

EXPLANATORY NOTES FOR THE
MINERAL RESOURCES MAP
OF
ASIA
1:5,000,000

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Mineral Resources Map of Asia

Masaharu KAMITANI*, Tetsuji OHNO**, Kimio OKUMURA**,
Yoji TERAOKA* and Yasushi WATANABE***

* Former staff of Geological Survey of Japan

** Geological Survey of Japan

*** Akita University

The mineral resources map of Asia exclusive of Southeast Asia covers the areas of mineral resources maps of East Asia(Kamitani *et al.*, 2007) and Central Asia(Kamitani *et al.*, 2012) and the neighboring regions.

The map shows land area deposits of main metallic mineral and non-metallic mineral resources except for limestone, dolomite, magnesite and construction materials. Uranium is included, although its principal utilization is for nuclear energy. About 8,000 mineral deposits are shown on the map regardless of their status of exploration, exploitation and mined out. However, creditable and detailed mineral deposit information has not been gotten from some areas and countries because of their complicated social and political environments. Therefore, strictly speaking, the map does not necessarily represent the present resources figure.

The background geology of the Mineral Resources Map of Asia was adopted from the Geological Map of Asia, scale 1:5,000,000(Teraoka and Okumura, 2011).

The Asian continent is very complicated in geology. Consequently, the tectonic map inserted on the lower-left corner of the mineral resources map of Asia was designed to make easy to understand the major geologic features and their relation to the distribution of mineral deposits. The map was prepared on the basis of the geological map of Asia (Teraoka and Okumura, 2011).

The map area is divided into many tectonic provinces, which are Precambrian massifs, orogenic belts ranging in age from Proterozoic to Cenozoic, associated with Mesozoic to Cenozoic large-scale sedimentary basins. The oldest Siberian, Sino-Korean and Indian massifs were consolidated in Archean to Early Proterozoic tectonic movements. There are also recognized the domains of Proterozoic orogenesis such as Enisei-Biryusa, Baikal-Vitim, Malkhan-Yablenov, Higher Himalayan and Dalhi belts, and Bureya-Khanka,

Yangtze and Kontum massifs. Phanerozoic orogenic belts occur between or around the older massifs, and resulted from Early Paleozoic(Caledonian), Late Paleozoic-Triassic (Variscan-Indosinian), Jurassic-Cretaceous(Yenshanian) and Cenozoic (Himalayan) movements. The large-scale basins are filled mainly with continental, partly marine sediments, and are important in production of oil, gas and some mineral resources.

On the mineral resources map, mineral deposits sizes; large, medium and small, are figured, and some sub-economic mineral deposits including mineral occurrences are plotted in order to indicate a resource potential in individual metallogenic area.

The legend of the mineral resources map is the same as ones of mineral resources maps of East and Central Asia (Kamitani *et al.*, 2007, 2012) and conforms fundamentally to that of the Circum-Pacific mineral resources map (Guild, 1981; Kamitani *et al.*, 1999). The commodity symbols show the metal or mineral contents of the deposits by colored geometric shapes with some modification.

The ten colors and five shapes indicated on the map's legend provide fifty combinations composed of metals, minerals and their associations.

The colors, insofar as possible, indicate metals or minerals of similar type. For example, copper, molybdenum and associated metals (tungsten, lead-zinc and nickel) are orange, precious metals (gold, silver, platinum group metals), diamond and precious stones are yellow, lead-zinc and associated metals are blue, and tungsten-tin and associated metals are red.

Three sizes of mineral deposits in Table 2 denote the relative importance of the mineral deposits. Limits among the three size categories for each commodity are mostly in terms of metric tons of the substances contained before

exploitation or an actual output. Some deposits shown as the smallest symbols on this map correspond to mineral occurrences, but they are included because they may help identify and estimate prospective areas broadly favorable for exploration planning of specific minerals. There are some differences in the deposit size categories between this map and Seltmann *et al.* (2001), Shatov *et al.* (2001), Geological Survey of India (2001) and others. Their criteria of the large-sized deposits were frequently adopted, unless the information of appropriate reserve/resource quantity of individual deposit is available.

Eleven deposit types including undifferentiated deposits shown on the map are as follows;

Magmatic and irregular massive deposits: mafic-ultramafic related Cu-Ni-PGE, Cr-PGE, podiform chromite and anorthosite related apatite, titanomagnetite and ilmenite deposits. REE, REE-Fe, REE-F, P and Mo are contained in carbonatite intrusives. Diamond-bearing kimberlite-type deposit consists of pipe and dykes.

Skarn and contact-metasomatic deposits: they consist mainly of irregularly massive sulfide-oxide minerals and are associated with veinlet-disseminated mineralization. Cu, Fe, Au, Ag, Pb-Zn, Mo and B minerals are formed in calc-silicate and magnesium-silicate skarns that replaces stratified carbonate and carbonaceous rocks. Related intrusive rocks vary in composition from quartz diorite to granite and from diorite to syenite.

Pegmatite and greisen deposits: Li-REE, Sn-W-F and Sn-Ta-Nb-bearing granitic pegmatites, W-Mo-Be greisen and hydrothermal deposits are closely related to felsic intrusives. They occur within endo- and exsocontact parts of multistage of granitic intrusions.

Porphyry deposits including stockwork and disseminated deposits: Various metallic commodities of this type of mineralization are formed within intrusives and adjacent country rocks. Cu, Cu-Au, Cu-Mo, Cu-Zn, Mo and Mo-W deposits are formed by felsic and calc-alkaline intrusions, commonly tonalitic and monzogranitic plutons. Some deposits have been described as stockwork and/or disseminated deposits. Almost all of the intrusions show hypogene hydrothermal alteration including sodic, potassic and phyllic facies.

Hydrothermal vein and fissure-filling deposits: Epithermal to hypothermal mineralization stage of deposits crosscut in any type of host rock and formed Au-Ag, Ag-Pb, Au-As, F, Hg-Sb, Mn, Pb-Zn±Au-Ag/Ba, Cu±Pb-Zn, Sn-W, Hg and U deposits. They are related to mafic to acidic extrusive and intrusive rocks. The major lodes of dimensions are transverse to stratification in sedimentary or volcanic hosts.

Stratabound deposits including marine extrusive rock-related massive sulfide, volcanogenic-sedimentary deposits and stratiform/stratabound deposits: Deposits of generally limited horizontal extent occur more or less at the same horizon in stratified rocks (Cu-Zn, Zn-Pb-Cu, Pb-Zn±Cu, Fe, Mn). They may be partly concordant or partly discordant with the enclosing rocks. Some deposits are stratiform with wide lateral extent and syngenetic with enclosing rocks. Examples are iron formation and sedimentary and exhalative copper, lead and zinc deposits. Most massive sulfide deposits belong to this category. Stratiform and stratabound carbonate-hosted Mississippi Valley-type (MSSV) of Pb-Zn deposit, sedimentary exhalative Pb-Zn (SEDEX) deposit and barite deposits are related to hydrothermal-sedimentary processes.

Sedimentary deposits including sandstone-hosted deposits: Deposits as massive to disseminated Fe, Mn, Fe-Mn and Cu oxide and carbonate deposits are rigorously confined to one or more layers in sedimentary rocks.

Metamorphic deposits: Almost all of graphite deposits are formed by regional metamorphism, contact metamorphism of coaly sediment and some talc deposits are originated from dolomitic and ultramafic rocks.

Weathering residual deposits: Deposits are formed by surficial chemical concentration. These deposits include nickeliferous laterite, bauxite, uraniferous calcrete and some manganese oxide deposits. The criterion is that supergene processes were responsible for producing ore grade materials.

Placer deposits: Deposits formed by a surficial mechanical concentration. Examples are alluvial and beach placer deposits, such as gold, ilmenite, monazite and diamond.

Evapolite deposits: Deposits composed mainly of minerals precipitated by a result of evaporation from solvent. Chloride, sulfate, carbonate and borate are derived from brine. Na, K, gypsum/anhydrite and phosphorite deposits are usually syngenetic with enclosing rocks. B and Li are concentrated in some lakes and brines.

Mineral deposit numbers are given only for 415 large-sized deposits (Table 3) on the Mineral Resources Map, and all the data including small and medium-sized deposits can be obtained from the home page of the Geological Survey of Japan (<https://www.gsj.jp/Map/EN/asia-area-geoscience.html>) of the AIST (National Institute of Advanced Industrial Science and Technology).

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The main metallogeny and the prosperity potential of the metallic mineral deposits of the Middle East region including Iran, Pakistan and Afghanistan were suggested by Dr. J. Hedenquist, former staff of Geological Survey of Japan.

Dr. K. Naito, former staff of the Geological Survey of Japan promoted the compilation project of the Geological Map and the Mineral Resources Map of Asia. Mineral deposit data sheets of several Central Asian countries were input by Mrs. S. Miyano and other geologists.

Table 1 Abbreviations used on Mineral resources map and in Table 3

Commodity	Deposit type and shape	Geologic age
Ag: silver	Alt: hydrothermally altered	A: Archean
Al: aluminum	A-mts: alkaline metasomatic	C: Carboniferous
As: arsenic	Bed: bedded	Cm: Cambrian
Au: gold	Brc: breccia	Cz: Cenozoic
B: boron	Brn: brine	D: Devonian
Ba: barium	Ch: carbonate hosted	E: Early
Be: beryllium	Crb: carbonatite	J: Jurassic
Bi: bismuth	CrI: carlin	K: Cretaceous
Cd: cadmium	Dis: disseminated	L: Late
Co: cobalt	Evp: evaporite	Mz: Mesozoic
Cr: chromium	Exh: exhalative	Mz1: Early Mesozoic
Cu: copper	Ff: fissure-filling	Mz2: Late Mesozoic
Dm: diamond	Grs: greisen	O: Ordovician
F: fluorite	Hyd: hydrothermal	P: Permian
Fe: iron	Irg: irregular	Pcm: Precambrian
Gp: gypsum	Lnt: lenticular	Pr: Proterozoic
Gm: gemstone	Lyr: layered	Pr1: Early Proterozoic
Gr: graphite	Mas: massive	Pr2: Middle Proterozoic
Hg: mercury	Mgm: magmatic	Pr3: Late Proterozoic
K: potassium	MSSV: Mississippi valley	Pz: Paleozoic
Kl: kaolin	Mtm: metamorphic	Pz1: Early Paleozoic
Li: lithium	Mts: metasomatic	Pz2: Late Paleozoic
Mg: magnesium	Pgm: pegmatite	Q: Quaternary
Mn: manganese	Pdf: podiform	S: Silurian
Mo: molybdenum	Pip: pipe	Tn: Neogene
Na: sodium salt	Plc: placer	Tp: Paleogene
Nb: niobium	Prp: porphyry	Tr: Triassic
Ni: nickel	Rf: role front	U: Unclassified
P: phosphorus	Rpl: replacement	
Pb: lead	Sbl: sublimation	
PGE: platinum group elements	Sed: sedimentary	
Py: pyrite	SEDEX: sedimentary exhalative	
Rb: rubidium	Sh: sandstone hosted	
Rc: refractory clay	Sht: sheet	
REE: rare earth elements	Sil: silicified	
S: sulfur	Skn: skarn	
Sb: antimony	Str: stratabound	
Se: selenium	Stw: stockwork	
Sn: tin	U: undifferentiated	
Sr: strontium	VMS: volcanogenic massive sulphide	
Ta: tantalum	Vn: vein	
Te: tellurium	V: volcanogenic	
Th: thorium	Wth-res: weathering-residual	
Ti: titanium		
Tl: talc		
Tn: thenardite		
U: uranium		
V: vanadium		
W: tungsten		
Y: yttrium		
Zn: zinc		
Zr: zirconium		

Table 2 Deposit sizes used on the resources map

Size limits are shown in metric tons of metals or minerals except for diamond and precious gems in carats. Past production and/or reserves totaled.

Commodity	Size	
	Large	> Medium > Small
Aluminum (bauxite) (Al ₂ O ₃)	100,000,000	1,000,000
Antimony (Sb)	500,000	10,000
Arsenic (As)	1,000,000	10,000
Barite (BaSO ₄)	5,000,000	50,000
Beryllium (BeO)	1,000	10
Boron (B ₂ O ₃)	10,000,000	100,000
Chromium (Cr ₂ O ₃)	1,000,000	10,000
Cobalt (Co)	20,000	1,000
Copper (Cu)	1,000,000	50,000
Diamond (Dm)	20,000	1,000
Fluorite (CaF ₂)	5,000,000	100,000
Gold (Au)	200	10
Graphite (fixed C.) (Gr)	1,000,000	10,000
Gypsum-anhydrite (CaSO ₄)	100,000,000	5,000,000
Iron (ore) (Fe)	100,000,000	5,000,000
Kaolin/Refractory clay (ore)	50,000,000	1,000,000
Lead (Pb)	1,000,000	100,000
Lithium (Li ₂ O)	100,000	10,000
Manganese (ore: (40%) Mn)	10,000,000	100,000
Mercury (Hg)	20,000	1,000
Molybdenum (Mo)	500,000	25,000
Nickel (Ni)	500,000	25,000
Niobium-Tantalum [(Nb,Ta) ₂ O ₅]	100,000	1,000
Phosphate (P ₂ O ₅)	200,000,000	1,000,000
Platinum group elements (PGE)	200	10
Potassium (KCl or K ₂ O)	10,000,000	1,000,000
Precious gems (Gm)	20,000	1,000
Pyrite (FeS ₂)	20,000,000	200,000
Pyrophyllite/Pottery stone (ore)	50,000,000	1,000,000
Rare earth with Yttrium (RE ₂ O ₃)	2,000,000	50,000
Silver (Ag)	10,000	500
Sodium (NaCl)	100,000,000	1,000,000
Strontium (Sr)	1,000,000	10,000
Sulfur (S)	100,000,000	1,000,000
Talc (ore)	10,000,000	1,000,000
Thenardite (Na ₂ SO ₄)	100,000,000	1,000,000
Tin (Sn)	100,000	5,000
Titanium (TiO ₂)	10,000,000	1,000,000
Tungsten (W)	50,000	1,000
Uranium (U)	50,000	1,000
Vanadium (V)	10,000	500
Zinc (Zn)	1,000,000	100,000

Table 3 Large-sized mineral deposits of Asia (415 deposits)

Country/Province	Deposit No.	Mine/Deposit/Area	Commodity	Deposit Type	Age
AFGHANISTAN 12	10030	Darrahe-Pech	Be, Li, Ta, Nb	Pgm/Vn	K
	10055	Aynak Central	Cu	Vol-Sed/Bed	Pr3
	10088	Bakhund	F, Pb, Zn	Hyd/Lyr-Vn	Tr
	10117	Pasghushta	Li, Nb, Ta	Pgm/Vn	Tp
	10118	Lower Pasghushta	Li	Pgm/Vn	U
	10119	Tsamgal	Li	Pgm/Vn	U
	10123	Jamanak Field	Li, Nb, Ta	Pgm/Vn	U
	10124	Yaryhgul	Li	Pgm/Vn	Tp
	10125	Drumgal	Li, Ta	Pgm/Vn	U
	10126	Paskhi	Li	Pgm/Vn	U
	10128	Shamakata	Li, Sn, Ta, Nb	Pgm/Vn	Tp
	10129	Taghawor Area	Li, Sn, Ta	Pgm/Vn	Tp
BHUTAN 1					
	12006	Khepchishi Hill	Gr	Mtm/Lyr	U
CHINA 225					
Anhui	14019	Shizishan	Cu, Au, Ag	Skn/Lnt	Mz2
	14020	Tongguanshan	Cu, Fe	Skn/Mas	Mz2
	14031	Huoqiu	Fe	Vol-Sed/Lyr	A
	14034	Aoshan	Fe, P, V	Skn-Hyd/Mas	K
	14035	Baixiangshan	Fe, V, Co	Hyd-Rpl/Lyr	U
	14036	Gushan	Fe	Vol-Sed/Lyr	K
	14039	Longqiao	Fe, Cu	Skn-Hyd/Mas	K
	14041	Luohe	Fe, Cu	Skn-Hyd/Mas	K
	14043	Dingyuan	Gp	Sed/Bed	Tp
	14045	Shapinggou	Mo	Prp	K
	14047	Dongxing	Na	Evp/Bed	Tp
Fujian	15008	Zijijshan	Cu, Au	Prp	K
	15019	Makeng	Fe, Mo	Skn/Lnt	U
Gansu	16051	Zheyaoshan/Baiyinchang	Cu, Zn	Vol-Sed/Bed	Pr
	16052	Huoyanshan/Baiyinchang	Cu, Zn	Vol-Sed/Bed	Pr
	16069	Jintieshan	Fe	Sed/Bed	Pr
	16086	Jinchuan	Ni, Cu	Mgm/Lnt	Pr
	16094	Luoba	Pb, Zn	Str(SEDEX)	D
	16103	Ta'ergo	W, Be, Bi, Sn	Skn-Hyd/Vn	U
	16106	Lijiagou/Xicheng	Zn, Pb	Str(SEDEX)	D
	16107	Changba/Xicheng	Zn, Pb	Str(SEDEX)	D
Guangdong	17034	Dading	Fe, Sn, Zn	Skn/Mas-Irg	K
	17053	Shan'ge	Kl	Sed/Bed	Tn
	17084	Dajiangping	Py	Sed/Bed	U
Guangxi	17142	Fankou	Zn, Pb, Ag	Hyd/Lyr	D
	18053	Banbi	Ba	Sed/Bed	Cm
	18055	Pancun	Ba	Sed/Bed, Hyd/Vn	D
	18058	Sicun	Ba	Sed/Bed, Hyd/Vn	U
	18080	Shizilu	Kl	Res/Lnt	Tn-Q
	18092	Xialei	Mn	Sed/Bed	D
	18127	Shanhu	Sn, W, Cu, Zn	Hyd/Vn, Plc	U
	18132	Changpu-Tongkeng/Dachang	Sn, Zn, Pb, Sb	Skn-Str/Lyr	K
	18148	Dafeng	V	Sed/Bed	D
	18151	Damingshan	W	Hyd/Vn	U
Guizhou	18154	Beishan	Zn, Pb	Str/Lnt	D
	19017	Maochang	Al, Py, Ga	Sed/Lnt	C
	19034	Dahebian	Ba, V	Sed/Bed	Cm
	19085	Xinhua	P	Sed/Bed	Pr
Hainan	20010	Shilu	Fe, Cu, Co, Py	Skn/Lyr	Pr
Hebei, Beijing	21104	Longyan	Fe	Sed/Bed	Pr
	21111	Mancheng	Fe	Vol-Sed/Bed	U
	21112	Sijiayin	Fe	Vol-Sed/Bed	A
	21117	Hanxin	Fe	Skn/Mas	K
	21118	Shuangbei	Gp	Sed/Bed	Tp
	21136	Caijiaying	Pb, Zn, Ag	Hyd/Vn	U
	21147	Damiaio	V, Ti, P	Mgm/Mas-Dis	U
Heilongjiang	22040	Duobaoshan	Cu, Mo, Au, Ag	Prp	Pz2
	22056	Yunshan	Gr	Mtm/Bed	U
	22059	Foling	Gr	Mtm/Bed	Pr
	22062	Liumao	Gr	Mtm/Bed	Pr
	22063	Yongtai-Anshan	Gr	Mtm/Bed	Pr
	22064	Chalukou	Mo	Prp	J
	22066	Luming	Mo	Prp	J
Henan	23079	Xinji	Gp	Sed/Bed	Cm
	23081	Xiaochagou	Gr	Mtm/Bed	Pr
	23082	Hengling	Gr	Mtm/Bed	Pr
	23089	Yuchiling	Mo	Prp	K
	23091	Shangfanggou	Mo, Fe	Prp	K
	23092	Nannifu-Sandaozhuang	Mo	Prp-Skn	K

Table 3 Continued.

Country/Province	Deposit No.	Mine/Deposit/Area	Commodity	Deposit Type	Age
	23093	Donggou	Mo	Prp	K
	23094	Qian Echong	Mo	Prp	K
	23095	Yexian-Wuyan	Na	Evp/Bed	Tp
Hubei	24019	Liulin	Ba	Sed/Bed	Pz2
	24021	Tonglushan	Cu, Fe	Skn/Mas	J-K
	24036	Huoshaping	Fe	Sed/Bed-Lnt	D
	24038	Guandian	Fe	Sed/Bed	D
	24041	Gaodianzi	Gp	Sed/Bed	Tp
	24045	Yunying	Na	Evp/Bed	Tp
	24046	Qianjian	Na	Evp/Bed	Tp
	24047	Miaoya	Nb, REE	Crb/Irg	P
	24052	Yichang	P	Sed/Bed	Pr
	24059	Shizilishan	Sr, Pb, Zn	Skn-Hyd/Irg	U
Hunan	25054	Gongxi	Ba	Sed/Bed	Cm
	25080	Qidong	Fe	Sed/Bed	Pr
	25086	Changle	Gp	Sed/Bed	C
	25087	Lutang-Heye	Gr	Skn/Lnt	U
	25103	Yanjing	Na, Tn	Evp/Bed	Tp
	25104	lijian	Na, Tn	Evp/Bed	Tp
	25105	Hengyang	Na, Tn	Evp/Bed	Tp
	25107	Dongshanfeng	P	Sed/Bed	Pr
	25113	Shuikoushan	Pb, Zn	Skn/Mas	K
	25128	Xikuanshan	Sb	Hyd	U
	25134	Yiejawei	Sn	Skn/Mas-Vn	Mz2
	25140	Xiangxi/Woxi	W, Sb, Au	Hyd/Vn	U
	25142	Chuankou-Yanglinao	W	Hyd/Vn	U
	25143	Shizhuyuan	W, Mo, Sn, Bi	Skn-Hyd/Mas-Vn	Mz2
	25144	YaogangXian	W	Skn-Hyd/Mas-Vn	Mz2
	25145	Zhuantouao	W	Skn/Mas	J
	25147	Xintianling	W, Bi	Skn	U
	25149	Taolin	Zn, Pb, F	Hyd/Vn	K
	25155	Baoshan	Zn, Pb, Cu, W, Mo	Skn/Mas	K
	25156	Huanshaping	Zn, Pb, Cu	Skn/Lnt	J
Inner Mongol/Nei Mongol	26040	Wunugetushan/Unegetshan	Cu, Mo	Prp	J
	26047	Sumt Qagan Obo	F	Hyd/Lnt	U
	26079	Suj	Gp	Sed/Bed	Tp
	26086	Dongsheng	Kl	Sed/Bed	Pz
	26101	Shanpianggou	Py	Str/Lnt	Pr
	26103	Dongshengmiao	Py, Zn	Str/Lnt	Pr
	26105	Baiyan Obo	REE, Fe, Nb	Crb/Lnt	Pr
	26124	Jiashengpan	Zn, Pb	Str/Iyr-Lnt	Pr
Jiangsu	27017	Sihu	Gp	Sed/Bed	Tp
	27018	Zhouchongcun	Gp	Sed/Bed	Tr
	27020	Shizhai	Na	Evp/Bed	U
	27021	Huaian	Na	Evp/Bed	K
	27022	Hongze	Na	Evp/Bed	Tp
	27023	Jintan	Na	Evp/Bed	Tr
	27033	Qixiashan	Zn, Pb, Au, Ag	Hyd/Lyr	U
Jiangxi	28033	Dexing	Cu, Mo	Prp	J
	28034	Chengmenshan	Cu, Zn, Mo, Au	Skn-Prp	Mz2
	28035	Wushan	Cu, Au, Ag, Zn	Skn/Lnt	J
	28036	Yinshan	Cu, Pb, Zn, Au, Ag	Hyd/Vn	U
	28037	Yongping	Cu, W, Au, Ag	Str/Bed-Lnt	C
	28046	Xinyu	Fe	Sed/Bed	Pr
	28061	Qingjiang	Na	Evp/Bed	Tp
	28062	Zhoutian	Na	Evp/Bed	K
	28089	Yangchuling	W, Mo	Hyd/Stw-Dis	J
	28090	Xianglushan	W	Skn/Mas	U
	28092	Xushan	W, Cu	Skn-Grs/Lnt-Vn	J
	28093	Xiatongling	W, Cu, Bi	Hyd/Vn	J
	28094	Hukeng	W	Hyd/Vn	J
	28095	Huanmeiao	W	Hyd/Vn	J
	28097	Huangshan	W	Hyd/Vn	J
	28098	Pangushan	W, Bi	Hyd/Vn	J
	28100	Maoping	W, Sn	Grs-Hyd/Vn-Dis	U
	28105	Piaotang	W, Sn	Hyd/Vn	J
	28107	Xihuashan	W	Hyd/Vn	J
	28109	Dajishan	W	Hyd/Vn	J
Jilin	29053	Sanbanjiang	Gr	Mtm/Bed	U
	29058	Daheishan/Qianzuolao	Mo	Prp	J
Liaoning	30062	Wengquan'gou North	B, Fe	Vol-Sed/Str	Pr
	30094	Gonchanglin No.2	Fe	Vol-Sed/Bed	A
	30095	Gonchanglin Laogonchanglin	Fe	Vol-Sed/Bed	A
	30096	Anshan Hongqi	Fe	Vol-Sed/Bed	A
	30097	Nanfen	Fe	Vol-Sed/Bed	A

Table 3 Continued.

Country/Province	Deposit No.	Mine/Deposit/Area	Commodity	Deposit Type	Age
	30098	Anshan Xidabei-Zhangjiawan	Fe	Vol-Sed/Bed	A
	30099	Gongchanglin No.1	Fe	Vol-Sed/Bed	A
	30100	Xianshan	Fe	Vol-Sed/Bed	A
	30104	Dong Anshan	Fe	Vol-Sed/Bed	A
	30107	Anshan Dagushan	Fe	Vol-Sed/Bed	A
	30131	Qingchengzi	Pb, Zn, Ag	Vol-Sed/Mas	Pr
	30147	Fanjiaopuzi	Tl	Mtm/Bed	Pr
Ningxia	31007	Hejiakouzi	Gp	U	Tp
Qinghai	32033	Tuolugou	Co, Au	Sed-Exh/Lnt	Pz1
	32070	Beishansi	Gp	Evp/Bed	Tp
	32074	Kunteyi Area	K	Evp	Tp-Tn
	32075	Mahai Field	K, Mg	Evp	Q
	32078	Qarhan Area	K	Evp	Q
	32079	Yiliping	Li, B	Evp	Q
	32080	Taijienaier Salt	Li, B	Evp	Q
	32082	Chaka	Na	Evp	Q
	32083	Keke	Na	Evp	Q
	32105	Jiandingshan	Sr	Evp/Bed	Tr
	32106	Dafenshan Field	Sr	Evp	Tr
	32107	Chahansilatu	Tn	Evp	Q
	32109	Xiangou	Tn	Evp	Q
	32113	Xitieshan	Zn, Pb	Vol-Sed/Mas	Pz1
Shaanxi	33044	Shitiba	Ba	Sed/Bed	S
	33057	Wadaozi	Gp	Evp/Bed	Tr
	33071	Jinduicheng	Mo	Prp	K
Shandong	34002	Zibo	Al	Sed/Lnt	C
	34112	Laiwu	Fe, Cu, Co	Skn	K
	34114	Wenshang-Dongping	Fe	Sed/Bed	Pcm
	34117	Bianqiao	Gp	Ses/Bed	Tr
	34118	Dige	Gp	Ses/Bed	Tn
	34126	Xingjianshan	Mo, W	Skn/Dis	K
	34127	Dawenkou Basin	Na	Evp/Bed	Tr
	34138	Zhujiazhuang	S	Sed/Bed	Tp
Shanxi	35052	Tongkuangyu	Cu, Mo	Prp	Pr
	35066	Yuanjiachun	Fe	Vol-Sed/Bed	A
	35084	Langguan	Gp	Sed/Bed	S
	35088	Zijinshan	K, P	Mgm/Mas	Mz2
Sichuan	36087	Taihe	Fe, Ti, V	Mgm/Lyr	U
	36089	Baima	Fe, Ti, V	Mgm/Lyr	U
	36093	Panzhihua	Fe, Ti, V	Mgm/Lyr	Pz2
	36094	Hongge	Fe, Ti, V	Mgm/Lyr	Pz2
	36102	Jinchuan Area	Li	Pgm/Vn	Mz
	36103	Jiajika	Li	Pgm/Vn	Tr
	36110	Weixi	Na	Evp/Bed	Tr
	36111	Yanjinggou	Na	Evp/Bed	Tr
	36119	Daliangzi	Pb, Zn	Hyd-Rpl	U
	36130	Chongqing Area	Sr	Sed/Lnt	Tr
	36132	Xiacun	Zn, Pb, Ag	Vol-Sed/Bed	Tr
	36135	Tianbaoshan	Zn, Pb, Ag	Vol-Sed/Lnt(SEDEX)	Pr
Tibet/Xizang	38035	Duobuza	Cu, Au	Prp	K
	38036	Yulong	Cu, Mo	Prp	Tp
	38040	Malasongduo	Cu, Mo	Prp	Tp
	38049	Jima	Cu, Pb, Zn	Skn	Tn
	38051	Qulong	Cu, Mo	Skn-Prp	Tn
	38056	Tinggong	Cu	Prp	Tn
	38059	Chongjiang	Cu, Au, Ag	Prp	Tn
	38065	Zhunu	Cu, Ag	Prp	Tn
	38074	Zhag'yap	Gp	Sed/Bed	Tr
	38076	Qinggu	Gr	Skn/Lnt	K
	38079	Narigongma	Mo, Cu	Prp	Tp
	38091	Youzha	Na	Evp	Q
	38109	Lanuoma	Zn, Pb	Hyd/Vn	U
Xinjiang	39065	Askart	Be	Pgm-Grs/Lnt	Pz2
	39069	Kokutohai/Keketuohai	Be, Li, Nb, Ta	Pgm/Vn	Pz2
	39071	Qunkur	Be, Ta, Nb	Pgm/Vn	Pz2
	39076	Ashele	Cu, Pb, Zn, Au, Ag	Vol-Sed/Lnt(SEDEX)	D
	39078	Karatungke	Cu, Ni	Mgm/Lnt-Vn	Pz2
	39085	Tuwu	Cu, Au, Ag	Skn-Prp	Pz2
	39086	Yandong	Cu	Prp	Pz2
	39124	Uyongbulak	Na, Tn, Gp	Evp	Q
	39125	Awart	Na	Evp/Bed	Q
	39148	Kaktale/Keketale	Zn, Pb, Ag	Vol-Sed/Lnt(SEDEX)	Pz2
Yunnan	40026	Dongchuan	Cu	Sed/Bed	Pr
	40032	Yimen	Cu	Sed/Bed	Pr
	40046	Dahongshan	Fe, Cu	Vol-Sed/Bed	Pr

Table 3 Continued.

Country/Province	Deposit No.	Mine/Deposit/Area	Commodity	Deposit Type	Age
	40048	Huimin	Fe	Vol-Sed/Lnt	Pr
	40052	Xujie	Gr	Mtm/Bed	Pr
	40056	Mengyejin	K, Na	Evp/Bed	J
	40060	Dounan	Mn	Sed/Bed	Tr
	40063	Zhebei	Na, Tn	Evp/Bed	J
	40064	Heijin	Na, Tn	Evp/Bed	K
	40065	Annin	Na, Tn	Evp/Bed	J
	40067	Zhendong	Na, Gp	Evp/Bed	K-Tp
	40068	Moxie	Na	Evp/Bed	K-Tp
	40085	Laochang	Pb, Zn, Cu, Ag	Vol-Sed	C
	40107	Geju	Sn, Pb, Cu, Ag	Hyd-Rpl	K
	40108	Xinzhai	Sn	Skn/Lnt	U
	40109	Dulong	Sn, Pb, Zn	Skn/Mas	U
	40116	Mahuaping	W, Bi, F	Hyd/Vn	U
	40119	Kuangshanchang	Zn, Pb	Str/Lnt	C
Zhejiang	41049	Wubu	Zn, Pb	Hyd	K
INDIA	45				
	42038	Panchmatmali	Al	Wth/Lnt	Cz
	42103	Kolar Gold Field	Au	Hyd/Vn	A
	42145	Sarubil	Cr	Mgm	A
	42148	Kaliapani South	Cr	Mgm	A
	42150	Sukrangi	Cr	Mgm	A
	42151	Bhimtanagar	Cr	Mgm	A
	42152	Kathpal	Cr	Mgm	A
	42172	Khetri	Cu, Au	Vol-Sed/Lnt	Pr
	42236	Malanjkhand	Cu	Hyd/Ff	A-Pr 1
	42272	Ambadungar	F, REE	Crb	Mz
	42289	Pur-Banera	Fe	Sed/Bed	A-Pr 1
	42306	Chiria-Manoharpur Sectr	Fe	Sed/Bed	A-Pr 1
	42312	Nuia/Bariaburu-Gua-Nuia	Fe	Sed/Bed	A-Pr 1
	42318	Thakurani	Fe	Sed/Bed	A-Pr 1
	42322	Noamundi S.	Fe	Sed/Bed	A-Pr 1
	42334	Bolani	Fe	Sed/Bed	A-Pr 1
	42336	Joda/Joda-Khondabandh Area	Fe	Sed/Bed	A-Pr 1
	42352	Gandharmardan Hill	Fe	Sed/Bed	A-Pr 1
	42365	Malangtoli	Fe	Sed/Bed	A-Pr 1
	42377	Dalli-Rajihara/Rajhara Pahar	Fe	Sed/Bed	A-Pr 1
	42388	Rowgaht Area	Fe	Sed/Bed	A-Pr 1
	42394	Bailadila Range No.1-14	Fe	Sed/Bed	A-Pr 1
	42416	Sandur	Fe	Sed/Bed	A-Pr 1
	42497	Kemangundi	Fe	Sed/Bed	A-Pr 1
	42506	Kodachadri	Fe	Sed/Bed	A-Pr 1
	42572	Islamabad & Dhansaiyid	Gr	Mtm	Pr
	42579	Mangoti-Ledwakhar	Gr	Mtm A-Pr 1	U
	42582	Sargipalli Mines	Gr	Mtm	A
	42583	Madaguda R.F.	Gr	Mtm	A
	42616	Siljora-Kalimati	Mn	Sed/Bed	A-Pr 1
	42620	Ukwa Block	Mn	Sed/Bed	A-Pr 1
	42622	Bharwali	Mn	Sed/Bed	Pr1
	42626	Chikla	Mn	Sed/Bed	Pr1
	42627	Dongiri-Buzung	Mn	Sed/Bed	Pr1
	42628	Balapur Hamesha	Mn	Sed/Bed	Pr1
	42655	Deogiri-Subrayanahalli	Mn	Sed/Bed	A-Pr 1
	42682	Kanivehalli	Mn	Sed/Bed	A-Pr 1
	42753	Saladipura	Py, Zn	Hyd/Ff	Pr1-2
	42754	Amjhore	Py	U	Pr2-3
	42789	Gopalpur-Chatarpur	Ti, Zr, REE	Sed/Plc	Q
	42845	Rampura-Agucha	Zn, Pb	Str/Lyr	A
	42847	Sindesar-Kalan-Mokanpura	Zn, Pb	Hyd/Rpl	A
	42849	Dariba-Raipura	Zn, Pb		A
	42851	Mochia	Zn, Pb, Ag, Py		Pr1
	42852	Balaria	Zn, Pb		Pr1
IRAN	11				
	44060	Reza	Cr	Mgm/Pdf	K
	44061	Sharhiar Shahin	Cr	Mgm/Pdf	K
	44096	Meiduk Lachar	Cu, Au, Ag, Mo	Prp	U
	44112	Sarcheshmeh	Cu, Mo, Au, Ag	Prp	Tn
	44161	Chador Malu	Fe, P	Mgm/Pip	Pr3
	44166	Choghart	Fe, P	Mgm/Pip	Pr3
	44177	Neyshabur	Gm	Pgm-Hyd/Irg	U
	44225	Shahrokh	Mn	U	U
	44352	Mehdiabad	Pb, Zn, Cu, Ag	MSSV	U
	44394	Iran Kuh	Zn, Pb	U	U
	44396	Siahkuh	Zn, Pb	U	U

Table 3 Continued.

Country/Province	Deposit No.	Mine/Deposit/Area	Commodity	Deposit Type	Age			
JAPAN	7	45037	Hishikari	Au, Ag	Hyd/Vn	Q		
		45122	Seto Area	KI	Sed/Bed	Tn		
		45162	Toyoha	Pb, Zn, Ag	Hyd/Vn-Stw	Tn		
		45138	Ohira/Mitsuishi Area	Pp	Hyd/Rpl	K		
		45143	Yanahara	Py, Cu, Au, Ag	Str/Lnt	P		
		45169	Kosaka	Zn, Pb, Cu, Au, Ag	Str/Mas(KUROKO)	Tn		
		45185	Kamioka	Zn, Pb, Ag	Skn/Mas	K		
KAZAKHSTAN	34	Central Area	46020	Basilkovskoye	Au, Sb, As	Skn-Hyd	Pz1	
		46229	Bozshakol	Cu, Mo, Au	Prp	Pz1		
		46258	Dhilandskiy	Cu	Sed/Bed	Pz2		
		46274	Kounrad/Qonyrat	Cu, Mo	Prp	Pz2		
		46280	Zhezqazgan	Cu	Sed/Bed	Pz2		
		46288	Zhaman-Aibat	Cu	Sed/Bed	Pz2		
		46342	Koktenkol	Mo, W, Bi, Cu	Hyd/Vn-Stw	Pz2		
		46344	Zhanet	Mo	Hyd/Vn-Stw	Pz2		
		46410	Donetskoe	Sn, Bi, Mo, Be	Hyd/Vn-Stw	Pz1		
		46411	Symbet	Sn, Bi, Mo, Be	Hyd/Vn-Stw	Pz1		
		46443	Kosachinoe	U	Hyd/Vn	Pz1		
		46493	Akshatau	W, Be, Mo, Bi	Hyd/Vn-Stw	Pz2		
		46495	Verkhnee Qairakty	W, Mo, Bi, Be	Hyd/Vn-Stw	Pz2		
		46498	Batystau	W, Mo	Hyd/Vn-Stw	Pz2		
		46519	Zhairem	Zn, Pb	SEDEX	Pz2		
		Eastern Area	46092	Bakyrchik	Au	Hyd/Ff	Pz2	
		46098	Vasilievskoe	Au	Hyd/Dis	U		
		46235	Nikolaevskoe	Cu, Zn	Vol-Sed/Mas	D		
		46268	Aktogai	Cu, Mo, Au, Ag	Prp	Pz2		
		46289	Koksai	Cu, Mo	Prp	U		
		46508	Tishinskoe	Zn, Pb, Cu	VMS	Pz2		
		46513	Orlovskoe	Zn, Pb, Cu	VMS	Pz2		
		46515	Maleevskoe	Zn, Pb, Cu	VMS	Pz2		
		46517	Zyryanovskoe	Zn, Pb	VMS	Pz2		
		Southern Area	46461	Mynkduk	U	Sed/Sh	K	
		46464	Inkai/Chu-Sarysum	U	Sed/Sh	Tp		
		46467	Muiunkum/Moinkum	U	Sed/Sh	Tp		
		46476	N. Kharasan	U	Sed/Sh	Tp		
		Western Area	46222	20 Let Kaz SSR/Kenpirsai	Cr	Mgm/Lnt	Pz2	
		46231	Bebkara North	Cu, Mo	Prp	U		
		46242	50 Let Octyabrya	Cu, Zn	Vol-Sed/Mas	U		
		46341	Dorozhilovskoe	Mo	Hyd/Vn-Stw	U		
		46354	Inder North	Na	Evp	U		
		46355	Dzhaksyklych	Na	Evp	U		
KYRGYZ	10	47029	Kumtor	Au, Ag	Hyd/Lnt-Stw	Pz2		
		47055	Kolesai	Be	Hyd/Ff-Stw	U		
		47056	Uzun-Tash	Be	Skn/Lnt-Stw	S		
		47068	Kuru-Tegerek	Cu, Au, Mo	Skn	U		
		47070	Bala-Chichkan	Fe, Ti, V	Mgm	O		
		47076	Dangy	Fe	Sed/Lyr	LP-Tr		
		47091	Chonkoy	Hg	Hyd/Ff-Dis	U		
		47095	Chauvai	Hg, Sb	Hyd/Vn-Dis	U		
		47105	Khaidarkan	Hg, Sb	Hyd/Vn-Dis	U		
		47199	Trudvoye	Sn, W, F	Skn-Grs	P		
		LAOS	3	48055	Phu Kham	Cu, Au	Prp	Tr
				48060	Khanong/Sepon	Cu, Au	Prp	Tr
				48063	Thengkham/Sepon	Cu, Au	Prp	Tr
MONGOLIA	10	49009	Beltesin Gol	Al	Mgm/Mas	Pr		
		49078	Khaltar Uul II	Au, Ag	Hyd/Vn-Ff	U		
		49113	Erdenet	Cu, Mo	Prp	Pz2		
		49142	Huh Adar	Cu, Zn, Pb	Hyd	U		
		49170	Tsagaan Suvarga	Cu, Mo	Prp	D		
		49171	Turquoise Hill	Cu, Au	Prp	D		
		49284	Hubsugul	P	Sed/Bed	Pr		
		49347	Achitnuur	W, Be, Sn	Grs-Hyd/Vn-Stw	Pz2		
		49377	Dulaan Khal Uul	Zn, Pb, Au, Ag	Hyd/Vn	Pz2		
		49380	Tumurtiin Ovoo	Zn, Cd	Skn/Lnt	Pz2		
MYANMAR	4	50075	Monywa-Letpadaung	Cu	Prp	Tn		
		50076	Monywa-Kysintaung, Sabetaung	Cu	Prp	Tn		
		50110	Tagataung Taung	Ni	Wth	Tn-Q		
		50124	Bawdwin	Pb, Zn, Cu, Au	Str/Lyr	Pz1		

Table 3 Continued.

Country/Province	Deposit No.	Mine/Deposit/Area	Commodity	Deposit Type	Age	
NORTH KOREA	4					
		52051	Musan	Fe	Str/Bed	Pcm
		52055	Iweon	Fe	Str/Lnt Pz2	U
		52077	Jaeryong	Fe, Ba	Skn-Hyd	J
	52098	Geumdeog	Pb, Zn, Ag	Skn-Hyd	J	
PAKISTAN	3					
		54061	Reko Diq	Cu	Prp	Tn
		54065	Saindak/Fort Saindak	Cu, Mo	Prp	Tn
	54170	Duddar/Khuzdar	Zn, Pb, Ag, Sb, Ba	Vol-Sed/Lyr(SEDEX)	J	
RUSSIA	23					
	Far East	55057	Voznesenka II	F	Hyd/Mas-Vn	Cm
		55063	Gar	Fe	Str/Lyr	Pz1
	East Siberia	55065	Sutarskoye	Fe	Str/Lyr(BIF)	ECm
		55242	Oktyabrskoye 4	Al	Sed/Lyr	D
		55248	Kharlinskoye	Al	Mgm/Mas	Pz1
		55279	Sorminskoye	Ba	Sed/Bed	Pcm
		55314	Barandatskoye	Fe	Sed/Bed	J
		55341	Telbes	Fe	Skn	S
		55348	Khaileolovskoye	Fe	Skn/Mas	S
		55352	Sheregesh	Fe	Skn/Mas	U
		55354	Tashtagol	Fe	Skn/Mas	U
		55355	Karasugskoye	Fe, REE, F	Crb	EK
		55357	Chesnokovskoye	Fe	Skn/Lnt	U
	55358	Inskeye	Fe	Skn/Mas-Dis	Pz	
	55359	Kharlovskoye	Fe, Ti, V	Mgm/Lyr	U	
	55366	Kholzunskoye	Fe	Vol-Sed/Bed	D	
	55369	Kalgutinskoye 2	Fe	Vol-Sed/Lnt	D	
	55396	Akalakhinskoye	Li, Ta, Nb, REE	Mgm-Pgm/Mas-Vn	U	
	55400	Usinskoye	Mn	Sed/Lyr	Cm	
	55476	Urskoye District	Zn, Cu, Pb, Ba, Ag	Str/Lnt	Cm	
	Ural	55483	Korbaliinskoye	Zn, Pb, Cu	Str/Mas(Kuroko)	D
		55521	Podolskoe	Cu, Zn	Str/Mas	D
	55524	Gaiskoe	Cu, Zn	Str/Mas	D	
SOUTH KOREA	3					
		56079	Ogmaesan	Pp	Hyd-Rpl	K
		56087	Pyeongan	Tl	Skn	Pcm
	56088	Sangdong	W, Mo, Cu, Pb, Zn	Skn-Grs/Lnt	K	
TAJIKISTAN	1					
	58050	Chorukh-Dairon	W, Mo	Skn	U	
THAILAND	2					
	59029	Phu Mai Tong	Ba	Hyd/Vn	U	
	59236	Mae Sod/Padaeng	Zn	Str/Mas	O	
UZBEKISTAN	11					
		61002	Actepe	Ag, Co, Ni, Pb, Zn, Bi	Hyd/Vn-Stw	Pz
		61011	Muruntau	Au, W, Bi, As	Hyd/Stw-Dis	Pz
		61013	Daughyztau	Au, Ag	U	U
		61023	Zarmitan	Au	Hyd/Vn	P
		61032	Dalnee	Cu, Mo, Au	Prp	C
		61033	Kalmakyr	Cu, Mo, Au	Prp	C
		61103	Uchkulach	Pb, Zn	Str/Mas	U
		61104	Khandizin	Pb, Zn, Cu	VMS	U
		61065	Uchkuduk	U	Sed/Sh	Tn-Q
		61071	Aktau	U	Sed/Sh	Tn-Q
	61096	Sarytau	W	Skn-Hyd	U	
VIETNAM	6					
		62076	Co Dinh	Cr	Plc	Q
		62134	Thac Khe	Fe	Skn/Irg	U
		62141	Lao Cai-Nham Thi	Gr	Hyd	U
		62233	Cam Duong-Lao Cai	P	Sed/Bed	Cm
		62279	Dong Pao	REE, Ba	Crb	Tp
	62347	Da Lien-Nui Phao	W, F	Skn/Irg	U	
Total	415					

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