IVANHOE MINES LTD
Form 6-K
September 21, 2004

==

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 6-K

REPORT OF FOREIGN PRIVATE ISSUER
PURSUANT TO RULE 13A-16 OR 15D-16 OF
THE SECURITIES EXCHANGE ACT OF 1934

From: September 17, 2004

IVANHOE MINES LTD.

(Translation of Registrant's Name into English)

SUITE 654 - 999 CANADA PLACE, VANCOUVER, BRITISH COLUMBIA V6C 3E1

(Address of Principal Executive Offices)

(Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.)

Form 20-F- [ ]   Form 40-F- [X]

(Indicate by check mark whether the registrant by furnishing the information contained in this form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.)

Yes: [ ]   No: [X]

(If "Yes" is marked, indicate below the file number assigned to the registrant in connection with Rule 12g3-2(b): 82-___________.)

Enclosed:

Technical Report

==

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

IVANHOE MINES LTD.

DATE: September 17, 2004

By: /s/ Beverly A. Bartlett

BEVERLY A. BARTLETT
Corporate Secretary

IMPORTANT NOTICE

This report was prepared as a National Instrument 43-101 Technical Report, in accordance with Form 43-101F1, for Ivanhoe Mines Limited (Ivanhoe) by AMEC Americas Limited (AMEC). The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in AMEC's services, based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended to be used by Ivanhoe, subject to the terms and conditions of its contract with AMEC. That contract permits Ivanhoe to file this report as a Technical Report with Canadian Securities Regulatory Authorities pursuant to provincial securities legislation. Except for the purposes legislated under provincial securities laws, any other use of this report by any third party is at that party's sole risk.

[IVANHOE MINES LOGO] IVANHOE MINES LTD.
TECHNICAL REPORT
OYU TOLGOI, MONGOLIA

CONTENTS

FIGURES

TABLES

APPENDICES

[IVANHOE MINES LOGO] IVANHOE MINES LTD.
TECHNICAL REPORT
OYU TOLGOI, MONGOLIA

1.0 SUMMARY

Ivanhoe Mines Ltd. (Ivanhoe) has asked AMEC Americas Limited (AMEC) to provide an independent mineral resource estimate and Qualified Person's review and Technical Report for the Southern deposits of the Oyu Tolgoi project in Mongolia. The work entailed estimating mineral resources in conformance with the CIM Mineral Resource and Mineral Reserve definitions referred to in National Instrument (NI) 43-101, Standards of Disclosure for Mineral Projects. It also involved the preparation of a Technical Report as defined in NI 43-101 and in compliance with Form 43-101F1 (the "Technical Reports"). The work represents a significant change in the level of confidence of the mineral resource since the last disclosure on these deposits in a Technical Report on the Oyu Tolgoi project, Mongolia dated February 2003 and repeated in a Preliminary Assessment on the Oyu Tolgoi project dated January 2004. Dr. Harry Parker, Ch.P.Geol., and Dr. Stephen Juras, P.Geo., directed the mineral resource estimation work and review of the geological data. Dr. Juras visited the project site from 24 March 2004 to 24 April 2004 and June 11 2004 to June 30 2004. Dr. Parker visited the site from 1 to 6 April 2004. Dr. Stephen Juras, P.Geo., an employee of AMEC, who served as the Qualified Person responsible for preparing the earlier February 2003 Technical Report, served in the same capacity for this updated version.

The Oyu Tolgoi project consists of copper-gold-molybdenum mineralization in a mid Paleozoic Cu-Au porphyry system. It is located in the Aimag (Province) of Omnogov, in the South Gobi region of Mongolia, about 530 km south of the capital city of Ulaanbaatar and 80 km north of the border with China. The Oyu Tolgoi project comprises Mining License 6709A, which covers an area of 8,496 ha. Ivanhoe has been granted the exclusive right to explore within the bounds of its exploration licence.

Oyu Tolgoi occurs in an early to mid Paleozoic island arc environment that is part of the Gurvansayhan terrane. The arc terrane is dominated by basaltic volcanics and intercalated volcanogenic sediments, intruded by plutonic-size hornblende-bearing granitoids of mainly quartz monzodiorite to possibly granitic composition. Carboniferous sedimentary rocks overlie this assemblage. Property geology consists of massive porphyritic augite basalt, which underlies much of the central part of the exploration block. Dacitic to andesitic ash flow tuffs, several hundred metres in thickness, overlie the augite basalt. The southern edge of a large body of hornblende granodiorite outcrops along the northern margin of the exploration block. A wide variety of felsic to mafic dykes are found throughout the exploration block and in drill holes. These include porphyritic quartz monzodiorite dykes that may be genetically related to the Cu-Au porphyry systems. Based on satellite imagery and geophysical interpretations, major structures trend N35E and N70E.

The Southern Oyu Tolgoi deposits occur in a triangular zone 1.9 km N-S x 1.5 km E-W at the base of the triangle. This zone encompasses three porphyry centres, Southwest Oyu

Tolgoi, Central Oyu Tolgoi and South Oyu Tolgoi. The region lying between Southwest and South deposits also contains copper sulphide mineralization and has been named Wedge Zone. The Southwest Oyu deposit is an Au-rich porphyry system, characterized by a pipe-like geometry, encompassing a high-grade core ((greater than) 1 g Au/t) about 250 m in diameter and extending over 700 m vertically. The deposit is centred on small (metres to tens of metres wide) quartz monzodiorite dykes and lies between two major northeast-striking, steeply northwest-dipping faults, West Bounding Fault and the East Bounding Fault. Over 80% of the deposit is hosted by massive porphyritic basalt. Strong quartz veining ((greater than) 20% volume) and secondary biotite alteration define the core of the porphyry system. Cu-Fe sulphide mineralization in the Southwest Oyu deposit consists mainly of finely disseminated pyrite-chalcopyrite and minor bornite. Molybdenite is also common but occurs mainly on late structures.

The South deposit is a copper porphyry deposit, developed in basaltic volcanics and related small, strongly-sericite altered quartz monzodiorite dykes. To the southwest, the host rock sequence is intruded by unmineralized quartz monzodiorite, while to the northeast it is overlain by weakly to non-mineralized ignimbrite and northeast-dipping non-mineralized strata of the Lower Sedimentary Sequence. The deposit lies on a NE-trending structural block bounded by two sub-parallel faults, the South Fault to the northwest, and the Solongo Fault to the southeast. It is characterized by secondary biotite, magnetite and moderate intensity quartz veining (10% by volume), with strong late-stage overprinting by sericite-chlorite-smectite (intermediate argillic alteration). The main sulphide minerals are chalcopyrite and bornite. Unlike the nearby Southwest Oyu system, it is not gold-rich. Cu-Fe sulphide mineralization at the South Oyu deposit consists of finely disseminated pyrite-chalcopyrite and bornite. As at Southwest Oyu, molybdenite occurs locally on late-stage structures.

The Central Oyu deposit occurs mainly within several phases of quartz monzodiorite intrusive rocks and associated intrusive/hydrothermal breccia, with volumetrically subordinate zones of augite basalt. The quartz monzodiorite (Qmd) dykes occupy over 80 percent of the area and, in general, comprises at least three intrusive phases. The Central deposit contains high-sulphidation (covellite-chalcocite-enargite) and Cu-Au (chalcopyrite-gold) porphyry styles, as well as a chalcocite enrichment blanket. High-sulphidation (HS) alteration and mineralization are telescoped onto an underlying gold-rich porphyry system. Central Oyu deposit contains several styles of mineralization; volumetrically the most important is finely disseminated pyrite-covellite-chalcocite. In addition, it is mineralogically complex and contains minor amounts of chalcopyrite, bornite, enargite, tetrahedrite and tennantite.

The Wedge Zone deposit is a newly outlined zone that, in part, consisted of what was previously described as the South deposit. The Wedge Zone is the area bound by the NNE striking East Bounding Fault to the west and the NE striking South and Solongo faults to the southeast. These structural features outline a triangle or wedge-shape whose apex is defined by the intersection between the East Bounding Fault and Solongo Fault in the

southern part of the property. The deposit is conformably overlain to the northeast by units of the Lower Sedimentary Sequence. The southern portion is dominated by weakly altered and mineralized Qmd. Bornite and chalcopyrite mineralization is hosted in strongly altered ignimbrite units to the north, and Qmd and lesser augite basalt to the south. Intensity of alteration (advanced argillic) and sulphide mineralization is most intense along the eastern side of the East Bounding Fault in the transition area between SW Oyu and Central Oyu.

The database used to estimate the mineral resources for the Oyu Tolgoi Southern deposits consists of samples and geological information from 539 core drill holes drilled by Ivanhoe between mid 2002 and June 2004. Samples from the drill programs were prepared for analysis at an on-site facility operated by SGS Mongolia LLC (SGS Mongolia). The samples were then shipped under the custody of Ivanhoe to Ulaanbaatar, where they were assayed at a facility operated by SGS Mongolia. Data transfer to the resource database was validated from original certificates through a 5% check of the database.

Ivanhoe employs a comprehensive QA/QC program. All sampling and QA/QC work is overseen on behalf of Ivanhoe by Dale A. Sketchley, M.Sc., P.Geo. Each sample batch of 20 samples contains four or five quality control samples. The quality control samples comprise one duplicate split core sample and one uncrushed field blank, which are inserted prior to sample preparation; a reject or pulp preparation duplicate, which is inserted during sample preparation; and one or two standard reference material (SRM) samples (one (less than) 2% Cu and one (greater than) 2% Cu if higher-grade mineralization is present based on visual estimates), which are inserted after sample preparation. A total of 33 different reference materials have been developed for the Oyu Tolgoi deposits and are used to monitor the assaying of six different ore types made up of varying combinations of chalcopyrite, bornite, primary and supergene chalcocite, enargite, covellite, and molybdenite.

Ivanhoe strictly monitors the performance of the standard reference material (SRM) samples as the assay results arrive at site. If a batch fails based on standard reference material and blank sample tolerance limits from round-robin programs, it is re-assayed until it passes, unless the batch is deemed to represent barren intervals. AMEC reviewed Ivanhoe's QA/QC procedures at site and found them to be strictly adhered to. Results of field blanks show low incidence of contamination and confirm negligible contamination in the assay process. Duplicate performance of core, coarse reject, and pulp duplicates was evaluated by AMEC and found to be well within the respective accepted ranges. The current Ivanhoe QA/QC program exceeds industry standards and demonstrates that the assay process for the Southern deposits samples is in control.

Infill diamond drilling over the Southern deposits of Oyu Tolgoi enabled better resolution of the various mineral-hosting and non-hosting lithologic units, the structural geology (namely the fault distribution) and the Cu-Au mineralization itself. The higher density of data and ongoing geologic investigations into the structural history, intrusive history and alteration zonation enabled Ivanhoe to create 3-dimensional shapes of key faults and intrusive units.

Particular useful was the modelling of the Southern deposits Qmd intrusive units, and the East and West Bounding Faults, South Fault and Solongo Fault. Comprehensive geologic models were also created of the post-mineral units: the post-mineral dykes (rhyolite, hornblende-biotite andesite and biotite granodiorite) and the contact between the mineralized volcanic sequence and the non-mineralized Lower Sedimentary sequence. AMEC checked the shapes for interpretational consistency in section and plan, and found them to have been properly constructed. The shapes honoured the drill data and appear well constructed.

To constrain grade interpolation in each of the zones, AMEC created 3-dimensional mineralized envelopes based on gold grades in Southwest and copper grades in Central, South, Bridge Zone and Wedge Zone. Except for the Wedge Zone, these were derived by a method of Probability

Assisted Constrained Kriging (PACK) to initially outline a general shape. Threshold grades were 0.7 g/t for gold and 0.3 to 0.5 % for Cu. Grade outline selection was done by inspecting contoured probability values (in increments of 0.05) in MineSight(R). These shapes were then edited in plan and section views to be consistent with the structural and lithologic models and the drill assay data so that the boundaries did not violate data and current geologic understanding of mineralization controls. Grade shells in the Wedge Zone were manually drawn at grade thresholds of 0.3% and 0.6% Cu.

The estimates were made from 3-dimensional block models utilizing commercial mine planning software (MineSight(R)). Industry-accepted methods were used to create interpolation domains based on mineralized geology and grade estimation based on ordinary kriging. The assays were composited into 5 m down-hole composites. The compositing honoured the domain zone by breaking the composites on the domain code values. The Oyu Tolgoi estimation plans, or sets of parameters used for estimating blocks, were designed using a philosophy of restricting the number of samples for local estimation. AMEC has found this to be an effective method of reducing smoothing and producing estimates that match the Discrete Gaussian change-of-support model and ultimately the actual recovered grade-tonnage distributions. Reasonableness of grade interpolation was reviewed by visual inspection of sections and plans displaying block model grades, drill hole composites and geology. Good agreement was observed. Global and local bias checks in block models, using nearest-neighbour estimated values versus the ordinary kriged values, found no evidence of bias.

The mineral resources of the Oyu Tolgoi project were classified using logic consistent with the CIM definitions referred to in National Instrument 43-101. Inspection of the model and drill hole data on plans and sections in the Southwest Gold Zone area, combined with spatial statistical work and investigation of confidence limits in predicting planned quarterly production showed good geologic and grade continuity in areas where sample spacing was about 50 m. When taken together with all observed factors, AMEC decided that blocks covered by this data spacing in the Southwest Gold Zone area may be classified as Measured Mineral Resource. A three-hole rule was used where blocks containing an

estimate resulting from three or more samples from different holes (all within 55 m with at least one within 30 m) were classified as Measured Mineral Resource.

The Indicated Mineral Resource category is supported by the present drilling grid over most of the remaining part of the Oyu Tolgoi Southern deposits. The drill spacing is at a nominal 70 m on and between sections. Geologic and grade continuity is demonstrated by inspection of the model and drill hole data in plans and sections over the various zones, combined with spatial statistical work and investigation of confidence limits in predicting planned annual production. Considering these factors, AMEC decided that blocks covered by this data spacing may be classified as Indicated Mineral Resource. A two-hole rule was used where blocks containing an estimate resulting from two or more samples from different holes. For the Southwest deposit the two holes needed to be within 75 m with at least one hole within 55 m. For the remaining deposits, both holes needed to be within 65 m with at least one hole within 45 m to be classified as Indicated Mineral Resources.

All interpolated blocks that did not meet the criteria for either Measured or Indicated Mineral Resources were assigned as Inferred Mineral Resources if within they fell within 150 m of a drill hole composite.

The mineralization of the Oyu Tolgoi Southern deposits as of 18 August 2004 is classified as Measured, Indicated and Inferred Mineral Resources. The resources are shown in Table 1-1, reported at a copper equivalent cutoff grade. The mineral resource estimate summary has been split into resources lying above and below a depth of 560 m below surface (an elevation of 600 m above sea level), which ongoing mine planning work has identified to be a conservative depth for a large-scale, open-pit mining operation. The resources above the depth of 560 m from surface have been estimated using a 0.30% copper equivalent cutoff grade. Resources lying below a depth of 560 m from surface (likely mining would be by underground bulk mining methods) were estimated using a 0.60% copper equivalent cutoff grade.

The equivalent grade was calculated using assumed metal prices for copper and gold. The assumed prices were US$0.80 for Cu and US$350/oz for gold. For convenience the formula is:

o CuEq = %Cu + (g/t Au*11.25)/17.64

The contained gold and copper estimates in the following table have not been adjusted for metallurgical recoveries.

TABLE 1-1: OYU TOLGOI SOUTHERN DEPOSIT MINERAL RESOURCE SUMMARY - 18 AUGUST 2004

		GRADES			CON
MINERAL RESOURCE CATEGORY	TONNES	COPPER (%)	GOLD (G/T)	COPPER EQ. (%)	COPP ('000S
Above a depth of 560 m from surface (600 m elevation), 0.30% Copper Equivalent Cut-off					
Measured	108,360,000	0.58	0.85	1.13	1,38
Indicated	882,070,000	0.47	0.25	0.62	9,14
Measured+Indicated	990,430,000	0.48	0.31	0.68	10,48
Inferred	259,060,000	0.35	0.20	0.47	1,99

Below a depth of 560 m from surface (600 m elevation), 0.60% Copper Equivalent Cut-off					
Measured	5,280,000	0.76	2.12	2.11	8
Indicated	65,620,000	0.44	0.99	1.08	63
Measured+Indicated	70,900,000	0.47	1.08	1.15	73
Inferred	26,200,000	0.41	0.55	0.76	23

2.0 INTRODUCTION AND TERMS OF REFERENCE

Ivanhoe Mines Ltd. (Ivanhoe) has asked AMEC Americas Limited (AMEC) to provide an independent mineral resource estimate and Qualified Person's review and Technical Report for the Southern deposits of the Oyu Tolgoi project in Mongolia. The work entailed estimating mineral resources in conformance with the CIM Mineral Resource and Mineral Reserve definitions referred to in National Instrument (NI) 43-101, Standards of Disclosure for Mineral Projects. It also involved the preparation of a Technical Report as defined in NI 43-101 and in compliance with Form 43-101F1 (the "Technical Reports"). The work represents a significant change in the level of confidence of the mineral resource since the last disclosure on these deposits in a Technical Report on the Oyu Tolgoi project, Mongolia data February 2003 and repeated in a Preliminary Assessment on the Oyu Tolgoi project dated January 2004. Dr. Stephen Juras, P.Geo., an employee of AMEC, who served as the Qualified Person responsible for preparing the earlier Technical Report, served in the same capacity for this updated version.

Information and data for the independent resource estimate were obtained from Ivanhoe personnel in Vancouver and from the project site in Mongolia.

Pertinent geological data were reviewed in sufficient detail to prepare this document. Dr. Harry Parker, Ch.P.Geol., and Dr. Stephen Juras, P.Geo., directed the mineral resource estimation work and review of the geological data. Dr. Juras visited the project site from 24 March 2004 to 24 April 2004 and 11 June 2004 to 30 June 2004. Parker visited the site from 1 to 6 April 2004.

2.1 TERMS OF REFERENCE

The Oyu Tolgoi project consists of a series of Cu-Au mineralized deposits grouped into the Southern and Northern (Hugo Dummett deposits) Oyu Tolgoi deposits. The Southern deposits, the focus of this Technical Report, comprise Southwest Oyu, Central Oyu, and South Oyu deposits. Throughout this report, these may be termed SW, CO, and SO, respectively.

All units are in the metric system except contained metal quantities shown in the mineral resource summary tables, which are also expressed in troy ounces and pounds.

3.0 DISCLAIMER

AMEC's review and resource work relied on work and reports done by Dr. Peter Lewis, P.Geo., of Lewis Geoscience Services Inc. on matters pertaining to structural geology of the Oyu Tolgoi project. AMEC used information from this work under the assumption that it was prepared by a Qualified Person.

4.0 PROPERTY DESCRIPTION AND LOCATION

The Oyu Tolgoi property hosts a series of copper-gold-molybdenum mineralized deposits in a Paleozoic porphyry system. It is located in the Aimag (Province) of Omnogovi in the South Gobi region of Mongolia, about 570 km south of the capital city of Ulaanbaatar and 80 km north of the border with China (Figure 4-1). The Oyu Tolgoi property comprises Mining License 6709A (Figure 4-2), which covers an area of 8,496 ha and is centred at latitude 43 degrees 00'45"N, longitude 106 degrees 51'15"E.

4.1 MINERAL TENURE

Ivanhoe, was granted Mining Licenses for the Oyu Tolgoi property and three satellite properties on 23 December 2003, in accordance with the Minerals Law of Mongolia. These licenses give the right to Ivanhoe to mine within the bounds of the license area. The licenses are valid for 60 years, with an option to Ivanhoe to extend its license for a further 40 years. These licenses were converted exploration licences that were originally issued to BHP on 17 February 1997.

The exploration licence fees were US$1.50 per hectare in 2002 and 2003 (6th and 7th years of tenure). Thus, Ivanhoe has paid US$12,744 to the Mongolian government each year since acquiring the property.

The mining license fees are:

- Years 1 - 3: $ 5.00 /ha
- Years 4 & 5: $ 7.50 /ha

o Years 6 on: $10.00 /ha

The Oyu Tolgoi property was legally surveyed in August 2002 by Surtech International Ltd.

4.2 PERMITS AND AGREEMENTS

Upon transfer of the exploration licence, Ivanhoe agreed to a 2% NSR royalty with BHP Billiton. However, the 2% NSR has now been acquired by Ivanhoe. Terms of this transaction require Ivanhoe to pay BHP Billiton a total of US$37 million in two payments, with the final payment of US$20 million to be made by February 5, 2004.

Royalties potentially payable to the Mongolian government are governed by Article 38 of the Minerals Law of Mongolia, which states: "Royalties shall be equal to 2.5 per cent of the sales value of all products extracted from the mining claim that are sold, shipped for sale, or used. Royalties shall be equal to 7.5 per cent of the sales value of gold extracted from the placer that are sold, shipped for sale, or used."

When the areas were covered by exploration licenses, an environmental plan accompanied the annual work plans submitted to the relevant soum, or district (Khanbogd Soum). The original environmental performance bond was posted in 1998 by BHP and it is still retained by the soum for the ongoing work. Further requirements for environmental impact assessment are discussed below.

The soum must also be paid for water and road usage. Payments are computed at the end of each calendar year based on the extent of use.

Archaeological surveys and excavations have been completed for the project area by the Institute of Archaeology at the Mongolian Academy of Science. Archaeological approvals have been granted for disturbance at the site.

4.3 ENVIRONMENTAL IMPACT ASSESSMENT

Project development for Oyu Tolgoi is currently subject to environmental impact assessment (EIA) in accordance with Mongolian environmental laws. The process was initiated with the completion of the "Oyu Tolgoi project Environmental Baseline Study" in October 2002. Ivanhoe submitted this document, along with preliminary project descriptions, to the Ministry for Nature and Environment (MNE) for screening. MNE has reviewed the documentation and prepared guidelines for the completion of a detailed EIA.

Sustainability, an Australian consulting firm, is assisting Ivanhoe with the EIA negotiations with the Mongolian Government and is coordinating the preparation of the appropriate documentation.

Mongolian law requires a licensed Mongolian consulting firm to prepare the EIA. Accordingly, Ivanhoe engaged Eco Trade Co Ltd to complete this work.

FIGURE 4-1: LOCATION MAP

[LOCATION MAP]

FIGURE 4-2: OYU TOLGOI LICENCE IN RELATION TO NEIGHBOURING TENEMENTS

[LICENCES IN RELATION TO NEIGHBOURING TENEMENTS MAP]

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 LOCATION

The Oyu Tolgoi project is in the Aimag (Province) of Omnogovi, located in the south Gobi Region of Mongolia. The property is approximately 570 km south of the capital city Ulaanbaatar.

The elevation of the Oyu Tolgoi property ranges from 1,140 m to 1,215 m above sea level. The topography largely consists of gravel-covered plains, with low hills along the northern and western lease borders. Scattered, small rock outcrops and colluvial talus are widespread within the northern, western and southern parts of the property.

5.2 REGIONAL CENTRES AND INFRASTRUCTURE

There are a number of communities in the South Gobi region. The most prominent is Dalanzadgad, population 14,000, which is the centre of the Omnogovi aimag and located 220 km northwest of the Oyu Tolgoi property. Facilities at Dalanzadgad include a regional hospital, tertiary technical colleges, domestic airport and a 6 MW capacity coal-fired power station. Ivanhoe envisions that Dalanzadgad may be suitable as a regional centre for recruiting and training. The closest community to the property is Khanbogd, the centre of the Khanbogd soum. Khanbogd has a population of approximately 2,000 and is located 45 km to the east. Other communities relatively near to the project include Mandalgovi (population 13,500), which is capital of the Dundgovi aimag and located 310 km north of the project on the road to Ulaanbaatar, Bayan Ovoo (population 1,600), 55 km to the west, and Manlai (population 2,400), 150 km to the north.

5.3 CLIMATE

The south Gobi region has a continental, semi-desert climate with cool springs and autumns, hot summers, and cold winters.

The average annual precipitation is approximately 80 mm, 90% of which falls in the form of rain with the remainders as snow. Snowfall accumulations rarely exceed 50 mm. Maximum rainfall events of up to 43 mm have been recorded for short-term storm events. In an average year, rainfalls on only 25 to 28 days and snowfalls on 10 to 15 days. Local records indicate that thunderstorms are likely to occur between 2 and 8 days a year at the project area with an average total of 29 hours of electrical activity annually. An average storm will have up to 83 lightning flashes a minute.

Temperatures range from an extreme maximum of about 36 degrees C to an extreme minimum of about -31 degrees C. The air temperature in wintertime fluctuates between -5 degrees C and -31 degrees C. In the coldest month, January, the average temperature is -12 degrees C.

Wind is usually present at the site. Very high winds are accompanied by sand storms that often severely reduce visibility for several hours at a time. The records obtained from 9 months monitoring at the Oyu Tolgoi project weather station show that the average wind speed in April is 5.5 m/sec. However, windstorms with gusts of up to 40 m/sec occur for short periods. Winter snowstorms and blizzards with winds up to 40 m/sec occur in the Gobi region between 5 and 8 days a year. Spring dust storms are far more frequent and these can continue through June and July.

5.4 PHYSIOGRAPHY

The region is covered by sparse semi-desert vegetation and is used by nomadic herders who tend camels, goats and sheep. Several ephemeral streams cross the lease area and flow for short periods immediately after rainfall. Water is widely available from shallow wells.

The Oyu Tolgoi property is relatively flat with occasional exposed bedrock. This topography will be amenable to the construction of the necessary infrastructure, including tailings storage sites, heap leach pads, waste disposal, and processing plant sites.

5.5 SEISMICITY

Knight Piesold completed a preliminary seismicity review from the Global Seismic Hazard Assessment Map, which is normally a reasonable reference source to conduct this level of review. The map indicates that the site lies within a very high hazard zone with a 475 year return period, peak ground acceleration of 0.4 to greater than 0.48 g.

A brief review of the worldwide seismic databases determined that there is a paucity of records for the Oyu Tolgoi area. A detailed seismic assessment, including a risk evaluation, will be required to develop the design criteria and to minimise the design level. While this is likely to result in a high seismic zoning and high ground acceleration values for design, the analysis could also result in a downgrading of one or even two zones.

5.6 TRANSPORTATION INFRASTRUCTURE

Ivanhoe currently accesses the property from Ulaanbaatar either by an unpaved road, via Mandalgovi (a 12-hour drive under good conditions), or by air. Ivanhoe has constructed a 1,600 m long gravel airstrip at the site. The Trans-Mongolian Railway, which crosses the Mongolia-China border approximately 420 km east of the property, traversing the country from southeast to northwest through Ulaanbaatar between Russia and China. The

Chinese government has upgraded 226 km highway from Gushaan Suhait to Wuyuan, providing a direct link between the Mongolian border crossing, 80 km south of Oyu Tolgoi, and the Trans-China Railway system (Figure 5-1). Ivanhoe (through Ivanhoe) has entered into negotiations with Mongolian and Chinese government authorities to extend the highway the final 80 km to the Oyu Tolgoi project site.

FIGURE 5-1: TRANSPORTATION INFRASTRUCTURE

[TRANSPORTATION INFRASTRUCTURE MAP]

5.7 OTHER RESOURCES

The Mongolia government has previously conducted extensive exploration for water resources in the south Gobi region and a number of such resources were discovered. Several possible sources of water lie within 20 to 60 km of the project site.

6.0 HISTORY

A minor amount of copper was recovered from malachite and chrysocolla at the South Oyu deposit during the Bronze Age, as indicated by small circular pits and minor copper smelting slag (Tseveendorj and Garamjav, 1999).

The Oyu Tolgoi district was explored by a joint Mongolian and Russian regional geochemical survey during the 1980s, when the Central Oyu area was identified as a molybdenum anomaly. Dondog Garamjav (now senior geologist with Ivanhoe Mines Mongolia) first visited Oyu Tolgoi in 1983 and found evidence of alteration and copper mineralization at South Oyu. In September 1996 he brought a team of Magma Copper geologists to the area, who identified a porphyry copper leached cap nearby. Exploration tenements were secured in late 1996.

During the 1997 field season, BHP, which had acquired Magma Copper, carried out geological, geochemical and geophysical surveys and completed a six-hole diamond-drilling program of 1,102 m (Perello, 2001). This program was designed to test the potential for secondary chalcocite mineralization at Central Oyu and for hypogene copper-gold mineralization at South Oyu. Drill hole OTD3 at Central Oyu intersected 10 m of 1.89% copper from 20 m below surface, and drill hole 4 at South Oyu encountered 70 m of 1.65% copper and 0.15 g/t gold at a depth of 56 m. A second drilling program of 17 widely spaced, relatively shallow holes (2,800 m total) was completed in 1998. Based on the results of this drilling, BHP in 1999 estimated a preliminary resource of 438 Mt averaging 0.52% copper and 0.25 ppm gold (Perello, 2001).

BHP shut down its exploration in Mongolia in mid-1999 and offered its properties for joint venture. Ivanhoe visited Oyu Tolgoi in May 1999 and made an agreement to acquire 100% interest in the property, subject to a 2% Net Smelter Royalty (NSR). Ivanhoe completed all of its earn-in requirements by June 2002 and became the owner of the property. In November 2003 Ivanhoe acquired the 2% NSR royalty retained by BHP Minerals International Exploration, a subsidiary of BHP.

Ivanhoe carried out 8,000 m of reverse circulation (RC) drilling in 2000, mainly at Central Oyu, to explore the chalcocite blanket discovered earlier by BHP. Based on this drilling, Ivanhoe estimated an indicated resource of 31.7 Mt at 0.80% copper and an additional inferred resource of 11.2 Mt grading 0.78% copper (Cargill, 2002). In 2001, Ivanhoe continued RC drilling, mostly in the South Oyu area, to test possible oxide resources, and then completed three diamond drill holes to test the deep hypogene copper-gold potential. Hole 150 intersected 508 m of chalcopyrite-rich mineralization grading 0.81% Cu and 1.17 g/t Au. Hole 159 intersected a 49 m thick chalcocite blanket grading 1.17% Cu and 0.21 g/t Au, followed by 252 m of hypogene covellite mineralization grading 0.61% Cu and 0.11 g/t Au.

These three holes were sufficiently encouraging for Ivanhoe to mount a major follow-up drill program. In late 2002, drilling in the far northern section of the property intersected 638 m of bornite-chalcopyrite-rich mineralization in hole 270, starting at a depth of 222 m. This hole marked the discovery of the Hugo Dummett deposit.

[IVANHOE MINES LOGO] IVANHOE MINES LTD.
TECHNICAL REPORT
OYU TOLGOI, MONGOLIA

7.0 GEOLOGICAL SETTING

7.1 REGIONAL GEOLOGY

Oyu Tolgoi occurs in an early to mid Paleozoic island arc environment, which is part of the Gurvansayhan terrane (Badarch et al., 2002). This terrane hosts several other South Gobi porphyry deposits, including Tsagaan Survarga (140 km northwest of Oyu Tolgoi). The terrane is composed of lower to mid Paleozoic metasediments and island arc basalts that rest upon a lower Paleozoic ophiolite complex. The structure of the terrane is complex and is dominated by imbricate thrust sheets, dismembered blocks and melanges (Badarch et al., 2002). Devonian to Carboniferous diorite and monzodiorite intrusive complexes appear to be spatially (and genetically?) associated with a major northeast-trending suture zone termed the East Mongolian Fault Zone. This suture, thought to be active from mid Paleozoic to Mesozoic times, forms the southern boundary of the Gurvansayhan terrane. On the northwest margin of the Gurvansayhan terrane (100 to 130 km northwest of Oyu Tolgoi) several other Cu-Au porphyry systems and high-sulphidation alteration zones occur in an east-northeast-trending belt (e.g., Kharmagtai, Shuteen).

The arc terrane, at 50 km scale around Oyu Tolgoi, is dominated by basaltic volcanics and intercalated volcanogenic sediments, intruded by plutonic-size hornblende-bearing granitoids of mainly quartz monzodiorite to possibly granitic composition. Carboniferous sedimentary rocks (identified by plant fossils) overlie this assemblage, including parts of the Oyu Tolgoi exploration area. In addition, the largest magmatic system near Oyu Tolgoi (7 km from porphyry alteration) is the Lower Permian, Na-alkalic Hanbogd Complex. The Hanbogd Complex appears to comprise two adjacent sub-circular intrusions up to 35 km in diameter, possibly emplaced along N70E structures. Satellite imagery reveals a concentric structure, which correlates to abundant pegmatite dykes. The pegmatites are enriched in Rare Earth elements and Zr. The Hanbogd Complex has a flat roof, as indicated by numerous basaltic wall rock roof pendants, and may therefore have a "pancake" or lopolithic structure.

7.2 OYU TOLGOI PROPERTY GEOLOGY

A tentative hardrock stratigraphy based mainly on extensive trenching (total ~20kms), drilling data, as well as detailed mapping of all outcrops in the exploration block (1:5000 scale), is shown in Figure 7-1. The stratigraphy is divided into 3 broad sequences, from oldest to youngest:

1. Late Devonian basaltic to dacitic volcanic rocks (Volcanic Arc sequence)

2. Late Devonian sedimentary rocks with intercalated basaltic flow breccia (Lower sedimentary-volcanic sequence)

FIGURE 7-1: GENERAL STRATIGRAPHIC COLUMN FOR THE OYU TOLGOI PROSPECT

[EXPLORATION BLOCK STRATIGRAPHY GRAPHIC]

3. Late Tournaisian-Early Visean terrigenous to shallow marine sedimentary rocks, with andesitic ash flow tuffs and lava, carbonaceous shale and coaly layers, overlain by a thick sequence of basaltic tuff (Upper sedimentary-volcanic sequence).

A wide variety of felsic to mafic dykes is found throughout the exploration block and in drill holes. Post-mineral dykes comprise basalt, hornblende-biotite andesite, rhyolite and biotite granodiorite. Hornblende-biotite andesite dykes may be co-magmatic with andesitic ignimbrite, and intrude this unit (the lower part of the Upper sedimentary-volcanic sequence), but do generally do not intrude overlying sedimentary units. Rhyolite and basalt dykes intrude the Carboniferous sedimentary rocks but not the overlying basaltic tuffs. Copper-gold porphyry and related systems in the exploration area are related to phenocryst-rich quartz monzodiorite intrusions that range in size from meter-wide tabular dykes to larger intrusions with plan dimensions in kilometres. The quartz monzodiorites may be co-magmatic with dacitic ash flow tuff, and may be Late Devonian in age.

7.3 PROPERTY STRUCTURAL GEOLOGY

Structural features found within the Oyu Tolgoi project area were studied and described by Dr. Peter Lewis, P.Geo., of Lewis Geocience Inc. in numerous Ivanhoe reports. AMEC used material from these reports as well as personal communication with their author.

Structural features on the Oyu Tolgoi project area developed during deformation events ranging in age from at least the Late Paleozoic to present. Four distinct episodes of deformation are supported, with common reactivation of earlier formed features by later events.

The alignment of deposits at Oyu Tolgoi strongly indicates control by a deep NNE-striking fault or fracture zone. This feature may be responsible for localizing ascent of productive magmas along the trend defined by the positions of the deposits. Such a feature would likely have been a long-lived structure with a pre-mineral movement history. The manifestation of this fault at shallow crustal levels is limited to low-displacement faults, dyke shapes, and the distribution and form of the deposits.

7.3.1 PRE-MINERALIZATION FAULTING

Stratigraphic distribution patterns in the project area strongly suggest that WNW-striking, moderately N-dipping faults were active synchronous with deposition of the Lower sedimentary sequence. Faults showing evidence of syn-sedimentary movement include the 110 Fault (Hugo Dummett deposit area) and the Central Fault (between Hugo Dummett and Central deposits). Kinematics history of these structures is poorly constrained but data are consistent with extensional faulting during NNE-oriented extension.

7.3.2 SYN-MINERALIZATION DEFORMATION

Quartz +/- sulphide veins in most of the deposit areas show at least a moderate degree of preferred orientation. In the Southern deposits, maximum concentrations of vein orientations strike north to northwest, and dip steeply to the west. These orientations are consistent with formation within a structural regime with a W to SW axis of extension. The Hugo deposits do not share these orientations: at Hugo South, veins show little or no preferred orientation, while at Hugo North maximum concentrations of veins are sub-parallel to stratigraphic contacts.

Crosscutting relationships in drill core indicate that in the Southwest and South Oyu deposit areas, northwest-striking, sub-vertical faults were active during mineralization. These faults contain kinematic indicators (asymmetric gouge fabrics, secondary fault surfaces) implying sinistral, sub-horizontal movement. This displacement direction is compatible with the vein orientations in the Southern deposits; however, it cannot be proved that the kinematic indicators formed synchronous with the veins, and not during a post-mineral period of fault re-activation.

Orientations of mineralized veins, combined with the kinematic history of syn-mineralization faulting imply that mineralization in the project area formed within a WSW-ENE extensional setting.

7.3.3 POST-MINERALIZATION NNE FOLDING AND RELATED FAULTING

Abundant NNE-trending folds are defined by bedding measurements from oriented drill core within the bedded Lower and Upper sedimentary sequences. These are particularly well documented in the eastern Hugo deposit area, but likely to occur throughout the concession. On a larger scale, gradual changes in the orientations of ignimbrite unit contacts also define an open, NNE-trending flexure approximately coinciding with the axis of the Hugo deposits. This folding indicates that the deposit area was subject to a period of WNW-ESE shortening in Carboniferous or younger time.

At Hugo Dummett, several NNE-striking, east-dipping faults occur as zones of gouge and breccia up to several meters wide within and along the margins of the deposit. These faults likely formed during the post-mineralization folding event to accommodate strain incompatibilities arising from the contrasting rheology of the units enclosing the deposit.

The timing of NNE folding is constrained by the Carboniferous age of the youngest folded strata, and the Cretaceous age of regional units lacking this evidence of this folding. There is no direct evidence that the numerous pre-existing faults in the deposit area were reactivated during the NNE folding event, and most have an orientation that would be unfavourable for reactivation within the structural regime accompanying folding.

7.3.4 LATE JURASSIC/EARLY CRETACEOUS FAULTING AND FOLDING

Approximately 40 km to the south of the Oyu Tolgoi project area, a period of extensional rifting commencing in late Jurassic to early Cretaceous time resulted in formation of the NE-trending East Gobi Basin (Johnson et al., 2001). Although there is no direct evidence that this extensional deformation reached Oyu Tolgoi, the presence of a Cretaceous chalcocite blanket at Central Oyu is consistent with extension-related exhumation of the deposit area during this event.

Broad reversals in plunge direction of NNE trending folds at Hugo Dummett, and fold interference patterns in the SE part of the project area are consistent with a late set of NW trending folds superimposed on the NNE folds. The NW fold orientation is compatible with folding during Jurassic - Cretaceous extensional event, although no direct age constraints exist at Oyu Tolgoi. As well, the NNE-striking dextral shear zone in the NW corner of the concession is kinematically compatible with the Early Cretaceous structural regime.

7.4 SOUTHERN OYU TOLGOI DEPOSITS

The Southern Oyu Tolgoi deposits occur in a triangular zone 1.9 km N-S x 1.5 km E-W at the base of the triangle. This zone encompasses three porphyry centres, Southwest Oyu Tolgoi, Central Oyu Tolgoi, and South Oyu Tolgoi. The region lying between Southwest and South deposits also contains copper sulphide mineralization, and has been named Wedge Zone.

7.4.1 SOUTHWEST DEPOSIT

The Southwest deposit is an Au-rich porphyry system, characterized by a pipe-like geometry, encompassing a high-grade core ((greater than) 0.7 g Au/t) about 250 m in diameter and extending over 700 m vertically. The deposit is centred on small (metres to tens of metres wide) quartz monzodiorite dykes and lies between two major northeast-striking, steeply northwest-dipping faults, West Bounding Fault and the East Bounding Fault. Over 80% of the deposit is hosted by massive porphyritic augite basalt. Strong quartz veining ((greater than) 20% volume) and secondary biotite alteration define the core of the porphyry system. There is no outward sericite zone; instead, weak epidote occurs at about a 600 m radius. The high-grade core is enclosed by a large low-grade ore shell (0.3% Cu; 0.3 g Au/t) 600 m x 2,000 m in area. The system is low sulphide ((less than) 5%), and the Cu-Au is related to chalcopyrite. Bornite is minor ((less than) 20%). Moderate to strong hydrothermal magnetite and gypsum-anhydrite mineralization are characteristic.

The porphyry system is related to several generations of porphyritic quartz monzodiorite (Qmd) dykes intruding massive porphyritic augite basalt. The earliest Qmd dykes (OT-Qmd) occur in the high-grade core of the deposit; they are small (metres to tens of metres wide) and may be discontinuous between drill holes. The OT-Qmd dykes are strongly

quartz-veined ((greater than) 20% by volume) and exhibit intense sericite alteration that overprints and obscures early K-silicate alteration (mainly biotite). Detailed logging suggests that the OT-Qmd is a multiply injected dyke swarm intruded as high-temperature quartz veining and K-silicate alteration developed, with later dykes entraining early quartz vein clasts (but not sulphide mineralization).

On the northwest and east side of the high-grade core, large quartz monzodiorite dykes with moderate to strong sericite alteration and weak sulphide mineralization are intruded in N25E to N70E directions. These dykes are regarded as intra- to post-mineral, but although they delimit the high-grade core of the deposit, they generally are not observed to cut high-grade mineralization. Hence, the role of these dykes may be to provide a structural focus for the late mineralizing fluids. They also host sporadic gold-rich base metal veins at a radius of about 600 m from the centre of the high-grade zone. The east side of the deposit is interpreted from ground-magnetics and drill data to comprise an N25E-trending 80 NW-dipping structural zone intruded by the late quartz monzodiorite dykes. Since these dykes dip to the northwest, they underlie the high-grade orebody at depths (greater than) 800 m. Although weakly copper-mineralized, the N25E dyke zone exhibits Au:Cu ratios of (less than) 1 (Au in g/t, Cu in %), a characteristic of the adjacent South deposit rather than the Southwest deposit.

In the core of SW Oyu, early K-silicate alteration and quartz veining was followed by volumetrically minor implosion breccias characterized by shard-like, angular clasts of quartz vein, OT-Qmd and biotite-altered basalt wall rock clasts. These breccias contain early chalcopyrite as clasts or mineralized fragments, but also exhibit late pyrite-chalcopyrite mineralization in their matrix. A highly irregular xenolithic quartz monzodiorite (i.e., entraining the breccia clasts) intrudes the implosion breccia. This intrusion varies from relatively unaltered to intensely altered and exhibits spectacular zones of coarse minerals including biotite, muscovite, tourmaline, pyrite and albite. These alteration assemblages show an evolution to strong hydrolytic alteration in the core of the deposit, coupled with final stages of mineralization and quartz monzodiorite intrusion.

Fault geometry and kinematics, vein orientations, and deposit geometry at SW Oyu imply a structural model invoking deposit formation in a dilational fault transfer zone. This zone is delineated by the West Bounding Fault on the NW, and the East Bounding Fault on the SE. As sinistral displacement on the West Bounding Fault decreases southward, movement is transferred across the deposit area to the East Bounding Fault, forming a zone of dilation between the two major faults. The steep W to SW dips of the dominant vein sets within the SW deposit area are compatible with a shallowly east-plunging axis of extension. This easterly plunge is also evident in bedding orientations to the east of the deposit, and may be an artefact of post-mineralization tilting or folding.

Post mineral dykes are common in SW Oyu and comprise rhyolite and hornblende andesite dykes. The rhyolite dykes tend to have EW and WNW strikes in the deposit core,

and NE strikes when emplaced along the bounding faults. Hornblende andesite dykes strike ENE, except where they intrude along the NE-striking West Bounding Fault.

7.4.2 SOUTH DEPOSIT

The South deposit is a copper porphyry deposit, developed in basaltic volcanics and related small, strongly-sericite altered quartz monzodiorite dykes. To the southwest, the host rock sequence is intruded by unmineralized quartz monzodiorite, while to the northeast it is overlain by weakly to non-mineralized ignimbrite and northeast-dipping non-mineralized strata of the Lower Sedimentary Sequence. The deposit lies on a NE-trending structural block bounded by two sub-parallel faults, the South Fault to the northwest, and the Solongo Fault to the southeast. The South Fault includes two splays cutting into the adjacent fault block to the north, and is interpreted to merge with the East Bounding Fault to the south. Both of the NE-striking bounding faults juxtapose significantly higher stratigraphic levels against the augite basalt hosting the deposit, defining a horst geometry in the deposit area. Their orientation implies that if they were present during mineralization, they would likely have accommodated dominantly sinistral strike-slip displacement.

South Oyu is characterized by secondary biotite, magnetite and moderate intensity quartz veining (10% by volume), with strong late-stage overprinting by sericite-chlorite-smectite (intermediate argillic alteration). The main sulphide minerals are chalcopyrite and bornite. Unlike the nearby Southwest system, gold mineralization at South Oyu is distinctly lower grade. Surface exposures suggest that the deposit may contain a tabular, northwest-striking core zone dominated by sheeted veins, grading outward into peripheral weaker stockworks. This core zone may be localized within a zone of extension linking the bounding faults to the northwest and southeast, which formed to accommodate internal strain within the hosting fault block.

The South deposit is intruded by numerous post-mineral dykes: rhyolite, basalt and subordinate hornblende-biotite andesite. The post-mineral dykes are usually small (metres) but may occupy up to 50% of the rock volume. However one major east-west trending, rhyolite dyke is up to 50 m thick in places. Dyke orientations are similar to those in the SW deposit.

7.4.3 WEDGE ZONE DEPOSIT

The Wedge Zone deposit is a newly outlined zone that, in part, consisted of what was previously described as the South deposit. The Wedge Zone is the area bound by the NNE striking East Bounding Fault to the west and the NE striking South and Solongo faults to the southeast. These structural features outline a triangle or wedge-shape whose apex is defined by the intersection between the East Bounding Fault and Solongo Fault in the southern part of the property. The deposit is conformably overlain to the northeast by units

of the Lower Sedimentary Sequence. The southern portion is dominated by weakly altered and mineralized Qmd. The dominant volcanic unit preserved here is the Dacite ash flow tuff or ignimbrite unit. Augite basalt is present at depth but its extent is limited due to the Qmd intrusions.

Mineralization is hosted in strongly altered ignimbrite units to the north, and Qmd and lesser augite basalt to the south. Intensity of alteration and sulphide mineralization is most intense along the eastern side of the East Bounding Fault in the transition area between SW Oyu and Central Oyu (called the Bridge Zone) west of the same fault. Current data show similar alteration styles and mineralogy to that seen in ignimbrite units in the Hugo Dummett South deposit. That is strong advanced argillic alteration.

The Wedge Zone is intruded by post-mineral dykes: EWE striking rhyolite dykes and NNE striking biotite granodiorite dykes are the most common. The latter occur in a rather narrow zone, parallel and just east of the East Bounding Fault.

7.4.4 CENTRAL DEPOSIT

The Central Oyu deposit occurs mainly within several phases of quartz monzodiorite intrusive rocks and associated intrusive/hydrothermal breccia, with volumetrically subordinate zones of augite basalt. The quartz monzodiorite (Qmd) dykes occupy over 80 percent of the area but have a complex geometry, and consequently their distribution and structural controls are poorly understood. In general, three Qmd intrusive phases can be recognized, based on quartz vein intensity and intrusive relationships. The earliest phase exhibit the highest intensity of quartz veining, whereas late Qmd dykes are relatively unaltered and poorly quartz-veined. The Central Oyu deposit area is overlain to the east by non-mineralized Lower Sedimentary Sequence conglomerate, mudstone, and siltstone beds. Wide zones of breccia and foliated breccia occur along the basal contact of these sedimentary units.

Most contacts between the Qmd units and volcanic rocks are intrusive, although minor faulting occurs locally along some contacts. Post-mineralization faults can be identified as minor zones of breccia and cataclasite in some drill holes, but it is not possible to correlate these intersections between drill holes to define continuous fault surfaces. Pre- or syn-mineral faulting, if present, is largely obscured by intrusive and hydrothermal overprinting.

The Central deposit contains high-sulphidation (covellite-chalcocite-enargite) and Cu-Au (chalcopyrite-gold) porphyry styles, as well as a chalcocite enrichment blanket. High-sulphidation (HS) alteration and mineralization are telescoped onto an underlying gold-rich porphyry system. The HS system is centred on multiple intruded quartz monzodiorite dykes characterized by a high intensity of porphyry-related quartz veining.

Current interpretations of the Central deposit (principally as defined by covellite-chalcocite and advanced argillic alteration) indicate it may be somewhat "funnel-shaped," suggesting that high-sulphidation alteration extended upward to a paleosurface. Laterally at the margins and at depth, the advanced argillic zone shows a transition to intermediate argillic and chlorite alteration assemblages that overprint early biotite alteration. Chalcopyrite mineralization at these margins is commonly gold-rich, either relict from early Au-rich porphyry mineralization or possibly HS-related.

Post mineral dykes are present in Central Oyu and comprise rhyolite, biotite granodiorite and uncommon hornblende andesite dykes. The rhyolite dykes are most common, usually occurring along the periphery of the deposit displaying EW and WNW strikes. Biotite granodiorite dykes occur along the deposit's eastern margin and tend to strike NNS to NS. Hornblende andesite dykes, when present, strike ENE.

7.5 HUGO DUMMETT DEPOSIT

The Hugo Dummett deposit is the northernmost of at least three mineralized centres comprising the Oyu Tolgoi Cu-Au porphyry/high-sulphidation mineralized system. Though not the focus of this Technical Report, it is briefly described here for the sake of completeness of the property's geological description. The Hugo Dummett deposit extends over a strike length of 2.6 km and appears to be bound on the northern end by a ENE trending, late high angle reverse fault that juxtaposes quartz monzodiorite intrusive rock, outcropping to the north of the deposit with the barren sediments that overlie the deposit. Underlying these sediments are dacitic ash flow tuffs and phyric basalt that constitute the principal host rocks of the deposit. These volcanic and volcaniclastic rocks appear to be folded into a monocline having its flat lying limb as the central core of the deposit and a steeply east dipping limb that bounds the eastern flank of the deposit. The western boundary of the monocline is cut by a steeply dipping to vertical fault referred to as the West BAT Fault.

Quartz-monzodiorite (Qmd) intrusions, with varying degrees of chalcopyrite and pyrite mineralization, irregularly intrude into the underlying basalts as fingers and dykes. At the northern end of Hugo North, an intense quartz stockwork has been intersected in several deep holes proximal to a significant increase in gold content of the bornite-rich mineralization hosted by both the quartz-rich basalt and the Qmd.

Bornite + chalcopyrite mineralization is centred on a zone of intense quartz veining that extends along the axis of the entire deposit. Highest-grade mineralization corresponds to zones of (greater than) 90% quartz, which may be over 80 m thick in drill core. In long section the quartz vein zone and corresponding high-grade mineralization ((less than) 2% Cu) is flat lying or dips at moderate angles to the north. The northerly plunge of the deposit is also in part due to a series of N70E and East-West cross faults that step the deposit down to the north. In cross section, it can be modeled as elliptical grade shells perpendicular to the vein zone

extent, with dimensions up to 300 m x 500 m, and oriented with the long axis of the ellipse approximately parallel to bedding.

Host rocks are differentially altered. The dacitic ash flow tuff or ignimbrite is intensely advanced argillic altered, including, quartz, pyrophyllite, andalusite, topaz, crandallite, alunite, diaspore, zunyite, kaolinite and late dickite. The augite basalt is altered to sericite, kaolinite, minor chlorite and locally pyrophyllite (typically at the ash flow tuff contact). At least locally strong hematite alteration encloses zones of intense advanced argillic alteration, and hematite typically forms a transitional zone to sericite-chlorite altered basaltic rocks below the ash flow tuff. Early K-silicate alteration is suspected to have been present in at least some Qmd intrusions and related wall rocks and spatially linked to the zone of intense quartz veining. K-silicate alteration is recognized in the basalt as biotite, although it is partly obscured by the above assemblages. Strongly mineralized intrusions are encountered mainly in the Hugo Dummett North deposit. These intrusions are characteristically red, and contain abundant quartz veins. Late, weakly to moderately mineralized Qmd intrusions contain sparse quartz veins and are typically sericite-altered.

The Hugo Dummett area contains multiple unmineralized pre and post mineral dykes, that appear to trend northerly (still open to interpretation) and include pre-mineral(?) biotite granodiorite; late to post mineral biotite-hornblende andesite; and post mineral basalt and rhyolite dykes. The biotite granodiorite dykes are prominent along the entire western flank of the deposit. In Hugo North they change from steeply dipping, 10 m to 20 m thick dykes flanking the western edge of the (greater than) 2% copper grade shell into a large intrusive mass, (greater than) 100 m to 200 m in thickness in the overlying barren sediments.

8.0 DEPOSIT TYPES

The Oyu Tolgoi deposits are Cu-Au porphyry and related high-sulphidation Cu-Au mineralization types. Cu-Au porphyry deposits are low-grade bulk tonnage, where copper sulphides are finely disseminated or deposited in anastomosing veins and fractures in a large volume of rock. High-sulphidation Cu deposits for Oyu Tolgoi are gold-poor but have similar characteristics, and both types are amenable to large-scale open pit or underground bulk mining methods.

9.0 MINERALIZATION

9.1 SOUTHWEST DEPOSIT

Cu-Fe sulphide mineralization in the Southwest deposit consists mainly of finely disseminated chalcopyrite and minor bornite. Pyrite contents are low, generally less than 2%. Molybdenite is ubiquitous occurring mainly on late structures. Bornite is subordinate to chalcopyrite and is estimated to comprise less than 20% of the copper mineralization. The bulk of the orebody is within basaltic wall rocks, with less than 20% hosted by quartz monzodiorite. Au:Cu ratios (Au in g/t, Cu in %) vary from 2 to 4:1, with highest ratios in the deeper part of the deposit and possibly in the core of the porphyry system. Outside the gold-rich zone, the augite basalts contain anomalous gold contents, which become subtly Au-richer southward (defined as the Far South sub-zone). Au:Cu ratios in this areas are closer to 1:1

Mineralization at Southwest is correlated to vein density and distribution. Veins are quarz-dominant with variable amounts of sulphide (pyrite, chalcopyrite and bornite), K-feldspar, chlorite and carbonate. Most veins have widths of several millimetres to several centimetres, although within the core of the deposit veins up to a metre or more thick occur. Vein contacts can be either planar or variably deformed, and folded and/or faulted veins are common. The combination of folded veins, minor faults and ductile shears, and localized foliated zones attests to semi-brittle deformation within the deposit area during mineralization.

Drill-holes that pass through the centre of the Southwest deposit show a transition from irregularly oriented stockwork veins in peripheral mineralized zones, to sub-parallel or sheeted veins within the highest-grade core zone. Core zone veins have a moderately to strongly preferred orientation corresponding to moderately SW-dipping surfaces. In the peripheral mineralized zones, vein data show a strong clustering corresponding to sub-vertical, N to NNW striking orientations.

The intersection between the controlling faults and the dominant vein set parallels the direction of maximum structural permeability, and thus represent the most effective direction of hydrothermal fluid flow during mineralization. Notably, the long axis of the deposit as defined by the gold-rich envelope is within a few degrees of this intersection line.

9.2 SOUTH DEPOSIT

Cu-Fe sulphide mineralization at the South deposit consists of finely disseminated bornite and chalcopyrite. Pyrite contents are low. Bornite may be dominant in the most strongly mineralized zones (Cu (greater than) 1%). As at Southwest, molybdenite occurs locally on late-stage structures. Although overall Au:Cu ratio's are low at the South deposit, gold grade is supplemented by narrow high-grade gold veins (up to 50 ppm over 2 m assay intervals), sporadically found throughout the South deposit.

Vein orientation data for South Oyu are limited and show variable results. In surface exploration pits, quartz-dominant veins occur in northwest-striking, steeply northeast-dipping, strongly sheeted sets. Outcrops adjacent to the pits and oriented drill core data contain stockwork vein styles that lack a clear preferred orientation.

9.3 WEDGE ZONE DEPOSIT

Sulphide mineralization in the Wedge Zone consists of two main types: that which is hosted primarily within strongly altered ignimbrite in the north half (generally north of the high-grade Au zone in SW Oyu, beside the SW - Central transition area called the Bridge Zone) and mineralization hosted in altered Qmd in the south (generally beside the SW Gold Zone). The mineralization comprises bornite and chalcopyrite with subordinate pyrite and enargite. Bornite is the dominant phase in the highest-grade areas. Most of the mineralization appears to be stratabound, occurring in the ignimbrite, generally sub-paralleling the contact with the Lower Sedimentary Sequence. Qmd mineralization roughly parallels the intrusive contact with the remnant ignimbrite and lesser augite basalt. A distinctly higher copper grade zone is observed closest to the sediment contact (within 5 to 50 m of the base of the sedimentary units). Except for two or three local areas, gold mineralization is sparse. The Wedge Zone represents a gold depleted area.

9.4 CENTRAL DEPOSIT

The Central Oyu deposit contains several styles of mineralization; volumetrically the most important is finely disseminated pyrite-covellite-chalcocite. The covellite-chalcocite zone is pyritic (~10%) and is hosted by buff coloured advanced argillic-altered quartz monzodiorite. It is mineralogically complex and contains minor amounts of chalcopyrite, bornite, enargite, tetrahedrite and tennantite. The best covellite-chalcocite mineralization correlates to the highest intensity of quartz veining, suggesting that this mineralization is inherited from earlier porphyry copper mineralization. Quartz+sulphide veins measured from the core of the deposit show a weak to moderate preferred orientation corresponding to WSW-dipping vein surfaces. In contrast, those from peripheral areas of the deposit show little or no preferred orientation.

A chalcocite enrichment blanket (up to 40 m thick) is developed over parts of the Central Oyu deposit and usually corresponds directly to the most strongly quartz-veined zones in quartz monzodiorite. The quartz-veined zones are also typically strongly covellite mineralized, thereby suggesting an inheritance from earlier porphyry mineralization. There are exceptions where strong covellite correlates to the intensity of advanced argillic alteration rather than quartz vein intensity. However, polished section mineralogy indicates that the chalcocite is derived from chalcopyrite-bornite (shown by relict grains enclosed in chalcocite) and is therefore formed directly from the porphyry progenitor rather than indirectly from covellite. The base of the supergene chalcocite zone is mixed with covellite over metres to tens of metres.

9.5 HUGO DUMMETT DEPOSIT

High-grade copper mineralization at Hugo Dummett occurs predominantly as bornite, chalcocite and chalcopyrite. Pyrite, enargite, tetrahedrite-tennantite occur in subordinate amounts mainly in the Hugo Dummett South deposit where sulphide associations correlate to the nature of alteration, which in turn is partly dependent on the host rock, but also exhibit a lateral zonation from the core of the high-grade shell ellipse. A typical sulphide zonation from the high-grade copper core to low-grade copper mineralization is, bornite + chalcocite, followed outward to chalcopyrite (+/- tetrahedrite-tennantite) and then finally pyrite, chalcopyrite (+/- enargite). Enargite, bornite + pyrite, and locally covellite are common sulphide minerals in the ignimbrite. A large part of the Hugo Dummett South deposit is hosted by ignimbrite, while in contrast, the high-grade mineralization at Hugo Dummett North is almost entirely within augite basalt and is dominated by bornite. Bornite + chalcopyrite-(chalcocite) occur in the augite basalt and Qmd intrusions while chalcopyrite, pyrite and enargite occur in the overlying dacitic ash flow tuffs. Molybdenite occurs locally in all rock types. Gold: copper ratio's over much of the deposit are 1:10, but in strongly quartz-veined Qmd intrusions and adjacent wall rocks encountered in Hugo Dummett North, these ratio's increase to 1:1. The high gold ratio's correlate primarily with bornite-rich mineralization.

9.6 OXIDIZED ZONE

A deep oxidized zone occurs at Oyu Tolgoi. Although present water tables are in the order of 6 m to 8 m below the surface (average elevation 1,160 m), paleowater tables (which may be related to deep weathering during the Cretaceous) are 40 m to 60 m deep over most of the deposits. Owing to high pyrite contents inherent to high-sulphidation alteration, Central Oyu is characterized by 40 m to 60 m of highly leached, soft white clay with limonite and minor jarosite on fractures. A 5 m thick siliceous regolith above the clay covers a small hill at Central Oyu. At South Oyu, hypogene Cu (sulphides) are almost completely removed in the oxide zone, but at Southwest Oyu, the oxide zone returns low-grade Cu and Au assay results. This is possibly due to partial depletion of sulphide, but it is also likely that high-grade mineralization does not reach the present surface, as Au:Cu ratios are unchanged. Because of the low sulphide contents of South and Southwest Oyu, no significant supergene chalcocite has developed. The host rocks are dominated by basalt, and so the oxidized zone is characterized by green-yellow clays (possibly chlorite-smectite) and limonite on fractures. Calcite filling fractures is also common within the oxide zone over basaltic rocks.

The best developed Cu-oxide at Oyu Tolgoi is the South oxide deposit located at Turquoise Hill, where secondary copper as malachite and minor turquoise has been exploited, possibly during the Bronze Age period. The main oxide cap corresponds to Turquoise Hill, and malachite covers an area of 300 m x 80 m along a northwest-oriented ridge. Three ancient pits are located along this ridge. The oxide zone is 40 m thick with assays up to 4% Cu from drill core and trench samples. Two smaller areas of malachite, each about 100 m x 30 m, occur nearby on lower topographic ridges. The RC collar in hole OTRCD149, drilled to test the northern flank of Turquoise Hill near the ancient pits intersected 29 m grading 1.83% copper starting at surface in the malachite-rich zone.

10.0 EXPLORATION

Exploration at Oyu Tolgoi has been mainly by remote sensing and geophysical methods, including satellite image interpretation, detailed ground magnetics, Bouguer gravity and gradient array induced polarization (IP), as well as extensive drilling. Gradient array IP has been conducted on north-south and subsequently east-west lines at 200 m line spacing, with electrode spacing up to 11 km. Drill holes have been targeted to test IP chargeability targets or structural zones. Outcropping prospects (Southwest, South and Central) have been mapped at 1:1000 scale. The central part of the exploration block was mapped at 1:5000 scale in 2001, and the entire block was mapped at 1:10,000 scale in 2002. As described below, geophysical methods have been the most important exploration tool.

The initial geophysical surveys conducted by BHP in 1996 consisted of airborne magnetics, ground magnetics and gradient array IP. The airborne magnetic survey was flown on 300 m spaced east-west lines approximately 100 m above surface level. The ground magnetic survey and IP survey were on 250 m line spacing; the latter showed chargeability anomalies over Central, South and Southwest deposits.

In 2001, subsequent to the Southwest Oyu high-grade discovery hole OTD150, Ivanhoe contracted Delta Geoscience of B.C., Canada, to conduct gradient array IP on 100 m spaced north-south lines over the 3 km x 4 km core block of Oyu Tolgoi. Using multiple current electrode (AB) spacing, ranging from 1,000 m to 3,600 m, the sulphide assemblages in Southwest, South and Central deposits were clearly defined on all of the AB plans, indicating significant vertical depth extents for the mineralization in all zones. The IP also defined a large, semi-circular feature with Central Oyu on the southern side and the Hugo Dummett IP anomaly on the north side. Considerable speculation regarding the origin of this feature ensued, including the possibility of a pyritic halo surrounding a porphyry copper core, or a ring structure around a volcanic caldera. Drill testing on 200 m spaced holes along the east-west extension of the Hugo Dummett IP anomaly ultimately resulted in the drilling of hole OTD270 at the eastern end of the anomaly. This proved to be the discovery hole for Hugo Dummett South.

With the recognition that the Hugo Dummett high-grade copper zone might be trending north-northeast, Delta Geoscience re-oriented the IP survey lines to east-west and re-surveyed the core block of Oyu Tolgoi on 100 m spaced lines using multiple AB current electrode spacing. This survey resulted in an entirely different chargeability signature that now appears to reflect a continuous zone of sulphide mineralization extending north-northeasterly from the southwest end of Southwest Oyu through to the northernmost extent of the property, for a total strike length of approximately 5 km (Figure 10-1). The Southwest Oyu high-grade, near-vertical pipe clearly responds on this survey, becoming tightly constrained with depth. The Central Oyu mineralization now trends north to northeasterly and continues to be the dominant chargeability feature on the IP map, reflecting concentrations of pyrite up to 10% and the central covellite core of the high-

sulphidation system. Extending north-northwesterly from Central Oyu, the strong IP anomaly reflecting 4% to 6% pyrite mineralization extends through Hugo Dummett, with the high-grade copper mineralization intersected in hole OTD270 and subsequent drill holes flanking it on the east side. The contrast between the copper-rich sulphide mineralization and the pyrite-rich mineralization reflects the overall sulphide concentration and the depth of burial of the copper-rich zone.

Detailed total field, ground magnetic surveys, reading 25 m x 5 m and 50 m x 10 m centres, have been completed over the full Oyu Tolgoi tenement (Figure 10-2). Although done in two surveys, the data were merged to produce a high-quality magnetic image of the block. The structural fabric of the property is clearly reflected by the magnetic survey, as are the hydrothermal magnetite-altered basalts underlying South and Southwest deposits. The magnetite-rich, unmineralized basalts underlying the southern boundary of the property and buried under sedimentary cover on the east side are also clearly distinguished. The subtle, elongated magnetic features flanking the Hugo Dummett copper-rich zone may be related to deeply buried, hydrothermal magnetite-rich basalt similar to Southwest.

FIGURE 10-1: GRADIENT ARRAY IP (E-W LINES)

[GRAPHIC - MAP "GRADIENT ARRAY IP (E-W LINES)"]

FIGURE 10-2: GROUND MAGNETICS

[GRAPHIC - MAP "GROUND MAGNETICS"]

11.0 DRILLING

Diamond drill holes are the principal source of geological and grade data for the Oyu Tolgoi project. Ivanhoe conducted diamond drilling over the Southern deposits throughout 2003 (Central and Southwest) and the first half of 2004 (Southwest, South and Wedge). As of the mineral resource cutoff date of 30 June 2004, drilling totals just under 255,000 m in 539 drill holes for the Southern deposits of Oyu Tolgoi. The holes generally range in length from 60 m to 1,200 m, averaging 610 m. A list of the project drill holes, together with their coordinates and lengths, is provided in Appendix A, along with a location plan.

Drilling was done by wireline method with H-size (HQ, 63.5 mm nominal core diameter) and N-size (NQ, 47.6 mm nominal core diameter) equipment using up to 20 drill rigs. Upon completion, the collar and anchor rods were removed and a PVC pipe was inserted into the hole. The hole collar was marked by a cement block inscribed with the hole number. Recent drilling at Southwest included multiple daughter holes drilled from the parent drill hole. A bend was placed in the parent hole at the location where the planned daughter holes were to branch off. The bend was achieved by means of a Navi-Drill(R) (navi) bit, which was lowered down the hole to the desired depth and aligned in the azimuth of the desired bend. As the navi bit advanced, a bend was achieved at the rate of 1 degree every 3 m. No core was recovered from the navi-drilled interval.

Drill hole collars were located respective to a property grid. Proposed hole collars and completed collars were surveyed by a Nikon Theodolite instrument relative to 18 survey control stations established during a legal survey of the property in August 2002. The drill holes were drilled at an inclination of between 45 degrees and 90 degrees, with the majority between 60 degrees and 70 degrees. Holes were drilled along 035 degrees and 125 degrees azimuths in Southwest and South, 0 degrees and 180 degrees azimuths in Central.

Down-hole surveys were taken approximately every 50 m by the drill contractor using a multi-shot measurement system (RANGER survey instrument).

Standard logging and sampling conventions were used to capture information from the drill core. The core is logged in detail onto paper logging sheets, and the data were then entered into the project database. The core was photographed before being sampled.

AMEC reviewed the core logging procedures at site and the drill core was found to be well handled and maintained. Material was stored as stacked pallets in an organized "core farm." Data collection was competently done. Ivanhoe maintained consistency of observations from hole to hole and between different loggers by conducting regular internal checks. Core recovery in the mineralized units was excellent, usually between 95% and 100%. Very good to excellent recovery was observed in the mineralized intrusive sections checked by AMEC. Overall, the Ivanhoe drill program and data capture were performed in a competent manner.

12.0 SAMPLING METHOD AND APPROACH

Rock sampling for resource estimation has been conducted on diamond drill core obtained from holes drilled between May 2001 and June 2004. About 540 drill holes, drilled in an area approximately 2 km x 2 km, were used for geological modelling and estimation. Collar spacing is approximately 50 m to 100 m. The holes are up to 1,200 m long and inclined between 45 degrees and 90 degrees.

Samples are taken at 2 m intervals down the drill holes, excluding dykes that extend more than 10 m along the core length. NQ and HQ core sizes are drilled routinely with one-half of the core collected for analysis.

The core is split with a rock saw, flushed regularly with fresh water. Core recovery is good, with relatively few broken zones. To prevent sampling bias, the core is marked with a continuous linear cutting line before being split. Samples are placed in cloth bags and sent to the on-site preparation facility for processing.

Reject samples are stored in plastic bags inside the original cloth sample bags and are placed in bins on pallets and stored at site. Duplicate pulp samples are stored at site in the same manner as reject samples. Pulp samples used for assaying are kept at the assaying facility for several months and then transferred to a warehouse in Ulaanbaatar.

Significant composited assays for the Southern deposits of the Oyu Tolgoi project are shown in Appendix B. Only values greater than 0.30 wt% Cu were tabulated.

13.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

13.1 SAMPLE PREPARATION AND SHIPMENT

Split core samples are prepared for analysis at an on-site facility operated by SGS Mongolia LLC (SGS Mongolia). The samples are then shipped under the custody of Ivanhoe to Ulaanbaatar, where they are assayed at a lab facility operated by SGS Mongolia. The lab was certified under ISO 9002:1994, which lapsed 15 December 2003; it will seek certification under ISO 9002:2000 in July 2004. All sampling and QA/QC work is overseen on behalf of Ivanhoe by Dale A. Sketchley, M.Sc., P.Geo..

The samples are initially assembled into groups of 15 or 16, and then 4 or 5 quality control samples are interspersed to make up a batch of 20 samples. The quality control samples comprise one duplicate split core sample, one uncrushed field blank, a reject or pulp preparation duplicate, and one or two standard reference material (SRM) samples (one (less than) 2% Cu and one (greater than) 2% Cu if higher grade mineralization is present based on visual estimates). The two copper SRMs are necessary because SGS Mongolia uses a different analytical protocol to assay all samples (greater than) 2% Cu. The split core, reject, and pulp duplicates are used to monitor precision at the various stages of sample preparation. The field blank can indicate sample contamination or sample mix-ups, and the SRM is used to monitor accuracy of the assay results.

The SRMs are prepared from material of varying matrices and grades to formulate bulk homogenous material. Ten samples of this material are then sent to each of at least seven international testing laboratories. The resulting assay data are analyzed statistically to determine a representative mean value and standard deviation necessary for setting acceptance/rejection tolerance limits. Blank samples are also subjected to a round-robin program to ensure the material is barren of any of the grade elements before they are used for monitoring contamination.

A total of 33 different reference materials have been developed and used to monitor the assaying of six different ore types made up of varying combinations of chalcopyrite, bornite, primary and supergene chalcocite, enargite, covellite, and molybdenite.

Split core samples are prepared according to the following protocol:

- the entire sample is crushed to 90% minus 2 to 3 mm
- a 1 kg sub-sample is riffle split from the crushed minus 2 to 3 mm sample and pulverized to 90% minus 75 (micro)m (200 mesh)
- a 150 g sub-sample is split off by taking multiple scoops from the pulverized 75 (micro)m sample

- the 150 g sub-sample is placed in a kraft envelope, sealed with a folded wire or glued top, and prepared for shipping.

All equipment is flushed with barren material and blasted with compressed air between each sampling procedure. Screen tests are done on crushed and pulverized material from one sample taken from each batch of 15 or 16 samples to ensure that sample preparation specifications are being met.

Prepared samples are placed in wooden shipping boxes, locked, sealed with tamper-proof tags, and shipped to Ulaanbaatar for assaying. Sample shipment details are provided to the assaying facility both electronically and as paper hard copy accompanying each shipment. The assaying facility then electronically confirms sample receipt, the state of the tamper-proof tags, and assigned laboratory report numbers back to site.

13.2 ASSAY METHOD

All samples are routinely assayed for gold, copper, and molybdenum. Gold is determined using a 30 g fire assay fusion, cupelled to obtain a bead, and digested with Aqua Regia, followed by an AAS finish. Copper and molybdenum are determined by acid digestion of a 5 g subsample, followed by an AAS finish. Samples are digested with nitric, hydrochloric, hydrofluoric, and perchloric acids to dryness before being leached with hydrochloric acid to dissolve soluble salts and made to volume with distilled water.

13.3 QA/QC PROGRAM

Assay results are provided to Ivanhoe in electronic format and as paper certificates. Upon receipt of assay results, values for SRMs and field blanks are tabulated and compared to the established SRM pass-fail criteria:

- automatic batch failure if the SRM result is greater than the round robin limit of three standard deviations

- automatic batch failure if two consecutive SRM results are greater than two standard deviations on the same side of the mean

- automatic batch failure if the field blank result is over 0.06 g/t Au or 0.06% Cu.

If a batch fails, it is re-assayed until it passes. Override allowances are made for barren batches. Batch pass/failure data are tabulated on an ongoing basis, and charts of individual reference material values with respect to round-robin tolerance limits are maintained.

Laboratory check assays are conducted at the rate of one per batch of 20 samples, using the same QA/QC criteria as routine assays.

13.3.1 STANDARDS PERFORMANCE

Ivanhoe strictly monitors the performance of the SRM samples as the assay results arrive at site. Since the last Southern deposits mineral resource update (Juras, 2003) the ability of the laboratories to return assay values in the prescribed SRM ranges has steadily improved: to around 2% (Figure 13-1). Charts of the individual SRMs are included in Appendix C. All samples are given a "fail" flag as a default entry in the project database. Each sample is re-assigned a date-based "pass" flag when assays have passed acceptance criteria. At the data cutoff date of 30 June 2004, only a very small number of assayed samples still had the "fail" flag. The relative uncertainty introduced to the mineral resource estimate by using this very small number of temporarily failed samples is considered negligible.

FIGURE 13-1: SRM FAILURE CHART

[GRAPH - "SRM FAILURE CHART"]

13.3.2 BLANK SAMPLE PERFORMANCE

Assay performance of field blanks is presented in Figures 13-2 to 13-3 for gold and copper. In these figures, the lower blue horizontal line represents the analytical detection limit (ADL) of the respective metal, and the upper yellow horizontal line represents the analytical rejection threshold (ART). The gold ADL is 0.01 g/t with an ART of 0.06 g/t; copper ADL was initially 0.01% and is now 0.001% with an ART of 0.06%. The results show a low incidence of contamination and a few cases of sample mix-ups, which were investigated at site and corrected.

FIGURE 13-2: BLANK SAMPLE RESULTS FOR GOLD

[GRAPH - "BLANK SAMPLE RESULTS FOR GOLD"]

FIGURE 13-3: BLANK SAMPLE RESULTS FOR COPPER

[GRAPH - "BLANK SAMPLE RESULTS FOR COPPER"]

13.3.3 DUPLICATES PERFORMANCE

The QA/QC program currently uses four different types of duplicate samples: core, coarse reject, pulp, and laboratory check pulps (samples sent to an umpire lab).

CORE, COARSE REJECT AND PULP DUPLICATES

AMEC has reviewed the core, coarse reject, and pulp duplicate samples for the southern Oyu Tolgoi deposits. The pulp and coarse reject duplicates reproduce well for copper and are reasonable for gold values greater than 0.2 g/t. The duplicate data are shown as relative difference charts in Figures 13-4 to 13-7. Pulp and reject duplicate types for each metal, though more so for gold, show similar high variability to good reproducibility trends from near detection values towards higher-grade value. Patterns for all metals are symmetric about zero, suggesting no bias in the assay process.

FIGURE 13-4: RELATIVE DIFFERENCE SCATTER PLOT, SOUTHWEST AND SOUTH DUPLICATE SAMPLES - COPPER (%)

[GRAPH - "RELATIVE DIFFERENCE SCATTER PLOT, SOUTHWEST AND SOUTH DUPLICATE SAMPLES - COPPER (%)"]

FIGURE 13-5: RELATIVE DIFFERENCE SCATTER PLOT, SOUTHWEST AND SOUTH DUPLICATE SAMPLES - GOLD (G/T)

[GRAPH - "RELATIVE DIFFERENCE SCATTER PLOT, SOUTHWEST AND SOUTH DUPLICATE SAMPLES - GOLD (G/T)"]

FIGURE 13-6: RELATIVE DIFFERENCE SCATTER PLOT, CENTRAL DUPLICATE SAMPLES - COPPER (%)

[GRAPH - "RELATIVE DIFFERENCE SCATTER PLOT, CENTRAL DUPLICATE SAMPLES - COPPER (%)"]

FIGURE 13-7: RELATIVE DIFFERENCE SCATTER PLOT, CENTRAL DUPLICATE SAMPLES - GOLD

(G/T)

[GRAPH - "RELATIVE DIFFERENCE SCATTER PLOT, CENTRAL DUPLICATE SAMPLES - GOLD (G/T)"]

The absolute relative percent difference for duplicate pairs against the percentile ranking of the grade in the sample population were also evaluated. For the 90th percentile of the population, a maximum difference of 10% is recommended for the pulp duplicates and 20% for the coarse reject duplicates because these duplicate types can be controlled by the sub-sampling protocol. The same criteria do not apply to core duplicates because these differences cannot be controlled by the sub-sampling protocol; however, the heterogeneity of the mineralization ideally would allow the difference to be less than 30%.

Table 13-1 summarizes the results of these analyses for each type of sample and the charts are shown in Figures 13-8 to 13-11. The core duplicates are above the ideal value of 30% for gold samples, whereas the coarse reject duplicates reproduce well for all elements.

TABLE 13-1: PERCENT DIFFERENCE AT THE 90TH POPULATION PERCENTILE (% DIFF)

		SOUTHWEST AND SOUTH DEPOSITS				CENTRAL DEPOSIT			
AREA		CU		AU		CU		A	
DUPLICATE TYPE	% DIFF. LIMIT	NO.	% DIFF.	NO.	% DIFF.	NO.	% DIFF.	NO.	%
Core	30	2898	38	2771	60	1599	32	975	
Coarse Reject	20	1371	14	1095	25	743	7	465	
Pulp	10	1368	5	1092	18	688	4	440	

FIGURE 13-8: PERCENTILE RANK PLOTS, SOUTHWEST AND SOUTH DUPLICATE DATA - COPPER (%)

[GRAPH - "PERCENTILE RANK PLOTS, SOUTHWEST AND SOUTH DUPLICATE DATA - COPPER (%)"]

FIGURE 13-9: PERCENTILE RANK PLOTS, CENTRAL DUPLICATE DATA - GOLD (G/T)

[GRAPH - "PERCENTILE RANK PLOTS, CENTRAL DUPLICATE DATA - GOLD (G/T)"]

FIGURE 13-10: PERCENTILE RANK PLOTS, CENTRAL DUPLICATE DATA - COPPER (%)

[GRAPH - "PERCENTILE RANK PLOTS, CENTRAL DUPLICATE DATA - COPPER (%)"]

FIGURE 13-11: PERCENTILE RANK PLOTS, CENTRAL DUPLICATE DATA - GOLD (G/T)

[GRAPH - "PERCENTILE RANK PLOTS, CENTRAL DUPLICATE DATA - GOLD (G/T)"]

Gold pulp duplicates mimic the reject duplicate results, and likely point to some liberation of gold during sample preparation. To obtain results closer to the ideal 10% limit, Ivanhoe would probably need to increase the pulp sample size (2x to 3x). However, since most of the Au values lie near the detection limit, and the few which are above 1.0 g/t show much better reproducibility (Figures 13-5 and 13-7) than the overall rank analysis, AMEC recommends no changes to the current sampling protocol.

13.3.4 SPECIFIC GRAVITY PROGRAM

Samples for specific gravity determination are 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) is calculated using the weights of representative samples in water (W2) and in air (W1). The bulk density is calculated by W1/(W1-W2). AMEC believes this method to be appropriate for the non-porous mineralized units and barren dykes.

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

14.0 DATA VERIFICATION

As a test of assay data integrity, the data used to estimate the August 2004 Hugo mineral resource were verified with a random comparison of 5% of the database records against the original electronic assay certificates. No discrepancies were found. Collar coordinates were checked against the database entries. No discrepancies were observed. AMEC also checked the down-hole survey data. Camera shots and RANGER output were read for the checked drill holes and compared to those stored in the resource database. Rare minor discrepancies were observed that are probably due to arbitrary corrections made to the data due to the suspected or measured presence of magnetite. These would have neglible impact on any resource estimate. AMEC concludes that the assay and survey database transferred to AMEC is sufficiently free of error to be adequate for resource estimation.

15.0 ADJACENT PROPERTIES

Adjacent properties are not relevant for the review of the Oyu Tolgoi project.

16.0 MINERAL PROCESSING AND METALLURGICAL TESTING

Material relevant to this section is contained in a previous Technical Report on the Oyu Tolgoi project (Hodgson, 2004).

17.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

The mineral resource estimates for the Oyu Tolgoi project were calculated under the direction of Dr. Harry Parker, Ch.P.Geol., and Dr. Stephen Juras, P.Geo. The estimates were made from 3-dimensional block models utilizing commercial mine planning software (MineSight(R)). The project was divided into four deposits, or Oyu's: Southwest (SW), South (SO), Wedge Zone (WZ) and Central (CO). Projects limits are in truncated UTM coordinates. Project limits are 649500 to 652000 East, 4762000 to 4765000 North and -225 m to +1,170 m elevation. Cell size was 20 m east x 20 m north x 15 m high.

17.1 GEOLOGIC MODELS AND DATA ANALYSIS

Infill diamond drilling over the Southern deposits of Oyu Tolgoi enabled better resolution of the various mineral-hosting and non-hosting lithologic units, the structural geology (namely the fault distribution) and the Cu-Au mineralization itself. The higher density of data and ongoing geologic investigations into the structural history, intrusive history and alteration zonation enabled Ivanhoe to create 3-dimensional shapes of key faults and intrusive units. Of particular use was the modelling of the Southern deposits Qmd intrusive units, and the East and West Bounding Faults, South Fault and Solongo Fault. Comprehensive geologic models were also created of the post-mineral units: the post-mineral dykes (rhyolite, hornblende-biotite andesite and biotite granodiorite) and the contact between the mineralized volcanic sequence and the non-mineralized Lower Sedimentary sequence. AMEC checked the shapes for interpretational consistency on section and plan, and found them to have been properly constructed. The shapes honoured the drill data and appear well constructed.

Based on these structural, lithologic and mineralogic features, the Southern deposits were sub-divided into seven zones for the purposes of data analysis and grade interpolation (Figure 17-1). They are:

1. Far South: the area of mineralized augite basalt south of the SW Gold Zone, bounded by the East Bounding Fault to the SE

2. Southwest Gold Zone: area of the SW Gold Zone and immediate marginal areas between the East and West Bounding faults

3. Bridge: northern portion of the SW deposit (i.e. north of the SW Gold Zone) which is transitional into the Central deposit

4. Central: Central deposit

5. South: South deposit, as defined by the South and Solongo faults

6. South Sliver: a small sub-zone that occupies the area between the 2 splays of the South Fault

7. Wedge: Ignimbrite and/or Qmd hosted Cu mineralization between the East Bounding and South Faults

FIGURE 17-1: OYU TOLGOI SOUTHERN DEPOSITS ESTIMATION ZONES

[GRAPHIC - MAP "OYU TOLGOI SOUTHERN DEPOSITS ESTIMATION ZONES"]

To constrain grade interpolation in each of the zones, AMEC created 3-dimensional mineralized envelopes based on gold grades in Southwest and copper grades in Central, South, Bridge Zone and Wedge Zone. Except for the Wedge Zone, these were derived by a method of Probability Assisted Constrained Kriging (PACK) to initially outline a general shape. Threshold grades were 0.7 g/t for Au and 0.3 to 0.5 % for Cu. Grade outline selection was done by inspecting contoured probability values (in increments of 0.05) in MineSight(R). These shapes were then edited on plan and section views to be consistent with the structural and lithologic models and the drill assay data so that the boundaries did not violate data and current geologic understanding of mineralization controls. Grade shells in the Wedge Zone were manually drawn at grade thresholds of 0.3% and 0.6% Cu.

The solids and surfaces were used to code the drill hole data and block model cells. A set of cross sections and plans with drill holes colour-coded by domain and blocks similarly coloured were plotted and inspected to determine the proper assignment of domain.

These mineralized domains were reviewed to determine appropriate estimation or grade interpolation parameters. Several different procedures were applied to the data to discover whether statistically distinct domains could be constructed using the available geological

variables. For each zone, key lithologic categories were investigated within and outside grade shells. The lithologic units were grouped into the mineralized volcanics (mostly augite basalt except for ignimbrite in the Wedge Zone) and intrusive rocks - namely the Qmd. Brecciated and variable mineralized phases of the Qmd (OT-Qmd and the xenolithic Qmd) were also looked at separately in the Southwest deposit.

Descriptive statistics, contact plots, and histograms have been completed for copper and gold. Results obtained were used to guide the construction of the block model and the development of estimation plans. Post-mineral dykes were purposely omitted from this analysis to more clearly determine the characteristics of the Cu and Au mineralization. Subsequent data for grade interpolation did include narrow unmineralized post mineral dyke intervals as non-segregated internal dilution.

The data analyses were conducted on composited assay data. Assays were composited into 5 m down-hole composites. The compositing for the data analysis honoured the main lithology categories according to logged data and then were segregated by zone and grade shell or background codes. AMEC reviewed the compositing process and found it to have been performed correctly.

17.1.1 HISTOGRAMS AND CUMULATIVE FREQUENCY PLOTS

Histograms and cumulative probability plots display the frequency distribution of a given variable and demonstrate graphically how that frequency changes with increasing grade. With histograms, the grades are grouped into bins, and a vertical bar on the graph shows the relative frequency of each bin. Cumulative frequency or cumulative distribution function (CDF) diagrams demonstrate the relationship between the cumulative frequency (expressed as a percentile or probability) and grade on a logarithmic scale. They are useful for characterizing grade distributions, and identifying multiple populations within a data set.

Appendix D contains a complete set of histograms and CDFs for copper and gold by grade shell and main rock type, for each zone. The statistical properties of the composited copper and gold data by grade shell and lithology are summarized in Tables 17-1 and 17-2.

Copper grades in the augite basalt units (Va) show distinct mean values for inside a grade shell versus background domains. The coefficients of variation (CV) values, however, are similarly low in all augite basalts, irrespective of domains (0.5 to 0.65). CDF plots are likewise similar displaying essentially single lognormal distribution for Cu, with about 2% to 10% included lower grade material. No distinct break occurs at or around the grade shell threshold value of 0.3% Cu in CDF patterns of augite basalt data when looked at without grade shell selection.

TABLE 17-1: STATISTICS - COPPER COMPOSITES (EXCLUDING POST MINERAL DYKE INTERVALS)

ZONE	SHELL	MEAN	CV	Q25	Q50	Q75	MAX
FAR SOUTH							
Augite Basalt	-	0.31	0.65	0.17	0.27	0.40	1.75
SOUTHWEST							
Augite Basalt	Au	0.72	0.55	0.46	0.65	0.90	4.01
Qmd	Au	0.29	1.11	0.08	0.20	0.36	1.71
OT-Qmd	Au	0.82	0.63	0.39	0.76	1.13	3.37
Augite Basalt	Bkgd	0.40	0.52	0.26	0.37	0.51	2.61
Qmd	Bkgd	0.10	1.39	0.02	0.04	0.11	1.03
OT-Qmd	Bkgd	0.29	0.84	0.18	0.26	0.35	1.95
BRIDGE							
Va + Qmd	Cu	0.71	0.53	0.43	0.65	0.95	2.33
Augite Basalt	Bkgd	0.38	0.51	0.27	0.35	0.46	2.78
Qmd	Bkgd	0.21	0.96	0.05	0.15	0.31	1.19
CENTRAL							
Augite Basalt	Cu	0.69	0.50	0.47	0.63	0.85	3.45
Qmd	Cu	0.68	0.61	0.41	0.61	0.85	4.19
Ignimbrite	Cu	0.75	0.60	0.43	0.62	0.93	2.78
Augite Basalt	Bkgd	0.32	0.55	0.21	0.30	0.40	1.17
Qmd	Bkgd	0.14	1.24	0.04	0.08	0.18	2.88
Ignimbrite	Bkgd	0.31	1.19	0.15	0.18	0.40	2.72
SOUTH							
Augite Basalt	Cu	0.60	0.60	0.37	0.49	0.70	3.44
Qmd	Cu	0.58	0.55	0.37	0.52	0.69	2.41
Augite Basalt	Bkgd	0.29	0.59	0.19	0.25	0.32	1.17
Qmd	Bkgd	0.23	0.73	0.12	0.19	0.29	1.54
WEDGE							
Ignimbrite	Cu - hi	0.89	0.48	0.59	0.81	1.08	2.32
Ignimbrite + Va	Cu	0.47	0.42	0.35	0.44	0.56	1.62

Qmd	Cu	0.47	0.42	0.34	0.45	0.58	1.32
Ignimbrite + Va	Bkgd	0.25	0.79	0.08	0.24	0.35	1.30
Qmd	Bkgd	0.15	1.02	0.05	0.10	0.21	1.31

TABLE 17-2: STATISTICS - GOLD COMPOSITES (EXCLUDING POST MINERAL DYKE INTERVALS)

ZONE	SHELL	MEAN	CV	Q25	Q50	Q75	MAX
FAR SOUTH							
Augite Basalt	-	0.34	.83	0.18	0.27	0.42	5.74
SOUTHWEST							
Augite Basalt	Au	1.59	.70	0.83	1.28	2.01	10.1
Qmd	Au	0.65	1.28	0.12	0.37	0.74	4.12
OT-Qmd	Au	1.33	.97	0.57	0.99	1.67	12.0
Augite Basalt	Bkgd	0.35	.71	0.20	0.30	0.44	3.90
Qmd	Bkgd	0.11	2.12	0.01	0.03	0.10	4.21
OT-Qmd	Bkgd	0.45	.91	0.17	0.42	0.54	2.51
BRIDGE							
Va + Qmd	Cu	0.14	1.57	0.05	0.08	0.13	1.83
Augite Basalt	Bkgd	0.15	1.73	0.06	0.09	0.14	3.38
Qmd	Bkgd	0.04	1.64	0.02	0.03	0.08	1.01
CENTRAL							
Augite Basalt	Cu	0.39	1.23	0.09	0.21	0.53	7.70
Qmd	Cu	0.17	1.63	0.05	0.09	0.16	5.25
Ignimbrite	Cu	0.11	1.40	0.05	0.07	0.10	1.46
Augite Basalt	Bkgd	0.18	1.40	0.05	0.10	0.19	2.69
Qmd	Bkgd	0.06	1.96	0.02	0.03	0.06	2.39
Ignimbrite	Bkgd	0.06	.95	0.03	0.04	0.08	0.42
SOUTH							
Augite Basalt	Cu	0.19	2.26	0.04	0.08	0.18	5.58
Qmd	Cu	0.36	2.41	0.10	0.18	0.35	16.1
Augite Basalt	Bkgd	0.11	2.31	0.02	0.04	0.09	2.52
Qmd	Bkgd	0.12	1.44	0.03	0.07	0.13	1.61
WEDGE							
Ignimbrite	Cu - hi	0.14	2.67	0.02	0.04	0.07	2.95
Ignimbrite + Va	Cu	0.04	1.13	0.02	0.03	0.05	0.67
Qmd	Cu	0.08	2.02	0.02	0.04	0.08	2.20
Ignimbrite + Va	Bkgd	0.08	1.99	0.02	0.03	0.06	1.37
Qmd	Bkgd	0.08	2.32	0.02	0.04	0.07	3.25

Copper values in quartz monzodiorite units (Qmd) show marked mean numbers between grade shell and background values. These differences were also controlled by which intrusive phase was predominant in a particular zone (e.g, early altered and mineralized Central Qmd units versus late, poorly altered and mineralized Southwest Qmds). Coefficients of variation (CV) values range from low inside copper grade shells (0.4 to 0.6)

to around 1.0 in background areas. CDF plots commonly show double to triple lognormal distributions (in analyses ignoring grade shell boundaries). Usually one of the grade distributions is at very low values, accounting for 5 to 15% of the data, and another still low-grade group representing about 30% to 70% of the remaining data. Threshold grades range from 0.15 % to 0.3 % Cu. These populations likely correspond to the three recognized intrusive Qmd phases in the Southern deposits. Occurrence of grade breaks in the grade trends support the use of grade shells, particularly in areas where mineralized Qmd units are common (e.g, Central and South).

Copper grades in the dacite ash flow tuff or Ignimbrite units mirror the mineralized Qmd statistics. Common only in Wedge and less so in Central, CDF plots show similar double to occasional triple lognormal distributions. Likely copper mineralization in the ignimbrites are related to one or all metal-bearing pulses associated with the Qmd phases.

Gold grades are highest in the Southwest Gold Zone, where every lithology has been enriched. Augite basalts units contain the highest gold values in this zone (1.6 g/t Au). Elsewhere, the augite basalts in Southwest (immediate background to the gold zone and the Far South sub-zone) and in Central contain anomalous mean values (0.3 to 0.4 g/t Au). Augite basalt units east of the East Bounding Fault contain distinctly lower gold concentrations (0.1 to 0.2 g/t). Qmd units are generally gold depleted as are the Ignimbrites. An exception is the South deposit Qmd where the higher means correspond to the presence of narrow high-grade gold veins. The Southwest augite basalts are the only units where the gold CV values are below 1.0 (0.7 to 0.8). Of all deposits, the Wedge Zone is the most depleted and Southwest most enriched relative to gold.

CDF diagrams for gold show typical positively skewed trends. For Southwest, the plots display single lognormal distribution populations in the high gold shell and background / Far South areas. In the rest of the zones, double lognormal populations are shown with a variable but high included low-grade component. In the area of the Southwest Gold Zone, CDF patterns of all data (in augite basalts) show a double lognormal population, with the threshold between the two populations at around 0.7 g/t Au. This lends support towards the use of this threshold grade to construct the Southwest gold shell.

17.1.2 GRADE SCATTER PLOTS

Copper versus gold scatter plots were used to determine what degree of correlation exists between the two grades and if trends are evident. Various Au versus Cu composite data scatter plots are shown in Figure 17-2. Mineralization in augite basalt units in and around the Southwest high gold zone appear to define a Au to Cu ratio of 3:1. Further south, in the Far South sub-zone, the augite basalts apparently define a main 1:1 Au to Cu ratio and a subordinate 3:1 ratio. Elsewhere, the augite basalts of the South deposit show the marked depletion in gold relative to the Southwest area by defining an Au to Cu ratio of

FIGURE 17-2: AU VS. CU COMPOSITE DATA SCATTER PLOTS, OYU TOLGOI SOUTHERN DEPOSITS

[GRAPH(S) 4 - "AU VS. CU COMPOSITE DATA SCATTER PLOTS"]

1:10. A second set of gold mineralization is indicated on this scatter plot that appears to be related to a range of Cu grades (0.3 to 0.5% Cu) but not in any definable ratio. These data may represent the narrow high-grade vein population found in the South deposit. At Central, the mineralization associated with Qmd phases generally outlines two Au to Cu ratio trends: a 1:10 ratio and general 1.5 to 2:1 trend.

17.1.3 CONTACT PROFILE ANALYSIS

Contact plots were generated to explore the relationship between: (1) grade and lithology, and (2) grade and grade shell codes. The plots are constructed with software that searches for data with a given code, and then searches for data with another specified code and bins the grades according to the distance between the two points. This allows for a graphical representation of the grade trends away from a "contact". If average grades are reasonably similar near a boundary and then diverge as the distance from the contact

increases, the particular boundary should probably not be used as a grade constraint. In fact, if a hard boundary is imposed where grades tend to change gradually, grades may be overestimated on one side of the boundary and underestimated on the opposite side. If there is a distinct difference in the averages across a boundary, there is evidence that the boundary may be important in constraining the grade estimation.

Contact profiles, or plots, were made for Cu and Au across the various key lithologic units and mineralized domains in each deposit. Two sets are shown as examples in Figures 17-3 and 17-4; the remainder are shown in Appendix D. Contact profiles for both metals in Southwest show distinct differences in grade in the vicinity of the boundary between the augite basalt and Qmd intrusions (Figure 17-3). Distinct differences also occur across the gold shell (Figure 17-4). For Central, no distinction is observed for copper between the augite basalt and Qmd, but a marked one is present for gold. Distinct differences occur in both metals across the copper shell. The South deposit shows distinct differences across its copper shell for copper and gold values. No differences in either gold or copper were seen between the augite basalt and Qmd within each domain. Finally, the Wedge Zone copper shells show distinct copper grade differences between the 0.3% and 0.6% shells, and between the 0.3% shell and background. No differences were observed between Qmd and Ignimbrites within each domain. Gold showed no distinct breaks between any shell or lithology in this zone.

17.1.4 ESTIMATION DOMAINS

The data analyses demonstrated that all of the grade shell domains in the Southern deposits should be treated as separate domains with respect to Cu and Au. Additionally, the augite basalt and Qmd units will be treated as separate sub-domains in Southwest for both Cu and Au, and Au-only in Central. Grades for blocks within the respective domains in each deposit or zone will be estimated with a hard boundary between them; only composites within the domain will be used to estimate blocks within the domain. The exception to this hard boundary approach will be for the gold distribution in the Wedge Zone; no boundaries will be necessary. Also no boundaries will be used between Qmd units and augite basalts in South or Wedge deposits.

FIGURE 17-3: AU AND CU CONTACT PLOTS, AUGITE BASALT (VA) VS. QMD, SOUTHWEST DEPOSIT

[GRAPH - "OT S CONACT PLOT: AU 5M COMP DATA SOUTH WEST - MAIN VA VS QMD"]

[GRAPH - "OT S CONTACT PLOT: CU 5M COP DATA SOUTH WEST - MAIN VA VS QMD"]

FIGURE 17-4: AU AND CU CONTACT PLOTS, GOLD SHELL VS. BACKGROUND, SOUTHWEST DEPOSIT

[GRAPH - "OT 2 CONTACT PLOT: AU 5M COMP DATA SOUTH WEST - MAIN IN VS OUT AU SHELL"]

[GRAPH - "OT S CONTACT PLOT: CU 5M COMP DATA SOUTH WEST - MAIN INSIDE VS OUTSIDE AU SHE"]

17.2 EVALUATION OF EXTREME GRADES

Extreme grades were examined for copper and gold, mainly by histograms and CDF plots. Generally, the distributions do not indicate a problem with extreme grades for copper. A restricted outlier approach was instead used to constrain any outlier-type grades. For Au, capped grades were selected in domains with high CVs and/or where trends defined in the

cumulative probability plots began to become discontinuous. In the latter case, this generally occurred between the 98% to 99.5% level. Capped gold grades for the Oyu Tolgoi Southern deposits are shown in Table 17-3. The capped grades were applied to the assay data prior to compositing.

TABLE 17-3: CAP GRADES FOR AU ASSAYS, OYU TOLGOI SOUTHERN DEPOSITS

ZONE AND DOMAIN	AU (G/T)
Far South	
Augite basalt	2.0
Southwest	
Augite basalt	8.0
Quartz monzodiorite	1.0
South deposit	
All units - Cu shell	2.0
All units - background	1.0
Central deposit	
Augite basalt - background	1.0
Quartz monzodiorite - background	0.5
Augite basalt - Cu shell	3.0
Quartz monzodiorite - Cu Shell	1.5
Wedge Zone	
Entire zone	0.7

17.3 VARIOGRAPHY

Variography, a continuation of data analysis, is the study of the spatial variability of an attribute. AMEC prefers to use a correlogram, rather than the traditional variogram, because it is less sensitive to outliers and is normalized to the variance of data used for a given lag. The correlogram ranges from -1 to +1, although models are usually made over the interval [0,1], where 0 represents no correlation (statistical independence) and 1 represents perfect correlation.

Correlograms were calculated for copper and gold in the main mineralized domains in each zone. The approach to correlogram model development is to calculate a relatively large number of sample correlograms in several directions using composite values. Directional sample correlograms are calculated along horizontal azimuths of 0 degrees, 30 degrees, 60 degrees, 90 degrees, 120 degrees, 150 degrees, 180 degrees, 210 degrees, 240 degrees, 270 degrees, 300 degrees, and 330 degrees. For each azimuth, sample correlograms are also calculated at a dip of -30 degrees and -60 degrees in addition to horizontally. Finally, a correlogram is calculated in the vertical direction. Using the 37 sample correlograms, an algorithm determines the best-fit model. This model consists of a nugget effect; single or two-nested structure variance contributions; ranges for the variance contributions; and the model type (spherical or exponential type). After fitting the variance parameters, the algorithm then fits an ellipsoid to the ranges from the directional models

for each structure. The anisotropy in grade variation is given by the two ellipsoids. Variogram model parameters and orientation data of rotated variogram axes are shown in Tables 17-4 and 17-5, respectively. The correlograms for the main mineralized domains at Southwest, South, Central and Wedge are included in Appendix E.

The deposits of the Oyu Tolgoi project exhibit mineralization controls related to the intrusive history and structural geology (faults). The patterns of anisotropy demonstrated by the various correlograms tend to be consistent with geological interpretations - particularly to any bounding structural features (faults and lithologic contacts) and quartz + sulphide vein orientation data. Key observations:

o Southwest deposit (including Far South) - Copper displays NE-SW trending, moderately SE dipping and more north-south trending, steep S dipping structures within mineralized augite basalt. Gold in the same lithology displays structures that trend NNE-SSW, dipping steeply to the SE and NE-SW, with moderate to steep SE dips. Also observed are NE-SW trending structures having gentle NW dips. These observations match the structural data and current 0.7 g/t Au shell shape. The latter has a near vertical upper portion and a moderately south plunging lower half. Mineralizing fluids are thought to have used the west dipping East Bounding Fault as a conduit. Fluid flow would likely have been upwards and "away" from the fault plane, that is in a north-westerly direction. This would account for the southeast dip directions. The north to northeast trends match attitudes of the bounding faults and observed vein data.

- South deposit - Both copper and gold are influenced by the geometry of the deposit defined in part by the flanking faults (South and Solongo). Both metals display E-W to ENE-WSW trends having steep N or S dips. The second structure in both metals trend northerly (NNE to NNW) with the model for copper having moderate E dips and the model for gold showing steep E dips. This second structure is compatible to some of the vein data at South.

- Central deposit - Copper structures show moderately S dipping E-W trends and NNE-SSW trends that are shallow dipping. The latter structure outlines a tabular shape, mimicking the Cu grade shell shape. The former structure orientation is similar to those of peripheral rhyolite dykes and to some vein data. Gold outlines N-S trending, near vertical structures that are characterized by small ranges.

TABLE 17-4: CU AND AU VARIOGRAM PARAMETERS FOR OYU TOLGOI SOUTHERN DEPOSITS

		NUGGET	SILLS		ROTATION ANGLES						
	MODEL	CO	C1	C2	Z1	X1'	Y1"	Z2	X2'	Y2"	Z
CU - SOUTHWEST											
Augite basalt - all SW	SPH	.324	.246	.430	-22	47	-38	77	1	-72	8
Qmd - background	SPH	.130	.511	.358	32	-4	28	-31	10	14	10
Augite basalt - Far South	SPH	.339	.203	.458	-74	34	20	39	22	-69	1
CU - CENTRAL											
Cu Shell	SPH	.313	.480	.207	24	-104	12	37	6	12	3
Augite basalt - background	SPH	.382	.337	.280	25	82	62	74	-18	2	1
Qmd - background	EXP	.200	.350	.450	-18	6	-6	52	3	90	9
CU - SOUTH											
Cu Shell	SPH	.325	.450	.225	50	56	-69	24	-12	-27	2
Background	EXP	.336	.305	.360	-91	19	46	8	-31	-25	1
CU - WEDGE											
Cu Shell	SPH	.390	.397	.214	-12	54	-46	-45	64	106	
Background	EXP	.272	.207	.521	80	-27	-21	-30	-35	8	6
AU - SOUTHWEST											
Augite basalt - Au Shell	SPH	.300	.388	.313	14	1	17	-27	-26	-71	13
Augite basalt - background	EXP	.321	.239	.441	-34	62	4	17	-5	-41	1
Qmd - background	SPH	.265	.555	.180	-54	-58	-3	64	3	-22	5

Augite basalt - Far South	SPH	.442	.188	.370	-16	-20	-68	39	1	-54	3
AU - CENTRAL											
Cu Shell	SPH	.264	.201	.535	25	80	66	9	106	-97	7
Augite basalt - background	SPH	.345	.340	.315	13	60	6	-12	-3	-30	1
Qmd - background	SPH	.272	.396	.332	-26	29	-17	18	-15	-69	1
AU - SOUTH											
Cu Shell	SPH	.445	.231	.324	2	-65	4	55	17	-55	2
Background	EXP	.317	.238	.445	92	7	51	-10	-15	-27	
AU - WEDGE											
all units and shells	EXP	.122	.347	.531	-39	-66	-73	36	10	60	3

TABLE 17-5: AZIMUTH AND DIP ANGLES OF ROTATED VARIOGRAM AXES, OYU TOLGOI SOUTHERN DEPOSITS

	AXIS AZIMUTH							
	Z1	X1	Y1	Z2	X2	Y2	Z1	X1
CU - SOUTHWEST								
Augite basalt - all SW	111	39	338	167	165	77	32	-25
Qmd - background	309	120	32	203	61	329	61	28
Augite basalt - Far South	138	27	286	138	86	39	52	16
CU - CENTRAL								
Cu Shell	12	103	204	280	128	37	-14	-3
Augite basalt - background	267	177	25	69	163	74	4	7
Qmd - background	117	72	342	322	235	52	82	-6
CU - SOUTH								
Cu Shell	158	75	50	91	120	24	12	-32
Background	162	18	269	50	112	8	41	43
CU - WEDGE								
Cu Shell	115	37	348	240	153	315	24	-25
Background	120	180	80	316	55	330	57	-19
AU - SOUTHWEST								
Augite basalt - Au Shell	279	104	14	54	115	333	73	17
Augite basalt - background	151	60	326	102	112	17	28	2
Qmd - background	310	39	306	162	153	64	32	-2
Augite basalt - Far South	66	114	344	129	128	39	20	-61
AU - CENTRAL								
Cu Shell	271	180	25	92	1	189	4	9

Augite basalt - background	200	108	13	72	80	348	30	3
Qmd - background	123	56	334	102	142	18	57	-14
AU - SOUTH								
Cu Shell	357	88	2	156	122	55	25	2
Background	356	191	92	53	88	350	39	50
AU - WEDGE								
all units and shells	35	122	321	285	127	36	7	-22

- Wedge Zone - Copper structures show pronounced northeast-southwest trends (NE-SE and NNE-SSW). Dips vary from moderately S to moderate to steeply SE. Overall attitude is consistent with the contact orientation between the ignimbrite and overlying Lower Sedimentary sequence. This contact may have acted as an impermeable cap to the mineralizing fluids resulting in a ponding-effect within the ignimbrite.

The nugget effects, or random variation components of spatial variation, tend to be moderate. Copper variograms generally have nugget effects of 30% to 40% of the total variation whereas gold variograms have somewhat more variable nugget effects of 25% to 50% of the total variation.

17.4 MODEL SET-UP

The block size for the model was selected based on mining selectivity considerations. It was assumed the smallest block size that could be selectively mined as ore or waste, referred to the selective mining unit (SMU), was approximately 20 m x 20 m x 15 m. In this case the SMU grade-tonnage curves predicted by the restricted estimation process adequately represented the likely actual grade-tonnage distribution.

The assays were composited into 5 m down-hole composites. The compositing honoured the domain zone by breaking the composites on the domain code values. Unlike the composite data used for data analyses (Section 17.1), these included any post-mineral dyke material intervals that were deemed too small to be part of a post mineral dyke model. The capping limits were applied to the assay data prior to compositing. AMEC reviewed the compositing process and found it to have been performed correctly. Also, assay data in older drill holes (pre-OTD231) were adjusted for bias (Juras 2003, Hodgson 2004).

Bulk density data were assigned to a unique MineSight(R) assay database file. These data were composited into 15 m fixed-length down-hole values to reflect the block model bench height.

Various coding was done on the block model in preparation for grade interpolation. The block model was coded according to zone, lithologic domain and grade shell. Percent below topography was also calculated into the model blocks. Post-mineral dykes were assumed to represent zero grade waste cutting the mineralized rock. The shapes were used to calculate an ore-remaining percent for each block by subtracting the volume percent dyke that intersects a block from 100. This percentage was used in the resource tabulation procedure to properly account for mineralized material.

Only the hypogene mineralization was estimated (with the Central chalcocite blanket being the only exception). The top of the hypogene was defined by the base of sulphide oxidation surface (constructed by Ivanhoe). A transition zone exists in areas where the top of observed sulphide minerals is above the base of oxidation. Unfortunately, that surface

was poorly constructed and non-usable for controlling grade interpolation at this time. Ivanhoe should make the effort to remedy this so that the potential of this transitional material can be properly assessed.

17.5 ESTIMATION

The Oyu Tolgoi estimation plans, or sets of parameters used for estimating blocks, were designed using a philosophy of restricting the number of samples for local estimation. AMEC has found this to be an effective method of reducing smoothing and producing estimates that match the Discrete Gaussian change-of-support model and ultimately the actual recovered grade-tonnage distributions. While local predictions based on the small number of samples are uncertain(1), this method can produce reliable estimates of the recovered tonnage and grade over the entire deposit, i.e., the global grade-tonnage curves from the estimations are accurate predictors of the actual grade-tonnage curves.

Modelling consisted of grade interpolation by ordinary kriging (KG). The chalcocite blanket in Central was interpolated by grade averaging because of the small data population in this domain. Only capped grades were interpolated. Nearest-neighbour (NN) grades were also interpolated for validation purposes. Blocks and composites were matched on estimation domain. To reduce the impact of locally inaccurate block grades due to conditional bias at the grade shell boundaries, all blocks straddling those contacts were estimated twice with each of the composite sets on either side of the contact. The final block grade was calculated with a volume-weighted average of the two domain grades in that block. The effect is to slightly smooth the grades at the hard grade shell boundary so that the distribution of block grades more closely approximates the shape of the composite distribution.

The search ellipsoids were oriented preferentially to the orientation of the respective zone as defined by bounding structures or to the attitude of the relevant Cu or Au grade shell. Search ranges comprised 175 to 200 m along the respective long axis, 100 to 150 m down the dip direction and 125 to 175 m vertically. Block discretization is 4 x 4 x 3.

A two pass approach was instituted for interpolation. The first pass allowed a single hole to place a grade estimate in a block and the second pass required a minimum of two holes from the same estimation domain. This approach was used to enable most blocks to receive a grade estimate within the domains, including the background domains. Blocks mostly received a minimum of 3 to 4 composites and a maximum of 4 to 5 composites from a single drill hole (for the two hole minimum pass). Maximum composite limits varied by domain, ranging from 12 to 20.

----

1 Local grade estimates at the block-scale can be conditionally biased. Blocks estimated to be low-grade will actually be higher grade and vice versa. Division of the deposits into domains prior to estimation reduces the impact of conditional bias.

These parameters were based on the geological interpretation, data analyses and variogram analyses. The number of composites used in estimating grade into a model block followed a strategy that matched composite values and model blocks sharing the same ore code or domain. The minimum and maximum number of composites were adjusted for each grade item to incorporate an appropriate amount of grade smoothing. This was done by change-of-support analysis (Discrete Gaussian or Hermitian polynomial change-of-support method), as described below.

For both metals, an outlier restriction was used to control the effects of high-grade composites within each of the domains, particularly in background domains and poorly mineralized units (e.g, Southwest Qmd). The threshold grades were generally set as the grade of the relevant grade shell or distinct break in the probability curves in the case of poorly mineralized units. In Southwest, an outlier of 0.7 g/t Au was used in background domains for augite basalt. Zones that contained Cu grade shells had a 0.5% Cu outlier value implemented in the background domains. Au values in those background domains had outlier values of 0.3 g/t (Wedge), 0.4 g/t (Central and Southwest Qmd) and 0.5 g/t (South). The restricted distances were 40m in Southwest, 30m elsewhere.

Bulk density values were estimated into the resource model by an averaging of composites. A maximum of six and minimum of two 15 m composites were used for the averaging. A rectangular search was used, measuring 200 m north x 200 m east x 50 m elevation. The assignment was constrained by matching composite values and model blocks that shared the same domain. In the event a block was not estimated, default density values were assigned based on lithology code. Augite basalt was assigned a value equal to 2.83, Qmd was given a value of 2.71.

17.5.1 VALIDATION

VISUAL INSPECTION

AMEC completed a detailed visual validation of the Oyu Tolgoi Southern deposits block model. The model was checked for proper coding of drill hole intervals and block model cells, in both section and plan. Coding was found to be properly done. Grade interpolation was examined relative to drill hole composite values by inspecting sections and plans. The checks showed good agreement between drill hole composite values and model cell values. The hard boundaries between grade shells appear to have constrained grades to their respective estimation domains. The addition of an outlier restriction reduced a significant amount of gold grade smearing in background domains. Examples of representative sections and plans containing block model grades, drill hole composite values, and domain outlines are included in Appendix G.

MODEL CHECK FOR CHANGE-OF-SUPPORT

An independent check on the smoothing in the estimates was made using the Discrete Gaussian or Hermitian polynominal change-of-support method described by Journel and Huijbregts (Mining Geostatistics, Academic Press, 1978). The distribution of hypothetical block grades derived by this method is compared to the estimated model grade distribution by means of grade-tonnage curves. The grade-tonnage curves allow comparison of the histograms of the two grade distributions in a format familiar to mining. If the estimation procedure has adequately predicted grades for the selected block size, then the grade-tonnage curves should match fairly closely. If the curves diverge significantly, then there is a problem with the estimated resource.

This method uses the "declustered" distribution of composite grades from a nearest-neighbour or polygonal model to predict the distribution of grades in blocks. In this case the blocks used in the model are 20 m x 20 m x 15 m. The unadjusted polygonal model assumes much more selectivity for ore and waste than is actually possible in mining practice, since many sample-sized volumes are averaged together within a block. This means that part of the sample-sized volumes in the block may be ore (above the mining cutoff) and part may be waste. Hence, the distribution of the grade of the blocks is not likely to resemble the distribution of grades from composite samples derived from the polygonal estimate. The method assumes that the distribution of the blocks will become more symmetric as the variance of the block distribution is reduced, i.e., as the mining blocks become bigger.

The histogram for the blocks is derived from two calculations:

- o the block-to-block variance (sometimes referred to in statistics as the between-block variance), which is calculated by subtracting the average value of the variogram within a block from the variance for composite samples (the sill of the variogram)

- o the frequency distribution for the composite grades transformed by means of hermite polynomials (Herco: hermite correction) into a less skewed distribution with the same mean as the declustered grade distribution and with the block-to-block variance of the grades.

The distribution of hypothetical block grades derived by the Herco method is then compared to the estimated grade distribution to be validated by means of grade-tonnage curves.

The distribution of calculated 20 m x 20 m x 15 m block grades for copper in the main domains of Southwest (Au shell, Background, Far South), Central (Cu Shell) and South (Cu Shell) are shown with dashed lines on the grade-tonnage curves in Figures 17-5 and 17-6. This is the distribution of grades based on 20 m blocks obtained from the change-of-support models. The continuous lines in the figures show the grade-tonnage distribution obtained from the block estimates. The grade-tonnage predictions produced for the model

show that grade and tonnage estimates are validated by the change-of-support calculations over the likely range of mining grade cutoff values (0.4% to 0.6% Cu).

FIGURE 17-5: CHANGE-OF-SUPPORT GRADE-TONNAGE PLOTS FOR CU MODEL AND HERCO VALUES, SOUTHWEST DEPOSIT DOMAINS

[GRAPH - "RECOVERED GRADE - TONNAGE CHART, SOUTH WEST DEPOST - IN AU SHELL"]

[GRAPH - "RECOVERED GRADE - TONNAGE CHART, SOUTH WEST DEPOST - OUTSIDE AU SHELL"]

[GRAPH - "RECOVERED GRADE - TONNAGE CHART, FAR SOUTH DEPOSIT"]

FIGURE 17-6: CHANGE-OF-SUPPORT GRADE-TONNAGE PLOTS FOR CU MODEL AND HERCO VALUES, CU SHELL DOMAINS, CENTRAL AND SOUTH DEPOSITS

[GRAPH - "RECOVERED GRADE - TONNAGE CHART, CENTRAL DEPOST - INSIDE CU SHELL"]

[GRAPH - "RECOVERED GRADE - TONNAGE CHART, SOUTH DEPOSIT - INSIDE CU SHELL"]

MODEL CHECKS FOR BIAS

AMEC checked the block model estimates for global bias by comparing the average metal grades (with no cutoff) from the model (KG) with means from nearest-neighbour estimates. (The nearest-neighbour estimator declusters the data and produces a theoretically unbiased estimate of the average value when no cutoff grade is imposed and is a good basis for checking the performance of different estimation methods.) Results are displayed in Table 17-6.

TABLE 17-6: GLOBAL MODEL MEAN GRADE VALUES BY DOMAIN IN EACH ZONE

	NEAREST-NEIGHBOUR ESTIMATE	KRIGED ESTIMATE	% DIFFEREN
CU (%) - SOUTHWEST			
Far South	0.250	0.252	1
Au shell	0.598	0.588	2
Background	0.226	0.231	2
CU (%) - CENTRAL			
Cu Shell	0.637	0.625	2
Background	0.162	0.170	5
CU (%) - SOUTH			
Cu Shell	0.455	0.452	1
Background	0.192	0.196	2
CU (%) - WEDGE			
Hi Cu Shell	0.733	0.670	9
Cu Shell	0.414	0.396	4
Background	0.099	0.102	3
AU (G/T) - SOUTHWEST			
Far South	0.290	0.276	5
Au shell	1.312	1.278	3
Background	0.234	0.233	0
AU (G/T) - CENTRAL			
Cu Shell	0.170	0.156	9

Background	0.054	0.058	7
AU (G/T) - SOUTH			
Cu Shell	0.151	0.137	9
Background	0.077	0.079	3
AU (G/T) - WEDGE			
Hi Cu Shell	0.076	0.071	7
Cu Shell	0.052	0.049	4
Background	0.038	0.037	0

AMEC also checked for local trends in the grade estimates (grade slice or swath checks). This was done by plotting the mean values from the nearest-neighbour estimate versus the kriged results for benches (in 30 m swaths), northings and eastings (both in 40 m swaths). The kriged estimate should be smoother than the nearest-neighbour estimate, thus the nearest-neighbour estimate should fluctuate around the kriged estimate on the plots.

Results for copper and gold are shown in Appendix F. The two trends behave as predicted and show no significant trends of copper or gold in the estimates.

HISTOGRAMS AND PROBABILITY PLOTS

Histograms were constructed to show the frequency of sample grades within the mineralized domains. Both kriged and nearest-neighbour plots were made for copper and gold. The nearest-neighbour plots mimic the respective composite value distribution. The kriged results show the formation of a more symmetric distribution because of the smoothing effect caused by using multiple values from multiple drill holes to interpolate a model block value.

17.6 MINERAL RESOURCE CLASSIFICATION

The mineral resources of the Oyu Tolgoi project were classified using logic consistent with the CIM definitions referred to in National Instrument 43-101. Inspection of the model and drill hole data on plans and sections in the Southwest Gold Zone area, combined with spatial statistical work and investigation of confidence limits in predicting planned quarterly production showed good geologic and grade continuity in areas where sample spacing was about 50 m. When taken together with all observed factors, AMEC decided that blocks covered by this data spacing in the Southwest Gold Zone area may be classified as Measured Mineral Resource. A three-hole rule was used where blocks containing an estimate resulting from three or more samples from different holes (all within 55 m with at least one within 30 m) were classified as Measured Mineral Resource.

The Indicated Mineral Resource category is supported by the present drilling grid over most of the remaining part of the Oyu Tolgoi Southern deposits. The drill spacing is at a nominal 70 m on and between sections. Geologic and grade continuity is demonstrated by inspection of the model and drill hole data in plans and sections over the various zones, combined with spatial statistical work and investigation of confidence limits in predicting planned annual production. Considering these factors, AMEC decided that blocks covered by this data spacing may be classified as Indicated Mineral Resource. A two-hole rule was used where blocks containing an estimate resulting from two or more samples from different holes. For the Southwest deposit the two holes needed to be within 75 m with at least one hole within 55 m. For the remaining deposits, both holes needed to be within 65 m with at least one hole within 45 m to be classified as Indicated Mineral Resources.

All interpolated blocks that did not meet the criteria for either Measured or Indicated Mineral Resources were assigned as Inferred Mineral Resources if within they fell within 150 m of a drill hole composite.

17.7 MINERAL RESOURCE SUMMARY

The mineralization of the Oyu Tolgoi Southern deposits as of 18 August 2004 is classified as Measured, Indicated and Inferred Mineral Resources. The resources are shown in Tables 17-7, and 17-8, and are reported at a copper equivalent cutoff grade. The mineral resource estimate summary has been split into resources lying above and below a depth of 560 m below surface (an elevation of 600 m above sea level). Mine planning work has identified this depth to be a conservative depth for a large-scale, open-pit mining operation. The resources above the depth of 560 m from surface have been estimated using a 0.30% copper equivalent cutoff grade. Resources lying below a depth of 560 m from surface (likely mining would be by underground bulk mining methods) were estimated using a 0.60% copper equivalent cutoff grade.

The equivalent grade was calculated using assumed metal prices for copper and gold. The assumed prices were US$0.80 for Cu and US$350/oz for gold. For convenience the formula is:

- $CuEq = \%Cu + (g/t\ Au*11.25)/17.64$

The contained gold and copper estimates in the tables below have not been adjusted for metallurgical recoveries.

TABLE 17-7: OYU TOLGOI SOUTHERN DEPOSIT MINERAL RESOURCE SUMMARY - 18 AUGUST 2004

GRADES			CON
COPPER	GOLD	COPPER EQ.	COP

MINERAL RESOURCE CATEGORY	TONNES	(%)	(G/T)	(%)	('000
Above a depth of 560 m from surface (600 m elevation), 0.30% Copper Equivalent Cut-off					
Measured	108,360,000	0.58	0.85	1.13	1,38
Indicated	882,070,000	0.47	0.25	0.62	9,14
Measured+Indicated	990,430,000	0.48	0.31	0.68	10,48
Inferred	259,060,000	0.35	0.20	0.47	1,99
Below a depth of 560 m from surface (600 m elevation), 0.60% Copper Equivalent Cut-off					
Measured	5,280,000	0.76	2.12	2.11	8
Indicated	65,620,000	0.44	0.99	1.08	63
Measured+Indicated	70,900,000	0.47	1.08	1.15	73
Inferred	26,200,000	0.41	0.55	0.76	23

TABLE 17-8: OYU TOLGOI SOUTHERN DEPOSIT MINERAL RESOURCE SUMMARY - 18 AUGUST 2004 (AT MULTIPLE COPPER EQUIVALENT CUTOFF GRADES)

MINERAL RESOURCE CATEGORY	COPPER EQ. CUTOFF GRADE (%)	TONNES	GRADES COPPER (%)	GOLD (G/T)	COPPER EQ. (%)	CO COP ('000
Above a depth of 560 m from surface (600 m elevation)						
MEASURED	(GREATER THAN)= 1.00	48,200,000	0.79	1.48	1.73	839,
	(GREATER THAN)= 0.70	69,900,000	0.70	1.17	1.45	1,079
	(GREATER THAN)= 0.60	83,560,000	0.66	1.03	1.32	1,216
	(GREATER THAN)= 0.30	108,360,000	0.58	0.85	1.13	1,386
INDICATED	(GREATER THAN)= 1.00	81,730,000	0.92	0.75	1.40	1,658
	(GREATER THAN)= 0.70	239,970,000	0.74	0.42	1.01	3,915
	(GREATER THAN)= 0.60	357,120,000	0.66	0.36	0.89	5,196
	(GREATER THAN)= 0.30	882,070,000	0.47	0.25	0.62	9,140
MEASURED+INDICATED	(GREATER THAN)= 1.00	129,930,000	0.87	1.02	1.52	2,492
	(GREATER THAN)= 0.70	309,870,000	0.73	0.59	1.11	4,987
	(GREATER THAN)= 0.60	440,680,000	0.66	0.48	0.97	6,412
	(GREATER THAN)= 0.30	990,430,000	0.48	0.31	0.68	10,481
INFERRED	(GREATER THAN)= 1.00	5,390,000	1.14	0.57	1.50	135
	(GREATER THAN)= 0.70	16,650,000	0.79	0.35	1.02	290
	(GREATER THAN)= 0.60	35,990,000	0.61	0.32	0.81	484
	(GREATER THAN)= 0.30	259,060,000	0.35	0.20	0.47	1,999

Below a depth of 560 m from surface (600 m elevation)

MEASURED	(GREATER THAN)= 1.00	5,000,000	0.78	2.19	2.18	86,
	(GREATER THAN)= 0.70	5,220,000	0.76	2.13	2.13	87,
	(GREATER THAN)= 0.60	5,280,000	0.76	2.12	2.11	88,
INDICATED	(GREATER THAN)= 1.00	29,470,000	0.55	1.39	1.44	357,
	(GREATER THAN)= 0.70	54,440,000	0.46	1.09	1.17	552,
	(GREATER THAN)= 0.60	65,620,000	0.44	0.99	1.08	637,
MEASURED+INDICATED	(GREATER THAN)= 1.00	34,470,000	0.58	1.50	1.55	441,
	(GREATER THAN)= 0.70	59,660,000	0.49	1.19	1.25	644,
	(GREATER THAN)= 0.60	70,900,000	0.47	1.08	1.15	735,
INFERRED	(GREATER THAN)= 1.00	3,020,000	0.51	1.04	1.17	34,
	(GREATER THAN)= 0.70	12,960,000	0.45	0.69	0.89	129,
	(GREATER THAN)= 0.60	26,200,000	0.41	0.55	0.76	237,

18.0 OTHER RELEVANT DATA AND INFORMATION

No other data or information are relevant for the review of the Oyu Tolgoi project.

19.0 REQUIREMENTS FOR TECHNICAL REPORTS ON PRODUCTION AND DEVELOPMENT PROPERTIES

This section is not relevant for this review.

20.0 CONCLUSIONS AND RECOMMENDATIONS

AMEC reviewed pertinent data from the Oyu Tolgoi project to obtain a sufficient level of understanding to assess the Mineral Resource estimate for the Oyu Tolgoi Southern deposits (Southwest, South, Central, Wedge). AMEC's general conclusions from this review are as follows:

- The geology of the Oyu Tolgoi project is well understood, particularly with the integration of a comprehensive structural model, a new development since the previous Technical Report (Juras 2003). The Southern deposits are considered to be examples of a Cu-Au porphyry system and related high-sulphidation types of deposits. Four deposits are known:

  1. The Southwest deposit consists primarily of pyrite-chalcopyrite mineralization related to sericite and sericite-albite alteration. Mineralization is characterized by high gold contents with Au:Cu ratios about 1:1 in the main part of the deposit, rising to 3:1 in the core of the system and at depth. The deposit is essentially hosted in augite basalts.

  2. South deposit contains pyrite-chalocopyrite-bornite mineralization. It lies in augite basalt and lesser Qmd intrusive units. It is gold-poor.

  3. Central deposit contains several mineralization types: a pyrite-covellite-chalcocite type, a subordinate auriferous chalcopyrite-pyrite type and a supergene chalcocite blanket type. Qmd units are the predominant host.

  4. Wedge Zone consists of bornite+/-chalcopyrite mineralization hosted in strongly altered ignimbrites. It is a gold-depleted system.

- The exploration program relies strongly on geophysical survey data (IP and magnetics), and other target anomalies still remain within the project land holdings.

- The database used to estimate the mineral resources for the Oyu Tolgoi project consists of samples and geological information from 539 core drill holes drilled by Ivanhoe between 2002 and June 2004. Data transfer to the resource database was validated from original assay certificates through a 5% check of the database.

- Ivanhoe employs a comprehensive QA/QC program. Each sample batch of 20 samples contains four or five quality control samples. The quality control samples comprise one duplicate split core sample and one uncrushed field blank, which are inserted prior to sample preparation; a reject or pulp preparation duplicate, which is inserted during sample preparation; and one or two reference material samples (one (less than) 2% Cu and one (greater than) 2% Cu if higher-grade mineralization is present based on visually estimates), which are inserted after sample preparation. AMEC reviewed Ivanhoe's

QA/QC procedures at site and found them to be strictly adhered to. Duplicate performance of core, coarse reject, and pulp duplicates was evaluated by AMEC and found to be well within the respective accepted ranges. The current Ivanhoe QA/QC program exceeds industry standards and demonstrates that the assay process for the Southern deposits samples is in control.

- The Oyu Tolgoi resource models were developed using industry-accepted methods. AMEC validated the model estimates and found them to reasonably estimate grade and tonnage for the Southern deposits.

- The mineralization at Oyu Tolgoi Southern deposits was classified using logic consistent with the CIM definitions referred to in National Instrument 43-101 into Measured, Indicated and Inferred Mineral Resources.

This independent mineral resource estimate and review by AMEC supports the August 2004 Oyu Tolgoi Southern deposit Mineral Resource statement.

21.0 REFERENCES

Badarch, G. et al., 2002. A new terrane subdivision for Mongolia: implications for the Phanerozoic crustal growth of Central Asia. Journal of Asian Earth Sciences, v.21, p.87-110.

Cargill, G., 2002. Report on the Oyu Tolgoi Exploration Project South Gobi Region, Mongolia. National Instrument 43-101 Technical Report, 11 January 2002.

Hodgson, S., 2004. Technical Report, Preliminary Assessment, Oyu Tolgoi Project, Mongolia. National Instrument 43-101 Technical Report, January 2004.

Journel, A.G. and Huijbregts, Ch.J. 1978. Mining Geostatistics, Academic Press, London.

Juras, S., 2003. Technical Report, Oyu Tolgoi Project, Mongolia. National Instrument 43-101 Technical Report, February 2003.

Perello, J. et al., 2001. Oyu Tolgoi, Mongolia: Siluro-Devonian porphyry Cu-Au-Moand high-sulphidation Cu mineralization with a Cretaceous chalcocite blanket. Econ.Geol. v.96, p.1407-1428.

Tseveendorj, D. and Garamjav, D., 1999. About ancient copper mining and processing in Mongolia; Ulaanbaatar, Mongolia, Academy of Science Institute Proceedings Series 19, p.17-21 (in Mongolian).

APPENDIX A

Drillhole List and Plan Views

APPENDIX B

Composite Data List

APPENDIX C

QA/QC Charts

APPENDIX D

EDA Charts

APPENDIX E

Variography

APPENDIX F

Grade Swath Plots

APPENDIX G

BLOCK MODEL SECTIONS AND PLANS

125 AZIMUTH SECTIONS
Central Deposit Au and Cu
Southwest and South Deposit Au and Cu
Wedge and Bridge Zones Au and Cu

PLANS
Plan 1065 Au and Cu
Plan 885 Au and Cu
Plan 705 Au and Cu