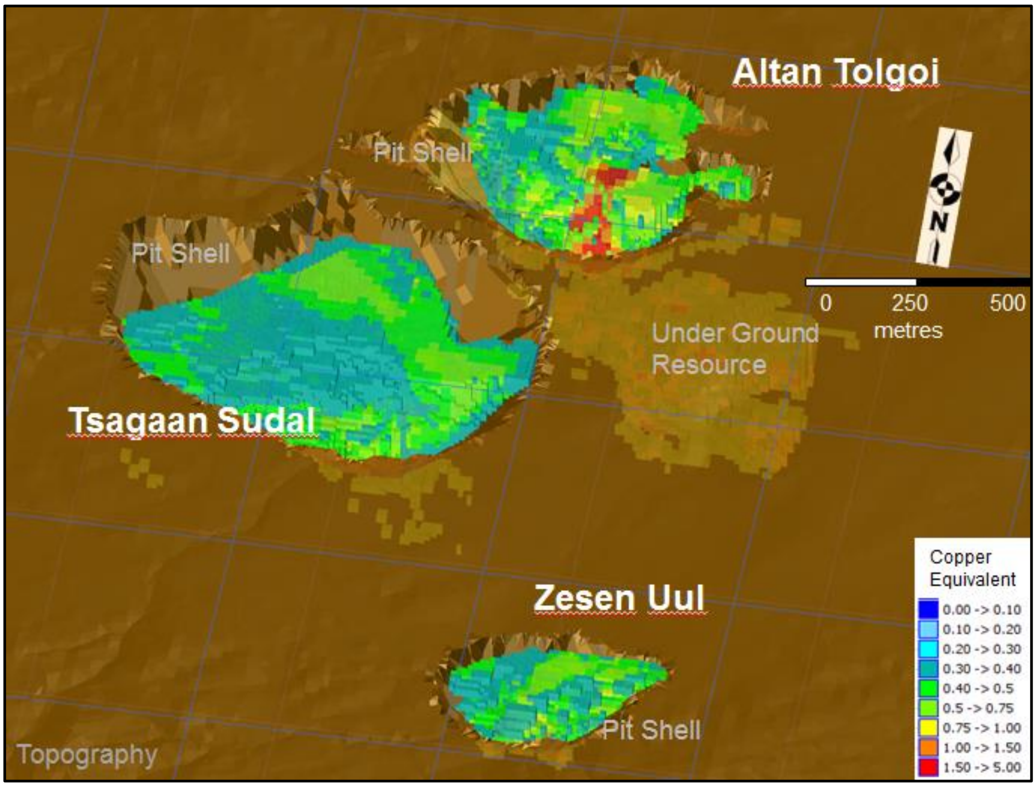
INDEPENDENT TECHNICAL REPORT

KHARMAGTAI COPPER GOLD PROJECT

MONGOLIA



Prepared by Mining Associates Limited

for

Xanadu Mines Ltd

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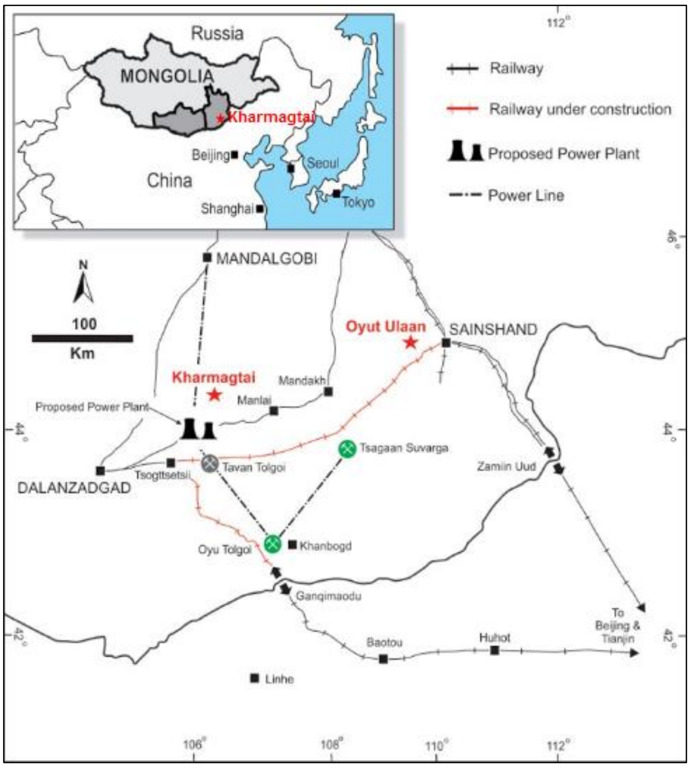
1 SUMMARY

At the request of Mr Andrew Stewart of Xanadu Mines Ltd, Mining Associates Pty Ltd ("MA") was commissioned in December 2014 to prepare an Independent Technical Report on the Mineral Resource estimates for the Kharmagtai copper-gold project to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves standards ("JORC 2012 Code standards").

Kharmagtai is located in the Omnogovi Province of southern Mongolia, approximately 420 km southeast of the capital, Ulaanbaatar. 90% of the Kharmagtai project is owned by Xanadu Mines Ltd's ("Xanadu") joint venture company, Mongol Metals LLC. Xanadu has the right to earn up to 85% of Mongol Metals LLC (67.5% at April 2014), equal to a 76.5% beneficial interest in the whole project. The remaining 10% of Kharmagtai is owned by QGX Ltd.



1.1 PROJECT HISTORY AND GEOLOGY

Copper mineralisation was first recognised at Kharmagtai by Russian-Mongolia exploration teams in 1979 and a limited programme of surface trenching and diamond core drilling followed. Exploration by QGX in the late 1990's identified copper-gold mineralisation at three main centres: Altan Tolgoi, Tsagaan Sudal and Zesen Uul. Ivanhoe Mines (IMMI) joint ventured into the project in 2002. Between 2002 and 2006 IMMI carried out extensive surface geochemistry and geophysics, excavated 119 trenches (65,636 m) and drilled 208 RC (27,747 m) and 172 diamond drill holes (54,269 m). This work defined Mineral Resources at Altan Tolgoi, Tsagaan Sudal and Zesen Uul. Between 2007 and 2011 Asia Gold (AGC: a subsidiary of Ivanhoe) assumed control of Kharmagtai exploration and subsequently focused on deep copper mineralisation associated with late stage tourmaline breccias previously recognised near Altan Tolgoi and Tsagaan Sudal.

Since acquiring an interest in the project in 2014, Xanadu has undertaken further drilling focussed on extending mineralisation and completed 26 diamond drill holes for 12,460 m.

Copper-gold mineralisation at Kharmagtai is hosted within the Lower Carboniferous Kharmagtai Igneous Complex ("KIC"), which was emplaced into a Late Devonian volcano-sedimentary sequence. The KIC is characterised by a composite porphyritic diorite to quartz diorite intrusive complex. Mineralisation at Kharmagtai is porphyry copper-gold style, related to a series of co-genetic porphyry centres. Distal gold-base metal-bearing breccia pipes and complex silicified structurally controlled breccia zones and younger tourmaline breccia also occur. Kharmagtai is a large and complex system with a number of targets that still remain to be tested.

Drilling and sampling by Ivanhoe, AGC and Xanadu was undertaken using industry best practice QA/QC protocols and procedures. Sample assay quality was controlled by the inclusion of certified reference materials, blanks, field duplicates and pulp duplicates. MA has reviewed the QA/QC results and is satisfied that the assay data is of acceptable quality for use in resource estimation.

Two previous resource estimates were undertaken for Kharmagtai: one in 2007 by IMMI and the other in 2012 by AMC Ltd. Neither estimate was released publicly, but the AMC report was prepared in accordance with NI43-101 standards.

1.2 RESOURCE ESTIMATION

Geological and assay data current as at 28th February 2015 were used for the Mineral Resource estimate. Three-dimensional wireframes were constructed to define domains for copper and gold separately in each of the three deposits being estimated: Altan Tolgoi, Tsagaan Sudal and Zesen Uul. Estimation was performed using ordinary kriging into a block model with block dimensions of 20 m x 20 m x 20 m (x, y, z). Bulk density was interpolated into the model using density measurements on drill core samples provided by Xanadu.

1.3 MINERAL RESOURCE STATEMENT

JORC 2012 categorised Mineral Resources for the Kharmagtai Copper Gold Project have been classified as indicated and inferred confidence categories on a spatial, areal and zone basis and are listed in the table below.

The Kharmagtai Copper Gold Project contains total resources of 203.4 Mt at 0.34 % Cu and 0.33 g/t Au for 1,533 Mlb Cu and 2,184 Koz Au. These resources are reported within a Whittle optimised pit shell at a cut-off of 0.3% CuEq, and below the pit shell at a cut-off of 0.5% CuEq.

The Resource Estimate includes a higher grade core of 56Mt @ 0.47% Cu and 0.59g/t Au (0.85% Cu equivalent) for a contained metal content of 580Mlb Cu and 1.1Moz Au. The higher grade core is reported at a 0.6% CuEq cut-off and split between open pit within a Whittle optimised pit shell and underground outside of the pit shell.

Summary Resources of Kharmagtai Project at 28 February 2015, Cut-Off 0.3% CuEq within Whittle Pit Shell and 0.5% CuEq Below Whittle Pit Shell.

Deposit	Mining Method	Cut-Off CuEq(%)	Resource Category	Material (Mt)	Grade			Metal	
					Cu(%)	Au(g/t)	CuEq(%)	Cu(Mlb)	Au(Koz)
All	OC	0.3	Indicated	23	0.41	0.55	0.8	203	401
			Inferred	107	0.27	0.24	0.4	641	833
			Subtotal	**129**	**0.30**	**0.30**	**0.5**	**844**	**1,234**
	UG	0.5	Indicated	24	0.43	0.47	0.7	225	359
			Inferred	51	0.42	0.36	0.6	463	591
			Subtotal	**74**	**0.42**	**0.40**	**0.7**	**688**	**950**
	Combined		Indicated	46	0.42	0.51	0.7	428	759
			Inferred	157	0.32	0.28	0.5	1,104	1,424
			Total	203	0.34	0.33	0.6	1,533	2,184

Summary Resources of Kharmagtai Project at 28 February 2015, Cut-Off 0.6% CuEq within and below Whittle Pit Shell.

Deposit	Mining Method	Cut Off CuEq(%)	Resource Category	Material (Mt)	Grade			Metal	
					Cu(%)	Au(g/t)	CuEq(%)	Cu(Mlb)	Au(Koz)
All	OC	0.6	Indicated	9	0.52	0.87	1.1	102	248
			Inferred	1	0.38	0.82	0.9	11	34
			Subtotal	**10**	**0.50**	**0.86**	**1.1**	**113**	**282**
	UG	0.6	Indicated	20	0.46	0.57	0.8	203	368
			Inferred	26	0.46	0.50	0.8	263	418
			Subtotal	**46**	**0.46**	**0.53**	**0.8**	**465**	**786**
	Combined		Indicated	29	0.48	0.66	0.9	305	616
			Inferred	27	0.46	0.52	0.8	274	452
			Total	56	0.47	0.59	0.9	578	1,068

Note: According to Clause 27 of the JORC Code 2012 edition: "in a public report of a Mineral Resource for a significant project for the first time, or when those estimates have materially changed from when they were last reported, a brief summary of the information in relevant sections of Table 1 must be provided". Table 1 is included in Appendix 1 of this report and must accompany any reporting of Mineral Resources.

CuEq calculated using the following formula: CuEq = Cu(%) + Au (g/t)*0.6378, based on a copper price of \$2.60/lb, and a gold price of \$1300/oz, with assumed recoveries of 90% for copper and 70.85% for gold .

"The information in this report that relates to Mineral Resources is based on information compiled by Andrew Vigar who is a Member of The Australasian Institute Geoscientists and is employed by Mining Associates Pty Ltd. Mr Vigar has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Vigar consents to the inclusion in the report of the matters based on his information in the form and context in which it appears".

Andrew J Vigar

Brisbane, Australia

30th April 2015

2 INTRODUCTION

2.1 TERMS OF REFERENCE

Mining Associates ("MA") was commissioned by Xanadu Mines Limited (ASX:XAM) ("Xanadu") to complete an Independent Technical report and estimation of Mineral Resource estimates for the of the Kharmagtai Cu-Au porphyry system, located in the South Gobi region of Mongolia.

MA has not been requested to provide an Independent Valuation, nor has MA been asked to comment on the Fairness or Reasonableness of any vendor or promoter considerations, and therefore no opinion on these matters has been offered.

2.2 PURPOSE

Xanadu intends that this report be used as an Independent Technical Report describing the geology and current Mineral Resource estimates for the Kharmagtai Cu-Au porphyry system.

At Xanadu's request, MA's inquiries included the following scope:

1. Review and validate Xanadu drill data (including QA/QC for Ivanhoe and Xanadu drilling).
2. Review mineralisation controls and wireframes / cross section interpretations supplied by Xanadu.
3. Determine selection criteria for geological controls and estimation domains – univariate statistics, Cu:Au ratios, geology. Review with Xanadu exploration manager Andy Stewart.
4. Tag mineralised intercepts in database, validate against wireframes.
5. Determine optimum composite lengths and grade top cuts.
6. Univariate statistics and variography on composited data.
7. Perform estimation and validate results
8. Resource estimates for three deposits: Altan Tolgoi, Tsgaan Sudal and Zesen Uul
9. Determine reporting cut-offs and JORC resource classification criteria
10. Report Resource in accordance with the JORC Code

2.3 INFORMATION USED

This report is based on technical data provided by Xanadu Mines Ltd to MA. Xanadu Mines Ltd provided open access to all the records necessary, in the opinion of MA, to enable a proper assessment of the project and resource estimates. Xanadu Mines Ltd has warranted in writing to MA that full disclosure has been made of all material information and that, to the best of the Xanadu Mines Ltd's knowledge and understanding, such information is complete, accurate and true. Readers of this report must appreciate that there is an inherent risk of error in the acquisition, processing and interpretation of geological and geophysical data, and MA takes no responsibility for such errors.

Additional relevant material was acquired independently by MA from a variety of sources. The list of references at the end of this report lists the sources consulted. This material was used to expand on the information provided by Xanadu Mines Ltd and, where appropriate, confirm or provide alternative assumptions to those made by Xanadu Mines Ltd.

The most recent report on the Kharmagtai project was prepared in accordance with the Canadian NI43-101 reporting standards by AMC consultants "Kharmagtai Mineral Resource Estimate Technical Report for Ivanhoe Ulaan PTE LTD in December 2012" (referred to here as "AMC, 2012").

Geological information usually consists of a series of small points of data on a large blank canvas. The true nature of any body of mineralization is never known until the last tonne of ore has been mined out, by which time exploration has long since ceased. Exploration information relies on interpretation of a relatively small statistical sample of the deposit being studied; thus a variety of interpretations may be possible from the fragmentary data available. Investors should note that the statements and diagrams in this report are based on the best information available at the time, but may not necessarily be absolutely correct. Such statements and diagrams are subject to change or refinement as new exploration makes new data available, or new research alters prevailing geological concepts. Appraisal of all the information mentioned above forms the basis for this report. The views and conclusions expressed are solely those of MA. When conclusions and interpretations credited specifically to other parties are discussed within the report, then these are not necessarily the views of MA.

2.3.1 Competent Persons

The information in this report that relates to Exploration results and Mineral Resources is based on information compiled by Andrew J Vigar who is a member of the Australian Institute of Geoscientists and is employed by Mining Associates Limited. He has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Andrew J Vigar consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Andrew joined the exploration team at the Vatukoula mine in Fiji in 1980 focused on gold and copper, transferred to WMC Kalgoorlie in 1985 and then worked on several gold and copper projects in WA and Indonesia. In 1990 he returned to Brisbane as Chief Geologist with the Cracow Mine, and in 1992/93 studied Geostatistics and worked at the W H Bryan Mining Geology Research Centre at the University of Queensland. He joined Comalco, Weipa Mine Operations in 1994 and transferred to CRAE – PNG in 1995 to head up the technical team for the Wafi Golpu Copper-Gold project. Commencing consulting in 1996 he has worked on the following copper or copper/gold projects: Wafi Golpu (Porphyry, PNG); Highway Reward (VMS, Qld); Ernest Henry, Rocklands and Selwyn (IOCG, Qld); Kainantu (Vein Cu, PNG); Zijin Shan and Huaxi (Porphyry, China); Dapingzhan (VMS, China); Carapateena (IOCG, SA); and Taysan, Hinobaan and Basay (Porphyry, Philippines).

3 PROPERTY DESCRIPTION AND LOCATION

3.1 LOCATION

The Kharmagtai copper-gold porphyry project is located within the Omnogovi Province of southern Mongolia, approximately 420 km southeast of Ulaanbaatar (Figure 1). The project is strategically located 120 km north of the giant Oyu Tolgoi porphyry copper-gold project and 60 km north of the Tavan Tolgoi coal deposit.

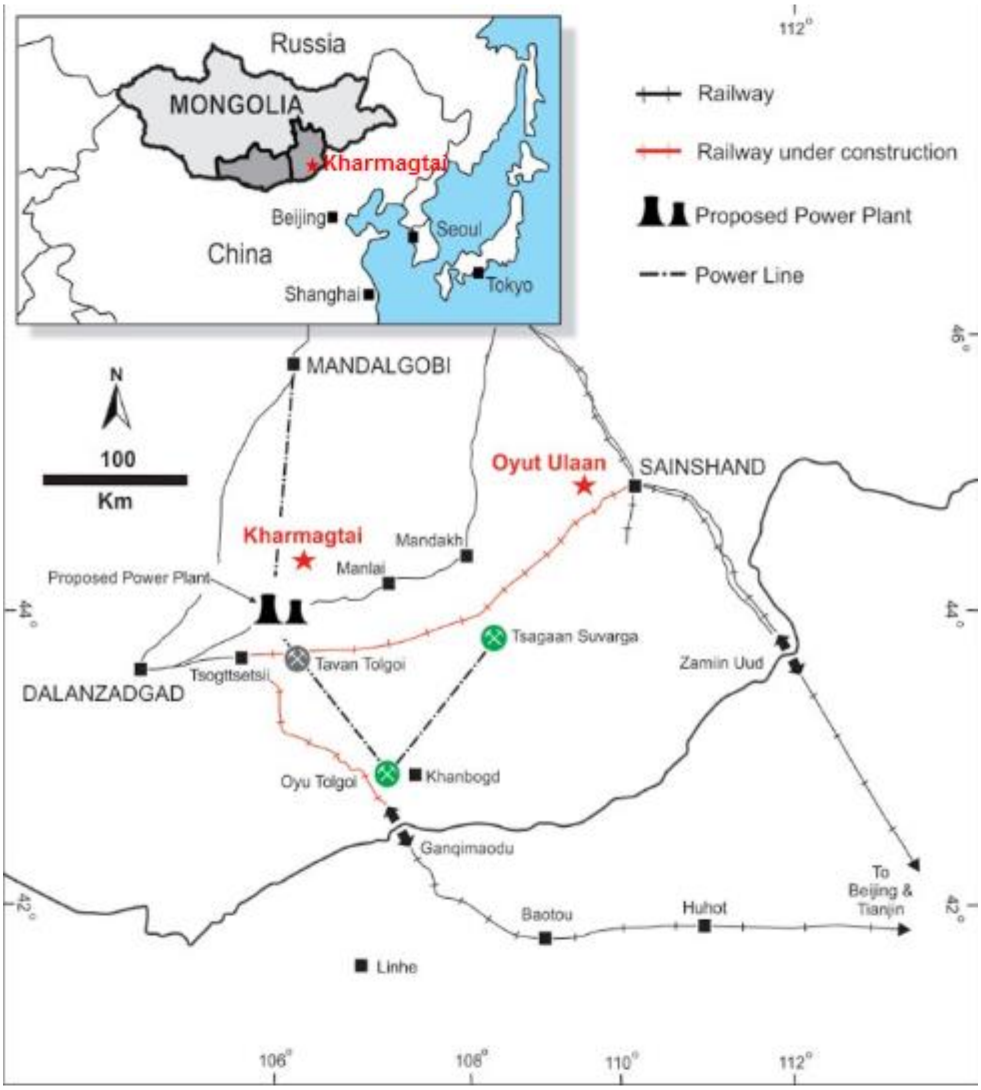


Figure 1. Project Location and Access

(Source: Xanadu Mines, 2014)

Road access to the area follows a semi-paved road from Ulaanbaatar requiring 6 hours of travel time. The soum (sub-province) centre of Tsogttsetsii is situated approximately 60 km south from the project area and is serviced by daily flights from Ulaanbaatar requiring 45 mins travel time.

Topography in the licence area is subdued and characterised by flat gravel covered plains and low undulating hills which range from 1,360 m to 1,250 m above sea level (Figure 2). Vegetation is sparse with low shrubs and grassy plains. The region experiences generally arid continental climatic conditions, varying between +30°C in summer and -30°C in winter.

3.2 TENURE

The Kharmagtai project is covered by Mining Licence 17387A as shown in Table 1, Table 2 and Figure 2. The tenement's status has not been independently verified by MA.

Table 1. Tenement details

Mining Licence (ML)	Licence Name	Size (Ha)	Licence Date	
			Grant	Expiry
17387A	Kharmagtai	6,647.05	27/09/2013	27/09/2043

Table 2. Kharmagtai Mining Licence Property Boundaries.

Mining Licence	Point	Latitude/Longitude WGS-84		UTM WGS84 Zone48N	
		Latitude	Longitude	Easting	Northing
17387A	1	44° 00' 39.46"	106° 14' 31.36"	599562	4873840
	2	44° 00' 39.45"	106° 07' 5.36"	589631	4873698
	3	44° 04' 16.46"	106° 07' 5.36"	589540	4880393
	4	44° 04' 31.36"	106° 14' 31.36"	599461	4880536

In early 2014 90% of the Kharmagtai project was acquired by Xanadu's joint venture company, Mongol Metals LLC, from Turquoise Hill Resources. Xanadu has the right to earn up to 85% of Mongol Metals LLC (67.5% at April 2014), equal to a 76.5% beneficial interest in the whole project. The remaining 10% of Kharmagtai is owned by QGX Ltd.

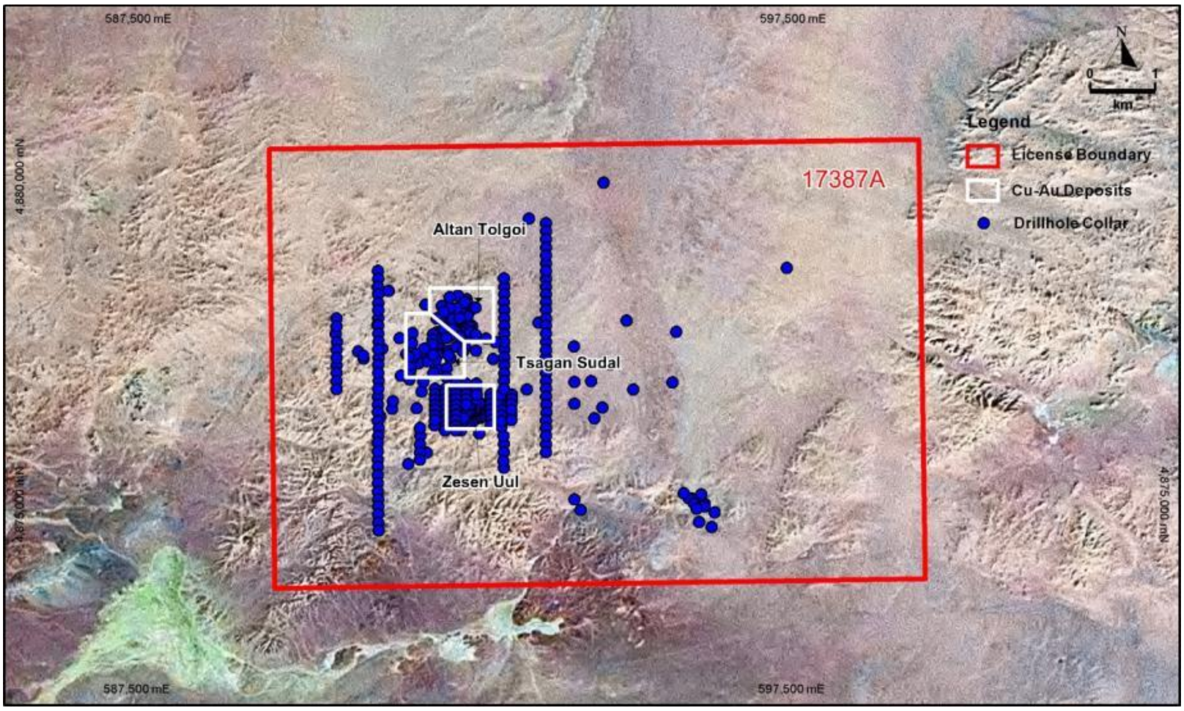


Figure 2. Tenement Location

(Source: Xanadu Mines)

4 HISTORY

4.1 PREVIOUS EXPLORATION

The porphyry copper-gold potential of the south Gobi region of Mongolia has only been fully recognised in the last 30 years. Prior to this, minor gold and copper was extracted from high grade veins and shallow oxide zones by Bronze Age workers.

Between 1960 and 1975 several geological surveys and mineral exploration programs were conducted in the Kharmagtai district under cooperation of former Soviet Union and Eastern European geological groups (Shabalovski et al., 1976; Shabalovski et al., 1978). This work included regional geological mapping, geochemistry, ground magnetics, induced polarisation (chargeability and resistivity) and airborne magnetic/radiometric surveys (Goldenberg et al., 1978; Shmelyov et al., 1983). First copper mineralisation was noted in the Kharmagtai area in 1979, and tourmaline gold mineralisation was consequently identified at Ovoot Khyar later in 1980. Recognition of porphyry style mineralisation sparked an extensive exploration program, which involved excavation of numerous trenches and drilling of seventeen shallow, widely spaced vertical diamond drill holes (Sharkhuu 1980). This exploration work resulted in a preliminary Russian standard resource estimate of 193 Mt @ 0.25% Cu. The gold assays that were done during these programs were by spectrometer and are not considered to be reliable.

Between 1991 and 1995, the Japan International Cooperation Agency (JICA) & Metal Mining Agency of Japan (MMAJ) at the request of the Mineral Authority of Mongolia, commenced mineral exploration in the South Gobi region (JICA 1995). This exploration included regional reconnaissance, airborne magnetic & radiometric surveys, and based on this work Kharmagtai was re-identified as an area of porphyry related alteration & mineralisation.

Exploration by QGX (Quincunx) at Kharmagati during 1995 and 1996 included the collection of approximately 181 rock-chip samples and 475 soil samples. Rock-chip samples from the mineralized stockwork at Altan Tolgoi returned numerous samples with greater than 1 g/t Au (Atkinson et al., 1998b). Based on encouraging results a further 2,980 soil samples were taken as part of a grid-based soil survey and the Ovoot Khyar area was identified as a priority target. Late 1996 a total of 240 line-kilometres of ground magnetic data was collected and 64 trenches excavated (approximately 14.7 km) resulting in 2,981 trench samples (Roscoe and MacCormack, 1997). Exploration continued at OV3 in 1997 with detailed geological mapping, trenching (2411 m) and geophysics focused on the shallow replacement-style gold mineralisation at Ovoot Khyar. This resulted in the drilling of five shallow holes (1,060 m) which intersecting narrow near surface low grade gold mineralisation (up to 0.83 g/t Au) hosted in phyllic altered sedimentary rock (Atkinson, 1998). This drilling highlighted the potential for replacement-style gold mineralisation typically found in the peripheral zones of porphyry copper deposits.

Following the intersection of low grade mineralisation at Ovoot Khyar in 1998, exploration moved to the previously identified porphyry copper prospects at Altan Tolgoi (formerly known as KH1) and Tsagaan Sudal (formerly known as KH2). Detailed induced-polarisation surveys were completed and six drill holes (859m) targeted shallow porphyry stockwork mineralisation at Tsagaan Sudal, Zesen Uul confirmed the presence of porphyry-related alteration and mineralisation with the best results of 43 m grading 1.89 g/t Au, 0.58% Cu (KH97-01) from Tsagaan Sudal.

Ivanhoe Mines Mongolia (IMMI) geologists visited Kharmagtai several times between 1997 and 2001 (Kirwin, 1997; Kirwin 1999), however it was not until 2002 that IMMI made a decision to earn into the property based on encouraging geology and widespread porphyry-related alteration. Between 2002 and 2006 Ivanhoe Mines Mongolia collected 2960 rock-chip samples within the Kharmagtai area, excavated 119 trenches (65,636 m) and drilled 208 RC (27,747 m) and 172 diamond drill holes (54,269 m). Diamond drilling focused on testing and defining the Altan Tolgoi, Zesen Uul, Tsagaan Sudal, Chun, Burged and OV3 prospects. Geological mapping, stream sediment and soil sample surveys, gradient array IP (289 km2), ground magnetics (589 km^2), ground gravity (39 km^2) and aerial magnetics and aerial gravity (Falcon, 259 km^2) surveys were also conducted during this period. Drilling during this period delineated a combined resource at Altan Tolgoi, Zesen Uul and Tsagaan Sudal of 174 Mt at 0.50 % Cueq. These resources were predominately near surface and mineralisation remained open both at depth and along strike at Altan Tolgoi and Tsagaan Sudal.

Between 2007 and 2011 Asia Gold (a subsidiary of Ivanhoe Mines) assumed control of the Kharmagtai district and exploration focused on deep copper mineralisation associated with late stage tourmaline breccia previously recognised in deeper drill holes drilled by IMMI. Fifteen diamond drill holes totalling 5170.60 m were drilled at Kharmagtai during 2007 to test deeply seated geophysical anomalies. A detailed 3D IP survey was completed was completed in 2011; and 19 diamond holes totalling 15,345.30 m targeting deep geophysical associated with tourmaline breccia mineralisation under the Altan Tolgoi and Tsagaan Sudal prospects. All holes intersected broad low grade mineralisation indicating the tourmaline breccias are part of a major copper system with significant exploration potential.

Table 3: Previous Exploration prior to 2011.

Period	Description of Work	References
1960 - 1975	Joint Mongolian Eastern Block Exploration • Regional geological mapping, geochemistry, ground magnetics, induced polarisation (chargeability and resistivity) and airborne magnetic/radiometric surveys • Diamond drill 17 vertical drill holes; • Russian standard resource estimate of 193 Mt @ 0.25% Cu.	Goldenberg et al.,(1978) Shabalovski et al., (1976) Shabalovski et al.,(1978) Sharkhuu 1980 Shmelyov et al., (1983)
1991 -1995	Japan International Cooperation Agency (JICA) & Metal Mining Agency of Japan (MMAJ) • Regional reconnaissance, airborne magnetic & radiometric surveys; • Kharmagtai re-identified as an area of porphyry related alteration & mineralisation	JICA (1995)
1996-1998	QGX (Quincunx) • Regional geological mapping, geochemistry (1500 rock-chip and 4000 soil samples), trenching (19 km), geophysics (240 km). • Diamond drilling of five shallow holes (1,060 m) - sediment-hosted Au mineralisation at Ovoot Khyar discovered • Diamond drill 19 shallow widely spaced holes – define widespread porphyry alteration and mineralisation Kharmagati.	Atkinson (1997) Atkinson (1998) Atkinson & Setterfield (1998) Atkinson et al., (1998a) Atkinson et al., (1998b) Roscoe & MacCormack (1997)
2001-2006	Ivanhoe Mines Mongolia (IMMI) • Detailed geological mapping, geochemistry (2960 rock-chip), 119 trenches (65,636 km). Geophysics included gradient array IP (289 km2), ground magnetics (589 km2), ground gravity (39 km2) and aerial magnetics and aerial gravity. • Drilled 208 RC (27,747 m) and 172 diamond drill holes (54,269 m). Drilling focused on testing and defining the Altan Tolgoi, Zesen Uul, Tsagaan Sudal, Chun, Burged and OV3 prospects. • Combined resource at Altan Tolgoi, Zesen Uul and Tsagaan Sudal of 174 Mt at 0.50 % Cueq.	Kirwin, (1997) Kirwin (1999) Kirwin et al. (2003) Wolfe (2004) Wolfe & Wilson (2004) Wolfe, R. (2006a) Wolfe, R. (2006b) Wolfe, R. (2007).
2007-2012	Asia Gold (AGC, a subsidiary of IMMI) • Deep diamond drilling (5170.60) m testing deeply seated geophysical anomalies; • A detailed 3D IP survey was completed was completed in 2011 and 19 diamond holes (15,345.30 m).	Orssich, C . (2012)

4.2 HISTORIC RESOURCE ESTIMATES

Exploration in the Kharmagtai district has identified significant copper-gold mineralisation within the Altan Tolgoi, Tsagaan Sudal and Zesen Uul deposits. Several in-house and independent Mineral Resource estimates have been prepared for IMMI and Asia Gold in past.

Two resource estimates have been carried out previously on the deposit, the first in 2005 by Ivanhoe, and updated in 2007 (internal resource estimates), and AMC completed an independent resource estimate (in accordance with NI43-101 reporting standards) in 2012:

Mineral Resource estimates were reported above and below 1000 m RL using relevant copper-equivalent (CuEq) cut off values. The following sections highlight the key components input to the resource estimates and the findings observed by MA.

4.2.1 Ivanhoe 2007

The 2007 Mineral Resource estimate (Table 3, Table 4) was prepared by Stephen Torr (Torr, 2007), which was classified according to NI43-101, however the Qualified Person at the time was a full-time employee of IMMI and therefore not independent. The total Kharmagtai Mineral Resource estimate for the three deposits, based on drilling as of 2007 at various copper equivalent (CuEq) cut-offs. The base case reporting CuEq cut-off grade of 0.3 % CuEq was determined using cut-off grades applicable to mining operations exploiting similar deposits by open pit mining methods. For reporting above a 0.3% CuEq cut-off a maximum depth of 1000 m RL (300 m below surface) was applied. Resources below this datum were reported separately and 0.6% CuEq was applied as a cut-off. The contained gold and copper in the tables was not adjusted for recovery.

Table 3. Ivanhoe 2007 Resource - at 0.3% CuEq cut-off above 1000m

Area	Category	Tonnage (kt)	Grades			Contained Metal	
			Au (g/t)	Cu (%)	CuEq (%)	Au (k oz)	Cu (M lbs)
Altan Tolgoi	Measured + Indicated	25,455	0.47	0.31	0.61	386	172
	Inferred	5,835	0.24	0.28	0.43	44	35
Zesen Uul	Measured + Indicated	9,945	0.54	0.47	0.81	172	103
	Inferred	635	0.16	0.24	0.34	3	3
Tsagaan Sudal	Inferred	115,735	0.20	0.29	0.42	758	736
Total	Measured + Indicated	35,400	0.49	0.35	0.66	558	275
	Inferred	122,205	0.20	0.29	0.42	805	774

Notes to accompany Resource Table:
CuEq was calculated using the formula CuEq = %Cu + ((g/t Au*18.98))/29.76
CuEq is based on a $1.35/lb copper price and a $650/oz gold price. A gold recovery factor of 0.908 was used.
Contained gold and copper in the tables has not been adjusted for recovery.

Table 4. Ivanhoe 2007 Resource - at 0.6 CuEq cut-off below 1000m

Area	Category	Tonnage (kt)	Grades			Contained Metal	
			Au (g/t)	Cu (%)	CuEq (%)	Au (k oz)	Cu (M lbs)
Altan Tolgoi	Measured + Indicated	2,001	0.37	0.52	0.76	24	23
	Inferred	24,220	0.57	0.47	0.83	443	252
Zesen Uul	Measured + Indicated	-	-	-	-	-	-
	Inferred	-	-	-	-	-	-
Tsagaan Sudal	Inferred	1,261	0.41	0.39	0.66	17	11
Total	Measured + Indicated	2,001	0.37	0.52	0.76	24	23
	Inferred	25,481	0.56	0.47	0.83	460	263

Notes to accompany Resource Table:
CuEq was calculated using the formula CuEq = %Cu + ((g/t Au*18.98))/29.76
CuEq is based on a $1.35/lb copper price and a $650/oz gold price. A gold recovery factor of 0.908 was used.
Contained gold and copper in the tables has not been adjusted for recovery.

4.2.2 AMC 2012

In 2011 AMC Consultants Pty Ltd prepared an independent Mineral Resource estimate that incorporated additional drill information obtained since the previous reports and provided the first independent technical report to a standard required by NI 43-101. Mineral Resource estimates in Table 5 are reported at a CuEq cutoff of 0.3% for mineralisation at depths ≥ 1,000 m RL. Mineral Resource estimates in Table 6 are reported at a CuEq cutoff of 0.6% for mineralisation at depths < 1,000 m RL. This division was intended to reflect the difference between resources that are likely to be mined by open-pit (<300 m from surface) and underground (>300 m from surface)

Table 5. Mineral Resource estimate - CuEq greater than 0.3% for shallow mineralisation (≥ 1,000 m RL).

Area	Category	Tonnage (kt)	Grades		
			Au (g/t)	Cu (%)	CuEq (%)
Altan Tolgoi	Measured + Indicated	22,985	0.56	0.39	0.73
	Inferred	2,219	0.30	0.40	0.58
Zesen Uul	Measured + Indicated	6,412	0.72	0.61	1.05
	Inferred	137	0.61	0.23	0.59
Tsagaan Sudal	Inferred	76,394	0.23	0.28	0.42
Total	Measured + Indicated	29,397	0.60	0.44	0.80
	Inferred	78,750	0.23	0.28	0.43

Notes to accompany Resource Table:
Mineral Resources reported at a 0.3% CuEq cut-off and depths (> 1,000 m RL).
CuEq is based on a $3.38/lb copper price and a $1,625/oz gold price. A gold recovery factor of 0.908 was used

Table 6. Mineral Resource estimate - CuEq greater than 0.6% for deep mineralisation (< 1,000 m RL).

Area	Category	Tonnage (kt)	Grades		
			Au (g/t)	Cu (%)	CuEq (%)
Altan Tolgoi	Measured + Indicated	21,768	0.54	0.53	0.86
	Inferred	2,421	0.53	0.53	0.85
Zesen Uul	Measured + Indicated				
	Inferred				
Tsagaan Sudal	Inferred	762	0.38	0.42	0.65
Total	Measured + Indicated	21,768	0.54	0.53	0.86
	Inferred	3,183	0.50	0.50	0.81

Notes to accompany Resource Table:
Mineral Resources reported at a 0.6% CuEq cut-off and depths (< 1,000 m RL).
CuEq is based on a $3.38/lb copper price and a $1,625/oz gold price. A gold recovery factor of 0.908 was used

5 GEOLOGICAL SETTING AND MINERALIZATION STYLE

5.1 REGIONAL GEOLOGY

The Kharmagtai district is located within the Central Asian fold belt (“CAFB”), one of the largest orogenic belts in the world, extending for over 5000 km from northern China to the Urals in Russia. Contained within this orogenic belt is the southern Mongolian fold system (Ruzhentsev and Pospelov, 1992), which comprises a zone of arc-continent collision that was active during several episodes from the Silurian to Early Carboniferous along the southern margin of the Siberian Craton. Currently the tectonics of Mongolia is interpreted as a series of fault-bounded accreted terranes (Badarch et al. 2002).

The Kharmagtai district is located within the Gurvansaikhan arc terrane which comprises an arcuate belt, 600 km long and up to 200 km wide through southern Mongolia (Figure 3). It comprises Middle to Late Palaeozoic volcanic and sedimentary rocks, intruded by Late Devonian and Carboniferous granitoids (Lamb and Badarch, 1997: Badarch et al., 2002). The current geometry and distribution of volcanic belts in southern Mongolia is attributed to post-accretion disruption and dislocation by extensional and/or dextral strike-slip faulting related to the Himalayan collision, which dominate the present-day regional structure of southern Mongolia.

The Gurvansaikan terrane hosts most of the known porphyry and intrusion-related mineralisation in the South Gobi, including the Oyu Tolgoi copper-gold porphyry (Perello et al., 2001; Crane and Kavalieris, 2013), the Kharmagtai copper-gold porphyry (Kirwin et al., 2004) deposits, and the Tsagaan Suvarga copper-molybdenum porphyry (Watanabe and Stein, 2000).

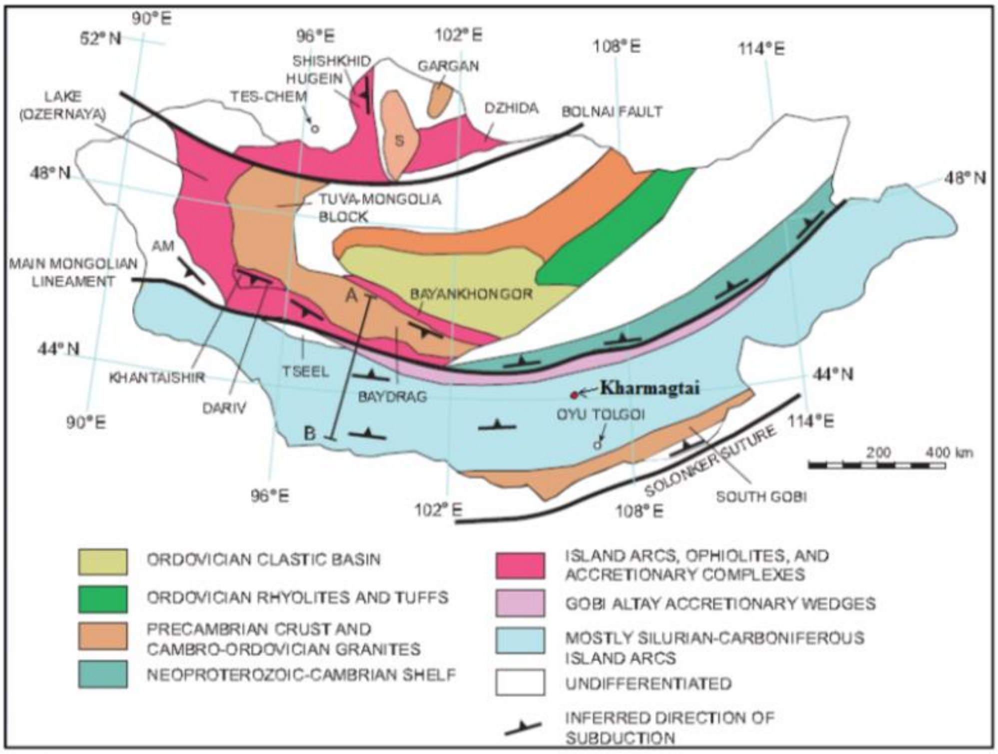


Figure 3. Regional Geology and Tectonic setting

(Source: AMC, 2012 and references therein)

5.2 MINERALISATION STYLE

Porphyry copper-gold deposits are formed from magmatic hydrothermal fluids typically associated with felsic intrusive stocks that have deposited metals as sulphides both within the intrusive and the intruded host rocks. Quartz stockwork veins are typically associated with sulphides occurring both within the quartz veinlets and disseminated thought out the wall rock. Typical alteration patterns consists of potassic altered cores, grading outward to propylitic altered margins and grading upward to overprinted phyllic alteration. Porphyry deposits are typically large tonnage deposits ranging from low to high grade and are generally mined by large scale open pit or underground bulk mining methods. The deposits at Kharmagtai are atypical in that they are associated with intermediate intrusions of diorite to quartz diorite composition, and the alteration assemblages are largely discontinuous, non-symmetrical, and do not all occur in every deposit. However in terms of contained gold the Kharmagtai deposits are significant, and similar gold-rich porphyry deposits have been an attractive exploration target over the last three decades, with significant discoveries made in the Tertiary volcanoplutonic arcs of the circum-Pacific region (e.g., Grasberg, Batu Hijau, Bajo de la Alumbrera, Far South East, Boyongan) and more recently in Siluro-Devonian island arc terranes in Mongolia (Oyu Tolgoi: Perelló et al., 2001).

5.3 LOCAL GEOLOGY

Outcrop throughout the Kharmagtai district is sparse with Quaternary sand forming a thin cover over most of the district and current understanding of the geology is derived mainly from diamond drilling. Copper-gold mineralisation at Kharmagtai is hosted within the Lower Carboniferous Kharmagtai Igneous Complex ("KIC"), which was emplaced into a Late Devonian volcano-sedimentary sequence (Kharmagtai Volcanic Group; Figure 4). The Kharmagtai Volcanic Group has a minimum stratigraphic thickness of 1500 m, and dominates the western part of the district. The true thickness of the succession is poorly constrained, due to structural complexities and alteration. The volcanic group predominantly comprises hornblende-phyric andesite interbedded with poorly sorted breccia and finely laminated volcaniclastic units.

The KIC is characterised by a composite porphyritic diorite to quartz diorite intrusive complex characterised by a high-K calc-alkaline island arc geochemical signature (Jargalan et al, 2006). The complex covers approximately 5 to 6 km^2, extending from Tsagaan Sudal in the west to Chun in the east, with at least 70 % of the complex concealed by shallow Quaternary cover. The intrusive complex is predominately composed of diorite, quartz diorite and monzodiorite intrusions with granodiorite and syenite on its eastern margin, with intrusions appearing to become more evolved the further east they are in the igneous complex. Early-mineral intrusions are typically equigranular stocks or weakly mineralised dark-grey to black diorite that have been cut by a series of quartz diorite porphyry pipes and dykes of early- and inter-mineral timing. The dimensions of the composite mineralised pipes at Kharmagtai are around 100 m to 200 m across, with vertical extents up 1 km. Unidirectional solidification textures (USTs) such as crenulated quartz layers, brain rock and vein dykes typically occur in most of the mineralised intrusive complexes, indicating an intimate relationship between intrusive emplacement, volatile exsolution and ore formation. The final intrusive phase comprises plagioclase-phyric andesite dykes that were emplaced along northwest-trending shear zones.

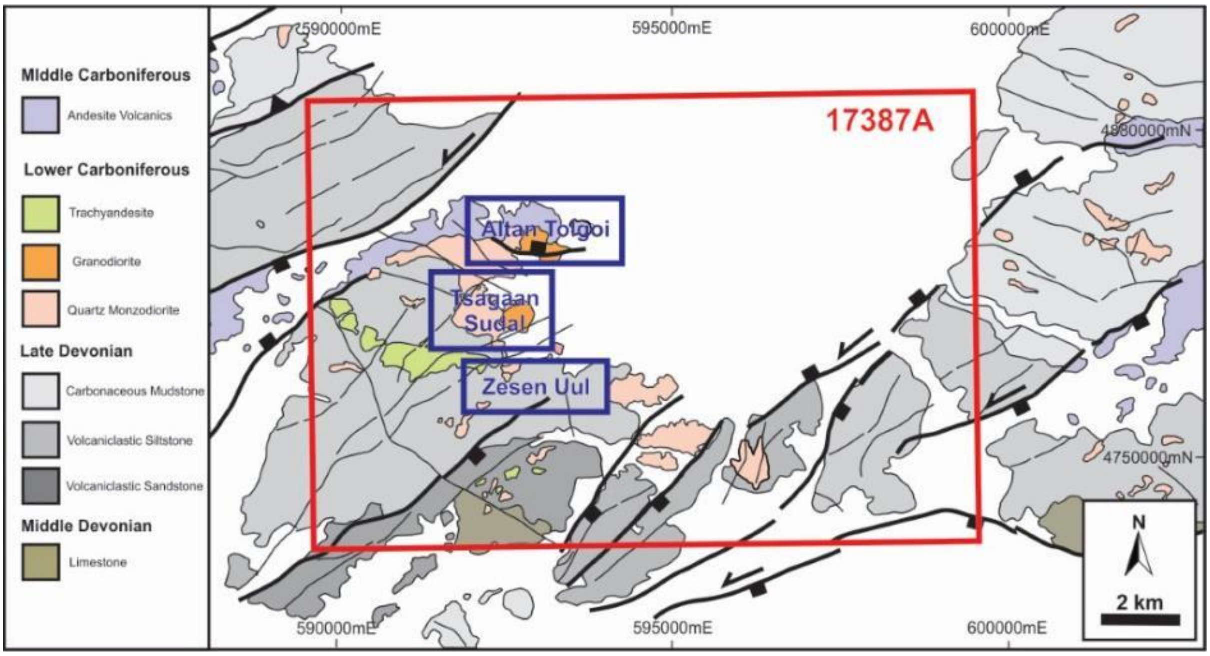


Figure 4. Kharmagtai Local Geology.

(Source: Xanadu 2015)

5.4 STRUCTURE

Northeast to east-northeast and northwest to west-northwest structures dominate regional to prospect scale satellite imagery and magnetics interpretations. Regional structural history appears to involve complex re-activation of both sets of structures at various times. Post-mineralisation movement occurred on both sets of structures: apparent sinistral strike-slip movement on northeast structures and dextral movement on northwest structures.

Mineralisation trends broadly from west-southwest at Zesen Uul (ZU) to west or west-northwest at Altan Tolgoi (AT) and Tsagaan Sudal (TS). Mapped zones of quartz-tourmaline breccia also follow the same broad trends. These structures are recognisable in ground magnetics images and correspond with regional fault and fracture array orientations described from satellite image interpretation (Figure 5). Baker (2004) proposed that igneous centres associated with mineralisation were emplaced into west to northwest trending transtensional zones developed during sinistral movement on northeast trending structures. Northeast trending structures were reactivated as normal dip-slip faults. Late dip-slip movement was inferred from the juxtaposition of different structural levels across the northeast faults.

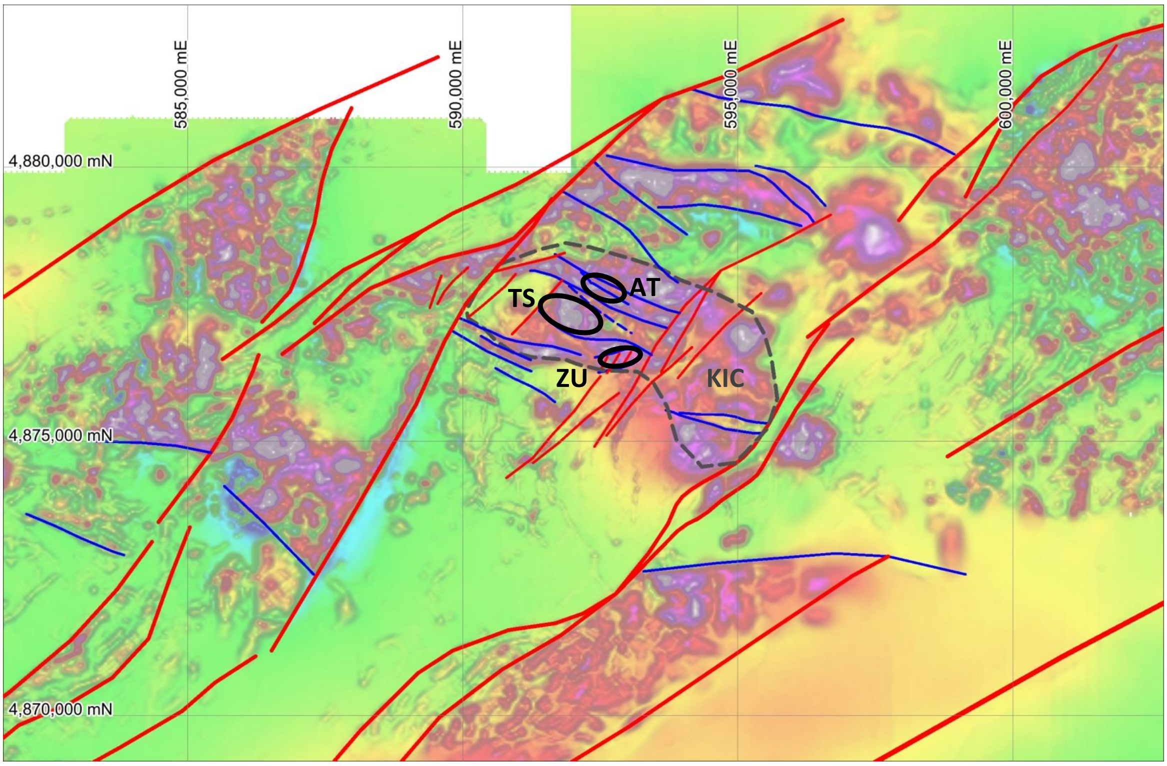


Figure 5. Structural Interpretation of the Kharmagtai area

Red lines: northeast structures, blue line: east-west structures, KIC: approximate limits of Kharmagtai Igneous Complex, AT: Altain Tolgoi, TS: Tsagaan Sudal, ZU: Zesen Uul. Background: Reduced to pole magnetics.

Baker's (2004) interpretation of sinistral strike slip movement on northeast faults controlling emplacement of the KIC is inconsistent with the general east-west trend of intrusives and mineralisation. East-west trending dilation implies transtension during dextral movement on northeast faults. Further work is required to constrain the regional structural setting and local structural controls on mineralisation.

Porphyry intrusive systems generally display a gross structural control at the regional scale and are commonly located within dilational parts of regional faults. Deposit-scale structural control is largely dependent on whether mineralisation occurred during ongoing movement along faults, and how much the local stress field was modified by the intrusions themselves. Kharmagtai mineralisation can be interpreted in the context of strike-slip dextral movement along northeast trending faults producing a roughly east-west trending zone of dilation that created space for intrusion of the KIC (Figure 6). Ongoing deformation would control the geometry of stockwork zones within the same orientation, with steep dips expected. The plunge of higher grade zones would be expected to be steep, although local controls such as intersecting structures or lithological contacts may play a role.

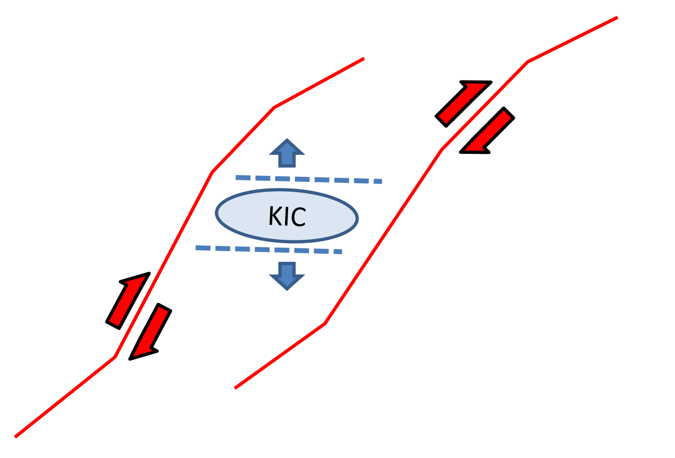


Figure 6. Structural setting of the Kharmagtai area

Cartoon depiction of development of east-west trending transtensional zone and emplacement of Kharmagtai Igneous Complex developed within a step-over zone between two dextral regional northeast trending structures.

Structural measurements are only available for six diamond holes, five of which were drilled in Altan Tolgoi with the remaining one drilled in Tsagaan Sudal. There is no structural information recorded in trench data supplied to MA and it appears that it was not recorded during trench logging. A better understanding of local structural geometries and possible controls on mineralisation will assist targeted exploration, in particular for the higher grade mineralisation.

5.5 GEOPHYSICS

Geophysics has been used extensively in drill targeting and interpretation of geology. Intrusions at Kharmagtai are associated with gravity lows, while several prospects are centred over small gravity highs. Several programs of ground magnetics and IP have been carried out over the project area. These have been reviewed and compared with the existing geological interpretation and models.

Porphyry mineralisation at Kharmagtai is associated with widespread magnetite alteration and all the main prospects are associated with broad magnetic highs (Figure 7). The west-northwest trending magnetite-altered corridor that controlled porphyry mineralisation typically extends several kilometres out under cover. Late-stage magnetite bearing andesite dykes tend to be associated with narrow, laterally extensive magnetic highs, while andesite lavas are associated with broad 'noisy' magnetic highs. Late-stage sericite alteration associated with tourmaline-pyrite breccias is magnetite-destructive and associated with magnetic lows, locally masking the magnetic response of porphyry-style alteration.

Porphyry mineralisation at Kharmagtai is associated with weak chargeability highs (Figure 7). Late-stage tourmaline-pyrite breccias and associated sericite-pyrite alteration are associated with strong chargeability highs. Sericite-pyrite alteration is most extensively developed in glass-bearing ash siltstones, such as at The Duck prospect, while porphyry alteration tends to be preserved within intrusions. Chargeability highs associated with tourmaline breccias and sericite-pyrite alteration in the volcanic units tend to mask weaker chargeability highs from adjoining intrusion-hosted porphyry mineralisation.

Prominent linear magnetic highs are known from drilling to be caused by zones of epidote-magnetite alteration associated with mineralisation. A linear zone of low magnetic response in the centre of Altan Tolgoi is due to magnetite destruction by overprinting sericite-pyrite-tourmaline alteration and quartz-tourmaline breccia emplacement. This effect can also be seen about 2 km west-southwest of Zesen Uul where mapped tourmaline breccias correspond with distinct zones of low magnetic response in otherwise magnetic volcaniclastic sediment.

Ground magnetics and IP give signatures for magnetite and pyrite respectively but these are largely related to alteration around mineralisation, and to parts of the complex not directly related to mineralisation. Also, hematite is a significant part of the alteration, and it does not respond well to either geophysical method. Commonly more subtle features, or edges of anomalies, are key targets. Geophysical methods are a valuable guide but must be interpreted in conjunction with known geology and mineralisation styles

Kharmagtai is a large and complex system with a number of targets that still remain to be tested. Geophysics is currently being re-processed by Xanadu and it is MA's opinion that a great deal could be achieved by integrating known geology with geophysics to better define anomalous results to generate new target areas.

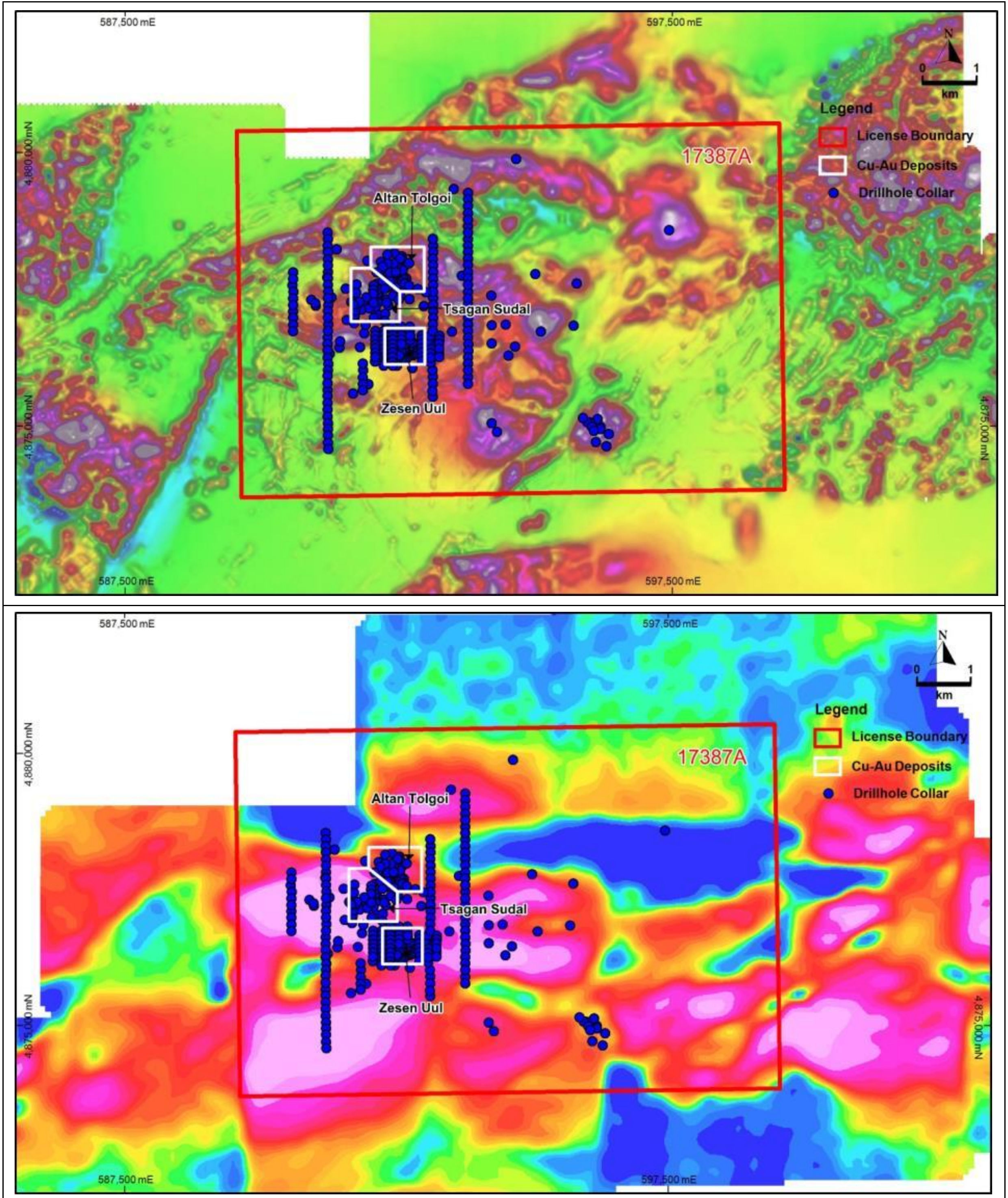


Figure 7. Geophysics and Tenement Boundary MEL3659

From top to bottom shown is ground magnetics, Gradient Array IP Chargeability. Red outline is approximate boundary of MEL 3659. From Ivanhoe 2012.

6 COPPER GOLD MINERALISATION

6.1 KNOWN DEPOSITS

Mineralisation at Kharmagtai is porphyry copper-gold style, related to a series of co-genetic porphyry centres. Distal gold-base metal-bearing breccia pipes and complex silicified structurally controlled breccia zones and younger tourmaline breccia also occur (Kirwan, et al., 2005b). Extensive exploration including trenching and diamond drilling has identified significant porphyry copper-gold mineralisation within the Altan Tolgoi, Tsagaan Sudal and Zesen Uul deposits, which are located within a 700 m radius of each other.

6.1.1 Mineralisation

Mineralisation at Kharmagati comprises quartz-chalcopyrite-pyrite-magnetite stockwork veins and breccias (Figure 8 and Figure 9). The principal minerals of economic interest are chalcopyrite, bornite and gold, which occur primarily as infill within the veins. Gold is intergrown with chalcopyrite and bornite. Mineralised zones at Altan Tolgoi, Tsagaan Sudal and Zesen Uul are associated with a core of quartz veins that were intensely developed in and around quartz diorite intrusive rocks. These vein arrays can be described as stockwork, but the veins have strong developed preferred orientations. Sulphide mineralisation is zoned from a bornite-rich core that zone outwards to chalcopyrite-rich and then outer pyritic haloes, with gold closely associated with bornite.

Drilling indicates that the supergene profile has been oxidised to depths up to 60 m below the surface. The oxide zone comprises fracture controlled copper and iron oxides; however there is no obvious depletion or enrichment of gold in the oxide zone.

Evaluation of geological models show that three broad styles of mineralisation occur within the prospect area which due to their metal ratios, spatial distribution and structural setting, are interpreted to be separate mineralizing events. The first two are of most immediate economic interest:

1. Larger zones of more complex shapes associated with more typical porphyry style quartz veins and moderate grades of copper and gold, like TS and AT North. Gold to copper ratio of about 1 to 1;
2. Steeply dipping, structurally controlled breccia zones with high grades of gold and copper (in that order), examples being AT South and ZU. Gold to copper ratio of 2 to 1 or higher;
3. Tourmaline Breccia as seen at depth and in the east of the area. Where mineralised, the breccias are characterized by copper to gold ratios of 2 to 1.

There is a strong structural control to the mineralisation and most of the higher grades occurs within local cross-cutting structures and at the margins of quartz diorite porphyries (breccia), with the broad low grade mineralisation typically draping the top of the intrusive bodies. The top of the deeper tourmaline breccia mineralisation is typically intersected in drill holes below 200 m depth from surface. This mineralisation is characterized by copper to gold ratios of 2:1. It is postulated that this deep tourmaline mineralisation is part of a bigger system at depth that has not been explored yet. Tourmaline-bearing breccia pipes both mineralised and barren are commonly associated with Andean porphyry copper deposits, eg. Toquepala (Zweng and Clark, 1995), Los Pelambres (Sillitoe, 1973), and Los Bronces (Skewes et al., 2003) and offers great potential for bulk low-grade mineralisation as they can be traced over several kilometres to the south.

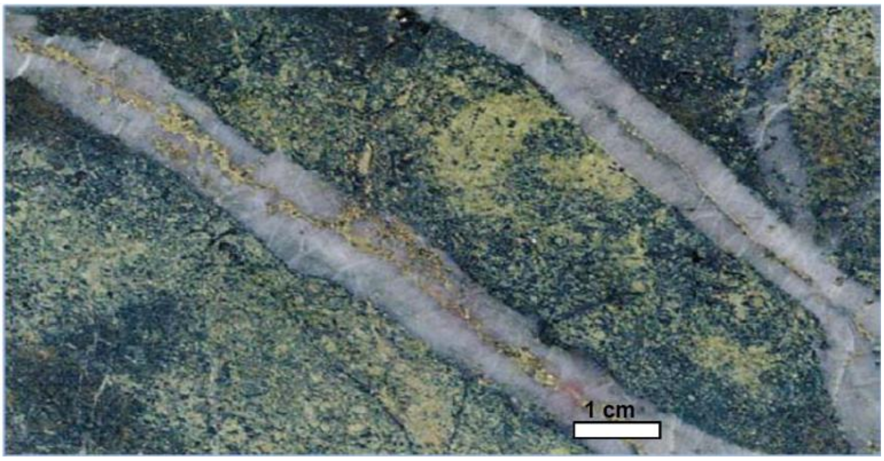
6.1.2 Alteration Assemblages

Alteration assemblages are largely discontinuous, non-symmetrical, and do not all occur in every deposit. The classic porphyry-style alteration zonation (potassic core-phyllic halo-peripheral propylitic zone), as described by Lowell and Guilbert (1970), is not apparent at Kharmagati due to the multiplicity of intrusions and their associated hydrothermal alteration assemblages and fault controlled distribution of the late-stage sericitic assemblages. Although each deposit is unique in terms of alteration zonation and paragenesis, there are many common features, which are described below.

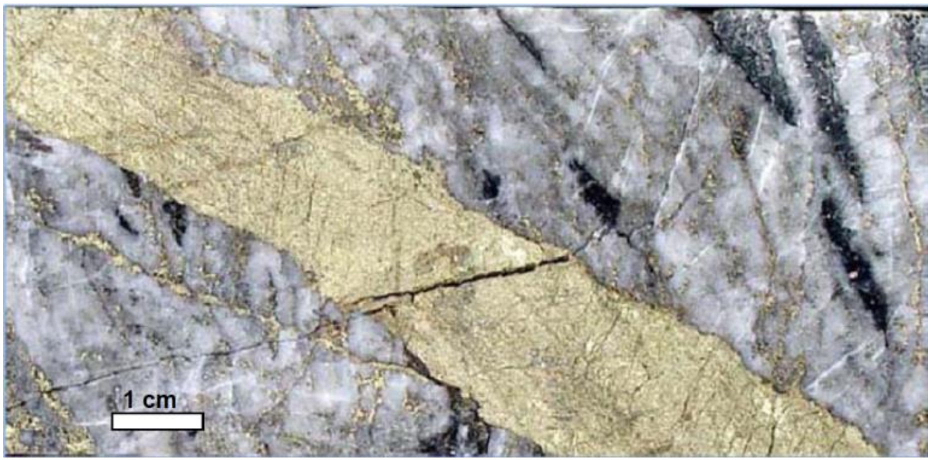
The earliest formed alteration assemblage recognised in the core of the porphyry deposits of Kharmgtai are sodic (albite), potassic (albite-biotite-magnetite) and /or propylitic (epidote-chlorite-magnetite alteration). At the Altan Tolgoi deposit, early albite-magnetite alteration, occurs within the margins of quartz diorite dykes and is locally associated with very high gold grade quartz-bornite-chalcopyrite vein stockwork containing common native gold. The early albite-magnetite alteration is followed by a selective and patchy pervasive epidote-chlorite-magnetite alteration related to emplacement of the main high gold grade quartz-chalcopyrite-pyrite-magnetite vein stockwork mineralisation. At Zesen Uul, early sodic alteration is characterised by albitization of plagioclase and is overprinted by high intensity K-feldspar variant of the potassic alteration, which destroys all primary textures. The composition and textures of the country rocks affected the spatial extents, intensities and style of alteration assemblages that developed around the porphyry complex at Altan Tolgoi. The early, epidote-chlorite-magnetite has the greatest aerial extent of all alteration assemblages.

Early potassic and inner propylitic assemblages have been overprinted by a sericite-pyrite ± tourmaline alteration assemblage. This phyllic zone is characterised by pervasive sericite-tourmaline-chlorite-yellow epidote alteration, tourmaline-sericite-carbonate-pyrite breccias, and quartz-pyrite-tourmaline-carbonate veins. Discontinuous 1 to 15 metre wide zones of pervasive sericite alteration are typically associated with carbonate-quartz-sericite-pyrite-tourmaline infilled fault zones. Extensive fault- and fracture-related phyllic alteration is typically unmineralised, however rare 2 to 10 metre wide zones of 0.5 to >5 % copper and <0.01 to 0.3 g/t gold are associated with chalcopyrite bearing tourmaline breccias and carbonate-filled fault zones.

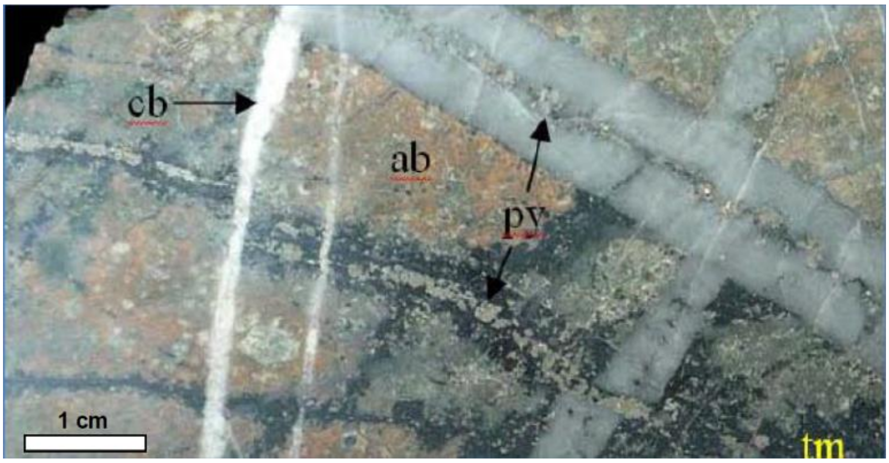
Distal alteration at Kharmagtai produced outer propylitic alteration assemblage (chlorite-calcite-carbonate-hematite-pyrite). This assemblage appears to have formed throughout the hydrothermal system, and presence of hematite and epidote indicates oxidising conditions of formation. The propylitic alteration has a complicated distribution, and there appears to be several discrete episodes. At Altan Tolgoi propylitic and potassic assemblages occur together, with epidote locally occurring in quartz quartz-chalcopyrite-pyrite-magnetite veins. Similar intricate relationships between potassic, sodic and propylitic alteration assemblage have been described from the high-grade porphyry deposits in the Lachlan Fold Belt (Wilson et al. 2003). The propylitic alteration assemblages have been overprinted by an extensive but unmineralised retrograde alteration assemblage consisting of selectively pervasive alteration and extensive carbonate-zeolite veins, both commonly associated with shear zones.



Altan Tolgoi – Northern Stockwork – KHDDH240 114 to 166m 3.91 g/tAu, 0.86% Cu
(quartz-chalcopyrite-pyrite stockwork in altered host)

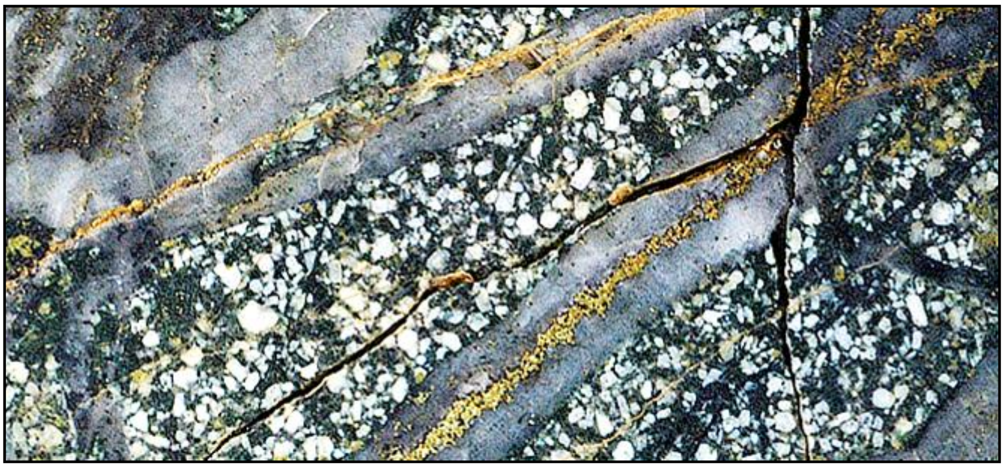


Altan Tolgoi – Southern Stockwork – KHDDH259 140 to 142m 9.79 g/tAu, 2.69% Cu
(quartz-chalcopyrite-pyrite stockwork)

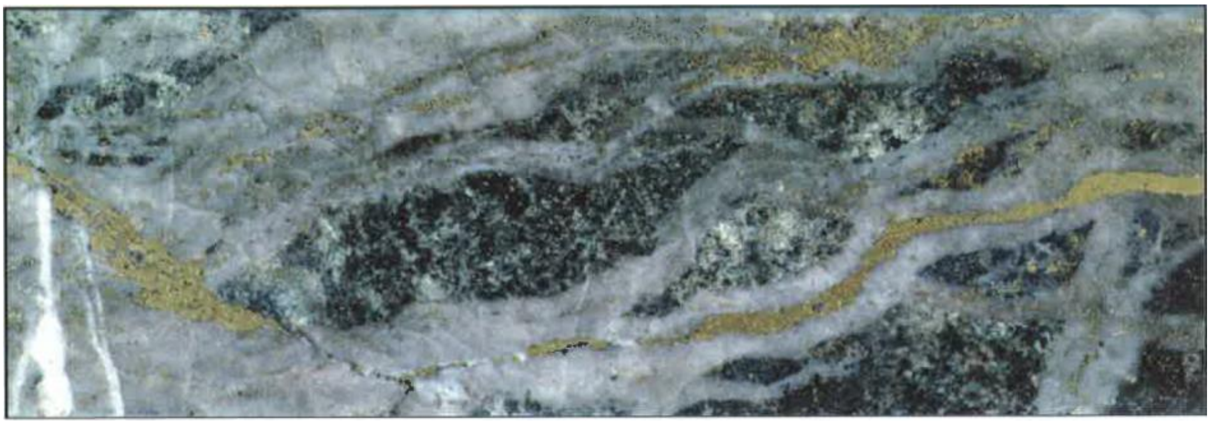


Tsagaan Sudal – Stockwork veins with alteration overprint

Figure 8 Mineralisation Examples (Source: Kirwan, et al., 2005b)



Zesen Uul – KHDDH022 148.8m 2m@ 1.82 g/tAu, 0.92% Cu
Crowded plagioclase phyric diorite with sheeted qtz-magnetite-cpy +/-py veins.



Altaan Tolgoi – KHDDH240 207.5m 2m@ 3.44 g/tAu, 0.81% Cu
Quartz-chalcopyrite-pyrite stockwork veins in chlorite-tourmaline altered quartz diorite.

Altan Tolgoi – KHDDH251 309m 2m@ 0.17 g/tAu, 1.11% Cu
Tourmaline Breccia – Sericite-hematite altered diorite porphyry clasts hosted in tourmaline-cpy-py matrix. Late tourmaline stage sulphides.

Figure 9 Mineralisation Examples (Source: Kirwan, et al., 2005b)

6.2 ALTAN TOLGOI

Altan Tolgoi (AT) was the focus of a large amount of work on geology, paragenesis and alteration (Figure 10). Two main mineralised zones were recognised, named the northern and southern stockwork zones (NSZ and SSZ respectively) which are approximately 100 m apart and hosted in diorite and quartz diorite porphyries.

The SSZ is at least 550 m long, 600 m deep and contains strong quartz-chalcopyrite-pyrite stockwork veining and associated high grade copper-gold mineralisation. The stockwork zone widens eastward from a 20 m to 70 m wide high-grade zone in the western and central sections to a 200 m wide medium-grade zone in the eastern-most sections. Mineralisation remains open at depth and along strike to the east. Quartz veins are tightly focused within the pipe-like stockwork zone, with typical vein densities of 2 to >15 veins per metre (providing grades of 0.7 to >5 g/t gold). Stockwork veining is associated with narrow 10 cm to 10 m wide quartz diorite dykes. These dykes can be traced vertically for up to 150 m between holes. The SSZ has been incorporated into a post-mineralisation 130° trending dextral shear, and quartz veins within the SSZ are typically strongly fractured. The shear zone has bisected the SSZ and a 2 m to 30 m wide post alteration andesite dyke has been emplaced along the shear zone. Approximately 200 m of dextral movement appears to have displaced the stockwork on either side of the shear zone.

The NSZ consists of a broad halo of quartz veins (typically ranging from 1 vein every 5 m to 2-3 veins per metre, the later with grades of 0.3 to 0.6 g/t gold and 0.1 to 0.5 % copper) that is 250 m long, 150 m wide long and at least 350 m deep. Within this zone are pockets of abundant quartz stockwork veins with grades that range from 0.6 to 1.5 g/t gold and 0.3 to 0.5 % copper. The broad, shallow zone of weak quartz veining appears to amalgamate into narrower pipes (30 m to 40 m wide) of stronger stockwork mineralisation at depth. The quartz veins form a broad halo centred on several 1 to 30 metre wide quartz diorite dykes. The largest quartz diorite dyke forms a stock that is 200 m long, 20 m wide and at least 300 m deep. The southern and south-western margins of the NSZ appear to grade out, through a series of faults, into unaltered or sericite-altered quartz diorite. The north-eastern margin of the NSZ has been sheared off by a southeast-trending fault zone. The eastern extension of the NSZ is marked by a 50 m wide zone of common quartz veins and associated weak malachite mineralisation that outcrop 50 m north of the KHDDH263 collar, with any further extension to the east obscured by Quaternary cover.

Summarised sequence of events is as follows:

1. Pre-mineralisation pyroxene and hornblende diorites.
2. Pre-mineralisation hornblende-quartz diorites (main host to mineralisation).
3. Mineralisation as stockwork zones trending roughly east-west and south dipping with tabular to pipe-like geometry, associated with epidote-magnetite alteration. Main veins are qz-cpy-py-mt. Mineralisation possibly associated with early movement on NW-WNW trending fault.
4. Pre-post mineralisation hornblende quartz diorite dykes.
5. Syn-post mineralisation tourmaline breccia. Only some parts of breccia are mineralised.
6. Post-mineralisation NW-WNW trending andesite dyke emplacement and dextral strike-slip faulting offsets SSZ.
7. Interpreted northeast trending vertical fault with east-side down movement offsets SSZ.

Wolfe (2004) postulated that the tourmaline breccias may coalesce at depth and a series of drill holes were proposed to test the idea. He also considered good regional potential along strike of the main controlling structure, citing analogies to North Parkes. AT has been the main focus of exploration due to containing the highest grades of the three defined higher grade bodies.

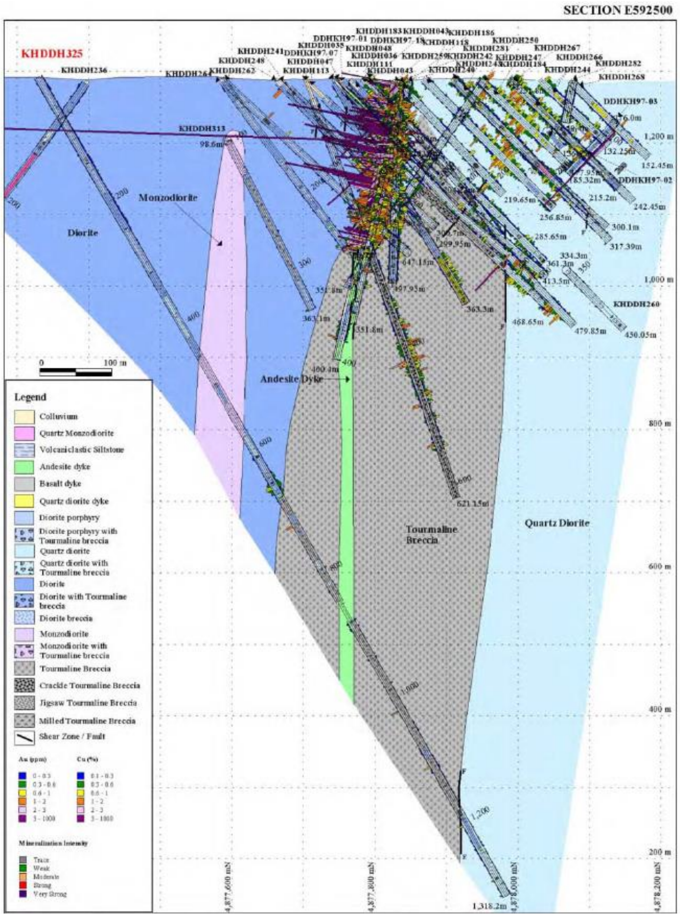


Figure 10 Altan Tolgoi Cross Section
From Ivanhoe 2012

Most phases of diorite are texturally and compositionally similar, so it is not feasible to separate these in drill core and to model separately. Wolfe (2004) noted that high gold grades occur in zones even with relatively low density of stockwork veining, suggesting that high gold grades may be a separate later event, possibly related to major shearing and the emplacement of tourmaline breccias.

6.3 TSAGAAN SUDAL

Tsagaan Sudal (TS) is located some 300 m south of Altan Tolgoi, and it is the largest and lowest-grade body of mineralisation defined in the project area. Mineralisation occurs as a main stockwork zone and breccia bodies hosted by diorite porphyry over a large area (Figure 11).

The TS stockwork zone consists of a broad halo of quartz veins (typically ranging from 1 vein every 5 m to 2-3 veins per metre, the latter with grades of 0.1 to 0.3 g/t gold and 0.3 to 0.4% copper) and hydrothermal breccias that is 850 m long, 550 m wide long and at least 500 m deep, and forms a pipe like geometry. The broad, shallow zone of weak quartz veining appears to amalgamate into narrower pipes (30 m to 40 m wide) containing higher grade stronger stockwork mineralisation at depth. Higher grade mineralisation (> 0.5 % Cu and 1 g/t Au) appears to be associated with narrow hydrothermal breccia bodies (less than 10 m wide) which are spatially related to the margins of inter-mineral quartz diorite dykes. Breccias range from clast- to matrix-supported and comprise diorite clasts set in a matrix of chlorite-magnetite-chalcopyrite. Stockwork veining and breccias are associated with 10 cm to 10 m wide quartz diorite dykes. The largest quartz diorite dyke forms a stock 100 m long, 20 m wide and at least 500 m deep. The geometry of the stockwork mineralisation is poorly defined and remains open in most directions.

Wolfe (2004) describes the main host at TS as a porphyritic diorite that intruded volcaniclastic siltstone, strongly altered with magnetite largely converted to hematite. Fine-grained late-stage diorite dykes cross-cut mineralisation. Least well drilled of the three deposits. He noted the presence of hematite related mineralisation as being important when defining exploration targets – ie iron oxides that are not just magnetite, and hence may not show clearly in magnetics.

Drilling at TS is more widely spaced than the other deposits, with collars on an approximate 100 m grid spacing with inconsistent drill directions. TS has received less attention due to lower grades to date. However, two holes drilled in 2011 beneath the previously defined resource intersected wide zones of mineralisation and the deposit remains open at depth and not adequately closed off along strike, especially to the east.

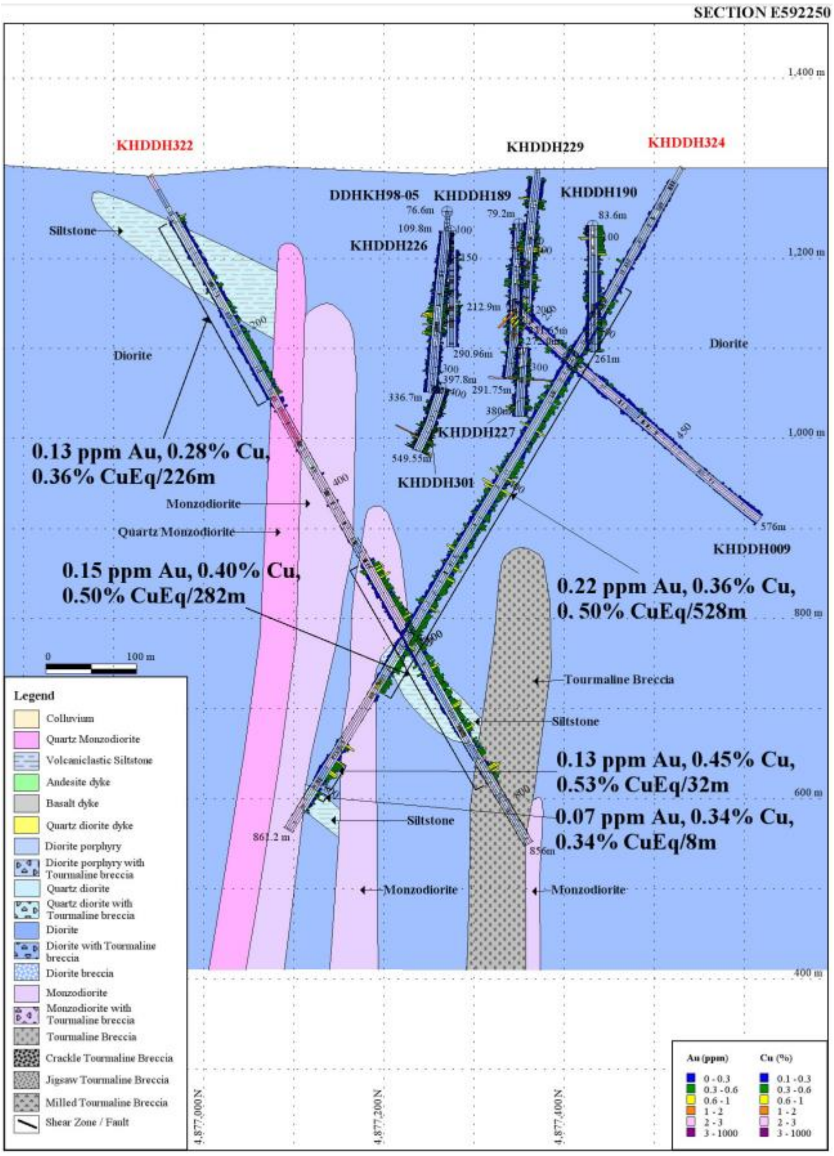


Figure 11 Tsagaan Sudal Cross Section

From Ivanhoe 2012

6.4 ZESEN UUL

At Zesen Uul, stockwork mineralisation is zoned around a vertically attenuated leucocratic, distinctly crystal-crowded quartz diorite stock that intruded volcaniclastic siltstone/sandstone. The stockwork zone forms a roughly tabular body of quartz-chalcopyrite-pyrite mineralisation trending east to east-northeast and dipping steeply south. Dimensions of the stockwork are approximately 350 m × 100 m by at least 200 m.

The deposit has a well-defined high-grade core (grades 1-3% Cu and 2-7 g/t Au) with quartz veining tightly focused within the pipe-like stockwork zone, with typical vein densities of 5 to >15 veins per metre. Quartz veins are typically planar and display centre line textures. Zones of high-grade mineralisation are characterised by gold to copper ratios that typically exceed 2:1. Initial potassic alteration and veining was overprinted by phyllic/propylitic, which may indicate thermal collapse of an initial high temperature system (Kirwin et al, 2003).

Mineralisation dies out abruptly along strike in both directions and down-dip, where the vertical truncation defines a southwest plunge. Termination is most sudden to the west, while to the east the modelled body does start to become narrower.

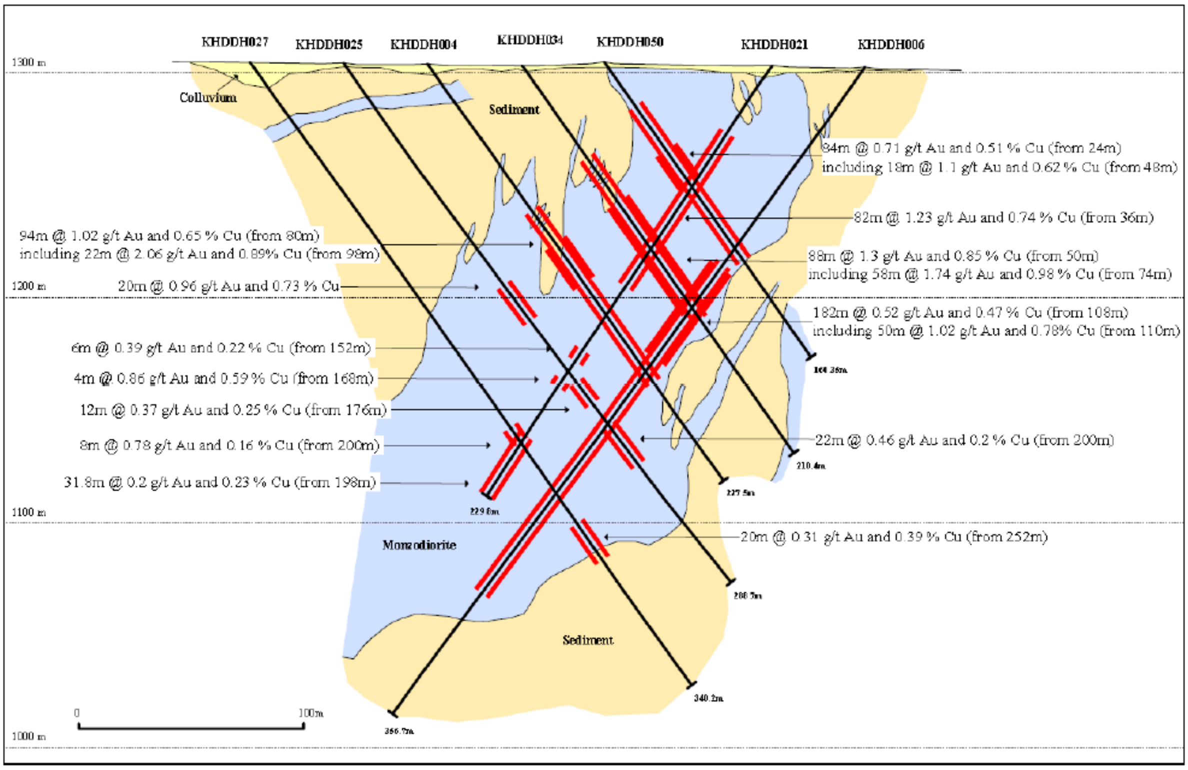


Figure 12: Zesen Uul Schematic Cross Section (592600mE)

. (Source: Ivanhoe, 2012)

Interpreted cross-sections show complex interfingering of mineralisation and host rocks at the margins of the intrusion. Monzodiorite and mineralisation abruptly truncated at east and west extents may indicate low angle faults not tested by the mainly north-south oriented drilling.

6.5 TOURMALINE BRECCIA MINERALISATION

In the deeper (typically below 200 m) parts of AT and TS the early stockwork copper-gold mineralisation was overprinted by late stage tourmaline-sericite-carbonate-pyrite breccias and quartz-pyrite-tourmaline-carbonate veins associated with a pervasive, structurally-controlled phyllic (sericite-tourmaline-chlorite) alteration. Tourmaline breccias are very widespread at depth and appear to be part of a much larger system of breccias which extends for several kilometres in a northwest-southeast direction. The breccias appear to be structurally controlled and form highly irregular bodies where the amount of breccia and the style of brecciation vary dramatically on scales of m to 10’s of m.

Breccias range from 10 cm to 40 m wide, are typically clast-supported, and consist of angular, locally derived, sericite-altered clasts (ranging in width from 1 cm to 4 m; typically 2 cm to 15 cm) set in a tourmaline-pyrite quartz-carbonate cement. Breccias are strongly zoned with central tourmaline-quartz-pyrite giving way outwards to sericite (dark) ± chlorite ± tourmaline ± carbonate ± pyrite ± chalcopyrite ± molybdenite ± gold mineralization and further to pale sericite ± carbonate ± chalcopyrite ± carbonate ± sphalerite ± galena ± gold mineralisation. Mineralisation occurs predominantly as cavity filling and associated alteration in the breccias (Pollard, 2008). Chalcopyrite-mineralised tourmaline breccias are associated with strong copper grades (0.5 % to >5 % Cu) but typically contain little or no gold (below detection to 0.03 g/t Au). Gold-mineralised tourmaline breccias (0.3 to 0.7 g/t Au) typically contain quartz stockwork vein fragments and clasts of stockwork mineralisation. Anhydrite appears to have been an important original component of the breccia system but has been completely leached in the upper 300 m-400 m to create a vuggy, leached appearance in places. At deeper levels anhydrite has been hydrated to gypsum, most likely through the action of meteoric waters.

7 EXPLORATION

Previous exploration on the Kharmagtai Project has been carried out by three companies: RUS-MNG JV from the early 1960's, QGX from 1995 to 1998 and Ivanhoe from 2002 to 2011. This is summarised in Section 4.

Since acquiring an interest in the property in 2014, Xanadu has focused on compiling historic data, reprocessing geophysical data and defining target areas for drilling. From mid-late 2014 Xanadu undertook a drilling program with the aim of extending zones of mineralisation beyond the limits defined by previous exploration. Results of this drilling program are summarised in Section 8.

8 DRILLING & SAMPLING

Drilling has been the primary exploration tool at Kharmagtai and the total Kharmagtai drill hole database contains information pertaining to 521 drill holes, comprising 275 diamond core drill holes, 155 RC holes and 91 trenches in an MS Access database prepared by Xanadu (file named "Kharmagtai_resource_2014.mdb"). Table 7 summarises the drill hole data base by company. Note of the listed 403 IMMI drill holes 77 are trench lines (34,206.75 m).

Table 7: Kharmagtai Drill Hole Summary

Drill hole type	Number of holes	Metres Drilled	Number of Samples	Metres Sampled
AGC	26	15907.1	5807	11350.2
IMMI	403	113560.7	48604	101743
QGX	52	8670.12	3199	6493.71
Historic Trench Data	14	2415	485	1913.4
Xanadu	26	12459.6	6201	12308.7

Drilling and sampling procedures for historic work by IMMI and AGC were reviewed by AMC (2012). In MA's opinion the review and discussion of the drilling and sampling procedures and results carried out by AMC (2012) are thorough and MA concurs with the AMC (2012) conclusion that "*sampling protocols are suitable for the purposes of resource estimation on porphyry style deposits."*

The following description of drilling and sampling protocols that were carried out by IMMI and AGC between 2003-2011 are summarised from internal Ivanhoe reports (Wilson 2005, Sketchley, 2007). Similar protocols for drilling and sampling of diamond core were implemented by the Xanadu exploration team for their 2014 drilling program.

8.1 DRILLING METHOD

Diamond drill holes are the principal source of geological and grade data for the Kharmagati Project. A small percentage of the drilling total comes from RC or combined RC/core drilling. Most of the RC holes were drilled in the early days of regional exploration (2002 and 2003). RC holes drilled in the early stage of exploration (pre 2003) are not used in any of the resource estimates at Kharmagtai.

As of the 31st December 2014, more than 265 diamond core (Table 8) and 155 reverse circulation drill holes (Table 11) have been completed at Altan Tolgoi, Tsagaan Sudal and Zesen Uul.

Diamond drilling at Kharmagtai was carried out by a variety of contractors; however the majority of the more recent drilling has been conducted by Major Drilling Mongolia LLC. Major Drilling LLC used a variety of drill rigs, including Universal UDR650, UDR1000 and UDR1500. Historical drill programs were completed by Can-Asia Mongolia and Gobi Drilling.

Table 8. Diamond drilling Summary by Year and Prospect

Year	Prospect	# holes	Metres	Year	Prospect	# holes	Metres
1997	Altan Tolgoi	16	3425.96	2007	Altan Tolgoi	5	1772.3
	Tsagan Sudal	12	2776.44		Tsagan Sudal	1	496.2
	Zesen Uul	5	1154.61		Zesen Uul	2	596.2
	Chun	2	297.5		KH-Exploration	1	405.7
	Galuu	4	644.6		Pigeon	2	480.2
	KH-Exploration	2	89		The Basin	2	858.6
	Pigeon	1	282.01		West Chun	1	220
2002	Altan Tolgoi	16	5771.05	2011	Altan Tolgoi	7	6253.8
	Tsagan Sudal	9	4325.7		Tsagan Sudal	3	2876.9
	Zesen Uul	40	10046.55		Zesen Uul	1	549.7
	Chun	1	351.8		Galuu	1	813.9
2003	Altan Tolgoi	22	6279.75		KH-Exploration	1	501.9
	Tsagan Sudal	12	3652.7		Pigeon	4	3058.9
	Zesen Uul	3	518.7		The Basin	1	526
	Chun	8	2400.02		West Chun	1	764.2
2004	Altan Tolgoi	22	8519.25	2012	Altan Tolgoi	4	678
	Tsagan Sudal	2	767.9		Zesen Uul	4	646
	Galuu	2	957.7	2014	Altan Tolgoi	18	9993.85
	Pigeon	2	508.45		Tsagan Sudal	3	1293.85
2005	Altan Tolgoi	1	346.5		Zesen Uul	3	531.7
	Tsagan Sudal	4	1445.4		Pigeon	1	259.5
	Zesen Uul	2	763.85		The Basin	1	380.7
	KH-Exploration	9	2244.85				
	The Basin	1	309.4				

Table 9. Reverse Circulation drilling Summary by Year and Prospect

Year	Prospect	# RC holes	Metres
2002	Altan Tolgoi	5	990
	Tsagan Sudal	1	200
	Zesen Uul	56	5547
	Galuu	9	1781
2003	Zesen Uul	24	4567
	Galuu	15	3010
	Pigeon	45	8458

8.2 SURVEY

Drill hole collars were initially located using hand-held GPS. Final collar surveys were obtained by differential GPS (DGPS).

Down-hole survey instruments were used to collect drill hole azimuth and inclination at specific depths for the majority of the diamond drilling programs. Two principal types of survey method have been used over the duration of the drilling programs: Eastman Kodak and Flexit. Down-hole survey measurements were generally taken every 30 m to 50 m.

8.3 LOGGING PROCEDURES

At the drill rig core was removed from the core barrel by the drillers and placed directly in wooden core boxes. Individual drill runs were identified with small wooden blocks, where the depth (m) and hole number were recorded. Unsampled core was never left unattended at the rig; boxes were transported to the core logging facility at the main camp twice a day under a geologist's or technician's supervision. Core was transported in open boxes in the back of a truck.

Upon arrival at the core shed, the core was subject to the following procedures:

- Quick review.
- Box labelling: core boxes are identified with the hole number, metres "from–to", and box number written with a permanent marker on the front.
- Core "re-building" (core is rotated to fit the ends of the adjoining broken pieces).
- Core photography.
- Geotechnical logging, using pre-established codes and logging forms, includes: length of core run, recovered/drilled ratio, RQD, and maximum length, structural data and oriented core data (orientated core measurements were logged as interval data using standardized codes for structural and vein data only; the orientated core measurements usually did not commence until the hole was within the mineralized zone).
- Geological logging: this is completed on paper logging forms, in accordance with the company protocol, which includes: header information, lithology description and litho code, graphic log, coded mineralization and alteration. The geologist marks a single, "unbiased" cutting line along the entire length of the core.

All diamond core was stored in a secure location at the main camp. Core was stacked on pallets in a stable, 3 x 3 box configurations to a height of about 15 boxes. Core logging facilities were indoors and took place on sturdy steel racks.

8.4 RECOVERY AND QUALITY

Core recovery and RQD were measured at the core logging area by geology staff where the following measurements were recorded:

- Block interval
- Drill run (m)
- Measured length (m)
- Calculated recovery (%)
- RQD measured length (m)
- Calculated RQD (%).

Recovery and RQD measurements were recorded in an MS Access database and were been collected during all core programs. The methodology used for measuring recovery was standard industry practice.

Average core recoveries for the main phases of drilling exceed 96% for all deposits. In localized areas of faulting and/or fracturing the recoveries decrease; however this is a very small percentage of the overall mineralised zones. IMMI noted decreased recoveries near-surface in overlying non-mineralized Cretaceous clays and to a lesser extent in a portion of the oxidized rocks (generally less than 100 m depth).

8.5 SAMPLING METHOD

8.5.1 Sampling Protocols

Sampling for resource estimation was conducted on diamond drill core obtained from IMMI, AGC and Xanadu holes drilled between 2002 and 2015. The core cutting protocols were as follows:

- The uncovered core boxes were transferred from the logging area to the cutting shed.
- Long pieces of core were broken into smaller segments with a hammer.
- Core was cut with a diamond saw, following the line marked by the geologist. The rock saw was regularly flushed with fresh water.
- Both halves of the core were returned to the box in their original orientation.
- The uncovered core boxes were transferred from the cutting shed to the sampling area carrying several boxes on a wooden palette; constant 2 m sample intervals were measured and marked on both the core and the core box with permanent marker; a sample tag was stapled to the box at the end of each 2 m sample interval; sample numbers were pre-determined and account for the insertion of QA/QC samples (core field duplicates, certified reference materials, blanks).
- Samples were bagged. These are always half core samples collected from the same side of the core hole. Each sample was properly identified with inner tags and

outside marked numbers. Samples were regularly transferred to a sample preparation facility.

- The unsampled half of the core remained in the box, in its original orientation, as a permanent record. It was transferred to the on-site core storage area.

Barren dykes that extend more than 10 m along the core length were generally not sampled.

8.6 DRILL CORE BULK DENSITY

IMMI collected an extensive database of bulk density determinations from core samples, dating back to drilling completed in 2003.

Samples for specific gravity determination were taken at approximately 10 m intervals per drill hole and tabulated by rock type. The specific gravity for non-porous samples (the most common type) was calculated using the weights of representative samples in water (W2) and in air (W1). The bulk density is calculated by the formula: W1/(W1-W2).

Less common porous samples were dried and then coated with paraffin before weighing. Allowance was made for the weight and volume of the paraffin when calculating the specific gravity.

The process utilised lithological domaining, since statistical analysis showed bulk density variation is primarily controlled by host lithology. The mean bulk density and number of samples in each of the lithology units is shown in Table 10.

Table 10: Average Bulk Density

Rock Code	Description	Count	Average BD (t/m^3)
QMDBx	Quartz monzodiorite breccia	4	2.68
TAND	Trachy Andesite	32	2.69
FLT	Fault	9	2.69
GRD	Granodiorite	99	2.70
VSST	Volcanic sandstone	22	2.72
SLT	Siltstone	6	2.74
COL	Colluvium	1	2.74
VSLT	Volcanic siltstone	2	2.74
QMDP	Quartz monzodiorite porphyry	8	2.74
QMD	Quartz monzodiorite	580	2.77
MD	Monzodiorite	59	2.77
TBx	Tourmaline breccia	237	2.78
MDP	Monzodiorite porphyry	2	3.17

Figure 13: BD Samples, with recorded hole ids and depth on samples

8.7 SAMPLE ASSAY PREPARATION AND ANALYSES

Routine sample preparation and analyses of IMMI, AGC and Xanadu samples were carried out by SGS Mongolia LLC (SGS Mongolia), who operate an independent sample preparation and analytical laboratory in Ulaanbaatar.

Between 2002 and 2005 three sample preparation facilities were used. During 2002 and 2003 samples were prepared at SGS Mongolia LLC (SGS Mongolia), who operates an independent sample preparation facility at Manlai. The preparation facility was installed in 2002 as a dedicated facility for Ivanhoe's Project during their exploration and resource definition stages. Although the facility has mostly dealt with samples from the Project, it also prepares some samples other Ivanhoe projects in Mongolia. Since 2004 samples were sent to SGS Mongolia LLC (SGS Mongolia) facilities Oyu Tolgoi and Ulaanbaatar.

All samples were prepared to meet standard quality control procedures as follows:

- Pre-preparation weighing
- Crushed to 75% passing 3.35 mm
- Split to 1kg
- Pulverised to 90% - 95% passing 200 mesh (75 microns)
- Split to 150g

All samples for IMMI, AGC and Xanadu were routinely assayed by SGS Mongolia for gold, copper, silver, lead, zinc, arsenic and molybdenum. SGS analytical codes, with detection limits for copper and gold are presented in Table 11.

Au was determined using a 30 g fire assay fusion, cupelled to obtain a bead, and digested with Aqua Regia, followed by an atomic absorption spectroscopy (AAS) finish, with a lower detection (LDL) of 0.01 ppm.

Cu, Ag, Pb, Zn, As and Mo were routinely determined using a three-acid-digestion of a 0.3g sub-sample followed by an AAS finish (AAS21R). Samples were digested with nitric, hydrochloric and perchloric acids to dryness before leaching with hydrochloric acid to dissolve soluble salts and made to 15ml volume with distilled water. The LDL for copper using this technique was 2ppm. Where copper is over-range (>1% Cu), it is analysed by a second analytical technique (AAS22S), which has a higher upper detection limit (UDL) of 5% copper.

In addition to the main elements of interest listed above, Xanadu also analysed for the following elements by ICP-AES: Ag, Al, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, La, Li, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sn, Sr, Ti, V, W, Y, Zn, Zr.

Table 11. Summary of Analytical Techniques (SGS Mongolia)

Element	Code	SGS Code & Technique	LDL	UDL
Cu	Cu	AAS21R	2ppm	1%
	Cu	AAS22S (over-range procedure)	0.01%	5%
Au	Au	FAA303	0.01ppm	100ppm

8.8 SECURITY

The security measures in place for shipment of pulps to the SGS analytical laboratory in Ulaanbaatar were briefly reviewed by AMC (2012) and were considered to be appropriate and adequate. Similar measures were adopted by Xanadu, with drill samples being bagged and transported within locked containers to the assay laboratory.

9 QA AND QC

9.1 DEFINTIONS

Quality Assurance ("QA") concerns the establishment of measurement systems and procedures to provide adequate confidence that quality is adhered to. Quality Control ("QC") is one aspect of QA and refers to the use of control checks of the measurements to ensure the systems are working as planned.

The QC terms commonly used to discuss geochemical data are:

- Precision: how close the assay result is to that of a repeat or duplicate of the same sample, i.e. the reproducibility of assay results.
- Accuracy: how close the assay result is to the expected result (of a certified reference material).
- Bias: the amount by which the analysis varies from the correct result.

Xanadu implemented QA/QC protocols for all drill hole sampling undertaken since acquiring the Kharmagtai project in 2014. Prior to this, IMMI and AGC used similar QA/QC protocols for drill sampling. IMMI's QA/QC program was reviewed by AMC (2012) in accordance with NI43-101 technical reporting standards.

9.2 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PROGRAM

QA/QC protocols evolved at Kharmagtai during the various phases of exploration. A summary of the QA/QC protocols applicable to different drill holes included in the resource estimate are outlined in Table 12. QA/QC protocols adopted by Xanadu are very similar to those used by IMMI and AGC from 2011 onwards, although no pulp or coarse reject duplicates were used. Prior to 2011, the majority of drill hole samples were monitored using certified reference materials (CRM) and blanks, with field duplicates inserted from 2004 onwards.

Table 12. QA/QC protocols according to drill hole series.

Drill Hole Series	Date Range	Company	QA/QC Protocols
KHDDH001 – KHDDH003	Early 2002	IMMI	No QC samples used
KHDDH004 – KHDDH261	Mid-2002 to 2004	IMMI	CRMs & blanks used in non-uniform sized batches
KHDDH262 – KHDDH317	2004 to mid-2007	IMMI	Two CRMs, one blank and one field duplicate used in batches of 40 samples
KHDDH318– KHDDH335 (& KHDDH313A), metallurgical holes	2011-2012	AGC	Two CRMs, two blanks, one core duplicate, one pulp duplicate and one reject duplicate inserted randomly in batches of 45 samples
KHDDH336-361	2014	XAM	Two CRMs, two blanks and one field duplicate inserted randomly in batches of 45 samples

Table 13 shows a summary of QC sample insertion rates for the main drilling phases. Insertion rates for CRMs, blanks and field duplicates are considered adequate and in accordance with industry standard practice for an advanced exploration project.

Table 13. QC Sample insertion summary

	IMMI (2002-2007)	AGC (2011-2012)	XAM (2014)
Number of routine samples	21699	3947	5947
Number of CRM	776	223	299
CRM insertion rate	3.6%	5.6%	5.0%
Number of blanks	692	219	297
Blanks insertion rate	3.2%	5.5%	5.0%
Number of field duplicates	378	101	147
Field duplicate insertion rate	1.7%	2.5%	2.5%

9.2.1 Blanks

Blanks (Figure 14 - Figure 16) were inserted routinely in sample batches for all drilling since mid-2002 (KHDDH004). Blank material was sourced locally from outcrops of Khanbogd Mountain granite coarse crushed to 1 cm particle size.

Monitoring of blanks by Xanadu defines failures as results more than five to ten times the lower detection limit for the element/analytical method combination being used. Various failures over the period from June 2002 to June 2004 were related mostly to sampling errors caused by switches with CRMs rather than systematic contamination. These errors were corrected using stored data and the database utilised by Xanadu is considered correct. There has been no indication of systematic assaying errors due to contamination. MA has reviewed the data and related documents and considers that the results are adequate to support the integrity of the Mineral Resource estimate.

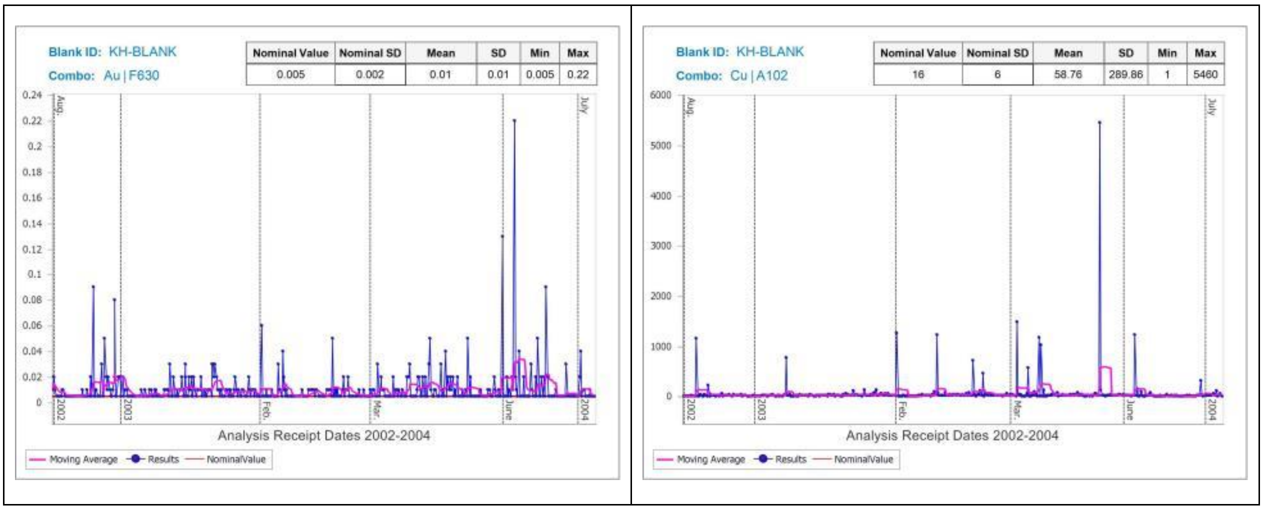


Figure 14. Performance control charts, blanks 2002-2004.

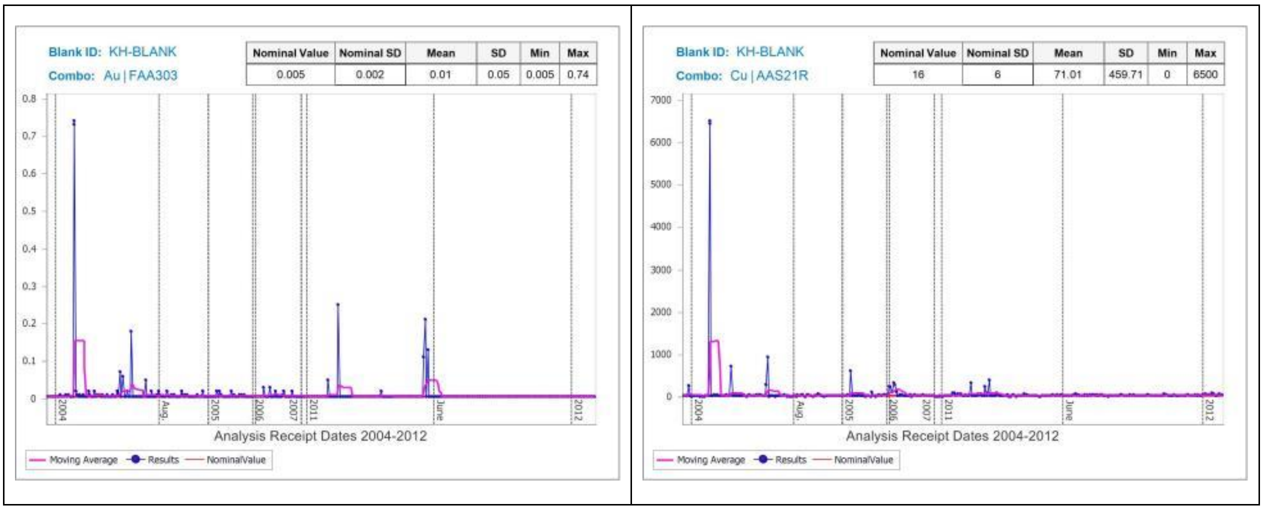


Figure 15. Performance control charts, blanks 2004-2012.

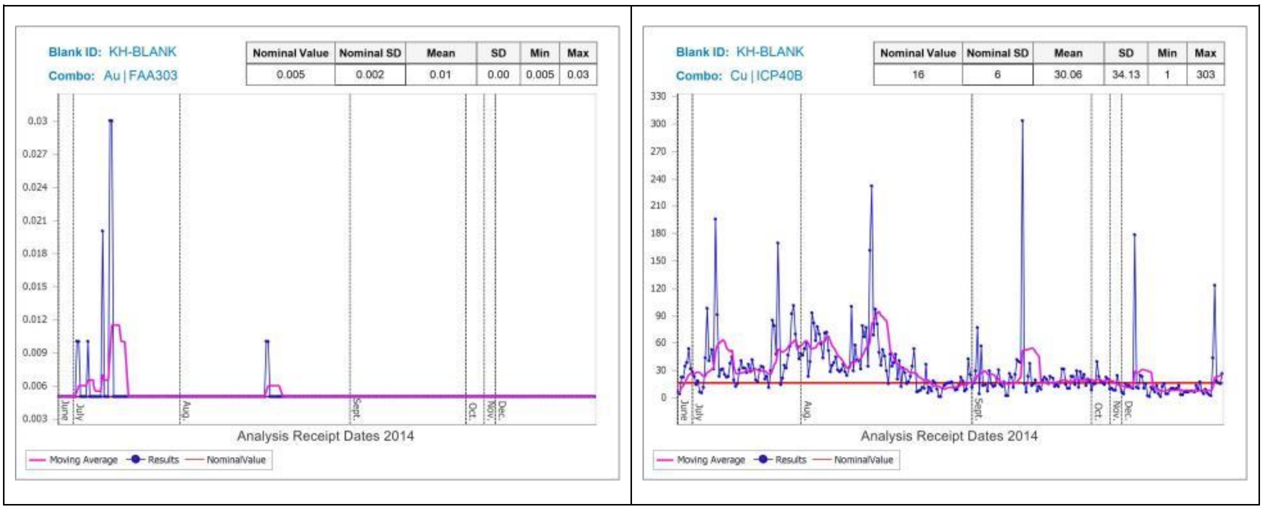


Figure 16. Performance control charts, blanks 2014 (Xanadu).

9.2.2 Pulp Duplicates

Pulp duplicates were utilised by IMMI in 2011 and were assessed using scatter plots, ranked scatter plots (Q-Q plots) and relative percentage difference (RPD) plots by AMC (AMC, 2012). AMC (2012) found that more than 98% of gold samples and 92% of copper samples reported a RPD value less than 10%, therefore the results are adequate to support the integrity of the Mineral Resource estimate.

9.2.3 Field Duplicates

Field duplicates for drill core samples were included as part of QA/QC protocols since 2011. Duplicates were created by splitting routine half-core samples using a diamond saw and submitting each resulting quarter-core sample under separate sample numbers.

MA has reviewed field duplicate data for IMMI/AGC and Xanadu samples (Figure 17 to Figure 20). Scatter plots show generally tight distribution (R^2 >0.8) about regression lines with slopes more than 0.95. Field duplicate data for Cu shows higher precision than for Au, reflecting more homogenous distribution of copper minerals compared to gold (particularly at Altan Tolgoi). Analysis of relative percent different (RPD) plots shows that for gold 80% of duplicate pairs have a relative difference less than 30%, and for copper 80% of duplicate pairs have a relative difference less than 20%-25%. Results for IMMI/AGC data and Xanadu data are very similar, although Xanadu Cu analyses show more scatter at high grades (>5000 ppm) compared with IMMI/AGC. MA considers that the results reported are adequate to support the integrity of the Mineral Resource estimate.

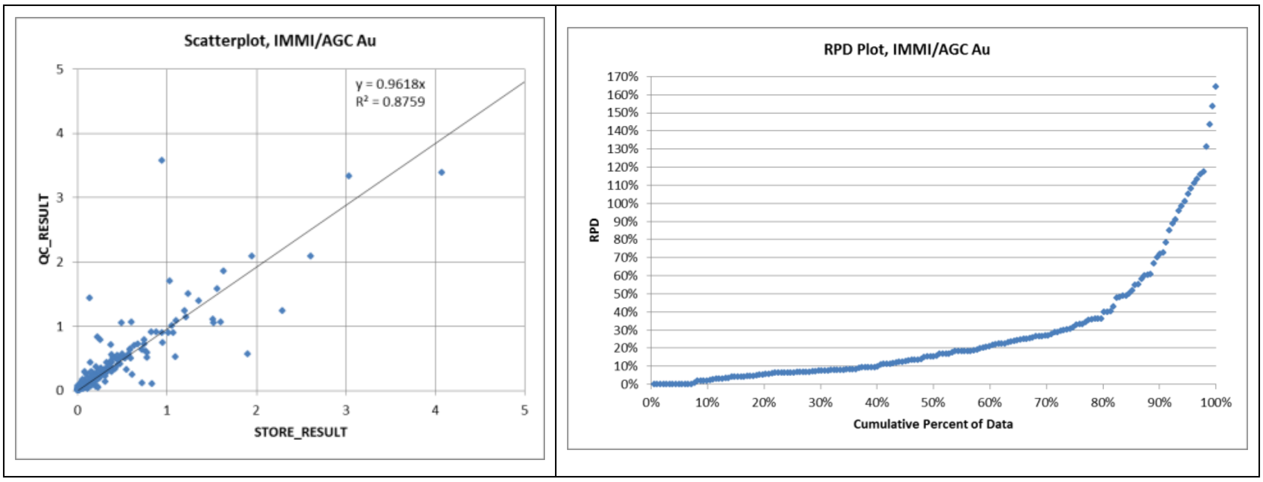


Figure 17. Duplicate Data for IMMI/AGC Au Analyses Plotted as Scatttergram (left) and Relative Percent Difference Plot (right).

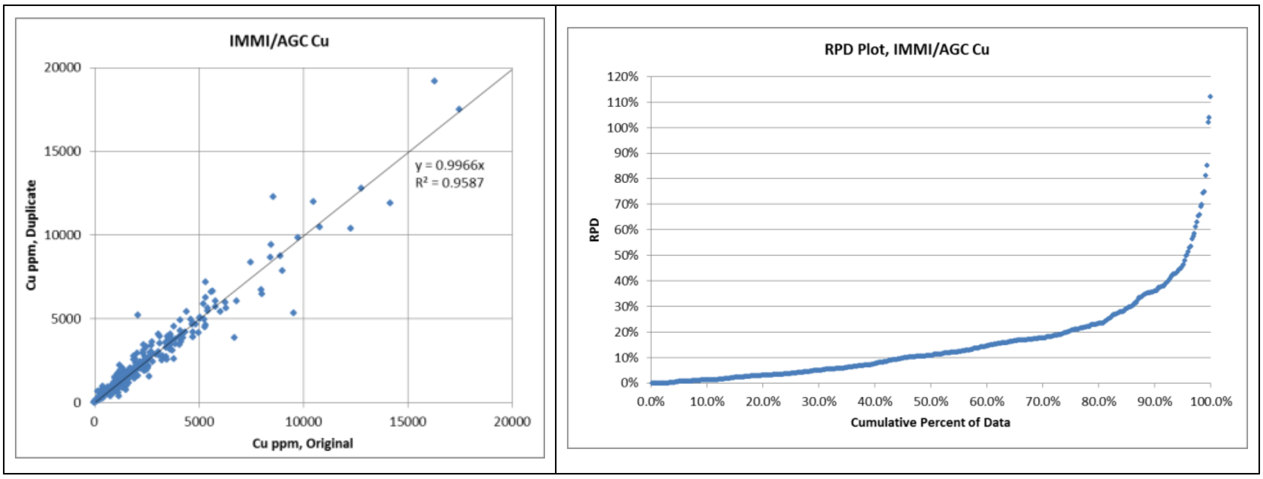


Figure 18. Duplicate Data for IMMI/AGC Cu Analyses Plotted as Scatttergram (left) and Relative Percent Difference Plot (right).

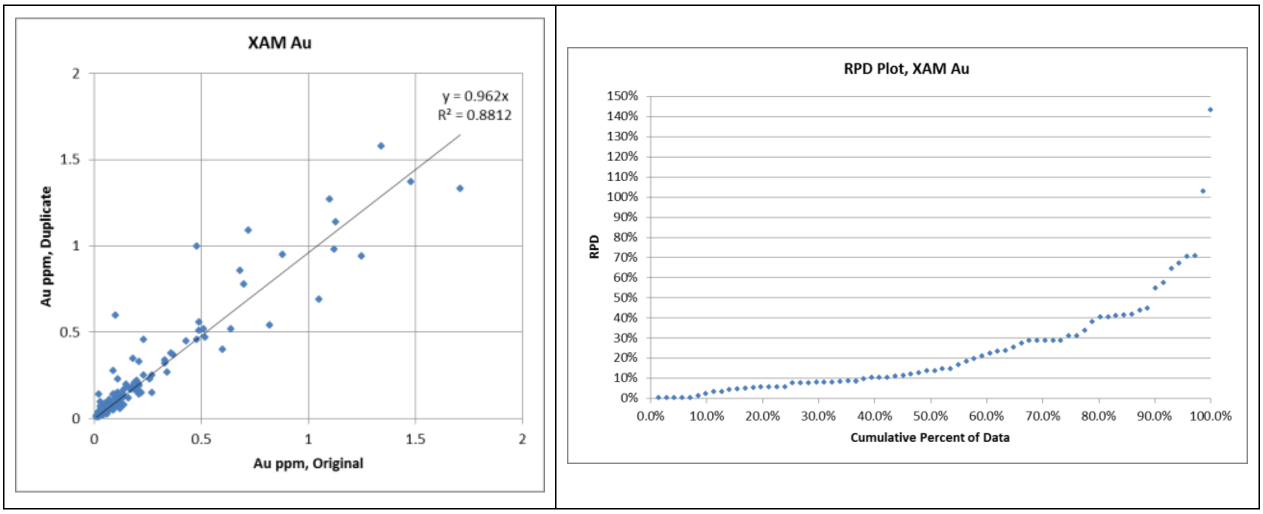


Figure 19. Duplicate Data for Xanadu Au Analyses Plotted as Scattergram (left) and Relative Percent Difference Plot (right).

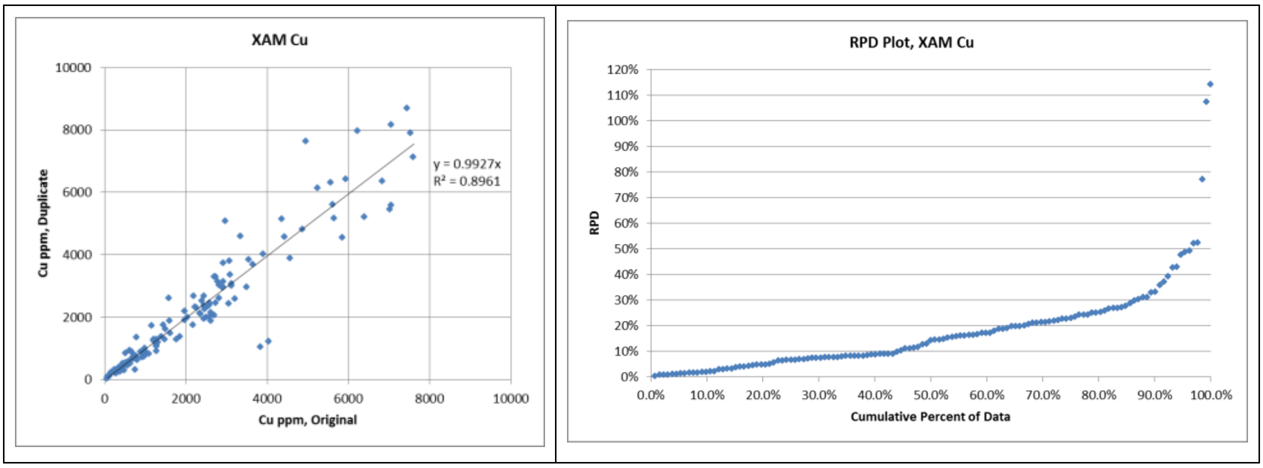


Figure 20. Duplicate Data for Xanadu Cu Analyses Plotted as Scattergram (left) and Relative Percent Difference Plot (right).

9.2.4 Certified Reference Materials

Certified reference materials (CRMs, or standards) were inserted routinely in sample batches for all drilling after mid-2002. CRMs were sourced from two main commercial suppliers: Ore Research & Exploration in Australia ("OREAS") and CDN Resource Laboratories Ltd in Canada ("CDN"). OREAS CRMs were derived from homogenised porphyry Cu-Au ore material with included Cu-Mo concentrate. CDN CRMs were derived by mixing and homogenising barren granitic material with Cu-Au concentrate. In addition to commercially supplied CRMs IMMI used a number of internally produced CRMs from 2002-2003. The exact nature and source of these CRMs was not provided to MA. Details of CRMs used throughout the history of drilling at Kharmagtai are shown in Table 14.

Table 14. Summary of CRM Used at Kharmagtai Project

CRM code	Au (ppm)	Cu (%)	Usage period	Source
OREAS 501b	0.248	0.260	XAM (2014)	OREAS
OREAS 503b	0.695	0.531	XAM (2014)	OREAS
OREAS 504b	1.61	1.11	XAM (2014)	OREAS
OREAS 50P	0.727	0.691	XAM (2014)	OREAS
OREAS 51P	0.43	0.728	IMMI (2003-2007)	OREAS
OREAS 52P	0.183	0.387	IMMI (2003-2007)	OREAS
OREAS 53P	0.38	0.413	IMMI (2003-2007)	OREAS
CGS-6	0.26	0.318	AGC (2011)	CDN
CGS-21	0.99	1.30	AGC (2011)	CDN
CGS-22	0.64	0.725	AGC (2011)	CDN
CGS-23	0.218	0.182	AGC (2011)	CDN
CGS-24	0.487	0.486	AGC (2011)	CDN
CGS-25	2.40	2.19	AGC (2011)	CDN
STD3	1.269	1.29	IMMI (2002-2003)	IMMI internal
STD5	0.099	0.811	IMMI (2002-2003)	IMMI internal
STD6	0.203	0.254	IMMI (2002-2003)	IMMI internal
STD7	0.499	0.508	IMMI (2002-2003)	IMMI internal
STD8	2.211	0.869	IMMI (2002-2003)	IMMI internal
STD9	3.308	0.953	IMMI (2002-2003)	IMMI internal
STD10	0.215	0.853	IMMI (2002-2003)	IMMI internal

CRM analyses were routinely monitored on receipt of laboratory results, and IMMI/AGC and Xanadu defined CRM failures as follows:

- One CRM over 3 standard deviations ("SD") and;
- Two CRM's between 2 SD and 3 SD on the same side of the mean value, suggesting consistent bias

Any batch of samples with a CRM failure was routinely re-assayed until it passed. IMMI included a protocol whereby a geological override was applied for barren batches or marginal failures with low impacts (Wilson, 2005).

CRM control charts for IMMI/AGC and Xanadu drilling have been reviewed by MA. Charts for which sufficient numbers of CRM were assayed to draw meaningful conclusions are shown in Figure 21 to Figure 34. Multiple CRM failures in the earliest stages of QC monitoring from 2002-2004 could all be traced to CRM handling errors, where the one CRM was recorded in the database, but either a different CRM or blank was inserted in the assay batch. In general the performance control charts demonstrate acceptable levels of accuracy in the analytical procedures being used, with the majority of assays falling within ±2 standard deviations of the certified means. In many cases a slight positive or negative bias is apparent when comparing analyses to the certified values. MA does not consider this to be a major issue since the assayed results still lie within acceptable limits. In MA's opinion the results of CRM analyses provide confidence in the assay data and are adequate to support the integrity of the Mineral Resource estimate.

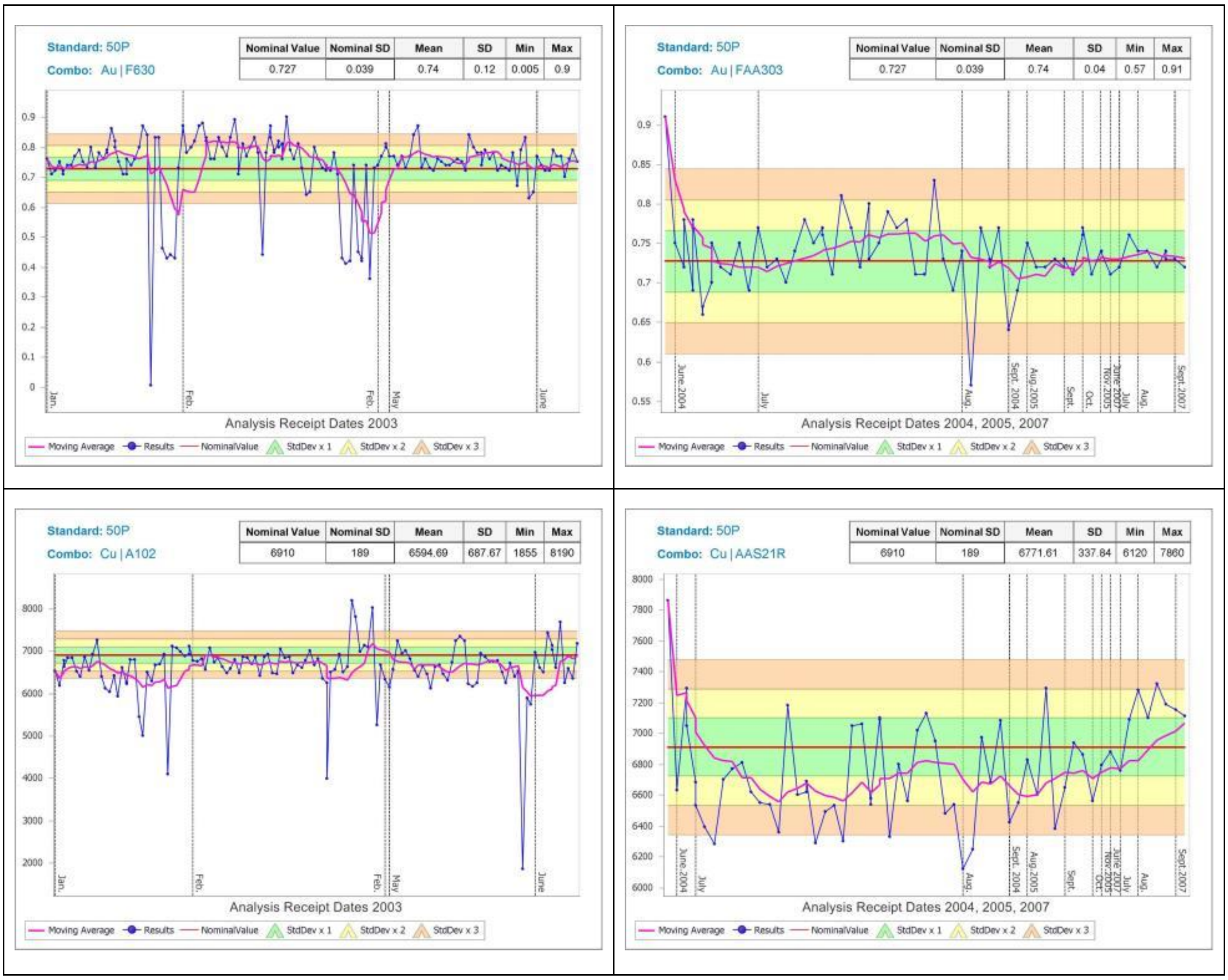
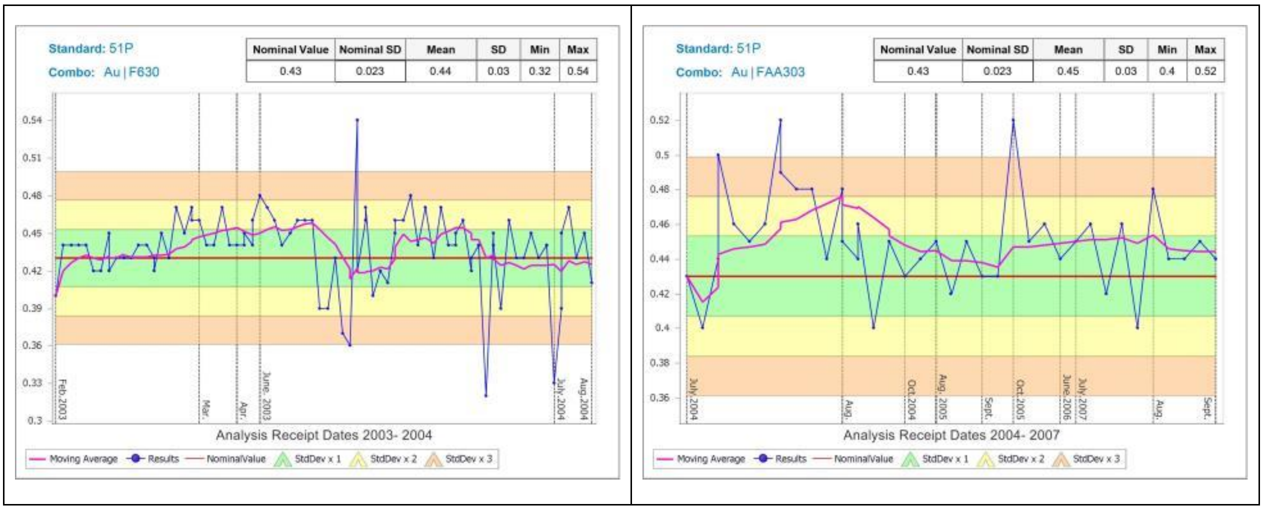


Figure 21. Performance Control Charts Au and Cu, OREAS 50P.



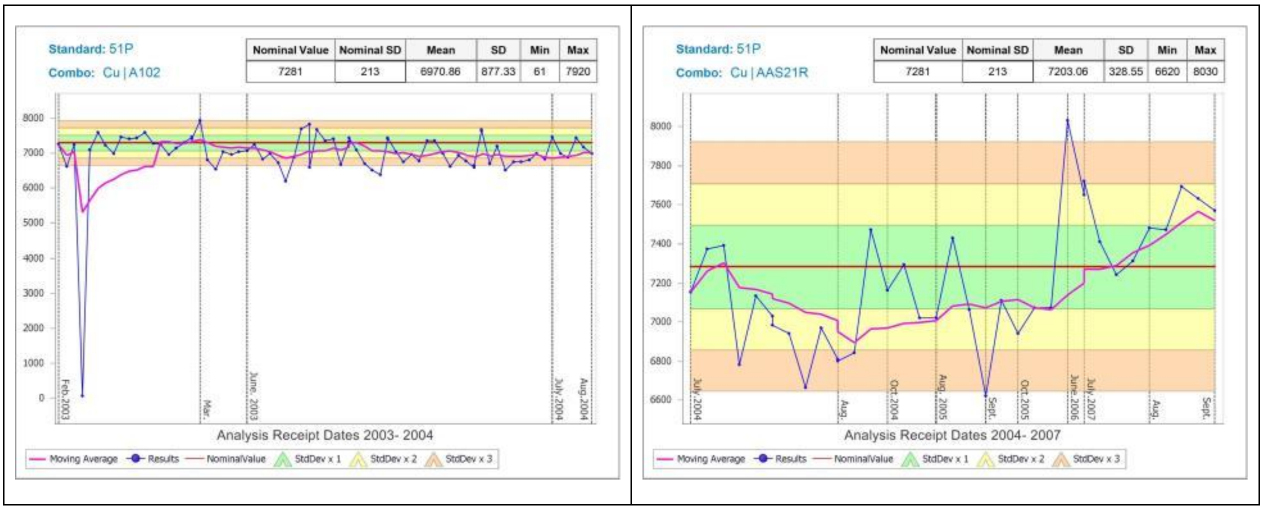


Figure 22. Performance Control Charts Au and Cu, OREAS 51P.

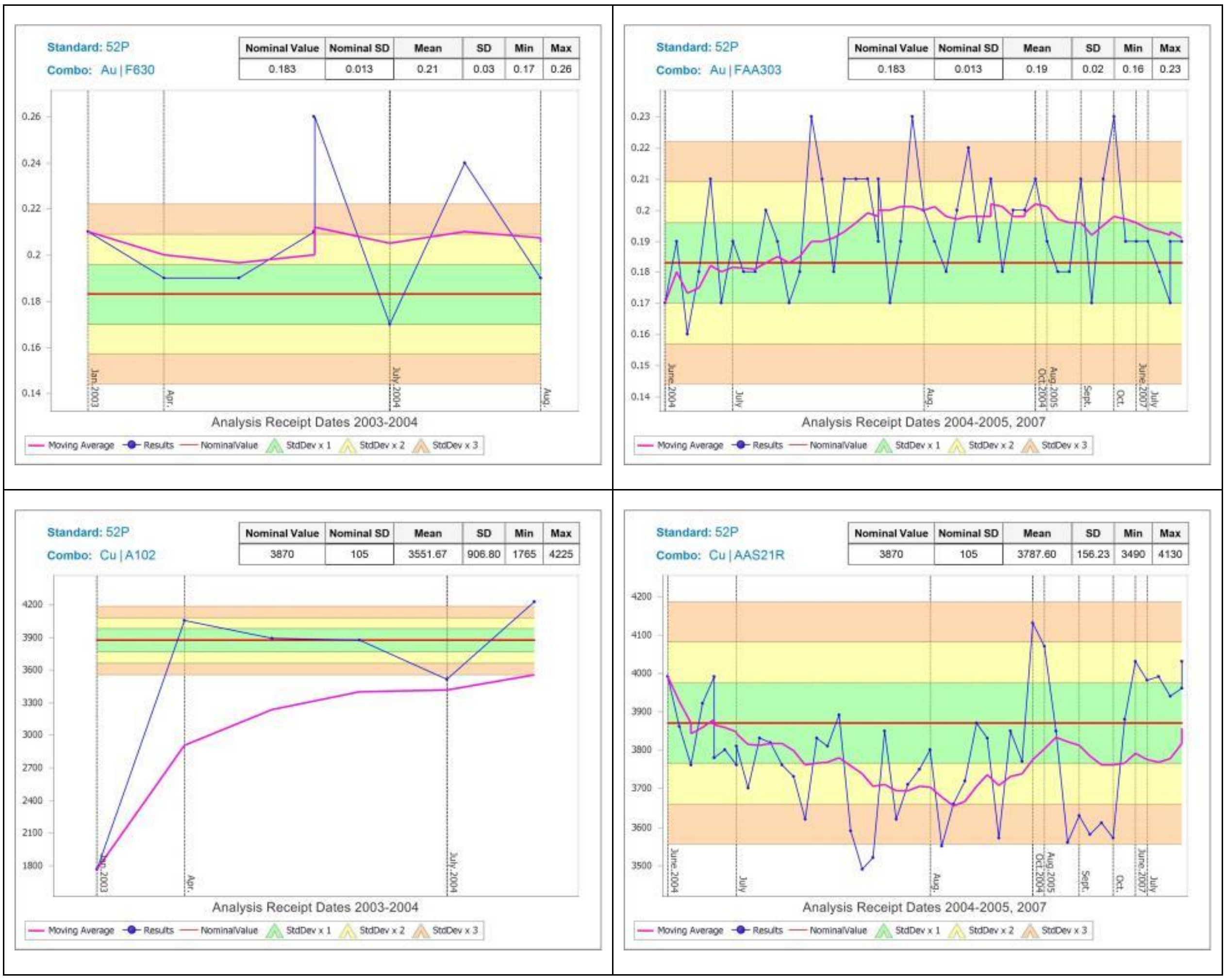


Figure 23. Performance Control Charts Au and Cu, OREAS 52P.

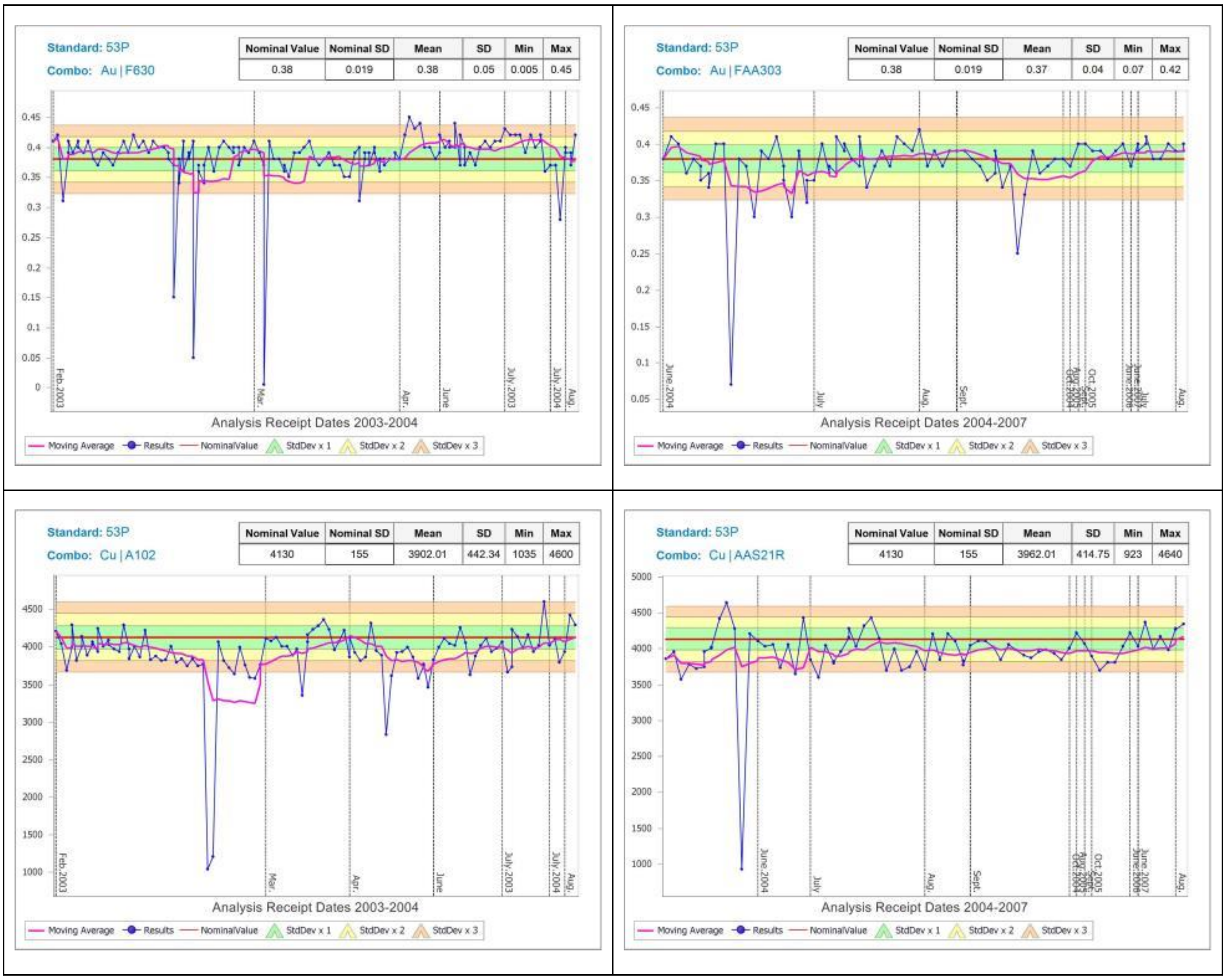


Figure 24. Performance Control Charts Au and Cu, OREAS 53P.

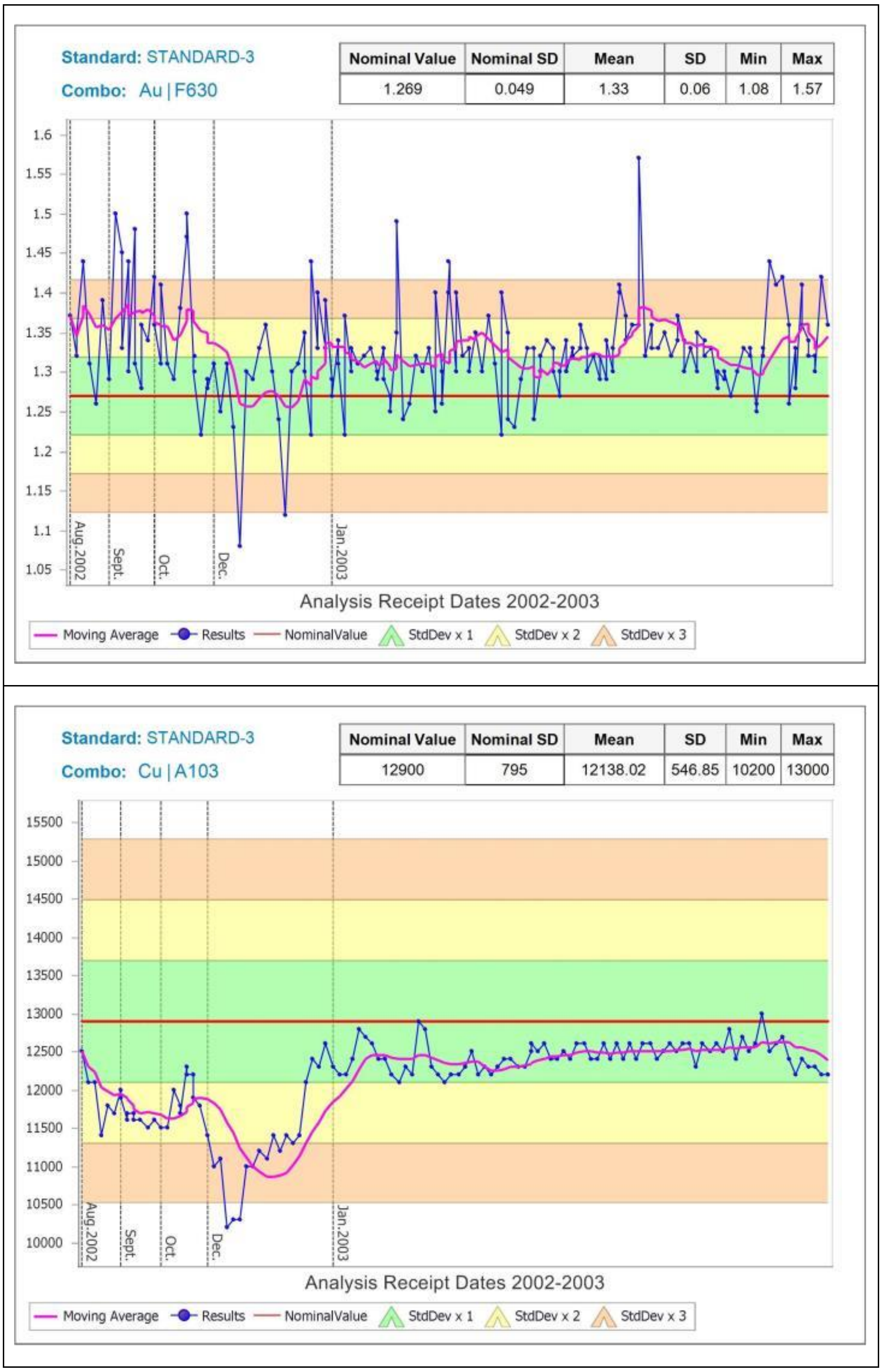


Figure 25. Performance Control Charts Au and Cu, STD3

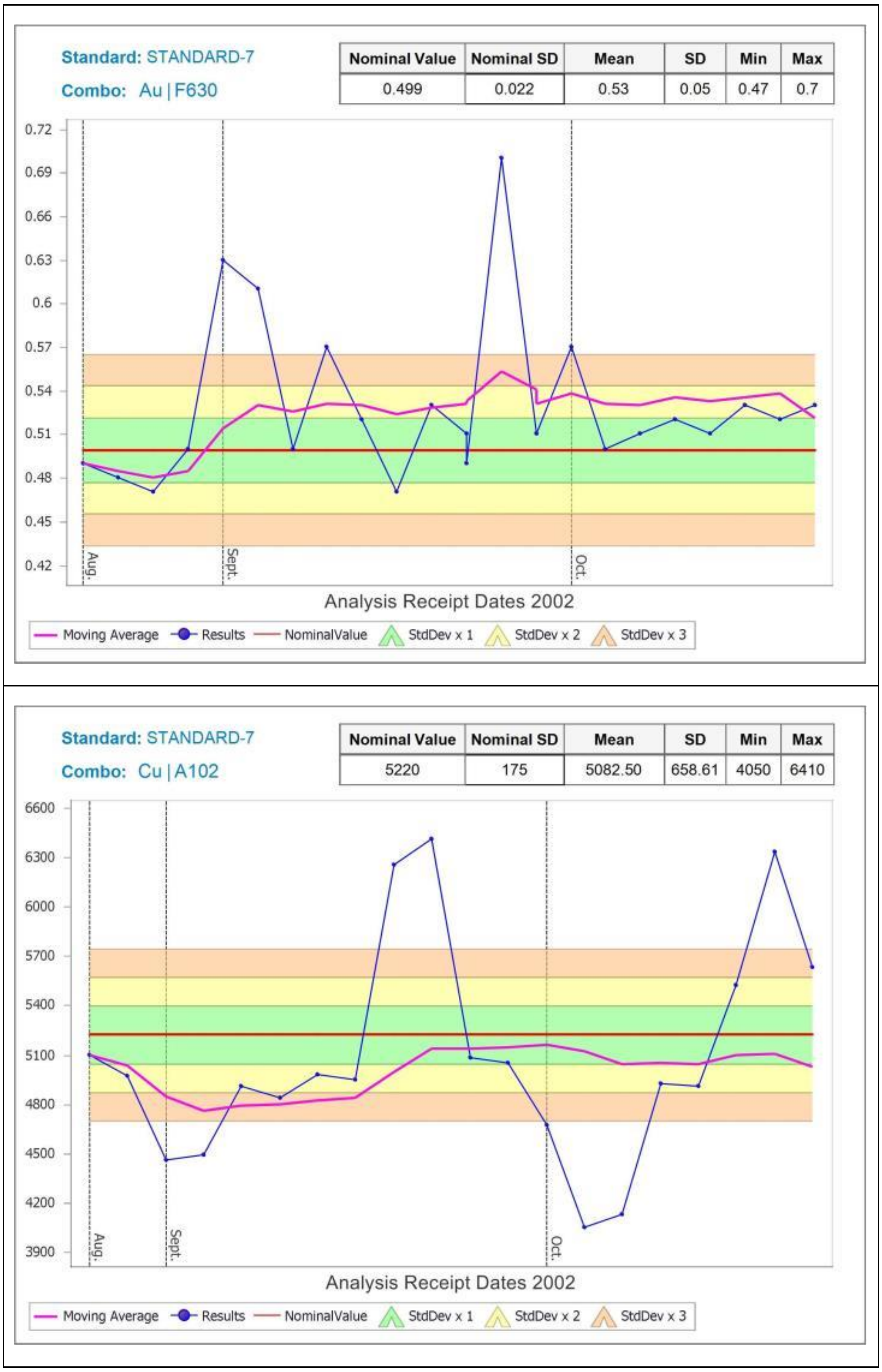


Figure 26. Performance Control Charts Au and Cu, STD7

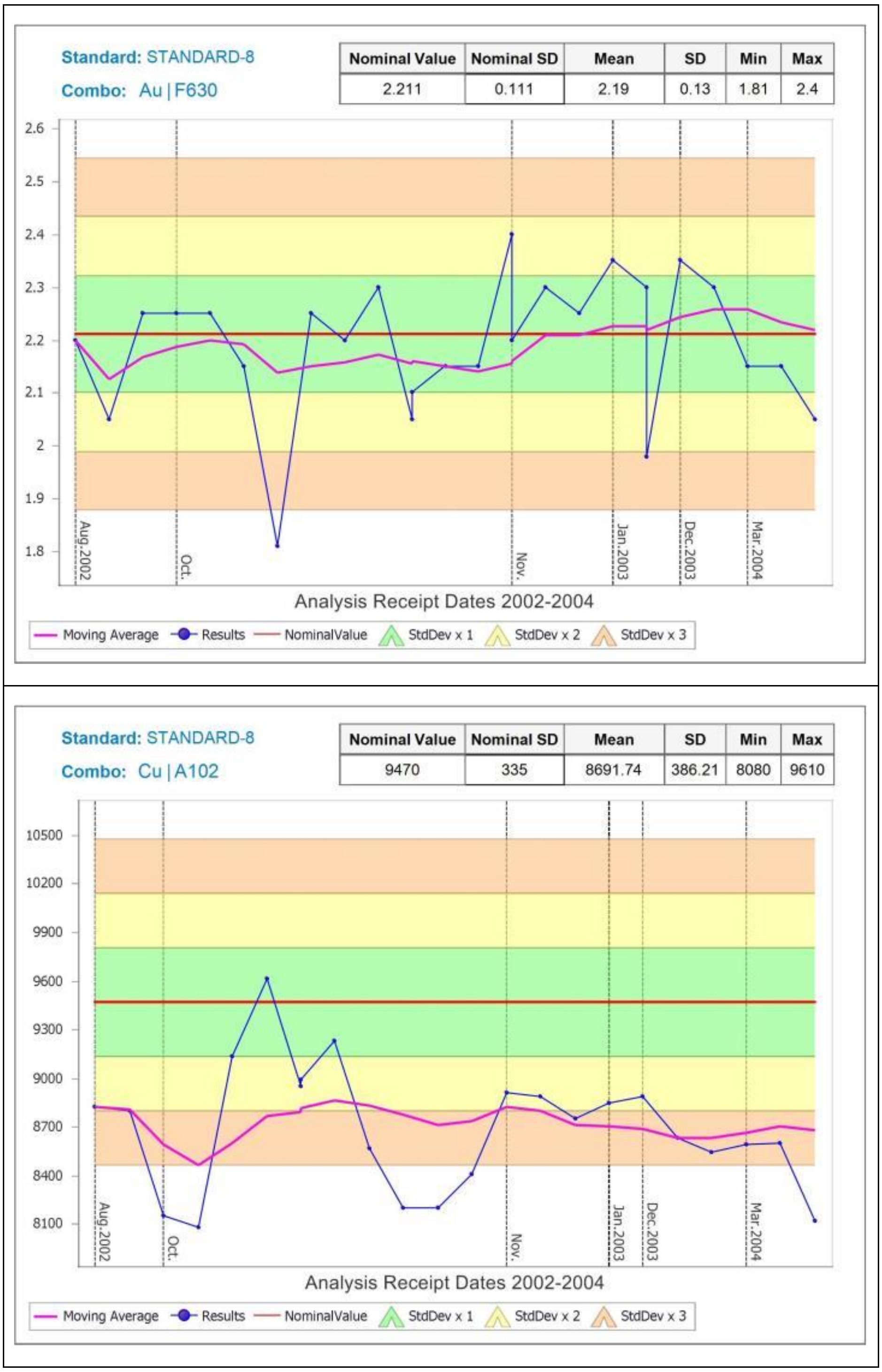


Figure 27. Performance Control Charts Au and Cu, STD8

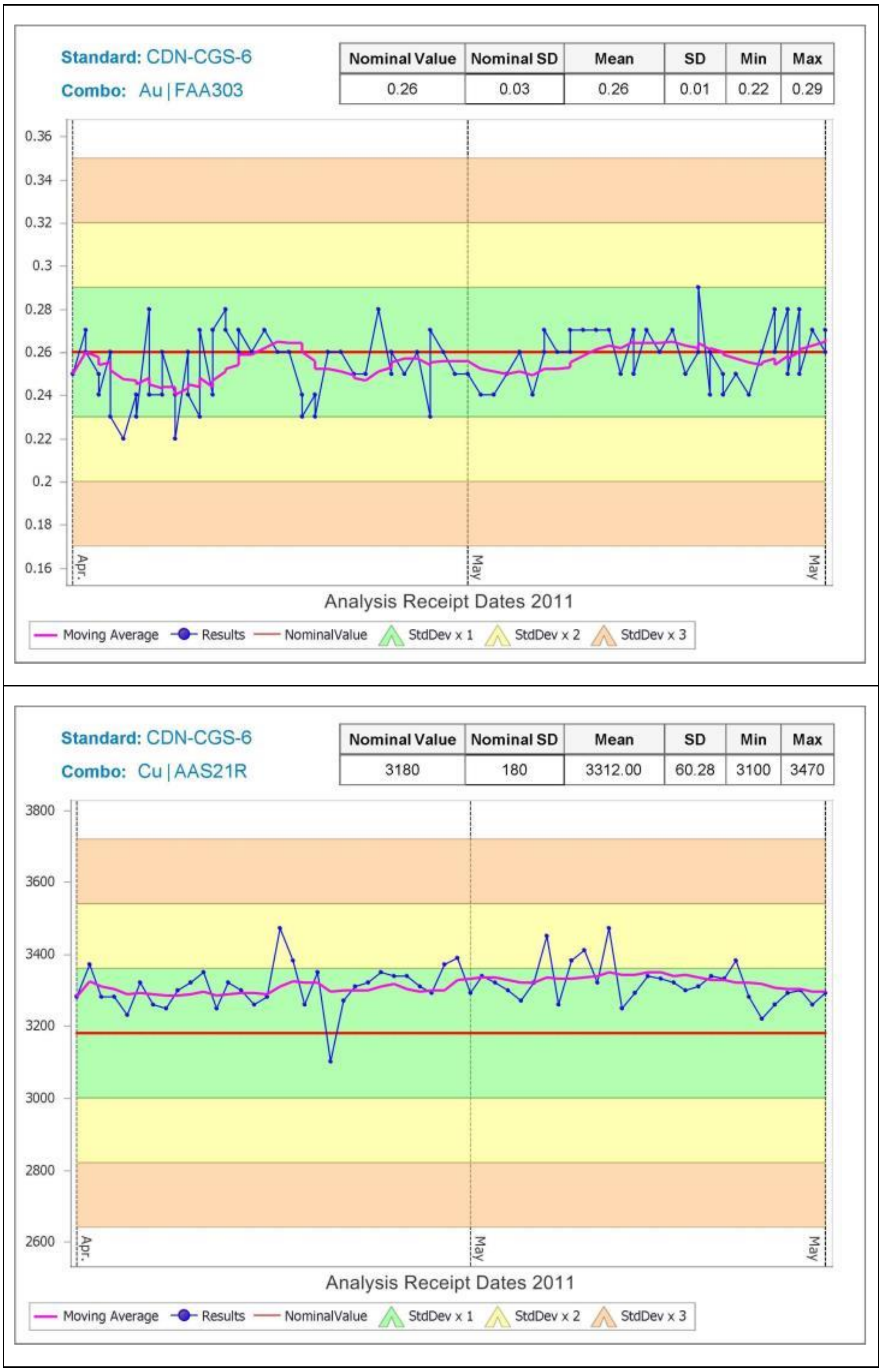


Figure 28. Performance Control Charts Au and Cu, CGS-6

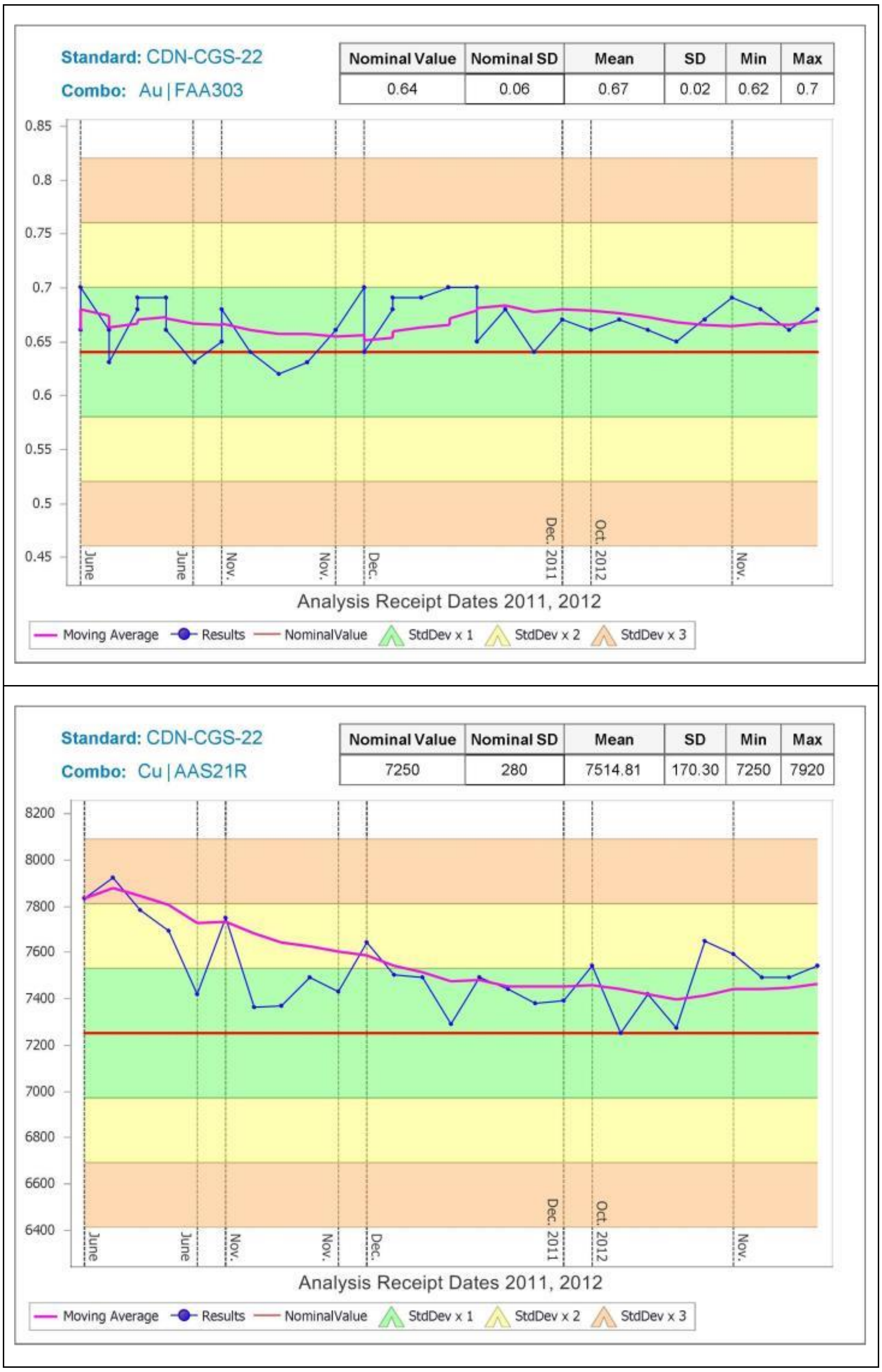


Figure 29. Performance Control Charts Au and Cu, CGS-22

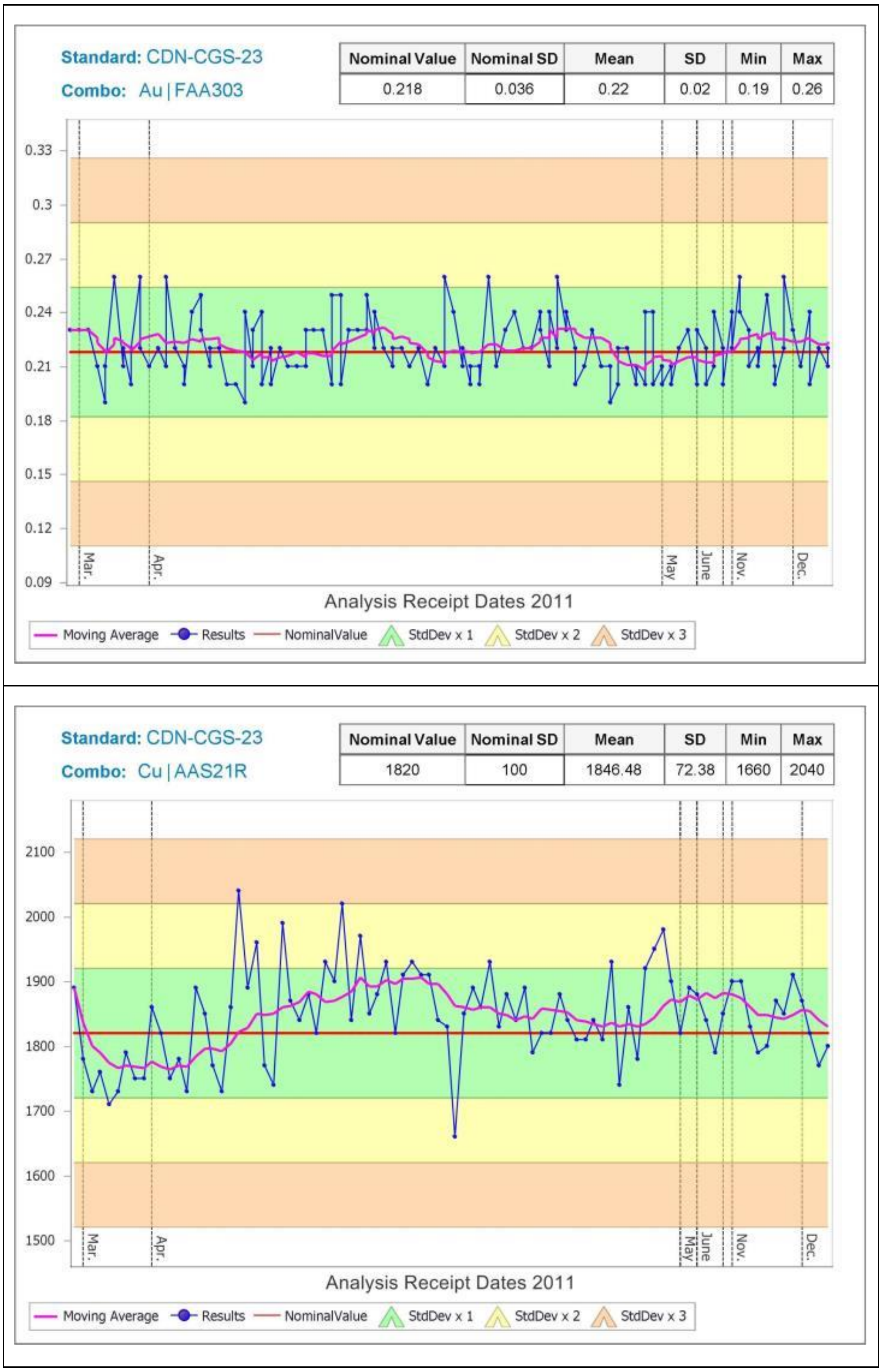


Figure 30. Performance Control Charts Au and Cu, CGS-23

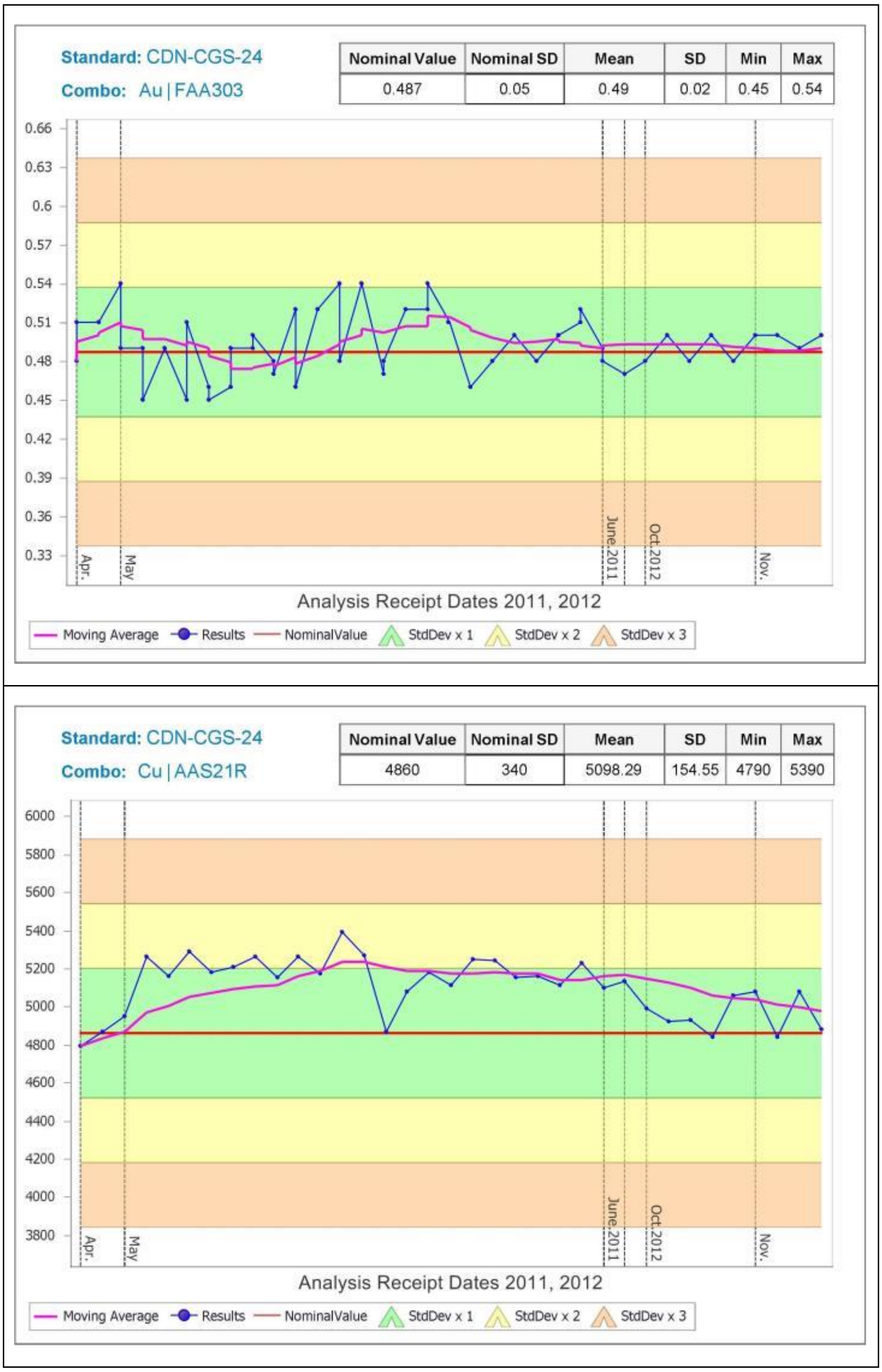


Figure 31. Performance Control Charts Au and Cu, CGS-24

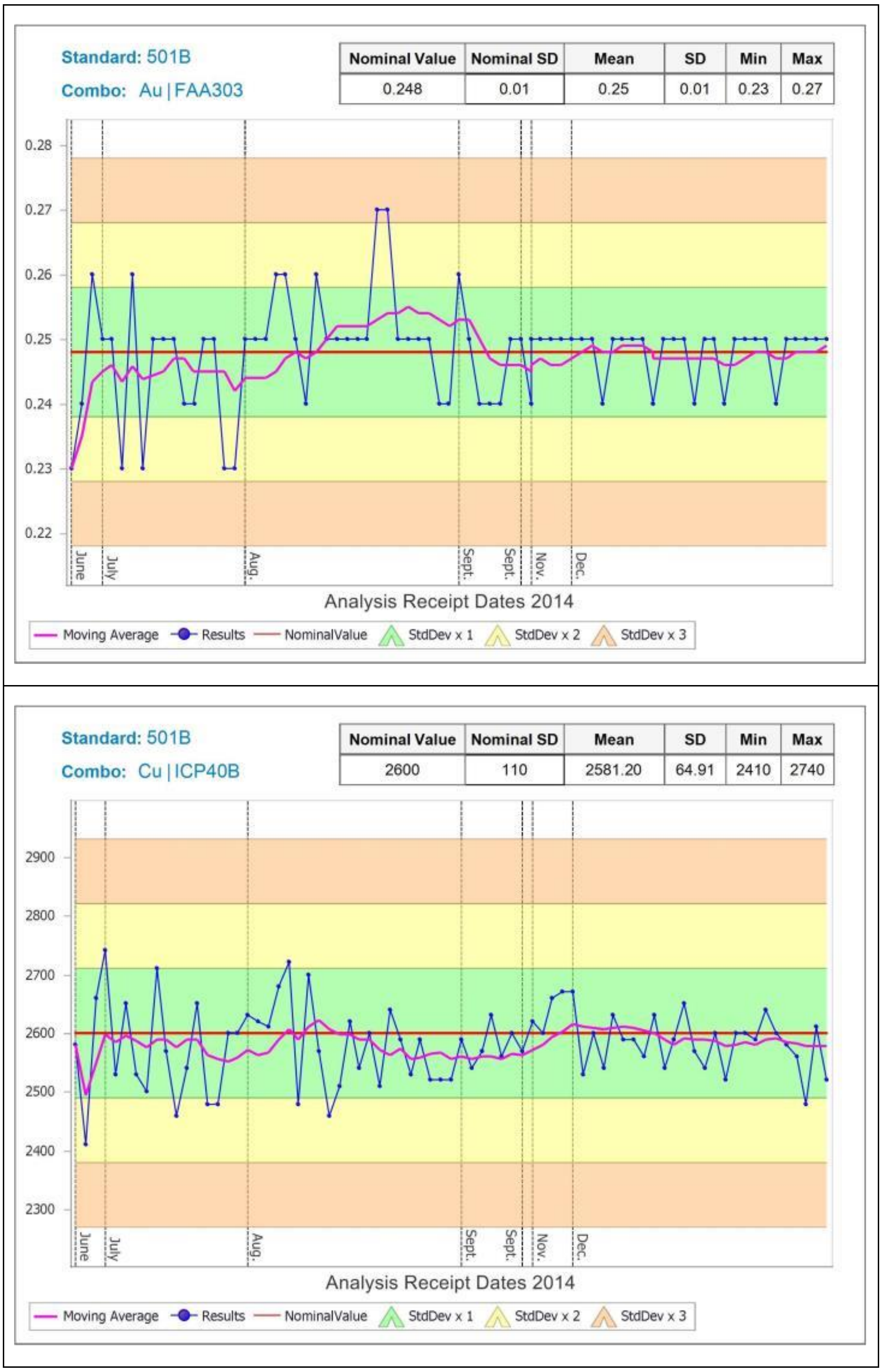


Figure 32. Performance Control Charts Au and Cu, OREAS 501B

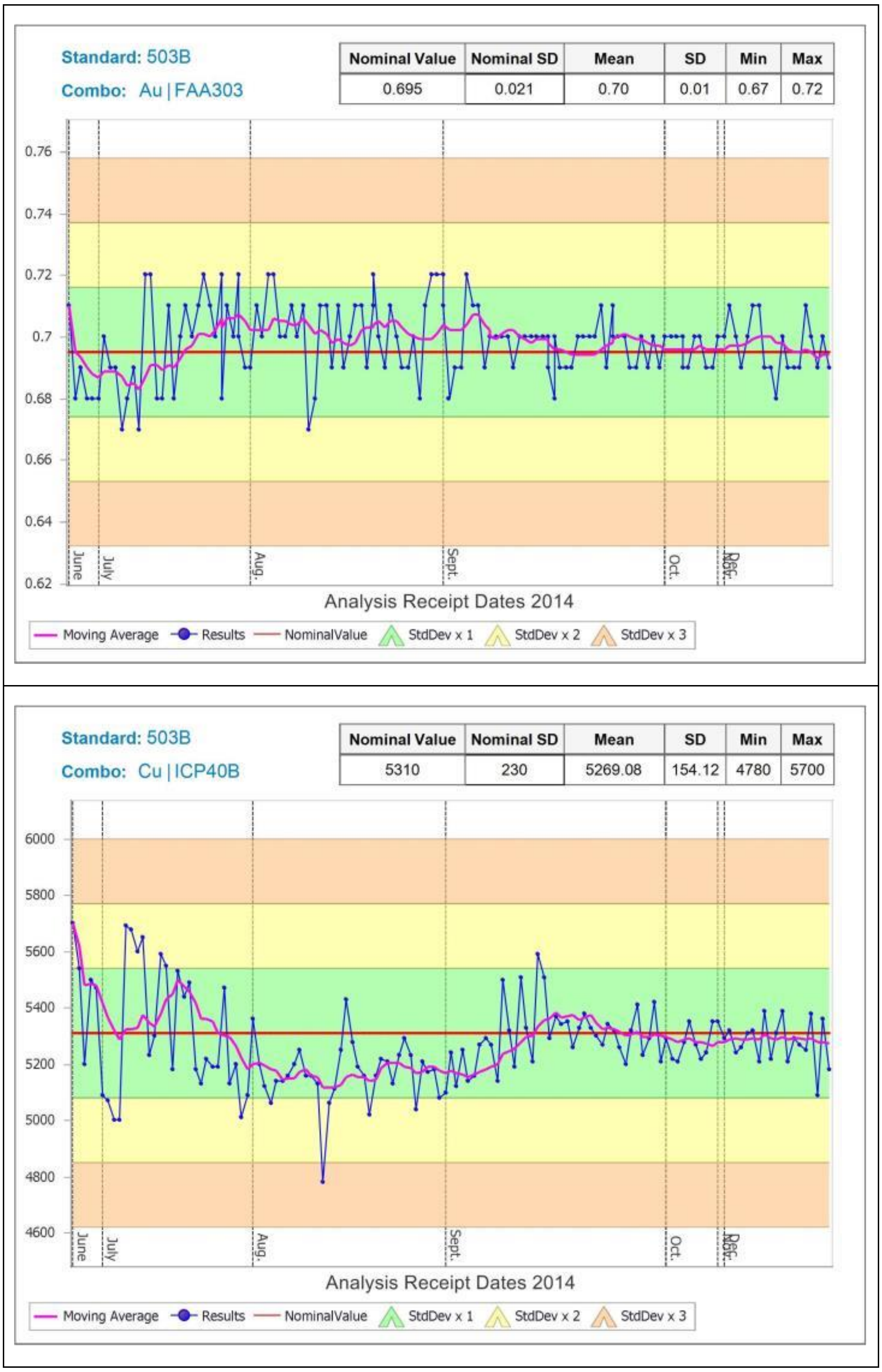


Figure 33. Performance Control Charts Au and Cu, OREAS 503B

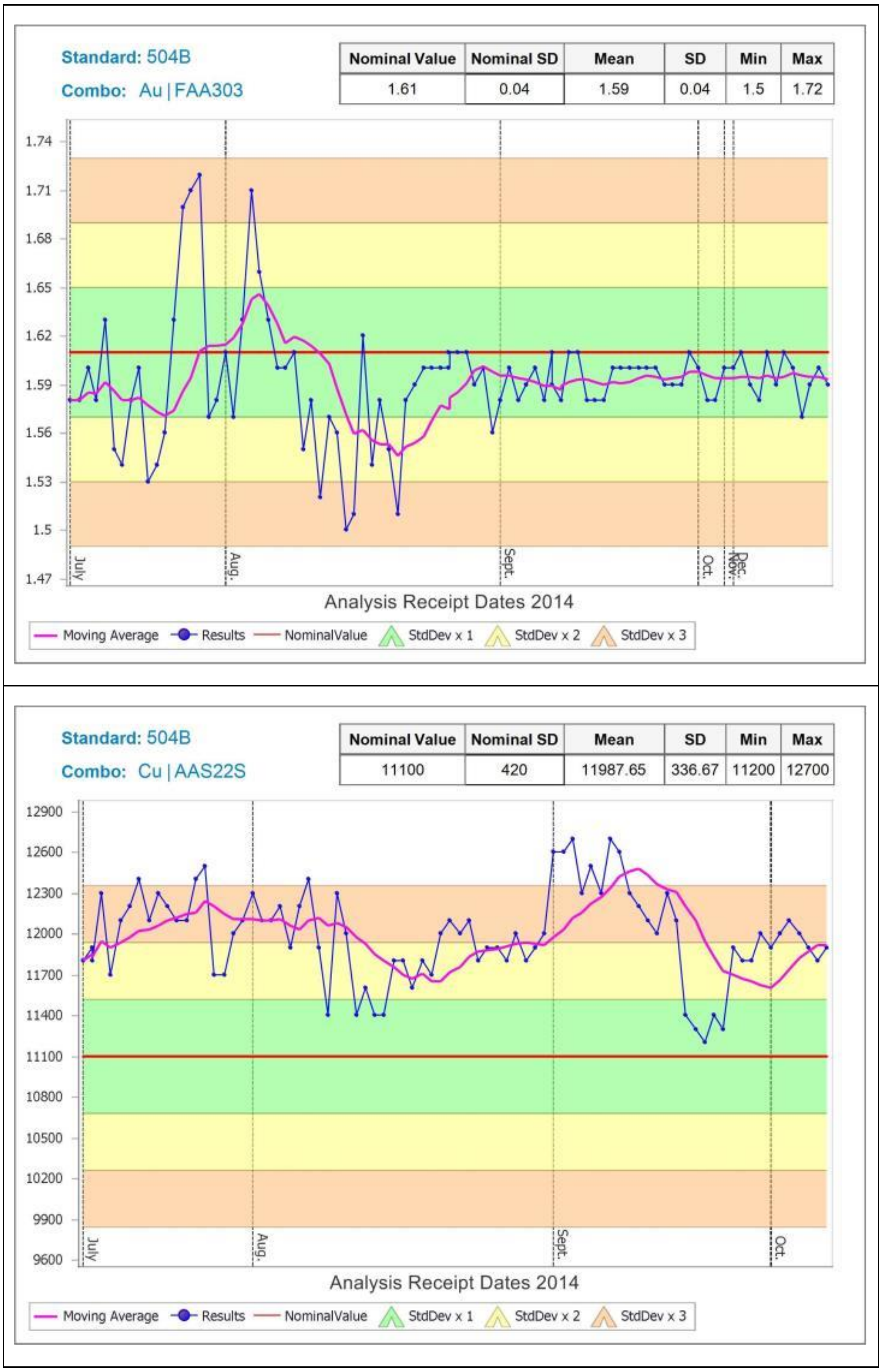


Figure 34. Performance Control Charts Au and Cu, OREAS 504B

9.3 DISCUSSION ON QA/QC

MA was requested by Xanadu to review and comment on assay quality control. A report prepared by AMC (AMC, 2012) provided a comprehensive review of the QA/QC for the project up to the end of

2011. Additional drilling undertaken since the end of 2011 was monitored by similar QA/QC protocols to those used by IMMI.

The general level of diligence and supervision of sample preparation and analytical quality control carried out by IMMI/AGC and Xanadu was high. The frequency of insertion of CRM, blanks and pulp duplicates is considered by MA to be sufficient to assure quality of assay data. Fail criteria for assay batches used by IMMI/AGC and Xanadu are considered by MA to be appropriate. Following review of the data and previous reports, in MA's opinion, past and present QA/QC protocols and procedures are adequate and appropriate and MA considers the data to be acceptable for use in resource estimation.

10 DATA VERIFICATION

10.1 SITE VISIT

As part of the data verification process, Mr Andrew Vigar visited the Kharmagtai Cu-Au project on 24 and 25 October 2014. During the visit, geological maps and reports were reviewed and a selection of drill sites. The most striking feature at the project is the lack of significant outcrop – there is extensive sub-crop and rubble but also evidence of disturbance due to possible ancient workings making surface mapping difficult. This would also suggest that high-grade mineralisation that is seen in drilling could in fact approach within tens of metres of surface without being seen.

Discussions were held with project geologists, project manager and country manager who have all worked on the project and are familiar with the geology of the area, the mineralisation being explored for, as well as the exploration and work procedures. The current drill fleet was inspected (Figure 35) and inspection of Historic drill collars (Figure 36) was carried out. The work procedures were observed to be in place and were reviewed during the site visit. Logging (Figure 37, Figure 38), sampling (Figure 39), sample quality control (Figure 40) and sample handling and security procedures (Figure 41) are to industry standard practice. The core storage facilities were also visited (Figure 42).

Figure 35: Drilling fleet Diamond drill rigs and support trucks

Figure 36: Hole collar and mark - hole KHDDH240 drilled on 15/04/2003

Figure 37: Whole core logging run

Figure 38: Rock Board to aid consistency between geologist logs

Figure 39: Sample cutting area, Electric core saw and rollers for ease of core tray movement.

Figure 40: Tickets, bags and CRMs

Figure 41: Sample Security during transport (locked Container)

Figure 42: Core storage facility

10.2 DISCUSSION AND LIMITS

The project is, in the opinion of MA, at the Advanced Exploration with limited surface exposure and has been largely defined by geophysics and drilling. It is MA's opinion from the review of the existing documentation and that both the company activities (exploration, drilling and sampling) and the recent independent verifications by MA (site visit) are adequate to for general style and tenor of the mineralisation. MA considers that the data for the project are acceptable as inputs to define a Mineral Resource.

11 MINERAL PROCESSING AND METALLURGICAL TESTING

It was not within the scope of this report to review the Mineral processing and Metallurgical testing work. MA notes that only preliminary Mineral Resource estimates have been reported and no detailed work has been completed on Mineral processing and Metallurgical testing.

In 2008 a suite of nine composite samples were submitted to G&T Metallurgical Services for metallurgical testing (Rowe and Shouldice, 2008). The laboratory was advised that the samples were from a previously untested portion of the Oyu Tolgoi deposit (then also operated by the same company – this approach was taken as a blind test) and needed to be evaluated with respect to the metallurgical and mineralogical requirements.

All of the composites investigated were identified as copper-gold mineralisation and contained between 0.25 % and 1.4 % copper. Gold was also present in significant amounts with an average of 1.2 g/t in the feed head grade. Four of the nine composites also contained potentially economic values of molybdenum. The vast majority of composites responded well to the applied Oyu Tolgoi flow sheet, recovering on average better than 85 % of the copper in the feed into a concentrate grading 28 % copper. Gold, on average, was about 60 % recovered into the copper concentrate and gold grades ranged from 8 to 100 g/t.

Final concentrates were also noted to contain bismuth and fluorine in quantities that could potentially affect saleability.

12 MINERAL RESOURCE ESTIMATES

Estimation was constrained within grade domains for each deposit. Domains were defined largely on the basis of geophysics, geology and exploration drilling, following discussions with Andrew Stewart (Exploration Manager).

Grades of copper and gold were estimated by Ordinary Kriging ("OK"), constrained within wire-framed domains. Copper and gold grades were estimated into a block model with parent blocks 20 m x 20 m x 20 m size and sub-blocking to 10 m x 10 m x 10 m. Block size was considered reasonable considering the drill spacing of approximate 40 m sections in Altan Tolgoi and Zesen Uul.

No geological controls were explicitly included in the estimation process, although the orientation of variograms reflected the trend of mineralisation.

Results for copper were compared with raw drill data and also with block estimates made using Nearest Neighbour, Inverse Distance Squared estimates. Resource categories were defined using sample density, number of informing samples and conditional bias slope.

Bulk density used for tonnage conversion was 2.75 t/m^3, which corresponds to the average specific gravity determined for 4431 measurements of mineralised and non-mineralised rock.

12.1 APPROACH

The resource was estimated using deterministic modeling techniques of the porphyry mineralisation from sectional interpretation. Each section displaying all the drilling was interpreted in consecutive 40 m north-south sections (eg Figure 43). The interpretation resulted in generally continuous zones or domains containing the mineralised system. Altan Tolgoi is the most complex deposit with five main mineralised zones modelled. Tsagaan Sudal was modelleds a single broad zone of mineralisation containing stockworks and breccia bodies hosted by diorite porphyry over a large area. Within the host porphyry several higher grade mineralisation (> 0.5 % Cu and 1 g/t Au) structures were modelled associated with narrow hydrothermal breccia bodies (less than 10 m wide) which are spatially related to the margins of inter-mineral quartz diorite dykes. Zesen Uul is the smallest mineralised body and was modelled as a single zone of stockwork mineralisation zoned around a vertically attenuated quartz diorite stock.

Mineralisation is defined within each deposit as greater than 0.12% Cu and 0.12g/t Au, resulting in two sets of mineralisation wireframes for each deposit. (au_interp_ma.dtm and cu_interp_ma.stm).

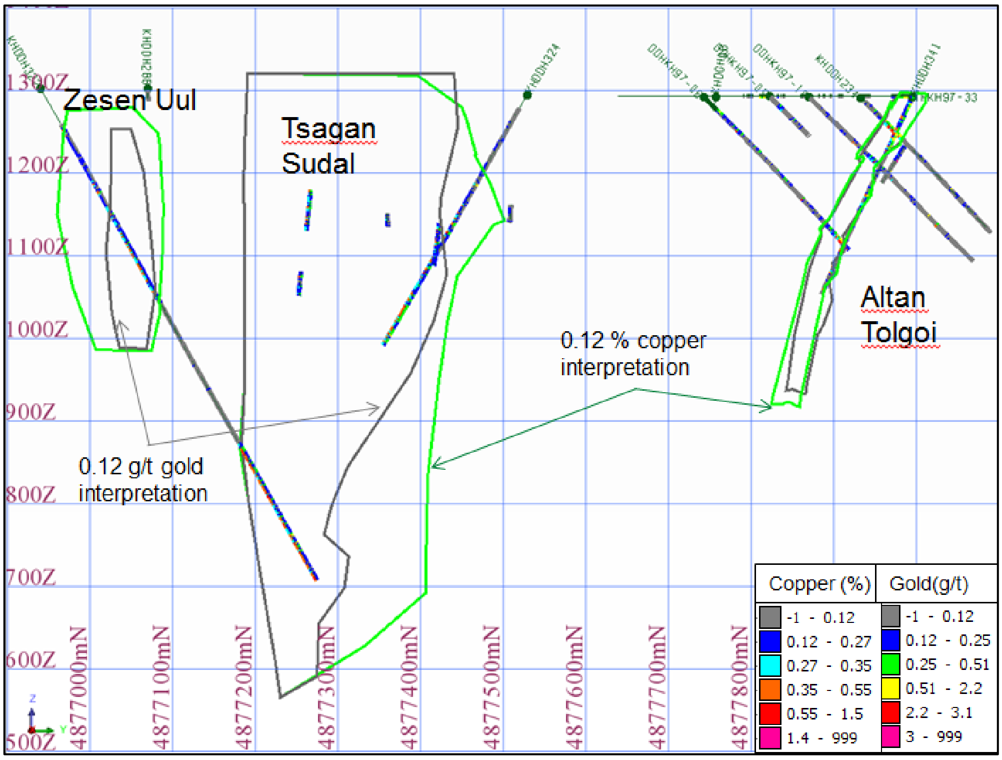


Figure 43: Kharmatai Resource - Section View 592250 mE ± 20m

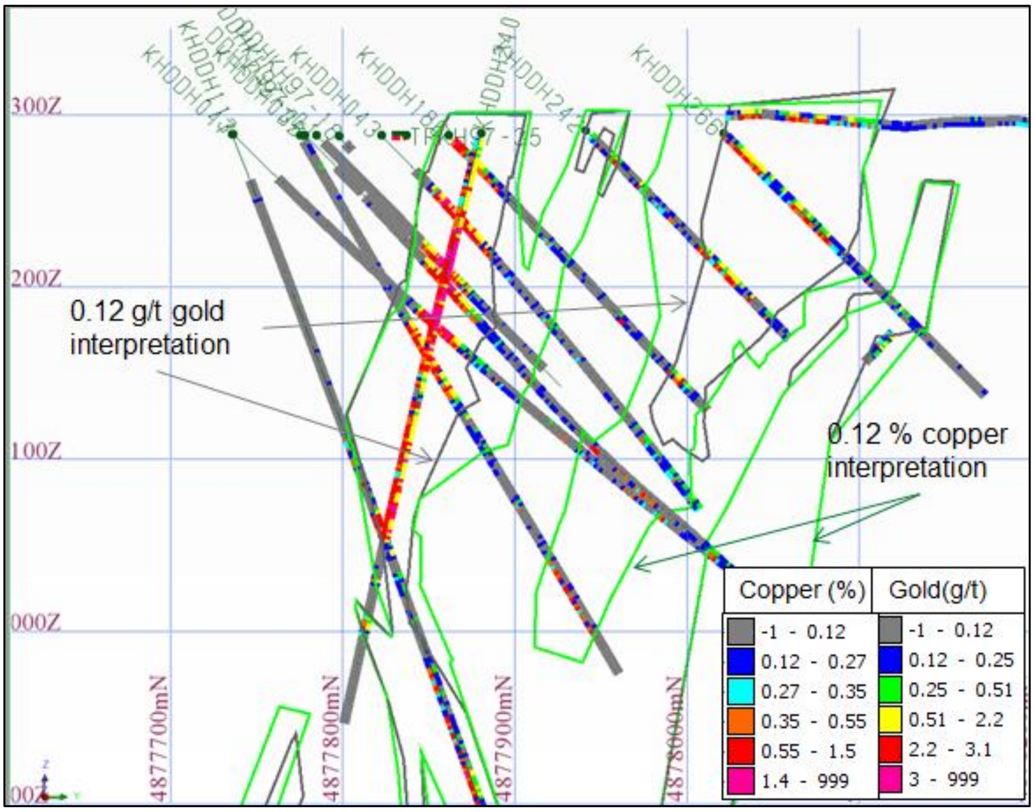


Figure 44: Altan Tolgoi - Section View 592500 mE ± 20m

12.2 SUPPLIED DATA

MA was supplied with exported text files from Xanadu's drill hole database, which were validated and compiled into a new database in MS Access. Database table names and a summary description of the information in each table is given in Table 15.

Table 15. Master Database Structure

Table Name	Description
TblCollar	X,Y,Z locations of drill hole collars with unique hole_id, plus various metadata fields, including hole length in metres, and year drilled
TblSurvey	Downhole point table containing hole_id, depth, azimuth and dip of hole orientation measurements taken at approximately 30 m intervals
TblAssay	Interval table containing hole_id, depth from, depth to and fields for results of geochemical analyses for Cu and Au for all samples, plus multielement trace/major lithogeochemistry for some samples.
TblGeology	Interval table containing hole_id, depth from, depth to and fields for various parameters logged by geologists. Includes lithology, magnetic susceptibility measurements and volume estimates of mineral species.
TblRQD	Interval table containing core recovery and RQD determinations per core run
TblSulphide	Interval table containing visual estimates of proportions of metallic sulphide minerals
TblSpecificGravity	Interval table containing data on specific gravity measurements on samples
TblQtzVeins	Interval table visual estimates of quartz vein proportions and number of veins per metre

MA notes that Xanadu's technical team have been most cooperative through the whole process and have supplied all requested information in an efficient and professional manner.

12.3 DATA PREPARATION AND STATISTICAL ANALYSIS

Statistical analysis of the grade data was principally carried out using the Surpac Software package. More detailed spatial analysis (variograms) was conducted within Surpac(TM) software. Surpac is an internationally recognised geological and mining software toolbox which incorporates geostatistical tools that can be used at all stages of the mining process from initial feasibility studies though to production control.

Prior to a statistical analysis, grade domaining is usually required to delineate homogeneous areas of grade data, failing to adequately separate mineralisation populations (domains) can lead to misinterpretation of mineralisation controls. Univariate statistical analysis does not take into account the spatial relationships of the data.

The purpose of the statistical analysis is to define the main characteristics of the underlying grade distribution to assist with the geological and grade modelling work. This process is important as the statistics of the individual sample populations can influence how the grade data is treated and the application of the grade estimation techniques. For example highly skewed data may require special grade capping and indicator semivariogram analysis.

The drill hole database is stored in an MS Access relational database. The Kharmagtai database is connected directly to Surpac for data display, down-hole compositing, wireframing of homogeneous grade domains and block model estimation.

12.4 DIMENSIONS

Defined mineralisation occurs within three main deposits within Xanadu's Kharmagtai licence area. From north to south, these are: Altan Tolgoi ("AT"), Tsagaan Sudal ("TS") and Zesen Uul ("ZU"). The interpreted domains defined for each deposit create an area with extents shown in Table 16. The vertical extent is 800 m below surface.

Table 16: Defined Mineralised Domains Extents, UTM Grid Units

	East	North	RL
min	591600	4876270	540
max	593220	4878200	1340
Extent (m)	1620	1940	800

12.4.1 Drill Hole Spacing

Drill hole data spacing is variable within each deposit. Drill spacing ranges from quite sparse in the Tsagan Sudal (approximately 80m centres), to well-spaced40 m x 40 m drill patterns over Altan Tolgoi and Zesen Uul.

12.5 GEOLOGICAL INTERPRETATION

Copper and gold mineralisation at Kharmagtai is interpreted to comprise three primary types: mineralised diorite porphyry, higher grade stockwork zones and mineralised tourmaline breccia. Mineralisation is broadly controlled by lithology, being dominantly hosted by quartz diorite in all three deposits.

Although mineralisation types are distinguishable in core at the macro scale, they overlap and interfinger spatially to such an extent that it is impractical to model them as separate wireframes to constrain estimation. Similarly, lithological contacts are highly irregular and in general do not define hard boundaries to mineralisation.

Xanadu supplied a series of cross-sections through each deposit with interpreted boundaries of mineralisation defined at 0.3% and 0.6% Cu equivalent. 3D wireframes of the same boundaries were also provided, as was a wireframe for the andesite porphyry dyke/fault that offsets the southern part of Altan Tolgoi. The grades used by Xanadu were chosen to reflect approximate economic cut-offs and do not coincide with natural breaks in grade distribution.

12.5.1 Altan Tolgoi

Copper and gold mineralisation occurs in four main bodies, all of which trend east to east-southeast. Mineralisation outlines are complex, and bifurcate along strike and down dip within broadly consistent bodies, reflecting the irregular nature of primary lithological and structural controls. An andesite porphyry dyke occupies a fault zone that transects the southern part of Altan Tolgoi and offsets mineralisation in an apparent dextral strike-slip sense. Section interpretation shows that the dyke and fault bifurcate and anastamose along strike and down-dip. In some places the dyke/fault bifurcates around mineralised intersections. The southeastern extent of the dyke/fault is less well defined in drill logging and mineralisation appears not to show any offset across the wireframe provided by Xanadu.

Structural controls are apparent at Altan Tolgoi, where stockwork and porphyry mineralisation forms subvertical, tabular shaped and pipe-like bodies aligned along an east to east-southeast trend. Tourmaline breccia extents are less clearly defined, but zones at Altan Tolgoi also appear to align along a southeast trend.

12.5.2 Tsagaan Sudal

Drill spacing and orientation makes interpretation of mineralisation at Tsagaan Sudal of lower confidence than the other two deposits. A large, broadly east-northeast trending body of low grade mineralisation is interpreted, with no well-defined lithological or structural controls. Several narrow (about 10 m wide), high grade (>0.5 % Cu and >0.5 g/t Au) zones occur within in the central part of the deposit and strike northwest with a steep southwesterly dip, and may have been formed in the same structural event as the high grade zones at Altan Tolgoi.

Xanadu interpretations show individual sections with some barren, cross-cutting dykes, but the current density of drilling does not allow these to be confidently projected between sections. They are currently included within mineralised domains, but future work should better define their extent and orientation.

12.5.3 Zesen Uul

Mineralisation occurs within a single main body, striking east-northeast and dipping steeply southeast. The geometry in plan view is roughly lensoidal, being wider in the central part than the extremities. There is limited evidence from drilling and ground magnetics that mineralisation may be transected and slightly offset by two or three northeast trending faults. These structures do not appear to have a major impact on the mineralisation and have not been included as part of the model. Xanadu interpret that the down-dip extent of the deposit is also truncated by a low-angle fault, although again the evidence at this stage is limited.

12.6 DOMAINS & STATIONARITY

A domain is a three-dimensional volume that delineates the spatial limits of a single grade population, has a single orientation of grade continuity, and is geologically homogeneous. A unique domain has statistical and geostatistical parameters that are applicable throughout the volume (i.e. the principles of stationarity apply). Typical controls that can be used as the boundaries to the domains include structural features, weathering, mineralisation halos, and lithology.

Due to geological domaining and grade boundaries, stationarity concerns are minimised with the resource estimation as each domain restricts the area of influence of each domained dataset.

12.6.1 Domain boundaries

Drill hole data was assessed using log probability plots to determine appropriate geochemical boundaries for Cu and Au to define mineralisation. All deposits show a lower break around 0.11-0.13 g/t Au and 0.12 % Cu. Altan Tolgoi and Zesen Uul show very subtle breaks for Cu and Au at higher grades, but the data points are too scattered spatially to resolve into separate domains. TS data shows a clear upper break at 0.55 % Cu and 0.55 g/t Au. These data represent narrow high-grade zones that can be separately domained with a reasonable degree of confidence.

Mineralised domains were interpreted at 0.12 % Cu and 0.12 g/t Au for all three deposits. High grade Cu and Au domains were interpreted for TS at 0.55 % Cu and 0.55 g/t Au. The cut-offs used best reflect the spatial continuity of mineralisation without making the estimation domains too large.

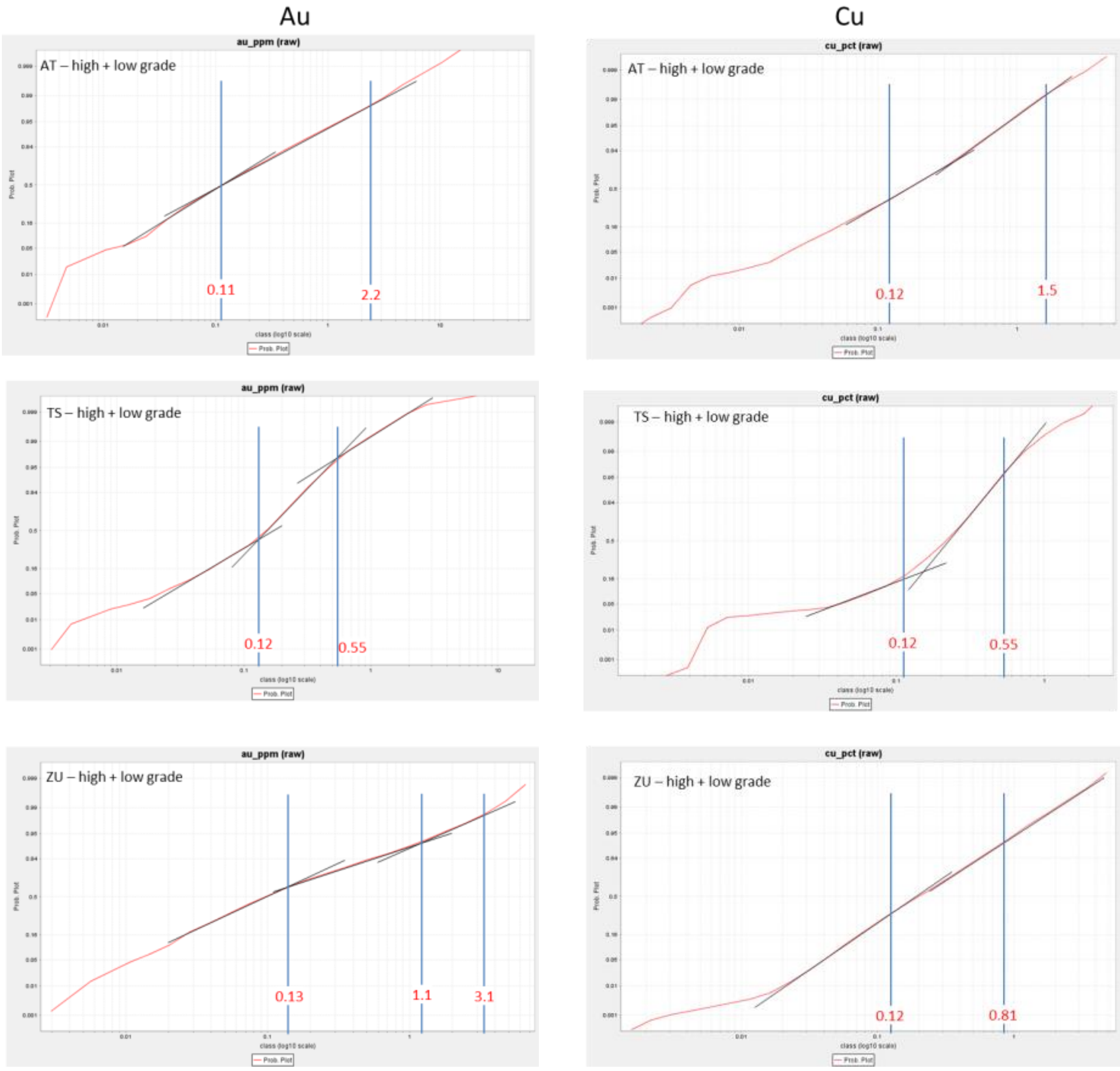


Figure 45: Probability plots, Au (left) and Cu (right)
with MA interpretative lines in black showing natural breaks

12.6.2 Gold / Copper Relationship

MA examined if there was a relationship between copper and gold, as this needs to be maintained during estimation, should one be present. Data for Zesen Uul shows the clearest example of a positive correlation between copper and gold, but the same can be seen in Altan Tolgoi and Tsagaan Sudal (Figure 46). This positive correlation means that copper and gold could be modelled together, however the scatter is too broad for a simple linear regression or co-kriging.

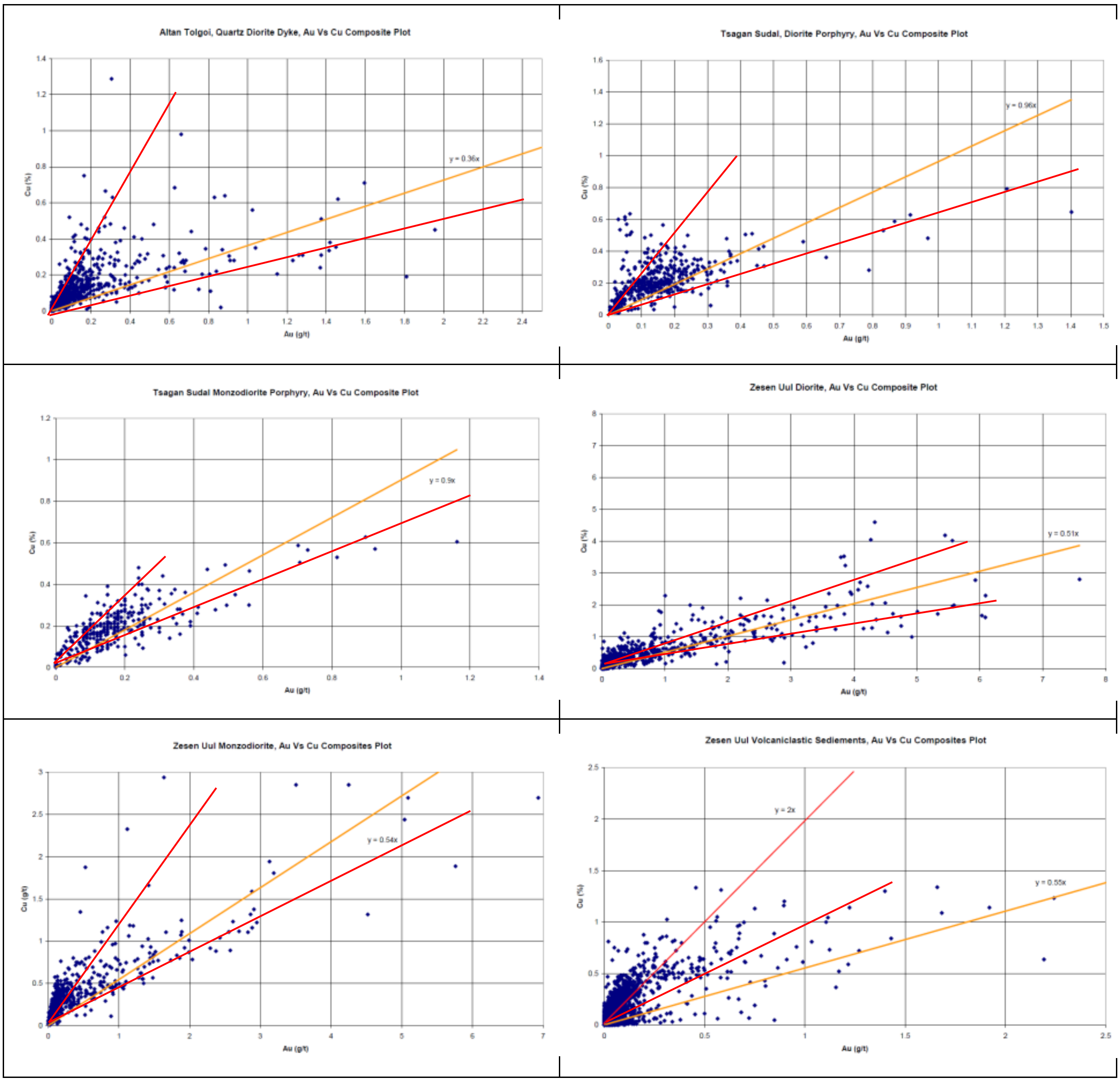


Figure 46: Gold Copper Relationship

(Source: MA, 2013) Red Lines indicate trends within the Cu-Au plots for key areas by geology. Orange line is the line of best fit

MA considers that three main mineralisation events are broadly distinguishable on the basis on Cu:Au ratio:

1) a lower grade copper gold event with Cu:Au ratio of 1 to 1 (% Cu to ppm Au). This is best seen at Tsagaan Sudal in the diorite porphyry, but evident in all three deposits.
2) a higher grade gold dominated event with Cu:Au ratio of around 1 to 3. This dominant high grade gold trend is best seen at Zesen Uul in the monzodiorite and volcanoclastic sediments.
3) a higher copper, low gold event with Cu:Au ratio more than 3 to 1. This trend is seen on many of the tourmaline breccia intersections in the eastern part of Altan Tolgoi.

Cu:Au populations have significant overlap at the lower grades, which is mitigated by wire frame modelling >0.12% Cu separately to >0.12% Au and treating each element as separate events (domains). In all deposits the >0.12% Cu wireframe is larger than and encloses the >0.12 g/t Au wireframe.

12.6.3 Domains

The Kharmagtai deposit is divided into six domains (Notes to accompany Resource Table:
Mineral Resources reported at a 0.3% CuEq cut-off and depths (> 1,000 m RL).
CuEq is based on a $3.38/lb copper price and a $1,625/oz gold price. A gold recovery factor of 0.908 was used

Table 6) based on location, orientation and general grade of the prospects. Altan Tolgoi is the most complex with 3 sub-groups (AT-D, AT-N & AT-S). Tsagaan Sudal has a large low grade domain (TS-LG) with several small high grade domains grouped together (TS-HG). Only one domain was defined at Zesen Uul (ZU). All gold mineralisation >0.12g/t occurs within the copper 0.12% Cu shell. The copper domains outside the defined gold domains were estimated with the local lower grade gold assays, resulting in each block being assigned a copper and gold value.

Table 17: Mineralised domain descriptions

Domain Name	Domain Description	Gold (Object or trisolation)	Copper (Object or trisolation)
AT-D	Altan Tolgoi proximal (sub parallel) to the fault (generally higher grades)	1,2	1,2
AT-N	Altan Tolgoi North	3	3
AT-S	Altan Tolgoi South	4,5	4
TS-LG	Tsagan Sudal low grade boundary	20	30
TS-HG	Tsagan Sudal High grade boundary	21	31
ZU	Zesen Uul	30	35
AT 99	Material inside Cu domains and outside gold domains at AT	Copper 12,3,4,	
TS 99	Material inside Cu domains and outside gold domains at TS	Copper 30,31	
ZU 99	Material inside Cu domains and outside gold domains at Zu	Copper 35	

12.7 COMPOSITES

The objective of compositing data is to obtain an even representation of sample grades and to eliminate bias due to sample length (volume variance). Compositing also assists in reducing variance. The dominant sample length for Kharmagtai drill sampling is two metres.

Six metre down-hole composites were chosen for statistical analysis and grade estimation of Cu and Au. Compositing was carried out downhole within the interpreted mineralisation domains described in Table 17. Composite files were created by selecting those samples within domain wireframes.

Important factors in deciding composite length are the original sample length and the perceived mining method that is likely to ultimately be employed. It is not good estimation practise to split samples, the last sample would be split between the last metre of one composite and the first metre of the next, artificially smoothing the data. The other critical consideration is the expected bench or flitch height in open pit mining. For the Kharmagtai deposits, large scale open pit mining with ten metre bench heights would be expected andis reflected in the block height dimension of 20 m.

Considering the expected bench height and block size, a composite length of six metres was selected for estimation. Due to most drilling being angled holes, 6 m downhole approximates 5 m vertical and provides a suitable flitch height and the option of multiple bench heights. Compared to raw sample statistics, Cu and Au mean values remain reasonably un-affected, and variances are consistently reduced with longer composites.

The current estimates have been run using composite lengths of 6 m on original sample lengths of 2m. MA is of the opinion that composites of 6 m are best suited to match the sample intervals and approximate the flitch height (5 vertical metres).

12.7.1 Summary Statistics

Summary statistics for the major domains, based on the 6m composites located within the domains (excluding missing samples), are presented in Table 18 and Table 19.

Table 18: Basic Statistics - Copper

Statistics	AT-D	AT-N	AT-S	TS-LG	TS-HG	ZU
Number of samples	408	800	1847	1752	45	877
Minimum value	0.02	0.02	0.01	0.01	0.26	0.02
Maximum value	2.16	1.43	3.80	0.95	1.07	2.69
Mean	0.31	0.27	0.38	0.25	0.57	0.39
Median	0.25	0.22	0.30	0.24	0.55	0.27
Standard Deviation	0.22	0.18	0.30	0.10	0.18	0.34
Coefficient of variation	0.72	0.66	0.79	0.40	0.31	0.88

Table 19: Basic Statistics - Gold

Statistics	AT-D	AT-N	AT-S	TS-LG	TS-HG	ZU
Number of samples	364	588	1352	1307	46	525
Minimum value	0.03	0.04	0.01	0.03	0.18	0.02
Maximum value	4.87	5.22	21.93	2.26	2.33	5.17
Mean	0.45	0.32	0.62	0.21	0.65	0.64
Median	0.31	0.24	0.32	0.19	0.60	0.32
Standard Deviation	0.54	0.30	1.02	0.12	0.35	0.82
Coefficient of variation	1.19	0.96	1.63	0.59	0.54	1.28

All copper domains display a moderate to low coefficient of variation (CV)) and highly skewed distributions. The moderate to low CVs suggest that few outliers may be present. The gold domains display a moderate to high coefficient of variation (CV), suggesting that outliers may be present and therefore contributing significantly to the mean.

An assessment of the high grade outliers was made prior to the selection (if appropriate) of a high grade cap and is discussed further in Section 12.7.2.

12.7.2 Grade Capping

Capping is the process of reducing the grade of the outlier sample to a value that is representative of the surrounding grade distribution. Reducing the value of an outlier sample grade minimises the overestimation of adjacent blocks in the vicinity of an outlier grade value. At no stage are sample grades removed from the database if grade capping is applied.

Detailed grade capping analysis based on histograms, log probability plots, and descriptive statistics assess how the mean, CV, and metal content changes with varying grade caps. The detailed results for Kharmagtai are presented in Table 20 and Table 21. Grade caps are considered appropriate and generally the grade cap applies to approximately the top 2% of the copper data and the top 1 or 2% of the gold data. The areas inside copper domains but outside gold domains (AT 99, TS 99 & ZU 99) have gold capped at 0.5g/t.

Table 20: Grade Capping for Kharmagtai Veins – Copper

Domain	Count	Mean	Max	CV	Count	# Capped	Mean	Cap	CV	% Cap	% Δ
AT D	408	0.31	2.16	0.722	408	11	0.30	0.9	0.63	2.70%	-2.2%
AT N	800	0.27	1.43	0.662	800	20	0.27	0.7	0.61	2.50%	-1.5%
AT S	1851	0.38	3.80	0.789	1851	36	0.37	1.2	0.70	1.94%	-2.1%
TS LG	1752	0.25	0.95	0.401	1752	27	0.25	0.5	0.39	1.54%	-0.5%
TS HG	45	0.57	1.07	0.317	45	1	0.57	1.0	0.31	2.22%	-0.1%
ZU	877	0.39	2.69	0.877	877	18	0.38	1.4	0.81	2.05%	-2.0%

Table 21: Grade Capping for Kharmagtai Veins - Gold

	Uncapped Composite Data				Capped Composite Data					Grade	
Domain	Count	Mean	Max	CV	Count	# Capped	Mean	Cap	CV	% Cap	% Δ
AT Au 1_2	364	0.45	4.87	1.191	364	4	0.44	2.8	1.04	1.10%	-3%
AT Au 3	588	0.32	5.22	0.965	588	1	0.31	3.3	0.83	0.17%	-1%
AT Au 4	1352	0.62	21.93	1.626	1352	14	0.60	4.4	1.25	1.04%	-4%
TS 20	1307	0.21	2.26	0.587	1307	7	0.21	0.8	0.50	0.54%	-1%
TS 21	46	0.65	2.33	0.549	46	1	0.65	2.3	0.54	2.17%	0%
Zu	525	0.64	5.17	1.280	525	10	0.61	3.1	1.15	1.90%	-4%

12.8 VARIOGRAPHY

The most important bivariate statistic used in geostatistics is the semivariogram (variogram). The experimental variogram is estimated as half the average of squared differences between data separated by a distance vector 'h'. The average squared difference for each lag distance is plotted on a bivariate plot where the X-axis is the lag distance and the Y-axis represents the average squared differences ($\Upsilon(h)$) for the nominated lag distance. Variogram models used in grade estimation should incorporate the main spatial characteristics of the underlying grade distribution at the scale at which mining is likely to occur. Variogram shapes can be modelled using a nugget (C_0) to describe the close spaced variance and by nesting several classical variogram shapes, such as the spherical or exponential shapes. The intermediate sills and ranges describe the proportion of spatial variability and the range of influence, the lower the sill and longer the range the lower the variance. The key to variogram modelling is parsimony whereby one should model variograms with as few structures as necessary to describe the continuity (Coombs 1997)

Variogram analysis was undertaken in Surpac for copper and gold within each major grade domain (Table 22, Table 23). Experimental variograms were well formed, due to the grade distribution expected in a porphyry copper gold system. The 3D experimental variograms are modelled using a nugget (C_0) and two spherical models (C_1, C_2), at chosen ranges (R_1, R_2). In some cases a single spherical model was sufficient.

The modelled variogram geometry is consistent with the interpreted mineralisation wireframes and incorporated a plunge component where identified.

Copper and gold variogram sills were standardized to 1. Nugget effects modelled for the copper variograms were generally low, ranging from 0.1 to 0.43, and the range (R2) of the variograms varied from 86 m to 210 m. Gold variograms have lower nuggets (0.05 to 0.25) and shorter ranges (71 m to 150 m). Geometric anisotropy was adopted and anisotropic ratios (ellipsoid) applied to reflect directional variograms. Anisotropic ellipses based on the resulting bearing, plunge, dip, and defined ranges and anisotropic ratios were graphically plotted in Surpac and displayed against the extracted assay composites to ensure modelled parameters were reasonably orientated. The major axis of the ellipse is orientated in the XY plane (bearing), the plunge is the angle above (+) or below (-) the XY plane, and dip defines the rotation of the semi-major axis around the major axis. The overall ranges modelled for the major axis are in excess of the drill spacing.

Table 22: Modelled Variogram Parameters for Copper

Domain	Bearing	Plunge	Dip	Nugget	Sill1	Range1	Sill2	Range 2	Semi Minor Ratio	Minor Ratio
AT-D	210	-80	10	0.24	0.02	32	0.74	86	1.2	3.25
AT-N	182	-80	-20	0.2	0.2	75	0.6	187	1.174	3.955
AT-S	220	-76	40	0.43	0.22	35	0.35	132	1.517	4.532
TS LG	110	0	-80	0.1	0.2	90	0.7	210	1	2.103
TS HG	110	0	-80	0.1	0.2	90	0.7	210	1	2.103
ZU	167	-75	20	0.13	0.2	36	0.66	104	1.117	2.976

Table 23: Modelled Variogram Parameters for Gold

Domain	Bearing	Plunge	Dip	Nugget	Sill1	Range1	Sill2	Range 2	Semi Minor Ratio	Minor Ratio
AT-D	345	76	40	0.15	0.37	55	0.48	102.5	1.836	3.455
AT-N	182	-80	40	0.1	0.29	84	0.61	137	1.364	2.184
AT-S	220	-16	30	0.25	0.11	21	0.65	140	2.821	9.587
TS LG	120	0	-80	0.23	0.23	61	0.54	150	1	2.77
TS HG	120	0	-80	0.23	0.23	61	0.54	150	1	2.77
ZU	233	-56.8	70	0.05	0.04	27.7	0.91	71	1.015	1.125
AT99	345	76	40	0.15	0.37	55	0.48	102.5	1.836	3.455
TS99	120	0	-80	0.23	0.23	61	0.54	150	1	2.77
ZU99	233	-56.8	70	0.05	0.04	27.7	0.91	71	1.015	1.125

12.9 GRADE ESTIMATION

Kriging techniques were used to estimate grade into large "parent" blocks, which were subsequently sub-blocked to give accurate volumes. Sub-blocks approach the size of the assumed Smallest Mining Unit (SMU). The estimation was tightly constrained by domain wireframes.

Ordinary kriging was used for estimation of grade for all elements in the mineralised domains. Ordinary kriging ("OK") is a robust grade estimation technique and is the main algorithm used in geostatistics. The most common use of OK is to estimate the average grades into parent blocks at the scale of the available drill hole spacing. OK is a globally unbiased estimator which produces the least error variance for grade estimates. OK does not assume stationarity of the entire sample population but utilises the local mean, thus only allowing the informing samples in the search neighbourhood to influence the estimate. Grade continuity information based on the semivariogram. OK is also able to accommodate anisotropy within the data and is able to replicate this in the parent block estimates. Another important feature of kriging is that it automatically deals with clustering of data which is important in areas where the data density is not uniform.

12.9.1 Block Model

A three dimensional block model was generated to enable grade estimation. Model block size was selected to best represent the available data (Table 24), the data characteristics (variability as defined by variography) and the envisaged mining practises. A parent block size of 20 mE x 20 mN x 20 mRL was selected to approximate half the data spacing and limit smoothing inherent in the selection of a small parent block size. Sub-blocking to a 10 mE x 10 mN x 10 mRL cell size was undertaken to allow effective volume representation of interpreted wireframe models.

Table 24: Block model parameters.

Type	Y	X	Z
Minimum Coordinates	4875750	590750	540
Maximum Coordinates	4878750	593750	1340
User Block Size (parent block)	20	20	20
Min. Block Size (sub-block)	10	10	10

12.9.1.1 Block Model Attributes

Interpreted mineralisation zones were coded to the block model. Sufficient variables were added to allow grade estimation, resource classification and reporting. The same attributes were created in each model, a complete list of block model attributes are shown in Table 25. Blocks above topography were coded as air and were not estimated. The rock code attribute only has air or rock assigned and no attempt to incorporate geological units has been made at this stage.

Table 25: Block Model Attributes

Attribute Name	Type	Decimals	Background	Description
au_id	Real	2	0	Au grade ppm by IDS
au_nn	Real	2	0	Au grade ppm by NN
au_ok	Real	2	0	Au grade ppm by OK
au_ok_un	Real	2	0	Au uncut grade ppm by OK
code_domain_au	Character	-	undf	Estimation domain for Au
code_domain_cu	Character	-	undf	Estimation domain for Cu
code_rock	Character	-	rock	Rock Type-air,rock,
cu_eq	Calculated	2	0	cu_eq = cu_ok + au_ok*0.6378
cu_id	Real	2	0	Cu grade percent by IDS
cu_nn	Real	2	0	Cu grade percent by NN
cu_ok	Real	2	0	Cu grade percent by OK
cu_ok_un	Real	2	0	Cu uncut grade percent by OK
Density	Real	2	0	Specific Gravity
Maginv	Real	6	0	magnetic inversion model result
Rescat	Character	-	undf	resource classification: 1-measured, 2-indicated, 3-inferred, 4&5-non resource mineralisation (not for report)
Weathering	Character	-	fr	Weathering Zone
zok_ads	Real	2	0	average distance to samples
zok_cbs	Real	2	0	Conditional bias slope
zok_dns	Real	2	0	distance to nearest sample
zok_ke	Real	2	0	krige efficency
zok_kv	Real	2	0	krige variance
zok_ns	Integer	-	0	number of informing samples
zok_ps	Integer	-	0	1 First Pass; 2 Second Pass Estimate

12.9.2 Search parameters

Search parameters were based on the variogram model and the dominant grade trend of mineralisation in each deposit. Mineralisation was treated as having hard boundaries, within 0.12% Cu and within 0.12% Au haloes. The assumption of hard boundaries restricts mineralisation outside the specified grade domain from influencing adjacent grade estimates.

Search radii are generally optimal at or near the distance that the variogram reaches the sill. Estimation is conducted in two passes, the first pass utilises search distances similar to the range of the variograms with semi major and minor ratios for the search axis defined from variogram analysis (Table 26 and Table 27). The second pass was universally extended to 300m and anisotropic ratios reduced to 1.2 and 2 for the semi-major and minor ratios. Minimum samples were reduced to 3 while the maximum number allowed remained the same (20).

Table 26: Search Parameters – Copper Domains

Domain	bearing	plunge	dip	Minimum samples	Maximum samples	Horizontal distance	Semi-minor Ratio	Minor Ratio
AT-D	210	-80	10	5	20	86	1.2	3.25
AT-N	182	-80	-20	5	20	187	1.174	3.955
AT-S	220	-76	40	5	20	132	1.517	4.532
TS-LG	110	0	-80	5	20	210	1	2.103
TS-HG	110	0	-80	5	20	210	1	2.103
ZU	167	-75	20	5	20	104	1.117	2.976

Table 27: Search Parameters – Gold Domains

Domain	bearing	plunge	dip	Minimum samples	Maximum samples	Horizontal distance	Semi-minor Ratio	Minor Ratio
AT-D	345	76	40	5	20	102.5	1.836	3.455
AT-N	182	-80	40	5	20	137	1.364	2.184
AT-S	220	-16	30	5	20	140	2.821	9.587
TS-LG	120	0	-80	5	20	150	1	2.77
TS-HG	120	0	-80	5	20	150	1	2.77
ZU	233	-56.8	70	5	20	71	1.015	1.125
AT99	345	76	40	5	20	102.5	1.836	3.455
TS99	120	0	-80	5	20	150	1	2.77
ZU99	233	-56.8	70	5	20	71	1.015	1.125

12.9.3 Discretisation

Discretisation is a means of correcting the OK estimate for the volume variance effect. It is used to give an indication of the size and form of the block to the kriging system. This ensures that the estimates are a good representation of the block throughout the whole block. In this case, 4 x 4 x 4 (XYZ) discretisation points were used, resulting in discretisation points creating a pseudo 3D grid of 5 m nodes within the parent block.

12.10 VALIDATION AND COMPARISON WITH PREVIOUS ESTIMATES.

12.10.1 Validation

Block models were validated by visual and statistical comparison of drill hole and block grades and through grade-tonnage analysis. Initial comparisons occurred visually on screen, using extracted composite samples or drill holes.

Nearest neighbour and ID^2 (Figure 47) estimation methods were utilised to ensure the OK estimate was not significantly globally biased. These alternate estimates provided expected correlations with kriging. Nearest neighbour showed less tonnes and higher grade in lower grade regions and increasing tonnes and increasing grade in high grade regions, as it does not employ averaging techniques to assign block grades (also known as conditional bias whereby block grades reflect individual sample grades). The ID^2 estimate was closer to kriging as it uses averaging weighted by distance, but cannot assign anisotropy nor does it decluster input data. The OK estimate is the most reliable as data is declustered and samples weighted based on variograms which incorporate anisotropy. The risk associated with kriging is to over smooth the result by using too many samples or using an inappropriate variogram (local bias). A comparison of OK results and ID^2 shows both estimates are similar.

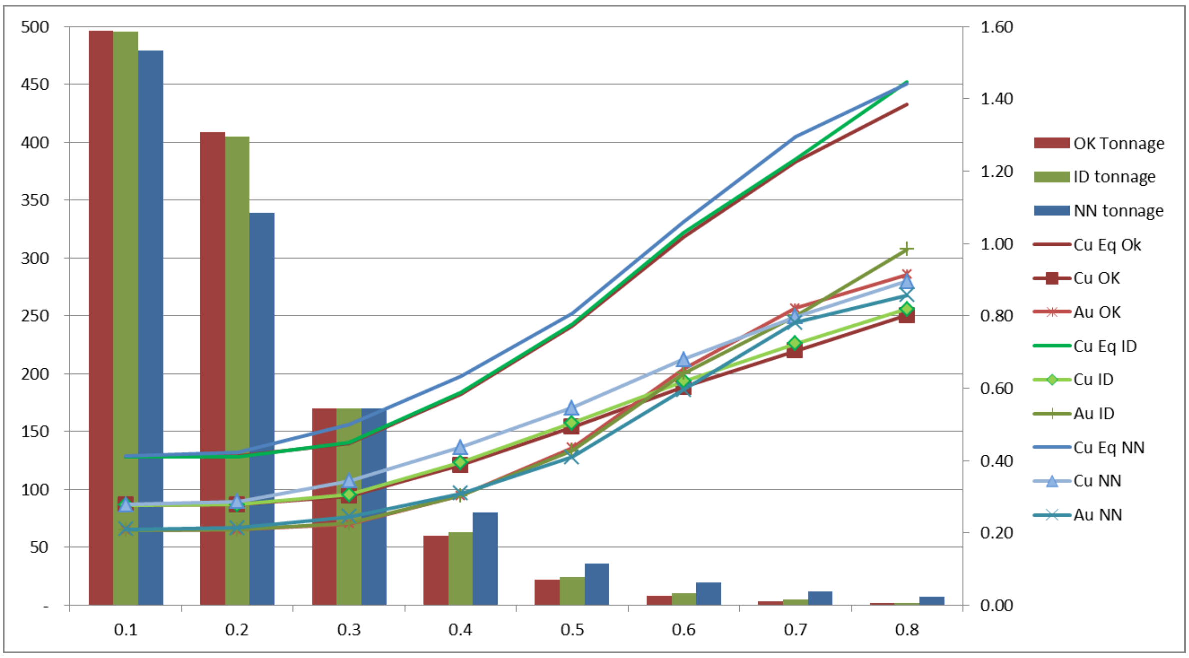


Figure 47: Grade tonnage curves resulting from different estimation techniques

Trend analysis compares informing sample mean grades and estimated mean grades within swaths through the block model in one orientation (by easting, northing or RL). Trend analysis by easting sections shows reasonable correlations between sample grades and block grades, with minimal smoothing. Altan Tolgoi shows significant smoothing of gold grades where the interpretation has been carried through sections 592530 mE to 592610 mE. Drilling has not intercepted mineralisation in this region, but it is picked up again east of 592650 mE (Figure 49 A). Tsagaan Sudal shows elevated copper grade compared to block grades between 591760 mE and 591840 mE where there is less than 30 samples per section (Figure 48 D). This trend is not seen in the gold mineralisation, however there is a high grade section (592920 mE, 14 samples) which is appropriately smoothed with data from neighbouring sections (Figure 49 D). Zesen Uul shows a high grade spike in the drill data on section 592660 mE that is not reflected in the block model (Figure 50 A, B).

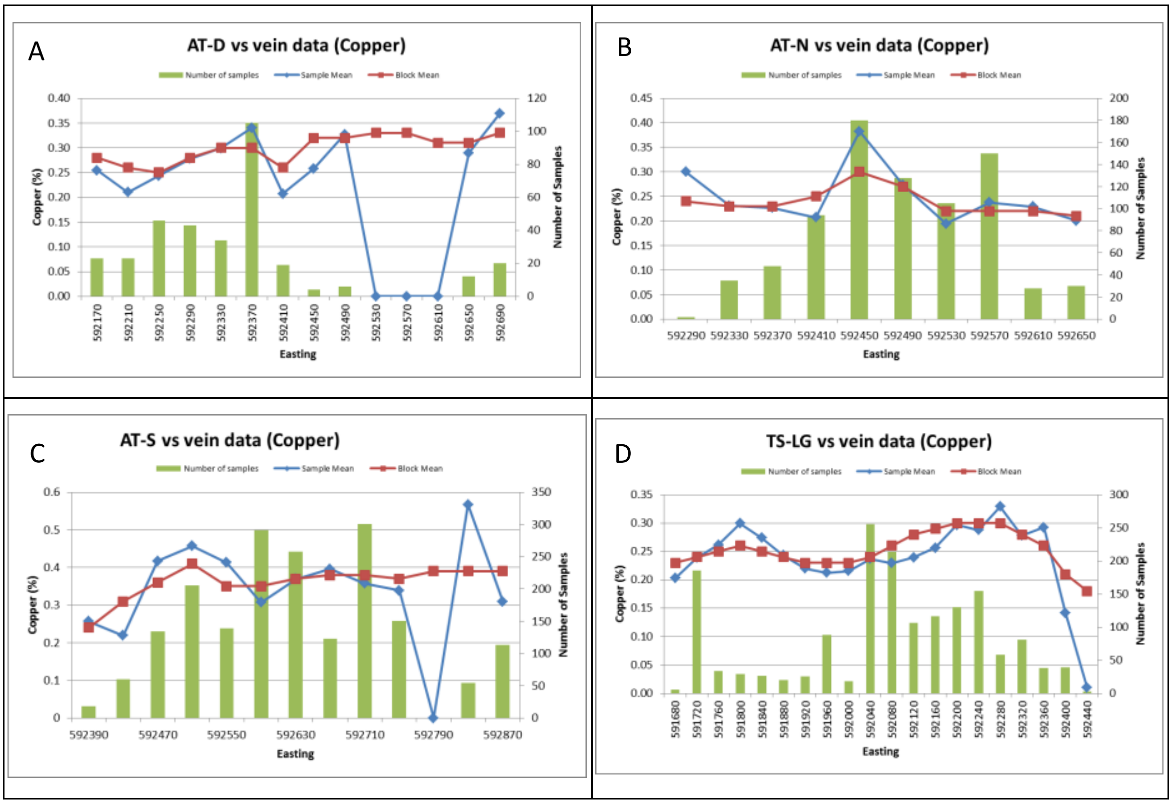


Figure 48; Trend analysis for copper domains in Altan Tolgoi and Tagaan Sudal

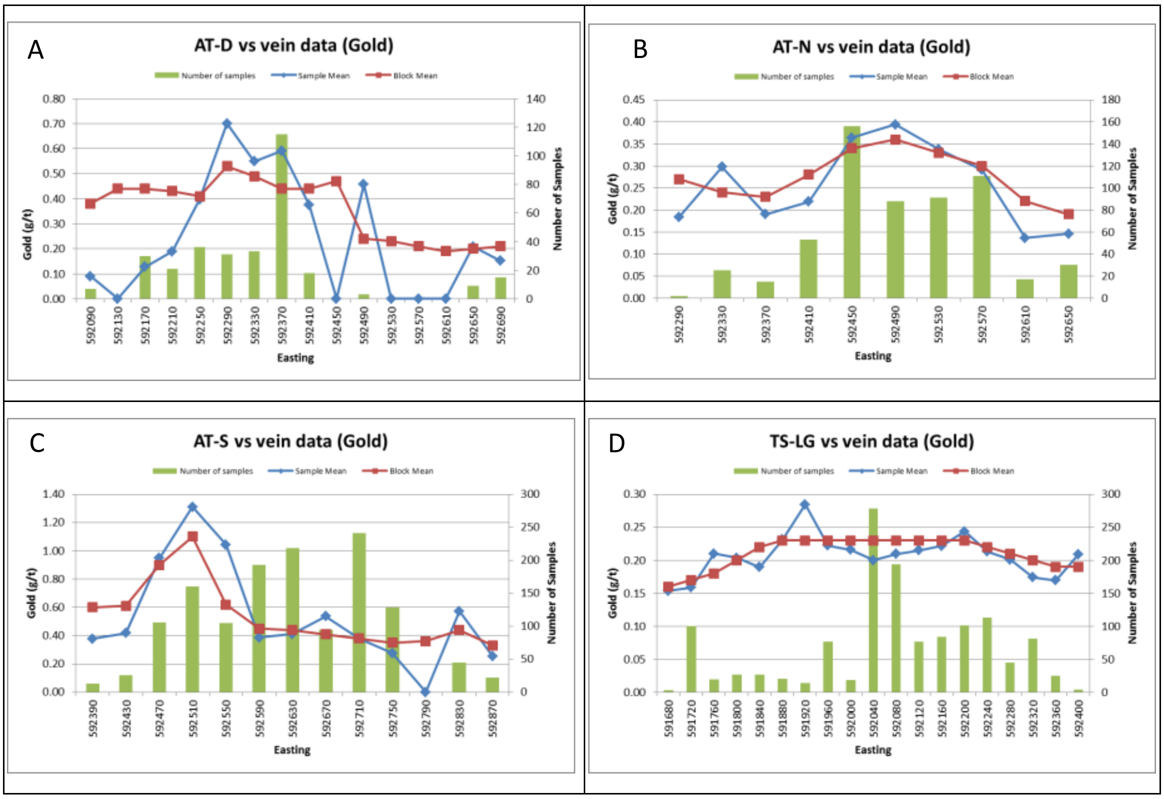


Figure 49; Trend analysis for gold domains in Altan Tolgoi and Tagaan Sudal

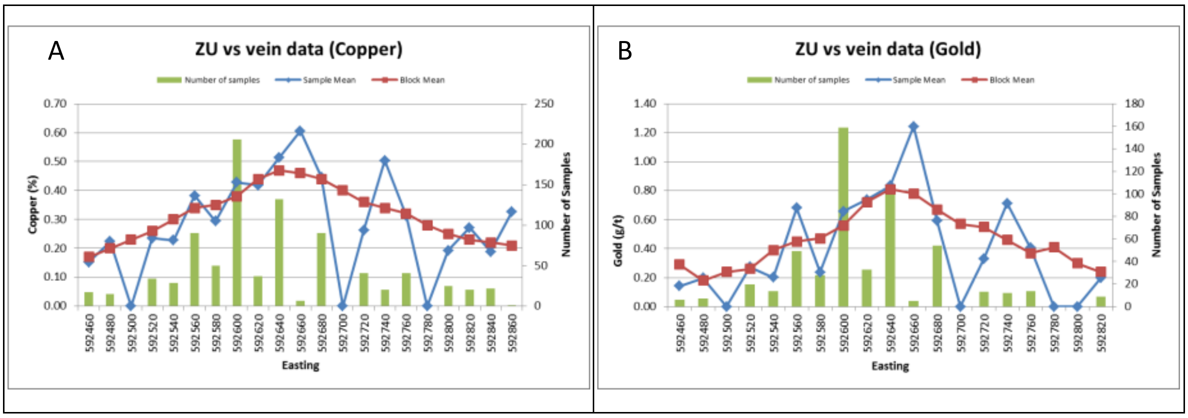


Figure 50; Trend Analysis for Zesen Uul, Copper and Gold

12.10.2 Previous resource comparisons

Two of the previous resource estimates were examined by MA and compared to the Mineral Resource. These estimates were

1. 2007 - Internal Ivanhoe estimate
2. 2012 - Estimate conducted by AMC for IMMI/AGC.

The estimates are summarised in Figure 51. For comparative purposes the 2015 resource is reported in the same manner as the 2012 AMC resource (>0.3g/t above 1000 mRL and 0.6% CuEq below 1000 mRL).

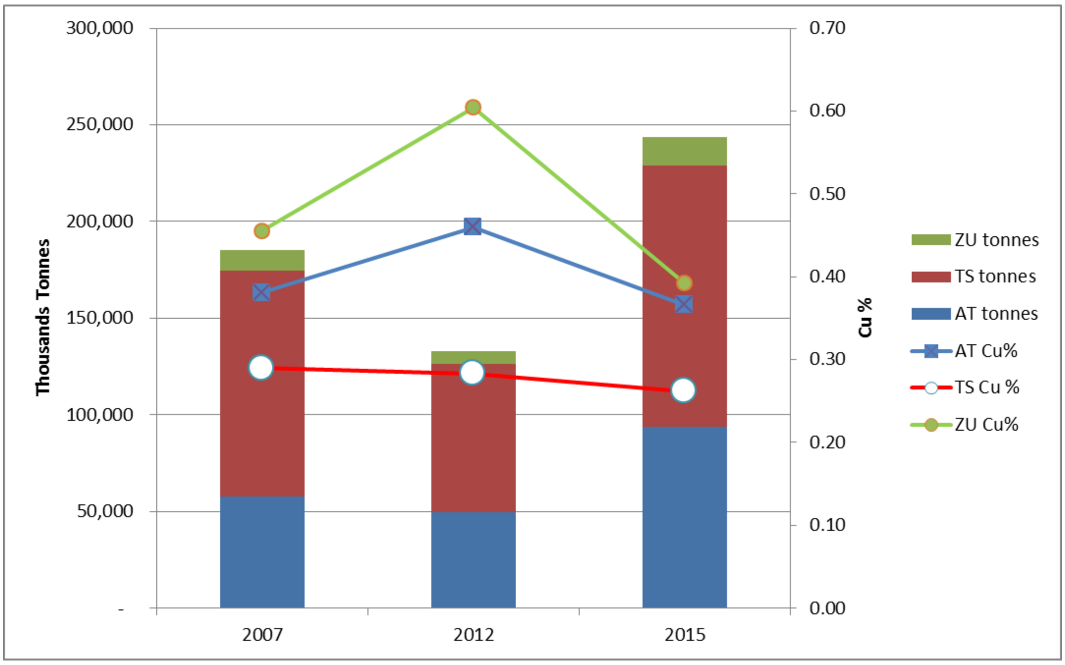


Figure 51: Comparison of historic global resource estimates and current resource area by year and deposit.

The 2012 AMC estimate excluded low grade Tsagaan Sudal mineralisation, and used a higher cut-off grade below 1,000m RL, (about 250m to 300m below the surface) which resulted in a drop in the total tonnage and increase in grade when compared with the other resources. AMC did not specify the precise methodology for defining measured resources, other than stating resource categories were based on search volumes and number of samples (Figure 52).

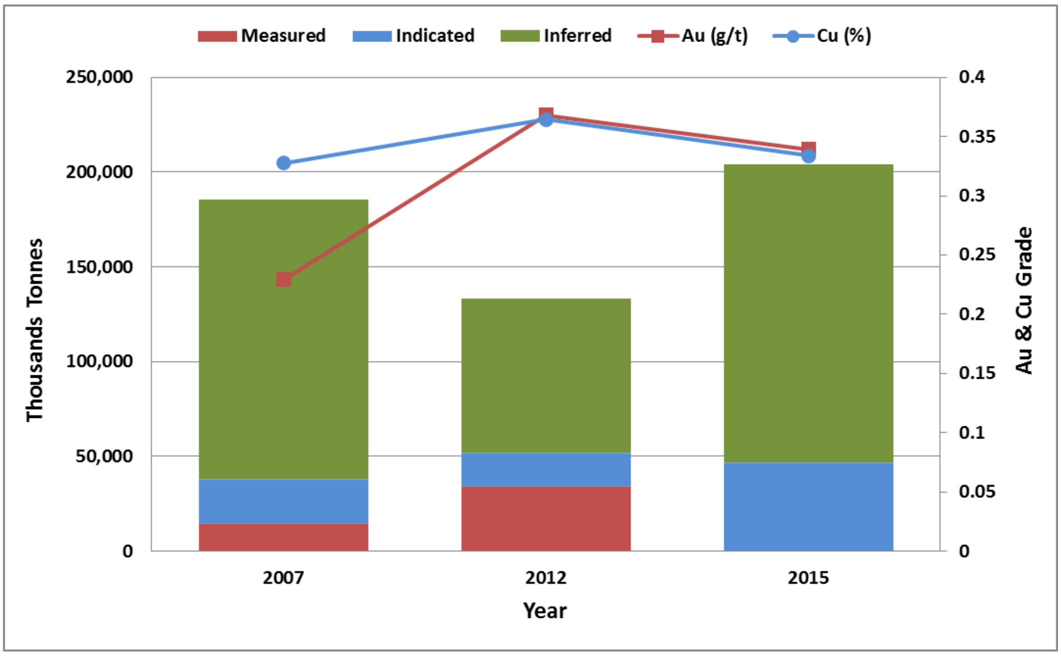
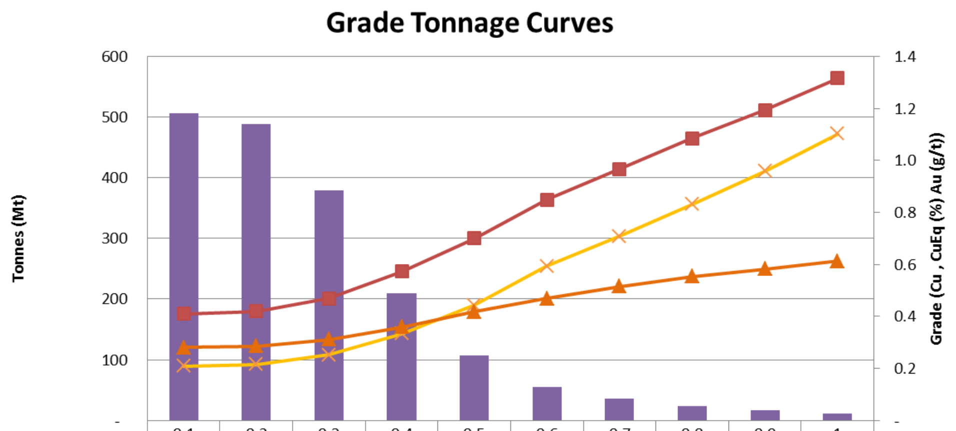


Figure 52: Comparison of resources by resource category

Historic resource estimates presented are an estimate of the quantity, grade and metal of the deposit that has not been verified as a current Mineral Resource, and which were prepared before Xanadu held an interest in the property that contains the deposits. A qualified person has not undertaken sufficient work to classify the historical estimates as current Mineral Resources. MA has quoted the historical resource estimates for information purposes only. Xanadu is not treating the historical estimates as current Mineral Resources.

12.11 ECONOMIC CUT-OFF PARAMETERS

All resources have been reported above 0.3% CuEq within a Whittle optimised pit shell (case12_sh47.dtm) and below the pit shell above 0.5 % CuEq. Parameters and assumptions used to define the Whittle pit shell are listed in Table 28. A grade tonnage curve for Kharmagtai mineralisation is shown in Figure 53, but it should be noted that no “reasonable prospects for economic extraction” test is applied to the grade tonnage curve. Xanadu is not treating the grade tonnage curve as current Mineral Resources.



	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Tonnes (Mt)	507	489	379	209	106	55	35	23	16	11
CuEq	0.41	0.42	0.47	0.57	0.70	0.85	0.97	1.08	1.19	1.32
Au	0.21	0.21	0.25	0.33	0.44	0.59	0.71	0.83	0.96	1.10
Cu	0.28	0.29	0.31	0.36	0.42	0.47	0.52	0.55	0.58	0.61

Figure 53: Grade tonnage chart, Kharmagtai block model.

A subset of the above resources were also reported using a higher cut-off grade of 0.6 % CuEq for both open pit and underground. This is intended to highlight the impact on resources on a smaller throughput mining operation. A separate Whittle optimised pit shell (case8_sh28.dtm) was used to define the boundary between open pit and underground resources.

12.11.1 Assumptions for reasonable economic extraction

Key financial assumptions used for the Whittle conceptual pit analyses of Kharmagtai are summarized in Table 28.

Table 28: Main Financial Inputs and Assumptions Used For Whittle Pit Shells 47 and 28

		Case 12 shell 47	Case 8b shell 28
METAL PRICES			
Copper	US$/lb	4.00	3.00
Gold	US$/oz	1,300	1,100
MINING			
Resource classes used		All	All
Mining Loss		5%	5%
Mining Dilution		5%	5%
Pit Wall Slopes - Overall Slope	deg	50	50
Maximum mining rate	Mtpa	20	20
Strip Ratio	Ore:waste	4:1	1:1
PROCESSING			
Mill feed rate	Mtpa	10	2
Copper recovery to concentrate		90.00%	90.00%
Gold recovery to concentrate		70.00%	70.00%
Concentrate grade - copper	%	25.00%	25.00%
Concentrate grade - gold	g/t	calculated	calculated
COSTS			
Mining cost - ore at surface	US$/t	$1.60	$1.60
Mining cost - waste at surface	US$/t	$1.50	$1.50
Mining cost - ore increase per 10m depth	US$/t	$0.03	$0.03
Mining cost - waste increase per 10m depth	US$/t	$0.04	$0.04
Process cost	US$/t ore	$10.75	$10.75
General and Admin cost	US$/t ore	$1.00	$1.00
Royalties - copper		5%	5%
Royalties - gold		5%	5%
Selling costs - copper	US$/t Cu	$1,584	$1,584
Selling costs - gold	US$/oz	$55.00	$55.00
ANALYSIS			
Discount rate		10%	7%

Material below the Whittle pit case12 shell 47 is assumed to be amenable to block cave mining techniques and a general cut off of 0.5% CuEq is applied to the resource below the Whittle pit shell.

For Whittle optimisation run case8b shell 28, a cut-off grade of 0.6% CuEq was applied to mimic a scenario in which higher grade only material was mined in both open pit and underground.

Using these parameters and assumptions the Mineral Resource may become economically extractable.

12.11.2 Copper Equivalents

Copper equivalent (CuEq) values are defined in the block model post estimation of copper and gold for each block in the model using the following formula:

CuEq = Cu (%) + Au (g/t)*0.6378

Where CuEq is copper equivalent in percentage terms

Cu (%) is copper grade

Au (g/t) is gold grade

The CuEq formula is based on a copper price of $2.60/lb, and a gold price of $1300/oz, with assumed recoveries of 90% for copper and 70.85% for gold (78.72% relative recovery of gold to copper).

12.12 BULK DENSITY

No reports, procedures, or original logging sheets were found in the files supplied to MA that describe the method of density determination used by Ivanhoe.

Xanadu's database as supplied to MA contains 4,428 measurements of specific gravity (SG) records in which "from" and "to" depths, many samples only record a "from", ie the sampled length is not recorded. However, from discussions with Xanadu geologists familiar with Ivanhoe's procedures it appears that 10 cm whole core samples were routinely used for density determinations. The non-porous nature of samples and the methodology utilised indicates that the SG readings are equivalent to dry bulk density (BD).

BD measurements were previously grouped by broad lithology code and statistically analysed by AMC 2012 (Section 8.6 Drill Core Bulk Density). Mean BD's are reasonable values for the described lithologies, most are between 2.6 t/m^3 and 2.8 t/m^3. Higher BD measurements up to 4.85 t/m^3 are related to samples taken in strong magnetite and/or sulphide alteration. BD measurements less than 2.5 t/m^3 (minimum 1.7 t/m^3) are generally related to shallow, presumably partly weathered samples and colluvium and are considered reasonable.

MA considers that the bulk densities defined in the drill hole database are reasonable to derive tonnages for resource calculations. The majority of the mineralisation occurs in monzodiorites and tourmaline breccias, for which densities range from 2.74 t/m^3 to 2.78 t/m^3. Inverse distance squared interpolation was used to estimate the density of the blocks, using a minimum of 3 and maximum of 15 informing samples and a 200 m neighbourhood search with no anisotropy was applied. For blocks not estimated the density attribute was set to 2.75 t/m^3. Histograms show a similar distribution of raw sample densities (Figure 54 A) and the block densities (Figure 54 B).

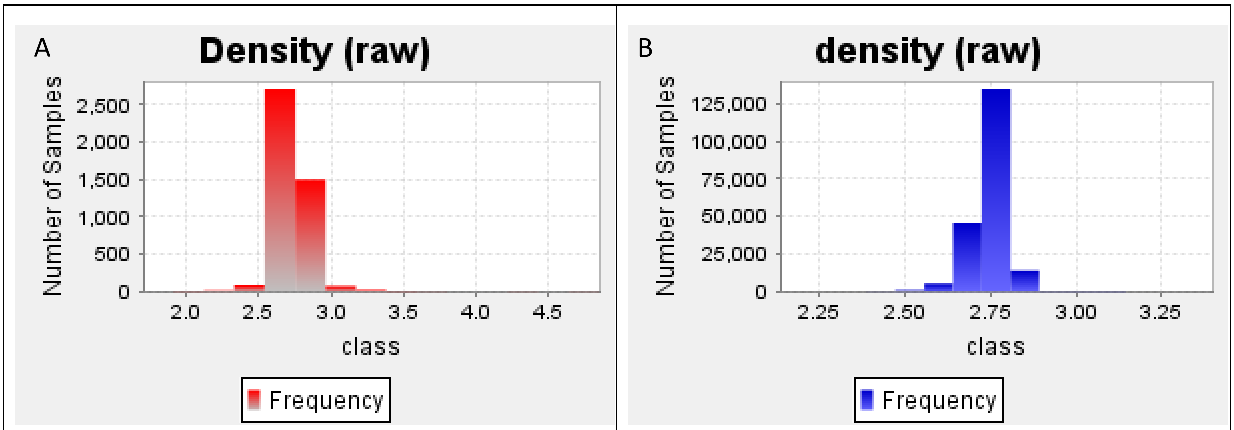


Figure 54: Histograms of Informing density samples (A) and block model (B)

12.13 MOISTURE

No measurements were recorded; all tonnes are reported as dry tonnes.

12.14 MINING & METALLURGICAL FACTORS

No mining factors have been applied to the in situ grade estimates for mining dilution or loss as a result of the grade control or mining process. No metallurgical factors have been applied to the in situ grade estimates, although assumptions about metallurgical recoveries were used in the calculation of CuEq grades.

12.15 RESOURCE CLASSIFICATION

Based on the study herein reported, delineated mineralisation of the Kharmagtai Copper Gold Project is classified as a resource according to the definitions from JORC 2012 Guidelines:

> *A 'Mineral Resource' is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories. (JORC Code 2012)*

Resource classification is based on data quality, drill density, number of informing samples, kriging efficiency, conditional bias slope, average distance to informing samples and deposit consistency (geological continuity).

The high confidence in the quality of the data justified the classification of indicated resources.

A breakdown of the Kharmagtai Copper Gold Project resource estimate by resource category and deposit is given in Table 29. The estimate has been reported above 0.3% CuEq within a Whittle optimised pit shell and below the pit shell above 0.5% CuEq.

The Resource Estimate includes a higher grade core, which is reported at a 0.6% CuEq cut-off and split between open pit within a Whittle optimised pit shell and underground outside of the pit shell. This higher grade part is broken down by resource category and deposit and shown in Table 30.

Table 29: Resource estimate by categories and deposit for the Kharmagtai Copper Gold Project, open cut (OC) at 0.3% CuEq cutoff and underground (UG) at 0.5% CuEq cutoff

Deposit	Mining Method	Cut-Off CuEq(%)	Resource Category	Material (Mt)	Grade Cu(%)	Grade Au(g/t)	Grade CuEq (%)	Metal Cu(Mlb)	Metal Au(Koz)	Metal CuEq (kt)
Altan Tolgoi	OC	0.3	Indicated	14.5	0.37	0.56	0.73	119	262	105.9
			Inferred	7.5	0.30	0.44	0.58	49	106	43.5
			Subtotal	**22.0**	**0.35**	**0.52**	**0.68**	**168**	**368**	**149.6**
	UG	0.5	Indicated	23.2	0.43	0.47	0.73	219	350	169.4
			Inferred	32.8	0.43	0.43	0.70	311	453	229.6
			Subtotal	**55.9**	**0.43**	**0.45**	**0.71**	**530**	**803**	**396.9**
	Combined		**Indicated**	**37.7**	**0.41**	**0.50**	**0.73**	**338**	**612**	**275.2**
			Inferred	**40.2**	**0.41**	**0.43**	**0.68**	**360**	**559**	**273.4**
			Total	**78.0**	**0.41**	**0.47**	**0.70**	**698**	**1,171**	**546.0**
Tsagaa n Sudal	OC	0.3	Indicated	-	-	-	-	-	-	
			Inferred	97.7	0.27	0.23	0.41	581	722	400.6
			Subtotal	**97.7**	**0.27**	**0.23**	**0.41**	**581**	**722**	400.6
	UG	0.5	Indicated	-	-	-	-	-	-	
			Inferred	17.7	0.39	0.24	0.54	152	136	95.6
			Subtotal	**17.7**	**0.39**	**0.24**	**0.54**	**152**	**136**	**95.6**
	Combined		**Indicated**	-	-	-	-	-	-	
			Inferred	**115.4**	**0.29**	**0.23**	**0.43**	**733**	**859**	**496.2**
			Total	**115.4**	**0.29**	**0.23**	**0.43**	**733**	**859**	**496.2**
Zesen Uul	OC	0.3	Indicated	8.0	0.5	0.5	0.8	84.6	138.8	64.0
			Inferred	1.4	0.3	0.1	0.4	10.5	5.4	5.6
			Subtotal	**9.4**	**0.46**	**0.48**	**0.76**	**95**	**144**	**71.4**
	UG	0.5	Indicated	0.6	0.4	0.4	0.7	5.7	8.8	4.2
			Inferred	0.1	0.3	0.5	0.6	0.5	1.3	0.6
			Subtotal	**0.7**	**0.40**	**0.44**	**0.67**	**6**	**10**	**4.7**
	Combined		**Indicated**	**8.6**	**0.47**	**0.53**	**0.81**	**90**	**148**	**69.7**
			Inferred	**1.5**	**0.34**	**0.14**	**0.42**	**11**	**7**	**6.3**
			Total	**10.1**	**0.45**	**0.47**	**0.75**	**101**	**154**	**75.8**
All	**OC**	**0.3**	**Indicated**	**23**	**0.41**	**0.55**	**0.76**	**203**	**401**	**174.8**
			Inferred	**107**	**0.27**	**0.24**	**0.42**	**641**	**833**	**449.4**
			Subtotal	**129**	**0.30**	**0.30**	**0.48**	**844**	**1,234**	**619.2**
	UG	**0.5**	**Indicated**	**24**	**0.43**	**0.47**	**0.73**	**225**	**359**	**175.2**
			Inferred	**51**	**0.42**	**0.36**	**0.64**	**463**	**591**	**326.4**
			Subtotal	**74**	**0.42**	**0.40**	**0.67**	**688**	**950**	**495.8**
	Combined		**Indicated**	**46**	**0.42**	**0.51**	**0.74**	**428**	**759**	**340.4**
			Inferred	**157**	**0.32**	**0.28**	**0.49**	**1,104**	**1,424**	**769.3**
			Total	**203**	**0.34**	**0.33**	**0.55**	**1,533**	**2,184**	**1116.5**

Table 30: Resource estimate by categories and deposit for the Kharmagtai Copper Gold Project above 0.6% CuEq for open cut (OC) and underground (UG).

Deposit	Mining	Cut-Off	Resource	Material	Grade			Metal		
	Method	CuEq(%)	Category	(Mt)	Cu(%)	Au(g/t)	CuEq(%)	Cu(Mlb)	Au(Koz)	CuEq (kt)
Altan Tolgoi	OC	0.6	Indicated	4.7	0.47	0.92	1.06	49	140	49.8
			Inferred	1.2	0.38	0.88	0.95	10	33	11.4
			Subtotal	**5.9**	**0.45**	**0.91**	**1.04**	**59**	**173**	**61.4**
	UG	0.6	Indicated	19.0	0.46	0.57	0.83	193	349	157.7
			Inferred	22.1	0.46	0.52	0.79	224	369	174.6
			Subtotal	**41.1**	**0.46**	**0.54**	**0.81**	**417**	**718**	**332.9**
	Combined		**Indicated**	**23.8**	**0.46**	**0.64**	**0.88**	**242**	**489**	**209.4**
			Inferred	**23.3**	**0.46**	**0.54**	**0.80**	**234**	**402**	**186.4**
			Total	**47.0**	**0.46**	**0.59**	**0.84**	**476**	**891**	**394.8**
Tsagaan Sudal	OC	0.6	Indicated	-	-	-	-	-	-	
			Inferred	0.1	0.41	0.32	0.61	1	1	0.6
			Subtotal	**0.1**	**0.41**	**0.32**	**0.61**	**1**	**1**	**0.6**
	UG	0.6	Indicated	-	-	-	-	-	-	
			Inferred	3.6	0.48	0.41	0.74	38	48	26.6
			Subtotal	**3.6**	**0.48**	**0.41**	**0.74**	**38**	**48**	**26.6**
	Combined		**Indicated**	-	-	-	-	-	-	
			Inferred	**3.7**	**0.48**	**0.41**	**0.74**	**39**	**48**	**27.4**
			Total	**3.7**	**0.48**	**0.41**	**0.74**	**39**	**48**	**27.4**
Zesen Uul	OC	0.6	Indicated	4.1	0.6	0.8	1.1	52.8	107.6	45.1
			Inferred	0.1	0.4	0.4	0.6	0.7	0.9	0.6
			Subtotal	**4.2**	**0.58**	**0.80**	**1.09**	**54**	**109**	**45.8**
	UG	0.6	Indicated	0.9	0.5	0.7	0.9	9.8	19.3	8.1
			Inferred	0.0	0.3	0.6	0.7	0.3	0.7	0.0
			Subtotal	**1.0**	**0.47**	**0.65**	**0.88**	**10**	**20**	**8.8**
	Combined		**Indicated**	**5.1**	**0.56**	**0.78**	**1.06**	**63**	**127**	**54.1**
			Inferred	**0.1**	**0.39**	**0.44**	**0.67**	**1**	**2**	**0.7**
			Total	**5.2**	**0.56**	**0.77**	**1.05**	**64**	**129**	**54.6**
All	**OC**	**0.6**	**Indicated**	**9**	**0.52**	**0.87**	**1.08**	**102**	**248**	**97.2**
			Inferred	**1**	**0.38**	**0.82**	**0.92**	**11**	**34**	**9.2**
			Subtotal	**10**	**0.50**	**0.86**	**1.06**	**113**	**282**	**106.0**
	UG	**0.6**	**Indicated**	**20**	**0.46**	**0.57**	**0.83**	**203**	**368**	**166.0**
			Inferred	**26**	**0.46**	**0.50**	**0.78**	**263**	**418**	**202.8**
			Subtotal	**46**	**0.46**	**0.53**	**0.80**	**465**	**786**	**368.0**
	Combined		**Indicated**	**29**	**0.48**	**0.66**	**0.91**	**305**	**616**	**263.9**
			Inferred	**27**	**0.46**	**0.52**	**0.79**	**274**	**452**	**213.3**
			Total	**56**	**0.47**	**0.59**	**0.85**	**578**	**1,068**	**476.0**

For the classification of Mineral Resources for the Kharmagtai project the definitions summarized in Table 31 were adopted and applied to each domain separately.

Table 31: Resource Classification Criteria

Resource Criteria	Inferred	Indicated	Measured
Drilling and Sampling	Drill spacing is close enough to determine extents or limits of drilled mineralisation. Sample location is known to within 5m. Drill collars are picked up with GPS or chain and compass from a control station.	Drill spacing is close enough to give reasonable interpretation of geological boundaries and regional structures. Drill spacing is sufficient to define mineralised volume suitable for mine planning and or feasibility study. Sample locations are known to within 3m. Survey collars are picked up with DGPS or total station. Drill density better than 40 x 40 m drill pattern	Drill hole spacing is close enough to determine the position of key geological boundaries and structural features at the precision required for mine planning with the proposed mining method considered. Sufficient drill density to define mineralised volumes suitable for grade controlled mill feed. Sample locations are known to within 1m. Survey collars are picked up with DGPS or total station. Drilling of waste and ore. Drill density approximating 20 x 20 m drill pattern.
Sample Preparation and Analysis	Sample size, sample preparation, analytical methods, data validation checked with an initial QA/QC programme to give an idea of precision and accuracy. Minimum of field blanks and duplicates, Intra-lab repeats and field standards.	Sample size, sample preparation, analytical methods, data validation checked with a consistent QA/QC programme to give an idea of precision and accuracy. Minimum of field blanks and duplicates including certified standard reference material Intra-lab repeats and inter-lab check repeats. A full audit trail to data stored in the database. Spot checks of secondary mineralisation.	Sample size, sample preparation, analytical methods, data validation checked with a comprehensive QA/QC programme to measure the precision and accuracy through each step of the sampling and analysis process. QA/QC should be properly prepared (certified) standard samples, blanks, duplicates, intra-lab repeat assays, inter-lab repeat assays. All elements of economic importance are monitored.
Geological Logging	Geological logs are available for legacy and current logging. Reference samples to define rock types	Standard logging protocols are used, with reference samples to define ore types. Major faults/folds, structural features noted. Lithology, weathering, alteration mineralogy are identified. Major contacts accurately placed.	Standard logging protocols are used, with reference samples to define ore types. Major faults/folds, structural features noted. Lithology, weathering, alteration mineralogy are identified. Major contacts accurately placed. Geotechnical and metallurgical drilling exists. Associated reports provided.
Database Construction	Database contains relevant data, coded to identify source, age, and drill type. Database has internal validation procedures (such as provided in Surpac) Database has been independently audited and spot checked	Database contains relevant data, coded to identify source, age, and analytical methods used. QA/QC data provided and analysed regularly throughout the drill programmes. Documented QA/QC procedures and regular QA/QC reports. Database has internal validation procedures (such as provided in Surpac) Database has been independently audited and spot checked.	Database contains relevant data, coded to identify source, age, drill methods and assay methods used. Database has internal validation procedures (such as provided in Surpac) Database has been independently audited and spot checked (5%).
Interpolation	Block grades estimated within domains using appropriate estimation techniques, within 3D wireframes representing interpreted mineralisation. (checked by alternate estimation methods)	Block grades estimated within domains using appropriate estimation techniques within 3D wireframes representing interpreted mineralisation. (checked by alternate estimation methods) Infill drilling (scissor and twin holes) to test geological interpretation. Quantitative kriging neighbourhood analysis has been completed as a validation check.	Block grades estimated within domains using appropriate estimation techniques within 3D wireframes representing interpreted mineralisation. (checked by alternate estimation methods) Infill drilling (including scissor and twin holes) to test geological interpretation. Close space sampling pattern to determine short range variograms. Quantitative kriging neighbourhood analysis has been completed as a validation check.
Estimation Parameters	Blocks are informed by the minimum number of informing samples. Two estimation passes are permitted, the 2nd pass, however nearest sample must be less than 150m. Conditional bias slope is low (>0.2)	Major search axis defined by the variogram ranges. Blocks are informed by a minimum of 5 samples, nearest sample is generally within 100m. Krige variances are generally low with few mid-range krige variances permitted if there is sufficient confidence in the geological interpretation. Conditional bias slopes are moderate.	Major search axis defined by the variogram ranges. Blocks are informed by the maximum number of informing samples, the majority of blocks have a sample within 30m. The average distance to all informing samples is generally within 50m. Conditional bias Slope is high (0.8).

12.16 MINERAL RESOURCE ESTIMATE STATEMENT

JORC 2012 categorised Mineral Resources for the Kharmagtai Copper Gold Project have been classified as Indicated and Inferred confidence categories on a spatial, areal and zone basis and are listed in Table 32. The Kharmagtai Copper Gold Project contains total Mineral Resources of 203.4 Mt at 0.34 % Cu and 0.33 g/t Au for 1,533 Mlb Cu and 2,184 Koz Au.

The Resource Estimate includes a higher grade core of 56Mt @ 0.47% Cu and 0.59g/t Au (0.85% Cu equivalent) for a contained metal content of 580Mlb Cu and 1.1Moz Au. The higher grade core is reported at a 0.6% CuEq cut-off and split between open pit within a Whittle optimised pit shell and underground outside of the pit shell (Table 33).

Table 32. Summary Resources of Kharmagtai Project at 28 February 2015, Cut-Off 0.3% CuEq within Whittle Pit Shell and 0.5% CuEq Below Whittle Pit Shell.

Deposit	Mining Method	Cut-Off CuEq(%)	Resource Category	Material (Mt)	Grade			Metal	
					Cu(%)	Au(g/t)	CuEq(%)	Cu(Mlb)	Au(Koz)
All	OC	0.3	Indicated	23	0.41	0.55	0.8	203	401
			Inferred	107	0.27	0.24	0.4	641	833
			Subtotal	**129**	**0.30**	**0.30**	**0.5**	**844**	**1,234**
	UG	0.5	Indicated	24	0.43	0.47	0.7	225	359
			Inferred	51	0.42	0.36	0.6	463	591
			Subtotal	**74**	**0.42**	**0.40**	**0.7**	**688**	**950**
	Combined		Indicated	46	0.42	0.51	0.7	428	759
			Inferred	157	0.32	0.28	0.5	1,104	1,424
			Total	203	0.34	0.33	0.6	1,533	2,184

Table 33. Summary Resources of Kharmagtai Project at 28 February 2015, Cut-Off 0.6% CuEq within and below Whittle Pit Shell.

Deposit	Mining Method	Cut Off CuEq(%)	Resource Category	Material (Mt)	Grade			Metal	
					Cu(%)	Au(g/t)	CuEq(%)	Cu(Mlb)	Au(Koz)
All	OC	0.6	Indicated	9	0.52	0.87	1.1	102	248
			Inferred	1	0.38	0.82	0.9	11	34
			Subtotal	**10**	**0.50**	**0.86**	**1.1**	**113**	**282**
	UG	0.6	Indicated	20	0.46	0.57	0.8	203	368
			Inferred	26	0.46	0.50	0.8	263	418
			Subtotal	**46**	**0.46**	**0.53**	**0.8**	**465**	**786**
	Combined		Indicated	29	0.48	0.66	0.9	305	616
			Inferred	27	0.46	0.52	0.8	274	452
			Total	56	0.47	0.59	0.9	578	1,068

Note: According to Clause 27 of the JORC Code 2012 edition: "in a public report of a Mineral Resource for a significant project for the first time, or when those estimates have materially changed from when they were last reported, a brief summary of the information in relevant sections of Table 1 must be provided". Table 1 is included in Appendix 1 of this report and must accompany any reporting of Mineral Resources.

"The information in this report that relates to Mineral Resources is based on information compiled by Andrew Vigar who is a Member of The Australasian Institute Geoscientists and is employed by Mining Associates Pty Ltd. Mr Vigar has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Vigar consents to the inclusion in the report of the matters based on his information in the form and context in which it appears".

13 REFERENCES

AMC, 2012. Kharmagtai Mineral Resource Estimate Technical Report. Report prepared for Ivanhoe Ulaan Pte Ltd, dated December 2012. 170p

Atkinson, J. 1998. 1997 exploration report, Ovoot Hyar area-Harteeg Exploration License, Republic of Mongolia. Quincunx Gold Exploration Ltd. Internal Report, 58 p.

Atkinson, J., Germundson, K. and Setterfield, T. 1998a. 1997 exploration report, Kharmagtai area-Harteeg Exploration License, Republic of Mongolia. Quincunx Gold Exploration Ltd. Internal Report, 86 p.

Atkinson, J., Turcotte, D. and Sills, T. 1998b. 1997 geochemical survey report, Harteeg Exploration License, Republic of Mongolia. Quincunx Gold Exploration Ltd. Internal Report, 40 p.

Atkinson. J. and Setterfield, T. 1998. 1998 exploration report, Kharmagtai-Ovoot Hyar area-Harteeg Exploration License, Republic of Mongolia. Quincunx Gold Exploration Ltd. Internal Report, 60 p.

Badarch, G, Cunningham, WD, Windley, BF, 2002. A new terrane subdivision for Mongolia: implications for the Phanerozoic crustal growth of Central Asia. *Journal of Asian Earth Sciences* 21, 87-110.

Baker, M, 2004. Kharmagtai 2004 Quickbird Interpretation. Consultant report for Ivanhoe Mines Mongolia.

Crane, D and Kavalieris, I, 2013. Geologic Overview of the Oyu Tolgoi Porphyry Cu-Au_Mo Deposits, Mongolia, pp 187-213. Littleton: Society of Economic Geologists.

Coombes, J, 1997. Handy Hints for Variography. National Conference on Iron Making, Resources and Reserves Estimation (pp. 172-130). Melbourne: AusIMM

Goldenberg, B.I., Sanjaadorj, D. and 17 others. 1978. Summary of report of the result of geological group mapping work at a scale of 1:200,000 conducted in the territories of Umnugovi, Dundgovi and Dornogovi aimags of Mongolia from 1974 to 1977. Report 2724, Geological Information Center, Mongolian Geological Survey, 213 p. (in Russian).

Ivanhoe, 2005. Kharmagtai Project Resource Estimate for Altan Tolgoi, Tsagaan Sudal and Zesen Uul Projects. Internal report for Ivanhoe Mines Mongolia, author Price, N, 13 p.

Ivanhoe, 2007. 2007 Progress Report, Kharmagtai Project, Mongolia. Internal report for Ivanhoe Mines Mongolia, author Wolfe, R, 56p.

Jargalan, S, Fujimaki, H, Hedenquist, J W and Kirwin, D J, 2006. Report on petrochemistry, alteration and mineralization of Kharmagtai gold copper porphyry district, report to Ivanhoe Mines Ltd (unpublished).

JICA, 1995. Report on the mineral exploration in the Altan Tal area, Mongolia, Consolidated Report. Unpublished report, Japan International Cooperation Agency, 264 p.

Kirwin D, Wilson C, Ketaren A, Wilson P, 2003. First Progress Report Kharmagtai / Ovoot Hyar Projects, Mongolia. Ivanhoe Mines Mongolia Internal Report.

Kirwin D.J., Forster C.N., Kavalieris I., Crane D., Orssich C., Panther C., Garamjav D., Munkhbat T.O., G.Niislelkhuu, 2005a. The Oyu Tolgoi copper-gold porphyry deposits, South Gobi, Mongolia. In Seltmann, R. Gerel, O. and Kirwin, D.J. (Eds), 2005: Geodynamics and Metallogeny of Mongolia with a special emphasis on copper and gold deposits: IAGOD Guidebook Series 11, CERCAMS/NHM London, p. 155-168.

Kirwin DJ, Wilson, C.C., Turmagnai and Wolfe, R, 2005b. Exploration history, geology, and mineralisation of the Kharmagtai gold-copper porphyry district, South Gobi Region, Mongolia. In Seltmann, R. Gerel, O. and Kirwin, D.J. (eds), 2005: Geodynamics and Metallogeny of Mongolia with a special emphasis on copper and gold deposits: IAGOD Guidebook Series 11, CERCAMS/NHM London, p. 175-191.

Kirwin, DJ, 1997. Aerial Reconnaissance, Mongolia. IndoChina Goldfields Ltd., internal company report.

Kirwin, DJ, Wilson, C, Ketaren and Wilson P, 2003. Third Progress Report, Khamagati Project, Mongolia. Report for Ivanhoe Mines Mongolia (unpubl.).

Kirwin, DJ, Wilson, C. and Worsley, M, 2001. Aerial Reconnaissance Survey, Central Mongolia. Internal IMMI report, July 2001.

Lamb, MA and Badarch, G, 1997. Palarozoic sedimentary basins and volcanic arc systems of southern Mongolia: new stratigraphic and sedimentologic constraints. *International Geology Review* 39, 542-576.

Orssich, C, 2012. Kharmagati 2011 Exploration Review. Internal IMMI report, October 2012.

Perelló, J, Cox, D, Garamjav, D, Sanjdorj, S, Diakov, S, Schissel, D, Munkhbat, T and Oyun, G, 2001. Oyu Tolgoi, Mongolia: Siluro-Devonian porphyry Cu-Au-(Mo) and highsulfidation mineralisation with a Cretaceous chalcocite blanket. Economic Geology, v.96, pp.1407-142

Roscoe, W.E. and MacCormack, L.V. 1997. Report on the Harteeg/Shuteen gold project, Gobi desert region, Mongolia for Quincunx Gold Exploration Ltd. Quincunx Gold Exploration Ltd. Internal Report, 37 p.

Rowe G, and Shouldice T, 2008. Preliminary metallurgical assessment of metallurgical composites – Ivanhoe Mines Ltd – Oyu Tolgoi Project, Mongolia. G&T Metallurgical Services (Internal Report).

Ruzhentsev, SV and Pospelov II, 1992. The South Mongolian Variscan fold system. *Geotectonics* 19 (4), 276-284.

Setterfield, T, Turcotte, D and Willoughby, N, 2000. 1999 exploration report, ShuteenExploration License, Republic of Mongolia. Quincunx Gold Exploration Ltd. Internal Report, 31 p.

Shabalovski, AY, Alyshev, AN and Gorbunov, AG, 1978. Report on results of exploration, evaluation and revision works copper in South Gobi ore region in 1976-1977. Report 2648, Geological Information Center, Mongolian Geological Survey, 199 p. (in Russian)

Shabalovski, AY, Yudin, I.M. and Gorbunov, AG, 1976. Report on results of exploration and evaluation works in South Gobi Cu-Mo region of Mongolian People’s Republic. Report 2267, Geological Information Center, Mongolian Geological Survey, 171 p. (in Russian)

Sharkhuu, L. 1980. Report on results of exploration and evaluation works with the scale of 1:50,000, 1:10,000 conducted in Kharmagtai copper ore field in 1979-1980. Report 3366, Geological Information Center, Mongolian Geological Survey, 159 p. (in Russian)

Shmelyov, YS, Panyev, VI, Gavrilov, YM, Tatauzov, VD and Chuvilin, VA, 1983. Results of aerogeophysical survey at scale 1:200,000, carried out on Manlai area. Report 2455, Geological Information Center, Mongolian Geological Survey, 150 p. (in Russian)

Sketchley, D, 2007. Kharmagtai Survey and Assay Data Checking. Internal IMMI report, November 2007.

Wilson, P, 2005. Sampling, Quality Control and data analysis - Exploration Projects – Drilling. Internal IMMI report, December 2005.

Wolfe, R and Wilson, C, 2003. Third Progress Report, Khamagati Project, Mongolia. Report for Ivanhoe Mines Mongolia (unpubl.).

Wolfe, R, 2004. 2004 Project Report, Regional Drilling Kharmagtai Project, Mongolia. Internal Report for Ivanhoe Mines Mongolia (unpubl.). MR-2004-14.

Wolfe, R, 2006a. 2006 Progress Report, Exploration Recommendations, Kharmagtai Project, Mongolia. Internal report for Ivanhoe Mines Mongolia (unpubl.). MR-2006-01.

Wolfe, R, 2006b. Tsagaan Sudal – comments on geology. Internal memo for Ivanhoe Mines Mongolia. Memo-060515-lic3659-Tsagaan Sudal Relog-RW.

Wolfe, R, 2007. Kharmagtai Project – Phase 1 dipole-dipole targets. Internal memo for Ivanhoe Mines Mongolia (unpubl.). Memo-070319-Kharmagtai-DrillPlans-RW.

Sillitoe, RH, 1973. Geology of the Los Pelambres porphyry copper deposits. Economic Geology, V68, pp 1-10.

Skews, MA, Holmgren, C., and Stern, CR, 2003. The Donoso copper rich tourmaline-bearing breccia pipe uin central Chile; petrologic, fluid inclusion and stable isotope evidence for an origin from magmatic fluids. Mineralium Deposita. V38, pp2-21

Watanabe, Y and Stein, H, 2000. Re-Os ages for the Erdenet and Tsagaan Suvarga porphyry Cu-Mo deposits, Mongolia and tectonic implications. *Economic Geology* 95, 1537-1542.

Zweng, PL and Clark, AH, 1995. Hypogene evolution of the Toquepala porphyry copper-molybdenum deposit, Moquequa, southeastern Peru. In Pierce, F. W. and Bolm, J.G., eds., Porphyry copper deposits of the American Cordillera. Arizona Geological Society Digest, 20, pp. 566-612.

COMPETENT PERSON'S CONSENT FORM

Pursuant to the requirements of ASX Listing Rules 5.6, 5.22 and 5.24 and Clause 9 of the JORC Code 2012 Edition (Written Consent Statement)

Report Title: **Mineral Resource Estimate Report for the Kharmagtai Copper Gold Project, Mongolia**. Prepared by Mining Associates Limited for Xanadu Mines Ltd, ("the Report").

I, Andrew James Vigar confirm that I am the Competent Person for the Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code 2012 Edition, having at least five years' experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Member of the Australian Institute of Geoscientists
- I have reviewed the Report to which this Consent Statement applies.

I am the Director of Mining Associates Pty Ltd, and have been engaged by Xanadu Mines Ltd to prepare the documentation for the Kharmagtai Copper Gold Project on which the Report is based, for the period ended 30th April 2015

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Mineral Resources

CONSENT

I consent to the release of the Report and this Consent Statement by the directors of Xanadu Mines Ltd

Signature of Competent Person:

Andrew J Vigar

Signature of Witness:

Ian Taylor, Brisbane

Professional Membership: Australian Institute of Geoscientists

Membership Number:

Date: 30/04/2015

Appendix 1 - JORC Code, 2012 Edition – Table 1

JORC Table 1 - Section 1 - Sampling Techniques and Data

Criteria	JORC Code (Section 1) Explanation	Commentary
Sampling techniques	• Nature and quality of sampling and assaying. • Measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. • Aspects of the determination of mineralisation that are Material to the Public Report.	• The resource estimate is based on diamond drill core samples only. • Representative 2 meter samples were taken from ½ NQ or HQ diamond core. • Only assay result results from recognised, independent assay laboratories were used in Resource calculation after QA/QC was verified.
Drilling techniques	• Drill type and details.	• Diamond core drilling has been the primary drilling method.
Drill sample recovery	• Method of recording and assessing core and chip sample recoveries and results assessed. • Measures taken to maximise sample recovery and ensure representative nature of the samples. • Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	• DDH core recoveries have been very good, averaging between 97% and 99% for all of the deposits. In localized areas of faulting and/or fracturing the recoveries decrease; however this is a very small percentage of the overall mineralised zones. • Recovery measurements were collected during all DDH programs. The methodology used for measuring recovery is standard industry practice. • Analysis of recovery results vs. grade indicates no significant trends. Indicating bias of grades due to diminished recovery and / or wetness of samples.
Logging	• Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. • Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. • The total length and percentage of the relevant intersections logged.	• Drill samples are logged for lithology, mineralisation and alteration and geotechnical aspects using a standardised logging system, including the recording of visually estimated volume percentages of major minerals. • Drill core was photographed after being logged by a geologist. • The entire interval drilled has been logged by a geologist.
Sub-sampling techniques and sample preparation	• If core, whether cut or sawn and whether quarter, half or all core taken. • If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	• DDH Core is cut in half with a diamond saw, following the line marked by the geologist. The rock saw is regularly flushed with fresh water. • Sample intervals are a constant 2m interval down-hole in length.

Criteria	JORC Code (Section 1) Explanation	Commentary
	• For all sample types, the nature, quality and appropriateness of the sample preparation technique. • Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. • Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling. • Whether sample sizes are appropriate to the grain size of the material being sampled.	• Routine sample preparation and analyses of DDH samples were carried out by SGS Mongolia LLC (SGS Mongolia), who operates an independent sample preparation and analytical laboratory in Ulaanbaatar. • All samples were prepared to meet standard quality control procedures as follows: Crushed to 90% passing 3.54 mm, split to 1kg, pulverised to 90% - 95% passing 200 mesh (75 microns) and split to 150g. • Certified reference materials (CRMs), blanks and pulp duplicate were randomly inserted to manage the quality of data. • Sample sizes are well in excess of standard industry requirements.
Quality of assay data and laboratory tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. • For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. • Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	• All samples were routinely assayed by SGS Mongolia for gold, copper, silver, lead, zinc, arsenic and molybdenum. • Au is determined using a 30g fire assay fusion, cupelled to obtain a bead, and digested with Aqua Regia, followed by an atomic absorption spectroscopy (AAS) finish, with a lower detection (LDL) of 0.01 ppm. • Cu, Ag, Pb, Zn, As and Mo were routinely determined using a three-acid-digestion of a 0.3g sub-sample followed by an AAS finish (AAS21R). Samples are digested with nitric, hydrochloric and perchloric acids to dryness before leaching with hydrochloric acid to dissolve soluble salts and made to 15ml volume with distilled water. The LDL for copper using this technique was 2ppm. Where copper is over-range (>1% Cu), it is analysed by a second analytical technique (AAS22S), which has a higher upper detection limit (UDL) of 5% copper. • Quality assurance was provided by introduction of known certified standards, blanks and duplicate samples on a routine basis. • Assay results outside the optimal range for methods were re-analysed by appropriate methods. • Ore Research Pty Ltd certified copper and gold standards have been implemented as a part of QA/QC procedures, as well as

Criteria	JORC Code (Section 1) Explanation	Commentary
		coarse and pulp blanks, and certified matrix matched copper--gold standards. • QA/QC monitoring is an active and ongoing processes on batch by batch basis by which unacceptable results are re-assayed as soon as practicable.
Verification of sampling and assaying	• The verification of significant intersections by either independent or alternative company personnel. • The use of twinned holes. • Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. • Discuss any adjustment to assay data.	• All assay data QA/QC is checked prior to loading into the Geobank data base. • The data is managed Xanadu geologists. • The data base and geological interpretation is collectively managed by Xanadu.
Location of data points	• Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. • Specification of the grid system used. • Quality and adequacy of topographic control.	• All DDH's have been surveyed with a differential global positioning system (DGPS) to within 10cm accuracy. • All DDH's have been down hole surveyed to collect the azimuth and inclination at specific depths. Two principal types of survey method have been used over the duration of the drilling programs including Eastman Kodak and Flexit. • UTM WGS84 48N grid. • The DTM is based on 1 m contours with an accuracy of ±0.01 m.
Data spacing and distribution	• Data spacing for reporting of Exploration Results. • Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. • Whether sample compositing has been applied.	• Drilling has been completed on nominal north-south sections, commencing at 120m spacing and then closing to 40m for resource estimation. • Vertical spacing of intercepts on the mineralised zones similarly commences at 100m spacing and then closing to 50m for resource estimation. • Drilling has predominantly occurred with angled holes approximately 70° to 60° inclination below the horizontal and either drilling to north or south, depending on the dip of the target mineralised zone. • Holes have been drilled to 1000m vertical depth • The data spacing and distribution is sufficient to establish geological and grade continuity appropriate for the Mineral Resource estimation procedure and has been taken into account in 3D space when determining the classifications to be applied.

Criteria	JORC Code (Section 1) Explanation	Commentary
Orientation of data in relation to geological structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. • If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	• Drilling has been predominantly completed on north-south section lines along the strike of the known mineralised zones and from either the north or the south depending on the dip. • Vertical to South dipping ore bodies were predominantly drilled to the north. • Scissor drilling, (drilling from both north and south), as well as vertical drilling, has been used in key mineralised zones to achieve unbiased sampling of possible structures and mineralised zones.
Sample security	• The measures taken to ensure sample security.	• Samples are dispatched from site through via company employees and secure company vehicles to the Laboratories. • Samples are signed for at the Laboratory with confirmation of receipt emailed through. • Samples are then stored at the lab and returned to a locked storage site.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data	• Internal audits of sampling techniques and data management on a regular basis, to ensure industry best practice is employed at all times. • External review and audit have been conducted by the following groups • 2012 – AMC Consultants Pty Ltd. was engaged to conduct an Independent Technical Report which reviewed drilling and sampling procedures. It was concluded that sampling and data record was appropriate for use in resource estimation including that required by the NI 43-101 standards. • 2013 - Mining Associates Ltd. was engaged to conduct an Independent Technical Report to review drilling, sampling techniques, QA/QC and previous resource estimates. Methods were found to conform to international best practise.

JORC Table 1 - Section 2 – Reporting of Exploration Results

(Criteria in this section apply to all succeeding sections).

Criteria	JORC Code (Section 2) Explanation	Commentary

Criteria	JORC Code (Section 2) Explanation	Commentary
Mineral tenement and land tenure status	• Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, verriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. • The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	• The Project comprises 1 Mining Licences (MV 17387A). • 100% owned by Oyut Ulaan LLC. • Xanadu and its joint venture partner, Mongol Metals can earn a 90% interest in the Kharmagtai porphyry copper-gold project. The remaining 10% is owned by Quincunx Ltd, which in turn is owned by an incorporated joint venture between Kerry Holdings Ltd. and MCS Holding LLC. • The Mongolian Minerals Law (2006 and Mongolian Land Law (2002) govern exploration, mining and land use rights for the project.
Exploration done by other parties	• Acknowledgment and appraisal of exploration by other parties.	• Previous exploration was conducted by Quincunx Ltd, Ivanhoe Mines Ltd and Turquoise Hill Resources Ltd including extensive drilling, surface geochemistry, geophysics, mapping and Mineral Resource estimation to NI 43-101 standards.
Geology	• Deposit type, geological setting and style of mineralisation.	• The mineralisation is characterised as porphyry copper-gold type. • Porphyry copper-gold deposits are formed from magmatic hydrothermal fluids typically associated with felsic intrusive stocks that have deposited metals as sulphides both within the intrusive and the intruded host rocks. Quartz stockwork veining is typically associated with sulphides occurring both within the quartz veinlets and disseminated thought out the wall rock. Porphyry deposits are typically large tonnage deposits ranging from low to high grade and are generally mined by large scale open pit or underground bulk mining methods. The deposits at Kharmagtai are atypical in that they are associated with intermediate intrusions of diorite to quartz diorite composition, however the deposits are in terms of contained gold significant, and similar gold-rich porphyry deposits.
Drill hole Information	• A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: • easting and northing of the drill hole collar. • elevation or RL Reduced Level – elevation above sea level in metres)	• Diamond drill holes are the principal source of geological and grade data for the Project. • See figures in main report.

Criteria	JORC Code (Section 2) Explanation	Commentary
	of the drill hole collar . • dip and azimuth of the hole • down hole length and interception depth • hole length. • If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	
Data Aggregation methods	• In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated. • Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. • The assumptions used for any reporting of metal equivalent values should be clearly stated.	• A nominal cut-off of 0.1% Cu is used for identification of potentially significant intercepts for reporting purposes. • Most of the reported intercepts are shown in sufficient detail, including maxima and subintervals, to allow the reader to make an assessment of the balance of high and low grades in the intercept. • Informing Samples have been composited to two metre lengths honouring the geological domains and adjusted where necessary to ensure that no residual sample lengths have been excluded (best fit). • Metal equivalents used the following formula: CuEq = Cu% x(Aug/t x 0.6378 CuEq Formula is based on a \$2.60/lb copper price and a \$1,300/oz gold price. A gold recovery factor of 78.72% was used.
Relationship between mineralisation on widths and intercept lengths	• These relationships are particularly important in the reporting of Exploration Results. • If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. • If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').	• Mineralised structures are variable in orientation, and therefore drill orientations have been adjusted from place to place in order to allow intersection angles as close as possible to true widths. • Exploration results have been reported as an interval with 'from' and 'to' stated in tables of significant economic intercepts. Tables clearly indicate that true widths will generally be narrower than those reported. • Resource estimation, as reported later, was done in 3D space.
Diagrams	• Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	• See figures in main report.

Criteria	JORC Code (Section 2) Explanation	Commentary
Balanced reporting	• Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	• Resources have been reported at a range of cut-off grades, above a minimum suitable for open pit mining, and above a minimum suitable for underground mining.
Other substantive exploration data	• Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	• Extensive work in this area has been done, and is reported separately.
Further work	• The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling). • Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive	• The mineralisation is open at depth and along strike. • Current estimates are restricted to those expected to be reasonable for open pit mining. Limited drilling below this depth (-300m rl) shows widths and grades potentially suitable for underground extraction. • Exploration on going.

JORC Table 1 - Section 2 – Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code (Section 3) Explanation	Commentary
Database integrity	• Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes. • Data validation procedures used.	• The database is managed using MicroMine Geobank software • Data is logged directly into an Excel spread sheet logging system with drop down field lists. • Validation checks are written into the importing program ensures all data is of high quality. • Digital assay data is obtained from the Laboratory, QA/QC checked and imported • Geobank exported to Access, and connected directly to the Gemcom Surpac Software. • Data was validated prior to resource estimation by checking collar coordinates, downhole surveys and reporting of basic

Criteria	JORC Code (Section 3) Explanation	Commentary
		statistics for each grade fields, including examination of maximum values, and visual checks of drill traces and grades on sections and plans.
Site visits	• Comment on any site visits undertaken by the Competent Person and the outcome of those visits. • If no site visits have been undertaken indicate why this is the case.	• Andrew Vigar of Mining Associates visited site from 24 and 25 October 2014. • The site visit included review of the exploration area, an inspection of core, sample cutting and logging procedures and discussions of geology and mineralisation with exploration geologists.
Geological interpretation	• Confidence in (or conversely, the uncertainty of the geological interpretation of the mineral deposit. • Nature of the data used and of any assumptions made. • The effect, if any, of alternative interpretations on Mineral Resource estimation. • The use of geology in guiding and controlling Mineral Resource estimation. • The factors affecting continuity both of grade and geology.	• Mineralisation resulted in the formation of comprises quartz-chalcopyrite-pyrite-magnetite stockwork veins and minor breccias. • The principle ore minerals of economic interest are chalcopyrite, bornite and gold, which occur primarily as infill within these veins. Gold is intergrown with chalcopyrite and bornite. • The ore mineralised zones at Altan Tolgoi, Tsagaan Sudal and Zesen Uul are associated with a core of quartz veins that were intensely developed in and the quartz diorite intrusive stocks and/or dykes rocks. These vein arrays can be described as stockwork, but the veins have strong developed preferred orientations. • Sulphide mineralisation is zoned from a bornite-rich core that zone outwards to chalcopyrite-rich and then outer pyritic haloes, with gold closely associated with bornite. • Drilling indicates that the supergene profile has been oxidised to depths up to 60 metres below the surface. The oxide zone comprises fracture controlled copper and iron oxides; however there is no obvious depletion or enrichment of gold in the oxide zone.
Dimensions	• The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	• Altan Tolgoi comprises two main mineralised zones, northern and southern stockwork zones (AT-N and AT-S) which are approximately 100 metres apart and hosted in diorite and quartz diorite porphyries. • AT-S is at least 550 metres long, 600 metres deep and contains strong quartz-chalcopyrite-pyrite stockwork veining and associated high grade copper-gold mineralisation. The stockwork zone widens eastward from a 20 to 70 metres wide high-grade zone in the

Criteria	JORC Code (Section 3) Explanation	Commentary
		western and central sections to a 200 metres wide medium-grade zone in the eastern most sections. Mineralisation remains open at depth and along strike to the east. • AT-N consists of a broad halo of quartz that is 250 metres long, 150 metres wide long and at least 350 m deep. • TS consists of a broad halo of quartz veins that is 850 m long, 550 m wide long and at least 500 m deep, and forms a pipe like geometry. • ZU forms a sub vertical body of stockwork approximately 350 × 100 m by at least 200 m and plunges to the southeast
Estimation and modelling techniques	• The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used. • The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data. • The assumptions made regarding recovery of by-products. • Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation). • In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed. • Any assumptions behind modelling of selective mining units. • Any assumptions about correlation between variables. • Description of how the geological interpretation was used to control the resource estimates. • Discussion of basis for using or not using grade cutting or capping. • The process of validation, the checking process used, the comparison of model data to drill	• The estimate Estimation Performed using Ordinary Kriging • Variograms are reasonable along strike. • Minimum & Maximum Informing samples is 5 and 20 (1st pass), Second pass is 3 and 20. • Copper and Gold Interpreted separately on NS sections and estimated as separate domains • Halo mineralisation defined as 0.12% Cu and 0.12g/t Au Grade • The mineralised domains were manually digitised on cross sections defining mineralisation. Three dimensional grade shells (wireframes) for each of the metals to be estimated were created from the sectional interpretation. Construction of the grade shells took into account prominent lithological and structural features. For copper, grade shells were constructed for each deposit at a cut-off of 0.12% and 0.3% Cu. For gold, wireframes were constructed at a threshold of 0.12g/t and 0.3 g/t. These grade shells took into account known gross geological controls in addition to broadly adhering to the above mentioned thresholds. • Cut off grades applied are copper-equivalent (CuEq) cut off values of 0.3% for appropriate for a large bulk mining open pit and 0.5% for bulk block caving underground. • A set of plans and cross-sections that displayed colour-coded drill holes were plotted and inspected to ensure the proper assignment of domains to drill holes. • The faulting interpreted to have had considerable movement, for this reason, the fault surface were used to define two separate structural domains for grade estimation.

Criteria	JORC Code (Section 3) Explanation	Commentary
	hole data, and use of reconciliation data if available	• Six metre down-hole composites were chosen for statistical analysis and grade estimation of Cu and Au. Compositing was carried out downhole within the defined mineralisation halos. Composite files for individual domains were created by selecting those samples within domain wireframes, using a fix length and 50% minimum composite length. • A total of 4428 measurements for specific gravity are recorded in the database, all of which were determined by the water immersion method. The average density of all samples is 2.75 t/m^3. In detail there are some differences in density between different rock types, but since the model does not include geological domains a single pass ID^2 interpolation was applied. • Primary grade interpolation for the two metals was by ordinary kriging of capped 6m composites. A two-pass search approach was used, whereby a cell failing to receive a grade estimate in a previous pass would be resubmitted in a subsequent and larger search pass. • The Mineral Resource estimate meets the requirements of JORC 2012 and has been reported considering geological characteristics, grade and quantity, prospects for eventual economic extraction and location and extents. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories using relevant copper-equivalent cut-off values; CuEq = Cu% x(Aug/t x 0.6378 Formula is based on a $2.60/lb copper price and a $1,300/oz gold price. A gold recovery factor of 78.72% was used
Moisture	• Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	• All tonnages are reported on a dry basis.
Cut-off parameters	• The basis of the adopted cut-off grade(s) or quality parameters applied.	• Cut off grades applied are copper-equivalent (CuEq) cut off values of 0.3% for possible open pit and 0.5% for underground.
Mining factors or	• Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if	• No mining factors have been applied to the in situ grade estimates for mining dilution or loss as a result of the grade control or mining

Criteria	JORC Code (Section 3) Explanation	Commentary
assumptions	applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	process. • The deposit is amenable to large scale bulk mining. • The Mineral Resource is reported above an optimised pit shell. (Lerch Grossman algorithm), mineralisation below the pit shell is reported at a higher cut-off to reflect the increased costs associated with block cave underground mining
Metallurgical factors or assumptions	• The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	• No metallurgical factors have been applied to the in situ grade estimates.
Environmental factors or assumptions	• Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	• An environmental baseline study was completed in 2003 by Eco Trade Co. Ltd. of Mongolia in cooperation with Sustainability Pty Ltd of Australia. The baseline study report was produced to meet the requirements for screening under the Mongolian Environmental Impact Assessment (EIA) Procedures administered by the Mongolian Ministry for Nature and Environment (MNE).
Bulk density	• Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry,	A total of 4428 measurements for specific gravity are recorded in the database, all of which were determined by the water immersion method.

Criteria	JORC Code (Section 3) Explanation	Commentary
	the frequency of the measurements, the nature, size and representativeness of the samples. • The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit. • Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	• The average density of all samples is approximately 2.75 t/m^3. In detail there are some differences in density between different rock types, but since the model does not include geological domains a single estimation pass (ID^2) was applied to a density attribute. • There is no material impact on global tonnages, but it should be noted that density is a function of both lithology and alteration (where intense magnetite/sulphide is present).
Classification	• The basis for the classification of the Mineral Resources into varying confidence categories. • Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data). • Whether the result appropriately reflects the Competent Person's view of the deposit.	• The Mineral Resource classification protocols, for drilling and sampling, sample preparation and analysis, geological logging, database construction, interpolation, and estimation parameters are described in the Main Report have been used to classify the 2015 resource. • The Mineral Resource statement relates to global estimates of in-situ tonnes and grade • The Mineral Resource estimate has been classified in accordance with the JORC Code, 2012 Edition using a qualitative approach. The classifications reflect the competent person's view of the Kharmagtai Copper Gold Project.
Audits or reviews	• The results of any audits or reviews of Mineral Resource estimates.	• Xanadu's internal review and audit of the Mineral Resource Estimate consisted of data analysis and geological interpretation of individual cross-sections, comparing drill-hole data with the resource estimate block model. • Good correlation of geological and grade boundaries were observed • 2013 - Mining Associates Ltd. was engaged to conduct an Independent Technical Report to review drilling, sampling techniques, QA/QC and previous resource estimates. Methods were found to conform to international best practise.
Discussion of relative accuracy/ confidence	• Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed	• An approach to the resource classification was used which combined both confidence in geological continuity (domain wireframes) and statistical analysis. The level of accuracy and risk is therefore reflected in the allocation of the measured, indicated and inferred resource categories. • Resource categories were constrained by geological understanding, data density and quality, and estimation parameters. It is expected that further work will extend this

Criteria	JORC Code (Section 3) Explanation	Commentary
	appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate. • The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. • These statements of relative accuracy and confidence of the estimate should be compared with production data, where available	considerably. • Resources estimates have been made on a global basis and relates to in-situ grades. • Confidence in the Indicated resource is sufficient to allow application of Modifying Factors within a technical and economic study. The confidence in Inferred Mineral Resources is not sufficient to allow the results of the application of technical and economic parameters • The deposits are not currently being mined. • There is surface evidence of historic artisanal workings. • No production data is available.

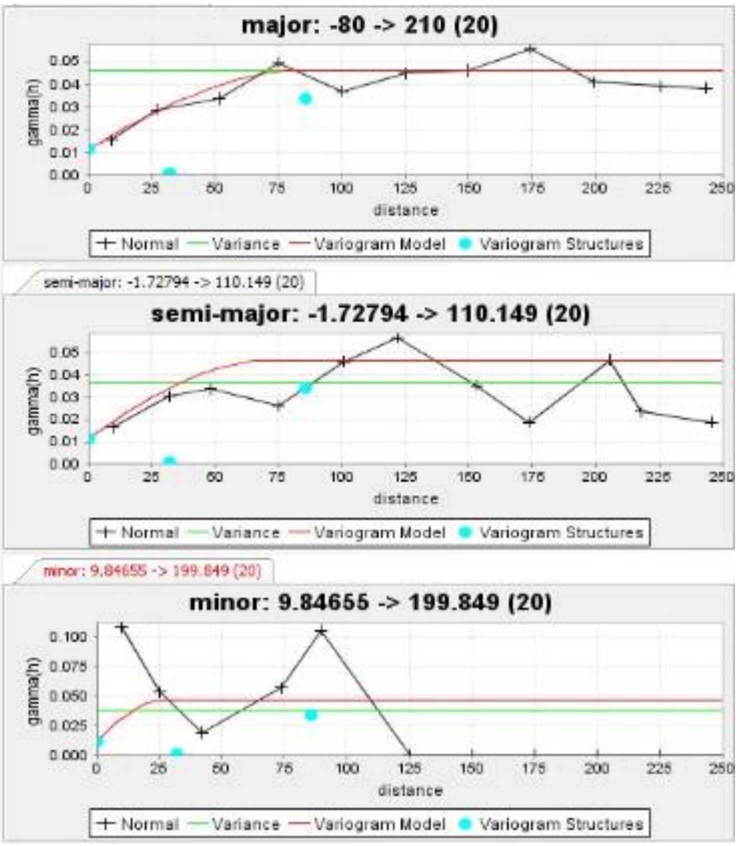
JORC Table 1 - Section 4 - Estimation and Reporting of Ore Reserves

Ore Reserves are not reported so this is not applicable to this report.

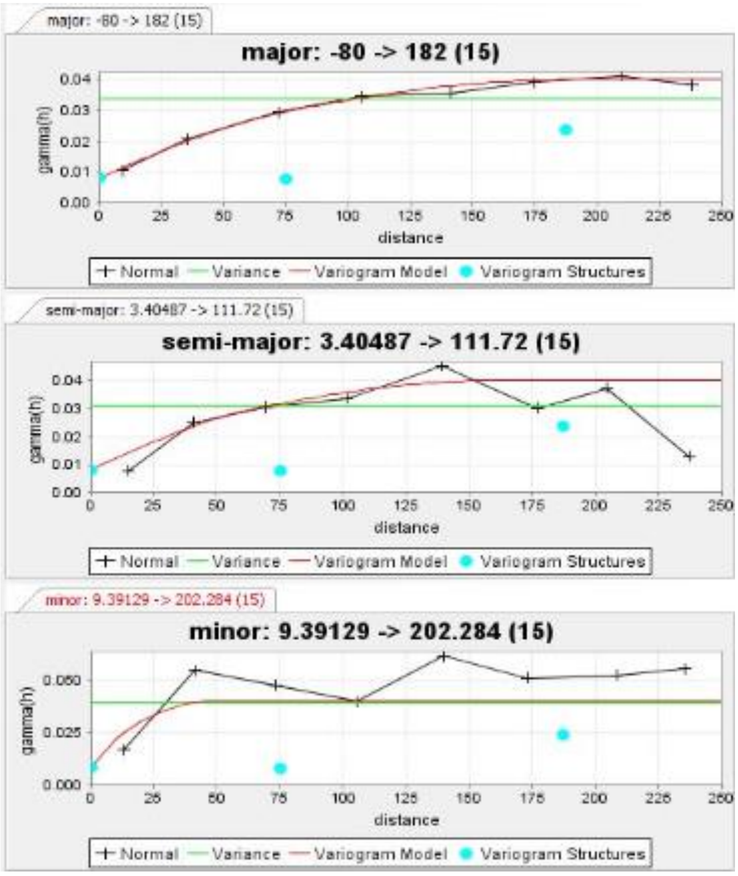
Appendix 2: Variograms

Note: Variogram model parameters have been normalised to a total sill of 1, experimental variograms are raw normal variograms.

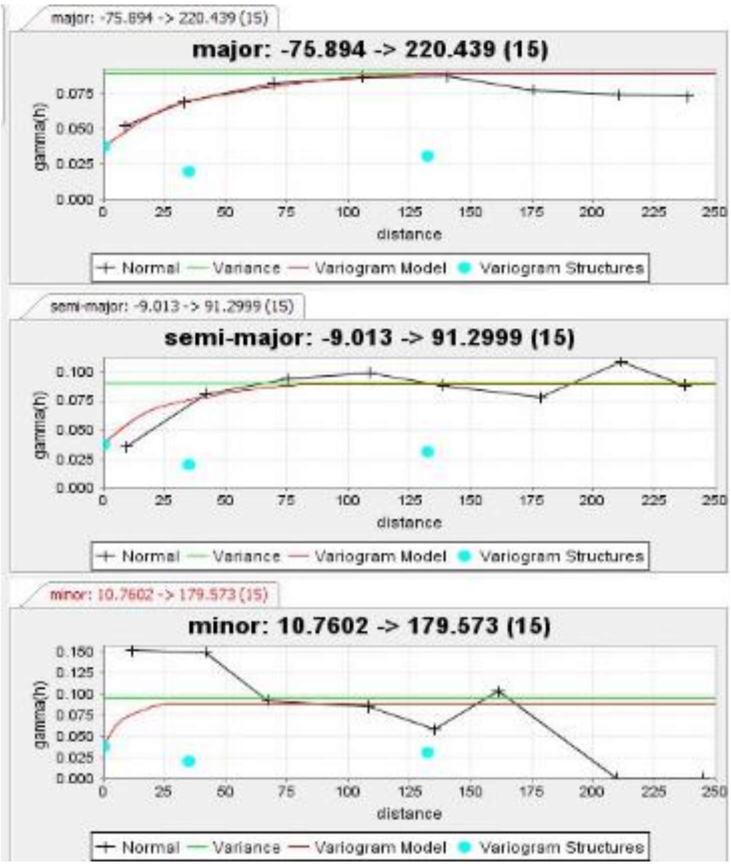
AT-D	Nugget	C_1	R_1	C_2	R_2	Semi-major	Minor
Cu (12)	0.24	0.02	32	0.74	86	1.2	3.25



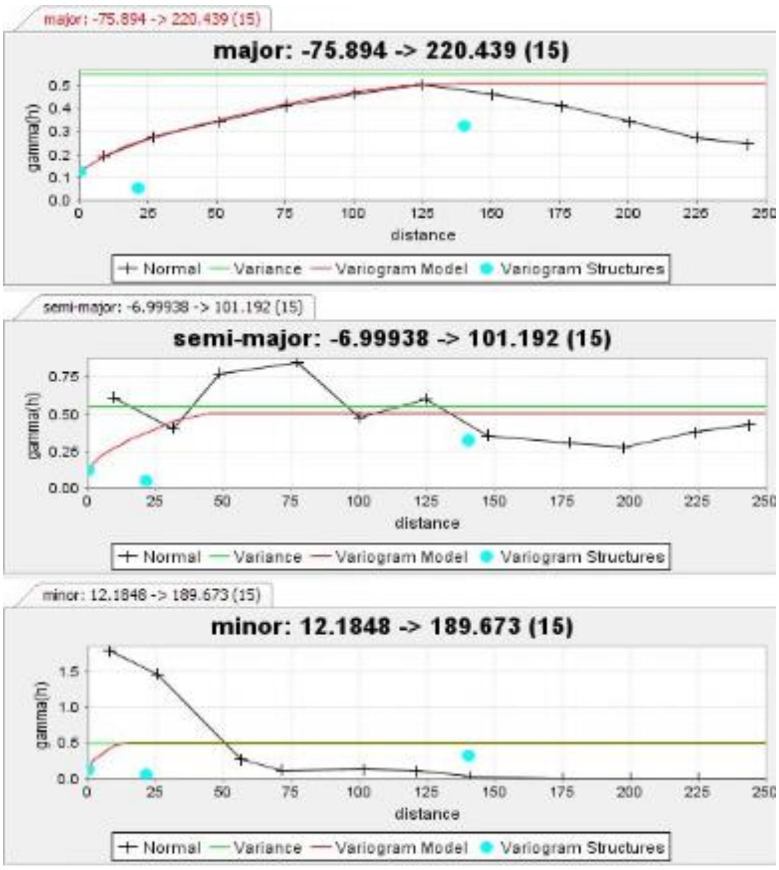
AT-N	Nugget	C_1	R_1	C_2	R_2	Semi-major	Minor
Cu (3)	0.2	0.2	75	0.6	187	1.174	3.955



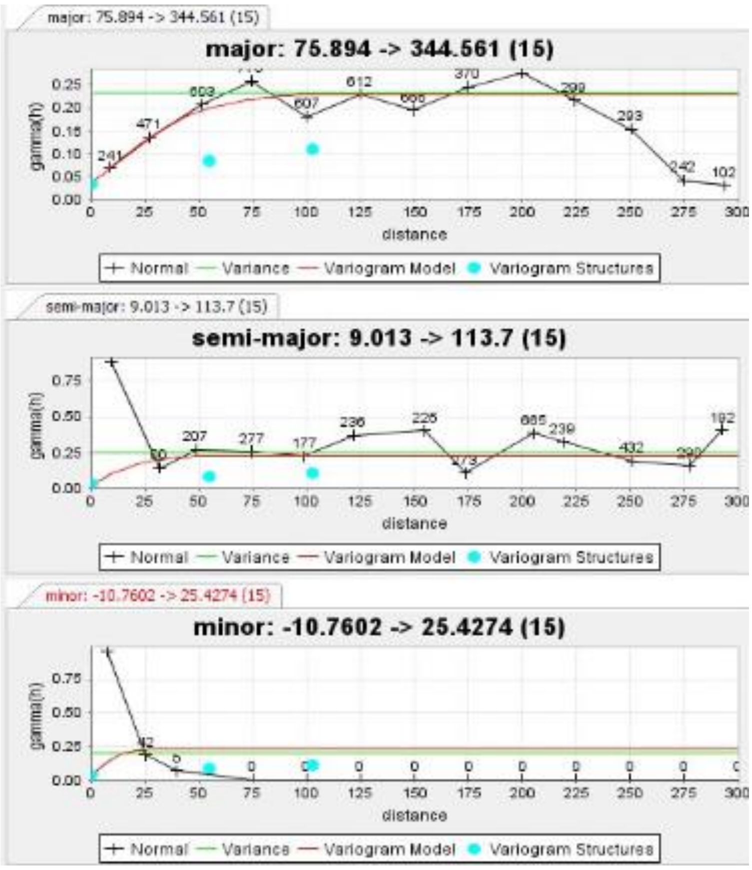
AT-S	Nugget	C_1	R_1	C_2	R_2	Semi-major	Minor
Cu (4)	0.43	0.22	35	0.35	132	1.517	4.532



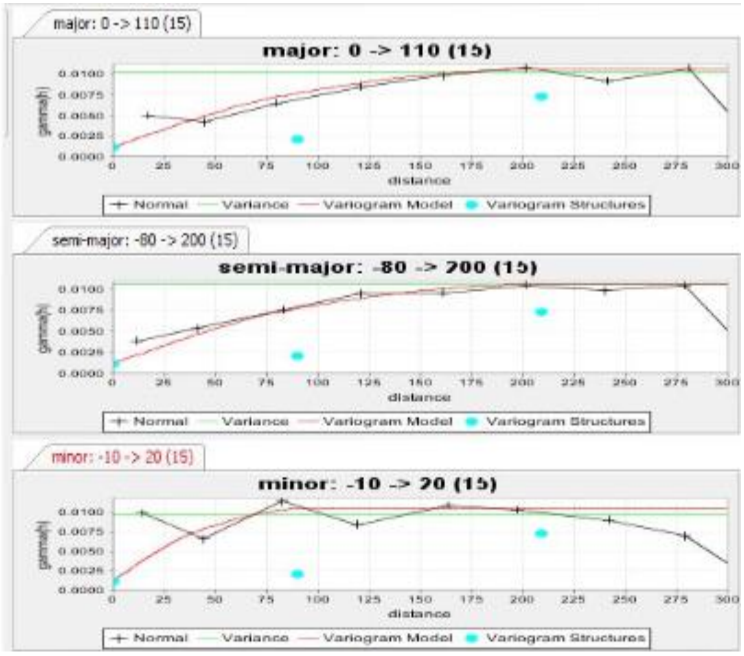
AT-S	Nugget	C_1	R_1	C_2	R_2	Semi-major	Minor
Au (45)	0.25	0.11	21	0.65	140	2.821	9.587



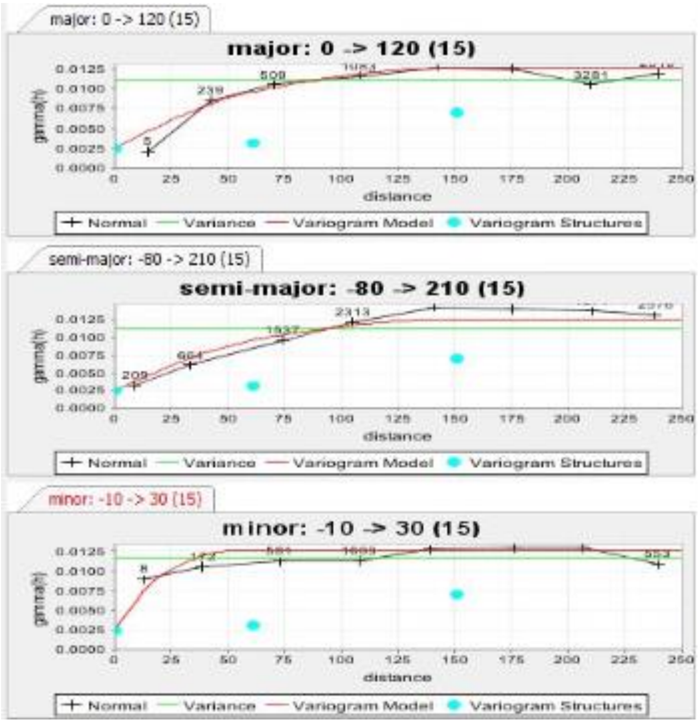
AT-D	Nugget	C_1	R_1	C_2	R_2	Semi-major	Minor
Au (12)	0.15	0.37	55	0.48	102.5	1.836	3.455



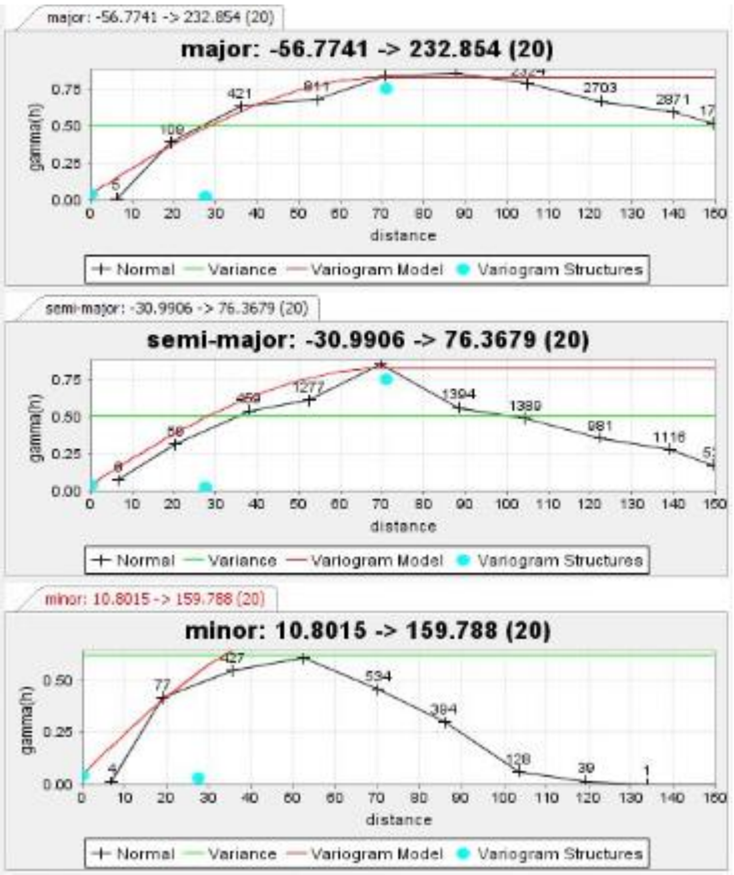
Ts	Nugget	C_1	R_1	C_2	R_2	Semi-major	Minor
Cu	0.1	0.2	90	0.7	210	1	2.103



TS	Nugget	C_1	R_1	C_2	$\mathbf{R_2}$	**Semi-major**	**Minor**
Au	0.23	0.23	61	0.54	150	1	**2.77**



ZU	Nugget	C_1	R_1	C_2	R_2	Semi-major	Minor
Au	0.05	0.04	27.7	0.91	71	1.015	1.125



ZU	Nugget	C_1	R_1	C_2	R_2	Semi-major	Minor
Cu	0.13	0.2	36	0.66	1.04	1.117	2.976