**CHINA GOLD INTERNATIONAL RESOURCES CORPORATION LIMITED**

# RESOURCE UPDATE REPORT ON THE JIAMA COPPER-POLYMETALLIC PROJECT IN METRORKONGKA COUNTY, TIBET AUTONOMOUS REGION THE PEOPLE'S REPUBLIC OF CHINA

**LONGITUDES 91°43'06"E - 91°50'00"E**
**LATITUDES 29°37'49"N - 29°43'53"N**

**(BEHRE DOLBEAR PROJECT 11-071)**

**6 OCTOBER 2011**

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# 1.0 SUMMARY

## 1.1 INTRODUCTION

This independent resource update report (Report) is prepared for China Gold International Resources Corporation Limited ("China Gold International" or "Company"), a Canadian company whose shares are dually listed on the Toronto Stock Exchange (TSX) and on the Stock Exchange of Hong Kong Limited (SEHK) to meet the filling requirements under Canadian and Hong Kong securities laws. China National Gold Group Hong Kong Limited (China Gold Group HK) is the largest shareholder of China Gold International and currently owns approximately 39% of the listed shares. The Report covers the mineral resource estimate for the 2010 drilling program at the Jiama copper-polymetallic project (Jiama Project) in the Tibet Autonomous Region of the People's Republic of China ("PRC" or "China").

The Jiama Project is located within the well-known Gangdise Copper Metallogeny Belt in Central Tibet, China, around 60 kilometers (km) east of Lhasa City along the Sichuan-Tibet Highway. The Jiama Project is owned and operated by Tibet Huatailong Mining Development Company Limited (Huatailong), which is wholly owned by China Gold International Resources Corporation Limited.

Jiama is a large, skarn-type mineralization dominated porphyry copper-polymetallic deposit complex with well-developed hornfels-type mineralization. The Phase I project, including two open pits and one processing plant, has been completed and started trial production in April 2010 and commercial production in September 2010. Up to May 31, 2011, about 1.3 million tonnes (Mt) of ore was mined and 1 Mt of ore has been processed. It has produced around 26,000 tonnes of concentrate that contains about 5,422 tonnes of copper metal, 128 kilograms (kg) of gold, and 13,406 kg of silver.

A 76 hole drilling program, totaling 45,537 meters (m) were completed in 2010, focused on the extensions to the north and west and center zone of the main skarn and hornfels ore bodies where previous drill holes have yielded significant inferred copper, molybdenum, gold, and silver resources, as seen in the Jiama Independent Technical Report (ITR) prepared by Behre Dolbear Asia in March 2010. The 2010 drill program successfully defined and upgraded the copper, molybdenum, gold, and silver resources. This new resource estimate report is prepared based on the 2010 drilling program.

Access to the Jiama Project site is excellent. Surface water is sufficient to support the planned production. A new 110 kilovolts (kV) power transmission line has been constructed to connect the Jiama Project site to the Central Tibet power grid. The Tibet government and China State Grid have been executing a power-supply development plan that includes building several new power generation plants and connecting the Central Tibet power grid to the national power grid in Qinghai Province, China, by the end of 2011. When this development plan is completed, the supply of electricity will be sufficient for Phase I mine production as well as for the Phase II expansion at Jiama. The Jiama Project has been designated as one of the most important projects in Tibet and has been granted priority in electricity supply by the Tibet government. However, power shortage for production, especially during the dry winter months, could be experienced before the Tibet power grid connects to the China national power grid in Qinghai Province.

Huatailong holds two valid mining licenses and two valid surrounding exploration licenses totaling 145.4951 square kilometers ($km^2$) for the Jiama Project. The Jiama mining license was consolidated in 2007 from four mining licenses held by different operators in accordance with the Chinese government's consolidation policy for mining properties; the Niumatang mining license adjacent to the Jiama mining license was issued to Huatailong in July 2010. All currently defined mineral resources and ore reserves are covered by these mining and exploration licenses.

## 1.2 GEOLOGY

The Jiama copper-polymetallic deposit is a large skarn-type dominated porphyry mineralization system with well-developed hornfels-type and well-zoned mineralization and alteration characteristics. The skarn-type copper-polymetallic mineralized body is controlled mostly by an interlayer structural zone between the underlying Upper-Jurassic Duodigou Formation marbles and the overlying Lower-Cretaceous Linbuzong Formation hornfels. The lower-grade, copper-polymetallic mineralized hornfels-type and porphyry mineralized bodies have been encountered in the overlying Linbuzong Formation hornfels and underlying Duodigou Formation marbles. Both hornfels-type and porphyry-type deposits are potentially large; however, their distribution and economic meaning will need to be determined by further drilling and technical studies.

## 1.3 MINERALIZATION

The I1 mineralized body controlled by the interlayer structural zone is the primary skarn-type mineralized body in the deposit. This mineralized body is stratiform, tabular, or lenticular in shape. It strikes west-northwesterly and dips to the northeast. The upper part of the mineralized body has a steeper dip angle, averaging around 60°, whereas the lower portion of the mineralized body has a much flatter angle, averaging around 10°. The I1 mineralized body is approximately 3,000m long along strike and over 2,500m wide in the dip direction. Its thickness generally ranges from 10m to 50m, with a maximum intercepting thickness of 280.70m.

Seven other smaller mineralized bodies (I2 to I8) have also been modeled, but they are generally not well defined by the current drilling data in the Jiama Project deposit.

Copper is the most important economic metal in the deposit. Other metals with economic value include molybdenum, lead, gold, silver, and zinc. These metals are distributed differently in the deposits. In general, the copper grade is higher at the upper and northwest portions and lower in the northeast portion. Molybdenum seems negatively correlated with copper, with higher grades in the northeast portion of the deposit. Gold and silver have a distribution pattern similar to that of copper in the deposit. Lead and zinc are only enriched in the upper part at the southwest portion of the I1 mineralized body that was part of the historical mining targets. Contents of harmful elements, such as arsenic, antimony, and mercury, are generally low in the deposit and will not cause a problem for marketing concentrate produced from the deposit.

Metallic minerals in the deposit include chalcopyrite, bornite, molybdenite, tetrahedrite, galena, sphalerite, chalcocite, digenite, covellite, native copper, pyrite, marcasite, pyrrhotite, magnetite, limonite, malachite, and azurite. Nonmetallic minerals include garnet, diopside, wollastonite, tremolite, epidote, quartz, feldspar, biotite, sericite, muscovite, chlorite, calcite, anhydrite, fluorite, and kaolinite. The metallic minerals occur as disseminations, massive aggregates, or stockwork in the skarns.

Oxidation occurs only at the near surface portion of the deposit. The majority of the defined mineral resources are in the unoxidized sulfide zone.

Standalone quartz-diorite porphyrite gold mineralization has been found within the Jiama property area in the 2010 drilling program. It occurs in the quartz-diorite porphyrite dyke in the hole of ZK4504. There are two gold mineralization intercepts in this hole. The first mineralized body is 10m thick. The second mineralized body is 13.06m thick. The discovery of these gold bearing intercepts shows the potential for other gold mineralization within the Jiama Project mining district.

## 1.4 MINERAL RESOURCE

The current mineral resources of the Jiama Project were estimated by the Mineral Resource Research Institute of the Chinese Academy of Geological Sciences using the Micromine® computer mining software system and then reviewed by Dr. Robert Cameron of Behre Dolbear Asia, Inc. (Behre Dolbear). The Jiama drill hole database as of the end of December 2010 and a geological model developed by geologists at the Mineral Resource Research Institute (Resource Institute) of Chinese Academy of Geological Sciences was used for the work. The geological database consists of 300 diamond drill holes (DDH) including 22 historical DDH holes with a total drilled length of 120,196.92m and 10 historical surface trenches with a total channel-sampled length of 349m completed by Huatailong in 2008 to 2010.

There have been four separate models developed and reviewed for this report to estimate the skarn (shallow and steep models), hornfels, and porphyry-type mineral resources as of June 30, 2011. Behre Dolbear believes that the Jiama Project currently has approximately 64.6 Mt of Measured, 941.4 Mt of Indicated, and 170 Mt of Inferred in-situ Mineral Resources conforming to the definitions in the 2004 Edition of The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (2004 JORC Code). No Mineral Reserves conforming to JORC standards have been estimated in this report, as the Jiama Project is currently working on new mine plans, production schedules, and economic analysis to include the additional mineralization.

The resources for the Jiama Project are summarized in Table 1.1 and Table 1.2. These resource estimates are also compliant with the CIM standards and Canadian National Instrument (NI) 43-101. Cut off grades used for the resource summary are 0.3% copper or 0.03% molybdenum or 1% lead or 1% zinc.

TABLE 1.1
BEHRE DOLBEAR'S JORC MEASURED AND INDICATED MINERAL RESOURCES ESTIMATES FOR THE JIAMA PROJECT AS OF JUNE 2011
(CUT OFF GRADE FOR THE RESOURCE ESTIMATE IS 0.3% COPPER OR 0.03% MOLYBDENUM OR 1% LEAD OR 1% ZINC)

| **Model** | **Category** | **Tonnes (kt)** | **Average Grade** | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | **Cu (%)** | **Mo (%)** | **Au (g/t)** | **Ag (g/t)** | **Pb (%)** | **Zn (%)** |
| Shallow Skarn | Measured | 60,579 | 0.82 | 0.057 | 0.33 | 15.47 | 0.04 | 0.03 |
| | Indicated | 210,722 | 0.75 | 0.061 | 0.29 | 14.07 | 0.03 | 0.02 |
| | Meas+Ind | 271,301 | 0.77 | 0.060 | 0.30 | 14.38 | 0.03 | 0.03 |
| Steep Skarn | Measured | 4,012 | 0.76 | 0.031 | 0.27 | 17.59 | 0.31 | 0.18 |
| | Indicated | 18,971 | 0.76 | 0.032 | 0.26 | 17.62 | 0.30 | 0.17 |
| | Meas+Ind | 22,983 | 0.76 | 0.032 | 0.26 | 17.61 | 0.30 | 0.17 |
| Hornfels | Measured | 0 | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Indicated | 655,089 | 0.27 | 0.037 | 0.03 | 1.04 | 0.01 | 0.01 |
| | Meas+Ind | 655,089 | 0.27 | 0.037 | 0.03 | 1.04 | 0.01 | 0.01 |
| Porphyry | Measured | 0 | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Indicated | 56,596 | 0.11 | 0.056 | 0.01 | 0.74 | 0.01 | 0.01 |
| | Meas+Ind | 56,596 | 0.11 | 0.056 | 0.01 | 0.74 | 0.01 | 0.01 |
| | | | | | | | | |
| **All Models** | **Total** | **1,005,969** | **0.41** | **0.044** | **0.10** | **5.00** | **0.02** | **0.02** |

TABLE 1.2
BEHRE DOLBEAR'S JORC INFERRED MINERAL RESOURCE ESTIMATES FOR THE JIAMA PROJECT AS OF JUNE 2011
(CUT OFF GRADE FOR THE RESOURCE ESTIMATE IS 0.3% COPPER OR 0.03% MOLYBDENUM OR 1% LEAD OR 1% ZINC)

| **Model** | **Category** | **Tonnes (kt)** | **Average grade** | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | **Cu (%)** | **Mo (%)** | **Au (g/t)** | **Ag (g/t)** | **Pb (%)** | **Zn (%)** |
| Shallow Skarn | Inferred | 94,325 | 0.61 | 0.056 | 0.23 | 11.66 | 0.02 | 0.02 |
| Steep Skarn | Inferred | 26,012 | 0.71 | 0.026 | 0.21 | 17.88 | 0.35 | 0.15 |
| Hornfels | Inferred | 39,460 | 0.23 | 0.039 | 0.03 | 1.02 | 0.01 | 0.01 |
| Porphyry | Inferred | 10,356 | 0.13 | 0.058 | 0.01 | 0.74 | 0.01 | 0.01 |
| | | | | | | | | |
| **All Models** | **Total** | **170,153** | **0.51** | **0.048** | **0.17** | **9.48** | **0.07** | **0.04** |

Behre Dolbear would note that mineral resources do not have demonstrated economic viability. Behre Dolbear would also note that the inferred resource estimates have a great amount of uncertainty as to their existence and economic and legal feasibility. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher resource category. Under Canadian rules, estimates of inferred mineral resources may not form the basis of feasibility or pre-feasibility studies, or economic studies except for preliminary assessment or a scoping study, as defined under the NI 43-101. Investors are cautioned not to assume that all of the inferred resources exist, or are economically or legally mineable.

Behre Dolbear's review indicates that drilling, sampling, sample preparation and analysis, and quality control have followed standard industry practice.

Behre Dolbear believes the mineral resource estimation database, procedures, and parameters applied by the Resource Institute to the Jiama Project to be generally reasonable and appropriate. The geological constraints were adequately considered in their estimation of the resource. Behre Dolbear believes that the data density requirements for 331 and 332 block definition used for the Chinese estimates are generally more aggressive than normally used for JORC Code resource estimation for similar deposits and has adjusted the estimates in Table 1.1 and Table 1.2 to account for this fact.

It is also Behre Dolbear's opinion that the Resource Institute has done good work in determining the global in-situ resource. Behre Dolbear feels the grade and tonnage estimates are a reasonable estimate of the overall resource. The models, however, should be redone (particularly the skarn models) using more directionally oriented and less general averaging of the block grades prior to detailed mine planning and scheduling.

## 1.5 CONCLUSIONS AND RECOMMENDATION

The Jiama Project deposit is a large copper-polymetallic porphyry deposit with well-defined mineral resources. In addition, there is a large defined inferred resource and hornfels-type copper-polymetallic resources, and the additional exploration potential, especially the porphyry mineralization potential. The currently defined mineral resources and ore reserves will likely be increased in the future by additional exploration work.

The following are Behre Dolbear's recommendations for the Jiama Project:

- **Exploration** – Further in-fill drilling and step-out drilling are likely to significantly increase the currently defined mineral resources and ore reserves for the Jiama Project. Behre Dolbear, however, does not consider additional drilling a high priority task at the current stage of the Jiama Project development, as the defined ore reserves are sufficient to support the mining operation. If mining operations over the next several years prove to be successful, Huatailong should consider increasing the currently planned production capacity of the Jiama Project, and additional drilling to increase the mineral resources and ore reserves of the Jiama Project may become necessary. Cost for the additional drilling could range from less than RMB20 million (US$3.08 million) to more than RMB50 million (US$7.71 million).

- **Resource Estimation** – It is Behre Dolbear's opinion that the Resource Institute has done good work in determining the overall grade and tonnage of the global in-situ resource and feels the grade and tonnage estimates in the models are a reasonable estimate of the overall resource. The models, however, should be redone (particularly the skarn models) adjusting the search ellipsoid to the recommended parameters in Table 1.2 to incorporate more directionally oriented grade structures and to reduce the overall localized averaging of the block grades. Newer models should be completed prior to the intended detailed mine planning and scheduling. The methods and search parameters used in the current models have the risk that the metal content of the deposit will be spatially distributed significantly differently than that modeled. The existing skarn models probably overly smooth the localized variations in the grade and probably does not honor the highly structural oriented gradation typically found in skarn deposits.

- **Database Audit** – Behre Dolbear would also recommend that an independent firm complete a detailed audit on the electronic database to ensure that the assay intervals and the drill hole logging have been entered correctly. Behre Dolbear believes it would be wise for an independent firm to audit the electronic database due to the size, budget, and scope of the proposed Jiama Project.

The estimation procedures and resource categorization used for the resource update were those recommended by Dr. Deng in 2010. Behre Dolbear believes that since there are an additional 82 drill holes completed since the 2010 report that the 2011 variography should be reviewed in detail and adjustments made to both the grade estimation parameters and to the methodology for determining JORC Mineral Resource categories.

## 2.0 INTRODUCTION

China Gold International is a Canadian mining company whose shares are dually listed on the TSX with a trading symbol CGG and on the SEHK with a trading symbol 2099. China Gold Group HK currently owns approximately 39% of the listed shares of the Company and is the largest shareholder.

The Company proposes to prepare an Independent Resource Estimate Report for the 2010 drilling program to be filed on the TSX and on the SEHK under Canadian and Hong Kong securities laws.

The Jiama Project is in Phase 1 of production in Metrorkongka County, the Tibet Autonomous Region, China. The Jiama Project is currently owned and operated by Huatailong, which is wholly owned by the China Gold International Resources Corporation through its subsidiary company registered in the British Virgin Islands (BVI).

The Company engaged Behre Dolbear Asia, Inc., a wholly owned subsidiary of the Behre Dolbear Group Inc. (Behre Dolbear), as their independent technical advisor to undertake an independent technical review of the Jiama 2010 drilling program and to prepare an Independent Technical Review (ITR) in connection with the Company's filling on the SEHK and TSX pursuant to applicable securities reporting requirements.

This report has been prepared in accordance with the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (Listing Rules). Mineral resources and ore reserves of the Jiama Project have been reviewed in accordance with the Australasian JORC Code. As China Gold International is a public company listed on the TSX in Canada, mineral resources and ore reserves reported under the Australasian JORC Code have also been reconciled with mineral resources and mineral reserves under the CIM Standards. The report format follows the reporting requirements under NI 43-101.

Behre Dolbear's project team for this technical review consists of senior-level professionals from Behre Dolbear's offices in Beijing, China and Denver, Colorado, USA. Behre Dolbear personnel contributing to the study and to this ITR include:

**Project Manager and Project Geologist – Dr. Yingting (Tony) Guo** is the Vice President of Behre Dolbear Asia, Inc. and Vice President of Behre Dolbear & Company, Ltd., the Canadian subsidiary of the firm. He has over 22 years of professional experience in the mineral industries. He has worked on gold, copper, iron, industrial mineral and coal projects/mines in China, Mongolia, Africa, United States, and Canada. Dr. Guo's business expertise includes mineral resource exploration, assessment, acquisition, and project management. Dr. Guo has participated in and managed several gold, copper, and coal exploration projects in China for the last 10 years. His credentials include a Bachelor of Science Degree in Geology from the Nanjing University as well as a Doctors Degree in Geology and Exploration from China University of Mining and Technology. He is a registered Professional Geoscientist from the Province of British Columbia, Canada. Dr. Guo has been involved in several (independent) technical reports for the Stock Exchange of Hong Kong (SEHK) and Toronto Stock Exchange (TSX) in recent years.

**Resource/Reserve Geologist – Dr. Robert E. Cameron** has over 30 years of experience in geostatistical analysis of ore reserves, computerized mine planning, mine design, computerized studies for mine production optimization, ultimate pit limit optimization, mine efficiency studies, equipment selection and utilization and operations research. He has completed geostatistical estimations or resource and reserve reviews or audits on over 200 properties worldwide during his career. Most recently, Dr. Cameron served as Vice President, Technical Services for Frontier Mining Ltd. and was responsible for overseeing all technical, engineering, and review for project development for Frontier Mining in Kazakhstan. Dr. Cameron's responsibilities also included ex-pat oversight of the day-to-day operations of the Naimanjal Mine, a heap leach gold project in Kazakhstan as well as initial geostatistical resource and reserve assessment of potential mine acquisitions for Frontier Mining in China, Indonesia, and Central Asia. Dr. Cameron also had responsibility for supervising, reviewing and quality assurance of all ore reserve work performed by Behre Dolbear as their Director and Vice President of Geostatistics and Mine Planning from 1992 to 1999. Currently, Dr. Cameron is a Registered Member of the Society of Mining, Metallurgy and Exploration and a Member and Qualified professional Member of the Mining and Metallurgical Society of America in mining and ore reserves. He routinely reviews and audits geostatistical calculations, ore reserves statements, minerals resources statements, computerized minerals models, mine designs, and their forward looking cash flow projections.

Dr. Cameron has extensive experience in geostatistics, computerized mine planning and ore reserve estimation using classical and geostatistical ore reserve modeling, selection of mining related computer software, ore reserve audits, computer applications, mineral commodity studies, computer modeling of commodities, and remediation of abandoned mine sites. Additionally, he has a vast knowledge of the full range of mine planning computer software including Techbase, Datamine, MedSystem, Gemcom, Surpac, Vulcan, and Whittle pit optimization. In addition, he has a wide range of knowledge in computer applications, programming, database development and design, computer communications, web site design and network design and implementation.

**Project Advisor – Mr. Bernard J. Guarnera** is the President and Chairman of Behre Dolbear Group Inc. He is a Certified Mineral Appraiser, with extensive experience in the valuation of mineral properties and mining companies. He is a registered Professional Engineer, a Registered Professional Geologist and a Chartered Professional (Geology) of the Australasian Institute of Mining and Metallurgy. Mr. Guarnera has over 30 years of professional experience, and his career has included senior-level positions in exploration and development at a number of major U.S. natural resource companies. Mr. Guarnera meets all the requirements for “Competent Person” in Australia and “Qualified Person” in Canada.

The sources of information for this report includes unpublished technical reports for the Jiama Project prepared by the Mineral Resource Research Institute (Resource Institute) of the Chinese Academy of Geological Sciences in Beijing, China in November 2009, June 2010, April 2011, and Behre Dolbear's professionals site visits to the Jiama Project and interviews with the Jiama Project management and technical personnel as well as outside consultants. It also includes the basic Jiama Project information from the Behre Dolbear ITR for the Jiama Project dated June 2010. The Resource Institute possesses a Class A exploration license for solid minerals issued by the Ministry of Land and Resources of China and has been engaged by Huatailong to manage the exploration work and resource estimation of the Jiama Project.

The Independent Qualified Person, Dr. Robert Cameron, in preparing this report, visited the Jiama Project from April 6 to April 10, 2011. Dr. Robert Cameron, Ph.D., carried out the review and assessment of mineral resource estimations by the Resource Institute based on the database, geological interpretation, and historic data provided by the Company and its staff. Dr. Yingting Tony Guo, also visited the Jiama Project during this time.

## 2.1 UNITS AND DEFINITIONS

The metric system is used throughout this report. The currency used is the Chinese Renminbi (RMB) or Yuan and/or the United States dollar (US$). The exchange rate used in the ITR is RMB6.481 for US$1.00, the rate of the People's Bank of China prevailing on June 8, 2011.

Shown below is a glossary of some of the statistical and mining terms.

- **Correlogram** – A statistical tool that measures how similar samples are likely to be with various separation distances. The correlogram as used in this report is computed by standardizing the spatial covariance by the standard deviation of the head and tail values.
- **Kriging** – A statistical weighted average process whereby the grade of a block is estimated by weighted average from surrounding assay or composite samples. The weights are established to minimize the error of the estimate.
- **Nugget** – The variance of samples taken at the same location or with zero separation between the two samples.
- **Spherical Model** – A form of equation used to approximate the variogram function for input to other tools such as kriging.
- **Sill** – The total variance of widely spaced samples, approximately equal to the variance of the statistical population in general.
- **Variogram** – A statistical tool that measures how similar samples are likely to be with various separation distances. The plot of a variogram shows variance versus distance between samples.

## 3.0 RELIANCE ON OTHER EXPERTS

Behre Dolbear has relied on certain technical information for the Jiama Project prepared by the Company, Huatailong, and the Resource Institute. Specifically, Behre Dolbear has accepted the drilling data, mine sampling data, assays, and block models as prepared by the Company and the Resource Institute for this report. The exploration, electronic database, and resource tonnage and grade calculations were completed by a government sanctioned institution that minimizes risk with its utilization. Behre Dolbear has not independently audited the electronic database.

This report relies on information for the geology, permits, and quality control and quality assurance sections provided by and reviewed by Dr. Yingting (Tony) Guo, Vice President of Behre Dolbear Asia, Inc. and Vice President of Behre Dolbear & Company, Ltd. Dr. Guo was an employee of China Gold prior to joining Behre Dolbear and still holds a minor stock interest in the company. Dr. Guo owns a less than a 0.02% interest in China Gold.

In regards to the exploration, mining, and environmental permits, the authors were provided with copies of the documents and they were reviewed. We note that Behre Dolbear is not qualified to express a legal opinion with respect to the property titles and current ownership and possible encumbrance status, and therefore, disclaims direct responsibility for such titles and status data.

## 4.0 PROPERTY DESCRIPTION AND LOCATION

The Jiama Project is located in Metrorkongka County, the Tibet Autonomous Region in China (Figure 4.1), approximately 68 km east-northeast of Lhasa, capital city of Tibet. Lhasa has a population of approximately 400,000 and is the political, economic, cultural, and transport center in Tibet.

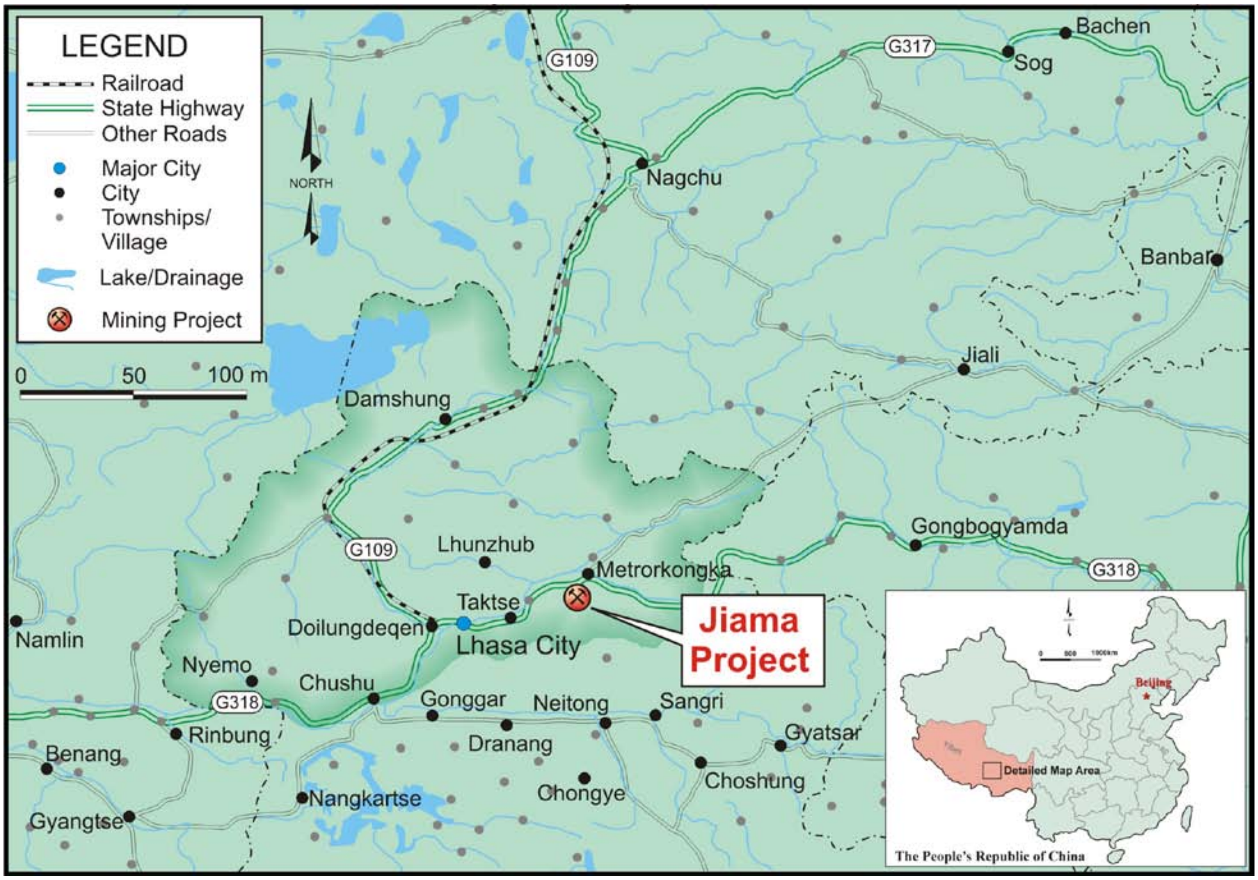



**Figure 4.1. Location of the Jiama Project**
**(After the Behre Dolbear 2010 ITR Report)**

The Jiama Project is currently owned and operated by Tibet Huatailong Mining Development Company Limited, which is indirectly 100% owned by China Gold International Resources Corporation. The Jiama Project currently holds two permits for mining rights and two permits for exploration rights.

The Jiama Project mining license, with an area of 2.1599 $km^2$ for the Jiama Project, is held by Huatailong; the license is valid until July 2, 2013 and extendable, thereafter. The license number is 5400000820009 that was issued by the Land and Resource Department of Tibet Autonomous Region. The horizontal license boundary is defined by 18 corner points, and its vertical boundary is between the mean sea level (MSL) elevations of 4,100m and 5,300m. The production rate specified on the mining license is 2.0 Mtpa or approximately 6,600 tpd based on 300 working days per annum. This mining license was consolidated in 2007 from four mining licenses held by different operators in accordance with the Chinese government's consolidation policy for mining properties.

The Niumatang mining license, with an area of 0.7352 $km^2$ and located at the northwest side of the Jiama Project mining license, is for the Niumatang open pit mining portion of the Jiama Project. The license is valid until July 15, 2015 and extendable thereafter. The license number is C5400002010073210070276 that was issued by the Land and Resource Department of Tibet Autonomous Region. The horizontal license boundary is defined by 11 corner points, and its vertical boundary is between the MSL elevations of 4,100m and 5,000m. The production rate specified on the mining license is 0.9 Mtpa or approximately 3,000 tpd based on 300 working days per annum. Behre Dolbear notes that the permitted production rate is lower than the 6,000 tpd production rate planned for the Niumatang open pit mining operation and Huatailong will need to revise the mining license to the appropriate production rate.

The Jiama exploration license surrounding two mining licenses, with an area of 76.19 $km^2$ (exclusive from the mining permits), is also held by Huatailong. The license number is T54520080702010972 that is issued by the Land and Resource Department of Tibet. This license expires on November 18, 2011 and is extendable thereafter. The license area is defined by 6 corner points and is approximately 8 km to 11 km long in the east-west direction and 6 km to 11 km wide in the north-south direction. The license area is located within the longitudes from 91°43’06”E to 91°50’00”E and the latitudes from 29°37’49”N to 29°43’53”N.

All the currently defined mineral resources for the Jiama Project are covered by the Jiama/Niumatang mining licenses and the Jiama exploration license.

In addition to the Jiama/Niumatang mining licenses and Jiama exploration license, Huatailong also holds the exploration license for the Bayi Ranch area located southwest of the Jiama mining/exploration licenses. This license has an area of 66.41 $km^2$ and was issued by the Land and Resource Department of Tibet. The license number is T54520080702010979. The license expires on November 18, 2011 and is extendable thereafter.

The two mining licenses and two exploration licenses for the Jiama Project cover a total area of 145.50 $km^2$.

Figure 4.2 shows the location of the two mining licenses and the two exploration licenses currently held by Huatailong.

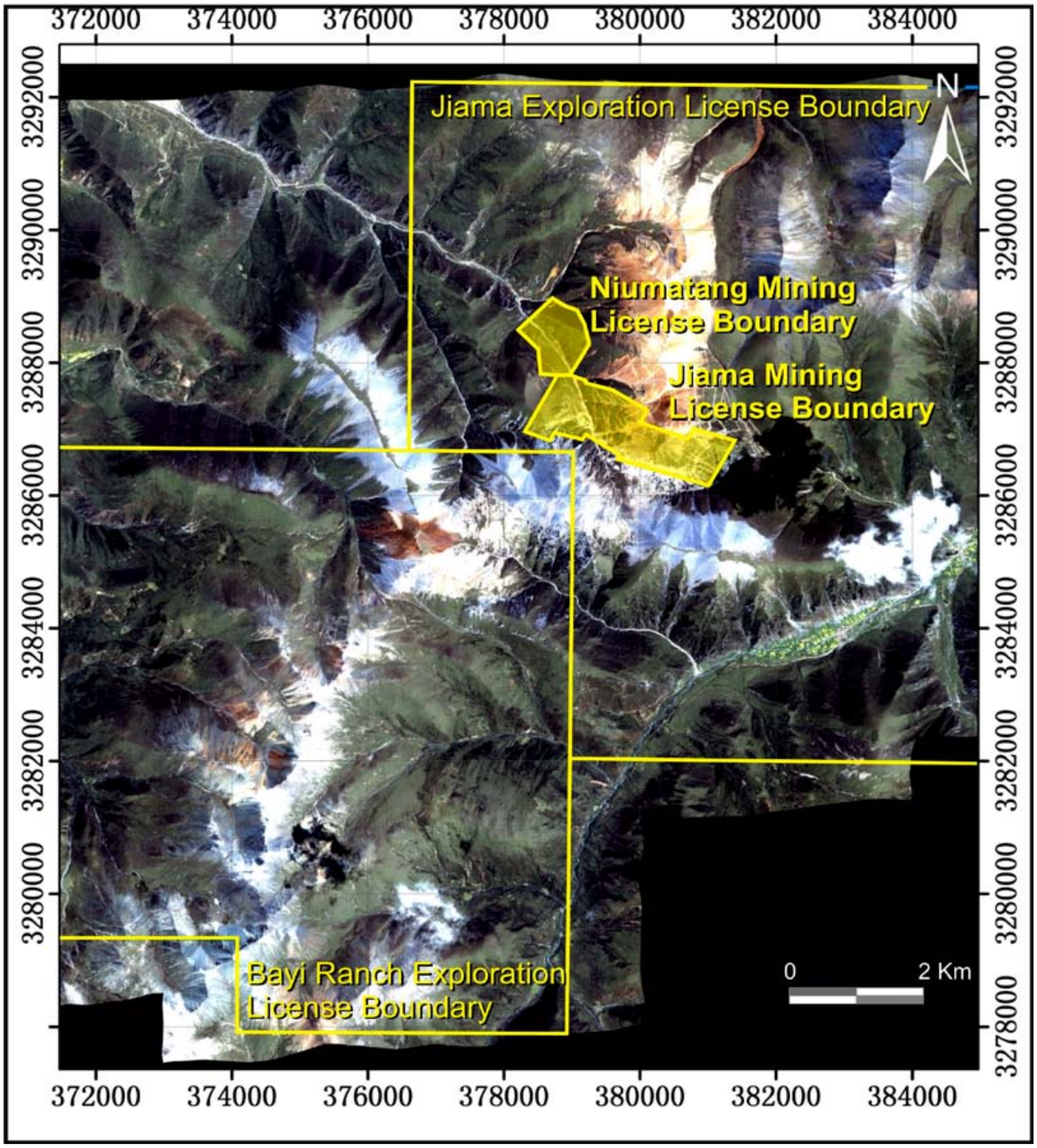



**Figure 4.2.** **Location of the mining/exploration licenses held by Huatailong**
**(After the Behre Dolbear 2010 ITR Report)**

Behre Dolbear has reviewed the copies of the mining licenses and exploration licenses provided by Huatailong and considers that they are valid and typical of mining and exploration licenses issued by relevant governmental agencies in China.

To renew an exploration license, all exploration permit fees must be paid, and the minimum exploration expenditure should have been made for the area designated under the exploration permit. To renew a mining permit, all mining permit fees, resource taxes, and resource compensation levies must be paid to the state for the area designated under the mining permit. The renewal application should be submitted to the relevant state or provincial authorities at least 30 days before the expiration of a permit.

# 5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

The Jiama Project is located in a mountainous area with MSL elevations ranging from 4,350m to 5,410m in the Tibet Plateau. The topography in the area is characterized by steep slopes, high elevation, and big elevation differences. About half of the surface area at the Jiama Project is covered by shrub bushes and grasses, and the other half of the surface area is covered by soil and fallen rocks formed from freezing, erosion, and weathering. The soil and fallen rock cover is generally only a few meters thick.

The area has a typical continental plateau climate. The summers (also the rainy season) are relatively humid and cool, and the winters are dry and extremely cold. The temperature difference between day and night is large. Winter conditions prevail from October through March. July and August are the only frost-free months in any year. Average annual precipitation is approximately 500 millimeters (mm) that occurs mostly as rain from June to September.

There are some sparsely-populated Tibetan inhabitants within the Jiama Project area, with most of the land being used for low-intensity yak and sheep grazing. The primary crop in the area is highland barley.

Access to the Jiama Project area is excellent. A newly-paved access road of approximately 8 km connects the Jiama Project site office and processing plant to the Sichuan-Tibet Highway (G318) in the north. The distance from the turning point to Lhasa in the west is approximately 60 km, and the distance to the Metrorkongka county town in the east is approximately 8 km. Lhasa is connected to other locations in China by railroad, highways, and air. There are a number of daily flights from Lhasa to Chengdu, Beijing, and other cities in China. Concentrates produced from the Jiama Project will be trucked to the Lhasa rail station and then shipped by rail to the current smelter customer in the Gansu Province ,China and may be shipped to other places in China in the future.

Electricity for mine production at the Jiama Project is provided by a newly constructed, 110 kV electricity transmission line from the Metrorkongka substation located approximately 20 km north of the Jiama Project area. Electricity supply in the central Tibet region was generally insufficient for mining operations in the past. The Tibet government and Central Government of China have been executing a power-supply development plan for the period from 2006 to 2010. Several new power generation plants have been constructed, and the Central Tibet power grid will be connected to the national power grid in China. Electricity supply will be sufficient for the Phase I mine production as well as for the Phase II expansion at the Jiama Project, when the development plan is completed. Prior to that, however, the mine could experience power shortages for production. The Jiama Project has been designated as one of the most important projects in Tibet and has been granted priority in electricity supply by the Tibet government.

Although water is scarce in the general area, the Jiama Project area has obtained sufficient surface water rights to support the planned mining and processing operation. Fresh water for production and for the mine camp will be obtained from the Chikang River that is a tributary of the Lhasa River. Water from the flotation tail thickeners and the tailing filtering system will be recycled for the use in production.

A significant portion of the mining personnel for the Jiama Project came from other China National Gold Group Corporation and/or from other mining operations outside Tibet. Huatailong has also recruited a significant number of local Tibetan workers and some of them were being trained outside Tibet for the Jiama Project during Behre Dolbear’s site visits in December 2009 and April 2011.

## 6.0 HISTORY

There were some small-scale historical lead mining activities at the Jiama Project site before the 1950s. Geological work conducted from 1951 to 1990 delineated a 3,600m long copper-lead-zinc mineralization zone, mostly by surface trenching at the Jiama Project area. Preliminary mineral resource estimation was also conducted. More detailed exploration work was conducted by the No. 6 Geological Brigade (Brigade 6) of the Tibet Geology and Mineral Resource Bureau between 1991 and 1999, when 16 exploration lines, with an azimuth of 30° and numbered as Lines 31, 23, 15, 7, 0, 4, 8, 12, 16, 24, 32, 48, 72, 80, and 96 from northwest to southeast, were designed to explore the deposit. A total of 31 DDH with a total drilled length of 10,091m were drilled during the period, along with the development of 407.5m of adits and 16,474 cubic meters ($m^3$) of surface trenches. Twenty-two of the Brigade 6 DDH holes with a total drilled length of 6,518m and 10 surface trenches with a total sampled length of 349m were used in the current resource estimation as these holes/trenches are located in the defined mineralized zones and contain reasonable-quality assay data.

Based on the Brigade 6 work, four mining licenses within the current Jiama Project mining license boundary were issued to different mining operators and four mining operations were established, including:

- **Lines 15-0 Mining License:** The license was issued to the Jiama Township government that organized the Jiama Township Fupin Development Company Limited to conduct mining activity at Jiama. A 300 tpd concentrating plant was built and mining started in 2004. A total of 14 adits were developed for mining. It was estimated that a total of 49,000 tonnes of ore was mined, with a mining loss of 9,200 tonnes, to the end of June 2006. Mine production after June 2006 is unknown.

- **Lines 0-16 Mining License:** The license was issued to Lhasa Mining Company. Both open pit mining and underground mining were conducted in the license area by the property owner. Open pit mining above the MSL elevation of 4,780m started in 1995, and a total of 10 adits with a level height ranging from 16m to 40m between the MSL elevations of 4,606m and 4,780m were developed before 2006. Mine production to the end of 2005 was estimated at 130,000 tonnes, with mine production since January 2006 unknown.

- **Lines 16-40 Mining License:** The license was issued to Brigade 6. A joint venture company, Tibet Jiama Mining Development Company Limited, between Brigade 6 and Henan Rongye Trading Company Limited, was established to conduct the mining operation. Mining started in 2003. A concentrating plant with a processing capacity of 850 tpd was built in 2006. It was estimated that the total mined and lost mineral resources were 109,000 tonnes to the end of June 2006. Production after June 2006 is unknown.

- **Lines 40-80 Mining License:** The license was issued to the original Tibet Huatailong Mining Development Company Limited. No concentrating plant was built for this mining license. Mining started in 2005. The estimated mine production from three mining adits was 80,000 tonnes to June 20, 2006, with an estimated mining loss of 8,900 tonnes. Mine production since June 2006 is unknown.

As the exact total historical mine production figure is unknown, the Resource Institute has conducted a systematic survey of the existing underground adits and mined-out stopes within the above mining license areas, and the volume calculated from the surveyed stopes has been used to deduct the consumed mineral resources for the Jiama Project.

Mining activities by the previous operators were stopped by the Tibet government on April 1, 2007 in the four mining license areas. In accordance with an agreement between the Tibet government and China National Gold Group Corporation, the four mining licenses as well as the exploration licenses in the surrounding areas were consolidated by the reorganized Huatailong in late 2007, with China Gold Group HK as the primary shareholder.

Since acquiring the consolidated mining and exploration licenses, Huatailong conducted an extensive exploration program in 2008, completing 150 DDH holes, with a total drilled length of 50,616.65m. In 2009, 47 qualified DDH holes totaling 18,745.45m of further in-fill drilling were completed in the proposed open pit mining area at Niumatang, located at the northwestern side of the defined mineralization zone, and step-out drilling was conducted to the northeast of the mineralized zone. The 2008-2009 drilling results, combined with limited historical data, constituted the basis for the resource estimation for the Jiama Project in the Behre Dolbear's 2010 ITR.

Based on the 2008 to 2009 exploration results, Huatailong conducted a further extensive exploration program in 2010, completing 82 DDH holes, with a total drilled length of 45,537.22m. The drilling program has significantly expanded the mineral resources of the Jiama Project. The 2010 drilling results, combined with 2008 to 2009 drilling data, constituted the basis for the current resource estimation for the Jiama Project in this Behre Dolbear 2011 ITR.

The new Jiama Project started construction in June 2008. The original underground mine workings, as well as three smaller processing plants with processing capacities ranging from 300 tpd to 850 tpd that existed before consolidation, were abandoned and the processing plants were dismantled and reclaimed by Huatailong. The associated tailing storage facilities (TSF) will also be reclaimed by Huatailong. The processing plant with processing capacity of 800 tpd has been rehabilitated and will be used to process the lead-zinc ore in the later period of 2011.

During Behre Dolbear's site visit in April 2011, the Phase I 6,000 tpd flotation processing plant and related TSF was completed and in operation. The smaller Tongqianshan pit was in production. Pre-production stripping for the larger Niumatang pit was near completion, and construction of the primary underground haulage tunnel at a MSL elevation of 4,261m and the secondary underground ore haulage tunnel at a MSL elevation of 4,087m was completed. It was reported by Huatailong that the Phase I concentrator trial production started in April 2010, full Phase I mining and processing operating of the Jiama Project started in late July 2010, and commercial production started in September 2010. The Jiama Project has become one of the largest copper-polymetallic mining operations in China in terms of its proposed ore production rate, total metal production, and mineral resources considered compliant under the Australasian JORC Code and the CIM Standards.

# 7.0 GEOLOGICAL SETTING AND MINERALIZATION

## 7.1 REGIONAL GEOLOGICAL SETTING

The Tibet Plateau is the youngest orogenic belt in the world. Subduction and collision between the Indian Plate and Eurasian Plate from Late Mesozoic to Cenozoic time, commonly referred to as the Himalayan Orogeny, has created the world's youngest and highest mountain ranges. The complicated tectonic evolution, during this period of time as well as during the preceding, Yanshanian Orogeny, has created a series of near east-west-trending structural zones in the plateau, with associated multiple-stage magmatism and related mineralization (Figure 7.1). From south to north, these structural zones include the Indian Plate (I), the Yalung Tsangpo Suture Zone (YS), the Gangdise-Nianqing Tanggula Terrane (II), the Bangong Lake-Nu River Suture Zone (BS), Qiangtang-Sanjiang Complex Terrane (III), and the Jinshan River Suture Zone (JS). The Gangdise-Nianqing Tanggula Terrane is subdivided, from south to north, into the Gangdise Yanshanian-Early Himalayan epicontinental volcanic arc (II1), Nianqing Tanggula faulted dome (II2), Cuoqin-Namucuo Late Yanshanian back-arc basin (II3), and Bange-Jiali Early Yanshanian epicontinental volcanic arc (II4).

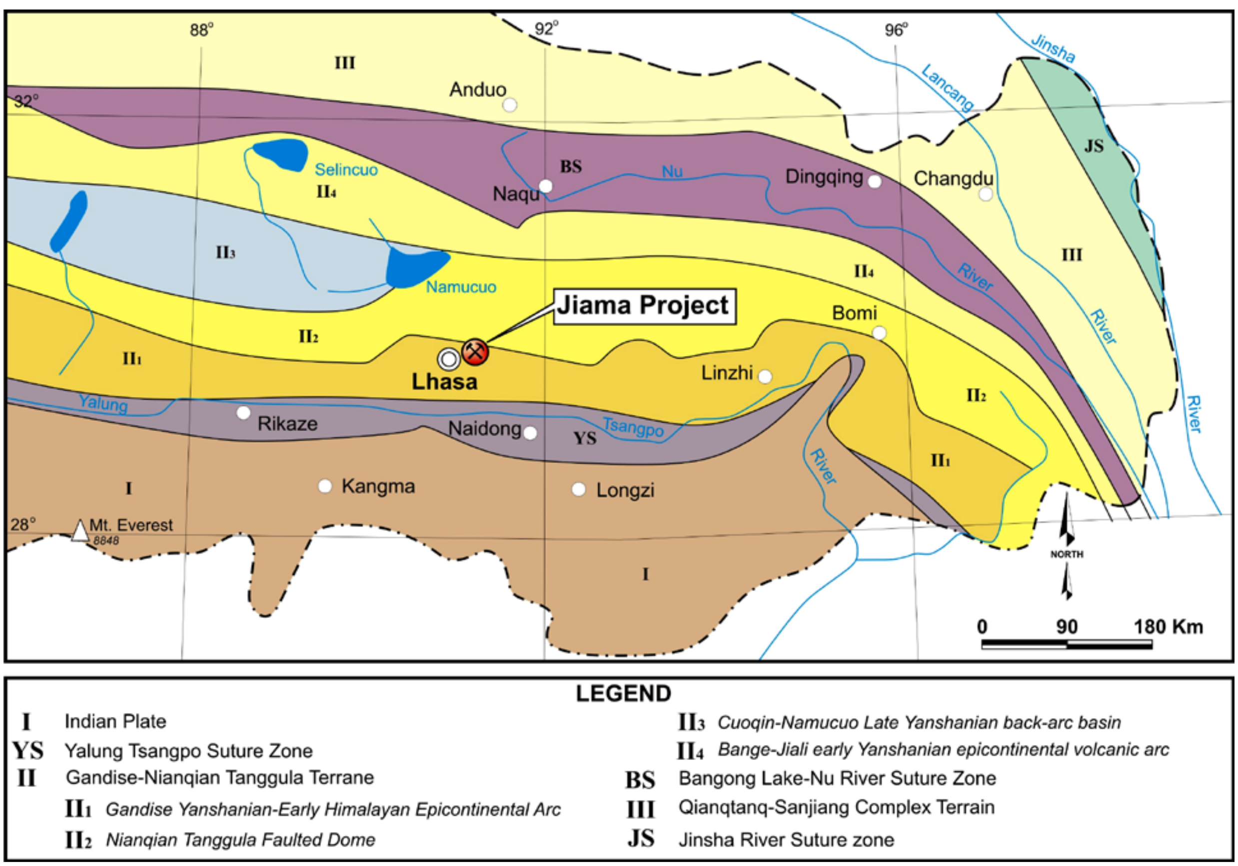



**Figure 7.1. Tectonic setting of the Jiama Project**
**(After the Behre Dolbear 2010 ITR Report)**

## 7.2 LOCAL GEOLOGY

The Jiama Project is located in the central-south portion of the Gangdise-Nianqing Tanggula Terrane (Figure 7.1). Stratigraphy outcropping in the Jiama Project area consists primarily of passive epicontinental clastic-carbonate rocks, including Upper-Jurassic Duodigou Formation limestones and marbles, Lower-Cretaceous Linbuzong Formation sandstones and slates, and locally, Quaternary colluviums and alluviums (Figure 7.2). Some mafic, intermediate to felsic dikes have been observed in outcrops and in drill holes, but no large intrusive bodies have yet been identified. It is believed, however, that a large granitic intrusive body exists at depth in the area and that it has provided the intense heat source for the metamorphism and also the mineralizing solutions for the copper-polymetallic mineralization. Because of the placement of the granitic intrusion, a large portion of the Duodigou limestones have been metamorphosed to marbles, and the Linbuzong clastic rocks have been largely metamorphosed into hornfels.

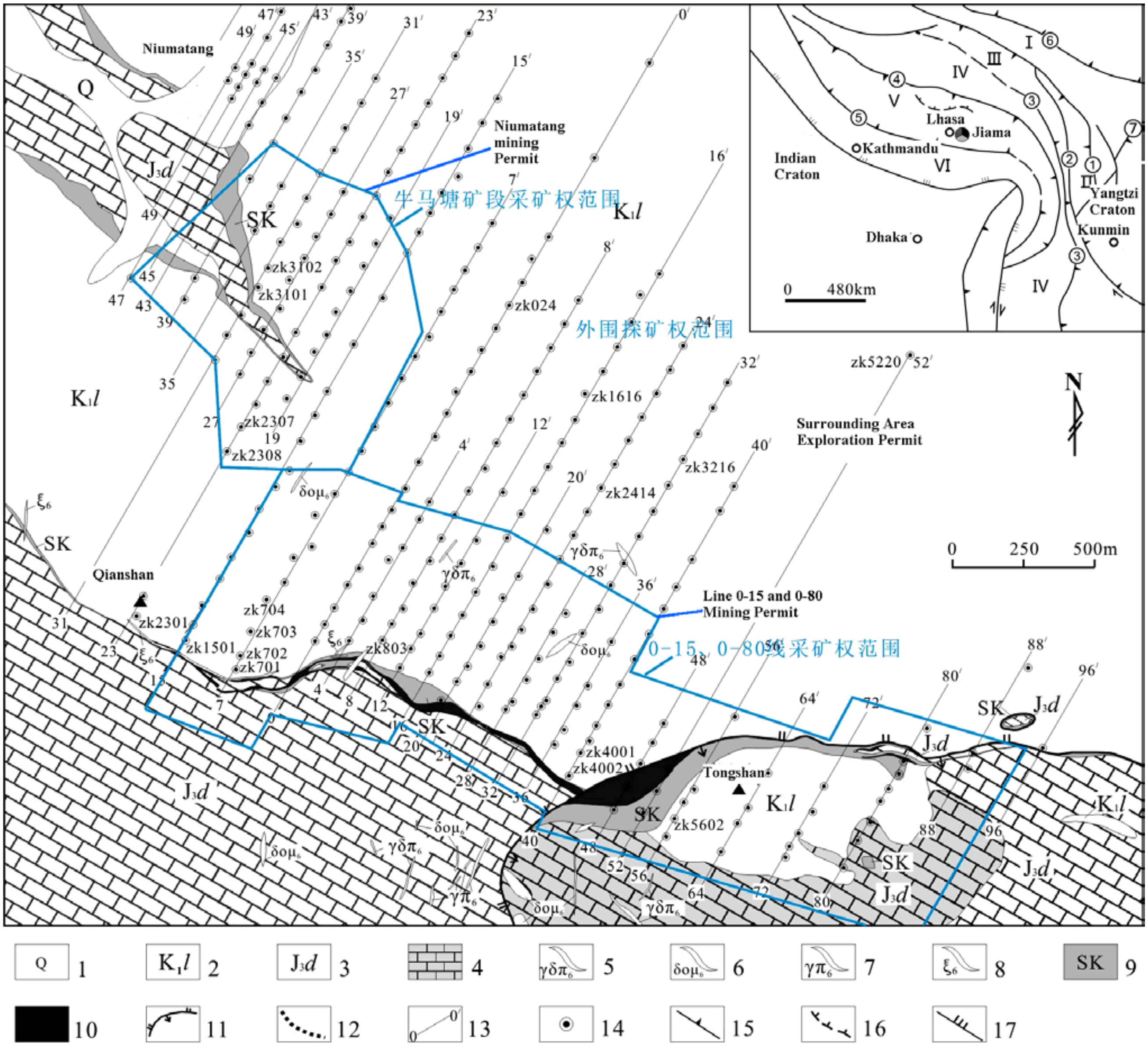



**Figure 7.2. Geology and drill holes of the Jiama Project area**

**(The entire map is within the boundary of the current Jiama exploration license)**

**1 – Slope Residual and Alluvial sediments of Quaternary; 2 – Slate and hornfels of Lower Cretaceous Linbuzong Fm; 3 – Limestone and marble of Upper Jurassic Duodigou Fm; 4 – Skarn altered marble; 5 – Grano-diorite porphyry dyke; 6 – Quartz-diorite poryphrite dyke; 7 – Granoporphyry dyke; 8 – Granoaplite dyke; 9 – Skarn; Skarn-type Deposit; 11 – Gliding nappe fault; 12 – Lead-Zinc Deposit boundary; 13 – Exploration line and number; 14 – Drilling hole; 15 – Craton margin belt and its subduction direction; 16 – Cceanic crust obduction nappe front; 17 – Major craton boundary thrust fault; ① Ganzi-Litang fault; ② Jinshajiang-Ailaoshan fault; ③ Lancang River fault; ④ Bangonghu lake-Nujiang fault; ⑤ Indian River-Yaluzangbujiang fault; ⑥ Kunlun South-Machen fault; ⑦ Longmen Mountain fault; Ⅰ, Kakaxili-Bayankala plate; Ⅱ, Yidun-Xiangcheng plate; Ⅲ, Karakorum-Happy Ridge-Qamdo plate; Ⅳ, Qiangtang-Tanggula-Baoshan plate; Ⅴ, Gangdise-Nyainqentanglha-Tengchong plate; Ⅵ, Himalayan plate (after Resource Institute's 2011 ITR Report)**

## 7.3 DEPOSIT GEOLOGY

Skarns with associated copper-polymetallic mineralization were formed at the contacts of the intrusives and the Duodigou marbles as well as in the interlayer structural zone between the Duodigou marbles and the Linbuzong hornfels. Less intensive copper-polymetallic mineralization was formed within the Linbuzong hornfels and lower grade molybdenum-copper polymetallic porphyry mineralization were formed within the granoporphyry intrusive in the Duodigou marbles.

Structures in the area consist of thrust and detachment faults as well as associated anticlines and synclines. The interlayer fracture zone between the Duodigou marbles and Linbuzong hornfels could be a detachment fault, as it is steeply-dipping (averaging around 60°) at the upper portion and flatter (averaging around 10°) at the lower portion.

## 7.4 SKARN-TYPE COPPER-POLYMETALLIC MINERALIZATION

Copper-polymetallic mineralization at Jiama is primarily hosted by skarns distributed along an interlayer structural zone between the Duodigou marbles and the Linbuzong hornfels. This zone is stratiform, tabular, or lenticular in shape and comprises the primary mineralized body (I1) in the deposit. It strikes west-northwest and dips to the northeast. The upper part of the mineralized body has a steep dip angle, averaging around 60° to 70°, whereas the lower portion of the mineralized body is much flatter, with an average dip of around 10° to 20°. The I1 mineralized body is approximately 3,000m long along the strike direction and 2,500m wide along the dip direction. Its thickness ranges from 10m to 50m, with the maximum intercepted thickness of 281.7m. This mineralized body was defined by over 275 drill holes (Figure 7.3).

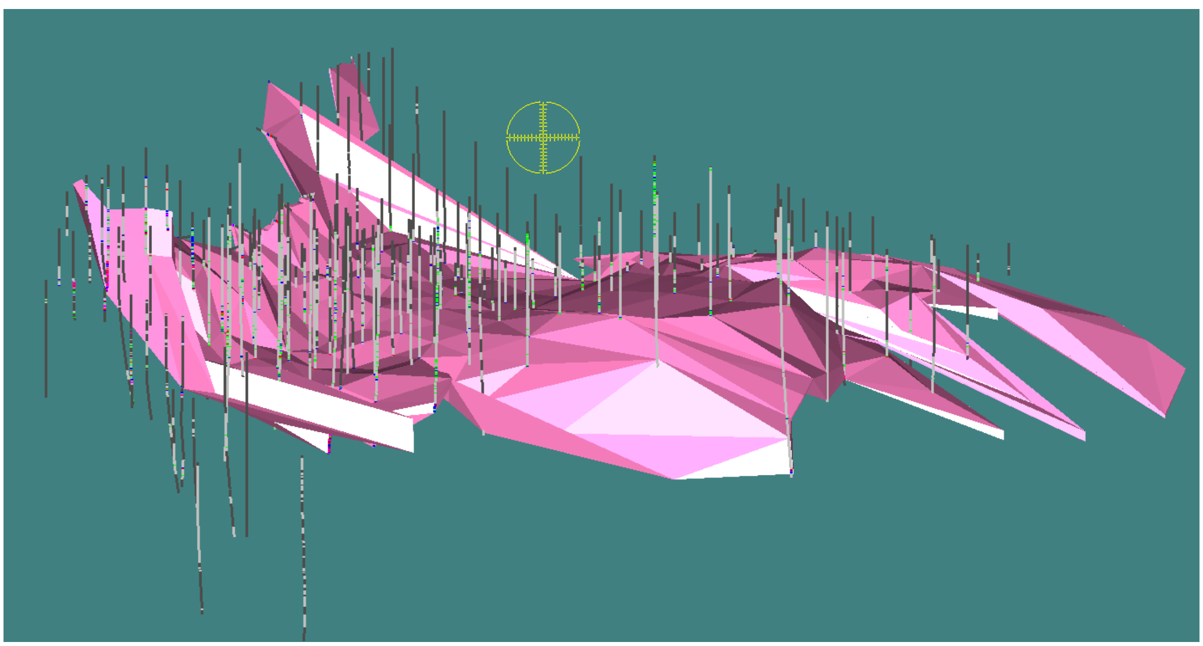


**Figure 7.3. 3D view of the I1 mineralized body for the Jiama Project**
**(The view is looking at 240° rotated azimuth with a dip angle of minus 15°. The yellow circle at the upper middle part of the diagram has a diameter of 200m) (after the Behre Dolbear 2010 ITR Report).**

Two zones within the I1 mineralized body have generally been well defined by drilling on a 100m by 100m grid. The first is the Niumatang area located at the northwestern portion of the mineralized zone between Exploration Lines 15 and 35, which will be the primary target for the open pit mining operation in the early years of the mine's life. The second is the area between Exploration Lines 0 and 40 and within the current Jiama mining license boundary, which will be the target for an underground mining operation. The mineralized body is still open to the northeast along the dip direction, representing significant additional exploration potential.

Seven other smaller mineralized bodies have also been modeled, but they are generally not well defined by the current drilling data.

The I2 mineralized body was intersected by nine drill holes between Exploration Lines 4 and 36 and consists of three small discontinuous zones located below the I1 mineralized body. The body is hosted by stratiform skarns and is dipping to the northeast. Thickness of the I2 mineralized body ranges from 1.5m to 20.9m, averaging 14.7m.

The I3 to I8 mineralized bodies are small, thin, mineralized zones located southeast of the I1 mineralized body between Exploration Lines 56 and 80 and are intersected by 2 to 10 drill holes each. These mineralized bodies are generally lenticular in shape and generally dip to the northeast. The average thickness of the zones ranges from 3m to 10m.

Copper is the most important economic metal in the deposit. Other metals of economic value include molybdenum, lead, gold, silver, and zinc. These metals are distributed differently in the deposits. In general, the copper grade is higher at the upper and northwest portions and lower in the northeast portion. Molybdenum seems negatively correlated with copper, with higher grades in the northeast portion of the deposit. Gold and silver have a distribution pattern similar to that of copper in the deposit. Lead and zinc are only enriched at the upper part at the southwest of the I1 mineralized body, which was part of the historic mining targets. Contents of deleterious elements, such as arsenic, antimony, and mercury, are generally low in the deposit and will not create any marketing issues for concentrate produced from the deposit.

Metallic minerals in the deposit include chalcopyrite, bornite, molybdenite, tetrahedrite, galena, sphalerite, chalcocite, digenite, covellite, native copper, pyrite, marcasite, pyrrhotite, magnetite, limonite, malachite, and azurite. Non-metallic minerals include garnet, diopside, wollastonite, tremolite, epidote, quartz, feldspar, biotite, sericite, muscovite, chlorite, calcite, anhydrite, fluorite, and kaolinite. The metallic minerals occur as disseminations, massive aggregates, or as stock works in the skarns.

Oxidation occurs only at the near-surface portion of the deposit. The majority of the defined mineral resources are in the unoxidized sulfide zone.

Behre Dolbear has reviewed the interpretation of the geology and copper-polymetallic mineralization of the Jiama Project by Huatailong and the Resource Institute geologists and considers that the interpretation is reasonable.

### 7.5 HORNFELS-TYPE COPPER-POLYMETALLIC MINERALIZATION

Compared with the skarn-type copper-polymetallic mineralization, hornfels-type copper-polymetallic mineralization at Jiama is generally lower in metal grades. It occurs in the thick tabular shape in the overlying hornfels of the Linbuzong formation. Its distribution center is between the exploration Lines 0 to 40 where it is of the maximum thickness. It is over 1,200m long in the northwest-west direction. The mineralized body becomes thicker to the north-northeast direction.

It is thinner to both northwest-west and southeast-east directions and pinches out in the southwest-west direction. It has not fully been controlled in the north-northeast direction. It trends extending north still. Along the exploration of each line, it is generally thinner in the southern end of the mineralized body and thicker in the north end of the mineralized body. It is generally 10m to 50m thick with the maximum intercepting thickness of 826m (ZK3216). The average copper grade is of 0.23% with an average grade of molybdenum 0.053%. The waste rock in the mineralized body mainly consists of the hornfels with some of the late dike intrusives (Figure 7.4). The hornfels-type mineralized body is usually shallow. Mostly it is only about 20 meters deep. A preliminary geological model of the hornfels-hosted mineralization was constructed by the Resource Institute, which was used as a basis for the resource estimation in this ITR.

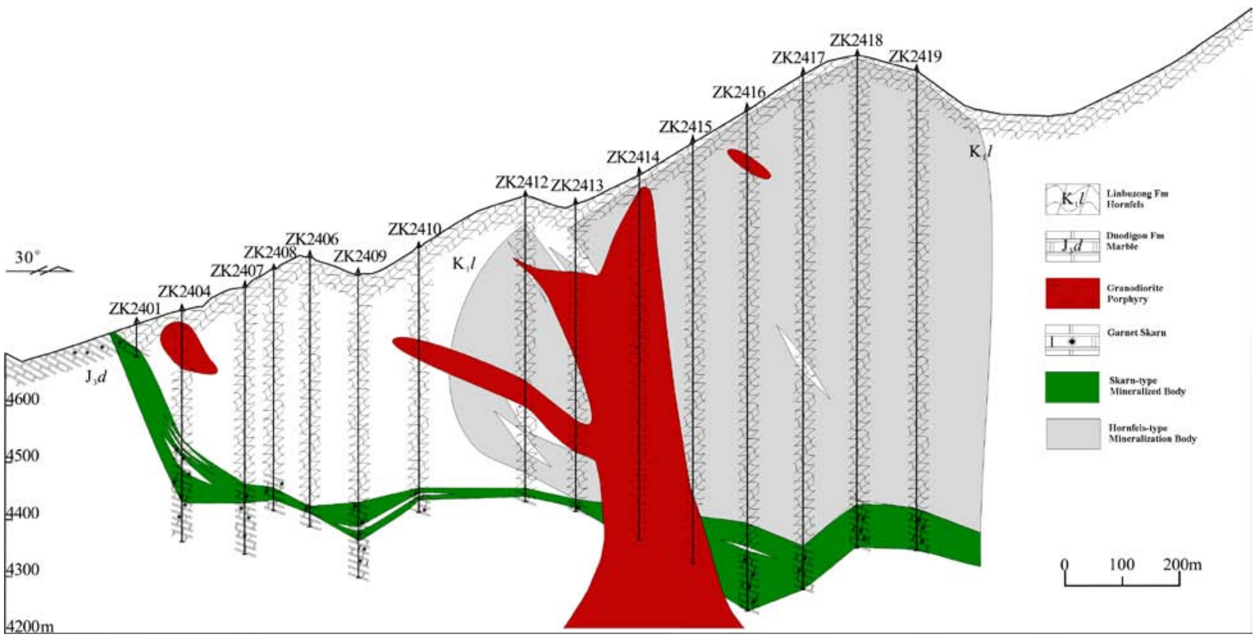



**Figure 7.4. Cross section map of Exploration Line 24 at Jiama Copper-polymetallic deposits (After the Resource Institute 2011 Report)**

Figure 7.4 illustrates the hornfels-hosted copper-polymetallic mineralized body as well as the skarn-type mineralization.

The currently defined hornfels-type mineralization is a large, massive body without clear preferred direction. Copper-polymetallic mineralization generally occurs as fracture coatings in the hornfels. The metallic minerals in the hornfels-type mineralization are similar to that of the skarn-type mineralization. Chalcopyrite, bornite, molybdenite, pyrite, and pyrrhotite are the major metallic minerals with minor amounts of other minerals. Copper and molybdenum are the two important elements; copper is generally enriched in the upper portion of the mineralization and molybdenum is generally enriched in the lower portion of the mineralization.

### 7.6 PORPHYRY-TYPE MOLYBDENUM-COPPER POLYMETALLIC MINERALIZATION

Porphyry-type molybdenum-copper mineralized body occurs in a pipe-shape. The hosting rocks of the mineralized body are mainly granodiorite porphyry and monzogranite porphyry. The maximum intercepting thickness of the mineralized body is up to 476.73m in the hole of ZK2414 with the average copper grade of 0.25% and average molybdenum grade of 0.055%. The mineralization is still open to depth.

### 7.7 INDEPENDENT STAND ALONE VEIN-TYPE GOLD MINERALIZATION

Standalone independent vein-type gold mineralization has been found during the 2010 exploration program. It occurs in the quartz-diorite porphyrite dyke in the hole of ZK4504. There are two gold mineralization intercepts in this hole. The first mineralized body is 10m thick with an average gold grade of 17.15 grams per tonne (g/t) and the highest gold grade of 47 g/t. The second mineralized body is 13.06m thick with an average gold grade of 2.04 g/t and the highest gold grade of 4.28 g/t (Figure 7.5). The discovery of these gold bearing intercepts shows the potential for other gold mineralization within the Jiama Project mining district.

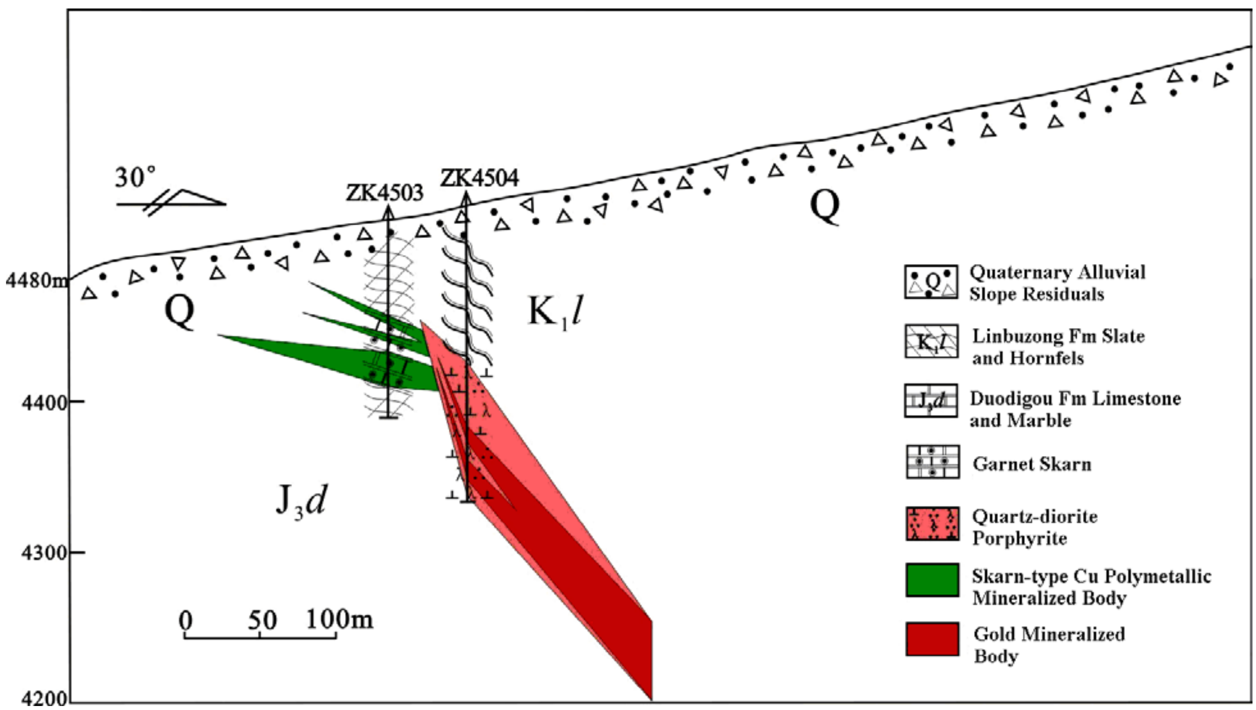



**Figure 7.5. Cross section of Exploration Line 45 at Jiama copper-polymetallic mine district (After the Resource Institute 2011 Report)**

## 8.0 DEPOSIT TYPES

The Jiama Project is a large, skarn-type, hornfels-type and porphyry-type, three-in-one copper-polymetallic porphyry deposit complex with well-developed zonation in both planar and vertical direction. The large stratiform skarn-type copper-polymetallic deposit is controlled mostly by an interlayer structural zone between the Duodigou marbles and the Linbuzong hornfels. The mineralized zone measures thousands of meters in both strike and dip directions and is still open in many places. The deposit is likely formed by contact metamorphism and hydrothermal mineralization associated with a granitic intrusion.

A lower-grade copper-polymetallic mineralization has also been encountered in the overlying Linbuzong hornfels. The hornfels-type mineralization is large; however, its economic feasibility will need to be determined by further technical studies.

A lower-grade molybdenum-copper polymetallic porphyry–type mineralization has been intercepted within the granoporphyry dykes and intrusives in the underlying Duodigou marbles. The porphyry-type mineralization is potentially large; however, its economic feasibility will need to be determined by further drilling and technical studies.

A three-dimensional computer mineralization body model has been constructed by the Resource Institute to model the skarn-type, porphyry-type as well as the hornfels-type copper-polymetallic mineralization at Jiama and is shown in Figure 8.1.

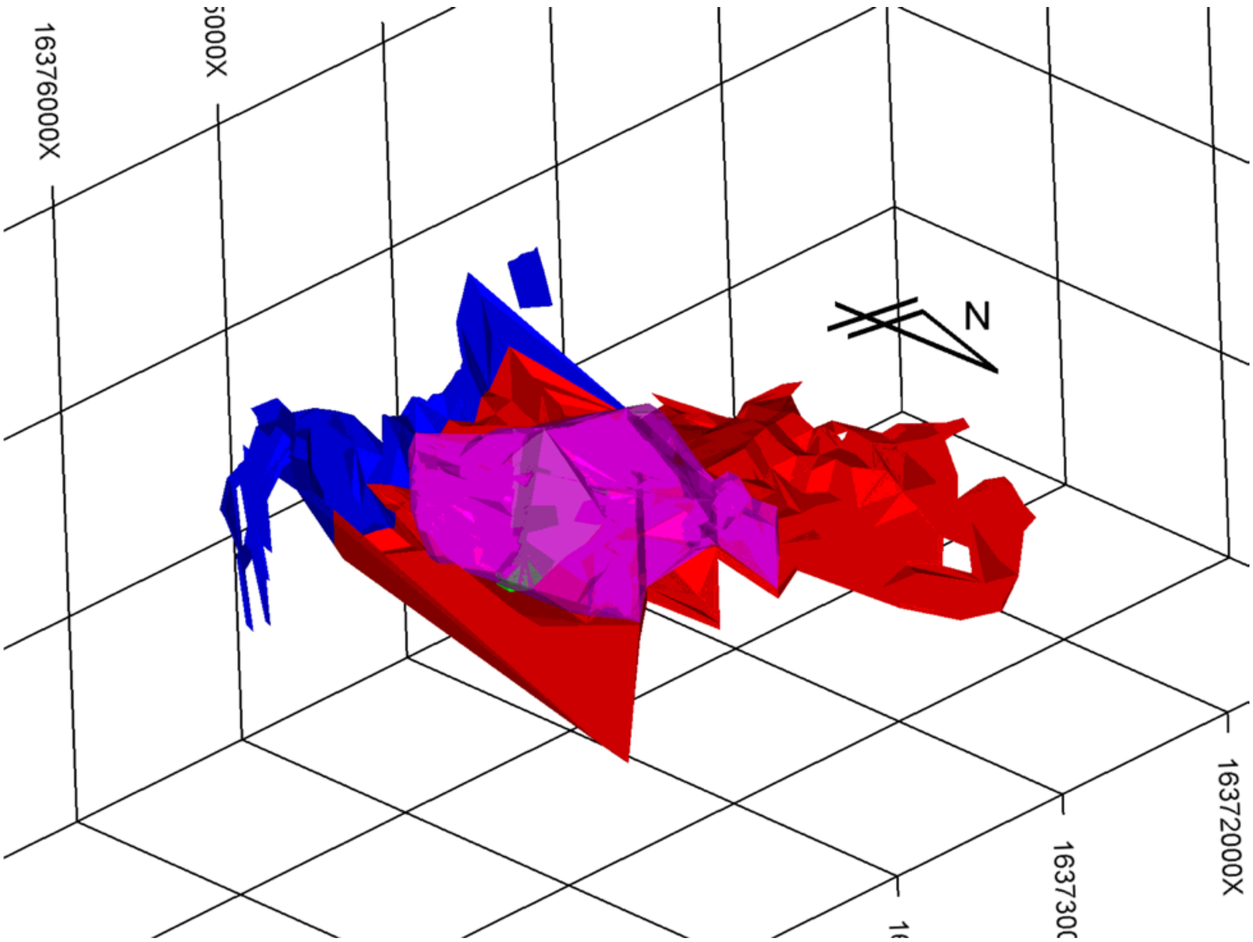



**Figure 8.1. Mineralization body model at the Jiama Project**
**(Red – gentle slope skarn mineralized body; blue – steep skarn mineralized body; purple–hornfels mineralized body; green – porphyry mineralized body, after the Resource Institute 2011 Report)**

# 9.0 EXPLORATION

## 9.1 BRIGADE 6 EXPLORATION WORK IN THE 1990S

Exploration work conducted by Brigade 6 in the 1990s included 1:2000 and 1:25,000-scale topographic survey, geological mapping, surface trenching, adit development, and DDH drilling. A total of 31 DDH holes with a total drilled length of 10,091m were completed, along with the development of 407.5m of adits and 16,474$m^3$ of surface trenches. Exploration work was concentrated on the near-surface portion of the mineralized zones and was conducted in accordance with the industry requirements in China at the time.

## 9.2 HUATAILONG EXPLORATION WORK IN 2008 TO 2010

Extensive exploration work conducted by Huatailong from 2008 to 2010 includes 1:2000-scale topographic surveying, geological mapping, and drilling of 279 DDH holes with a total drilled length of 114,899.23m. Management of the exploration work and resource estimation was contracted to the Resource Institute in Beijing.

Survey control points were established using differential GPS instruments, based on the 1954 Beijing coordinate system and the 1956 Yellow Sea elevation system. The topographic survey was conducted by total stations, and the survey results were tied to the established survey control points. The 1:2000-scale topographic survey, with a 2m contour interval, covered an area of 13.8 $km^2$, providing good support for the drilling and other exploration work.

# 10.0 DRILLING

## 10.1 BRIGADE 6 DRILLING IN THE 1990S

DDH drilling by Brigade 6 in the 1990s was conducted in accordance with the "Core Drilling Regulation" promulgated by the former Ministry of Geology and Mineral Resources of China. Of the 31 holes drilled with a total drilled length of 10,091.1m, only 25 with a total drilled length of 7,830.75m met the requirements under the regulation. Core recoveries ranged from 42% to 98.3% with an average of 82.7%. Six other holes (ZK4808, ZK8008, ZK9608, ZK9612, ZK3201, and ZK006) with a total drilled length of 2,260.35m were considered as not conforming with the regulations because the core recovery was too low or because the drill hole was terminated prematurely. Eventually, 25 holes meeting the regulations have been included in the database for the current resource estimation.

## 10.2 HUATAILONG DRILLING FROM 2008 TO 2010

### 10.2.1 2008 Drilling

Huatailong's 2008 drilling program was conducted from April 31 to December 9. Six drilling contractors, with a total of 36 drill rigs, completed 150 DDH holes and drilled a total length of 50,617m. Drilling was managed and supervised by the Resource Institute. Drill hole spacing was designed at 100m to 200m by 100m to 200m within the mining license boundary and increased to 200m to 400m by 100m to 400m outside the mining license. Five of the drilled holes were terminated prematurely, but three of the relatively deep holes were still included in the database for geological purposes. Excluding the redrilled intervals, the 2008 holes included in the Jiama drill hole database consist of 148 holes with a total drilled length of 48,970m.

Drilling started at the surface using 130 mm or 110 mm diameter drill bits, reducing to 91 mm or 75 mm diameter drill bits after entering into the solid rocks. Core recoveries were generally good. Core recovery for the skarn mineralized intervals ranged from 60.3% to 100%, averaging 95.3%; core recovery for the hanging walls ranged from 62.7% to 100%, averaging 95.0%; and core recovery for the footwalls ranged from 65.1% to 100%, averaging 95.3%.

Drill hole collar locations were surveyed using differential GPS survey instruments after drilling, and the downhole deviation was measured using downhole survey instruments generally at a 100m interval. Completed drill holes were plugged using cement, with a cement post maintained at the center of the drill hole collar.

Properly labeled and boxed drill cores were transported from the drill site to the core storage warehouse, where core logging, photographing, and sampling took place.

### 10.2.2 2009 Drilling

Huatailong's 2009 drilling consisted of 47 DDH holes with a total drilled length of 18,745.45m in the Niumatang area and the northeast of the mineralized zone. The in-fill drilling has brought the drilling density in the Niumatang area to 100m by 100m, which is sufficient to produce a resource estimate for open pit mine planning and ore reserve estimation in the area. The four step-out drill holes to the northeast have further extended the mineralized zone and increased the total mineral inventory of the Jiama deposit.

Drilling and surveying of the drill holes for the 2009 program were conducted in a similar manner as that for the 2008 drilling program. Core recoveries were generally good. Core recovery for the mineralized intervals ranged from 76.3% to 100%, averaging 96.5%; core recovery for the hanging walls ranged from 87.6% to 100%, averaging 96.3%; and core recovery for the footwalls ranged from 85.4% to 100%, averaging 96.4%.

### 10.2.3 2010 Drilling

Huatailong's 2010 drilling through the end of December of 2010 consisted of 82 certified DDH holes with a total drilled length of 45,553.72m. The in-fill drilling has brought the drilling density in the central area of the Jiama deposit to 100m by 100m, which is sufficient to produce a resource estimate for open pit mine planning and ore reserve estimation in the area.

Drilling and surveying of the drill holes for the 2010 program were conducted in a similar manner as that for the 2008-2009 drilling program. Core recoveries were generally good. Core recovery for the mineralized intervals ranged from 76.3% to 100%, averaging 96.5%; core recovery for the hanging walls ranged from 87.6% to 100%, averaging 96.3%; and core recovery for the footwalls ranged from 85.4% to 100%, averaging 96.4%.

Table 10.1 summarizes the drill hole information completed by Huatailong in 2010.

TABLE 10.1
2010 HUATAILONG DRILL HOLES FOR THE JIAMA PROJECT
(UNDER THE 1954 BEIJING COORDINATE SYSTEM AND THE 1956 YELLOW SEA ELEVATION SYSTEM)

| Hole ID | Easting | Northing | Elevation | Dip | Azimuth | Depth (m) | Core Recovery | | | Number of Samples |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | -1[1] | -2[2] | -3[3] | |
| ZK017 | 3,287,822.15 | 16,379,258.65 | 4,707.85 | -90 | 0 | 338.45 | 0 | 97.5 | 88 | 222 |
| ZK019 | 3,287,988.25 | 16,379,357.55 | 4,831.62 | -90 | 0 | 383.26 | 99 | 99.5 | 100 | 214 |
| ZK022 | 3,288,132.55 | 16,379,435.83 | 4,916.78 | -90 | 0 | 490.1 | 99 | 93.75 | 99.67 | 247 |
| ZK023 | 3,288,294.22 | 16,379,531.93 | 4,985.43 | -90 | 0 | 519.87 | 99 | 99.33 | 100 | 272 |
| ZK024 | 3,288,386.83 | 16,379,574.36 | 4,926.91 | -90 | 0 | 675.3 | | 99.43 | | 506 |
| ZK025 | 3,288,462.51 | 16,379,628.17 | 4,881.46 | -90 | 0 | 573.68 | 91.37 | 88.48 | 98.73 | 361 |
| ZK027 | 3,288,610.15 | 16,379,717.91 | 4,941.09 | -90 | 0 | 681.09 | 91 | 90 | 98 | 373 |
| ZK714 | 3,288,036.01 | 16,379,148.02 | 4,695.35 | -90 | 0 | 209.8 | 100 | 99 | 99 | 93 |
| ZK717 | 3,288,196.14 | 16,379,242.05 | 4,813.02 | -90 | 0 | 341.6 | 94 | 99 | 97 | 180 |
| ZK719 | 3,288,348.72 | 16,379,333.24 | 4,907.75 | -90 | 0 | 465.75 | 99 | 95 | 99.5 | 266 |
| ZK721 | 3,288,502.15 | 16,379,422.02 | 4,846.16 | -90 | 0 | 516.95 | 96.33 | 95.89 | 97 | 321 |
| ZK724 | 3,288,656.82 | 16,379,516.02 | 4,818.45 | -90 | 0 | 543.1 | | 98.84 | | 283 |
| ZK810 | 3,287,723.92 | 16,379,431.92 | 4,744.05 | -90 | 0 | 303.55 | 99 | 97.42 | 99 | 177 |
| ZK813 | 3,287,892.91 | 16,379,529.02 | 4,857.84 | -90 | 0 | 623.93 | 97.33 | 96.67 | 97.57 | 340 |
| ZK815 | 3,288,059.88 | 16,379,632.41 | 4,996.12 | -90 | 0 | 599.5 | 90 | 93.83 | 95 | 336 |
| ZK816 | 3,288,141.28 | 16,379,675.45 | 5,044.06 | -90 | 0 | 692.2 | | 96.83 | | 417 |
| ZK817 | 3,288,219.65 | 16,379,726.38 | 5,047.52 | -90 | 0 | 696 | 93.4 | 87.75 | 79 | 456 |
| ZK818 | 3,288,308.15 | 16,379,768.26 | 5,001.23 | -90 | 0 | 654.4 | 98 | 95.4 | 99 | 433 |
| ZK819 | 3,288,396.95 | 16,379,814.11 | 4,944.32 | -90 | 0 | 665 | 85.75 | 92.63 | 99 | 331 |
| ZK1519 | 3,288,491.40 | 16,379,165.10 | 4,805.00 | -90 | 0 | 447.14 | 95 | 91 | 86 | 261 |
| ZK1521 | 3,288,625.27 | 16,379,263.55 | 4,723.77 | -90 | 0 | 419.2 | 98.75 | 93.67 | 100. | 213 |
| ZK1523 | 3,288,767.62 | 16,379,344.06 | 4,711.83 | -90 | 0 | 426.81 | 95 | 98 | 100 | 215 |
| ZK1525 | 3,288,767.47 | 16,379,346.40 | 4,724.21 | -90 | 0 | 601.2 | 100 | 98 | 100 | 289 |
| ZK1527 | 3,289,094.93 | 16,379,533.89 | 4,849.86 | -90 | 0 | 739.6 | 100 | 98.5 | 100 | 160 |
| ZK1612 | 3,287,644.21 | 16,379,612.91 | 4,857.52 | -90 | 0 | 522.5 | 96 | 96 | 88 | 317 |
| ZK1613 | 3,287,807.19 | 16,379,710.15 | 4,918.98 | -90 | 0 | 663.1 | | 98.43 | | 331 |
| ZK1614 | 3,287,888.46 | 16,379,758.52 | 4,981.97 | -90 | 0 | 801.8 | | 97.82 | | 405 |
| ZK1615 | 3,287,975.98 | 16,379,811.58 | 5,049.62 | -90 | 0 | 786.44 | | 93.78 | | 401 |
| ZK1617 | 3,288,143.17 | 16,379,906.22 | 5,126.02 | -90 | 0 | 830.36 | 85.33 | 97.4 | | 529 |

TABLE 10.1
2010 HUATAILONG DRILL HOLES FOR THE JIAMA PROJECT
(UNDER THE 1954 BEIJING COORDINATE SYSTEM AND THE 1956 YELLOW SEA ELEVATION SYSTEM)

| Hole ID | Easting | Northing | Elevation | Dip | Azimuth | Depth (m) | Core Recovery | | | Number of Samples |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | -1[1] | -2[2] | -3[3] | |
| ZK1624 | 3,288,482.15 | 16,380,101.35 | 5,083.93 | -90 | 0 | 851.6 | 100 | 99 | 66 | 470 |
| ZK2414 | 3,287,733.06 | 16,379,900.85 | 5,003.15 | -90 | 0 | 638.8 | 100 | 98.25 | 100 | 46 |
| ZK2315 | 3,288,837.15 | 16,379,153.45 | 4,637.11 | -90 | 0 | 297.51 | 97 | 92.5 | 86 | 209 |
| ZK2317 | 3,289,002.96 | 16,379,251.25 | 4,689.56 | -90 | 0 | 412.6 | 97 | 96.5 | 96.5 | 337 |
| ZK2319 | 3,289,167.29 | 16,379,344.89 | 4,801.95 | -90 | 0 | 652.08 | 96 | 99.29 | 96 | 176 |
| ZK2322 | 3,289,332.41 | 16,379,434.82 | 4,828.91 | -90 | 0 | 768.8 | 97 | 97.25 | 96 | 274 |
| ZK2412 | 3,287,566.25 | 16,379,801.92 | 4,965.16 | -90 | 0 | 536.7 | | 97.41 | | 284 |
| ZK2413 | 3,287,642.26 | 16,379,839.21 | 4,953.12 | -90 | 0 | 539.2 | 93 | 96.82 | 96 | 322 |
| ZK2415 | 3,287,818.01 | 16,379,944.72 | 5,059.78 | -90 | 0 | 737.2 | 100 | 98 | 100 | 362 |
| ZK2416 | 3,287,898.16 | 16,379,994.93 | 5,116.01 | -90 | 0 | 876.1 | 97 | 99.25 | | 505 |
| ZK2417 | 3,287,976.61 | 16,380,053.21 | 5,178.48 | -90 | 0 | 901.3 | 95 | 95.85 | | 492 |
| ZK2418 | 3,288,063.90 | 16,380,089.76 | 5,213.39 | -90 | 0 | 863.3 | 95 | 95 | 91 | 482 |
| ZK2419 | 3,288,152.03 | 16,380,144.69 | 5,186.48 | -90 | 0 | 840.65 | 95 | 99.36 | 100 | 456 |
| ZK3109 | 3,288,921.17 | 16,378,960.15 | 4,554.56 | -90 | 0 | 190.3 | 100 | 100 | 100 | 25 |
| ZK3111 | 3,289,084.56 | 16,379,067.94 | 4,683.14 | -90 | 0 | 338.6 | 100 | 98 | 98 | 23 |
| ZK3116 | 3,289,501.30 | 16,379,288.60 | 4,749.50 | -90 | 0 | 692.54 | 94 | 93.4 | 96 | 37 |
| ZK3213 | 3,287,561.37 | 16,380,051.42 | 5,054.25 | -90 | 0 | 789.75 | 94 | 92.4 | 94 | 415 |
| ZK3214 | 3,287,657.85 | 16,380,087.15 | 5,071.36 | -90 | 0 | 818.14 | | 98.71 | | 410 |
| ZK3215 | 3,287,740.49 | 16,380,138.09 | 5,136.68 | -90 | 0 | 895.6 | 86 | 98.69 | | 453 |
| ZK3217 | 3,287,917.12 | 16,380,231.41 | 5,268.94 | -90 | 0 | 1,001.14 | 99 | 99.33 | | 504 |
| ZK3218 | 3,288,011.39 | 16,380,295.26 | 5,313.38 | -90 | 0 | 1073 | 93 | 96.6 | | 546 |
| ZK3219 | 3,288,095.56 | 16,380,334.98 | 5,274.77 | -90 | 0 | 1000.61 | | 95 | | 504 |
| ZK3903 | 3,288,464.15 | 16,378,477.22 | 4,508.84 | -90 | 0 | 118.7 | | 100 | | 18 |
| ZK3905 | 3,289,028.50 | 16,378,803.19 | 4,582.15 | -90 | 0 | 201.12 | 99 | 94 | 99 | 38 |
| ZK3907 | 3,289,194.46 | 16,378,897.52 | 4,606.01 | -90 | 0 | 275.32 | 99 | 92.75 | 92 | 13 |
| ZK3909 | 3,289,365.42 | 16,378,995.15 | 4,641.95 | -90 | 0 | 447.05 | 98 | 96 | 96 | 46 |
| ZK3912 | 3,289,526.26 | 16,379,090.54 | 4,677.33 | -90 | 0 | 601.68 | 99 | 96.17 | 100 | 53 |
| ZK4007 | 3,286,968.43 | 16,379,920.47 | 4,993.50 | -90 | 0 | 631.78 | 100 | 100 | 99.9 | 382 |
| ZK4009 | 3,287,136.46 | 16,380,012.62 | 5,045.36 | -90 | 0 | 749.85 | 99.7 | 98.5 | 97.18 | 421 |
| ZK4010 | 3,287,230.76 | 16,380,071.83 | 5,013.85 | -90 | 0 | 692.49 | 97.8 | 99.5 | 99.34 | 368 |

TABLE 10.1
2010 HUATAILONG DRILL HOLES FOR THE JIAMA PROJECT
(UNDER THE 1954 BEIJING COORDINATE SYSTEM AND THE 1956 YELLOW SEA ELEVATION SYSTEM)

| Hole ID | Easting | Northing | Elevation | Dip | Azimuth | Depth (m) | Core Recovery | | | Number of Samples |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | -1[1] | -2[2] | -3[3] | |
| ZK4011 | 3,287,314.66 | 16,380,110.59 | 5,023.54 | -90 | 0 | 737.43 | 99 | 99 | 99 | 371 |
| ZK4013 | 3,287,495.89 | 16,380,224.17 | 5,147.88 | -90 | 0 | 732.13 | | 93.6 | | 372 |
| ZK4015 | 3,287,651.40 | 16,380,324.57 | 5,215.40 | -90 | 0 | 931.15 | 97 | 97 | | 504 |
| ZK4016 | 3,287,744.07 | 16,380,372.81 | 5,263.13 | -90 | 0 | 965.12 | 97 | 95.2 | | 489 |
| ZK4302 | 3,288,995.52 | 16,378,667.26 | 4,514.50 | -90 | 0 | 96.5 | 97.5 | 91.33 | 100 | 62 |
| ZK4304 | 3,289,094.02 | 16,378,717.60 | 4,532.50 | -90 | 0 | 163.21 | 95.5 | 90 | 97 | 57 |
| ZK4306 | 3,289,168.72 | 16,378,768.14 | 4,551.00 | -90 | 0 | 195.21 | 97.5 | 96.37 | 96 | 22 |
| ZK4503 | 3,289,112.07 | 16,378,673.05 | 4,534.73 | -90 | 0 | 130.9 | 81.1 | 94.85 | 91.92 | 58 |
| ZK4504 | 3,289,195.10 | 16,378,727.92 | 4,551.50 | -90 | 0 | 196.97 | 95.17 | 90 | 96 | 62 |
| ZK4703 | 3,289,098.00 | 16,378,604.14 | 4,528.11 | -90 | 0 | 93.91 | 69 | 83 | 24 | 36 |
| ZK4704 | 3,289,133.92 | 16,378,633.46 | 4,531.85 | -90 | 0 | 142.2 | 89 | 98.33 | 53 | 48 |
| ZK4705 | 3,289,180.81 | 16,378,656.48 | 4,545.49 | -90 | 0 | 164.42 | 89 | 97 | 89 | 28 |
| ZK4707 | 3,289,309.45 | 16,378,731.84 | 4,567.17 | -90 | 0 | 254.07 | | 95.4 | | 16 |
| ZK4710 | 3,289,483.91 | 16,378,834.26 | 4,605.88 | -90 | 0 | 429.83 | 98 | 93.14 | 95 | 20 |
| ZK4712 | 3,289,644.16 | 16,378,927.98 | 4,665.00 | -90 | 0 | 617 | 95 | 94 | 100 | 80 |
| ZK4802 | 3,286,605.41 | 16,379,929.00 | 5,000.52 | -90 | 0 | 500.7 | 99.4 | 99.05 | 98.91 | 463 |
| ZK4806 | 3,286,752.05 | 16,379,989.97 | 5,047.82 | -90 | 0 | 571.06 | | 97.2 | 95.4 | 351 |
| ZK4808 | 3,286,856.12 | 16,380,093.34 | 5,083.82 | -90 | 0 | 798.15 | 98.5 | 98.67 | 98.85 | 432 |
| ZK4902 | 3,289,168.26 | 16,378,588.51 | 4,537.74 | -90 | 0 | 172.41 | 96.5 | 95 | 97 | 35 |
| ZK4903 | 3,289,228.83 | 16,378,632.17 | 4,550.75 | -90 | 0 | 178.7 | | 98 | | 23 |
| ZK5204 | 3,286,666.46 | 16,380,090.18 | 5,119.27 | -90 | 0 | 499.48 | 97.5 | 87.05 | 96.88 | 457 |
| ZK5220 | 3,286,747.32 | 16,380,136.89 | 5,145.28 | -90 | 0 | 841.7 | 99.9 | 91.9 | 94.4 | 422 |
| ZK5604 | 3,286,631.55 | 16,380,181.15 | 5,187.89 | -90 | 0 | 479.78 | 99.4 | 98.1 | 97 | 421 |

[1]mineralized intervals
[2]hanging wall waste
[3]footwall waste

### 10.3 DISCUSSION

As the primary skarn-type mineralized body has a steep dip angle (averaging 60°) at the upper (southwest) portion and is flatter (with an average dipping angle of 10°) at the lower (northeast) portion at the Jiama Project and as the drill holes were drilled vertically, the true thickness of the mineralized zone at the location of a drill hole is approximately 0.50 and 0.98 times the drilled intercepted mineralized zone length for the upper steeply-dipping zone and the lower flatter zone, respectively.

These drilling results defined the lateral extents and metal grade distribution of the skarn-type mineralization for the Jiama Project and formed a solid basis for the skarn-type mineral resource and mineral reserve estimates. The drilling results have also provided a preliminary basis for the modeling of the hornfels-type mineralization and porphyry type mineralization.

# 11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

## 11.1 BRIGADE 6 WORK IN THE 1990S

Sample preparation and analysis for the Brigade 6 samples in the 1990s was conducted by the Tibet Central Laboratory of the Ministry of Geology and Mineral Resources of China in accordance with relevant regulations at that time. No detailed information was available for the sample preparation procedures and metal grade determination methods. However, Behre Dolbear believes that the assay results are acceptable based on their similarities with the samples taken in 2008 to 2010 by Huatailong.

## 11.2 HUATAILONG WORK FROM 2008 TO 2010

Sample preparation and analysis for the Huatailong core samples was undertaken by the Southwestern Metallurgic Geology Analytical Center (Southwest Center) in Chengdu, Sichuan Province, which is an accredited laboratory by the Chinese National Accreditation Board for Laboratories (CNAL). The Southwest Center set up a sample preparation facility in the Huatailong core storage warehouse. Sample preparation was undertaken by the Southwest Center personnel. Samples were prepared by a two-stage crushing and one-stage grinding procedure to reduce the size of sample particles to minus 200 mesh (0.074 mm). Sample splitting was not performed until the particle size was reduced to approximately 1 mm. A ground sample of approximately 400 grams (g) was sent for analysis in Chengdu; a duplicate ground sample of approximately 500 g as well as the coarse rejects was kept in the core storage warehouse.

Sample analysis was undertaken by the Southwest Center using the standard analytic methods specified in “The Quality Administration Standards for Analysis in Geological and Mineral Resource Laboratories” (DZ0130-94) promulgated by the former Ministry of Geology and Mineral Resources of China. Gold grades were determined by an aqua regia plus fluoride digestion, reactivated carbon concentrating, and atomic absorption spectroscopy (AAS) procedure. Copper, lead, zinc, molybdenum, and silver grades were determined using an aqua regia plus hydrofluoric acid plus perchloric acid digestion and Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) or AAS procedure. All samples were analyzed for the above six metals.

Some composite samples were also used to determine the concentration of tungsten, cobalt, nickel, cadmium, tin, gallium, niobium, rhenium, arsenic, antimony, bismuth, mercury, selenium, tellurium, germanium, indium, thallium, and sulfur by ICP-AES and other analytic methods.

None of the Huatailong employees, officers, directors, or associates was involved in the sample preparation. Behre Dolbear considers the sample preparation procedures, analytic method, and security utilized to be appropriate for this type of copper-polymetallic deposit.

# 12.0 DATA VERIFICATION

## 12.1 BRIGADE 6 WORK IN THE 1990S

Assay quality control/quality assurance (QA/QC) programs for the Brigade 6 samples included regular internal check assays, external check assays, and analysis of standard reference materials and blank samples. Assay quality was considered good based on a review conducted by the Tibet Central Laboratory; however, no detailed information was available for Behre Dolbear's review.

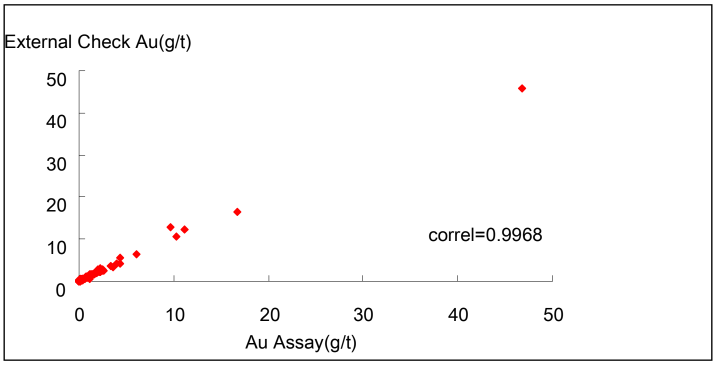
## 12.2 HUATAILONG WORK IN 2008 AND 2009

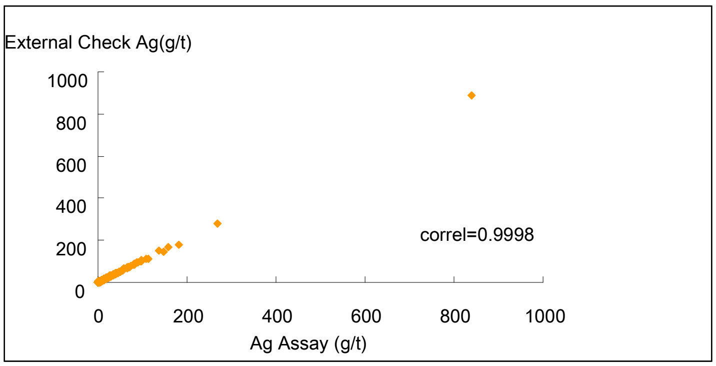
QA/QC programs for the Huatailong samples included regular internal check assays, external check assays, and analysis of standard reference materials and blank samples.

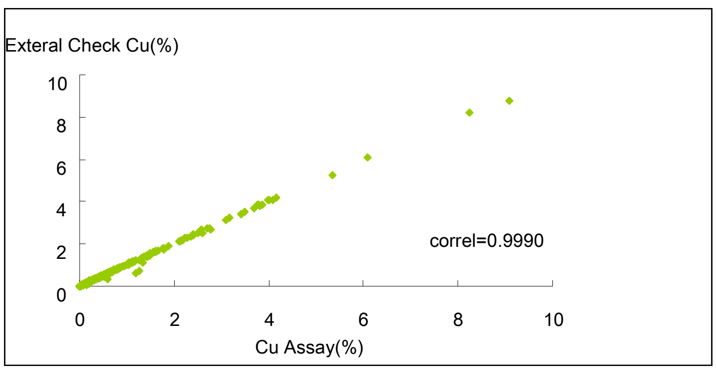
Within the Southwest Center, all analyses were conducted twice. At the same time, approximately 20% of the samples were randomly selected and were blindly coded with different sample numbers for assay precision control. State standard reference materials and blanks were inserted into every batch of samples by the laboratory to monitor the quality of the analytic results. Work performed will not be credited for the laboratory operator if less than 90% of the samples analyzed meet the quality control requirements in a batch. It was reported that all of these measures undertaken have indicated good assay results.

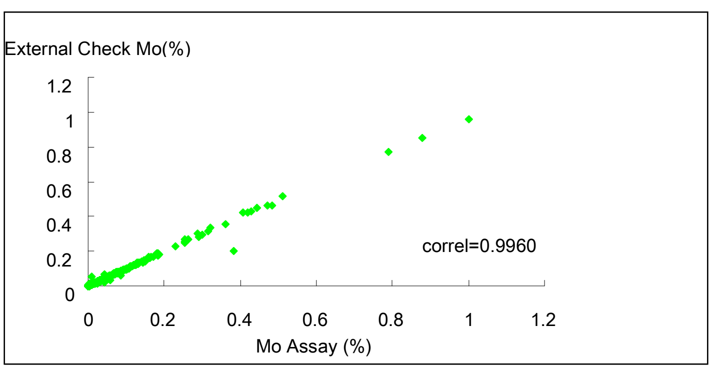
Internal check samples were selected from the duplicate samples by the Resource Institute personnel and were coded with different sample numbers blind to the laboratory. A total of 750 internal check samples were analyzed by the Southwest Center in 2008, representing 3.8% of the total analyzed samples in 2008. Internal checks were compared with the original assay results to see if they met the permitted relative deviation ranges specified by the regulations. It was reported that over 93% of the internal checks were within the permitted relative deviation ranges in 2008, which is better than the 80% requirement specified by the regulations. No systematic bias was reported between the original assay results and the internal checks.

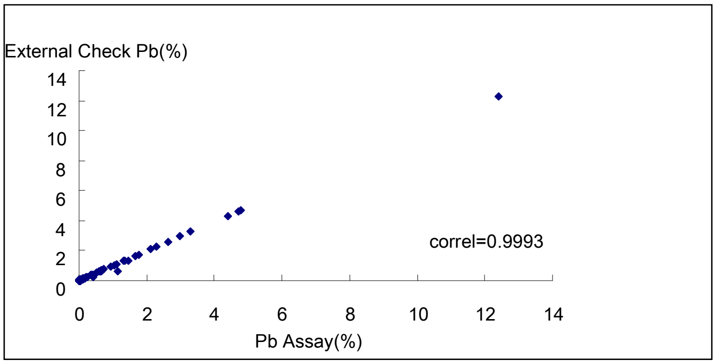
External check samples were randomly selected from the pulp rejects by the Resource Institute personnel and were sent to the State Geologic Laboratory Analytic Center in Beijing for analysis. A total of 695 external check samples were analyzed in 2008, representing 3.6% of the total analyzed samples in 2008. External checks were compared with the original assay results to see if they met the permitted relative deviation ranges specified by the regulations. It was reported that 94% to 99% of the external checks for the six different analyzed metals met the permitted relative deviation ranges in 2008. No systematic bias was reported between the original assay results and the external checks. Figure 12.1 shows the scatter plots of the 2008 original assay results and the external check assay results.


External Check Au(g/t)
50
40
30
20
10
0
0
10
20
30
40
50
correl=0.9968
Au Assay(g/t)


External Check Ag(g/t)
1000
800
600
400
200
0
0
200
400
600
800
1000
correl=0.9998
Ag Assay (g/t)


Exteral Check Cu(%)
10
8
6
4
2
0
0
2
4
6
8
10
correl=0.9990
Cu Assay(%)


External Check Mo(%)
1.2
1
0.8
0.6
0.4
0.2
0
0
0.2
0.4
0.6
0.8
1
1.2
correl=0.9960
Mo Assay (%)



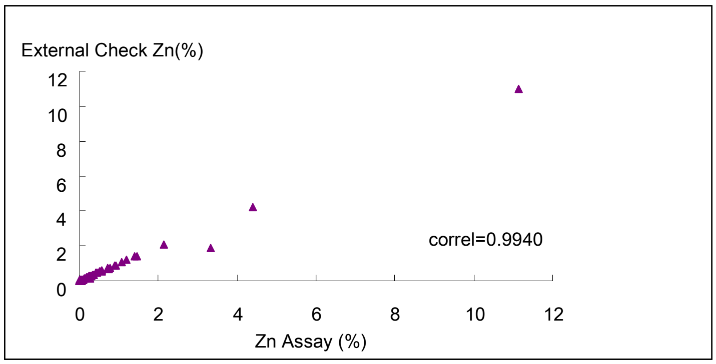




**Figure 12.1. Scatter plots of original assay results and external check assay results**

## 12.3 HUATAILONG WORK IN 2010

QA/QC programs for the Huatailong samples included regular internal check assays, external check assays, and analysis of duplicated samples, standard reference materials, and blank samples in 2010.

The basic sample assay and internal sample assay checking in 2010 were all conducted within the Southwest Center using the same assay methods and QA/QC procedures that had been used in 2008 and 2009.

External check samples were randomly selected from the pulp rejects by the Resource Institute personnel and were sent to the ALS Minerals Division, ALS Chemex (Guanzhou) Ltd. in Guangzhou, China for analysis. Eight-hundred thirty (830) external check samples for copper, molybdenum, silver, lead, and zinc minerals; 533 external check samples for gold mineral were analyzed. External checks were compared with the original assay results to see if they met the permitted relative deviation ranges specified by the regulations. It was reported that 95.93% to 99.88% of the external checks for the six different analyzed metals met the permitted relative deviation ranges (Table 12.1). No systematic bias was reported between the original assay results and the external checks. Table 12.1 shows the scatter plots of the 2010 original assay results and the external check assay results.

TABLE 12.1
EXTERNAL CHECK SAMPLES ASSAY SUMMARY FOR THE JIAMA PROJECT IN 2010

| Sample Type | Total Samples | Samples Passed | Passing Ration (%) |
|---|---|---|---|
| Copper Assay Samples | 830 | 821 | 98.92 |
| Gold Assay Samples | 533 | 458 | 85.93 |
| Molybdenum Assay Samples | 830 | 819 | 98.67 |
| Silver Assay Samples | 830 | 826 | 99.52 |
| Lead Assay Samples | 830 | 828 | 99.76 |
| Zinc Assay Samples | 830 | 829 | 99.88 |

Behre Dolbear has verified the copper-polymetallic mineralization by observing the mineralized drill cores at Huatailong's core storage facility. To ensure that the analytic results were correctly entered into the computer's drill hole database used for resource modeling, Behre Dolbear has randomly selected about 10% of the 2008 drill holes to compare the assay data in the computer's database with the scanned copies of the original assay certificates issued by the Southwest Center. The check indicates that all assay data has been correctly entered into the computer's database. Behre Dolbear has also verified the internal and external check assay data from the original assay certificates.

Based on the review of the drilling, sampling, sample preparation, and analysis, as well as the QA/QC data, Behre Dolbear is of the opinion that assay quality for the 2008 to 2010 samples for the Jiama Project meets industry standards and can be used for estimating the mineral resources present at the Jiama Project.

## 13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

The Jiama Project is currently revising their detailed processes and recovery methods for the new material within the current updated resource estimate. No new information is available at the time of this resource update. Information on the current processing and metallurgical testing can be found in the previous report completed by Behre Dolbear Asia, Inc., 2010 "*Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County*, *Tibet Autonomous Region*" (Appendix 1.0).

# 14.0 MINERAL RESOURCE ESTIMATES

The Australasian JORC Code is a mineral resource and ore reserve classification system that is widely used and is internationally recognized. It has been used previously in ITRs for mineral resource and ore reserve statements for other Chinese companies reporting to the SEHK and has been accepted as a valid reporting code by the SEHK. The JORC Code is used by Behre Dolbear to report the mineral resources and ore reserves of the Jiama Project in this ITR. Mineral resources, inclusive of reserves have been reconciled to the CIM Standards, and are the same as the mineral resources under the JORC Code.

Current mineral resources of the Jiama Project were estimated by the Resource Institute, using the Micromine® computer mining software, the December 2010 drill hole database and the Jiama 3D geological model produced by the Resource Institute geologists. To determine the resource at Jiama, the Resource Institute used four different block models that are designated as:

1) Steep Skarn
2) Shallow Skarn
3) Hornfels
4) Porphyry

For the purposes of this report, Behre Dolbear has reviewed the work completed by the Resource Institute and completed check calculations to evaluate the four models. Behre Dolbear believes that the work conforms to acceptable industry practices and is acceptable for JORC or Canadian NI 43-101 compliant mineral resource estimates.

## 14.1 ELECTRONIC DATABASE USED FOR RESOURCE MODELS

The drill hole database used for the current Jiama Project resource model is summarized in Table 14.1. It consists of a total of 300 DDH with a total drilled length of 120,197m. In addition, the database contains 10 surface trenches with a total length of 349m.

TABLE 14.1
DRILL HOLE DATABASE USED FOR JIAMA PROJECT RESOURCE ESTIMATION

| Drilling Campaign | Number | Total Meters |
|---|---|---|
| 1990s No. 6 Brigade DDH Holes | 22 | 6,518.00 |
| 1990s No. 6 Brigade Surface Trenches | 10 | 349.00 |
| 2008 Huatailong DDH Holes | 150 | 50,616.56 |
| 2009 Huatailong DDH Holes | 47 | 18,745.45 |
| 2010 Huatailong DDH Holes | 82 | 45,537.22 |
| | | |
| **Total** | **300** | **120,196.92** |

These holes were drilled on exploration lines oriented at a N30°E direction and at a line spacing of 100m or 200m. Drill hole spacing on the exploration lines is approximately 100m, 200m, or 400m, with the drill hole spacing at the central portions of the deposit at approximately 100m by 100m, increasing to 200m by 100m, 200m by 200m, or 400m by 400m toward the peripheries of the deposit. The electronic database provided by the Company contains 51,362 assay intervals, with grades for copper, molybdenum, gold, silver, lead, and zinc.

Topography used for the resource estimation was based on a 1:2000 topographic survey completed by the Huatailong Company in 2008.

For the resource modeling work, all coordinates in the electronic database have been rotated 30 degrees counter-clockwise about 3,280,000N and 16,370,000E in order to align the x-axis of the block models with the drill section lines. Hence, the coordinates shown on the figures and discussed below are in a rotated local coordinate system.

## 14.2 BULK DENSITY MEASUREMENTS

A total of 217 core and rock samples were measured for bulk density by Brigade 6 in the 1990s. However, there were no detail location descriptions and no assay for these samples. The Resource Institute has not used these bulk density measurements in its 2011 Resource Estimation Report. A total of 333 bulk density samples from the selected drill cores and underground/surface rock samples were measured by the Resource Institute in 2008 and 2010, using the industry standard wax-coating displacement method and were used in the resource estimation that includes 176 samples from the skarn-type copper-molybdenum mineralization zone, 41 samples from skarn-type lead-zinc mineralization zone, 81 from hornfels-type mineralization zone, and 35 from porphyry-type mineralization zone. All bulk density samples have been assayed after the density measurements. A correlation analysis was conducted on the bulk density measurements and the grades of the principal element mineralization samples, excluding those samples where the grade is less than the cut off grade. After this analysis, the correlation was found to be poor between the grades of the principal element and the bulk density measurements in the skarn-type copper-molybdenum mineralization samples, hornfels-type copper-molybdenum mineralization samples, and porphyry-type copper-molybdenum mineralization samples. Therefore, the average bulk density measurement values for each type of mineralization were used to determine the tonnage. Table 14.2 shows the average densities for skarn-type copper-molybdenum mineralization zone, hornfels-type copper-molybdenum mineralization zone and porphyry-type copper-molybdenum mineralization zone.

TABLE 14.2
AVERAGE BULK DENSITY FOR COPPER-MOLYBDENUM MINERALIZATION

| Rock Type | Average Density ($t/m^3$) |
|---|---|
| Skarn | 3.135 |
| Hornfels | 2.626 |
| Porphyry | 2.373 |

The correlation between the lead and zinc grades and the bulk density measurements, however, is good in the skarn-type lead-zinc mineralization samples and can be calculated.

$$XT = 2.9518 + 0.0297 \times Pb + 0.0041 \times Zn$$

where:

XT = bulk density
Pb and Zn are the lead and zinc grades in percent

## 14.3 PROCEDURES AND PARAMETERS USED FOR THE RESOURCE MODELING

### 14.3.1 Skarn Models

The skarn mineralization is distributed along an interlayer structural zone between underlying marbles and overlying hornfels and is believed to be formed along a detachment structural zone. Mineralization in this zone is still open in many places, especially along the down-dip direction, indicating significant additional exploration potential. Although this mineralized zone is very extensive, metal grade distribution in the zone is quite variable. In general, the upper portion of the mineralized body is copper rich, and the lower portion of the body is molybdenum rich. Lead with some zinc is enriched locally at the upper portion of the zone. As the primary mineralized zone strikes at a 120° azimuth, the coordinate system for the drill hole database was rotated counter-clockwise 30° to align the east-west axis of the rotated coordinate system with the strike of the mineralization for the resource model.

The mineralization within the skarns was divided into two separate block models for resource estimation designated as the steep skarn model and the shallow skarn model. The following procedures and parameters were used in the current resource estimation for the skarn-type mineralization of the Jiama Project.

- **3D Geologic Model:** A 3D geological model was generated by the Resource Institute geologists using the Micromine® mining software. Mineralized envelopes were constructed with the skarn using a grade envelope generated on the drill hole sections using a cut off grade of 0.3% copper or 0.03% molybdenum for the copper-molybdenum orebodies, and 0.3% lead or 0.5% zinc for the lead-zinc orebodies. The minimum mineralized zone thickness is 2m and any internal waste zones under 4m were included in the grade envelope. After determining the grade envelopes on sections, they joined the sections to form 3D solids to define the skarn mineralized bodies.

  These 3D solids divide the skarn deposit into eight mineralized resource areas. The primary mineralized body is referred to as the I1 mineralized body and the seven smaller mineralized bodies are referred to as the I2 to I8 mineralized bodies. The I1 mineralized body strikes at an approximately 120° azimuth and dips to the northeast. The upper portion of the zone has a steep dip angle averaging approximately 60° and the lower portion of the zone is flatter with an average dip angle of approximately 10°. The I1 mineralized body is approximately 2,400m long along strike and 150m to 1,900m wide in the dip direction, and its thickness ranges from less than 5m to more than 200m and occupies over 97% of the mineralized volume for the entire deposit. Figure 14.1 shows a typical cross section used to create the 3D solids with the steep and shallow skarn model outlined in red.

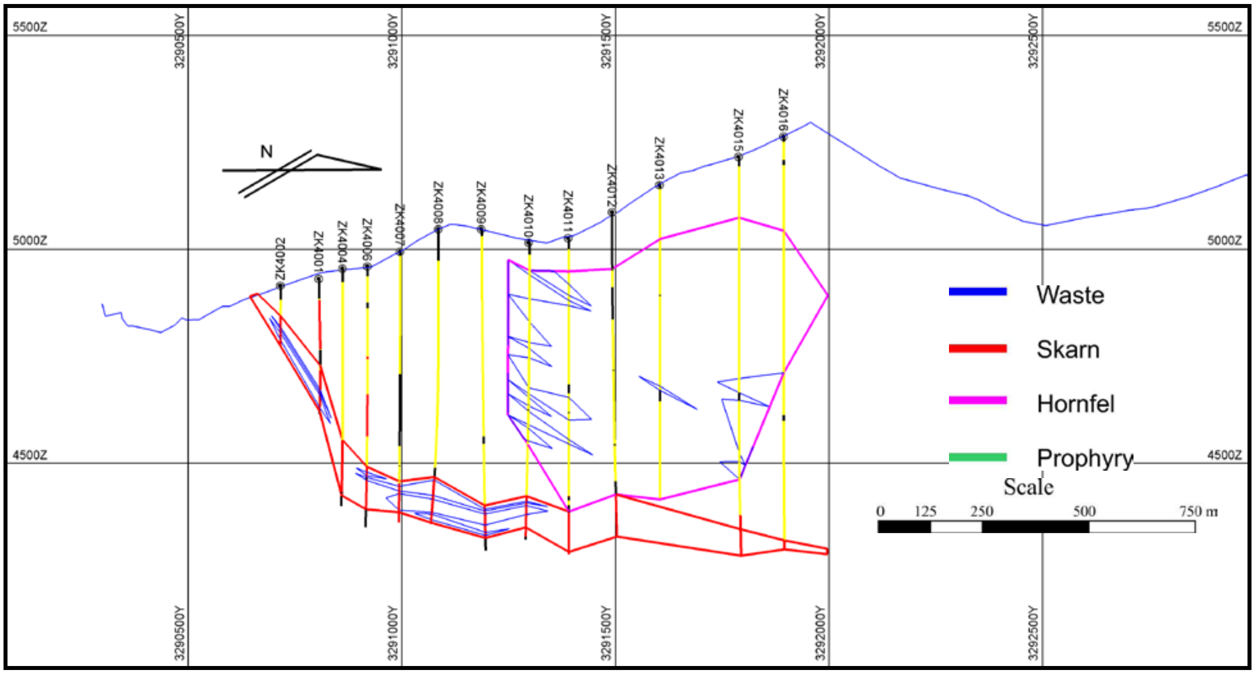



**Figure 14.1. Typical cross section used to construct 3D solids**

Figure 14.2 shows the 3D geologic solid used to delineate the skarn mineralization where the red illustrates the skarn model. Behre Dolbear has reviewed the geologic solids and believes they are appropriate, based on the assumptions for the grade envelopes.

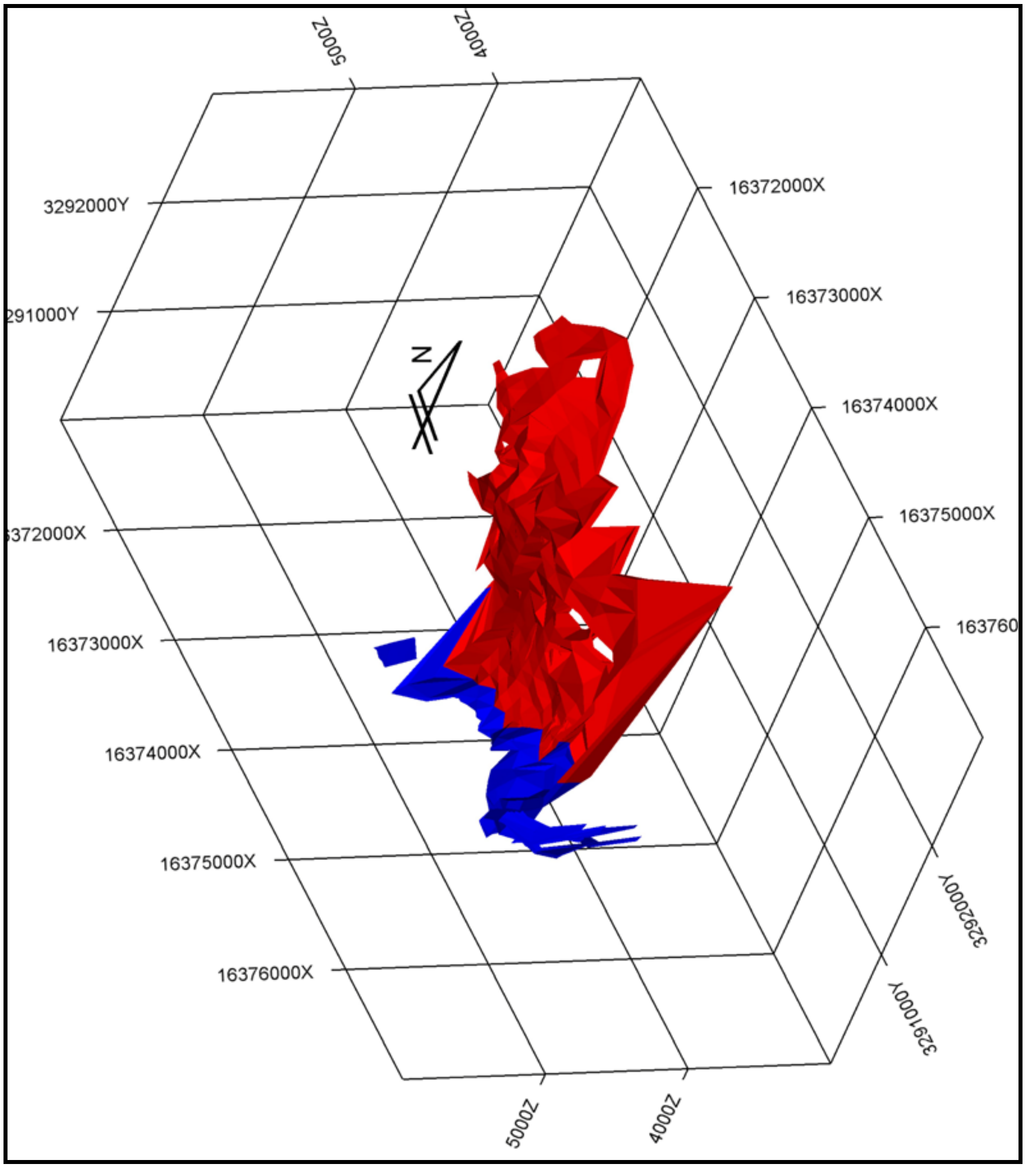



**Figure 14.2. 3D geologic solids of skarn mineralization**

- **Grade Capping and Assay Statistics:** Grade capping for the skarn models was based on the grade probability distributions. Capping was set at the point where the cumulative frequency curve deviated from a straight line. Figure 14.3 shows the probability curves and the capping value used for the resource estimate. The capping grade determined for the Jiama deposit is 10% for copper, 0.75% for molybdenum, 6 g/t for gold, 190 g/t for silver, 21% for lead, and 7% for zinc. Samples with metal grades above the capping grades are considered outliers, and these outlier metal grades were replaced by the capping grades before compositing, variography analysis, and grade estimation. Behre Dolbear has reviewed the capping and agrees that the selected grades are appropriate for the modeling work. Table 14.3 summarizes the uncapped and capped metal grade statistics.

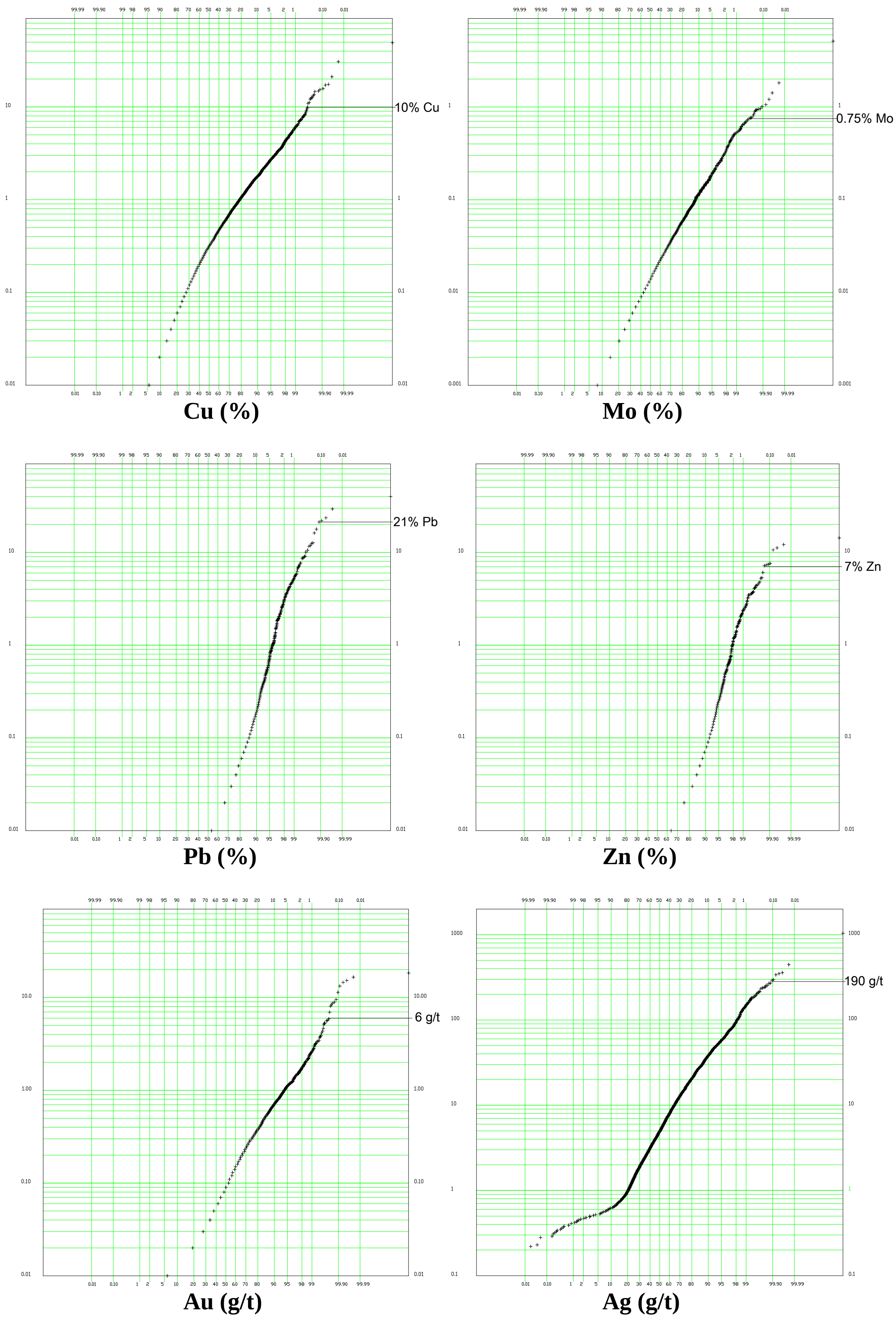



**Figure 14.3. Cumulative distribution plots of metals grades**

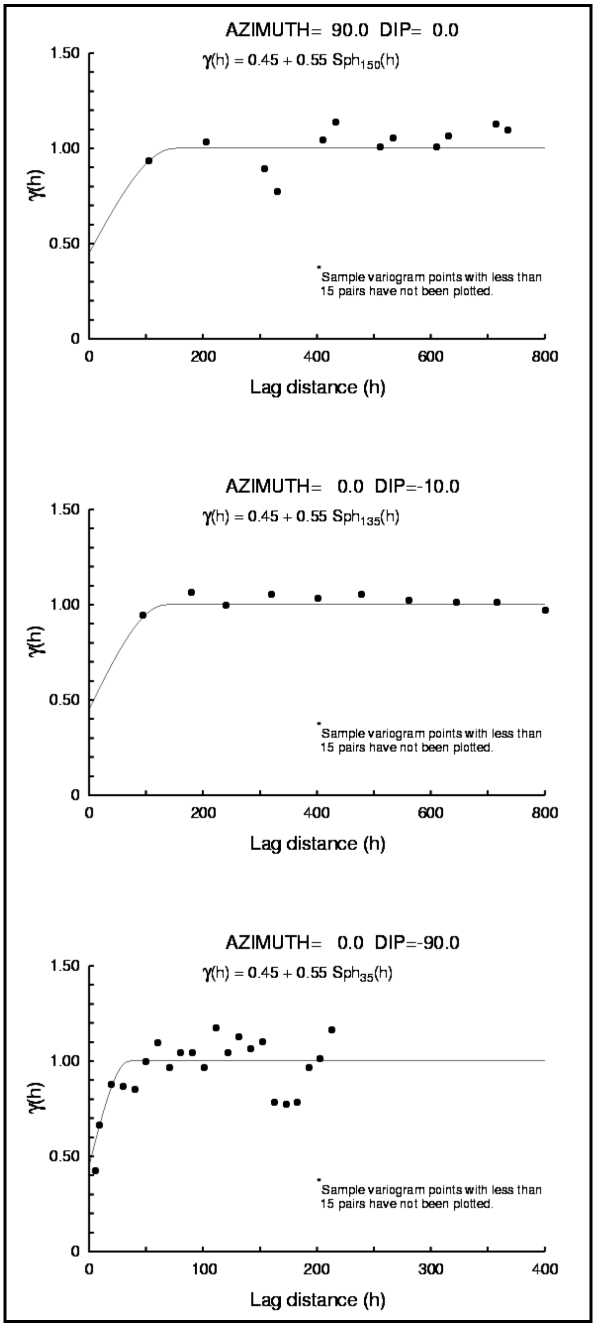
TABLE 14.3
METAL ASSAY GRADE STATISTICS INSIDE THE MINERALIZED ZONES

| Metal | Uncapped | | | Capped | | | |
|---|---|---|---|---|---|---|---|
| | Mean | Standard Deviation | Coefficient of Variation | Capping Grade | Mean | Standard Deviation | Coefficient of Variation |
| Cu (%) | 0.68 | 1.43 | 2.1 | 10.0 | 0.66 | 1.13 | 1.72 |
| Mo (%) | 0.045 | 0.112 | 2.46 | 0.75 | 0.044 | 0.08 | 2.01 |
| Au (g/t) | 0.27 | 1.29 | 4.71 | 6.0 | 0.25 | 0.58 | 2.39 |
| Ag (g/t) | 14.03 | 30.48 | 2.17 | 190.0 | 13.53 | 24.52 | 1.81 |
| Pb (%) | 0.12 | 0.94 | 8.14 | 21.0 | 0.11 | 0.85 | 7.60 |
| Zn (%) | 0.06 | 0.41 | 6.47 | 7.0 | 0.06 | 0.35 | 5.86 |

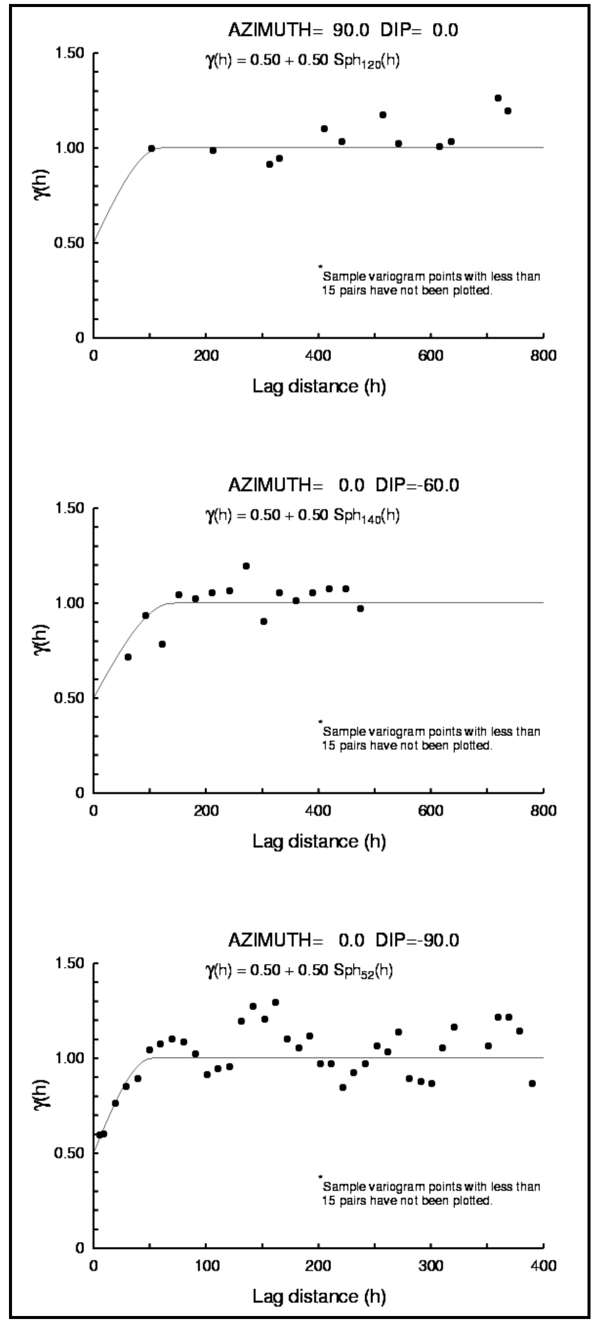
- **Compositing:** Capped metal assays inside the mineralized envelopes were composited to 5m fixed-length composites, and composites less than 1m long were merged into the previous 5m composite. The composite length was chosen to correspond to the block dimensions in the block model. Behre Dolbear believes that the composite length is appropriate for the modeling work.

- **Variography:** As the modeled mineralized zones have a steep dip angle at the upper portion and a flat dip angle at the lower portion, the mineralized zones were divided into an upper, steeply-dipping domain and a lower, flatter domain for the purpose of variogram modeling and grade estimation. The Resource Institute uses a correlogram instead of traditional variograms for the variography analysis. The correlograms are computed by standardizing the covariance by the standard deviation of the head and tail values and not the more traditional definition for correlogram. These were modeled for the 5m length composite metal grades. The holes were drilled roughly vertically on a regular drilling grid from 100m to 400m. The Resource Institute found it difficult to produce good correlogram models in any direction other than the vertical direction (or the downhole direction). The correlogram models generally show a relative nugget at around 0.5 and a correlogram range for the primary direction, or the strike of the mineralization, between 105m to 200m. Correlograms in the vertical direction were used to estimate the correlograms in the minor direction since there was the lack of sufficient data in this direction for meaning analysis. The Resource Institute assumed that the correlogram range in the minor direction is 80% of the vertical correlogram range for the flatter domain and 60% of the vertical correlogram range for the steep-dip domain.

  Figure 14.4 shows the correlograms produced by the Resource Institute for copper for both the steep skarn model and the shallow skarn model. The detailed correlograms for the other metals (molybdenum, lead, zinc, gold, and silver) can be found in Sections 16 through 18 of their 2011 report. Behre Dolbear has reviewed the variography work in detail and agrees that the correlogram models are not as robust as typically used for this sort of resource estimate. This is due primarily to the steep terrain making drilling and drill site locations less than ideal. However, Behre Dolbear believes the variography work with the extrapolation used is adequate for the current resource model.




Copper Correlogram – Shallow Skarn Model




Copper Correlograms – Steep Skarn Model

**Figure 14.4. Example correlograms for the skarn models**

Table 14.4 summarizes the correlogram ellipsoids determined by the Resource Institute for the two skarn models at the property.

TABLE 14.4
2011 CORRELOGRAM ELLIPSOIDS FOR THE SKARN MINERALIZATION

| Model Area | Metal | Axis | Azimuth | Dip | Nugget | Sill | Range (m) |
|---|---|---|---|---|---|---|---|
| Shallow Skarn | Gold | Major | 270 | 0 | 0.55 | 0.45 | 145 |
| | | Semi-Major | 0 | -10 | | | 138 |
| | | Minor | 0 | 80 | | | 3 |
| | Silver | Major | 270 | 0 | 0.5 | 0.5 | 158 |
| | | Semi-Major | 0 | -10 | | | 132 |
| | | Minor | 0 | 80 | | | 32 |
| | Copper | Major | 270 | 0 | 0.45 | 0.55 | 150 |
| | | Semi-Major | 0 | -10 | | | 135 |
| | | Minor | 0 | 80 | | | 28 |
| | Molybdenum | Major | 270 | 0 | 0.45 | 0.55 | 110 |
| | | Semi-Major | 0 | -10 | | | 145 |
| | | Minor | 0 | 80 | | | 25.6 |
| | Lead | Major | 270 | 0 | 0.48 | 0.52 | 122 |
| | | Semi-Major | 0 | -10 | | | 118 |
| | | Minor | 0 | 80 | | | 20 |
| | Zinc | Major | 270 | 0 | 0.55 | 0.45 | 200 |
| | | Semi-Major | 0 | -10 | | | 100 |
| | | Minor | 0 | 80 | | | 20 |
| Steep Skarn | Gold | Major | 270 | 0 | 0.45 | 0.55 | 135 |
| | | Semi-Major | 0 | -60 | | | 125 |
| | | Minor | 0 | 30 | | | 30 |
| | Silver | Major | 270 | 0 | 0.48 | 0.52 | 125 |
| | | Semi-Major | 0 | -60 | | | 155 |
| | | Minor | 0 | 30 | | | 28.8 |
| | Copper | Major | 270 | 0 | 0.5 | 0.5 | 120 |
| | | Semi-Major | 0 | -60 | | | 140.2 |
| | | Minor | 0 | 30 | | | 31.2 |
| | Molybdenum | Major | 270 | 0 | 0.58 | 0.42 | 115 |
| | | Semi-Major | 0 | -60 | | | 120 |
| | | Minor | 0 | 30 | | | 18 |
| | Lead | Major | 270 | 0 | 0.58 | 0.42 | 125 |
| | | Semi-Major | 0 | -60 | | | 125 |
| | | Minor | 0 | 30 | | | 33 |
| | Zinc | Major | 270 | 0 | 0.5 | 0.5 | 125 |
| | | Semi-Major | 0 | -60 | | | 105 |
| | | Minor | 0 | 30 | | | 24 |

The "Nugget" components of the correlograms, presented in Figure 14.4, are greater than 45% of the total structure for all metals and most of the correlogram structures are very loosely defined by the selected model. The lack of structure seen in many of the correlograms at distances below the interpreted range increases the risk of resource estimation and reduces the overall confidence of the resulting estimates.

- **Block Model Definition:** A 3D block model with a block size of 10m × 10m × 10m was defined for the Jiama steep skarn model and the shallow skarn model. The Resource Institute used the sub-blocking capabilities of the Micromine® software in the models that further reduced the block size to 5m × 5m × 5m to better fit the 3D grade enveloped developed. The mineralized envelopes were coded into the block model using the center of the block, *i.e.*, a block is considered inside the mineralized envelope if the center of the block is located inside the mineralized envelope. A volume check was conducted by comparing the mineralized envelope volume and the 3D block volume, with a negligible difference. Table 14.5 shows the major definitions of the two models used for the skarn mineralization.

TABLE 14.5
SKARN BLOCK MODEL PARAMETERS

| Block Model | Direction | From | To | Length (m) | Block Dimensions (m) | Number of Blocks |
|---|---|---|---|---|---|---|
| Shallow Skarn | East | 16,372,756.00 | 16,375,406.00 | 2,650.00 | 10 | 266 |
| | North | 3,290,598.75 | 3,292,968.75 | 2,370.00 | 10 | 238 |
| | Vertical | 4,003.72 | 4,703.72 | 700.00 | 10 | 76 |
| Steep Skarn | East | 16,373,510.00 | 16,376,310.00 | 2,800.00 | 10 | 281 |
| | North | 3,290,377.25 | 3,291,467.25 | 1,090.00 | 10 | 110 |
| | Vertical | 4,337.58 | 5,177.58 | 840.00 | 10 | 85 |

- **Grade Estimation:** Block grade estimation was conducted using a three-pass ordinary kriging (OK) procedure. The search radii for the three passes were 120m, 150m, and 240m for the shallow skarn model and 57.6m, 96m, and 192m for the steep skarn model. Discussions with the Resource Institute indicated that the number of 5m composites used for the first and second passes ranged from 4 to 10, with a maximum of three composites from any single drill hole or surface trench. The number of 5m composites used for the third pass ranged from 2 to 10, with a maximum of three composites from any single drill hole or surface trench.

  Although the Resource Institute determined oriented correlogram ellipsoids, as shown in Table 14.4, the search ellipsoid appears to be spherical in nature, *i.e.*, all search axes are the same distance. Typically, each estimation pass should conform to the correlogram ellipsoids generated for the metal or estimation domain.

  While the procedures utilized by the Resource Institute for grade estimation do not match typical Western practices, the risk to the overall tonnage and average grade of the resource is probably minimal. However, these methods will increase the risk associated with mine planning and production schedules, if used for advanced mining studies.

- **Resource Classification:** Model blocks were classified into 331, 332, and 333 resources under the Chinese Code. All blocks with a pass one grade estimation were classified as 331; all blocks with a pass two grade estimation were classified as 332; and all blocks with a pass three grade estimation were classified as 333 by the Resource Institute.

  While Chinese categories of 331, 332, and 333 are generally converted to Measured, Indicated, and Inferred mineral resources under the JORC Code, the author believes that the classification method used by the Resource Institute for their Chinese classification are too aggressive for direct JORC conversion; therefore, is not compliant with any Western resource code. Behre Dolbear would recommend that the base search ellipse be 80% of the correlogram range for each axis and that the first pass be completed at 50% of the base search ellipsoid to enable an appropriate conversion.

- **Validation:** Local grade bias was checked by the Resource Institute posting the block grades and composite grades on a computer screen on sections and plans, indicating the block grades are generally similar to the nearby composite grades, with a reasonable amount of smoothing. The author has repeated this exercise and believes that the model grade distribution reasonably corresponds to the drilling data.

- **Mined-out Areas:** The Resource Institute conducted a systematic survey of the adits driven by the four previous operators before the consolidation of the property. A total of 64 adits were surveyed, of which 24 were for exploration purposes only and had no mining stopes. The other 40 adits were for mining purpose and have mined-out stopes. Based on the survey results, the total mined-out volume from stopes in the 40 surveyed adits is approximately 397,000 $m^3$. The mined-out areas are all located in the skarn mineralized zone; therefore, the skarn-type mineralization bulk density of 3.115 $t/m^3$ was used to calculate the mined-out tonnage of approximately 1.236 Mt. The stopes were distributed at MSL elevations ranging from 4,600m to 4,950m and between Exploration Lines 7 and 96. Behre Dolbear believes that the mined out tonnages, based on the Resource Institute's survey results, are reasonable estimates of the mineral resources consumed by historical mining for the Jiama Project. These mined out tonnages were allocated by the Resource Institute to 50m levels and were deducted from the summaries produced for the current resource model.

  Typically, mined out areas are surveyed by digitization from old operating maps and then the actual areas are removed from the model prior to the resource estimate summary. In this case, the Resource Institute has adjusted the summary tonnage and metal content to reflect past mining activities. While this will not affect the overall resource statement, it may affect the mine planning and the timing of mineral exploitation at some later date as the material is still included in the model.

### 14.3.2 Procedures and Parameters Used for the Hornfels-Type Resource Modeling

The following procedures and parameters were used in the current resource estimation for the hornfels-type mineralization of the Jiama Project.

- **Geological Modeling:** Geological modeling was performed by the Resource Institute geologists using Micromine® mining software. The mineralized zones were modeled by a grade envelope at the cut off grade of 0.3% copper or 0.03% molybdenum or 1% lead or 1% zinc. The minimum mineralized zone thickness is 2m. Results of the geological modeling show that the hornfels-type mineralization is likely to consist of a large, massive mineralized body over 1,500m long, up to 1,000m wide, and up to 820m thick, as shown from the computer model in Figure 14.5. In general, the upper portion of the mineralized body is copper rich and the lower portion of the body is molybdenum rich.

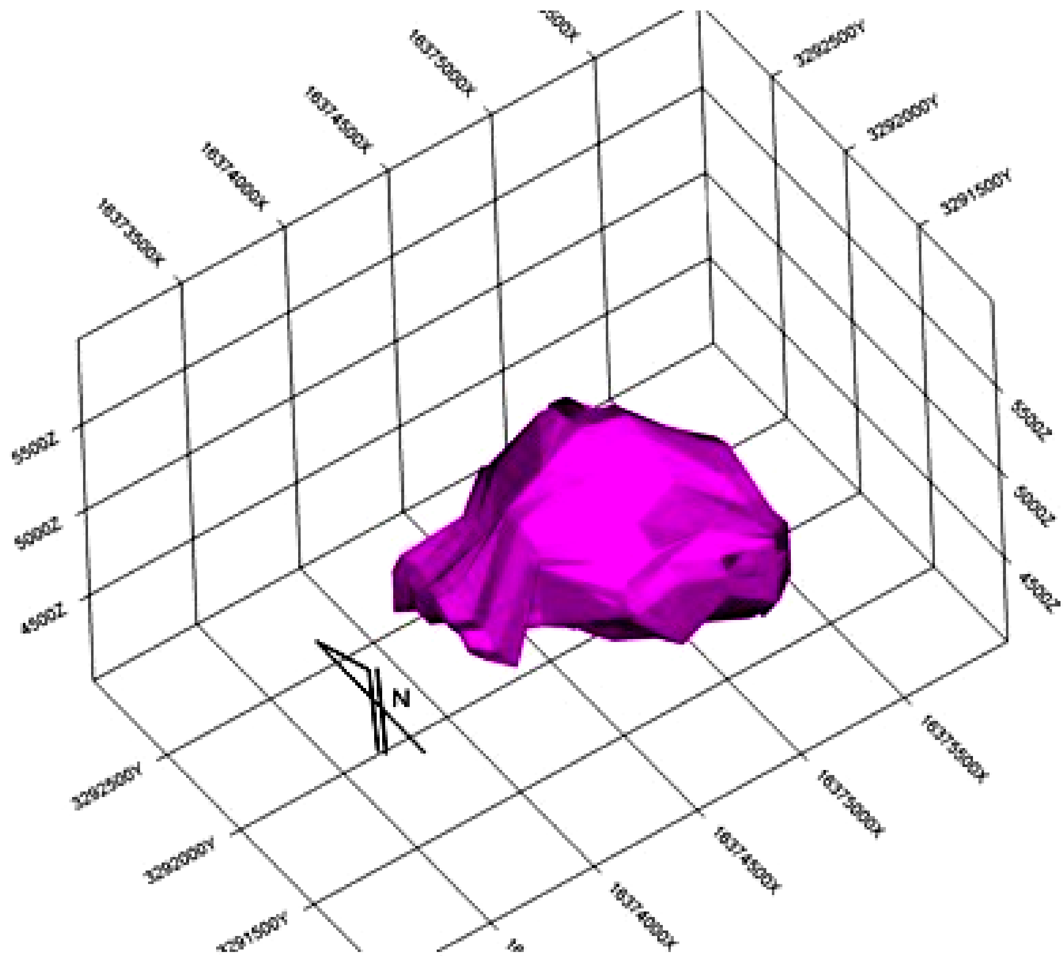



**Figure 14.5. Hornfels geologic model**

- **Metal Grade Statistical Analysis and Grade Capping:** A total of 10,377 assay intervals with a total length of 19,681m are located inside the defined hornfels-type mineralized envelopes for the Jiama Project. Therefore, the average assay interval length inside the hornfels-type mineralized envelopes is 1.9m. Metal grade statistics of these assay intervals are summarized in Table 14.6. No capping was conducted on the hornfels-type mineralization as all of the assay grades are below the capping grades for the skarn-type mineralization.

TABLE 14.6
METAL ASSAY GRADE STATISTICS INSIDE THE HORNFELS-TYPE MINERALIZED ZONES

| Metal | Number of Samples | Mean | Standard Deviation | Minimum | Maximum | Coefficient of Variation |
|---|---|---|---|---|---|---|
| Cu (%) | 10,377 | 0.23 | 0.167 | 0.00 | 5.27 | 0.70 |
| Mo (%) | 10,377 | 0.031 | 0.047 | 0.000 | 0.75 | 1.49 |
| Au (g/t) | 10,377 | 0.032 | 0.19 | 0.00 | 6.0 | 6.05 |
| Ag (g/t) | 10,377 | 1.03 | 1.23 | 0.09 | 67.8 | 1.20 |
| Pb (%) | 10,377 | 0.005 | 0.019 | 0.00 | 1.36 | 3.63 |
| Zn (%) | 10,377 | 0.006 | 0.023 | 0.00 | 2.13 | 3.66 |

- **Compositing:** Metal assays inside the mineralized envelopes were composited to 5m fixed-length composites, and composites less than 1m long were merged into the previous 5m composite. A total of 3,521 composites were produced inside the hornfels-type mineralized envelopes. Metal grade statistics for the composites are summarized in Table 14.7.

TABLE 14.7
LENGTH-WEIGHTED 5-M LENGTH HORNFELS COMPOSITE METAL GRADE STATISTICS

| Metal | Number of Samples | Mean | Standard Deviation | Minimum | Maximum | Coefficient of Variation |
|---|---|---|---|---|---|---|
| Cu (%) | 3,521 | 0.25 | 0.15 | 0.02 | 2.27 | 0.58 |
| Mo (%) | 3,521 | 0.033 | 0.037 | 0.000 | 0.613 | 1.12 |
| Au (g/t) | 3,521 | 0.02 | 0.14 | 0.00 | 4.90 | 4.89 |
| Ag (g/t) | 3,521 | 1.06 | 1.17 | 0.44 | 53.44 | 1.11 |
| Pb (%) | 3,521 | 0.005 | 0.016 | 0.00 | 0.78 | 2.95 |
| Zn (%) | 3,521 | 0.007 | 0.018 | 0.00 | 1.00 | 2.83 |

- **Block Model Definition:** A 3D block model, with a block size of 10m × 10m × 10m, was defined for the hornfels-type mineralization at the Jiama Project. The Resource Institute used the sub-blocking capabilities of the Micromine® software in the models that further reduced the block size to 5m × 5m × 5m to better fit the 3D grade envelope developed. The mineralized envelopes were coded to the block model using the majority rule method, *i.e.*, a block is considered inside the mineralized envelope if more than 50% of the block is located inside the mineralized envelope. A volume check was conducted by comparing the mineralized envelope volume and the 3D block volume, with a negligible difference. Table 14.8 shows the definition of the block model used for the estimation of the Hornfels mineralization.

TABLE 14.8
HORNFELS BLOCK MODEL PARAMETERS

| Direction | From | To | Length (m) | Block Dimensions (m) | Number of Blocks |
|---|---|---|---|---|---|
| East | 16,374,002.00 | 16,375,212.00 | 1,210 | 10 | 122 |
| North | 3,291,252.25 | 3,292,452.25 | 1,200 | 10 | 121 |
| Vertical | 4,230.10 | 5210.10 | 980 | 10 | 99 |

- **Grade Estimation:** Block grade estimation was conducted using the inverse distance to the second power ($ID^2$) procedure with a three pass procedure similar to the one used for the skarn deposits. The search radius for the first-pass was 125m, for the second-pass it was 250m, and for the third-pass it was 500m. The search ellipsoid was again spherical in nature, *i.e.*, all search axes were the same distance. According to the discussions with the Resource Institute, the number of 5m composites used for the grade estimation ranged from 2 to 16, with a maximum of four composites from any single drill hole.

- **Resource Classification:** Model blocks were classified by the Resource Institute into 331, 332, and 333 resources under the Chinese Code. All blocks with a pass one grade estimation were classified as 331; all blocks with a pass two grade estimation were classified as 332; and all blocks with a pass three grade estimation were classified as 333 by the Resource Institute.

  The author believes that the classification method used by the Resource Institute for their Chinese classification for the hornfels model is also too aggressive for direct JORC conversion for the same reasons discussed for the skarn models. The search radii used by the Resource Institute categorization will not have the confidence typically required for direct JORC conversion. Based on the lack of meaningful variography in this area, Behre Dolbear would recommend that the 125m search radius that was used by the Resource Institute for their 331 category be used for Indicated mineral resource categorization under JORC and double it for Inferred classification.

- **Validation:** Local grade bias was checked by the Resource Institute posting the block grades and composite grades on a computer screen on sections and plans, indicating the block grades are generally similar to the nearby composite grades, with a reasonable amount of smoothing. The author has repeated this exercise and believes that the model grade distribution reasonably corresponds to the drilling data.

### 14.3.3 Procedures and Parameters Used for the Porphyry-type Resource Modeling

The following procedures and parameters were used in the current resource estimation for the porphyry-type mineralization of the Jiama Project.

- **Geological Modeling:** Geological modeling was again performed by the Resource Institute geologists using Micromine® mining software and MapGIS® software. The porphyry was modeled by geologic sections generated from the drill hole geologic intersections within the porphyry and using grade envelopes. The mineralized zones were modeled by a grade envelope at the cut off grade of 0.2% copper or 0.02% molybdenum. The minimum mineralized zone thickness is 2m. In general, the grades of the porphyry are highly variable and generally low grade. The 3D geologic model for the porphyry model is shown in Figure 14.6. The high degree of angularity seen in the figures demonstrates the relatively lack of drilling definition on this part of the deposit along with its conformance to the geologic sections.

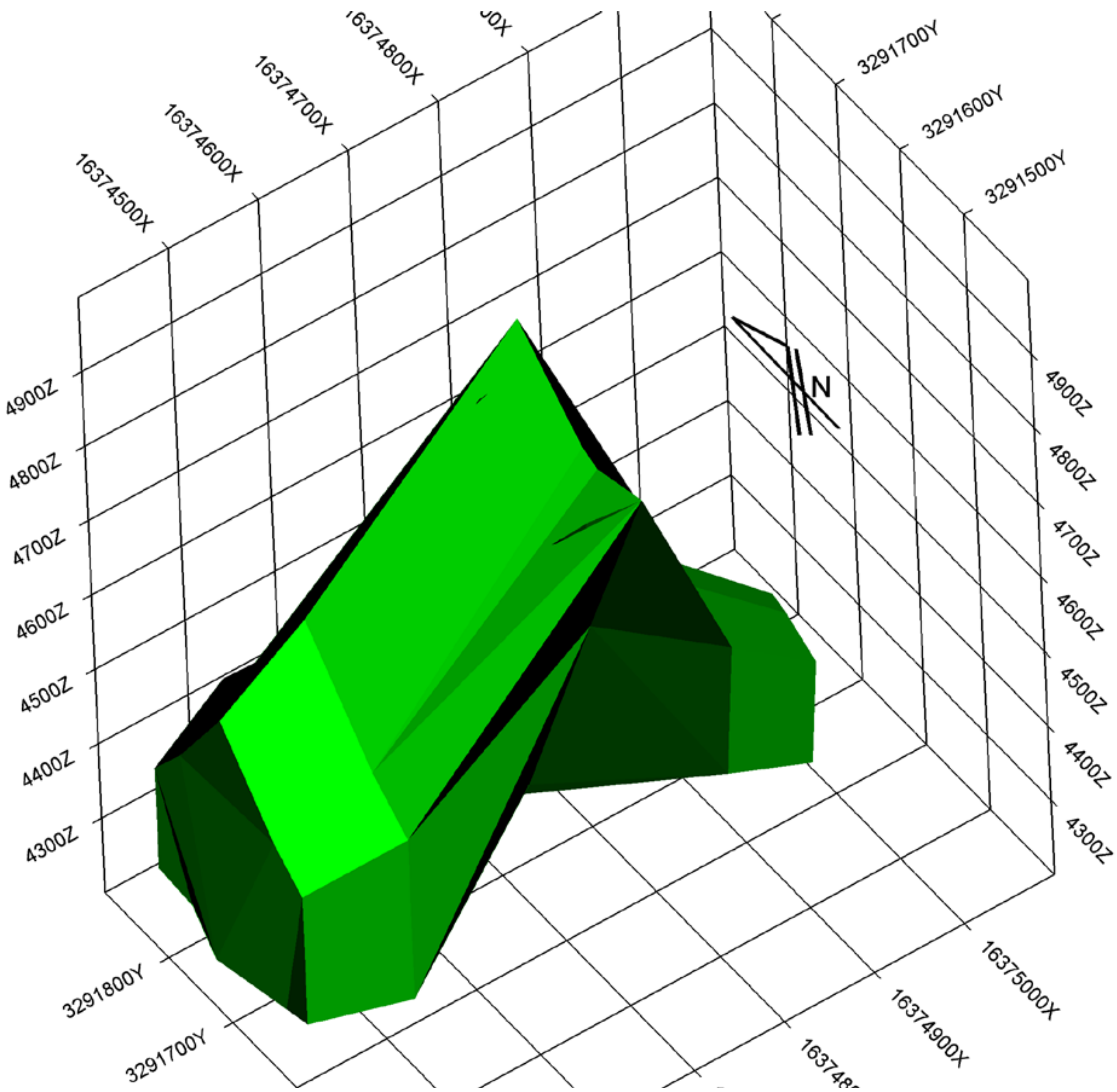



**Figure 14.6. 3D geologic model of the porphyry**

- **Metal Grade Statistical Analysis and Grade Capping:** A total of 1,086 assay intervals, with a total length of 2,124m, are located inside the defined porphyry-type mineralized envelopes for the Jiama Project. Therefore, the average assay interval length, inside the porphyry-type mineralized envelopes, is 1.96m. Metal grade statistics of these assay intervals are summarized in Table 14.9. No capping was conducted on the porphyry-type mineralization as all of the assay grades are below the capping grades.

TABLE 14.9
METAL ASSAY GRADE STATISTICS INSIDE THE PORPHYRY-TYPE MINERALIZED ZONES

| Metal | Number of Samples | Mean | Standard Deviation | Minimum | Maximum | Coefficient of Variation |
|---|---|---|---|---|---|---|
| Cu (%) | 1,086 | 0.12 | 0.147 | 0.00 | 1.01 | 1.16 |
| Mo (%) | 1,086 | 0.047 | 0.091 | 0.00 | 2.04 | 1.92 |
| Au (g/t) | 1,086 | 0.013 | 0.032 | 0.00 | 0.66 | 2.43 |
| Ag (g/t) | 1,086 | 0.78 | 0.71 | 0.29 | 14.60 | 0.90 |
| Pb (%) | 1,086 | 0.006 | 0.006 | 0.00 | 0.09 | 0.96 |
| Zn (%) | 1,086 | 0.005 | 0.007 | 0.00 | 0.08 | 1.25 |

- **Compositing:** Metal assays inside the mineralized envelopes were composited to 5m fixed-length composites and composites less than 1m long were merged into the previous 5m composite. A total of 414 composites were produced inside the porphyry-type mineralized envelopes. Metal grade statistics for the composites are summarized in Table 14.10.

TABLE 14.10
5-M LENGTH PORPHYRY COMPOSITE METAL GRADE STATISTICS

| Metal | Number of Samples | Mean | Standard Deviation | Minimum | Maximum | Coefficient of Variation |
|---|---|---|---|---|---|---|
| Cu (%) | 414 | 0.13 | 0.14 | 0.00 | 0.77 | 1.08 |
| Mo (%) | 414 | 0.05 | 0.06 | 0.00 | 0.69 | 1.25 |
| Au (g/t) | 414 | 0.01 | 0.02 | 0.00 | 0.17 | 1.48 |
| Ag (g/t) | 414 | 0.77 | 0.46 | 0.33 | 5.25 | 0.60 |
| Pb (%) | 414 | 0.005 | 0.004 | 0.00 | 0.04 | 0.66 |
| Zn (%) | 414 | 0.005 | 0.005 | 0.00 | 0.06 | 1.03 |

- **Block Model Definition:** A 3D block model with a block size of 10m × 10m × 10m was defined for the porphyry-type mineralization at the Jiama Project. The Resource Institute used the sub-blocking capabilities of the Micromine® software in the models that further reduced the block size to 5m × 5m × 5m to better fit the 3D grade enveloped developed. The mineralized envelopes were coded to the block model using the majority rule method, *i.e.*, a block is considered inside the mineralized envelope if more than 50% of the block is located inside the mineralized envelope. A volume check was conducted by comparing the mineralized envelope volume and the 3D block volume, with a negligible difference. Table 14.11 shows the definition of the block model used for the estimation of the porphyry mineralization.

TABLE 14.11
PORPHYRY BLOCK MODEL PARAMETERS

| Direction | From | To | Length (m) | Block Dimensions (m) | Number of Blocks |
|---|---|---|---|---|---|
| East | 16,374,406.00 | 16,374,986.00 | 580 | 10 | 59 |
| North | 3,291,458.25 | 3,291,858.25 | 400 | 10 | 41 |
| Vertical | 4,229.01 | 4,989.01 | 760 | 10 | 77 |

- **Grade Estimation:** Block grade estimation was conducted using the $ID^2$ procedure with the same three pass procedure used for the hornfels model. The search radius for the first pass was 125m, for the second pass it was 250m, and for the third pass it was 500m. The search ellipsoid was again spherical in nature, *i.e.*, all search axes were the same distance. According to the discussions with the Resource Institute, the number of 5m composites used for the grade estimation ranged from 2 to 16, with a maximum of four composites from any single drill hole.

- **Resource Classification:** Model blocks were classified by the Resource Institute into 331, 332, and 333 resources under the Chinese Code. All blocks with a pass one grade estimation were classified as 331; all blocks with a pass two grade estimation were classified as 332; and all blocks with a pass three grade estimation were classified as 333, by the Resource Institute.

  Again, the author believes that the classification method used by the Resource Institute for their Chinese classification for the porphyry model is also too aggressive for direct JORC conversion for the same reasons discussed for the skarn and hornfels models. The search radii used by the Resource Institute categorization will not have the confidence typically required for direct JORC conversion. Based on the lack of meaningful variography in this area, Behre Dolbear would recommend that the 125m search radius that was used by the Resource Institute for their 331 category be used for Indicated mineral resource categorization under JORC and double it for Inferred classification.

- **Validation:** Local grade bias was checked by the Resource Institute posting the block grades and composite grades on a computer screen on sections and plans, indicating the block grades are generally similar to the nearby composite grades, with a reasonable amount of smoothing. The author has repeated this exercise and believes that the model grade distribution reasonably corresponds to the drilling data.

## 14.4 CHINESE RESOURCE ESTIMATION RESULTS

The Resource Institute has estimated and summarized the in-situ resource, including mined out tonnage from the block models in a variety of different ways. Estimates tabulated include:

- Resource of all models with copper as the dominant metal
- Resource of all models with molybdenum as the dominant metal
- Resource of the steep skarn with lead as the dominant metal
- Resource of the steep skarn with zinc as the dominant metal

Tonnages for the various metals are calculated only when the average grade of the block is above the industrial index assigned by the government for this deposit. Table 14.12 shows the resource estimate when copper is the dominant metal at a 0.3% copper cut off. The tonnages reported for the other metals (molybdenum, gold, silver, lead, and zinc) are the portion of the tonnage that meets the Chinese cut off requirements for reporting those associated metals, as determined for this deposit. Likewise, the reported average grades are those only associated with the corresponding subset of the tonnage and not based on the average grade of the full resource.

TABLE 14.12
CHINESE IN-SITU RESOURCE ESTIMATE FOR JIAMA PROJECT AT A 0.3% COPPER CUT OFF
**(CU DOMINANT ELEMENT)**

| Model | Chinese Category | Tonnage above Industrial Cut Off | | | | | | Average Grade | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cu (kt) | Mo (kt) | Au (kt) | Ag (kt) | Pb (kt) | Zn (kt) | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | Pb (%) | Zn (%) |
| Copper Skarn | 331 | 103,964 | 91,993 | 87,606 | 103,955 | 5,367 | 2,254 | 0.87 | 0.049 | 0.37 | 16.62 | 0.85 | 0.79 |
| | 332 | 387,594 | 373,538 | 327,217 | 391,799 | 15,817 | 7,601 | 0.70 | 0.062 | 0.30 | 13.73 | 1.08 | 0.69 |
| | 333 | 61,727 | 59,910 | 37,356 | 62,240 | 9,640 | 4,263 | 0.50 | 0.047 | 0.24 | 10.53 | 0.80 | 0.71 |
| | **Subtotal** | **553,286** | **525,440** | **452,179** | **557,994** | **30,824** | **14,117** | **0.71** | **0.058** | **0.31** | **13.91** | **0.95** | **0.71** |
| | | | | | | | | | | | | | |
| Hornfels | 331 | 171,290 | 163,133 | 2,455 | 80,861 | 0 | 0 | 0.39 | 0.02 | 0.13 | 1.26 | 0.00 | 0.00 |
| | 332 | 817,570 | 781,701 | 7,075 | 399,661 | 11 | 0 | 0.38 | 0.02 | 0.15 | 1.27 | 0.24 | 0.00 |
| | 333 | 72,323 | 67,784 | 2,783 | 27,378 | 5 | 0 | 0.38 | 0.02 | 0.14 | 1.31 | 0.24 | 0.00 |
| | **Subtotal** | **1,061,184** | **1,012,618** | **12,313** | **507,900** | **16** | **0** | **0.38** | **0.02** | **0.13** | **1.27** | **0.23** | **NA** |
| | | | | | | | | | | | | | |
| Porphyry | 331 | 19 | 5,858 | 0 | 64 | 0 | 0 | 0.11 | 0.058 | 0.00 | 1.25 | 0.00 | 0.00 |
| | 332 | 4,838 | 42,951 | 0 | 2,386 | 0 | 0 | 0.21 | 0.059 | 0.00 | 1.32 | 0.00 | 0.00 |
| | 333 | 25,470 | 40,711 | 0 | 954 | 0 | 0 | 0.25 | 0.046 | 0.00 | 1.48 | 0.00 | 0.00 |
| | **Subtotal** | **30,327** | **89,521** | **0** | **3,404** | **0** | **0** | **0.25** | **0.053** | **0.00** | **1.37** | **0.00** | **0.00** |
| | | | | | | | | | | | | | |
| **All Models** | **Total** | **1,644,796** | **1,627,579** | **464,492** | **1,069,298** | **30,840** | **14,117** | **0.41** | **0.043** | **0.31** | **7.83** | **0.95** | **0.71** |

## 14.3 JORC EQUIVALENT RESOURCE CONVERSION

The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia in September 1999 and revised in December 2004 (JORC Code) is a resource/reserve classification system that has been widely used and is internationally recognized. The JORC Code is used by Behre Dolbear to report the mineral resources at the Jiama property in this report. Mineral resources under the JORC Code are defined as follows:

> *A '**Mineral Resource'** is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.*
>
> *An **'Inferred Mineral Resource'** is that part of a Mineral Resource for which tonnage, grade and mineral content can be estimated with a low level of confidence. It is inferred from geological evidence and assumed but not, verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes which may be limited or of uncertain quality and reliability.*
>
> *An '**Indicated Mineral Resource'** is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed.*
>
> *A '**Measured Mineral Resource'** is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity.*

After reviewing the detailed variography and categorization in 2010, Dr. Deng recommended a categorization procedure for blocks in resource models. Behre Dolbear was asked by the Company to use those same procedures to determine the equivalent JORC Measured, Indicated, and Inferred mineral resource to maintain consistency in reporting for the current models. This method involves distance, number of samples, and number of drill holes being used to estimate the grade of each block. Table 14.13 summarizes the 2010 categorization parameters.

TABLE 14.13
BEHRE DOLBEAR 2010 PARAMETERS FOR JORC CATEGORIZATION

| Category | Minimum Drill Holes within Ellipsoid | Search Ellipse | | | |
|---|---|---|---|---|---|
| | | Search Ellipse Axis | Shallow Skarn (m) | Steep Skarn (m) | Hornfels and Porphyry (m) |
| Measured | 3 | Axis-1 | 81.0 | 64.8 | NA |
| | | Axis-2 | 72.9 | 75.6 | NA |
| | | Axis-3 | 15.1 | 25.2 | NA |
| Indicated | 2 | Axis-1 | 135 | 108.0 | 150 |
| | | Axis-2 | 121.5 | 126.0 | 150 |
| | | Axis-3 | 25.2 | 28.0 | 50 |
| Inferred | 1 | Axis-1 | 270.0 | 216.0 | 300 |
| | | Axis-2 | 243.0 | 252.0 | 300 |
| | | Axis-3 | 50.4 | 56.0 | 100 |

However, Behre Dolbear believes that given that there are now an additional 82 drill holes the 2011 variography should be reviewed in detail and adjustments made to both the grade estimation parameters and to the methodology for determining the JORC Mineral Resource categories.

Behre Dolbear has categorized and summarized the JORC Equivalent Mineral Resource for the four models based on the 2010 methodology. Behre Dolbear has used a cut off of either 0.3% copper or 0.03% molybdenum or 1% lead or 1% zinc. If any of the blocks meet any of the four cut off criteria then they are included in the Behre Dolbear resource summary.

Table 14.14 presents the Behre Dolbear's estimate of the JORC equivalent Measured and Indicated mineral resource at the Jiama Project. Table 14.15 shows Behre Dolbear's estimate of the JORC equivalent Inferred mineral resource. These tables are based on a cut off grade for the resource estimate of either 0.3% copper or 0.03% molybdenum or 1% lead or 1% zinc.

TABLE 14.14
BEHRE DOLBEAR JORC MEASURE AND INDICATED MINERAL RESOURCE ESTIMATES FOR THE JIAMA PROJECT AS OF JUNE 2011
**(CUT OFF GRADE FOR THE RESOURCE ESTIMATE IS 0.3% COPPER OR 0.03% MOLYBDENUM OR 1% LEAD OR 1% ZINC)**

| Model | Category | Tonnes (kt) | Average grade | | | | | | Contained Metal | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | Pb (%) | Zn (%) | Cu (kt) | Mo (kt) | Au (t) | Ag (t) | Pb (kt) | Zn (kt) |
| Shallow Skarn | Measured | 60,579 | 0.82 | 0.057 | 0.33 | 15.47 | 0.04 | 0.03 | 496.7 | 34.5 | 19.8 | 937.2 | 22.4 | 20.6 |
| | Indicated | 210,722 | 0.75 | 0.061 | 0.29 | 14.07 | 0.03 | 0.02 | 1,580.4 | 128.5 | 60.7 | 2,964.9 | 52.7 | 50.6 |
| | **Meas+Ind** | **271,301** | **0.77** | **0.060** | **0.30** | **14.38** | **0.03** | **0.03** | **2,077.2** | **163.1** | **80.5** | **3,902.0** | **75.1** | **71.2** |
| | | | | | | | | | | | | | | |
| Steep Skarn | Measured | 4,012 | 0.76 | 0.031 | 0.27 | 17.59 | 0.31 | 0.18 | 30.5 | 1.2 | 1.1 | 70.6 | 12.4 | 7.3 |
| | Indicated | 18,971 | 0.76 | 0.032 | 0.26 | 17.62 | 0.30 | 0.17 | 143.8 | 6.1 | 4.9 | 334.3 | 56.7 | 31.7 |
| | **Meas+Ind** | **22,983** | **0.76** | **0.032** | **0.26** | **17.61** | **0.30** | **0.17** | **174.3** | **7.3** | **6.0** | **404.8** | **69.1** | **39.0** |
| | | | | | | | | | | | | | | |
| Hornfels | Measured | 0 | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Indicated | 655,089 | 0.27 | 0.037 | 0.03 | 1.04 | 0.01 | 0.01 | 1,768.7 | 242.4 | 16.4 | 681.3 | 32.8 | 39.3 |
| | **Meas+Ind** | **655,089** | **0.27** | **0.037** | **0.03** | **1.04** | **0.01** | **0.01** | **1,768.7** | **242.4** | **16.4** | **681.3** | **32.8** | **39.3** |
| | | | | | | | | | | | | | | |
| Porphyry | Measured | 0 | 0.00 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Indicated | 56,596 | 0.11 | 0.056 | 0.01 | 0.74 | 0.01 | 0.01 | 61.7 | 31.7 | 0.7 | 41.9 | 2.8 | 2.8 |
| | **Meas+Ind** | **56,596** | **0.11** | **0.056** | **0.01** | **0.74** | **0.01** | **0.01** | **61.7** | **31.7** | **0.7** | **41.9** | **2.8** | **2.8** |
| | | | | | | | | | | | | | | |
| **All Models** | **Total** | **1,005,969** | **0.41** | **0.044** | **0.10** | **5.00** | **0.02** | **0.02** | **4,082** | **444** | **104** | **5,030** | **180** | **152** |

TABLE 14.15
BEHRE DOLBEAR JORC INFERRED MINERAL RESOURCE ESTIMATES FOR THE JIAMA PROJECT AS OF JUNE 2011
**(CUT OFF GRADE FOR THE RESOURCE ESTIMATE IS 0.3% COPPER OR 0.03% MOLYBDENUM OR 1% LEADS OR 1% ZINC)**

| Model | Category | Tonnes (kt) | Average Grade | | | | | | Contained Metal | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cu (%) | Mo (%) | Au (g/t) | Ag (g/t) | Pb (%) | Zn (%) | Cu (kt) | Mo (kt) | Au (t) | Ag (t) | Pb (kt) | Zn (kt) |
| Shallow Skarn | Inferred | 94,325 | 0.61 | 0.056 | 0.23 | 11.66 | 0.02 | 0.02 | 576.3 | 52.8 | 21.7 | 1,099.8 | 17.0 | 19.8 |
| Steep Skarn | Inferred | 26,012 | 0.71 | 0.026 | 0.21 | 17.88 | 0.35 | 0.15 | 184.4 | 6.8 | 5.3 | 465.1 | 91.8 | 40.1 |
| Hornfels | Inferred | 39,460 | 0.23 | 0.039 | 0.03 | 1.02 | 0.01 | 0.01 | 90.8 | 15.4 | 1.0 | 40.2 | 2.0 | 2.4 |
| Porphyry | Inferred | 10,356 | 0.13 | 0.058 | 0.01 | 0.74 | 0.01 | 0.01 | 13.4 | 6.0 | 0.1 | 7.7 | 0.5 | 0.5 |
| | | | | | | | | | | | | | | |
| **All Models** | **Total** | **170,153** | **0.51** | **0.048** | **0.17** | **9.48** | **0.07** | **0.04** | **865** | **81** | **28** | **1,613** | **111** | **63** |

Behre Dolbear would also note that the Inferred resource estimates have a great amount of uncertainty as to their existence and economic and legal feasibility. It cannot be assumed that all or any part of an Inferred mineral resource will ever be upgraded to a higher category. Under Canadian rules, estimates of Inferred mineral resources may not form the basis of feasibility or pre-feasibility studies or economic studies except for a preliminary economic assessment or scoping study as defined under Canadian NI 43-101. Investors are cautioned not to assume that any or all of the Inferred resources exist or are economically or legally mineable.

## 14.5 RESOURCE RISK FACTORS

Behre Dolbear believes that the Resource Institute has done good work in determining the in-situ resource of the mineralization at the Jiama Project. Behre Dolbear also believes that the Mineral Resource Statements, revised and issued by Behre Dolbear as of June 2011, are appropriate based on our review of the mineralized envelopes and the grade estimation methods. However, there are a number of risk factors on the resource estimate.

- **Behre Dolbear Has Not Audited the Sampling Data or Conducted Independent Sampling:** Behre Dolbear has accepted the drilling data, mine sampling data, and assays, as presented by Jiama for this report. A few inconsistencies were discovered during the preparation of this report and most were resolved as typographic errors during translation or transposition errors in preparing the documents. The exploration, electronic database, and resource calculations were completed by a government sanctioned institution that minimizes risk with its utilization. ***Low Risk***

- **Variography:** The "Nugget" components of the correlograms presented in Table 14.3 are greater than 45% of the total structure for all metals and, most of the correlogram structures are very loosely defined by the selected model. The lack of significant structure in many of the correlograms, at distances below the interpreted range, increases the risk of errors in the resource estimation and reduces the overall confidence of the resulting estimates. In addition, Behre Dolbear believes that the range of the variography is probably a bit overstated also due to the lack of significant structure. While the overall effects on grade estimation are probably low, it tends to over state the confidence of the resource estimate. ***Low Risk***

- **Search Radii:** Although the Resource Institute determined oriented correlogram ellipsoids for the skarn deposits, the search ellipsoid used appears to be spherical, *i.e.*, all search axes are the same distance. Behre Dolbear would recommend that each estimation pass should conform to the correlogram ellipsoids generated for the metal or estimation domain. The search ellipse for the hornfels and porphyry are also spherical in nature. Behre Dolbear also believes that the radii used for these models also are too large for Measured, Indicated, and Inferred mineral resource categorization.

  While the procedures utilized by the Resource Institute for grade estimation do not match typical Western practices, the risk to the estimated overall tonnage and average grade of the resource is probably minimal. However, the techniques used tend to smooth out localized grade variations will increase the risk associated with mine planning and production schedules, if the models are used for advanced mining studies. ***Low Risk***

- **Resource Categorization:** Model blocks were estimated and classified into 331, 332, and 333 resources under the Chinese Code, based on the recommended parameters determined for the 2010 model and reporting. Behre Dolbear believes that given there are now an additional 82 drill holes, that the 2011 variography should be reviewed, in detail, and adjustments made to both the grade estimation parameters and to the methodology for determining JORC Mineral Resource categories. ***Moderate Risk***

- **Risks to Mine Planning:** Behre Dolbear believes that the overall grade and tonnage estimates are probably reasonable based on the assay statistics and variography; however, the methods and search parameters used will increase the risk that the metal content of the deposit will be spatially distributed differently than as modeled. The skarn models will probably overly smooth out the localized variations in the grade as the estimation techniques used will not honor the highly oriented structural controls typically found in skarn deposits.

## 14.6 RESOURCE CONCLUSIONS

Behre Dolbear believes that the Jiama Project, covered by this review, holds approximately 64.6 Mt of Measured, 941.4 Mt of Indicated, and 170 Mt of Inferred in-situ resources conforming to the definitions in the 2004 edition of *The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves* (2004 JORC Code). No reserves conforming to JORC standards have been estimated as the Jiama Project is currently working on new mine plans, production schedules, and economic analysis to include the additional mineralization.

Behre Dolbear believes the mineral resource estimation database, procedures, and parameters applied by the Resource Institute to the Jiama Project to generally be reasonable and appropriate. The geological constraints were adequately considered in their estimation of the resource. Behre Dolbear believes that the data density requirements for 331 and 332 block definition used for the Chinese estimates are generally more aggressive than that normally used for JORC Code resource estimation for similar deposits.

The estimation procedures and resource categorization used for the resource update were those recommended by Dr. Deng in 2010. Behre Dolbear believes that since there are an additional 82 drill holes completed since the 2010 report, that the 2011 variography should be reviewed in detail, and adjustments made to both the grade estimation parameters and to the methodology for determining JORC Mineral Resource categories.

It is also Behre Dolbear's opinion that the Resource Institute has done good work in determining the global in-situ resource. Behre Dolbear feels the grade and tonnage estimates are a reasonable estimate of the overall resource. However, the models should be redone (particularly the skarn models) using more directionally oriented and less general averaging of the block grades prior to detailed mine planning and scheduling.

## 14.7 ADDITIONAL EXPLORATION POTENTIAL

Copper-polymetallic mineralization at Jiama lies within a large mineralized system. Over 97% of the currently defined mineral resources are contained within the primary I1 mineralized body controlled by the interlayer structure zone between the footwall Upper-Jurassic Duodigou Formation marbles and the hanging wall Lower-Cretaceous Linbuzong Formation hornfels. A total of 1,006 Mt of Measured and

Indicated resources have been defined by current drilling, and there is an additional 170 Mt of Inferred mineral resource for the Jiama Project. With additional drilling and sampling, Behre Dolbear believes that a significant portion of the Inferred resource can be upgraded to the Measured and Indicated resource categories, which in turn, can be used for additional ore reserve estimation.

In addition, the I1 mineralized body is generally open in the down-dip direction to the northeast, representing significant additional exploration potential in that area, as shown in the Resource Institute's estimation of the fringe of the deposit outlined with wide-space drilling but does not have sufficient sampling density to classify the material as an Inferred mineral resource. The difference in the Chinese estimate of 1,645 Mt and Behre Dolbear's of 1,176 Mt represents exploration potential with additional infill drilling mostly around the fringe of the currently delineated deposit. Behre Dolbear would caution, however, that this tonnage has a great amount of uncertainty as to their existence and economic and legal feasibility and it cannot be assumed that all or any part will ever be upgraded to a resource category.

Furthermore, as Jiama is within a large mineralized system and as Huatailong's mining and exploration licenses covering an area of 145.5 $km^2$, it is possible to find other mineralized bodies similar to the I1 mineralized body and other types of mineralization, such as porphyry-type copper or copper-polymetallic mineralization, within the mining/exploration license area.

## 14.8 RESOURCE RECONCILIATION UNDER THE CIM STANDARDS

The CIM Standards are a resource/reserve classification system very similar to the Australasian JORC Code. There is minor difference between the two classification systems. Mineral resource estimates, reportable under the JORC Code, can be converted to mineral resource estimates under the CIM Standards. It should be noted, however, that under the JORC Code, Inferred resource can be added to Measured and Indicated resources in reporting, while such an addition is not allowed under the CIM Standards in resource statements. In this report, the Inferred resource is not added to the Measured and Indicated resources to follow the Canadian NI 43-101 report disclosure guidelines.

## 15.0 ORE RESERVE ESTIMATES

This report has not reviewed any updated ore reserve estimates at Jiama as the Jiama Project is in the process of revising their detailed mine plan to include the new material within the current updated resource estimate. Information on the current reserves at the Jiama Project can be found in the previous report completed by Behre Dolbear Asia, Inc., 2010 "*Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region*" (Appendix 1.0).

## 16.0 MINING METHODS

The Jiama Project is currently revising their detailed mine plan to include the new material within the current updated resource estimate. No new information is available at the time of this resource update. Information on the current mining methods can be found in the previous report completed by Behre Dolbear Asia, Inc., 2010 "*Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region*" (Appendix 1.0).

## 17.0 RECOVERY METHODS

The Jiama Project is currently revising their detailed processes and recovery methods for the new material within the current updated resource estimate. No new information is available at the time of this resource update. Information on the current recovery methods can be found in the previous report completed by Behre Dolbear Asia, Inc., 2010 "*Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region*" (Appendix 1.0).

## 18.0 PROJECT INFRASTRUCTURE

Information on the project infrastructure can be found in the previous report completed by Behre Dolbear Asia, Inc., 2010 "*Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region*" (Appendix 1.0).

## 19.0 MARKET STUDIES AND CONTRACTS

Information on the project market studies and contracts can be found in the previous report completed by Behre Dolbear Asia, Inc., 2010 "*Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region*" (Appendix 1.0).

## 20.0 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

Information on the project environmental studies, permitting and social or community impact can be found in the previous report completed by Behre Dolbear Asia, Inc., 2010 "*Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region*" (Appendix 1.0).

## 21.0 CAPITAL AND OPERATING COSTS

The Jiama Project is currently revising their detailed mine and processing plans to include the new material within the current updated resource estimate. No new information is available on capital and operating costs at the time of this resource update. Information on the current capital and operating costs can be found in the previous report completed by Behre Dolbear Asia, Inc., 2010 "*Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region*" (Appendix 1.0).

## 22.0 ECONOMIC ANALYSIS

The Jiama Project is currently revising their detailed mine and processing plans to include the new material within the current updated resource estimate. No new economic analysis has been completed at the time of this resource update. Information on the current economic analysis can be found in the previous report completed by Behre Dolbear Asia, Inc., 2010 "*Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County*, *Tibet Autonomous Region*" (Appendix 1.0).

## 23.0 ADJACENT PROPERTIES

Figure 23.1 shows the Jiama Copper polymetallic deposit in context within the Gangdise-Nianqing Tanggula metallogenic belt and the surrounding region. Several major and minor porphyry type deposits share similar geological settings to Jiama deposit, including:

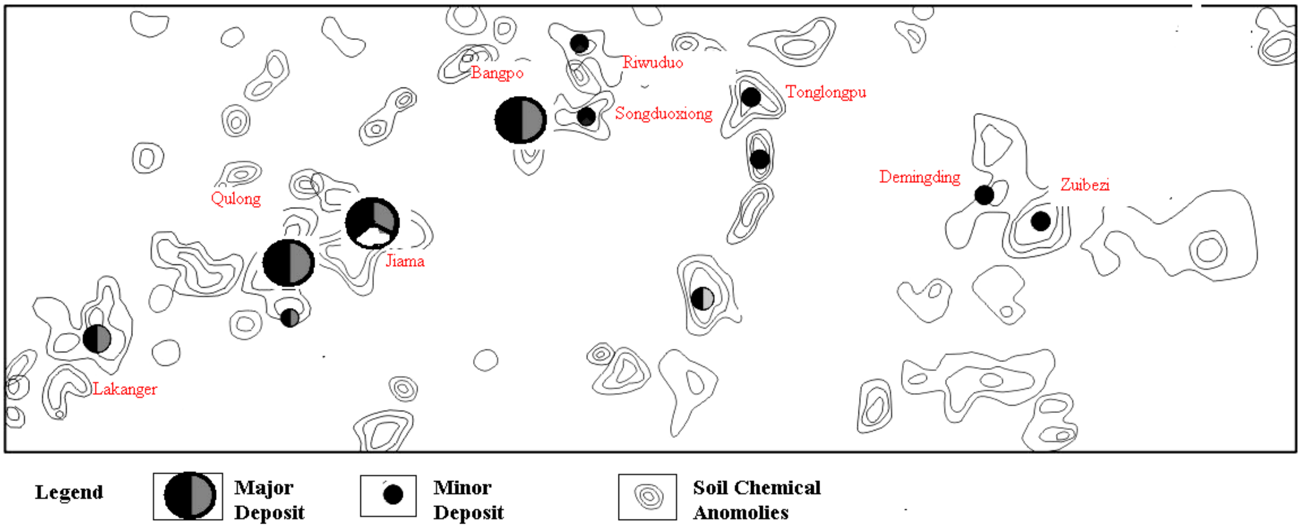



**Figure 23.1. Major and minor porphyry type deposits in the Jiama surrounding area**

Qulong porphyry copper-molybdenum deposit is about 20 km southwest in the Maizhokunggar County, Tibet Autonomous Region, China. It is reported to have a resource of 7 million tonnes of contained copper metal, 0.35 million tonnes of contained molybdenum metal; 4,000 tones of contained silver metal and 6 million tonnes of contained sulfur(*numbers are from Resource Institute Report dated on March 30, 2011 and are not 43-101 compliant)*

Bangpo Molybdenum- copper porphyry deposit is located 30 km north east to the Jiama property in the Maizhokunggar County, Tibet Autonomous Region. It is reported to have a resource of 0.45 million tonnes of contained molybdenum metal and 0.9 million tonnes of contained copper metal (*numbers are from Resource Institute Report dated on March 30, 2011 and are not 43-101 compliant)*

## 24.0 OTHER RELEVANT DATA AND INFORMATION

There is no other relevant data and information.

## 25.0 INTERPRETATION AND CONCLUSIONS

The Jiama Project is a large copper-polymetallic deposit with well-defined mineral resources and ore reserves. In addition, there is a large, defined, Inferred resource, and the additional exploration potential is very good. The currently defined mineral resources and ore reserves will likely be increased in the future with additional exploration work. The Tibet government is supportive of the development of the Jiama Project, and the pending mining license issue is unlikely to affect the defined resources of the Jiama Project.

# 26.0 RECOMMENDATIONS

## 26.1 EXPLORATION

Further in-fill drilling and step-out drilling are likely to significantly increase the currently defined mineral resources and ore reserves for the Jiama Project. However, Behre Dolbear does not consider additional drilling to be a high priority task at the current stage of the Jiama Project development as the defined ore reserves are sufficient to support the mining operation. If mining operations over the next several years prove to be successful, Huatailong should consider increasing the currently planned production capacity of the Jiama Project, and additional drilling to increase the mineral resources and ore reserves of the Jiama Project may become necessary. Cost for the additional drilling could range from less than RMB20 million (US$3.08 million) to more than RMB50 million (US$7.71 million).

## 26.2 RESOURCE MODELING

It is Behre Dolbear's opinion that the Resource Institute has done good work in determining the overall grade and tonnage of the global in-situ resource and feels the grade and tonnage estimates in the models are a reasonable estimate of the overall resource. However, the models should be redone (particularly the skarn models) adjusting the search ellipsoid to the recommended parameters in Table 14.14 to incorporate more directionally oriented grade structures and reduce the overall localized averaging of the block grades. Newer models should be completed prior to the intended detailed mine planning and scheduling. The methods and search parameters used in the current models have the risk that the metal content of the deposit will be spatially distributed, significantly differently than that modeled. The existing skarn models probably overly smooth the localized variations in the grade and probably does not honor the highly structural oriented gradation typically found in skarn deposits.

The estimation procedures and resource categorization used for the resource update were those recommended by Dr. Deng in 2010. Behre Dolbear believes that since there are an additional 82 drill holes completed since the 2010 report and that the 2011 variography should be reviewed in detail and adjustments made to both the grade estimation parameters and to the methodology for determining JORC Mineral Resource categories.

Behre Dolbear would also recommend that an independent firm complete a detailed audit on the electronic database to ensure that assay intervals and the drill hole logging has been entered correctly. Behre Dolbear believes it would be wise for an independent firm to audit the electronic database due to the size, budget, and scope of the proposed Jiama Project.

## 27.0 REFERENCES

Mineral Resource Research Institute of Chinese Academy of Geological Sciences, 2009: Mineral Resource and Reserve Evaluation Report for the Jiama Polymetallic Deposit in Metrorkongka County, Tibet Autonomous Region (an unpublished internal company report), 271 pages, November 2009.

Mineral Resource Research Institute of Chinese Academy of Geological Sciences, 2010: Mineral Resource and Reserve Evaluation Report for the Jiama Polymetallic Deposit in Metrorkongka County, Tibet Autonomous Region (an unpublished internal company report), 223 pages, January 2010.

Mineral Resource Research Institute of Chinese Academy of Geological Sciences, 2011: Mineral Resource and Reserve Evaluation Report for the Jiama Polymetallic Deposit in Metrorkongka County, Tibet Autonomous Region (an unpublished internal company report), 141 pages, March 2011.

Changsha Engineering and Research Institute of Nonferrous Metals Metallurgy, 2009: Feasibility Study Report for the 12,000 tpd Mining/Processing Operation for the Jiama Copper-Polymetallic Project of Tibet Huatailong Mining Development Company Limited (an unpublished internal company report), 331 pages, December 2009.

Changsha Engineering and Research Institute of Nonferrous Metals Metallurgy, 2010: Preliminary Economic Assessment of the 50 ktpd of Mining/Processing Operation for Copper-Polymetallic Resources at Jiama for Tibet Huatailong Mining Development Company Limited (an unpublished internal company report), 167 pages, July 2010.

Behre Dolbear Asia, Inc, 2010: Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, China, 105 pages, June 2010

## 28.0 DATE PAGE AND CERTIFICATES

The undersigned prepared this Technical Report, titled "Resource Update Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, The People's Republic of China" dated 6 October 2011.

The format and content of the report are intended to conform to Form 43-101F1 of National Instrument 43-101 (NI 43-101) of the Canadian Securities Administrators.

Signed and Sealed

6 October 2011

Robert Cameron, Ph.D., QP MMSA — Date

6 October 2011

Bernard J. Guarnera, F.AusIMM-CP, MMSA-QPM, CMA — Date

## CERTIFICATE OF QUALIFICATIONS

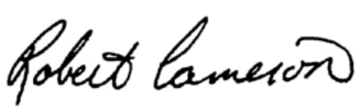
**Robert Cameron, Ph.D.**

I, Robert E. Cameron, Ph.D., MMSA QP, do hereby certify that:

1. I am a consulting Resource and Reserve Specialist doing business as Robert Cameron Consulting at the address of 200 Dubois Street, Black Hawk Colorado, USA, 80422.
2. I am a Qualified Person – No. 01357QP of the Mining and Metallurgical Society of America.
3. I am a graduate of The University of Utah with a B.S., M.S. and Ph.D. degrees in Mining Engineering.
4. I have practiced my profession since 1977. My relevant experience for the purpose of the Technical Report is Acting as a consulting resource and reserve specialist for 30 years specializing in the due diligence review, computerized mine design, mine optimization, geostatistical review, and resource and reserve audits of a wide variety of minerals.
5. I have read the definition of “Qualified Person” as set out in Canadian National Instrument 43-101 *Standards of Disclosure for Mineral Properties* (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “Qualified Person” for the purposes of NI 43-101.
6. I am responsible for preparation of Sections 1.4, 14.0 and jointly responsible for Sections 1.0 through 28.0 of the Resource Update Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, The People’s Republic of China dated 6 October 2011 (Technical Report).
7. I have personally visited to the properties that are the subject of this report from April 6 to April 10, 2011.
8. I have had no prior involvement with the properties that are the subject of the Technical Report.
9. I am independent of China Gold International Resources Corporation, as set out in Section 1.5 of Canadian National Instrument 43-101.
10. I have read Canadian National Instrument 43-101 and the Technical Report has been prepared in compliance with Canadian National Instrument 43-101 and Form 43-101F1.
11. As of the date of the certificate, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
12. I consent to the filing of this Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public.

Dated this 6th day of October 2011

“Signed and Sealed”



Robert E Cameron, Ph.D., MMSA 01357QP

## CERTIFICATE OF QUALIFICATIONS

**Bernard J. Guarnera**

I, Bernard J. Guarnera, CMA, P. E., P.G., C. P. (Geology), do hereby certify that:

1. I am currently the president and chairman of the board of directors of the minerals industry advisory firm, Behre Dolbear Group Inc., a Delaware corporation, with business office at 999 Eighteenth Street, Denver, Colorado, 80202 USA, Telephone: 303.620.0020; Facsimile: 303.620.0024; Email: guarnera@dolbear.com.
2. I graduated from the Michigan College of Mining and Technology (now Michigan Technological University) with a Bachelor of Science degree in Geological Engineering (Mining) in 1965 and a Master of Science in Economic Geology in 1967.
3. I am a registered member of the following professional and technical societies:
    - American Institute of Mineral Appraisers – Certified Mineral Appraiser
    - Australasian Institute of Mining and Metallurgy – Fellow and Chartered Professional (Geology)
    - Texas Board of Professional Engineers – Professional Engineer 41852
    - Idaho Board of Registration for Professional Geologists – Registered Geologist 510
    - Oregon Board of Geologist Examiners – Registered Geologist 070
    - Mining and Metallurgical Society of America – Qualified Professional Member
    - Canadian Institute of Mining, Metallurgy and Petroleum – Member
    - Prospectors and Developers Association of Canada – Member
    - Society of Economic Geologists – Fellow
    - Society of Mining Engineers – 45-year member university and have acted in a responsible professional manner throughout this period.
4. I have read the definition of "Qualified Person" as set out in Canadian National Instrument 43-101 *Standards of Disclosure for Mineral Properties* (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
5. I am jointly responsible for Sections 1.0 through 28.0 except for Section 1.4 and all of Section 14.0 of the Resource Update Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, The People's Republic of China dated 6 October 2011 (Technical Report).
6. I have not personally visited to the properties that are the subject of this report.
7. I have had no prior involvement with the properties that are the subject of the Technical Report.
8. I am independent of China Gold International Resources Corporation, as set out in Section 1.5 of Canadian National Instrument 43-101.
9. I have read Canadian National Instrument 43-101 and the Technical Report has been prepared in compliance with Canadian National Instrument 43-101 and Form 43-101F1.
10. As of the date of the certificate, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
11. I consent to the filing of this Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public.

Dated this 6th day of October 2011

"Signed and Sealed"

Bernard J. Guarnera, F.AusIMM-CP, MMSA-QPM, CMA

APPENDIX 1.0

**INDEPENDENT TECHNICAL REPORT ON THE**
**JIAMA COPPER-POLYMETALLIC PROJECT IN**
**METRORKONGKA COUNTY, TIBET AUTONOMOUS REGION**
**THE PEOPLE'S REPUBLIC OF CHINA**

# INDEPENDENT TECHNICAL REPORT ON THE JIAMA COPPER-POLYMETALLIC PROJECT IN METRORKONGKA COUNTY, TIBET AUTONOMOUS REGION, THE PEOPLE'S REPUBLIC OF CHINA

**Final Report**

**November 17, 2010**

**Prepared for:**

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***A Member of the Behre Dolbear Group of Companies***

Behre Dolbear Project 09-079-2

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# 1.0 SUMMARY

This independent technical report ("ITR") is prepared for China Gold International Resources Corporation Limited ("China Gold International" or the "Company", previously Jinshan Gold Mines Inc.), a Canadian company whose shares are listed on the Toronto Stock Exchange ("TSX"), to support its initial public offering ("IPO") on the main board of The Stock Exchange of Hong Kong Limited ("SEHK") and its filings under Canadian securities laws. China National Gold Group Hong Kong Limited ("China Gold Group HK") is the largest shareholder of China Gold International and currently owns approximately 39% of the listed shares. This ITR covers the Jiama copper-polymetallic project ("Jiama Project") currently under construction in Tibet Autonomous Region of the People's Republic of China ("PRC" or "China"). The Jiama Project will be injected into the Company during the IPO process.

## 1.1 The Jiama Project

The Jiama Project is currently owned and operated by Tibet Huatailong Mining Development Company Limited ("Huatailong"), which is wholly owned by a joint venture ("JV") company between China Gold Group HK (51%) and Rapid Result Investment Limited ("Rapid Result", 49%), a company registered in the British Virgin Islands ("BVI").

Jiama is a large, skarn-type, copper-polymetallic deposit and will be developed into a large, combined open-pit and underground mining operation, producing copper, molybdenum, and lead concentrates with significant gold and silver contents using flotation processing methods. There is also a large, less-well defined, lower-grade, hornfels-type, copper-polymetallic mineralization above the skarn-type mineralization in the Jiama Project.

The designed Phase I production capacity for the skarn-type mineralization is 6,000 tonnes per day ("tpd") of ore, and Phase II of the project will increase the production capacity to 12,000 tpd of ore. During BDASIA's site visit in December 2009, construction of the Phase I, 6,000-tpd flotation processing plant and related tailings storage facilities ("TSF") was near completion. Pre-production stripping of the smaller Tongqianshan pit was also near completion, and a small stockpile of ore mined from the pit was accumulated at the processing plant site. Pre-production stripping for the larger Niumatang pit was initialized, and construction of the primary underground haulage tunnel at a mean sea level ("MSL") elevation of 4,261 m and the secondary underground ore haulage tunnel at a MSL elevation of 4,087 m was well under way. It was reported by Huatailong that the Phase I concentrator trial production started in July 2010, and Phase I commercial mining/processing operating of the Jiama Project started in September 2010. When it is fully developed, the Jiama Project will become one of the largest copper-polymetallic mining operations in China in terms of ore production rate, total metal production, and mineral resources considered compliant under the Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves (the "JORC Code") prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists, and Minerals Council of Australia in 1999 and revised in 2004 and the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Standards – for Mineral Resources and Mineral Reserves prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council on December 11, 2005.

Access to the Jiama Project site is good. Surface water is sufficient to support the planned production. A new 110-kV power transmission line has been constructed to connect the project site to the Central Tibet power grid. The Tibet government has been executing a power-supply development plan for the period from 2006 to 2010, which includes building several new power generation plants, with the goal of connecting the Central Tibet power grid to the national power grid in China. When this development plan is completed, the supply of electricity will be sufficient for Phase I mine production as well as the Phase II expansion at Jiama. The Jiama Project has been designated as one of the most important projects in Tibet and has been granted priority in electricity supply by the Tibet government. However, power shortage for production, especially during the dry winter months, could be experienced before the government's power-supply development plan is completed.

Huatailong holds two valid mining licenses and two valid surrounding exploration licenses, which combine to yield a total area of 145.50 square kilometers ("$km^2$") for the Jiama Project. The Jiama mining license was consolidated in 2007 from four mining licenses held by different operators in accordance with the Chinese government's consolidation policy for mining properties; the Niumatang mining license adjacent to the Jiama mining license was issued to Huatailong in July 2010. All the currently defined mineral resources and ore reserves are covered by these mining and exploration licenses.

Mining operation for the Jiama Project is subject to a resource tax of RMB15 (US$2.21) per tonne of the processed ore and a resource compensation levy of 2% for the sales revenue generated from the operation. Copper, molybdenum, lead, zinc, and silver produced from the mine are subject to a value-added-tax ("VAT") of 17%. Gold production is exempted from VAT in China. The Jiama Project is also subject to a city-maintenance-and-construction tax of 7% of the VAT and an education tax of 3% of the VAT. The corporate income tax rate for Huatailong is 15%.

The Jiama Project is required to post an environmental reclamation bond of approximately RMB35 million ("M") (US$5.2 M). A first payment of RMB1.5 M (US$0.22 M) was made in 2009, and the remaining amount will be paid in five installments in the 5 years following the commencement of Phase I production at the Jiama Project.

## 1.2 Geology and Mineralization

The Jiama deposit is a skarn-type, copper-polymetallic deposit controlled mostly by an interlayer structural zone between the underlying Upper-Jurassic Duodigou Formation marbles and the overlying Lower-Cretaceous Linbuzong Formation hornfels. Some lower-grade, copper-polymetallic mineralization has also been encountered in the overlying Linbuzong hornfels. The hornfels-type mineralization is potentially very large; however, its existence and economic meaning will need to be determined by further drilling and technical studies.

The I-1 mineralized body controlled by the interlayer structural zone is the primary skarn-type mineralized body in the deposit. This mineralized body is stratiform, tabular, or lenticular in shape. It strikes west-northwesterly and dips to the northeast. The upper part of the mineralized body has a steeper dip angle, averaging around 60°, whereas the lower portion of the mineralized body has a much flatter angle, averaging around 10°. The I-1 mineralized body is approximately 2,400-m long along strike and 150-m to over 1,900-m wide in the dip direction. Its thickness ranges from 2 m to 240 m, with an average of 33.24 m. This mineralized body was defined by over 170 drill holes and contains over 97% of the currently defined mineral resources in the deposit.

Seven other smaller mineralized bodies (I-2 to I-8) have also been modeled, but they are generally not well defined by the current drilling data in the Jiama deposit.

Copper is the most important economic metal in the deposit. Other metals with economic value include molybdenum, lead, gold, silver, and zinc. These metals are distributed differently in the deposits. In general, the copper grade is higher at the upper and northwest portions and lower in the northeast portion. Molybdenum seems negatively correlated with copper, with higher grades in the northeast portion of the deposit. Gold and silver have a distribution pattern similar to that of copper in the deposit. Lead and zinc are only enriched in the upper part at the southwest portion of the I-1 mineralized body, which was part of the historical mining targets. Contents of harmful elements, such as arsenic, antimony, and mercury, are generally low in the deposit and will not cause a problem for marketing concentrate produced from the deposit.

Metallic minerals in the deposit include chalcopyrite, bornite, molybdenite, tetrahedrite, galena, sphalerite, chalcocite, digenite, covellite, native copper, pyrite, marcasite, pyrrhotite, magnetite, limonite, malachite, and azurite. Nonmetallic minerals include garnet, diopside, wollastonite, tremolite, epidote, quartz, feldspar, biotite, sericite, muscovite, chlorite, calcite, anhydrite, fluorite, and kaolinite. The metallic minerals occur as disseminations, massive aggregates, or stockwork in the skarns.

Oxidation occurs only at the near surface portion of the deposit. The majority of the defined mineral resources are in the unoxidized sulfide zone.

## 1.3 Resource and Reserve Estimates

Current mineral resources of the Jiama Project under the JORC Code were estimated by Competent Person Dr. Qingping Deng, of Behre Dolbear ASIA, Inc. ("BDASIA"), using the MineSight computer mining software system and the drill hole database as of the end of October 2009 and a geological model developed by geologists of the Mineral Resource Research Institute (the "Resource Institute") of Chinese Academy of Geological Sciences. The geological database used for the resource estimation consists of 22 historical diamond drill holes ("DDH") with a total drilled length of 6,518 meters ("m"), 10 historical surface trenches with a total channel-sampled length of 349 m, and 188 new DDH holes with a total drilled length of 62,511 m completed by Huatailong in 2008 and 2009.

Skarn-type mineral resources, inclusive of ore reserves, as of June 30, 2010 under the Australasian JORC Code for the Jiama Project are summarized in Table 1.1. These resource estimates are also compliant with the CIM standards and Canadian National Instrument 43-101 ("NI 43-101"). Cutoff grades used for the resource summary are 0.3% copper, or 0.03% molybdenum, or 1% lead, or 1% zinc.

**Table 1.1**
**Skarn-Type Mineral Resource Estimates for the Jiama Project as of June 30, 2010**
(Cutoff grade for the resource estimate is 0.3% Cu, or 0.03% Mo, or 1% Pb, or 1% Zn.)

| kt | Grade | | | | | | Contained Metal | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % | Cu kt | Mo kt | Au t | Ag t | Pb kt | Zn kt |
| **Measured Resource** | | | | | | | | | | | | |
| 82,928 | 0.83 | 0.042 | 0.30 | 16.0 | 0.06 | 0.05 | 686.9 | 34.42 | 25.11 | 1,326 | 51.9 | 38.7 |
| **Indicated Resource** | | | | | | | | | | | | |
| 102,187 | 0.68 | 0.041 | 0.22 | 13.7 | 0.10 | 0.05 | 691.6 | 42.07 | 22.33 | 1,396 | 100.6 | 55.4 |
| **Measured + Indicated Resources** | | | | | | | | | | | | |
| **185,116** | **0.74** | **0.041** | **0.26** | **14.7** | **0.08** | **0.05** | **1,378.5** | **76.49** | **47.44** | **2,722** | **152.5** | **94.1** |
| **Inferred Resource** | | | | | | | | | | | | |
| 165,763 | 0.64 | 0.053 | 0.21 | 13.1 | 0.14 | 0.06 | 1,068.0 | 88.57 | 35.42 | 2,179 | 239.0 | 106.9 |

Hornfels-type mineral resources, as of June 30, 2010 under the Australasian JORC Code for the Jiama Project, are summarized in Table 1.2. Only inferred resources were estimated for the hornfels-type mineralization as the mineralization is currently defined by only widely-spaced drill holes. These resource estimates are also compliant with the CIM standards and Canadian NI 43-101. Cutoff grades used for the resource summary are 0.3% copper, or 0.03% molybdenum, or 1% lead, or 1% zinc.

**Table 1.2**
**Hornfels-Type Mineral Resource Estimates for the Jiama Project as of June 30, 2010**
(Cutoff grade for the resource estimate is 0.3% Cu, or 0.03% Mo, or 1% Pb, or 1% Zn.)

| Mt | Grade | | | | | | Contained Metal | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % | Cu kt | Mo kt | Au t | Ag t | Pb kt | Zn kt |
| **Inferred Resource** | | | | | | | | | | | | |
| 655 | 0.23 | 0.045 | 0.02 | 1.17 | 0.00 | 0.01 | 1,500 | 290 | 13 | 770 | - | - |

BDASIA would note that mineral resources that are not mineral reserves do not have demonstrated economic viability. BDASIA would also note that the inferred resource estimates have a great amount of uncertainty as to their existence, and economic and legal feasibility. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher resource category. Under Canadian rules, estimates of inferred mineral resources may not form the basis of feasibility or pre-feasibility studies, or economic studies except for preliminary assessment or a scoping study as defined under Canadian NI 43-101. Investors are cautioned not to assume that all of the inferred resources exist, or is economically or legally mineable.

BDASIA's review indicates that drilling, sampling, sample preparation and analysis, quality control, and resource estimation have followed standard industry practice.

Mine planning and ore reserve estimation for the skarn-type mineralization were conducted by the Changsha Engineering and Research Institute of Nonferrous Metals Metallurgy (the "Changsha Institute") in Changsha, Hunan Province of China, a state-owned and licensed mining engineering company, using the Jiama computer resource model produced by BDASIA and other appropriate technical and economic parameters, and are summarized in its December 2009 feasibility study report for the Jiama Project. Two open pits, the smaller Tongqianshan pit and the larger Niumatang pit, and an underground mine have been designed for the Jiama Project. The Changsha Institute's feasibility study mine planning and ore reserve estimation have been reviewed by BDASIA in this ITR.

BDASIA has reviewed the procedures and parameters used in the Changsha Institute's reserve estimation and the reserve estimation results, and considers that the reserve estimates have been completed in accordance with the industry standards and that the results are reasonable. Therefore, BDASIA has adopted the Changsha Institute's reserve estimates in this ITR.

Skarn-type ore reserve estimates under the JORC Code as of June 30, 2010 for the Jiama Project are summarized in Table 1.3. The block economic value calculated from selected metal in concentrate prices, metallurgical recoveries, and appropriate mining dilution factors and mining recovery factors was used as the cutoff parameter for the Jiama reserve estimates. The economic cutoff values for the Jiama reserve estimates are RMB276.5/t (US$40.78/t) for the smaller Tongqianshan pit, RMB249.0/t (US$36.73/t) for the larger Niumatang pit, RMB276.5/t (US$40.78/t) for the upper, steeply-dipping ore zone of the underground mine, and RMB249.0/t (US$36.73/t) for the lower, flatter ore zone of the underground mine. These reserve estimates are also compliant with the CIM Standards as the JORC and CIM reserve classifications are exactly the same.

**Table 1.3**
**JORC Skarn-Type Ore Reserve Estimates for the Jiama Project as of June 30, 2010**

| Type | kt | Grade | | | | | | Contained Metal | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % | Cu kt | Mo kt | Au t | Ag t | Pb kt | Zn kt |
| **Tongqianshan Pit** | | | | | | | | | | | | | |
| Proved | 1,208 | 0.64 | 0.015 | 0.20 | 10.0 | 0.21 | 0.05 | 7.7 | 0.18 | 0.24 | 12 | 2.5 | 0.6 |
| Probable | 2,524 | 0.77 | 0.012 | 0.24 | 13.4 | 0.51 | 0.09 | 19.4 | 0.29 | 0.60 | 34 | 13.0 | 2.3 |
| Subtotal | 3,733 | 0.73 | 0.013 | 0.23 | 12.3 | 0.41 | 0.08 | 27.1 | 0.47 | 0.84 | 46 | 15.5 | 2.8 |
| Waste | 20,826 | | | | | | | | | | | | |
| Strip ratio | 5.58 | | | | | | | | | | | | |
| **Niumatang Pit** | | | | | | | | | | | | | |
| Proved | 14,473 | 1.04 | 0.039 | 0.45 | 21.6 | 0.03 | 0.03 | 150.9 | 5.66 | 6.56 | 313 | 4.2 | 3.9 |
| Probable | 5,423 | 1.06 | 0.035 | 0.49 | 21.7 | 0.03 | 0.03 | 57.7 | 1.89 | 2.63 | 118 | 1.8 | 1.7 |
| Subtotal | 19,897 | 1.05 | 0.038 | 0.46 | 21.6 | 0.03 | 0.03 | 208.6 | 7.55 | 9.19 | 430 | 6.0 | 5.6 |
| Waste | 146,224 | | | | | | | | | | | | |
| Strip ratio | 7.35 | | | | | | | | | | | | |
| **Total Open Pits** | | | | | | | | | | | | | |
| Proved | **15,682** | **1.01** | **0.037** | **0.43** | **20.7** | **0.04** | **0.03** | **158.6** | **5.83** | **6.80** | **325** | **6.7** | **4.5** |
| Probable | **7,948** | **0.97** | **0.027** | **0.41** | **19.1** | **0.19** | **0.05** | **77.2** | **2.18** | **3.23** | **151** | **14.8** | **4.0** |
| Subtotal | **23,630** | **1.00** | **0.034** | **0.42** | **20.1** | **0.09** | **0.04** | **235.8** | **8.02** | **10.03** | **476** | **21.5** | **8.5** |
| Waste | **167,050** | | | | | | | | | | | | |
| Strip ratio | **7.07** | | | | | | | | | | | | |
| **Underground Reserve** | | | | | | | | | | | | | |
| Proved | **37,860** | **0.75** | **0.038** | **0.27** | **14.5** | **0.06** | **0.04** | **284.2** | **14.48** | **10.3** | **550** | **22.9** | **16.9** |
| Probable | **44,410** | **0.82** | **0.042** | **0.27** | **16.0** | **0.09** | **0.05** | **365.6** | **18.77** | **12.0** | **712** | **40.6** | **23.2** |
| Subtotal | **82,269** | **0.79** | **0.040** | **0.27** | **15.3** | **0.08** | **0.05** | **649.8** | **33.25** | **22.3** | **1262** | **63.5** | **40.1** |
| **Total Reserves** | | | | | | | | | | | | | |
| Proved | **53,541** | **0.83** | **0.038** | **0.32** | **16.3** | **0.06** | **0.04** | **442.8** | **20.31** | **17.1** | **874** | **29.6** | **21.3** |
| Probable | **52,358** | **0.85** | **0.040** | **0.29** | **16.5** | **0.11** | **0.05** | **442.8** | **20.96** | **15.2** | **864** | **55.4** | **27.2** |
| Total | **105,899** | **0.84** | **0.039** | **0.31** | **16.4** | **0.08** | **0.05** | **885.6** | **41.27** | **32.3** | **1738** | **85.0** | **48.6** |

## 1.4 Mining Operation

The Jiama project mine plan contemplates mining approximately 105.9 million tonnes ("Mt") of ore by open-pit and underground mining operations at a production rate of 3.6 million tonnes per annum ("Mtpa") or 12,000 tpd based on 300 working days per annum over a mine life of 31 years. Open-pit mining operation started in late July 2010 from the smaller Tongqianshan pit at a rate of 3,000 tpd or 900,000 tpa; open-pit mining at the Niumatang pit is planned to start in April 2011 at a rate of 6,000 tpd or 1.8 Mtpa, increasing the total open-pit mining production to 9,000 tpd or 2.7 Mtpa; underground mining is planned to start in January 2012 at a rate of 3,000 tpd or 900,000 tpa, increasing the total mine production to 12,000 tpd or 3.6 Mtpa. Underground mining is planned to ramp up to 6,000 tpd or 1.8 Mtpa in 2014 when the Tongqianshan pit will be depleted. Therefore, after January 2012, the mine will maintain a total production rate of 12,000 tpd or 3.6 Mtpa. At the depletion of the Niumatang pit in 2021, underground capacity will be increased to 12,000 tpd or 3.6 Mtpa. Ore from the open pits will be hauled by truck to a crusher and ore pass within close proximity to the Niumatang pit, which will connect to a rail haulage system that will haul the ore underground to the processing plant, a distance of approximately 8.4 kilometers ("km").

Open-pit mining is planned to use conventional mining methods, using hydraulic excavators and trucks for loading and haulage of ore and waste. The Tongqianshan open pit is a relatively small open pit located at the southern section of the I-1 mineralized zone, where the ore zone is relatively steeply-dipping. The open-pit design was not based on a pit optimization analysis but was designed to meet the waste-to-ore strip ratio that ensured the pit's profitability and provided early production for the start up of the operation. In addition, the open pit met the project's need to provide sufficient waste rock to establish an operational work area at the base of the valley for surface infrastructure for the underground mine. The designed final pit contains approximately 3.7 Mt of ore and 20.8 Mt of waste at a strip ratio of 5.6:1 (waste:ore) by weight. Ore and waste rocks within the Tongqianshan pit are competent rocks, with no significant faulting or structures. The pit has been designed with an overall pit slope of 45°.

The design of the Niumatang open pit that contains the majority of the open-pit reserves was based on optimization work undertaken by the Changsha Institute and reviewed by BDASIA. Mine parameters used in the analysis were similar to, or slightly more conservative than, those used in the life-of-mine financial model. The selected shell from the pit optimization analysis was chosen to maximize profitability and minimize the strip ratio. The open-pit design followed the selected optimization shell, with the designed final pit containing approximately 19.9 Mt of ore and 146.2 Mt of waste at a strip ratio of 7.4:1 (waste:ore) by weight. The open-pit slope parameters for the design are similar to the Tongqianshan pit, with an overall open-pit slope angle of 45°. The maximum wall height within the pit is 570 m, and further geotechnical analysis on the final slope angles is justified.

The underground mine will be accessed via two inclined shafts and a decline ramp for trackless equipment. In planning the mine, the Changsha Institute divided the ore zone into the steeply-dipping (approximately 60°) section above the 4,550-m level and the flatter (dipping at an average of 10°) and relatively thick section below the 4,550-m level. The resource split within the two ore zones is approximately 20% and 80% respectively. The mining method planned for both the steeply-dipping and flatter, thick zones is open stope mining with variations based on access, stope dimensions, and sublevel intervals. Stopes within the flatter section are planned to be backfilled with classified tailings, with and without cement depending on the requirements for accessing ore adjacent to each stope. Trackless electric load-haul-dump ("LHD") units will be used to extract ore from the stopes and tipped to intermediate level rail haulage that will transport the ore to the main ore pass connecting to the main rail transport system to the processing plant. Trackless equipment will also be used for development, production drilling, and blasting, as well as for the provision of services.

The two mining methods described above account for around 90% of the ore reserves. For zones where open stoping mining methods are not appropriate due to ore dimensions, room-and-pillar or shrinkage stoping mining methods are planned depending on the thickness of the ore zone and the dip. Ground conditions are anticipated to be good within the skarn orebody, where the majority of underground development is planned; ground conditions for the mine infrastructure in the surrounding wall rocks are also expected to be good.

## 1.5 Processing

The Jiama processing facility will treat two types of ore: the copper-lead ore and the copper-molybdenum ore. A mixture of these two ore types will be treated during the initial 2 years of operation. After that period, only the copper-molybdenum ore will be processed. The processing capacity will be 6,000 tpd or 1.8 Mtpa for Phase I operation and 12,000 tpd or 3.6 Mtpa after the Phase II expansion, both based on 300 working days per year.

It was reported by Huatailong that trial production for the Phase I concentrator started in July 2010, but adjustments had to be made to the plant which delayed its commissioning. BDASIA was informed by Huatailong that commercial production of the Phase I plant started in September 2010 and the original ore production target for 2010 as presented in the production schedule of this report will be reduced by approximately 60% as the commission of the Phase I plant was delayed by several months.

The Phase II 6,000-tpd mill was originally planned to be constructed in 2010 and become operational in early 2011 with a total 2.7 Mt of ore processed by the two processing plants in 2011. BDASIA was informed by Huatailong that construction of the Phase II plant will not start until December 2010. If the construction commences on time in December 2010 as currently planned, it is likely that the originally planned production targets for 2011 will be reduced by at least 10% due to the delayed starting of the Phase II plant construction.

Based on the Changsha Institute feasibility study, the ore processing rate is expected to be approximately 5,000 tpd from April 2010, 9,000 tpd from January 2011, and 12,000 tpd from January 2012. Ore processed in the first year will consist of ore mined from the Tongqianshan pit, stockpiled ore from pre-production stripping of the Tongqianshan pit, and pre-production stripped ore from the Niumatang pit.

The processing method and plant will be rather typical for such ores. After crushing to minus 12 millimeters ("mm") and grinding to 70% minus 0.074 mm, the ground ore is subjected to copper-lead-molybdenum bulk flotation. The obtained bulk concentrates are subjected to the separation of a lead concentrate and a bulk copper-molybdenum concentrate. Then the bulk copper-molybdenum concentrate is separated into copper and molybdenum concentrates. Consequently, individual copper, lead, and molybdenum concentrates will be produced in the initial 2 years of the Jiama mine life. No lead concentrate will be produced thereafter as the plants will treat only the copper-molybdenum ore. The concentrates will be dewatered and sold to the smelter buyers.

The laboratory test work indicated that the ores are relatively easy to treat and that satisfactory results can be obtained.

The final copper concentrate is expected to assay approximately 26% copper. Copper recovery is expected to be 90% when the average copper grade of the processed ore is above 0.8% and 85% when the copper ore grade is no more than 0.8%.

The final lead concentrate is expected to assay 60% lead at a lead recovery of 80% when the lead ore grade is at least 0.3%. No lead concentrate will be produced when the lead ore grade is less than 0.3%.

The final molybdenum concentrate is expected to assay 45% molybdenum at a molybdenum recovery of approximately 70% when the molybdenum ore grade is at least 0.011%.

Gold will only be recovered in copper concentrate, with an expected recovery of approximately 50%. The gold grade in the copper concentrates is expected to generally range from 5 g/t to 6 g/t.

Silver will be recovered in both the copper and lead concentrates. Silver recovery is expected to be 50% in the copper concentrate and 35% in the lead concentrate when both copper and lead concentrates are produced. Silver recovery is expected to be 80% in the copper concentrate when no lead concentrate is produced. The silver grade is expected to generally range between 300 g/t to 500 g/t in the copper concentrate and above 500 g/t in the lead concentrate.

## 1.6 Production

Forecast life-of-mine annual processed ore, processing recoveries, and concentrate production from 2010 through the end of mine life for the Jiama Project are summarized in Table 1.4.

## Table 1.4
## Life-of-Mine Forecast Production for the Jiama Project

| Item | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Milled Ore Production** | | | | | | | | | | | | | | | | |
| from open pits (kt) | 1,121 | 2,700 | 2,700 | 2,700 | 1,909 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,700 | | | | |
| from underground (kt) | | | 900 | 900 | 1,691 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,900 | 3,600 | 3,600 | 3,600 | 3,600 |
| Total milled ore production (kt) | 1,121 | 2,700 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 |
| average Cu grade (%) | 0.83 | 0.96 | 1.10 | 0.95 | 0.85 | 1.11 | 0.98 | 0.97 | 0.99 | 1.03 | 0.76 | 0.97 | 0.91 | 0.85 | 0.81 | 0.83 |
| average Mo grade (%) | 0.015 | 0.040 | 0.051 | 0.043 | 0.048 | 0.053 | 0.032 | 0.028 | 0.031 | 0.044 | 0.052 | 0.021 | 0.023 | 0.046 | 0.047 | 0.033 |
| average Au grade (g/t) | 0.26 | 0.39 | 0.40 | 0.35 | 0.28 | 0.42 | 0.38 | 0.38 | 0.41 | 0.44 | 0.30 | 0.44 | 0.30 | 0.33 | 0.31 | 0.36 |
| average Ag grade (g/t) | 17.3 | 19.1 | 19.3 | 17.5 | 16.1 | 21.3 | 17.2 | 18.3 | 19.4 | 21.7 | 14.3 | 17.4 | 16.5 | 17.0 | 19.0 | 17.7 |
| average Pb grade (%) | 0.92 | 0.20 | 0.04 | 0.03 | 0.01 | 0.07 | 0.07 | 0.04 | 0.02 | 0.04 | 0.01 | 0.01 | 0.25 | 0.11 | 0.23 | 0.18 |
| average Zn grade (%) | 0.16 | 0.05 | 0.02 | 0.02 | 0.02 | 0.06 | 0.05 | 0.03 | 0.02 | 0.03 | 0.02 | 0.04 | 0.12 | 0.07 | 0.03 | 0.07 |
| contained Cu metal (kt) | 9.33 | 25.84 | 39.55 | 34.07 | 30.54 | 39.92 | 35.30 | 34.92 | 35.72 | 37.01 | 27.34 | 35.05 | 32.78 | 30.67 | 29.19 | 29.84 |
| contained Mo metal (kt) | 0.16 | 1.08 | 1.83 | 1.57 | 1.74 | 1.90 | 1.15 | 1.01 | 1.12 | 1.59 | 1.88 | 0.76 | 0.84 | 1.66 | 1.69 | 1.21 |
| contained Au metal (kg) | 292 | 1043 | 1452 | 1251 | 1009 | 1501 | 1381 | 1368 | 1477 | 1568 | 1092 | 1577 | 1076 | 1174 | 1107 | 1295 |
| contained Ag metal (t) | 19.34 | 51.61 | 69.37 | 62.90 | 58.11 | 76.79 | 62.07 | 65.73 | 69.93 | 77.97 | 51.60 | 62.55 | 59.36 | 61.35 | 68.57 | 63.59 |
| contained Pb metal (kt) | 10.30 | 5.35 | 1.46 | 1.05 | 0.49 | 2.34 | 2.54 | 1.32 | 0.89 | 1.41 | 0.45 | 0.48 | 8.83 | 3.96 | 8.35 | 6.45 |
| contained Zn metal (kt) | 1.78 | 1.32 | 0.88 | 0.80 | 0.56 | 2.25 | 1.68 | 1.02 | 0.84 | 0.91 | 0.69 | 1.27 | 4.42 | 2.47 | 1.21 | 2.37 |
| **Milling Recovery (%)** | | | | | | | | | | | | | | | | |
| Cu to Cu concentrate | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 85.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 |
| Au to Cu concentrate | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Ag to Cu concentrate | 50.0 | 50.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |
| Mo to Mo concentrate | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 |
| Pb to Pb concentrate | 80.0 | 80.0 | | | | | | | | | | | | | | |
| Ag to Pb concentrate | 35.0 | 35.0 | | | | | | | | | | | | | | |
| **Concentrate Production** | | | | | | | | | | | | | | | | |
| Cu concentrate (t) | 32,311 | 89,444 | 136,917 | 117,931 | 105,711 | 138,189 | 122,198 | 120,878 | 123,648 | 128,115 | 89,374 | 121,335 | 113,469 | 106,154 | 101,032 | 103,287 |
| Cu grade (%) | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Au grade (g/t) | 4.52 | 5.83 | 5.30 | 5.30 | 4.77 | 5.43 | 5.65 | 5.66 | 5.97 | 6.12 | 6.11 | 6.50 | 4.74 | 5.53 | 5.48 | 6.27 |
| Ag grade (g/t) | 299 | 289 | 405 | 427 | 440 | 445 | 406 | 435 | 452 | 487 | 462 | 412 | 419 | 462 | 543 | 493 |
| Contained Cu metal (t) | 8,401 | 23,255 | 35,598 | 30,662 | 27,485 | 35,929 | 31,771 | 31,428 | 32,148 | 33,310 | 23,237 | 31,547 | 29,502 | 27,600 | 26,268 | 26,855 |
| Contained Au metal (kg) | 146 | 522 | 726 | 625 | 505 | 750 | 691 | 684 | 738 | 784 | 546 | 788 | 538 | 587 | 554 | 648 |
| Contained Ag metal (t) | 9.67 | 25.81 | 55.49 | 50.32 | 46.49 | 61.43 | 49.65 | 52.58 | 55.95 | 62.38 | 41.28 | 50.04 | 47.49 | 49.08 | 54.86 | 50.87 |
| Mo concentrate (t) | 256 | 1,684 | 2,846 | 2,436 | 2,711 | 2,955 | 1,796 | 1,571 | 1,747 | 2,477 | 2,927 | 1,176 | 1,301 | 2,584 | 2,633 | 1,876 |
| Mo grade (%) | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 |
| Contained Mo metal (t) | 115 | 758 | 1,281 | 1,096 | 1,220 | 1,330 | 808 | 707 | 786 | 1,115 | 1,317 | 529 | 586 | 1,163 | 1,185 | 844 |
| Pb concentrate (t) | 13,735 | 7,130 | | | | | | | | | | | | | | |
| Pb grade (%) | 60.0 | 60.0 | | | | | | | | | | | | | | |
| Ag grade (g/t) | 493 | 2,534 | | | | | | | | | | | | | | |
| Contained Pb metal (t) | 8,241 | 4,278 | | | | | | | | | | | | | | |
| Contained Ag metal (t) | 6.77 | 18.06 | | | | | | | | | | | | | | |

**Table 1.4**
**Life-of-Mine Forecast Production for the Jiama Project (continued)**

| Item | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Milled Ore Production** | | | | | | | | | | | | | | | | |
| from open pits (kt) | | | | | | | | | | | | | | | | **23,630** |
| from underground (kt) | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 2,700 | 1,500 | **81,591** |
| Total milled ore production (kt) | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 2,700 | 1,500 | **105,221** |
| average Cu grade (%) | 0.91 | 0.71 | 0.71 | 0.71 | 0.71 | 0.75 | 0.71 | 0.70 | 0.63 | 0.80 | 0.77 | 0.82 | 0.66 | 0.70 | 0.47 | **0.83** |
| average Mo grade (%) | 0.022 | 0.033 | 0.036 | 0.031 | 0.025 | 0.030 | 0.036 | 0.054 | 0.065 | 0.032 | 0.038 | 0.028 | 0.041 | 0.062 | 0.092 | **0.039** |
| average Au grade (g/t) | 0.38 | 0.24 | 0.24 | 0.25 | 0.25 | 0.25 | 0.23 | 0.25 | 0.22 | 0.28 | 0.27 | 0.26 | 0.17 | 0.16 | 0.20 | **0.31** |
| average Ag grade (g/t) | 19.5 | 14.6 | 15.7 | 15.5 | 17.4 | 18.9 | 14.1 | 14.4 | 12.5 | 17.0 | 14.9 | 15.1 | 8.8 | 8.3 | 9.6 | **16.5** |
| average Pb grade (%) | 0.10 | 0.06 | 0.03 | 0.05 | 0.04 | 0.10 | 0.06 | 0.04 | 0.06 | 0.16 | 0.02 | 0.07 | 0.02 | 0.02 | 0.01 | **0.08** |
| average Zn grade (%) | 0.03 | 0.03 | 0.02 | 0.03 | 0.05 | 0.09 | 0.06 | 0.03 | 0.06 | 0.12 | 0.03 | 0.07 | 0.02 | 0.02 | 0.01 | **0.05** |
| contained Cu metal (kt) | 32.64 | 25.44 | 25.62 | 25.54 | 25.51 | 26.94 | 25.47 | 25.29 | 22.58 | 28.72 | 27.64 | 29.60 | 23.58 | 18.78 | 7.09 | **877.52** |
| contained Mo metal (kt) | 0.78 | 1.17 | 1.30 | 1.11 | 0.89 | 1.08 | 1.29 | 1.95 | 2.35 | 1.14 | 1.36 | 1.01 | 1.47 | 1.67 | 1.38 | **41.17** |
| contained Au metal (kg) | 1,361 | 878 | 850 | 916 | 893 | 900 | 835 | 903 | 783 | 993 | 986 | 930 | 608 | 442 | 298 | **32,239** |
| contained Ag metal (t) | 70.26 | 52.63 | 56.57 | 55.83 | 62.51 | 68.19 | 50.61 | 51.87 | 45.00 | 61.12 | 53.62 | 54.34 | 31.64 | 22.46 | 14.33 | **1,731.84** |
| contained Pb metal (kt) | 3.49 | 2.18 | 1.15 | 1.77 | 1.59 | 3.61 | 2.06 | 1.29 | 2.05 | 5.90 | 0.87 | 2.38 | 0.80 | 0.44 | 0.08 | **85.32** |
| contained Zn metal (kt) | 0.96 | 1.17 | 0.76 | 1.06 | 1.81 | 3.13 | 2.22 | 0.99 | 2.23 | 4.25 | 1.03 | 2.37 | 0.68 | 0.43 | 0.16 | **47.73** |
| **Milling Recovery (%)** | | | | | | | | | | | | | | | | |
| Cu to Cu concentrate | 90.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 90.0 | 85.0 | 85.0 | 85.0 | |
| Au to Cu concentrate | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | |
| Ag to Cu concentrate | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | |
| Mo to Mo concentrate | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | |
| Pb to Pb concentrate | | | | | | | | | | | | | | | | |
| Ag to Pb concentrate | | | | | | | | | | | | | | | | |
| **Concentrate Production** | | | | | | | | | | | | | | | | |
| Cu concentrate (t) | 112,996 | 83,177 | 83,762 | 83,507 | 83,412 | 88,065 | 83,252 | 82,686 | 73,834 | 93,878 | 90,368 | 102,453 | 77,089 | 61,380 | 23,188 | **2,973,039** |
| Cu grade (%) | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | **26.0** |
| Au grade (g/t) | 6.02 | 5.28 | 5.07 | 5.49 | 5.35 | 5.11 | 5.02 | 5.46 | 5.30 | 5.29 | 5.46 | 4.54 | 3.94 | 3.60 | 6.42 | **5.42** |
| Ag grade (g/t) | 497 | 506 | 540 | 535 | 600 | 619 | 486 | 502 | 488 | 521 | 475 | 424 | 328 | 293 | 494 | **459** |
| Contained Cu metal (t) | 29,379 | 21,626 | 21,778 | 21,712 | 21,687 | 22,897 | 21,646 | 21,498 | 19,197 | 24,408 | 23,496 | 26,638 | 20,043 | 15,959 | 6,029 | **772,990** |
| Contained Au metal (kg) | 681 | 439 | 425 | 458 | 446 | 450 | 418 | 452 | 391 | 496 | 493 | 465 | 304 | 221 | 149 | **16,120** |
| Contained Ag metal (t) | 56.21 | 42.11 | 45.26 | 44.66 | 50.01 | 54.55 | 40.49 | 41.49 | 36.00 | 48.90 | 42.90 | 43.47 | 25.32 | 17.97 | 11.46 | **1,364.19** |
| Mo concentrate (t) | 1,216 | 1,821 | 2,030 | 1,727 | 1,392 | 1,681 | 2,011 | 3,038 | 3,657 | 1,768 | 2,120 | 1,578 | 2,289 | 2,597 | 2,142 | **64,044** |
| Mo grade (%) | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | **45.0** |
| Contained Mo metal (t) | 547 | 819 | 913 | 777 | 626 | 756 | 905 | 1,367 | 1,646 | 796 | 954 | 710 | 1,030 | 1,169 | 964 | **28,820** |
| Pb concentrate (t) | | | | | | | | | | | | | | | | **20,864** |
| Pb grade (%) | | | | | | | | | | | | | | | | **60.0** |
| Ag grade (g/t) | | | | | | | | | | | | | | | | **1,190** |
| Contained Pb metal (t) | | | | | | | | | | | | | | | | **12,519** |
| Contained Ag metal (t) | | | | | | | | | | | | | | | | **24.84** |

Based on the production schedule developed by the December 2009 Changsha Institute feasibility study report for the Jiama Project, the Phase I 6,000-tpd mill is expected to start operation at the beginning of the second quarter of 2010, with 1.121 Mt of ore processed in that year. Actual trial production of the Phase I concentrator started in July 2010, but adjustments that had to be made to the plant delayed its commissioning. BDASIA was informed by Huatailong that commercial production of the Phase I plant started in September 2010 and actual ore production will be reduced by approximately 60% from the original production target for 2010 as presented in Table 1.4 because of the delay in Phase I plant commissioning. Ore processed in the first year will consist of ore mined from the Tongqianshan pit, stockpiled ore from pre-production stripping of the Tongqianshan pit, and pre-production stripped ore from the Niumatang pit. The Phase II 6,000-tpd mill was originally planned to be constructed in 2010 and become operational in early 2011 with a total 2.7 Mt of ore processed by the two processing plants in 2011. BDASIA was informed by Huatailong that construction of the Phase II plant will not start until December 2010. If the construction commences on time in December 2010 as currently planned, it is likely that the originally planned production targets for 2011 will be reduced by at least 10% due to the delayed starting of the Phase II plant construction. The full production rate of 12,000 tpd or 3.6 Mtpa is expected to be reached at the end of 2011 and will continue to 2038; after that, the two processing plants will be operated at a reduced rate for the final 2 years of the mine life. The forecast ore grades are based on the detailed production scheduling from the economic measured and indicated mineral resources in the computer resource model developed by BDASIA. An attempt has been made to schedule the mining of the relatively higher-grade Niumatang open pit and the flatter, thick underground stopes below the 4,550-m level in the earlier years of the mine life, resulting in relatively higher ore grades in the first half of the mine life. Appropriate mining dilution and mining loss factors have been adopted in the production scheduling process.

During the first 2 years of operation, a mixture of the copper-lead ore and copper-molybdenum ore will be processed; copper, molybdenum, and lead concentrates will be produced. Subsequently, the copper-lead ore will be exhausted, only copper-molybdenum ore will be processed, and only copper and molybdenum concentrates will be produced. The annual tonnage of copper, molybdenum, and lead concentrate will vary with the types of ore processed and the metal grades in the plant feed. In addition to copper, the copper concentrate produced will also contain generally 4 to 6 g/t of gold and 300 to 500 g/t of silver. The lead concentrate will generally contain at least 500 g/t of silver. The types of concentrate produced and their annual production tonnages, metal grades, and metal contents are presented in detail in Table 21.2. The forecast processing recoveries for each type of concentrate are based on the metallurgical testwork.

BDASIA considers that there is a degree of uncertainty for forecast production targets for the first two to three years of the mine life as the full production of the Phase I plant and the construction of the Phase II plant have been delayed for a number of months. Shortage in electricity supply for mine and mill production during the winter dry season could also cause some problems in achieving the stated production targets. Once the production capacity ramps up to the full designed production capacity and electricity supply to the project becomes sufficient, the long-term production targets are considered reasonable and achievable by BDASIA. Additional drilling for the Jiama deposit is very likely to convert a significant portion of the large inferred mineral resource to the measured and indicated categories, and the economic portion of the upgraded resource will become ore reserves, extending the mine life or justifying a higher production rate in the future.

## 1.7 Operating Costs and Capital Costs

The life-of-mine forecast operating costs for the Jiama Project are set out in Table 1.5. The operating costs have been estimated by the Changsha Institute and were presented in its December 2009 feasibility study report for the Jiama Project. BDASIA has reviewed these cost estimates and considers them to be reasonable. However, BDASIA has made an adjustment for contract mining costs for the Tongqianshan pit based on the current mining contract and for the underground mining cost.

Open-pit contract mining unit costs are forecast to be RMB16.4/t (US$2.42/t) of ore and RMB13.2/t (US$1.95/t) of waste for the Niumatang pit and RMB20.7/t (US$3.05/t) for ore and RMB17.5/t (US$2.58/t) for waste for the Tongqianshan pit. These contract mining costs are based on the current mining contracts that Huatailong has with the mining contractors. There is an additional open-pit management cost of RMB5.6/t (US$0.83/t) in the period from 2011 to 2013, increasing up to RMB8.4/t (US$1.24/t) at the completion of the Tongqianshan pit.

The underground mining unit cost is estimated to be RMB117.9/t (US$17.39/t) for approximately the first 2.5 years of production as production capacity increases to the forecast rate of 1.8 Mtpa. Once this rate is achieved, the unit mining cost reduces to RMB98.2/t (US$14.48/t) until production capacity increases from 1.8 Mtpa to 3.6 Mtpa, when the mining unit cost further reduces to RMB92.1/t (US$13.58/t). The life-of-mine average unit underground mining cost is RMB94.5/t (US$13.94/t). BDASIA has made a 15% positive adjustment over the unit underground mining cost estimated by the Changsha Institute as BDASIA considers that the Changsha Institute's estimate is not well defined and considers it prudent to make the adjustment to unit costs. BDASIA notes that the mine plan can be modified to absorb the increased costs, for instance by increasing sublevel intervals within the stopes and thereby reducing development requirements.

Table 1.5 shows that the life-of-mine unit total open-pit mining cost, including ore mining, waste mining, and mining management, is forecast to be RMB97.8/t (US$14.42/t) of processed ore, which is higher than the life-of-mine unit underground mining cost of RMB94.5/t (US$13.94/t) of processed ore. BDASIA believes that optimization of the ratio of open-pit mining and underground mining should be conducted, which will result in the reduction of the high strip ratio, i.e. high-cost portion, of the open-pit mining operation; the increase of underground mining operation; and an overall reduction of unit total mining cost for the Jiama Project.

## Table 1.5
## Life-of-Mine Forecast Operating Costs for the Jiama Project

| Item | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open-pit Contract Ore Mining (RMB/t of ore) | 20.7 | 17.9 | 17.9 | 17.9 | 16.7 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | | | | |
| Open-pit Contract Waste Mining (RMB/t of waste) | 17.5 | 14.4 | 14.0 | 13.4 | 13.3 | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 | | | | |
| open-pit strip ratio | 4.3 | 7.8 | 7.0 | 5.9 | 8.0 | 6.7 | 6.7 | 6.7 | 4.4 | 1.5 | 0.9 | 0.8 | | | | |
| Open-pit Management (RMB/t of ore) | 13.3 | 5.5 | 5.5 | 5.5 | 7.8 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 6.8 | | | | |
| Total Open-pit Mining (RMB/t of ore) | 110.0 | 136.2 | 121.7 | 102.8 | 130.8 | 113.4 | 113.4 | 113.4 | 83.0 | 44.6 | 36.6 | 33.1 | | | | |
| Underground Mining (RMB/t of ore) | | | 117.9 | 117.9 | 100.9 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 95.9 | 92.1 | 92.1 | 92.1 | **92.1** |
| Ore Transportation (RMB/t of ore) | 10.3 | 6.2 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | **5.1** |
| **Total Mining Cost (RMB/t of ore)** | **120.3** | **142.4** | **125.8** | **111.6** | **121.8** | **110.9** | **110.9** | **110.9** | **95.7** | **76.5** | **72.5** | **71.4** | **97.2** | **97.2** | **97.2** | **97.2** |
| **Total Processing Cost (RMB/t of ore)** | **75.8** | **61.7** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** |
| **Total G&A and Other Cost (RMB/t of ore)** | **63.0** | **43.2** | **43.1** | **39.2** | **37.9** | **44.5** | **40.5** | **40.1** | **40.9** | **42.4** | **35.2** | **40.1** | **40.4** | **40.1** | **39.3** | **39.2** |
| **Total Operating Cost (RMB/t of ore)** | **259.1** | **247.4** | **229.5** | **211.4** | **220.4** | **216.0** | **212.0** | **211.6** | **197.1** | **179.4** | **168.3** | **172.1** | **198.2** | **197.9** | **197.0** | **196.9** |
| **Total Operating Cost (US$/t of ore)** | **38.21** | **36.48** | **33.85** | **31.18** | **32.50** | **31.85** | **31.27** | **31.21** | **29.07** | **26.46** | **24.83** | **25.38** | **29.23** | **29.19** | **29.06** | **29.04** |
| Depreciation and Amortization (RMB/t of ore) | 80.2 | 45.3 | 48.1 | 48.1 | 48.1 | 48.1 | 48.1 | 48.1 | 48.1 | 48.1 | 48.1 | 46.3 | 37.2 | 37.2 | 37.2 | **36.6** |
| **Total Production Cost (RMB/t of Ore)** | **339.3** | **292.6** | **277.6** | **259.5** | **268.4** | **264.0** | **260.1** | **259.7** | **245.2** | **227.5** | **216.4** | **218.4** | **235.4** | **235.1** | **234.3** | **233.5** |
| **Total Production Cost (US$/t of Ore)** | **50.05** | **43.16** | **40.94** | **38.27** | **39.59** | **38.94** | **38.36** | **38.30** | **36.16** | **33.55** | **31.92** | **32.21** | **34.72** | **34.68** | **34.55** | **34.44** |
| **CuEq in Concentrate Production (t)** | **12,656** | **33,385** | **49,256** | **42,522** | **39,413** | **50,307** | **42,106** | **41,285** | **42,881** | **46,568** | **35,631** | **40,594** | **37,769** | **39,645** | **38,634** | **37,304** |
| **CuEq Operating Cost (RMB/t)** | **22,948** | **20,006** | **16,772** | **17,899** | **20,128** | **15,455** | **18,126** | **18,453** | **16,549** | **13,870** | **17,007** | **15,260** | **18,888** | **17,969** | **18,361** | **19,003** |
| **CuEq Operating Cost (US$/t)** | **3,385** | **2,951** | **2,474** | **2,640** | **2,969** | **2,279** | **2,673** | **2,722** | **2,441** | **2,046** | **2,508** | **2,251** | **2,786** | **2,650** | **2,708** | **2,803** |
| **CuEq Total Production Cost (RMNB/t)** | **30,055** | **23,665** | **20,286** | **21,969** | **24,518** | **18,894** | **22,236** | **22,645** | **20,585** | **17,586** | **21,864** | **19,367** | **22,436** | **21,350** | **21,830** | **22,535** |
| **CuEq Total Production Cost (US$/t)** | **4,433** | **3,490** | **2,992** | **3,240** | **3,616** | **2,787** | **3,280** | **3,340** | **3,036** | **2,594** | **3,225** | **2,857** | **3,309** | **3,149** | **3,220** | **3,324** |

| Item | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open-pit Contract Ore Mining (RMB/t of ore) | | | | | | | | | | | | | | | | **17.1** |
| Open-pit Contract Waste Mining (RMB/t of waste) | | | | | | | | | | | | | | | | **13.7** |
| open-pit strip ratio | | | | | | | | | | | | | | | | **5.3** |
| Open-pit Management (RMB/t of ore) | | | | | | | | | | | | | | | | **7.5** |
| Total Open-pit Mining (RMB/t of ore) | | | | | | | | | | | | | | | | **97.8** |
| Underground Mining (RMB/t of ore) | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 104.2 | 113.9 | **94.5** |
| Ore Transportation (RMB/t of ore) | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 6.2 | 9.8 | **5.3** |
| **Total Mining Cost (RMB/t of ore)** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **110.4** | **123.8** | **100.5** |
| **Total Processing Cost (RMB/t of ore)** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **80.8** | **73.7** | **61.5** |
| **Total G&A and Other Cost (RMB/t of ore)** | **40.5** | **35.2** | **35.5** | **35.2** | **35.0** | **36.1** | **35.3** | **36.0** | **34.8** | **37.2** | **36.8** | **38.5** | **34.1** | **39.1** | **36.9** | **38.7** |
| **Total Operating Cost (RMB/t of ore)** | **198.3** | **192.9** | **193.2** | **193.0** | **192.8** | **193.9** | **193.1** | **193.8** | **192.5** | **195.0** | **194.5** | **196.3** | **191.9** | **230.3** | **234.4** | **200.7** |
| **Total Operating Cost (US$/t of ore)** | **29.24** | **28.46** | **28.50** | **28.46** | **28.43** | **28.60** | **28.48** | **28.58** | **28.40** | **28.76** | **28.69** | **28.95** | **28.30** | **33.97** | **34.57** | **29.60** |
| Depreciation and Amortization (RMB/t of ore) | 32.8 | 32.8 | 32.8 | 32.8 | 32.8 | 31.3 | 31.3 | 31.3 | 31.1 | 31.1 | 31.1 | 25.0 | 25.0 | 33.2 | 31.7 | **38.5** |
| **Total Production Cost (RMB/t of Ore)** | **231.0** | **225.7** | **226.0** | **225.8** | **225.6** | **225.2** | **224.4** | **225.1** | **223.6** | **226.1** | **225.6** | **221.3** | **216.9** | **263.5** | **266.0** | **239.2** |
| **Total Production Cost (US$/t of Ore)** | **34.08** | **33.29** | **33.34** | **33.30** | **33.27** | **33.22** | **33.10** | **33.20** | **32.98** | **33.34** | **33.28** | **32.64** | **31.99** | **38.87** | **39.23** | **35.28** |
| **CuEq in Concentrate Production (t)** | **38,450** | **30,625** | **31,467** | **30,673** | **29,980** | **32,241** | **30,992** | **33,835** | **32,687** | **33,862** | **33,568** | **35,152** | **28,869** | **24,898** | **13,087** | **1,090,340** |
| **CuEq Operating Cost (RMB/t)** | **18,563** | **22,681** | **22,108** | **22,650** | **23,148** | **21,650** | **22,426** | **20,619** | **21,206** | **20,728** | **20,862** | **20,100** | **23,926** | **24,976** | **26,860** | **19,366** |
| **CuEq Operating Cost (US$/t)** | **2,738** | **3,345** | **3,261** | **3,341** | **3,414** | **3,193** | **3,308** | **3,041** | **3,128** | **3,057** | **3,077** | **2,965** | **3,529** | **3,684** | **3,962** | **2,856** |
| **CuEq Total Production Cost (RMNB/t)** | **21,633** | **26,535** | **25,859** | **26,499** | **27,086** | **25,148** | **26,065** | **23,952** | **24,629** | **24,033** | **24,196** | **22,663** | **27,046** | **28,576** | **30,488** | **23,082** |
| **CuEq Total Production Cost (US$/t)** | **3,191** | **3,914** | **3,814** | **3,908** | **3,995** | **3,709** | **3,844** | **3,533** | **3,633** | **3,545** | **3,569** | **3,343** | **3,989** | **4,215** | **4,497** | **3,404** |

An additional ore transportation unit cost for both the open-pit and underground mines is forecast to be RMB5.3/t (US$0.78/t) for the life-of-mine once the rail system is commissioned in 2011. Prior to the commissioning of the rail system, ore will be trucked down the valley from the mine to the processing plants and is currently being stockpiled above the processing plant crushers. Unit transport costs are higher during this short trucking phase. Transportation costs include electricity for powering the trains and operating the ore pass chutes and repairs for locomotives, rail, mine cars, and chutes.

The long-term processing unit cost when the plants are in full operation is estimated to be RMB60.6/t (US$8.94/t). This unit cost is forecast to be slightly higher for the ramp up period in the initial 2 years as well as during the last 2 years of the mine life when the plants will be operating at a reduced rate. BDASIA considers the processing cost estimates to be reasonable.

The unit G&A and other costs in Table 1.5 include the administrative costs, the concentrate sale and transportation costs, and the resource compensation levy at 2% of the profit and range from RMB34.1/t (US$5.03/t) to RMB44.5/t (US$6.56/t) of processed ore except for the first year of operation. The life-of-mine average unit G&A and other costs are RMB38.7/t (US$5.71/t).

The total unit operating cost ranges from RMB168.3/t (US$24.82/t) to RMB234.4/t (US$34.57), with a life-of-mine average of RMB200.7/t (US$29.60/t). The total unit production cost, which consists of total unit operating cost and unit depreciation and amortization costs, ranges from RMB216.9/t (US$31.99/t) of processed ore to RMB339.3/t (US$50.04/t), with a life-of-mine average of RMB239.2 (US$35.28/t).

BDASIA has calculated a copper-equivalent ("CuEq") production in concentrate for the Jiama Project based on the metal in concentrate sale prices (without VAT) as listed in Table 1.8, using the following formula:

$$CuEq\ (t) = Cu\ (t) + Mo\ (t) \times 256{,}410.26/42{,}115.39 + Pb\ (t) \times 10{,}683.76/42{,}115.39 + Au\ (g) \times 166/42{,}115.39 + Ag\ (kg) \times 2{,}318.38/42{,}115.39$$

Unit CuEq operating cost and unit CuEq total production have also been calculated and presented in Table 1.5.

BDASIA would note that no inflation factor has been built into the operating cost estimates for the Jiama Project.

Table 1.6 shows the Changsha Institute's initial capital investment estimates for the 12,000 tpd Jiama Project in its December 2009 feasibility study. The capital cost estimates cover the pre-production stripping for the two open-pit mining areas, underground development, and construction of the ore transportation system, as well as Phase I and Phase II processing plants with a production rate of 6,000 tpd each, infrastructure, administration and supporting facilities, land acquisition, and other capital expenditures, and a 10% contingency for all of the estimated capital expenditures.

**Table 1.6**
**Initial Capital Cost Estimates for the 12,000 tpd Production Capacity of the Jiama Project**

| Item | Development | Construction | Equipment | Engineering & Installation | Other | Total | Percentage |
|---|---|---|---|---|---|---|---|
| Geology and Construction Exploration (RMB×$10^3$) | | 16,041 | 2,067 | | | 18,108 | 0.68% |
| Open-pit Pre-production stripping (RMB×$10^3$) | | | | | | | |
| Tongqianshan Pit (RMB×$10^3$) | 89,111 | | | | | 89,111 | |
| Niumatang Pit (RMB×$10^3$) | 502,770 | | | | | 502,770 | |
| Subtotal (RMB×$10^3$) | 591,881 | | | | | 591,881 | 22.21% |
| Underground Development (RMB×$10^3$) | 205,505 | 6,156 | 180,797 | 22,822 | | 415,280 | 15.58% |
| Ore Transportation System (RMB×$10^3$) | 99,316 | 20,778 | 35,181 | 27,242 | | 182,517 | 6.85% |
| Concentrating Plant and TSF (RMB×$10^3$) | | 249,042 | 297,522 | 48,524 | | 595,088 | 22.33% |
| Infrastructures (RMB×$10^3$) | | 163,563 | 72,925 | 63,170 | | 299,658 | 11.24% |
| Administration and Supporting Facilities (RMB×$10^3$) | | 19,472 | 4,077 | 1,600 | | 25,149 | 0.94% |
| Land Acquisition and Other Costs (RMB×$10^3$) | | | | | 295,184 | 295,184 | 11.08% |
| Contingency (RMB×$10^3$) | | | | | 242,286 | 242,286 | 9.09% |
| **Total (RMB×$10^3$)** | **896,702** | **475,052** | **592,569** | **163,358** | **537,470** | **2,665,151** | **100.00%** |
| **Total (US$×$10^3$)** | **132,257** | **70,067** | **87,400** | **24,094** | **79,273** | **393,090** | **100.00%** |

Table 1.7 shows the life-of-mine forecast capital expenditures for the Jiama Project. Based on the project construction progress, the Changsha Institute estimated that the total expenditures in 2008 and 2009 were approximately RMB1,480 M (US$218.3 M), which is quite close to the actual total capital expenditures in 2008 and 2009 based on information available from Huatailong. The 2008 and 2009 capital expenditures represent approximately 56% of the total initial capital cost estimates. The remaining capital expenditures are mostly for the pre-production stripping of the Niumatang open pit, development and equipping of the underground mine, and construction of the Phase II processing plant. Additional capital cost estimates of RMB519 M (US$76.5M) in 2021 and 2022 will be used to expand underground capacity, including the development of the steeply-dipping ore zone above the 4,550-m level. Replacement capital expenditures of RMB276 M (US$40.7 M) in 2022, RMB366 M (US$54.0 M) in 2026, and RMB421 M (US$62.1 M) in 2032 have also been estimated for the Jiama Project. This replacement capital may be spread over several years of the operation rather than being two distinct amounts as forecast, but the general amount is considered by BDASIA to be reasonable.

Total working capital required for the Jiama Project was estimated at RMB129.5 M (US$19.1 M).

BDASIA considers that the capital cost estimates for the Jiama Project are reasonable and achievable. The total capital cost estimate for the two processing plants of RMB595 M (US$87.8 M) is high due to the construction of two physically separated plants that will be built in two stages at the available site, instead of one larger facility.

**Table 1.7**
**Life-of-Mine Forecast Capital Costs for the Jiama Project**

| Item | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Capital Expenditures (RMB×$10^3$) | 657,000 | 823,000 | 628,000 | 557,151 | | | | | | | | | 233,550 | 561,087 | | | |
| Total Capital Expenditures (US$×$10^3$) | 96,903 | 121,386 | 92,625 | 82,176 | | | | | | | | | 34,447 | 82,756 | | | |
| Working Capital (RMB×$10^3$) | | | 52,637 | 55,347 | 21,536 | | | | | | | | | | | | |
| Working Capital (US$×$10^3$) | | | 7,764 | 8,163 | 3,176 | | | | | | | | | | | | |

| Item | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Capital Expenditures (RMB×$10^3$) | 365,973 | | | | | | 420,885 | | | | | | | | | -107,500 | **4,139,146** |
| Total Capital Expenditures (US$×$10^3$) | 53,978 | | | | | | 62,077 | | | | | | | | | -15855 | 610493 |
| Working Capital (RMB×$10^3$) | | | | | | | | | | | | | | -25,974 | -44,152 | -59,394 | **0** |
| Working Capital (US$×$10^3$) | | | | | | | | | | | | | | -3,831 | -6,512 | -8,760 | **0** |

## 1.8 Project Economics

Metal prices used for the base case economic analysis of the Jiama Project in the Changsha Institute's December 2009 feasibility study report are listed in Table 1.8. A VAT of 17% is applied to all metal sales except for gold in China. Commonly, a concentrate producer in China sells its concentrate production to the smelter customers. Sale prices for metals in concentrate are discounted by a certain percentage from the metal sale prices based on the smelter's concentrate treatment costs and the prevailing metal market prices in China. The discount factors (if applicable) taken by the Changsha Institute in Table 1.8 represent the conditions set out in the preliminary copper concentrate sales contract discussed in Section 21.3 or the current industry averages in China. The copper, molybdenum, and lead prices selected by the Changsha Institute represent the actual average metal market prices for the last 3 to 5 years in China. Gold and silver prices selected by the Changsha Institute are slightly higher than the past 3-year actual averages, but they represent the Changsha Institute's expectation for the long-term prices for these two metals. BDASIA accepts these metal price selections and has used the same metal prices in the base case economic analysis of the Jiama Project in this ITR. The prices for metals in concentrate without VAT are used in the following economic analysis. In addition to the metal prices in Table 1.8, a copper concentrate transportation credit of RMB200/t (US$29.50/t) of copper metal contained in the copper concentrate will be applied based on the current preliminary sales contract with the copper concentrate buyer.

**Table 1.8**
**Metal Prices Used for Base Case Economic Analysis for the Jiama Project**

| Metal | Metal with VAT Price(1) | | Metal in Concentrate with VAT Price | | Metal in Concentrate without VAT Price | |
|---|---|---|---|---|---|---|
| | RMB | US$ | RMB | US$ | RMB | US$ |
| Copper | 55,000/t | 8,112.09/t | 49,275/t(2) | 7,267.70/t | 42,115.39/t | 6,211.71/t |
| Molybdenum | | | 300,000/t | 44,247.79/t | 256,410.26/t | 37,818.62/t |
| Gold | 200/g | 917.51/oz | 166/g | 761.53/oz | 166/g | 761.53/oz |
| Silver | 3,500/kg | 16.06/oz | 2,712.5/kg | 12.44/oz | 2,318.38/kg | 10.64/oz |
| Lead | | | 12,500/t | 1,843.66/t | 10,683.76/t | 1,575.78/t |

*Note:*

*(1) VAT is 17% for all metals except gold; gold sales are not subject to VAT.*

*(2) Cu price in copper concentrate includes a grade bonus of RMB600/t based on the concentrate sales contract as the copper concentrate to be produced by Jiama is expected to have an average Cu grade of 26%, which is 6% higher than the base Cu grade of 20%.*

BDASIA conducted a base case economic analysis for the Jiama Project using the technical and economic parameters discussed in this ITR (Table 1.9). A discount rate of 9% was used for the net present value ("NPV") calculation, which is the same as the discount rate used in the Changsha Institute's feasibility study for the Jiama Project. The middle of the year discount method was used in calculating the NPV.

## Table 1.9
## Base Case Economic Analysis for the Jiama Project

| Item | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metal Production** | | | | | | | | | | | | | | | | |
| Cu Production in Cu Concentrate (t) | 8,401 | 23,255 | 35,598 | 30,662 | 27,485 | 35,929 | 31,771 | 31,428 | 32,148 | 33,310 | 23,237 | 31,547 | 29,502 | 27,600 | 26,268 | 26,855 |
| Au Production in Cu Concentrate (kg) | 146 | 522 | 726 | 625 | 505 | 750 | 691 | 684 | 738 | 784 | 546 | 788 | 538 | 587 | 554 | 648 |
| Ag Production in Cu Concentrate (t) | 9.67 | 25.81 | 55.49 | 50.32 | 46.49 | 61.43 | 49.65 | 52.58 | 55.95 | 62.38 | 41.28 | 50.04 | 47.49 | 49.08 | 54.86 | 50.87 |
| Mo Production in Mo Concentrate (t) | 115 | 758 | 1,281 | 1,096 | 1,220 | 1,330 | 808 | 707 | 786 | 1,115 | 1,317 | 529 | 586 | 1,163 | 1,185 | 844 |
| Pb Production in Pb Concentrate (t) | 8,241 | 4,278 | | | | | | | | | | | | | | |
| Ag Production in Pb Concentrate (t) | 6.77 | 18.06 | | | | | | | | | | | | | | |
| **Metal Sales Income** | | | | | | | | | | | | | | | | |
| Cu Production in Cu Concentrate (RMB M) | 354 | 979 | 1,499 | 1,291 | 1,158 | 1,513 | 1,338 | 1,324 | 1,354 | 1,403 | 979 | 1,329 | 1,242 | 1,162 | 1,106 | 1,131 |
| Au Production in Cu Concentrate (RMB M) | 24 | 87 | 120 | 104 | 84 | 125 | 115 | 114 | 123 | 130 | 91 | 131 | 89 | 97 | 92 | 107 |
| Ag Production in Cu Concentrate (RMB M) | 22 | 60 | 129 | 117 | 108 | 142 | 115 | 122 | 130 | 145 | 96 | 116 | 110 | 114 | 127 | 118 |
| Mo Production in Mo Concentrate (RMB M) | 30 | 194 | 328 | 281 | 313 | 341 | 207 | 181 | 202 | 286 | 338 | 136 | 150 | 298 | 304 | 216 |
| Pb Production in Pb Concentrate (RMB M) | 88 | 46 | | | | | | | | | | | | | | |
| Ag Production in Pb Concentrate (RMB M) | 15 | 41 | | | | | | | | | | | | | | |
| **Total Sales Revenue (RMB M)** | **533** | **1,407** | **2,077** | **1,793** | **1,662** | **2,121** | **1,775** | **1,740** | **1,808** | **1,963** | **1,503** | **1,711** | **1,592** | **1,672** | **1,629** | **1,573** |
| **Total Sales Revenue (US$ M)** | **79** | **208** | **306** | **264** | **245** | **313** | **262** | **257** | **267** | **290** | **222** | **252** | **235** | **247** | **240** | **232** |
| Sales Tax 10% of VAT (RMB M) | 6 | 14 | 23 | 20 | 18 | 25 | 20 | 19 | 21 | 25 | 18 | 21 | 19 | 20 | 19 | 18 |
| Cu Concentrate Transportation Credit (RMB M) [(1)] | 2 | 5 | 7 | 6 | 5 | 7 | 6 | 6 | 6 | 7 | 5 | 6 | 6 | 6 | 5 | 5 |
| **Income after Sales Tax (RMB M)** | **529** | **1,398** | **2,060** | **1,779** | **1,650** | **2,103** | **1,762** | **1,728** | **1,793** | **1,946** | **1,489** | **1,697** | **1,579** | **1,657** | **1,615** | **1,560** |
| **Operating Cost** | | | | | | | | | | | | | | | | |
| Mining Cost (RMB M) | 135 | 385 | 453 | 402 | 439 | 399 | 399 | 399 | 344 | 275 | 261 | 257 | 350 | 350 | 350 | 350 |
| Processing Cost (RMB M) | 85 | 167 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 |
| G&A and Other Cost (RMB M) | 71 | 117 | 155 | 141 | 136 | 160 | 146 | 145 | 147 | 152 | 127 | 144 | 145 | 144 | 141 | 141 |
| **Total Operating Costs (RMB M)** | **290** | **668** | **826** | **761** | **793** | **777** | **763** | **762** | **710** | **646** | **606** | **619** | **713** | **712** | **709** | **709** |
| **Total Operating Costs (US$ M)** | **43** | **99** | **122** | **112** | **117** | **115** | **113** | **112** | **105** | **95** | **89** | **91** | **105** | **105** | **105** | **105** |
| Depreciation and Amortization (RMB M) | 90 | 122 | 173 | 173 | 173 | 173 | 173 | 173 | 173 | 173 | 173 | 167 | 134 | 134 | 134 | 132 |
| Resource Tax @RMB15/t of ore (RMB M) | 17 | 41 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 |
| **Taxable Income (RMB M)** | **132** | **567** | **1007** | **791** | **629** | **1,099** | **772** | **739** | **857** | **1,073** | **656** | **857** | **678** | **757** | **718** | **665** |
| Income Tax @15% (RMB M) | 20 | 85 | 151 | 119 | 94 | 165 | 116 | 111 | 128 | 161 | 98 | 129 | 102 | 114 | 108 | 100 |
| **After Tax Income (RMB M)** | **112** | **482** | **856** | **672** | **535** | **934** | **656** | **628** | **728** | **912** | **558** | **728** | **576** | **643** | **610** | **566** |
| Total Capital Costs (RMB M) | 628 | 557 | | | | | | | | | 234 | 561 | | | | 366 |
| Working Capital (RMB M) | 53 | 55 | 22 | | | | | | | | | | | | | |
| Environmental Bond/Closing Costs (RMB M)[(2)] | 2 | 7 | 7 | 7 | 7 | 7 | | | | | | | | | | |
| VAT Refund (RMB M) | 58 | 30 | | | | | | | | | | | | | | |
| Fixed Asset Remnant Value (RMB M) | | | | | | | | | | | | | | | | |
| **After Tax Cash Flow (RMB M)** | **-422** | **15** | **1001** | **839** | **701** | **1,100** | **829** | **801** | **901** | **1,085** | **497** | **334** | **710** | **777** | **744** | **331** |
| **After Tax Cash Flow (US$ M)** | **-62** | **2** | **148** | **124** | **103** | **162** | **122** | **118** | **133** | **160** | **73** | **49** | **105** | **115** | **110** | **49** |
| Years to Discount at End of 2009 | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 |
| Discount Factor @9% | 0.9578 | 0.8787 | 0.8062 | 0.7396 | 0.6785 | 0.6225 | 0.5711 | 0.5240 | 0.4807 | 0.4410 | 0.4046 | 0.3712 | 0.3405 | 0.3124 | 0.2866 | 0.2630 |
| **Discounted Cash Flow (RMB M)** | **-404** | **13** | **807** | **620** | **476** | **685** | **473** | **420** | **433** | **478** | **201** | **124** | **242** | **243** | **213** | **87** |
| **Discounted Cash Flow (US$ M)** | **-59.6** | **1.9** | **119.0** | **91.5** | **70.2** | **101.0** | **69.8** | **61.9** | **63.9** | **70.6** | **29.7** | **18.3** | **35.7** | **35.8** | **31.5** | **12.9** |

*Notes: (1) A copper concentrate transportation credit of RMB200/t (US$29.50/t) of copper metal in concentrate is provided by the copper concentrate buyer based on the current preliminary sales contract. (2) An environmental bond of RMB35 M (US$5.2 M) was added to the economic analysis by BDASIA, which is used as the closing cost for the Jiama Project.*

## Table 1.9
## Base Case Economic Analysis for the Jiama Project (continued)

| Item | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metal Production** | | | | | | | | | | | | | | | | |
| Cu Production in Cu Concentrate (t) | 29,379 | 21,626 | 21,778 | 21,712 | 21,687 | 22,897 | 21,646 | 21,498 | 19,197 | 24,408 | 23,496 | 26,638 | 20,043 | 15,959 | 6,029 | **772,990** |
| Au Production in Cu Concentrate (kg) | 681 | 439 | 425 | 458 | 446 | 450 | 418 | 452 | 391 | 496 | 493 | 465 | 304 | 221 | 149 | **16,120** |
| Ag Production in Cu Concentrate (t) | 56.21 | 42.11 | 45.26 | 44.66 | 50.01 | 54.55 | 40.49 | 41.49 | 36.00 | 48.90 | 42.90 | 43.47 | 25.32 | 17.97 | 11.46 | **1,364.19** |
| Mo Production in Mo Concentrate (t) | 547 | 819 | 913 | 777 | 626 | 756 | 905 | 1367 | 1646 | 796 | 954 | 710 | 1030 | 1169 | 964 | **28,820** |
| Pb Production in Pb Concentrate (t) | | | | | | | | | | | | | | | | **12,519** |
| Ag Production in Pb Concentrate (t) | | | | | | | | | | | | | | | | **24.84** |
| **Metal Sales Income** | | | | | | | | | | | | | | | | |
| Cu Production in Cu Concentrate (RMB M) | 1,237 | 911 | 917 | 914 | 913 | 964 | 912 | 905 | 808 | 1,028 | 990 | 1,122 | 844 | 672 | 254 | **32,555** |
| Au Production in Cu Concentrate (RMB M) | 113 | 73 | 71 | 76 | 74 | 75 | 69 | 75 | 65 | 82 | 82 | 77 | 50 | 37 | 25 | **2,676** |
| Ag Production in Cu Concentrate (RMB M) | 130 | 98 | 105 | 104 | 116 | 126 | 94 | 96 | 83 | 113 | 99 | 101 | 59 | 42 | 27 | **3,163** |
| Mo Production in Mo Concentrate (RMB M) | 140 | 210 | 234 | 199 | 161 | 194 | 232 | 351 | 422 | 204 | 245 | 182 | 264 | 300 | 247 | **7,390** |
| Pb Production in Pb Concentrate (RMB M) | | | | | | | | | | | | | | | | **134** |
| Ag Production in Pb Concentrate (RMB M) | | | | | | | | | | | | | | | | **56** |
| **Total Sales Revenue (RMB M)** | **1,621** | **1,291** | **1,327** | **1,293** | **1,264** | **1,359** | **1,307** | **1,427** | **1,379** | **1,428** | **1,415** | **1,482** | **1,217** | **1,050** | **552** | **45,973** |
| **Total Sales Revenue (US$ M)** | **239** | **190** | **196** | **191** | **186** | **201** | **193** | **210** | **203** | **211** | **209** | **219** | **180** | **155** | **81** | **6,781** |
| Sales Tax 10% of VAT (RMB M) | 19 | 14 | 15 | 14 | 14 | 15 | 14 | 16 | 16 | 16 | 16 | 17 | 13 | 11 | 6 | **520** |
| Cu Concentrate Transportation Credit (RMB M) | 6 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 3 | 1 | **155** |
| **Income after Sales Tax (RMB M)** | **1,608** | **1,282** | **1,317** | **1,284** | **1,255** | **1,349** | **1,297** | **1,415** | **1,367** | **1,416** | **1,404** | **1,470** | **1,208** | **1,042** | **548** | **45,607** |
| **Operating Cost** | | | | | | | | | | | | | | | | |
| Mining Cost (RMB M) | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 298 | 186 | **105,78** |
| Processing Cost (RMB M) | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 111 | **6,471** |
| G&A and Other Cost (RMB M) | 146 | 127 | 128 | 127 | 126 | 130 | 127 | 130 | 125 | 134 | 132 | 139 | 123 | 106 | 55 | **4,068** |
| **Total Operating Costs (RMB M)** | **714** | **695** | **696** | **695** | **694** | **698** | **695** | **698** | **693** | **702** | **700** | **707** | **691** | **622** | **352** | **21,116** |
| **Total Operating Costs (US$ M)** | **105** | **102** | **103** | **102** | **102** | **103** | **103** | **103** | **102** | **104** | **103** | **104** | **102** | **92** | **52** | **3,114** |
| Depreciation and Amortization (RMB M) | 118 | 118 | 118 | 118 | 118 | 113 | 113 | 113 | 112 | 112 | 112 | 90 | 90 | 90 | 47 | **4,052** |
| Resource Tax @RMB15/t of ore (RMB M) | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 41 | 23 | **1,578** |
| **Taxable Income (RMB M)** | **722** | **415** | **449** | **417** | **389** | **484** | **435** | **551** | **508** | **549** | **538** | **620** | **373** | **290** | **126** | **18,862** |
| Income Tax @15% (RMB M) | 108 | 62 | 67 | 63 | 58 | 73 | 65 | 83 | 76 | 82 | 81 | 93 | 56 | 43 | 19 | **2,829** |
| **After Tax Income (RMB M)** | **614** | **353** | **382** | **354** | **330** | **411** | **370** | **468** | **432** | **466** | **457** | **527** | **317** | **246** | **107** | **16,032** |
| Total Capital Costs (RMB M) | | | | | | 421 | | | | | | | | | | **2,767** |
| Working Capital (RMB M) | | | | | | | | | | | | | -26 | -44 | -59 | |
| Environmental Bond/Closing Costs (RMB M) | | | | | | | | | | | | | | | | **35** |
| VAT Refund (RMB M) | | | | | | | | | | | | | | | | **88** |
| Fixed Asset Remnant Value (RMB M) | | | | | | | | | | | | | | | 107 | **107** |
| **After Tax Cash Flow (RMB M)** | **732** | **471** | **500** | **472** | **449** | **103** | **483** | **581** | **544** | **578** | **569** | **617** | **433** | **380** | **322** | **17,477** |
| **After Tax Cash Flow (US$ M)** | **108** | **69** | **74** | **70** | **66** | **15** | **71** | **86** | **80** | **85** | **84** | **91** | **64** | **56** | **47** | **2,578** |
| Years to Discount at End of 2009 | 16.5 | 17.5 | 18.5 | 19.5 | 20.5 | 21.5 | 22.5 | 23.5 | 24.5 | 25.5 | 26.5 | 27.5 | 28.5 | 29.5 | 30.5 | |
| Discount Factor @9% | 0.2412 | 0.2213 | 0.2031 | 0.1863 | 0.1709 | 0.1568 | 0.1438 | 0.1320 | 0.1211 | 0.1111 | 0.1019 | 0.0935 | 0.0858 | 0.0787 | 0.0722 | |
| **Discounted Cash Flow (RMB M)** | **177** | **104** | **101** | **88** | **77** | **16** | **69** | **77** | **66** | **64** | **58** | **58** | **37** | **30** | **23** | **6,157** |
| **Discounted Cash Flow (US$ M)** | **26.0** | **15.4** | **15.0** | **13.0** | **11.3** | **2.4** | **10.2** | **11.3** | **9.7** | **9.5** | **8.6** | **8.5** | **5.5** | **4.4** | **3.4** | **908.1** |

Based on the assumptions listed above, the Jiama Project had a total after-tax discounted cash flow of RMB6,157M (US$908.1 M) as of December 31, 2009. Subtracting the debt of approximately RMB888 M (US$131.0 M) at December 31, 2009, the after-tax NPV of the Jiama Project as of December 31, 2009 was RMB5,269 M (US$777.2 M). The payback period to recover all the capital investment for the Jiama Project is approximately 5.2 years starting from January 1, 2010.

Sensitivity analyses indicate that the NPV of the Jiama Project is very sensitive to variations in metal prices and processing metal recoveries, moderately sensitive to variations in operating costs, and less sensitive to variations in capital costs.

## 1.9 Environmental, Occupational Health and Safety Issues

An environmental permit was issued for the construction phase of the Jiama Project by the Ministry of Environment Protection of China in Beijing in September 2008, and an environmental assessment for the Project will be produced by government authorities following review by an expert panel around September 2010.

Mitigation measures are being put in place to ensure environmental and social risks are minimized and regulatory environmental requirements are satisfied. A soil and water conservation plan has been approved and is being implemented. The Project is being developed as a zero discharge site and has a current water permit for top-up water, which was granted in October 2008. The flotation tailings will be dewatered in a press filter facility above the plant. These dewatered, low-moisture tailings will be stored in a TSF and stacked behind and above the tailings dam in a valley fill design. The filtrate, i.e., water from filtration will be sent back to the plant and reused in the process.

The Jiama Project has a policy of social responsibility towards the local community, with a focus on providing assistance and contributing towards social development, through financially supporting local economic development, education, employment, training initiatives, local transport, communications, drinking water supply, and other social initiatives.

The community has, in general, welcomed the opportunity for employment and other cash streams introduced into the area as a result of the mine development and has participated in ongoing dialogue with both Huatailong and the local government concerning the development and operation of the mine, potential environmental impacts and their management, and the scope and nature of community benefits to be generated by the development. Over RMB 50 M (US$ 7.4 M) has been expended to date by Huatailong through the implementation of its community development plan.

Huatailong has already employed approximately 26,000 days of contracted local labor at a cost of around RMB20 M (US$2.9 M) and intends to employ some 125 local people in the workforce.

Huatailong seeks to conduct its operations in accordance with the national safety standards and has a health and safety management system in place.

## 1.10 Conclusions and Recommendation

The Jiama deposit is a large copper-polymetallic deposit with well-defined mineral resources and ore reserves. The currently defined ore reserve for the deposit is sufficient to support a production at a rate of 12,000 tpd or 3.6 Mtpa for approximately 30 years. In addition, there is a large defined inferred resource, and the additional exploration potential is also very good. The currently defined mineral resources and ore reserves will very likely be increased in the future by additional exploration work.

The extraction of the I-1 mineralized body, the primary mineralized body in the Jiama deposit, requires the use of both open-pit and underground mining methods. BDASIA considers the mine design generally appropriate. However, there is a degree of uncertainty with the production targets during the ramp-up period; and further detailed planning, optimization, and detailed geotechnical assessment would assist in reducing overall risk of the mine plan. The schedule is susceptible to interruptions of the supply of power. The economics of the two open pits are not optimum, but project goals such as early production and the need for waste as a platform for the underground mine access development, justify the selection of the pit size, particularly the Tongqianshan pit.

Both the copper-lead ore and copper-molybdenum ore appear to be fairly typical and relatively simple to treat. It is expected that the concentrates of copper, lead and, molybdenum could be produced as indicated by the testwork and outlined in the life-of-mine production forecast (Table 1.4).

To ensure uninterrupted production, two aspects specific to this operation should be given a high degree of attention. They involve process water and movement of the tails from the plant to the final tailings disposal site:

- Fresh water is scarce in the area, and the process water will have to be recovered, treated, and recycled.

- The thickened tails will have to be pumped from the thickeners at a MSL elevation of around 3,980 m to a filtering facility at a 4,380-m MSL elevation, the water returned to process, and the filtered cake (tailings) transported by a conveyor belt and deposited in the final tailings disposal site. Any malfunction of this system will cause the shutdown of the plant and loss of production.

The following are BDASIA's recommendations for the Jiama Project:

***Exploration***

Further in-fill drilling and step-out drilling are likely to significantly increase the currently defined mineral resources and ore reserves for the Jiama Project. BDASIA, however, does not consider additional drilling a high priority task at the current stage of project development as the defined ore reserves are sufficient to support the mining operation for approximately 30 years at the planned production rate of 12,000 tpd or 3.6 Mtpa. If mining operations over the next several years prove to be successful, Huatailong should consider increasing the currently planned production capacity of the project, and additional drilling to increase the mineral resources and ore reserves of the project may become necessary. Cost for the additional drilling could range from less than RMB5 M (US$0.74 M) to more than RMB20 M (US$2.9 M).

***Open-pit Mining***

Preliminary assessment of slope stability has been carried out on both the Tongqianshan and Niumatang pits, and it is recommended that a more detailed geotechnical assessment be carried out on the pit walls, particularly for the larger Niumatang open pit to better define the appropriate slope angle for the various walls of the pit.

Within the planned Tongqianshan open pit, there has been some localized extraction of ore by previous underground mining. The Changsha Institute has noted that these mining areas can create a risk to the open-pit mining operation and recommended that the Jiama Project take measures to protect the open-pit operation with procedures to identify these voids within the mining area as the open pit progresses.

The optimization analysis for the Niumatang pit did not consider the marginal cost of mining the ore zones within the open pit by underground mining. The overall open-pit unit mining costs for the Niumatang pit are higher than those for the underground mine. BDASIA recommends that further optimization of the mine plan be carried out to maximize the profitability of ore extraction by better defining the boundary between the open-pit and underground mining methods.

***Underground Mining***

Given the quality of the orebody and adjacent rocks, BDASIA recommends that the stope dimensions within the zone below the 4,550-m level be geotechnically reviewed to determine if stope sizes can be increased without significantly affecting the production risk. Overall, BDASIA considers that further optimization of the mine design is warranted and has the potential to improve the profitability of the underground mine.

The recommendations mode for both the open-pit mining and underground mining should generally be considered as part of routine technical work for the mining operation, and should not cost the project significantly more money. The optimizations discussed are very likely to result in some cost savings for the project.

***Processing***

Additional testwork aimed to design and confirm the process water treatment – its recycling and effect on concentrate grades and recoveries – is strongly recommended. The tests should be conducted on samples representing the mill feed for years 1, 2, 3, and 4 if at all possible. The final, locked-cycle tests should be carried out in duplicate. The cost for the additional test work can be ranged from RMB0.4 M (US$0.059 M) to RMB1.5 M (US$0.22 M).

# 2.0 INTRODUCTION

China Gold International is a Canadian mining company whose shares are listed on the TSX with a trading symbol CGG. China Gold Group HK currently owns approximately 39% of the listed shares of the Company and is the largest shareholder.

The Company proposes to prepare a prospectus to be issued in support of an IPO for a listing on the main board of the SEHK and to raise capital for exploration, project development, and acquisition. Citigroup Global Markets Asia Limited ("Citigroup") is the Company's sponsor for the IPO.

The Jiama Project currently under construction in Metrorkongka County, Tibet Autonomous Region, China, will be injected into China Gold International during the IPO process. The Jiama Project is currently owned and operated by Huatailong, which is wholly owned by a JV company between China Gold Group HK (51%) and Rapid Result (49%), a company registered in the British Virgin Islands ("BVI").

The Company engaged BDASIA, a wholly owned subsidiary of Behre Dolbear & Company, Inc. ("Behre Dolbear"), as their independent technical advisor to undertake an independent technical review of the Jiama Project and to prepare an ITR in connection with the Company's IPO on the SEHK. This BDASIA ITR is intended to be included in the Company's IPO prospectus and in the Company's information circular for shareholder approval of the Jiama transaction. This ITR will also be filed as a technical report in Canada pursuant to applicable securities reporting requirements.

This ITR has been prepared in accordance with the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (the "Listing Rules"). Mineral resources and ore reserves of the Jiama Project have been reviewed in accordance with the Australasian JORC Code. As China Gold International is a public company listed on the TSX in Canada, mineral resources and ore reserves reported under the Australasian JORC Code have also been reconciled with mineral resources and mineral reserves under the CIM Standards. The report format follows the reporting requirements under Canadian NI 43-101.

BDASIA's project team for this technical review consists of senior-level professionals from Behre Dolbear's offices in Denver, Colorado in the United States, Sydney in Australia, and London in the United Kingdom. Behre Dolbear personnel contributing to the study and to this ITR include:

- **Dr. Qingping Deng (B.S., M.S., and Ph.D.),** a senior associate and former president of BDASIA, was BDASIA's **Project Manager** and **Project Geologist** for this technical review. Dr. Deng is a geologist with more than 26 years of professional experience in the areas of exploration, deposit modeling and mine planning, estimation of mineral resources and ore reserves, geostatistics, cash-flow analysis, project evaluation/valuation, and feasibility studies in North, Central and South America, Asia, Australia, Europe, and Africa. Dr. Deng is a Certified Professional Geologist with the American Institute of Professional Geologists, a Qualified Professional Member of Mining and Metallurgical Society of America, and a Registered Member of The Society of Mining, Metallurgy, Exploration, Inc. ("SME") and meets all the requirements for "Competent Person" as defined in the 2004 Australasian JORC Code and all the requirements for "Qualified Person" as defined in Canadian NI 43-101. In recent years, he has managed a number of ITR studies for filling with SEHK and other securities exchanges. Dr. Deng is fluent in both English and Chinese. He was the president and chairman of the board of directors of BDASIA before June 30, 2010.

- **Mr. Peter Ingham (B.S. and M.S.),** general manager mining of Behre Dolbear's Sydney office, was BDASIA's **Project Mining Engineer** for this review. Mr. Ingham has over 30 years of professional experience in the mining industry in Europe, Africa, Australia, and Asia. His experience includes operational expertise in operations management, mining contract management, project assessment and acquisition, operational audits and trouble-shooting, and tenement and title issues. He is experienced in a range of commodities, primarily copper, gold, and platinum, in both surface and underground mining. Mr. Ingham is a Fellow of the Australasian Institute of Mining and Metallurgy and a Member of Institute of Materials, Minerals and Mining. He meets all the requirements for "Qualified Person" as defined in Canadian NI 43-101.

- **Mr. Vuko Lepetic (B.S. and M.S.),** a senior associate of Behre Dolbear's London office, was BDASIA's **Project Metallurgist**. Mr. Lepetic has over 30 years of worldwide experience in mineral processing and metallurgy. He has worked with and has extensive knowledge of processes employed and products produced by Huatailong. Mr. Lepetic holds patents for stibnite and cassiterite flotation (both industrially employed), as well as records of invention for the processing of iron, lead, and zinc oxide minerals, rare earths, and phosphates. Mr. Lepetic is a Qualified Professional Member of the Mining and Metallurgical Society of America and meets all the requirements for "Qualified Person" as defined in Canadian NI 43-101.

- **Ms. Janet Epps (B.S. and M.S.),** a senior associate of Behre Dolbear's Sydney, Australia office, was BDASIA's **Project Environmental and Occupational Health and Safety Specialist**. She has over 30 years experience in environmental and community issues management, sustainability, policy development, and regulatory consultancy services. Ms. Epps has worked extensively with the private sector, government and the United Nations, the World Bank, the IFC, and the Multilateral Investment Guarantee Agency ("MIGA"), as well as with the mining industry. She has provided policy advice to governments of developing countries on designated projects and contributed toward sustainable development and environmental management strategies. She has completed assignments in Australasia, the Pacific, Asia, the Middle East, the CIS countries, Africa, Eastern Europe, South America, and the Caribbean. Ms. Epps is a Fellow of the Australasian Institute of Mining and Metallurgy and meets all the requirements for "Qualified Person" as defined in Canadian NI 43-101.

- **Mr. Bernard J. Guarnera (B.S. and M.S.),** president and chairman of the Behre Dolbear Group Inc., the parent company of Behre Dolbear & Company, Inc., was BDASIA's **Project Advisor**. He is a Certified Mineral Appraiser, with extensive experience in the valuation of mineral properties and mining companies. He is a registered Professional Engineer, a Registered Professional Geologist, and a Chartered Professional (Geology) of the Australasian Institute of Mining and Metallurgy. Mr. Guarnera has over 30 years of professional experience, and his career has included senior-level positions in exploration and development at a number of major U. S. natural resource companies. Mr. Guarnera meets all the requirements for "Competent Person" in Australia and "Qualified Person" in Canada.

BDASIA's project team, with the exception of Mr. Guarnera, has traveled to China to visit the Jiama Project site. Dr. Deng visited the Jiama Project from August 16 to August 19, 2009. Dr. Deng, Messrs Ingham and Lepetic, and Ms. Epps visited the Jiama Project from December 15 to December 19, 2009. During BDASIA's visit, discussions were held with technical and managerial staff at the mine and plant sites. Status of current mine construction and life-of-mine production schedules, budgets, and forecasts were reviewed.

The sources of information for this ITR includes unpublished technical reports for the Jiama Project prepared by the Mineral Resource Research Institute (the "Resource Institute") of the Chinese Academy of Geological Sciences in Beijing, China in November 2009 and June 2010 and the Changsha Institute in December 2009 and July 2010, technical and financial information provided by Huatailong, and BDASIA professionals' site visits to the Jiama Project and interviews with the Jiama Project management and technical personnel as well as outside consultants. The Resource Institute possesses a Class A exploration license for solid minerals issued by the Ministry of Land and Resources of China and has been engaged by Huatailong to manage the exploration work and resource estimation of the Jiama Project. The Changsha Institute has been engaged by Huatailong to conduct the feasibility study and project design for the Jiama Project.

This BDASIA ITR contains forecasts and projections prepared by BDASIA based on information provided by Huatailong. BDASIA's assessment of the projected production schedules, capital and operating costs, and project economics is based on technical reviews of project data and project site visits.

The metric system is used throughout this ITR. The currency used is the Chinese Renminbi ("RMB") or Yuan and/or the United States dollar ("US$"). The exchange rate used in the ITR is RMB6.78 for US$1.00, the rate of the People's Bank of China prevailing on June 30, 2010.

## 3.0 RELIANCE ON OTHER EXPERTS

BDASIA has relied on certain technical and financial information for the Jiama Project prepared by the Company, Huatailong, the Resource Institute, and the Changsha Institute.

## 4.0 PROPERTY DESCRIPTION AND LOCATION

The Jiama Project is located in Metrorkongka County, Tibet Autonomous Region in China (Figure 4.1), approximately 55 linear km east-northeast of Lhasa, the capital city of Tibet. Lhasa has a population of approximately 400,000 and is the political, economic, cultural, and transport center in Tibet.

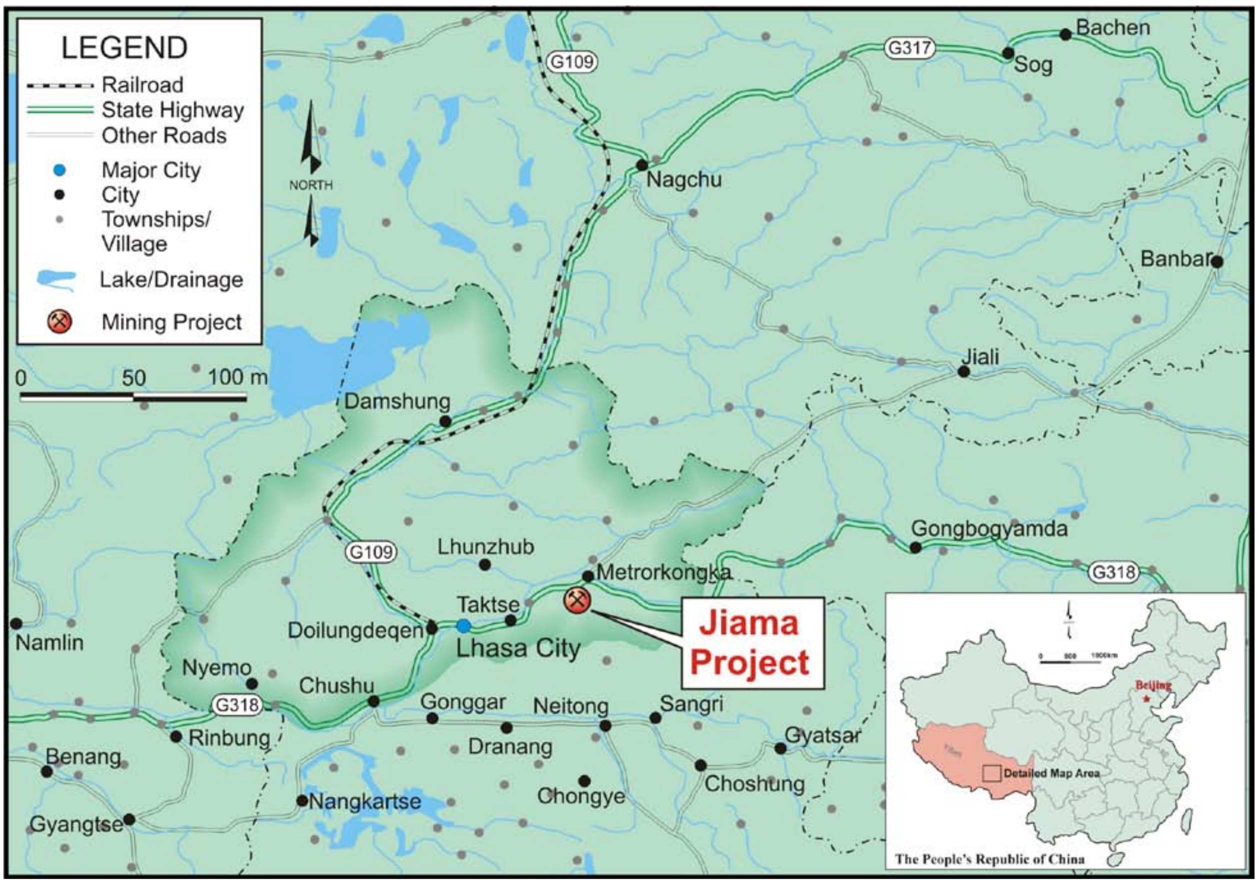



Figure 4.1 Location of the Jiama Project

The Jiama Project is currently owned and operated by Tibet Huatailong Mining Development Company Limited, which is indirectly owned by China Gold Group HK (51%) and Rapid Result Investments Limited (49%). The Jiama Project currently holds two permits for mining rights and two permits for exploration rights.

The Jiama mining license, with an area of 2.1599 $km^2$ for the Jiama Project, is held by Huatailong; the license is valid until July 2013 and extendable thereafter. The license number is 5400000820009, which was issued by the Land and Resource Department of Tibet Autonomous Region. The horizontal license boundary is defined by 18 corner points, and its vertical boundary is between the MSL elevations of 4,100 m and 5,300 m. The production rate specified on the mining license is 2.0 Mtpa or approximately 6,000 tpd based on 330 working days per annum. This mining license was consolidated in 2007 from four mining licenses held by different operators in accordance with the Chinese government's consolidation policy for mining properties.

The Niumatang mining license, with an area of 0.7352 $km^2$ and located at the northwest side of the Jiama mining license, is for the open pit mining portion of the Jiama Project. The license is valid until July 2015 and extendable thereafter. The license number is C5400002010073210070276, which was issued by the Land and Resource Department of Tibet Autonomous Region. The horizontal license boundary is defined by 11 corner points, and its vertical boundary is between the MSL elevations of 4,100 m and 5,000 m. The production rate specified on the mining license is 0.9 Mtpa or approximately 2,730 tpd based on 330 working days per annum. BDASIA notes that the permitted production rate is lower than the 6,000 tpd production rate planned for the Niumatang open pit mining operation and Huatailong will need to revise the mining license to the appropriate production rate.

The Jiama exploration license surrounding two mining licenses, with an area of 76.93 $km^2$ (excluding the Jiama mining license area but including the Niumatang mining license area), is also held by Huatailong. The license number is T54520080702010972, which is issued by the Land and Resource Department of Tibet. This license expires on October 3, 2010 and is extendable thereafter. The license area is defined by six corner points and is approximately 8-km to 11-km long in the east-west direction and 6-km to 11-km wide in the north-south direction. The license area is located within the longitudes from 91°43'06"E to 91°50'00"E and the latitudes from 29°37'49"N to 29°43'53"N.

All the currently defined mineral resources for the Jiama Project are covered by the Jiama/Niumatang mining licenses and the Jiama exploration license.

In addition to the Jiama/Niumatang mining licenses and Jiama exploration license, Huatailong also holds the exploration license for the Bayi Ranch area located southwest of the Jiama mining/exploration licenses. This license has an area of 66.41 $km^2$ and was issued by the Land and Resource Department of Tibet. The license number is T54520080702010979. The license expires on October 3, 2010 and is extendable thereafter.

The two mining licenses and two exploration licenses for the Jiama Project cover a total area of 145.50 $km^2$.

Figure 4.2 shows the location of the two mining licenses and the two exploration licenses currently held by Huatailong.

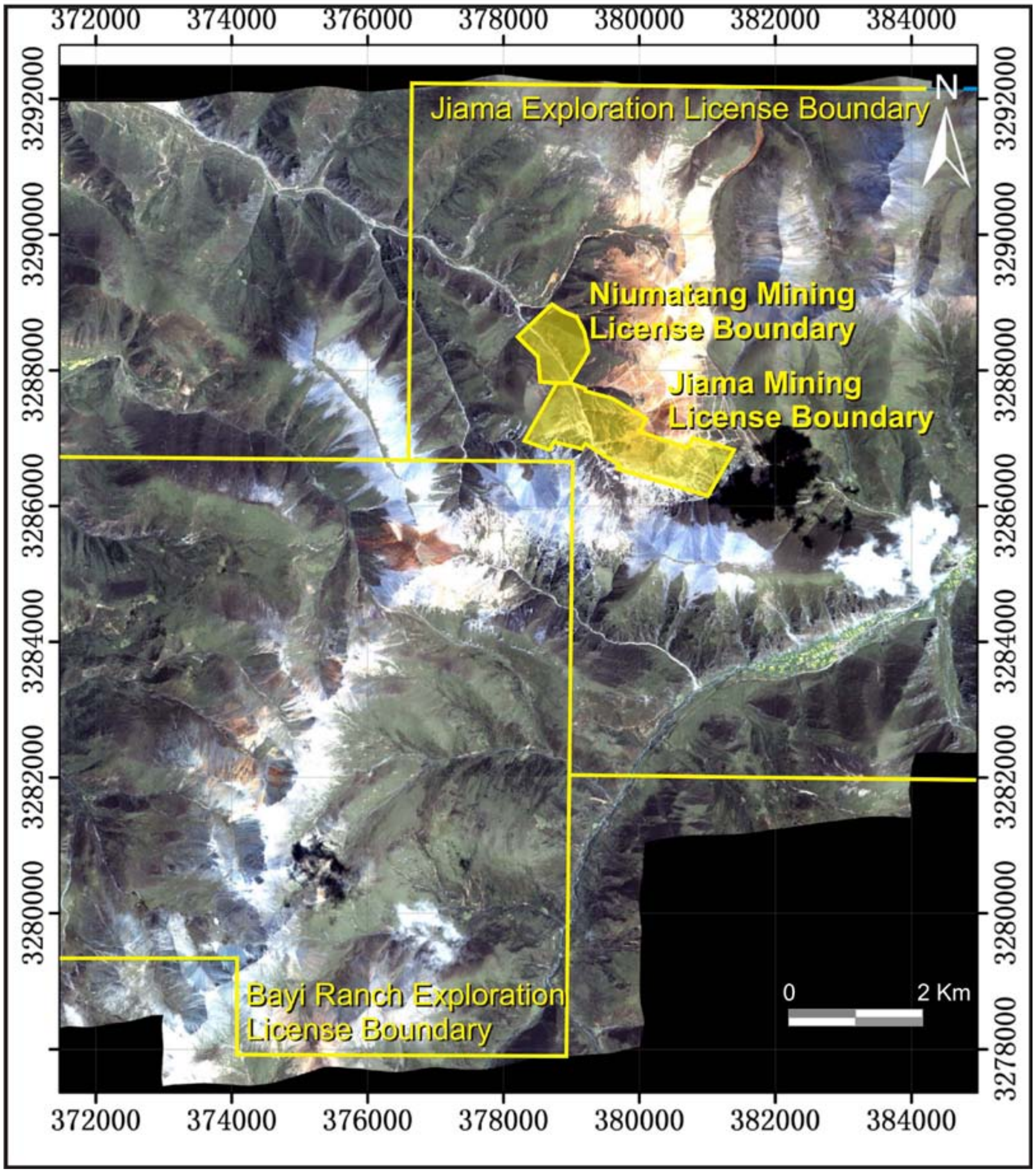



Figure 4.2 Location of the mining/exploration licenses held by Huatailong

BDASIA has reviewed the copies of the mining licenses and exploration licenses provided by Huatailong and considers that they are valid and typical of mining and exploration licenses issued by relevant governmental agencies in China.

Mining operation for the Jiama Project is subject to a resource tax of RMB15.00 (US$2.21) per tonne of the processed ore and a resource compensation levy of 2% for the sales revenue from the operation. Copper, molybdenum, lead, zinc, and silver produced from the mine are subjected to a VAT of 17%. Gold production is exempted from the VAT in China. The Jiama Project is also subject to a city-maintenance-and-construction tax of 7% of the VAT and an education tax of 3% of the VAT. The corporate income tax rate for Huatailong is 15%.

To renew an exploration license, all exploration permit fees must be paid, and the minimum exploration expenditure should have been made for the area designated under the exploration permit. To renew a mining permit, all mining permit fees, resource taxes, and resource compensation levies must be paid to the state for the area designated under the mining permit. The renewal application should be submitted to the relevant state or provincial authorities at least 30 days before the expiration of a permit.

Huatailong has secured sufficient surface land areas through short-term and long-term leases for the planned mining operation and expansion, including lands for the open pits, waste dumps, accesses to the underground mine, processing plant, TSFs, office buildings, mine camp, and other mine infrastructural items.

Huatailong has obtained all necessary permits and licenses to conduct open-pit and underground mining operations and processing within the current Jiama and Niumatang mining license areas. However, the production rate of the Niumatang mining license will need be increased to be consistent with the planned production rate.

In order to retain the Jiama property, Huatailong is obligated to conduct all mining and processing activities at the Jiama Project site in accordance with the state and local laws and regulations and to pay any license fees and taxes to the relevant governmental agencies on a timely basis.

The Jiama Project is required to post an environmental reclamation bond of approximately RMB35 million ("M") (US$5.2 M). A first payment of RMB1.5 M (US$ 0.22 M) was made in 2009, and the remaining amount will be paid in five installments in the 5 years following the commencement of Phase I production of the Jiama Project.

Environmental liabilities at the Jiama Project area are mostly related to the mining operation by the four previous operators before the project consolidation in 2007. The original underground mine workings as well as three smaller processing plants with processing capacities ranging from 300 tpd to 850 tpd that existed before consolidation were abandoned, and the processing plants were dismantled and reclaimed by Huatailong. The associated TSFs will also be reclaimed by Huatailong.

Figure 4.3 shows the Jiama mining and exploration license boundaries, the two planned open pits (the smaller Tongqianshan Pit and the larger Niumatang pit) and waste dumps, the underground mine, processing facilities, the TSF, and other infrastructure items of the Jiama Project.

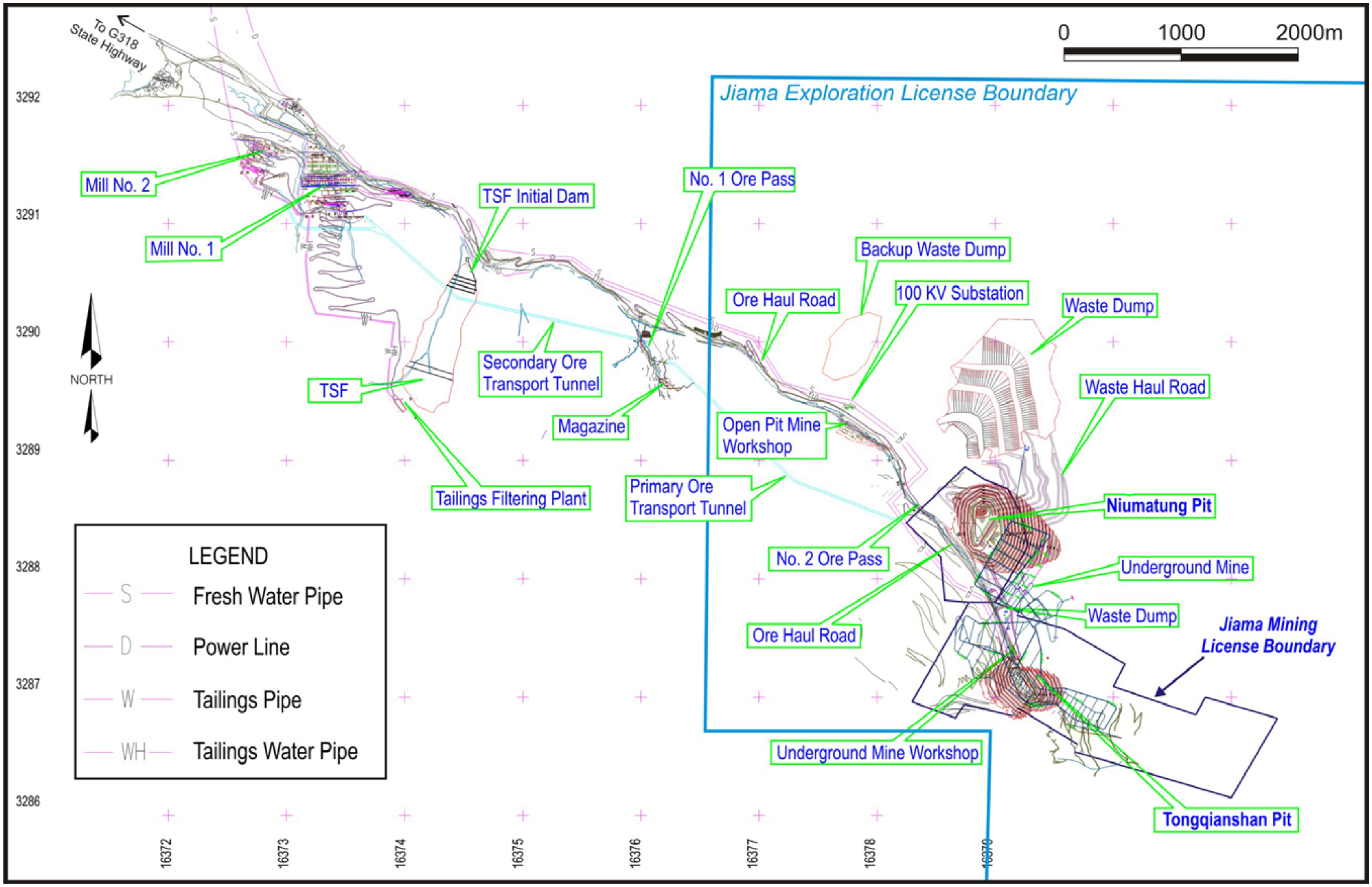



Figure 4.3 Jiama Project site map

# 5.0 PHYSIOGRAPHY, CLIMATE, ACCESSIBILITY, LOCAL RESOURCES AND INFRASTRUCTURE

The Jiama Project is located in a mountainous area with MSL elevations ranging from 4,350 m to 5,410 m in the Tibet Plateau. The topography in the area is characterized by steep slopes, high elevation, and large elevation differences. About half of the surface area at Jiama is covered by shrub bushes and grasses, and other half of the surface area is covered by soil and fallen rocks formed from freezing, erosion, and weathering. The soil and fallen rock cover is generally only a few meters thick.

The area has a typical continental plateau climate. The summers (also the rainy season) are relatively humid and cool, and the winters are dry and extremely cold. The temperature difference between day and night is large. Winter conditions prevail from October through March. July and August are the only frost-free months in any year. Average annual precipitation is approximately 500 mm, which mostly occurs as rains from June to September.

There are some sparsely-populated Tibetan inhabitants within the project area, with most of the land being used for low-intensity yak and sheep grazing. The primary crop in the area is highland barley.

Access to the Jiama Project area is good. A newly-paved access road of approximately 8 km connects the project site office and processing plant to the Sichuan-Tibet Highway (G318) in the north. The distance from the turning point to Lhasa in the west is approximately 60 km, and the distance to the Metrorkongka county seat in the east is approximately 8 km. Lhasa is connected to other locations in China by railroad, highways, and air. There are a number of daily flights from Lhasa to Chengdu, Beijing, and other cities in China. Concentrates produced from the Jiama Project will be trucked to the Lhasa rail station and then shipped by rail to smelter customers in various places in China.

Electricity for mine production at the Jiama Project will be provided by a newly constructed, 110-kV electricity transmission line from the Metrorkongka substation located approximately 20 km north of the project area. Electricity supply in the central Tibet region was generally insufficient for mining operations in the past. The Tibet government has been executing a power-supply development plan for the period from 2006 to 2010. Several new power generation plants will be constructed, and the Central Tibet power grid will be connected to the national power grid in China. Electricity supply will be sufficient for Phase I mine production as well as for the Phase II expansion at Jiama when the development plan is completed. Prior to that, however, the mine could experience power shortages for production. The Jiama Project has been designated as one of the most important projects in Tibet and has been granted priority in electricity supply by the Tibet government.

Although water is scarce in the general area, the project area has obtained sufficient surface water rights to support the planned mining and processing operation. Fresh water for production and the mine camp will be obtained from the Chikang River, which is a tributary of the Lhasa River. Water from the flotation tail thickeners and the tailing filtering system will be recycled for the use in production.

A significant portion of the mining personnel for the Jiama Project came from other China National Gold Group Corporation and/or non-China National Gold Group Corporation mining operations outside Tibet. Huatailong has also recruited a significant number of local Tibetan workers and some of them were being trained outside Tibet for the project during BDASIA's site visit in December 2009.

# 6.0 HISTORY

There were some small-scale historical lead mining activities at the Jiama Project site before the 1950s. Geological work conducted from 1951 to 1990 delineated a 3,600-m long copper-lead-zinc mineralization zone, mostly by surface trenching at the Jiama Project area. Preliminary mineral resource estimation was also conducted. More detailed exploration work was conducted by the No. 6 Geological Brigade ("Brigade 6") of Tibet Geology and Mineral Resource Bureau between 1991 and 1999, when 16 exploration lines with an azimuth of 30° and numbered as Lines 31, 23, 15, 7, 0, 4, 8, 12, 16, 24, 32, 48, 72, 80, and 96 from northwest to southeast were designed to explore the deposit. A total of 31 diamond drill holes ("DDH") with a total drilled length of 10,091 m were drilled during the period, along with the development of 407.5 m of adits and 16,474 cubic meters ("$m^3$") of surface trenches. Twenty-two of the Brigade 6 DDH holes with a total drilled length of 6,518 m and 10 surface trenches with a total sampled length of 349 m were used in current resource estimation as these holes/trenches are located in the defined mineralized zones and contain reasonable-quality assay data.

Based on the Brigade 6 work, four mining licenses within the current Jiama Project mining license boundary were issued to different mining operators and four mining operations were established, including:

- **Lines 15 – 0 Mining License:** The license was issued to the Jiama Township government, which organized the Jiama Township Fupin Development Company Limited to conduct mining activity at Jiama. A 300-tpd concentrating plant was built and mining started in 2004. A total of 14 adits were developed for mining. It was estimated that a total of 49,000 t of ore was mined, with a mining loss of 9,200 t, to the end of June 2006. Mine production after June 2006 is unknown.

- **Lines 0-16 Mining License:** The license was issued to Lhasa Mining Company. Both open-pit mining and underground mining were conducted in the license area by the property owner. Open-pit mining above the MSL elevation of 4,780 m started in 1995, and a total of 10 adits with a level height ranging from 16 m to 40 m between the MSL elevations of 4,606 m and 4,780 were developed before 2006. Mine production to the end of 2005 was estimated at 130,000 t, with mine production since January 2006 unknown.

- **Lines 16-40 Mining License:** The license was issued to Brigade 6. A joint venture company, Tibet Jiama Mining Development Company Limited, between Brigade 6 and Henan Rongye Trading Company Limited was established to conduct the mining operation. Mining started in 2003. A concentrating plant with a processing capacity of 850 tpd was built in 2006. It was estimated that the total mined and lost mineral resources were 109,000 t to the end of June 2006. Production after June 2006 is unknown.

- **Lines 40-80 Mining License:** The license was issued to the original Tibet Huatailong Mining Development Company Limited. No concentrating plant was built for this mining license. Mining started in 2005. The estimated mine production from three mining adits was 80,000 t to June 20, 2006, with an estimated mining loss of 8,900 t. Mine production since June 2006 is unknown.

As the exact total historical mine production figure is unknown, the Resource Institute has conducted a systematic survey of the existing underground adits and mined-out stopes within the above mining license areas, and the volume calculated from the surveyed stopes has been used to deduct the consumed mineral resources for the Jiama Project.

Mining activities by the previous operators were stopped by the Tibet government on April 1, 2007 in the four mining license areas. In accordance with an agreement between the Tibet government and China National Gold Group Corporation, the four mining licenses as well as the exploration licenses in the surrounding areas were consolidated by the reorganized Huatailong in late 2007, with China Gold Group HK as the primary shareholder.

Since acquiring the consolidated mining and exploration licenses, Huatailong conducted an extensive exploration program in 2008, completing 150 DDH holes, with a total drilled length of 50,617 m (including some re-drilled intervals and two abandoned holes with a total drilled length of 198 m that are not included in the assay database for the current resource modeling). The drilling program has significantly expanded the mineral resources of the project. In 2009, as of at the end of October, 40 DDH holes totaling 13,541 m of further in-fill drilling were completed in the proposed open-pit mining area at Niumatang, located at the northwestern side of the defined mineralization zone, and step-out drilling was conducted to the northeast of the mineralized zone. The 2009 drilling has upgraded the confidence level of the defined mineral resources in the Niumatang area and has also further increased the mineral resource inventory of the project. The 2008-2009 drilling results combined with limited historical data constituted the basis for the current resource estimation for the Jiama Project, which is summarized in this ITR.

The new Jiama Project started construction in June 2008. The original underground mine workings as well as three smaller processing plants with processing capacities ranging from 300 tpd to 850 tpd that existed before consolidation were abandoned, and the processing plants were dismantled and reclaimed by Huatailong. The associated TSFs will also be reclaimed by Huatailong. Because of the significant increase in mineral resources resulting from the additional drilling, the currently proposed mining operation is planned at a much larger scale, with a Phase I production capacity of 6,000 tpd, expanding to 12,000 tpd in Phase II of the project.

During BDASIA's site visit in December 2009, construction of the Phase I, 6,000-tpd flotation processing plant and related TSF was near completion. Pre-production stripping of the smaller Tongqianshan pit was also near completion, and a small ore stockpile mined from the pit was accumulated at the processing plant site. Pre-production stripping for the larger Niumatang pit was initialized, and construction of the primary underground haulage tunnel at a MSL elevation of 4,261 m and the secondary underground ore haulage tunnel at a MSL elevation of 4,087 m was well under way. It was reported by Huatailong that the Phase I concentrator trial production started in July 2010, and commercial Phase I mining and processing operating of the Jiama Project started in September 2010. When it is fully developed, the Jiama Project will become one of the largest copper-polymetallic mining operations in China in terms of ore production rate, total metal production, and mineral resources considered compliant under the Australasian JORC Code and the CIM Standards.

# 7.0 GEOLOGICAL SETTING

## 7.1 Regional Geological Setting

The Tibet Plateau is the youngest orogenic belt in the world. Subduction and collision between the Indian Plate and Eurasian Plate from Late Mesozoic to Cenozoic time, commonly referred to as the Himalayan Orogeny, has created the world's youngest and highest mountain ranges. The complicated tectonic evolution during this period of time as well as during the preceding Yanshanian Orogeny has created a series of near east-west-trending structural zones in the plateau, with associated multiple-stage magmatism and related mineralization (Figure 7.1). From south to north, these structural zones include the Indian Plate (I), the Yalung Tsangpo Suture Zone (YS), the Gangdise-Nianqing Tanggula Terrane (II), the Bangong Lake-Nu River Suture Zone (BS), Qiangtang-Sanjiang Complex Terrane (III), and the Jinshan River Suture Zone (JS). The Gangdise-Nianqing Tanggula Terrane is subdivided, from south to north, into the Gangdise Yanshanian-Early Himalayan epicontinental volcanic arc ($II_1$), Nianqing Tanggula faulted dome ($II_2$), Cuoqin-Namucuo Late Yanshanian back-arc basin ($II_3$), and Bange-Jiali Early Yanshanian epicontinental volcanic arc ($II_4$).

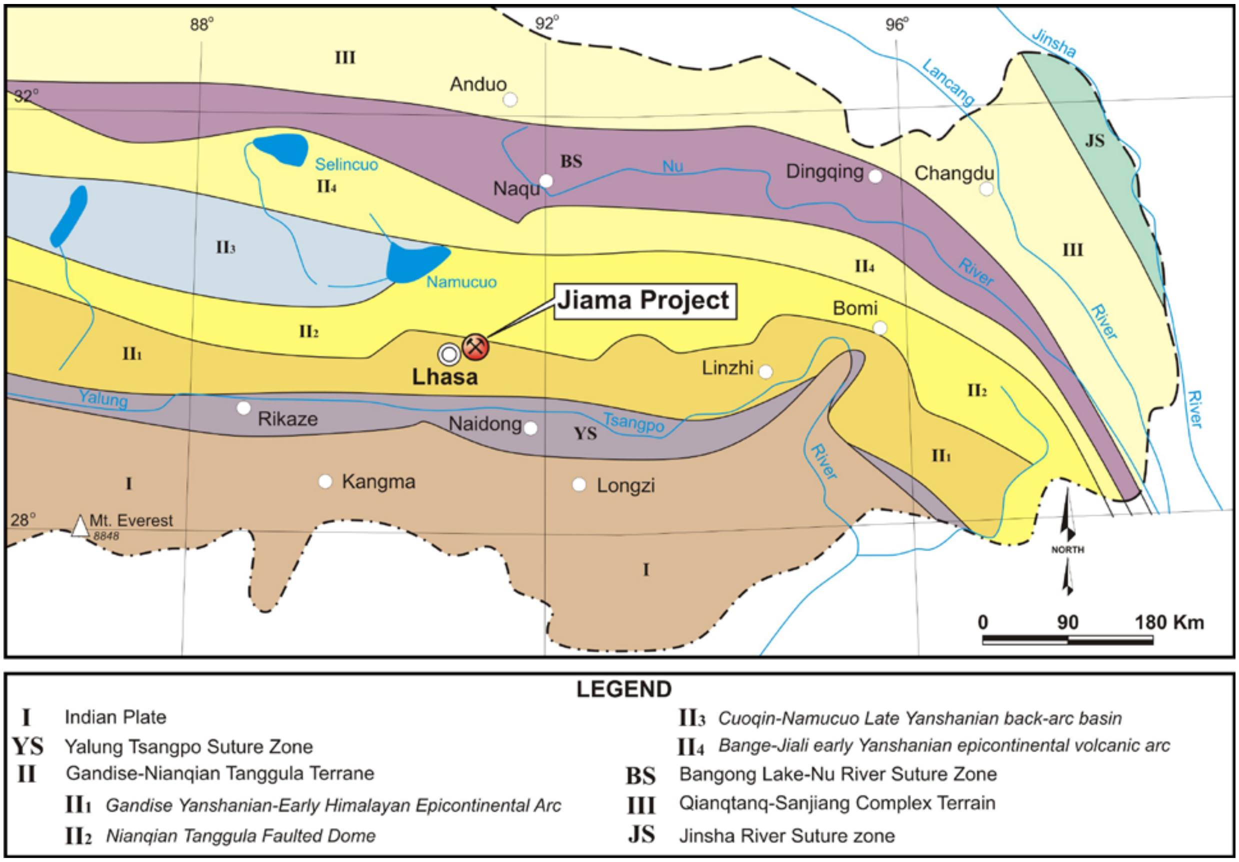



Figure 7.1 Tectonic Setting of the Jiama Project

## 7.2 Local Geology

The Jiama Project is located in the central-south portion of the Gangdise-Nianqing Tanggula Terrane (Figure 7.1). Stratigraphy outcropping in the Jiama Project area consists primarily of passive epicontinental clastic-carbonate rocks, including Upper-Jurassic Duodigou Formation limestones and marbles, Lower-Cretaceous Linbuzong Formation sandstones and slates, and locally, Quaternary colluviums and alluviums (Figure 7.2). Some mafic, intermediate to felsic dikes have been observed on outcrops and in drill holes, but no large intrusive bodies have yet been identified. It is believed, however, that a large granitic intrusive body exists at depth in the area and that it has provided the intense heat source for the metamorphism and also the mineralizing solutions for the copper-polymetallic mineralization. Because of the placement of the granitic intrusion, a large portion of the Duodigou limestones have been metamorphosed to marbles, and the Linbuzong clastic rocks have been largely metamorphosed into hornfels.

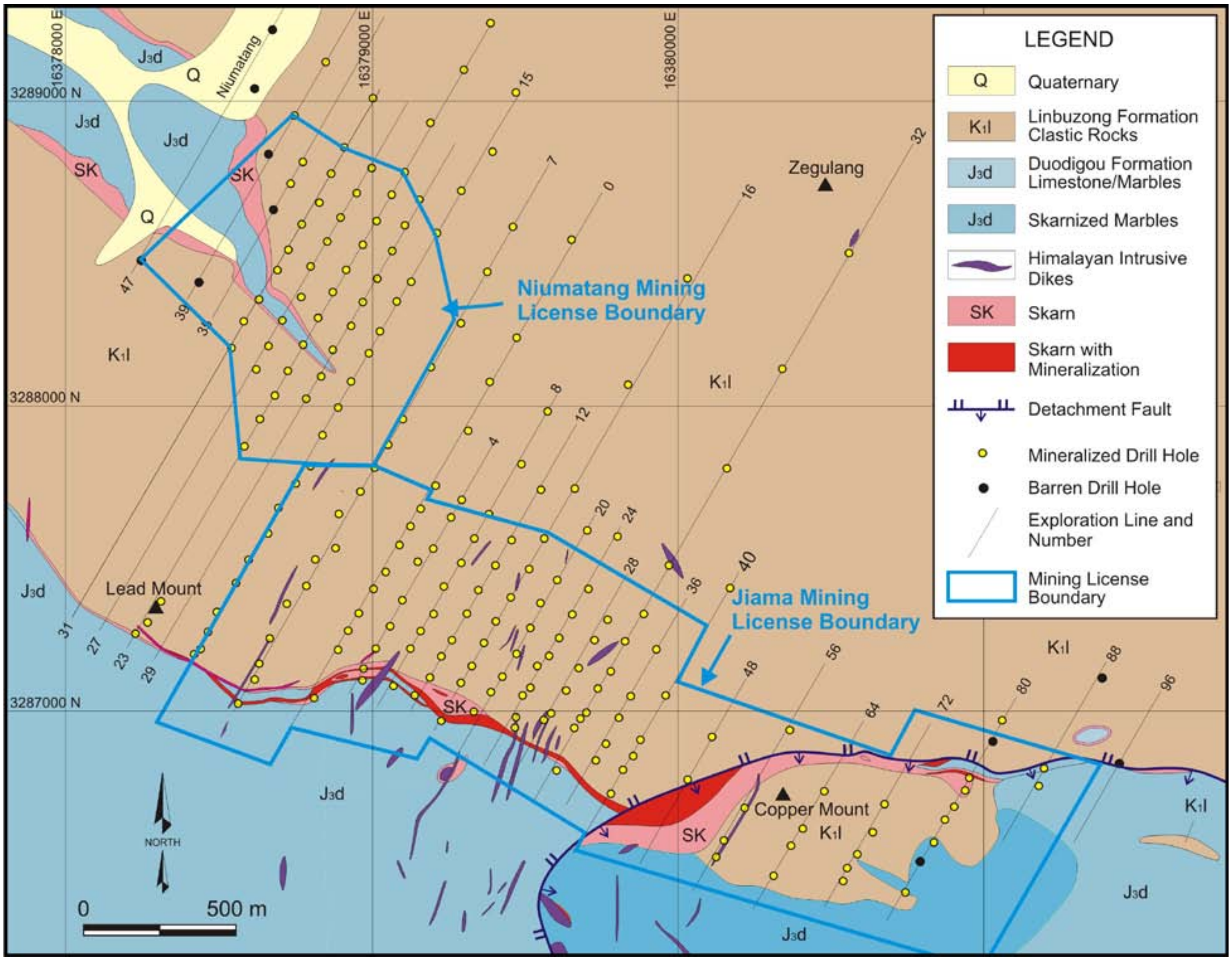



Figure 7.2 Geology and drill holes of the Jiama Project area
(The entire map is within the boundary of the current Jiama exploration license.)

## 7.3 Deposit Geology

Skarns with associated copper-polymetallic mineralization were formed at the contacts of the intrusives and the Duodigou marbles as well as in the interlayer structural zone between the Duodigou marbles and the Linbuzong hornfels. Less intensive copper-polymetallic mineralization was also formed within the Linbuzong hornfels.

Structures in the area consist of thrust and detachment faults as well as associated anticlines and synclines. The interlayer fracture zone between the Duodigou marbles and Linbuzong hornfels could be a detachment fault, as it is steeply-dipping (averaging around 60°) at the upper portion and flatter (averaging around 10°) at the lower portion.

# 8.0 DEPOSIT TYPES

The Jiama deposit is a large stratiform skarn-type copper-polymetallic deposit controlled mostly by an interlayer structural zone between the Duodigou marbles and the Linbuzong hornfels. The mineralized zone measures thousands of meters in both strike and dip directions and is still open in many places. The deposit is likely formed by contact metamorphism and hydrothermal mineralization associated with a granitic intrusion.

Some lower-grade copper-polymetallic mineralization has also been encountered in the overlying Linbuzong hornfels. The hornfels-type mineralization is potentially very large; however, its economic meaning will need to be determined by further drilling and technical studies.

A three-dimensional computer block model has been constructed by BDASIA to model the skarn-type as well as the hornfels-type copper-polymetallic mineralization at Jiama and will be discussed in detail in this ITR.

# 9.0 MINERALIZATION

## 9.1 Skarn-Type Copper-Polymetallic Mineralization

Copper-polymetallic mineralization at Jiama is primarily hosted by skarns distributed along an interlayer structural zone between the Duodigou marbles and the Linbuzong hornfels. This zone is stratiform, tabular, or lenticular in shape and comprises the primary mineralized body (I-1) in the deposit. It strikes west-northwest and dips to the northeast. The upper part of the mineralized body has a steep dip angle, averaging around 60°, whereas the lower portion of the mineralized body is much flatter, with an average dip of around 10°. The I-1 mineralized body is approximately 2,400-m long along the strike direction and 150-m to 1,900-m wide along the dip direction. Its thickness ranges from 2 m to 240 m, averaging 33.24 m. This mineralized body was defined by over 170 drill holes and contains over 97% of the currently defined mineral resources in the deposit (Figure 9.1).

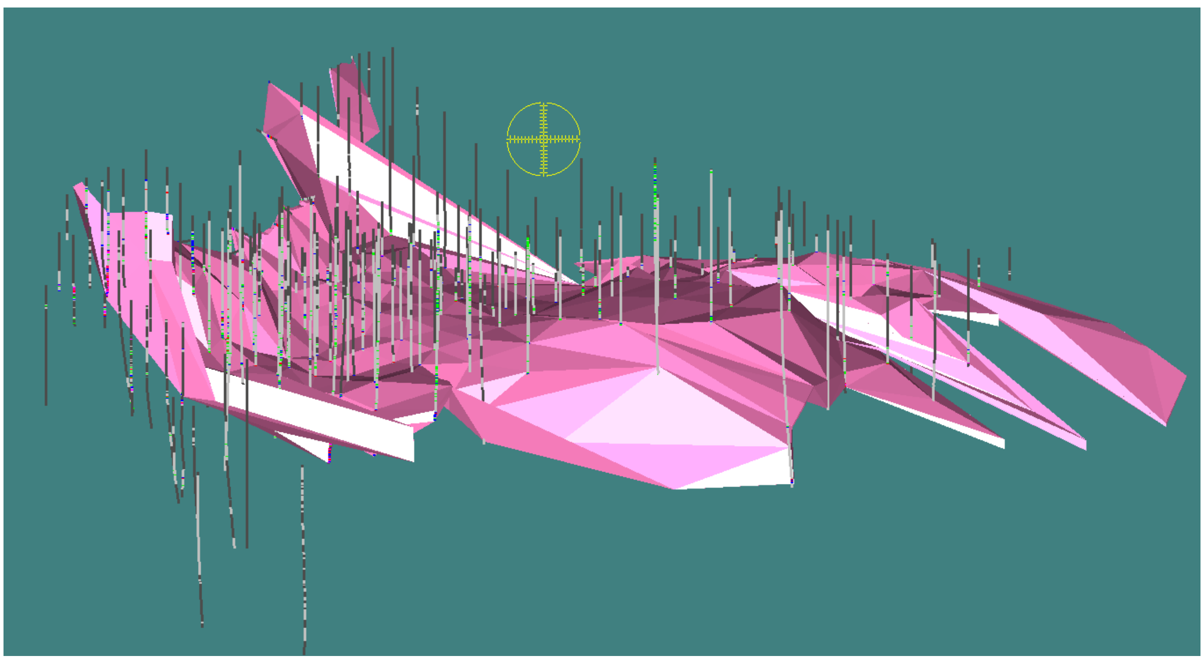


Figure 9.1 3-D view of the I-1 mineralized body for the Jiama Project
(The view is looking at 240° rotated azimuth with a dip angle of -15°. The yellow circle at the upper middle part of the diagram has a diameter of 200 m.)

Two zones within the I-1 mineralized body have generally been well defined by drilling on a 100-m by 100-m grid. The first is the Niumatang area located at the northwestern portion of the mineralized zone between Exploration Lines 15 and 35, which will be the primary target for the open-pit mining operation in the early years of the mine's life. The second is the area between Exploration Lines 0 and 40 and within the current Jiama mining license boundary, which will be the target for an underground mining operation. The mineralized body is still open to the northeast along the dip direction, representing significant additional exploration potential.

Seven other smaller mineralized bodies have also been modeled, but they are generally not well defined by the current drilling data.

The I-2 mineralized body was intersected by nine drill holes between Exploration Lines 4 and 36 and consists of three small discontinuous zones located below the I-1 mineralized body.  The body is hosted by stratiform skarns and is dipping to the northeast.  Thickness of the I-2 mineralized body ranges from 1.5 m to 20.9 m, averaging 14.7 m.

The I-3 to I-8 mineralized bodies are small, thin, mineralized zones located southeast of the I-1 mineralized body between Exploration Lines 56 and 80 and are intersected by two to ten drill holes each.  These mineralized bodies are generally lenticular in shape and generally dip to the northeast.  The average thickness of the zones ranges from 3 m to 10 m.

Copper is the most important economic metal in the deposit.  Other metals of economic value include molybdenum, lead, gold, silver, and zinc.  These metals are distributed differently in the deposits.  In general, the copper grade is higher at the upper and northwest portions and lower in the northeast portion.  Molybdenum seems negatively correlated with copper, with higher grades in the northeast portion of the deposit.  Gold and silver have a distribution pattern similar to that of copper in the deposit.  Lead and zinc are only enriched at the upper part at the southwest of the I-1 mineralized body, which was part of the historic mining targets.  Contents of harmful elements, such as arsenic, antimony, and mercury, are generally low in the deposit and will not create any marketing issues for concentrate produced from the deposit.  Figures 9.2 to 9.4 present the drill hole mineralized interval average metal grade isopachs of the six elements, showing the metal distribution in the Jiama deposit.

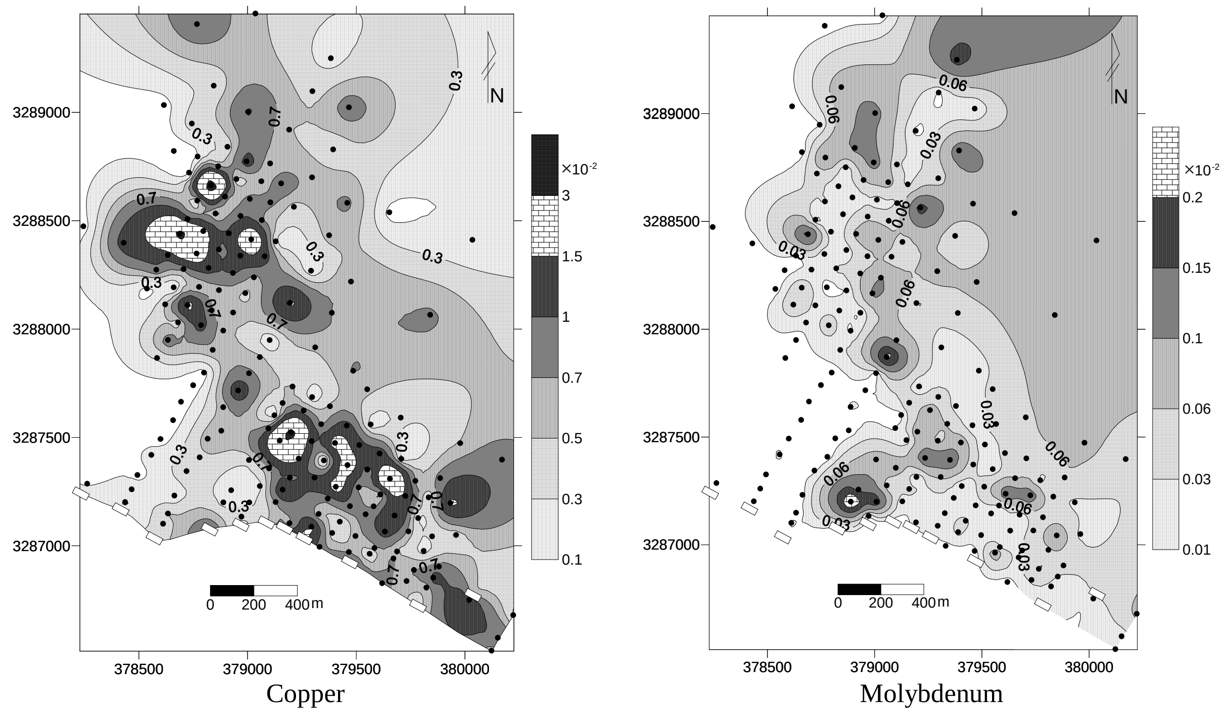
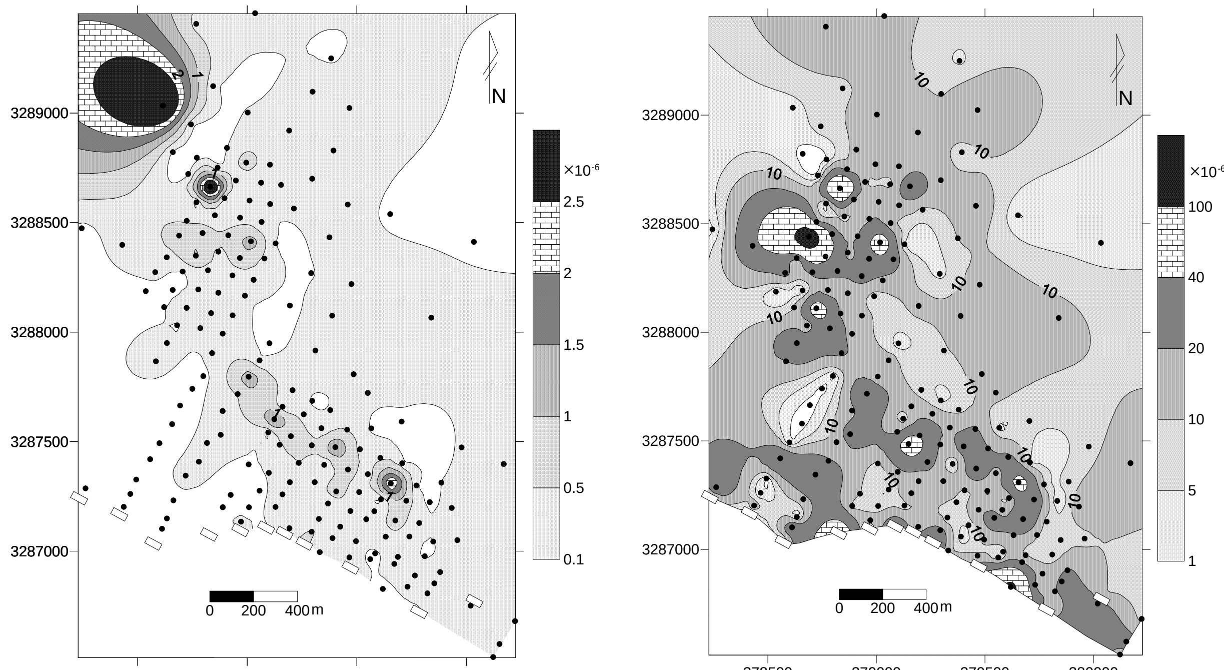
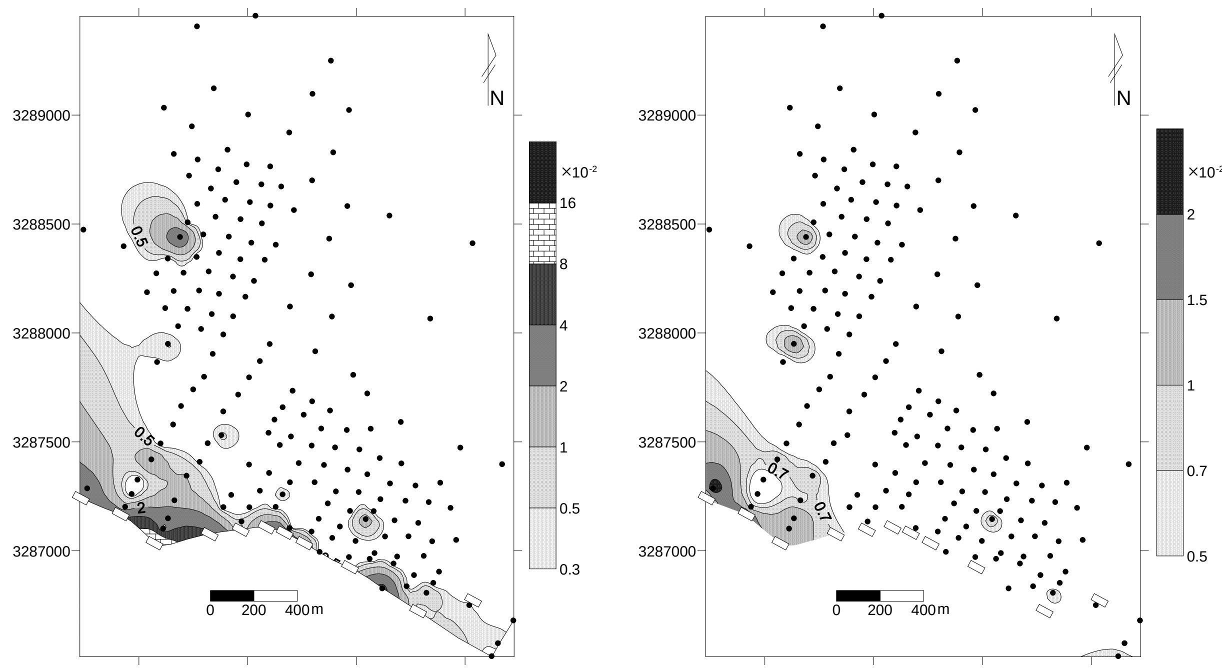



Figure 9.2     Copper and molybdenum grade distribution in the Jiama deposit




Gold Silver

Figure 9.3 Gold and silver grade distribution in the Jiama deposit




Lead Zinc

Figure 9.4 Lead and zinc grade distribution in the Jiama deposit

Metallic minerals in the deposit include chalcopyrite, bornite, molybdenite, tetrahedrite, galena, sphalerite, chalcocite, digenite, covellite, native copper, pyrite, marcasite, pyrrhotite, magnetite, limonite, malachite and azurite.

Nonmetallic minerals include garnet, diopside, wollastonite, tremolite, epidote, quartz, feldspar, biotite, sericite, muscovite, chlorite, calcite, anhydrite, fluorite, and kaolinite. The metallic minerals occur as disseminations, massive aggregates, or as stockworks in the skarns.

Oxidation occurs only at the near-surface portion of the deposit. The majority of the defined mineral resources are in the unoxidized sulfide zone.

BDASIA has reviewed the interpretation of the geology and copper-polymetallic mineralization of the Jiama Project by Huatailong and the Resource Institute geologists and considers that the interpretation is reasonable.

### 9.2 Hornfels-Type Copper-Polymetallic Mineralization

Compared with the skarn-type copper-polymetallic mineralization, hornfels-type copper-polymetallic mineralization at Jiama is generally lower in metal grades and less well understood as it was only defined by 13 widely spaced (400×400 m to 400×200 m) drill holes. However, the mineralization is massive and very large in scale. A preliminary geological model of the hornfels-hosted mineralization was constructed by the Resource Institute, which was used as a basis for a preliminary resource estimation in this ITR.

Figure 9.5 shows the hornfels-hosted copper-polymetallic mineralized body as well as the skarn-type mineralization. The currently defined hornfels-type mineralization is very large, massive body without clear preferred direction. This mineralized body is over 1,500 m long in the rotated northwestern direction, up to 1,000 m wide in the rotated northeastern direction, and up to 820 m thick (as in drill hole ZK3216).

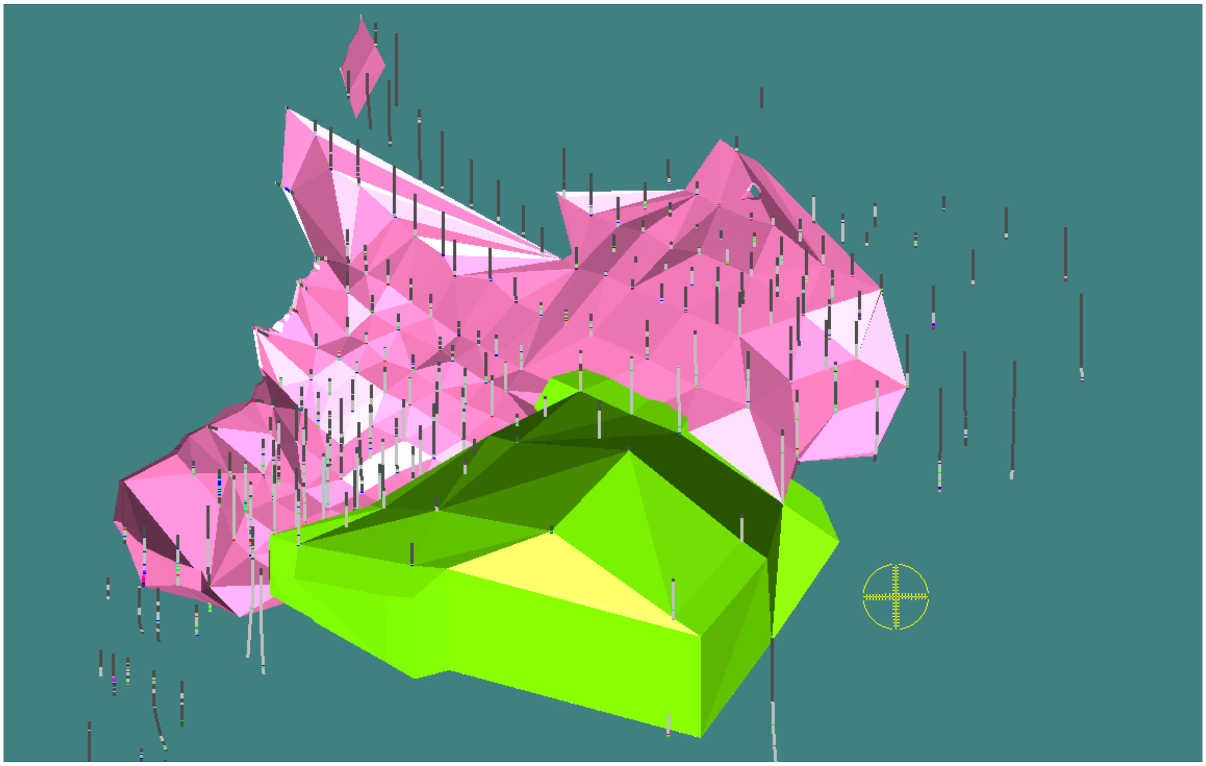


Figure 9.5 3-D view of the Hornfels-Type Mineralization of the Jiama Project

(The view is looking at 240° rotated azimuth with a dip angle of -60°. The Green solid is the hornfels-type mineralization and the magenta solid is the I-1 skarn-type mineralized body. The yellow circle at the upper middle part of the diagram has a diameter of 200 m.)

Copper-polymetallic mineralization generally occurs as fracture coatings in the hornfels. The metallic minerals in the hornfels-type mineralization are similar to that of the skarn-type mineralization. Chalcopyrite, bornite, molybdenite, pyrite and pyrrhotite are the major metallic minerals with minor amounts of other minerals. Copper and molybdenum are the two important elements; copper is generally enriched in the upper portion of the mineralization and molybdenum is generally enriched in the lower portion of the mineralization.

# 10.0 EXPLORATION

## 10.1 Brigade 6 Exploration Work in 1990s

Exploration work conducted by Brigade 6 in the 1990s included 1:2000 and 1:25,000-scale topographic survey, geological mapping, surface trenching, adit development, and DDH drilling. A total of 31 DDH holes with a total drilled length of 10,091 m were completed, along with the development of 407.5 m of adits and 16,474 $m^3$ of surface trenches. Exploration work was concentrated on the near-surface portion of the mineralized zones and was conducted in accordance with the industry requirements in China at the time.

## 10.2 Huatailong Exploration Work in 2008 and 2009

Extensive exploration work conducted by Huatailong in 2008 and 2009 (through the end of October) includes 1:2000-scale topographic surveying, geological mapping, and drilling of 192 DDH holes with a total drilled length of 64,158 m. Management of the exploration work and resource estimation was contracted to the Resource Institute in Beijing.

Survey control points were established using differential GPS instruments, based on the 1954 Beijing coordinate system and the 1956 Yellow Sea elevation system. The topographic survey was conducted by total stations, and the survey results were tied to the established survey control points. The 1:2000-scale topographic survey, with a 2-m contour interval, covered an area of 13.8 $km^2$, providing good support for the drilling and other exploration work.

# 11.0 DRILLING

## 11.1 Brigade 6 Drilling in the 1990s

DDH drilling by Brigade 6 in the 1990s was conducted in accordance with the “Core Drilling Regulation” promulgated by the former Ministry of Geology and Mineral Resources of China. Of the 31 holes drilled, only 22 with a total drilled length of 6,518 m met the requirements under the regulation. Core recoveries ranged from 65% to 95%, with an average of 84% for 15 holes. Six other holes were considered as not conforming with the regulations because the core recovery was too low or because the drill hole was terminated prematurely. Only the 22 holes meeting the regulations have been included in the database for the current resource estimation.

Table 11.1 summarizes the drill hole information completed by Brigade 6 in the 1990s.

| Table 11.1<br>1990s Brigade 6 Drill Holes for the Jiama Project<br>(under the 1954 Beijing coordinate system and the 1956 Yellow Sea elevation system) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hole ID** | **Easting** | **Northing** | **Elevation** | **Dip** | **Azimuth** | **Depth (m)** | **Core Recovery** | | | **No. of Samples** |
| | | | | | | | **(1)** | **(2)** | **(3)** | |
| ZK3114 | 16378635 | 3288339 | 4502.9 | -90 | 0 | 176.3 | 59.7 | 71.0 | 47.0 | 4 |
| ZK1502 | 16378469 | 3287258 | 5023.6 | -90 | 0 | 349.0 | 83.6 | 80.0 | 82.0 | 2 |
| ZK702 | 16378636 | 3287147 | 4976.9 | -90 | 0 | 303.5 | 85.2 | 83.6 | 79.5 | 7 |
| ZK710 | 16379009 | 3287794 | 4550.0 | -90 | 0 | 142.0 | 89.4 | 85.0 | 97.9 | 44 |
| ZK002 | 16378967 | 3287321 | 4740.7 | -90 | 0 | 200.0 | 71.8 | 81.7 | 96.4 | 52 |
| ZK004 | 16379044 | 3287454 | 4653.6 | -90 | 0 | 182.1 | 43.9 | 71.0 | 84.0 | 54 |
| ZK402 | 16378974 | 3287132 | 4755.3 | -90 | 0 | 240.2 | - | 87.9 | 96.8 | 79 |
| ZK404 | 16379011 | 3287198 | 4735.9 | -90 | 0 | 311.0 | - | - | 75.8 | 74 |
| ZK804 | 16379131 | 3287199 | 4666.7 | -90 | 0 | 250.3 | 93.2 | 91.0 | 89.2 | 87 |
| ZK808 | 16379197 | 3287312 | 4597.1 | -90 | 0 | 286.6 | 88.3 | 85.2 | 89.3 | 65 |
| ZK1204 | 16379228 | 3287171 | 4625.3 | -90 | 0 | 203.7 | 86.4 | 96.9 | 87.4 | 84 |
| ZK1206 | 16379260 | 3287227 | 4612.1 | -90 | 0 | 280.1 | - | - | 85.8 | 90 |
| ZK1606 | 16379330 | 3287145 | 4637.0 | -90 | 0 | 180.2 | 73.2 | 84.9 | 95.3 | 105 |
| ZK1610 | 16379409 | 3287270 | 4735.6 | -90 | 0 | 331.1 | 77.3 | 69.4 | 83.2 | 63 |
| ZK2402 | 16379517 | 3287070 | 4773.8 | -90 | 0 | 336.3 | 85.7 | 85.7 | 79.6 | 24 |
| ZK2406 | 16379613 | 3287235 | 4860.6 | -90 | 0 | 471.6 | 74.7 | 73.8 | 70.0 | 34 |
| ZK3202 | 16379699 | 3286986 | 4874.8 | -90 | 0 | 264.9 | 78.4 | 31.6 | 61.6 | 52 |
| ZK3210 | 16379835 | 3287221 | 4947.1 | -90 | 0 | 610.0 | 77.1 | 49.5 | 89.3 | 42 |
| ZK4001 | 16379825 | 3286805 | 4930.2 | -90 | 0 | 314.9 | 52.8 | 72.0 | 79.1 | 102 |
| ZK7204 | 16380560 | 3286479 | 5072.1 | -90 | 0 | 265.3 | 84.4 | 67.5 | 84.9 | 27 |
| ZK8012 | 16380881 | 3286637 | 4976.0 | -90 | 0 | 329.1 | 84.0 | 94.0 | 83.4 | 44 |
| ZK8016 | 16380963 | 3286778 | 4934.5 | -90 | 0 | 490.1 | 93.9 | 78.0 | 92.2 | 55 |
| *Note: Core recovery (1) is for mineralized intervals; core recovery (2) is for hangingwall waste; and core recovery (3) is for footwall waste.* | | | | | | | | | | |

## 11.2 Huatailong Drilling in 2008 and 2009

### 11.2.1 2008 Drilling

Huatailong's 2008 drilling program was conducted from April 31 to December 9. Six drilling contractors with a total of 36 drill rigs completed 150 DDH holes and drilled a total length of 50,617 m. Drilling was managed and supervised by the Resource Institute. Drill hole spacing was designed at 100-200 m by 100-200 m within the mining license boundary and increased to 200-400 m by 100-400 m outside the mining license. Five of the drilled holes were terminated prematurely, but three of the relatively deep holes were still included in the database for geological purposes. Excluding the re-drilled intervals, the 2008 holes included in the Jiama drill hole database consist of 148 holes with a total drilled length of 48,970 m.

Drilling started at the surface using 130-mm or 110-mm diameter drill bits, reducing to 91-mm or 75-mm diameter drill bits after entering into the solid rocks. Core recoveries were generally good. Core recovery for the skarn mineralized intervals ranged from 60.3% to 100%, averaging 95.3%; core recovery for the hanging walls ranged from 62.7% to 100%, averaging 95.0%; and core recovery for the footwalls ranged from 65.1% to 100%, averaging 95.3%.

Drill hole collar locations were surveyed using differential GPS survey instruments after drilling, and the down-hole deviation was measured using down-hole survey instruments generally at a 100-m interval. Completed drill holes were plugged using cement, with a cement post maintained at the center of the drill hole collar.

Properly labeled and boxed drill cores were transported from the drill site to the core storage warehouse, where core logging, photographing, and sampling took place.

Table 11.2 summarizes the drill hole information completed by Huatailong in 2008.

| Table 11.2<br>2008 Huatailong Drill Holes for the Jiama Project<br>(under the 1954 Beijing coordinate system and the 1956 Yellow Sea elevation system) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hole ID** | **Easting** | **Northing** | **Elevation** | **Dip** | **Azimuth** | **Depth (m)** | **Core Recovery** | | | **No. of Samples** |
| | | | | | | | **(1)** | **(2)** | **(3)** | |
| ZK003 | 16378891 | 3287198 | 4791.7 | -90 | 0 | 247.2 | 95.6 | 96.2 | 95.4 | 63 |
| ZK007 | 16378927 | 3287254 | 4758.2 | -90 | 0 | 236.0 | 99.3 | 98.8 | 96.4 | 84 |
| ZK008 | 16379126 | 3287600 | 4576.4 | -90 | 0 | 103.3 | 93.4 | 89.7 | 84.9 | 32 |
| ZK011 | 16379009 | 3287394 | 4692.0 | -90 | 0 | 192.0 | 94.1 | 95.3 | 93.8 | 42 |
| ZK012 | 16379099 | 3287539 | 4585.2 | -90 | 0 | 352.0 | 97.6 | 97.1 | 80.1 | 29 |
| ZK014 | 16379164 | 3287657 | 4613.5 | -90 | 0 | 189.2 | 95.8 | 95.4 | 85.0 | 54 |
| ZK016 | 16379209 | 3287732 | 4632.1 | -90 | 0 | 161.9 | 97.6 | 89.2 | 88.1 | 79 |
| ZK018 | 16379313 | 3287913 | 4779.0 | -90 | 0 | 347.2 | 94.6 | 86.7 | 88.8 | 159 |
| ZK020 | 16379390 | 3288073 | 4873.4 | -90 | 0 | 410.4 | 99.0 | 99.2 | 100.0 | 200 |
| ZK021 | 16379478 | 3288217 | 4970.0 | -90 | 0 | 500.9 | 99.9 | 95.7 | 96.5 | 284 |
| ZK026 | 16379655 | 3288536 | 4886.4 | -90 | 0 | 551.5 | 98.0 | 88.9 | 95.4 | 296 |
| ZK1201 | 16379195 | 3287102 | 4673.4 | -90 | 0 | 154.4 | 95.9 | 94.9 | 94.9 | 48 |
| ZK1205 | 16379310 | 3287312 | 4671.8 | -90 | 0 | 239.2 | 91.9 | 84.4 | 98.0 | 124 |
| ZK1207 | 16379354 | 3287392 | 4685.3 | -90 | 0 | 226.3 | 96.7 | 99.0 | 97.8 | 122 |
| ZK1208 | 16379405 | 3287472 | 4747.0 | -90 | 0 | 337.0 | 94.8 | 98.3 | 95.3 | 118 |
| ZK1209 | 16379459 | 3287552 | 4798.7 | -90 | 0 | 446.3 | 94.8 | - | 96.2 | 248 |
| ZK1212 | 16379553 | 3287720 | 4802.9 | -90 | 0 | 415.2 | 97.5 | 97.6 | 99.3 | 242 |
| ZK1501 | 16378439 | 3287200 | 4984.3 | -90 | 0 | 176.8 | 96.4 | 98.8 | 96.3 | 13 |
| ZK1503 | 16378496 | 3287324 | 5020.8 | -90 | 0 | 404.6 | 93.1 | 91.3 | 93.3 | 18 |
| ZK1504 | 16378560 | 3287417 | 4952.9 | -90 | 0 | 464.7 | 96.8 | 98.9 | 98.7 | 36 |
| ZK1505 | 16378890 | 3287991 | 4534.9 | -90 | 0 | 119.4 | 74.8 | 100.0 | 100.0 | 53 |
| ZK1506 | 16378936 | 3288074 | 4563.7 | -90 | 0 | 103.0 | 87.5 | 89.6 | 90.5 | 41 |
| ZK1507 | 16378842 | 3287902 | 4599.5 | -90 | 0 | 152.2 | 93.9 | 98.3 | 94.4 | 41 |
| ZK1508 | 16378802 | 3287797 | 4650.5 | -90 | 0 | 204.3 | 90.1 | 90.2 | 90.5 | 32 |
| ZK1509 | 16378752 | 3287739 | 4695.3 | -90 | 0 | 237.3 | 91.0 | 93.4 | 92.4 | 36 |
| ZK1510 | 16378696 | 3287662 | 4756.0 | -90 | 0 | 274.6 | 97.1 | 97.2 | 98.0 | 26 |
| ZK1511 | 16378660 | 3287577 | 4820.7 | -90 | 0 | 322.2 | 97.7 | 97.6 | 98.7 | 12 |
| ZK1512 | 16378602 | 3287491 | 4895.2 | -90 | 0 | 374.6 | 98.2 | 99.1 | 98.1 | 12 |
| ZK1516 | 16379032 | 3288237 | 4685.0 | -90 | 0 | 233.2 | 96.8 | 97.4 | 89.9 | 56 |
| ZK1518 | 16379132 | 3288403 | 4826.4 | -90 | 0 | 358.1 | 90.3 | 94.7 | 95.0 | 136 |
| ZK1520 | 16379215 | 3288562 | 4754.6 | -90 | 0 | 400.5 | 95.4 | 96.3 | 95.2 | 87 |
| ZK1522 | 16379299 | 3288698 | 4683.2 | -90 | 0 | 370.7 | 95.4 | 96.2 | 90.1 | 128 |
| ZK1524 | 16379396 | 3288827 | 4738.2 | -90 | 0 | 494.1 | 96.4 | 95.6 | 95.0 | 156 |
| ZK1602 | 16379296 | 3287086 | 4630.9 | -90 | 0 | 187.1 | 73.3 | 94.2 | 92.2 | 98 |
| ZK1604 | 16379371 | 3287215 | 4702.3 | -90 | 0 | 270.4 | 94.6 | 83.4 | 91.2 | 91 |
| ZK1607 | 16379462 | 3287370 | 4733.4 | -90 | 0 | 290.4 | 92.1 | 96.3 | 95.4 | 210 |
| ZK1608 | 16379517 | 3287463 | 4802.7 | -90 | 0 | 404.7 | 92.6 | 95.6 | 96.3 | 96 |
| ZK1609 | 16379569 | 3287558 | 4860.8 | -90 | 0 | 480.7 | 62.7 | 81.9 | 99.4 | 337 |
| ZK1616 | 16379842 | 3288064 | 5098.6 | -90 | 0 | 839.4 | 95.5 | 90.0 | 92.4 | 787 |
| ZK1618 | 16380037 | 3288409 | 5024.7 | -90 | 0 | 800.6 | 95.0 | 65.1 | 93.2 | 444 |
| ZK1620 | 16379666 | 3287718 | 4861.1 | -90 | 0 | 436.1 | 95.4 | - | - | 212 |
| ZK2001 | 16379334 | 3286993 | 4645.2 | -90 | 0 | 162.1 | 93.7 | 94.5 | 93.8 | 132 |
| ZK2002 | 16379392 | 3287057 | 4690.1 | -90 | 0 | 237.2 | 98.9 | 100.0 | 99.2 | 87 |
| ZK2004 | 16379427 | 3287109 | 4718.4 | -90 | 0 | 273.5 | 97.9 | 98.8 | 99.3 | 112 |
| ZK2005 | 16379473 | 3287181 | 4765.5 | -90 | 0 | 338.9 | 97.7 | 100.0 | 98.7 | 76 |
| ZK2006 | 16379513 | 3287267 | 4795.4 | -90 | 0 | 377.2 | 96.1 | 100.0 | 96.7 | 186 |
| ZK2007 | 16379553 | 3287349 | 4776.4 | -90 | 0 | 403.9 | 95.9 | 8635 | 60.3 | 162 |
| ZK2008 | 16379610 | 3287423 | 4833.3 | -90 | 0 | 443.3 | 96.8 | 100.0 | 97.7 | 213 |
| ZK2010 | 16379707 | 3287589 | 4918.1 | -90 | 0 | 665.1 | 99.1 | 95.0 | 98.6 | 217 |
| ZK2301 | 16378265 | 3287284 | 4972.3 | -90 | 0 | 190.8 | 95.6 | 96.6 | 85.8 | 19 |
| ZK2303 | 16378823 | 3288280 | 4567.1 | -90 | 0 | 127.8 | 93.5 | 97.9 | 96.0 | 94 |
| ZK2304 | 16378779 | 3288192 | 4517.4 | -90 | 0 | 117.1 | 93.6 | 85.9 | 89.9 | 56 |
| ZK2305 | 16378726 | 3288108 | 4567.9 | -90 | 0 | 126.5 | 91.4 | 94.4 | 92.6 | 42 |
| ZK2306 | 16378683 | 3288029 | 4627.7 | -90 | 0 | 227.6 | 95.9 | 95.0 | 95.9 | 73 |
| ZK2307 | 16378636 | 3287948 | 4692.7 | -90 | 0 | 284.1 | 92.6 | 96.9 | 98.0 | 55 |
| ZK2308 | 16378586 | 3287864 | 4759.9 | -90 | 0 | 322.0 | 92.0 | 98.3 | 97.1 | 62 |
| ZK2310 | 16378916 | 3288440 | 4690.6 | -90 | 0 | 300.0 | 94.6 | 97.2 | 98.8 | 169 |

*Note: Core recovery (1) is for mineralized intervals; core recovery (2) is for hangingwall waste; and core recovery (3) is for footwall waste.*

| Table 11.2<br>2008 Huatailong Drill Holes for the Jiama Project (continued)<br>(under the 1954 Beijing coordinate system and the 1956 Yellow Sea elevation system) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hole ID** | **Easting** | **Northing** | **Elevation** | **Dip** | **Azimuth** | **Depth (m)** | **Core Recovery** | | | **No. of Samples** |
| | | | | | | | **(1)** | **(2)** | **(3)** | |
| ..ZK2312 | 16379013 | 3288598 | 4713.8 | -90 | 0 | 280.9 | 99.6 | 100.0 | 100.0 | 64 |
| ..ZK2314 | 16379106 | 3288762 | 4596.5 | -90 | 0 | 311.2 | 98.3 | 100.0 | 100.0 | 51 |
| ..ZK2316 | 16379194 | 3288917 | 4667.5 | -90 | 0 | 341.0 | 98.3 | 99.5 | 97.2 | 56 |
| ..ZK2401 | 16379468 | 3286969 | 4745.2 | -90 | 0 | 56.2 | 97.5 | - | 95.8 | 18 |
| ..ZK2404 | 16379499 | 3287043 | 4765.7 | -90 | 0 | 403.5 | 99.0 | 100.0 | 98.8 | 138 |
| ..ZK2407 | 16379546 | 3287143 | 4807.1 | -90 | 0 | 466.7 | 95.5 | 99.4 | 99.1 | 154 |
| ..ZK2408 | 16379582 | 3287180 | 4839.3 | -90 | 0 | 418.7 | 97.5 | 100.0 | 90.0 | 94 |
| ..ZK2409 | 16379657 | 3287307 | 4829.8 | -90 | 0 | 531.0 | 99.4 | 99.7 | 97.5 | 292 |
| ..ZK2410 | 16379710 | 3287399 | 4877.6 | -90 | 0 | 463.4 | 98.1 | 98.4 | 99.9 | 200 |
| ..ZK2412 | 16379802 | 3287560 | 4968.0 | -90 | 0 | 402.4 | 97.4 | - | - | 212 |
| ..ZK2801 | 16379564 | 3286961 | 4804.4 | -90 | 0 | 189.3 | 93.5 | - | 87.9 | 89 |
| ..ZK2802 | 16379586 | 3286987 | 4822.5 | -90 | 0 | 360.1 | 98.2 | 100.0 | 98.4 | 270 |
| ..ZK2804 | 16379634 | 3287064 | 4862.5 | -90 | 0 | 456.4 | 95.9 | 96.8 | 96.0 | 184 |
| ..ZK2805 | 16379678 | 3287137 | 4897.6 | -90 | 0 | 508.3 | 98.8 | 99.4 | 98.8 | 396 |
| ..ZK2806 | 16379729 | 3287228 | 4901.1 | -90 | 0 | 498.0 | 98.7 | 97.0 | 97.1 | 249 |
| ..ZK2807 | 16379774 | 3287297 | 4879.2 | -90 | 0 | 502.0 | 98.6 | 100.0 | 100.0 | 234 |
| ..ZK3101 | 16378692 | 3288438 | 4547.1 | -90 | 0 | 86.5 | 82.3 | 92.0 | 93.1 | 18 |
| ..ZK3102 | 16378727 | 3288506 | 4584.3 | -90 | 0 | 158.0 | 100.0 | 96.2 | 100.0 | 67 |
| ..ZK3103 | 16378540 | 3288185 | 4611.4 | -90 | 0 | 158.6 | 80.6 | 94.0 | 94.9 | 40 |
| ..ZK3104 | 16378583 | 3288271 | 4554.3 | -90 | 0 | 119.9 | 100.0 | 100.0 | 100.0 | 46 |
| ..ZK3106 | 16378834 | 3288661 | 4652.9 | -90 | 0 | 196.3 | 95.5 | 90.7 | 96.9 | 75 |
| ..ZK3108 | 16378910 | 3288839 | 4549.3 | -90 | 0 | 146.2 | 97.3 | 97.3 | 100.0 | 25 |
| ..ZK3203 | 16379674 | 3286939 | 4858.4 | -90 | 0 | 373.9 | 95.0 | 87.8 | 94.1 | 206 |
| ..ZK3204 | 16379690 | 3286971 | 4880.8 | -90 | 0 | 388.9 | 86.2 | 99.2 | 88.6 | 179 |
| ..ZK3207 | 16379742 | 3287064 | 4936.0 | -90 | 0 | 525.6 | 98.9 | 98.6 | 98.5 | 379 |
| ..ZK3208 | 16379787 | 3287126 | 4967.6 | -90 | 0 | 587.3 | 99.3 | 98.1 | 96.3 | 542 |
| ..ZK3209 | 16379888 | 3287310 | 4926.9 | -90 | 0 | 656.8 | 96.6 | 91.4 | 97.8 | 403 |
| ..ZK3212 | 16379981 | 3287471 | 5037.7 | -90 | 0 | 640.5 | 98.6 | - | 93.1 | 314 |
| ..ZK3601 | 16379734 | 3286835 | 4883.3 | -90 | 0 | 470.9 | 97.0 | 95.1 | 97.6 | 279 |
| ..ZK3603 | 16379768 | 3286886 | 4881.2 | -90 | 0 | 513.7 | 96.5 | 96.6 | 96.7 | 314 |
| ..ZK3604 | 16379813 | 3286974 | 4936.3 | -90 | 0 | 543.1 | 97.8 | 99.2 | 99.0 | 248 |
| ..ZK3605 | 16379851 | 3287041 | 4988.6 | -90 | 0 | 678.4 | 95.6 | 100.0 | 85.0 | 350 |
| ..ZK3608 | 16379936 | 3287195 | 4981.8 | -90 | 0 | 720.8 | 95.6 | 95.2 | 95.5 | 363 |
| ..ZK3901 | 16378432 | 3288396 | 4567.1 | -90 | 0 | 156.9 | 93.9 | 99.9 | 100.0 | 22 |
| ..ZK3902 | 16378663 | 3288819 | 4555.2 | -90 | 0 | 145.0 | 94.6 | 97.7 | 97.9 | 65 |
| ..ZK3904 | 16378746 | 3288946 | 4523.1 | -90 | 0 | 96.8 | 98.9 | 9427 | 99.5 | 36 |
| ..ZK4002 | 16379784 | 3286724 | 4914.3 | -90 | 0 | 140.8 | 90.7 | 94.5 | 93.5 | 90 |
| ..ZK4004 | 16379856 | 3286850 | 4952.4 | -90 | 0 | 552.6 | 97.0 | 96.1 | 96.3 | 319 |
| ..ZK4006 | 16379883 | 3286902 | 4958.1 | -90 | 0 | 607.3 | 95.2 | 97.3 | 95.7 | 384 |
| ..ZK4008 | 16379961 | 3287048 | 5046.9 | -90 | 0 | 690.1 | 95.2 | - | 94.4 | 365 |
| ..ZK406 | 16379059 | 3287273 | 4679.0 | -90 | 0 | 154.2 | 94.5 | 98.8 | 100.0 | 40 |
| ..ZK408 | 16379101 | 3287355 | 4636.1 | -90 | 0 | 133.8 | 100.0 | 96.9 | 95.5 | 70 |
| ..ZK409 | 16379151 | 3287483 | 4581.3 | -90 | 0 | 143.4 | 95.3 | 98.8 | 100.0 | 34 |
| ..ZK410 | 16379202 | 3287522 | 4618.0 | -90 | 0 | 140.8 | 87.9 | 89.0 | 86.1 | 54 |
| ..ZK411 | 16379260 | 3287622 | 4677.9 | -90 | 0 | 217.9 | 91.5 | 70.0 | 91.7 | 47 |
| ..ZK412 | 16379299 | 3287684 | 4688.5 | -90 | 0 | 260.9 | 99.0 | 91.3 | 95.0 | 119 |
| ..ZK4701 | 16378247 | 3288472 | 4547.0 | -90 | 0 | 125.7 | 100.0 | - | - | 0 |
| ..ZK4702 | 16378617 | 3289032 | 4518.7 | -90 | 0 | 94.07 | 78.2 | 74.7 | 93.7 | 6 |
| ..ZK4803 | 16380121 | 3286908 | 5094.5 | -90 | 0 | 805.8 | 96.9 | 97.8 | 97.1 | 354 |
| ..ZK4804 | 16380037 | 3286771 | 5077.7 | -90 | 0 | 650.5 | 93.6 | - | 95.8 | 247 |
| ..ZK5601 | 16380125 | 3286514 | 5117.4 | -90 | 0 | 127.8 | 97.1 | 100.0 | 100.0 | 44 |
| ..ZK5602 | 16380154 | 3286574 | 5155.1 | -90 | 0 | 374.9 | 95.0 | - | 97.1 | 270 |
| ..ZK5603 | 16380225 | 3286678 | 5222.4 | -90 | 0 | 311.4 | 79.4 | 95.8 | 79.9 | 211 |
| ..ZK5605 | 16380365 | 3286933 | 5258.2 | -90 | 0 | 659.8 | 93.3 | 98.1 | 99.4 | 306 |
| ..ZK6402 | 16380375 | 3286558 | 5175.5 | -90 | 0 | 305.2 | 99.1 | 99.8 | 91.6 | 64 |
| ..ZK6403 | 16380411 | 3286615 | 5218.6 | -90 | 0 | 336.0 | 94.0 | 98.7 | 99.3 | 87 |
| ..ZK6405 | 16380485 | 3286735 | 5244.1 | -90 | 0 | 191.0 | 94.4 | 88.6 | 97.4 | 130 |
| *Note: Core recovery (1) is for mineralized intervals; core recovery (2) is for hangingwall waste; and core recovery (3) is for footwall waste.* | | | | | | | | | | |

| Table 11.2<br>2008 Huatailong Drill Holes for the Jiama Project (continued)<br>(under the 1954 Beijing coordinate system and the 1956 Yellow Sea elevation system) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hole ID** | **Easting** | **Northing** | **Elevation** | **Dip** | **Azimuth** | **Depth (m)** | **Core Recovery** | | | **No. of Samples** |
| | | | | | | | **(1)** | **(2)** | **(3)** | |
| ZK6406 | 16380319 | 3286461 | 5123.5 | -90 | 0 | 129.5 | 95.0 | - | 94.4 | 34 |
| ZK701 | 16378614 | 3287100 | 4980.9 | -90 | 0 | 182.5 | 92.6 | 94.0 | 93.8 | 54 |
| ZK703 | 16378666 | 3287230 | 4950.5 | -90 | 0 | 287.3 | 97.5 | 99.2 | 98.7 | 27 |
| ZK704 | 16378722 | 3287342 | 4887.0 | -90 | 0 | 341.2 | 94.5 | 98.0 | 98.4 | 31 |
| ZK705 | 16378782 | 3287406 | 4819.3 | -90 | 0 | 290.2 | 95.6 | 98.3 | 98.6 | 31 |
| ZK706 | 16378819 | 3287492 | 4773.7 | -90 | 0 | 270.7 | 96.0 | 100.0 | 99.0 | 13 |
| ZK707 | 16378882 | 3287529 | 4707.2 | -90 | 0 | 267.2 | 97.0 | 93.0 | 99.2 | 36 |
| ZK708 | 16378890 | 3287637 | 4676.5 | -90 | 0 | 224.3 | 98.1 | 96.7 | 98.0 | 17 |
| ZK709 | 16378959 | 3287715 | 4613.4 | -90 | 0 | 194.5 | 95.5 | 96.9 | 96.8 | 21 |
| ZK711 | 16379059 | 3287869 | 4588.2 | -90 | 0 | 152.3 | 93.0 | 99.5 | 97.6 | 86 |
| ZK712 | 16379104 | 3287947 | 4640.9 | -90 | 0 | 198.9 | 95.6 | 96.9 | 92.5 | 103 |
| ZK716 | 16379197 | 3288119 | 4761.7 | -90 | 0 | 284.7 | 98.9 | 99.9 | 98.4 | 70 |
| ZK718 | 16379294 | 3288267 | 4864.8 | -90 | 0 | 400.7 | 98.0 | 92.0 | 63.9 | 209 |
| ZK720 | 16379378 | 3288431 | 4881.5 | -90 | 0 | 405.6 | 99.2 | 100.0 | 98.2 | 189 |
| ZK7201 | 16380591 | 3286524 | 5101.5 | -90 | 0 | 171.5 | 95.0 | 73.3 | 99.0 | 70 |
| ZK7202 | 16380637 | 3286602 | 5107.1 | -90 | 0 | 520.7 | 95.7 | 99.0 | 99.1 | 113 |
| ZK7203 | 16380682 | 3286689 | 5120.7 | -90 | 0 | 288.3 | 91.7 | 97.3 | 97.3 | 49 |
| ZK7205 | 16380545 | 3286441 | 5075.4 | -90 | 0 | 172.5 | 98.5 | 100.0 | 99.6 | 58 |
| ZK722 | 16379461 | 3288580 | 4789.6 | -90 | 0 | 457.3 | 99.5 | 90.9 | 96.7 | 205 |
| ZK8001 | 16380843 | 3286564 | 4982.4 | -90 | 0 | 97.1 | 92.5 | 95.5 | 96.0 | 37 |
| ZK8002 | 16380911 | 3286679 | 4967.7 | -90 | 0 | 348.4 | 99.4 | 99.2 | 99.5 | 74 |
| ZK8003 | 16380943 | 3286733 | 4937.1 | -90 | 0 | 519.5 | 90.1 | 95.1 | 95.5 | 124 |
| ZK8006 | 16381037 | 3286893 | 4865.1 | -90 | 0 | 554.5 | 96.2 | - | 96.2 | 139 |
| ZK803 | 16379163 | 3287257 | 4627.9 | -90 | 0 | 200.9 | 92.8 | 95.9 | 99.6 | 94 |
| ZK805 | 16379237 | 3287400 | 4624.8 | -90 | 0 | 160.1 | 96.0 | 97.5 | 97.0 | 75 |
| ZK806 | 16379297 | 3287481 | 4679.9 | -90 | 0 | 210.0 | 98.8 | 100.0 | 98.6 | 145 |
| ZK807 | 16379341 | 3287559 | 4719.9 | -90 | 0 | 263.5 | 99.2 | 97.9 | 99.3 | 185 |
| ZK809 | 16379381 | 3287642 | 4746.6 | -90 | 0 | 293.6 | 99.6 | 100.0 | 100.0 | 163 |
| ZK812 | 16379488 | 3287805 | 4801.2 | -90 | 0 | 364.7 | 98.7 | - | 97.6 | 222 |
| ZK816 | 16379577 | 3287972 | 4928.5 | -90 | 0 | 394.7 | 96.8 | - | - | 181 |
| ZK8801 | 16381189 | 3286752 | 4784.8 | -90 | 0 | 215.7 | 97.7 | 97.1 | 97.0 | 70 |
| ZK8802 | 16381202 | 3286808 | 4764.4 | -90 | 0 | 354.1 | 88.4 | - | - | 27 |
| ZK8807 | 16376317 | 3291850 | 4649.4 | -90 | 0 | 547.3 | 98.2 | - | - | 266 |
| ZK9602 | 16376510 | 3291630 | 4645.5 | -90 | 0 | 441.1 | 96.2 | - | - | 308 |
| *Note: Core recovery (1) is for mineralized intervals; core recovery (2) is for hangingwall waste; and core recovery (3) is for footwall waste.* | | | | | | | | | | |

### 11.2.2 2009 Drilling

Huatailong's 2009 drilling through the end of October consisted of 36 in-fill DDH holes with a total drilled length of 9,985 m in the Niumatang area and 4 step-out DDH holes with a total drilled length of 3,556 m to the northeast of the mineralized zone. The in-fill drilling has brought the drilling density in the Niumatang area to 100-m by 100-m, which is sufficient to produce a resource estimate for open-pit mine planning and ore reserve estimation in the area. The 4 step-out drill holes to the northeast have further extended the mineralized zone and increased the total mineral inventory of the Jiama deposit.

Drilling and surveying of the drill holes for the 2009 program were conducted in a similar manner as that for the 2008 drilling program. Core recoveries were generally good. Core recovery for the mineralized intervals ranged from 76.3% to 100%, averaging 96.5%; core recovery for the hanging walls ranged from 87.6% to 100%, averaging 96.3%; and core recovery for the footwalls ranged from 85.4% to 100%, averaging 96.4%.

Table 11.3 summarizes the drill hole information completed by Huatailong in 2009.

| Table 11.3<br>2009 Huatailong Drill Holes for the Jiama Project<br>(under the 1954 Beijing coordinate system and the 1956 Yellow Sea elevation system) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hole ID** | **Easting** | **Northing** | **Elevation** | **Dip** | **Azimuth** | **Depth (m)** | **Core Recovery** | | | **No. of Samples** |
| | | | | | | | **(1)** | **(2)** | **(3)** | |
| ZK1514 | 16378986 | 3288156 | 4632.0 | -90 | 0 | 195.7 | 92.0 | 96.4 | 96.6 | 73 |
| ZK1517 | 16379081 | 3288333 | 4768.5 | -90 | 0 | 289.8 | 96.8 | 85.4 | 82.7 | 50 |
| ZK1526 | 16379469 | 3289021 | 4820.3 | -90 | 0 | 645.5 | 98.5 | 98.9 | 99.9 | 195 |
| ZK1902 | 16378788 | 3288016 | 4584.3 | -90 | 0 | 168.7 | 93.7 | 99.1 | 98.1 | 94 |
| ZK1904 | 16378838 | 3288084 | 4533.0 | -90 | 0 | 119.5 | 87.6 | 97.8 | 97.9 | 62 |
| ZK1906 | 16378871 | 3288177 | 4553.0 | -90 | 0 | 165.5 | 100.0 | 100.0 | 99.7 | 146 |
| ZK1908 | 16378935 | 3288256 | 4639.0 | -90 | 0 | 188.2 | 96.3 | 95.3 | 99.2 | 99 |
| ZK1910 | 16378969 | 3288336 | 4696.4 | -90 | 0 | 289.1 | 98.1 | 99.4 | 99.1 | 166 |
| ZK1912 | 16379020 | 32884112 | 4753.5 | -90 | 0 | 324.7 | 99.2 | 100.0 | 99.2 | 115 |
| ZK1914 | 16379068 | 3288501 | 4787.9 | -90 | 0 | 419.1 | 99.7 | 98.1 | 100.0 | 113 |
| ZK1916 | 16379107 | 3288582 | 4748.2 | -90 | 0 | 406.2 | 97.9 | 99.1 | 99.0 | 63 |
| ZK1918 | 16379157 | 3288670 | 4693.0 | -90 | 0 | 327.3 | 98.7 | 96.3 | 91.9 | 101 |
| ZK2309 | 16378871 | 3288365 | 4636.4 | -90 | 0 | 241.0 | 97.2 | 97.3 | 99.5 | 159 |
| ZK2311 | 16378970 | 3288520 | 4754.9 | -90 | 0 | 425.2 | 98.6 | 99.6 | 98.9 | 119 |
| ZK2313 | 16379066 | 3288680 | 4663.8 | -90 | 0 | 259.3 | 95.2 | 91.6 | 91.4 | 71 |
| ZK2318 | 16379301 | 3289095 | 4751.3 | -90 | 0 | 581.1 | 96.2 | 98.0 | 96.4 | 48 |
| ZK2320 | 16379386 | 3289247 | 4839.9 | -90 | 0 | 693.4 | 97.4 | 85.8 | 96.5 | 49 |
| ZK2702 | 16378623 | 3288112 | 4614.2 | -90 | 0 | 206.9 | 93.7 | 98.5 | 98.0 | 33 |
| ZK2704 | 16378662 | 3288190 | 4559.4 | -90 | 0 | 131.4 | 99.3 | 88.3 | 75.3 | 34 |
| ZK2706 | 16378708 | 3288274 | 4509.2 | -90 | 0 | 115.8 | 92.2 | 90.2 | 93.6 | 55 |
| ZK2708 | 16378768 | 3288347 | 4567.1 | -90 | 0 | 175.2 | 100.0 | 100.0 | 99.5 | 75 |
| ZK2710 | 16378799 | 3288450 | 4613.2 | -90 | 0 | 185.8 | 91.6 | 94.3 | 99.4 | 110 |
| ZK2712 | 16378855 | 3288531 | 4683.7 | -90 | 0 | 321.3 | 98.9 | 98.0 | 98.2 | 202 |
| ZK2714 | 16378899 | 3288609 | 4683.8 | -90 | 0 | 335.7 | 96.7 | 99.7 | 99.3 | 124 |
| ZK2716 | 16378951 | 3288690 | 4642.2 | -90 | 0 | 223.9 | 94.5 | 98.8 | 99.7 | 66 |
| ZK2718 | 16378998 | 3288771 | 4596.9 | -90 | 0 | 208.1 | 91.8 | 85.6 | 93.2 | 37 |
| ZK3105 | 16378771 | 3288590 | 4646.1 | -90 | 0 | 146.2 | 99.0 | 98.5 | 98.2 | 65 |
| ZK3107 | 16378867 | 3288749 | 4604.1 | -90 | 0 | 170.0 | 97.5 | 98.3 | 99.7 | 37 |
| ZK3110 | 16379005 | 3289000 | 4639.8 | -90 | 0 | 266.5 | 98.8 | 100.0 | 93.8 | 81 |
| ZK3216 | 16380181 | 3287825 | 5205.4 | -90 | 0 | 864.4 | 96.5 | 92.0 | - | 428 |
| ZK3220 | 16380384 | 3288199 | 5232.0 | -90 | 0 | 935.2 | 98.2 | 93.4 | 100.0 | 508 |
| ZK3224 | 16380587 | 3288504 | 5217.2 | -90 | 0 | 1000.4 | 98.3 | 99.3 | - | 306 |
| ZK3506 | 16378676 | 3288631 | 4628.5 | -90 | 0 | 185.4 | 94.6 | 99.8 | 98.2 | 148 |
| ZK3508 | 16378733 | 3288720 | 4610.6 | -90 | 0 | 180.5 | 88.8 | 99.6 | 96.8 | 134 |
| ZK3510 | 16378773 | 3288794 | 4568.3 | -90 | 0 | 93.5 | 98.1 | 98.5 | 98.9 | 18 |
| ZK3906 | 16378847 | 3289121 | 4593.3 | -90 | 0 | 225.4 | 97.3 | 96.0 | 98.4 | 24 |
| ZK3910 | 16379039 | 3289454 | 4645.8 | -90 | 0 | 540.7 | 98.9 | 99.5 | 97.9 | 75 |
| ZK4012 | 16380173 | 3287395 | 5084.5 | -90 | 0 | 755.7 | 96.6 | - | 98.5 | 366 |
| ZK4706 | 16378675 | 3289224 | 4554.0 | -90 | 0 | 198.6 | 93.3 | 98.3 | 94.6 | 22 |
| ZK4708 | 16378770 | 3289405 | 4593.8 | -90 | 0 | 334.5 | 97.7 | 91.4 | 93.4 | 24 |
| *Note: Core recovery (1) is for mineralized intervals; core recovery (2) is for hangingwall waste; and core recovery (3) is for footwall waste.* | | | | | | | | | | |

## 11.3 Discussion

As the primary skarn-type mineralized body has a steep dip angle (averaging 60°) at the upper (southwest) portion and is flatter (with an average dipping angle of 10°) at the lower (northeast) portion at the Jiama Project, and as the drill holes were drilled mostly vertically, the true thickness of the mineralized zone at the location of a drill hole is approximately 0.50 and 0.98 times the drilled intercepted mineralized zone length for the upper steeply-dipping zone and the lower flatter zone, respectively.

These drilling results defined the lateral extents and metal grade distribution of the skarn-type mineralization for the Jiama Project and formed a solid basis for the skarn-type mineral resource and mineral reserve estimates. The drilling results have also provided a preliminary basis for the modeling of the hornfels-type copper-polymetallic mineralization.

## 12.0 SAMPLING METHOD AND APPROACH

### 12.1 Brigade 6 Sampling in the 1990s

Core samples were taken by a mechanical splitter. Half of the core was sent for sample preparation and assay, and the other half was retained for records. Sample intervals were generally 1 to 2 m. Surface trenches were sampled by channels 5-cm wide and 3-cm deep, with sample intervals of 1 to 2 m. Channels were oriented as much as possible perpendicular to the direction of the mineralized/alteration zone extension.

Table 12.1 lists the skarn-type mineralized intervals in the drill holes drilled in the 1990s for the Jiama Project.

**Table 12.1**
**Skarn-Type Mineralized Intervals in 1990s Drill Holes for the Jiama Project**

| Hole Id | Mineralized Interval | | | Est. True | Average Grade | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | From | To | Length | Thickness (m) | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % |
| ZK3114 | 10.09 | 16.44 | 6.35 | 6.25 | 1.12 | 0.003 | 0.20 | 11.99 | 0.02 | 0.02 |
| ZK702 | 254.50 | 260.37 | 5.87 | 2.94 | 0.53 | 0.000 | 0.00 | 0.00 | 3.58 | 1.66 |
| ZK710 | 83.05 | 85.34 | 2.29 | 2.26 | 1.13 | 0.007 | 1.13 | 13.64 | 0.02 | 0.20 |
| ZK002 | 151.87 | 191.45 | 39.58 | 38.98 | 1.30 | 0.015 | 0.59 | 24.63 | 0.27 | 0.09 |
| ZK004 | 134.86 | 151.48 | 16.62 | 16.37 | 0.33 | 0.015 | 0.22 | 9.29 | 0.04 | 0.02 |
| ZK402 | 13.80 | 124.42 | 43.19 | 21.60 | 0.56 | 0.018 | 0.23 | 13.56 | 0.52 | 0.16 |
| ZK404 | 121.17 | 180.49 | 42.83 | 21.42 | 0.78 | 0.045 | 0.28 | 8.75 | 0.20 | 0.04 |
| ZK804 | 110.85 | 185.61 | 27.80 | 13.90 | 1.62 | 0.297 | 0.29 | 14.50 | 0.14 | 0.55 |
| ZK808 | 80.50 | 85.68 | 5.18 | 5.10 | 1.09 | 0.004 | 0.31 | 9.74 | 0.01 | 0.14 |
| ZK1204 | 43.71 | 105.39 | 61.68 | 60.74 | 1.03 | 0.010 | 0.38 | 8.55 | 0.08 | 0.03 |
| ZK1206 | 63.97 | 125.96 | 61.99 | 61.05 | 0.46 | 0.029 | 0.06 | 4.21 | 0.01 | 0.02 |
| ZK1606 | 98.21 | 147.87 | 49.66 | 48.91 | 0.33 | 0.025 | 0.09 | 4.78 | 0.01 | 0.02 |
| ZK1610 | 252.58 | 284.86 | 32.28 | 31.79 | 1.85 | 0.006 | 0.75 | 8.49 | 0.02 | 0.01 |
| ZK2402 | 255.53 | 271.70 | 16.17 | 15.92 | 0.15 | 0.001 | 0.01 | 5.19 | 0.01 | 0.01 |
| ZK2406 | 436.65 | 447.92 | 11.27 | 11.10 | 0.44 | 0.139 | 0.02 | 9.58 | 0.02 | 0.02 |
| ZK3210 | 519.96 | 586.09 | 66.13 | 65.13 | 0.24 | 0.032 | 0.00 | 0.00 | 0.00 | 0.00 |
| ZK4001 | 201.47 | 308.66 | 107.19 | 53.60 | 0.37 | 0.015 | 0.11 | 13.57 | 0.84 | 0.54 |
| ZK7204 | 144.50 | 162.50 | 18.00 | 17.73 | 2.44 | 0.000 | 0.00 | 0.00 | 0.03 | 0.03 |
| ZK8012 | 188.49 | 254.55 | 49.44 | 48.69 | 0.68 | 0.016 | 0.00 | 0.00 | 0.11 | 0.21 |
| ZK8016 | 217.04 | 442.82 | 23.39 | 23.03 | 0.83 | 0.004 | 0.40 | 13.26 | 1.56 | 0.16 |

### 12.2 Huatailong Sampling in 2008 and 2009

Core samples were taken by a diamond rock saw. Half of the core was sent for sample preparation and assay, and the other half was retained for records. Sample intervals were generally 1 m for the skarn-type mineralization and 2 m for the hornfels-type mineralization. Variable sample intervals sometimes were used based on geological characteristics. Samples were taken continuously within the mineralized zones as well as every 2 m among the host rocks on each side of a mineralized zone. A total of 19,536 and 3,453 core samples were taken for grade analysis in 2008 and 2009 (up to the end of October), respectively.

Tables 12.2 and 12.3 list the skarn-type mineralized intervals in the 2008 and 2009 drill holes for the Jiama Project, respectively.

| Table 12.2<br>Skarn-Type Mineralized Intervals in 2008 Drill Holes for the Jiama Project | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hole Id** | **Mineralized Interval** | | | **Est. True Thickness (m)** | **Average Grade** | | | | | |
| | **From** | **To** | **Length** | | **Cu %** | **Mo %** | **Au g/t** | **Ag g/t** | **Pb %** | **Zn %** |
| ZK003 | 212.33 | 231.30 | 18.97 | 9.49 | 0.22 | 0.273 | 0.06 | 7.70 | 0.07 | 0.09 |
| ZK007 | 175.23 | 198.73 | 23.50 | 23.14 | 0.20 | 0.130 | 0.02 | 9.97 | 0.12 | 0.01 |
| ZK008 | 84.22 | 86.22 | 2.00 | 1.97 | 0.04 | 0.000 | 0.02 | 0.52 | 0.00 | 0.00 |
| ZK011 | 139.77 | 156.88 | 17.11 | 16.85 | 0.38 | 0.086 | 0.08 | 7.79 | 0.04 | 0.03 |
| ZK012 | 82.33 | 94.83 | 12.50 | 12.31 | 0.90 | 0.009 | 0.06 | 18.17 | 0.09 | 0.02 |
| ZK014 | 120.80 | 127.95 | 7.15 | 7.04 | 0.54 | 0.053 | 0.17 | 16.46 | 0.14 | 0.03 |
| ZK016 | 143.90 | 146.10 | 2.20 | 2.17 | 0.51 | 0.005 | 0.33 | 6.68 | 0.00 | 0.01 |
| ZK018 | 275.88 | 317.47 | 41.59 | 40.96 | 0.52 | 0.024 | 0.26 | 8.79 | 0.01 | 0.01 |
| ZK020 | 364.20 | 386.70 | 22.50 | 22.16 | 0.30 | 0.031 | 0.11 | 5.67 | 0.01 | 0.01 |
| ZK021 | 430.30 | 498.20 | 67.90 | 66.87 | 0.52 | 0.050 | 0.29 | 10.51 | 0.01 | 0.01 |
| ZK026 | 466.70 | 547.60 | 80.90 | 79.67 | 0.03 | 0.070 | 0.01 | 0.67 | 0.00 | 0.01 |
| ZK1201 | 78.93 | 120.52 | 41.59 | 20.80 | 0.55 | 0.024 | 0.22 | 9.89 | 0.01 | 0.02 |
| ZK1205 | 152.66 | 199.08 | 46.42 | 45.71 | 1.14 | 0.064 | 0.42 | 20.33 | 0.00 | 0.01 |
| ZK1207 | 169.44 | 200.50 | 31.06 | 30.59 | 0.07 | 0.103 | 0.01 | 1.07 | 0.01 | 0.01 |
| ZK1208 | 250.31 | 314.39 | 64.08 | 63.11 | 1.23 | 0.060 | 1.03 | 17.92 | 0.01 | 0.01 |
| ZK1209 | 312.10 | 427.55 | 115.45 | 113.70 | 0.93 | 0.008 | 0.37 | 17.88 | 0.01 | 0.02 |
| ZK1212 | 304.50 | 393.40 | 88.90 | 87.55 | 0.39 | 0.069 | 0.12 | 8.61 | 0.04 | 0.09 |
| ZK1501 | 145.07 | 153.48 | 8.41 | 4.21 | 0.04 | 0.006 | 0.01 | 15.26 | 1.36 | 0.75 |
| ZK1505 | 27.10 | 54.20 | 27.10 | 26.69 | 0.52 | 0.004 | 0.21 | 14.69 | 0.01 | 0.00 |
| ZK1506 | 53.80 | 72.80 | 19.00 | 18.71 | 0.59 | 0.008 | 0.20 | 13.07 | 0.00 | 0.01 |
| ZK1507 | 132.72 | 143.28 | 10.56 | 10.40 | 1.00 | 0.023 | 0.27 | 36.37 | 0.01 | 0.01 |
| ZK1516 | 154.85 | 198.30 | 43.45 | 42.79 | 0.52 | 0.072 | 0.24 | 11.62 | 0.01 | 0.01 |
| ZK1518 | 269.13 | 276.12 | 6.99 | 6.88 | 0.23 | 0.048 | 0.05 | 2.53 | 0.01 | 0.01 |
| ZK1520 | 337.07 | 400.54 | 63.47 | 62.51 | 0.38 | 0.162 | 0.15 | 7.01 | 0.01 | 0.01 |
| ZK1522 | 307.83 | 362.07 | 54.24 | 53.42 | 0.50 | 0.032 | 0.26 | 9.37 | 0.01 | 0.01 |
| ZK1524 | 439.47 | 461.00 | 21.53 | 21.20 | 0.33 | 0.132 | 0.18 | 6.77 | 0.01 | 0.01 |
| ZK1602 | 54.90 | 129.26 | 74.36 | 37.18 | 0.99 | 0.016 | 0.35 | 15.84 | 0.01 | 0.01 |
| ZK1604 | 196.40 | 240.50 | 44.10 | 43.43 | 0.61 | 0.023 | 0.12 | 7.16 | 0.00 | 0.01 |
| ZK1607 | 247.49 | 284.00 | 36.51 | 35.96 | 1.92 | 0.035 | 0.75 | 36.24 | 0.01 | 0.01 |
| ZK1608 | 330.20 | 393.89 | 63.69 | 62.72 | 1.33 | 0.007 | 0.43 | 23.51 | 0.01 | 0.01 |
| ZK1609 | 413.10 | 456.65 | 43.55 | 42.89 | 0.19 | 0.047 | 0.06 | 4.27 | 0.00 | 0.01 |
| ZK1616 | 587.16 | 839.36 | 252.20 | 248.37 | 0.76 | 0.102 | 0.26 | 12.56 | 0.01 | 0.01 |
| ZK1618 | 687.40 | 790.26 | 102.86 | 101.30 | 0.12 | 0.069 | 0.05 | 2.82 | 0.01 | 0.00 |
| ZK1620 | 412.26 | 432.68 | 20.42 | 20.11 | 0.31 | 0.019 | 0.12 | 5.37 | 0.01 | 0.00 |
| ZK2001 | 54.59 | 140.65 | 73.65 | 36.83 | 0.74 | 0.006 | 0.15 | 12.98 | 0.02 | 0.03 |
| ZK2002 | 143.80 | 218.90 | 18.80 | 18.51 | 0.58 | 0.044 | 0.23 | 8.27 | 0.00 | 0.02 |
| ZK2004 | 211.90 | 231.40 | 19.50 | 19.20 | 0.31 | 0.022 | 0.17 | 6.01 | 0.00 | 0.01 |
| ZK2005 | 298.30 | 325.40 | 27.10 | 26.69 | 0.73 | 0.017 | 0.20 | 14.39 | 0.06 | 0.21 |
| ZK2006 | 324.00 | 369.00 | 45.00 | 44.32 | 0.66 | 0.054 | 0.16 | 9.48 | 0.01 | 0.01 |
| ZK2007 | 331.50 | 368.50 | 37.00 | 36.44 | 0.81 | 0.004 | 0.21 | 14.69 | 0.02 | 0.19 |
| ZK2008 | 380.60 | 438.10 | 57.50 | 56.63 | 0.96 | 0.031 | 0.32 | 17.60 | 0.00 | 0.00 |
| ZK2010 | 566.30 | 655.20 | 88.90 | 87.55 | 0.28 | 0.114 | 0.07 | 5.58 | 0.01 | 0.01 |
| ZK2301 | 130.38 | 140.58 | 10.20 | 10.05 | 0.09 | 0.004 | 0.09 | 35.61 | 2.97 | 2.27 |
| ZK2303 | 36.26 | 95.92 | 59.66 | 58.75 | 1.12 | 0.031 | 0.30 | 22.57 | 0.02 | 0.02 |
| ZK2304 | 34.70 | 37.00 | 2.30 | 2.27 | 0.51 | 0.116 | 0.05 | 4.42 | 0.01 | 0.01 |
| ZK2305 | 76.08 | 86.08 | 10.00 | 9.85 | 1.81 | 0.022 | 0.48 | 60.88 | 0.01 | 0.01 |
| ZK2306 | 178.44 | 200.05 | 21.61 | 21.28 | 0.17 | 0.027 | 0.03 | 4.29 | 0.01 | 0.01 |
| ZK2307 | 256.53 | 267.53 | 11.00 | 10.83 | 0.87 | 0.002 | 0.21 | 40.99 | 0.57 | 1.68 |
| ZK2308 | 306.16 | 310.16 | 4.00 | 3.94 | 0.32 | 0.007 | 0.19 | 19.24 | 0.24 | 0.01 |
| ZK2310 | 137.50 | 258.50 | 121.00 | 119.16 | 1.10 | 0.071 | 0.66 | 20.21 | 0.01 | 0.01 |
| ZK2312 | 231.10 | 272.50 | 41.40 | 40.77 | 0.67 | 0.023 | 0.14 | 16.69 | 0.03 | 0.03 |
| ZK2314 | 224.40 | 229.40 | 5.00 | 4.92 | 0.49 | 0.033 | 0.17 | 10.11 | 0.01 | 0.01 |
| ZK2316 | 320.80 | 323.80 | 3.00 | 2.95 | 0.96 | 0.001 | 0.51 | 29.05 | 0.01 | 0.02 |
| ZK2401 | 42.00 | 55.00 | 13.00 | 6.50 | 0.56 | 0.002 | 0.30 | 11.16 | 0.04 | 0.04 |
| ZK2404 | 229.00 | 334.90 | 105.90 | 52.95 | 0.45 | 0.016 | 0.08 | 8.61 | 0.08 | 0.03 |
| ZK2407 | 344.00 | 378.30 | 34.30 | 33.78 | 0.84 | 0.017 | 0.26 | 31.18 | 1.71 | 1.08 |
| ZK2408 | 382.92 | 404.60 | 21.68 | 21.35 | 0.68 | 0.020 | 0.24 | 10.56 | 0.01 | 0.07 |
| ZK2409 | 399.40 | 466.40 | 67.00 | 65.98 | 1.91 | 0.074 | 1.84 | 36.94 | 0.01 | 0.01 |
| ZK2410 | 416.40 | 442.80 | 26.40 | 26.00 | 0.16 | 0.053 | 0.15 | 3.80 | 0.01 | 0.01 |

| Table 12.2<br>Skarn-Type Mineralized Intervals in 2008 Drill Holes for the Jiama Project (continued) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hole Id | Mineralized Interval | | | Est. True | Average Grade | | | | | |
| | From | To | Length | Thickness (m) | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % |
| ZK2801 | 104.52 | 147.52 | 43.00 | 21.50 | 0.13 | 0.058 | 0.01 | 1.94 | 0.01 | 0.01 |
| ZK2802 | 149.80 | 336.70 | 109.30 | 54.65 | 0.46 | 0.026 | 0.08 | 8.12 | 0.04 | 0.02 |
| ZK2804 | 384.86 | 429.80 | 44.94 | 22.47 | 1.18 | 0.019 | 0.33 | 18.34 | 0.13 | 0.21 |
| ZK2805 | 458.80 | 474.30 | 15.50 | 15.26 | 1.64 | 0.010 | 0.75 | 38.40 | 0.00 | 0.01 |
| ZK2806 | 463.50 | 496.30 | 32.80 | 32.30 | 0.95 | 0.094 | 0.47 | 21.86 | 0.00 | 0.01 |
| ZK2807 | 428.45 | 476.20 | 47.75 | 47.02 | 0.60 | 0.039 | 0.07 | 6.73 | 0.02 | 0.03 |
| ZK3101 | 39.50 | 50.78 | 11.28 | 11.11 | 3.48 | 0.186 | 0.97 | 175.26 | 3.69 | 1.49 |
| ZK3104 | 79.20 | 89.20 | 10.00 | 9.85 | 0.91 | 0.001 | 0.20 | 24.95 | 0.21 | 0.23 |
| ZK3106 | 181.30 | 185.30 | 4.00 | 3.94 | 8.25 | 0.002 | 8.20 | 209.92 | 0.03 | 0.01 |
| ZK3108 | 91.50 | 109.20 | 17.70 | 17.43 | 0.31 | 0.084 | 0.09 | 10.38 | 0.02 | 0.01 |
| ZK3203 | 212.35 | 358.30 | 127.95 | 63.98 | 0.65 | 0.024 | 0.21 | 15.00 | 0.05 | 0.03 |
| ZK3204 | 369.03 | 382.25 | 13.22 | 6.61 | 0.48 | 0.026 | 0.28 | 10.42 | 0.01 | 0.02 |
| ZK3207 | 454.40 | 511.40 | 57.00 | 56.13 | 0.44 | 0.031 | 0.15 | 7.02 | 0.01 | 0.01 |
| ZK3208 | 540.20 | 549.20 | 9.00 | 8.86 | 0.02 | 0.054 | 0.01 | 1.13 | 0.02 | 0.02 |
| ZK3209 | 525.40 | 656.80 | 131.40 | 129.40 | 0.72 | 0.052 | 0.10 | 6.99 | 0.02 | 0.03 |
| ZK3212 | 609.60 | 640.50 | 30.90 | 30.43 | 0.51 | 0.078 | 0.13 | 7.58 | 0.02 | 0.01 |
| ZK3601 | 129.82 | 469.60 | 335.78 | 167.89 | 0.49 | 0.029 | 0.19 | 11.43 | 0.04 | 0.03 |
| ZK3603 | 309.70 | 496.20 | 165.42 | 82.71 | 0.62 | 0.055 | 0.27 | 12.32 | 0.01 | 0.01 |
| ZK3604 | 431.46 | 521.84 | 90.38 | 89.01 | 0.19 | 0.059 | 0.04 | 4.54 | 0.06 | 0.04 |
| ZK3605 | 497.90 | 671.91 | 174.01 | 171.37 | 0.31 | 0.075 | 0.08 | 6.70 | 0.03 | 0.02 |
| ZK3608 | 630.11 | 717.60 | 87.49 | 86.16 | 1.66 | 0.026 | 0.34 | 16.57 | 0.01 | 0.02 |
| ZK3904 | 79.70 | 81.70 | 2.00 | 1.97 | 0.48 | 0.014 | 0.18 | 10.10 | 0.00 | 0.01 |
| ZK4002 | 73.59 | 134.05 | 60.46 | 30.23 | 0.34 | 0.015 | 0.07 | 10.72 | 0.11 | 0.11 |
| ZK4004 | 395.67 | 527.18 | 131.51 | 65.76 | 1.19 | 0.027 | 0.45 | 22.99 | 0.04 | 0.02 |
| ZK4006 | 453.64 | 565.55 | 111.91 | 110.21 | 0.70 | 0.033 | 0.22 | 17.15 | 0.05 | 0.01 |
| ZK4008 | 579.03 | 686.03 | 107.00 | 105.37 | 0.15 | 0.010 | 0.08 | 3.90 | 0.01 | 0.01 |
| ZK406 | 110.62 | 117.62 | 7.00 | 6.89 | 0.32 | 0.061 | 0.03 | 6.49 | 0.06 | 0.02 |
| ZK408 | 93.56 | 107.40 | 13.84 | 13.63 | 0.36 | 0.047 | 0.06 | 8.23 | 0.01 | 0.01 |
| ZK409 | 80.90 | 85.50 | 4.60 | 4.53 | 2.99 | 0.142 | 0.46 | 60.32 | 0.01 | 0.01 |
| ZK410 | 93.66 | 119.31 | 25.65 | 25.26 | 3.31 | 0.089 | 0.84 | 38.09 | 0.03 | 0.02 |
| ZK411 | 182.61 | 198.42 | 15.81 | 15.57 | 0.84 | 0.074 | 0.35 | 16.04 | 0.01 | 0.01 |
| ZK412 | 177.70 | 213.10 | 35.40 | 34.86 | 0.21 | 0.057 | 0.04 | 2.77 | 0.01 | 0.01 |
| ZK4804 | 498.57 | 599.17 | 100.60 | 50.30 | 0.49 | 0.038 | 0.24 | 10.22 | 0.06 | 0.03 |
| ZK5601 | 28.36 | 89.88 | 61.52 | 30.76 | 0.28 | 0.021 | 0.08 | 7.76 | 0.07 | 0.28 |
| ZK5602 | 129.90 | 373.00 | 243.10 | 121.55 | 0.93 | 0.017 | 0.32 | 22.82 | 0.45 | 0.26 |
| ZK5603 | 83.76 | 306.83 | 146.07 | 73.04 | 0.31 | 0.055 | 0.14 | 6.53 | 0.12 | 0.14 |
| ZK6402 | 178.20 | 285.60 | 12.00 | 11.82 | 0.41 | 0.049 | 0.14 | 10.83 | 0.10 | 0.04 |
| ZK6403 | 94.50 | 99.50 | 5.00 | 4.92 | 0.05 | 0.072 | 0.06 | 1.23 | 0.07 | 0.11 |
| ZK6405 | 71.60 | 191.00 | 52.40 | 51.60 | 0.77 | 0.027 | 0.11 | 7.65 | 0.07 | 0.04 |
| ZK701 | 84.84 | 124.30 | 39.46 | 19.73 | 0.35 | 0.014 | 0.04 | 38.86 | 1.15 | 0.96 |
| ZK703 | 271.80 | 278.80 | 7.00 | 3.50 | 0.19 | 0.002 | 0.11 | 23.75 | 2.12 | 6.90 |
| ZK704 | 305.46 | 314.46 | 9.00 | 8.86 | 0.50 | 0.006 | 0.14 | 45.38 | 1.14 | 1.06 |
| ZK705 | 253.72 | 260.40 | 6.68 | 6.58 | 0.45 | 0.001 | 0.15 | 21.19 | 0.21 | 0.02 |
| ZK706 | 259.30 | 269.20 | 9.90 | 9.75 | 0.62 | 0.002 | 0.16 | 10.53 | 0.01 | 0.12 |
| ZK707 | 216.72 | 232.70 | 15.98 | 15.74 | 0.76 | 0.001 | 0.23 | 36.06 | 0.77 | 0.65 |
| ZK708 | 195.38 | 207.83 | 12.45 | 12.26 | 0.58 | 0.012 | 0.28 | 17.14 | 0.01 | 0.01 |
| ZK709 | 146.72 | 155.10 | 8.38 | 8.25 | 1.36 | 0.011 | 0.50 | 44.77 | 0.01 | 0.02 |
| ZK711 | 87.58 | 135.70 | 48.12 | 47.39 | 0.48 | 0.205 | 0.12 | 12.40 | 0.03 | 0.03 |
| ZK712 | 130.18 | 137.18 | 7.00 | 6.89 | 0.10 | 0.083 | 0.00 | 2.44 | 0.02 | 0.02 |
| ZK716 | 231.98 | 258.76 | 26.78 | 26.37 | 2.08 | 0.034 | 0.07 | 16.39 | 0.02 | 0.02 |
| ZK718 | 332.02 | 395.96 | 63.94 | 62.97 | 0.09 | 0.039 | 0.05 | 2.03 | 0.01 | 0.01 |
| ZK720 | 336.30 | 404.80 | 68.50 | 67.46 | 0.42 | 0.019 | 0.18 | 7.29 | 0.00 | 0.01 |
| ZK7201 | 144.63 | 148.63 | 4.00 | 3.94 | 0.04 | 0.037 | 0.02 | 0.58 | 0.02 | 0.02 |
| ZK7202 | 74.34 | 440.05 | 21.90 | 21.57 | 0.13 | 0.100 | 0.03 | 6.65 | 0.39 | 0.04 |
| ZK7203 | 84.27 | 147.15 | 8.00 | 7.88 | 0.58 | 0.003 | 0.13 | 14.75 | 1.03 | 1.72 |
| ZK722 | 397.20 | 439.26 | 42.06 | 41.42 | 0.72 | 0.073 | 0.28 | 13.98 | 0.01 | 0.01 |
| ZK8001 | 35.80 | 64.90 | 29.10 | 28.66 | 1.54 | 0.002 | 0.60 | 21.50 | 0.21 | 0.14 |
| ZK8002 | 133.64 | 138.64 | 5.00 | 4.92 | 0.09 | 0.000 | 0.18 | 20.84 | 1.09 | 0.84 |

| Table 12.2<br>Skarn-Type Mineralized Intervals in 2008 Drill Holes for the Jiama Project (continued) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hole Id | Mineralized Interval | | | Est. True | Average Grade | | | | | |
| | From | To | Length | Thickness (m) | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % |
| ..ZK722 | 397.20 | 439.26 | 42.06 | 41.42 | 0.72 | 0.073 | 0.28 | 13.98 | 0.01 | 0.01 |
| ..ZK8001 | 35.80 | 64.90 | 29.10 | 28.66 | 1.54 | 0.002 | 0.60 | 21.50 | 0.21 | 0.14 |
| ..ZK8002 | 133.64 | 138.64 | 5.00 | 4.92 | 0.09 | 0.000 | 0.18 | 20.84 | 1.09 | 0.84 |
| ..ZK722 | 397.20 | 439.26 | 42.06 | 41.42 | 0.72 | 0.073 | 0.28 | 13.98 | 0.01 | 0.01 |
| ..ZK8001 | 35.80 | 64.90 | 29.10 | 28.66 | 1.54 | 0.002 | 0.60 | 21.50 | 0.21 | 0.14 |
| ..ZK8002 | 133.64 | 138.64 | 5.00 | 4.92 | 0.09 | 0.000 | 0.18 | 20.84 | 1.09 | 0.84 |
| ..ZK722 | 397.20 | 439.26 | 42.06 | 41.42 | 0.72 | 0.073 | 0.28 | 13.98 | 0.01 | 0.01 |
| ..ZK8001 | 35.80 | 64.90 | 29.10 | 28.66 | 1.54 | 0.002 | 0.60 | 21.50 | 0.21 | 0.14 |
| ..ZK8002 | 133.64 | 138.64 | 5.00 | 4.92 | 0.09 | 0.000 | 0.18 | 20.84 | 1.09 | 0.84 |
| ..ZK722 | 397.20 | 439.26 | 42.06 | 41.42 | 0.72 | 0.073 | 0.28 | 13.98 | 0.01 | 0.01 |
| ..ZK8001 | 35.80 | 64.90 | 29.10 | 28.66 | 1.54 | 0.002 | 0.60 | 21.50 | 0.21 | 0.14 |
| ..ZK8002 | 133.64 | 138.64 | 5.00 | 4.92 | 0.09 | 0.000 | 0.18 | 20.84 | 1.09 | 0.84 |

| Table 12.3<br>Skarn-Type Mineralized Intervals in 2009 Drill Holes for the Jiama Project | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hole Id | Mineralized Interval | | | Est. True | Average Grade | | | | | |
| | From | To | Length | Thickness (m) | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % |
| ZK1514 | 112.70 | 137.80 | 25.10 | 24.72 | 0.43 | 0.113 | 0.12 | 6.39 | 0.01 | 0.01 |
| ZK1517 | 241.05 | 267.48 | 26.43 | 26.03 | 1.20 | 0.044 | 0.37 | 27.51 | 0.01 | 0.02 |
| ZK1526 | 616.70 | 644.30 | 27.60 | 27.18 | 0.87 | 0.002 | 0.32 | 21.00 | 0.01 | 0.10 |
| ZK1902 | 75.88 | 93.88 | 18.00 | 17.73 | 1.16 | 0.046 | 0.14 | 34.81 | 0.01 | 0.03 |
| ZK1904 | 51.28 | 107.40 | 56.12 | 55.27 | 0.66 | 0.025 | 0.21 | 16.04 | 0.01 | 0.01 |
| ZK1906 | 63.00 | 125.00 | 62.00 | 61.06 | 0.59 | 0.011 | 0.22 | 14.36 | 0.01 | 0.01 |
| ZK1908 | 100.20 | 143.30 | 43.10 | 42.45 | 1.05 | 0.057 | 0.37 | 25.88 | 0.01 | 0.01 |
| ZK1910 | 197.50 | 222.40 | 24.90 | 24.52 | 1.22 | 0.041 | 0.69 | 27.89 | 0.00 | 0.01 |
| ZK1912 | 247.70 | 292.70 | 45.00 | 44.32 | 2.38 | 0.111 | 1.32 | 61.03 | 0.01 | 0.02 |
| ZK1914 | 345.80 | 377.90 | 32.10 | 31.61 | 0.70 | 0.042 | 0.10 | 10.87 | 0.01 | 0.02 |
| ZK1916 | 349.17 | 355.90 | 6.73 | 6.63 | 0.77 | 0.028 | 0.22 | 15.56 | 0.01 | 0.03 |
| ZK1918 | 312.30 | 320.86 | 8.56 | 8.43 | 0.93 | 0.022 | 0.37 | 33.93 | 0.01 | 0.02 |
| ZK2309 | 90.62 | 201.38 | 110.76 | 109.08 | 0.80 | 0.018 | 0.36 | 15.87 | 0.01 | 0.01 |
| ZK2311 | 247.65 | 316.25 | 68.60 | 67.56 | 0.94 | 0.055 | 0.31 | 19.19 | 0.01 | 0.02 |
| ZK2313 | 217.05 | 224.05 | 7.00 | 6.89 | 0.50 | 0.076 | 0.12 | 8.19 | 0.00 | 0.01 |
| ZK2318 | 514.90 | 524.60 | 9.70 | 9.55 | 0.42 | 0.007 | 0.22 | 9.60 | 0.01 | 0.01 |
| ZK2320 | 654.46 | 683.46 | 29.00 | 28.56 | 0.20 | 0.173 | 0.08 | 4.06 | 0.00 | 0.01 |
| ZK2702 | 132.13 | 154.27 | 22.14 | 21.80 | 0.54 | 0.055 | 0.08 | 10.82 | 0.01 | 0.01 |
| ZK2704 | 90.68 | 91.68 | 1.00 | 0.98 | 0.05 | 0.056 | 0.00 | 0.71 | 0.01 | 0.01 |
| ZK2706 | 67.57 | 92.26 | 24.69 | 24.31 | 0.74 | 0.009 | 0.07 | 23.98 | 0.16 | 0.39 |
| ZK2708 | 59.40 | 78.20 | 18.80 | 18.51 | 2.06 | 0.009 | 1.07 | 45.65 | 0.01 | 0.01 |
| ZK2710 | 97.84 | 162.90 | 65.06 | 64.07 | 1.77 | 0.010 | 0.82 | 30.41 | 0.01 | 0.01 |
| ZK2712 | 212.50 | 293.40 | 80.90 | 79.67 | 0.42 | 0.016 | 0.15 | 7.79 | 0.01 | 0.02 |
| ZK2714 | 246.63 | 312.23 | 65.60 | 64.60 | 0.72 | 0.011 | 0.23 | 13.77 | 0.01 | 0.03 |
| ZK2716 | 166.94 | 196.94 | 30.00 | 29.54 | 0.33 | 0.062 | 0.13 | 8.17 | 0.00 | 0.13 |
| ZK2718 | 120.55 | 149.32 | 28.77 | 28.33 | 1.26 | 0.118 | 0.82 | 18.26 | 0.04 | 0.02 |
| ZK3105 | 134.70 | 136.25 | 1.55 | 1.53 | 0.30 | 0.032 | 0.02 | 1.45 | 0.00 | 0.01 |
| ZK3107 | 144.50 | 157.50 | 13.00 | 12.80 | 0.59 | 0.012 | 0.10 | 14.19 | 0.00 | 0.01 |
| ZK3110 | 207.10 | 240.32 | 33.22 | 32.72 | 1.06 | 0.113 | 0.13 | 16.27 | 0.02 | 0.01 |
| ZK3508 | 112.00 | 114.00 | 2.00 | 1.97 | 0.00 | 0.045 | 0.00 | 0.62 | 0.00 | 0.01 |
| ZK3510 | 74.04 | 77.64 | 3.60 | 3.55 | 0.12 | 0.113 | 0.02 | 1.39 | 0.00 | 0.01 |
| ZK3906 | 201.69 | 207.69 | 6.00 | 5.91 | 0.32 | 0.086 | 0.16 | 8.34 | 0.00 | 0.01 |
| ZK3910 | 510.80 | 520.80 | 10.00 | 9.85 | 0.54 | 0.001 | 0.25 | 13.76 | 0.00 | 0.01 |
| ZK4012 | 657.15 | 755.68 | 98.53 | 97.03 | 0.84 | 0.030 | 0.32 | 16.34 | 0.01 | 0.03 |
| ZK4708 | 315.37 | 320.71 | 5.34 | 5.26 | 0.93 | 0.002 | 0.34 | 19.86 | 0.01 | 0.02 |

## 12.3 Discussion

Copper-polymetallic mineralization in the Jiama Project is sampled by DDH drill holes and a small number of surface trenches. The resource database used for the resource estimates in this ITR consists of 210 DDH holes with a total drilled length of 69,028 m and 10 surface trenches with a total sampled length of 349 m. Drill hole spacing in the central portion of the mineralized zones is 100 m by 100 m, and drill hole spacing in the peripheral zones generally ranges from 200 m to 400 m. The drill hole samples completed by Brigade 6 in the 1990s and by Huatailong in 2008-2009 cover an area of approximately 3,500-m along strike (northwest) and 2,500-m wide along the dip direction (northeast) for the Jiama Project.

Core recovery is generally good, averaging over 95% for the Huatailong DDH holes completed in 2008 to 2009. The 22 DDH holes completed in the 1990s by Brigade 6 have a lower average core recovery of 84%, but they represent less than 10% of the drill hole database.

BDASIA's review indicates that the drilling and sampling for the Jiama Project have been performed in accordance with accepted industry standards, the core samples are representative of the copper-polymetallic mineralization in the deposit and should not produce any material bias for metal grade distribution.

# 13.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

## 13.1 Brigade 6 Work in the 1990s

Sample preparation and analysis for the Brigade 6 samples in the 1990s were conducted by the Tibet Central Laboratory of the Ministry of Geology and Mineral Resources of China in accordance with relevant regulations at that time. No detailed information was available for the sample preparation procedures and metal grade determination methods. However, BDASIA believes that the assay results are acceptable based on their similarities with the samples taken in 2008 and 2009 by Huatailong.

## 13.2 Huatailong Work in 2008 and 2009

Sample preparation and analysis for the Huatailong core samples were undertaken by the Southwestern Metallurgic Geology Analytical Center ("Southwest Center") in Chengdu, Sichuan Province, which is an accredited laboratory by the Chinese National Accreditation Board for Laboratories ("CNAL"). The Southwest Center set up a sample preparation facility in the Huatailong core storage warehouse. Sample preparation was undertaken by the Southwest Center personnel. Samples were prepared by a two-stage crushing and one-stage grinding procedure to reduce the size of sample particles to minus 200 mesh (0.074 mm). Sample splitting was not performed until the particle size was reduced to approximately 1 mm. A ground sample of approximately 400 grams ("g") was sent for analysis in Chengdu; a duplicate ground sample of approximately 500 g as well as the coarse rejects was kept in the core storage warehouse.

Sample analysis was undertaken by the Southwest Center using the standard analytic methods specified in "The Quality Administration Standards for Analysis in Geological and Mineral Resource Laboratories" (DZ0130-94) promulgated by the former Ministry of Geology and Mineral Resources of China. Gold grades were determined by an aqua regia + fluoride digestion, reactivated carbon concentrating, and atomic absorption spectroscopy ("AAS") procedure. Copper, lead, zinc, molybdenum, and silver grades were determined using an aqua regia + hydrofluoric acid + perchloric acid digestion and Inductively Coupled Plasma Atomic Emission Spectrometry ("ICP-AES") or AAS procedure. All samples were analyzed for the above six metals.

Some composite samples were also used to determine the concentration of tungsten, cobalt, nickel, cadmium, tin, gallium, niobium, rhenium, arsenic, antimony, bismuth, mercury, selenium, tellurium, germanium, indium, thallium, and sulfur by ICP-AES and other analytic methods.

None of the Huatailong employees, officers, directors, or associates was involved in the sample preparation. BDASIA considers the sample preparation procedures, analytic method, and security utilized to be appropriate for this type of copper-polymetallic deposit.

# 14.0 DATA VERIFICATION

## 14.1 Brigade 6 Work in the 1990s

Assay quality control and quality assurance ("QAQC") programs for the Brigade 6 samples included regular internal check assays, external check assays, and analysis of standard reference materials and blank samples. Assay quality was considered good based on a review conducted by the Tibet Central Laboratory; however, no detailed information was available for BDASIA's review.

## 14.2 Huatailong Work in 2008 and 2009

QAQC programs for the Huatailong samples included regular internal check assays, external check assays, and analysis of standard reference materials and blank samples.

Within the Southwest Center, all analyses were conducted twice. At the same time, approximately 20% of the samples were randomly selected and were blindly coded with different sample numbers for assay precision control. State standard reference materials and blanks were inserted into every batch of samples by the laboratory to monitor the quality of the analytic results. Work performed will not be credited for the laboratory operator if less than 90% of the samples analyzed meet the quality control requirements in a batch. It was reported that all these measures undertaken have indicated good assay results.

Internal check samples were selected from the duplicate samples by Resource Institute personnel and were coded with different sample numbers blind to the laboratory. A total of 750 internal check samples were analyzed by the Southwest Center in 2008, representing 3.8% of the total analyzed samples in 2008. Internal checks were compared with the original assay results to see if they met the permitted relative deviation ranges specified by the regulations. It was reported that over 93% of the internal checks were within the permitted relative deviation ranges in 2008, which is better than the 80% requirement specified by the regulations. No systematic bias was reported between the original assay results and the internal checks. Figure 14.1 shows the scatter plots of the 2008 original assay results and the internal check assay results.

External check samples were randomly selected from the pulp rejects by Resource Institute personnel and were sent to the State Geologic Laboratory Analytic Center in Beijing for analysis. A total of 695 external check samples were analyzed in 2008, representing 3.6% of the total analyzed samples in 2008. External checks were compared with the original assay results to see if they met the permitted relative deviation ranges specified by the regulations. It was reported that 94% to 99% of the external checks for the six different analyzed metals met the permitted relative deviation ranges in 2008. No systematic bias was reported between the original assay results and the external checks. Figure 14.2 shows the scatter plots of the 2008 original assay results and the external check assay results.

BDASIA has verified the copper-polymetallic mineralization by observing the mineralized drill cores at Huatailong's core storage facility.

To ensure that the analytic results were correctly entered into the computer drill hole database used for resource modeling, BDASIA has randomly selected about 10% of the 2008 drill holes to compare the assay data in the computer database with the scanned copies of the original assay certificates issued by the Southwest Center. The check indicates that all assay data has been correctly entered into the computer database. BDASIA has also verified the internal and external check assay data from the original assay certificates.

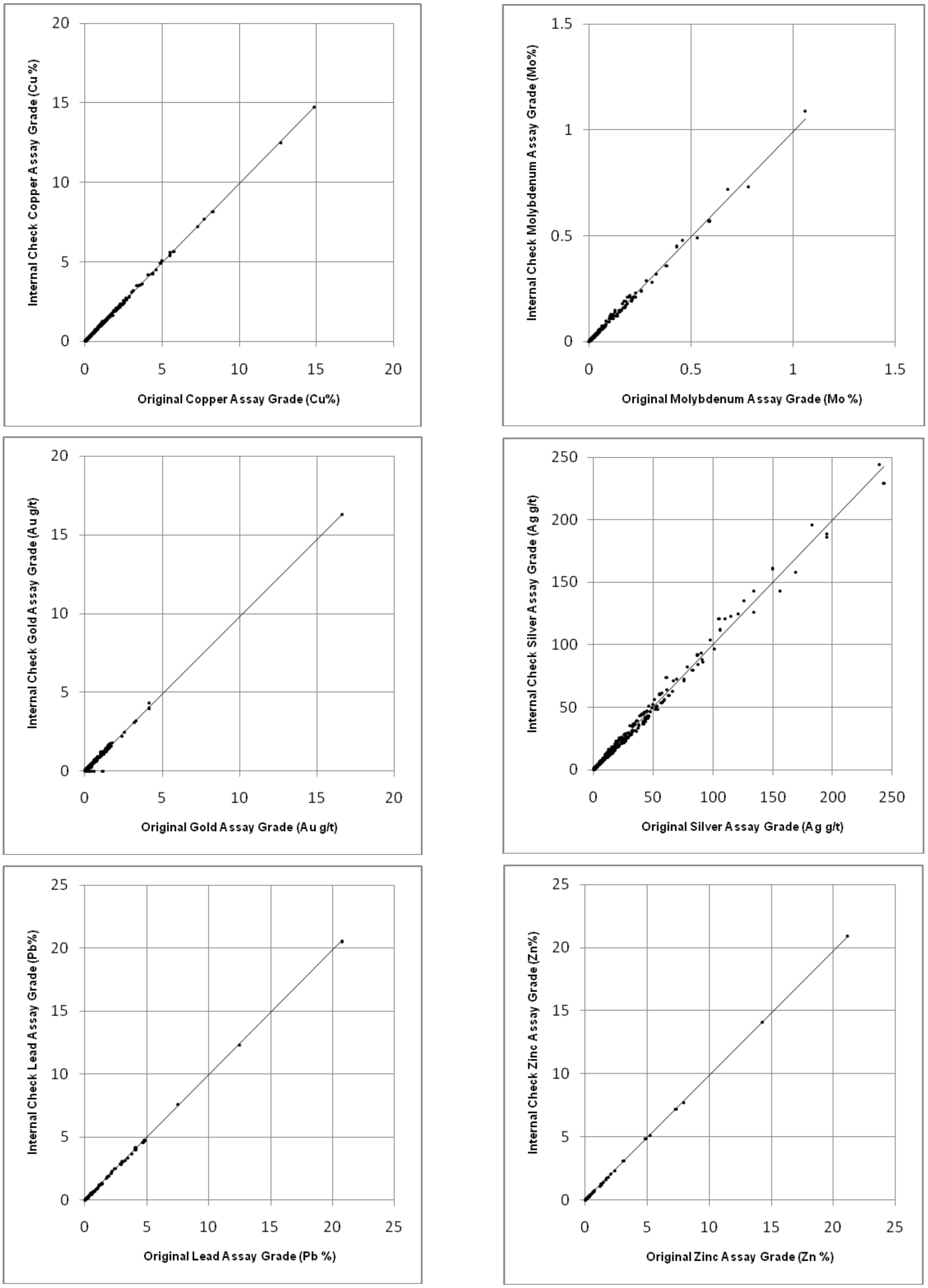



Figure 14.1 Scatter plots of original assay results and internal check assay results

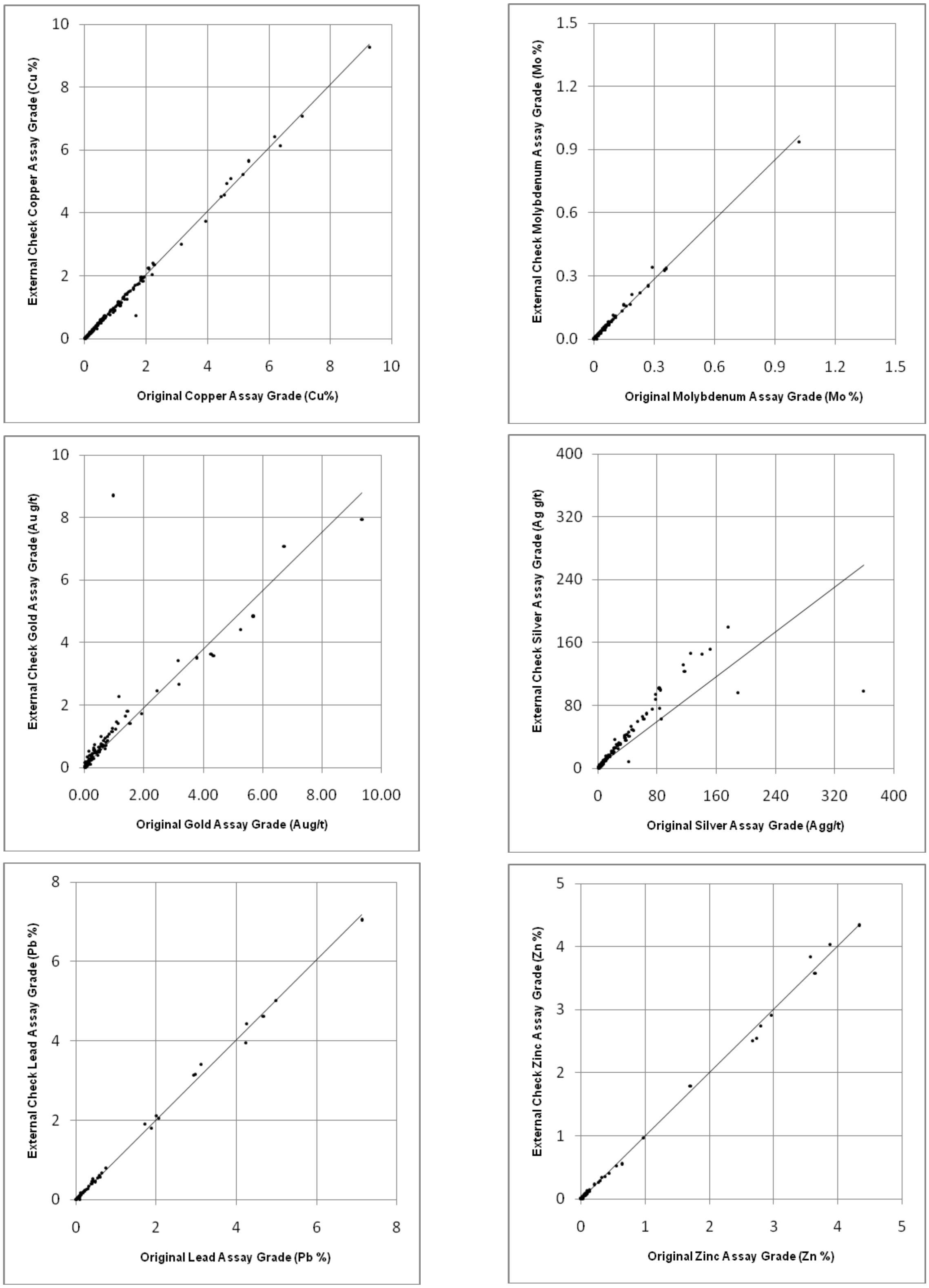



Figure 14.2 Scatter plots of original assay results and external check assay results

Based on the review of the drilling, sampling, sample preparation, and analysis, as well as QAQC data, BDASIA is of the opinion that assay quality for the 2008 and 2009 samples for the Jiama Project meets industry standards and can be used for estimating the mineral resources present at the project.

# 15.0 ADJACENT PROPERTIES

There is no publically available information about the other mining properties adjacent to the Jiama Project.

# 16.0 METALLURGICAL TESTING AND MINERAL PROCESSING

The metallurgical testwork and development of the required processing methods and facilities to treat the Jiama copper-lead and copper-molybdenum ores is described below. The copper-lead ore as part of the mineralization at the upper portion of the Tongqianshan open pit constitutes a very small portion of the Jiama ore reserve, while the copper-molybdenum ore is the primary ore type in the Jiama ore reserve. The project will treat a mixture of both ore types for the initial 2 years of the mine life to produce separate copper, molybdenum and lead concentrates; it will treat only the copper-molybdenum ore after the initial 2 years to produce separate copper and molybdenum concentrates. Economically attractive quantities of gold will be reported with the copper concentrate while some silver will be reported with both the copper and the lead concentrates.

## 16.1 Metallurgical Testing

Early metallurgical testwork for the Jiama Project was mostly concentrated on the copper-lead ore, which accounts for only a very small portion of the Jiama resource/reserves located at the upper portion of the steeply-dipping ore zone. The testwork on the copper-lead ore was conducted by the Beijing General Research Institute of Mining and Metallurgy ("BGRIMM") in 1990 and 2008, the Chengdu Institute of Multipurpose Utilization of Mineral Resources of Chinese Academy of Geological Sciences, ("CIMUMR") in 2000, and the Beijing General Research Institute for Nonferrous Metals ("BGRINM") in 2007. Changsha Institute summarized these tests in its December 2009 feasibility study report for the Jiama Project.

The metallurgical testwork on the copper-molybdenum ore was conducted by the Changchun Gold Research Institute ("CGRI") in August 2009. The results of the final test on this ore are also reported in the Changsha Institute December 2009 feasibility study report. The test sample was composited from the coarse rejects of drill core assay samples. The content of metal values corresponded reasonably well to the forecast mill feed. The test sample and test results were satisfactory.

### 16.1.1 Test Samples

The two main types of ore to be processed during the life of the Jiama operation are the copper-molybdenum ore, with a large reserve, and the copper-lead ore, with a substantially smaller reserve. For the first ore type, the sample for testing was obtained from drill core assay sample coarse rejects. The testwork samples for the second ore type were generally obtained by the channel sampling method from underground mine workings.

The 1990 BGRIMM copper-lead ore test sample was composited from high-grade ore (67.75%), low-grade ore (25.8%), and waste rock (6.45%), with average grades of 0.99% copper, 29.14% lead, 6.23% zinc, 344 g/t silver, and 0.39 g/t gold. The lead, zinc, and silver grades for the sample are extremely high and not representative of the ore to be treated by the processing plant at Jiama. Therefore, the 1990 BGRIMM test results are not discussed in this ITR.

Three test samples were collected for the 2000 CIMUMR testwork, representing the copper-lead-zinc ore, lead-zinc ore, and copper-molybdenum ore. The copper-lead-zinc ore sample that was used for metallurgical test had average grades of 0.98% copper, 3.41% lead, 1.42% zinc, 63 g/t silver and 0.42 g/t gold, which are reasonably close to the forecast metal grades of the copper-lead ore for the project. Other elements in the sample include 0.0035% molybdenum, 2.93% sulfur, 9.84% iron, 0.035% arsenic, 0.37% manganese, 34.00% $SiO_2$, 7.04% $Al_2O_3$, 27.60% CaO, and 1.52% MgO.

Five samples were collected for the 2007 BGRINM testwork by channel sampling from the underground mined-out areas and from surface ore stockpiles. The copper-lead-zinc ore sample that was used for the metallurgical tests has average grades of 1.28% copper, 3.60% lead, 2.06% zinc, 52 g/t silver, and 0.20 g/t gold, which are reasonably close to the forecast metal grades of the copper-lead ore for the project.

The 2008 BGRIMM copper-lead ore test sample was collected by channel sampling from underground mined-out areas, with average grades of 1.38% copper, 2.37-2.42% lead, 1.08-1.16% zinc, 61.79-64.32 g/t silver, and 0.44-0.47 g/t gold, which are reasonably close to the forecast metal grades of the copper-lead ore for the project.

The 2009 CGRI copper-molybdenum ore test sample composited from drill core assay sample coarse rejects has average grades of 1.02% copper, 0.054% molybdenum, 16.08 g/t silver, and 1.07 g/t gold, which are reasonably close to the forecast average metal grades for the copper-molybdenum ore of the Jiama Project. Other elements in the sample include 0.03% lead, 0.03% zinc, 1.01% sulfur, 8.06% iron, 0.011% arsenic, 1.36% carbon, 44.67% $SiO_2$, 3.66% $Al_2O_3$, 18.1% CaO, and 2.86% MgO.

The zinc grade in the tested copper-lead ore samples is moderately high (1.08% to 2.06%), however, the average zinc grade for the mixed copper-lead ore and copper-molybdenum ore is below 0.20%, which is too low to justify separate zinc concentrate production for the Jiama Project. Therefore, no zinc concentrate production is planned in the feasibility study.

### 16.1.2 Mineral Composition of Ores

The two types of ores have similar mineral composition. They differ in relative amounts of the minerals present. Table 16.1 shows the mineral composition of the typical ore.

**Table 16.1**
**Mineral Composition of Jiama Ore**

| Metallic Minerals | | Non-Metallic Minerals |
|---|---|---|
| **Name** | **Chemical Formula** | |
| **Major Minerals** | | |
| Chalcopyrite | $CuFeS_2$ (34.6% Cu) | Garnet |
| Bornite | $Cu_5FeS_4$ (63.3% Cu) | Diopside |
| Galena | PbS (86.6% Pb) | Plagioclase |
| Sphalerite | ZnS (67.1% Zn) | Wollastonite |
| Molybdenite | $MoS_2$ (59.9% Mo) | K-Feldspar |
| Pyrite | $FeS_2$ (46.5% Fe) | Quartz |
| **Minor Minerals** | | |
| Chalcocite | $Cu_2S$ (79.9% Cu) | Chlorite |
| Enargite | $Cu_3AsS_4$ (48.4% Cu) | Dolomite |
| Tetrahedrite | $(Cu,Fe)_{12}Sb_4S_{13}$ (up to 45.8% Cu) | Sericite |
| Covellite | CuS (66.5% Cu) | Calcite |
| Native Gold | Au, 100% | Tremolite |
| Malachite | $CuCO_3Cu(OH)_2$ (57.5% Cu) | Actinolite |
| Native Silver | Ag, 100% | |
| Hematite | $Fe_2O_3$ | |
| Cobaltite | CoAsS | |
| Rutile | $TiO_2$ | |

**Chalcopyrite** is embedded in rock-forming minerals and together with galena, sphalerite, and pyrite. It may be deposited between gangue minerals in irregular shapes. Small amounts of chalcopyrite occur as inclusions in sphalerite measuring 0.001 to 0.1 mm in size.

**Galena** is found in chalcopyrite-bornite-galena-sphalerite ore, primarily embedded with sphalerite and chalcopyrite. It appears in irregular shapes or is disseminated in gangue minerals.

**Sphalerite,** along with galena, chalcopyrite, and bornite, is disseminated in gangue minerals in irregular shapes, or is found as interrupted veinlets along fractures or between gaps of gangue minerals together with galena and chalcopyrite.

**Molybdenite** is present mostly in tabular form but may be embedded in or wrapped by gangue minerals. Its distribution among different types of ore is uneven. Its size generally varies between 0.01 and 0.05 mm.

**Gold** is found mostly as native gold with a grain size generally between 0.01 and 0.03 mm, the largest being 0.1 mm. It occurs mostly within tetrahedrite, bornite, and gangue minerals.

**Silver** is found as either native silver or silver telluride. It is generally directly correlated with lead.

The elements with economic values in the deposit include copper, molybdenum, lead, zinc, gold, and silver. Deleterious elements include arsenic and magnesium, but their contents are generally low.

### 16.1.3 Tests and Results

The summaries of the testwork results obtained from the copper-lead ore are presented in Table 16.2. Tests T1 and T2 compare the selective flotation approach with bulk flotation, followed by separation approach. Of the two approaches, the bulk flotation/separation method yielded a higher copper concentrate grade (29.11% Cu) than the selective flotation method (23.45% Cu) at similar copper recoveries for both approaches. The lead concentrate grades were similar. However, the lead recovery obtained using the bulk flotation method (90.27% Pb) was substantially higher than that for the selective flotation method (80.54% Pb). The silver assay and recovery in the lead concentrate were also significantly higher (990.0 g/t and 91.51% vs. 749.5 g/t and 64.57%) for the bulk flotation approach. Therefore, the bulk flotation approach has been selected for the Jiama Project as the method will yield significantly higher net smelter returns.

| Table 16.2<br>Summary of Flotation Test Results for Copper-Lead Ore | | | | | |
|---|---|---|---|---|---|
| **Test Identifier** | **T1** | **T2** | **T3** | **T4** | **T5** |
| **Performed by** | CIMUMR, 2000 | BGRINM, 2007 | BGRIMM, 2008 | BGRIMM, 2008 | BGRIMM, 2008 |
| **Flotation Approach** | Bulk Cu-Pb, then Cu-Pb separation | Selective Cu-Pb flotation; locked cycle test | Bulk Cu-Pb, then Cu-Pb separation; 100% fresh water; locked cycle test | Bulk Cu-Pb, then Cu-Pb separation; 50% fresh water; locked cycle test | Bulk Cu-Pb, then Cu-Pb separation; 15% fresh water; locked cycle test |
| **Feed Assay** | | | | | |
| Cu % | 0.98 | 1.28 | 1.38 | 1.38 | 1.38 |
| Pb % | 3.41 | 3.60 | 2.38 | 2.42 | 2.37 |
| Ag g/t | 52.47 | 52.0 | 64.32 | 63.85 | 61.79 |
| Au g/t | - | 0.20 | 0.47 | 0.44 | 0.44 |
| **Copper Conc. Assay** | | | | | |
| Cu % | 29.11 | 23.45 | 27.67 | 28.66 | 28.11 |
| Ag g/t | 39.44 | 274.3 | 785.0 | 762.0 | 736.0 |
| Au g/t | - | 3.49 | 6.45 | 6.20 | 5.96 |
| **Copper Conc. Recoveries** | | | | | |
| Cu % | 85.04 | 85.88 | 91.90 | 90.13 | 89.24 |
| Ag % | 2.14 | 24.74 | 55.81 | 51.92 | 52.16 |
| Au % | | 81.84 | 62.66 | 61.86 | 59.97 |
| **Lead Conc. Assay** | | | | | |
| Pb % | 63.55 | 64.72 | 66.04 | 62.79 | 63.07 |
| Ag g/t | 990.00 | 749.5 | 742.0 | 785.0 | 735.0 |
| Au g/t | - | 0.47 | 0.69 | 0.76 | 0.72 |
| **Lead Conc. Recoveries** | | | | | |
| Pb % | 90.27 | 80.54 | 84.44 | 83.63 | 86.75 |
| Ag % | 91.51 | 64.57 | 33.13 | 39.64 | 38.71 |
| Au % | - | 10.53 | 4.46 | 5.62 | 5.38 |

The effect of water recycling on the copper-lead bulk flotation then separation process was tested (Tests T3, T4, and T5) by BGRIMM in 2008. The test results were rather similar, taking into account possible experimental errors. However, it appears that the results obtained when using 100% fresh process water may have an edge over the fresh/recycled mix. Therefore, a recycled water treatment plant is necessary to improve the quality of the process water in general.

The copper-molybdenum processing approach of bulk flotation first followed by bulk concentrate regrinding and flotation separation of molybdenum from copper is well known and used in the majority of similar operations worldwide. This approach was successfully tested by CGRI in 2009, and the obtained test results are presented in Table 16.3.

| Table 16.3<br>Summary of Flotation Test Results for Copper-Molybdenum Ore | |
|---|---|
| **Item** | **Parameter** |
| **Feed Assay** | |
| Cu % | 1.05 |
| Mo % | 0.054 |
| Au g/t | 1.07 |
| Ag g/t | 16.08 |
| **Copper Concentrate Assay** | |
| Cu % | 32.11 |
| Mo % | 0.22 |
| Au g/t | 16.65 |
| Ag g/t | 351.7 |
| **Copper Concentrate Recoveries** | |
| Cu % | 94.22 |
| Mo % | 12.50 |
| Au % | 47.88 |
| Ag % | 67.30 |
| **Molybdenum Concentrate Assay** | |
| Cu % | 3.02 |
| Mo % | 47.71 |
| Au g/t | - |
| Ag g/t | - |
| **Molybdenum Concentrate Recoveries** | |
| Cu % | 0.24 |
| Mo % | 73.20 |
| Au % | - |
| Ag % | - |

Both ore types will be ground to 70% minus 0.074 mm before flotation. The copper-lead flotation reagents comprise lime, xanthate collectors BK 204, BK 809, and BK 908, zinc sulfate, sodium sulfide, activated carbon, and alcohol-type frothers. The reagents for copper-molybdenum flotation ore comprise sodium silicate, sodium sulfide, No.2 diesel oil, butyl xanthates, kerosene, and frothers. All these reagents are fairly typical for the ores being studied and are readily available in China.

Results of chemical analyses of primary components of copper and lead concentrates produced by the 2008 BGRIMM testwork on copper-lead ore and copper and molybdenum concentrates produced by the 2009 CGRI testwork on copper-molybdenum ore are given in Table 16.4. BDASIA notes that analyses of nickel, bismuth, and antimony for concentrates are not available from the table.

Based on the preliminary copper concentrate sales agreement signed between Huatailong and a major smelter customer, the specifications for copper concentrate are Cu ≥18%; Ni ≤1.5%; As ≤0.5%; Pb+Zn ≤8.0%; Bi+Sb ≤0.5%; MgO ≤4.0. Copper concentrate produced by the 2009 CGRI testwork on the copper-molybdenum ore generally meets these specifications, although nickel, bismuth, and antimony contents in the copper concentrate are unknown.

No molybdenum and lead concentrate sales agreements have been signed by Huatailong; therefore, the commercial specifications for molybdenum and lead concentrates for the Jiama Project are unknown. BDASIA considers it important to obtain the commercial specifications for molybdenum and lead concentrates as soon as possible.

**Table 16.4**
**Chemical Analyses of Flotation Concentrates Obtained from the Testwork**

| **Testwork** | **BGRIMM, 2008** | | **CGRI, 2009** | |
|---|---|---|---|---|
| Ore Type | Copper-Lead | | Copper-Molybdenum | |
| Concentrate Type | Copper | Lead | Copper | Molybdenum |
| Cu (%) | 28.66 | 2.11 | 32.11 | 3.02 |
| Pb (%) | 6.98 | 62.79 | 0.438 | 0.158 |
| Zn (%) | 1.64 | 4.08 | 0.643 | 0.053 |
| Mo (%) | 0.10 | 0.051 | 0.220 | 47.71 |
| S (%) | 29.40 | 16.76 | 23.66 | 35.43 |
| Fe (%) | 22.12 | 5.12 | 16.64 | 2.32 |
| $WO_3$ (%) | 0.094 | 0.074 | - | - |
| As (%) | 0.81 | 0.068 | 0.07 | 0.26 |
| Mn (%) | 0.016 | 0.040 | - | - |
| $SiO_2$ (%) | 1.33 | 3.72 | 12.46 | 4.59 |
| $Al_2O_3$ (%) | 0.14 | 0.32 | 0.98 | 0.36 |
| Ca (%) | 0.76 | 2.49 | 8.23 (CaO) | 2.22 (CaO) |
| Mg (%) | 0.096 | 0.23 | 2.87 (MgO) | 3.52 (MgO) |
| Au (g/t) | 6.20 | 0.76 | 16.65 | - |
| Ag (g/t) | 762 | 785 | 351.70 | - |

## 16.2 Mineral Processing

### 16.2.1 Plant Design

The mineral processing facilities for the Jiama Project were designed by the Changsha Institute and were presented in the December 2009 feasibility study report. The bases for the design comprised the metallurgical testwork results by well-regarded Chinese mining and metallurgical institutes (including BGRIMM, CIMUMR, BGRINM, and CGRI) as well as the sets of principles, regulations, and safety codes required by law.

The facilities required to treat a total of 12,000 tpd or 3.6 Mtpa of ore when in full production will be brought on stream in two phases. The first 6,000-tpd phase was near completion during BDASIA's site visit in December 2009; it was put into trial production in July 2010 and commercial production started in September 2010. Construction of the second 6,000-tpd plant is expected to start in December 2010; production from the second phase plant will likely be delayed beyond the original plan (starting production in early 2011 and ramping up to full production capacity at the end of 2011). The two plants will be physically separated by a valley and independent of each other except for the shared concentrate dewatering system and power substation.

The plants will operate 300 days per year, in three shifts of 6 hours each for crushing, concentrate dewatering, and tailings filtering and 8 hours each for flotation and tailing thickening.

### 16.2.2 Process and Flowsheet Description

The processing of the Jiama ores is based on the 2008 BGRIMM testwork on the copper-lead ore and 2009 CGRI testwork on the copper-molybdenum ore, as well as the sound and modern practices employed on similar ores elsewhere in China and worldwide. The flowsheet presented in Figure 16.1 shows the basic processing steps, i.e. crushing and screening; grinding and classification; bulk flotation roughing, cleaning, and scavenging; separation of concentrates by flotation; and thickening and filtration as the final stages in the finished concentrate production.

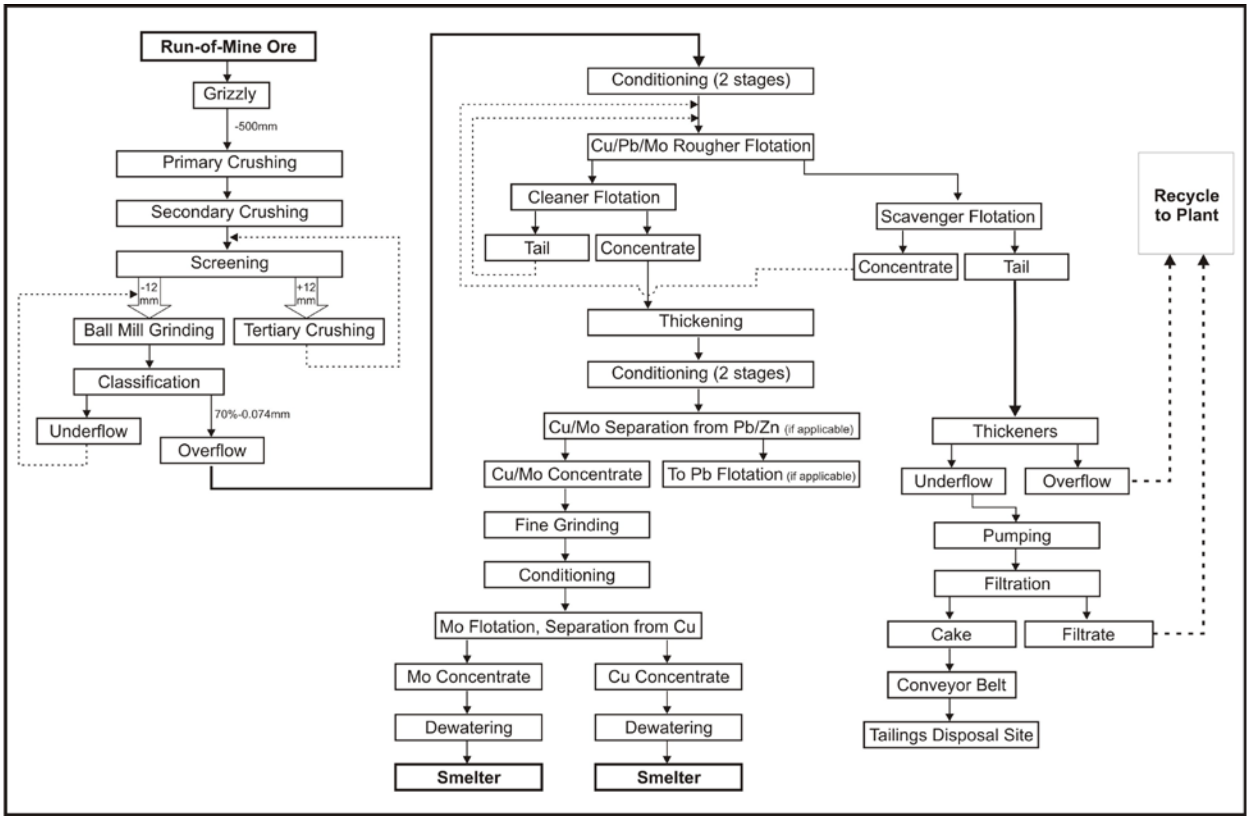



Figure 16.1 Processing Flowsheet for the Jiama Ore

The processing is described as follows:

The Jiama ores, a mixture of both copper-lead ore and copper-molybdenum ore for the initial 2 years of the mine life and copper-molybdenum ore alone thereafter, will be treated in the same plant, using the same equipment. Changes in the pulp flows and flotation reagent types will accommodate the differences in ore types and process requirements.

The run-of-mine ore will be crushed in three stages to the size of minus 12 mm. A jaw crusher, in an open circuit, will perform the primary crushing. Gyratory crushers in a closed circuit with a 12-mm screen will perform the secondary and tertiary crushing. The crushed, minus 12-mm ore will be ground in ball mills operating in a closed circuit with a battery of cyclones. The cyclone underflow (sand) will be returned to the ball mills. The overflow (fines), sized at 70% -0.074 mm, will be sent to conditioning, where the ground ore is prepared for flotation by reagents introduction.

The first flotation stage is the bulk rougher flotation of copper, lead, and molybdenum minerals from the mixture of copper-lead and copper-molybdenum ores in the initial 2 years of mine life (copper and molybdenum in the case of the copper-molybdenum ore thereafter). This stage yields two products: rougher bulk concentrate and rougher tail. The tail is scavenged, and its concentrate is sent back to the bulk rougher flotation head, while the tail of this stage is the final plant tail, which is thickened and filtered. The water from thickening and filtering is recovered for reuse in the plant, and the filtered cake is transported to a tailing disposal site by a conveyor system (a portion of the tails will be used for stope backfill when the underground mining is in operation starting in 2012). The bulk rougher flotation concentrate is cleaned, and the cleaner tail is pumped back to the rougher head. The bulk cleaner concentrate is then subjected to separation into the lead concentrate and bulk copper-molybdenum concentrates.

The separation into lead concentrate and bulk copper-molybdenum concentrate begins with thickening of the bulk concentrate, followed by two stages of conditioning with required reagents. The flotation separation yields the final lead concentrate and the bulk copper-molybdenum concentrate. The bulk copper-molybdenum concentrate is then reground to 90% minus 0.045 mm, conditioned, and then separated into copper concentrate and molybdenum concentrate. Multiple cleaner stages in column flotation and standard flotation cells are used to produce the final copper and molybdenum concentrates. The lead concentrate requires fewer cleaner steps. The final concentrates, after dewatering and bagging, are ready for shipping.

### 16.2.3 Equipment

The major pieces of equipment to be employed in each of the two 6,000-tpd plants comprise a C110 jaw crusher for primary crushing, an HP4-EC Ultra Coarse standard gyratory crusher, and an HP500C Coarse short-head gyratory crusher for secondary and tertiary crushing. These crushers are imported equipment.

Three double-deck vibrating screens (2YKR2460) will be used for screening of the crushed product. The minus 12-mm size will be ground in two Ø4000×8000-mm ball mills working in a closed circuit with two batteries of Ø500×6-mm hydrocyclones. The rougher flotation is carried out in 35 40-m$^3$ cells, the cleaning in 60 4-m$^3$ cells. Prior to copper-molybdenum separation, the bulk copper-molybdenum cleaner concentrate is reground in a Ø1500×3000-mm ball mill working in a closed circuit with a battery of Ø250×4-mm hydrocyclones. Copper and molybdenum separation takes place in 2.5×12-m, 0.9×12-m, and Ø0.6×12-m flotation columns. Copper concentrate is thickened in a Ø30-m thickener, lead concentrate in a Ø18-m thickener, and molybdenum concentrate in a Ø9-m thickener. These thickened concentrates are filtered in a 36-m$^2$ ceramic filter, a 21-m$^2$ ceramic filter, and a 20-m$^2$ pressure filter, respectively. The molybdenum concentrate filter cake is additionally dewatered in a 20-m$^2$ vacuum dryer. The two tailings thickeners are Ø60-m each, and the thickened tailings are filtered on 8 600-m$^2$ pressure filters. The equipment is all Chinese made.

### 16.2.4 Concentrate Production and Processing Recoveries

Based on the December 2009 Changsha Institute feasibility study report, three concentrates (copper, lead, and molybdenum) will be produced for the initial 2 years of the mine life when the processing plants treat a mixture of the copper-lead ore and the copper-molybdenum ore. Only two concentrates (copper and molybdenum) will be produced thereafter when the plants treat the copper-molybdenum ore alone.

The final copper concentrate is expected to assay approximately 26% copper. Copper recovery is expected to be approximately 90% when average copper grade of the processed ore is at least 0.8% and to be approximately 85% when the copper grade of the ore is less than 0.8%.

The final lead concentrate is expected to assay 60% lead at a lead recovery of 80% when the lead grade of the ore is at least 0.3%. No lead concentrate will be produced when the ore lead grade is less than 0.3%.

The final molybdenum concentrate is expected to assay 45% molybdenum and will recover approximately 70% of the molybdenum when the molybdenum grade of the ore is at least 0.011%.

Gold will be recovered in the copper concentrate only, with an expected recovery of approximately 50%. The gold grade in the copper concentrates is expected generally to range from 5 g/t to 6 g/t.

Silver will be recovered to both copper and lead concentrates. Silver recovery is expected to be 50% to the copper concentrate and 35% to the lead concentrate when both copper and lead concentrates are produced. Silver recovery is expected to be 80% to the copper concentrate when no lead concentrate is produced. The silver grade is expected generally to range from 300 g/t to 500 g/t in the copper concentrate and above 500 g/t in the lead concentrate.

# 17.0 MINERAL RESOURCE AND ORE RESERVE ESTIMATES

The Australasian JORC Code is a mineral resource/ore reserve classification system that is widely used and is internationally recognized. It has been used previously in ITRs for mineral resource and ore reserve statements for other Chinese companies reporting to SEHK. The JORC Code is used by BDASIA to report the mineral resources and ore reserves of the Jiama Project in this ITR. Mineral resources, inclusive of reserves, and mineral reserves have been reconciled to the CIM Standards, and are exactly the same as mineral resources and ore reserves under the JORC Code.

Generally, ore reserves are quoted as comprising part of the total mineral resource, rather than the mineral resources being additional to the ore reserves quoted. The JORC Code allows for either procedure, provided the system adopted is clearly specified. In this BDASIA ITR, all of the ore reserves are included within the mineral resource statements.

## 17.1 Mineral Resource Estimates

Current mineral resources of the Jiama Project were estimated by Qualified Person Dr. Qingping Deng of BDASIA, using MineSight computer mining software, the drill hole database as of the end of October 2009, and the Jiama geological model produced by the Resource Institute geologists. The database, procedures, and parameters used and the results of the resource estimation are summarized below.

### 17.1.1 Database used for Resource Modelling

The drill hole database used for the current Jiama Project resource model is summarized in Table 17.1. It consists of a total of 210 DDH holes with a total drilled length of 69,029 m and 10 surface trenches with a total length of 349 m.

**Table 17.1**
**Drill Hole Database used for Jiama Project Resource Estimation**

| Drilling Campaign | Number | Total Meters |
|---|---|---|
| 1990s No. 6 Brigade DDH Holes | 22 | 6,518 |
| 1990s No. 6 Brigade Surface Trenches | 10 | 349 |
| 2008 Huatailong DDH Holes | 148 | 48,970 |
| 2009 Huatailong DDH Holes | 40 | 13,541 |
| **Total** | **220** | **69,378** |

These holes were drilled on exploration lines oriented at a N30°E direction and at a line spacing of 100 m or 200 m. Drill hole spacing on the exploration lines is approximately 100 m, 200 m, or 400 m, with the drill hole spacing at the central portions of the deposit at approximately 100 m by 100 m, increasing to 200 m by 100 m, 200 m by 200 m, or 400 m by 400 m toward the peripheries of the deposit. The database contains 26,606 assay intervals, with grades for copper, molybdenum, gold, silver, lead, and zinc.

Topography used for the resource estimation was based on a 1:2000 topographic survey completed by the Resource Institute in 2008.

Bulk density measurements were conducted on selected drill cores and underground/surface rock samples by Brigade 6 in the 1990s and by the Resource Institute in 2008. A total of 217 core and rock samples were measured by Brigade 6 in the 1990s, using the industry standard wax-coating displacement method. An average bulk density for the 136 samples from the skarn-type mineralized zone was 3.068 t/m$^3$. The other 81 samples were host rocks (including slates, marbles, limestones, and dikes) to the mineralization. A total of 228 core samples and 100 underground rock samples were used for bulk density measurements by the Resource Institute in 2008, using the industry standard wax-coating displacement method. An average bulk density of the 248 skarn-type mineralized samples taken in 2008 and the 136 mineralized samples taken by Brigade 6 in the 1990s was 3.115 t/m$^3$, with a range from 2.042 to 4.889. The other 80 samples taken in 2008 were hornfels-type mineralized samples with an average bulk density of 2.842 t/m$^3$ and a range from 2.074 to 4.039. The bulk density used for the current resource estimation is 3.115 t/m$^3$ for the skarn-type mineralization and 2.842 t/m$^3$ for the hornfels-type mineralization.

### 17.1.2 Procedures and Parameters Used for the Skarn-Type Resource Modelling

The following procedures and parameters were used in the current resource estimation for the skarn-type mineralization of the Jiama Project:

- **Geological Modeling**: Geological modeling was performed by the Resource Institute geologists using the Micromine mining software. The mineralized zones were modeled by a grade envelope at the cutoff grade of 0.3% Cu, or 0.03% Mo, or 1% Pb, or 1% Zn. The minimum mineralized zone thickness is 2 m. Results of the geological modeling show that the deposit consists of a primary mineralized body (referred to as the I-1 mineralized body) and seven smaller mineralized bodies (referred to as the I-2 to I-8 mineralized bodies). The I-1 mineralized body strikes at an approximately 120° azimuth and dips to the northeast. The upper portion of the zone has a steep dip angle averaging approximately 60° and the lower portion of the zone is flatter with an average dip angle of approximately 10°. The I-1 mineralized body is approximately 2,400-m long along strike and 150-m to 1,900-m wide in the dip direction, and its thickness ranges from less than 5 m to more than 200 m (Figures 9.1 and 17.1). It occupies over 97% of the mineralized volume for the entire deposit. This mineralized body is hosted by skarns distributed along an interlayer structural zone between underlying marbles and overlying hornfels and is believed to be formed along a detachment structural zone. Mineralization in this zone is still open in many places, especially along the down-dip direction, indicating significant additional exploration potential. Although this mineralized zone is very extensive, metal grade distribution in the zone is quite variable. In general, the upper portion of the mineralized body is copper rich, and the lower portion of the body is molybdenum rich. Lead with some zinc is enriched locally at the upper portion of the zone. As the primary mineralized zone strikes at a 120° azimuth, the coordinate system for the drill hole database was rotated counter-clockwise 30° to align the east-west axis of the rotated coordinate system with the strike of the mineralization for the resource model.

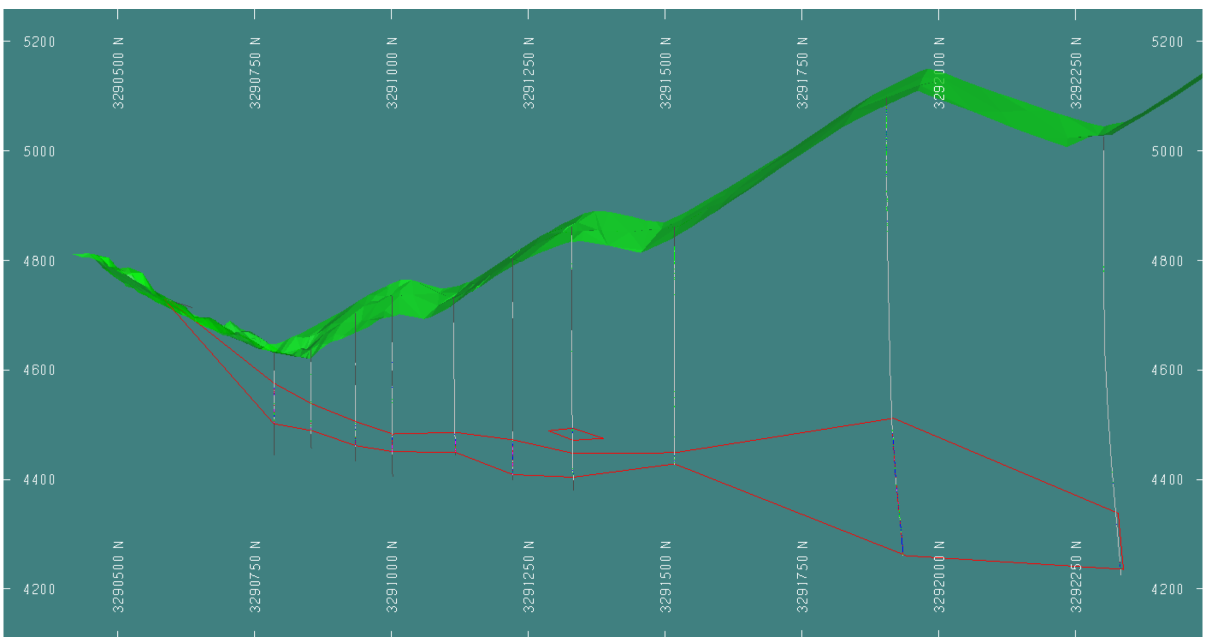



Figure 17.1 Sectional view of the I-1 mineralized body for the Jiama Project
(The view is looking at 270° rotated azimuth and is on Exploration Line 16.)

- **Metal Grade Statistical Analysis and Grade Capping:** A total of 7,314 assay intervals with a total length of 7,847 m are located inside the defined mineralized envelopes for the Jiama Project. Therefore, the average assay interval length inside the mineralized envelopes is 1.07 m. Original length-weighed metal grade statistics of these assay intervals are summarized in Table 17.2. Based on metal grade probability distribution (Figure 17.2), the capping grade determined for the Jiama deposit is 10% for copper, 0.75% for molybdenum, 6 g/t for gold, 190 g/t for silver, 21% for lead, and 7% for zinc. Samples with metal grades above the capping grades are considered outliers, and these outlier metal grades were replaced by the capping grades before compositing, variography analysis, and grade estimation. Table 17.3 summarizes the capped length-weighted metal grade statistics.

**Table 17.2**
**Original Length-Weighted Metal Assay Grade Statistics inside the Mineralized Zones**

| Metal | Number of Samples | Length (m) | Mean | Standard Deviation | Minimum | Maximum | Coefficient of Variation |
|---|---|---|---|---|---|---|---|
| Cu (%) | 7,314 | 7,847 | 0.72 | 1.56 | 0 | 49.28 | 2.18 |
| Mo (%) | 7,314 | 7,847 | 0.043 | 0.112 | 0 | 5.13 | 2.60 |
| Au (g/t) | 7,314 | 7,847 | 0.26 | 1.35 | 0 | 98.7 | 5.27 |
| Ag (g/t) | 7,314 | 7,847 | 14.3 | 32.3 | 0 | 1,041 | 2.26 |
| Pb (%) | 7,314 | 7,847 | 0.16 | 1.23 | 0 | 39.93 | 7.83 |
| Zn (%) | 7,314 | 7,847 | 0.08 | 0.50 | 0 | 14.28 | 6.18 |

**Table 17.3**
**Capped Length-Weighted Metal Assay Grade Statistics inside the Mineralized Zones**

| Metal | Number of Samples | Length (m) | Mean | Standard Deviation | Minimum | Maximum | Coefficient of Variation |
|---|---|---|---|---|---|---|---|
| Cu (%) | 7,314 | 7,847 | 0.69 | 1.18 | 0 | 10 | 1.71 |
| Mo (%) | 7,314 | 7,847 | 0.042 | 0.089 | 0 | 0.75 | 2.13 |
| Au (g/t) | 7,314 | 7,847 | 0.23 | 0.54 | 0 | 6 | 2.36 |
| Ag (g/t) | 7,314 | 7,847 | 13.7 | 25.5 | 0 | 190 | 1.86 |
| Pb (%) | 7,314 | 7,847 | 0.15 | 1.07 | 0 | 21 | 7.11 |
| Zn (%) | 7,314 | 7,847 | 0.08 | 0.43 | 0 | 7 | 5.51 |

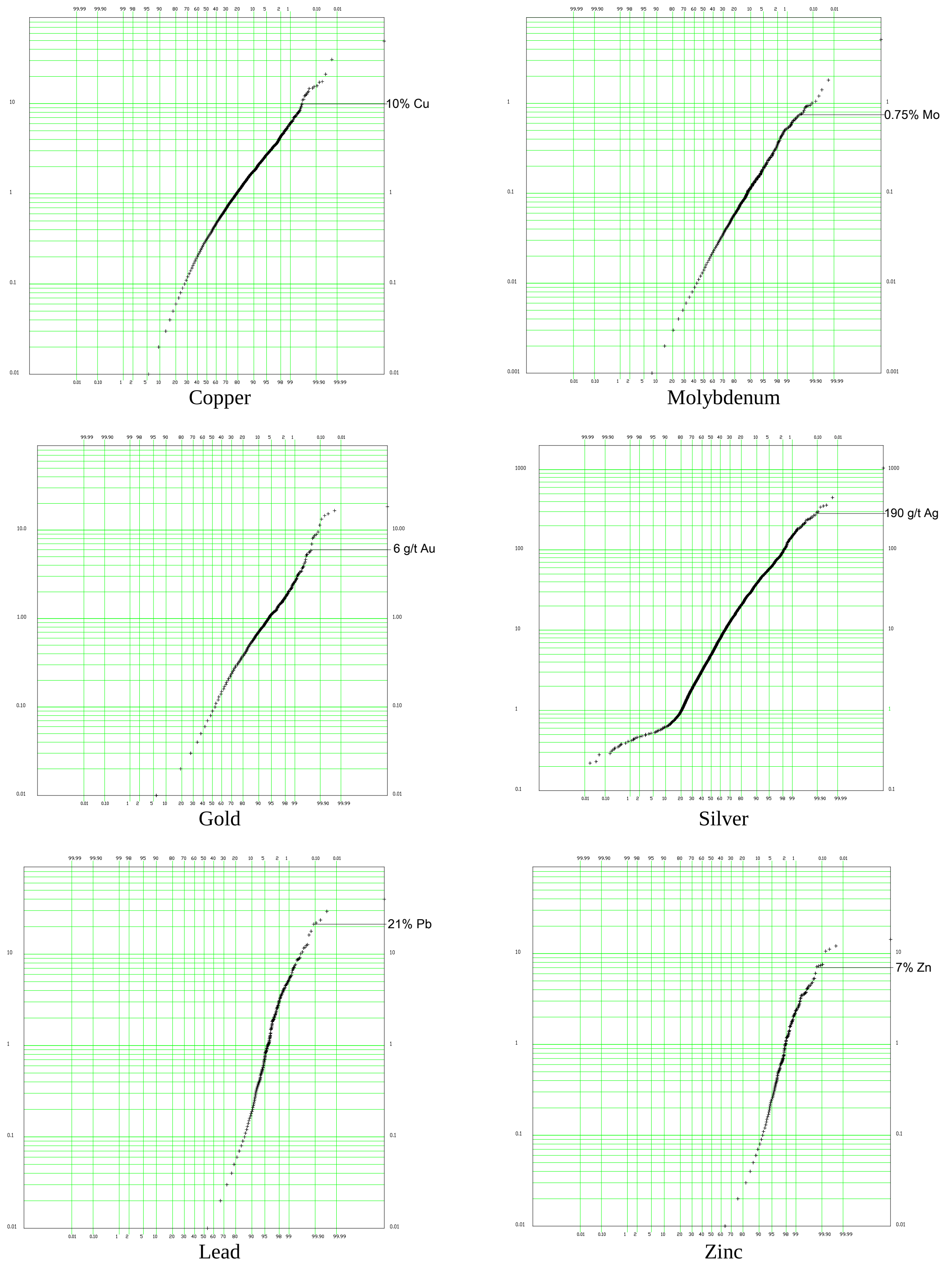



Figure 17.2 Metal grade probability distribution and capping grade determination for the Jiama Project

- **Compositing**: Capped metal assays inside the mineralized envelopes were composited to 5-m fixed-length composites, and composites less than 1-m long were merged into the previous 5-m composite. A total of 1,434 composites were produced inside the mineralized envelopes. Capped length-weighted metal grade statistics for the composites are summarized in Table 17.4.

**Table 17.4**
**Capped Length-Weighted 5-m Length Skarn Composite Metal Grade Statistics**

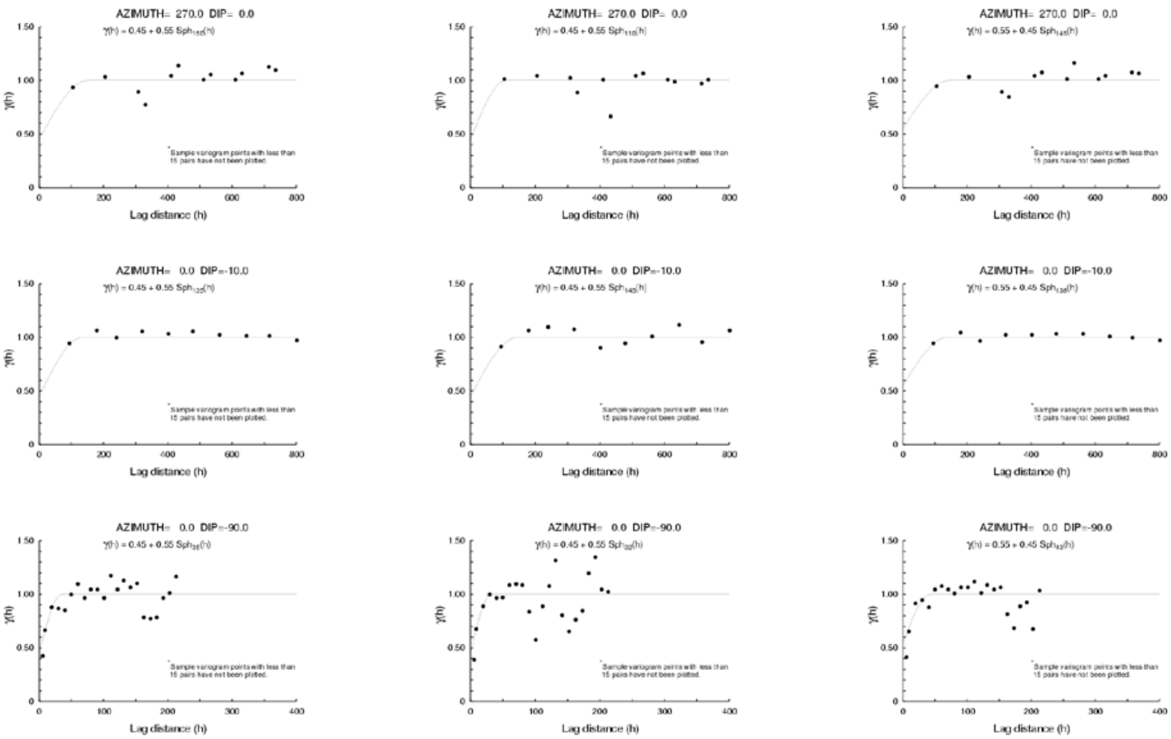
| Metal | Number of Samples | Length (m) | Mean | Standard Deviation | Minimum | Maximum | Coefficient of Variation |
|---|---|---|---|---|---|---|---|
| Cu (%) | 1,673 | 7,847 | 0.69 | 0.87 | 0 | 10.00 | 1.27 |
| Mo (%) | 1,673 | 7,847 | 0.042 | 0.066 | 0 | 0.604 | 1.57 |
| Au (g/t) | 1,673 | 7,847 | 0.23 | 0.40 | 0 | 4.83 | 1.75 |
| Ag (g/t) | 1,673 | 7,847 | 13.7 | 19.6 | 0 | 186.4 | 1.43 |
| Pb (%) | 1,673 | 7,847 | 0.15 | 0.86 | 0 | 21.00 | 5.77 |
| Zn (%) | 1,673 | 7,847 | 0.08 | 0.31 | 0 | 5.36 | 4.05 |

- **Variography**: As the modeled mineralized zones have a steep dip angle at the upper portion and a flat dip angle at the lower portion, the mineralized zones were divided into an upper, steeply-dipping domain and a lower, flatter domain for the purpose of variogram modeling and grade estimation. Correlograms, instead of traditional variograms, were modeled for the 5-m length composite metal grades inside the defined I-1 mineralized body for each domain (Table 17.5 and Figures 17.3 and 17.4). It should be noted that the azimuths in Table 17.5 and Figures 17.3 and 17.4 all refer to the rotated azimuth. As all the holes were drilled vertically on a regular drilling grid from 100 m to 400 m, it is difficult to produce good correlogram models in any directions other than the vertical direction (or the down-hole direction). The correlogram models generally show a moderate relative nugget at around 0.5 (indicating nearby samples have a reasonable grade similarity) and a correlogram range for the primary direction, or the strike of the mineralization, between 105 m to 200 m. Correlograms in the vertical direction were modeled to simulate the correlograms in the minor direction, and it was assumed that the correlogram range in the minor direction is 80% of the vertical correlogram range for the flatter domain and 60% of the vertical correlogram range for the steep-dip domain.

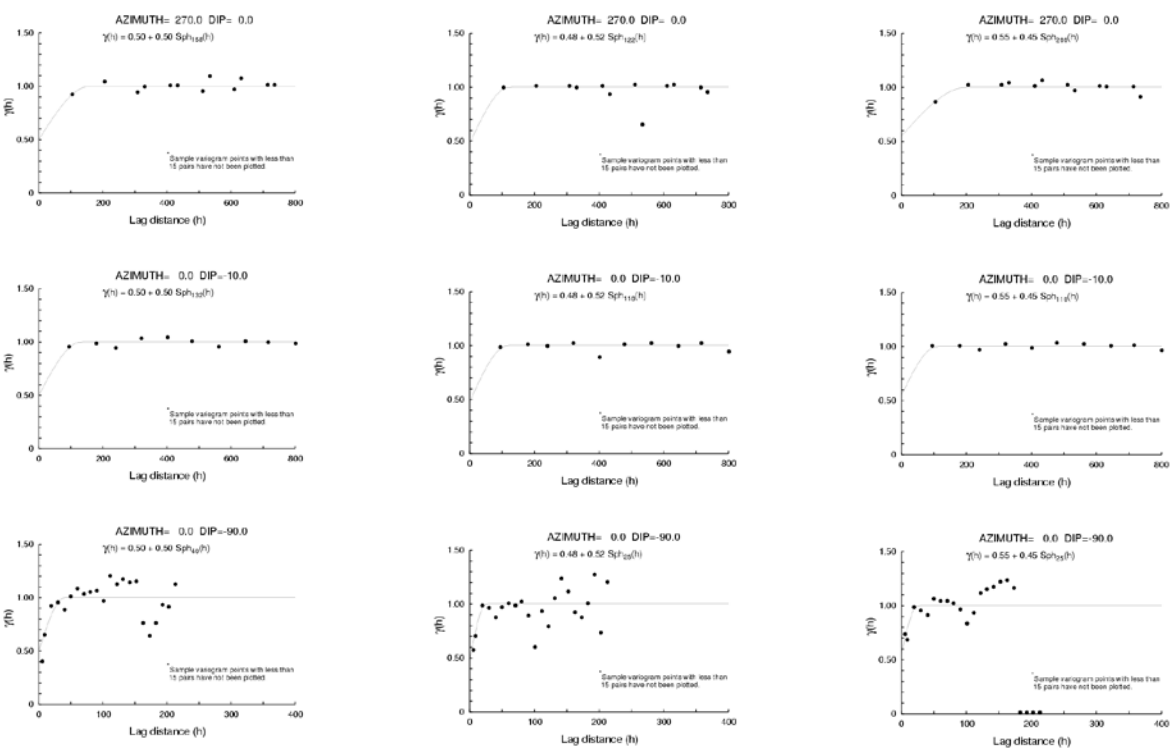
**Table 17.5**
**Correlogram Models for the I-1 Mineralized Body of the Jiama Project**

| Metal | Direction | Azim | Dip | Window | Lag | $C_0$ | $C_1$ | $a_1$ |
|---|---|---|---|---|---|---|---|---|
| **Flatter Mineralized Domain** | | | | | | | | |
| Au | major | 270° | 0° | 15° | 50 m | 0.55 | 0.45 | 145 m |
| | semi-major | 0° | -10° | 20° | 80 m | | | 138 m |
| | minor | 0° | -90° | 20° | 10 m | | | 40 m |
| Ag | major | 270° | 0° | 15° | 50 m | 0.50 | 0.50 | 158 m |
| | semi-major | 0° | -10° | 20° | 80 m | | | 132 m |
| | minor | 0° | -90° | 20° | 10 m | | | 40 m |
| Cu | major | 270° | 0° | 15° | 50 m | 0.45 | 0.55 | 150 m |
| | semi-major | 0° | -10° | 20° | 80 m | | | 135 m |
| | minor | 0° | -90° | 20° | 10 m | | | 35 m |
| Mo | semi-major | 270° | 0° | 15° | 50 m | 0.45 | 0.55 | 110 m |
| | major | 0° | -10° | 20° | 80 m | | | 145 m |
| | minor | 0° | -90° | 20° | 10 m | | | 32 m |
| Pb | major | 270° | 0° | 15° | 50 m | 0.48 | 0.52 | 122 m |
| | semi-major | 0° | -10° | 20° | 80 m | | | 118 m |
| | minor | 0° | -90° | 20° | 10 m | | | 25 m |
| Zn | major | 270° | 0° | 15° | 50 m | 0.55 | 0.45 | 200 m |
| | semi-major | 0° | -10° | 20° | 80 m | | | 100 m |
| | minor | 0° | -90° | 20° | 10 m | | | 25 m |
| **Steeply-Dipping Mineralized Domain** | | | | | | | | |
| Au | major | 270° | 0° | 20° | 50 m | 0.45 | 0.55 | 135 m |
| | semi-major | 0° | -60° | 20° | 30 m | | | 125 m |
| | minor | 0° | -90° | 20° | 10 m | | | 50 m |
| Ag | semi-major | 270° | 0° | 20° | 50 m | 0.48 | 0.52 | 125 m |
| | major | 0° | -60° | 20° | 30 m | | | 155 m |
| | minor | 0° | -90° | 20° | 10 m | | | 48 m |
| Cu | semi-major | 270° | 0° | 20° | 50 m | 0.50 | 0.50 | 120 m |
| | major | 0° | -60° | 20° | 30 m | | | 140 m |
| | minor | 0° | -90° | 20° | 10 m | | | 52 m |
| Mo | semi-major | 270° | 0° | 20° | 50 m | 0.58 | 0.42 | 115 m |
| | major | 0° | -60° | 20° | 30 m | | | 120 m |
| | minor | 0° | -90° | 20° | 10 m | | | 30 m |
| Pb | major | 270° | 0° | 20° | 50 m | 0.58 | 0.42 | 125 m |
| | semi-major | 0° | -60° | 20° | 30 m | | | 125 m |
| | minor | 0° | -90° | 20° | 10 m | | | 55 m |
| Zn | major | 270° | 0° | 20° | 50 m | 0.50 | 0.50 | 125 m |
| | semi-major | 0° | -60° | 20° | 30 m | | | 105 m |
| | minor | 0° | -90° | 20° | 10 m | | | 40 m |

Notes:
$C_0$ – correlogram nugget, $C_1$ – correlogram sill, and $a_1$ – correlogram range.



Copper Molybdenum Gold



Silver Lead Zinc

Figure 17.3 Correlogram models for the flatter domain of the I-1 mineralized body

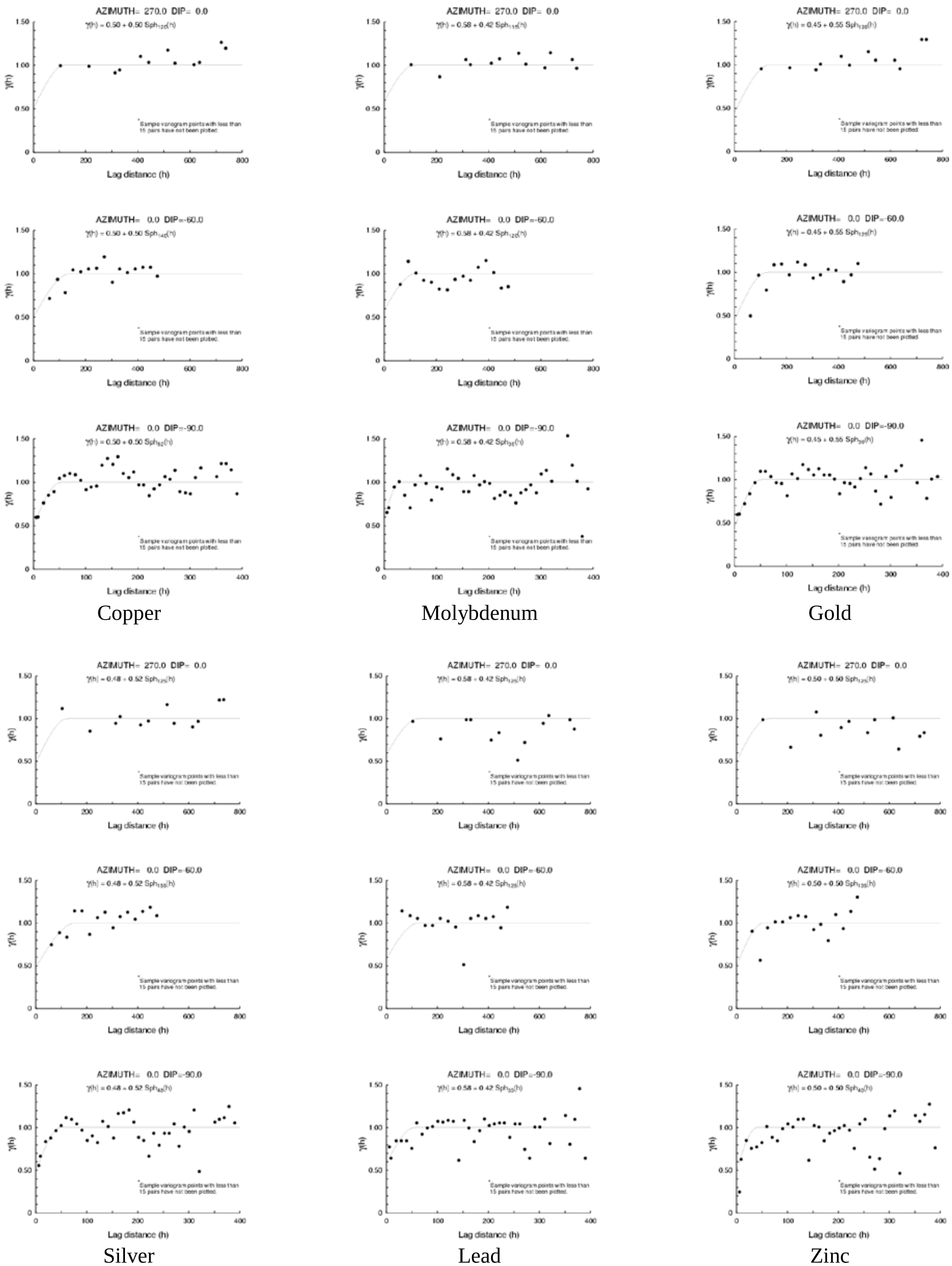
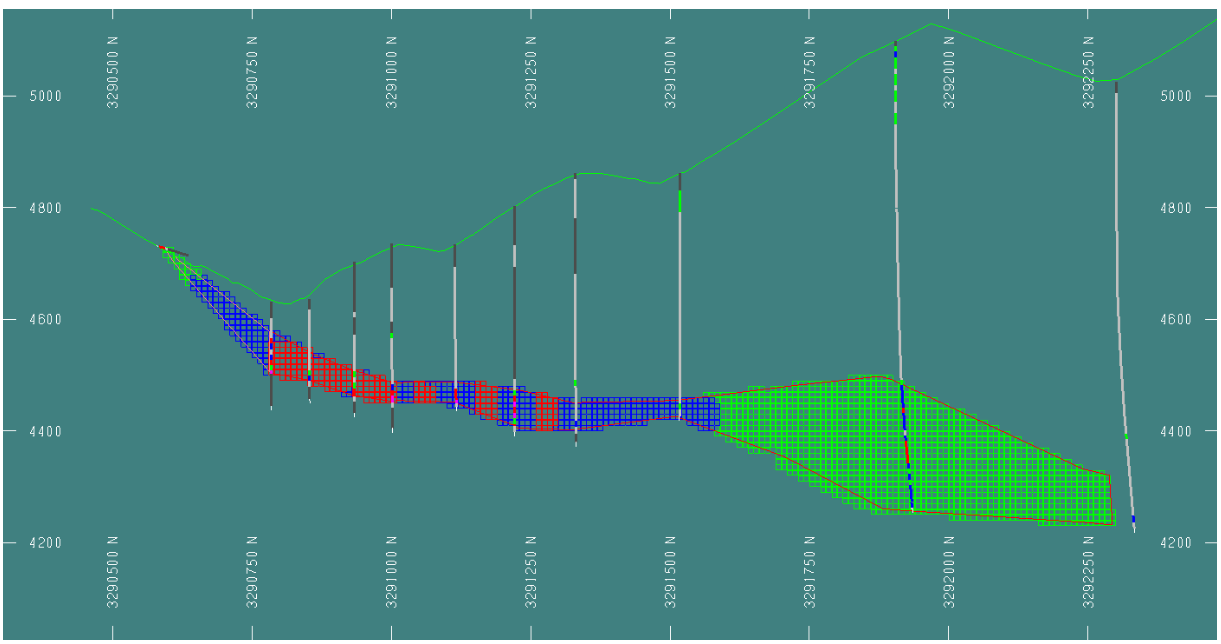



Figure 17.4 Correlogram models for the steep-dip domain of the I-1 mineralized body

- **Block Model Definition**: A 3-D block model with a block size of 10×10×10 m was defined for the Jiama Project. The mineralized envelopes were coded to the block model using the partial block method, i.e., a block is considered inside the mineralized envelope if any part of the block is located inside the mineralized envelope and the percentage of the block inside the mineral envelope is recorded for resource summary purpose. A volume check was conducted by comparing the mineralized envelope volume and the 3-D block volume, with a negligible difference.

- **Grade Estimation**: Block grade estimation was conducted using a three-pass ordinary kriging ("OK") procedure. The base search ellipsoid radius was defined by 90% of the copper correlogram range in each domain, which was used for the second-pass OK grade estimation. The search radius for the first-pass was 60% of the base search radius, and the search radius for the third-pass was two times the base search radius. The number of 5-m composites used for the first and second passes ranged from four to ten, with a maximum of three composites from any single drill hole or surface trench. The number of 5-m composites used for the third-pass ranged from two to ten, with a maximum of three composites from any single drill hole or surface trench.

- **Resource Classification**: Model blocks were classified into measured, indicated, and inferred resources under the JORC Code. All blocks with a pass one grade estimation were classified as measured; all blocks with a pass two grade estimation were classified as indicated; and all blocks with a pass three grade estimation were classified as inferred (Figure 17.5).

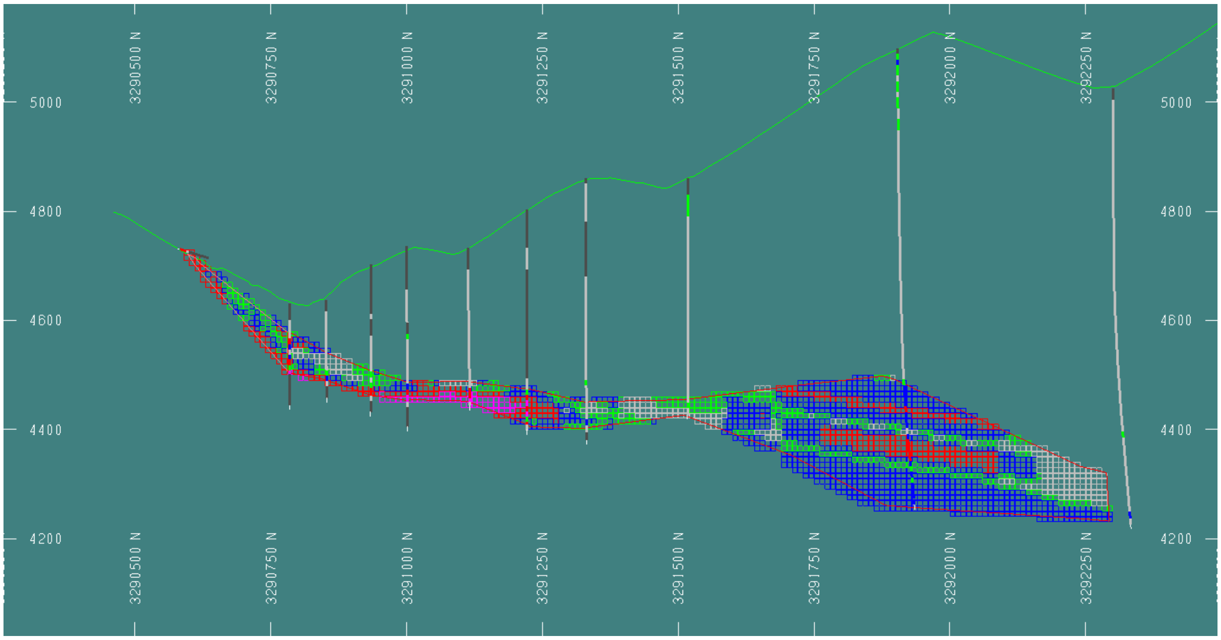



Color code for resource classes (red – measured; blue – indicated; green – inferred)

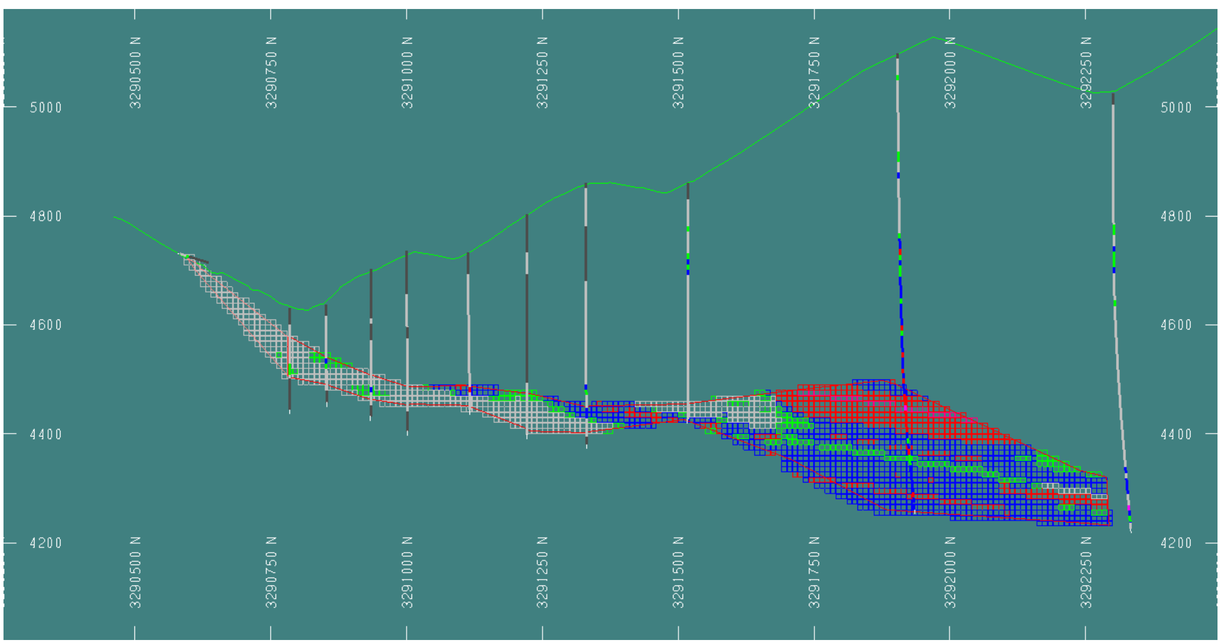
Figure 17.5 Resource classification for the Jiama Project resource model
(The view is looking at 270° rotated azimuth and is on Exploration Line 16.)

- **Validation:** Global grade bias was checked by generating a nearest neighbor ("NN") block grade model. It is generally considered that the overall average grade at the zero cutoff grade for grade estimation should be very close to the overall average NN model grade. For the 119,741 model blocks with grade estimation, the average OK grade at the zero cutoff grade is within a 2% difference of the average NN grade for copper, molybdenum, gold, and silver, indicating there is generally no global grade bias in the OK resource model for these metals. The average OK grade is 3.5% lower and 7.5% higher than the average NN grade for lead and zinc, respectively, indicating there might be some negative or positive grade biases for the two metals. As lead and zinc generally have very low grades in most parts of the deposit, their mining potential is generally limited to the near-surface portion at the southwest of the I-1 mineralized body. Therefore, these negative and possible grade biases should not produce a material impact on the project. Local grade bias was checked by posting the block grades and composite grades on a computer screen on sections and plans, indicating the block grades are generally similar to the nearby composite grades, with a reasonable amount of smoothing (Figures 17.6, 17.7 and 17.8).

- Mined-out areas: The Resource Institute conducted a systematic survey of the adits produced by the four previous operators before the consolidation of the property. A total of 64 adits were surveyed, of which 24 were for exploration purposes only and had no mining stopes. The other 40 adits were for mining purpose and have mined-out stopes. Based on the survey results, the total mined-out volume from stopes in the 40 surveyed adits is approximately 397,000 $m^3$. The mined-out areas are all located in the skarn mineralized zone; therefore, the skarn-type mineralization bulk density of 3.115 $t/m^3$ was used to calculate the mined-out tonnage of approximately 1.236 million tonnes ("Mt"). The stopes were distributed at MSL elevations ranging from 4,600 m to 4,950 m and between Exploration Lines 7 and 96. Based on the previous estimation (Section 6.0 of this ITR), the consumed resources by the four operators to the end of June 2006 (December 2005 for one property) totaled approximately 377,200 t. Considering these mining operations were terminated at April 1, 2007 and some additional ore was mined out between June 2006 (or December 2005 for one property) and April 1, 2007, BDASIA believes that the mined-out tonnages based on the Resource Institute's survey results are reasonable estimates of the mineral resources consumed by historical mining for the Jiama Project. These mined out tonnages were allocated to 50-m levels and were deducted from the current resource model.

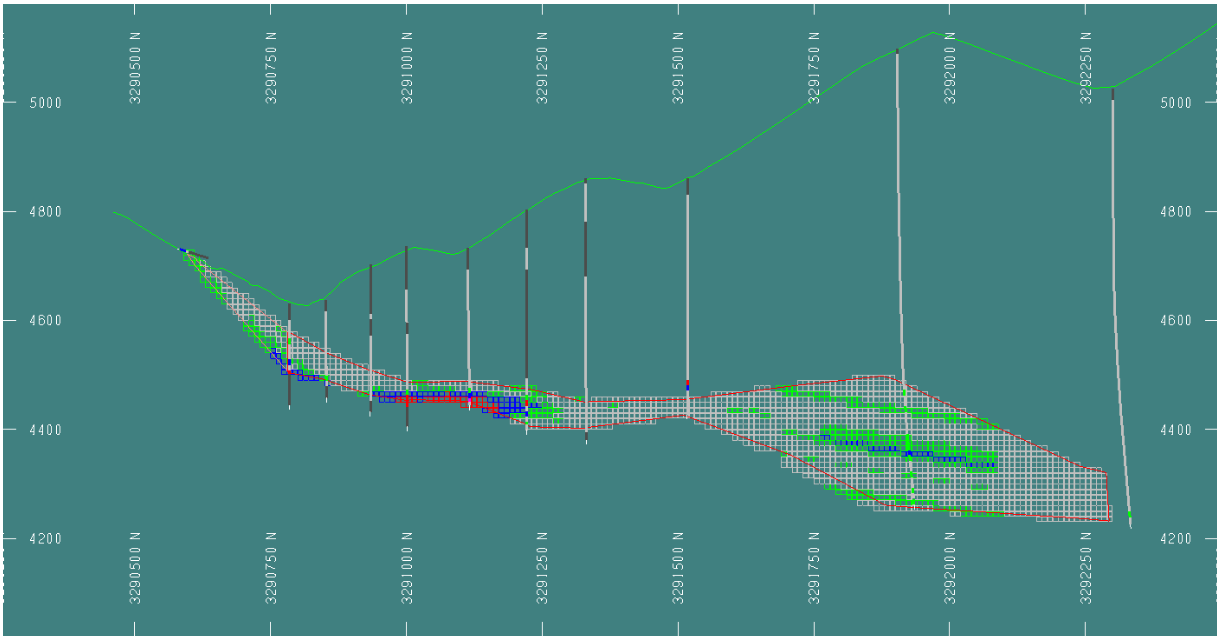



Copper (grade range by color: magenta >=2.00%; red 1.00% – 1.99%; blue 0.50% – 0.99%; green 0.30% – 0.49%; white 0.00% – 0.29%; black no assays)

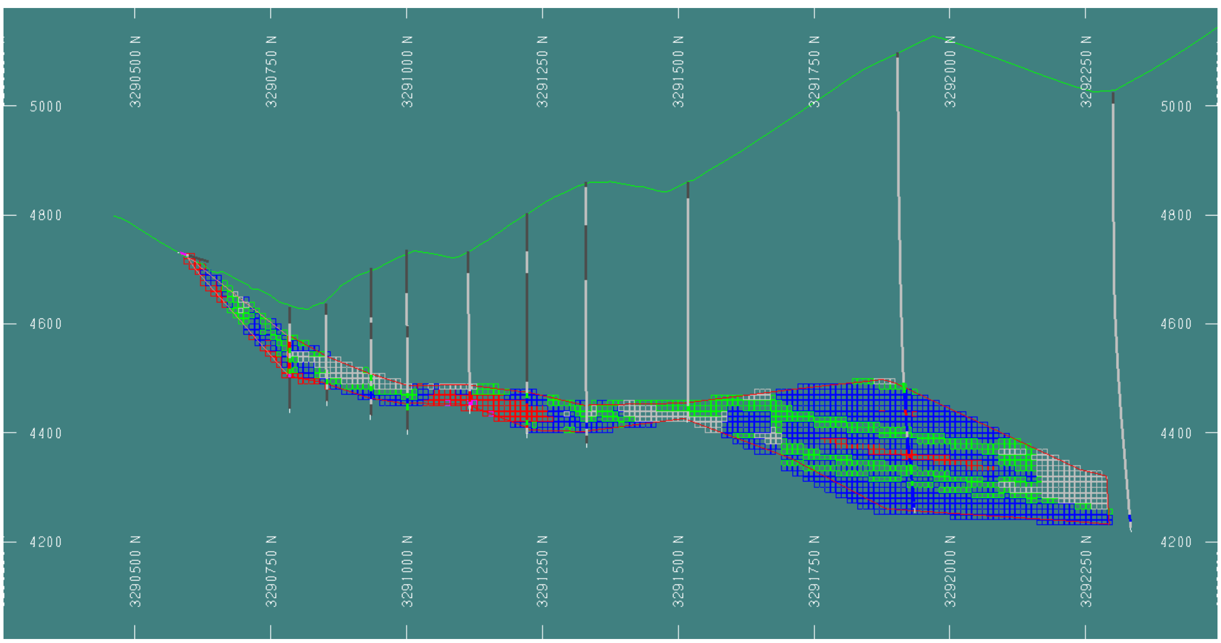



Molybdenum (grade range by color: magenta >=0.200%; red 0.100% – 0.199%; blue 0.050% – 0.099%; green 0.030% – 0.049%; white 0.000% – 0.029%; black no assays)

Figure 17.6 Comparison of OK model block grades and composite grades on a cross section (The view is looking at 270° rotated azimuth and is on Exploration Line 16.)

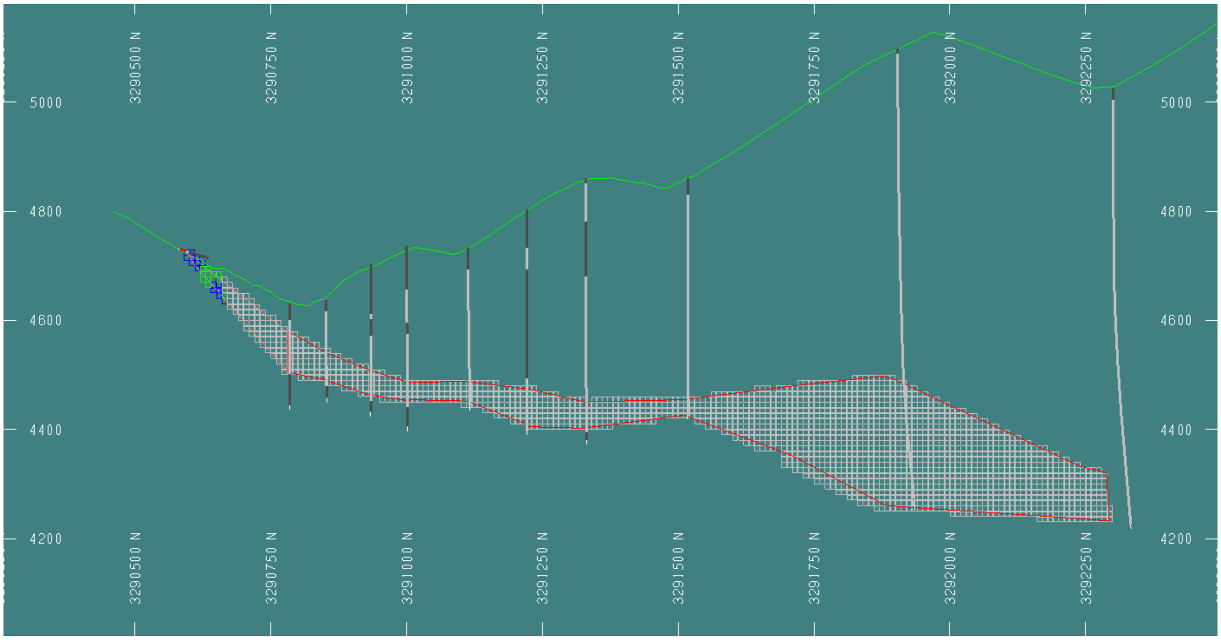



Gold (grade range by color: magenta >=2.00 g/t; red 1.00 – 1.99 g/t; blue 0.50 – 0.99 g/t; green 0.30 – 0.49 g/t; white 0.00 – 0.29 g/t; black no assays)

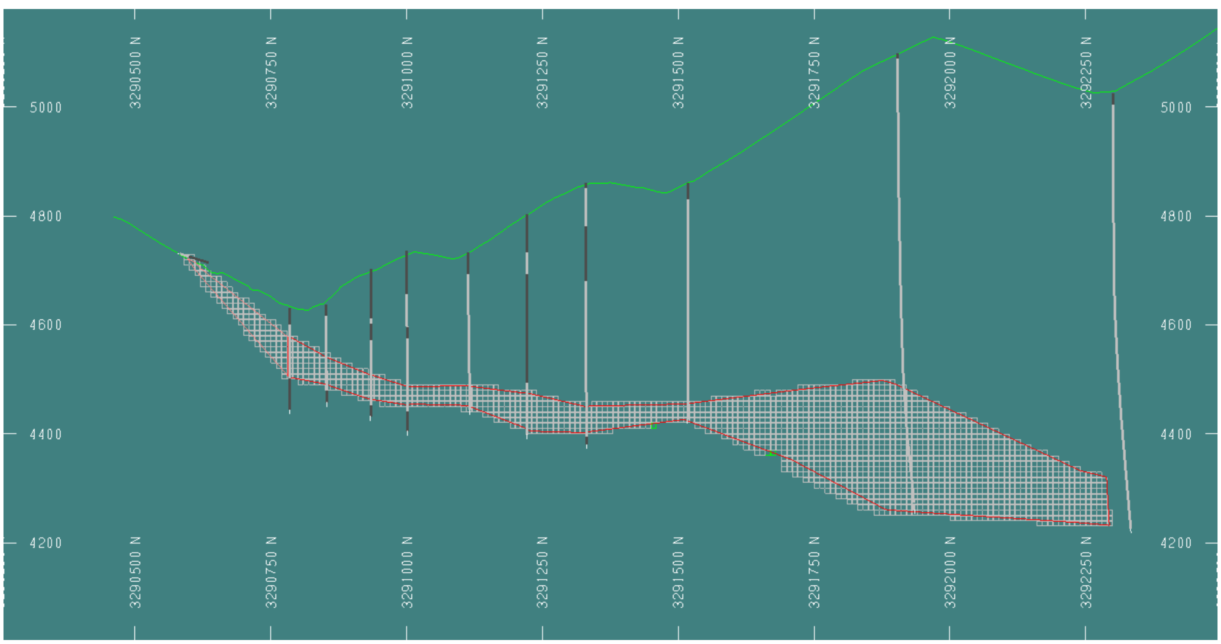



Silver (grade range by color: magenta >=50.0 g/t; red 20.0 – 49.9 g/t; blue 10.0 – 19.9 g/t; green 5.0 – 9.9 g/t; white 0.00 – 4.9 g/t; black no assays)

Figure 17.7 Comparison of OK model block grades and composite grades on a cross section (The view is looking at 270° rotated azimuth and is on Exploration Line 16.)



Lead (grade range by color: magenta >=4.00%; red 2.00% – 3.99%; blue 1.00% – 1.99%; green 0.50% – 0.99%; white 0.00% – 0.49%; black no assays)



Zinc (grade range by color: magenta >=4.00%; red 2.00% – 3.99%; blue 1.00% – 1.99%; green 0.50% – 0.99%; white 0.00% – 0.49%; black no assays)

Figure 17.8 Comparison of OK model block grades and composite grades on a cross section (The view is looking at 270° rotated azimuth and is on Exploration Line 16.)

### 17.1.3 Procedures and Parameters Used for the Hornfels-Type Resource Modelling

The following procedures and parameters were used in the current resource estimation for the hornfels-type mineralization of the Jiama Project:

- **Geological Modeling**: Geological modeling was performed by the Resource Institute geologists using Micromine mining software. The mineralized zones were modeled by a grade envelope at the cutoff grade of 0.3% Cu, or 0.03% Mo, or 1% Pb or 1% Zn. The minimum mineralized zone thickness is 2 m. Results of the geological modeling show that the hornfels-type mineralization is likely to consist of a large, massive mineralized body (Figure 9.5), over 1,500 m long, up to 1,000 m wide and up to 820 m thick. In general, the upper portion of the mineralized body is copper rich, and the lower portion of the body is molybdenum rich.

- **Metal Grade Statistical Analysis and Grade Capping:** A total of 3,434 assay intervals with a total length of 6,017 m are located inside the defined hornfels-type mineralized envelopes for the Jiama Project. Therefore, the average assay interval length inside the hornfels-type mineralized envelopes is 1.75 m. Original length-weighed metal grade statistics of these assay intervals are summarized in Table 17.6. No Capping was conducted on the hornfels-type mineralization as all the assay grades are below the capping grades for the skarn-type mineralization.

**Table 17.6**
**Original Length-Weighted Metal Assay Grade Statistics inside the Hornfels-Type Mineralized Zones**

| Metal | Number of Samples | Length (m) | Mean | Standard Deviation | Minimum | Maximum | Coefficient of Variation |
|---|---|---|---|---|---|---|---|
| Cu (%) | 3,434 | 6,017 | 0.21 | 0.17 | 0.00 | 5.27 | 0.78 |
| Mo (%) | 3,434 | 6,017 | 0.025 | 0.037 | 0.000 | 0.540 | 1.43 |
| Au (g/t) | 3,434 | 6,017 | 0.02 | 0.11 | 0.00 | 4.14 | 4.86 |
| Ag (g/t) | 3,434 | 6,017 | 1.1 | 0.9 | 0.4 | 20.4 | 0.76 |
| Pb (%) | 3,434 | 6,017 | 0.00 | 0.01 | 0.00 | 0.21 | 2.49 |
| Zn (%) | 3,434 | 6,017 | 0.01 | 0.01 | 0.00 | 0.30 | 1.55 |

- **Compositing**: Metal assays inside the mineralized envelopes were composited to 5-m fixed-length composites, and composites less than 1-m long were merged into the previous 5-m composite. A total of 1,217 composites were produced inside the hornfels-type mineralized envelopes. Length-weighted metal grade statistics for the composites are summarized in Table 17.7.

**Table 17.7**
**Length-Weighted 5-m Length Hornfels Composite Metal Grade Statistics**

| Metal | Number of Samples | Length (m) | Mean | Standard Deviation | Minimum | Maximum | Coefficient of Variation |
|---|---|---|---|---|---|---|---|
| Cu (%) | 1,217 | 6,017 | 0.21 | 0.13 | 0.01 | 2.28 | 0.62 |
| Mo (%) | 1,217 | 6,017 | 0.026 | 0.029 | 0.000 | 0.312 | 1.15 |
| Au (g/t) | 1,217 | 6,017 | 0.02 | 0.09 | 0.00 | 3.10 | 4.21 |
| Ag (g/t) | 1,217 | 6,017 | 1.1 | 0.6 | 0.5 | 7.7 | 0.56 |
| Pb (%) | 1,217 | 6,017 | 0.00 | 0.01 | 0.00 | 0.08 | 1.97 |
| Zn (%) | 1,217 | 6,017 | 0.01 | 0.01 | 0.00 | 0.09 | 1.28 |

- **Block Model Definition**: A 3-D block model with a block size of 10×10×10 m was defined for the hornfels-type mineralization at the Jiama Project. The mineralized envelopes were coded to the block model using the majority rule method, i.e., a block is considered inside the mineralized envelope if more than 50% of the block is located inside the mineralized envelope. A volume check was conducted by comparing the mineralized envelope volume and the 3-D block volume, with a negligible difference.

- **Grade Estimation**: Block grade estimation was conducted using the inverse-distance to the second power ("ID2") procedure. The search ellipsoid radius was 300 m long horizontally and 100 m long vertically. The number of 5-m composites used for the grade estimation ranged from two to sixteen, with a maximum of four composites from any single drill hole.

- **Resource Classification**: All hornfels model blocks were classified as inferred resources under the JORC Code as the hornfels-type mineralization is currently only defined by widely-spaced drill holes.

### 17.1.4 Resource Estimation Results under the JORC Code

The skarn-type mineral resources, inclusive of ore reserves, as of June 30, 2010 under the JORC Code estimated by BDASIA for the Jiama Project are summarized in Table 17.8. The cutoff grade used for the skarn-type resource summary is 0.3% copper, or 0.03% molybdenum, or 1% lead, or 1% zinc. The measured and indicated skarn-type resources in the deposit are also summarized by 50-m vertical intervals in Table 17.9.

**Table 17.8**
**JORC Skarn-Type Resource Estimates for the Jiama Project as of June 30, 2010**
(Cutoff grade for the resource estimate is 0.3% Cu, or 0.03% Mo, or 1% Pb, or 1% Zn.)

| kt | Grade | | | | | | Metals | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % | Cu kt | Mo kt | Au t | Ag t | Pb kt | Zn kt |
| **Measured Resource** | | | | | | | | | | | | |
| 82,928 | 0.83 | 0.042 | 0.30 | 16.0 | 0.06 | 0.05 | 686.9 | 34.42 | 25.11 | 1,326 | 51.9 | 38.7 |
| **Indicated Resource** | | | | | | | | | | | | |
| 102,187 | 0.68 | 0.041 | 0.22 | 13.7 | 0.10 | 0.05 | 691.6 | 42.07 | 22.33 | 1,396 | 100.6 | 55.4 |
| **Measured + Indicated Resource** | | | | | | | | | | | | |
| **185,116** | **0.74** | **0.041** | **0.26** | **14.7** | **0.08** | **0.05** | **1,378.5** | **76.49** | **47.44** | **2,722** | **152.5** | **94.1** |
| **Inferred Resource** | | | | | | | | | | | | |
| 165,763 | 0.64 | 0.053 | 0.21 | 13.1 | 0.14 | 0.06 | 1,068.0 | 88.57 | 35.42 | 2,179 | 239.0 | 106.9 |

**Table 17.9**
**Measured and Indicated Skarn-Type Resource Estimates for the Jiama Project by Level**
(Cutoff grade for the resource estimate is 0.3% Cu, or 0.03% Mo, or 1% Pb, or 1% Zn.)

| Level | kt | Grade | | | | | | Metals | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % | Cu kt | Mo kt | Au t | Ag t | Pb kt | Zn kt |
| 5050-5100 | 94 | 0.72 | 0.016 | 0.10 | 12.2 | 0.33 | 0.44 | 0.7 | 0.01 | 0.01 | 1 | 0.3 | 0.4 |
| 5000-5050 | 397 | 0.59 | 0.012 | 0.24 | 20.6 | 0.50 | 0.78 | 2.4 | 0.05 | 0.09 | 8 | 2.0 | 3.1 |
| 4950-5000 | 641 | 0.71 | 0.016 | 0.26 | 22.2 | 0.52 | 0.58 | 4.5 | 0.10 | 0.17 | 14 | 3.3 | 3.7 |
| 4900-4950 | 351 | 0.83 | 0.016 | 0.19 | 18.8 | 1.55 | 0.59 | 2.9 | 0.05 | 0.07 | 7 | 5.4 | 2.1 |
| 4850-4900 | 383 | 0.97 | 0.007 | 0.29 | 17.1 | 0.98 | 0.44 | 3.7 | 0.03 | 0.11 | 7 | 3.8 | 1.7 |
| 4800-4850 | 615 | 0.56 | 0.017 | 0.15 | 15.8 | 0.60 | 0.30 | 3.5 | 0.10 | 0.09 | 10 | 3.7 | 1.8 |
| 4750-4800 | 1,272 | 0.38 | 0.023 | 0.09 | 15.7 | 0.75 | 0.34 | 4.8 | 0.29 | 0.11 | 20 | 9.6 | 4.3 |
| 4700-4750 | 2,821 | 0.52 | 0.021 | 0.14 | 22.3 | 0.80 | 0.19 | 14.6 | 0.60 | 0.38 | 63 | 22.7 | 5.3 |
| 4650-4700 | 4,005 | 0.54 | 0.025 | 0.14 | 13.9 | 0.40 | 0.11 | 21.7 | 1.00 | 0.56 | 56 | 16.1 | 4.5 |
| 4600-4650 | 5,090 | 0.61 | 0.028 | 0.18 | 11.5 | 0.20 | 0.07 | 31.1 | 1.40 | 0.90 | 59 | 9.9 | 3.3 |
| 4550-4600 | 10,875 | 0.68 | 0.042 | 0.23 | 13.9 | 0.10 | 0.07 | 74.5 | 4.54 | 2.53 | 151 | 11.1 | 7.3 |
| 4500-4550 | 34,729 | 0.79 | 0.046 | 0.25 | 14.0 | 0.05 | 0.03 | 273.3 | 16.08 | 8.84 | 486 | 16.4 | 11.2 |
| 4450-4500 | 65,371 | 0.81 | 0.040 | 0.31 | 16.3 | 0.03 | 0.03 | 531.8 | 26.21 | 20.02 | 1,063 | 21.2 | 18.6 |
| 4400-4450 | 39,142 | 0.74 | 0.039 | 0.26 | 14.8 | 0.06 | 0.06 | 291.1 | 15.30 | 10.15 | 579 | 22.9 | 22.8 |
| 4350-4400 | 14,158 | 0.58 | 0.058 | 0.16 | 10.2 | 0.02 | 0.02 | 82.5 | 8.18 | 2.33 | 144 | 3.5 | 3.2 |
| 4300-4350 | 4,725 | 0.68 | 0.048 | 0.19 | 10.2 | 0.01 | 0.02 | 32.1 | 2.27 | 0.92 | 48 | 0.5 | 0.8 |
| 4250-4300 | 331 | 0.88 | 0.048 | 0.42 | 16.5 | 0.01 | 0.02 | 2.9 | 0.16 | 0.14 | 5 | 0.0 | 0.1 |
| 4200-4250 | 81 | 0.39 | 0.079 | 0.17 | 8.0 | 0.00 | 0.01 | 0.3 | 0.06 | 0.01 | 1 | 0.0 | 0.0 |
| 4150-4200 | 35 | 0.21 | 0.118 | 0.09 | 4.4 | 0.00 | 0.01 | 0.1 | 0.04 | 0.00 | 0 | 0.0 | 0.0 |
| **Total** | **185,116** | **0.74** | **0.041** | **0.26** | **14.7** | **0.08** | **0.05** | **1,378.5** | **76.49** | **47.44** | **2,722** | **152.5** | **94.1** |

The hornfels-type mineral resources, as of June 30, 2010 under the JORC Code as estimated by BDASIA for the Jiama Project are summarized in Table 17.10. The cutoff grade used for the hornfels-type resource summary is 0.3% copper, or 0.03% molybdenum, or 1% lead, or 1% zinc. Only inferred resources were estimated for the hornfels-type mineralization.

| Table 17.10<br>Hornfels-Type Mineral Resource Estimates for the Jiama Project as of June 30, 2010<br>(Cutoff grade for the resource estimate is 0.3% Cu, or 0.03% Mo, or 1% Pb or 1% Zn.) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mt | Grade | | | | | | Contained Metal | | | | | |
| | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % | Cu kt | Mo kt | Au t | Ag t | Pb kt | Zn kt |
| Inferred Resource | | | | | | | | | | | | |
| 655 | 0.23 | 0.045 | 0.02 | 1.17 | 0.00 | 0.01 | 1,500 | 290 | 13 | 770 | - | - |

BDASIA would note that mineral resources that are not mineral reserves do not have demonstrated economic viability. BDASIA would also note that the inferred resource estimates have a great amount of uncertainty as to their existence, and economic and legal feasibility. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher category. Under Canadian rules, estimates of inferred mineral resources may not form the basis of feasibility or pre-feasibility studies, or economic studies except for preliminary assessment or scoping study as defined under Canadian NI 43-101. Investors are cautioned not to assume that all of the inferred resources exist, or is economically or legally mineable.

## 17.2 Ore Reserve Estimates

Based on the December 2009 Changsha Institute feasibility study report, mining operations of the Jiama Project include both open-pit mining and underground mining. Two open pits, the smaller Tongqianshan pit located at the southwestern portion of the current Jiama Mining license, and the larger Niumatang pit located north of the Tongqianshan pit, have been designed for the project.

### 17.2.1 Economic Value Calculation of the Resource Model

The resource block model developed by BDASIA was used by the Changsha Institute in conducting mine planning and ore reserve estimation. An economic value was calculated for each model block based on the selected metal in concentrate prices and processing recoveries listed in Table 17.11 as well as mining dilution and mining recovery factors listed in Table 17.9.

| Table 17.11<br>Metal in Concentrate Prices and Processing Recoveries used for Mine Planning | | | |
|---|---|---|---|
| Item | Metal | Parameter | Note |
| Metal in Concentrate Price | Cu | RMB48,000/t (US$7,080/t) | These metal in concentrate prices include a 17% VAT except for gold, which is not subject to VAT in China. |
| | Mo | RMB300,000/t (US$44,248/t) | |
| | Au | RMB200/g (US$918/oz) | |
| | Ag | RMB3,200/t (US$14.68/oz) | |
| | Pb | RMB12,500/t (US$1,844/t) | |
| | Zn | RMB12,000/t (US$1,770/t) | |
| Processing Recovery | Cu | 83% | These processing recoveries were based on the information available at the time when the mine planning was conducted, and are slightly different from the processing recoveries used in project financial analysis. |
| | Mo | 75% | |
| | Au | 50% | |
| | Ag | 80% | |
| | Pb | 75% | |
| | Zn | 75% | |

Metal in concentrate prices for copper, molybdenum, lead, and zinc in Table 17.11 represent the actual average market metal prices for the last 3 to 5 years in China. Gold and silver prices are slightly higher than the past 3-year actual averages, but they represent the Changsha Institute's expectation for the long-term prices for these two metals. BDASIA notes that the gold and silver prices in Table 17.11 are metal prices instead of metal in concentrate prices. Compared to the metal in concentrate prices used in the base case financial analysis of the Jiama Project (Table 21.6

of this ITR), the gold in concentrate price in Table 17.11 is 22.0% higher, and the silver in concentrate price is 20.3% higher.

Processing recoveries used for mine planning were based on the available data at the time when the mine planning was conducted and are not exactly the same as those for the base-case project economic analysis, except for gold. The copper recovery of 83% in Table 17.11 is lower than the 85% (when the average copper grade is not more than 0.8%) or 90% (when the copper grade is above 0.8%) copper processing recovery used for project financial analysis; the molybdenum recovery of 75% in Table 17.11 is higher than the 70% molybdenum processing recovery used in the project financial analysis; the lead recovery of 75% in Table 17.11 is less than the 80% lead recovery used in the project financial analysis; and the silver recovery of 80% in Table 17.11 is the same for most of the years in the mine life in the project financial analysis except for the initial 2 years of the mine life, when the silver recovery is 85%, as both the copper and lead concentrates will be produced for these 2 years. A zinc value was calculated for the mine planning, but this metal is not recovered and payable in the project financial analysis; however, this should only produce a minimum impact on the mine plan, as the zinc grade is generally very low in the resource model.

As copper is the primary economic metal in the deposit and as the copper processing recovery used in the mine plan is 2% to 7% lower than the copper recovery in the project financial analysis, BDASIA considers that the net effect of the different metal in concentrate prices and processing recoveries used between the mine plan and the project economic analysis is that the mine plan is slightly more conservative and, therefore, is considered acceptable by BDASIA for the Jiama Project.

The Jiama resource model was constructed using an ordinary kriging procedure, and a certain amount of mining dilution and mining losses have been built into the resource model because of the grade smoothing effect of the kriging grade estimation process. The Changsha Institute has applied additional mining dilution and mining recovery factors to the resource model as listed in Table 17.12. The Tongqianshan pit is mining the upper, steeply-dipping portion of the I-1 mineralized body, and the additional mining dilution factor applied is 5% and the mining recovery factor applied is 95%. The Niumatang pit is mining the lower, flatter portion of the I-1 mineralized body, and the additional dilution factor is 3% and the mining recovery factor is 97%. The underground reserve will be mostly mined by open stoping methods, and the additional mining dilution factor is 10% for the upper, steeply-dipping portion of the I-1 mineralized body (+4,600 m), and 8% for the lower, flatter, and thick portion of the mineralized body. The mining recovery factor applied is 85% for the upper, steeply-dipping ore zone and 90% for the lower, flatter, and thick ore zone. BDASIA considers these mining dilution factors and mining recovery factors to be appropriate for the planning stage. However, BDASIA recommends that Huatailong closely monitor the actual mining dilution and mining recoveries in the actual mining operation and calculate the actual mining dilution factors and mining recovery factors based on the production reconciliation data.

**Table 17.12**
**Mining Dilution and Mining Recovery Factors for Reserve Estimation of the Jiama Project**

| Area | Factor | Chinese Parameter | Western Parameter |
|---|---|---|---|
| Tongqianshan Pit | Dilution Factor | 5% | 5.26% |
| | Mining Recovery Factor | 95% | 95% |
| Niumatang Pit | Dilution Factor | 3% | 3.09% |
| | Mining Recovery Factor | 97% | 97% |
| Underground (+4,600 m) Sublevel Stoping | Dilution Factor | 10% | 11.11% |
| | Mining Recovery Factor | 85% | 85% |
| Underground (-4,600 m) Panel Sublevel Stoping | Dilution Factor | 8% | 8.70% |
| | Mining Recovery Factor | 90% | 90% |

It should be noted that the definition of the mining dilution factor in China is different from that in most Western countries. The mining dilution factor in China is defined as the ratio of the waste tonnage in the concentrator feed to the total concentrator feed tonnage, while the mining dilution factor in the West is defined as the ratio of the waste tonnage in the concentrator feed to the ore tonnage in the concentrator feed. Therefore, when using the same data for calculation, the Western mining dilution factor is always higher than the Chinese mining dilution factor, with the difference getting larger when the dilution factor is higher. For example, the Chinese mining dilution factor of 6.0%

is equivalent to a Western mining dilution factor of 6.4%, and the Chinese mining dilution factor of 9.0% is equivalent to a Western mining dilution factor of 9.9%. The mining dilution factors discussed in the text above all refer to the Chinese mining dilution factors; the corresponding Western mining dilution factors are listed in Table 17.12.

### 17.2.2 Mine Planning and Reserve Estimation for the Tongqianshan Pit

The Tongqianshan pit is a relatively small open pit located at the southern section of the I-1 mineralized body, where the ore zone is relatively steeply-dipping and exposed on the surface. The open-pit design was not based on an optimization analysis but was designed to meet the waste-to-ore strip ratio that ensured the pit's profitability and provided early ore production for the start up of the operation. In addition, the open pit met the project needs to provide sufficient waste rock to establish an operational work area above the base of the valley at the level of the planned entrance (around the MSL elevation of 4,600 m) to the underground mine.

The open-pit slope parameters for the design are 15-m benches with a 4-m-wide berm followed by a second bench with a 14-m-wide safety berm; the berm width alternates between 4 m and 14 m down the pit slope. The haul road width is designed at 12 m, although the majority of pit benches will not require a haul road within the bench due to the topography of the pit and only the last three benches being continuous, i.e., not daylighting. The bench face slope angle is 70°, giving an overall open-pit slope angle of 45°.

The pit is located within the valley between the Tongshan and the Qianshan mountains, with the main walls of the pit being on the east and west walls cut into the sides of the two mountains. The dimensions of the pit are approximately 640 m east-west and 580 m north-south. The highest pit wall is 270 m. The final pit is only 45 m below the floor of the valley, with all other benches daylighting. The defined final pit contains approximately 3.7 Mt of ore and 20.8 Mt of waste at a strip ratio of 5.6:1 (waste:ore) by weight.

Within the planned open pit, there has been some localized extraction of ore from previous underground workings, as mentioned previously in this ITR. The Changsha Institute has noted that these mining areas can create a risk to the open-pit mining operation and recommended that the Jiama Project take measures to protect the open-pit operation with procedures to identify these voids within the mining area as the open pit progresses.

### 17.2.3 Mine Planning and Reserve Estimation for the Niumatang Pit

The design of the Niumatang open pit, which contains the majority of the open-pit reserves, was based on optimization work undertaken by the Changsha Institute and reviewed by BDASIA. An optimization procedure, using the Lerchs Grossman algorithm in SURPAC, was used to create optimized pit shells from the resource block model.

The mining cost parameters used in the pit optimization analysis were based on the unit mining costs of RMB17.5/t (US$2.58/t) for ore mining and RMB15.5/t (US$2.29/t) for waste stripping. Other unit costs, including processing, G&A, sales, and financing, total RMB145.0/t (US$21.39/t) of processed ore. These costs are generally higher than the unit costs used for the project financial analysis (unit ore mining cost RMB16.4/t (US$2.42/t), unit waste stripping cost RMB13.2/t (US$1.95/t), unit ore transportation, mining management, processing, G&A, sales, and financing costs RMB112.5/t (US$16.59/t)).

The assumption for the pit slopes for all walls was 45º.

The analysis was based on a block economic value calculated from the block metal grades, processing recoveries, and metal in concentrate prices.

The selected shell for final pit design from the optimization analysis was chosen to maximize profitability and minimize the strip ratio. The open-pit design followed the selected optimization shell, with the designed final pit containing approximately 19.9 Mt of ore and 146.2 Mt of waste at a strip ratio of 7.4:1 (waste:ore) by weight. The dimensions of the pit are approximately 900 m east-west and 840 m north-south. The highest pit wall is 570 m. The final pit is only 80 m below the floor of the valley, with all other benches daylighting. The open-pit slope parameters for the design are similar to the Tongqianshan pit.

BDASIA notes that the optimization analysis did not consider the marginal cost of mining the ore zones within the open pit by underground mining. The overall unit open-pit unit mining costs for the Niumatang pit are higher than the unit underground mining costs. BDASIA recommends that further optimization of the mine plan be carried out to better define the boundary between the open-pit and underground mining method. Any adjustment in the boundary would need to be assessed with respect to the impact on the mine scheduling and timing of the capital cost of increasing the underground production capacity.

#### 17.2.4 Underground Mine Planning and Reserve Estimation

In planning the extraction methods for the underground mine, the Changsha Institute divided the ore zone into the steeply-dipping (averaging approximately 60°) section above the 4,550-m level and the flatter (dipping approximately 10°) but relatively thick section below the 4,550-m level. The reserve split within the two ore zones is currently approximately 20% and 80%, respectively.

Access to underground is planned from the 4,600-m level in the Xiagongpu valley, north of the Tongqianshan pit, with two inclined shafts and a decline access for trackless equipment. The shafts will be inclined at 30°, with one shaft used for transportation of personnel and materials and the second shaft used for waste hoisting; the shafts will have an approximately 600-m final depth, with an initial 355 m developed in the first stage of underground production. Prior to the construction of the underground access, the valley is required to be filled to the 4,600-m level with waste rocks from the Tongqianshan pit. The waste rock will also create a platform for construction of mine offices and other surface infrastructure for the underground mine.

The mining method planned for both the steeply-dipping and flatter, thick zones is open stope mining, with variations to the access, stope dimensions, and sublevel intervals. Stopes within the flatter, thick section are planned to be backfilled with classified tailings, with and without cement. Stopes within the steeply-dipping zone will not be backfilled.

For the flatter, thick zone, it is planned to mine the zone in 50-m vertical height blocks, with the stopes approximately 45-m high, 50-m long, and 15-m wide, yielding approximately 100,000 t per stope. The sublevel interval planned is to be two at 15 m and one at 20 m, with a 5-m crown pillar above the stope. Primary stopes, i.e., where no stope extraction has occurred adjacent to the stope, will be cement filled to allow adjacent stopes to be extracted. For secondary stopes where no stopes are planned to be extracted beside the stope, no cement will be used in the fill, and a finer hydraulic fill is planned; some secondary stopes may be cement filled where further mining of tertiary stopes is planned. Management of backfilling is one of the critical activities to ensuring long-term production schedules are met and stope sequencing is not compromised due to late filling of stopes. Cement fill stopes will require appropriate curing time before mining commences from adjacent stopes. While management of the blasting against fill will minimize fill failures, some fill will inevitably break into secondary and tertiary stopes.

In the steeper zones, the sublevels are planned at the same sublevel interval of 15-m and 20-m. Stope length is 20-m and stope width is set by the ore zone, which will be 20-m or greater, yielding approximately 50,000 t per stope.

The two mining methods described above account for around 90% of the ore reserves. For zones where open stoping mining methods are not appropriate due to ore dimensions, room-and-pillar or shrinkage stoping mining methods are planned, depending on the thickness of the ore zone and the dip.

A unit economic value was calculated for each stope based on the resource model metal grades, metal in concentrate prices, and metallurgical recoveries to determine if the stope is profitable and should be considered as a reserve.

#### 17.2.5 JORC Ore Reserve Statement for the Jiama Project

Ore reserves under the JORC Code were summarized based on the block/stope unit economic values calculated for the resource blocks within the final Tongqianshan pit and Niumatang pit designs and for stopes within the planned underground mining areas. The cutoff unit economic values used to separate ore and waste by the Changsha Institute are listed in Table 17.13.

| Table 17.13<br>Cutoff Unit Economic Value for Reserve Estimation of the Jiama Project | | |
|---|---|---|
| **Area** | **Cutoff Unit Economic Value** | **Total Unit Ore Operating Cost In Project Financial analysis** |
| Tongqianshan Pit | RMB276.5/t (US$40.78/t) | RMB133.2/t (US$19.65/t) |
| Niumatang Pit | RMB249.0/t (US$36.73/t) | RMB128.9/t (US$19.01/t) |
| Underground (+4,600 m) Sublevel Stoping | RMB276.5/t (US$40.78/t) | RMB201.0/t (US$29.65/t) |
| Underground (-4,600 m) Panel Sublevel Stoping | RMB249.0/t (US$36.73/t) | RMB201.0/t (US$29.65/t) |

For comparison purposes, total unit ore operating costs (including ore mining, transportation, processing, G&A, sales, and financing costs) used for the project financial analysis for each mining area of the Jiama Project are also listed in Table 17.13. It can be seen that the cutoff unit economic values are considerably higher than the total unit ore operating costs used in the project financial analysis, especially for the two open pits. This means that the marginally profitable resource blocks or stopes are not included in the ore reserve estimate by the Changsha Institute.

Only the measured and indicated resource block/stopes were used for reserve estimation. The economic measured resource was converted to a proved reserve and the economic indicated resource was converted to a probable reserve. Appropriate mining dilution factors and mining recovery factors have been incorporated into the reserve estimates.

BDASIA considers that the Changsha Institute's reserve estimates are relatively conservative and meet the JORC reserve definition. As the ore reserves for the Jiama Project are sufficient for the planned production rate for approximately 30 years, eliminating some of the low-profit-margin ore blocks from production will actually help the project economics. Therefore, the Changsha Institute's reserve estimates are adopted by BDASIA in this ITR. Table 17.14 summarizes the JORC reserve estimates for the Jiama Project as of June 30, 2010. The waste tonnage and strip ratio for the two open pits have also been summarized in the table. These reserve estimates are also compliant with the CIM Standards as the JORC and CIM reserve classifications are exactly the same.

| Table 17.14<br>JORC Ore Reserve Estimates for the Jiama Project as of June 30, 2010 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | kt | Grade | | | | | | Metals | | | | | |
| | | Cu % | Mo % | Au g/t | Ag g/t | Pb % | Zn % | Cu kt | Mo kt | Au t | Ag t | Pb kt | Zn kt |
| **Tongqianshan Pit** | | | | | | | | | | | | | |
| Proved | 1,208 | 0.64 | 0.015 | 0.20 | 10.0 | 0.21 | 0.05 | 7.7 | 0.18 | 0.24 | 12 | 2.5 | 0.6 |
| Probable | 2,524 | 0.77 | 0.012 | 0.24 | 13.4 | 0.51 | 0.09 | 19.4 | 0.29 | 0.60 | 34 | 13.0 | 2.3 |
| Subtotal | 3,733 | 0.73 | 0.013 | 0.23 | 12.3 | 0.41 | 0.08 | 27.1 | 0.47 | 0.84 | 46 | 15.5 | 2.8 |
| Waste | 20,826 | | | | | | | | | | | | |
| Strip ratio | 5.58 | | | | | | | | | | | | |
| **Niumatang Pit** | | | | | | | | | | | | | |
| Proved | 14,473 | 1.04 | 0.039 | 0.45 | 21.6 | 0.03 | 0.03 | 150.9 | 5.66 | 6.56 | 313 | 4.2 | 3.9 |
| Probable | 5,423 | 1.06 | 0.035 | 0.49 | 21.7 | 0.03 | 0.03 | 57.7 | 1.89 | 2.63 | 118 | 1.8 | 1.7 |
| Subtotal | 19,897 | 1.05 | 0.038 | 0.46 | 21.6 | 0.03 | 0.03 | 208.6 | 7.55 | 9.19 | 430 | 6.0 | 5.6 |
| Waste | 146,224 | | | | | | | | | | | | |
| Strip ratio | 7.35 | | | | | | | | | | | | |
| **Total Open Pits** | | | | | | | | | | | | | |
| Proved | **15,682** | **1.01** | **0.037** | **0.43** | **20.7** | **0.04** | **0.03** | **158.6** | **5.83** | **6.80** | **325** | **6.7** | **4.5** |
| Probable | **7,948** | **0.97** | **0.027** | **0.41** | **19.1** | **0.19** | **0.05** | **77.2** | **2.18** | **3.23** | **151** | **14.8** | **4.0** |
| Subtotal | **23,630** | **1.00** | **0.034** | **0.42** | **20.1** | **0.09** | **0.04** | **235.8** | **8.02** | **10.03** | **476** | **21.5** | **8.5** |
| Waste | **167,050** | | | | | | | | | | | | |
| Strip ratio | **7.07** | | | | | | | | | | | | |
| **Underground Reserve** | | | | | | | | | | | | | |
| Proved | **37,860** | **0.75** | **0.038** | **0.27** | **14.5** | **0.06** | **0.04** | **284.2** | **14.48** | **10.3** | **550** | **22.9** | **16.9** |
| Probable | **44,410** | **0.82** | **0.042** | **0.27** | **16.0** | **0.09** | **0.05** | **365.6** | **18.77** | **12.0** | **712** | **40.6** | **23.2** |
| Subtotal | **82,269** | **0.79** | **0.040** | **0.27** | **15.3** | **0.08** | **0.05** | **649.8** | **33.25** | **22.3** | **1262** | **63.5** | **40.1** |
| **Total Reserves** | | | | | | | | | | | | | |
| Proved | **53,541** | **0.83** | **0.038** | **0.32** | **16.3** | **0.06** | **0.04** | **442.8** | **20.31** | **17.1** | **874** | **29.6** | **21.3** |
| Probable | **52,358** | **0.85** | **0.040** | **0.29** | **16.5** | **0.11** | **0.05** | **442.8** | **20.96** | **15.2** | **864** | **55.4** | **27.2** |
| Total | **105,899** | **0.84** | **0.039** | **0.31** | **16.4** | **0.08** | **0.05** | **885.6** | **41.27** | **32.3** | **1738** | **85.0** | **48.6** |

## 17.3 Additional Exploration Potential

Copper-polymetallic mineralization at Jiama lies within a large mineralized system. Over 97% of the currently defined mineral resources are contained within the primary I-1 mineralized body controlled by the interlayer structure zone between the footwall Upper-Jurassic Duodigou Formation marbles and the hanging wall Lower-Cretaceous Linbuzong Formation hornfels. A total of 185 Mt of measured and indicated resources have been defined by current drilling, and there is an additional 166 Mt of inferred mineral resource for the Jiama Project. With additional drilling and sampling, BDASIA believes that a significant portion of the inferred resource can be upgraded to the measured and indicated resource categories, which in turn, can be used for additional ore reserve estimation. In addition, the I-1 mineralized body is generally open in the down-dip direction to the northeast, representing significant additional exploration potential in that area.

Furthermore, as Jiama is within a large mineralized system and as Huatailong's mining and exploration licenses cover an area of 145.5 $km^2$, it is possible to find other mineralized bodies similar to the I-1 mineralized body and other types of mineralization, such as porphyry-type copper or copper-polymetallic mineralization, within the mining/exploration license area.

## 17.4 Mine Life Analysis

Based on the December 2009 Changsha Institute feasibility study report, the current proved and probable ore reserves for the skarn-type mineralization of the Jiama Project are 105.9 Mt. At the planned long-term production rate of 3.6 Mtpa, the current reserve mine life for the Jiama Project is approximately 29.4 years. This reserve mine life may change significantly in the future due to the following reasons:

- In addition to the proved and probable reserve estimates, an additional 165 Mt of inferred mineral resources are estimated to exist for the skarn-type mineralization at the Jiama Project. BDASIA believes that additional drilling and sampling can upgrade a significant portion of this inferred resource into the measured and indicated resource categories, which in turn can be used to estimate additional skarn-type ore reserves for the Jiama Project. The additional ore reserves defined by upgrading the inferred resource estimate could increase the reserve mine life of the Jiama Project significantly;

- The mineralization is generally open in the down-dip direction, and additional exploration may increase the mineral resources significantly. Depending on economic conditions, some of the increased mineral resources could be converted into ore reserves, increasing the mine life; and

- Changes in the production rate would also change the mine life. The mine life would be shortened if the production rate is increased to a level higher than the anticipated long-term production level.

### 17.5 Resource/Reserve Reconciliation under the CIM Standards

The CIM Standards are a resource/reserve classification system very similar to the Australasian JORC Code. There is no material difference between the two classification systems. Resource/reserve estimates under the JORC Code can be easily converted to resource/reserve estimates under the CIM Standards. It should be noted, however, that under the JORC Code, inferred resource can be added to measured and indicated resources in reporting, while such an addition is not allowed under the CIM Standards in resource statements. In this ITR, the inferred resource is not added to the measured and indicated resources, as this ITR follows the NI 43-101 report disclosure guidelines.

Mineral resources, inclusive of mineral reserves, and mineral reserves under the CIM Standards for the Jiama Project as of June 30, 2010 are exactly the same as the mineral resources and ore reserves under the JORC Code and are summarized in Table 17.8 and Table 17.14, respectively.

## 18.0 INTERPRETATION AND CONCLUSIONS

The Jiama deposit is a large copper-polymetallic deposit with well-defined mineral resources and ore reserves. The currently defined ore reserve for the deposit is sufficient to support a production rate of 12,000 tpd or 3.6 Mtpa for approximately 30 years. In addition, there is a large, defined, inferred resource, and the additional exploration potential is very good. The currently defined mineral resources and ore reserves will very likely be increased in the future with additional exploration work. The Tibet government is supportive of the development of the Jiama Project, and the pending mining license issue is unlikely to affect the defined reserves of the project.

The extraction of the I-1 mineralized body, the primary mineralized body in the Jiama deposit, requires the use of both open-pit and underground mining methods. BDASIA considers the mine design generally appropriate. However, there is a degree of uncertainty with the production targets during the ramp-up period; and, further detailed planning, optimization, and detailed geotechnical assessment would also assist in reducing the overall risk of the mine plan. The schedule is susceptible to interruptions from the supply of power. The economics of the two open pits are not optimum, but project goals such as early production and the need for waste as a platform for the underground mine access development justify the selection of the pit size, particularly the Tongqianshan pit.

Both the copper-lead ore and copper-molybdenum ore appear to be fairly typical and relatively simple to treat. It is expected that the concentrates of copper, lead, and molybdenum could be produced as indicated by the testwork and outlined in the life-of-mine production forecast (Table 21.2).

To ensure uninterrupted production, two aspects specific to this operation should be given a high degree of attention. They involve process water and movement of the tails from the plant to the final tailings disposal site.

Fresh water is scarce in the area, and the process water will have to be recovered, treated, and recycled.

The thickened tails will have to be pumped from the thickeners at a MSL elevation of around 3,980 m to a filtering facility at a 4,380-m MSL elevation, the water returned to process, and the filtered cake (tailings) transported by a conveyor belt and deposited in the final tailings disposal site. Any malfunction of this system will cause the shutdown of the plant and loss of production.

# 19.0 RECOMMENDATIONS

## 19.1 Exploration

Further in-fill drilling and step-out drilling are likely to significantly increase the currently defined mineral resources and ore reserves for the Jiama Project. BDASIA, however, does not consider additional drilling a high priority task at the current stage of project development as the defined ore reserves are sufficient to support the mining operation for approximately 30 years at the planned production rate of 12,000 tpd or 3.6 Mtpa. If mining operations over the next several years prove to be successful, Huatailong should consider increasing the currently planned production capacity of the project, and additional drilling to increase the mineral resources and ore reserves of the project may become necessary. Cost for the additional drilling could range from less than RMB5 M (US$0.74 M) to more than RMB20 M (US$2.9 M).

## 19.2 Open-pit Mining

A preliminary assessment of slope stability has been carried out on both the Tongqianshan and Niumatang pits, and it is recommended that a more detailed geotechnical assessment be carried out on the pit walls, particularly for the larger Niumatang open pit to better define the appropriate slope angle for the various walls of the pit.

Within the planned Tongqianshan open pit, there has been some localized extraction of ore by previous underground mining. The Changsha Institute has noted that these mining areas can create a risk to the open-pit mining operation and recommended that the Jiama Project take measures to protect the open-pit operation with procedures to identify these voids within the mining area as the open-pit progresses.

The optimization analysis for the Niumatang pit did not consider the marginal cost of mining the ore zones within the open pit by underground mining. The overall open-pit unit mining costs for the Niumatang pit are higher than those for the underground mine. BDASIA recommends that further optimization of the mine plan be carried out to maximize the profitability of ore extraction by better defining the boundary between the open-pit and underground mining methods.

## 19.3 Underground Mining

Given the quality of the orebody and adjacent rocks, BDASIA recommends that the stope dimensions within the zone below the 4,550-m level be geotechnically reviewed to determine if stope sizes can be increased without significantly affecting the production risk. Overall, BDASIA considers that further optimization of the mine design is warranted and has the potential to improve the profitability of the underground mine.

The recommendations made for both the open-pit mining and underground mining should generally be considered as part of routine technical work for the mining operation, and should not cost the project significantly more money. The optimizations discussed are very likely to result in some cost savings for the project.

## 19.4 Processing

Additional testwork aimed to design and confirm the process water treatment – its recycling and effect on concentrate grades and recoveries – is strongly recommended. The tests should be conducted on samples representing the mill feed for years 1, 2, 3, and 4, if at all possible. The final, locked-cycle tests should be carried out in duplicate. The cost for the additional test work can be ranged from RMB0.4 M (US$0.059 M) to RMB1.5 M (US$0.22 M).

## 20.0 REFERENCES


Mineral Resource Research Institute of Chinese Academy of Geological Sciences, 2009: Mineral Resource and Reserve Evaluation Report for the Jiama Polymetallic Deposit in Metrorkongka County, Tibet Autonomous Region (An unpublished internal company report). 141p. November 2009.

Changsha Engineering and Research Institute of Nonferrous Metals Metallurgy, 2009: Feasibility Study Report for the 12,000 tpd Mining/Processing Operation for the Jiama Copper-Polymetallic Project of Tibet Huatailong Mining Development Company Limited (An unpublished internal company report). 331p. December 2009.

Changsha Engineering and Research Institute of Nonferrous Metals Metallurgy, 2010: Preliminary Economic Assessment of the 50 ktpd of Mining/Processing Operation for Copper-Polymetallic Resources at Jiama for Tibet Huatailong Mining Development Company Limited (An unpublished internal company report). 167p. July 2010.


## 21.0 ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES

### 21.1 Mining Operations

The Jiama Project plans to mine approximately 105.9 Mt of ore by open-pit and underground mining operations at a production rate of 3.6 Mtpa or 12,000 tpd based on 300 working days per annum over a mine life of approximately 31 years (Table 21.1). Open-pit mining operation started in late July 2010 from the smaller Tongqianshan pit at a rate of 3,000 tpd or 900,000 tpa; open-pit mining at the Niumatang pit will start in April 2011 at a rate of 6,000 tpd or 1.8 Mtpa, increasing the total open-pit mining production to 9,000 tpd or 2.7 Mtpa; underground mining is planned to start in January 2012 at a rate of 3,000 tpd or 900,000 tpa, increasing the total mine production to 12,000 tpd or 3.6 Mtpa. Underground mining is planned to ramp up to 6,000 tpd in 2014 when the Tongqianshan pit will be depleted. Therefore, the mine will maintain a total production rate of 12,000 tpd or 3.6 Mtpa. At the depletion of the Niumatang pit, underground production capacity will be increased to 3.6 Mtpa or 12,000 tpd.

## Table 21.1
## Life-of-Mine Forecast Mine Production for the Jiama Project

| Item | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Tongqianshan Pit** | | | | | | | | | | | | | | | | | |
| development waste striping (kt) | 5,803 | | | | | | | | | | | | | | | | |
| development ore mining (kt) | 174 | | | | | | | | | | | | | | | | |
| production waste striping (kt) | | 4,875 | 5,850 | 3,600 | 675 | 23 | | | | | | | | | | | |
| production ore mining (kt) | | 750 | 900 | 900 | 900 | 109 | | | | | | | | | | | |
| **Niumatang Mount Pit** | | | | | | | | | | | | | | | | | |
| development waste striping (kt) | 12,790 | 22,537 | | | | | | | | | | | | | | | |
| development ore mining (kt) | 0 | 197 | | | | | | | | | | | | | | | |
| production waste striping (kt) | | | 15,300 | 15,300 | 15,300 | 15,300 | 12,060 | 12,060 | 12,060 | 7,920 | 2,700 | 1,620 | 1,278 | | | | |
| production ore mining (kt) | | | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,700 | | | | |
| **Total Open-pit Production** | | | | | | | | | | | | | | | | | |
| **development waste striping (kt)** | **18,593** | **22,537** | | | | | | | | | | | | | | | |
| **development ore mining (kt)** | **174** | **197** | | | | | | | | | | | | | | | |
| **production waste striping (kt)** | | **4,875** | **21,150** | **18,900** | **15,975** | **15,323** | **12,060** | **12,060** | **12,060** | **7,920** | **2,700** | **1,620** | **1,278** | | | | |
| **production ore mining (kt)** | | **750** | **2,700** | **2,700** | **2,700** | **1,909** | **1,800** | **1,800** | **1,800** | **1,800** | **1,800** | **1,800** | **1,700** | | | | |
| **Underground Ore Mining (kt)** | | | | **900** | **900** | **1,691** | **1,800** | **1,800** | **1,800** | **1,800** | **1,800** | **1,800** | **1,900** | **3,600** | **3,600** | **3,600** | **3,600** |
| **Total Ore Production (kt)** | **174** | **947** | **2,700** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** |

| Item | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Tongqianshan Pit** | | | | | | | | | | | | | | | | |
| development waste striping (kt) | | | | | | | | | | | | | | | | **5,803** |
| development ore mining (kt) | | | | | | | | | | | | | | | | **174** |
| production waste striping (kt) | | | | | | | | | | | | | | | | **15,023** |
| production ore mining (kt) | | | | | | | | | | | | | | | | **3,559** |
| **Niumatang Mount Pit** | | | | | | | | | | | | | | | | |
| development waste striping (kt) | | | | | | | | | | | | | | | | **35,326** |
| development ore mining (kt) | | | | | | | | | | | | | | | | **197** |
| production waste striping (kt) | | | | | | | | | | | | | | | | **133,200** |
| production ore mining (kt) | | | | | | | | | | | | | | | | **19,700** |
| **Total Open-pit Production** | | | | | | | | | | | | | | | | |
| **development waste striping (kt)** | | | | | | | | | | | | | | | | **41,129** |
| **development ore mining (kt)** | | | | | | | | | | | | | | | | **371** |
| **production waste striping (kt)** | | | | | | | | | | | | | | | | **148,223** |
| **production ore mining (kt)** | | | | | | | | | | | | | | | | **23,259** |
| **Underground Ore Mining (kt)** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **2,700** | **1,500** | **82,270** |
| **Total Ore Production (kt)** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **3,600** | **2,700** | **1,500** | **105,900** |

### 21.1.2 Open-pit Mining

***Geotechnical Parameters***

Some geotechnical assessment of the rocks within the mining area has been carried out and various rock parameters determined. The rocks within the planned Tongqianshan and Niumatang pits range from very hard rocks (mostly silicified hornfels) to hard rocks (hornfels and slates) and less hard rocks (carbonaceous shales, marble, limestone, and skarns). The majority of the pit walls are within the skarn, marble, limestone, and hornfels. No major faults have been identified within the mining area; the Xiapu fracture zone is a large brittle-ductile thrust-detachment fault zone located south of the mining area.

The natural slopes of the surrounding topography are of the range between approximately 30° and 45°. No detailed geotechnical assessment has been completed for the pit designs for either the Tongqianshan or the Niumatang pit slopes, but the designed slopes have been set at a relatively conservative 45°, which is similar to many of the natural slopes within the mining area.

The Changsha Institute has recommended to the Jiama Project that further analysis of the final boundary of the Niumatang open pit be carried out to further optimize the pit slope. The pit slope angles, particularly for the larger Niumatang open pit, can be better defined with detailed geotechnical assessment. There is some potential to reduce operating costs for the open pit if the pit slopes can be steepened without increasing the risk of wall failure above acceptable limits.

As part of the pit wall management program, the Jiama Project has commenced pit slope monitoring of both open pits and will continue this program as mining progresses.

***Open-pit Mining Operation***

The smaller Tongqianshan pit and the larger Niumatang pit designed by the Changsha Institute in its December 2009 feasibility study for the Jiama Project are summarized in section 17.2 of this ITR.

The feasibility study assumed production drilling and blasting of 15-m benches, with a drill hole diameter of 165 mm. The study assumed a mining fleet of 8-$m^3$ CED1850-7 hydraulic excavators for waste stripping and 4-$m^3$ CED650-6 hydraulic excavators for ore mining, with 45-t and 20-t trucks allocated to the respective excavators. The fleet sizes were calculated based on appropriate efficiencies, but no detailed haulage modeling was completed. Open-pit mining costs calculated from the fleet are within the range of costs from the open-pit contractor currently carrying out the pre-strip mining at both the Tongqianshan and Niumatang pits. The excavator size planned for mining ore from the 15-m blasted benches will require loading in sections or flitches (sub-benches) to ensure a safe work place and sufficient control of ore mining. The ore zone is relatively continuous, but BDASIA considers that Huatailong should consider reducing the height of the work bench to provide more control of ore mining, particularly in the early stage of the pit when grade control practices are being refined. Ancillary equipment, including bulldozers, water trucks, and front end loaders, is included within the mining fleet for the open pit.

### 21.1.2 Underground Mining

Underground mine planning for the Jiama Project has also been summarized in section 17.2 of this ITR.

It is planned to use drill jumbos for stope development and electric LHD units equipped with a 4-$m^3$-capacity bucket for loading material to ore and waste passes. Ore passes will connect to interim haulage levels for each 50-m-thick block, where ore will be transported to a major ore pass to the main transportation system detailed in Section 21.1.3. Waste will be hauled up one of the inclined shafts and tipped initially within the Xiagongpu valley, with excess waste being taken to the open-pit waste dump. Waste rock may also be used as stope fill (negating the need to hoist the waste) where no cement is required. Drilling of production blast holes within the stopes is planned using Atlas Copco Simba 1254 units or similar equipment.

Ground conditions are anticipated to be good within the orebody, where the majority of underground development is planned in skarn that has been assessed as hard competent rock; other wall rocks are also expected to be competent. Given the quality of the orebody and adjacent rocks, BDASIA recommends that the stope dimensions within the zone below 4,550-m level be geotechnically reviewed to determine if stope sizes can be increased without significantly affecting the production risk. Overall, BDASIA considers that further optimization of the mine design is warranted and has the potential to improve the profitability of the underground mine. There is potential to extend the underground mine if the significant inferred resources can be better defined; any significant extension to the mine area would also justify a review of the mine plan.

The ventilation plan for the mine is for fresh air to be drawn into the mine through the decline and the two inclined shafts. All return air will be exhausted initially through a return air system that will be mined to the north of the mine within the valley above where the Niumatang waste dump is planned. A second return air system will be developed for the mining of the ore zone above the 4,550-m level in the south of the mine area. Total design airflow through the mine is planned at about 190 $m^3$ per second.

Drainage of water from the mine will be via the main transport haulage tunnel, which is located below the underground mine area. The haulage tunnel is being mined at a gradient of 0.3% from the surface adit, allowing free flow of all mine drainage water to the 4,261-m level adit northwest of the mine area. No significant water flows are anticipated from the country rock; any unforeseen water flows will have minimal impact on the operation given the general mine layout.

### 21.1.3 Ore Rail Transportation System

Ore from the Tongqianshan and Niumatang open pits is planned to be trucked to a crusher (crushing to minus 500 mm), where the crushed ore will discharge into an ore pass to feed an ore rail transport system. Ore from underground will be tipped into a separate pass to feed the same ore rail transport system.

The ore from both open pit and underground is planned to be tipped into ore passes that feed a rail system that transports the ore approximately 8.4 km to the ore bins above the main plant crushers. Due to the elevation difference between both the underground and open-pit operations and the plant, ore can be hauled with positive gradient fall between the levels below the mining operations and the level above the plant. The rail system consists of an initial section of 3.9 km on the 4,261-m level and progresses to the surface where the ore is transferred via an ore pass to the second underground rail section of 4.5-km on the 4,087-m level, exiting from underground at the adit above the plant crusher where a rail haulage car tipple is positioned above the ore bins. A duplicate tipple will be installed above the second plant. The rail haulage is planned to be a dual rail system, with 20-t electric locomotives pulling ten 20-$m^3$ mine cars.

Other options were considered for transporting the ore to the processing plant, including truck haulage and aerial ropeway, but the proposed system provided reduced surface disturbance, low operating costs, and protection from the adverse weather conditions.

### 21.1.4 Life-of-Mine Forecast Mine Production Plan

The life-of-mine forecast mine production plan for the open pits and underground mine is detailed in Table 21.1.

Initial production of ore is from the Tongqianshan pit, with ore production targeted at 900,000 tpa or 3,000 tpd starting from late July 2010. Initial pre-production stripping is scheduled to be around 6.0 Mt of material, mostly waste, in 2009 and a similar material movement in 2010, with peak movement of material in 2011 of 6.8 Mt. Material movement will then reduce each year over the short life of the pit.

Pre-production stripping of waste in the Niumatang pit had commenced during BDASIA's site visit in December 2009 and is planned to take until the end of 2010; a total of 35.5 Mt of material is scheduled over the 2-year period. From 2011, ore production is targeted to achieve 1.8 Mtpa or 6,000 tpd over a mine life of approximately 11 years. Total material movement is scheduled at 17.1 Mtpa for the first 4 years, reducing to 13.9 Mtpa for the next 3 years before further reducing to below 9.7 Mtpa as the pit is mined out. With the flat-lying ore zone within the pit, the pit is planned to be mined in three stages as it advances back to the final pit wall. The stages allow the mining of waste rock to be scheduled at a relatively constant rate in exposing the ore.

Open-pit mining is conducted by contractors. Two mining contractors are used to mine the Tongqianshan pit and the Niumatang pit separately. The mining contractors are required to provide sufficient equipment to meet the life-of-mine schedule and mine the required ore and waste tonnages. At the time of BDASIA's site visit in December

2009, pre-production stripping of the two open pits was generally progressing as scheduled, and pre-production ore was hauled by truck to two small ore stockpiles (one for higher-grade ore and one for lower-grade ore) next to the primary crusher at the Phase I processing plant. No detailed pre-production waste stripping and ore production data, however, were available to BDASIA during the visit.

Initial underground mining is planned from the ore zone below the 4,550-m level and is scheduled at a rate of 1.8 Mtpa or 6,000 tpd after an initial ramp up in production of 50% in 2012 and 2013 and 94% in 2014 before full production in 2015. The underground mine will double in capacity in 2022 when the Niumatang open pit is mined out. A large capital program is planned during 2020 and 2021 to develop the new production areas, including above the 4,550-m level ore zone, and to purchase additional new and replacement mine equipment.

BDASIA would note that mine production is susceptible to any disruption in the power supply. BDASIA would also note that the production ramp-up process is dependent upon the capital expenditures incurred by mine/concentrator construction. Any delays in construction will cause a longer ramp-up period, increasing the operating costs of the initial years and the capital costs of the project.

### 21.2 Processing

Please refer to Section 16.0 for mineral processing and metallurgical recoveries of the Jiama ore.

### 21.3 Markets, Contracts, and Taxes

Copper, molybdenum, and lead concentrates produced from the Jiama Project will be sold to smelters located in various places in China. A preliminary sales contract was signed between Huatailong and a smelter customer in Gansu Province for the copper concentrate produced from the Jiama Project. The copper concentrate specifications include Cu grade (≥18%), contents of Ni (≤1.5%), As (≤0.5%), Pb+Zn (≤8.0%) , Bi+Sb (≤0.5%), MgO (4.0%), and moisture (≤12%). All concentrates produced from the Jiama Project must be fully analyzed for all elements required by the eventual buyers. According to the preliminary contract, the sales price for copper in copper concentrate (Cu ≥18% and ≤20%) will be based on the monthly average copper price on the Shanghai Metal Exchange less treatment charges ranging from 9.5% to 18% based on the copper price range. When the copper concentrate grade is more than 20%, there is a bonus of RMB1.0/t (US$0.15/t) for each 0.01% incremental increase in copper grade until the copper concentrate grade reaches 30%, where no additional grade bonus will be applied. Gold and silver in the copper concentrate will be payable when the minimum grade of 1 g/t for gold and 20 g/t for silver is reached based on the monthly average gold and silver prices on the Shanghai Metal Exchange adjusted by a price coefficient. The price coefficient for gold ranges from 80% when the gold grade equals or is more than 1 g/t and is less than 2 g/t to 87% when the gold grade equals or more is than 20.0 g/t. The price coefficient for silver ranges from 72% when the silver grade equals or is more than 20.0 g/t and is less than 50.0 g/t to 85% when the silver grade equals or is more than 1,000.0 g/t. Concentrate transportation will be paid by the seller, but the buyer will add a RMB200.0/t (US$29.50/t) price for the copper metal contained in the copper concentrate for the concentrate sale. No molybdenum and lead concentrate sales contracts had been signed for the Jiama Project at the time of BDASIA's site visit in December 2009. The sales of these concentrates will be generally based on prevailing sale conditions in China.

The Jiama Project does not have any metal hedging contracts.

Open-pit mining operations are conducted by two mining contractors, one for the Tongqianshan pit and one for the Niumatang pit. The unit Niumatang contract mining price, including drilling and blasting, is RMB16.4/t (US$2.42/t) for ore and RMB13.2/t (US$1.95/t) for waste; the unit Tongqianshan contract mining price is higher, RMB20.7/t (US$3.05/t) for ore and RMB17.5/t (US$2.58/t) for waste.

Mining operations at the Jiama Project are subject to a resource tax of RMB15/t (US$2.21/t) of processed ore and a resource compensation levy of 2% for the sales revenue generated from the operation. Copper, molybdenum, lead, zinc, and silver produced from the mine are subject to a VAT of 17%. Gold production is exempted from VAT in China. The Jiama Project is also subject to a city-maintenance-and-construction tax of 7% of the VAT and an education tax of 3% of the VAT. The corporate income tax rate for Huatailong is 15%.

The Jiama Project is required to post to an environmental reclamation bond of approximately RMB35 M (US$5.2 M). A first payment of RMB1.5 M (US$0.22 M) was made in 2009, and the remainder will be paid in 5 years following the commencement of Phase I production of the Jiama Project.

### 21.4 Production

Forecast life-of-mine annual processed ore, processing recoveries, and concentrate production from 2010 through the end of mine life for the Jiama Project are summarized in Table 21.2.

## Table 21.2
## Life-of-Mine Forecast Production for the Jiama Project

| Item | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Milled Ore Production** | | | | | | | | | | | | | | | | |
| from open pits (kt) | 1,121 | 2,700 | 2,700 | 2,700 | 1,909 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,700 | | | | |
| from underground (kt) | | | 900 | 900 | 1,691 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 | 1,900 | 3,600 | 3,600 | 3,600 | 3,600 |
| Total milled ore production (kt) | 1,121 | 2,700 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 |
| average Cu grade (%) | 0.83 | 0.96 | 1.10 | 0.95 | 0.85 | 1.11 | 0.98 | 0.97 | 0.99 | 1.03 | 0.76 | 0.97 | 0.91 | 0.85 | 0.81 | 0.83 |
| average Mo grade (%) | 0.015 | 0.040 | 0.051 | 0.043 | 0.048 | 0.053 | 0.032 | 0.028 | 0.031 | 0.044 | 0.052 | 0.021 | 0.023 | 0.046 | 0.047 | 0.033 |
| average Au grade (g/t) | 0.26 | 0.39 | 0.40 | 0.35 | 0.28 | 0.42 | 0.38 | 0.38 | 0.41 | 0.44 | 0.30 | 0.44 | 0.30 | 0.33 | 0.31 | 0.36 |
| average Ag grade (g/t) | 17.3 | 19.1 | 19.3 | 17.5 | 16.1 | 21.3 | 17.2 | 18.3 | 19.4 | 21.7 | 14.3 | 17.4 | 16.5 | 17.0 | 19.0 | 17.7 |
| average Pb grade (%) | 0.92 | 0.20 | 0.04 | 0.03 | 0.01 | 0.07 | 0.07 | 0.04 | 0.02 | 0.04 | 0.01 | 0.01 | 0.25 | 0.11 | 0.23 | 0.18 |
| average Zn grade (%) | 0.16 | 0.05 | 0.02 | 0.02 | 0.02 | 0.06 | 0.05 | 0.03 | 0.02 | 0.03 | 0.02 | 0.04 | 0.12 | 0.07 | 0.03 | 0.07 |
| contained Cu metal (kt) | 9.33 | 25.84 | 39.55 | 34.07 | 30.54 | 39.92 | 35.30 | 34.92 | 35.72 | 37.01 | 27.34 | 35.05 | 32.78 | 30.67 | 29.19 | 29.84 |
| contained Mo metal (kt) | 0.16 | 1.08 | 1.83 | 1.57 | 1.74 | 1.90 | 1.15 | 1.01 | 1.12 | 1.59 | 1.88 | 0.76 | 0.84 | 1.66 | 1.69 | 1.21 |
| contained Au metal (kg) | 292 | 1043 | 1452 | 1251 | 1009 | 1501 | 1381 | 1368 | 1477 | 1568 | 1092 | 1577 | 1076 | 1174 | 1107 | 1295 |
| contained Ag metal (t) | 19.34 | 51.61 | 69.37 | 62.90 | 58.11 | 76.79 | 62.07 | 65.73 | 69.93 | 77.97 | 51.60 | 62.55 | 59.36 | 61.35 | 68.57 | 63.59 |
| contained Pb metal (kt) | 10.30 | 5.35 | 1.46 | 1.05 | 0.49 | 2.34 | 2.54 | 1.32 | 0.89 | 1.41 | 0.45 | 0.48 | 8.83 | 3.96 | 8.35 | 6.45 |
| contained Zn metal (kt) | 1.78 | 1.32 | 0.88 | 0.80 | 0.56 | 2.25 | 1.68 | 1.02 | 0.84 | 0.91 | 0.69 | 1.27 | 4.42 | 2.47 | 1.21 | 2.37 |
| **Milling Recovery (%)** | | | | | | | | | | | | | | | | |
| Cu to Cu concentrate | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 85.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 |
| Au to Cu concentrate | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Ag to Cu concentrate | 50.0 | 50.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |
| Mo to Mo concentrate | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 |
| Pb to Pb concentrate | 80.0 | 80.0 | | | | | | | | | | | | | | |
| Ag to Pb concentrate | 35.0 | 35.0 | | | | | | | | | | | | | | |
| **Concentrate Production** | | | | | | | | | | | | | | | | |
| Cu concentrate (t) | 32,311 | 89,444 | 136,917 | 117,931 | 105,711 | 138,189 | 122,198 | 120,878 | 123,648 | 128,115 | 89,374 | 121,335 | 113,469 | 106,154 | 101,032 | 103,287 |
| Cu grade (%) | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Au grade (g/t) | 4.52 | 5.83 | 5.30 | 5.30 | 4.77 | 5.43 | 5.65 | 5.66 | 5.97 | 6.12 | 6.11 | 6.50 | 4.74 | 5.53 | 5.48 | 6.27 |
| Ag grade (g/t) | 299 | 289 | 405 | 427 | 440 | 445 | 406 | 435 | 452 | 487 | 462 | 412 | 419 | 462 | 543 | 493 |
| Contained Cu metal (t) | 8,401 | 23,255 | 35,598 | 30,662 | 27,485 | 35,929 | 31,771 | 31,428 | 32,148 | 33,310 | 23,237 | 31,547 | 29,502 | 27,600 | 26,268 | 26,855 |
| Contained Au metal (kg) | 146 | 522 | 726 | 625 | 505 | 750 | 691 | 684 | 738 | 784 | 546 | 788 | 538 | 587 | 554 | 648 |
| Contained Ag metal (t) | 9.67 | 25.81 | 55.49 | 50.32 | 46.49 | 61.43 | 49.65 | 52.58 | 55.95 | 62.38 | 41.28 | 50.04 | 47.49 | 49.08 | 54.86 | 50.87 |
| Mo concentrate (t) | 256 | 1,684 | 2,846 | 2,436 | 2,711 | 2,955 | 1,796 | 1,571 | 1,747 | 2,477 | 2,927 | 1,176 | 1,301 | 2,584 | 2,633 | 1,876 |
| Mo grade (%) | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 |
| Contained Mo metal (t) | 115 | 758 | 1,281 | 1,096 | 1,220 | 1,330 | 808 | 707 | 786 | 1,115 | 1,317 | 529 | 586 | 1,163 | 1,185 | 844 |
| Pb concentrate (t) | 13,735 | 7,130 | | | | | | | | | | | | | | |
| Pb grade (%) | 60.0 | 60.0 | | | | | | | | | | | | | | |
| Ag grade (g/t) | 493 | 2,534 | | | | | | | | | | | | | | |
| Contained Pb metal (t) | 8,241 | 4,278 | | | | | | | | | | | | | | |
| Contained Ag metal (t) | 6.77 | 18.06 | | | | | | | | | | | | | | |

## Table 21.2
## Life-of-Mine Forecast Production for the Jiama Project (continued)

| Item | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Milled Ore Production** | | | | | | | | | | | | | | | | |
| from open pits (kt) | | | | | | | | | | | | | | | | **23,630** |
| from underground (kt) | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 2,700 | 1,500 | **81,591** |
| Total milled ore production (kt) | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 3,600 | 2,700 | 1,500 | **105,221** |
| average Cu grade (%) | 0.91 | 0.71 | 0.71 | 0.71 | 0.71 | 0.75 | 0.71 | 0.70 | 0.63 | 0.80 | 0.77 | 0.82 | 0.66 | 0.70 | 0.47 | **0.83** |
| average Mo grade (%) | 0.022 | 0.033 | 0.036 | 0.031 | 0.025 | 0.030 | 0.036 | 0.054 | 0.065 | 0.032 | 0.038 | 0.028 | 0.041 | 0.062 | 0.092 | **0.039** |
| average Au grade (g/t) | 0.38 | 0.24 | 0.24 | 0.25 | 0.25 | 0.25 | 0.23 | 0.25 | 0.22 | 0.28 | 0.27 | 0.26 | 0.17 | 0.16 | 0.20 | **0.31** |
| average Ag grade (g/t) | 19.5 | 14.6 | 15.7 | 15.5 | 17.4 | 18.9 | 14.1 | 14.4 | 12.5 | 17.0 | 14.9 | 15.1 | 8.8 | 8.3 | 9.6 | **16.5** |
| average Pb grade (%) | 0.10 | 0.06 | 0.03 | 0.05 | 0.04 | 0.10 | 0.06 | 0.04 | 0.06 | 0.16 | 0.02 | 0.07 | 0.02 | 0.02 | 0.01 | **0.08** |
| average Zn grade (%) | 0.03 | 0.03 | 0.02 | 0.03 | 0.05 | 0.09 | 0.06 | 0.03 | 0.06 | 0.12 | 0.03 | 0.07 | 0.02 | 0.02 | 0.01 | **0.05** |
| contained Cu metal (kt) | 32.64 | 25.44 | 25.62 | 25.54 | 25.51 | 26.94 | 25.47 | 25.29 | 22.58 | 28.72 | 27.64 | 29.60 | 23.58 | 18.78 | 7.09 | **877.52** |
| contained Mo metal (kt) | 0.78 | 1.17 | 1.30 | 1.11 | 0.89 | 1.08 | 1.29 | 1.95 | 2.35 | 1.14 | 1.36 | 1.01 | 1.47 | 1.67 | 1.38 | **41.17** |
| contained Au metal (kg) | 1,361 | 878 | 850 | 916 | 893 | 900 | 835 | 903 | 783 | 993 | 986 | 930 | 608 | 442 | 298 | **32,239** |
| contained Ag metal (t) | 70.26 | 52.63 | 56.57 | 55.83 | 62.51 | 68.19 | 50.61 | 51.87 | 45.00 | 61.12 | 53.62 | 54.34 | 31.64 | 22.46 | 14.33 | **1,731.84** |
| contained Pb metal (kt) | 3.49 | 2.18 | 1.15 | 1.77 | 1.59 | 3.61 | 2.06 | 1.29 | 2.05 | 5.90 | 0.87 | 2.38 | 0.80 | 0.44 | 0.08 | **85.32** |
| contained Zn metal (kt) | 0.96 | 1.17 | 0.76 | 1.06 | 1.81 | 3.13 | 2.22 | 0.99 | 2.23 | 4.25 | 1.03 | 2.37 | 0.68 | 0.43 | 0.16 | **47.73** |
| **Milling Recovery (%)** | | | | | | | | | | | | | | | | |
| Cu to Cu concentrate | 90.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 85.0 | 90.0 | 85.0 | 85.0 | 85.0 | |
| Au to Cu concentrate | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | |
| Ag to Cu concentrate | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | |
| Mo to Mo concentrate | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | |
| Pb to Pb concentrate | | | | | | | | | | | | | | | | |
| Ag to Pb concentrate | | | | | | | | | | | | | | | | |
| **Concentrate Production** | | | | | | | | | | | | | | | | |
| Cu concentrate (t) | 112,996 | 83,177 | 83,762 | 83,507 | 83,412 | 88,065 | 83,252 | 82,686 | 73,834 | 93,878 | 90,368 | 102,453 | 77,089 | 61,380 | 23,188 | **2,973,039** |
| Cu grade (%) | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | **26.0** |
| Au grade (g/t) | 6.02 | 5.28 | 5.07 | 5.49 | 5.35 | 5.11 | 5.02 | 5.46 | 5.30 | 5.29 | 5.46 | 4.54 | 3.94 | 3.60 | 6.42 | **5.42** |
| Ag grade (g/t) | 497 | 506 | 540 | 535 | 600 | 619 | 486 | 502 | 488 | 521 | 475 | 424 | 328 | 293 | 494 | **459** |
| Contained Cu metal (t) | 29,379 | 21,626 | 21,778 | 21,712 | 21,687 | 22,897 | 21,646 | 21,498 | 19,197 | 24,408 | 23,496 | 26,638 | 20,043 | 15,959 | 6,029 | **772,990** |
| Contained Au metal (kg) | 681 | 439 | 425 | 458 | 446 | 450 | 418 | 452 | 391 | 496 | 493 | 465 | 304 | 221 | 149 | **16,120** |
| Contained Ag metal (t) | 56.21 | 42.11 | 45.26 | 44.66 | 50.01 | 54.55 | 40.49 | 41.49 | 36.00 | 48.90 | 42.90 | 43.47 | 25.32 | 17.97 | 11.46 | **1,364.19** |
| Mo concentrate (t) | 1,216 | 1,821 | 2,030 | 1,727 | 1,392 | 1,681 | 2,011 | 3,038 | 3,657 | 1,768 | 2,120 | 1,578 | 2,289 | 2,597 | 2,142 | **64,044** |
| Mo grade (%) | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | **45.0** |
| Contained Mo metal (t) | 547 | 819 | 913 | 777 | 626 | 756 | 905 | 1,367 | 1,646 | 796 | 954 | 710 | 1,030 | 1,169 | 964 | **28,820** |
| Pb concentrate (t) | | | | | | | | | | | | | | | | **20,864** |
| Pb grade (%) | | | | | | | | | | | | | | | | **60.0** |
| Ag grade (g/t) | | | | | | | | | | | | | | | | **1,190** |
| Contained Pb metal (t) | | | | | | | | | | | | | | | | **12,519** |
| Contained Ag metal (t) | | | | | | | | | | | | | | | | **24.84** |

Based on the production schedule developed by the December 2009 Changsha Institute feasibility study report for the Jiama Project, the Phase I 6,000-tpd mill is expected to start operation at the beginning of the second quarter of 2010, with 1.121 Mt of ore processed in that year. Actual trial production of the Phase I concentrator started in July 2010, but adjustments that have to be made to the plant have delayed its commissioning. BDASIA was informed by Huatailong that commercial production of the Phase I plant started in September 2010 and actual 2010 ore production will be reduced by approximately 60% from the original production target for 2010 as presented in Table 21.2. Ore processed in the first year will consist of ore mined from the Tongqianshan pit, stockpiled ore from pre-production stripping of the Tongqianshan pit, and pre-production stripped ore from the Niumatang pit. The Phase II 6,000-tpd mill was originally planned to be constructed in 2010 and become operational in early 2011 with a total 2.7 Mt of ore processed by the two processing plants in 2011. BDASIA was informed by Huatailong that construction of the Phase II plant will not start until December 2010. If the construction commences on time in December 2010 as currently planned, it is likely that the originally planned production targets for 2011 will be reduced by at least 10% due to the delayed starting of the Phase II plant construction. The full production rate of 12,000 tpd or 3.6 Mtpa is expected to be reached at the end of 2011 and will continue to 2038; after that, the two processing plants will be operated at a reduced rate for the final 2 years of the mine life. The forecast ore grades are based on the detailed production scheduling from the economic measured and indicated mineral resources in the computer resource model developed by BDASIA. An attempt has been made to schedule the mining of the relatively higher-grade Niumatang open pit and the flatter, thick underground stopes below the 4,550-m level in the earlier years of the mine life, resulting in relatively higher ore grades in the first half of the mine life. Appropriate mining dilution and mining loss factors have been adopted in the production scheduling process.

During the first 2 years of operation, a mixture of the copper-lead ore and copper-molybdenum ore will be processed; copper, molybdenum, and lead concentrates will be produced. Subsequently, the copper-lead ore will be exhausted, only copper-molybdenum ore will be processed, and only copper and molybdenum concentrates will be produced. The annual tonnage of copper, molybdenum, and lead concentrate will vary with the types of ore processed and the metal grades in the plant feed. In addition to copper, the copper concentrate produced will also contain generally 4 to 6 g/t of gold and 300 to 500 g/t of silver. The lead concentrate will generally contain at least 500 g/t of silver. The types of concentrate produced and their annual production tonnages, metal grades, and metal contents are presented in detail in Table 21.2. The forecast processing recoveries for each type of concentrate are based on the metallurgical testwork.

BDASIA considers that there is a degree of uncertainty for forecast production targets for the first two to three years of the mine life as the full production of the Phase I plant and the construction of the Phase II plant have been delayed for a number of months. Shortages in electricity supply for mine and mill production during the winter dry season will also cause some problems in achieving the production targets. Once the production capacity ramps up to the full designed production capacity and electricity supply to project become sufficient, the long-term production targets are considered reasonable and achievable by BDASIA. Additional drilling for the Jiama deposit is very likely to convert a significant portion of the large inferred mineral resource to the measured and indicated categories, and the economic portion of the upgraded resource will become ore reserves, extending the mine life or justifying a higher production rate in the future.

## 21.5 Operating Costs

The life-of-mine forecast operating costs for the Jiama Project are set out in Table 21.3. The operating costs have been estimated by the Changsha Institute and were presented in its December 2009 feasibility study report for the Jiama Project. BDASIA has made an adjustment for contract mining costs for the Tongqianshan pit based on the current mining contract and for the underground mining cost.

Open-pit contract mining unit costs are forecast to be RMB16.4/t (US$2.42/t) of ore and RMB13.2/t (US$1.95/t) of waste for the Niumatang pit and RMB20.7/t (US$3.05/t) for ore and RMB17.5/t (US$2.58/t) for waste for the Tongqianshan pit. These contract mining costs are based on the current mining contracts that Huatailong has with the mining contractors. There is an additional open-pit management cost of RMB5.6/t (US$0.83/t) in the period from 2011 to 2013 increasing up to RMB8.4/t (US$1.24/t) at the completion of the Tongqianshan pit.

The underground mining unit cost is estimated to be RMB117.9/t (US$17.39/t) for approximately the first 2.5 years of production as production capacity increases to the forecast rate of 1.8 Mtpa. Once this rate is achieved, the unit mining cost reduces to RMB98.2/t (US$14.48/t) until production capacity increases from 1.8 Mtpa to 3.6 Mtpa, when mining unit cost further reduces to RMB92.1/t (US$13.58/t). The life-of-mine average unit underground mining cost is RMB94.5/t (US$13.94/t). BDASIA has made a 15% positive adjustment over the unit underground mining cost estimated by the Changsha Institute as BDASIA considers that the Changsha Institute's estimate is not well defined and considers it prudent to make the adjustment to unit costs. BDASIA notes that the mine plan can be modified to absorb the increased costs, for instance by increasing sublevel intervals within the stopes and thereby reducing development requirements.

Table 21.3 shows that the life-of-mine unit total open-pit mining cost, including ore mining, waste mining, and mining management, is forecast to be RMB97.8/t (US$14.42/t) of processed ore, which is higher than the life-of-mine unit underground mining cost of RMB94.5/t (US$13.94/t) of processed ore. BDASIA believes that optimization of the ratio of open-pit mining and underground mining should be conducted, which will result in the reduction of the high strip ratio, i.e. high-cost portion, of the open-pit mining operation; the increase of underground mining operation; and an overall reduction of unit total mining cost for the Jiama Project. Table 21.4 summarizes the operating costs by categories.

## Table 21.3
## Life-of-Mine Forecast Operating Costs for the Jiama Project

| Item | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open-pit Contract Ore Mining (RMB/t of ore) | 20.7 | 17.9 | 17.9 | 17.9 | 16.7 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | | | | |
| Open-pit Contract Waste Mining (RMB/t of waste) | 17.5 | 14.4 | 14.0 | 13.4 | 13.3 | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 | 13.2 | | | | |
| open-pit strip ratio | 4.3 | 7.8 | 7.0 | 5.9 | 8.0 | 6.7 | 6.7 | 6.7 | 4.4 | 1.5 | 0.9 | 0.8 | | | | |
| Open-pit Management (RMB/t of ore) | 13.3 | 5.5 | 5.5 | 5.5 | 7.8 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 6.8 | | | | |
| Total Open-pit Mining (RMB/t of ore) | 110.0 | 136.2 | 121.7 | 102.8 | 130.8 | 113.4 | 113.4 | 113.4 | 83.0 | 44.6 | 36.6 | 33.1 | | | | |
| Underground Mining (RMB/t of ore) | | | 117.9 | 117.9 | 100.9 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 95.9 | 92.1 | 92.1 | 92.1 | **92.1** |
| Ore Transportation (RMB/t of ore) | 10.3 | 6.2 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | **5.1** |
| **Total Mining Cost (RMB/t of ore)** | **120.3** | **142.4** | **125.8** | **111.6** | **121.8** | **110.9** | **110.9** | **110.9** | **95.7** | **76.5** | **72.5** | **71.4** | **97.2** | **97.2** | **97.2** | **97.2** |
| **Total Processing Cost (RMB/t of ore)** | **75.8** | **61.7** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** |
| **Total G&A and Other Cost (RMB/t of ore)** | **63.0** | **43.2** | **43.1** | **39.2** | **37.9** | **44.5** | **40.5** | **40.1** | **40.9** | **42.4** | **35.2** | **40.1** | **40.4** | **40.1** | **39.3** | **39.2** |
| **Total Operating Cost (RMB/t of ore)** | **259.1** | **247.4** | **229.5** | **211.4** | **220.4** | **216.0** | **212.0** | **211.6** | **197.1** | **179.4** | **168.3** | **172.1** | **198.2** | **197.9** | **197.0** | **196.9** |
| **Total Operating Cost (US$/t of ore)** | **38.21** | **36.48** | **33.85** | **31.18** | **32.50** | **31.85** | **31.27** | **31.21** | **29.07** | **26.46** | **24.83** | **25.38** | **29.23** | **29.19** | **29.06** | **29.04** |
| Depreciation and Amortization (RMB/t of ore) | 80.2 | 45.3 | 48.1 | 48.1 | 48.1 | 48.1 | 48.1 | 48.1 | 48.1 | 48.1 | 48.1 | 46.3 | 37.2 | 37.2 | 37.2 | **36.6** |
| **Total Production Cost (RMB/t of Ore)** | **339.3** | **292.6** | **277.6** | **259.5** | **268.4** | **264.0** | **260.1** | **259.7** | **245.2** | **227.5** | **216.4** | **218.4** | **235.4** | **235.1** | **234.3** | **233.5** |
| **Total Production Cost (US$/t of Ore)** | **50.05** | **43.16** | **40.94** | **38.27** | **39.59** | **38.94** | **38.36** | **38.30** | **36.16** | **33.55** | **31.92** | **32.21** | **34.72** | **34.68** | **34.55** | **34.44** |
| **CuEq in Concentrate Production (t)** | **12,656** | **33,385** | **49,256** | **42,522** | **39,413** | **50,307** | **42,106** | **41,285** | **42,881** | **46,568** | **35,631** | **40,594** | **37,769** | **39,645** | **38,634** | **37,304** |
| **CuEq Operating Cost (RMB/t)** | **22,948** | **20,006** | **16,772** | **17,899** | **20,128** | **15,455** | **18,126** | **18,453** | **16,549** | **13,870** | **17,007** | **15,260** | **18,888** | **17,969** | **18,361** | **19,003** |
| **CuEq Operating Cost (US$/t)** | **3,385** | **2,951** | **2,474** | **2,640** | **2,969** | **2,279** | **2,673** | **2,722** | **2,441** | **2,046** | **2,508** | **2,251** | **2,786** | **2,650** | **2,708** | **2,803** |
| **CuEq Total Production Cost (RMNB/t)** | **30,055** | **23,665** | **20,286** | **21,969** | **24,518** | **18,894** | **22,236** | **22,645** | **20,585** | **17,586** | **21,864** | **19,367** | **22,436** | **21,350** | **21,830** | **22,535** |
| **CuEq Total Production Cost (US$/t)** | **4,433** | **3,490** | **2,992** | **3,240** | **3,616** | **2,787** | **3,280** | **3,340** | **3,036** | **2,594** | **3,225** | **2,857** | **3,309** | **3,149** | **3,220** | **3,324** |

| Item | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open-pit Contract Ore Mining (RMB/t of ore) | | | | | | | | | | | | | | | | **17.1** |
| Open-pit Contract Waste Mining (RMB/t of waste) | | | | | | | | | | | | | | | | **13.7** |
| open-pit strip ratio | | | | | | | | | | | | | | | | **5.3** |
| Open-pit Management (RMB/t of ore) | | | | | | | | | | | | | | | | **7.5** |
| Total Open-pit Mining (RMB/t of ore) | | | | | | | | | | | | | | | | **97.8** |
| Underground Mining (RMB/t of ore) | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 104.2 | 113.9 | **94.5** |
| Ore Transportation (RMB/t of ore) | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 6.2 | 9.8 | **5.3** |
| **Total Mining Cost (RMB/t of ore)** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **97.2** | **110.4** | **123.8** | **100.5** |
| **Total Processing Cost (RMB/t of ore)** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **60.6** | **80.8** | **73.7** | **61.5** |
| **Total G&A and Other Cost (RMB/t of ore)** | **40.5** | **35.2** | **35.5** | **35.2** | **35.0** | **36.1** | **35.3** | **36.0** | **34.8** | **37.2** | **36.8** | **38.5** | **34.1** | **39.1** | **36.9** | **38.7** |
| **Total Operating Cost (RMB/t of ore)** | **198.3** | **192.9** | **193.2** | **193.0** | **192.8** | **193.9** | **193.1** | **193.8** | **192.5** | **195.0** | **194.5** | **196.3** | **191.9** | **230.3** | **234.4** | **200.7** |
| **Total Operating Cost (US$/t of ore)** | **29.24** | **28.46** | **28.50** | **28.46** | **28.43** | **28.60** | **28.48** | **28.58** | **28.40** | **28.76** | **28.69** | **28.95** | **28.30** | **33.97** | **34.57** | **29.60** |
| Depreciation and Amortization (RMB/t of ore) | 32.8 | 32.8 | 32.8 | 32.8 | 32.8 | 31.3 | 31.3 | 31.3 | 31.1 | 31.1 | 31.1 | 25.0 | 25.0 | 33.2 | 31.7 | **38.5** |
| **Total Production Cost (RMB/t of Ore)** | **231.0** | **225.7** | **226.0** | **225.8** | **225.6** | **225.2** | **224.4** | **225.1** | **223.6** | **226.1** | **225.6** | **221.3** | **216.9** | **263.5** | **266.0** | **239.2** |
| **Total Production Cost (US$/t of Ore)** | **34.08** | **33.29** | **33.34** | **33.30** | **33.27** | **33.22** | **33.10** | **33.20** | **32.98** | **33.34** | **33.28** | **32.64** | **31.99** | **38.87** | **39.23** | **35.28** |
| **CuEq in Concentrate Production (t)** | **38,450** | **30,625** | **31,467** | **30,673** | **29,980** | **32,241** | **30,992** | **33,835** | **32,687** | **33,862** | **33,568** | **35,152** | **28,869** | **24,898** | **13,087** | **1,090,340** |
| **CuEq Operating Cost (RMB/t)** | **18,563** | **22,681** | **22,108** | **22,650** | **23,148** | **21,650** | **22,426** | **20,619** | **21,206** | **20,728** | **20,862** | **20,100** | **23,926** | **24,976** | **26,860** | **19,366** |
| **CuEq Operating Cost (US$/t)** | **2,738** | **3,345** | **3,261** | **3,341** | **3,414** | **3,193** | **3,308** | **3,041** | **3,128** | **3,057** | **3,077** | **2,965** | **3,529** | **3,684** | **3,962** | **2,856** |
| **CuEq Total Production Cost (RMNB/t)** | **21,633** | **26,535** | **25,859** | **26,499** | **27,086** | **25,148** | **26,065** | **23,952** | **24,629** | **24,033** | **24,196** | **22,663** | **27,046** | **28,576** | **30,488** | **23,082** |
| **CuEq Total Production Cost (US$/t)** | **3,191** | **3,914** | **3,814** | **3,908** | **3,995** | **3,709** | **3,844** | **3,533** | **3,633** | **3,545** | **3,569** | **3,343** | **3,989** | **4,215** | **4,497** | **3,404** |

## Table 21.4
## Life-of-Mine Forecast Operating Costs by Categories for the Jiama Project

| Item | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Contract Mining (RMB/t of ore) | 110.0 | 136.2 | 120.7 | 106.5 | 116.8 | 105.8 | 105.8 | 105.8 | 90.6 | 71.4 | 67.4 | 66.3 | 92.1 | 92.1 | 92.1 | 92.1 |
| Workforce Employment and Transport of Workforce(1) (RMB/t of ore) | 47.3 | 28.3 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 |
| Consumables (RMB /t of ore) | 17.2 | 18.8 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 |
| Fuel, Electricity and Water (RMB /t of ore) | 21.7 | 20.8 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 |
| On and Off-Site Management (RMB/t of ore) | 31.8 | 13.2 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 |
| Environmental Protection and Monitoring(2) (RMB/t of ore) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Product Marketing and Transport (RMB/t of ore) | 17.7 | 15.6 | 16.6 | 14.3 | 12.9 | 16.8 | 14.7 | 14.6 | 14.9 | 15.5 | 11.0 | 14.6 | 13.6 | 12.9 | 12.3 | 12.5 |
| Non-Income Taxes, Royalties and Other Governmental Charges (RMB/t of ore) | 13.5 | 14.5 | 16.6 | 15.0 | 15.1 | 17.8 | 15.9 | 15.7 | 16.1 | 16.9 | 14.4 | 15.6 | 16.9 | 17.3 | 17.1 | 16.8 |
| Contingency Allowances(3) (RMB/t of ore) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Total Operating Cost (RMB/t of ore)** | **259.1** | **247.4** | **229.5** | **211.4** | **220.4** | **216.0** | **212.0** | **211.6** | **197.1** | **179.4** | **168.3** | **172.1** | **198.2** | **197.9** | **197.0** | **196.9** |
| **Total Operating Cost (US$/t of ore)** | **38.21** | **36.48** | **33.85** | **31.18** | **32.50** | **31.85** | **31.27** | **31.21** | **29.07** | **26.46** | **24.83** | **25.38** | **29.23** | **29.19** | **29.06** | **29.04** |

| Item | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Contract Mining (RMB/t of ore) | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 92.1 | 104.2 | 113.9 | 95.3 |
| Workforce Employment and Transport of Workforce(1) (RMB/t of ore) | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 35.1 | 34.1 | 27.3 |
| Consumables (RMB /t of ore) | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 18.6 | 24.8 | 26.5 | 18.9 |
| Fuel, Electricity and Water (RMB /t of ore) | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 20.4 | 27.2 | 22.9 | 20.6 |
| On and Off-Site Management (RMB/t of ore) | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 13.2 | 14.2 | 10.4 |
| Environmental Protection and Monitoring(2) (RMB/t of ore) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Product Marketing and Transport (RMB/t of ore) | 13.6 | 10.1 | 10.2 | 10.1 | 10.1 | 10.7 | 10.1 | 10.2 | 9.2 | 11.4 | 11.0 | 12.4 | 9.4 | 10.1 | 7.2 | 12.4 |
| Non-Income Taxes, Royalties and Other Governmental Charges (RMB/t of ore) | 17.0 | 15.2 | 15.4 | 15.2 | 15.0 | 15.6 | 15.3 | 15.9 | 15.7 | 16.0 | 15.9 | 16.3 | 14.8 | 15.8 | 15.4 | 15.9 |
| Contingency Allowances(3) (RMB/t of ore) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Total Operating Cost (RMB/t of ore)** | **198.3** | **192.9** | **193.2** | **193.0** | **192.8** | **193.9** | **193.1** | **193.8** | **192.5** | **195.0** | **194.5** | **196.3** | **191.9** | **230.3** | **234.4** | **200.7** |
| **Total Operating Cost (US$/t of ore)** | **29.24** | **28.46** | **28.50** | **28.46** | **28.43** | **28.60** | **28.48** | **28.58** | **28.40** | **28.76** | **28.69** | **28.95** | **28.30** | **33.97** | **34.57** | **29.60** |

*Notes:*

*(1) Cost for transport of workforce was included in the workforce employment cost in the feasibility study report.*
*(2) Environmental protection and monitoring cost was not separated from other cost items in the feasibility study report.*
*(3) Contingency allowance was not separated from other cost items in the feasibility study report.*

An additional ore transportation unit cost for both the open pit and underground mines is forecast to be RMB5.3/t (US$0.78/t) for the life-of-mine once the rail system is commissioned in 2011. Prior to the commissioning of the rail system, ore will be trucked down the valley from the mine to the processing plants and is currently being stockpiled above the processing plant crushers. Unit transport costs are higher during this short trucking phase. Transportation costs include electricity for powering the trains and operating the ore pass chutes and repairs for locomotives, rail, mine cars, and chutes.

The long-term processing unit cost when the plants are in full operation is estimated to be RMB60.6/t (US$8.94/t). This unit cost is forecast to be slightly higher for the ramp up period in the initial 2 years as well as during the last 2 years of the mine life when the plants will be operating at a reduced rate. BDASIA considers the processing cost estimates to be reasonable.

The unit G&A and other costs in Table 21.3 include the administrative costs, concentrate sale and transportation costs, and the resource compensation levy at 2% of the profit and range from RMB34.1/t (US$5.03/t) to RMB44.5/t (US$6.56/t) of processed ore except for the first year of operation. The life-of-mine average unit G&A and other costs are RMB38.7/t (US$5.71/t).

The total unit operating cost ranges from RMB168.3/t (US$24.82/t) to RMB234.4/t (US$34.57), with a life-of-mine average of RMB200.7/t (US$29.60/t). The total unit production cost, which consists of total unit operating cost and unit depreciation and amortization costs, ranges from RMB216.9/t (US$31.99/t) of processed ore to RMB339.3/t (US$50.04/t), with a life-of-mine average of RMB239.2 (US$35.28/t).

BDASIA has calculated a copper-equivalent ("CuEq") production in concentrate for the Jiama Project based on the metal in concentrate sale prices (without VAT) as listed in Table 21.7, using the following formula:

CuEq (t) = Cu (t) + Mo (t) × 256,410.26/42,115.39 + Pb (t) × 10,683.76/42,115.39 + Au (g) × 166/42,115.39 + Ag (kg) × 2,318.38/42,115.39

Unit CuEq operating cost and unit CuEq total production have also been calculated and presented in Table 21.2.

BDASIA would note that no inflation factor has been built into the operating cost estimates for the Jiama Project.

## 21.6 Capital Costs

Table 21.5 shows the Changsha Institute's initial capital investment estimates for the 12,000 tpd Jiama Project in its December 2009 feasibility study. The capital cost estimates cover the pre-production stripping for the two open-pit mining areas, underground development, and construction of the ore transportation system, as well as Phase I and Phase II processing plants with a production rate of 6,000 tpd each, infrastructure, administration and supporting facilities, land acquisition, and other capital expenditures, and a 10% contingency for all of the estimated capital expenditures.

**Table 21.5**
**Initial Capital Cost Estimates for the 12,000 tpd Production Capacity of the Jiama Project**

| Item | Development | Construction | Equipment | Engineering & Installation | Other | Total | Percentage |
|---|---|---|---|---|---|---|---|
| Geology and Construction Exploration (RMB×$10^3$) | | 16,041 | 2,067 | | | 18,108 | 0.68% |
| Open-pit Pre-production stripping (RMB×$10^3$) | | | | | | | |
| Tongqianshan Pit (RMB×$10^3$) | 89,111 | | | | | 89,111 | |
| Niumatang Pit (RMB×$10^3$) | 502,770 | | | | | 502,770 | |
| Subtotal (RMB×$10^3$) | 591,881 | | | | | 591,881 | 22.21% |
| Underground Development (RMB×$10^3$) | 205,505 | 6,156 | 180,797 | 22,822 | | 415,280 | 15.58% |
| Ore Transportation System (RMB×$10^3$) | 99,316 | 20,778 | 35,181 | 27,242 | | 182,517 | 6.85% |
| Concentrating Plant and TSF (RMB×$10^3$) | | 249,042 | 297,522 | 48,524 | | 595,088 | 22.33% |
| Infrastructures (RMB×$10^3$) | | 163,563 | 72,925 | 63,170 | | 299,658 | 11.24% |
| Administration and Supporting Facilities (RMB×$10^3$) | | 19,472 | 4,077 | 1,600 | | 25,149 | 0.94% |
| Land Acquisition and Other Costs (RMB×$10^3$) | | | | | 295,184 | 295,184 | 11.08% |
| Contingency (RMB×$10^3$) | | | | | 242,286 | 242,286 | 9.09% |
| **Total (RMB×$10^3$)** | **896,702** | **475,052** | **592,569** | **163,358** | **537,470** | **2,665,151** | **100.00%** |
| **Total (US$×$10^3$)** | **132,257** | **70,067** | **87,400** | **24,094** | **79,273** | **393,090** | **100.00%** |

Table 21.6 shows the life-of-mine forecast capital expenditures for the Jiama Project. Based on the project construction progress, the Changsha Institute estimated that the total expenditures in 2008 and 2009 were approximately RMB1,480 M (US$218.3 M), which is quite close to the actual total capital expenditures in 2008 and 2009 based on information available from Huatailong. The 2008 and 2009 capital expenditures represent approximately 56% of the total initial capital cost estimates. The remaining capital expenditures are mostly for the pre-production stripping of the Niumatang open pit, development and equipping of the underground mine, and construction of the Phase II processing plant. Additional capital cost estimates of RMB519 M (US$76.5M) in 2021 and 2022 will be used to expand underground capacity, including the development of the steeply-dipping ore zone above the 4,550-m level. Replacement capital expenditures of RMB276 M (US$40.7 M) in 2022, RMB366 M (US$54.0 M) in 2026, and RMB421 M (US$62.1 M) in 2032 have also been estimated for the Jiama Project. This replacement capital may be spread over several years of the operation rather than two distinct amounts as forecast, but the general amount is considered by BDASIA to be reasonable.

Total working capital required for the Jiama Project was estimated at RMB129.5 M (US$19.1 M).

BDASIA considers that the capital cost estimates for the Jiama Project are reasonable and achievable. The total capital cost estimate for the two processing plants of RMB595 M (US$87.8 M) is high due to the construction of two physically separated plants that will be built in two stages at the available site, instead of one larger facility.

## Table 21.6
## Life-of-Mine Forecast Capital Costs for the Jiama Project

| Item | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Capital Expenditures (RMB×$10^3$)** | 657,000 | 823,000 | 628,000 | 557,151 | | | | | | | | | 233,550 | 561,087 | | | |
| **Total Capital Expenditures (US$×$10^3$)** | 96,903 | 121,386 | 92,625 | 82,176 | | | | | | | | | 34,447 | 82,756 | | | |
| **Working Capital (RMB×$10^3$)** | | | 52,637 | 55,347 | 21,536 | | | | | | | | | | | | |
| **Working Capital (US$×$10^3$)** | | | 7,764 | 8,163 | 3,176 | | | | | | | | | | | | |

| Item | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Capital Expenditures (RMB×$10^3$)** | 365,973 | | | | | | 420,885 | | | | | | | | | -107,500 | 4,139,146 |
| **Total Capital Expenditures (US$×$10^3$)** | 53,978 | | | | | | 62,077 | | | | | | | | | -15855 | 610493 |
| **Working Capital (RMB×$10^3$)** | | | | | | | | | | | | | | -25,974 | -44,152 | -59,394 | 0 |
| **Working Capital (US$×$10^3$)** | | | | | | | | | | | | | | -3,831 | -6,512 | -8,760 | 0 |

### 21.7 Base Case Economic Analysis

Metal prices used for the base case economic analysis of the Jiama Project in the Changsha Institute's December 2009 feasibility study report are listed in Table 21.7. A VAT of 17% is applied to all metal sales except for gold in China. Commonly, a concentrate producer in China sells its concentrate production to the smelter customers. Sale prices for metals in concentrate are discounted by a certain percentage from the metal sale prices based on the smelter's concentrate treatment costs and the prevailing metal market prices in China. The discount factors (if applicable) taken by the Changsha Institute in Table 21.7 represent the conditions set out in the preliminary copper concentrate sales contract discussed in Section 21.3 or the current industry averages in China. The copper, molybdenum, and lead prices selected by the Changsha Institute represent the actual average metal market prices for the last 3 to 5 years in China. Gold and silver prices selected by the Changsha Institute are slightly higher than the past 3-year actual averages, but they represent the Changsha Institute's expectation for the long-term prices for these two metals. BDASIA accepts these metal price selections and has used the same metal prices in the base case economic analysis of the Jiama Project in this ITR. The prices for metals in concentrate without VAT are used in the following economic analysis. In addition to the metal prices in Table 21.7, a copper concentrate transportation credit of RMB200/t (US$29.50/t) of copper metal contained in the copper concentrate will be applied based on the current preliminary sales contract with the copper concentrate buyer.

**Table 21.7**
**Metal Prices Used for Base Case Economic Analysis for the Jiama Project**

| Metal | Metal with VAT Price[1] | | Metal in Concentrate with VAT Price | | Metal in Concentrate without VAT Price | |
|---|---|---|---|---|---|---|
| | RMB | US$ | RMB | US$ | RMB | US$ |
| Copper | 55,000/t | 8,112.09/t | 49,275/t[2] | 7,267.70/t | 42,115.39/t | 6,211.71/t |
| Molybdenum | | | 300,000/t | 44,247.79/t | 256,410.26/t | 37,818.62/t |
| Gold | 200/g | 917.51/oz | 166/g | 761.53/oz | 166/g | 761.53/oz |
| Silver | 3,500/kg | 16.06/oz | 2,712.5/kg | 12.44/oz | 2,318.38/kg | 10.64/oz |
| Lead | | | 12,500/t | 1,843.66/t | 10,683.76/t | 1,575.78/t |

*Note:*
*(1) VAT is 17% for all metals except gold; gold sales are not subject to VAT.*
*(2) Cu price in copper concentrate includes a grade bonus of RMB600/t based on the concentrate sales contract as the copper concentrate to be produced by Jiama is expected to have an average Cu grade of 26%, which is 6% higher than the base Cu grade of 20%.*

BDASIA conducted a base case economic analysis for the Jiama Project using the technical and economic parameters discussed in this ITR (Table 21.8). A discount rate of 9% for the NPV calculation was provided by Citigroup, China Gold International's sponsor for the proposed IPO, which BDASIA considers generally reasonable for the Jiama Project. The middle of the year discount method was used in calculating the NPV.

**Table 21.8**
**Base Case Economic Analysis for the Jiama Project**

| Item | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metal Production** | | | | | | | | | | | | | | | | |
| Cu Production in Cu Concentrate (t) | 8,401 | 23,255 | 35,598 | 30,662 | 27,485 | 35,929 | 31,771 | 31,428 | 32,148 | 33,310 | 23,237 | 31,547 | 29,502 | 27,600 | 26,268 | 26,855 |
| Au Production in Cu Concentrate (kg) | 146 | 522 | 726 | 625 | 505 | 750 | 691 | 684 | 738 | 784 | 546 | 788 | 538 | 587 | 554 | 648 |
| Ag Production in Cu Concentrate (t) | 9.67 | 25.81 | 55.49 | 50.32 | 46.49 | 61.43 | 49.65 | 52.58 | 55.95 | 62.38 | 41.28 | 50.04 | 47.49 | 49.08 | 54.86 | 50.87 |
| Mo Production in Mo Concentrate (t) | 115 | 758 | 1,281 | 1,096 | 1,220 | 1,330 | 808 | 707 | 786 | 1,115 | 1,317 | 529 | 586 | 1,163 | 1,185 | 844 |
| Pb Production in Pb Concentrate (t) | 8,241 | 4,278 | | | | | | | | | | | | | | |
| Ag Production in Pb Concentrate (t) | 6.77 | 18.06 | | | | | | | | | | | | | | |
| **Metal Sales Income** | | | | | | | | | | | | | | | | |
| Cu Production in Cu Concentrate (RMB M) | 354 | 979 | 1,499 | 1,291 | 1,158 | 1,513 | 1,338 | 1,324 | 1,354 | 1,403 | 979 | 1,329 | 1,242 | 1,162 | 1,106 | 1,131 |
| Au Production in Cu Concentrate (RMB M) | 24 | 87 | 120 | 104 | 84 | 125 | 115 | 114 | 123 | 130 | 91 | 131 | 89 | 97 | 92 | 107 |
| Ag Production in Cu Concentrate (RMB M) | 22 | 60 | 129 | 117 | 108 | 142 | 115 | 122 | 130 | 145 | 96 | 116 | 110 | 114 | 127 | 118 |
| Mo Production in Mo Concentrate (RMB M) | 30 | 194 | 328 | 281 | 313 | 341 | 207 | 181 | 202 | 286 | 338 | 136 | 150 | 298 | 304 | 216 |
| Pb Production in Pb Concentrate (RMB M) | 88 | 46 | | | | | | | | | | | | | | |
| Ag Production in Pb Concentrate (RMB M) | 15 | 41 | | | | | | | | | | | | | | |
| **Total Sales Revenue (RMB M)** | **533** | **1,407** | **2,077** | **1,793** | **1,662** | **2,121** | **1,775** | **1,740** | **1,808** | **1,963** | **1,503** | **1,711** | **1,592** | **1,672** | **1,629** | **1,573** |
| **Total Sales Revenue (US$ M)** | **79** | **208** | **306** | **264** | **245** | **313** | **262** | **257** | **267** | **290** | **222** | **252** | **235** | **247** | **240** | **232** |
| Sales Tax 10% of VAT (RMB M) | 6 | 14 | 23 | 20 | 18 | 25 | 20 | 19 | 21 | 25 | 18 | 21 | 19 | 20 | 19 | 18 |
| Cu Concentrate Transportation Credit (RMB M) (1) | 2 | 5 | 7 | 6 | 5 | 7 | 6 | 6 | 6 | 7 | 5 | 6 | 6 | 6 | 5 | 5 |
| **Income after Sales Tax (RMB M)** | **529** | **1,398** | **2,060** | **1,779** | **1,650** | **2,103** | **1,762** | **1,728** | **1,793** | **1,946** | **1,489** | **1,697** | **1,579** | **1,657** | **1,615** | **1,560** |
| **Operating Cost** | | | | | | | | | | | | | | | | |
| Mining Cost (RMB M) | 135 | 385 | 453 | 402 | 439 | 399 | 399 | 399 | 344 | 275 | 261 | 257 | 350 | 350 | 350 | 350 |
| Processing Cost (RMB M) | 85 | 167 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 |
| G&A and Other Cost (RMB M) | 71 | 117 | 155 | 141 | 136 | 160 | 146 | 145 | 147 | 152 | 127 | 144 | 145 | 144 | 141 | 141 |
| **Total Operating Costs (RMB M)** | **290** | **668** | **826** | **761** | **793** | **777** | **763** | **762** | **710** | **646** | **606** | **619** | **713** | **712** | **709** | **709** |
| **Total Operating Costs (US$ M)** | **43** | **99** | **122** | **112** | **117** | **115** | **113** | **112** | **105** | **95** | **89** | **91** | **105** | **105** | **105** | **105** |
| Depreciation and Amortization (RMB M) | 90 | 122 | 173 | 173 | 173 | 173 | 173 | 173 | 173 | 173 | 173 | 167 | 134 | 134 | 134 | 132 |
| Resource Tax @RMB15/t of ore (RMB M) | 17 | 41 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 |
| **Taxable Income (RMB M)** | **132** | **567** | **1007** | **791** | **629** | **1,099** | **772** | **739** | **857** | **1,073** | **656** | **857** | **678** | **757** | **718** | **665** |
| Income Tax @15% (RMB M) | 20 | 85 | 151 | 119 | 94 | 165 | 116 | 111 | 128 | 161 | 98 | 129 | 102 | 114 | 108 | 100 |
| **After Tax Income (RMB M)** | **112** | **482** | **856** | **672** | **535** | **934** | **656** | **628** | **728** | **912** | **558** | **728** | **576** | **643** | **610** | **566** |
| Total Capital Costs (RMB M) | 628 | 557 | | | | | | | | | 234 | 561 | | | | 366 |
| Working Capital (RMB M) | 53 | 55 | 22 | | | | | | | | | | | | | |
| Environmental Bond/Closing Costs (RMB M)(2) | 2 | 7 | 7 | 7 | 7 | 7 | | | | | | | | | | |
| VAT Refund (RMB M) | 58 | 30 | | | | | | | | | | | | | | |
| Fixed Asset Remnant Value (RMB M) | | | | | | | | | | | | | | | | |
| **After Tax Cash Flow (RMB M)** | **-422** | **15** | **1001** | **839** | **701** | **1,100** | **829** | **801** | **901** | **1,085** | **497** | **334** | **710** | **777** | **744** | **331** |
| **After Tax Cash Flow (US$ M)** | **-62** | **2** | **148** | **124** | **103** | **162** | **122** | **118** | **133** | **160** | **73** | **49** | **105** | **115** | **110** | **49** |
| Years to Discount at End of 2009 | 0.5 | 1.5 | 2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 | 12.5 | 13.5 | 14.5 | 15.5 |
| Discount Factor @9% | 0.9578 | 0.8787 | 0.8062 | 0.7396 | 0.6785 | 0.6225 | 0.5711 | 0.5240 | 0.4807 | 0.4410 | 0.4046 | 0.3712 | 0.3405 | 0.3124 | 0.2866 | 0.2630 |
| **Discounted Cash Flow (RMB M)** | **-404** | **13** | **807** | **620** | **476** | **685** | **473** | **420** | **433** | **478** | **201** | **124** | **242** | **243** | **213** | **87** |
| **Discounted Cash Flow (US$ M)** | **-59.6** | **1.9** | **119.0** | **91.5** | **70.2** | **101.0** | **69.8** | **61.9** | **63.9** | **70.6** | **29.7** | **18.3** | **35.7** | **35.8** | **31.5** | **12.9** |

*Notes: (1) A copper concentrate transportation credit of RMB200/t (US$29.50/t) of copper metal in concentrate is provided by the copper concentrate buyer based on the current preliminary sales contract. (2) An environmental bond of RMB35 M (US$5.2 M) was added to the economic analysis by BDASIA, which is used as the closing cost for the Jiama Project.*

## Table 21.8
## Base Case Economic Analysis for the Jiama Project (continued)

| Item | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metal Production** | | | | | | | | | | | | | | | | |
| Cu Production in Cu Concentrate (t) | 29,379 | 21,626 | 21,778 | 21,712 | 21,687 | 22,897 | 21,646 | 21,498 | 19,197 | 24,408 | 23,496 | 26,638 | 20,043 | 15,959 | 6,029 | **772,990** |
| Au Production in Cu Concentrate (kg) | 681 | 439 | 425 | 458 | 446 | 450 | 418 | 452 | 391 | 496 | 493 | 465 | 304 | 221 | 149 | **16,120** |
| Ag Production in Cu Concentrate (t) | 56.21 | 42.11 | 45.26 | 44.66 | 50.01 | 54.55 | 40.49 | 41.49 | 36.00 | 48.90 | 42.90 | 43.47 | 25.32 | 17.97 | 11.46 | **1,364.19** |
| Mo Production in Mo Concentrate (t) | 547 | 819 | 913 | 777 | 626 | 756 | 905 | 1367 | 1646 | 796 | 954 | 710 | 1030 | 1169 | 964 | **28,820** |
| Pb Production in Pb Concentrate (t) | | | | | | | | | | | | | | | | **12,519** |
| Ag Production in Pb Concentrate (t) | | | | | | | | | | | | | | | | **24.84** |
| **Metal Sales Income** | | | | | | | | | | | | | | | | |
| Cu Production in Cu Concentrate (RMB M) | 1,237 | 911 | 917 | 914 | 913 | 964 | 912 | 905 | 808 | 1,028 | 990 | 1,122 | 844 | 672 | 254 | **32,555** |
| Au Production in Cu Concentrate (RMB M) | 113 | 73 | 71 | 76 | 74 | 75 | 69 | 75 | 65 | 82 | 82 | 77 | 50 | 37 | 25 | **2,676** |
| Ag Production in Cu Concentrate (RMB M) | 130 | 98 | 105 | 104 | 116 | 126 | 94 | 96 | 83 | 113 | 99 | 101 | 59 | 42 | 27 | **3,163** |
| Mo Production in Mo Concentrate (RMB M) | 140 | 210 | 234 | 199 | 161 | 194 | 232 | 351 | 422 | 204 | 245 | 182 | 264 | 300 | 247 | **7,390** |
| Pb Production in Pb Concentrate (RMB M) | | | | | | | | | | | | | | | | **134** |
| Ag Production in Pb Concentrate (RMB M) | | | | | | | | | | | | | | | | **56** |
| **Total Sales Revenue (RMB M)** | **1,621** | **1,291** | **1,327** | **1,293** | **1,264** | **1,359** | **1,307** | **1,427** | **1,379** | **1,428** | **1,415** | **1,482** | **1,217** | **1,050** | **552** | **45,973** |
| **Total Sales Revenue (US$ M)** | **239** | **190** | **196** | **191** | **186** | **201** | **193** | **210** | **203** | **211** | **209** | **219** | **180** | **155** | **81** | **6,781** |
| Sales Tax 10% of VAT (RMB M) | 19 | 14 | 15 | 14 | 14 | 15 | 14 | 16 | 16 | 16 | 16 | 17 | 13 | 11 | 6 | **520** |
| Cu Concentrate Transportation Credit (RMB M) | 6 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 3 | 1 | **155** |
| **Income after Sales Tax (RMB M)** | **1,608** | **1,282** | **1,317** | **1,284** | **1,255** | **1,349** | **1,297** | **1,415** | **1,367** | **1,416** | **1,404** | **1,470** | **1,208** | **1,042** | **548** | **45,607** |
| **Operating Cost** | | | | | | | | | | | | | | | | |
| Mining Cost (RMB M) | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 298 | 186 | **105,78** |
| Processing Cost (RMB M) | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 111 | **6,471** |
| G&A and Other Cost (RMB M) | 146 | 127 | 128 | 127 | 126 | 130 | 127 | 130 | 125 | 134 | 132 | 139 | 123 | 106 | 55 | **4,068** |
| **Total Operating Costs (RMB M)** | **714** | **695** | **696** | **695** | **694** | **698** | **695** | **698** | **693** | **702** | **700** | **707** | **691** | **622** | **352** | **21,116** |
| **Total Operating Costs (US$ M)** | **105** | **102** | **103** | **102** | **102** | **103** | **103** | **103** | **102** | **104** | **103** | **104** | **102** | **92** | **52** | **3,114** |
| Depreciation and Amortization (RMB M) | 118 | 118 | 118 | 118 | 118 | 113 | 113 | 113 | 112 | 112 | 112 | 90 | 90 | 90 | 47 | **4,052** |
| Resource Tax @RMB15/t of ore (RMB M) | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 41 | 23 | **1,578** |
| **Taxable Income (RMB M)** | **722** | **415** | **449** | **417** | **389** | **484** | **435** | **551** | **508** | **549** | **538** | **620** | **373** | **290** | **126** | **18,862** |
| Income Tax @15% (RMB M) | 108 | 62 | 67 | 63 | 58 | 73 | 65 | 83 | 76 | 82 | 81 | 93 | 56 | 43 | 19 | **2,829** |
| **After Tax Income (RMB M)** | **614** | **353** | **382** | **354** | **330** | **411** | **370** | **468** | **432** | **466** | **457** | **527** | **317** | **246** | **107** | **16,032** |
| Total Capital Costs (RMB M) | | | | | | 421 | | | | | | | | | | **2,767** |
| Working Capital (RMB M) | | | | | | | | | | | | | -26 | -44 | -59 | |
| Environmental Bond/Closing Costs (RMB M) | | | | | | | | | | | | | | | | **35** |
| VAT Refund (RMB M) | | | | | | | | | | | | | | | | **88** |
| Fixed Asset Remnant Value (RMB M) | | | | | | | | | | | | | | | 107 | **107** |
| **After Tax Cash Flow (RMB M)** | **732** | **471** | **500** | **472** | **449** | **103** | **483** | **581** | **544** | **578** | **569** | **617** | **433** | **380** | **322** | **17,477** |
| **After Tax Cash Flow (US$ M)** | **108** | **69** | **74** | **70** | **66** | **15** | **71** | **86** | **80** | **85** | **84** | **91** | **64** | **56** | **47** | **2,578** |
| Years to Discount at End of 2009 | 16.5 | 17.5 | 18.5 | 19.5 | 20.5 | 21.5 | 22.5 | 23.5 | 24.5 | 25.5 | 26.5 | 27.5 | 28.5 | 29.5 | 30.5 | |
| Discount Factor @9% | 0.2412 | 0.2213 | 0.2031 | 0.1863 | 0.1709 | 0.1568 | 0.1438 | 0.1320 | 0.1211 | 0.1111 | 0.1019 | 0.0935 | 0.0858 | 0.0787 | 0.0722 | |
| **Discounted Cash Flow (RMB M)** | **177** | **104** | **101** | **88** | **77** | **16** | **69** | **77** | **66** | **64** | **58** | **58** | **37** | **30** | **23** | **6,157** |
| **Discounted Cash Flow (US$ M)** | **26.0** | **15.4** | **15.0** | **13.0** | **11.3** | **2.4** | **10.2** | **11.3** | **9.7** | **9.5** | **8.6** | **8.5** | **5.5** | **4.4** | **3.4** | **908.1** |

Based on the assumptions listed above, the Jiama Project had a total after-tax discounted cash flow of RMB6,157M (US$908.1 M) as of December 31, 2009. Subtracting the debt of approximately RMB888 M (US$131.0 M) at December 31, 2009, the after-tax NPV of the Jiama Project as of December 31, 2009 was RMB5,269 M (US$777.2 M). The payback period to recover all the capital investment for the Jiama Project is approximately 5.2 years starting from January 1, 2010.

Sensitivity analyses (Table 21.9 and Figure 21.1) indicate that the NPV of the Jiama Project is very sensitive to variations in the metal prices and processing metal recoveries, moderately sensitive to variations in operating costs, and less sensitive to variations in capital costs.

**Table 21.9**
**Sensitivity analysis for after-tax NPV as of December 31, 2009 for the Jiama Project**

| | After-Tax NPV Variation (RMB M) | | | | |
|---|---|---|---|---|---|
| **Sensitivity Item Variation** | **-20%** | **-10%** | **Base Case** | **+10%** | **+20%** |
| Metal Prices | 2,401 | 3,835 | 5,269 | 6,703 | 8,138 |
| Metal Recoveries | 2,401 | 3,835 | 5,269 | 6,703 | 8,138 |
| Operating Costs | 6,520 | 5,895 | 5,269 | 4,644 | 4,019 |
| Capital Costs | 5,580 | 5,425 | 5,269 | 5,114 | 4,958 |
| | **After-Tax NPV Variation (US$ M)** | | | | |
| **Sensitivity Item Variation** | **-20%** | **-10%** | **Base Case** | **+10%** | **+20%** |
| Metal Prices | 354.1 | 565.7 | 777.2 | 988.7 | 1200.2 |
| Metal Recoveries | 354.1 | 565.7 | 777.2 | 988.7 | 1200.2 |
| Operating Costs | 961.7 | 869.4 | 777.2 | 684.9 | 592.7 |
| Capital Costs | 823.1 | 800.1 | 777.2 | 754.2 | 731.3 |

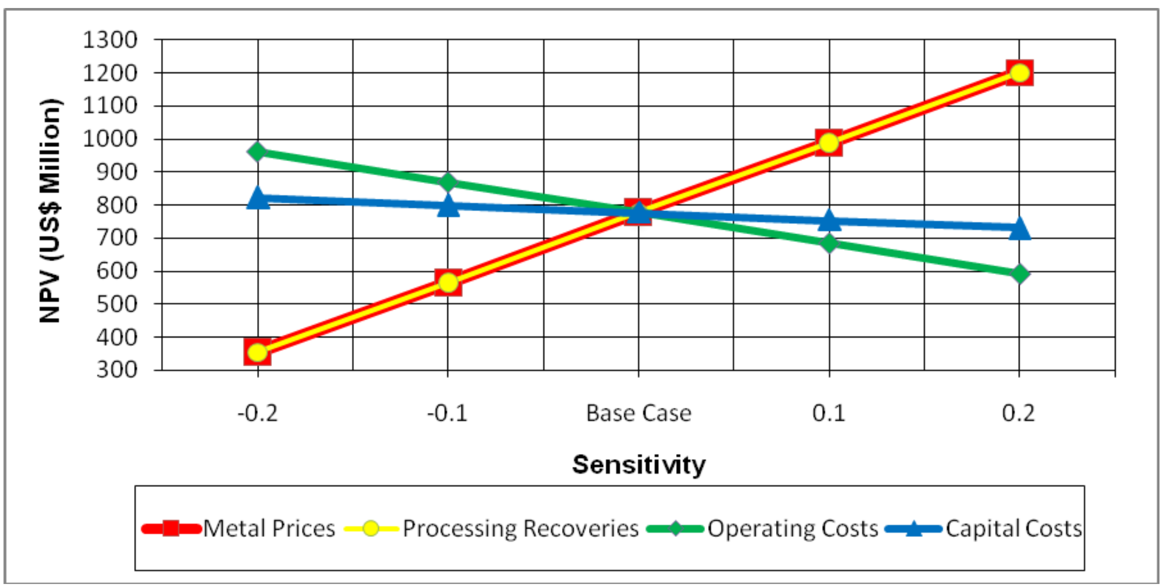



Figure 21.1 After-tax NPV sensitivity analysis for the Jiama Project

## 21.8 Environmental and Community Considerations

### 21.8.1 Environment

Environment protection is being taken seriously by the management at the Jiama Project, who are complying with Chinese requirements to achieve a responsible standard of environmental protection. On September 28, 2008, an environmental permit was issued for the construction phase of Jiama Project by the Ministry of Environment Protection of China in Beijing. An environmental assessment for the Project will be produced by government authorities following review of documents and a site inspection by an expert panel at their pre-operations phase inspection, which is anticipated to take place around September 2010. A site soil and water conservation plan was approved by the Tibetan Autonomous Region Water Bureau on October 8, 2008.

Due to the high alpine, semi-desert conditions, where the evaporation rate is approximately twice the precipitation rate, the project is being developed as a zero discharge operation, hence it only requires a water supply (and not a water discharge) permit by the regulatory authorities. The current water permit, granted on October 8, 2008, allows 7,300 $m^3$/day to be pumped from the Chikang River, a tributary of the Lhasa River, which eventually flows into the Brahmaputra River.

Waste water from the processing plant thickeners' overflow and the tailing filtering system will be recycled back to the flotation plant's production lines. Water consumption for the project is estimated at 43,396 $m^3$/day, of which 36,547 $m^3$/day will comprise recycled water.

Environment protection measures for the mine site comprise:

- **Water management**: the site is being developed as a zero discharge operation, with an expectation of recycling all used process and TSF drainage water. A recycling rate of at least 84% is expected. Huatailong holds a current water permit for the extraction of 7,300 $m^3$/day for top up and domestic water, which is taken from the nearby Chikang River, which also receives any surplus waste water from the site following treatment in accordance with Chinese national standards. Waste water treatment includes sewage treatment and reuse in the replanting program.

- **Solid waste**: waste rock from the open pits will initially be used to construct infrastructure foundations, particularly roads, after which surplus waste material will be placed on constructed waste dumps. Underground waste will be mainly left underground. Tailings will be mixed with cement for use as stope fill, while TSFs will be constructed in adjacent valleys to store the remaining tailings material (Table 21.10).

- **Dust and air quality mitigation**: including use of dust collectors (cyclones) and baghouses for the boiler houses, incinerator, the crushing and screening plant, and fine ore bin. Treated flue gas from these sources will be vented via stacks ranging in height from 20 m (crushing, screening, and fine bin areas) to 40 m (boilers). Other mitigation measures include the use of water sprays, including water trucks, use of paved or watered roads to reduce dust generated from mining and truck transport activities, and enclosure of dusty activities where possible. Personal protection devices are issued to workers to provide additional personal protection from dust.

- **Noise control:** methods of noise control include use of silencers, noise and vibration dampening on mobile equipment, enclosure of noisy equipment, use of insulation, and regular equipment maintenance. Company policy requires PPE use, such as ear muffs or ear plugs, for noise-affected workers.

- **Environmental monitoring**: A comprehensive air, water, and climatic monitoring plan will be put in place to build up an environmental baseline database. All analytical results are to comply with Chinese National Standards.

♦ **Rehabilitation**: a mine closure plan has been produced and approved as part of the Soil and Water Conservation Plan. The plan will be updated as the operation progresses. An Environmental Bond of RMB35 M (US$5.2 M) is to be lodged with the Government within the first 5 years of operations.

**Table 21.10**
**Tailings Storage Facility for the Jiama Project**

| Design Capacity & Estimated Life | Comments |
|---|---|
| The TSF is designed to accommodate approximately 10 years production at the 12,000-tpd rate. This design life may be extended if significant quantities of tailings are used as goaf fill underground.<br><br>Once the TSF is full a new TSF will be constructed in one of the many nearby valleys. | The TSF is being constructed in the valley above the Phase I mill site, with a storage capacity of 23.53 $Mm^3$. At a production rate of 12,000 tpd (or 2.34 $Mm^3/a$), the tailings will be pumped to a pressure filter station above the TSF, the moisture level of the tailings will be reduced to 15-18%, and the filtered tailings will then be conveyed to the TSF and stacked. The initial concrete faced, earth-fill dam wall will be 70 m high and 6 m wide and an upstream method of deposition adopted. The TSF is being designed with a 1 in 500-year flood design factor and seismic intensity Level 7, with a basic earthquake acceleration value of 0.15 g. When complete, the height of the stacked tailings will be 260 m, with an average slope of 1:4.<br><br>The TSF has a catchment of 2.82 $km^2$. A drainage system is to be installed at the base of the tailings pile and side drains catching surface water, as well as drainage layers at 10 m intervals utilizing geotextile fabric mats and drainage pipes, will direct seepage water into this TSF drainage system. The water will be collected, treated, and then recycled through the processing plant.<br><br>The surface of the TSF will be treated with a dust suppressant chemical to bind the material and minimize both erosion and dust generation.<br><br>The small existing TSFs will be topsoiled and revegetated (as will the new TSF when it is full), as part of the implementation of the soil and water conservation plan. |

### 21.8.2 Community

The Jiama Project has a policy of social responsibility towards the local community, with a focus on providing assistance and contributing towards social development, through financially supporting local economic development, education, employment, training initiatives, local transport, communications, drinking water supply, and other social initiatives such as assisting poor families and rectifying both contamination issues and outstanding debts due to the community that were generated by previous mining operations on the Jiama mine site.

Prior to mining operations being established in the area, the mine site was used for low-intensity grazing of yak and sheep with occasional scattered temporary shelters used by members of the nearby Jiama township, which is located about 4-km away. Land was acquired for the mine site and associated infrastructure corridors in compliance with PRC laws through both short-term and long-term leasing agreements, signed and approved by the local government authorities. Compensation for land and land use rights was and will be paid under these lease agreements in line with standard PRC guidelines. The community has, in general, welcomed the opportunity for employment in the area and has participated in ongoing dialogue with both Huatailong and the local government through the “Jiama Project Coordination and Development Management Committee” concerning the development and operation of the mine, potential environmental impacts and their management, and the scope and nature of community benefits to be generated by the development. Over RMB50 M (US$7.4 M) has been expended to date by Huatailong through the implementation of its community development plan.

Huatailong intends to employ approximately 125 local Tibetan mine workers, is providing training and around thirty tertiary education scholarships to local people, has already employed approximately 26,000 days of contracted local labor at a cost of around RMB20 M (US$2.9 M) and is ensuring that non-Tibetan staff are learning the local language.

## 21.9 Occupational Health and Safety

The Jiama Project has been under construction since June 2008 and is (or will be) conducting its operations in accordance with specific national laws and regulations covering occupational health and safety ("OH&S") in construction, mining, underground mining, production blasting and explosives handling, mineral processing, TSF design, hazardous wastes, environmental noise, fire protection and fire extinguishment, sanitary provisions, power provision, lightning and seismic protection, labor, and supervision.

To manage the health and safety of the workforce, the mine is implementing an OH&S management system in line with national standards, with OH&S training of 30 workers currently in progress and regular medical checks for all employees. When mining operation commences, there will be a medical clinic on site with one doctor and three nurses, but in the meantime the Jiama Community Hospital serves the mine community. Safety statistics for the mine to date show a record of no significant injuries. An environmental emergency response plan is in place for the management of chemical spill, flood, fire, etc.

The mine holds current pre-evaluation approvals issued by the Tibet Autonomous Region Safety and Supervision Bureau for both the mine and the TSF. Safety Assessments are expected to be conducted by the end of 2010, following which safety permits for the mine and the TSF are expected to be issued.

## 21.10 Risk Analysis

When compared with many industrial and commercial operations, mining is a relatively high-risk business. Each orebody is unique. The nature of the orebody, the occurrence and grade of the ore, and its behavior during mining and processing can never be accurately predicted.

Estimations of the tonnes, grade, and overall metal content of a deposit are not precise calculations but are based on interpretation and on samples from drilling or channel sampling, which, even at close sample spacing, remain very small samples of the entire orebody. There is always a potential error in the projection of sampling data when estimating the tonnes and grade of the surrounding rock, and significant variations may occur. Reconciliations of past production and ore reserves can confirm the reasonableness of past estimates but cannot categorically confirm the accuracy of future predictions.

Estimations of project capital and operating costs are rarely more accurate than ±10% and will be at least ±15% for projects in the planning stages. Mining project revenues are subject to variations in metal prices and exchange rates, though some of this uncertainty can be removed with hedging programs and long-term contracts.

Huatailong's Jiama Project reviewed in this ITR is still in the development stage, and mine production has yet not started, which brings an additional uncertainty for project. The life-of-mine production projections are largely based on a feasibility study.

In reviewing the Jiama Project, BDASIA has considered areas where there is perceived technical risk to the operation, particularly where the risk component could materially impact the projected production and resulting cash flows. The assessment is necessarily subjective and qualitative. Risk has been classified as low, moderate, or high based on the following definitions:

- High Risk: the factor poses an immediate danger of a failure, which, if uncorrected, could have a material impact (>15%) on the project cash flow and performance and could potentially lead to project failure.

- Moderate Risk: the factor, if uncorrected, could have a significant impact (>10%) on the project cash flow and performance unless mitigated by some corrective action.

- Low Risk: the factor, if uncorrected, could have little or no effect on project cash flow and performance.

| Risk Component | Comments |
|---|---|
| Mineral Resources<br>*Low Risk* | More than 97% of the currently defined mineral resources for the Jiama Project are contained within the I-1 mineralized body, which is hosted by a stratiform skarn zone along an interlayer fracture between the underlying marbles/limestones and overlying hornfels. This mineralized body is over 2,000-m long along strike and is close to 2,000-m wide in the down dip direction but still widely open. The mineralized body has good geological continuity and reasonable grade continuity. Measured and indicated resources have been defined by a drill hole spacing of 100 m by 100 m or 100 m by 200 m. Procedures and parameters used for resource estimation generally conform to industry standards.<br><br>In addition to the measured and indicated mineral resources, there is also a large inferred resource defined by wider drill hole spacing of 200 m to 400 m. BDASIA believes that it is very likely that a significant portion of the inferred resource will be upgraded to the measured and indicated resource categories with additional drilling and sampling. Furthermore, the I-1 mineralized body is widely open in the down-dip direction, indicating that there is a significant additional exploration potential. |
| Ore Reserves<br>*Low to Moderate Risk* | Current open-pit and underground ore reserves for the Jiama Project were defined by the Changsha Institute, using generally appropriate economic and technical parameters and the computer resource model produced by BDASIA. Only measured and indicated resources were used to estimate the proved and probable reserves. Appropriate additional mining dilution factors and mining recovery factors have also been applied in reserve estimation. Currently defined ore reserves are sufficient to support the mining operation at the planned 12,000 tpd or 3.6 Mtpa for approximately 30 years, and there is also a significant upside potential for the reserve estimates.<br><br>However, the Jiama Project is at a late stage of mine development, and mining operation has not yet formally started. Mining and processing operation in the next several years will be crucial to prove that the reserve estimates are reasonable and appropriate for the planned mining and processing methods. |
| Open-Pit Mining<br>*Low Risk* | The Tongqianshan pit is relatively small, and the pit slopes are generally conservative. There is some potential disruption from the voids within the open pit from prior underground mining activity. Procedures are required to ensure both personnel and equipment safety.<br><br>The Niumatang pit is mining an ore zone that is shallow dipping, with a relatively high strip ratio over the life of the operation. High rock strength of both ore and waste indicates relatively conservative slope angles, but the height of the two major walls in excess of 500 m requires a more detailed slope analysis for the final wall. The three-stage development of the open pit provides some risk mitigation. Huatailong has ongoing slope monitoring to track any slope movement. |
| Underground Mining<br>*Low to Moderate Risk* | There is a shortage of detailed design, which elevates the overall risk of underground mining. BDASIA considers that the mine design is generally conservative given the size of stopes within a competent rock mass, with potential to further optimize mine design layouts; this provides some mitigation of the risk.<br><br>The scale of the operation is appropriate for the size of the mineralized zone, and the production rates are considered achievable. There is potential to increase the mining area if significant inferred resources can be better defined. |

| Risk Component | Comments |
|---|---|
| Ore Processing<br>*Low to Moderate Risk* | There is a low to moderate risk that the copper concentrate grades and particularly recoveries during the initial 2 years of the mine life may be one or two percentage points lower than forecast. This could be due to the copper-lead ore participating in the plant feed, accounting for about 25% to 33% of the total feed tonnage. The laboratory tests on this ore indicated copper recovery of 89% to 90%, which suggests a plant recovery of about 86% to 87%. However, the copper-molybdenum ore in the feed, participating with 67% to 75% of the total feed tonnage, is realistically expected to yield 90% copper recovery, thus bringing the overall copper recovery in the initial 2 years to approximately 88.5%. |
| Infrastructure<br>*Low to Moderate Risk* | Access road conditions to the Jiama Project site are excellent. Although water is scarce in the mine area, a sufficient water source has been identified and is available for planned mine production and mine camp use. However, currently there is a power shortage for mine production during the winter dry months. The Tibet government has been executing a power-supply development plant for the period from 2006 to 2010, during which several new power generation plants will be constructed and the Central Tibet power grid will be connected to the national power grid in China. Electricity supply will be sufficient for Phase I production and Phase II expansion at Jiama when the development plan is completed. |
| Production Targets<br>*Moderate Risk* | BDASIA believes that there is a degree of uncertainty for achieving the production targets during the ramp-up period of the mine life as the commercial production of Phase I concentrator was delayed from April 2010 to September 2010 and as construction of the Phase II concentrator will not start until December 2010, which is behind of the original schedule. Shortages in electricity supply could also slow the ramp-up process. However, once the two concentrators reach the designed production capacity and when the electricity supply problem is solved, the long-term production target of the project is considered achievable by BDASIA. Well managed backfilling of underground stopes will be important in ensuring long-term production schedules are achieved.<br><br>There is a low to moderate risk that the copper metal production in the initial 4-year period will be lower by one to two percentage points for the forecast ore head values. The reason for this is discussed above under Ore Processing. |
| Operating Cost<br>*Low to Moderate Risk* | Open-pit unit costs reflect the contract unit prices and are considered relatively low risk. Underground cost estimates are not well defined, and the potential for increased costs is higher than for the open pits. Therefore, BDASIA has made a 15% positive adjustment for the underground mining cost estimated by the Changsha Institute. BDASIA considers a mitigating factor to increased costs is that the underground design is conservative and there is some potential to reduce operating costs by increasing stope size. Further optimization of the open-pit design and the open-pit/underground mining ratio may also result in some savings on overall project mining operating cost.<br><br>Processing costs and G&A and other costs are considered reasonable.<br><br>BDASIA notes that no inflation factors have been included in the operating costs estimates. |

| Risk Component | Comments |
|---|---|
| Capital Cost<br>*Low Risk* | More than half of the initial capital investment for constructing the 12,000-tpd day mine had been spent and was generally on budget at the end of 2009. The remaining initial capital expenditures are mostly for pre-production stripping of the Niumatang pit, development and equipping of the 6,000-tpd underground mine, and the construction of the Phase II 6,000-tpd processing plant. Any delays, such as power restrictions, in completing the remaining capital works on schedule will increase the initial capital costs for the project; however, BDASIA considers the overall risk of capital cost for the entire Jiama Project to be low. |
| Environment and Community<br>*Low Risk* | Mitigation measures are being put in place to minimize environmental and social risks and to ensure regulatory environmental requirements are satisfied. Ongoing dialogue between Huatailong, the local government and local residents is being fostered through the activity of the “Jiama Project Coordination and Development Management Committee” with the objective of maintaining good community relations.<br><br>All structures and infrastructure, including the TSF, are being designed to withstand a 1 in 500-year flood event and a Level-7 seismic event with an acceleration value of 0.15 g; however, it will be important to ensure that the tailings in the TSF have uniform size distribution at all times.<br><br>A soil and water conservation plan has been approved and is being implemented.<br><br>Dust generation in dry, cold, windy periods is low but nevertheless can pose a risk that will require careful management and adequate supplies of water. |
| Occupational Health and Safety<br>*Low Risk* | Huatailong seeks to conduct its operations in accordance with the national safety standards and has a health and safety management system in place. The Project has maintained a good safety record to date. |

# 22.0 DATE PAGE AND CERTIFICATES

The effective date of this ITR is November 17, 2010.

Signatures of the Qualified Persons for the ITR are as follows:

______________________

Qingping Deng, Ph.D., C.P.G.
November 17, 2010

______________________

Peter D. Ingham, FAusIMM, CEng
November 17, 2010

______________________

Vuko M. Lepetic Q.P.Metallurgy of MMSA
November 17, 2010

______________________

Janet M. Epps, FAusIMM
November 17, 2010

**Qingping Deng, Ph.D., C.P.G.**
Behre Dolbear Asia, Inc.
999 Eighteenth Street, Suite 1500, Denver, CO 80202 USA
Phone: +1.303.620.0020 Fax: +1.303.620.0024
Email: qdeng@aol.com

I, Qingping Deng, Ph.D., C.P.G., do hereby certify that:

1. I am currently a senior associate of Behre Dolbear Asia, Inc., which is a member of the minerals industry advisory firm, Behre Dolbear Group Inc.

2. I graduated with a degree of B.Sc. in Geology and a degree of M.Sc. in Geology from the Central South Institute of Mining and Metallurgy in China in 1981 and 1984. I graduated with a degree of Ph.D. in Geology from the University of Texas at El Paso 1990.

3. I am a Certified Professional Geologist in good standing with the American Institute of Professional Geologists (certification number 10515). I am a Qualified Professional Member (Geology and Ore Reserves) in good standing with the Mining and Metallurgical Society of America (certification number 01135QP). I am a Founding Registered Member in good standing with the Society for Mining, Metallurgy, and Exploration, Inc. (certification number 785284RM).

4. I have worked as a geologist, ore reserve specialist, and project manager for a total of 26 years since my graduation from university. I have been involved in exploration and mining projects in North, Central, and South America, Asia, Australia, Africa, and Europe.

5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.

6. I am responsible for the overall supervision and preparation of the report titled of “Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, the People’s Republic of China” (the “Technical Report”) dated November 17, 2010. I visited the property two times in conjunction with the Technical Report. The first visit was from August 16 to August 19, 2009, and the second visit was from December 15 to December 19, 2009.

7. I have not had prior involvement with the property that is the subject of the Technical Report.

8. As of the date hereof, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

9. I am independent of the issuer applying all of the tests in Section 1.4 of NI 43-101.

10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 17th day of November 2010.

Signature of Qualified Person

______________________
Qingping Deng, Ph.D., C.P.G.

**Peter D. Ingham, B.Sc., M.Sc., CEng, FAusIMM**
Behre Dolbear Australia Pty Ltd.
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Email: ingham@ihug.com.au

I, Peter D. Ingham (B.Sc., M.Sc, FAusIMM, MIMMM, CEng), do hereby certify that:

1. I am General Manager Mining of Behre Dolbear Australia Pty Limited ("BDA") of Level 9, 80 Mount Street, North Sydney, NSW 2060, Australia.

2. I graduated with a Bachelor of Science degree in Mining from Leeds University, England in 1975 and a Master of Science degree in Mineral Production Management from Imperial College of Science and Technology in 1980.

3. I am a Fellow of the Australasian Institute of Mining and Metallurgy and Member of the Institute of Materials, Minerals and Mining, UK. I am a Chartered Engineer (CEng) of the Engineering Council of UK.

4. I have worked as a mining engineer and a project manager for a total of 34 years since my graduation from university. I have been involved in both open-pit and underground mining projects in Europe, Africa, Australia, and Asia. My experience includes operational expertise in operations management, mining contract management, project assessment and acquisition, operational audits and trouble-shooting, and tenement and title issues.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

6. I am responsible for the preparation of Section 21.1 Mining Operations, part of Section 17.2 Ore Reserve Estimates, and statements relevant to mining operations of the report titled of "Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, the People's Republic of China" (the "Technical Report") dated November 17, 2010. I visited the property in conjunction with the Technical Report from December 15 to December 19, 2009.

7. I have not had prior involvement with the property that is the subject of the Technical Report.

8. As of the date hereof, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

9. I am independent of the issuer applying all of the tests in Section 1.4 of NI 43-101.

10 I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 17th day of November 2010.

Signature of Qualified Person

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Peter D. Ingham, FAusIMM, CEng

**Vuko M. Lepetic, Q.P.Metallurgy**
Behre Dolbear International Ltd.
Winchester House, 259.269 Old Marylebone Road, London, NW 1 5RA, UK
Phone: +4420.7170.4034
Email: vl_carpediem@yahoo.com

I, Vuko M. Lepetic, Dipl.Ing., M.SC., Q.P.Metallurgy, do hereby certify that:

1. I am currently a Senior Associate of Behre Dolbear International Ltd. with an address of Winchester House, 259.269 Old Marylebone Road, London, NW 1 5RA, United Kingdom.

2. I graduated with a degree of Dipl.Ing. in Mining Engineering at the School of Mining and Geology, University of Belgrade, Yugoslavia in 1961. I received a M.Sc. degree in Mineral Engineering from the Henry Krumb School of Mines, Columbia University, New York, USA in 1964.

3. I am a Qualified Professional Member (Metallurgy) in good standing with the Mining and Metallurgical Society of America (certification number 01382QP).

4. I have worked as a mineral processing specialist for 45 years in the mining industry since my graduation. I have been involved in mineral processing and mining projects in North, Central, and South America, Asia, Australia, Africa, and Europe.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

6. I am responsible for the Section 16.0 Metallurgical Testing and Mineral Processing and other mineral processing-related statements in the report titled "Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, the People's Republic of China" (the "Technical Report") dated November 17, 2010. I visited the property one time in conjunction with the Technical Report. The visit was from December 15 to December 19, 2009.

7. I have not had prior involvement with the property that is the subject of the Technical Report.

8. As of the date hereof, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

9. I am independent of the issuer applying all of the tests in Section 1.4 of NI 43-101.

10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 17th day of November 2010.

Signature of Qualified Person

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Vuko M. Lepetic Q.P.Metallurgy

**Janet M. Epps, M.Env.Stud., B.Sc., FAusIMM**
Behre Dolbear Australia
Level 9, 80 Mount Street, North Sydney, NSW, 2090 Australia
Phone: +61 2 9954 4988 Fax: +61 2 9929 2549
Email: emcint@bigpond.com

I, Janet M. Epps, M.Env.Stud., FAusIMM, do hereby certify that:

1. I am a Senior Associate of Behre Dolbear Australia Pty Limited of Level 9, 80 Mount Street, North Sydney, NSW 2060, Australia.

2. I graduated with degrees in Bachelor of Science in Geology (1971) from the University of New England, Armidale, and Master of Environmental Studies (1980) from Macquarie University, Sydney, both in NSW, Australia.

3. I am a Fellow of the Australasian Institute of Mining and Metallurgy (Member number 101317).

4. I have worked as a professional Environmental Specialist for 35 years and previously worked as a geoscientist for a further 3 years.

5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.

6. I am responsible for Section 21.7 Environmental Considerations and Section 21.8 Occupational Health & Safety, together with the section concerning risk relating to these two areas, of the report titled “Independent Technical Report on the Jiama Copper-Polymetallic Project in Metrorkongka County, Tibet Autonomous Region, the People’s Republic of China” (the “Technical Report”) dated November 17, 2010. I visited the property from December 15 to December 19, 2009 in conjunction with producing the Technical Report.

7. I have not had prior involvement with the property that is the subject of the Technical Report.

8. As of the date hereof, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

9. I am independent of the issuer applying all of the tests in Section 1.4 of NI 43-101.

10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 17th day of November 2010.

Signature of Qualified Person

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Janet M. Epps, FAusIMM