarn,ep-act,py	◎		○								·			○	△																		
16	3 DS 33	Ulaan	Rhyolite,sil,sp,py	◎		○			△																		◎									
17	3 DS 36	Ulaan	Oxide ore,act,ep,py,qz	◎													△	·	○																	
18	3 DY 1	Tsav	Pb-Zn ore	○			·			◎														·?	·?											
19	3 DY 5	Salhiit(Dornod)	Qzv	◎						△																			△	△						
20	3 DY 7	Bayan-Uul	Qzv,oxd	◎									·																			·				
21	3 DY 8	Bayan-Uul	Qzv,oxd	◎									○		△																					
22	3 DY 9	Bayan-Uul	Qzv,oxd	◎									·									·														
23	3 TN 1	Tumurtiin-Ovoo	Skarn,gar,mgt,sp	△															△												◎	△				
24	3 TN 4	Salhiit(T.O.)	Skarn,gar	△															◎																	
25	3 TN 7	Salhiit(T.O.)	Cortlandite											○		△	◎															△				
26	3 TS 18	Tumurtiin-Ovoo	Skarn,oxd	·			◎				△?																									
27	3 TS 24	Tumurtiin-Ovoo	Skarn,eqecul?	·																														◎	○	△
28	3 TS 27	Tumurtiin-Ovoo	Limestone,gar,Mn-Cu oxd				◎												·																	
29	3 TS 30	Tumurtiin-Ovoo	Skarn,gar,sp	△															◎								◎									
30	3 TS 38	Salhiit(T.O.),DDH	Skarn,gar,sp	○			○							·					◎													△	○			
31	3 TY 2	Tumurtiin-Ovoo	Skarnized siltstone	◎	◎	·	△							○			△											·								

◎:Abundant ○:Common △:Poor ·:Rare

Appendix 1-14 X-ray Diffraction Analyses (Cu-Mo Deposits)

No.	SAMPLE No.	LOCALITY	ROCK NAME	Quartz	Plagioclase	K-feldspar	Calcite	Smectite	Sericite/Smectite	Sericite	Chlorite	Hematite	Laumontite	Bornite	Chalcopyrite	Malachite	Brochantite	Goethite	Molybdenite
32	3 SN 2	Tsagaansuvraga	Meta-dacite	○	◎	△		△				△	○						
33	3 SN 3	Tsagaansuvraga	Qz monzonite,grn-Cu	◎	○	◎				○	・								
34	3 SN 7	Tsagaansuvraga	Syenite,dike	△	△	△					○		○						
35	3 SN 10	Tsagaansuvraga	Qz-monzonite,grn-Cu	◎	◎	◎				・	△	・				・			
36	3 SN 16	Tsagaansuvraga	Qz-monzonite,grn-Cu	◎	◎	◎	・		・		△	・				・			
37	3 SN 19	Tsagaansuvraga	Qz-monzonite,grn-Cu	◎	◎	◎			・		△								
38	3 SN 21	Tsagaansuvraga	Greisen,mus,qz	◎						◎					△				
39	3 SS 11	Tsagaansuvraga	Tuff breccia	◎	◎	○			・	・	・	△							
40	3 SS 12	Tsagaansuvraga	Qz monzonite,grn-Cu	◎	△	◎	○			△	△		・			・			
41	3 SS 18	Tsagaansuvraga	Qz monzonite,grn-Cu	◎	◎	○	△		・		△								
42	3 SS 24	Tsagaansuvraga	Qz monzonite,grn-Cu	◎	・	◎				△						・			
43	3 SS 32	Tsagaansuvraga	Qz monzonite,grn-Cu	◎	◎	◎			・		△	・							
44	3 SS 35	Tsagaansuvraga	Granodiorite	◎	◎	◎			・		・								
45	3 SS 36	Tsagaansuvraga	Qz monzonite,grn-Cu	◎	◎	○	△	・	△							・			
46	3 SS 40	Tsagaansuvraga	Qz monzonite,grn-Cu	◎	◎	◎				△	△								
47	3 SS 44	Tsagaansuvraga	Qz monzonite,grn-Cu	◎	○	◎				△	・	・				△			
48	3 SS 48	Tsagaansuvraga	Qz monzonite,grn-Cu	◎	◎	◎			・		△	・				・			
49	3 SY 1	Tsagaansuvraga	Qzv,mal,cc,ccp	◎											・	△	△		
50	3 SY 15	Tsagaansuvraga	Qzv,ccp,bn,mal	◎		△				◎				・	○				
51	3 TS 1	Arin-Nuur	Oxide ore,grn-Cu,mus	◎	○	◎				△	・							△	
52	3 TS 7	Arin-Nuur	Granite,bt,mus	◎	△	◎				○									△

◎:Abundant ○:Common △:Poor ・:Rare

Appendix 1-15 X-ray Diffraction Analyses (Au, Fluorite Deposits)

No.	SAMPLE No.	LOCALITY	ROCK NAME	Quartz	Plagioclase	K-feldspar	Calcite	Ankerite			Amphibole	Clinopyroxene			Smectite	Sericite/Smectite	Sericite	Chlorite	Kaolinite	Halloysite	Gibbsite		Gypsum	Fluorite			Hematite	Goethite			Laumontite			2θ=27.70 *	
53	3 DS 46	Tsagaan-Chuluut	Qz,ser,py	◎													◎																	
54	3 DS 47	Tsagaan-Chuluut	Qz,bre,mica	◎													○											△			•?			
55	3 DS 58	Tsagaan-Chuluut	Qzv 2.5m,py,mal,az	◎			△	•									◎		△					•				•					△	
56	3 HA 1	Bor-Undur No.5	Qp,stg sil	◎		○											△		△					•										
57	3 HN 13	Bor-Undur No.3	Qp,stg sil,fl vlt	◎											△		△		△		•?			◎			△							
58	3 HN 18	Bor-Undur No.11	Clay in 3HN17	◎		△									•				•					◎										
59	3 HN 20	Adag No.1	White altered, in 3HN19	◎		◎													○					◎										
60	3 HN 22	Bor-Undur No.5	Qzv,fl	△																				◎										
61	3 HS 6	Adag No.3	Greisen,fl	◎		△													•					◎										
62	3 HS 8	Bor-Undur No.5	Clay,fl	◎		•										•								◎										
63	3 HY 5	Bor-Undur No.5	Qzv,fl	△																				◎										
64	3 HY 6	Chol-Tsagaan-Del	Clay,white	◎											△		•			○				△										
65	3 UN 16	Olon-Ovoot	Qzv,alt zone	◎	•	△?	•										◎		○				○											
66	3 US 28	Olon-Ovoot	Sltstone	◎	○		△										△	○																
67	3 US 31	Olon-Ovoot	Sltstone	◎	○	○	•	○									△	○	△									△						
68	3 US 35	Olon-Ovoot	Qzv in siltstone	◎	○	•		○									○	○										△						
69	3 US 41	Olon-Ovoot	Qzv	◎		△		○									○	•	△									△						
70	3 US 43	Olon-Ovoot	Qzv in siltstone	◎				•																				△						
71	3 US 47	Olon-Ovoot	Qzv in siltstone	◎		•?		○									◎	△	•									△						
72	3 US 48	Olon-Ovoot	Diorite,sheared	◎	△	•?		◎									△		△									△						
73	3 US 51	Olon-Ovoot	Diorite,sheared	◎	◎						○	△						◎																
74	3 US 67	Olon-Ovoot	Siltstone with qzv	◎	◎		△											○										△						
75	3 US 70	Olon-Ovoot	Diorite	○	◎	•?		○									◎	○										•						
76	3 US 72	Olon-Ovoot	Diorite,py oxd	◎	◎	•?	△	△									△	◎										△						
77	3 US 74	Olon-Ovoot	Diorite,py	◎	◎	•?						•						◎										•			•?			
78	3 US 78	Olon-Ovoot	Siltstone with qzvlt	◎	•	•?	△	•									○	△										•			•?			

◎:Abundant ○:Common △:Poor •:Rare * Unidentified

Appendix 1-16 X-ray Diffraction Analyses (Rare Earth, Rare Metal Deposits)

No.	SAMPLE No.	LOCALITY	ROCK NAME	Quartz	Plagioclase	K-feldspar	Calcite	Ankerite	Dolomite	Bastnaesite	Mica	Smectite	Sericite	Kaolinite	Molybdenite	Monazite	Synchysite	Strontianite	Celestite	Beryl	Topaz	Barite	Fluorite	Apatite	Anatase	Gypsum	Jarosite	Pyrite	Magnetite	Hematite	Goethite	Rasplite	Phosphosiderite			
79	3 NS 1	Yuguzer	Greisen,fl	◎							◎				△								△			•									
80	3 NS 6	Yuguzer	Oxide ore	◎							◎			•													△				△				
81	3 NS 11	Tsentr	Secondary carbonate,on qp	◎			△														○						•								
82	3 NS 13	Nuhutiin-Tsagaan	Beryl	△																◎															
83	3 NS 14	Nuhutiin-Tsagaan	Qz,wf	◎	△?	△?	◎																								△				
84	3 RS 1	Lugiingol	Carbonatite,synchi			△	◎										○																		
85	3 RS 3	Lugiingol	Carbonatite,synchi	◎									•				△						△								•				
86	3 RS 8	Lugiingol	Carbonatite,synchi,pari				◎	△									△	•	•					△											
87	3 RS 10	Lugiingol	Carbonatite,gn				◎										△	△										△							
88	3 RS 11	Lugiingol	Carbonatite,pseu py			△	○		◎				•				△																		
89	3 RS 13	Lugiingol	Carbonatite,synchi,fl			•	△				△						△						◎								•				
90	3 TS 36	Salaa	Qz,limonite	◎																											•				
91	3 UN 5	Olon-Ovoot area	Alkali rhyolite,topaz-bg	◎	○	◎					△	•																			•				
92	3 US 2	Mushgia-Hudak	Carbonatite,bre ore,fl	◎		○	○																◎												
93	3 US 6	Mushgia-Hudak	Carbonatite,bre ore,fl	•					•	•												△	◎												
94	3 US 9	Mushgia-Hudak	Carbonatite,fl,apt,mart	○											•				○				○	△							△	△			
95	3 US 15	Mushgia-Hudak	Apatite,gypsum	△																						◎							△		
96	3 US 18	Mushgia-Hudak	Magnetite rock,phlog			• ?					△														• ?				○	○	△				
97	3 US 21	Mushgia-Hudak	Magnetite,apatite,gyp																										○	○	•				
98	3 US 26	Mushgia-Hudak	Carbonatite,fl,purp	◎			•				•								△				•	△											
99	3 US 88	Bayan-Hoshoo	Rhytic tuff,celestite,qz	○		△	△					△	•						○																
100	3 US 90	Bayan-Hoshoo	Rhytic tuff,celestite,qz			◎	○					△	△						◎							•									
101	3 US102	Bayan-Hoshoo	Carbonatite,celestite,ba	•			◎			△												◎	◎												
102	3 US103	Bayan-Hoshoo	Carbonatite,ba,qz,fl,py	△															◎				△												

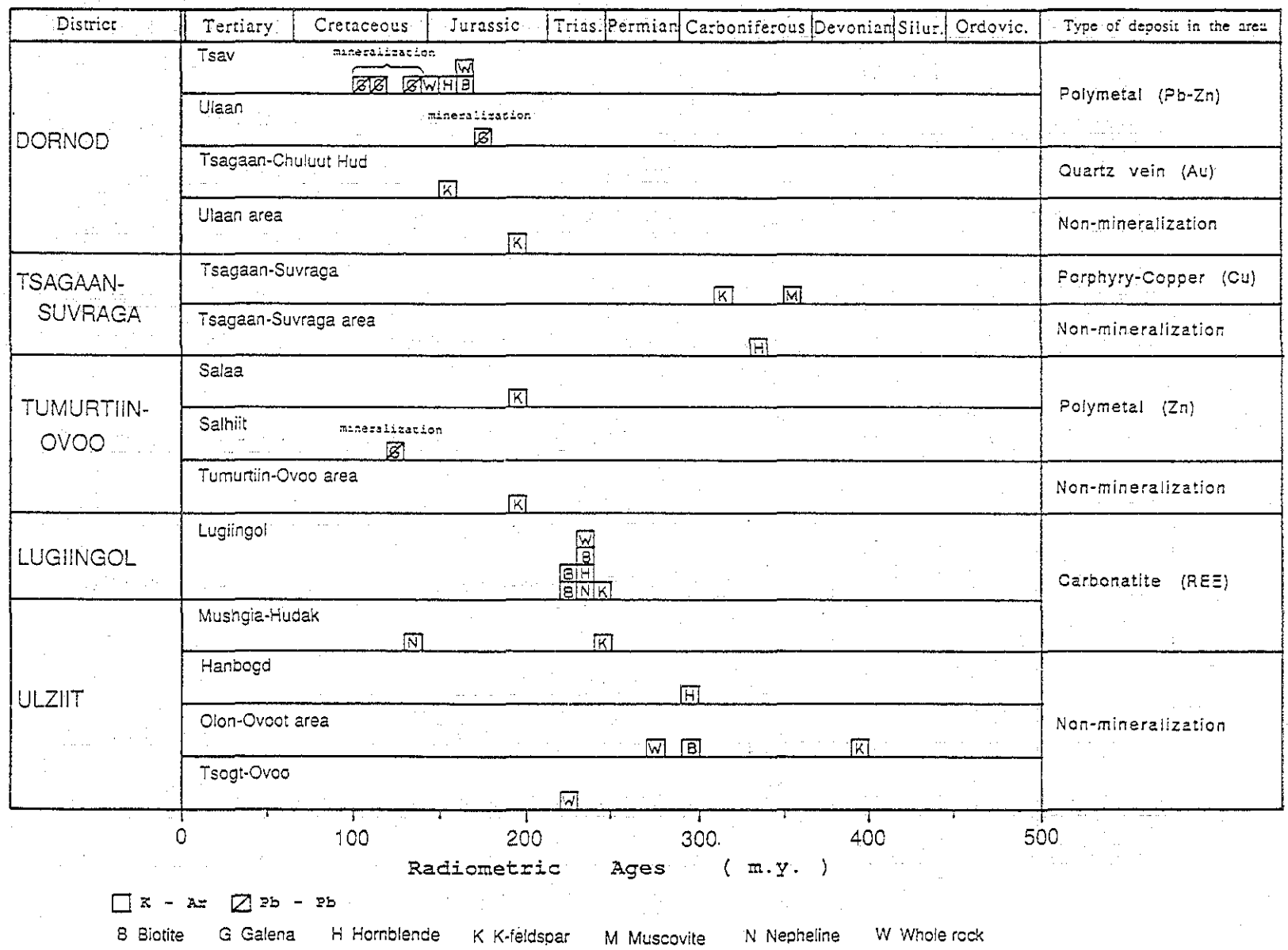
◎:Abundant ○:Common △:Poor •:Rare

Appendix 1-17 Results of Dating (K-Ar, Pb-Pb)

No.	SAMPLE No.	LOCALITY	COORDINATES NORTH	COORDINATES EAST	ROCK	MEDIA	RESULT DETERMINED AGE (Ma)	RESULT GEOLOGIC TIME	NOTE
(K-Ar method)									
1	3 DY 16	Tsagaan-Chuluut Hud.	49° 29.93'	113° 25.63'	Granite porphyry	K-feldspar	154 ± 8	M~U Jur	Near qz v.
2	3 DN 17	Tsav	* 48° 55.96'	115° 21.51'	Monzodiorite	Hornblende	156 ± 8	M~U Jur	DDH, Habirgan cmplx
3	3 DN 18	Tsav			Granite porphyry	Whole rock	140 ± 7	U Jur~L Cret	DDH, Habirgan cmplx
4	3 DN 19	Tsav			Schistose granite	Biotite	161 ± 8	M Jur	DDH, Habirgan cmplx
5						Whole rock	163 ± 8	M Jur	
6	3 DN 38	Ulaan area	49° 6.64'	114° 7.29'	Granite	K-feldspar	191 ± 10	L Jur	NW of Ulaan
7	3 RS 9	Lugiingol	42° 58.64'	108° 35.07'	Nepheline syenite	Biotite	237 ± 12	L~U Tri	No.6 vein
8	3 RS 14	Lugiingol	* 42° 58.17'	108° 37.04'	Syenite	Biotite	229 ± 11	M~U Tri	DDH10-A-8, 10m
9						Hornblende	234 ± 12	M~U Tri	
10						K-feldspar	242 ± 12	U Perm~M Tri	
11						Whole rock	239 ± 12	U Perm~U Tri	
12	3 RS 15	Lugiingol			Nepheline syenite	Nepheline	234 ± 12	L~U Tri	DDH12-A-6, 90m
13						Biotite	228 ± 11	M~U Tri	
14	3 SN 21	Tsagaansuvraga	* 43° 52.08'	108° 20.81'	Greisen	Muscovite	354 ± 18	U Dev~L Carb	Ore stock pile
15	3 SS 24	Tsagaansuvraga	43° 52.04'	108° 20.81'	Quartz monzonite	K-feldspar	315 ± 16	L~U Carb	"Leuco granite"
16	3 SN 22	Tsagaansuvraga area	43° 50.64'	108° 27.75'	Quartz monzonite	Hornblende	339 ± 17	U Dev~L Carb	10km east from T.S.
17	3 TN 3	Salaa	* 46° 47.25'	113° 30.27'	Granite	K-feldspar	191 ± 10	L Jur	DDH, pale-grn feld
18	3 TY 4	Tumurtiin-Ovoo area	46° 48.31'	113° 18.86'	Granite	K-feldspar	191 ± 10	L Jur	1km NW from T.O.
19	3 UN 7	Hanbogd	43° 11.36'	107° 11.73'	Alkali granite	Hornblend	290 ± 15	U Carb~L Perm	Hanbogd complex
20	3 US 19	Mushgia-Hudak	44° 23.23'	104° 0.51'	Syenite	Nepheline	132 ± 7	U Jur~L Cret	NW of apatite Mt.
21	3 UN 1	Olon-Ovoot area	44° 27.80'	104° 21.06'	Graphic granite	Albite	392 ± 75	L Ord~U Carb	18km NE from O.O.
22	3 UN 2	Olon-Ovoot area	44° 22.05'	104° 5.93'	Gabbro	Whole rock	278 ± 14	U Dev~L Perm	5km WSW from O.O.
23	3 UN 3	Mushgia-Hudak	44° 26.38'	104° 1.17'	Granite	K-feldspar	246 ± 12	U Perm~M Tri	5km NNE from M.H.1
24	3 UN 4	Olon-Ovoot area	44° 17.15'	104° 7.68'	Granodiorite	Biotite	292 ± 15	U Carb~L Perm	10km SSW from O.O.
25	3 UY 5	Tsogt-Ovoo	44° 33.97'	105° 3.10'	Granite	Whole rock	226 ± 11	M~U Tri	Tsogt-Ovoo massif
(Pb-Pb method)							**		
26	3 DS 1	Tsav	48° 55.61'	115° 20.28'	Plymtl vein ore	Galena	131.0	L Cret	No.4 trench
27	3 DS 5	Tsav	* 48° 55.45'	115° 20.27'	Plymtl vein ore	Galena	116.1	L Cret	Ore stock pile
28	3 DY 3	Tsav			Plymtl vein ore	Galena	109.3	L Cret	near No.14 shaft
29	3 DN 39	Ulaan	49° 5.02'	114° 4.76'	Plymtl brc-pip ore	Galena	170.1	M Jur	Ore stock pile
30	3 TN 8	Salhiit	* 46° 47.25'	113° 30.27'	Gar-mgt sk ore	Galena	125.3	L Cret	DDH

(ABBREVIATIONS) T.S.:Tsagaansuvrag, T.O.:Tumurtiin-Ovoo, O.O.:Olon-Ovoot, M.H.:Mushgia-Hudak, U:Upper, M:Middle, L:Lower
Cret:Cretaceous, Jur:Jurassic, Tri:Triassic, Perm:Permian, Carb:Carboniferous, Ord:Ordovician
DDH:Boring core, Plymtl:Polymetal, Gar-mgt sk:Garnet-magnetite skarn, Brc-pip:Breccia pipe
*:Coordinates of core strage yard or ore stock pile.
**:Pb-Pb age were calculated using the formular taken from "Principles of Isotopic Geology" by Gunter Faure, 1977.

Appendix 1-18 Histogram of Radio Metric Ages



Appendix 1-19 (1) Data of Dating (K-Ar) (1)

No.	SAMPLE No.	LOCALITY	ROCK	MEDIA	Ar* (scc/gm×10^{-5})	% Ar*	% K	ISOTOPIC AGE (Ma)
1	3 DY 16	Tsagaan-Chuluut Hud.	Granite porphyry	K-feldspar	5.25 5.23 5.40	89.4 92.7 92.8	8.53 8.45	154 ± 8
2	3 DN 17	Tsav	Monzodiorite	Hornblende	0.181 0.173	54.8 54.9	0.28 0.28	156 ± 8
3	3 DN 18	Tsav	Granite porphyry	Whole rock	2.32 2.36 2.23 2.29	93.4 94.4 92.7 93.2	4.08 4.04	140 ± 7
4	3 DN 19	Tsav	Schistose granite	Biotite	0.651 0.662 0.655	77.7 82.0 86.2	1.00 1.01	161 ± 8
5	3 DN 19	Tsav	Schistose granite	Whole rock	2.60 2.68 2.65	95.0 95.7 96.0	4.00 3.99	163 ± 8
6	3 DN 38	Ulaan area	Granite	K-feldspar	3.63 3.64 3.55 3.57	88.1 89.2 86.2 85.4	4.61 4.56	191 ± 10
7	3 RS 09	Lugiingol	Nepheline syenite	Biotite	2.52 2.50	93.5 93.2	2.52 2.57	237 ± 12
8	3 RS 14	Lugiingol	Syenite	Biotite	4.00 4.08 4.14	96.8 96.7 95.0	4.36 4.23	229 ± 11
9	3 RS 14	Lugiingol	Syenite	Hornblende	1.76 1.78	94.8 95.1	1.81 1.83	234 ± 12
10	3 RS 14	Lugiingol	Syenite	K-feldspar	7.90 7.68	91.2 92.5	7.68 7.80	242 ± 12
11	3 RS 14	Lugiingol	Syenite	Whole rock	6.30 6.16 6.25 6.16	97.3 97.9 97.4 98.2	6.27 6.23	239 ± 12
12	3 RS 15	Lugiingol	Nepheline syenite	Nepheline	7.13 7.06 7.12 7.05	97.3 97.0 97.8 98.1	7.30 7.32	234 ± 12

Appendix 1-19 (2) Data of Dating (K-Ar) (2)

No.	SAMPLE No.	LOCALITY	ROCK	MEDIA	Ar* (scc/gm×10^{-5})	% Ar*	% K	ISOTOPIC AGE (Ma)
13	3 RS 15	Lugiingol	Nepheline syenite	Biotite	3.12 3.19	94.3 93.7	3.33 3.34	228 ± 11
14	3 SN 21	Tsagaan-Suvraga	Greisen	Muscovite	11.6 11.4	98.4 98.2	7.55 7.58	354 ± 18
15	3 SS 24	Tsagaan-Suvraga	Quartz monzonite	K-feldspar	13.2 12.9	95.5 96.8	9.71 9.77	315 ± 16
16	3 SN 22	Tsagaan-Suvraga	Quartz monzonite	Hornblende	0.611 0.629 0.629	81.7 83.4 79.2	0.43 0.43	339 ± 17
17	3 TN 03	Salaa	Granite	K-feldspar	5.90 5.64 6.00	90.1 88.1 89.3	7.40 7.50	191 ± 10
18	3 TY 04	Tumurtiin-Ovoo area	Granite	K-feldspar	7.22 7.22	91.4 92.2	9.25 9.18	191 ± 10
19	3 UN 07	Hanbogd	Alkali granite	Hornblende	0.603 0.614 0.617 0.639	93.2 92.2 90.5 91.1	0.51 0.50	290 ± 15
20	3 US 19	Mushgia-Hudak	Syenite	Nepheline	3.41 3.34	94.2 95.8	6.30 6.36	132 ± 7
21	3 UN 01	Olon-Ovoot area	Graphic granite	Albite	0.128 0.127	13.7 18.3	0.07 0.08	392 ± 75
22	3 UN 02	Olon-Ovoot area	Gabbro	Whole rock	0.763 0.812	83.3 87.5	0.67 0.68	278 ± 14
23	3 UN 03	Mushgia-Hudak	Granite	K-feldspar	9.44 9.22	95.8 95.5	9.18 9.01	246 ± 12
24	3 UN 04	Olon-Ovoot area	Granodiorite	Biotite	4.94 4.94	94.5 95.6	4.03 3.98	292 ± 15
25	3 UY 05	Tsogt-Ovoo	Granite	Whole rock	3.90 3.90	96.3 96.8	4.15 4.17	226 ± 11

1. Analist : TELEDYNE ISOTOPE (U.S.A.)

2. Constants : $\lambda\beta = 4.962\times10^{-10}\ yr^{-1}$ $\lambda\varepsilon = 0.581\times10^{-10}\ yr^{-1}$
$^{40}K/K = 1.167\times10\ atm\%$ $^{40}Ar/^{36}Ar$ atmosphere=295.5 (Steiger and Jager, 1977)

3. $^{40}Ar*$: Radioactive Argon

Appendix 1-20 Data of Dating (Pb-Pb)

No.	SAMPLE No.	LOCALITY	ORE TYPE	MEDIA	204 Pb	206 Pb	207 Pb	208 Pb	Isotopic Age (Ma)
1	3 DS 01	Tsav	Polymetal vein ore	Galena	1.369	25.111	21.268	52.252	131.0
2	3 DS 05	Tsav	Polymetal vein ore	Galena	1.371	25.140	21.279	52.210	116.1
3	3 DY 03	Tsav	Polymetal vein ore	Galena	1.372	25.142	21.278	52.208	109.3
4	3 DN 39	Ulaan	Polymetal breccia pipe ore	Galena	1.368	25.071	21.282	52.279	170.1
5	3 TN 08	Salhiit	Garnet-magnetite skarn ore	Galena	1.372	25.165	21.309	52.154	125.3

1. Analist: TELEDYNE ISOTOPES (U.S.A.)

2.

$$Ma = \left[\frac{^{207}Pb / ^{204}Pb - 10.294}{^{206}Pb / ^{204}Pb - 9.307} \right]$$

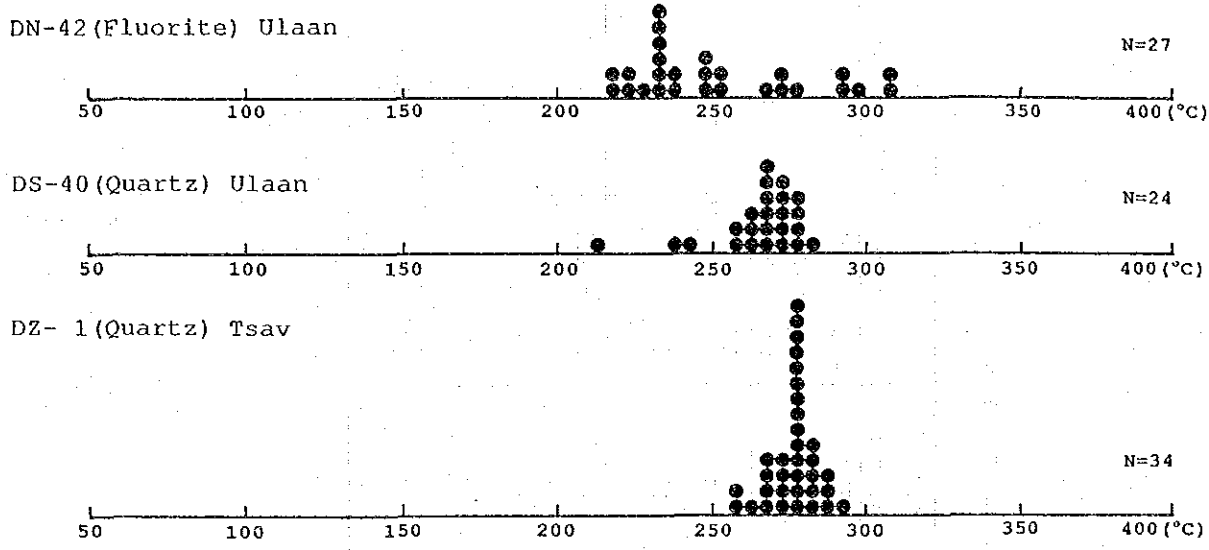
(after Doe and Stacey, 1974 ; Faure, 1977)

Appendix 1-21 Homogenization Temperature of Fluid Inclusions

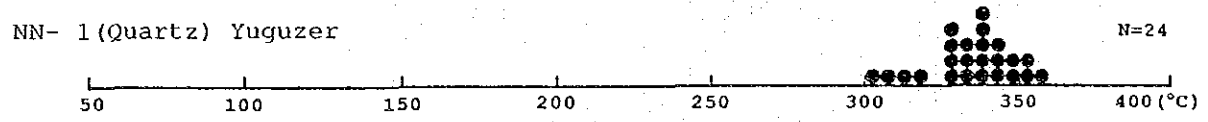
No.	Type of deposit (element)	Deposits	Sample No.	Mineral	Number of measurements	Homogenization temperature (℃)		
						Range	Mean of sample	Mean of deposit
1	Polymetal(Pb, Zn)	Ulaan	3DN42	Fluorite	27	215 - 307	252	258
2			3DS40	Quartz	24	213 - 280	264	
3		Tsav	3DZ 1	Quartz	34	255 - 291	276	276
4	Greisen(W)	Yuguzer	3NN 1	Quartz	24	301 - 357	334	334
5	Fluorite vein(F)	Bor-Undur No.5 vein	3HN22	Fluorite	9	92 - 260	156	156
6		Maihanta2	3HY 2	Fluorite	15	147 - 171	160	160
7	Carbonatite(REE)	Lugiingol	3RS13	Fluorite	24	160 - 285	213	213
8	Quartz vein(Au)	Olon-Ovoot	3US36	Quartz	19	219 - 283	246	246
9			3US40	Quartz	18	185 - 341	270	
10			3US47	Quartz	16	169 - 339	251	
11			3US54	Quartz	18	181 - 251	218	
12		Onh	3UY 1	Quartz	13	191 - 339	301	301
13		Dugshin	3UY 6	Quartz	24	207 - 331	280	281
14			3UY 7	Quartz	14	253 - 328	283	

Appendix 1-22 (1) Histogram of Homogenization Temperature of Fluid Inclusions (1)

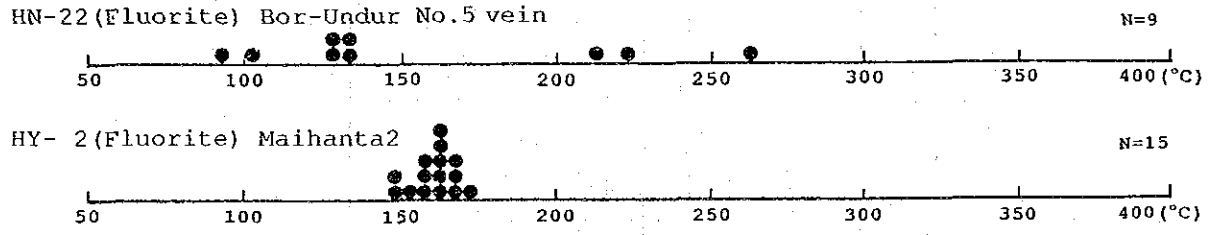
Polymetal (Pb, Zn)



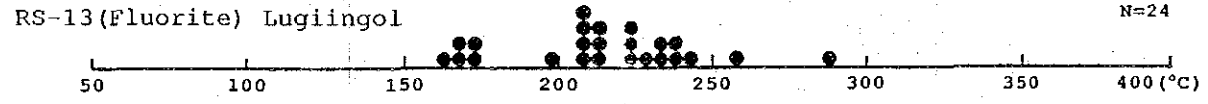
Greisen (W)



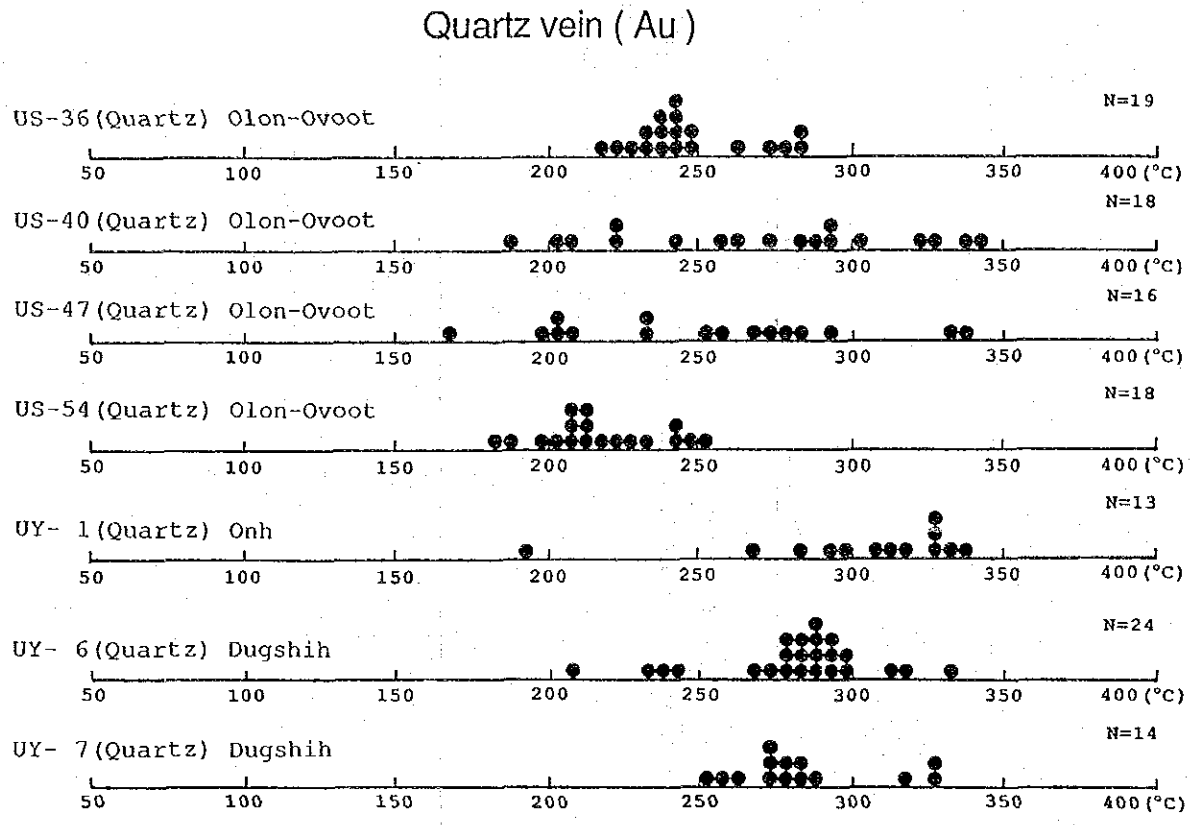
Fluorite vein (F)



Carbonatite (REE)



Appendix 1-22 (2) Histogram of Homogenization Temperature of Fluid Inclusions (2)



Appendix 1-23 Fossil Identifications

Sample : Fossiliferous calcareous siltstone (Sample No. 3SS10)
Locality : Tsagaansuvraga area, Cental Gobi, MPR (43°51'N, 108°21'E)

(Phyrum)	Name	Age	Distribution	Note	Determined by
(Brachyopoda)	Athyris sp.	Lower Devonian～Triassic	World wide		Junichi TAZAWA
(Brachyopoda)	Productella sp.	Middle Devonian～Upper Devonian	Europe, Asia, N. America		Junichi TAZAWA
(Brachyopoda)	Spiriferide			gen. et sp. indet.	Junichi TAZAWA
(Brachyopoda)	Rhynchonellide			gen. et sp. indet.	Junichi TAZAWA
(Bryozoa)	Fenestera spp.	Ordovician～Permian		sp. indet.	Sumio SAKAGAMI
(Bryozoa)	Penniretepora spp.	Ordovician～Permian		sp. indet.	Sumio SAKAGAMI

(ABBREVIATIONS) gen. : genus
et : and
sp. : species
indet. : indeterminable

Appendix 2

Mines and Ore-showings of the Uudam-Tal Area

Appendix 2-1 Mines and Ore-showings of the Uudam-Tal Area
Appendix 2-2 Gold deposit and Ore-showings in the Ulziit Area

Appendix2-1 Mines and Ore-showings of the Uudam-Tal Area (1)

AREA No. Name of deposit	LOCATION Longitude E	Latitude N	Altitude	MINERAL	TYPE OF DEPOSIT	TYPE OF ORE	RESERVE (T. t)	ORE GRADE (Au. Ag: g/t, Others: %)	HOST ROCK	DISCOVERY YEAR	EXPLORATION CONDITION	NOTE
DORNOD AREA												
1. Tsav	115° 20′ 16″	48° 55′ 27″	770 m	Ag, Pb, Zn	Vein	Polymetal	7,680	Ag 222.4, Pb 6.4, Zn 4.6	Gns, Schist, Dior. Gr. An Bas.	1975 USSR	Intensively explored	Under exploration by MPR. Cretaceous Mineralization.
2. Ulaan	114° 05′ 47″	49° 05′ 12″	1,159 m	Ag, Pb, Zn	Stockwork & Skarn	Polymetal	68,100 + P_1 25,000	Ag 49, Pb 0.95, Zn 1.90	Rhyolite (Jurassic)	1973 USSR	Intensively explored	All the exploration was done by USSR. Now stopped
3. Muhar	1.2 km southeast from Ulaan dep.			Ag, Pb, Zn	Stockwork	Polymetal	25,500	Ag 113, Pb 0.63, Zn 3.4	Rhyolite (Jurassic)	1973? USSR	Insufficient	All the exploration was done by USSR. Now stopped
4. Bayan-Uul	115° 41′ 16″	48 ° 54′ 11″	920 m	Ag, Pb, Zn	Quartz vein and stockwork	Polymetal	61,110	Ag 80g/t, Pb+Zn 1 ～2 % Au 0.3g/t, Cu 0.10~0.13	Gr(Pz), Dior. (Mz)	1975 USSR	Insufficient	Being studied by MPR.
5. Salhiit	115° 41′ 01″	48 ° 57′ 37″	732 m	Ag, Pb, Zn	Quartz vein	Polymetal	—	Ag 15g/t at outcrop	Schist, Gr, Grd, An	1988	? 20 drillings	Abandoned
6. Delger-Munh	114° 48′ 21″	48 ° 46′ 58″	917 m	Ag, Pb, Zn?	Quartz vein	Polymatal	—	not clarified	An, Shale, Ss, Cgl	198? USSR	IP, Boring.	Under exploration
7. Tsagaan-Chuluut Huduk	113° 25′ 00″	49 ° 28′ 00″	860 m	Au	Placer	Placer Au	Au 4 t?	not clarified	Alluvium	1973	Intensive	Under exploration Production from 1992.
8. Mardai	114° 21′ 30″	49 ° 06′ 20″	900 m	U	Stockwork & vein	coffinite uraninite	?	?	Rhy, An, Bas. of Jurassic	1972	?	Under exploitation by USSR
TUMURTIIN-OVOO AREA												
1. Tumurtiin-Ovoo	113° 39′ 29″	46 ° 47′ 44″	1,135 m	Zn	Massive	Skarn (Ga-Sk)	7,680	Zn 11.5%	Limestone Siluro-Devon	1974 GDR/MPR	Intensive 113 drillings	Under stripping for exploitation.
2. Salhiit	113° 30′ 05″	46 ° 48′ 02″	1,074 m	Zn	Massive	Skarn (Ga-Sk)	920	Zn 6.4 %	Limestone Siluro-Devon	1966 UPR	Intensive	Many drillings were done.
3. Salaa	113° 26′ 06″	46 ° 48′ 49″	1,070 m	W	Quartz vein	Wolframite	170	WO_3 1.35 %	Granite of Jurassic	1966 UPR/MPR	Intensive	Mined out by open pit & underground
4. Arin-Nuur	113° 57′ 31″	47 ° 13′ 44″	1,006 m	Cu, Mo	Greizen	Molybdenite Chalcopyrite	24,100	Mo 0.107 %, Cu 0.06 %	Gr, Grd, Jurassic～ Cretaceous	1967 UPR	Intensive	Mined out by open pit & underground
NUHUT-DAWAA												
1. Yuguzer	115° 24′ 02″	45 ° 54′ 27″	1,181 m	W, MO, Be, Bi	Greizen Qz vein	Wolframite Molybdenite	21,580	WO_3 0.197 %, Mo 0.056 % Bi 5,140 t(Av 0.132 %) Be 41,000 t(Av 0.08 %)	Granite Triassic～ Jurassic	1939 USSR	Very intensive	Mined by underground method. Difficulty in ore dressing.
2. Tsentr	115° 35′ 18″	45 ° 56′ 08″	1,167 m	Sn, W, Be, Mo	Greizen	Wolframite Cassiterite	9,000	Sn 0.078 %, WO_3 0.137 % BeO 0.120 %	Granite Trias ～Jura	1977	Very intensive	Abandoned after exploration.

Appendix2-1 Mines and Ore-showings of the Uudam-Tal Area (2)

AREA No. Name of deposit	LOCATION Longitude E	Latitude N	Altitude	MINERAL	TYPE OF DEPOSIT	TYPE OF ORE	RESERVE (T. t)	ORE GRADE (Au, Ag: g/t, Others: %)	HOST ROCK	DISCOVERY YEAR	EXPLORATIO CONDITION	NOTE
3. Nuhutiin-Tsagaan-tolgoi	115° 48′ 24′	46 ° 03′ 17″	1.070 m	Be	Pegmatite	Berryl	?	?	Granite	?	?	lenticular body, 10 ～20 m long
HAR-AIRAG AREA												
1. Bor-Undur	109° 25′ 18′ 109° 26′ 16′	46 ° 15′ 21′ 46 ° 16′ 19′	1.250 m 1.333 m	CaF_2	Vein	Quartz-Fluorite	20.985	CaF_2 39.10 %	Basalt, Qp, Gr, Cretaceous	1956	Intensive Working	production 210,000 t/y CaF_2 32 %
2. Adag	109° 19′ 32′	46° 17′ 44 ′	1.500 m	CaF_2	Vein	Quartz-Fluorite	4.000	CaF_2 40 %	Granite, Qp,	?	Intensive Working	production 60,000 t/y CaF_2 27 %～29 %
3. Chol-Tsagaan-Del	107° 14′ 21′	46 ° 55′ 48′	1.440 m	CaF_2	Vein	Quartz-Fluorite	1.400	CaF_2 40 %～53 %	Phyl, Sch, Dol, Ls	1978	Intensive Working	production 60,000 t ～70,000 t/y CaF_2 40 %～53 %
4. Hongor	109° 44′ 51′	45 ° 48′ 17″	1.250 m	CaF_2	Vein	Quartz-Fluorite	1.376	CaF_2 29 %～34 %	Sch, Ls, Rhy Protero, Carb	1964	Intensive Exploited by open pit	Closed. 1977-1979 produc. 259,729t crude o.
5. Maihanta I II	108° 38′ 20′ 108° 39′ 54′	45° 49′ 50′ 45° 51′ 22′	1.190 m 1.180 m	CaF_2	Vein	Quartz-Fluorite Cal-Fl	2.887 197	CaF_2 36.5 % CaF_2 33.1 %	Gns, Gr, Ls Protero-Pz.	1971	Intensive Exploited by Open pit	Abandoned Difficulty in ore dressing.
6. Tsagantakhilch	108° 37′ 36′	45 ° 47′ 46′	1.215 m	CaF_2	Vein	Quartz-Fluorite	1.824	CaF_2 40.5 %	Gns, Gr, Ls	1971	Intensive 55 bore holes	abandoned.
7. Hamar-Us	110° 10′ 28′	46 ° 25′ 13′		CaF_2	Vein		1.053	CaF_2 47.1 %			Intensive	Working
8. Dzuun-Tsagaan-Del	110° 02′ 18′	46 ° 22′ 12′		CaF_2	Vein		6.952	CaF_2 32.1 %			Intensive	Working
9. Tsagaan-Elegeni	30km southeast from Dzuuun-Tsagaan-Del			CaF_2	Vein		1.100	CaF_2 46.0 %				
10. Hajyuu-Ulaan	109° 52′ 05°	46 ° 19′ 24′		CaF_2	Vein		582	CaF_2 39.0 %			Intensive	
LUGIINGOL AREA												
1. Lugiingol	108° 35′ 04′	42 ° 58′ 38′	1.113 m	RE	Vein	Carbonatite	436	TREO 2.86 %	Alkaline rock complex Triassic	197?	Intensive	Left
TSAGAANSUVRAGA												
1. Tsagaansuvraga	108° 20′ 47′	43 ° 51′ 56′	1.188 m	Cu, Mo	Porphyry	dissemina-ted	240.044 (Serven-Suhait ore body or No.1 ore body only)	Cu 0.53 %, Mo 0.018 %	Quartz-monzo nite	1964 MPR	Very inten-sive	Left. Not pay for initial cost.
2. Duchi-Hural	106° 18′ 00′ 106° 20′ 25′	44 ° 04′ 30′ 44 ° 05′ 50′	about 1.000 m	Cu	Porphyry	dissem. stockw.	2.600	Cu 0.31 %	An, Gd-Por. Carb-Perm	1971 MPR	12 drillings	Abandoned

Appendix2-1 Mines and Ore-showings of the Uudam-Tal Area (3)

AREA No. Name of deposit	LOCATION Longitude E	Latitude N	Altitude	MINERAL	TYPE OF DEPOSIT	TYPE OF ORE	RESERVE (T, t)	ORE GRADE (Au, Ag:g/t, Others: %)	HOST ROCK	DISCOVERY YEAR	EXPLORATION CONDITION	NOTE
3. Harmagtai	106° 08′ 40″	44° 01′ 30″	about 1,000 m	Cu	Porphyry	dissem. & stockw.	139,600	Cu 0.25 %	An, Gd-Por. Carb-Perm	1971 MPR	3 drillings	Abandoned
4. Ih-Shanhai	106° 00′ 00″	43° 40′ 20″	about 1,000 m	Cu	Porphyry	dissem. Qz stockw.	—	Cu 0.01 ～2.5 %, Au 0.03 ～3g/t	An, tuff, Gr, Grd. Carbon	1971	IP, Magne	Abandoned
5. Narinhuduk	107° 11′ 00″	44° 14′ 10″	about 1,000 m	Cu	Porohyry	dissem. 6 ore bodies	8,600	Cu 0.58 %	Grd, Dior. Permian	1971	1/50,000 Geol. surv., IP	Abandoned
5. Ovootu-Hira	105° 02′ 10″	44° 01′ 05″	about 1,100 m	Cu	Porphyry	Qz stock-work	—	Cu 0.05 % ～0.3 %, Ag 0.2 ～0.6g/t, Au≦5g/t	Grd-por.	1971	14 drillings IP, Geochem, Magne, Trench	Abandoned
6. Shuten	107° 21′ 15″	43° 36′ 25″	about 1,000 m	Cu	Porphyry	dissem.	—	Cu 0.31 %	Grd, Gr, Por Ap, Dior.	1971	Geological mapping	Abandoned
7. Uhaa-Hudak	106° 12′ 30″	44° 01′ 45″	about 1,000 m	Cu	Porphyry	Stockw.	—	Cu 0.05 % ～3 %, Ag 0.1～12.3 g/t	Grd Carbon-Perm.	1971	9 drillings 9 trenchings	Abandoned
ULZIIT AREA												
1. Mushgia-Huduk	104° 00′ 16″	44° 23′ 41″	1,160 m	RE	Vein, lens	Carbonatite	398,000	TREO 1.53	Syenite Jurassic	1974-77 USSR/MPR	Intensive 100 <drill--ing holes	Ore reserve drastically decreased by 1989-90 survey
2. Bayan-Hosho	104° 21′ 19″	44° 20′ 17″	1,129 m	Sr	Massive	Stockw. of celestite	about 700	SrO 40～50 %	Rhy. Tuff, Syenite of Jurassic	1976	Intensive With many drillings	Vein ratio at surface is 2 ～3 % Abandoned
3. Olon-Ovoot	104° 09′ 44″	44° 22′ 28″	1,205 m	Au	Vein Network	Auriferous quartz v.	?	Au up to 32.8g/t in 68 samples. max 340g/t in spot samples.	Ss, Shale of Silurian	1979-82 USSR	Insufficient	Under exploration possibly workable
4. Dugshih	104° 55′ 48″	44° 24′ 29″	1,284 m	Au	Vein swarm	Auriferous quartz v.	?	Au up to 50 g/t in 18 samples.	Diabase, Gab. Devonian	1979-82 USSR	Insufficient	Left.
5. Onh	105° 22′ 29″	44° 36′ 12″	1,284 m	Au	Vein	Auriferous quartz v	?	Au 0.1～0.4 g/t, Ag 0.2～0.8 g/t	Sch, Rhy, Gab Siluro-Devon	1979-82 USSR	Insufficient	Left.
6. Bayan-Bor-Nuruu	104° 53′ 06″	44° 24′ 25″	1,275 m	Au	Vein	Auriferous quartz v	?	Au 1～6 g/t in 182 samples	altn. Ss. sh Silurian	1979-82 USSR	Insufficient	Left.

Appendix2-2 Gold Deposits and Ore-showings in the Ulziit Area (1)

Name or Number of Occurence	Mineral	Ore-type	Coordinate Longitude	Coordinate Latitude	Characteristics and Scale	Host Rock	Quantitiy of samples	Assay Au(g/t)	Assay Ag(g/t)	Note
Olon-Ovoot	Au	Quartz vein	104° 09′ 44″	44° 22′ 28″	Vein swarm of auriferous quartz veins, partly network type. Quartz vein zone:L.50m～100m× w:20～50m ×D:30～50m?	sandstone siltstone shale (Silurian)	55 pcs	～32.8	< 0.5	pyritization is widely seen. mesothermal ty Under exploration by MPR
Dugshih	Au	Quartz vein	104° 55′ 48′	44° 24′ 29′	Vein swarm of auriferous quartz W ≦1m, L.30～50m Quartz vein zone:L.150m ×50m	diabase, gabbro, schist (Siluro-Devon)	18 pcs	up to 20-60	up to 1.8	sericitization, pyritization, silicification
Onh	Au	Quartz vein	105° 22′ 29′	44° 36′ 12′	Vein swarm of auriferous quartz veins. vein: L.50～150m×Wmax.1m zone: L.2.500m×W.600m	diabase, gabbro, schist (Siluro-Devon)	2 pcs	0.07>	0.5 >	sericitization, pyritization
1	Ag	Quartz vein	106° 50′ 15′	45° 10′	zone: 600 m ×50 m vein: up to 50 m×2.5 m containing green copper, pyrite	limestone $R_2 or_2$	1 pc		30	4 km north from Haldzan-ula Pb 0.2 %, Cu 0.05 %, Bi 0.015 %
2	Ag	Quartz vein	106° 40′ 25′	45° 15′	vein: 50 m×1.5 m	acidic tuff (Devonian)	1 pc		50	2.5 km NE from Hutul Usu-khuduk Pb 0.3 %, Cu,Zn 0.02 %
3	Au	Quartz vein	104° 52′ 15′	44° 22′ 30′	vein: 10 m×0.4 m	sandstone (Devonian)	1 pc	3.0		5 km SE from Saltain Vosaga-khuduk
4	Au	Quartz vein	104° 31′ 15′	44° 12′ 15′	zone: 1,000 m(N-S)×50 m vein: up to 100 m ×0.3 ～0.5 m	$\gamma_2 p_1$	1 pc	0.5		Tsagan Tolgoi-khuduk
5	Ag	Stockwork of quartz	104° 26′	43° 51′ 40′	area: 200 m ×100 m vein: up to 1 ～3 cm	silicious $S_2 D_1 gs$	2 pcs		10.50	1 km west from Takhilga-Ula
6	Au	Quartz vein	104° 22′ 35′	44° 25′ 45′	area: 700 m ×100 m vein: up to 100 m ×1 m	claystone, sandstone (D_1 ms)	1 pc	0.3		2 km NW from Mu Suhai-khuduk
7	Au	Quartz vein	104° 25′	44° 26′ 30′	zone: 500 m ×50 m vein: up to 50 m×1 m (parallel veins)	claystone, sandstone (D_1 ms)	1 pc	0.3		2.5 km N ～NE from Mu Suhai-khuduk
8	Ag	Silicified rock	106° 45′ 10′	45° 10′ 40′	zone: 500 m ×50 m silicification, brecciation, hematitization	limestone ($R_2 or_2$)	1 pc		8	3.5 km SW from Sologoi-khuduk As 0.04 % Sb 0.01 %
9	Ag	Quartz vein	106° 01′	45° 10′ 25′	vein: 100 m ×0.3 ～2.5 m (brecciated quartz vein)	limestone $R_2 or_2$, γD_2	1 pc		6	3 mk N ～NW from Tsalangatai-khuduk Pb,Zn 0.1 %, Cu 0.07 %, Bi 0.03 %
10	Au	?	104° 37′ 45′	44° 09′	zone: 200 m ×50 m	tuff breccia	1 pc	0.2		2.8 km S ～SE from Tsagan Tologoi-khuduk, Pb 0.05 %, Zn 0.02 %, Mo0.002
11	Au	Stockwork of quartz	104° 50′ 20′	44° 20′ 25′	area: 300 m ×100 m vein: up to 3 cm wide	sandstone S_{1-2} mn	1 pc	0.3		7 km S-SE from Saltain Bosaga-khuduk
12	Ag	milky quartz	105° 51′ 40′	45° 52′ 20′	zone: 900 m ×50 m (quartz vein with brecciated texture)	acidic tuff	20 pcs	0.003 ～0.1	0.1 ～ 3	1 km S from Bolo Khabtsagai-khuduk Pb,Cu,Zn up to 0.05%, Mo up to 0.01%

Appendix2-2 Gold Deposits and Ore-showings in the Ulziit Area (2)

Name or Number of Occurence	Mineral	Ore-type	Coordinate		Characteristics and Scale	Host Rock	Quantitiy of samples	Assay		Note
			Longitude	Latitude				Au(g/t)	Ag(g/t)	
13	Ag	Quart zvein	105° 42′ 30″	45° 35′	vein swarm of quartz veins area: 300 m ×50 m vein: up to 50 m×0.5 m	volcanic rocks P_1 sh_1	20 pcs 4.0	up to 0.05	0.3 ~ 50	Cu, Zn, W≦ 0.015 % Pb ≦ 0.05 % Mo ≦0.005 %
14	Au, Ag	Quartz vein	105° 52′ 50″	45° 50′ 05″	parallel quartz veins area: 500 m ×100 m vein: up to 150 m ×5 m	$\gamma\delta P_1$	12 pcs	0.03 ~0.1	0.2 ~ 0.7	Zn ≦0.15 % Mo ≦0.008 % Mn ≦1.0 %
15	Ag	silicified rock	106° 14′ 35″	45° 58′ 35″	siricified rock , pyrite dissem. area: 200 m ×200 m	acidic volcanics P_1 sh_1	3 pcs		0.3 ~ 8	Cu ≦0.1 % , Zn 0.01 ~0.03 W ≦0.01 %
16	Ag	Quartz network	104° 42′ 05″	45° 55′ 40″	zone: 500 m ×20 m vein: ≦15 m×0/3 m	sedimentary rocks P_2 sn_2	6 pcs	0.003 ~0.1	0.1 ~ 0.7	Pb 0.01~0.3 %, Bi ≦0.004 % Zn, Cu 0.015~0.15 %
17	Ag	Parallel quartz vein	104° 52′ 05″	44° 54′ 15″	area: 300 m ×100 m vein: 10~30 m×0.1 ~0.5 m	γD_2	4 pcs		0.5 ~ 50	1.4 km S from Tsagan-Ura Pb ≦0.08 %, As, Cu ≦0.04 %
18	Ag	Quartz vein swarm	104° 54′	44° 51′ 10″	vein: 10~100 m ×0.2 ~2 m containing galena and malachite	shale R_{1-2} SV	5 PCS		0.1 ~ 1	5 km W Unaga-Ura As, Zn 0.02 %, Mo ≦0.003 %
19	Au, Ag	Quartz vein	105° 18′ 15″	44° 40′ 30″	area: 800 m vein: ≦0.5 m wide	σPZ_{1-2}	13 pcs	0.1~ 0.4	1.2 ~ 3.2	2.5 km SW from Onchiin Tsuzo-Ula Cr 0.1 ~0.7 %, Ni 0.1 ~0.3 % Co 0.01~0.3 %
20	Ag	Quartz vein	105° 46′ 55″	45° 55′ 30″	zone: 1,000 m ×15 m vein: ≦50 m×0.5 m brecciated chalcedonic quartz veins, many vugs after pyrite	sandstone T_{2-3} mu	4 pcs		0.1 ~ 10	1.4 km N from Soirig Khairkhan-Ula W, Mo ≦0.03 %, As≦1.0 %, Ge 0.1 % Be, Sb≦0.05 %
21	Au, Ag	silicified rock	105° 20′	45° 59′ 30″	mono-quartz silicified rock, quartz-kaolinite, hematite-sericite-quartz facies	dacite P_1 sh_1	33 pcs	≦0.1	0.5 ~ 30	Tsagan Kharatu Cu ≦0.1 %, Ge >0.1 %, Mo 0.001 ~ 0.03 %, W 0.001 %~0.015 %
22	Au, Ag	Qz-Tour breccia	104° 53′	44° 23′ 30″	quartz-tourmaline breccia vein: ≦25 m×0.6 m	sandstone S_{1-2} mn, $\mu\beta D_2$	3 pcs	0.02 ~2	≦0.3	4.8kmE~SE from Saltain Vosaga-khuduk As ≦0.005 %
23	Ag	Quartz	106° 50′ 15″	44° 55′ 40″	quartz containing green copper	amphibolite pyroxenite D_2 bt	1 pc		50	4 km SE from Undur-Uda Cu 0.5 %
24	Au	Qz-Tour vein	104° 52′ 15″	44° 24′ 15″	quartz, quartz-tourmaline vein zone: 150 m ×20 m vein: ≦50 m×0.3 m	siltstone D_1 ir_1	2 pcs	0.3, 5.0		4 km E~NE from Saltain Bosaga-Khuduk
25	Au, Ag	Quartz vein	106° 54′ 05″	45° 30′ 25″	quartz veins, silicification, argillization, propylitization zone: 300 m ×10 m vein: ≦15 m×2 m	rhyolite P_1 sh_1	5 pcs	≦0.1	0.1 ~ 1	1 km west from Chili-Khduku
26	Au, Ag	Quartz vein	104° 49′ 20″	45° 53′ 45″	quartz veinlets zone: 100 m ×70 m vein: ≦5 cm wide	sedimentary rocks, dike P_2 sn_2 , λP_2	1 pc	0.7	0.3	1.3 km N from Tsordoi-Khuduk quartz veinlet zone zone: 100 m×70 m, vein: ≦5 cm